

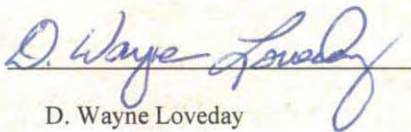
Quarterly Progress Report

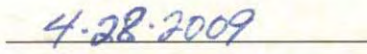
Volume 16

**First Quarter Report
January 1 through March 31, 2009**

Submitted to EPA on April 28, 2009

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.


D. Wayne Loveday


Date

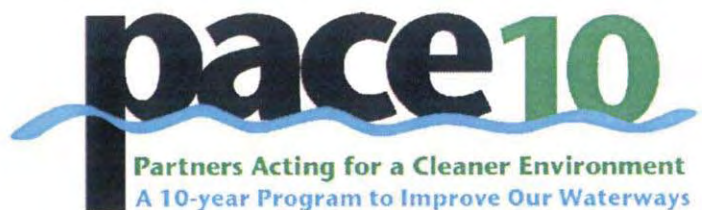


Table of Contents

Executive Summary	i
Section 1 Phase 1 Corrective Action Plan/Engineering Report (CAP/ER) and Phase 2 CAP/ER	1
Section 2 Comprehensive Performance Evaluation Program and Composite Correction Plan	7
Section 3 Process Controls Program	8
Section 4 Capacity Assurance Program	9
Section 5 Transfers of Ownership	10
Section 6 Compliance and Non-Compliance With the Consent Decree	11
6.1 Submission of Deliverables	11
6.2 Violations Subject to Stipulated Penalties	12
Section 7 Sanitary Sewer Overflows (SSOs), Bypasses, Diversions, and Effluent Limit Violations	13
7.1 SSOs	13
7.2 Building Backups	13
7.3 Bypasses	13
7.4 Diversions	13
7.5 Effluent Limit Violations	13
Section 8 Water Quality Monitoring Data	15
8.1 Sampling Conducted and Results	15
8.2 Projected Data Collection	17
Appendices	
Appendix A Capital Projects and Rehabilitation Credits	
Appendix B SSOs	
Appendix C Building Backups	
Appendix D Water Quality Monitoring Program Sampling Results	

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 2009 from January 1 through March 31. This is the sixteenth quarterly report required of KUB under this Consent Decree. The Consent Decree requirements pertaining to the Phase 2 CAP/ER will not be fulfilled in this report since it has not become due; rather, a description of the status of development for this program is given. The Consent Decree reporting requirements for this program will be met after EPA has provided approval.

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, 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 5, 2009

- Submitted to EPA – January 2009 Revised Composite Correction Plan

January 20, 2009

- Approved by EPA – January 2009 Revised Composite Correction Plan

January 28, 2009

- Submitted to EPA – Quarterly Progress Report 4th quarter 2008
- Submitted to EPA – SEP Periodic Report 2nd period 2009

February 26, 2009

- Submitted to EPA – Annual MOM Progress Report 2008

March 3, 2009

- Submitted to EPA – Documentation for SEP Payment #7

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 will be submitted to EPA by September 11, 2009.

Requested Project Extensions and Changes

Project and Reason	Original Completion Date	Revised Completion Date
No extensions were requested during this reporting period		

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)** – End date extended from FY 06/07 to FY 07/08. Due to the expanded scope, an additional extension was requested in the Phase I CAP/ER Annual Report 2008. End date was extended from FY 07/08 to FY 08/09 and is on schedule.
- **1-20 Vine Middle School Rehabilitation Project** – End date extended from FY 06/07 to FY 07/08 and was completed as scheduled.
- **2-4 Dutch Valley Collector Rehabilitation (Sewershed 10B1)** – End date was extended to September 2007 and was completed as scheduled.
- **2-5 Rickard and Wilson Collector Rehabilitation (Sewershed 10C1)** – End date was extended to September 2007 and was completed as scheduled.
- **S-1 Ginnbrook Pump Station Rehabilitation** – End date was extended from FY 06/07 to 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** – End date scheduled as FY 08/09 and was completed as scheduled.

- **2-1 Lower Second Creek Replacement/Rehabilitation at I40/I275 Junction** – End date was extended from FY 08/09 to FY 09/10 and is on schedule.
- **2-2 Lower Second Creek Replacement/Rehabilitation at Woodland** – End date was extended from FY 07/08 to FY 08/09 and is on schedule.

Current Capital Improvement Plan for FY 04/05 - FY 09/10

The following is a list of facility improvement projects included in the Capital Improvement Plan for fiscal years 04/05 to 09/10. 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.

Ongoing Projects

First Creek

1. **1-1 Upper First Creek Collector Project (Mini-basin 1A1, 2A2, and 3D1)** – Find and fix work to identify and address cause of overflow in the vicinity of 4811 Beverly Road, 4144 Oakland Drive, and 5511 Dogwood Road. Project scope was expanded to include comprehensive assessment of the entire sub-basin (approximately 105,000 ft). An extension for this project was approved in August 2006. Due to the expanded scope, an additional extension was requested in the Phase I CAP/ER Annual Report 2008. Design is complete. Project has been bid and awarded. The expected completion date is June 2009.

Second Creek

1. **Lower Second Creek Replacement/Rehabilitation at I40/I275 Junction** – Perform sewer system assessment and design rehabilitation and replacement of various trunk and collector lines located in sub-basin 23 near the intersection of interstates 40 and 275. Sewer assessment and design is underway. Project scope will be redefined in lieu of storage placement upstream of the Second Creek trunk sewer running from Dameron south to Interstate 40. Original scope was to upsize this portion of trunkline; however, peak shaving at the Bernard Avenue storage tank will offset the need for additional trunkline capacity. Schedule may be adjusted for new project definition. Evaluation of project scope is underway. Construction of CCP storage at Bernard Avenue is underway.
2. **Lower Second Creek Replacement/Rehabilitation at Woodland** – Perform sewer system assessment and design rehabilitation and replacement of various trunk and collector lines located in sub-basin 23 near Woodland Avenue. Sewer assessment is underway. Design is nearing completion. Construction is underway and nearing completion.

Third Creek

1. **3-6 Interstate 40 and Middlebrook Pike Trunk Sewer Replacement** – Design is underway.

2. **3-7 Neyland Drive Trunk Replacement** – Project is in preliminary engineering as part of the CCP storage being evaluated at the Kuwahee WWTP.
3. **3-8 Third Creek Bike Trail Trunk Replacement** – Project is in preliminary engineering as part of the CCP storage being evaluated at the Kuwahee WWTP.

Fourth Creek

1. **4-1 Chukar Road Rehabilitation** – Design is complete. Bid will open on April 21, 2009. Construction should commence by May 1, 2009.
2. **4-2 Gleason Road Rehabilitation** – Design is complete. Bid will open on April 21, 2009. Construction should commence by May 1, 2009.
3. **4-3 Middlebrook Pike Rehabilitation** – Design is complete. Bid will open on April 21, 2009. Construction should commence by May 1, 2009.
4. **4-4 Northshore Drive Trunk Sewer Replacement** – Replace approximately 3600 ft of existing 24-inch trunk sewer with 36 inch. Construction should commence in the 2nd quarter 2009. A schedule extension will be requested in the 2009 Annual CAP/ER Report to complete the Phase II portion of work. Design is underway.
5. **4-6 Shadyland Drive Rehabilitation** – Design is complete. Bid will open on April 21, 2009. Construction should commence by May 1, 2009.

South Knox

1. **Blount Avenue Trunkline (Goose Creek)** – Project will examine major trunkline along Blount Avenue in South Knoxville. It will include field survey, line cleaning, and CCTV inspection. Design report has been prepared and presents recommendation on needed improvements. Phase I construction is complete. Phase II construction is complete. Construction manager has been selected and permit process has been initiated. Work will commence once all permits are secured. Design is nearing completion and TDOT has given clearance to work on Neyland Drive. This phase will commence in April 2009. River crossing is in permit phase with Corp of Engineers and TVA. Completion is projected in Spring 2010.

Completed Projects

First Creek

1. **Fountain Road** - Upsized 3700 ft of gravity sewer using open cut and pipe bursting methods. Replaced manholes and services.
2. **Fair Drive Phase II** - Rehabilitated 3691 ft and replaced 2458 ft of existing 8-12 inch gravity sewer along Fair Drive.
3. **Greenfield Lane** - Replaced approximately 3300 ft of existing sewer with 8-inch and 12-inch PVC and ductile iron pipe.
4. **Whites Creek Phase III** - Replaced 300 ft of 12-inch, 300 ft of 16-inch, 2700 ft of 24-inch, and 5000 ft of 36-inch sewer.
5. **First Creek Sub-basins 3 and 4 Rehabilitation** – Rehabilitated 26,500 ft of line and replaced 10,500 ft. Project included CCTV, smoke testing, and manhole inspections.
6. **Lower First Creek Storage** - Designed and built 5 million gallon (MG) wet-weather storage tank to control sewer overflows near North Hoitt Avenue during rain events.
7. **Upper First Creek Storage** - Designed and built 9 MG wet-weather storage tank to control sewer overflows near Old Broadway during rain events.

