



City of Chattanooga

Mayor Andy Berke

October 21, 2013

VIA HAND DELIVERY

Ms. Corinne Hill
Library Director
Chattanooga-Hamilton County Public Library
1001 Broad Street
Chattanooga, TN 37402

**Re: *United States of America et. al. v. City of Chattanooga, No. 1:12-cv-0024*
Consent Decree Public Document Repository
Draft Sewer Overflow Response Plan**

Dear Ms. Hill:

On behalf of the City of Chattanooga, Tennessee ("City"), and in accordance with the consent decree entered by the United States District Court for the Eastern District of Tennessee (Southern Division), on April 24, 2013, in the case styled the *United States of America et. al. v. City of Chattanooga, No. 1:12-cv-0024* ("Consent Decree"), we are providing the Chattanooga-Hamilton County Public Library with the Draft Sewer Overflow Response Plan ("Draft SORP") for submission to the City's Public Document Repository ("PDR"). The purpose of the SORP is to establish a policy that will assist the City in:

- Responding to cleanup and/or minimizing the impact of Sanitary Sewer Overflows (SSOs);
- Determining the location, volume, cause, and impact of all confirmed SSOs;
- Reporting SSO information to the appropriate regulatory agencies;
- Notifying the impacted public; and
- Reducing impact on the environment and protecting the public from potential health hazards.

We are providing a copy of the Draft SORP to the PDR for public review and comment, prior to final submission of the Draft SORP to the EPA and the State of Tennessee. Thus, we ask that you make this document available to the public for

Ms. Corinne Hill
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review for thirty (30) days. The public can provide comments to the City by sending comments to the following address:

City of Chattanooga: Waste Resources Divisions
RE: Consent Decree Public Comments
c/o Jacobs Engineering Group
4510 Turntable Road, Suite 110
Chattanooga, TN 37421

An electronic copy of this document is also available for review and comment on the City's Consent Decree website at the following location:

<http://www.chattanooga.gov/public-works/waste-resources/consent-decree/44-public-works/1050-consent-decree-document-repository>

We look forward to receiving public comments from the public on this important document.

Sincerely,



Alice L. Cannella, P.E.
Director, Waste Resources Division

Enclosure

cc: Donald L. Norris, Administrator, Public Works, City of Chattanooga
Mike Marino, PE, Jacobs
Adam Sowatzka, King & Spalding



Draft

Sanitary Sewer Overflow Response Protocol (SORP)

Prepared for

EPA & TDEC

City of Chattanooga
Waste Resources Division
Consent Decree Program

Prepared by

City of Chattanooga
Waste Resources Division

Submitted by

JACOBS[®]

Jacobs Engineering Group Inc.
Consent Decree Program Manager

Chattanooga, Tennessee

October 21, 2013

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Acronyms and Abbreviations

CCTV	Closed Circuit Television
CFD	Chattanooga Fire Department
CFR	Code of Federal Regulations
CMMS	Computerized Maintenance and Management System
CMOM	Capacity, Management, Operations, and Maintenance
CSO	Combined Sewer Overflow
CSOTF	Combined Sewer Overflow Treatment Facility
CSS	Combined Sewer System
DMR	Discharge Monitoring Report
DPW	Department of Public Works
EPA	United States Environmental Protection Agency
GIS	Geographic Information System
gpm	Gallons Per Minute
HAZMAT	Hazardous Material
I&I	Infiltration and Inflow
ISS	Interceptor Sewer System
MBWWTP	Moccasin Bend Wastewater Treatment Plant
MOM	Management, Operations, and Maintenance
MOR	Monthly Operating Report
NPDES	National Pollution Discharge Elimination System
SCADA	Supervisory Control and Data Acquisition System
SORP	Sewer Overflow Response Protocol
SSO	Sanitary Sewer Overflow
SSS	Sanitary Sewer System
TCWN	Tennessee Clean Water Network
TDEC	Tennessee Department of Environment and Conservation
TWRA	Tennessee Wildlife Resources Agency
WCTS	Wastewater Collection and Transmission System
WRD	Waste Resources Division
WWTP	Waste Water Treatment Plant

1.0 Introduction

1.1 Purpose

The City of Chattanooga's Waste Resources Division (WRD) has prepared a Sewer Overflow Response Protocol (SORP) for review and approval by the United States Environmental Protection Agency (EPA) and the Tennessee Department of Environment and Conservation (TDEC).

The purpose of the SORP is to establish timely and effective methods and means of:

1. Responding to cleanup and/or minimizing the impact of Sanitary Sewer Overflows (SSOs);
2. Determining the location, volume, cause, and impact of all confirmed SSOs;
3. Reporting SSO information to the appropriate regulatory agencies;
4. Notifying the impacted public; and
5. Reducing impact on the environment and protecting the public from potential health hazards.

This SORP has been prepared as a guidance document, providing standard operating procedures (SOPs) for the response to all confirmed SSOs. This SORP was prepared in accordance with EPA Region IV MOM guidance and guidelines available from the American Public Works Association..

1.2 Authority

Authority for this SORP is derived from the following:

1. The Consent Decree-Case No. 1:12 –CV-00245 Collier/Lee received from the EPA, TDEC, and the Department of Justice, in consolidation with Case No. 1:10-CV-281 Collier/Lee and the Tennessee Clean Water Network (TCWN) and signed April 24, 2013 (See Paragraph 20 (a) pages 24-26);
2. National Pollution Discharge Elimination System (NPDES) Permit Number TN0024210 for the ISS, which prohibits unpermitted discharges or bypasses;
3. Clean Water Act; and
4. Tennessee Water Quality Control Act.

2.0 General

This SORP is designed to assist the City in immediately responding to and addressing SSOs so that the effects of the SSO can be minimized and to ensure that any required notification or reporting is made to the appropriate local, state, and federal authorities. Taking appropriate actions to address SSOs will minimize impacts to public health and safety and substantially reduce the potential adverse effects on the beneficial uses and the water quality of surface waters. Taking appropriate actions to address SSOs will also help the City maintain quality service for its customers.

2.1 Objectives

The primary objectives of the SORP are to

1. Protect public health and the environment.
2. Provide appropriate customer service;
3. Protect the Interceptor Sewer System's (ISS) wastewater treatment plant (WWTP) and wastewater collection and transmission system (WCTS) personnel;
4. Protect the WCTS, WWTP, and all related appurtenances; and
5. Protect private and public property beyond the WWTP and WCTS,
6. Comply with regulatory agencies and permit conditions that address procedures for managing confirmed SSO

2.2 Key Elements of the SORP

The key elements of the SORP are addressed individually as follows:

1. Section 3.0 OVERFLOW RESPONSE PROCEDURE
2. Section 4.0 REGULATORY NOTIFICATION PROCEDURE
3. Section 5.0 PUBLIC ADVISORY PROCEDURE
4. Section 6.0 DISTRIBUTION AND MAINTENANCE OF SORP

2.3 Definitions

311 Call Center: The City's 311 Call Center is the primary contact for customers who have utility questions or need to report a wastewater issue. The Call Center is staffed 10 hours per day, 8:00 AM to 6:00 PM, Monday through Friday. Calls that come in after 4:00 PM and on the weekends revert to a recording with instructions.

Building Backup: A building backup occurs when wastewater backs up into buildings due to blockages or flow conditions in the City's WCTS (other than a private service lateral). A wastewater backup into a building that is caused by a blockage or other malfunction in a private service lateral is not considered to be a Building Backup for the purposes of this document.

CCTV: Closed circuit television used to visually inspect the internal condition of pipes and subsurface structures.

City of Chattanooga: City of Chattanooga, Department of Public Works, Waste Resources Division, Interceptor Sewer System.

Cleanout: A cleanout is a vertical pipe with a removable cap extending from a private service lateral to the surface of the ground. It is used for access to the private service lateral for inspection and maintenance.

Computerized Maintenance and Management System (CMMS): A Computerized Maintenance and Management System (currently Cityworks®) is used to maintain records of ISS assets, including physical properties and any maintenance and repair records. It also generates work orders and facilitates workflow to other ISS sections, or between departments.

Collection System: The network of pipes, manholes, and associated appurtenances that transports wastewater from homes and businesses to the treatment plant is referred to as the collection system.

Combination Cleaners: Combination cleaners are mechanical equipment with flushing and suction capabilities. This equipment is used to clear or collect wastewater and related debris from the collection system.

Combined Sewer System (CSS): The combined sewer system shall mean the portion of the City's WCTS designed to convey municipal sewage (domestic, commercial, and industrial wastewater) and stormwater runoff through a single-pipe system to the WWTP or a CSO Outfall.

Combined Sewer Overflow Treatment Facility (CSOTF): These are permitted primary treatment facilities in the City's CSS that treat combined stormwater and sanitary sewage and discharge through the CSO Outfalls during heavy wet weather events.

Combined Sewer Overflow Outfall or CSO Outfall: The outfalls currently identified, or identified in the future, as a permitted combined sewer overflow outfall in any Chattanooga NPDES permit from which CSOs are discharged to waters of the United States or the State.

Combined Sewer Overflow (CSO): Any discharge from the CSS from any outfall currently identified, or identified in the future, as a permitted combined sewer overflow outfall in any Chattanooga NPDES permit

Dispatcher: A designated ISS employee who contacts, notifies, and sends an ISS First Responder to respond to possible SSO events.

Discharge: A discharge is any release of untreated wastewaters (including that combined with stormwaters) induced by infiltration and inflow (I&I) from a sanitary sewer system or a combined sewer system.

Dry Weather SSO: A discharge of untreated sewage from a sanitary sewer system due to flow restrictions or system disruptions.

EPA: United States Environmental Protection Agency.

First Responder: Typically, a designated ISS Sewer Maintenance employee or any qualified ISS employee who assumes initial responsibility for responding to an SSO event.

Force Main: A pressurized line that conveys wastewater from a pump station.

Geographic Information System (GIS): The GIS is a mapping and geographic information system created, owned, and funded by Hamilton County and the City. GIS maintains digital geographic data for all of Hamilton County, Tennessee. The GIS Office manages some of the core mapping information, including topography and aerial photography, while respective City, County, and City departments maintain other map “layers,” such as property, utility information, and address data.

Gravity Lines: Gravity or “main” lines represent the largest portion of the ISS WCTS. They use changes in elevation to transport sewage between points (typically manholes or junction boxes).

I&I: Inflow and infiltration, or extraneous surface or ground water that enters the WCTS.

Interceptor Sewer System (ISS): The ISS is the entire sewer system for the City of Chattanooga which includes the WWTS and the MBWWTP.

Impacted Areas: Impacted areas are sites where sanitary sewage or combined sewage has collected or areas that have been affected as the result of a discharge from the WCTS.

Infiltration: As defined by 40 CFR § 35.2005(b)(21), Inflow shall mean water other than wastewater that enters the WCTS (including sewer service connections) from sources such as, but not limited to, roof leaders, cellar drains, yard drains, drains from springs and swampy areas, manhole covers, cross connections between storm sewers and sanitary sewers, and catch basins, cooling towers, storm water, surface runoff, street wash waters, or drainage.

Inflow: Inflow is the introduction of extraneous water into the WCTS by direct or inadvertent connections with storm water infrastructure, such as gutters and roof drains, uncapped cleanouts, and cross-connections with storm drains.

Manhole or Junction Box: A manhole or junction box provides a connection point for gravity lines, private service laterals, or force mains, as well as an access point for maintenance and repair activities.

Private Service Lateral: Private service lateral shall mean that portion of a sanitary sewer pipe, not owned or operated by ISS, that extends from a structure to the point at which such pipe connects to the ISS WCTS in the street or right-of-way. Private service laterals include the portion of the customer’s service in the public street or right-of-way.

Public System: Public system refers to the ISS WCTS, excluding private service laterals and connections with private systems.

Pump Station: A pump or lift station is a mechanical method of conveying wastewater to higher elevations.

Sanitary Sewer Overflow (SSO): An SSO is any discharge of wastewater to waters of the United States or the State from the City’s WCTS through a point source not permitted in the NPDES permit, as well as any overflow, spill, or release of wastewater to public or private

property from the sewer system that may not have reached waters of the United States or the State, including building backups.

Sanitary Sewer System (SSS): A sanitary sewer system collects, conveys, and treats residential, commercial, and industrial wastewaters through a complex network of infrastructure. It is the collection system portion of the WCTS.

Sewer Overflow Response Protocol (SORP): The ISS Sewer Overflow Response Protocol provides structured guidance, including a range of field activities to choose from, for a uniform response to overflows.

Sewersheds: Sewersheds or basins are small portions of the sanitary sewer system and combined sewer system defined by boundaries of natural topography or system configuration. Separating the system into sewersheds or basins allows the ISS to better identify and monitor system performance in those smaller areas.

