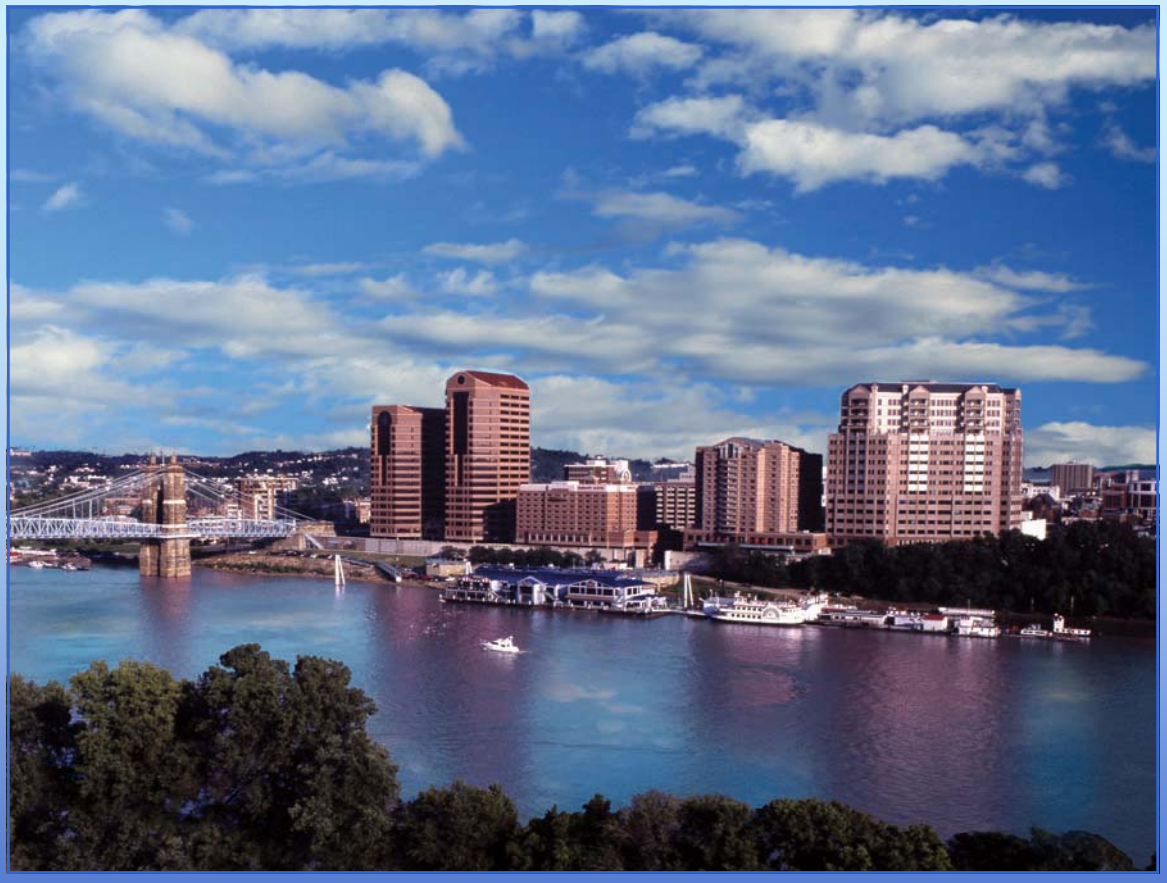
Capacity, Management, Operation and Maintenance (CMOM) Self-Assessment

Sanitation District No. 1
March 8, 2008



CERTIFICATION

Capacity, Management, Operations, and Maintenance (CMOM) Self-assessment
Consent Decree Case No. 2:05-cv-00199-WOB

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

Jeffery A. Eger
General Manager

October 15, 2007
Date

COMMONWEALTH OF KENTUCKY

COUNTY OF Kenton)ss.

The foregoing instrument was acknowledged before me this 15 day of October, 2007 by Jeffery A. Eger, General Manager of Sanitation District. No. 1.

Linda Hamberg
NOTARY PUBLIC

State-at-Large County, Kentucky

My commission expires: May 9, 2010

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CAPACITY, MANAGEMENT, OPERATION, AND MAINTENANCE SELF-ASSESSMENT

March 8, 2008

Sanitation District No. 1
1045 Eaton Drive
Ft. Wright, KY 41017

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LIST OF ACRONYMS AND ABBREVIATIONS

ARV	Air Relief Valves
Cabinet	Kentucky Environmental and Public Protection Cabinet
CCTV	Closed-Circuit Television
CIP	Capital Improvement Program
CMOM	Capacity, Management, Operation, and Maintenance
CSO	Combined Sewer Overflow
CSS	Combined Sewer System
District	Sanitation District No. 1
DOJ	United States Department of Justice
DOT	Department of Transportation
DS	Dissolved Sulfide
EPA	United States Environmental Protection Agency
ERT	Emergency Response Team
ESRI	Environment Systems Research Institute
FMSP	Field Maintenance and Sampling Plans
FOG	Fats, Oils, and Grease
FSE	Food Service Establishment
FY	Fiscal Year
gbaMS	GBA Master Series (information tracking system)
GIS	Geographic Information System
GPS	Global Positioning System
HCF	Hundred Cubic Feet
HR	Human Resources
H_2S	Hydrogen Sulfide
ID	Identification
I/I	Inflow and Infiltration
IMS	Information Management System
IT	Information Technologies

KAR	Kentucky Administrative Regulations
KDOW	Kentucky Division of Water
KPDES	Kentucky Pollutant Discharge Elimination System
KRS	Kentucky Revised Statutes
KY/TN WEA	Kentucky/Tennessee Water Environment Association
LDSAP	Large Diameter Sewer Assessment Program
mgd	Million Gallons Per Day
mg/L	Milligrams per Liter
NASSCO PACP	National Association of Sewer Service Companies Pipeline Assessment and Certification Program
NICET	National Institute for Certification in Engineering Technologies
NMC	Nine Minimum Controls
NO_3	Nitrates
NPDES	National Pollutant Discharge Elimination System
O&M	Operations and Maintenance
OSHA	Occupational Safety and Health Administration
PDM	Predictive Maintenance
PE	Professional Engineer
PM	Preventive Maintenance
ppm	Parts Per Million
QA	Quality Assurance
QC	Quality Control
SCADA	Supervisory Control and Data Acquisition
SCREAM™	Sewer Condition Risk Evaluation Analysis Model
SIU	Significant Industrial User
SOP	Standard Operating Procedure
SORP	Sewer Overflow Response Plan
SSES	Sanitary Sewer Evaluation Survey
SSO	Sanitary Sewer Overflow
SSS	Sanitary Sewer System

USGS	United States Geological Survey
WEF	Water Environment Federation
WWTP	Wastewater Treatment Plant

SECTION 1. INTRODUCTION

1.1 Organizational Objectives

The high-level objectives of Sanitation District No. 1 (District) have recently been revisited and modified through an organization-wide strategic planning initiative. In 2006, the District began the strategic planning process by engaging our Board of Directors in an exercise to develop clear, concise vision and mission statements for the District. The following was the result of this exercise:

> *Vision:* To become a nationally recognized steward of the environment, enhancing the quality of life in Northern Kentucky.
>
> *Mission:* Serving Boone, Campbell and Kenton counties through regional collaboration, education of the public, and unparalleled customer service, Sanitation District No. 1 will provide affordable, sustainable protection of our water resources and enhance economic opportunities.

We then looked to our Board of Directors and Management Team to identify core values that define our success drivers and the internal culture that we have developed and will continue to foster throughout the District. Through this process, the District established the following list of core values:

- Education
- Employee-centered culture
- Engaged communication
- Environmental stewardship
- Fiscal responsibility
- Innovation
- Integrity
- Proactive leadership
- Safety
- Unparalleled customer service

Following the development of our vision, mission, and core values, a Professional Development Day was held in early 2007 to involve employees at all levels in the strategic planning process. During this time, employees brainstormed ways in which each individual department could contribute to the overall goals of the organization. Results of these brainstorming sessions were collected, categorized, and inputted into a spreadsheet that has been uploaded to the District's Human Resources (HR) Intranet site. Some suggestions have already begun to be implemented into daily operations. The District will continue to engage all levels of employees in the strategic planning process by developing departmental plans that align with the overall goals of the organization.

The District has reaped several benefits from implementing strategic planning into our routine operations: It has enabled us to anticipate and prepare for the future, which consequently forces us to establish and implement proactive measures that help create

the road map that we will follow to meet future goals and objectives. It has also helped define performance indicators that will be used to measure our success along the way. These strategic planning efforts have enabled the District to move from a reactive to a proactive mode of operations.

The Capacity, Management, Operation, and Maintenance (CMOM) Self-assessment the District has completed and reported on in this document can also be classified as a strategic planning exercise. Over the past six months, we have involved nearly half of our workforce in taking a critical look at the CMOM activities performed throughout the collection systems. Through this process, staff members identified performance goals and measures that will guide future operations. The individual program assessments contained within Section 4 of this report are the result of the District's CMOM self-assessment process.

1.2 Regulatory Requirements

On April 18, 2007, the District entered into a Consent Decree with the U.S. Environmental Protection Agency (EPA), the U.S. Department of Justice (DOJ), and the Kentucky Environmental and Public Protection Cabinet (Cabinet) to address sanitary sewer overflows (SSOs) in the District's sanitary sewer system (SSS) and combined sewer overflows (CSOs) in the combined sewer system (CSS) in an effort to improve water quality throughout the District's service area. Pursuant to the District's Consent Decree, a CMOM Self-assessment is required to be submitted by October 18, 2007:

> **36. CMOM (CAPACITY, MANAGEMENT, OPERATION AND MAINTENANCE) PROGRAMS SELF-ASSESSMENT.** Within six (6) months of entry of this Consent Decree, the District shall submit to the Cabinet/EPA for review and joint approval a CMOM Programs Self-Assessment of the District's SSS and CSS in accordance with U.S. EPA Region IV methodology as set forth in the CDROM disk attached hereto as *Exhibit B*, to ensure that the District has CMOM Programs in place that are effective at eliminating SSOs. This Self-Assessment shall include an evaluation of, and recommendation of improvements to, each CMOM Program to ensure that such Programs contain the following key CMOM elements: written, defined purpose(s); written, defined goal(s); written documentation with specific details; implementation by well trained personnel; established performance measures; and written procedures for periodic review. Recommended improvements shall include schedules for implementation. The District shall apply special emphasis to assessing its Gravity Line Preventative Maintenance Program.

1.3 Report Purpose & Overview

The primary purpose of the CMOM self-assessment is to determine enhancements and modifications that can be made to collection systems' activities in order to more effectively achieve regulatory compliance and contribute toward the elimination of SSOs throughout the District's service area. This report contains specific actions and milestone dates to complete the recommended improvements that resulted from the self-assessment. The overall goal of the activities contained within this report is to improve water quality and meet or exceed the requirements of the Consent Decree.

Regulatory agencies have concluded that when utilities manage their system resources effectively, they are more likely to achieve regulatory compliance and reduce conveyance or treatment system performance failures. This CMOM Program is what the District will use to manage its collection systems' assets and operations. The EPA has recognized that proper planning and management of a CMOM Program can result in:

- Effective public notification of performance failures
- Cost-effective listing, prioritization, and scheduling of improvement projects
- Reduction of the number, frequency, and volume of SSOs and CSOs

SECTION 2. DISTRICT'S APPROACH TO CMOM SELF-ASSESSMENT

Although the District has sought support from external consulting firms to assist with other Consent Decree requirements, we saw value in performing the CMOM self-assessment process internally. The District decided to actively involve staff members during the development of this living, working document that will be used to transform the management, operation, and maintenance of the collection systems. Internally, this document will serve as a proactive, strategic plan to maximize operational efficiency and regulatory compliance.

Performing this task internally has resulted in several benefits for the District, including:

- Generating greater buy-in, which has led to a more engaged workforce
- Educating staff on regulatory requirements
- Developing consensus for future plans
- Providing open channels of communication to discuss system needs
- Creating a more effective tool to reduce SSOs by stimulating healthy change throughout the District

2.1 Project Team

The District identified four employees to serve as the CMOM project team. Tasks the CMOM project team members were responsible for executing included, but were not limited to:

- Identifying and reviewing CMOM guidance and reference documents
- Researching successful CMOM programs
- Developing a regulatory communication strategy
- Developing an internal communication strategy
- Identifying focus areas and developing a structure for the District's CMOM programs
- Developing and executing a CMOM schedule and work plan
- Providing CMOM education for District employees
- Scheduling and facilitating CMOM interviews, workshops, and meetings
- Gathering, reviewing, and filing applicable CMOM documents
- Preparing the final self-assessment report

Members of the project team include:

- Mike Kendall, Director of Regulatory Compliance
- Maggie Mulshine, Consent Decree Reporting Manager
- Brandon Vatter, Engineering Program Manager
- Donnie Couch, Regulatory Compliance Project Coordinator

2.2 Phased Approach

The project team organized the required CMOM tasks into a five-phased approach:

- Phase 1: Research, education, and work plan development
- Phase 2: Interviews and documents review
- Phase 3: Team workshop preparation and implementation
- Phase 4: Report development
- Phase 5: Final review

2.2.1 CMOM Research, Education, & Work Plan Development

Project team members researched a variety of utilities' CMOM programs, and referenced several CMOM guidance materials during the development of the work plan, including:

- Guide for Evaluating Capacity, Management, Operation and Maintenance Programs for Sanitary Sewer Collection Systems (EPA 305-B-05-002, January 2005)
- Introduction to Conducting Evaluations of Municipal Wastewater Collection System Management, Operation, and Maintenance Programs, Version 1.0 (EPA Region 4, September 2003)

- Guide to Collection and Transmission System Management, Operation, and Maintenance Programs, Version 1.0 (EPA Region 4, September 2003)
- Region 4 Publicly Owned Treatment Works Management, Operations and Maintenance (MOM) Programs Project: Region 4 Management, Operations and Maintenance Work Group Standard Management Procedure – *Results of EPA Region 4 Audit or Utility Self-Audit Review* (EPA Region 4, February 2000)

2.2.2 Interviews & Documents Review

District-wide involvement in the CMOM self-assessment process began in April 2007 with a kick-off meeting held to properly educate staff on the background and significance of CMOM and how it relates to the elimination of SSOs and other regulatory compliance measures. Following the kick-off meeting, the project team referred to EPA guidance materials, as well as the CMOM key elements listed in the District's Consent Decree, to compile comprehensive interview questions for each CMOM program. During April and May 2007, more than 50 employees were interviewed on all CMOM programs contained within this report. The interview transcripts and summaries resulting from this process are stored on the District's server. A comprehensive document review process occurred in conjunction with these interviews. Employees were asked to bring all applicable documents, reports, and forms that related to their CMOM program to their individual interviews. The project team then reviewed and filed all documents turned in during this process.

2.2.3 Team Workshop Preparation & Implementation

In July 2007, a CMOM update meeting was held to discuss preliminary interview findings and prepare staff for the next phase of the self-assessment process, which involved a series of CMOM program workshops. Interview summaries were distributed during the update meeting in order to prepare District employees for the workshops. A total of approximately 35 workshops were held in July and August 2007. More than one-third of the District's workforce participated in the workshops, which were designed to review interview summaries and EPA guidance in an open, team environment, identify areas of improvement, and develop detailed assessments for each CMOM program. Section 4 of this report contains the outcome of these workshops, which are detailed assessments for each CMOM program that address the eight key elements referred to in the District's Consent Decree:

- Written, defined purpose
- Written, defined goals
- Written documentation with specific details
- Implementation by well-trained personnel
- Established performance measures
- Written procedures for periodic review
- Recommended improvements for each focus area

- A proposed strategy and corresponding schedule for implementing recommended improvements

2.2.4 CMOM Report Development & Final Review

The final two phases of the self-assessment process consisted of formalizing the detailed program assessments developed during the workshops and routing the report for internal review.

SECTION 3. DISTRICT SYSTEMS & RESOURCES

3.1 Organizational History/Overview

When the District was established in 1946, we were responsible for wastewater treatment and operations & maintenance (O&M) of 124 miles of main interceptor lines. As a result of increasing environmental regulations, the District's enabling legislation, Kentucky Revised Statutes (KRS) 220, was revised. In 1995, 28 cities in Northern Kentucky turned over ownership of their SSS to the District.

The District is now responsible for the collection and treatment of wastewater in 33 Northern Kentucky communities in Boone, Campbell, and Kenton counties.

3.2 District Systems & Components

The sewer system covers approximately 200 square miles and serves approximately 90,000 customer accounts. A map of our service area and major components can be found in Appendix A. The District's collection and treatment systems are composed of approximately:

- 1,600 miles of sewer lines
- 47,000 manholes
- 3,600 catch basins in the CSS
- 129 pump stations
- 2 regional wastewater treatment plants (WWTP)
- 4 small WWTPs
- 15 flood pump stations

3.2.1 Collection Systems

The District's sewer system conveys wastewater from private laterals connected to homes, businesses, and industries through a series of gravity lines, pumped systems, and interceptors to a WWTP. The District's system consists of both combined and separate systems.

The combined sewers are located primarily in the river cities. The District maintains a database of all CSOs, which is updated continually. In addition, the District has photos of all CSO locations and diversions on file. Currently, the District has 69 CSO locations, which are permitted by the Kentucky Division of Water (KDOW) through the District's Kentucky Pollutant Discharge Elimination System (KPDES) permit KY 0021466. The District has also identified an additional 27 locations that need to be permitted, which KDOW has requested be included in the next Dry Creek WWTP permit in 2007. That permit application has been submitted and is awaiting approval by KDOW.

The separate system, which includes 129 pump stations, is comprised of both gravity lines and force mains. In accordance with the Consent Decree, the District plans to eliminate 29 of these pump stations that were designed and built with constructed bypasses.

A map of the District's CSOs, SSOs, and pump station bypass and overflow locations can be found in Appendix B.

Table 3.1 below represents the total number of CSOs and SSOs reported prior to the District assuming ownership of the Cities' systems in 1995, as well as the total annual number of CSOs and SSOs reported between 2002 and 2006.

Table 3.1 Total Number of CSOs and SSOs Reported Prior to 1995 and Total Annual Number of CSOs and SSOs Reported Between 2002 and 2006

Calendar Year		Active SSOs	Inactive SSOs	Total SSOs		Permitted CSOs	CSOs To Be Permitted	Total CSOs
Prior to 1995		7	0	7		0	0	0
2002		175	Being Evaluated	175		74	Being Evaluated	74
2003		106	61	167		74	33	107
2004		86	20	106		71	33	104
2005		83	23	106		71	28	99
2006		71	35	106		70*	30**	100

* One CSO was sealed. 69 submitted to KDOW for permit renewal in 2007.
** Three CSOs to be permitted were eliminated or sealed. 27 submitted to KDOW for permit number in 2007.

3.2.2 Treatment Systems

The District owns and maintains the award-winning Dry Creek WWTP. Dry Creek is a regional WWTP that began operation in 1979. It treats an average of 36 million gallons per day (mgd) and then discharges into the Ohio River under its KPDES permit. The Dry Creek WWTP provides both primary and secondary treatment processes and utilizes an activated sludge process for adequate protection of our water resources.

The Dry Creek WWTP receives flows from both the combined and separate sewer systems. The plant's permitted design flow is 46.5 mgd, but during wet weather events the flows from the combined system exceed this capacity. In accordance with the Dry Creek KPDES permit KY0021466, the plant blends flows exceeding 55.5 mgd. When blending, all flows receive primary treatment at the plant, but to protect the plant's biological secondary treatment process, flows beyond 55.5 mgd bypass secondary treatment and are recombined prior to the disinfection process. All blended flows are disinfected with liquid chlorine and then dechlorinated prior to discharge.

The Eastern Regional WWTP began accepting flow on September 24, 2007 after nearly three years of construction. It was constructed to eliminate recurring SSOs due to deteriorated infrastructure, and to replace and receive the combined flows of the existing Alexandria, Southern Campbell County Industrial Park, and Pond Creek treatment plants. Beyond eliminating these package plants, it will also accommodate future growth in Campbell County.

In addition to Dry Creek and Eastern Regional WWTPs, the District also maintains and operates four small treatment plants. See Table 3.2 for a list of WWTPs and their applicable KPDES permit numbers.

Table 3.2 WWTP List and Applicable KPDES Permit Numbers

Wastewater Treatment Plant	KPDES Number	Date Issued	Date Expires	Size (mgd)
Dry Creek	KY0021466	8/01/2002	7/31/2007	46.5
Eastern Regional	KY0105031	7/1/2004	4/30/2008	4.0
Rivershore Farms	KY0094072	8/01/2002	7/31/2007	0.060
Verona Commons Subdivision	KY0093025	7/01/2002	6/30/2007	0.030
Ethans Glen	KY0050466	8/01/2002	7/31/2007	0.015
Charles H. Kelly Elementary School	KY0080691	8/01/2002	7/31/2007	0.015

3.2.3 Flood Pump Stations

The District operates and maintains a series of 15 U.S. Army Corps of Engineers' flood pump stations located along the levee system on the Ohio and Licking rivers. These are areas served by CSSs, where high river levels result in intrusion into the combined

system and widespread flooding and basement backups. As stated in the District's Consent Decree, during elevated river levels, the District institutes operating procedures that are compliant with the requirements of the U.S. Army Corps of Engineers' Ohio River Flood Protection System Pumping Operations Manual, dated 1954 and revised 1988. Flood stations are activated at varying Ohio River stage levels.

3.3 District Resources

The District employs approximately 220 people committed to addressing overflows and protecting the environment. There are six main areas of operation: Dry Creek O&M, Field Technical Services, Collection Systems, HR & Administration, Engineering, and Water Resource Management. Since the District's National Pollutant Discharge Elimination System (NPDES) Compliance Evaluation conducted by Region 4 of the EPA in August 2004, the District has increased its total staff by approximately 20% and its Collection Systems staff by approximately 21%. The District's organizational charts can be found in Appendix C. The following is a description of the roles and responsibilities of the departments involved in all CMOM-related activities.