8. **Fountain City Trunkline Replacement** - Replaced and upgraded approximately 6000 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.
9. **Sub-Basin 8B2** – Characterized the condition of 24,900 ft of pipe to determine rehabilitation needs.
10. **1-20 Vine Middle School Rehabilitation Project** – Completed find and fix work to identify cause of overflow in the vicinity of 214 Bertrand Street.
11. **First Creek 8A1** - Rehabilitated approximately 21,067 ft, and replaced approximately 10,273 ft of sewer.

Second Creek

1. **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.
2. **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.
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. **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. **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.

Third Creek

1. **Mynderse, Western, and Canna** - Replaced approximately 1700 ft of 8-inch sewer and pipe-burst approximately 3400 ft of 8-inch up to 10-inch and 12-inch pipe to address wet-weather capacity restrictions resulting in overflows near Pleasant Ridge Road.
2. **Third Creek 28B1*** - Investigated rehabilitation needs for collectors in mini-basin 28B1 (approximately 7900 ft of pipe). Project included inspection (CCTV, smoke test, manhole inspections), design, and rehabilitation of lines requiring repair. Plans are being developed for a future rehabilitation project. No construction is planned in the short-term.
*The project named Third Creek 28B1 replaces Third Creek 28C1 that appeared in the Quarterly Progress Report for the Second Quarter 2005. After additional studies, it was determined that flows from 28B1 more likely contributed to overflows along Sutherland Avenue and North Bellemeade, as listed in the SSOER.
3. **Third Creek Storage** - Designed and constructed 4.5 MG wet-weather storage tank to control sewer overflows near Western Avenue and Third Creek Road during rain events.
4. **Upper McKamey Trunk Sewer Replacement** – Project replaced approximately 1600 ft of 12-inch and 15-inch trunk sewer. This project further enhanced improvements already made in Third Creek to address overflows along McKamey Road.
5. **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.
6. **Third Creek Road Trunk Sewer Replacement** – Project included approximately 3100 ft of 24-inch and 30-inch 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 2000

ft to reach the new location of the Third Creek Storage Facility at the KUB Hoskins Center.

7. **Third Creek Basin 9 Phase I** – Assessed and rehabilitated collector sewer in 9A1, 9A2, 9A4, and 9D1 (CAP/ER Scope).
8. **Third Creek Basin 9 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.

Fourth Creek

1. **Pinebrook Drive Sewer Replacement** – Replaced 330 ft of 8-inch gravity sewer partially exposed by erosion of the bank of the adjacent drainage channel.
2. **Walker Springs Rehabilitation (Mini-Basin 32A4)** – Performed find, and design work in Mini-basin 32A4 in the Walker Springs area. Inspection included 43,000 ft of smoke testing, 43,000 ft of CCTV, and 228 manhole inspections. Plans will be developed for future rehabilitation work.
3. **Walker Springs Storage** – Designed and constructed 3.25 MG wet-weather storage tank to control sewer overflows near Walker Springs Pump Station during rain events.
4. **Papermill Drive Phases I, II, and III** – Designed and constructed replacement of approximately 4000 ft of 15-inch, 18-inch, and 2100 ft of 36-inch sewer in the Papermill Drive area to increase conveyance capacity and reduce sewer overflows.

South Knox

1. **Maryville Pike** – Designed and replaced 800–1,200 ft of 24-inch sewer located in Witherspoon Superfund site. Design rerouted sewer around site.
2. **South Haven Phase I and Phase II** – Relocated, rehabilitated, and upsized approximately 4700 ft of existing collector sewers to increase conveyance capacity and reduce inflow and infiltration (I/I).
3. **Island Home Rehabilitation** – Rehabilitated 9400 ft and replaced 1200 ft of collector sewers to reduce I/I.
4. **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.
5. **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.
6. **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.
7. **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.
8. **Neubert Springs Collector and West Ford Valley Trunk Rehabilitation** – Rehabilitated 10000 ft of 15- to 18-inch 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.

Williams Creek

1. **Delrose Force Main Replacement** – Designed and replaced approximately 5,000 ft of 16-inch ductile iron pipe force main that had severe structural problems.
2. **Williams Creek Trunk Line Replacement** – Designed and replaced approximately 3,700 ft of 24-inch sewer to correct structural problems.
3. **Williams Creek Sub-basin 19 Rehabilitation** – Performed rehabilitation in sub-basin 19A2 to reduce R-value to 2%. 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.

Loves Creek

1. **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.

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 posted in the public document repository on June 19, 2007, and comments were accepted until July 18, 2007. The CCP was submitted to the EPA on July 23, 2007.

On November 19, 2007, KUB received notice from EPA extending their review period of the CCP until December 22, 2007. On January 4, 2008, KUB received a letter from EPA disapproving the CCP. In a letter dated February 20, 2008, KUB requested to extend the deadline for responding to EPA's comments until March 25, 2008, which was approved by EPA.

KUB submitted the Revised CCP to EPA on March 21, 2008.

Following the submittal of the Revised CCP in March 2008, KUB, EPA, TDEC, and DOJ participated in several discussions to address both technical issues related to the work outlined in the CCP and legal issues pertaining to the relationship between the CCP, Consent Decree, and outstanding appeals of KUB's NPDES Permits. These discussions culminated in all parties agreeing to a revised schedule for the CCP plant upgrades. Among the changes agreed upon by all parties was to issue an amendment to the Consent Decree, which specifically addresses extending the compliance schedule for completing the work outlined in the Revised CCP.

The Revised CCP was submitted to EPA on January 5, 2009 and subsequently approved on January 20, 2009.

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 21 times during this reporting period resulting in two Diversion events (one at Kuwahee and one at Fourth Creek). All parameters were followed and Diversions were conducted based on PCP parameters.

In a letter to EPA dated August 28, 2008, KUB concluded that the PCP needed no modifications or revisions and proposed continuing to use the PCP as previously approved. KUB committed to make revisions to the PCP as upgrades required by the CCP are made to Kuwahee and Fourth Creek WWTPs in the future. Until then, KUB agreed to provide updates regarding the number of initiations and any resulting Diversions in the Quarterly Progress Report.

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 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 Revised Composite Correction Plan

Consent Decree language, page 42: *“KUB shall propose, as part of its CPE, a schedule for submission of the CCP set forth below, such schedule not to exceed twelve (12) months after EPA’s approval of the CPE...KUB shall submit a Composite Correction Plan (CCP) pursuant to the schedule set forth in the CPE.”*

On January 5, 2009, KUB submitted to EPA the January 2009 Revised CCP. This revised version was posted in the PDR on January 7, 2009. EPA approved the January 2009 Revised CCP on January 20, 2009.

6.1.2 Quarterly Progress Report Fourth Quarter 2008

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 28, 2009, KUB submitted to EPA and placed in the PDR the Quarterly Progress Report for the fourth quarter 2008. This deliverable was not subject to the Public Review Requirement of Section VI.A.2, but was available for public comment from January 28, 2009, until February 17, 2009. No comments were received during that period.

6.1.3 SEP Periodic Report Second Period 2008

Consent Decree language, page 61: *“While the SEP is being planned and implemented, KUB shall submit semiannual reports to the Parties describing the progress of the SEP up to and during the most recent Calendar Quarter within one (1) Month after the end of the second and fourth Calendar Quarters following the Date of Entry.”*

On January 28, 2009, KUB submitted the SEP Periodic Report for the second period 2008 to EPA. This deliverable was not subject to public review but was posted in the PDR at the time of submission.

6.1.4 Annual MOM Progress Report 2008

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 26, 2009, KUB submitted to EPA and placed in the PDR the Annual MOM Progress Report for 2008. This deliverable was not subject to the Public Review Requirement of Section VI.A.2, but was available for public comment from February 26, 2009, until March 18, 2009. No comments were received during that period.

6.2 Violations Subject to Stipulated Penalties

During this reporting period, KUB incurred 20 Unpermitted Discharges. Table 1 below lists all violations subject to stipulated penalties as outlined in the Consent Decree.