Supervisory Control and Data Acquisition System (SCADA): SCADA is automated sensory control equipment that monitors the operation of the pump stations. The SCADA system will convey alarms when predetermined conditions occur. Monitoring parameters include, but are not limited to, power failures, high wetwell levels, and pump failures that could potentially cause overflows.

TDEC: Tennessee Department of Environment and Conservation.

TWRA: Tennessee Wildlife Resources Agency.

Unpermitted Discharges: A discharge of pollutants from any location within the sanitary sewer system that reaches waters of the State and which are not authorized by an NPDES Permit.

Wastewater Collection and Transmission System (WCTS): The WCTS is the wastewater collection, retention, and transmission systems, including all force mains, gravity sewer lines, pump stations, manholes, and other related appurtenances thereto owned or operated by the City that are designed to collect and convey municipal sewage (domestic, commercial, and industrial) to the City's WWTP or CSOs. It is comprised of the SSS and CSS.

Waters of the State: Waters of the State (Tennessee) shall have the same meaning as "Waters" defined under TCA § 69-3-103 (33).

Wet Weather SSO: A discharge of untreated sewage from a sanitary sewer system due to excessive flows during rain events or elevated ground and surface water conditions causing inflow and infiltration of additional water into the WWTS.

WRD: Waste Resources Division

WWTP: Wastewater treatment plant or the Moccasin Bend Wastewater Treatment Plant.

2.4 Types of SSOs

SSO is a broad term used to describe the discharge of wastewater from a sanitary or combined sewer system (CSS) anywhere except from a permitted discharge point. All suspected SSOs that are reported to the City will be investigated to verify/identify and correct the problem.

2.4.1 Wet Weather SSOs

Wet weather SSOs result from excessive flows during significant rain events and/or elevated ground and surface water conditions causing inflow and infiltration of unwanted additional water into the WWTS. SSOs can be attributed to a number of factors, including, but not limited to, the following:

- Downspout connections to the SSS and/or CSS
- Footing drains connections to the SSS and/or CSS
- Sump pumps connections to the SSS and/or CSS
- Leaking service laterals;
- Flooding from the storm water system.

2.4.2 Dry Weather SSOs

SSOs during dry weather are most often caused by flow restrictions or system disruptions. Dry weather SSOs can be attributed to a number of factors including, but not limited to, the following:

- Bottlenecks and/or blockages;
- Grease;
- Roots;
- Debris;
- Mechanical or electrical failures;
- Loss of electrical power;
- System overloads;
- Sewer main breaks; and
- Treatment facility malfunctions and/or overloads.

2.5 General Categories of SSOs

SSOs may occur in any part of the WCTS, however, where they occur generally dictate the type of response needed to identify, isolate, control, correct, and remediate the SSO location. SSOs can be separated into three (3) primary categories, which are the following:

- Collection System;
- Pump Station or WWTP; and
- Building Backups.

2.5.1 Collection System

SSOs related to the collection system portion of the WCTS may occur in wet weather and/or dry weather and will require crews with different skills and equipment to address the problem.

Typical causes associated with SSOs in this category are the following:

- Bottlenecks and/or blockages;
- Grease;
- Roots;
- Debris;

- Pipe collapses; and
- Capacity issues.

2.5.2 Pump Stations or WWTP

SSOs related to pump stations or the WWTP portion of the WCTS may occur in wet weather and/or dry weather and will require crews with different skills and equipment to address the problem. Typical causes associated with SSOs in this category are the following:

- Loss of electrical power;
- Electrical and mechanical failures;
- Malfunctions of WWTP unit processes;
- Stoppages in wetwell piping, valves, and force mains; and
- Capacity limitations.

2.5.3 Building Backups

SSOs related to building backups may occur in wet weather and/or dry weather and will require crews with different skills and equipment to address the problem. Typical causes associated with SSOs in this category are similar to that for the collections system and include the following:

- Bottlenecks and/or blockages;
- Grease;
- Roots;
- Debris;
- Pipe collapses; and
- Capacity issues.

2.6 Description of Interceptor Sewer System (ISS)

As the regional wastewater utility provider, the City of Chattanooga, a Municipal Corporation owns, operates, maintains, and manages a network of pipes, manholes, pump stations, force mains, Combined Sewer Overflow Treatment Facilities (CSOTFs), and associated appurtenances that transports wastewaters from homes, businesses, and industries to the Moccasin Bend Wastewater Treatment Plant (MBWWTP). This network is also referred to as the WCTS. Customers own the private service laterals from the served residential, commercial, and industrial structure to the public main line in the street or right-of-way, including the connection.

Currently (in 2013), the City's ISS serves about 170,000 people with about 61,000 customers. It also provides wheelage and treatment for eight (8) regional or satellite users, with about 25,000 customers. The assets of the ISS include the following:

- 1,263 miles of gravity sewers(approximate), including 70 miles of combined sewers
- 30,000 manholes (approximate)
- 71 pump stations
- 53 miles of force main

- 8 Combined Sewer Overflow Treatment Facilities (CSOTFs)
- 1 Combined Sewer Storage Facility
- 130 (approximate) residential/grinder pumps
- 1 Moccasin Bend Wastewater Treatment Plant (MBWWTP)

2.7 Organization of ISS

The ISS is a section of the WRD of the Department of Public Works (DPW) of the City of Chattanooga. The Director of the WRD is responsible for the operations, maintenance, and management of the ISS. The System Engineer is responsible for the operations, maintenance, and management of the collection sewer portion of the WCTS system. The Plant Manager is responsible for the operations and management of the WWTP, pump stations, and CSOTFs. The Maintenance Manager is responsible for the maintenance of the WWTP, pump stations, and CSOTFs. An organizational chart for the WRD and ISS is provided in Appendix A.

3.0 SSO Response Procedures

An SSO response procedure provides the City with a strategy for the ISS to mobilize labor, materials, tools, and equipment to correct or repair a condition that may cause or contribute to an SSO. The procedures described herein consider a range of potential WCTS failures that could lead to an SSO to surface waters, land, or buildings.

3.1 Receipt of Information Regarding an SSO or CSO

3.1.1 SSO Report Sources

Reports of a possible SSO may be received by the ISS from one or more of the following:

- A telephone call, e-mail, text or other social media contact, or written communication from a customer or citizen;
- A telephone call, email, text, or other social media contact from an ISS or other City department employee;
- The Supervisory Control and Data Acquisition (SCADA) system for the WCTS;
- An outside party such as a regulatory agency, boater, or other interested party; or
- ISS employee(s) checking “hot spot” locations where SSOs had previously occurred during wet weather events.

The City's 311 Call Center is generally responsible for receiving calls from the public regarding possible SSOs.

3.1.2 SSO Report Information

When a telephone call is received concerning a possible SSO, the 311 Call Center representative should record as much as possible relevant information regarding the potential SSO on the ISS Sewer Overflow Observation Report (SSO Report). The SSO Report supporting document templates are provided in Appendix B. The SSO Report template is provided in Appendix B-1. The 311 Call Center representatives should obtain, if possible, the following information:

- Time and date call was received;
- Specific location and description of problem;
- Time that possible SSO was noticed by the caller;
- Caller's name and phone number;
- Observations of the caller (e.g., odor, duration, location of the SSO, any impacts); and
- Other relevant information that will enable the quick identification, assessment, and corrective actions to be taken by ISS personnel.

In the event that an SSO call is received by ISS personnel from sources other than the 311 Call Center, the ISS personnel taking the call or report will, if possible, collect the same information noted above.

3.1.3 SSO Reporting for Collection System and Building Backups

Normal Business Hours

During normal business hours, (normal business hours are from 8:00 AM to 6:00 PM, Monday through Friday), the 311 Service Request is reported immediately by e-mail by the 311 Call Center representative to the ISS Dispatcher (Crew Scheduler).

When the ISS Dispatcher (Crew Scheduler) receives the 311 Service Request regarding the possible SSO, the ISS Dispatcher (Crew Scheduler) should then contact by radio or cell phone the designated ISS First Responder for Collection System and Building Backups, who is typically a Crew Supervisor 3 (Sewer Maintenance). The Crew Supervisor 3 (Sewer Maintenance) should create a work order (See Appendix B-2) and call in other Sewer Maintenance personnel and equipment as needed to address the SSO .

After Normal Business Hours

Outside of normal business hours (normal business hours are from 8:00 AM to 6:00 PM, Monday through Friday), the 311 Service Request report (See Appendix B-3) should be transferred by e-mail or telephone from the 311 Call Center to the Plant Operator 3 (Control Room) on duty at the WWTP. The Plant Operator 3 (Control Room) should contact the ISS First Responder “on call” for Collection System and Building Backups, who is typically a Crew Supervisor 3 (Sewer Maintenance), regarding the possible SSO. The Crew Supervisor 3 (Sewer Maintenance) should create a work order (See Appendix B-2) and call in other Sewer Maintenance personnel and equipment as needed to address the SSO

3.1.4 SSO Reporting for SCADA, Pump Stations, CSOTF, and Other

Each pump station and CSOTF is equipped with SCADA systems that monitor the operation of the stations and CSOTF. The SCADA system will convey alarms to the WWTP Control Room when predetermined conditions are present at the stations. Monitoring parameters include, but are not limited to:

- Power failures;
- Mechanical failures;
- Wetwell levels; and
- Pump failures.

Plant Operator 3 (Control Room) monitors the pump stations and CSOTFs from the SCADA system on a 24/7/365 basis. Plant Operator 2 (Plant) and Plant Operator 1 (Pump Station) serve as the ISS First Responders for pump station and CSOTF alarm calls.

In addition to the continuous SCADA monitoring, each pump station or CSOTF is inspected on a regular basis by Plant Operators (Pump Station) and Plant Maintenance Personnel. The frequency of these inspections is based on factors such as facility age, operating history, size of facility, and the potential for negative environmental impact.

3.2 Dispatch of Appropriate Crews to Site of SSOs

3.2.1 General

Crews should be dispatched to any location of a reported/suspected SSO immediately. Additional ISS Sewer Maintenance and Plant Maintenance personnel are “on call” should extra personnel or crews be needed.

3.2.2 Dispatching Crews

ISS Dispatchers (Crew Scheduler or Plant Operator 3) will receive notification of SSO or CSO as outlined in Section 3.1 of the SORP and dispatch an appropriate ISS First Responder and/or the appropriate crews and resources as needed. ISS Dispatchers (Crew Scheduler or Plant Operator 3) should notify the appropriate ISS managers or supervisors by telephone, cell phone, text, email, or two-way radio regarding SSO and field crew locations.

ISS Dispatchers should relay the entire message to the ISS First Responder and/or crews that are dispatched should acknowledge the instructions. Standard communication protocols should be followed. ISS employees being dispatched to the site of an SSO should proceed immediately to the location of the suspected SSO, typically within one (1) hour after notification. Any delays or conflicts in assignments should be immediately reported to the Plant Operations Supervisor- Pump Stations & CSOTF and /or Sewer Maintenance General Supervisor for resolution.

3.3 SOPs for Responding to SSOs

3.3.1 General

SSOs of different types and in different categories will require responses from different crews and equipment. The general categories are as follows:

- Collection System;
- Pump Stations or WWTP;
- Building Backups;
- Hazardous Wastes;
- Fish Kills; and
- Wet Weather Related.

3.3.2 Responses at the Collection System

A. General – SOP for Collection System Response

1. SSOs can occur anywhere in the WCTS, including along creeks and within public right-of-ways or dedicated public easements. The ISS First Responders should understand that each event may require a unique plan of action.
2. The ISS First Responders for SSOs in the collection system portion of the WCTS are in the Crew Supervisor 3 position of the Sewer Maintenance section. They provide the initial response to SSOs or other unscheduled wastewater issues in the collection system portion of the WCTS. They are typically the first ISS

representatives to arrive at a suspected SSO and will initiate the ISS field response per this SORP.

3. The ISS First Responders may request additional support as needed based on the SSO event. Additional support crews will generally have additional capabilities such as hydraulic cleaning equipment to mitigate blockages and CCTV equipment to perform follow-up inspections. Sewer Maintenance crews will perform any containment and cleaning activities prescribed by this SORP.

B. Procedure Steps – SOP for Collection System Response

Once at the location of the suspected SSO the ISS First Responder will:

1. Identify and isolate the cause of the SSO or (See Section 3.4.1 - Responsibilities upon Arrival for detail); usually, the causes can be identified as one of the following:
 - Pipe blockages due to grease, roots or debris;
 - Pipe breaks; or
 - Capacity issues.

Note the presence of potential hazardous waste or potential fish kills.