3.3.1 Collection Systems Department

The Collection Systems Department is broken into two subgroups – customer service and construction. The customer service group is comprised of dispatch personnel, trouble call investigators and three field crews. There are approximately 33 employees in the customer service group. The other half of the department is the construction group. This department includes personnel for inventory, maintenance, equipment delivery, equipment refueling, and stock material delivery, as well as six construction field crews. There are approximately 38 employees in the construction group.

3.3.2 Other Applicable Departments

Aside from the Collection Systems personnel, there are many other staff members throughout the District that play a role in the implementation of our CMOM programs. Both the Engineering Department and the Field Technical Services Department are heavily involved in CMOM-related activities. Engineering, consisting of approximately 45 active full-time employees, covers areas such as water resource management, strategic planning, plan review, regulatory compliance, flow monitoring, inspections, and capital improvement. Field Technical Services, made up of approximately 13 full-time employees, is responsible for the O&M of all pump stations. This group used to be housed within the Dry Creek O&M Department; however, due to increased responsibilities and requirements set forth in the Consent Decree, it has now been expanded to become its own department. Members of Human Resources & Administration also play a role in CMOM activities; however, they are less heavily involved.

SECTION 4. EVALUATION OF CURRENT CMOM PROGRAMS

This section of the report contains detailed assessments for each CMOM program at the District. The content of this section was developed with the assistance of District employees that are responsible for program implementation. These assessments represent the outcome of the team workshops discussed in Section 2 of this report. This section of the report is divided into four subsections: Section 4.1 contains an assessment for each CMOM Management Program; Section 4.2 contains an assessment for each CMOM Operation Program; Section 4.3 contains an assessment for each CMOM Maintenance Program; and Section 4.4 contains an assessment for each CMOM Capacity Program. Program activities for each section are displayed in Table 4.1. Each program assessment, with the exception of Sections 4.2.11 (Pump Station Force Mains Preventive Maintenance (PM)), 4.2.13 (Continuous Sewer Assessment), and 4.3.7 (Maintenance of Rights-of-way), contains the following headings:

- Program Purpose
- Connection to SSO Elimination
- Program Documentation & Procedures
- Program Training & Staffing
- Performance Goal(s)
- Performance Measures
- Periodic Evaluation
- Summary of Recommended Improvements & Implementation Schedule

The Pump Station Force Mains PM Program and Maintenance of Rights-of-way Program have yet to be developed, which is why they do not currently contain these detailed headings. The Continuous Sewer Assessment Program is a high-level program in which these detailed headings, as they relate to more specific activities, are contained within other program assessments in this report.

Per the District's Consent Decree, we have been asked to apply special emphasis to assessing our Gravity Line PM Program. The District does not have a specific Gravity Line PM Program; rather, our gravity line PM activities play a large role in our Sewer Cleaning Program (Section 4.3.4) and our Continuous Sewer Assessment Program (Section 4.2.13). Approximately 90% of the sewer cleaning we currently perform is on lines that are part of a routine, scheduled PM list. Additionally, the newly revised sewer cleaning activities that will be implemented as part of our Continuous Sewer Assessment Program provide measures for classifying pipes by their known cleaning needs as they are assessed and includes new cleaning (pipes cleaned after initial assessment), re-inspection cleaning (follow-up cleaning of pipes prior to being placed

on a permanent PM cycle or prior to implementation of a capital solution), and PM cleaning where it is cost-effective to clean the pipes on a fixed schedule.

Table 4.1 CMOM Program Activities

Section 4.1	Management Programs
	• Organizational Structure • Communication & Customer Service • Legal Authority • Acquisition Considerations • Information Management System (IMS) • Training • System Mapping • SSO Reporting & Notification
Section 4.2	Operation Programs
	• Emergency Preparedness & Response • Safety • Budgeting • Engineering • Call Before You Dig • Water Quality Monitoring • Compliance • Mobile Waste Haulers • Pump Station Operations • Pump Station Emergencies • Pump Station Force Mains PM • Odor & Corrosion Control • Continuous Sewer Assessment • Smoke & Dye Testing • Flow Monitoring • CCTV Inspection • Manhole Inspections
Section 4.3	Maintenance Programs
	• Manhole Repairs • Rehabilitation & Replacement • Mainline Sewer Repairs • Sewer Cleaning • Equipment & Tools Maintenance • Pump Station Maintenance • Maintenance of Rights-of-way
Section 4.4	Capacity Programs
	• Capacity Assessment & Assurance • New Connection Tap-In

4.1 Collection Systems Management

4.1.1 Organizational Structure

Program Purpose
The purpose of the District's Organizational Structure Program is to provide delineated job responsibilities, outline opportunities for advancement, ensure effective employee-supervisor ratios, and guarantee adequate staff is in place to accomplish the mission and vision of the District. This program also works in conjunction with the annual budget process to determine staffing needs and allocate operational expenses appropriately.

Connection to SSO Elimination
Adequate staff, proper leadership, and well-defined and communicated job descriptions are essential to building a motivated and competent workforce charged with eliminating SSOs throughout the District's service area**.**

Program Documentation & Procedures
This District's organizational structure is demonstrated through its organizational chart, which can be found in Appendix C. The chart outlines functional groups and classifications and indicates open positions. It is utilized as a planning tool when evaluating staffing needs, particularly with the Collection Systems Department where composition of crews remains flexible to address the evolving needs of our system. In addition, the organizational chart visually demonstrates hierarchy and reporting structures, which helps inform employees of advancement opportunities.

The District's Employee Benefits & Development Manager updates the organizational chart whenever new employees are hired or there is a change in the structure or function of an existing position. Updated organizational charts are distributed to the management team on an as-needed basis. At any time, employees can download the current organizational chart from the Intranet site. A hard copy of the chart is also distributed and explained to all new employees during new hire orientation.

Written job descriptions are on file for all employees within the District's Collection Systems and Field Technical Services Departments. We are currently working to develop up-to-date job descriptions for all positions throughout the organization. Job descriptions contain the following information:

- Nature of work to be performed
- List of the essential functions of the position
- Special qualifications (certifications, licenses, etc.)
- Physical expectations
- Educational qualifications
- Supervisory responsibilities (when appropriate)

- Minimum qualifications (when appropriate)

All open positions are posted internally, both on the Intranet and in common areas, to allow advancement opportunities for existing staff members. Vacancies are filled once the appropriate level of talent is found, which takes an average of three to four weeks once interviews have commenced. We are highly selective in hiring new employees. Although this selective process may require the vacancy to remain open for an extended period, the payoff in skills and abilities is beneficial in the long run. Our meticulous hiring practices build a strong team with a high skill level.

The District's HR Department utilizes a variety of software programs to assist in implementing the Organizational Structure Program. KnowledgePoint Descriptions Now® software is used to develop job descriptions, and KnowledgePoint Performance Now® is used to conduct performance reviews. SmartDraw software is used to develop the organizational charts.

Program Training & Staffing

The District's Assistant General Manager of HR and Employee Benefits & Development Manager are responsible for implementation of the Organizational Structure Program. Both are members and past presidents of the Kentucky Public Human Resource Association, and the Assistant General Manager of HR is also a member of the Society of Human Resource Managers. Both regularly attend workshops, seminars, and conferences that cover a variety of human resource topics.

In addition, members of the District's management team assist the HR Department in writing job descriptions, interviewing potential candidates, and conducting performance reviews.

Performance Goal(s)

The ongoing goals of the Organizational Structure Program are to maintain up-to-date job descriptions and organizational charts, effectively communicate job responsibilities and opportunities for advancement to District staff, and acquire and maintain the level of skills and abilities necessary to perform the mission and vision of the organization. Specific performance goals for Fiscal Year (FY) 2008 are to:

- Assess the use of Dry Creek WWTP's Crew Leader in Training Program for the Collection Systems Department. This program identifies potential future crew leaders and places them in a formal Crew Leader in Training position to better prepare staff to advance into higher positions. This has been a successful program at the Dry Creek WWTP, and may also prove to be beneficial for our Collection Systems personnel
- Begin posting job descriptions to the Intranet, starting at the crew-level and eventually including more senior-level positions

- Research the Society of Human Resource Managers' Senior Professional Human Resource Certification process to determine if this would be beneficial for members of our HR staff
- More actively solicit external candidates for open positions in an effort to enhance the diversity of applicants. Tactics to achieve this goal may include participating in local job fairs and posting open positions to the District's website and to local and national career websites.

Performance Measures

There are several performance indicators for the Organizational Structure Program, including:

- Number of up-to-date job descriptions on file
- Number of vacant positions
- Length of time taken to fill vacancies with qualified personnel
- Accuracy of and accessibility to the organizational chart
- Ability to identify future leaders in-house
- Results of performance reviews

Periodic Evaluation

The Organizational Structure Program is evaluated on a consistent basis during the annual budget process and through frequent communication between HR personnel and all six operating departments. In addition, members of the management team evaluate staffing needs throughout the year as needs arise that may not have been considered while formulating budget projections.

The performance of our workforce is evaluated using a formal performance review process for all employees. The District also continuously evaluates and compares the use of internal staff versus outside contractors. This helps to determine what responsibilities we should continue to perform in house and what might be more cost effective to outsource.

In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule

Recommended improvements for the Organizational Structure Program identified during the self-assessment process include:

- By December 31, 2007, the Director of Collection Systems will research Dry Creek WWTP's Crew Leader in Training program to determine if it would be of value to the Collection Systems Department.
- By February 29, 2008, job descriptions for Collection Systems crews will be posted to the Intranet.

- By April 30, 2008, a decision will be made as to whether or not the Assistant General Manager of HR and Employee Benefits & Development Manager should obtain the Senior Professional Human Resource Certification.
- Throughout FY 2008 and beyond, stronger efforts will be made to solicit external candidates for open positions.

4.1.2 Communication & Customer Service

Program Purpose

The purpose of the District's Communication & Customer Service Program is to inform and educate District staff, external customers, and community groups about the services we offer, including:

- Wastewater collection and treatment
- Storm water management
- Flood protection and drainage
- Industrial monitoring
- Water quality monitoring
- Environmental education

Another internal purpose of this program is to make sure that staff fully understand and embrace the big-picture goals of the organization so they can more effectively and holistically perform their daily responsibilities.

Connection to SSO Elimination

Educating internal and external publics about the wastewater industry helps to develop an engaged and informed community, which consequently garners support for District initiatives targeted toward eliminating SSOs. This program also encourages changes in behavior by promoting viable action steps that the public can take to help eliminate SSOs in the community, such as properly maintaining service laterals, appropriately disposing of grease, and disconnecting illegal connections such as downspouts and area drains.

Program Documentation & Procedures

Public Information & Education

The District's education and communication efforts reach a diverse group of stakeholders, including students, teachers, community groups, media, members of the business community, elected officials, developers, environmental organizations, and municipal groups. The District informs our customers about wastewater services and user rates through a variety of communication channels, including:

- Bill inserts, brochures, door hangers, and other printed materials
- Community newsletters
- Correspondence with large commercial and industrial users

- E-newsletters
- Formal educational curriculum
- Legal notices
- Newspaper articles
- Personalized customer correspondence
- Public hearings and workshops
- Website content

Collection Systems personnel are responsible for handling calls from the public. They have received informal, on-the-job public relations training to help guide them through responses to customer inquiries. The Public Relations Department provides field crews with printed communication pieces to distribute to customers on an as-needed basis. The Public Relations Department is also available to assist other departments throughout the District with their communication needs.

District staff communicates regularly with community partners such as the Northern Kentucky Water District, Boone County Water District, Florence Water and Sewer, Duke Energy, environmental organizations, local police and fire departments, and city officials. We also maintain open lines of communication with neighboring wastewater utilities such as the Metropolitan Sewer District of Greater Cincinnati and Louisville/Jefferson County Metropolitan Sewer District. Developing strong relationships with community and industry partners is a high priority for the District, as it helps to garner support and benchmark best practices.

Customer Notification

Collection Systems crews notify customers of major construction or maintenance work occurring in their area via verbal communication, door hangers, flyers, project signs, website content, published notices, community workshops, and letters. Customers are also notified of overflow occurrences through signs posted in the affected areas warning residents to avoid contact with water. In addition, the District's website contains general information regarding how customers can protect themselves from sewer overflows, and the District has a formal Wet Weather Overflow Notification Program to notify residents within the our service area when existing or predicted weather conditions could potentially cause sewer overflows. Lastly, when basement backups occur, Collection Systems personnel provide the homeowner with insurance information and names of local cleaning companies. For more detailed SSO Reporting & Notification procedures, refer to Section 4.1.8 of this report.

Customer Feedback & Complaint Procedures

The District has procedures in place to respond to customer complaints within two hours; however these procedures do not currently exist in written form. The public can contact the District via the main office number (859-578-7450), a 24-hour emergency number (859-331-6674), or through the website (e.g., Trouble Call Form, Feedback Form, or email). Complaints regarding the performance of the collection systems are

routed to Collection Systems dispatch personnel by the Account Services Department (during regular working hours), or to the appropriate Collection Systems on-call personnel by the Dry Creek WWTP control room operator (during after-hours). Occasionally, trouble calls are routed to the Collection Systems Department by members of the Public Relations group that receive the initial call.

Collection Systems dispatch personnel and Dry Creek WWTP control room operators receive trouble calls resulting from a variety of collection systems issues, including basement back-ups, sewer overflows occurring in the environment, and odor complaints. The majority of trouble calls received are due to building backups, and approximately 80% of these are caused by damage to or blockages in private service laterals.

When a complaint comes in, a Trouble Call Form is completed. If the trouble call generates a Work Order, the following complaint data is logged into the District's data management system – GBA Master Series (gbaMS):

- Cause of the problem
- Crew members responsible for follow-up action
- Customer contact information
- Date complaint was received
- Date complaint was resolved
- Date of follow-up action
- Feedback provided to the customer
- Location of the problem
- Nature of the complaint
- Personnel who received the call
- Tracking number

Work Orders are generated from trouble calls when the trouble call requires a fix by District personnel. Examples of conditions resulting from a trouble call that would require a work order to be generated include sewer maintenance needs such as cleaning or televising a line; structure maintenance needs such as repairing a frame and lid; or pump station maintenance needs such as draining a force main.

Although only trouble calls that initiate a response from a field crew are currently entered in the database, staff has identified a need to enter all customer calls received by Collection Systems personnel in an effort to more effectively track responses.

Internal Communication

Internal staff members are informed about District-related news and initiatives through several communication channels, including:

- Annual Employee Recognition Dinner
- Annual Professional Development Day

- Bulletin board postings
- Frequently Asked Questions
- Internal newsletters
- Interoffice correspondence
- Intranet content
- Quarterly lunches
- Regularly scheduled staff meetings

The District provides opportunities for employee feedback during quarterly all-employee lunches, regularly scheduled team meetings (which vary by department), and via the HR Intranet site. We feel it is important to create an internal culture that encourages active participation, a sense of independence, and a feeling of ownership at all levels of staff.

District employees receive incentives for being dedicated and contributing members of our workforce. Incentives are typically developed on a department-by-department basis and may include activities such as team lunches and raffles. There is an established dollar amount per employee to be contributed annually toward a rewards program that the department heads can choose to develop for their team. The Collection Systems Department has developed an incentive program called the Overachievers Award Program, which is used to recognize employees that have gone above and beyond their normal job responsibilities.

Program Training & Staffing

Several staff members within Public Relations, Collection Systems, Engineering, Field Technical Services, Account Services, HR, and Dry Creek WWTP are responsible for implementing the Communication & Customer Service Program. Most training is conducted on-the-job; however there are staff members in the Public Relations and HR Departments who have received formal university-level education in the communication field.

Performance Goal(s)

The ongoing goals of the District's Communication & Customer Service Program are to address all incoming inquiries, requests, and complaints in a timely fashion and to effectively communicate District activities to impacted internal and external publics. Specific performance goals for FY 2008 are to:

- Begin tracking all trouble calls in gbaMS
- Improve interdepartmental communication in regards to daily construction work performed by the District
- Obtain customer and employee feedback on the effectiveness of our Communication & Customer Service Program
- Develop Standard Operating Procedures (SOPs) for customer notification and complaint procedures

- Evaluate the District's current basement back-up policy and make any necessary adjustments
- Educate customers throughout the service area on inflow and infiltration (I/I), service lateral maintenance, and basement back-up cleaning procedures

Performance Measures

The effectiveness of the Communication & Customer Service Program is measured through a variety of performance indicators, including:

- Number of trouble calls received
- Hits on website
- Customer feedback
- Employee feedback
- District response time to trouble calls (tracked in gbaMS)

Periodic Evaluation

This program is evaluated through customer and employee feedback; however, staff has identified the need for more formal evaluation methods. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule

Recommended improvements for the Communication & Customer Service Program identified during the CMOM self-assessment process include:

- Begin tracking all trouble calls, not just those that warrant a response from a field crew. This may require modifications to the District's data management system. This will be addressed during the organization-wide IMS assessment discussed in Section 4.1.5 of this report.
- By February 29, 2008, develop a structured system for communicating daily construction activities to Account Services, Public Relations, Collection Systems, and Dry Creek personnel
- By March 31, 2008, develop a template for project-specific customer evaluations as a tool to measure the success of the District's customer service efforts
- By April 30, 2008, develop an internal online survey as a tool to measure the success of the District's internal communication efforts and to identify areas of improvement
- By June 30, 2008, develop written SOPs for customer complaints and customer notification procedures for activities such as smoke & dye testing, Closed-Circuit Television (CCTV) inspection, and construction/maintenance activities
- By June 30, 2008, evaluate the District's current basement back-up policy to identify areas where adjustments should be made
- Throughout FY 2008, develop educational campaigns directed toward customers throughout the service area on I/I, service lateral maintenance, and basement back-up cleaning procedures

- As a long-term ongoing goal, assess the need for a centralized call center

4.1.3 Legal Authority

Program Purpose

The purpose of the District's Legal Authority Program is to:

- Implement and enforce the District's Rules and Regulations
- Assist in the development of policies and guidance
- Implement the District's existing policies and guidance
- Comply with applicable state and federal laws
- Keep informed of relevant legal issues and state and federal policies and guidance
- Reduce legal liability and manage risk
- Provide staff with legal support and advice
- Effectively manage litigation
- Continuously review and revise legal authority as needed to further the mission of the District
- Provide legal counsel for timely, effective, and cost-efficient implementation of the Consent Decree, including coordination with regulators and legal review of all plans submitted pursuant to the Consent Decree

The District's Sanitary Rules and Regulations were originally approved by the District's Board of Directors in November 1983 with the most recent revisions approved on October 18, 2005.

Connection to SSO Elimination

An established Legal Authority Program provides the District with the support needed to interpret, adapt, and enforce our Rules and Regulations as needed, which helps control root causes of SSOs such as I/I and corrosion and blockage due to industrial waste and Fats, Oils, and Grease (FOG). The Legal Authority Program also provides the District with the resources necessary to effectively manage and implement the requirements set forth in the Consent Decree, which will ultimately eliminate SSOs in the District's service area.

The following statutes, ordinances, policies, agreements, documents and legal support areas are relevant to SSO elimination:

- Chapter 220 of KRS
- Chapter 5 of the Kentucky Administrative Regulations
- District's Sanitary Rules and Regulations
- Contractual Agreement with Satellite Community (City of Florence)
- Pretreatment Program Legal Support and Enforcement Response Plan
- Fat, Oils and Grease Control Legal Support
- Private Sewer Lateral Legal Support

- Consent Decree

SSO Elimination Legal Support

Prohibitions
Article 5 of the Sanitary Rules and Regulations contains the general prohibition "No user may introduce into the wastewater treatment system any pollutants or wastes which cause, threaten to cause, or are capable of causing, either alone or by interaction with other substances, pass through or interference." This Article also lists specific prohibitions which include: fire and explosion hazards; fats, oils, grease or petroleum; and corrosive materials.

Satellite Community Agreement
The District has an agreement with the City of Florence, which is the only satellite community within the District's jurisdiction. The area of the City of Florence is approximately 6604 acres or 10.31 square miles. The agreement, which became effective in 1983, regulates the volume of flow entering the collection system and explicitly prohibits the contribution of excess flow. Pursuant to the 1983 Agreement, Florence purchased from the District a capacity of 2.3 mgd. By Memorandum of Understanding dated June 29, 2001, Florence exercised its right to purchase an additional capacity of 1 mgd of sanitary wastewater for treatment by the District, which represented capacity already being utilized by customers of Florence in excess of the 2.3 mgd of capacity previously purchased. Florence agreed to ensure that inflow and infiltration is eliminated on a continuing basis from the sanitary sewer system serviced under the Agreement in accordance with EPA regulations. Florence also agreed to abide by the District's Rules and Regulations in the operation, repair and replacement of the sanitary sewer system and any additions thereto within the service area. The term of the Agreement is 30 years with a provision for automatic renewal for an additional 15 years unless the District, not less than five years prior to the expiration of the original 30-year term, delivers notice of its intent to terminate the Agreement. If the District terminates the Agreement, it must pay $2,500,000 to Florence within 180 days of notice of termination.

Pretreatment Program
The District's pretreatment program seeks to prevent the discharge of materials into the sewer system that interfere with proper operation of the wastewater treatment plant or may pass through the plant untreated. The provision of the District's Sanitary Rules and Regulations that deals with pretreatment is Article 5 – Wastewater Discharges Industrial/Commercial/Residential Users. Article 5 contains the general and specific prohibitions, and the pretreatment requirements. The Pretreatment Enforcement Response Plan, which was approved by EPA on May 17, 1991, and updated on June 1, 2003, is used to ensure that violations of the District's pretreatment program are remedied. The enforcement provisions in the Enforcement Response Plan are derived from Article 10 of the Rules and Regulations (see "Enforcement" section below).

Grease Control Program

The purpose of the District's Grease Control Program is to prevent the introduction of FOG into the sanitary sewer system thereby reducing sewer overflows, maximizing sewer capacity and decreasing sewer maintenance costs. In addition, this program is intended to increase awareness of operators of local food service establishments and home owners about measures they can take to limit or prevent the introduction of FOG into the drains and sanitary sewer systems.