Table 1. Violations Subject to Stipulated Penalties

Violation	Date	Address	Cause
Unpermitted Discharge	1/6/2009	1210 E Moody Avenue	Heavy rainfall
Unpermitted Discharge	1/6/2009	203 S Chilhowee Drive	Heavy rainfall
Unpermitted Discharge	1/6/2009	1233 Maryville Pike	Blockage
Unpermitted Discharge	1/6/2009	4144 Oakland Drive	Heavy rainfall
Unpermitted Discharge	1/6/2009	7661 Bud Hawkins Road	Heavy rainfall
Unpermitted Discharge	1/6/2009	5103 Kingston Pike	Heavy rainfall
Unpermitted Discharge	1/6/2009	2536 Cecil Avenue	Heavy rainfall
Unpermitted Discharge	1/6/2009	7112 Shadyland Drive	Heavy rainfall
Unpermitted Discharge	1/6/2009	3410 Boright Drive	Heavy rainfall
Unpermitted Discharge	1/7/2009	600 N Gallaher View Road	Heavy rainfall
Unpermitted Discharge	1/7/2009	701 Cedar Lane	Blockage
Unpermitted Discharge	1/7/2009	5315 Shannondale Road	Blockage
Unpermitted Discharge	1/29/2009	1701 E Fifth Avenue	Blockage
Unpermitted Discharge	2/13/2009	4712 Moss Drive	Blockage
Unpermitted Discharge	2/18/2009	2600 Woodson Drive	Electrical failure
Unpermitted Discharge	2/21/2009	5534 Jacksboro Pike	Broken pipe
Unpermitted Discharge	3/4/2009	4712 Moss Drive	Blockage
Unpermitted Discharge	3/6/2009	751 Ingersoll Avenue	Blockage
Unpermitted Discharge	3/18/2009	4125 Greenway Drive	Construction failure
Unpermitted Discharge	3/26/2009	6024 Brokkvale Lane	Heavy rainfall

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 32 SSO events. Of that number, 15 were due to blockages by either grease, debris, roots, or a combination thereof; 11 were due to heavy rainfall; three were due to broken pipe; one was due to construction failure; one was due to electrical failure; and one was due to a grinder pump failure. Of the 32 SSO events, 16 were in the 0 – 1000 gallons volume range, eight were in the 1001 – 10,000 range, seven events totaled greater than 10,000 gallons, and the volume was not known for one event. Durations for events during this period are as follows: 13 ranged from 0 – 2 hours, three ranged from 2.1 - 5 hours, 15 were greater than 5 hours, and the duration was not known for one event.

The most significant events that occurred during the first quarter of 2009 were due to a three-day rain event from January 5th to 7th. During this event, nearly 3.5 inches of rain fell locally. On the third day of the rain event, the 3.25 MG Walker Springs storage facility exceeded its capacity and resulted in an overflow of approximately 105,000 gallons. All four of KUB’s storage facilities were utilized during this rain event.

7.2 Building Backups

Appendix C lists all Building Backups that occurred during this reporting period. During this period, there were five Building Backups. Four were due to blockage and one was due to heavy rainfall.

7.3 Bypasses

No Bypasses occurred during this reporting period.

7.4 Diversions

Table 2 contains all Diversion event information that occurred during this reporting period. During this reporting period, there was one Diversion at Kuwahee and one at Fourth Creek. No Diversions occurred at Loves Creek or Eastbridge WWTPs.

7.5 Effluent Limit Violations

Table 3 contains all effluent limit violations that occurred during this reporting period. The table contains the information as it is reported in KUB’s Discharge Monitoring Reports. During this reporting period, there was one effluent limit violation at Kuwahee, one at Fourth Creek, and none at Loves Creek or Eastbridge WWTPs.

Table 2: Bypasses and Diversions

WWTP	Did an event occur?	Type of Event	Date Diversion gate opened	Time Diversion gate opened	Date Diversion gate closed	Time Diversion gate closed	Date Diversion flow reported	Duration (hrs)	Volume (MG)	Total Event Duration (hrs)	Total Event Volume (MG)	Reason for Event
Kuwahee	Yes	Diversion	01/06/09	20:00			01/06/09	4	8.37	26.5	37.13	High flow event due to excess rainfall
					01/07/09	22:30	01/07/09	22.5	28.76			
Fourth Creek	Yes	Diversion	01/06/09	19:00			01/06/09	5	3.48	24	9.29	High flow event due to excess rainfall
					01/07/09	19:00	01/07/09	19	5.81			
Loves Creek	No											
Eastbridge	No											

Table 3: Effluent Limit Violations

WWTP	Did an event occur?	Date	Parameter	Type	Limit	Value
Kuwahee	Yes	01/07/09	Daily Min % Removal	TSS	40%	36.4%
Fourth Creek	Yes	01/08/09	Daily Min % Removal	TSS	40%	28.3%
Loves Creek	No	-	-	-	-	-
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 the 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 dry and/or wet weather investigative sampling on Fourth Creek, Baker Creek, Goose Creek, Loves Creek and Williams Creek. Much of this investigative sampling included the use of Real Time Polymerase Chain Reaction (RT-PCR) source testing to identify potential sewer impacts.

Loves Creek

In early February, KUB was contacted by TDEC regarding elevated bacterial counts they had obtained in a tributary along Loves Creek. KUB Water Quality personnel sampled the location in question for *E. coli* and fecal coliform bacteria to determine if there was a sewer issue in the area. The first sampling conducted on the tributary revealed elevations in fecal coliform and *E. coli* counts. However, RT-PCR analysis of that sample did not show elevations of Human Bacteroides content and evidence of human source. A second, more in-depth sampling event later in the month did not yield elevations in fecal coliform or *E. coli* counts (Appendix D, Table 1). KUB will continue to monitor Loves Creek on a routine basis, but no further investigation of this stream is necessary at this time based on the this recent data or the routine monitoring of the creek over time.

Goose Creek

During this quarter, KUB submitted samples from routine monitoring on Goose Creek with *E. coli* counts above 941 cfu/100 ml for RT-PCR analysis. However, there was little if any evidence of human source in these samples as illustrated by the Human Bacteroides results in Appendix D, Table 2.

The SSO at 751 Ingersoll Avenue that was reported in the Spill Impact portion of this report also did not appear to reach the creek given the low bacterial counts reported. Water quality personnel will continue to collect routine samples as well as continue investigative sampling on Goose Creek especially if *E. coli* counts exceed Water Quality criteria.

Williams Creek

Water quality personnel submitted one routine sample collected at Site 1.70 of Williams Creek for RT-PCR analysis (Appendix D, Table 3). Once again, elevations in *E. coli* bacteria did not show appreciable elevations of Human Bacteroides. KUB Water Quality personnel will continue to investigate Williams Creek during wet and dry weather focusing on the upper region of the creek to determine if the source of the *E. coli* elevations is in fact sewer related or environmental in origin.

The pH measurements obtained during routine sampling in January were atypically elevated for Williams creek. Although the probe was calibrated prior to field measurements, the resulting field pH seemed suspicious. Field personnel cleaned and subsequently changed the pH probe in early February. A new pH probe was purchased and put into use in early March.

First Creek

Beginning in March, KUB changed the location for the lowest site on First Creek after careful consideration of field observations. The previous site located at stream mile 0.45 was reviewed in light of safety concerns and samples were not collected during routine monitoring in February for this reason. Numerous locations along the creek from the discharge point at the river and upstream for about 1 ½ miles are impacted by the area's homeless population. This is not only a safety concern, but also a potential water quality issue that is unrelated to investigating sewer related problems. Water quality personnel relocated the routine monitoring site further upstream at stream mile 1.74 starting with the March routine monitoring. This change has been reflected in the Table under Projected Data Collection.

Second Creek

During routine monitoring on Second Creek in January, fecal coliform counts at the upper most site of the creek at stream mile 5.76 were unusually elevated. However, E. coli counts were not elevated at any time during this quarter. KUB is currently reviewing this monitoring location for future use in investigating sewer related problems.

Fourth Creek

On March 31, 2009, Water Quality personnel investigated a site on Fourth Creek just downstream from a construction dig-in that resulted in damage to the casing of a sewer main. No SSO occurred, but the creek was sampled as additional confirmation that there was no leak from the main. Fecal coliform and E. coli bacteria counts were low as expected. (Appendix D, Table 4).

Baker Creek

KUB has completed its investigation of Baker Creek after extensive routine and investigative monitoring of the stream over the last three years. This quarter will conclude any investigative efforts on this stream, unless routine monitoring data reveals coliform bacteria counts that are above 4000 cfu/100 ml. Although previous quarterly reports have contained the results of the routine and investigative monitoring efforts in Baker Creek, much of this data is being included again in this quarterly report for reference.

A dry weather walking stream survey of Baker Creek was first performed in July of 2006 to evaluate stream conditions and assess water quality in terms of bacteriological contamination. No apparent sewer related issues were visually identified during the stream survey. However the sample data (Appendix D, Table 5) revealed several locations in addition to the routine monitoring sites that needed further investigation due to elevated bacteriological results. Over the last two years, Location of Source testing was performed on several occasions to try and identify the origin of the bacteriological contamination. All this data related to investigative monitoring and some routine monitoring has been summarized by stream location and collection date and is provided again in Appendix D, Table 6 of this report.

Initial location of source testing involved primarily testing for dissolved oxygen, pH, temperature, fecal coliform bacteria, E. coli bacteria, fecal strep bacteria and the knowledge of the stream environmental conditions to locate origin of source. However, the conflicting results obtained in multiple sampling events could not always be explained without the use of RT-PCR source testing to identify true sewer impacts.