2. Attempt to correct the problem by taking the following steps:
 - Removing the blockage;
 - Initiating point repairs to the pipe;
 - Utilizing bypass pumping, if appropriate;
 - Contacting the Control Room to evaluate shutting off an upstream pump station if the SSO involves a force main;
 - Coordinating with Sewer Maintenance General Supervisor; or
 - Requesting additional Sewer Maintenance resources as required.
3. Determine the infrastructure configuration and the necessary investigation points to be evaluated, such as upstream and downstream manholes (minimum of two (2) in both directions), and other potential problem areas using GIS maps of the WCTS.
4. Determine the total impacted area and assess the necessary remediation techniques or practices needed by taking the following actions:
 - Outlining the impacted area;
 - Determining what environmental impacts and potential hazards to public health are present;
 - Evaluating the following factors, at a minimum:
 - Streams and creeks,
 - Stormwater infrastructure,
 - Private property, or
 - Public health, safety, and accessibility; and
 - Coordinating with Sewer Maintenance General Supervisor.
5. Establish an initial containment area and control zone around the impacted area (See Section 3.4.2 - SSO Containment for detail) by taking the following steps:

- Determining the number of barricades to distribute based on the size of the area impacted and best judgment;
 - Using appropriate signs and barricading practices around the perimeter of the impacted area to limit public access and warning public of potential health hazards;
 - Coordinating with Sewer Maintenance General Supervisor; and
 - Requesting additional Sewer Maintenance resources as necessary.
6. Evaluate, determine, and coordinate with Sewer Maintenance General Supervisor about additional Sewer Maintenance resources needed to correct, contain, and remediate the SSO location.
 7. Request guidance and development of action plans from Sewer Maintenance General Supervisor or System Engineer as needed for unusual situations to help meet the goals of the SORP to isolate, confirm, correct, contain, and remediate the SSO.
 8. Assist with site clean-up and remediation as needed.
 9. Prepare or assist in preparation of SSO reports (See Appendix B-1), activity sheets (See Appendix B-4), GIS maps, and work orders (See Appendix B-2) including before, during, and after photos and/or videos of the event and ensure that the SSO Report will be provided within the specified time to appropriate agencies.
 10. Assist, as required, the Sewer Maintenance General Supervisor with the final inspection of the SSO location to determine that the SSO has been adequately addressed as set forth in this SORP.

C. Cleanup and Remediation Resources – SOP for Collection System Response

1. The ISS should follow response procedures outlined above and use its available resources to correct, contain, and cleanup SSOs. The ISS should make available necessary additional personnel, material, supplies, and equipment from crews working at the site of an SSO (See Section 3.4.4 - SSO Site Cleanup or Remediation Practices for detail).

The following resources should be available as needed:

- Trained personnel;
- Excavation equipment, track hoes, backhoes, etc.;
- Combination cleaner/flushing equipment;
- Closed circuit television equipment;
- By-pass pumping equipment;
- Other materials, such as sand bags, silt fences, lime, signs, hand tools etc.; and
- External specialty contractors.

See Appendix C for a list of available equipment.

3.3.3 Responses at Pump Stations, CSOTFs, or WWTP

A. General - SOP for Pump Stations, CSOTFs, or WWTP Response

1. Plant Operations as well as Plant Maintenance are responsible for operation and maintenance of the ISS pump stations, CSOTFs, or WWTP.
2. Each pump station, CSOTF, and WWTP is equipped with SCADA systems that monitor the operation of the stations, CSOTFs, and WWTP. The SCADA system will convey alarms when predetermined conditions are present at the pump station, CSOTF, or WWTP.
3. In addition to the continuous monitoring by SCADA, each pump station, CSOTF, and the WWTP is inspected on a regular basis. The frequency of these inspections is based on factors such as facility age, operating history, size of facility, and the potential for negative environmental impact. Plant Maintenance personnel perform service and calibration of all instrumentation, such as flow meters, level sensors, alarms, and SCADA equipment on a periodic basis.
4. Plant Operator 2 (Plant) and Plant Operator 1 (Pump Stations) personnel serve as the ISS First Responders for pump station, CSOTF, or WWTP service calls. For any incident that involves an SSO, Plant Operations and Plant Maintenance in conjunction with Sewer Maintenance will coordinate and implement the requirements of the SORP and take the appropriate action to contain the SSO. The ISS will dedicate additional resources to the SSO response to satisfy the intent of this SORP.

B. Procedure Steps - SOP for Pump Stations, CSOTFs, or WWTP Response

Once on the site of the pump station, CSOTF, or WWTP SSO, the ISS First Responder should:

1. Identify and isolate the cause of the disruption to the pump station, CSOTF, or WWTP (See Section 3.4.1 - Responsibilities upon Arrival for detail); usually, these causes can be identified as the loss of power or the failure of a critical mechanical or electrical component. Note presence of potential hazardous waste or potential fish kills.
2. Attempt to correct the problem by taking the following actions:
 - Restoring power;
 - Using a redundant power supply;
 - Placing a standby pump in service;
 - Using portable pumping equipment;
 - Coordinating with Plant Operations Supervisor- Pump Stations & CSOTF or Plant Operations Supervisor- Liquids; or
 - Requesting additional Plant Maintenance resources as required.
3. Determine the infrastructure configuration and the necessary investigation points to be evaluated, such as upstream and downstream manholes (minimum of two (2) in both directions) or upstream and downstream WWTP unit processes, and other

potential problem areas using GIS maps as needed.

4. Determine the total impacted area and assess the necessary remediation techniques or practices needed by taking the following actions:
 - Outlining the impacted area;
 - Determining what environmental impacts and potential hazards to public health are present;
 - Evaluating the following factors, at a minimum:
 - Streams and creeks,
 - Stormwater infrastructure,
 - Private property, or
 - Public health, safety, and accessibility; and
 - Coordinating with Plant Operations Supervisor- Pump Stations & CSOTF or Plant Operations Supervisor- Liquids.
5. Establish an initial containment or control zone around the impacted area (See Section 3.4.2, SSO Containment for detail) by taking the following actions:
 - Determining the number of barricades to distribute based on the size of the area impacted and best judgment;
 - Using appropriate signs and barricading practices around the perimeter of the impacted area to limit public access and warning public of potential health hazards;
 - Coordinating with Plant Operations Supervisor- Pump Stations & CSOTF; and
 - Requesting additional Plant Maintenance and Sewer Maintenance resources as required.
6. Evaluate and determine additional Plant Maintenance and/or Sewer Maintenance resources needed.
7. Request guidance and development of action plans from Plant Manager, Maintenance Manager, and /or Pump Station Supervisor as needed for unusual situations to ensure goals of SORP are addressed.
8. Assist with site clean-up and remediation as needed.
9. Prepare or assist in the preparation of SSO reports, activity sheets, GIS maps, and work orders related to SSOs including before, during, and after photos and/or videos of the event and ensure that the SSO Report (See Appendix B-1) will be provided within the specified time to appropriate agencies.
10. Assists, as required, Plant Operations Supervisor- Pump Stations & CSOTF with inspection of site to ensure that provision of SORP and other directives are met.

C. Cleanup and Remediation Resources - SOP for Pump Stations, CSOTFs, or WWTP Response

1. The ISS should follow response procedures outlined above and use its available resources to correct, contain, and clean up SSOs. The ISS should make available

necessary additional personnel, material, supplies, and equipment from crews working at the site of an SSO (See 3.4.4 SSO Site Cleanup or Remediation Practices for detail).

The following resources should be made available as needed:

- Trained personnel;
- Excavation equipment, track hoes, backhoes, etc.;
- Combination cleaner/flushing equipment;
- Closed circuit television equipment;
- By-pass pumping equipment;
- Other materials, such as sand bags, silt fences, lime, signs, hand tools etc.;
- Portable generators; and
- External specialty contractors.

See Appendix C for a list of available equipment.

3.3.4 Responses at Building Backups

A. General - SOP for Building Backup Responses

1. Building back-ups occur as the result of blockages in the WCTS or in the private lateral line serving the residential, commercial, or industrial customer. Depending on the location of the blockage, any damages caused by or otherwise related to the SSO may be the responsibility of the customer.
2. The ISS First Responders for SSOs in the collection system portion of the WCTS are in the Crew Supervisor 3 position of Sewer Maintenance. They are typically the first ISS representatives to arrive at a reported discharge and will initiate the ISS field response per this SORP.
3. The focus is to resolve the problem. The response crews should use discretion in assisting the property owner/occupant as reasonably as they can. Be aware that the Sewer Maintenance section could face increased liability for any further damages inflicted to the private property during such assistance.

B. Procedure Steps - SOP for Building Backup Responses

Once on site of the building backup related SSO, the ISS First Responder will:

1. Identify and isolate the cause of the building backup related SSO (See Section 3.4.1 - Responsibilities upon Arrival for detail); usually, the causes can be identified as the following:
 - Pipe blockages from grease, roots or debris;
 - Pipe breaks; or
 - Capacity issues.
2. Attempt to correct the problem by taking the following actions:
 - Inspecting flow in ISS sewer line in the street or right-of way upstream and downstream of private lateral connection for free flowing condition;

- Examining the cleanout on the customer's private lateral if available to inspect flow in private service laterals;
 - Dye testing (with customer permission) of private lateral lines;
 - Removing any blockages in the ISS sewer line in the street or right-of-way by hydraulic cleaning;
 - Inspecting ISS sewer line in street or right-of-way and private lateral connection with CCTV;
 - Coordinating with Sewer Maintenance General Supervisor; or
 - Requesting additional Sewer Maintenance resources as required.
3. Assess conditions that indicate that the cause of the building backup is private or customer related, including, but not limited to, the following:
- Free-flowing conditions upstream and downstream of customer's private lateral connection before hydraulic line cleaning in ISS sewer line;
 - Stagnant with little or no flow conditions observed in private lateral after clean out cap is removed for inspection after ISS sewer line cleaning;
 - Little or no dye appearing in private lateral at clean out or in ISS sewer line;
 - CCTV inspection of ISS sewer line indicates no damaged pipe or blockages; and
 - CCTV inspection of customer's private service lateral connection indicates no flow or damaged condition.
4. If the SSO is determined to be caused by the private party, take the following steps:
- Notify Sewer Maintenance General Supervisor of findings.
 - Notify customer that problem is in the customer's plumbing or private lateral service line. Leave door hanger (Appendix B-5) if the customer is not available.
 - Prepare or assist in the preparation of SSO reports, activity sheets, GIS maps, and work orders related to SSOs including before, during, and after photos and/or videos of the event.
 - Assist, as required, Sewer Maintenance General Supervisor with the final inspection of the site to ensure that provisions of this SORP and other directives are met.
5. If the SSO is determined to be caused by the private party, take the following steps:
- Notify Sewer Maintenance General Supervisor of findings.
 - Sewer Maintenance General Supervisor notifies System Engineer and City Claims Investigator of findings.
 - System Engineer or his/her designee authorizes building cleanup or initiate property damage claim settlement process through the City Attorney.
 - If any public property is involved, determine the infrastructure configuration and the necessary investigation points to be evaluated, such as upstream and downstream manholes (minimum of two (2) in both directions) and other potential problem areas using GIS maps of the WCTS.
 - If any public property is involved, determine the total impacted area and assess the necessary remediation techniques or practices needed by taking the

- following actions:
- Outlining the impacted area;
 - Determining what environmental impacts and potential hazards to public health are present;
 - Evaluating the following factors at a minimum:
 - Streams and creeks,
 - Stormwater infrastructure,
 - Private property, and
 - Public health, safety, and accessibility;
 - Coordinating with Sewer Maintenance General Supervisor;
 - Requesting additional Sewer Maintenance resources as required.
6. If any public property is involved, establish control zone around the impacted area (See Section 3.4.2, SSO or CSO Containment for detail), by taking the following steps:
- Using appropriate signs and barricading practices around the perimeter of the impacted area to limit public access and warning public of potential health hazards;
 - Determining the number of barricades to distribute based the size of the area impacted and best judgment;
 - Coordinating with Sewer Maintenance General Supervisor;
 - Requesting additional Sewer Maintenance resources as required; and
 - Evaluate and determine any additional Sewer Maintenance resources needed;
7. If any public property is involved, take the following additional steps:
- Request guidance and development of action plans from Sewer Maintenance General Supervisor or System Engineer or other supervision as needed to ensure goals of SORP are addressed;
 - Assist with site clean-up and remediation as needed;
 - Prepare or assist in the preparation of SSO reports, activity sheets, GIS maps, and work orders including before and after pictures of the event; and
 - Assist, as required, the Sewer Maintenance General Supervisor with the final inspection of the site to ensure that provisions of this SORP and other directives are met.

C. Cleanup and Remediation Resources - SOP for Building Backup Responses

1. The ISS should follow response procedures outlined above and use its available resources to correct, contain, and clean up SSOs. The ISS should make available necessary additional personnel, material, supplies, and equipment from crews working at the site of an SSO (See 3.4.4 SSO Site Cleanup or Remediation Practices for detail). See Appendix C for a list of available equipment.