Article 5, Sections 501.1.B.6, 501.5.C and 504 of the District's Sanitary Rules and Regulations provide explicit legal authority to control the discharge of grease into the sanitary sewer system. Section 501.1.B.6 specifically prohibits the discharge of "any water or waste containing floating fat, oils, or grease" to the wastewater treatment. Pursuant to Section 501.5.C, the General Manager may require grease or oil interception devices or traps on nonresidential property if he deems it necessary for the proper handling of liquid wastes containing oil or grease in excessive amounts. Section 504 deals with grease trap requirements and permitting:

> Article 5, Section 504 of the Rules and Regulations – Restaurants and Other Commercial Users
>
> 1. All restaurants and food service establishments within the boundaries of the District must, upon request, complete a Grease Trap Permit Application/Questionnaire. The Sanitation District will determine the need to issue a permit along with any applicable fees.
> 2. The District may inspect a grease trap to determine if the trap is of adequate size and working properly.
> 3. The Sanitation District reserves the right to require cleaning or additional pretreatment if the trap is of inadequate size or not working properly.
> 4. The District may require that any new restaurant construction within its boundaries submit a detailed drawing of the grease trap and complete a Grease Trap Permit Application/Questionnaire.
> 5. Other commercial users may be inspected by the District to monitor chemical storage, usage and disposal methods.

Pursuant to the District's Rules and Regulations and the Grease Control Program, which was approved by EPA and the state on January 8, 2008, appropriate facilities are required to properly maintain grease traps and clean them out on a regular basis. All new Food Service Establishments (FSEs) applying for a sanitary sewer capacity connection permit are supplied with new FSE Information. The information provides grease removal and management techniques to eliminate grease from entering the sanitary sewer system.

Industrial Monitoring Department representatives inspect all existing FSEs that may contribute FOG to trouble call or PM areas. During the inspection, the FSE is required to fill out a Restaurant/Food Service Grease Handling Questionnaire and submit it to the District. The questionnaire is used to help gain insight for the potential of FOG to enter the collection system. If the potential is established, then the FSE is issued a Food Service Discharge Permit. Random inspections are conducted to ensure compliance with the permit and with the District's Rules and Regulations. All grease trap waste disposed at the Dry Creek Wastewater Treatment Plant is required to have a Domestic Holding Tank Waste Hauler Manifest.

There are numerous provisions in KRS 220 and the District's Rules and Regulations pertaining to enforcement of FOG prohibitions and requirements. In addition, the District's Pretreatment Enforcement Response Plan is used to address violations of the Grease Control Program (see "Enforcement" section below).

Standards for Design and Construction of Sewers
Article 6 of the Sanitary Rules and Regulations addresses the requirements and specifications for the construction of sewers to ensure that new and rehabilitated sewers have been properly designed and constructed.

Sewer Connections and Permits
Article 6 of the Sanitary Rules and Regulations deals with the connection of building sewers to sewer mains. Since these connections have potential for infiltration, standards for new connections are clearly specified. Only persons certified as sewer tappers with the District are allowed to connect building sewers to the sanitary sewer system.

> Article 7, Section 701.1.I(5) of the Rules and Regulations.
> Any person making connection, either directly or indirectly, to the sanitary sewer without first obtaining a building sewer connection permit and paying applicable [Capacity Connection Fees] CCFs shall be deemed to have made an *illegal connection* to District sewers and shall be liable to the District for the amount of the CCF in effect at the time the illegal connection is discovered by District personnel, in addition to any other penalty or action which the District may impose or seek to have imposed pursuant to KRS Chapter 220 or the Rules and Regulations.

Private Sewer Laterals
The Sanitary Rules and Regulations outline the District's procedures for inspection and rehabilitation of private sewer laterals and the appeals and enforcement processes.

> Article 3, Section 302.1 of the Rules and Regulations.

> No person shall discharge or cause to be discharged, either directly or indirectly, to the sanitary sewer system, surface water, groundwater, roof runoff, subsoil drains or subsurface drainage.
>
> Article 3, Section 302.2 of the Rules and Regulations.
> Any such connections made …shall be considered illegal and shall be subject to immediate removal by the owner of the premises so connected and at such owner's expense.
>
> Article 3, Section 302.3 of the Rules and Regulations.
> Should the owner of such an illegally connected premises fail to *remove* the illegal connection within 90 days of being notified by the General Manager to do so, the General Manager may cause the connection to be removed and the cost thereof to be billed to the owner of the premises.

In addition to the Rules and Regulations, the District has a Sewer Lateral Repair Policy (see Appendix D) that was last amended by the Board of Directors in November 2006:

> The owner of the premises, served by a sewer shall be responsible for all maintenance, operation, cleaning, repair and reconstruction of the building sewer from the building to the point of connection with the public sewer. However, if a property owner conclusively demonstrates, in accordance with the guidelines set out in the Sewer Lateral Repair Policy, that the private sewer lateral is not functioning as a result of a structural problem occurring at a section of the private lateral located beneath the public roadway, the Sanitation District will repair the structural problem of the private lateral from the public sewer to the edge of the public roadway at no cost to the property owner.

Storm Water Connections to Sanitary Sewer
The District has extensive legal authority to prohibit storm water connections to the sanitary system.

> KRS 220.322(1)(a). The board may adopt rules requiring owners of property to disconnect storm water inflows to sanitary sewers maintained and operated by the district and not operated as a combined sewer, or to connections with these sewers.
>
> KRS 220.322(2). Any inflow required to be disconnected under a rule adopted pursuant to this chapter shall constitute a nuisance subject to injunctive relief and abatement.

Section 302 of the Rules and Regulations prohibits the direct or indirect discharge of surface water, groundwater, roof runoff, subsoil drains or subsurface drainage to the

sanitary sewer system. Such connections are considered illegal and are subject to immediate removal by the owner at the owner's expense. If the owner fails to disconnect within 90 days, the District may cause the connection to be removed and the cost thereof to be billed to the owner. In accordance with Article 7, Section 701.2.B, "upon completion of the disconnection, the property owner shall notify the District to conduct an inspection of the rehabilitation work."

Authority to Enter Private Property

The District is conducting a self assessment of its Rules and Regulations in regards to the right to enter private property. If the District determines that existing authority is deficient, revisions will be made to address the deficiencies, and will be proposed to the Cabinet/US EPA for approval. After the appropriate approval and publication procedures, the revisions will become effective. Currently, the Sanitary Rules and Regulations contain the following provisions dealing with a right of entry:

> Article 3, Section 302.3 of the Rules and Regulations.
> Should the owner of such an illegally connected premises fail to remove the illegal connection within ninety (90) days of being notified by the General Manager to do so, the General Manager may cause the connection to be removed and the cost thereof to be billed to the owner of the premises.
>
> Article 9, Section 901.3 of the Rules and Regulations.
> The General Manager and other duly authorized employees of the District bearing proper credentials and identification shall be permitted to enter all private properties, through which a proper easement is on record, for the purpose of effluent record inspection and/or transcribing, surveying, inspection, maintenance, operation, repair and reconstruction of any portion of the wastewater treatment system under the management of the District subject to the terms of the easement.

Enforcement

There are numerous provisions in KRS 220 and the District's Sanitary Rules and Regulations pertaining to enforcement. In addition, the District has an Enforcement Response Plan to ensure that violations of the District's Pretreatment and Grease Control Programs are remedied (Appendix E).

General Enforcement Authority

> KRS 220.320. The board may make and enforce regulations that may prevent the unnecessary pollution of any watercourse or supply within the district and may prohibit the discharge into such sewers of any wastes deemed detrimental to the works and improvements of the district.

Furthermore, KRS 220.320 authorizes the board to recover by civil action from any person or public corporation violating the regulations a penalty of $100 to $1,000 for each offense, plus costs. The Board may enforce by mandamus or otherwise all necessary and authorized regulations made by them, and may remove any improper construction or close any connections made improperly or in violation of the regulations.

> Article 9, Section 901.4 of the Rules and Regulations.
> The General Manager and other employees of the District shall have the authority to serve notices of violation of these Rules and Regulations. The General Manager shall be responsible for the enforcement of these Rules and Regulations and shall have authority to issue orders and impose penalties as authorized therein,…and shall have any other powers or authority necessary and proper for the enforcement and the achievement of the goals of these Rules and Regulations.
>
> Article 10, Section 1001.1.A of the Rules and Regulations.
> If any person or public corporation is found to be violating any provision of these Rules and Regulations, the General Manager may:
> (1) Enforce these regulations by mandamus or otherwise;
> (2) Remove any improper construction or close any connections made improperly or in violation of these regulations;
> (3) Revoke any permit issued pursuant to these regulations;
> (4) Recover by civil action from any person or public corporation violating any regulation, a sum of not less than $100 nor more than $5,000 for each offense, together with costs.

Administrative Enforcement Remedies

Pursuant to Article 10, Section 1001.2.A of the Rules and Regulations, the District may invoke the following remedies:

(1) Notice of Violation
(2) Administrative Orders such as:
- Cease and Desist Orders (used in situations where discharge could cause interference or pass through, or otherwise create an emergency situation)
- Show Cause Orders
(3) Administrative Fines
- General Manager may assess a penalty of up to $1,000 for each violation of the District's Rules and Regulations

Judicial Enforcement Remedies

Judicial remedies may be sought pursuant to Article 10, Section 1001.2.B in the following situations: (1) when notices of violation and administrative orders have proven ineffective in returning the violating user to compliance; (2) when emergency situations

require injunctive relief to halt or prevent discharges which threaten human health or the environment or interfere with the treatment system or (3) to impose civil penalties and recover losses incurred due to noncompliance. All judicial administrative remedies will be sought at the discretion of the General Manager. The available remedies include:

(1) Injunctive Relief - where an administrative order does not achieve compliance;
(2) Cost Recovery - to recover the cost associated with noncompliant acts of a user;
(3) Civil Penalties - $1,000 per violation for individuals and $5,000 per violation for corporations; and
(4) Termination of Wastewater Treatment Service – the General Manager may terminate or cause to be terminated wastewater treatment system service to any premise if a violation is found to exist.

Program Documentation & Procedures

The following is an overview of the general activities associated with implementation of the District's Legal Authority Program:

- Research, draft, and review correspondence, meeting minutes, memoranda, agreements, contracts, and other legal documents
- Provide legal representation and counsel on a wide range of real estate, compliance, and financial matters
- Assist with the resolution of disputes or conflicts in matters that could involve the District's customers, suppliers, consultants, contractors, employees, or any local governmental agencies
- Assist with securing permits from state and federal agencies
- Perform all required actions in regards to litigation, from initiation to final disposition
- Coordinate necessary legal or enforcement action against individuals or entities alleged to be in violation of KRS 220 and/or the District's Rules and Regulations
- Participate in Board meetings and any scheduled meetings with the County Judges Executive
- Advise on records retention issues and assist with responses to Open Records Requests

Program Training & Staffing

The Legal Authority Program consists of one in-house counsel and six law firms used as outside counsel. In-house counsel assigns to outside counsel based on the firms' expertise in eight key legal areas (Administrative/Constitutional Law; Real Estate; HR; Environmental Regulatory; Environmental Policy/Legislation; Litigation; Finance; Construction Contract Services).

In-house counsel and outside counsel are required to attend at least 12 hours of Continuing Legal Education courses per year. Records must be maintained and submitted to the Kentucky Bar Association. In-house counsel tracks training using the District's training software program.

Communication and Customer Service

The District's Communication & Customer Service Program (see section 4.1.2) promotes viable action steps the public can take to help address overflows in the community, such as properly maintaining service laterals, appropriately disposing of grease, and disconnecting illegal connections such as downspouts and area drains. The District informs our customers about wastewater services and proper sewer use practices through a variety of communication channels, including:

- Bill inserts, brochures, door hangers and other printed materials
- Community newsletters
- Correspondence with large commercial and industrial users
- E-newsletters
- Formal educational curriculum
- Legal notices
- Newspaper articles
- Personalized customer correspondence
- Public hearings and workshops
- Website content

Performance Goal(s)

The ongoing goal of the Legal Authority Program is to provide top quality, cost-efficient legal service that furthers the mission of the District, which is to provide affordable and sustainable protection of our water resources and enhancement of economic opportunities while maintaining unparalleled customer service.

Specific performance goals for the Legal Authority Program for FY 2008 are to:

- Evaluate targeted areas for I/I caused by private source connections in conjunction with the prioritization of problem areas outlined in the Continuous Sewer Assessment portion of this report
- Renegotiate our sanitary sewer agreement with the City of Florence to more effectively control I/I from the Florence system
- Develop a Consent Decree repository on the District's website to serve as a central public location for all required submittals of the Consent Decree

Performance Measures

The success of the Legal Authority Program is measured through a variety of performance indicators, including effective implementation and enforcement of the District's Rules and Regulations, compliance with all laws, and timely, effective, and cost-efficient implementation of the Consent Decree.

Specific performance indicators for the current fiscal year that align with set goals are finalizing a renegotiated sanitary sewer agreement with the City of Florence that includes I/I control measures, and creating an up-to-date Consent Decree repository on the District's website that includes all submittals from FY 2008.

Periodic Evaluation
The Legal Authority Program is regularly monitored by the District's General Manager and Board of Directors. Since hiring our first in-house legal counsel in November 2006, the District has been able to more effectively manage and evaluate legal affairs. There is constant collaboration between the management team and legal counsel. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule
The recommended improvement for this program identified during the self-assessment process is to create a Consent Decree repository on the District's website in an effort to provide greater public access to the District's legal documents. The Public Relations staff will need to coordinate the development of this repository with an outside website development firm. We will not post Consent Decree submittals to the website until they have been formally approved, so the District will not designate a specific date to have these documents live on the site. The Cabinet and EPA have 90 days from receipt to review submittals unless the District receives notification before the expiration of the 90-day period that review will take longer.

4.1.4 Acquisition Considerations

Program Purpose
The purpose of the District's Acquisition Considerations Program is to ensure that the design and construction of infrastructure that is acquired into our CSS and SSS complies with the District's technical specifications and construction standards. This program applies to prospective infrastructure from both new construction and privately owned systems being considered for a transfer of ownership to the District.

Connection to SSO Elimination
The Acquisition Considerations Program includes proactive measures to prevent the occurrence of SSOs caused by I/I by inspecting new infrastructure to determine if it is properly designed, constructed, and installed, and that private sewers connecting to the public system are water tight.

Program Documentation & Procedures
This program is largely implemented and enforced through standard evaluation and inspection procedures. District inspectors monitor new construction activities for compliance with our standards and specifications. Prior to accepting new infrastructure, District inspectors witness post-construction performance tests to assess the integrity of the infrastructure. Vacuum tests are performed on manholes, low air pressure and mandrel tests are used for gravity sewer lines, and hydraulic testing is used on force mains. Once the new infrastructure passes these tests and other appropriate paperwork has been submitted, reviewed, and approved, it is accepted into the public

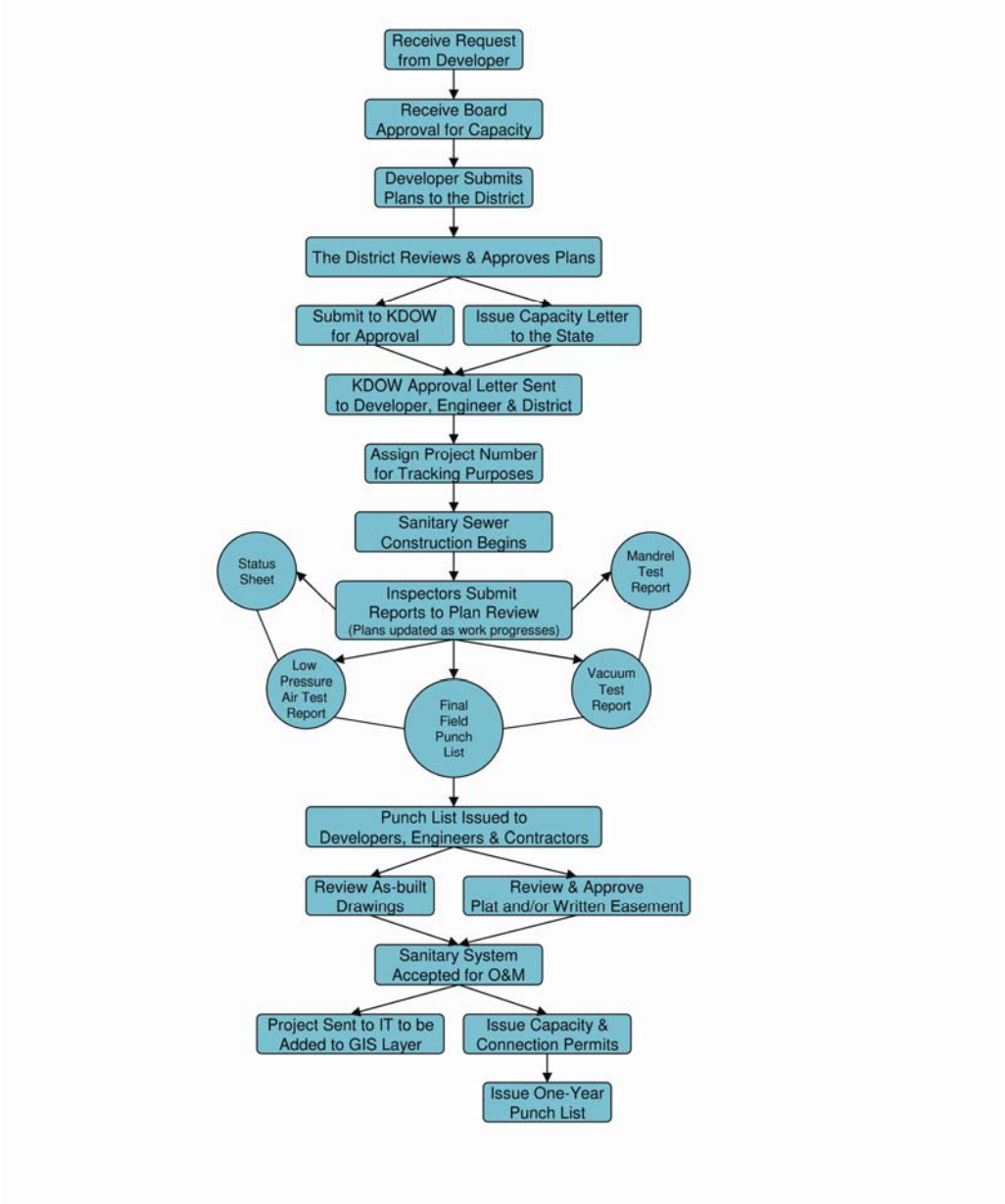
system and put on a one-year warranty. Inspectors go back to the site at the end of this one-year period for a final above-ground visual inspection. If it is determined through the vacuum, air pressure, and mandrel testing that the new infrastructure has not met District construction standards and specifications, developers are given a detailed punch list. Once the punch list has been completed, we go back out to conduct the performance tests prior to accepting the new infrastructure and beginning the one-year warranty period. Figure 4.1 is a detailed flow chart that outlines the process of acquiring new infrastructure.

There is a significant amount of documentation and data management associated with our new construction inspection program. Inspectors in the District's Engineering Department complete a Daily Inspection Report during routine visits to District-funded construction sites. Completed reports are kept on file at the District; however, they are not entered into gbaMS. Project photos are also kept on file. Staff has identified the need to begin inputting new construction inspection reports and applicable photos into gbaMS to increase the effectiveness of our data management practices. This will require gbaMS training for inspectors.

In addition to the Daily Inspection Report, the District also has standard letters that are sent to developers to formally accept new infrastructure, confirm the one-year warranty period, and to accompany the issuance of a punch list. This letter and punch list serve as the enforcement measures taken to make sure developers comply with District standards and specifications. Article 6 of the District's Sanitary Rules and Regulations outline design and construction standards that infrastructure must meet to be acquired into the public sewer system. Technical specifications are kept on file at the District and provided to developers on an as-needed basis.

There are no formal written SOPs in place for inspecting existing infrastructure considered for acquisition, which may include privately owned pump stations, package treatment plants, and sewer lines. Currently, members of our Engineering, Legal, and Finance team discuss and assess the feasibility of acquiring the existing infrastructure. This assessment will sometimes include inspection activities such as CCTV or flow monitoring; however, these inspection techniques are not consistently used prior to acquisition.

Figure 4.1 Flow Chart for Acquiring New Infrastructure



Program Training & Staffing

The District currently has 13 in-house inspectors dedicated full-time to monitoring construction activities. This team of inspectors is under the direct supervision of one crew leader, and there is one licensed Professional Engineer (PE) that oversees all responsibilities of the Engineering Department. Most of the training for inspectors is conducted through informal on-the-job instruction; however, there are more formal periodic training sessions on construction specifications and on how to write daily reports. In addition, three of our inspectors are certified under the National Institute for Certification in Engineering Technologies' (NICET) testing program. All inspectors are encouraged to prepare for this test and obtain their certification.

There are various other members of the Engineering Department that assist with the administrative implementation of this program. The District's in-house Legal Counsel is also periodically involved in this program on an as-needed basis.

Performance Goal(s)

The ongoing goal of the Acquisition Considerations Program is to make sure that newly acquired infrastructure meets the District's construction standards and technical specifications and is water tight. Specific performance goals for FY 2008 are to:

- Begin to develop a New Development I/I Prevention Program for new sewers to provide stronger enforcement measures for compliance with District standards and specifications
- Establish a formal, written policy and guidelines for assuming ownership of pre-existing infrastructure
- Assess use of gbaMS for more effective management of data associated with the Acquisition Considerations Program

Performance Measures

The success of the Acquisition Considerations Program is measured through a variety of performance indicators, including a reduction in the number of work orders associated with newly constructed sewers and manholes, and a reduction in the number of punch lists issued. Table 4.2 represents the total annual number of initial punch lists issued since 2002.

Specific performance indicators for the current fiscal year that align with established performance goals are having the New Development I/I Reduction Program and a written policy for acquiring existing infrastructure under development, and an assessment of the use of gbaMS for inspection data.