Appendix D, Table 6 reveals that numerous locations in Baker Creek were investigated under various weather and seasonal conditions from 2006 through 2009. Many of the

samples obtained during investigations were also analyzed for Human Bacteriodes as evidence of human fecal matter. This RT-PCR source testing was performed by the University of Tennessee Center for Biotechnology, which has developed specific primers to target a Human Bacteriodes gene in wastewater matrices. A review of the data in Appendix D, Table 6 reveals the lack of a consistent human source at any given location over time, and the level of Human Bacteriodes reported is not characteristic of the concentrations found in creek water downstream of an SSO or raw sewage (Appendix D, Table 7). It is clear from the levels of human source and their patterns of occurrence, that leaking sewer mains are not impacting any areas of this stream. Further examination of the data also shows any detection of human source is rarely found during dry weather conditions. Human Bacteriodes evidenced in the dry fall of 2007 was traced back to a broken private sewer lateral that was repaired (as previously reported). Human Bacteriodes evidenced in the summer of 2008 at Routine Site 0.36 and Site 1.45 has not yet been traced to a leaking lateral due to its inconsistency. However, the low levels found and the increased detection of human source during wet weather conditions strongly suggests that leaking private sewer laterals near and around this stream basin are likely the origin of any human source contamination in the creek. Visual observations during wet weather investigations involving heavy rain in excess of an inch within 24 hours have also not revealed surcharging of the sewers in this area (as previously reported). Again, the lower levels of human source detected are likely due to leaking laterals that have not yet been identified.

More sewer rehabilitation work is currently planned in the Baker Creek area during Phase II of the CAP/ER. This will include further inspections of private sewer laterals to find defects. Over 200 private sewer laterals have already required repair in this sewer basin. In the meantime KUB will continue with its Routine Monitoring at established sites and only investigate areas with coliform bacteria counts above 4000 cfu/100 ml.

8.2 Projected Data Collection

During the first quarter of 2009, 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 2009:

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	5.76
Third Creek	0.87	2.08E	4.80W
Fourth Creek	0.55	1.33	1.78
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

In the second Quarter of 2009, KUB will conduct Dry and Wet Weather investigations on Goose Creek. KUB will also continue to investigate regions of Williams Creek and upper regions of Second Creek as well as complete a dry weather survey of Fourth Creek.

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

Capital Projects and Rehabilitation Credits

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
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 Aver 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

Appendix B

SSOs

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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
1/6/2009	5:47 PM	1210	EAST MOODY AVENUE	KUW	South Knoxville	40	MH 39	Swale to Baker Creek	Baker Creek	Heavy rainfall in the area resulted in high flows in the collection system.	7,400	0	7,400	14.5	Yes
1/6/2009	6:05 PM	203	SOUTH CHILHOWEE DRIVE	LC	Loves Creek	20	MH 25	Swale to Unnamed Tributary to Loves Creek	Loves Creek	Heavy rainfall in the area resulted in high flows in the collection system.	6,100	0	6,100	12	Yes
1/6/2009	6:16 PM	1233	MARYVILLE PIKE	KUW	South Knoxville	39	MH 27-115	Pavement to Ditch to Goose Creek	Goose Creek	The sewer main was flushed to remove the blockage caused by debris and was influenced by heavy rainfall.	15,000	0	15,000	14.75	Yes
1/6/2009	7:11 PM	4144	OAKLAND DRIVE	KUW	First Creek	2	MHs 39-4, 39-44, 39-45 & 2 Cleanouts	Pavement to Ditch to Unnamed Tributary to Whites Creek	Whites Creek	Heavy rainfall in the area resulted in high flows in the collection system.	22,475	0	22,475	11	Yes
1/6/2009	7:20 PM	961	EAST FORD VALLEY ROAD	KUW	Knob Creek	41	Wetwell	Swale to Soil Saturation		Heavy rainfall in the area resulted in high flows in the collection system.	60,000	0	60,000	10	No
1/6/2009	9:57 PM	7661	BUD HAWKINS ROAD	EB	Eastbridge	113	Wetwell	Swale to Unnamed Tributary to Roseberry Creek	Roseberry Creek	Heavy rainfall in the area resulted in high flows in the collection system.	24,000	0	24,000	8	Yes
1/6/2009	10:05 PM	5103	KINGSTON PIKE	KUW	Third Creek	34	MH 58	Pavement to Storm Sewer to Unnamed Tributary to Fourth Creek	Fourth Creek	Heavy rainfall in the area resulted in high flows in the collection system.	5,600	0	5,600	11	Yes
1/6/2009	10:58 PM	2536	CECIL AVENUE	KUW	First Creek	18	MH 30-11	Pavement to Storm Sewer to First Creek	First Creek	Heavy rainfall in the area resulted in high flows in the collection system.	4,575	0	4,575	9	Yes
1/6/2009	10:58 PM	7112	SHADYLAND DRIVE	FC	Fourth Creek	36	MH 36	Unnamed Tributary to Fourth Creek	Fourth Creek	Heavy rainfall in the area resulted in high flows in the collection system.	17,300	0	17,300	24	Yes
1/6/2009	11:50 PM	3410	BORIGHT DRIVE	KUW	First Creek	8	MHs 42, 43, 44 & 45	Pavement to Ditch to Unnamed Tributary to First Creek	First Creek	Heavy rainfall in the area resulted in high flows in the collection system.	4,830	0	4,830	9.5	Yes
1/7/2009	8:30 AM	600	NORTH GALLAHER VIEW ROAD	FC	Fourth Creek	32A	MH 77	Swale to Ten Mile Creek	Ten Mile Creek	Heavy rainfall in the area resulted in high flows in the collection system. The storage tank reached capacity.	105,000	0	105,000	26	Yes
1/7/2009	9:45 AM	701	CEDAR LANE	KUW	Second Creek	5	MH 35-4	Pavement to Swale to Unnamed Tributary to Second Creek	Second Creek	The sewer main was flushed to remove the blockage caused by roots and was influenced by heavy rainfall.	37,450	0	37,450	26	Yes
1/7/2009	4:53 PM	5315	SHANNONDALE ROAD	KUW	First Creek	1	MH 36	Swale to Ditch to Unnamed Tributary to Whites Creek	Whites Creek	The sewer main was flushed to remove the blockage caused by roots and was influenced by heavy rainfall.	5,040	0	5,040	14	Yes
1/10/2009	7:00 PM	5007	ROWAN ROAD	KUW	Second Creek	5	MH 17-47	Swale to Ditch to Soil Saturation		The sewer main was flushed to remove the blockage caused by roots.	1,080	0	1,080	2	No
1/11/2009	3:42 PM	1110	CLINCH AVENUE	KUW	Second Creek	23	Undesignated MH	Pavement to Storm Drain to Soil Saturation		The sewer main was flushed to remove the blockage caused by roots.	75	0	75	2	No
1/12/2009	2:41 PM	7105	DULANEY WAY	FC	Fourth Creek	36	MH 12-86	Swale to Ditch to Soil Saturation		The sewer main was flushed to remove the blockage caused by roots.	1,780	0	1,780	3.5	No
1/22/2009	7:52 AM	9027	MASCOT ROAD	EB	Eastbridge	114	Leaking ARV	Pavement to Soil Saturation		There was a leak from air-release valve on a high-pressure force main.	75	0	75	1	No
1/29/2009	11:11 AM	1701	EAST FIFTH AVENUE	KUW	First Creek	24	MH 29-2	Swale to Ditch to Storm Sewer to First Creek	First Creek	The sewer main was flushed to remove the blockage caused by debris.	765	0	765	1.5	Yes
2/4/2009	4:20 PM	8560	WESTLAND DRIVE	FC	Fourth Creek	42	Leaking ARV	Soil Saturation		There was a leak from air-release valve on a high-pressure force main.	225	0	225	1	No
2/7/2009	4:00 PM	3853	CLUSTER AVENUE	LC	Loves Creek	6	MH 29-161	Soil Saturation		The sewer main was flushed to remove the blockage caused by roots.	5	0	5	4	No
2/13/2009	6:40 PM	4712	MOSS DRIVE	KUW	Third Creek	13	Lateral Cleanout	Swale to Third Creek	Third Creek	The sewer main was flushed to remove the blockage caused by grease and debris.	750	0	750	1	Yes
2/18/2009	12:13 PM	2600	WOODSON DRIVE	KUW	South Knoxville	44	MH 2-1	Swale to Spring Creek	Spring Creek	There was an electrical surge and power outage at the pump station during a rainfall event.	190	0	190	0.25	Yes
2/20/2009	5:20 PM	117	SIXTEENTH AVENUE	KUW	Second Creek	23	MH 21-33	Pavement to Catch Basin to Soil Saturation		The sewer main was flushed to remove the blockage caused by grease.	255	0	255	1	No
2/21/2009	5:09 PM	5534	JACKSBORO PIKE	KUW	First Creek	3	Broken Pipe	Underground Flow to Surface to Unnamed Tributary to First Creek	First Creek	There was a pipe separation at a temporary connection to the sewer main.	960	0	960	8	Yes
3/2/2009	9:30 AM	5101	MALONEYVILLE ROAD	EB	Eastbridge	109	MH 93-10	Soil Saturation		The sewer main was flushed to remove the blockage caused by debris.	360	0	360	2	No
3/4/2009	7:35 AM	4712	MOSS DRIVE	KUW	Third Creek	13	MH 43 and Lateral Cleanout	Soil Saturation and Swale to Third Creek	Third Creek	The sewer main was flushed to remove the blockage caused by grease and roots.	250	0	250	0.5	Yes
3/6/2009	6:00 PM	751	INGERSOLL AVENUE	KUW	South Knoxville	39	MH 4-13	Soil Saturation and Ditch to Unnamed Tributary to Goose Creek	Goose Creek	The sewer main was flushed to remove the blockage caused by grease and roots.	405	0	405	6	Yes
3/7/2009	12:13 PM	1527	WILSON ROAD	KUW	Second Creek	10	Lateral Cleanout	Swale to Ditch to Soil Saturation		The sewer main was flushed to remove the blockage caused by debris.	95	0	95	3	No
3/9/2009	12:21 PM	1000	OGLEWOOD AVENUE	KUW	First Creek	16	Lateral Cleanout and BBU	Soil Saturation		The sewer main was flushed to remove the blockage caused by debris.	13	10	3	0.5	No
3/18/2009	3:42 PM	4125	GREENWAY DRIVE	KUW	First Creek	2	Private Sewer Connection	Soil Saturation and Wetland Area to Whites Creek	Whites Creek	There was an unconnected private sewer main.	Unknown	0	Unknown	Unknown	Yes
3/26/2009	11:22 AM	6024	BROOKVALE LANE	FC	Fourth Creek	33	MH 15	Fourth Creek	Fourth Creek	Heavy rainfall in the area resulted in high flows in the collection system.	90	0	90	1	Yes
3/26/2009	3:00 PM	1925	ROSEWOOD ROAD	LC	Loves Creek	105	Commercial Grinder Pump and BBU	Soil Saturation		There was a mechanical failure of the commercial grinder pump.	5	2	3	1.5	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)
1/6/2009	7:11 PM	1033	KEOWEE AVENUE	KUW	Third Creek	38	BBU	The sewer main was flushed to remove the unidentified blockage influenced by heavy rainfall.	1000	1000	0	0.5
1/6/2009	7:37 PM	5230	MCNUTT ROAD	KUW	Knob Creek	41	BBU	Heavy rainfall in the area resulted in high flows in the collection system.	11	10	1	0.25
2/1/2009	8:32 AM	4413	DEERFIELD ROAD	KUW	Third Creek	11	BBU	The sewer main was flushed to remove the blockage caused by roots.	1	1	0	1
3/15/2009	11:21 AM	4726&4728	BALL CAMP PIKE	KUW	Third Creek	12	BBU	The sewer main was flushed to remove the blockage caused by grease.	375	375	0	0.5
3/17/2009	8:58 AM	2862	LINDEN AVENUE	KUW	Williams Creek	19	BBU	The sewer main was flushed to remove the blockage caused by debris.	1	1	0	0.02