The ISS also:

- The ISS will either reimburse the property owner or pay for the cost for cleaning, disinfecting, and any necessary structural repairs after an SSO event, on a case-by-case basis;

- Works very closely with each customer and addresses lost contents on a case-by-case basis;
 - Has an in-house City claims investigator assigned to each incident manage the claim; and
 - Provides an ISS Project Coordinator to coordinate work tasks between ISS work crews and the independent contractors while keeping the customer informed of progress.
2. The following resources are available as needed to clean up public property:
- Trained personnel;
 - Excavation equipment, track hoes, backhoes, etc.;
 - Combination cleaner/flushing equipment;
 - Closed circuit television equipment;
 - By-pass pumping equipment;
 - Other materials, such as sand bags, silt fences, lime, signs, etc.; and
 - External specialty contractors.

3.3.5 Responses to Hazardous Waste

A. General - SOP for Hazardous Waste Response

1. Although infrequent, it is possible to have SSOs involving a hazardous substance which would tend to occur in the industrialized areas of the WCTS. They may also result from an illicit discharge or spills. They are typically identified at the WWTP when there is a foamy or oily sheen or uncommon odor at the WCTS.
2. The ISS First Responders for SSOs in the collection system portion of the WCTS are in the Crew Supervisor 3 position of the Sewer Maintenance section. They provide the initial response to SSOs or other unscheduled issues in the collection system portion of the WCTS. They are typically the first ISS representatives to arrive at a reported discharge and will initiate the ISS field response per this SORP.

B. Response for Hazardous Waste Events- SOP for Hazardous Waste Response

Once on the site of SSO, the ISS First Responder will take the following actions:

1. Note the appearance and odors of the wastewater on the ground or being discharged from the SSO. If suspicious or uncommon to the WCTS, immediately contact Sewer Maintenance General Supervisor and/or System Engineer for site investigation and further guidance.
2. Take no further action. Assist Sewer Maintenance General Supervisor, System Engineer, Occupational Safety Coordinator, and/or Pretreatment Supervisor with site investigation and determination to call in HAZMAT.
3. If considered to be serious problem, the System Engineer or his/her designee will contact the Chattanooga Fire Department (CFD) to dispatch its HAZMAT team.
4. Standby until arrival of CFD HAZMAT team.
5. Upon arrival of the CFD HAZMAT response team, the ISS First Responder or crew will take direction from the Incident Commander of that team.

6. Provide support to HAZMAT team as required.
7. Once HAZMAT Incident Commander determines site is safe and appropriate for the ISS First Responder and crew to proceed, proceed with response procedure outlined in Section 3.3.2 Response at Collection System.

3.3.6 Response for Fish Kill

A. General - SOP for Fish Kill Response

1. Although infrequent, it is possible for an SSO to cause a fish kill. SSOs involving these events will generally occur in areas of the WCTS along streams, ponds, or sloughs. The fish kills normally are the result of oxygen depletion in these areas. They may occur as the result of SSOs in the collection system or from pump stations and CSOTFs.
2. The ISS First Responders for SSOs in the collection system portion of the WCTS are in the Crew Supervisor 3 position of the Sewer Maintenance section or Plant Operator 2 (Plant) and Plant Operator 1 (Pump Stations), who serve as the ISS First Responders for pump station, CSOTF or WWTP trouble calls. They provide the initial response to SSOs or other unscheduled wastewater issues in the WCTS. They are typically the first ISS representatives to arrive at a reported discharge and will initiate the ISS field response per this SORP.

B. Response to Fish Kill Events - SOP for Fish Kill Response

Once on site of the SSO, the ISS First Responder will

1. Identify nearby potential waterways or water bodies adjacent to the SSO location.
2. Note the appearance of water surfaces. If floating dead fish and wastewater debris from the WCTS are there, immediately contact Sewer Maintenance General Supervisor and/or System Engineer for site investigation and further guidance.
3. Take no further action and assist Sewer Maintenance General Supervisor, System Engineer, Occupational Safety Coordinator, and/or Pretreatment Supervisor with site investigation and determination to call or contact TDEC or Tennessee Wildlife Resources Agency (TWRA).
4. Identify and isolate the cause of the SSO, usually one of the following:
 - Pipe blockages due to grease, roots or debris;
 - Pipe breaks;
 - Capacity issues;
 - Loss of power; or
 - Failure of a critical mechanical or electrical component.
5. Attempt to correct the problem by
 - Removing the blockage;
 - Performing point repairs to the pipe;
 - Utilizing bypass pumping as appropriate
 - Contacting the Control Room to evaluate shutting off an upstream pump station if the SSO involves a force main;

- Restoring power;
 - Applying a redundant power supply;
 - Placing a standby pump in service; or
 - Utilizing portable pumping equipment.
6. Assist Sewer Maintenance General Supervisor with determination of visible cause of the fish kill and the extent of the fish kill (number, species, etc.).
 7. Assist, as required, with coordination of TDEC and TWRA on site until their investigation is complete.
 8. Once TDEC and TWRA determines it is appropriate for the ISS First Responder and crew to proceed, then proceed with response procedure outlined in Section 3.3.2 Response for Collection System and Section 3.3.3 Response for Pump Station, CSOTF or WWTP.

3.3.7 Wet Weather Procedures

A. General - SOP for Wet Weather Procedures

1. SSOs may occur during significant rainfall events and from flooding of creeks and streams within the WCTS. Generally these SSOs are the result of excessive I/I. These SSOs are generally the responsibility of the Sewer Maintenance Section and generally appear on the ISS "Hot Spot" list of sites to be checked during rainfall events.
2. During Wet Weather SSOs, the volume of the discharge can exceed the ability of the field crews to successfully contain. For example, containment might not be practical during an intense rain event with a high volume of discharge.
3. The ISS First Responders for SSOs in the collection system portion of the WCTS for wet weather events are in the Crew Supervisor 3 position of the Sewer Maintenance section. They provide the initial response to SSOs or other unscheduled wastewater issues in the collection system portion of the WCTS. They are typically the first ISS representatives to arrive at a reported discharge and will initiate the ISS field response per this SORP.

B. Response for Wet Weather Events - SOP for Wet Weather Procedures

Once on site of the SSO, the ISS First Responder will:

1. Identify and isolate the cause of the SSO (See Section 3.4.1 - Responsibilities on Arrival for detail), usually one of the following:
 - Pipe blockages from grease, roots or debris;
 - Pipe breaks; or
 - Capacity issues.
 - Note any presence of potential hazardous substances or potential fish kill.
2. Attempt to correct the problem by requesting additional Sewer Maintenance resources for:
 - Removing of the blockage,
 - Initiating point repairs to the pipe,

- Utilizing of bypass pumping,
 - Contacting the Control Room to evaluate shutting off an upstream pump station if the SSO involves a force main,
 - Coordinating with Sewer Maintenance General Supervisor, and
 - Requesting additional Sewer Maintenance resources as required.
3. Determine the infrastructure configuration and the necessary investigation points to be evaluated, such as upstream and downstream manholes (minimum of two (2) in both directions) and other potential problem areas using GIS maps of the WCTS.
 4. Determine the total impacted area and assess the necessary remediation techniques or practices needed by taking the following actions:
 - Outlining the impacted area;
 - Determining what environmental impacts and potential hazards to public health are present;
 - Evaluating the following factors, at a minimum:
 - Streams and creeks;
 - Stormwater infrastructure;
 - Private property; and
 - Public health, safety, and accessibility; and
 - Coordinating with Sewer Maintenance General Supervisor.
 5. Establish an initial containment area and control zone around the impacted area (See Section 3.4.2, SSO Containment for detail) by taking the following actions:
 - Using appropriate signs and barricading practices around the perimeter of the impacted area to limit public access and warning public of potential health hazard;
 - Determining the number of barricades to distribute based the size of the area impacted and best judgment;
 - Coordinating with Sewer Maintenance General Supervisor; and
 - Requesting additional Sewer Maintenance resources as required.
 6. Evaluate, determine, and coordinate with Sewer Maintenance General Supervisor about additional Sewer Maintenance resources needed to correct, contain, and remediate SSO location.
 7. Request guidance and development of action plans from Sewer Maintenance General Supervisor or System Engineer as needed for unusual situations to meet the goals of the SORP.
 8. Assist with site clean-up and remediation as needed.
 9. Prepare or assist in the preparation of SSO reports, activity sheets, GIS maps and work orders including before, during, and after photos and/or videos of the event and complete the SSO Report (See Appendix B-1) and provide it to the appropriate agencies in a timely manner.

10. Assists, as required, the Sewer Maintenance General Supervisor with the final inspection of the SSO location to meet the goals of the SORP.

C. Cleanup and Remediation Resources - SOP for Wet Weather Procedures

1. The ISS should follow response procedures outlined above and use its available resources to correct, contain, and clean up SSOs. The ISS should make available necessary additional personnel, material, supplies, and equipment from crews working at the site of an SSO (See 3.4.4 SSO Site Cleanup or Remediation Practices for detail).

The following resources are available as needed:

- Trained personnel;
- Excavation equipment, track hoes, backhoes, etc.;
- Combination cleaner/flushing equipment;
- Closed circuit television equipment;
- Bypass pumping equipment;
- Other materials, such as sand bags, silt fences, lime, signs, hand tools etc.; and
- External specialty contractors.

See Appendix C for a list of available equipment.

3.4 SSO Correction, Containment, and Cleanup

3.4.1 General

When responding to SSOs, temporary actions should be taken to divert flows, to repair the WCTS, and to restore the WCTS to normal operation without leading to negative effects elsewhere in the WCTS. For example, repairing a force main could require the temporary shutdown of a pump station and diversion of the flow at an upstream location. If not handled properly, WCTS backups may create other SSOs.

Under most circumstances, the ISS will handle response actions with its own maintenance forces. ISS personnel have the experience and skills necessary to respond rapidly and in the most appropriate manner. Circumstance may arise, however, when the ISS could benefit from the support of private sector construction assistance, such as when excavation is performed to expose large diameter pipes that are buried to depths requiring sheet piling and/or dewatering. The ISS may also choose to use private contractors for open excavation operations that may exceed one (1) day to complete.

3.4.2 Responsibilities Upon Arrival

The goal of the ISS First Responder that arrives at the site of an SSO is to protect the health and safety of the public by mitigating the impact of the SSO to the greatest extent possible. Should the SSO not be the responsibility of the ISS, but there is imminent danger to public health, public, or private property or to the quality of nearby waters, then prudent emergency action should be taken until the responsible party assumes responsibility and takes appropriate action.

Upon arrival at a SSO location, ISS personnel should take the following actions:

1. Determine the cause of the SSO (e.g., sewer line blockage, pump station mechanical or electrical failure, sewer line break, etc.);
2. Identify and request assistance or additional resources, personnel, materials, supplies or equipment that will expedite and minimize the impact of the SSO, correct the SSO and assist in the determination of the cause;
3. Determine if private property is impacted; and
4. Take immediate steps to stop the SSO (e.g., relieve pipeline blockage, manually operate pump station controls, repair pipe, etc.).
5. Initiate the generation of an SSO Report (See Appendix B-1 for the SSO Report)

3.4.3 SSO Containment

Upon arrival at an SSO location, ISS personnel should initiate measures to contain the overflowing wastewater and recover, where possible, wastewater which has already been discharged, to minimize the impact to public health or the environment, including the following:

1. Determine the immediate destination of the SSO (storm drain, street curb gutter, body of water, creek bed, etc.);
2. Identify and request the necessary materials and equipment to contain or isolate the SSO, if not readily available; and
3. Take immediate steps to contain the SSO (e.g., block or bag storm drains, recover through vacuum truck, divert into downstream manhole, etc.).
4. When the ISS First Responder identifies the area impacted by the SSO, the next step of the initial overflow response stage is to develop and implement a control zone around the contaminated area.
5. The ISS First Responders should use best judgment in determining the number of barricades to distribute and the decision will depend on the size of the area affected.
6. The containment area or control zone will help prevent public access around the perimeter of the affected surface area using appropriate signs and barricading practices. The purpose of the containment area or control zone is to warn those who may enter the area of potential health hazards associated with contact with SSOs.
7. The temporary signs and barricades will warn passersby to avoid contact with this area.

3.4.4 Additional Measures under Potentially Prolonged SSO Conditions

Where possible, flow diversion techniques provide an effective means of conveying the discharge back into the WCTS. This procedure reduces additional potential impact on the immediate area and possible impact downstream. The flow diversion techniques employed by the ISS when practicable include, but are not limited to, the following:

Bypassing measures - Portable bypass pumps can be used in certain situations to collect wastewater from the environment and convey it back into the WCTS beyond the disruption of service point. This method is most effective in bypassing a single identified problem area when the discharge can be directed to the next downstream manhole. Bypassing may not be appropriate in wet weather overflows. This type of equipment can be used in conjunction with

other containment measures or may be used independently.