Table 4.2 Total Annual Number of Initial Punch Lists Issued Since 2002

Calendar Year	Total Number of Punch Lists Issued
2002	97
2003	62
2004	64
2005	70
2006	44
2007 (Jan-Sept)	40

Periodic Evaluation
The Acquisition Considerations Program is evaluated on a consistent basis through daily construction inspections performed by in-house Engineering staff. This program is also evaluated during Engineering team meetings and inspector performance reviews. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule
Recommended improvements for the Acquisition Considerations Program identified during the CMOM self-assessment process include:

- Throughout FY 2008, begin to develop a New Development I/I Prevention Program for new sewers to provide stronger enforcement measures for compliance with District standards and specifications throughout all stages of development
- Throughout FY 2008, begin to establish a written policy and written guidelines for assuming ownership of pre-existing infrastructure
- Assess the use of gbaMS for more effective management of data associated with the Acquisition Considerations Program. This improvement will be addressed as part of the IMS assessment described in Section 4.1.5 of this report.

4.1.5 IMS

Program Purpose
The purpose of the District's Information Management System (IMS) Program is to provide tools that track collection systems' performance, costs, and work orders, and measure the effectiveness and efficiency of our O&M activities. Our IMS programs and software maximize accessibility to a wide range of data that is pertinent to the decision-making process.

Connection to SSO Elimination
The District's IMS Program contributes greatly to the elimination of SSOs. Collectively, IMS tools give staff a well-defined, detailed understanding of how the collection systems perform through the monitoring and analysis of their respective performance measures. This helps categorize and prioritize problems throughout the system and helps staff make well-informed decisions as to where to allocate resources and implement maintenance and rehabilitation activities that can result in the elimination of SSOs.

Program Documentation & Procedures
The District utilizes a wide range of IMS tools and software programs. The IMS tools most relevant to the management, operation, and maintenance of our collection system include:

- *ArcGIS Desktop* – An integrated collection of geographic information system (GIS) software products developed by the Environment Systems Research Institute (ESRI), including ArcMap, ArcReader, ArcInfo and ArcPad. ArcMap is

the central application for all map-based tasks including cartography, map analysis, and editing. ArcReader is a desktop mapping application that allows users to view, explore, and print maps and globes. ArcInfo provides advanced capabilities needed to utilize high-end cartography tools, and perform spatial analysis and extensive data manipulation. ArcPad is software for mobile GIS and field mapping applications using handheld and mobile devices, providing field crews with the ability to capture, analyze, and display geographic information.

- *GBA Master Series* (gbaMS) – The District uses numerous gbaMS software products for management and maintenance of infrastructure assets. The module-based, customizable applications allow the District to organize and use its data effectively. The District utilizes a variety of modules within gbaMS, including GIS Master, Sewer Master, Work Master, and Equipment Master. The gbaMS software generates an extensive variety of reports and can export data into spreadsheets. Each of the gbaMS modules provides a wide range of data and work management functions that are completely integrated to assist the District in establishing a maintenance plan, setting priorities, providing timetables, tracking system rehabilitations, and giving direction on effectively maintaining the system. A large number of pre-defined reports are contained within gbaMS and can be modified, or additional reports can be created using Crystal Reports, which is a software application used to design and generate reports.
- *Great Plains* – Microsoft accounting software.
- *InfoWorks* – Hydraulic computer modeling of the sanitary and combined wastewater collection systems. InfoWorks is a fully dynamic modeling program that actively operates within GIS to maximize functionality and efficiency. It is capable of simulating complex hydraulic structures found in today's sewer systems.
- *LABWORKS* – A laboratory IMS used at Dry Creek WWTP to securely manage testing data and adapt to specific laboratory workflows.
- *Linko Data Systems* – The District utilizes two Linko software products – LinkoCTS and LinkoFOG. LinkoCTS is designed specifically for industrial pretreatment compliance tracking. LinkoFOG is designed to inventory FSEs, manage grease trap maintenance, schedule and record inspections, and issue violations, enforcements, and permits.
- *Sewer Condition Risk Evaluation Analysis Model*™ (SCREAM) – A sewer and manhole condition assessment tool developed by CH2M Hill. The software provides a standardized defect coding system and a definitive scoring and ranking process.
- *Supervisory Control And Data Acquisition* (SCADA) – A remote sensing application that monitors and transmits information from sensors located within the District's collection systems. The data is transmitted to a central location for management, operation, and control. Preset limits are established and compared to actual limits. Approximately 80% of the District's treatment plants, flood stations, and pump stations (including all of those with a constructed

bypass) are on the SCADA system. Data from approximately 123 SCADA locations are transmitted via radio to the Dry Creek WWTP, where monitoring personnel are available 24 hours per day, seven days per week.

- *Training Tracker* – Software used by the HR Department as a computer-based management tool for the District's Training Program. Training Tracker provides a database designed to help assign and schedule training needs for each employee, and track participation in training classes.
- *United States Geologic Survey (USGS) Monitoring Stations* – A network of 13 monitoring stations located throughout the District's service area are used to collect precipitation information and water quality data. Each station continuously measures stream stage (height), local rainfall, and water quality parameters (temperature, dissolved oxygen, pH, conductivity and turbidity). The data are collected year around at 15-minute intervals and updated on the Internet every four hours.
- *WennSoft*® – Job costing software system that will be used to help track capital projects. The District currently uses Multi-Dimensional Analysis software; however, we will switch over to *WennSoft*® by the end of the current fiscal year. *WennSoft*® is closely integrated with Great Plains – they will communicate well as part of a larger package. *WennSoft*® will enable us to track more detailed cost information for each capital project.

Activities that our IMS tools enable us to perform include, but are not limited to:

- Determine daily work schedules for field crews
- Expediently retrieve data
- Maintain PM schedules
- Manage inventory
- Map and locate structures and facilities
- Predict and understand the condition of our sewers
- Simulate existing and future hydraulic scenarios in the conveyance and treatment system
- Record customer inquiries/comments/requests
- Remotely monitor pump stations and treatment plants
- Track and measure system performance
- Track both capital and O&M costs and develop budget projections
- Track work order history
- Trouble shoot

Of all IMS tools listed above, gbaMS is the primary computer-based maintenance management system for the collection systems and will be referred to frequently throughout this report. District personnel often use gbaMS and ArcGIS in conjunction with each other, as gbaMS is built with the capability of interfacing with existing GIS systems. This enables us to increase our options for leveraging system data. Each department uses gbaMS differently due to the many unique data management needs

District-wide. We have been using versions of this software since 1999 and have added several modules and applications in response to evolving needs. Staff is generally not aware of how other departments utilize this tool, and data entry procedures are not consistent and do not exist in written form.

One of the key areas for improvement identified during the CMOM self-assessment process was the need to fully assess our data management needs and processes and to fine-tune the tools we already have in order to use them to their fullest potential. There is a long-standing, historical gap in tracking and documentation organization-wide. The District is currently undergoing an organizational shift toward adopting more extensive data management practices. This was a recognized area of improvement for several CMOM programs during the self-assessment process and will be addressed through the established improvement plans.

Performance Indicators

A key benefit of the District's IMS tools is that they organize and process the collected data and produce the performance indicators used by staff to help determine the condition or performance of the collection systems. Efficiently and effectively tracking data enables District personnel to obtain a "snap-shot" view of the condition of the collection systems for periodic evaluation. The IMS Program enables the District to have a data management means in place to assist in identifying key issues, developing improvement plans, and tracking progress in eliminating SSOs.

During the CMOM workshops conducted during Phase 3 of the self-assessment process, the District held one workshop with the sole purpose of discussing performance indicators. Workshop participants used "Appendix A: Example Collection System Performance Indicator Data Collection Form" from EPA's 2005 *Guide for Evaluating CMOM Programs at Wastewater Collection Systems* as a guide for this discussion. Staff members went through each line item on the form to determine what data we are currently tracking well, and what data needs to be tracked and recorded more effectively. Areas of improvement were noted and will be used during the organization-wide assessment of our IMS Program described in the recommended improvements section of this program assessment.

Examples of data management areas identified during the self-assessment as being in need of improvement include:

- Consolidate data storers (i.e., eliminate use of personal databases where appropriate and transfer data into an organization-wide data storer; determine ability for major data storers to interact or "talk," and act upon this potential where appropriate)
- Improve consistency and standardization of data input practices among all users of gbaMS
- Begin to use the pump station module within gbaMS to more comprehensively and effectively track pump station inspections

- Assess solution for assigning only one work order number to multiple tasks associated with the same original cause or problem
- Raise internal awareness of what type of organizational and system performance data is tracked and in what program(s) it can be found

Program Training & Staffing

Although several personnel throughout all operating departments at the District use our IMS programs, it is a combination of the Information Technologies (IT) staff and yearly maintenance contracts that provide oversight and support for the District's IMS tools. The IT team is comprised of six employees, of whom two employees are devoted to IT and three full-time employees and one part-time employee are devoted to GIS. Two staff members in the IT group have completed both undergraduate and graduate-level university degree programs. The majority of training for the IT staff has been through workshops, conferences, formalized classroom instruction, and on-the-job experience.

In addition to our IT staff, we have two gbaMS groups. There is a gbaMS Advisory Group in place to provide high-level guidance on the applications of gbaMS software. The gbaMS Advisory Group is comprised of selected members throughout the District's operating departments that typically ask questions of the data contained within the software, but that do not necessarily input the data. The second group is the gbaMS Users Group, which is comprised of District employees with editing rights to the software. The purpose of forming this group was to bring gbaMS users together to learn from one another. Both groups try to meet quarterly; however, scheduling conflicts sometimes makes this difficult. Selected members of these groups attend the gbaMS user conference and training on an annual basis.

Personnel throughout the District that use IMS tools are trained through both internal and external classes and workshops, as well as less formal on-the-job instruction. The CMOM self-assessment process identified the need for more extensive gbaMS training, as a large majority of staff are unaware of the software's full potential. A more comprehensive training program for gbaMS will be developed by the IT staff, as described in the recommended improvements section of this program assessment.

Performance Goal(s)

The ongoing performance goals of the IMS Program are to have adequate and effective computer-based tools in place to manage and track system data, to have written SOPs in place to ensure documentation of pertinent system data, and to have well-trained staff competent in using IMS tools to their fullest potential. Specific performance goals for FY 2008 are to increase IMS training efforts, begin using underutilized modules in gbaMS, continue to move forward with mobile data entry research, and conduct a District-wide assessment of all IMS tools and procedures.

Performance Measures

The effectiveness of the IMS Program is measured through a variety of performance indicators, including:

- Level of effort required to find requested data in IMS programs
- Accuracy of data contained within IMS programs
- Completeness of data contained within IMS programs
- Competency level of staff members responsible for utilizing IMS programs

Periodic Evaluation

The IMS Program is evaluated on a periodic basis through frequent IT staff meetings, as well as gbaMS User Group and Advisory Group meetings. The effectiveness of this program is also continuously evaluated through the routine use of IMS tools and through quality assurance and quality control (QA/QC) measures performed by both District staff and outside consultants. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule

District staff has placed a strong emphasis on improving several key aspects of the IMS Program, most of which deal with the utilization of gbaMS. It is essential to the future success of our organization that we improve upon our data management and recordkeeping practices. As the first step to this process, we will conduct a comprehensive, organization-wide assessment of all IMS activities and programs. We plan to use the assistance of an outside firm and take a multi-phased approach to the assessment:

- Phase 1: Determine what data need to be captured and for what purpose
- Phase 2: Determine whether or not we currently have the capability to capture the data identified in Phase 1. If so, in what software does this capability currently exist? If not, what modifications need to be made to existing software? This phase may require the engagement of the applicable software companies.
- Phase 3: Make modifications based upon the results of Phase 2
- Phase 4: Develop SOPs for data entry and data extraction and provide extensive training for staff on new formal data management procedures and software applications

This assessment is going to kick off on October 31, 2007 at a meeting that has been scheduled with employees throughout the District to begin to discuss the unique data needs of all operating departments. We will also use this time to discuss current IMS practices and training needs. This meeting will help us prepare a Scope of Work for an outside firm to come in and perform an extensive IMS assessment. We will issue the Scope of Work by the end of the 2007 calendar year and hope to have a firm assigned to the project in early 2008. Once the firm has been hired, a more detailed schedule for the assessment will be developed. This IMS assessment process will also help the

District identify additional resources that may be needed to effectively implement the IMS Program.

Although this organization-wide IMS assessment will reap many benefits for the District's data management practices, there are some improvements that can be made prior to the outcome of the assessment in order to address immediate needs. These improvements and associated time schedules include:

- By March 31, 2008, the District will determine the most effective method for tracking labor hours spent on O&M activities.
- We will continue to evaluate the use of mobile data entry. The District is currently wrapping up our first mobile data entry pilot program for catch basin inventory. By December 31, 2007, a "lessons learned" debrief meeting will be held with all staff involved in this pilot program to discuss best practices to be used when moving forward with mobile data entry. In addition, a broadband pilot study has been budgeted for and will begin by the end of the 2007 calendar year with one trouble call crew.
- A more extensive IMS training program will be developed and will include instruction for computer basics, gbaMS, and GIS. A plan and schedule for this training program will be created by members of the District's IT staff by the end of the 2007 calendar year.
- There are several gbaMS updates and improvements that staff will make by June 30, 2008 that are not dependent upon the outcome of the IMS assessment. These updates include:
    - Assess the use of the Inspection module in gbaMS for new construction inspections
    - Begin utilizing the Pump Station Inspection module in gbaMS
    - Input smoke and dye testing results into gbaMS
    - Link CCTV video to gbaMS
    - Promote more extensive use of the Facility module in gbaMS, which is used to track facility improvements (e.g., replacement of audio visual equipment)

4.1.6 Training

Program Purpose

The purpose of the District's Training Program is to build an elite, professional, and proactive workforce capable of executing the mission and vision of the District in a safe, timely, and cost-effective manner. The District's comprehensive Training Program results in several benefits for the organization, including:

- Ensuring the safety of our employees and the community we serve
- Increasing job satisfaction, employee morale, and workforce engagement by providing opportunities for personal and professional growth
- Keeping staff up-to-date on industry trends, as well as certification and license requirements

- Maintaining the efficiency and consistency of job performance, which consequently upholds the quality of our work and yields a greater return on investment
- Meeting and exceeding the expectations of our ratepayers and governing bodies by ensuring fiscally responsible, efficient, and well-informed operations

Connection to SSO Elimination

A well-trained and knowledgeable workforce is the District's most valuable tool in eliminating SSOs. Developing a highly skilled workforce ensures that decisions are made and work is performed in the safest and most effective manner to prevent and eliminate SSOs.

Program Documentation & Procedures

Safety Training

The District has a formal safety training program administered by our in-house Safety Manager and Safety Coordinator, with executive oversight provided by the District's General Manager and Assistant General Manager of HR. Curriculum for the program exceeds Occupational Safety and Health Administration (OSHA) requirements. All topics within the safety training program run on a three-year cycle (Initial Training – Update Training – Refresher Training). Specific safety training requirements for each employee is dependent upon individual job responsibilities. Examples include confined space entry, CPR, respiratory protection, lockout/tagout, fall protection, bloodborne pathogen control, traffic and flagger control, and electrical safety. A database of safety training requirements for each employee is maintained by the Safety Manager and Safety Coordinator and is also contained within the Training Tracker software.

The majority of safety training for Collection Systems personnel occurs during winter months when temperatures are not conducive to perform field work. The Safety Manager and Safety Coordinator schedule all necessary classes, and foremen and crew leaders in the Collection Systems Department are responsible for ensuring crew members' attendance. Subject-matter experts from a variety of internal and external sources are used to conduct safety training classes, including partnering agencies and educational institutions such as the Greater Cincinnati Hazardous Materials Unit and Cincinnati State Technical and Community College.

Technical & Skills Training

The District employs a large array of diversified talent and abilities, including professional engineers, public relations and education specialists, scientists, sewer line cleaning and inspection personnel, and construction workers. District employees hold more than 100 certifications and licenses in areas such as wastewater pretreatment, master electrician licensure, commercial driver licensure, First Aid, and Cardio-Pulmonary Resuscitation (CPR). Employees are provided with training opportunities in areas that focus on technical and leadership skills such as professional and managerial

development, information technology, engineering, electrical systems, project management, and equipment operations. Several means of instruction are used, including in-house classes, online learning, manufacturer training, regular attendance at workshops and conferences, university education, and on-the-job training.

New Employee Training
All new employees spend their first two days with members of the District's HR Department. During these two days, employees are provided with a general organizational overview, as well an abundance of information related to benefits, policies and procedures, safety, and information technologies. At this time, new employees are also given a tour of District facilities and are introduced to other District personnel.

Following the time spent with HR, new employees begin to work with their respective teams, where they gain applicable skills primarily through on-the-job training. The District has a number of employees who are subject-matter experts with the appropriate level of experience and technical ability to instruct new employees. Because of this, on-the-job training is one of the most frequently used methods of instruction for new employees.

Data Management
Most of the training received by District staff is recorded and tracked in Training Tracker software. Not all staff is aware of this database or the procedures for documenting and submitting internal and external training courses to HR. Therefore, this tool is not being utilized to its fullest potential. Remediation steps have been noted in the Recommended Improvements section of this assessment.

Program Training & Staffing
Six members of the HR staff oversee nearly all training needs for the District. Of these six personnel, both the Safety Manager and Safety Coordinator are "competent persons" according to General Industry and Construction Standards and are responsible for managing all safety training initiatives. In addition, crew leaders in the Collection Systems and Field Technical Services Departments play a large role in developing and implementing on-the-job training for field crews. Lastly, several external trainers, agencies, and educational institutions are used to conduct training courses and provide classroom instruction for District employees.

Performance Goal(s)
The ongoing goals of the Training Program are to maintain the high skill level and safety conscientiousness of employees, provide sufficient opportunities for personal and professional growth, continue to develop subject-matter experts to ensure the presence of in-house trainers, and keep staff well informed on industry trends and technological advancements. Specific performance goals for FY 2008 are to:

- Assess Training Tracker software and select the most effective computer-based tool for future data management needs associated with the Training Program
- Create a more effective procedure to help employees meet their annual safety training requirements by pushing individual responsibility down to the crew-member level
- Develop a pilot program within the Field Technical Services Department to explore techniques to enhance new employee training
- Identify and implement more structured procedures for tracking on-the-job training

Performance Measures

The success and effectiveness of the District's Training Program is measured through a variety of performance indicators, including:

- Accuracy of records maintained in Training Tracker
- Number of "friendly reminders" issued by the safety team
- Number of staff members that hold relevant certifications and licenses
- Outcome of periodic audits, testing, and drills
- Training needed vs. training received for each employee

Periodic Evaluation

The Training Program is evaluated on a consistent basis through a variety of tactics, including employee performance reviews, post-training questionnaires, review of records contained in Training Tracker, and periodic testing, drills, and audits. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule

During the CMOM self-assessment process, staff identified recommended improvements for the safety training, new employee and transferred employee training, and data management portions of the District's overall Training Program.

Safety Training

Although the District's safety training initiatives have been successful to date, staff identified a few recommended improvements to the structure and administration of the program. The District's Safety Manager and Safety Coordinator, along with the guidance of the Safety Committee and Emergency Response Team, will make the following changes to the safety training program for the 2008 calendar year. These changes will be assessed at the end of the year to determine the effectiveness of the new procedures.

- By January 7, 2008, produce and distribute a 2008 safety training calendar that will identify class offerings, instructors, and times and dates of classes for the 2008 calendar year. December should be reserved as a catch-up month for employees that have missed training classes due to vacation or sick leave

- Throughout the 2008 calendar year, generate monthly reports from Training Tracker to give to Collection Systems foremen and crew leaders to track safety training requirements for their crew members. Crew leaders should share these reports with their crew members, as personnel will begin to be evaluated on the level of initiative taken to complete their annual training requirements.

New Employee/Transferred Employee Training

- By June 30, 2008, the Maintenance Manager in the Field Technical Services Department, with the assistance of HR personnel will create a Certification Pilot Program for his crew. This pilot program will be developed as an effort to provide more structure for on-the-job training procedures for new employees. The desired end result of this program is to have employees pass a series of proficiency tests or complete a series of checklists that would make them eligible for District certification in their respective department. This would enable each department to tailor new employee training to meet their specific needs. The pilot program will be tested and evaluated for future use by other departments at the District.

Data Management

- By December 31, 2007, the HR group will explore and identify the most efficient and comprehensive software to track all of our training efforts. Through this research process, HR may conclude that Training Tracker is the most efficient tool and may recommended continued use of this software program.
- If Training Tracker is selected, training will be provided throughout the remainder of FY 2008 for key administrators of this software to attain optimal use of the tool.
- Key administrators of the training data management tool will communicate to other departments how this tool will be utilized and determine the extent of information that will need to be kept on file in regards to training received. District-wide training tracking procedures will be developed and will include a standardized form for data entry. These procedures will include a method for tracking and recording on-the-job training. In addition, a method for ensuring procedures are being followed will need to be put in place. All of these improvements will occur by June 30, 2008.

4.1.7 System Mapping

Program Purpose

The purpose of the District's System Mapping Program is to ensure that accurate and comprehensive inventory of the collection and transmission systems is maintained, that it is assembled and presented in a manner conducive for use, and that it is easily accessible by District personnel that depend on the data for both performance and planning purposes. The District's mapping software identifies several collection system components and attributes, including:

- Service areas boundaries
- Property lines
- Manholes and other access points
- CSOs
- SSOs
- Flow monitors
- Pump stations
- Flood stations
- Data contained within gbaMS
- Gravity mains
- Pipe attributes
- Structure attributes
- Distance between manholes
- Force mains
- Ownership of infrastructure
- New construction locations
- Planimetric features

Connection to SSO Elimination

The District's system mapping tools provide a visual representation of our collection systems and enable staff to look at issues on a larger scale. These tools increase staff's knowledge of our collection systems and enhance our ability to recognize relationships between system components, their performance, and trace flow through our system. This visual display of components and problem areas helps the District determine the most effective solutions to eliminate SSOs.