Appendix D

Water Quality Monitoring Program Sampling Results



Routine Water Quality Monitoring Report

1/1/2009 Through 3/31/2009

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>									
0.45	1/29/2009	09:57	8.9	8	11	580	440	Wet	R
2.57	1/29/2009	09:35	9.6	8	11	460	360	Wet	R
6.33	1/29/2009	09:21	9.5	11	9.1	260	390	Wet	R
2.57	2/25/2009	09:50	7.9	10	11	220	280	Wet	R
6.33	2/25/2009	09:30	7.6	12	7.5	81	80	Wet	R
1.74	3/19/2009	12:42	7.8	14	8.3	470	580	Wet	R
2.57	3/19/2009	12:27	7.8	15	8.0	210	150	Wet	R
6.33	3/19/2009	12:13	7.5	15	8.1	130	340	Wet	R
<u>Second Creek</u>									
0.30	1/28/2009	09:42	8.2	12	10	270	200	Wet	R
1.54	1/28/2009	09:31	7.9	11	8.5	330	230	Wet	R
5.76	1/28/2009	09:12	7.3	15	6.5	27000	220	Wet	R
0.30	2/16/2009	10:51	7.9	11	9.5	10	< 1	Wet	R
1.54	2/16/2009	10:37	8.3	10	13	110	93	Wet	R
5.76	2/16/2009	10:16	7.5	14	6.5	9	17	Wet	R
0.30	3/24/2009	12:52	7.8	15	11	18	44	Dry	R
1.54	3/24/2009	12:19	7.7	15	12	90	220	Dry	R
5.76	3/24/2009	11:42	6.8	15	6.9	200	150	Dry	R

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

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



Water Quality Monitoring
Report

Routine Water Quality Monitoring Report

1/1/2009 Through 3/31/2009

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
<u>Third Creek</u>									
0.87	1/26/2009	09:57	9.2	10	11	130	88	Dry	R
2.08E	1/26/2009	09:46	9.7	8	10	900	920	Dry	R
4.80w	1/26/2009	09:27	8.7	11	9.9	210	340	Dry	R
0.87	2/24/2009	12:16	8.3	9	12	18	41	Wet	R
2.08E	2/24/2009	12:05	8.1	7	13	27	55	Wet	R
4.80W	2/24/2009	11:47	7.6	11	11	120	160	Wet	R
0.87	3/25/2009	10:37	7.4	14	8.6	440	550	Dry	R
2.08E	3/25/2009	10:24	7.5	14	8.4	430	410	Dry	R
4.80W	3/25/2009	10:00	7.0	14	8.6	160	210	Dry	R
<u>Fourth Creek</u>									
0.55	1/15/2009	10:10	7.9	10	11	230	330	Dry	R
1.33	1/15/2009	09:59	8.0	11	10	130	120	Dry	R
1.78	1/15/2009	09:45	8.5	11	10	310	220	Dry	R
0.55	2/12/2009	10:40	7.1	14	10	320	550	Wet	R
1.33	2/12/2009	10:27	8.1	13	9.7	200	120	Wet	R
1.78	2/12/2009	10:16	8.6	14	10	63	130	Wet	R
0.55	3/23/2009	09:53	7.4	14	8.9	63	140	Dry	R
1.33	3/23/2009	09:27	7.3	14	8.4	27	45	Dry	R
1.78	3/23/2009	09:40	7.4	14	9.1	63	37	Dry	R

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Water Quality Monitoring
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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
<u>Baker Creek</u>									
0.36	1/12/2009	12:40	7.8	11	9.9	820	920	Wet	R
0.53	1/12/2009	12:54	8.2	11	10	230	440	Wet	R
1.45	1/12/2009	13:06	7.6	11	9.1	430	650	Wet	R
0.36	2/9/2009	10:51	7.9	11	10	1600	980	Dry	R
0.53	2/9/2009	11:10	8.1	11	10	410	360	Dry	R
1.45	2/9/2009	11:27	8.0	12	9.8	1100	1700	Dry	I
0.36	3/4/2009	09:39	7.5	8	11	280	390	Wet	R
0.53	3/4/2009	09:53	8.0	9	11	360	520	Wet	R
1.45	3/4/2009	09:25	7.8	9	9.9	1400	980	Wet	I
<u>Goose Creek</u>									
0.40	1/8/2009	09:27	7.5	11	9.4	2400	1200	Wet	R
1.19E	1/8/2009	08:50	8.2	12	9.2	260	360	Wet	R
1.80E	1/8/2009	09:07	7.7	12	9.3	1600	1300	Wet	R
0.40	2/10/2009	10:46	8.1	10	9.9	410	410	Dry	R
1.19E	2/10/2009	10:16	8.4	12	10	1800	2000	Dry	I
1.80E	2/10/2009	10:32	8.4	12	9.7	90	120	Dry	R
0.40	3/10/2009	06:40	7.7	13	7.5	900	610	Dry	R
1.19E	3/10/2009	07:19	7.6	13	8.6	12000	> 2400	Dry	I
1.80E	3/10/2009	07:02	7.8	13	8.9	540	1000	Dry	R

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Creek Mile #	Sample Date	Sample Time	pH	Sample Temp (C)	Dissolved Oxygen (mg/l)	Fecal Coliform (CFU/100 ml)	E. Coli (MPN)	Precipitation Event	Status
<u>Loves Creek</u>									
0.85	1/5/2009	09:26	7.6	13	8.5	320	170	Wet	R
1.89	1/5/2009	09:16	7.2	14	7.6	110	120	Wet	R
3.45	1/5/2009	09:06	7.5	13	8.5	160	160	Wet	R
0.85	2/11/2009	11:00	8.0	14	8.9	100	150	Dry	R
1.89	2/11/2009	10:19	7.6	14	8.8	27	42	Dry	R
3.45	2/11/2009	10:10	7.9	13	10	18	17	Dry	R
0.85	3/11/2009	10:07	7.8	16	8.1	140	100	Dry	R
1.89	3/11/2009	10:26	7.3	15	7.3	72	100	Dry	R
3.45	3/11/2009	10:39	7.4	16	7.5	36	39	Dry	R
<u>Williams Creek</u>									
0.89	1/21/2009	11:09	10	7	12	90	60	Wet	R
1.70	1/21/2009	10:47	8.9	10	9.8	140	49	Wet	R
2.02	1/21/2009	10:35	9.3	9	11	99	49	Wet	R
0.89	2/23/2009	09:44	7.7	8	12	72	67	Wet	R
1.70	2/23/2009	09:30	7.7	8	10	1100	1100	Wet	R
2.02	2/23/2009	09:13	7.7	10	9.9	54	68	Wet	R
0.89	3/16/2009	09:53	7.4	13	9.3	280	340	Wet	R
1.70	3/16/2009	10:06	7.3	13	9.2	360	290	Wet	R
2.02	3/16/2009	10:16	7.3	13	9.2	410	410	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
Water Quality Laboratory
Debbie Ailey, Lab Supervisor
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Event Date 1/29/2009
Street Address 1701 E. Fifth Avenue
Description The SSO was caused by a partial blockage in the sewer main caused by debris. The SSO flowed from a swale to a ditch to a storm sewer to First Creek.