Combination cleaner/flusher measures - Combination cleaner/flusher equipment provides an additional resource for collecting discharged wastewater and conveying it back into the WCTS beyond the disruption of service point. This equipment can be used in certain situations in conjunction with other containment measures or may be used independently. Like portable bypass pumps, this equipment may not be effective in wet weather situations.

In the event of a prolonged sewer line blockage or a sewer line collapse, a determination should be made to set up a portable bypass pumping operation around the obstruction while considering the following:

- Appropriate measures will be taken to determine the proper size and number of pumps required to effectively handle the wastewater flow;
- Continuous or periodic monitoring of the bypass pumping operation will be implemented, as required; and
- Regulatory agency will be addressed in conjunction with emergency repairs.

3.4.5 SSO Site Cleanup or Remediation Practices

A. General – SOP for SSO Site Cleanup or Remediation Practices

1. SSO locations should be thoroughly cleaned and remediated after an SSO event. The goal of the cleanup practices is to restore the site to pre-event conditions. One or more of the practices may be required, depending on the size and duration of the SSO and the area affected. No readily identifiable residue (sewage solids, papers, rags, plastics, rubber products, etc.) is to remain.
2. ISS management and any impacted property owner should be kept informed on the status of the cleanup and remediation.
3. After securing the site of the SSO from public contact, the following cleanup practices will be considered and implemented:

B. Manual Practices – SOP for SSO Site Cleanup or Remediation Practices

1. Manual cleanup techniques may include the use hand tools or flushing of the area with water to remove residue. The following should be considered for manual practices:
 - Hand tools, such as rakes, shovels, brooms, etc., are used to sweep, rake, collect, and remove all readily identifiable material (sewage solids, papers, plastics, rubber products, etc.) originating from the sewer system and properly dispose of it.
 - Unless the wash down water can be safely isolated, collected, vacuumed up, and removed, flushing with water is not advised if the SSO site is anywhere near a stream or ditch with flowing water. Any water used in cleanup should be held to a minimum.
 - When warranted, it may be necessary to remediate the disturbed area by allowing the area to dry, followed by the application of grass seed, fertilizer, and straw.

C. Mechanical Practices – SOP for SSO Site Cleanup or Remediation Practices

1. Mechanical cleanup techniques may include the use of mechanical equipment to remove

all impacted substances and properly dispose of them. The following should be considered for mechanical practices:

- The Sewer Maintenance Supervisor, Systems Engineer, or other designated individuals will direct these practices.
- Track hoes, backhoes, dump trucks, and other specialized excavating equipment can be used to remove, dispose of, and replace contaminated soil from the SSO location.
- Combination cleaner/flushers trucks can be used to flush, collect, remove, and dispose of liquid residues from the SSO location.
- Portable aerators and bypass pumps may be used where complete recovery of wastewater is not practical and where severe oxygen depletion in existing surface water such as ponds and sloughs could be expected. This action should also include the monitoring of dissolved oxygen levels in the surface water until acceptable levels are obtained. This action should be coordinated, if possible, with TDEC.
- Bypass pumps may be used to pump around collapsed lines and point repairs in the collection system and disabled pump stations while repairs are being made. Bypass pumps may be used to pump large areas of ponded wastewater resulting from the event back in to the sewer system.
- When warranted, it may be necessary to remediate the disturbed area by allowing the area to dry, followed by the application of top soil, grass seed, fertilizer, and straw.

D. Disinfection Practices – SOP for SSO Site Cleanup or Remediation Practices

1. Disinfection techniques may include the application of lime or other disinfection and deodorization agents. The following should be considered for disinfection practices:
 - The Sewer Maintenance General Supervisor, Systems Engineer, or other designated individuals will direct these practices.
 - Lime and/or disinfectants will be applied as necessary without excess and will not be applied if the site is anywhere near a stream or ditch with flowing or ponded water.
 - When warranted, it will be necessary to remediate the disturbed area by allowing the area to dry before disinfection, followed by the application of grass seed, fertilizer, and straw.

E. Contracting Practices – SOP for SSO Site Cleanup or Remediation Practices

1. Contracting practices are used to support and supplement ISS staff during cleanup and remediation of SSO or CSO events. The following should be considered for contracting practices:
 - The Sewer Maintenance General Supervisor, Systems Engineer, or other designated individuals will direct these practices.
 - Contractors that specialize in building cleaning are under contract with ISS to clean, disinfect, and/or replace damaged carpet or flooring; to replace and paint damaged drywall and insulation; to clean, disinfect, and/or repair/replace and disinfect damaged plumbing fixtures; and to repair/replace damaged electrical

- fixtures.
- Contractors that specialize in landscaping and lawn remediation are available for contracting with the ISS to repair/replace damaged shrubs, flowers, specialty lawns.
 - Contractors that specialize in hazardous waste cleanup and remediation are available to the ISS to collect, remove, and dispose of any hazardous or industrial wastes; and to collect, remove, and dispose of any dead fish, floating substances, or debris that might be discharged to surface waters during an SSO event.
 - Contractors that have excavating equipment are under contract with the ISS to support the cleanup and remediation of large areas impacted by the SSO event.

3.5 SSO Related Reports

There are four (4) reports that are used to collect information that may be relevant to SSOs events and are provided in Appendix B. These include the following:

- B-1 SSO Report
- B-2 Cityworks Work Orders
- B-3 311 Call Center Service Request
- B-4 Public Work Department-Waste Resources Division Activity Sheet

3.5.1 SSO Report

Using information provided by the ISS First Responder and the Sewer Maintenance General and/or Plant Operations Supervisor – Pump Stations & CSOTFs, an SSO Report (See Appendix B-1) will be completed by the System Engineer or his/her designee. The System Engineer or his/her designee will promptly notify TDEC and the Director when the SSO is eliminated.

ISS dispatchers will record relevant SSO information and dispatch an ISS First Responder and additional response crews, as needed. An ISS First Responder will confirm the SSO or CSO with the concurrence of the Sewer Maintenance General Supervisor. Until verified, the report of a possible spill should not be referred to as a “SSO.”

Information regarding the SSOs in the SSO Report will include the following:

1. Date
2. 311 Call
3. Wet Weather Or Dry Weather Overflow
4. Time Notified or Dispatched
5. Time Crew Responded
6. Date and approximate Time SSO Started
 - a. Date and time information received and/or reported to have begun and later substantiated by a First Responder or response crew;
 - b. Visual observation; or
 - c. Pump station and lift station flow charts and other recorded data.
7. Date and Time SSO Stopped
 - a. When the blockage is cleared or flow is controlled or contained; or

- b. The arrival time of the ISS First Responder or response crew, if the SSO stopped between the time it was reported and the time of arrival.
8. Date and Time Corrective Action Complete
9. Actions Taken to Stop SSO
 - a. Removed blockages
 - b. Cleaned MH or Line
 - c. Repaired Pump Station
 - d. Other
10. Approximate Location (Street Address, Watershed, Sub-basin, or Other)
11. Approximate Latitude and Longitude
12. Source of SSO (MH, Pump station, Main line, Private Service, etc.)
13. MH ID Number
14. Destination of Overflow (Stream, Land, House, Etc.)
 - a. Indication whether the SSO reached surface waters, i.e., SSOs where wastewater was observed running to surface waters, or there was obvious indication (e.g., wastewater residue, debris, etc.) that wastewater flowed to surface waters at that location; and
 - b. Indication whether the SSO had not reached surface waters. Guidance in characterizing these SSOs is provided in the following:
 - i. SSOs to covered storm drains (with no public access) where ISS personnel verify, by inspection, that the entire volume is contained in a sump or impoundment and where complete cleanup occurs leaving no residue.
 - ii. Preplanned or emergency maintenance jobs involving bypass pumping, if accessed by the public, to a bypass channel is restricted and subsequent complete cleanup occurs leaving no residue. (Note: A preplanned bypass under these circumstances will not be considered an overflow unless a spill occurs.); and
 - iii. SSOs where observation or onsite evidence clearly indicates wastewater was retained on land and did not reach a surface water and where complete cleanup occurs leaving no residue.
15. Estimated Volume of SSO (Gallons +/-)
 - a. An estimation of the rate of an SSO, in gallons per minute (gpm), by direct observations of the SSO; or measurement of an actual SSO from the WCTS. See Appendix B-6 for guidance in estimation of SSO volume.
 - b. Determination of the volume of the SSO by multiplying the duration of the SSO by the overflow rate (when the rate of SSO is known); or when the rate of SSO is not known, investigate the surrounding area for evidence of ponding or other indications of SSO volume.
 - c. Photos and/or videos before, during, and after of the event, when possible.
 - d. Estimation of the volume of the SSO based on observation and photos by ISS First Responder and calculations by System Engineer or his/her designee
16. Cause of SSO
 - a. Blockages due of root, grease, gravel, trash, or defects
 - b. Pump station due to loss of power, electrical failure, mechanical failure, or miscellaneous
 - c. Weather
 - d. Other

17. Actions Taken to Prevent Future SSOs at This Location

- a. Point Repairs
- b. More frequent Cleaning
- c. Rehab Watershed Sewer
- d. Private Service Lateral Repair Program if available
- e. Install Permanent Generators at Pump Station
- f. Rehab and Update pumping Stations
- g. Other

18. Site safety and Security

19. Other Information and Data

- a. Line Cleaned Within Last 12 Months
- b. SSOs Occurred Within Last 12 Months at This Location
- c. Assessment of damage to the exterior areas of public/private property.

3.5.2 Cityworks Work Orders

The ISS uses the Cityworks software for its Computer Maintenance Management System (CMMS) for tracking and monitoring its plant and sewer maintenance.

The CMMS generates work orders and facilitates workflow between sections while keeping a record of activities requested by a particular customer or group of customers. The CMMS maintains records of infrastructure assets and historic repair and maintenance activity performed.

The ISS Dispatcher (Crew Scheduler) addresses requests from the 311 Call Center Service and dispatches the First Responder and crews as a work order. Requests received from customers as well as internal requests are entered into CMMS as appropriate. Information including customer name (if given), location, specific problem, and any additional comments that would help in the swift response to the request is recorded. Field communication with the customer is performed as appropriate.

ISS Dispatcher (Crew Scheduler) will issue Cityworks Work Orders (See Appendix B-2) at the request of ISS responders or the Sewer Maintenance General Supervisor to support the correction, containment and cleanup of any SSO event. ISS Dispatcher (Crew Scheduler) will review and ensure that the information provide in the work orders is correct before the work order is closed out.

This information in the Cityworks Work Order is used to assist in addressing the information requirements of the SSO Report (See Appendix B-1).

3.5.3 Activity Sheet

The Sewer Maintenance section work crews are required to provide work task summaries of their daily activities. The City of Chattanooga Public Works Department-Waste Resources Division Activity Sheet (Activity Sheet – See Appendix B-4) provides the basis for developing the work summary for each sewer maintenance task performed for each day.

Although the SSO Report (See Appendix B-1) is used to address most of the information needed that is related to an SSO event, the Activity Sheet can provide information on man-

hours, materials used, and equipment used to address the SSO problem if that particular crew is dispatched to respond to the event.

The Activity Sheet is also used by the Crew Scheduler to provide information on Cityworks Work Orders (See Appendix B-2) when it is necessary to dispatch crews to perform emergency work tasks before work orders can be issued.

3.5.4 311 Call Center Service Request

As noted in Section 3.1, the majority of calls related to SSOs are received from the 311 Call Center. A service request and its assigned number is generated by each call and is sent to the ISS Dispatcher (Crew Scheduler) who notifies the ISS First Responder with all of the relevant information about the SSO event. The ISS Dispatcher (Crew Scheduler) is responsible for tracking the progress of the work addressing the problem. Once the work is complete the ISS Dispatcher (Crew Scheduler) will close the service request by supplying the relevant requested information by the 311 Call Center.

The SSO Report (See Appendix B-1) and other related reports are the sources of the information needed to close the service request.

3.6 SSOs Tracking

The frequency and location of SSOs will be tracked by the ISS as part of their CMOM Program. In addition, a database with appropriate mapping will be maintained as part of the CMOM Program.

Data from the completed Final SSO Report (See Appendix B-1) is entered into to the SSO database by the System Engineer or his/her designee.

4.0 Regulatory Agency Notification

The ISS will provide the following notifications in order to provide formal notice to TDEC, as necessary, in the event of an SSO. The reporting criteria below, explains to whom and when various forms of notification should be made, and lists agencies/individuals to be contacted. Agency notifications will be performed in parallel with other internal notifications.

4.1 24-hour or Immediate Notification

Using the ISS First Responder field SSO Report (See Appendix B-1), Cityworks Work Orders (See Appendix B-2), and Activity Sheets (See Appendix B-4), the System Engineer or his/her designee will review and complete the SSO in spreadsheet format. The System Engineer or his/her designee is responsible for e-mailing or faxing the SSO Report to TDEC in order to meet the 24-hour oral, e-mail, or facsimile notification requirement.