Program Documentation & Procedures

Existing Infrastructure

The District has a systematic numbering system in place for manholes, sewer lines, and pump stations based on drainage area. Approximately one-third of the District's system components have accurate coordinates based on Global Positioning System (GPS). This was the result of a 2001 study conducted by outside consultants while developing hydraulic models of the systems. Planimetric features are updated every three years based upon aerial photography obtained from partnering agencies. In between updates, the Northern Kentucky Area Planning Commission and Boone County GIS submit updates for road centerlines in Boone and Kenton counties, and Campbell County agencies submit occasional updates as well during this three-year period.

All structures that we are aware of are mapped in the GIS layer. We believe there are some structures we are unaware of; however, an ongoing goal of this program is to continuously obtain more comprehensive, accurate data and input this data into the mapping system. Updates to existing infrastructure are submitted by both internal crews and external consultants when routine field inspections or work in special project areas reveal changes or additions to system mapping data.

New Development

Mapping data and attributes for new infrastructure are entered into the GIS layer through as-built plans and maps required for all new development. Service laterals for new sewers are also mapped in GIS. The District has been requiring submittal of as-builts since the regional sewer system consolidation in 1995. Hard copies of as-builts are submitted by developers to the District's Plan Review group for approval. In

addition, updated digital versions of as-builts are requested as part of the one-year punch list.

Program Data Management
The mapping system used is ESRI's ArcGIS desktop product, which interfaces with gbaMS to enable staff to spatially associate structures and pipes with their attributes, repair history, and relevant asset management information. In addition, the District currently owns two GPS units, which will be used by field crews during a pilot program scheduled to begin by the end of the 2007 calendar year. District staff will use this pilot program to assess the feasibility of equipping more field crews with GPS units to obtain accurate locations of mapping data. The District's GIS staff also inputs system mapping data from new development and capital improvement projects through the use of digital AutoCAD files.

Digital maps generated from ArcGIS are available to field crews both in the office and in the field through the use of laptops and handheld devices. Field crews and CCTV crews record changes and inaccuracies by submitting a hard copy form called the "GIS Work Order Update" to the District's GIS staff. Data contained within this form are transferred electronically into the GIS as they are submitted, and monthly files are maintained by a GIS technician. Crew members can also make updates to inventory data directly to the data management system if they are connected to the server. In addition to accessing data through gbaMS and ArcGIS, all District employees have access to GIS data through a link on the District's Intranet site.

Program Training & Staffing
Three full-time staff members and one part-time staff member in the District's IT group are responsible for implementation of the System Mapping Program. However, there are several other employees throughout the District that utilize system mapping tools and provide updates to inventory data. In addition to internal staff, the District obtains planimetric data and aerial photography from three partnering GIS organizations – Campbell County LINK-GIS, Kenton County LINK-GIS, and Boone County GIS.

All applicable staff members receive training from IT personnel on ArcGIS, and ArcPad. The method of training for these applications ranges from formal classroom instruction to informal reference sheets that are developed and distributed. Personnel that utilize system mapping tools also attend relevant workshops and other GIS events.

Performance Goal(s)
The ongoing performance goal of the District's System Mapping Program is to continuously obtain accurate and updated system inventory data and regularly input the data into the GIS layer and gbaMS. Specific performance goals for FY 2008 are to:

- Conduct a GPS pilot program with one CCTV truck to assess more widespread use of this tool in the future

- Increase the efficiency of the GIS technician's time by ensuring that 90-95% of updates for new development are based on digital as-builts. Measuring this goal will help determine whether stronger enforcement is needed to obtain digital files from developers
- Increase the use of the GIS Work Order Form amongst all departments
- Upgrade to ArcGIS 9.2, which will give us the capability to look at other web-based applications

Performance Measures

The success and effectiveness of the System Mapping Program is measured by determining the completeness and accuracy of system inventory data contained within the GIS layer and gbaMS. The program is also measured by assessing the ease in which staff can access pertinent data and the level of knowledge that staff members have in utilizing system mapping tools. A specific performance measure for FY 2008 is to track the format in which as-builts are submitted to the District – whether it's a digital or hard copy file. This will help measure our goal of ensuring that 90-95% of updates for new development are based on digital as-builts.

Periodic Evaluation

The System Mapping Program is evaluated on a continuous basis through monthly team meetings with IT staff and frequent communication between GIS administrators and users throughout the District. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree

Summary of Recommended Improvements & Implementation Schedule

During the CMOM self-assessment process, staff identified the following recommended improvements for the System Mapping Program:

- By December 31, 2007, initiate the GPS pilot program with one CCTV crew
- By March 31, 2008, develop an SOP to be submitted to developers and contractors for obtaining proposed digital files for new construction and capital improvement projects. We will also need updated as-builts once construction is complete. This SOP shall include a request for attribute data in the form of an electronic spreadsheet to accompany record drawings
- Throughout FY 2008 and beyond, begin the process of updating maps to identify the separate and combined system, location of flow monitors, and creek names.
- Throughout the remainder of FY 2008 and beyond, promote use of the GIS Work Order Form amongst all departments.
- During the IMS assessment discussed in Section 4.1.5 of this report, assess the feasibility of linking scanned drawings and plats to gbaMS in order to interface with ArcGIS.

4.1.8 SSO Reporting & Notification

Program Purpose

The purpose of the District's SSO Reporting & Notification Program is to ensure that unpermitted discharges from the District's sewer collection systems are properly documented, stored in a data management system, and properly reported to appropriate regulatory authorities, drinking water purveyors, city and county officials, and affected publics. An unpermitted discharge includes any SSO or other discharge to waters of the United States that are not specified in a KPDES permit.

Connection to SSO Elimination

Adherence to and compliance with the District's SSO Reporting & Notification Program plays a vital role in eliminating SSOs, supporting the District's community values, and minimizing the District's compliance and legal risks. Properly tracking and reporting SSOs provides staff with a better understanding of release points trends and root causes throughout the collection systems and enables decision makers to prioritize resources to cost effectively eliminate SSOs. Continuous tracking of overflow occurrences leads to proactive prevention of SSO events.

Program Documentation & Procedures

All specific details of this program are contained within the District's Sanitary Sewer Overflow Response Plan (SORP), which is a scheduled submittal requirement in the District's Consent Decree (submitted on October 8, 2007). The SORP includes recently refined procedures and forms for identifying and responding to unauthorized discharges, as well as procedures for entering data into gbaMS and reporting SSO data to regulatory agencies, public health officials, city and county officials, drinking water purveyors, and local residents. Procedures for the following tasks exist in written form in the SORP:

- Agency notification
- Dry Creek WWTP notification
- Internal/staff notification
- Monitoring and assessment
- Prioritization
- Public notification
- Tracking and data management

Overflows are reported as they occur via an electronic notification system to both the local office of KDOW (8020 Veterans Memorial Drive, Suite 110, Florence, Kentucky 41042-7570) and the state office of KDOW (300 Fair Oaks Lane, Frankfort, KY 40601-1135). If the electronic notification system is not operating properly, state and local regulatory agencies are notified via telephone (local KDOW 859-525-4923; state KDOW 1-800-928-2380). Established measures for regulatory notification provided in the SORP fulfill reporting requirements mandated by 401 Kentucky Administrative Regulations (KAR) 5:015 and the District's Consent Decree.

A standard form titled the Systems Release Report is generated by the control room operator at the District's Dry Creek WWTP to document overflow events. Completed reports are faxed to the local KDOW office on a weekly basis (Fax No. 859-525-4157). The report is also given to the District's Regulatory Compliance Department to include additional information associated with the event. Work orders, photos and any other pertinent information associated with the overflow is linked to the Systems Release Report and entered into gbaMS. Information provided in the comprehensive, final report inputted and stored in gbaMS includes:

- Actions taken to eliminate the discharge and steps taken to prevent reoccurrence
- Cause of release
- Date and time the discharge started and stopped
- Environmental impact assessment
- Estimation of discharge volume and method of estimation
- Identification of system component that is the source of the discharge
- Location of the discharge
- Name and type of receiving water body
- Names of staff members responsible for performing the assessment and producing the report
- Nature of incident and weather conditions
- Source responsible for reporting the overflow
- Type of overflow

Program Training & Staffing

A variety of District employees are involved in the SSO notification and documentation process such as Dry Creek WWTP personnel, public relations personnel, field crews, and regulatory compliance personnel. Training is currently conducted on an annual basis; however, there is a recognized need for increased training to ensure competency in evaluating SSO source and location, estimating SSO volumes, identifying defects, and determining preventive and reactive maintenance. The SORP will enable all appropriate staff members to be properly trained and will provide documentation of training conducted. SCREAM™ software will assist staff with new rating procedures to improve prioritization of problem areas of the conveyance system. Staff recognizes the need for a full-time operator at the plant who is cross-trained in all departments charged with eliminating and responding to SSOs.

Performance Goal(s)

The overarching goal of the SSO Reporting & Notification Program is to maintain accurate and timely records of individual overflow events and to strengthen relationships with the public; local, state, and federal agencies; and environmental groups in a cooperative effort to protect the environment. In addition, ongoing goals of this program are to ensure regulatory requirements for tracking and reporting

unpermitted discharges are met, and that employees are accurately adhering to established internal procedures.

Performance Measures

District success in meeting the goals of the SSO Reporting & Notification Program is measured by the following performance indicators:

- Identified publics are consistently notified in an efficient manner. This includes meeting regulatory notification and reporting requirements, as well as properly notifying other constituencies identified in SORP.
- SSO data is consistently and accurately recorded and stored in gbaMS.
- Internal procedures for SSO documentation and notification are consistently and accurately followed. Measuring this performance indicator will involve periodic audits during overflow events, as well as maintaining comprehensive training records.

Periodic Evaluation

The SSO Reporting & Notification Program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree. This review process will help the District determine how well the program goals are being accomplished, and whether or not the program is being implemented in the most efficient manner possible.

Summary of Recommended Improvements & Implementation Schedule

Recommended improvements for the SSO Reporting & Notification Program identified through the CMOM self-assessment include:

- Internal Documentation Procedures – There is a need to improve the efficiency of the internal action steps taken between generating the initial overflow report and inputting the final, comprehensive report into gbaMS. This process currently involves passing the report through several employees, causing inconsistency of data entry. By the end of FY 2008, the District will revise current internal documentation and data entry procedures and create a step-by-step procedural flow diagram outlining the revised plan.
- Response Crew Composition and Initial Data Collection – There is a need to further assess the means of initial data collection and documentation at the overflow site. Currently, a large majority of details about the discharge event are added to the report at a later time. There is concern that the integrity of data being inputted into gbaMS may be compromised due to the response crew's immediate focus being overflow containment. One possible solution would be to enter data directly into gbaMS at the overflow site during the initial response. This may require the need for both an assessment/documentation staff person and a containment staff person to be part of the overflow response team, depending upon the severity and complexity of the event. On-site data entry would also require the need for additional laptops to be purchased for field crews, as well as associated training. This is an issue that will need to be further

discussed to determine the most effective solution. District staff will explore this issue and identify a solution by the end of FY 2008.

4.2 Collection Systems Operation

4.2.1 Emergency Preparedness & Response

Program Purpose

The purpose of the District's Emergency Preparedness & Response Program is to properly contain, mitigate, and clean residuals from overflows. Although the Emergency Preparedness & Response Program addresses the District's response to overflows, it is the SSO Reporting & Notification Program that outlines documentation and notification procedures associated with overflow occurrences. For a detailed description of the District's SSO Reporting & Notification Program, refer to Section 4.1.8 of this report.

The District's Emergency Action Plan is also an integral part of this program, as it is a comprehensive document that outlines procedures for compliance with federal and state OSHA requirements, in conjunction with local emergency action planning requirements and internal safety policies and procedures. The Emergency Action Plan addresses areas of concern such as medical emergencies, fires and explosions, hazardous materials, bomb threats, workplace violence, natural gas leaks, and severe weather.

Emergency procedures for pump station operations are addressed through a separate program and are described in Section 4.2.10 of this report.

Connection to SSO Elimination

Overflow emergency response, containment, and cleanup procedures minimize the effect of SSOs on the environment. Once the overflow has been remedied, the respondent either initiates follow-up work orders as deemed necessary to ensure the overflow no longer occurs or initiates the appropriate work order to continue the study of the overflow for permanent mitigation in the District's Long-Term Abatement Program. Additionally, prompt and effective responses to emergency situations such as the loss of power may prevent an SSO from occurring.

Program Documentation & Procedures

Overflow Response Procedures

The District's SORP outlines a detailed sewer overflow response protocol. The SORP is a required component of the Consent Decree and was submitted on October 8, 2007. The document contains the following information:

- Resources involved in overflow response procedures
- Information and data management programs used to better understand and track overflow occurrences
- Detailed sewer overflow response procedures

- Training requirements for overflow response procedures
- Long-term overflow abatement framework

The SORP is currently stored on the District's server, as well as a hard copy reference binder kept at the District's main office location. SORP training will be conducted near the end of the 2007 calendar year, at which time all applicable personnel will obtain a copy of the SORP procedures and will be thoroughly trained on implementation of the program.

Overflow containment procedures vary on a case-by-case basis. During intense rain events, containment might not be practical due to high volumes of discharge exceeding the ability of field crews to successfully control it. When these types of events occur, post-event assessment and cleanup is accomplished to minimize the impact to the area. Where practical, the area is thoroughly flushed and cleaned of any sewage or wash-down water. Solids and debris are flushed, swept, raked, picked up, and hauled away for proper disposal. Overflows that can be contained are pumped back into the sanitary system when feasible. When streams are impacted by an overflow, flushing operations may be utilized in an effort to regain the stability of the stream. Local water utilities are notified when flushing is required. The District is experimenting with the use of portable aerators for heavier impacted overflow locations. The primary purpose of these aerators is to improve stream recovery efforts. Where appropriate, the overflow site is disinfected and deodorized in accordance with instructions provided by KDOW's local office.

In addition to cleanup procedures, staff members currently try to estimate, to the best of their ability, the amount of volume spilled during a dry weather overflow or pump station bypass. However, during rain events, we do not currently estimate the volume spilled from each of our SSOs. Once fully calibrated, we plan to use the hydraulic models to estimate annual SSO spill volume and track reductions as Watershed Plan projects are implemented.

Trouble call crews within the District's Collection Systems Department are primarily responsible for responding to overflow events. On nights and weekends, the District has a formal, written Call-in Procedure that is followed to deploy respondents to the location of the overflow. Additionally, the District has an emergency maintenance contract in place to provide assistance with overflow remediation as needed.

Overflow data is tracked in gbaMS, as well as through hard-copy System Release Reports and internal spreadsheets and databases.

Emergency Action Plan

The District's Emergency Action Plan contains detailed procedures for addressing and responding to emergency situations such as severe weather, workplace violence, and exposure to hazardous materials. Members of the District's Management Team have a

copy of the Emergency Action Plan, as well as employees that have been identified as Designated First Responders and Floor Wardens. Designated First Responders are District employees certified in providing First Aid, CPR, and Automatic External Defibrillator. Floor Wardens are District employees designated to conduct occupant searches in assigned areas of the building and direct people to the nearest, safest available exit. A detailed record of employees that have received and have been trained on the Emergency Action Plan is kept on file by the District's Safety Manager and Safety Coordinator.

Program Training & Staffing

Overflow Response
Customer service personnel in the District's Collection Systems Department are the first line of response to SSO events. Collection Systems customer service personnel are comprised of dispatch, trouble call investigators, and three field crews. There are approximately 30 employees that comprise the Collection System's customer service group. On-call personnel are pulled from this group for after-hours investigations and response. Additionally, there are plans to begin involving Collection Systems construction crews in SORP training so they will be able to assist with overflow responses. There are approximately 30 employees total in these construction crews. The trouble call investigators serve as the District's first responders and are on call 24/7. Both the trouble call investigators and the field crews are trained annually in assessment and overflow response practices. Emergency contractors are used as needed.

Emergency Action Plan
The District's Safety Manager and Safety Coordinator oversee implementation of the District's Emergency Action Plan. Refer to Section 4.2.2 of this report for a detailed description of the District's Safety Program.

Performance Goal(s)
The ongoing goal of the Emergency Preparedness & Response Program is to respond promptly and effectively to overflow occurrences in order to minimize the potential for health hazards and environmental degradation that may result from the overflow event. In addition, an ongoing performance goal of this program is to keep staff well informed and trained on emergency procedures associated with catastrophic events.

Specific performance goals for FY 2008 are to train all applicable personnel on SORP and to benchmark other utilities' call-in procedures to identify best practices and modify our current call-in procedures as deemed appropriate.

Performance Measures
The success and effectiveness of the District's Emergency Preparedness & Response Program is largely measured by assessing the outcome of staff's response to an

overflow or other emergency situation. The effectiveness of overflow response procedures can be measured through periodic reviews of the data contained within System Release Reports and overflow records in gbaMS.

Periodic Evaluation

The Emergency Preparedness & Response Program is evaluated on a continuous basis through ongoing communication between personnel involved in overflow response and emergency response situations. It is through these informal post-occurrence assessments that staff identifies what went well and where there is room for improvements and modifications. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree. More specifically, the Consent Decree requires the District to perform an annual review of the SORP and propose changes as appropriate.

Summary of Recommended Improvements & Implementation Schedule

During the CMOM self-assessment process, staff identified the following recommended improvements for the Emergency Preparedness & Response Program:

- By June 30, 2008 add a Significant Industrial Users (SIU) layer to GIS so that staff can easily identify whether or not there is an SIU upstream of an overflow.
- The District has at least one trouble call personnel on call at all times (24 hours a day, 365 days per year) who is required to respond to overflow events and other problematic occurrences throughout the collection systems. If this person needs assistance, the formal, written Call-in Procedures are followed. Staff has identified that during special events and holidays, it is sometimes difficult to recruit additional help. Some type of incentive may need to be created to promote additional trouble call response help during off hours. By June 30, 2008, the District will benchmark other utilities' call-in procedures to identify best practices and modify our current call-in procedures as deemed appropriate.

4.2.2 Safety

Program Purpose

The purpose of the District's award-winning Safety Program is to ensure that appropriate measures are taken to eliminate or control the exposure of District employees and the general public to hazards that may cause physical harm, and to comply with local, state, and federal safety codes and legislation. Performing daily operations in a safe manner not only protects our workforce and the community, but also demonstrates fiscal prudence, high employee morale, and results in financial savings for our ratepayers.

The mission statement of the District's Safety Program is as follows:

> "The District's Safety Department believes in an employee-based, proactive Safety Program. Our belief is that our safety initiative should be

based on the following principles: Responsibility, Accountability, Involvement, and Employee Ownership at all levels.

Our goal is to provide the District with technical support and services that are related to compliance at all levels: Safety, Health, and our Environmental Responsibilities.

We are responsible and accountable for the well being of our employees, our communities, and the equipment to which we work with. We promote a work environment that is safe and free from all known and recognized hazards.

We base our program on the management philosophy that our employees are our most valuable assets. Our goal is to provide our employees the necessary leadership for compliance training, education, equipment, and administrative support with service.

All incidents and accidents are preventable."

Connection to SSO Elimination

The Safety Program helps establish a protected, motivated, and empowered workforce, which is necessary to perform the activities throughout the District that contribute to the elimination of SSOs. By executing safe operations, we increase productivity and maintain the level of staffing necessary to eliminate SSOs throughout the District's service area.

Program Documentation & Procedures

The District operates in compliance with the Kentucky Department of Labor, the Department of Transportation (DOT), and OSHA. As a condition of employment, all employees are required to follow the District's adopted formal safety policies and procedures. Staff members are subject to progressive disciplinary action resulting from the failure to follow the Safety & Health Manual provided to each employee. "Friendly Reminders" are issued to employees when they fail to comply with safety policies and procedures. Accumulation of Friendly Reminders results in stronger enforcement measures.

The following is an extensive list of safety tasks performed on a routine basis:

- Conduct and record audits of operational activities
- Communicate safety policies and procedures to District personnel
- Perform and document facility inspections
- Inspect work sites and generate reports
- Investigate incidents, generate applicable reports, and coordinate legal action when necessary

- Conduct Medical Evaluation Tests, Respirator Fit Tests, and Audiometric Tests and retain records
- Attend regularly scheduled meetings with groups such as the District's Safety Committee, Emergency Response Team (ERT), and Management/Leadership Team, the Northern Kentucky Technical Rescue Team, the Greater Cincinnati Hazardous Materials Unit, the Northern Kentucky Hazardous Weapons of Mass Destruction Response Team, and the Northern Kentucky Emergency Planning Committee
- Manage the Atmospheric Monitor and Calibration Program
- Ensure contractors' awareness of the District's safety compliance requirements
- Administer the First Aid, CPR, Blood-borne Pathogens, and Automatic External Defibrillator Program
- Manage all occupational health and safety required training
- Coordinate and document EPA safety compliance measures
- Respond to emergency situations as needed

Employee Involvement

In 2006, the District created the Safety Buck Program, which is an incentive program geared toward increasing safety awareness District-wide. By reading and answering questions in the monthly newsletter, turning in valid safety suggestions, and going above and beyond minimum safety requirements, District personnel are rewarded with safety bucks, which can be turned in for various prizes throughout the year. The District's Safety Committee, working in conjunction with HR, administers this program.