Estimated unrecovered volume 765 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
	1/29/2009	0	1.16

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	1/29/2009	12:45	11	9	7.7	460	440
Downstream of SSO Discharge	1/29/2009	12:55	11	9	7.7	450	980
Upstream of SSO Discharge	2/4/2009	10:18	12	5	8.1	190	260
Downstream of SSO Discharge	2/4/2009	10:10	12	5	7.8	230	220



**Spill Impact Sampling Results
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Event Date 2/13/2009
Street Address 4712 Moss Drive
Description The SSO was caused by a partial blockage in the sewer main caused by grease and debris. The SSO flowed from a swale to Third Creek.

Estimated unrecovered volume 750 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
	2/13/2009	0	0.11

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	2/13/2009	19:50	4.9	14	7.4	220	190
Downstream of SSO Discharge	2/13/2009	20:09	2.0	14	7.4	>600000	>2400
Upstream of SSO Discharge	2/17/2009	10:45	5.9	12	7.4	32	26
Downstream of SSO Discharge	2/17/2009	10:38	6.5	13	7.9	260	410



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

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Event Date 2/21/2009
Street Address 5534 Jacksboro Pike
Description The SSO was caused by a pipe separation at a temporary connection in the sewer main. The SSO flowed underground to the surface to an unnamed tributary of First Creek.

Estimated unrecovered volume 960 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
	2/21/2009	0	0.98

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	2/21/2009	22:37	9.1	9	6.9	310	360
Downstream of SSO Discharge	2/21/2009	22:55	8.8	9	6.6	14000	1200
Upstream of SSO Discharge	2/24/2009	09:40	7.5	8	6.4	140	190
Downstream of SSO Discharge	2/24/2009	10:50	7.8	7	6.3	580	1000
Upstream of SSO Discharge	2/26/2009	09:25	5.7	11	6.4	81	160
Downstream of SSO Discharge	2/26/2009	09:45	8.7	14	7.1	36	40



Water Quality Monitoring
Report

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

Knoxville Utilities Board
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Knoxville, Tennessee 37915
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Event Date 3/4/2009
Street Address 4712 Moss Drive
Description The SSO was caused by a partial blockage in the sewer main caused by roots and grease. The SSO flowed from soil saturation and swale to Third Creek.

Estimated unrecovered volume 250 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
	3/4/2009	0	0.4

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	3/4/2009	11:03	5.7	10	7.3	15000	> 2400
Downstream of SSO Discharge	3/4/2009	11:16	6.7	13	7.3	210000	1400
Upstream of SSO Discharge	3/6/2009	09:07	5.8	14	7.1	390	390
Downstream of SSO Discharge	3/6/2009	09:21	7.0	15	7.0	520	410



Water Quality Monitoring
Report

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Knoxville Utilities Board
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Event Date 3/6/2009
Street Address 751 Ingersoll Avenue
Description The SSO was caused by a partial blockage in the sewer main caused by grease and roots. The SSO flowed from soil saturation and ditch to an unnamed tributary of Goose Creek.

Estimated unrecovered volume 405 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
	3/6/2009	0	0

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	3/7/2009	23:06	8.9	13	7.9	99	82
Downstream of SSO Discharge	3/7/2009	22:51	8.3	14	8.0	200	80



Water Quality Monitoring
Report

Spill Impact Sampling Results
Water Quality Monitoring Program

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

Event Date 3/18/2009
Street Address 4125 Greenway Drive
Description The SSO was caused by an unconnected private sewer lateral. The SSO flowed from soil saturation and Wetland area to Whites Creek.

Estimated unrecovered volume Unknown 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
	3/18/2009	0	1.73

Sample Location	Sample Date	Sample Time	Dissolved Oxygen	Temperature (Celsius)	pH	Fecal Coliform	E-Coli (MPN)
Upstream of SSO Discharge	3/19/2009	10:57	11	13	7.5	420	440
Downstream of SSO Discharge	3/19/2009	10:49	11	13	7.5	270	360

Knoxville Utilities Board
 Water Quality Monitoring Program

Investigative Water Quality Monitoring Report
 01/01/2009 Through 3/31/2009

Table 1: Loves Creek Investigative Sampling

	Collection Date	Collection Time	Dissolved Oxygen (mg/L)	Water Temperature (°C)	Water pH	Fecal Coliform (CFU/ 100mL)	E. coli (MPN)	Total Fecal Concentration (mg/L)	Human Fecal Concentration (mg/L)
Tributary to Loves Creek at Asheville Hwy	2/9/2009	9:13	9.6	10	8.3	2600	> 2400	6	< 5.0
Tributary at Library	2/23/2009	13:20	10	10	7.9	130	110	N/A	N/A
Tributary East of Burns Rd.	2/23/2009	13:25	11	10	8.0	45	100	N/A	N/A
Tributary East of Meadow View Dr.	2/23/2009	13:38	9.6	10	7.7	300	330	N/A	N/A

Knoxville Utilities Board

Water Quality Monitoring Program

Investigative Water Quality Monitoring Report

01/01/2009 Through 3/31/2009

Table 2: Goose Creek Routine Sampling

	Collection Date	Collection Time	Dissolved Oxygen (mg/L)	Water Temperature (°C)	Water pH	Fecal Coliform (CFU/ 100mL)	E. coli (MPN)	Total Fecal Concentration (mg/L)	Human Fecal Concentration (mg/L)
Routine Site 0.40	1/8/2009	9:27	9.4	11	7.5	2400	1200	32.2	< 5.0
Routine Site 1.19E	2/10/2009	10:16	10	12	8.4	1800	2000	10.2	5.9
Routine Site 1.19E	3/10/2009	7:19	8.6	13	7.6	12000	> 2400	3.8	< 5.0
Routine Site 1.80E	1/8/2009	9:07	9.3	12	7.7	1600	1300	6.9	< 5.0
Routine Site 1.80E	3/10/2009	7:02	8.9	13	7.8	540	1000	10.8	< 5.0

Knoxville Utilities Board
Water Quality Monitoring Program

Investigative Water Quality Monitoring Report
01/01/2009 Through 3/31/2009

Table 3: Williams Creek Routine Sampling

	Collection Date	Collection Time	Dissolved Oxygen (mg/L)	Water Temperature (°C)	Water pH	Fecal Coliform (E. coli) (CFU/ 100mL)	(MPN)	Total Fecal Concentration (mg/L)	Human Fecal Concentration (mg/L)
Routine Site 1.70	2/23/2009	9:30	10.0	8	7.7	1100	1100	29.3	< 5.0

Knoxville Utilities Board

Water Quality Monitoring Program

Investigative Water Quality Monitoring Report
01/01/2009 Through 3/31/2009**Table 4: Fourth Creek Investigative Sampling**

	Collection Date	Collection Time	Dissolved Oxygen (mg/L)	Water Temperature (°C)	Water pH	Fecal Coliform (CFU/ 100mL)	E. coli (MPN)	Total Fecal Concentration (mg/L)	Human Fecal Concentration (mg/L)
Downstream of 320 N. Weisgarber Rd.	3/31/2009	15:07	9.3	15	7.9	76	120	N/A	N/A