The System Engineer or his/her designee will send TDEC an electronic initial SSO Report within 24 hours of a continued SSO. The ISS is also available to reply to any requests for additional information by TDEC.

- TDEC Contact Person: Environmental Specialist, Chattanooga Assistance Center
- TDEC Telephone: 423-634-57008
- TDEC Fax number: (423) 634-6389.
- TDEC Address: Tennessee Department of Environment & Conservation

Division of Water Resources
5040 McCallie Avenue
Suite 550, 5th Floor State Office Building
Chattanooga, TN 37402

4.2 5-Day Written Report

Using the SSO Report, the System Engineer or his/her designee will prepare the Final SSO Report to the regulatory agencies. This Final SSO Report should also be made available to those desiring additional information or written confirmation. Written notification in a “hard copy” version should be made available within five (5) days. The System Engineer or his/her designee will mail or e-mail copies of both the Final SSO Report to TDEC. These reports are to be sent to the address above.

4.3 Discharge Monitoring Report (DMR) and Monthly Operating Report (MOR)

The ISS is required by its NPDES permit to submit to TDEC a Discharge Monitoring Report (DMR) and Monthly Operating Report (MOR) for the WCTS. These reports must be postmarked by the 15th of the month. The MOR includes a spreadsheet of all reports for SSOs that occurred during the month. This spreadsheet summarizes all of the information collected for each SSO including the status of any extended ongoing work associated with its correction (See Appendix B-7 for example).

4.4 Other Agency Contact Information

When the System Engineer has determined that the SSO will potentially affect or require assistance from the agencies listed below, the System Engineer will contact these agencies, as necessary:

- Tennessee Emergency Management Agency (800) 262-3300
- TWRA (800) 831-1174
- Fire, Police, Ambulance (Emergency) 911

5.0 Public Advisory Procedure

This section describes the actions the ISS will take, in cooperation with TDEC, to limit public access to areas potentially impacted by SSOs.

5.1 Temporary Signage

The ISS, in conjunction with TDEC, has primary responsibility for determining when to post notices of polluted surface water bodies or ground surfaces that result from SSOs. The postings do not necessarily prohibit use of recreational areas, unless posted otherwise, but provide a warning of potential public health risks due to wastewater contamination. Considerations for personnel to recommend to the Director or his/her designee to post include the following:

- Chronic SSO sites (greater than five (5) per calendar year);
- Capacity related SSOs greater than three (3) days;
- Public areas (paths, trails, walkways, etc.) where cleanup and sanitization from a SSO is not yet complete;
- Public access areas downstream of where an SSO entered a water body where cleanup and sanitization is not yet complete.

If any one of the above conditions transpires, personnel are to recommend to the Director or his/her designee that posting of a confirmed SSO be undertaken or that there is reasonable potential for an SSO to occur, thereby requiring to post in advance. If posting is deemed necessary, TDEC will be notified by the System Engineer.

Examples of signs to be posted on barricades at an affected SSO location when necessary to inform the public concerning SSOs at that site are available in Appendix D.

5.2 Other Public Notification

Should the posting of surface water bodies or ground surfaces subjected to an SSO be deemed necessary by the Director or his/her designee, the need for further public notification will also be determined at that time. These types of notifications can be completed through the use of pre-scripted notices made available to the printed or electronic news media for immediate publication or airing, or by other measures such as front door hangers to potentially impacted customers. (See Appendix D.)

5.3 Media Notification

All phone calls from the media received by the ISS personnel, concerning SSOs should be transferred to the Director of WRD or his/her designee. When an SSO has been confirmed and is a threat to public health, the following actions should be taken, as necessary, to notify the media:

- The System Engineer notifies the Director or his/her designee who is the "first-line" of response to the media for SSO reporting; or
- If this public health threat SSO occurs after normal office hours or during the weekend, the Director of WRD or his/her designee will be contacted

Authorization is given only to the Director of WRD or his/her designee for interviews by the media. The Director of WRD or his/her designee is considered the designated spokesperson for the ISS in cases of SSO reporting. A sample Press Release, found in Appendix D, may be used when necessary to release statements to the public concerning SSO events.

6.0 Distribution and Maintenance of SORP

6.1 SORP Submittal and Availability

Controlled copies of the SORP and amendments will be distributed to the following WRD sections and/or functional positions:

- Director
- Deputy Director
- Plant Manager
- System Engineer
- Maintenance Manager

Other personnel who may become incidentally involved in responding to overflows should also become familiar with the SORP.

6.2 SORP Review and Update

The SORP should be reviewed annually and amended as appropriate. The SORP will also be reviewed and updated as necessary in July of each calendar year. The ISS will:

- Update the SORP with the issuance of a revised or new NPDES permit;
- Conduct annual training sessions with appropriate personnel; and
- Review and update, as needed, the various contact person lists included in the SORP.

Those involved with the annual review will include:

- System Engineer
- Sewer Maintenance General Supervisor
- Plant manager
- Plant Operations Supervisor – Pump Stations & CSOTFs
- Plant Operations Supervisor- Liquids
- Maintenance Manager

6.3 Training

The ISS supervision will conduct training for the appropriate ISS Dispatchers, First Responders, response crews, and ISS support staff to ensure their compliance with this SORP. These training sessions will be organized based on the latest version of the SORP, as well as other pertinent reference materials. Training sessions will be supplemented with a practical hands-on field component so that all response personnel are prepared for responding to SSOs.

ISS supervision will conduct refresher sessions annually or when any revisions are made to the SORP.

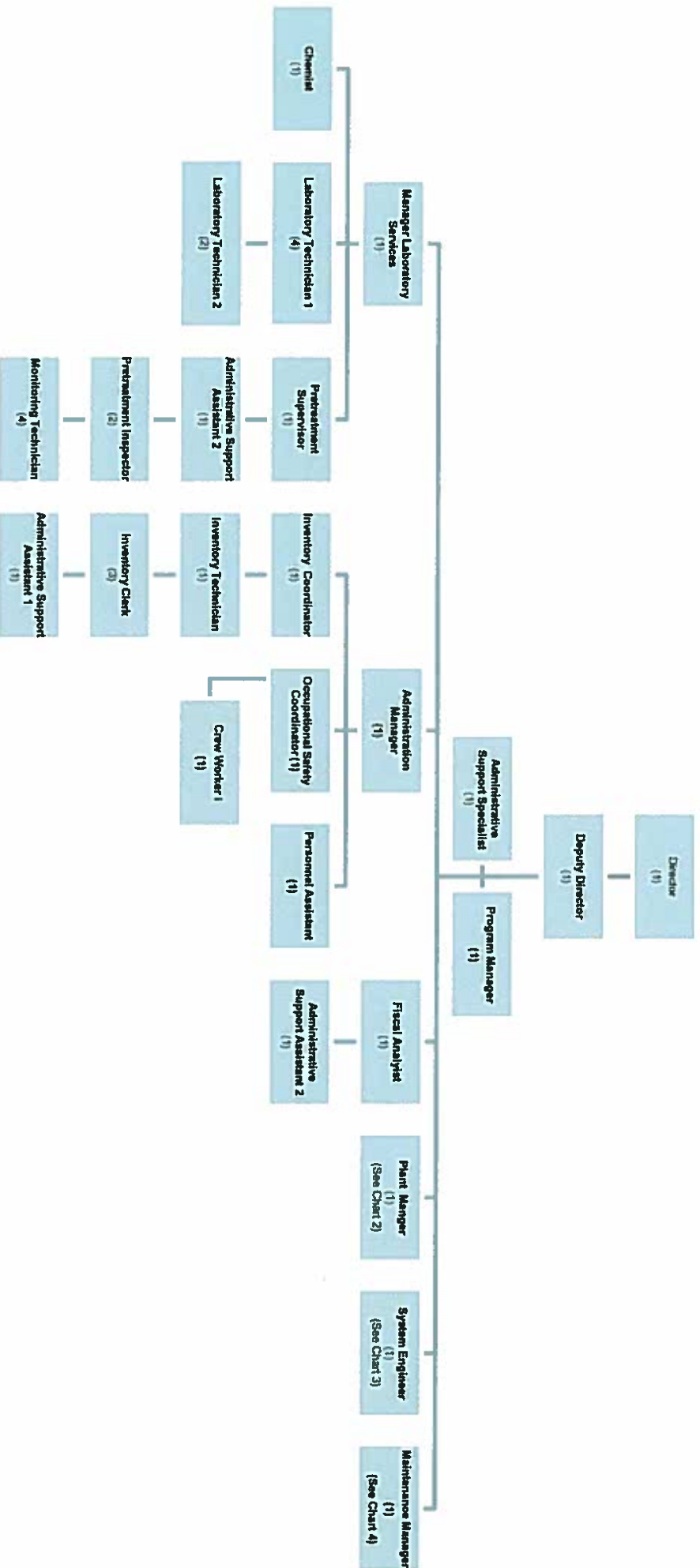
The training sessions will be held in August of each calendar year.

The Sewer Maintenance General Supervisor, Plant Operations Supervisor- Pump Stations & CSOTF or Plant Operations Supervisor- Liquids will oversee the SORP implementation and field operations to ensure that the established procedures are being followed.

Appendix A

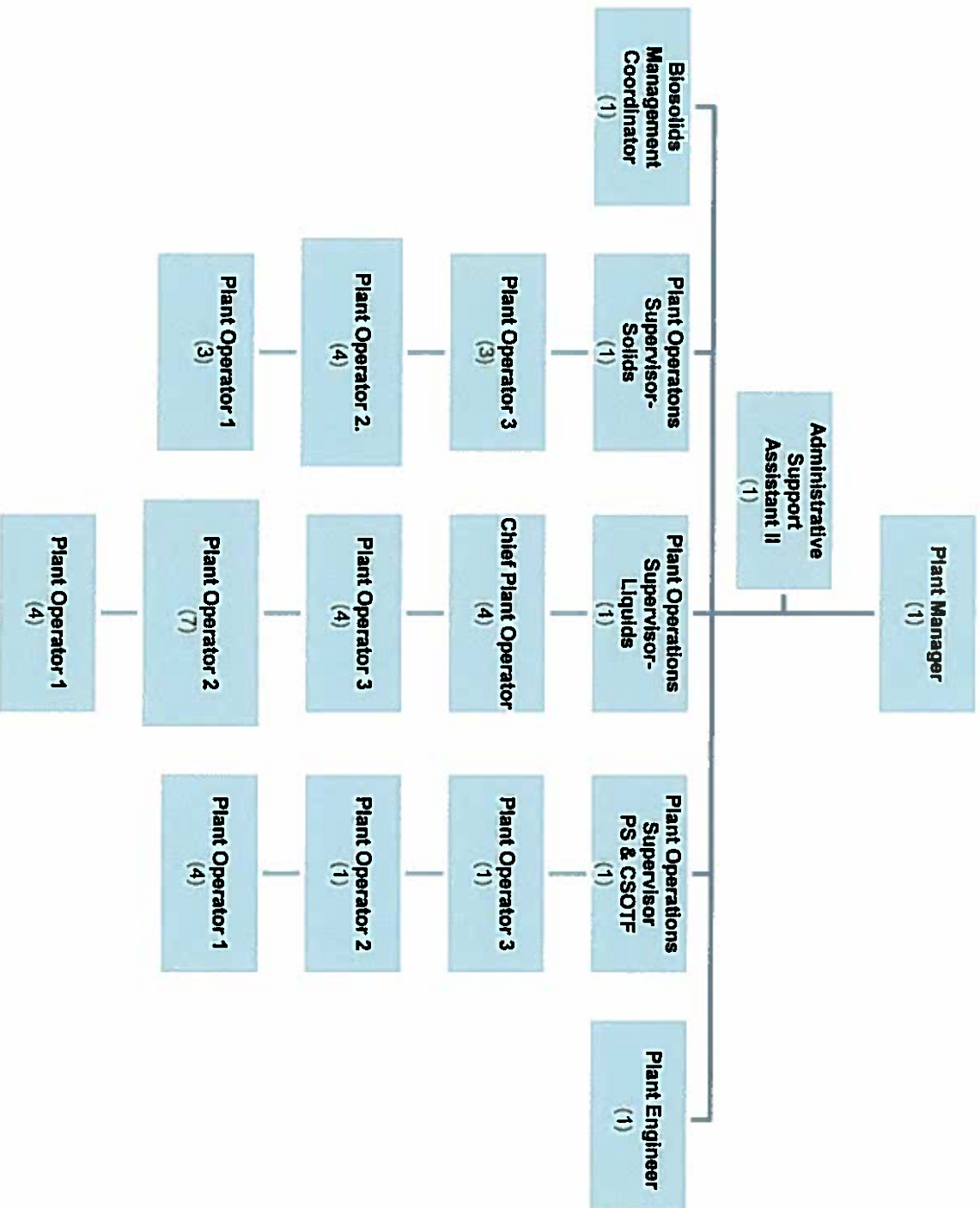
ISS Organization Charts

WASTE RESOURCES DIVISION PROPOSED ORGANIZATIONAL CHART (January 2013)