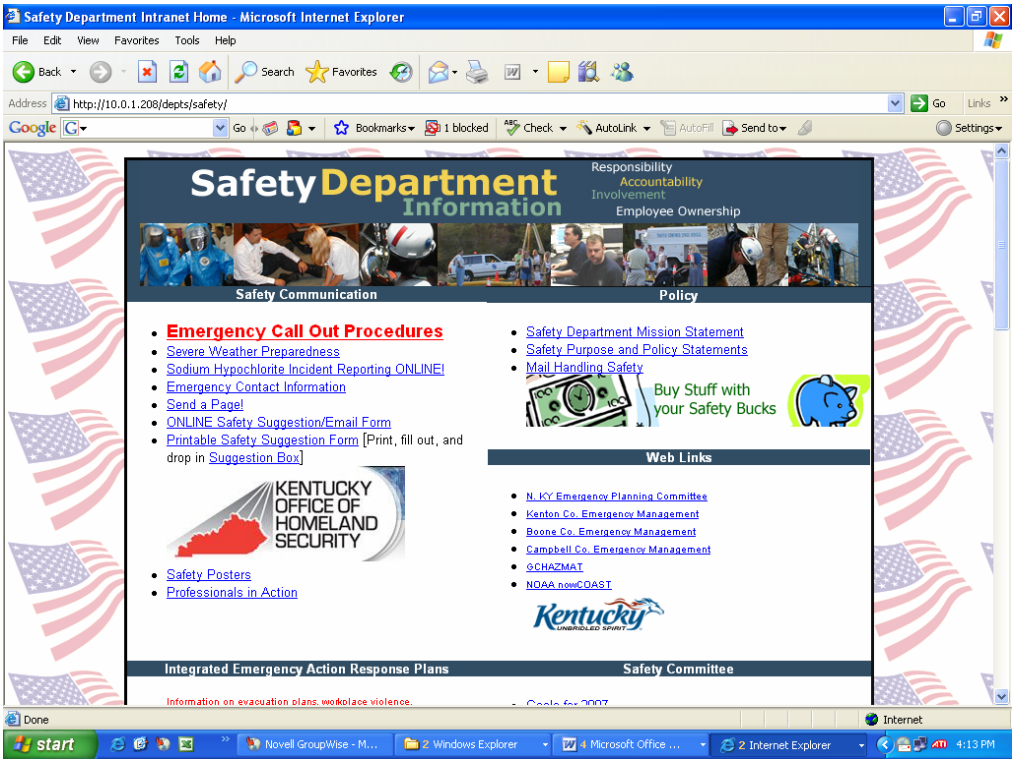
Data Management

The District has an extensive safety Intranet site that is accessible to all employees, which contains the following type of information:

- Communication tools such as emergency contact information and online forms
- Policy statements
- Links to outside agencies such as the Northern Kentucky Emergency Planning Committee
- Integrated Response and Emergency Action Response Plans
- Safety Committee information and meeting minutes
- Emergency Response Team information
- Hazardous materials and chemical data
- Safety and health policies and procedures

Figure 4.2 is the home page on the District's safety Intranet site.

Figure 4.2 Home Page on the District's Safety Intranet Site



In addition to the information contained on the Intranet site, there is also a Safety & Health Manual distributed to every employee during new hire orientation, as well as extensive files maintained in both hard copy form and on the District's server that include items such as policies and procedures, inspection and audit results, training records, and correspondence with internal and external constituencies. The District's Training Tracker software is also used to record and track safety training requirements.

Program Training & Staffing

The District employs two staff members dedicated full time to implementing the Safety Program – one Safety Manager and one Safety Coordinator. In addition, there is an established Safety Committee representatively comprised of a total of 21 members from all operating departments throughout the District. There is also an Executive Safety Steering Committee whose role it is to ensure that all departments understand the importance of safety and are solidly committed to promoting and performing safe operations District-wide. This steering committee is comprised of the General Manager, Assistant General Manager of HR, and the Safety Manager. The Safety Committee meets once a month to discuss issues relevant to employee safety concerns and suggestions, safety training requirements, and changes to safety policies and procedures.

The District also has an ERT, comprised of approximately 15 staff members. The ERT is a highly skilled group of individuals that receive specialized training to be able to promptly and effectively respond to emergency situations, such as the release of hazardous materials, confined space rescue and excavation/trench rescue. This group was originally formed for internal purposes; however, they have since partnered with outside community organizations and now respond to both internal and external emergencies.

The Safety Manager and Safety Coordinator who administer the District's Safety Program are considered "competent persons" according to General Industry and Construction Safety Standards. Both have fulfilled a plethora of certification and training requirements necessary to provide proper oversight of the Safety Program. A comprehensive document listing the applicable qualifications of the program's administrators is maintained in a file on the District's server. Ongoing education and certification requirements for the Safety Manager and Safety Coordinator are included in each fiscal year's budget. In addition, members of the Safety Committee and ERT receive annual training and ongoing education through a variety of means, including internal classes and workshops, Kentucky OSHA training classes, and attendance at conferences such as the Ohio Workplace Safety Conference and the Hearing Conservation Conference.

Refer to Section 4.1.6 for a detailed description of safety training that occurs organization-wide.

Performance Goal(s)

The ongoing performance goals of the Safety Program are to comply with OSHA standards, pass both internal and external inspections and audits, achieve zero lost time injuries, and continuously inform District employees of revisions to safety policies and procedures. A specific performance goal for FY 2008 is to conduct an organization-wide, anonymous survey to collect feedback on the District's Safety Program.

Performance Measures

The success and effectiveness of the Safety Program is measured by a variety of performance indicators, including:

- Level of staff involvement in the Safety Buck Program
- Number of accidents and occurrences
- Number of Friendly Reminders issued
- Number of loss-time incidents
- Personal injuries and property damage caused by a safety incidents
- Results of inspections and audits
- Safety training requirements versus safety training received

Periodic Evaluation

The District's Safety Program is evaluated on a continuous basis through a variety of means, including:

- Annual review of safety policies and procedures, as required by OSHA
- Job hazard analyses of the work processes and tasks required in order to maintain wastewater effluent quality for the prevention of environmental degradation and community health hazards
- Quarterly audits by worker's compensation loss control specialists. In addition, this program can be audited at any time by a variety of external organizations, including OSHA, EPA, KDOW, Army Corps of Engineers, and the Kentucky Department of Homeland Security.
- Monthly Safety Committee meetings
- Monthly ERT meetings
- Weekly Management Team meetings
- Periodic review of a comprehensive safety spreadsheet that contains information such as the number of activities performed (i.e., confined space entry), number of incidents, number and results of audits, number and content of "friendly reminders" issued, and the number of Violations of Specific Safety Requirements and Procedures issued. This spreadsheet contains historical data through 2001.
- Serious Potential Investigations as warranted, based upon the incident/accident report and the level of immediate exposure to serious injury from the incident

The District's lost-time injury rate is well below the OSHA standard. In 2005, the District's lost-time injury rate with 207 employees was 3.6%, based on 406,096 hours. In 2006, the District's lost-time injury rate with 229 employees was 4.2%, based on 405,663 hours. The District's Safety Program has received many awards, including the Governor's Occupational Safety & Health Award in recognition of more than 1.5 million hours without a lost-time incident, the Alliance for Chemical Safety's Risk Reduction Achievement Award, and the Kentucky Association of Responsible Employers' Award for Superior Workplace Safety.

In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree

Summary of Recommended Improvements & Implementation Schedule

During the CMOM self-assessment process, staff identified the following recommended improvements for the Safety Program:

- Beginning January 1, 2008, crew leaders will have their team members sign a form verifying that they have been informed of updates and revisions to safety policies and procedures. The Safety Manager and Safety Coordinator will create the verification forms and will maintain records of the forms to serve as documentation that appropriate personnel have been notified of the changes.

- By March 31, 2008, the District will identify and purchase proper equipment for nighttime traffic control.
- By June 30, 2008, an organization-wide safety survey will be distributed to obtain employee feedback on the District's Safety Program.
- Throughout FY 2008, the Safety Buck Program will be evaluated on a more consistent basis to determine if it is meeting its goals and will make improvements when necessary.

4.2.3 Budgeting

Program Purpose

The purpose of the District's Budgeting Program is to provide structured processes that enable all operating departments to execute the District's mission and vision in a fiscally responsible manner and provide cost-effective services to our ratepayers. The Budgeting Program provides us with a clear understanding of our financial needs and obligations, which enables us to adequately manage debt service and plan for future needs. This program also helps District personnel categorize expenses and properly manage our assets and infrastructure.

Connection to SSO Elimination

Through proper funding, budgeting, and planning, we are able to provide sufficient capital, labor, and equipment to complete necessary sewer rehabilitation projects on existing infrastructure, construct new infrastructure, and add or modify resources as needed to ensure the elimination of SSOs.

Program Documentation & Procedures

User Fee Schedules

The District's user rates are calculated based on total water consumption information supplied by one of the three water districts in Northern Kentucky – the Northern Kentucky Water District, Boone County Water District, and Florence Water District. Utilizing a customized Pro Forma, user fees are evaluated and adjusted annually based on system needs. The process begins at the end of the calendar year by analyzing needs for the upcoming fiscal year, which begins on July 1. Currently, the District's user rates are $3.18 per 1 hundred cubic feet (HCF), with a household averaging 30 HCF per quarter, which equates to an average cost of $91.44 per quarter for sanitary sewer services. The District also consults with our Financial Advisor and has engaged Independent Third Parties to evaluate the rates and revenue needs.

Within the past 10 years, there have been six changes to sanitary sewer charges. In 2000, there was a 35% increase, which totaled an average quarterly cost of $43.92. From 2001 to 2003, there were increases of 14.35% each year, which totaled an average quarterly cost of $66.14 in 2003. In 2006, there was an increase of 15%, which

totaled an average quarterly cost of $76.20. Lastly, in 2007, there was a 20% increase, which brought us to our current average quarterly cost of $91.44.

Although these rate increases help to enhance the services provided by the District, we do not receive sufficient funding from revenues generated from user fees. This requires the District to borrow money from other sources. Due to the District's credit worthiness and solid, sound financial operations, we are able to borrow money at a relatively low interest rate. We have a Moody's bond rating of Aaa/Aa3 and a Standard & Poor's bond rating of AAA/AA-.

We perform an internal analysis of our user fees on an annual basis. In addition, we engage outside firms approximately every five years. We are currently engaging an outside consulting firm to perform a five-phase analysis of our rates. The firm is performing an analysis of the following topics:

- Rate tiers/classes (special low-income rates will be considered)
- Rate structure
- Financial affordability
- Future rate schedules

Annual Budgeting Process

A budget is created by department directors, submitted to and approved by the Board of Directors and Judges Executive of Boone, Campbell, and Kenton counties, and set into effect the beginning of each fiscal year. The budget includes sufficient line item detail for labor, materials, and equipment. District management and staff are involved with budget preparation. The accounting team assists in developing financial information needed by department heads to prepare departmental budgets. The department heads submit their anticipated labor needs to the Assistant General Manager of HR, and he then prepares cumulative salary projections for each department. Other O&M and Capital Improvement Program (CIP) costs are determined by the department directors through collaboration with their staff. Once each department has a draft budget, the District's management team collectively reviews the document and makes any necessary adjustments. This review process occurs multiple times before it is sent to the Board of Directors. The Board of Directors and Judges Executive have final review and approval before the budget is enacted.

CIP and O&M Financing

District CIP personnel analyze, project, plan and finance capital improvement needs through the use of comprehensive engineering studies and extensive industry knowledge. Capital improvement financing is planned on a five-year cycle and is updated, at a minimum, on an annual basis. The Actual Cost of Work Performed (ACWP) during FY 2007 was approximately $64.3 million. The current CIP budget for FY 2008 is $77.1 million, and the current five-year CIP budget for FY 2008 through FY 2012 is approximately $504.4 million. The five-year CIP budget includes categories such as City Rehabilitation, Eastern Regional, Western Regional, Equipment, I/I

Rehabilitation, Program Management, Pump Stations, Storm Water, Treatment Plants, and Watershed Management.

Costs for collection system O&M are separated from other utility services and include line items such as Salaries & Wages, Sludge/Grit Removal, Material Sewers, Fleet Vehicles, and Training & Certification. The District spent $20.3 million in O&M expenses during FY 2007. The current O&M budget for FY 2008 is $25.8 million. The Collection System's O&M budget is approximately 19% of the District's total O&M budget.

Data Management

Project budgets are tracked through Great Plains accounting software, which generates reports separated by project codes. The District currently uses Multi-Dimensional Analysis software as the job costing system used to track capital projects; however, by the end of the current fiscal year, the District will switch to the WennSoft® job costing software system. WennSoft® will be closely integrated with Great Plains – they will communicate well as part of a larger package. WennSoft® will enable us to track more detailed cost information for each capital project. Project budgets are also tracked through various internal spreadsheets and reports, and there is also CIP project information and some O&M expenses tracked in gbaMS.

The District utilizes a customized 20-year ProForma tool to project our expenses and the revenue we need to meet our expenses. It indicates our capacity to borrow and to meet our required coverage rates. Rates are structured and calculated to meet the expense requirements. The ProForma was developed for us by outside rate consultants and is continually refined as needs arise.

Lastly, Article 4 of the District's Sanitary Rules and Regulations describes, in detail, our sewer service charges.

<u>Program Training & Staffing</u>

The Budgeting Program is largely implemented by the Controller and the Director of Account Services & Finance. Both have received university-level education, and one has completed a Master's in Business Administration. Directors and supervisors also play a large role in the budgeting process, as they are required to develop the budgets for their respective departments. The training for budget preparation has been through on-the-job experience. The District also utilizes the expertise of outside consultants, including a financial advisor provided through a professional service contract and several engineering consulting firms that assist in developing budget projections and tracking project costs.

<u>Performance Goal(s)</u>

The ongoing performance goal of the Budgeting Program is to continue generating the revenues needed to execute the organizations' mission and to maintain 150% debt

service coverage or better for future borrowing needs. The minimum coverage required by our bond indenture is 125%; however, the District's Board of Directors has set a goal of 150%. The Board of Directors has also required that we maintain at least $15 million in Infrastructure Repair and Replacement (IRR) funds and at least $5 million in our self insurance fund. In addition, we are required to keep three months worth of O&M expenses in the O&M reserve fund at all times. Lastly, an ongoing performance goal of this program is to complete all projects at or below the budgeted number.

Specific performance goals for the Budgeting Program for FY 2008 are to:

- Complete the comprehensive, five-phase analysis of our rates
- Issue approximately $100 million in revenue bonds
- Provide training for staff members involved in the budgeting process

Performance Measures

The success of the Budgeting Program is measured through a variety of performance indicators, including Moody's ratings, Standard & Poor's ratings, actual versus projected expenses, current year actual expenses versus previous year actual expenses, and data from benchmarking studies and comparisons to other utilities.

Periodic Evaluation

The Budgeting Program is evaluated by upper management and the Board of Directors on a monthly basis. The five-year planning goals contained within the CIP budget are continuously evaluated by internal staff and members of the Board of Directors. Project budgets are tracked through the use of a code within the accounting system and reports are frequently generated to monitor progress. In addition, this program is evaluated annually by internal staff members during the budget review process and by external auditors.

Summary of Recommended Improvements & Implementation Schedule

Recommended improvements for the Budgeting Program identified during the CMOM self-assessment process include:

- By January 31, 2008, internal workshops will be conducted by the District's Accounting staff for directors and supervisors involved in the budgeting process.
- By June 30, 2008, we will begin to develop a more effective process to track the life cycle of all new and replaced infrastructures from this point forward, which will help us tie future budget projections to the life of our assets.
- Throughout FY 2008, we will continue to provide additional budgeting codes to allow for more detailed expense descriptions for tracking purposes.

4.2.4 Engineering

Program Purpose

The purpose of the District's Engineering Program is multi-faceted, as it encompasses several functional areas of the organization, including:

- Capital Improvements
- Flow Monitoring
- Inspections
- Plan Review
- Regulatory Compliance
- Strategic Initiatives
- Water Resource Management

The overall purpose of these functional areas is to continually assess and monitor the collection system infrastructure and capacity, and identify, plan, design, and construct improvements and expansions as necessary to maintain the design conveyance and integrity of the collection system, remove I/I, eliminate SSOs, and bring CSOs into compliance.

Connection to SSO Elimination

The District's Engineering Program serves as the chief investigative and decision-making body responsible for managing the elimination of SSOs. It is the coordinating entity behind many more specific activities such as construction inspections, rehabilitation and replacement, and capacity assessment and assurance. The Engineering Program must confirm that new facilities are constructed according to standard construction specifications and do not contribute to future I/I problems; that rehabilitative work is properly executed; and that proper infrastructure is in place to collect and convey dry and wet weather flows, thus keeping flow in our system and preventing the release of untreated wastewater into the environment.

Program Documentation & Procedures

Because this is a high-level program encompassing many more specific activities, descriptions of the documentation and procedures associated with the Engineering Program are contained within several portions of this report, including Acquisition Considerations (Section 4.1.4), System Mapping (Section 4.1.7), Budgeting (Section 4.2.3), Water Quality Monitoring (Section 4.2.5), Call Before You Dig (Section 4.2.6), Continuous Sewer Assessment (Section 4.2.13), Flow Monitoring (Section 4.2.15), Rehabilitation & Replacement (Section 4.3.2), Engineering Capacity (Section 4.4.1), and New Connection Tap-in (Section 4.4.2)

In addition, a large portion of our Engineering Program activities are related to our CIP. A five-year CIP budget is prepared annually and approved by the District's Board of Directors and three county Judges Executive, which sets project schedules and annual expenditures. CIP projects address both conveyance system and treatment system needs and are comprised of three stages – study, design, and construction. CIP projects are closely inspected by full-time inspectors to ensure they meet the District's construction standards and technical specifications. Most inspections are above ground; however, these inspections are supplemented by CCTV inspections of the pipelines as needed. The Engineering Program is also responsible for design review,

approval and inspection of new sanitary sewers and pump stations installed by private developers. This work is also closely inspected by full-time inspectors to ensure it meets the District's construction standards and technical specifications. Once this infrastructure passes inspection, the District takes it over as part of our infrastructure. For infrastructure associated with private development, all contractors are required to contact the District's Inspection Supervisor at least 72 hours prior to starting construction. For District-funded CIP projects, a formal pre-construction meeting is held. At this time, an inspector is assigned to the job and given a set of working plans. The inspector then monitors the job to make sure the District's construction standards and specifications are being met. Any deviation from standards or approved plans is reported immediately to his or her supervisor who then contacts appropriate District Engineering personnel. Inspectors fill out a Daily Construction Report and testing forms as the job progresses. All original inspection forms are stored in their specific project file.

CIP projects are tracked through a combination of hard copy and electronic documents in project-specific files. Once the project is completed, record drawings are entered into gbaMS and ArcGIS. Records are maintained for a minimum of three years. Hard copies are kept a minimum of five years. Electronic files are stored on a computerized server database, which provides the District with the ability to file by project.

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Program Training & Staffing

All engineering activities are performed under the supervision of the Assistant General Manager and Director of Engineering, who is a registered PE. The Engineering Department is comprised of about 45 employees and several project managers who oversee engineering activities. In addition, the District uses several engineering consulting firms and outside contractors for planning, design, and construction activities. Staff members in the Engineering Department receive continuing education and training through industry seminars and workshops, as well as classes required to maintain PE licensure.

Performance Goal(s)

Ongoing performance goals of the Engineering Program are as follows:

- Identify and address infrastructure needs to eliminate SSOs, bring CSOs into compliance and ensure adequate dry and wet weather capacity in our collection system
- Enforce the District's construction standards and specifications to ensure the integrity of our system
- Review and update specifications as needed
- Continue to be a national model based on our watershed approach in our Consent Decree to addressing infrastructure needs
- Continue to facilitate open channels of communication with state and federal regulators

.

Specific goals for FY 2008 are to:

- Begin to develop a private source I/I policy
- Continue to hire and train qualified staff to achieve program goals
- Meet all Consent Decree milestone dates
- Move forward with Green Infrastructure and Low Impact Development initiatives
- Present at least two technical papers at state and/or national conferences
- Upload technical specifications to the District's website

Performance Measures

The success and effectiveness of the Engineering Program is largely measured by tracking progress made toward meeting the requirements of the Consent Decree. In addition, other performance indicators include meeting project budgets and deadlines, meeting the annual CIP budget, tracking participation at industry conferences, and conducting post-monitoring of rehabilitation and replacement projects.

Periodic Evaluation

The Engineering Program is continuously evaluated through a variety of communication channels and standard procedures, including:

- Bi-weekly coordination meetings with regulators
- Employee performance reviews
- Engineering inspection activities
- Frequent CIP progress meetings
- Monthly budget reviews
- Monthly Consent Decree progress meetings
- Monthly Engineering Department meetings
- Monthly Inspection team meetings
- Weekly Water Resource Management team meetings

This program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree. In addition, all Consent Decree activities will be evaluated on a quarterly basis and quarterly progress reports will be submitted to state and federal regulators per the requirements of our Consent Decree.

Summary of Recommended Improvements & Implementation Schedule

Because this is a high-level program encompassing many more specific activities, recommended improvements and implementation schedules for the Engineering Program are contained within several portions of this report, including Acquisition Considerations (Section 4.1.4), System Mapping (Section 4.1.7), Budgeting (Section 4.2.3), Water Quality Monitoring (Section 4.2.5), Call Before You Dig (Section 4.2.6), Continuous Sewer Assessment (Section 4.2.13), Flow Monitoring (Section 4.2.15), Rehabilitation & Replacement (Section 4.3.2), Engineering Capacity (Section 4.4.1), and New Connection Tap-in (Section 4.4.2)

Additional recommended improvements to the Engineering Program that are not addressed in other portions of this report are to:

- By June 30, 2008, develop an approach to addressing the extent of the District's involvement in private source I/I investigations and improvement projects.
- By June 30, 2008, upload technical specifications to the District's website

4.2.5 Call Before You Dig

Program Purpose

The purpose of the District's Call Before You Dig Program is to protect our infrastructure by marking sewer lines and easements prior to construction activities performed by contractors, other utilities, and homeowners.

Connection to SSO Elimination

By marking sewer lines prior to construction, the District prevents damage to infrastructure that could potentially result in an SSO. This is a proactive measure taken by the District to prevent the occurrence of overflows.

Program Documentation & Procedures

The District responds to approximately 800-850 line location requests per year. Calls are directed to an Engineering Technician at the District from a variety of sources, including contractors, public utilities, county public works departments, and homeowners. The Engineering Technician responsible for administration of the program receives approximately 100 calls per month; however, only about 60-70 of these generate a work order that requires physical markings to take place. This is because the Engineering Technician is sometimes able to respond to the request over the phone by using the District's desktop GIS application.