Knoxville Utilities Board
Water Quality Monitoring Program

Investigative Water Quality Monitoring Report

Table 5: Baker Creek Walking Survey

Collection Date	Collection Time	Sample Location	Dissolved Oxygen (mg/L) Field	pH Field	Silt Level Field Observation	Temperature (degrees C) Field	Fecal Coliform (CFU/100mL)
7/20/2006	7:51	BC SM 0.17	6.4	6.9	0	23	90
7/20/2006	8:26	BC SM 0.26	3.5	6.9	0-1	24	1200
7/20/2006	8:38	BC SM 0.32	7.1	7.3	0-1	22	590
7/20/2006	8:48	BC SM 0.36	7.5	7.3	0	22	2700
7/20/2006	9:02	BC SM 0.48	8.6	7.4	0	22	1500
7/20/2006	9:19	BC SM 0.483	8.4	7.7	0	22	3600
7/20/2006	9:26	BC SM 0.487	9.4	7.5	0	22	2600
7/20/2006	9:46	BC SM 0.55	9.2	7.6	0	22	3100
7/20/2006	9:58	BC SM 0.56	9.8	7.3	0	21	2000
7/20/2006	10:19	BC SM 0.648	9.0	7.5	0	22	1100
7/20/2006	10:30	BC SM 0.71	8.7	7.6	0	22	1900
7/20/2006	10:45	BC SM 0.75	8.8	7.6	0	22	2000
7/20/2006	10:57	BC SM 0.82	9.0	7.6	0	22	910
7/20/2006	11:52	BC SM 0.93	8.8	7.5	0	24	910
7/20/2006	12:01	BC SM 1.01	8.4	7.3	0	21	330
7/20/2006	12:26	BC SM 1.14	9.0	7.4	0-1	23	2100
7/20/2006	12:41	BC SM 1.21	9.4	7.4	0-1	23	1000
7/20/2006	13:06	BC SM 1.42	9.8	7.6	0	22	1100
7/20/2006	13:20	BC SM 1.47	10.1	7.5	0	21	2500
7/20/2006	13:25	BC SM 1.471	7.5	7.4	0	22	150
7/20/2006	14:06	BC SM 1.63	9.5	7.2	0	23	1500
7/20/2006	14:26	BC SM 1.76	9.9	7.6	0	21	2000
7/21/2006	7:31	BC SM 1.78	7.8	7.6	0	18	1500
7/21/2006	7:56	BC SM 1.92	8.3	8	0	17	2100
7/21/2006	8:02	BC SM 1.93	8.0	7.4	0	17	640
7/21/2006	8:22	BC SM 1.99	8.7	7.4	0	16	540
7/21/2006	8:46	BC SM 2.08	5.2	6.9	0	16	150
7/21/2006	9:12	BC TM 0.47	7.5	8.2	0	21	4000
7/21/2006	9:21	BC TM 0.24	3.3	6.8	0	18	110

Knoxville Utilities Board
Water Quality Monitoring Program

Investigative Water Quality Monitoring Report

Table 6: Baker Creek: Summary of Investigative and Source Data

Sample Location	Closest Stream Mile	Type of Sampling	Collection Date	Collection Time	Dissolved Oxygen (mg/L)	Water Temperature (°C)	Water pH	Fecal Coliform (CFU/100mL)	E. coli (MPN)	Total Fecal Bacteriodes (mg/L)	Human Fecal Bacteriodes (mg/L)
Island Home Blvd.	0.30	Dry Weather	12/20/2006	11:40	12	11	7.9	2700	2400	N/A	N/A
		Dry Weather	6/13/2007	11:20	6.7	19	7.5	3600	1200	N/A	N/A
Routine Site 0.36	0.36	Wet Weather	3/3/2008	13:47	13	16	7.7	130	280	9.6	< 5.0
		Wet Weather	3/4/2008	10:56	8.7	14	7.3	5000	> 2400	23.0	7.7
		Wet Weather	3/4/2008	13:15	8.8	14	7.4	4500	> 2400	37.0	12.4
		Wet Weather	3/5/2008	13:54	10	13	7.6	2400	> 2400	15.8	< 5.0
		Wet Weather	3/19/2008	8:31	8.6	15	7.5	220	290	5.4	< 5.0
		Dry Weather	5/20/2008	11:58	7.0	17	7.1	4900	> 2400	260.7	189.4
		Dry Weather	5/21/2008	11:45	8.2	16	7.3	11000	> 2400	44.6	22.8
		Dry Weather	5/22/2008	9:46	7.5	16	7.0	4900	> 2400	42.3	28.1
		Routine	7/15/2008	9:04	6.8	19	7.3	810	1100	8.0	< 5.0
		Routine	8/13/2008	13:13	7.6	20	7.4	540	920	2.9	< 5.0
		Dry Weather	8/20/2008	9:50	8.1	19	7.6	2900	2400	25.9	23.8
		Wet Weather	8/26/2008	11:59	6.9	21	7.4	48000	> 2400	142.8	33.9
		Routine	11/20/2008	10:13	9.1	10	7.6	540	1400	8.9	< 5.0
		Routine	12/3/2008	12:15	9.5	10	7.7	210	260	6.0	< 5.0
		Wet Weather	12/9/2008	13:45	9.6	12	7.6	210	200	12.1	< 5.0
		Wet Weather	12/10/2008	8:53	9.5	11	7.1	14000	2400	111.3	48.3
		Wet Weather	12/10/2008	12:45	8.6	12	7.3	17000	1300	76.1	18.9
		Wet Weather	12/15/2008	8:40	8.3	12	7.6	810	610	18.4	< 5.0
		Routine	2/9/2009	10:51	10	11	7.9	1600	980	8.9	< 5.0
Tributary at South Haven	Upstream from 0.36	Dry Weather	12/20/2006	11:27	11	9	8.0	530	690	N/A	N/A
		Dry Weather	2/9/2009	11:47	11	9	8.1	810	1000	4.3	
		Dry Weather	3/16/2009	12:37	8.0	12	7.4	720	1300	8.6	< 5.0
		Wet Weather	3/26/2009	9:00	9.0	12	7.3	6400	> 2400	15.9	< 5.0

Knoxville Utilities Board
Water Quality Monitoring Program

Investigative Water Quality Monitoring Report

Table 6: Baker Creek: Summary of Investigative and Source Data

Sample Location	Closest Stream Mile	Type of Sampling	Collection Date	Collection Time	Dissolved Oxygen (mg/L)	Water Temperature (°C)	Water pH	Fecal Coliform (CFU/100mL)	E. coli (MPN)	Total Fecal Bacteriodes (mg/L)	Human Fecal Bacteriodes (mg/L)
Tributary at Mayfair	Upstream on Tributary	Dry Weather	6/13/2007	10:37	7.9	19	7.9	2000	2400	N/A	N/A
		Dry Weather	3/4/2009	12:55	10	9	8.0	460	520	N/A	N/A
		Dry Weather	3/16/2009	12:25	8.0	12	7.3	380	390	N/A	N/A
		Wet Weather	3/26/2009	9:30	9.0	13	7.2	3100	2400	16.4	< 5.0
McClung and Middle Fork	0.24 miles on Tributary	Dry Weather	12/20/2006	11:15	5.8	15	7.2	< 10	3	N/A	N/A
		Dry Weather	6/13/2007	10:56	4.3	18	7.1	150	46	N/A	N/A
Routine Site 0.53	0.53	Wet Weather	3/3/2008	14:26	12	15	7.9	82	230	4.8	< 5.0
		Wet Weather	3/4/2008	11:08	9.0	13	7.7	1100	1700	14.5	< 5.0
		Wet Weather	3/4/2008	13:30	9.1	14	7.6	5000	2400	14.3	< 5.0
		Wet Weather	3/5/2008	14:04	10	12	7.6	140	250	3.9	< 5.0
		Wet Weather	3/19/2008	8:39	8.8	14	7.7	450	250	5.4	< 5.0
		Dry Weather	5/20/2008	13:21	7.7	18	7.2	450	730	15.2	< 5.0
		Dry Weather	5/21/2008	11:31	8.2	16	7.3	990	730	6.3	< 5.0
		Dry Weather	5/22/2008	10:10	8.2	16	7.2	900	1300	7.7	< 5.0
		Routine	7/15/2008	9:18	7.8	19	7.6	1100	980	6.8	< 5.0
		Routine	8/13/2008	13:32	7.8	21	7.6	1500	1700	7.4	< 5.0
		Dry Weather	8/20/2008	9:37	7.8	19	7.8	990	1300	2.5	< 5.0
		Wet Weather	8/26/2008	12:11	7.1	22	7.5	120000	> 2400	22.6	< 5.0
		Routine	11/20/2008	9:59	9.4	9	7.8	590	920	8.3	< 5.0
		Routine	12/3/2008	12:27	8.8	10	7.8	460	440	6.8	< 5.0
		Wet Weather	12/9/2008	13:57	9.4	11	7.7	260	310	9.8	< 5.0
Wet Weather	12/10/2008	9:30	9.5	10	7.2	20000	> 2400	69.6	11.3		
Wet Weather	12/10/2008	13:05	8.8	12	7.3	9100	1100	122.0	35.4		
Wet Weather	12/15/2008	9:00	9.0	12	7.9	430	520	6.8	< 5.0		
Lenland Ave.	Upstream from 0.53	Dry Weather	9/18/2007	10:20	8.1	18	8.2	1300	1100	6.8	< 5.0
Sevier Ave.	0.93	Dry Weather	12/20/2006	11:05	11	10	7.9	460	330	N/A	N/A
		Dry Weather	6/13/2007	10:03	7.1	18	7.8	1200	1600	N/A	N/A
		Dry Weather	9/18/2007	10:10	7.3	18	8.0	2400	1600	4.5	< 5.0