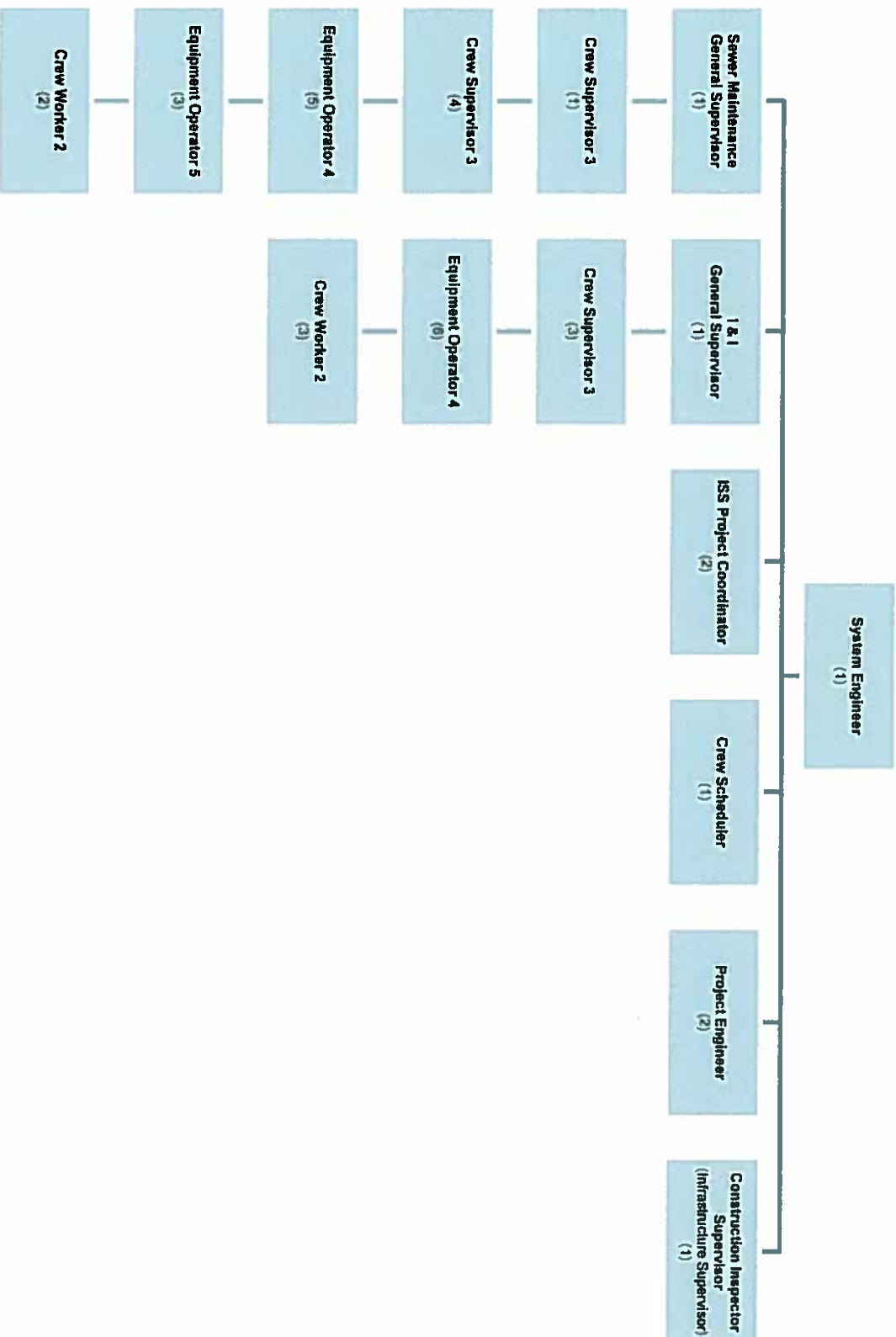
WASTE RESOURCES DIVISION PROPOSED ORGANIZATIONAL CHART

Chart 2
(January 2013)



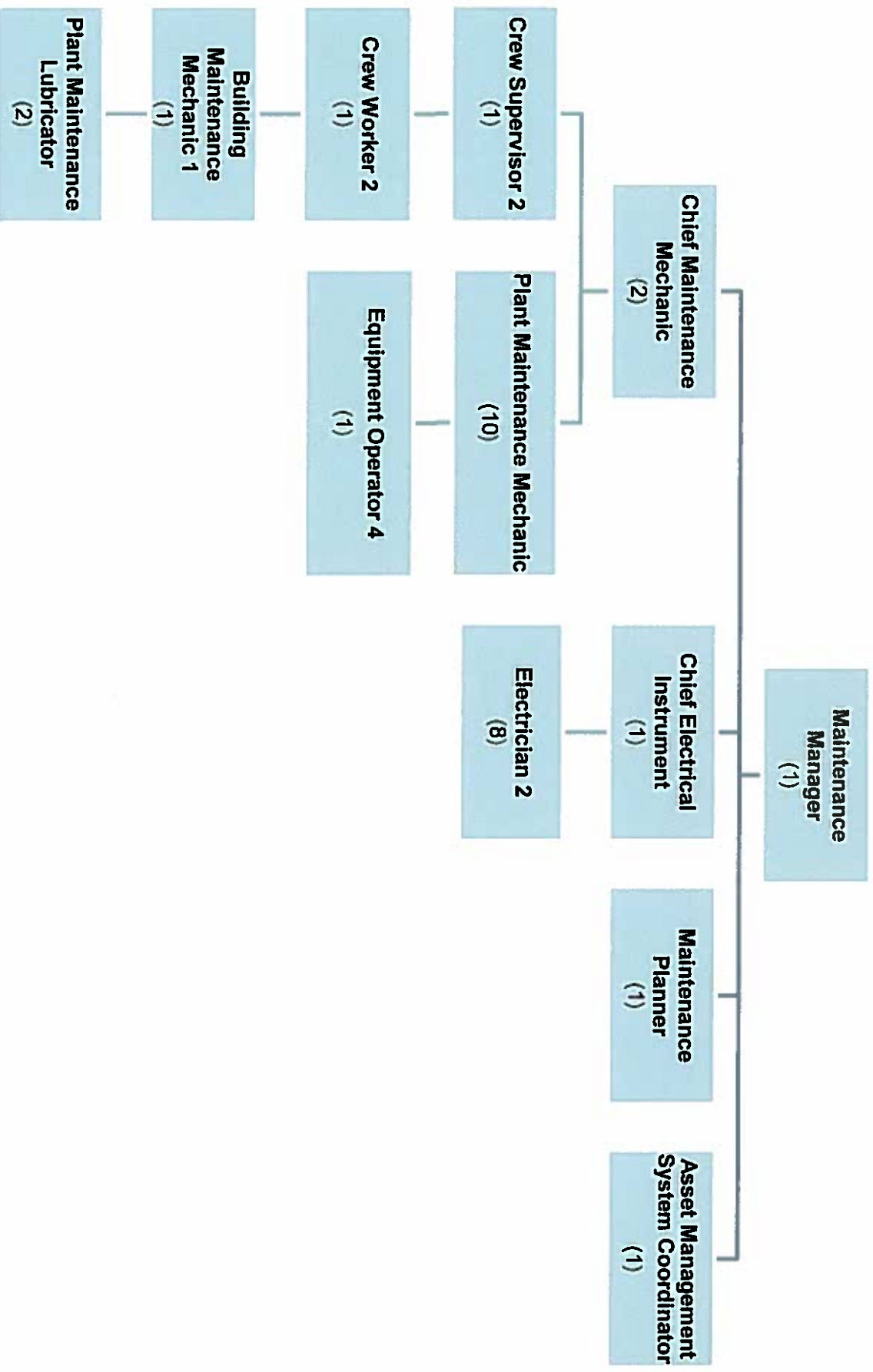
WASTE RESOURCES DIVISION PROPOSED ORGANIZATIONAL CHART

Chart 3
(January 2013)



WASTE RESOURCES DIVISION
PROPOSED
ORGANIZATIONAL CHART

Chart 4
(January 2013)



Appendix B
Sanitary Sewer Overflow (SSO) Observation
Reports and Other Reports

Appendix B-1
Sanitary Sewer Overflow
(SSO) Observation Report



City of Chattanooga
Sanitary Sewer Overflow (SSO) Observation Report

Dry Weather Overflow

Date of SSO _____ 311 Call _____ Other _____ Wet Weather Overflow

Time Notified _____ AM PM Time Crew Responded _____ AM PM

Time SSO Stopped _____ AM PM Date SSO Stopped _____

Approximate Address Location _____

Source of SSO	Manhole	<input type="checkbox"/>	<input type="checkbox"/>	Destination of SSO	Land	<input type="checkbox"/>	Name
	Pump Station	<input type="checkbox"/>	<input type="checkbox"/>		Stream	<input type="checkbox"/>	
	Main Line	<input type="checkbox"/>	<input type="checkbox"/>		Structures	<input type="checkbox"/>	
	Service Line	<input type="checkbox"/>	<input type="checkbox"/>		River	<input type="checkbox"/>	
Height of Discharge Above Manhole Rim _____				MH ID# _____	Ditch	<input type="checkbox"/>	
					Other	<input type="checkbox"/>	

Approximate Latitude _____ Approximate Longitude _____

Dimensions of Discharge

Length	_____
Width	_____
Height	_____

Photographs Taken

Estimated Volume of Gallons _____

Cause of SSO

Blockage	<input type="checkbox"/>	<input type="checkbox"/>	Roots	<input type="checkbox"/>	<input type="checkbox"/>	Power Failure from Power Source	<input type="checkbox"/>
Weather	<input type="checkbox"/>	<input type="checkbox"/>	Trash	<input type="checkbox"/>	<input type="checkbox"/>	Pump Station Electrical Failure	<input type="checkbox"/>
Defects	<input type="checkbox"/>	<input type="checkbox"/>	Grease	<input type="checkbox"/>	<input type="checkbox"/>	Pump Station Mechanical Failure	<input type="checkbox"/>
Pump Station	<input type="checkbox"/>	<input type="checkbox"/>	Gravel	<input type="checkbox"/>	<input type="checkbox"/>	Misc	<input type="checkbox"/>
Other	<input type="checkbox"/>	<input type="checkbox"/>					

Site Safe/Secure Yes No If no explain _____

Date Corrective Action Complete _____ Action Taken to Stop SSO

Time Corrective Action Complete _____ AM PM

Removed Roots	<input type="checkbox"/>
Cleaned MH or Line	<input type="checkbox"/>
Repair Station	<input type="checkbox"/>

Call Answered By _____ Results Received by O&C _____

Prevention for Future Problems _____

Additional Comments _____

Supervisor Signature _____

Certification

I hereby certify that the information presented above has been reviewed by me and to the best of my knowledge to be true, accurate, and complete. I am aware there is a significant disciplinary action up to and including dismissal for submitting false information.

Appendix B-2

Cityworks Work Order

Cityworks Work Order (EXAMPLE)



CITY OF CHATTANOOGA
PUBLIC WORKS DEPARTMENT
UNIFIED WORK ORDER
Project/Funding:

Work Order Number: 1143124

Address: 1407 MERCER ST Tax Map/Ord:

Required Work Type: WFR - Repair Sewerline	Category: SEWER	Date Needed: 0/14/2013	Status: UNDOING
WO Initiated: 5/29/2013 2:15:33 PM	Requested By: BARBEE, SANDRA R	Priority: 2	Transferred To/Submitted to:

Instructions: EPB pole in through sewer line may be able to reroute Nns
Main line has a collapse underneath speed hump

Comments:

Date Completed: Supervisor: PARDUJE, MICHAEL W/O Closed:

Associated Service Request(s), if Any:

SRS	Date/Time Init.	Priority	Description	Problem Address
				Customer Zip
				Customer Home Phone
				Customer Home Phone

Work Comments/Results:

Appendix B-3

311 Call Center Service Request

311 Service Request Example

Service Request # 762351 SEW-General Comments / SEW - General Complaints/Comments

Request Recent Search Save Close New Print Tools Labor

Search for Request ID Recently Opened

Code: SEW-General Comments
 Description: SEW - General Complaints/Comments
 Cityworks ID: 762351
 Priority/Category: 1 EMERGENCY - SEWER
 Initiated By: CSR-311_20996604 8/28/2013 8:34:14 AM
 Submitted To: WASTERESOURCE? 8/28/2013 8:34:14 AM
 Opened By:
 Dispatched To: WASTERESOURCE?
 Opened By:
 Due Date: 9/7/2013 08:34
 Closed By:
 Is the Investigation Complete?
 Is This Incident an Emergency? Apply To All
 Is a Work Order Needed?
 Work Order:
[Open WO](#) [Attach To](#) [Create](#)
 WO Description:
 Proj Start/Finish Date:
 Actual Start/Finish Date:
 Project:
[Open](#) [Attach To](#)

Incident Address: Locate Using: Streets Parcels
 City/Zip: CHATTANOOGA 37421
 Date/Time: 8/28/2013 8:34:14 AM Account:
 Mr Ms
 First Name: Last:
 Address:
 City: Zip:
 Home Phone: Work:
 Other Phone: Type: CALLER
 Email:
 Caller Information:
 Is Caller a Resident Within the Service Area?
 Is This a Follow-up Call?
 Customer Contacted on Site?
 Customer Contacted Afterwards?