All requests that generate work orders are entered into gbaMS and are completed within 48 hours by an Engineering Inspector. In compliance with the American Public Works Association Uniform Color Code, the District uses the color green to mark all sanitary sewers, storm sewer facilities, and other drain lines. If the staff member performing the line markings recognizes a difference in the actual location of our infrastructure in comparison to the location marked in the District's GIS, he completes a GIS Work Order Form and submits it to the District's IT Department. In addition to records retained in gbaMS, the Engineering Technician responsible for program administration maintains hard copy files of work orders and a comprehensive electronic spreadsheet on the District's server that contains program data dated back to 2002.

The District promotes the Call Before You Dig Program through various means such as on-hold messages, regular communication with contractors and other local utilities, and website content. Figure 4.3 displays the Call Before You Dig page on the District's website.

Figure 4.3 Call Before You Dig Page on the District's Website

Program Training & Staffing

There is one Engineering Inspector and one Engineering Technician responsible for implementation of the District's Call Before You Dig Program. The inspector responsible for this program has been performing line marking activities at the District for the past 12 years. He has attended formal training on the use of the Metro 850 Line Locator, which is used for program implementation. The Engineering Technician is responsible for all administrative tasks associated with the program and has been performing these duties for approximately five years. All of the training for this administrative position has occurred on the job.

Performance Goal(s)

The ongoing performance goals of the Call Before You Dig Program are to continually promote community use of this service, respond to line locating requests within 48 hours, and properly retain data records associated with the program. Specific performance goals for FY 2008 are to develop a written SOP for the program, increase efforts to educate the public about the program, and asses tracking and data management procedures associated with the program to determine if improvements should be made.

Performance Measures

The success and effectiveness of the Call Before You Dig Program is measured through a variety of performance indicators, including the turnaround time on line

location requests, the completeness and accuracy of Call Before You Dig records, and the number of repairs made due to people hitting our sewer lines.

Periodic Evaluation

The Call Before You Dig Program is continuously evaluated through frequent communication amongst District personnel responsible for implementing the program, as well as through inspections of incidents that occur when outside agencies or customers hit our sewer lines. In addition, this program will also begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule

Recommended improvements for the Call Before You Dig Program identified during the CMOM self-assessment process include:

- By March 31, 2008, assess the benefit of tracking all line marking requests that are received, not just those that generate work orders. If it is deemed beneficial, the District will define the most effective procedures for tracking every call received by the Engineering Technician
- By June 30, 2008, create a written SOP that contains both administrative tasks and physical inspection tasks associated with the program
- Throughout FY 2008, work with the District's Public Relations Department to determine additional communication channels that can be used to advertise the program

4.2.6 Water Quality Monitoring

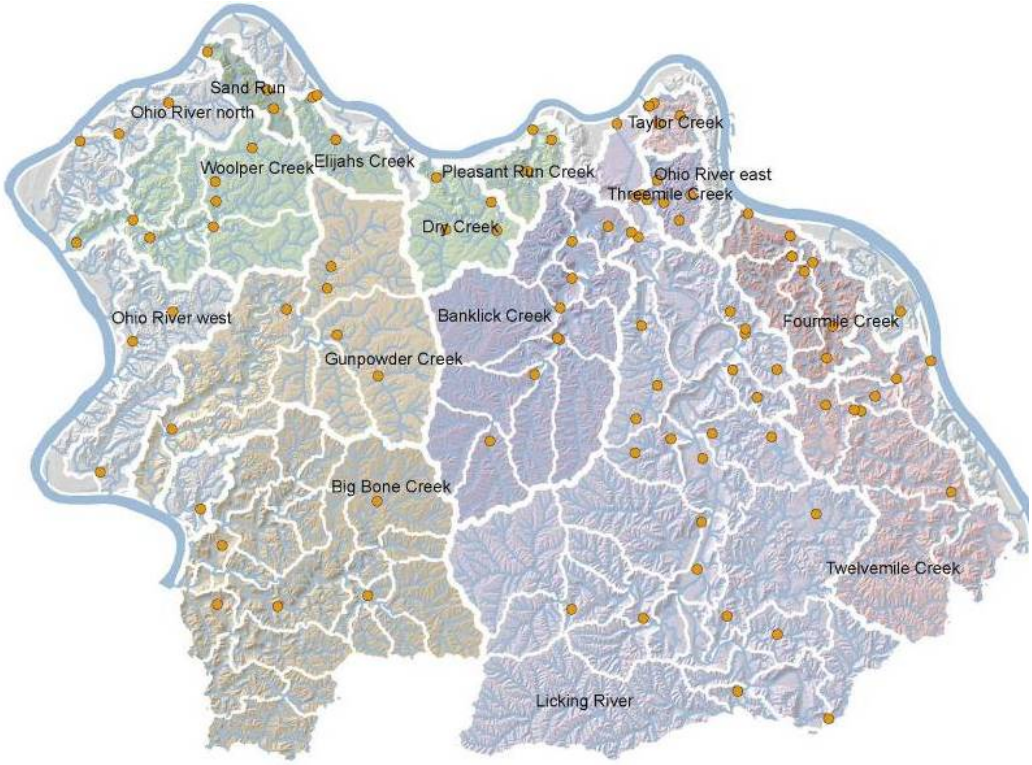
Program Purpose

Three sampling programs comprise the District's overall Water Quality Monitoring Program – the Watershed Monitoring Program, the Outfall Sampling Program, and the Industrial Monitoring Program. Each program serves distinct purposes, which are described below.

Watershed Monitoring Program

The purpose of the District's Watershed Monitoring Program is to collect instream water quality, habitat, macroinvertebrate and fish data to inform the watershed characterization process being used to help develop the Watershed Plans required by the District's Consent Decree. This characterization process will be described in more detail in the District's Watershed Plan Framework, which is required to be submitted by April 18, 2008 under the Consent Decree. The Watershed Monitoring Program includes baseline sampling in all watersheds, and event-based and biological sampling in major watersheds. Figure 4.4 displays the District's watershed sampling sites**.**

Figure 4.4 Watershed Sampling Sites

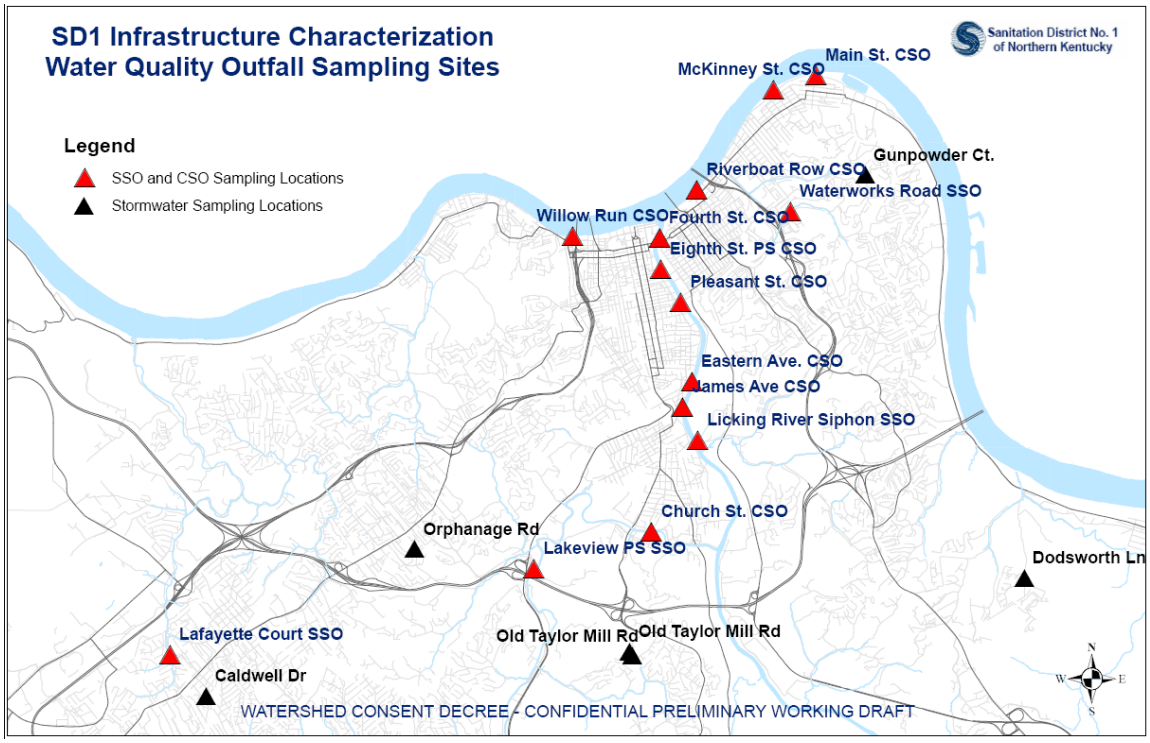


In addition to watershed sampling, the District also obtains stream data through a cooperative agreement with the United States Geological Survey (USGS) that established a stream gage network in Northern Kentucky. The agreement was established in 1998, and there are now a total of 13 monitoring stations installed in local watersheds. These monitoring stations continuously measure stream stage (height), local rainfall, and water quality parameters (temperature, dissolved oxygen, pH, conductivity and turbidity). The data are collected year around at 15-minute intervals and are updated on the Internet every hour at http://water.usgs.gov/ky/nwis/qw.

Outfall Sampling Program

The District has also instituted an Outfall Sampling Program at 20 locations across the system to better characterize the composition of overflows during wet weather. The purpose of this program is to provide data on pollutant concentrations in the SSOs, CSOs, and storm water discharges in order to effectively characterize the District's infrastructure. This characterization process will be described in more detail in the District's Watershed Plan Framework. The collection of this data will help update and refine the hydraulic models of the collection system, which are described in Section 4.4.1 of this report. The Outfall Sampling Program works in close conjunction with the continuous sewer assessment activities described in Section 4.2.13 of this report. Figure 4.5 displays the District's outfall sampling sites**.**

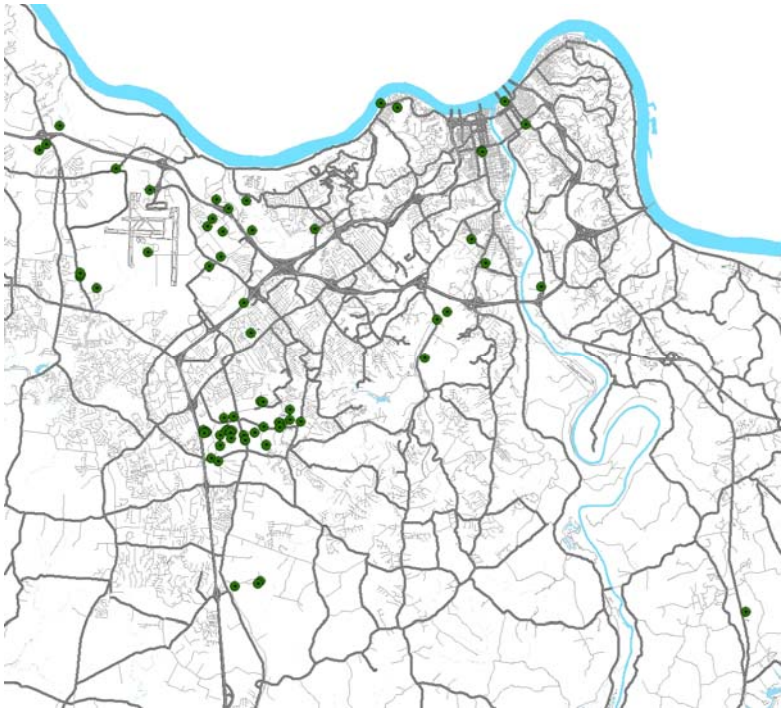
Figure 4.5 Outfall Sampling Sites



Industrial Pretreatment Monitoring Program

The purpose of the Industrial Pretreatment Monitoring Program is to monitor discharges from industrial users throughout the service area to ensure compliance with Article 5 of the District's Sanitary Rules and Regulations and to protect the District's sanitary sewer system, treatment plants, employees, and the receiving waters. Figure 4.6 displays the locations of the permitted industries throughout the District's service area.

Figure 4.6 Locations of Permitted Industries



Connection to SSO Elimination

Instream water quality and overflow data collected to help characterize watersheds in the District's service area plays an integral role in prioritizing, designing, and implementing solutions that will eliminate SSOs. This data helps the District to better understand the constituents in the overflows through pollutant concentrations and loadings and the impact that the discharges have on the surrounding environment. Ultimately, the data will be used to help develop hydraulic and water quality models that serve as essential planning tools when developing cost-effective alternatives to reducing overflow occurrences and improving water quality in rivers and streams within the District's service area. Additionally, monitoring the discharges of industrial users helps to protect the integrity of the collection system, protect the treatment plants from upsets or violations of the KPDES permits, and ensures that discharges from Industries during wet weather do not impact the receiving waters.

Program Documentation & Procedures

Both the Watershed Monitoring Program and Outfall Sampling Program have written Quality Assurance Project Plans in place to address quality assurance (QA) and quality control (QC) elements related to monitoring activities. Field Monitoring and Sampling Plans (FMSP) have also been developed for these two programs. The FMSPs identify what locations need to be sampled, what analyses need to be conducted, field and laboratory protocols, and what data quality is required. In addition, there are written SOPs in place for the Watershed Monitoring Program, Outfall Sampling Program, and

the Industrial Monitoring Program to document various operational procedures. Individual contracts and manuals that outline specific procedures and time schedules for program implementation are on file at the District. Program data is managed through the use of a variety of IMS tools such as ArcGIS applications, modeling programs, and LinkoCTS. Data is also contained within several internal reports, spreadsheets, and databases stored in files on the District's server.

Program Training & Staffing

Staffing for the Watershed Monitoring Program consists of five well-trained staff members with university-level education. Two staff members have received a "Scientist of the Year" award from the Engineers & Scientists of Cincinnati organization. Due to the volume of samples, analysis is performed by an outside laboratory. District staff conducts baseline sampling and biological sampling, while external consultants are used for event-based sampling. Additional staff is employed through Thomas More College to assist with sampling as needed.

Staffing for the District's Outfall Sampling Program consists of one internal Project Manager who oversees a team of external consultants responsible for implementing the program. This Project Manager is a registered P.E. and has received the formal training necessary to oversee this program. An outside laboratory is used to perform data analysis for this program as well.

Although the Watershed Monitoring Program and the Outfall Sampling Program are managed internally from separate groups, both teams attempt to coordinate schedules and sampling locations in order to identify the relative contribution of the overflow loads in relation to potential non-point source pollutants.

The District's Industrial Monitoring Program is implemented by three staff members in the District's Industrial Monitoring group. Two of these staff members have attended Kentucky/Tennessee Water Environment Association (KY/TN WEA) voluntary pretreatment certification courses, and the third staff member recently joined the District in September 2007. All other training for program implementation occurs on-the-job.

Performance Goal(s)

The ongoing performance goals of each monitoring program are to continue to meet sampling schedules, perform QA/QC, and retain adequate records of sampling results. Specific performance goals for the Watershed Monitoring Program and Outfall Sampling Program will be described in further detail in the Watershed Framework document that the District will be submitting by April 18, 2008 per the requirements of the Consent Decree.

Performance Measures

The success of the District's monitoring programs is primarily measured by the overall effectiveness of the modeling tools developed for watershed and collection system

management. Secondarily, effectiveness is measured by sample completion criteria, analytical laboratory results, QA/QC results, and by tracking project schedules.

Periodic Evaluation
The District's monitoring programs are evaluated on a consistent basis through QA/QC measures, project team meetings, and periodic state audits of the pretreatment program. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule
Currently, there are no recommended improvements to the District's Water Quality Monitoring Program.

4.2.7 Compliance

Program Purpose
The purpose of the District's Compliance Program is to satisfy The Clean Water Act pretreatment regulations and comply with our NPDES permit by identifying and controlling residential, commercial, and industrial sources of flow that could adversely affect our collection system. This program encompasses both our Industrial Pretreatment Program and our Grease Control Program.

Connection to SSO Elimination
The Compliance Program provides the authoritative measures necessary to permit and monitor discharges from commercial and industrial users that may cause corrosion or blockages in the collection system, which could potentially cause an SSO.

Program Documentation & Procedures
Industrial and commercial users are categorized into one of three levels – Significant Industrial Users (SIU), Categorical Industrial Users, or Non-Significant Users. Permitting and monitoring procedures performed by the District are unique for each type of user. There is a comprehensive Industrial Pretreatment Program manual on file within the Industrial Monitoring group that contains several written SOPs that outline detailed steps for permitting, inspection, and enforcement activities. In addition, Article 5 of the District's Sanitary Rules and Regulations establishes pretreatment policies and regulations that follow standard guidelines set forth by US EPA's Part 403 regulations.

The District's Grease Control Program is a required component of the Consent Decree and was submitted on September 18, 2007. This document provides a comprehensive description of both previous and newly proposed controls for FOG. The Phased Implementation Plan outlined in the Grease Control Program fulfills the requirements set forth in Exhibit C of the Consent Decree and includes components such as new ordinances, design standards, and expanded permitting, inspection, and enforcement protocols. The enhancements made to the Grease Control Program through this

Phased Implementation Plan will aid in maximizing sewer capacity and reducing sewer overflows caused by the buildup of FOG in the collection system.

The District's Industrial Monitoring group utilizes two computer-based data management products from Linko Data Systems products as the computer-based data management tools for the Compliance Program. LinkoCTS is designed specifically for industrial pretreatment compliance tracking, and LinkoFOG is used to manage the District's FOG program. Work orders generated in response to collection system issues caused by commercial and industrial users are tracked through gbaMS. In addition to data contained within the Linko programs and gbaMS, there are also detailed hard copy files for each industrial and commercial user on record at the District's Dry Creek WWTP.

Program Training & Staffing

Three full-time staff members in the District's Industrial Monitoring group are dedicated to implementing the Compliance Program. This group reports to the Environmental Manager at the District's Dry Creek WWTP. The District's in-house legal counsel assists with enforcement measures and interpretation of the Sanitary Rules and Regulations. The District uses both internal and external laboratory personnel to process samples.

There are a total of five staff members at the District that have attended KY/TN WEA Voluntary Pretreatment Certification courses. Two District staff members have also undergone formal training for FOG sponsored by the Water Environment Federation (WEF). All other training for program staff has been through on-the-job experience and formal university-level education.

Performance Goal(s)

The ongoing goal of the Compliance Program is to properly permit, inspect, and sample all industrial and commercial users in order to monitor their compliance with the District's Sanitary Rules and Regulations. There are additional performance goals outlined in the Grease Control Program, which was a separate required submittal of the Consent Decree.

Performance Measures

The success and effectiveness of the Compliance Program is measured through a variety of performance indicators, including tracking sampling schedules and results, the number of trouble calls and work orders due to grease and industrial discharges, and the number of fines and Notices of Violations issued to industrial and commercial users.

Periodic Evaluation

All permitted industries are inspected annually and monitored semi-annually, with additional inspection and sampling performed as needed. In addition, the program is annually audited by the State's pretreatment division and has historically received positive reviews. The State's inspection covers our Grease Control Program, Mobile

Waste Haulers Program, and the Industrial Pretreatment Program. The District recently received the KY/TN WEA Control Authority Pretreatment Excellence Award for going above and beyond pretreatment requirements.

In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule

The only recommended improvement for the Compliance Program identified during the self-assessment process is to develop a more structured and effective method of identifying new industrial and commercial users discharging to the collection system. Staff is currently notified through various informal means such as reading the paper, word of mouth, reviewing quarterly tap-in lists, or performing visual inspections throughout the service area. One option is to build a stronger working relationship with organizations such as Northern Kentucky Tri-ED, which is a non-profit economic development organization. This proposed improvement will be addressed on an ongoing basis and is not tied to a specific deadline.

4.2.8 Mobile Waste Haulers

Program Purpose

There are three main purposes of the District's Mobile Waste Haulers Program:

- To provide extended wastewater treatment services to customers that reside within the District's service area but use private domestic septic tanks
- To track and regulate loads discharged from mobile waste haulers to the Dry Creek WWTP
- To provide a regulated process for properly disposing and treating FOG from grease traps to prevent blockages in the District's collection and conveyance system

Connection to SSO Elimination

The primary benefit of the Mobile Waste Haulers Program is to ensure that a well-defined program is in place for hauling FOG from FSEs and domestic waste from septic systems to Dry Creek WWTP for proper treatment prior to being released to the environment. This program plays an integral role in minimizing the amount of FOG in the collection system, which could potentially cause a blockage that may result in an SSO.

Program Documentation & Procedures

All individuals or companies that haul waste to the Dry Creek WWTP must apply for and obtain a Domestic Holding Tank Waste Hauler Discharge Permit before discharging holding tank waste to the Dry Creek WWTP. Permits are issued on an annual basis and provisions of the permit must be adhered to at all times. A permit fee is applicable for each waste hauler.

A Domestic Holding Tank Waste Hauler Manifest must be completed by the mobile waste hauler for each load on their truck. When the mobile waste hauler arrives at Dry Creek WWTP, the control room operator must inspect, accept, and retain a hard copy of the manifest prior to the mobile waste hauler discharging the waste. The hard copy of the manifest is kept on file in the industrial Monitoring department. Each hauler has a separate file that contains questionnaires, permits, letters, requests, and any Notices of Violation they have been issued.

There is a comprehensive Industrial Pretreatment Program manual on file within the Industrial Monitoring group that contains written SOPs for implementation and regulation of the Mobile Waste Haulers Program. In addition, Article 5 and Article 10 of the District's Sanitary Rules and Regulations establish a written policy for the disposal of sludge hauler waste, as well as enforcement measures to ensure compliance.

Program Training & Staffing

There are three full-time staff members in the District's Industrial Monitoring group that are dedicated to implementing the Mobile Waste Haulers Program. This group reports to the Environmental Manager at the District's Dry Creek WWTP. The District's in-house legal counsel assists with enforcement measures and interpretation of the Sanitary Rules and Regulations. The District utilizes both internal and external laboratory personnel to process samples. The control room operator on duty at Dry Creek WWTP also plays an integral role in program implementation.