Table 6: Baker Creek: Summary of Investigative and Source Data

Sample Location	Closest Stream Mile	Type of Sampling	Collection Date	Collection Time	Dissolved Oxygen (mg/L)	Water Temperature (°C)	Water pH	Fecal Coliform (CFU/100mL)	E. coli (MPN)	Total Fecal Bacteriodes (mg/L)	Human Fecal Bacteriodes (mg/L)
Routine Site 1.45	1.45	Wet Weather	3/3/2008	14:50	8.8	16	7.5	1000	1600	3.5	< 5.0
		Wet Weather	3/4/2008	11:17	9.1	13	7.5	3600	1600	18.4	15.0
		Wet Weather	3/4/2008	13:48	8.5	14	7.3	3700	2000	14.7	< 5.0
		Wet Weather	3/5/2008	14:26	9.5	12	7.5	1000	610	4.4	< 5.0
		Wet Weather	3/19/2008	8:19	8.6	14	7.6	1500	1400	5.9	< 5.0
		Dry Weather	5/7/2008	11:40	8.6	16	7.5	14000	2400	6.3	< 5.0
		Dry Weather	5/20/2008	13:45	7.7	18	7.2	2100	> 2400	12.5	< 5.0
		Dry Weather	5/21/2008	11:18	8.5	15	7.2	2000	1700	7.8	< 5.0
		Dry Weather	5/22/2008	10:26	8.5	15	7.2	2200	1700	4.4	< 5.0
		Routine	7/15/2008	9:31	8.0	18	7.6	3000	> 2400	12.8	< 5.0
		Routine	8/13/2008	12:59	8.1	19	7.7	26000	> 2400	10.1	< 5.0
		Dry Weather	8/20/2008	8:45	8.2	18	7.9	3500	>2400	3.3	< 5.0
		Wet Weather	8/26/2008	11:47	7.0	22	7.5	580000	> 2400	23.6	21.5
		Routine	11/20/2008	9:51	10	7	7.8	3900	> 2400	11.5	< 5.0
		Routine	12/3/2008	12:37	10	9	7.7	1300	1400	7.5	< 5.0
		Wet Weather	12/9/2008	14:08	9.3	11	7.8	990	1200	10.8	< 5.0
		Wet Weather	12/10/2008	9:47	9.4	11	7.2	15000	2400	93.9	27.5
		Wet Weather	12/10/2008	13:21	8.4	12	7.3	15000	> 2400	73.8	14.1
		Wet Weather	12/15/2008	9:09	8.8	11	7.8	1100	1000	17.9	< 5.0
		Routine	2/9/2009	11:27	10	11	8.1	360	> 2400	11.5	< 5.0
		Routine	3/4/2009	9:25	10	9	7.8	1400	980	4.5	< 5.0
Upstream of routine site 1.45	1.45	Dry Weather	8/20/2008	9:19	8.2	17	7.8	3200	2400	6.5	< 5.0
		Dry Weather	8/26/2008	11:37	7.3	21	7.3	370000	> 2400	20.3	13.7
		Dry Weather	12/3/2008	12:50	8.9	10	7.8	3900	> 2400	12.2	< 5.0

Knoxville Utilities Board
Water Quality Monitoring Program

Investigative Water Quality Monitoring Report

Table 6: Baker Creek: Summary of Investigative and Source Data

Sample Location	Closest Stream Mile	Type of Sampling	Collection Date	Collection Time	Dissolved Oxygen (mg/L)	Water Temperature (°C)	Water pH	Fecal Coliform (CFU/100mL)	E. coli (MPN)	Total Fecal Bacteriodes (mg/L)	Human Fecal Bacteriodes (mg/L)
Upstream from site 1.45, behind tennis courts		Dry Weather	5/7/2008	11:57	8.2	16	7.3	1500	>2400	5.5	< 5.0
Sevierville Pike	1.47	Dry Weather	12/20/2006	10:52	10	10	7.8	2000	770	N/A	N/A
		Dry Weather	6/13/2007	9:51	8.2	17	7.9	1300	910	N/A	N/A
		Dry Weather	9/18/2007	9:52	8.3	17	8.2	2600	> 2400	10.7	< 5.0
Taylor Rd. (between Cruze and Tilson)	1.93	Dry Weather	12/20/2006	10:17	7.6	12	7.7	120000	> 2400	N/A	N/A
		Dry Weather	1/3/2007	11:15	9.1	11	7.9	8000	>2400	N/A	N/A
		Dry Weather	6/13/2007	9:00	8.1	17	7.9	3400	> 2400	N/A	N/A
		Dry Weather	9/18/2007	9:40	7.2	17	8.0	35000	> 2400	266.6	24.8
Taylor Road at Cruze	2.08	Wet Weather	3/3/2008	15:15	8.5	16	7.6	200	250	2.9	< 5.0
		Wet Weather	3/4/2008	11:29	8.9	14	7.5	3400	1300	10.9	< 5.0
		Wet Weather	3/4/2008	14:05	8.0	15	7.5	7300	> 2400	16.2	5.5
		Wet Weather	3/5/2008	14:36	8.9	13	7.7	2200	> 2400	5.1	< 5.0
		Wet Weather	3/19/2008	8:10	8.4	15	7.8	220	200	1.1	< 5.0
		Dry Weather	5/20/2008	10:35	8.7	16	7.3	860	980	8.2	< 5.0
		Dry Weather	5/21/2008	11:04	8.9	15	7.3	180	160	1.1	< 5.0
		Dry Weather	5/22/2008	10:41	8.9	15	7.2	160	120	2.5	< 5.0
		Dry Weather	8/20/2008	8:59	8.4	16	7.8	1400	2000	4.5	< 5.0
		Wet Weather	8/26/2008	11:25	7.1	20	7.3	220000	> 2400	35.5	12.0
		Dry Weather	12/3/2008	12:59	9.7	10	7.8	1300	1000	4.9	< 5.0
		Wet Weather	12/9/2008	14:19	8.9	12	7.8	1800	> 2400	13.7	< 5.0
		Wet Weather	12/10/2008	10:05	9.0	11	7.3	12000	1700	61.2	15.1
		Wet Weather	12/10/2008	13:40	8.5	11	7.5	22000	2000	79.3	5.7
		Wet Weather	12/15/2008	9:24	9.1	12	8.0	1900	2000	9.0	< 5.0

Table 6: Baker Creek: Summary of Investigative and Source Data

Sample Location	Closest Stream Mile	Type of Sampling	Collection Date	Collection Time	Dissolved Oxygen (mg/L)	Water Temperature (°C)	Water pH	Fecal Coliform (CFU/100mL)	E. coli (MPN)	Total Fecal Bacteriodes (mg/L)	Human Fecal Bacteriodes (mg/L)
Taylor Rd. (between Cruze and Barclay)	2.08	Dry Weather	12/20/2006	10:35	8.6	13	7.6	> 600000	> 2400	N/A	N/A
		Dry Weather	1/3/2007	11:23	9.5	12	7.8	2100	2400	N/A	N/A
		Dry Weather	6/13/2007	9:30	8.6	16	7.9	5500	> 2400	N/A	N/A
		Dry Weather	9/18/2007	9:25	8.1	16	8.0	59000	> 2400	1352.5	29.9
		Dry Weather	9/26/2007	9:37	8.7	17	7.9	1400	2400	N/A	N/A
		Dry Weather	10/9/2007	11:05	8.6	16	7.7	760	N/A	N/A	N/A

Knoxville Utilities Board
Water Quality Monitoring Program

Investigative Water Quality Monitoring Report

Table 7: Real Time PCR Results from SSO located at 3413 Pilkey Road and WWTP Raw Sewage

	Collection Date	Collection Time	Dissolved Oxygen (mg/L)	Water Temperature (°C)	Water pH	Fecal Coliform (CFU/ 100mL)	E. coli (MPN)	Total Fecal Concentration (mg/L) (mean±SD)	Human Fecal Concentration (mg/L) (mean±SD)
Upstream from SSO	11/4/2008	12:53	8.9	13	7.8	4800	310	24.4 (± 6.7)	BDL
Downstream from SSO	11/4/2008	13:03	8.7	13	7.8	55000	2400	881.4 (± 172.4)	464.7 (± 89.1)
Upstream from SSO	11/10/2008	9:55	9.1	11	7.8	370	410	11.9 (± 3.5)	2.4 (± 2.2)
Downstream from SSO	11/10/2008	10:10	9.3	10	7.6	340	280	15.1 (± 8.3)	3.3 (± 1.0)
Kuwahee WWTP Sewage	3/26/2008	0:00	N/A	N/A	N/A	> 600000	> 2400	5876.4	6100.8
Fourth Creek WWTP Sewage	3/26/2008	0:00	N/A	N/A	N/A	> 600000	> 2400	18738.8	15072