Attachments

Attachment

Questions and Answers

Caller

Q1 1 Complete Participant Information required for a response
 A1 N/A
 Q2 2 Please describe the problem.
 A2 SMOKE IS COMING OUT OF 5-6 MANHOLES IN AREA
 Q3 3 Select the nature of the request from the list.
 A3 COMMENT
 Q4 4 Constituent Response Doc #
 A4 N/A
 Q5 5 District of Meeting
 A5 N/A
 Q6 6 Date of Meeting
 A6 N/A
 Q7 7 Mail Merge 1
 A7 N/A
 Q8 8 Mail Merge 2
 A8 N/A
 Q9 9 Mail Merge 3
 A9 N/A

**Appendix B-4
Public Work Department –
Waste Resources Division
Activity Sheet**

City of Chattanooga

Public Works Department-Waste Resource Division

Activity Sheet:

Initiated By:	Time Arrived:	Lunch time start:
Time Left:	Lunch Time End:	
Work Type:	Date:	
Address:		
Crew Workers Names:		
311 <input type="checkbox"/> Other <input type="checkbox"/> Sewer Pipe Size: _____ Material: _____ Depth: _____		
Call Response: Repairs Cleaning and TV :		
Stoppage in City Line <input type="checkbox"/> Point Repair <input type="checkbox"/> Feet Cleaned _____		
Stoppage in Customer Line <input type="checkbox"/>	MH Repaired <input type="checkbox"/> Feet TVed: _____	
Water or Stormwater Problem <input type="checkbox"/>	MH Installed <input type="checkbox"/>	Tanks of Water _____
MH overflow from weather <input type="checkbox"/>	Tap <input type="checkbox"/> Meter Reading _____	
Locate MH/Line <input type="checkbox"/>	Located/Marked Lines or MH <input type="checkbox"/> Cut Out Roots <input type="checkbox"/>	
MH-Lid problem <input type="checkbox"/>	Feet of Line Replaced ___ Cleaned Wet Well <input type="checkbox"/>	
Odor Complaint <input type="checkbox"/>	Easement Clearing Footage _____	Equipment Downtime _____
Mileage Day Begin: _____	Cut Asphalt/Concrete <input type="checkbox"/>	Training or School time _____
Mileage End Day: _____	Temporary Patch <input type="checkbox"/>	Work order # _____
Final Patch <input type="checkbox"/>		

Equipment Used: _____

Material Used: _____

Work Comments: _____

Crew Supervisor Signature: _____

General Supervisor Signature: _____

I hereby certify that the information presented above has been reviewed by me and to the best of my knowledge to be true, accurate, and complete. I am aware there is a significant disciplinary action up to and including dismissal for submitting false information

Appendix B-5

Door Hanger

City of Chattanooga Waste Resources
Sewer Maintenance Department
455 Moccasin Bend Rd.
Chattanooga Tennessee 37405
Phone (423)757-5026

Date

Time

SR #

Call Answered By

Unit #

Dear Customer,

In response to your call. We have checked
our main line serving your property. We found:

No problem with our line, we suggest
you contact a licensed plumber to correct a
problem with your service line.

We removed a blockage in our main
line, this should correct the problem.

If you have any questions please contact us.

Additional Comments:

Appendix B-6

Volume Calculation

Exhibit D-2



City of San Diego
Metropolitan Wastewater Department

Reference Sheet for Estimating Sewer Spills
from Overflowing Sewer Manholes
All estimates are calculated in gallons per minute (gpm)



rec. 409

All photos were taken during a demonstration using metered water from a hydrant in cooperation with the City of San Diego's Water Department.

D.2.3 WET WEATHER OVERFLOW CALCULATION:

The following can be used to help in estimating the rate of loss of flow out of manholes. As this is an estimate, judgment by the observing person and/or estimator must always be used.

All calculations are based on an estimate of the size of the opening involved, the velocity of flow through the opening, and the duration of time the overflow occurred. In most all occurrences, the opening size and velocity will change over an event from low to high back to low. Judgment on an average condition must thus be attempted to reach a realistic rate of loss.

D.2.3.A. Loss through vent holes

1. Size of opening:

Assume holes at 1- inch diameter

$$\text{Area} = (\text{number of holes}) (\pi) (D^2/4) (1\text{ft}^2/144)$$

$$\text{Area} = (\text{number of holes}) (3.14) (1/4) (1/144)$$

$$\text{Area} = (\text{number of holes}) (0.0055\text{ft}^2/\text{hole})$$

2. Velocity Plume Guide

Velocity through holes, based on Velocity Head = $(\text{Velocity}^2/2g)$

<u>Plume height</u>	<u>Velocity</u>
1-inch	2.0 ft/sec
2-inch	3.3 ft/sec
3-inch	4.0 ft/sec
4-inch	4.6 ft/sec
5-inch	5.2 ft/sec
6-inch	5.7 ft/sec

3. Time = convert to minutes

$$\text{Volume (Gal.)} = (\text{Area}) (\text{Velocity}) (\text{Time}) (448 \text{ gpm/cfs})$$

Example: Top with six hole, flow through holes makes a one-inch high plume, last for 4 hours, 15 minutes

$$\begin{aligned} \text{Volume} &= (6 \text{ holes} \times 0.0055 \text{ ft}^2/\text{hole}) (2\text{ft}/\text{sec}) (255 \text{ min}) (448 \text{ gpm}/\text{cfs}) \\ \text{Volume} &= (0.033) (2) (255) (448) = 7540 \text{ gallons} \end{aligned}$$

D.2.3.B. Loss around edge of non-vented cover

1. Size of opening:

As the weight of manhole lid will generally hold it in place until internal pressures exceed 0.4 pounds/sq. in., loss occurs through imperfections, grit, etc. between the lid and manhole frame. Observations are generally a vertical ring of water from side gap between the lid and frame of approximately 1/4 inch width.

$$\begin{aligned} \text{Area} &= (\pi) (D) (1/4 \text{ inch}) (1/12 \text{ in}/\text{ft}) \\ &= (3.14) (2\text{ft}) (1/4) (1/12) \end{aligned}$$

$$\text{Area} = 0.131 \text{ ft}^2$$

2. Velocity through gap
(see vertical plume guide above, D.3.A.2.)

3. Time – convert to minutes

Example: Manhole with 4-inch plume around edge for 2 hours, 15 minutes

$$\begin{aligned} \text{Volume (Gal.)} &= (\text{Area}) (\text{Velocity}) (\text{Time}) (448 \text{ gpm}/\text{cfs}) \\ &= (0.131 \text{ ft}^2) (4.6 \text{ ft}/\text{sec}) (135) (448) \\ &= 36,445 \text{ gallons} \end{aligned}$$

D.2.3.C. Loss from tilted cover

1. Size of opening:

Some estimate has to be made in the field concerning how much gap exists in order to do this calculation. For the following amounts of lift of one side, the areas are as follows:

$$\begin{aligned} A &= (\pi) (D) (\text{in of lift}) (1/12 \text{ ft}/\text{in}) (1/2) \\ A &= (3.14) (2\text{ft}) (\text{in. of lift}) (1/12) (1/2) \\ A &= 0.262 (\text{in. of lift}) \end{aligned}$$

<u>Lift (inches)</u>	<u>Area (ft²)</u>
1	0.262
2	0.524
3	0.786
4	1.048

2. Velocity through opening

This must be estimated from visual observation. A low rate would be 2 ft/sec, moderate rate at 4 to 5 ft/sec, high rates up to 7 ft/sec. Over 7 ft/sec, the lid will

probably blow off the manhole. The gap (lift) will generally increase with higher velocity as well.

3. Time - convert to minutes

$$\text{Volume (Gal.)} = (\text{Area}) (\text{Velocity}) (\text{Time}) (448 \text{ gpm/cfs})$$

Example: Field observation of 2-inch gap and velocity of 4 ft/sec for a period of 3 hours, 30 minutes.

$$\begin{aligned} \text{Volume (Gal.)} &= (0.524 \text{ ft}^2) (4\text{ft/sec}) (210\text{min}) (448) \\ &= 197,192 \text{ gallons} \end{aligned}$$

D.2.3.D. Loss from Manhole without a lid in place

If no cover exists, an estimate of the average height the water column (plume) extends above the top of the manhole frame must be made. Use the height to velocity estimate from (A) above to estimate the velocity. Be sure to adjust the height estimate downward for the affects of debris around the edge of the rim which will cause the height to be incorrectly high.

$$\text{Area} = (\pi) (D^2/4) = (3.14) (2^2/4) = 3.14 \text{ ft}^2$$

Velocity - from field observation of water column height

Time - convert to minutes

$$\text{Volume (Gal.)} = (\text{Area}) (\text{Velocity}) (\text{Time}) (448 \text{ gpm/cfs})$$

Example: A manhole without a lid was observed to have an overflow with a 3 - inch high column of water for a period of 6 hours, 10 minutes

$$\begin{aligned} \text{Volume (Gal.)} &= (3.14) (4.0 \text{ ft /sec}) (370) (448) \\ \text{Volume} &= 2,081,946 \text{ gallons} \end{aligned}$$

D.2.3.E. Other

1. Generally approach of estimating a cross sectional area where the flow is leaving and a velocity of flow can be used to determine a rate. This can be applied to any situation.
2. Several observations over an event to estimate the area and velocity are better than a single observation. The overflow examples above assume a constant rate over the period which will estimate volumes too high. As an example, if an hour at the beginning and end of each event is assumed for the flow to build up from zero to maximum and back to zero, a calculation could be done as follows:

Appendix B-7
Sanitary Sewer Overflow (SSO) Observation
Report Spreadsheet

Appendix C

List of Available Resources and Equipment

WARNING!

**POTENTIAL PUBLIC HEALTH RISKS
EXIST IN THIS AREA DUE TO AN
OVERFLOW OF THE SANITARY
SEWER SYSTEM.**

**PUBLIC USE OF THIS AREA IS
TEMPORARILY NOT ADVISED.**

**ONCE ALL CLEANUP AND
DISINFECTION ACTIVITIES HAVE BEEN
COMPLETED, THE PUBLIC HEALTH
RISK WILL NO LONGER EXIST.**

Press Release Example

**Press Release
City of Chattanooga
Interceptor Sewer System**

(Insert Date)

The sanitary and combined sewer system owned, operated and maintained by the City of Chattanooga Interceptor Sewer System has recently experienced an overflow. This overflow occurred at ____(Insert Approximate Location)____. The City of Chattanooga strives to prevent overflows from occurring and this overflow has been stopped. Investigative efforts have begun in order to determine the cause of the overflow. If you would like more information regarding this overflow, please contact the City of Chattanooga at (423) 757-5026.

Appendix D

Public Notification Materials and Signs

ISS List of Available Equipment

Sewer Maintenance					
QTY	Equipment	W#	W#	W#	W#
1	Pick Up	W6676	-	-	-
3	Crew Cab	W6674	W6675	W6677	
2	Van	W6622	WL6678	-	-
2	Flat Bed	W6630	W6609	-	-
1	Pipe Hunter	W6651	-	-	-
1	Flush Truck	W7935	-	-	-
4	Dump Truck	W6656	W6673	W656	W690
3	Track hoe	W6683	W6688	W6639	-
1	Backhoe	W651	-	-	-
2	Bobcat	W6694	W6695	-	-
4	Equipment Trailer	W644T	W283T	W6656T	W690T
3	Trailer (small)	No W#	No W#	No W#	-
2	Air Compressor	W687	W8012		
3	Generator	No W#	No W#	No W#	
2	Pump	W631	No W#		
Inflow and Infiltration					
QTY	Equipment	W#	W#	W#	W#
2	Pick Up	W6645	WL6673		
1	Pipe Hunter	W3839			
2	CCTV Truck	W6624	W6657		
3	Vac-Con	W6689	W6692	W7910	
Plant Maintenance					
QTY	Equipment	W#	W#	W#	W#
4	Portable Generator	2-at plant	1-at BR#1	1-at Egate	
1	Permanent Generator (O&C)	No W#			