There are a total of five staff members at the District who have attended KY/TN WEA Voluntary Pretreatment Certification courses. Two District staff members have also undergone formal training for FOG sponsored by the Water Environment Federation (WEF). All other training for program staff has been through on-the-job experience and formal university-level education.

Performance Goal(s)

The ongoing performance goal of the Mobile Waste Haulers Program is to ensure all mobile waste haulers are properly permitted and remain in compliance with their Domestic Holding Tank Waste Hauler Discharge Permit and the District's Sanitary Rules and Regulations.

Performance Measures

The success and effectiveness of the Mobile Waste Haulers Program is measured through the results of periodic audits, inspections, and spot samples, as well as by tracking the number of violations issued each year.

Periodic Evaluation

The Mobile Waste Haulers Program is evaluated each year as part of the state's annual pretreatment audit. The local health department also inspects and keeps records of the

mobile waste haulers and their trucks throughout the service area, and inspection results are kept on file with the District's Industrial Monitoring group. The program is also continuously evaluated through the annual permitting process, the manifest form submittal and review process, occasional spot checks, and through screening plant material after sludge hauler discharges.

In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule
There are no recommended improvements for this program.

4.2.9 Pump Station Operations

Program Purpose
The purpose of the District's Pump Station Operations Program is to ensure reliable operations of the pump stations throughout the District's service area by conducting routine inspections, troubleshooting when situations arise, retaining appropriate records of pump station performance, and by remotely monitoring pump station operations through the use of a telemetric SCADA system. This program is executed in conjunction with the Pump Station Maintenance Program (Section 4.3.6 of this report), as routine inspections typically generate work orders for the maintenance crew, and pump station operators are responsible for performing light maintenance work as needed.

Connection to SSO Elimination
Monitoring the reliability of pump stations through routine inspections, troubleshooting, and remote supervision helps to decrease the chance of pump station failure that could potentially cause an SSO. Proper pump station operation also maximizes storage and assures adequate capacity throughout the collection system, which may consequently prevent an overflow from occurring.

Program Documentation & Procedures

Routine Monitoring & Inspections
Each pump station throughout the District's service area is physically inspected at least once per week, at which time light maintenance needs generated by work orders in gbaMS are also performed. The frequency of inspections is determined by the criticality of the pump station. Some large pump stations and stressed pump stations are physically inspected on a daily basis. There are currently five operators that perform inspections, each of whom is responsible for approximately 25 pump stations. This equates to about five to six inspections per day for each operator. All pump stations, with the exception of six or seven, have telemetry and are remotely monitored by the SCADA system by the plant operator at the District's Dry Creek WWTP. The pump

stations that do not have telemetry are on a long-term waiting list to be removed from the District's collection system. In addition to routine inspections and monitoring, there are a few pump stations that are on a routine PM list to be cleaned using a Vactor truck to address grease issues. The District's Collection Systems field crews perform this PM cleaning.

Data Management & Recordkeeping

Pump station inspections are recorded in palm pilots in the field, and the data is exported to an excel spreadsheet and kept on file on the District's server. There is pump station inspection data on record since February 2003. Pump station operators store inspection data in their palm pilot for approximately one month before turning it into the administrative assistant to download onto the District's server. The categories on the palm pilot inspection templates match the headings on the spreadsheet. Hard copy inspection forms are kept on file as well, as this provides a more effective means to store comments. The data entered into standard inspection forms varies according to the size of the pump station, and includes fields such as:

- Date
- Pump 1 status, run time, and difference since last run time
- Pump 2 status, run time, and difference since last run time
- Pump 3 status, run time, and difference since last run time
- Pump 4 status, run time, and difference since last run time
- Ventilation status
- Level control status
- Sump pump status
- Electrical equipment status
- Station and grounds condition status
- Wet well status
- Signs of station releasing (yes or no)
- Amount of overflow (if applicable)
- Amount of rainfall (if applicable)
- Flow totalizer
- Comments
- Operator performing inspection

At some of the larger stations, more extensive data is collected and filled out on work sheets, which are kept on clipboards at the site so that operators can easily scan the data for trends during their inspections. The inspection forms (both in the palm pilot and on the spreadsheet) serve as SOPs for the program, and there is also a customized, hard copy SOP housed at each station. In addition, there are written SOPs in place for flood pump station operations. The pump station operations crew has identified the need to begin using the pump station inspection module in gbaMS as a more effective means for data entry and records retention.

The District's SCADA system currently operates from Lookout. Telemetry data is stored on the SCADA system for 30 days, unless staff members choose to back up the data for future use. Data monitored through SCADA includes information such as run time, on/offs, well levels, flow, power failures, and pump failures. Over the course of the next year, the District hopes to switch to a new Intellution software that will make this process more web based. This will enable any employee to remotely monitor the pump stations, not just the operator at the treatment plant. Some large stations have permanent flow meters, and these readings are captured in spreadsheets.

Backup Power

Per the Consent Decree, the District is required to submit a Pump Station Operation Plan for Backup Power by April 18, 2008 that evaluates the District's pump stations and includes schedules for providing backup power or other appropriate measures for addressing power outages at the District's pump stations as soon as practicable; provided, however, that such schedules shall not extend beyond December 31, 2015.

Program Training & Staffing

The District's pump station operations crew is comprised of seven employees – one crew leader, one administrative assistant, and five pump station operators. This team is housed within the Field Technical Services Department in the District's organizational structure. Each operator has a designated list of approximately 25 pump stations that they are responsible for inspecting on a routine basis. The crew leader serves as a floater when additional assistance is needed. The majority of training for pump station operators occurs through on-the-job experience, and the District's pump station crew members have been employed at the District for an average of 15-20 years. Staff identified the need for additional personnel to lessen the work load of current operators in order to ensure that more comprehensive inspections are conducted and recorded and to continuously monitor telemetry data.

Performance Goal(s)

The ongoing performance goals of the Pump Station Operations Program are to conduct routine inspections at each pump station throughout the District's service area, properly document and retain inspection records, and perform light maintenance work as needed to ensure reliable operations. Specific performance goals for FY 2008 are to:

- Continue to cross train pump station operators on stations that are not on their assigned list
- Move forward with plans to utilize a new Intellution SCADA system to perform telemetry services
- Begin using the pump station inspection module in gbaMS to record and track inspection data

Performance Measures
The success of the Pump Station Operations Program is measured through a variety of performance indicators, including the results of pump station inspections and periodic audits, number and cause of pump station failures, and the accuracy and completeness of pump station inspection records.

Periodic Evaluation
Evaluation of the Pump Station Operations Program is conducted on a consistent basis through frequent team meetings with the pump station operations crew, routine inspections at pump stations, and by tracking project schedules and holding project team meetings when pump station improvements are being made. The pump station operations crew leader also performs periodic audits at select pump stations as his time allows. In addition, future goals are written into pump station personnel's performance reviews and evaluated at a minimum of once per year. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule
Recommended improvements for the Pump Station Operations Program identified during the CMOM self-assessment process include:

- By March 31, 2008, compile a list of stressed pump stations and identify either an internal or external engineer to perform a critical assessment of the situation
- Coordinate with Engineering Plan Review personnel and Engineering Inspectors to create a written SOP that defines procedures for involving specialized pump station staff members in the process of reviewing new pump station plans and drawings and performing inspections during construction of new pump stations. A coordination meeting will be held by April 30, 2008
- Address staffing issues during the FY 2009 budget process, which will take place in the spring of 2007
- By June 30, 2008, begin utilizing the pump station inspection module in gbaMS to record and track pump station inspections
- Throughout FY 2008, continue to make progress with plans to begin using Intellution SCADA software to remotely monitor the District's pump stations

4.2.10 Pump Station Emergencies

Program Purpose
The purpose of the District's Pump Station Emergencies Program is to ensure that atypical situations are dealt with in the most efficient and timely manner in order to negate or limit the release of untreated wastewater at either the pump stations or elsewhere in the collection system.

Connection to SSO Elimination

Implementation of the District's Pump Station Emergencies Program provides reactive measures for responding to irregular activities at pump stations, which will either prevent the occurrence of an SSO if remedied in time, or may minimize the amount of environmental degradation that could occur from the release of untreated sewage.

Program Documentation & Procedures

Notification

The District relies, in part, on the local populace as well as city, county, state and federal officials for notification of trouble in our collection system. External constituencies can hear an audible alarm or see a red light flashing at one of our pump stations and call our 24-hour response line to report trouble. The pump station operators also make routine physical inspections at the pump stations, at which time they may encounter a troublesome issue. More recently, however, the District has invested considerable capital to research, design, install, and maintain a SCADA system to act as an early warning system to District personnel of impending trouble at more than 150 pump stations owned and/or operated by the District throughout the three-county service area. There are up to 16 data points monitored at the small- and medium-sized pump stations and up to 32 data points monitored at the larger stations. Example data points include equipment run time, communications status, wet well levels, valve positioning, and effluent flow. The SCADA system is monitored 24 hours a day, seven days a week by trained control room operators at the Dry Creek WWTP. These operators have a written set of SOPs to use as a guideline of who to call and when to call them based on the time of day, weather conditions, and nature of the issue. During normal business hours, trouble calls are also received by the radio dispatcher located at the main office facility.

Response Procedures

There are two sets of procedures for the control room operator to follow when summoning help to respond to a pump station trouble alert – one for normal business hours and one for after hours. When a pump station trouble call is received during normal business hours either through the phone system or from the SCADA system, the control room operator or radio dispatcher will contact the pump station operator assigned to that specific station and advise them of the trouble being reported. The station operator will then respond to the location and asses the situation, at which time they will either remedy the problem or summon further assistance. Whether or not assistance is summoned depends on the nature and severity of the problem being investigated.

Trouble calls received via the phone system or SCADA system after regular business hours are forwarded to the control room operator at Dry Creek WWTP. In the event that trouble arises, the control room operator - using the SOPs as a guideline - will contact the pump station on-call person by use of the phone system (home phone, cell phone or

pager). After advising the on-call person of the problem, the on-call person will respond to the location and start the assessment procedure. After the assessment is made, the on-call person will either make the necessary repairs to put the pump station back in service or summon further help by contacting the control room operator and advising them of the assistance that is required.

R*esources & Equipment Available for Pump Station Trouble Call Responses*
Additional assistance for pump station trouble calls may be summoned by the control room operator through the use of the phone system. Skilled and/or general labor is available, as well as equipment operators and their respective equipment. The responding on-call person will determine labor and equipment needs during the initial assessment of the issue. Equipment available for pump station emergencies include:

- Stationary and portable diesel generators.
- Portable diesel and gasoline powered pumps
- Service trucks with crane bodies
- 25-ton crane truck
- Sludge hauling trucks
- Vactor trucks
- Camera trucks
- Hand and portable power tools
- Heavy equipment
- Dump trucks
- Spare parts (limited)

Work orders associated with pump station emergencies are completed and inputted into gbaMS.

Program Training & Staffing
There are six members of the Field Technical Services Department that are designated as on-call responders to pump station trouble calls. The on-call person rotates weekly. During regular business hours, one of five pump station operators is responsible for responding to pump station trouble calls, at which time they may recruit assistance from any of five pump station maintenance employees or field crews in the Collection Systems Department if necessary. In addition, the on-duty control room operator at Dry Creek WWTP plays a large role in monitoring the SCADA system and initializing trouble call procedures. The District also has an emergency service contract with a local construction company that can be used for additional assistance as needed.

The control room operator receives almost all training for monitoring the SCADA system and administering trouble calls through on-the-job experience. On-call pump station personnel, for the most part, have received formalized training through a specialized trade school and/or attended Gateway Community College as part of a maintenance

technician course of study, which included training on various electrical and mechanical systems as well as troubleshooting and various maintenance procedures.

Performance Goal(s)

The ongoing goal of the Pump Station Emergencies Program is to respond to and remedy pump station trouble calls in the most timely and effective manner possible. Specific performance goals for FY 2008 are to:

- Provide formal training to all personnel involved in the monitoring and response of pump station emergencies
- Have the ability to monitor pump station activity in the field maintenance area by implementing the use of the new Intellution SCADA software

Performance Measures

The success and effectiveness of the Pump Station Emergencies Program is measured through a variety of performance indicators, including response time to trouble calls, effectiveness of remedies implemented during trouble call response procedures, and the number of well-trained personnel available to monitor and respond to pump station emergencies.

Periodic Evaluation

This program is evaluated on a continuous basis during the assessment of each trouble call response, through routine pump station inspections, and through frequent communication amongst members of the District's Field Technical Services Department. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule

Recommended improvements for the Pump Station Emergencies Program identified during the CMOM self-assessment process include:

- Staff has recently noticed that the SCADA system is becoming over-burdened and does not have adequate bandwidth to transmit data across the system. Communication failures are becoming too frequent, causing District electricians to go out to the pump station and physically reset the radio. By April 30, 2008, staff will identify the most appropriate solution for this issue.
- Throughout FY 2008, staff will continue to make progress with plans to begin utilizing Intellution SCADA software to remotely monitor the District's pump stations, as noted in the recommended improvements in Pump Station Operations (Section 4.2.9).
- By June 30, 2008, the District's Field Technical Services Department will develop a plan to provide more formal training for implementation of the Pump Station Emergencies Program.

4.2.11 Pump Station Force Mains Preventive Maintenance

The District does not currently have a formal program to address the PM needs of force mains and air relief valves (ARV). There are areas in which we perform maintenance on force mains and ARVs; however, this work is currently reactive. The District recognizes that ARVs operating at peak proficiency help keep force mains in better working condition, thereby reducing SSOs caused by damaged force mains. Moreover, identifying failing force mains and enacting regular maintenance would move this program into proactive status as opposed to being reactive. Having recognized the benefit of a structured PM program for force mains and ARVs, the District will create a program to:

- Accurately map force mains and ARVs (develop inventory)
- Develop condition assessments for force mains and ARVs
- Investigate corrosion issues in conjunction with the condition assessment process
- Implement PM when needed to protect the integrity of our infrastructure

During FY 2008, the District will begin to develop a formal Pump Station Force Mains PM Program. We will start by collecting and documenting inventory of all force mains and ARVs throughout the District's collection system. This will require physically walking every force main, locating every ARV, and inputting them into the District's GIS. Condition assessments will be performed during the inventory process, and work orders will be generated and completed as needed. We anticipate being able to complete this inventory process by December 2009. Additionally, the FY 2009 CIP budget (developed during the spring of 2008) shall include a program to thoroughly asses force mains and provide sufficient capital for rehabilitation and/or replacement on an annual basis. Labor needs for program implementation will also be identified and included in the FY 2009 budget. Updates on the progress made toward developing this program will be included as part of the CMOM Annual Report that is required to be submitted under the Consent Decree by December 31, 2008.

4.2.12 Odor & Corrosion Control

Program Purpose

The District's Odor & Corrosion Control Program is implemented primarily by Siemens Water Technologies through a contractual service agreement with the District. The stated purpose contained within the contract is to provide a high-value, full-service liquid and vapor phase Odor & Corrosion Control Program for the wastewater collection system and treatment plants to meet the following objectives:

- Eliminate odors beyond the fence line of control points in a cost-efficient manner
- Eliminate odors in close proximity to manholes and air release valves
- Protect infrastructure from corrosion and measure corrosion potential where directed

- Establish and meet goals for levels of Dissolved Sulfide (DS), Hydrogen Sulfide (H_2S), and Nitrate (NO_3)
- Perform all work in a safe and professional manner

Connection to SSO Elimination

The Odor & Corrosion Control Program provides proactive measures to continuously monitor for hydrogen sulfide in the collection system, which consequently prevents corrosion of pipes. Significantly corroded pipes could eventually contribute to I/I issues and overflow occurrences. In addition, manholes in corrosion-sensitive areas are lined as part of this program as a preventive measure to reduce I/I.

Program Documentation & Procedures

The majority of the Odor & Corrosion Control Program is implemented through a service agreement with an outside firm. The following is an overview of the services that Siemens Water Technologies provides to the District:

- Liquid phase treatment
- Vapor phase treatment
- O&M of the treatment systems, including equipment inspections, air and liquid monitoring, analysis, reporting, and recommendations
- Technical support services
- Health and Safety Plans for chemical(s) transfer, storage, spills, application, containment, and disposal; equipment inspections; and wastewater monitoring

Detailed descriptions of the procedures performed as part of the Odor & Corrosion Control Program are contained within written SOPs, proposals, and service agreements kept on file both at the District and with Siemens Water Technologies. Monthly reports generated by Siemens are also retained by both the District and by Siemens. The District stores these reports on the organization's server and in hard-copy form.

Although most documentation and procedures associated with this program are executed by an outside firm, there are a few activities performed internally. When staff members receive an odor complaint, an Odor Incident Report is completed and entered into gbaMS. There are also times when District staff members assist Siemens with odor inspections and monitoring activities.

In addition, our field crews are inspecting manholes in some areas throughout the District's service area where force mains dump into the gravity system, making them predisposed to corrosion problems. An outside company is lining manholes that are identified during these inspections as needing to be addressed. Data associated with these inspections and repairs is inputted into gbaMS.

Program Training & Staffing

In October 2004, the District entered into a five-year contract with Siemens Water Technologies to perform odor and corrosion control services. Siemens Water

Technologies is a recognized leader in products, systems, and services for water and wastewater treatment for industrial, municipal, laboratory, commercial, and aquatics and leisure customers. There are three Siemens staff members responsible for executing most tasks associated with the contract; however, they use additional support staff as needed. Two crew leaders in the District's Field Technical Services Department manage implementation of this program.

In addition, District personnel perform occasional odor and corrosion control activities in house, such as maintaining odor logs and performing manhole inspections. There is one member of the Field Technical Services Department responsible for internal activities that are performed, who has worked at the District for nearly 11 years. All training for this staff member in regards to odor and corrosion control has been through on-the-job experience. Several members of the District's Collection Systems Department assist with manhole inspections, and training for these staff members has likewise been through on-the-job experience.

Performance Goal(s)

The ongoing performance goals of the Odor & Corrosion Control Program are to:

- Continue to meet the goal numbers established for levels of H_2S, DS, and Nitrate (NO_3) identified in the monthly service reports submitted to the District by Siemens Water Technologies. The goal numbers are unique to each feed point and are displayed in Table 4.3.
- Continue performing manhole inspections and meeting the budgeted amount of $20,000 per year for manhole linings. Manhole inspections are described in further detail in Sections 4.2.13 and 4.2.17 of this report.

A specific performance goal for FY 2008 is to have Siemens Water Technologies start mapping odor complaints and feed points in GIS so they can interface with our mapping system.

Performance Measures

The success of the Odor & Corrosion Control Program is measured through a variety of performance indicators, including the number of odor complaints received, the number of repair or replacement projects initiated due to corroded pipes, and the number of H_2S, DS, and NO_3 goals met each month.

Table 4.3 Goal Numbers for H_2S, DS, and Nitrate (NO_3)

Feed Point	H_2S Goal (ppm)*	DS Goal (mg/L)**	NO_3 Goal (mg/L)
Airport Terminal	<10	<0.2	<10
Airport Tower	<10	<0.2	<10
Allen Fork	<25	<0.1	<5
Bromley	na	<0.1	0
Bullittsville	<10	<0.2	<20
Centerplex	<20	<0.2	<20
Cold Spring Crossing	<10	<0.2	<20
Gunpowder	<25	<0.1	<5
Marshall Rd	<5	<0.2	<10
Richwood	<10	<0.2	<10
Sandrun	<5	<0.2	<10
Silver Grove	<25	<0.5	<10
Taylorsport	na	<0.2	0
Hillshire Farms	<50	<0.5	na
Riley Road	<10	<0.2	na
Dry Creek WWTP	<30	na	0

* ppm is parts per million
** mg/L is milligrams per liter

Periodic Evaluation

The Odor & Corrosion Control Program is evaluated on a daily basis by one Siemens representative housed locally that performs daily activities associated with the service and performance monitoring programs detailed in the contractual agreement. This program is also evaluated on a monthly basis when representatives from Siemens Water Technologies meet in person with the District's Field Technical Services staff to review monthly service reports. During these monthly meetings, results are assessed and modifications are made as needed.

In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule

The only recommended improvement for the Odor & Corrosion Control Program identified during the CMOM self-assessment is to have Siemens Water Technologies start mapping odor complaints and feed points in GIS so that they can interface with the District's mapping system.

4.2.13 Continuous Sewer Assessment

During our CMOM interviews and workshops, we identified the need to develop a more proactive collection system inspection, cleaning, and rehabilitation/replacement program. We also identified the need to establish a coordinated approach to this program to address both our Nine Minimum Control (NMC) requirements for our CSS

and our CMOM requirements for our SSS. In concert with our CMOM self-assessment and our NMC activities, we began developing a holistic Continuous Sewer Assessment Program in 2007 to address both our CSS and SSS. This formalized Continuous Sewer Assessment Program will guide our assessment and rehabilitation/replacement work into the future.

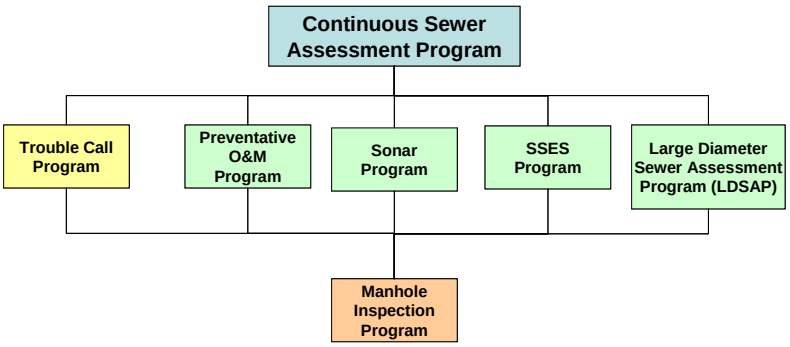
The purpose of the District's Continuous Sewer System Assessment Program is to utilize a proactive and coordinated asset management-based approach to assessing our infrastructure's condition and life cycle, and managing rehabilitation/replacement of our system. Using the process diagram provided in Appendix F as a guide for our continuous sewer assessment activities, the District will be able to more effectively and proactively prioritize and implement system inspection, cleaning, and rehabilitation/replacement needs in order to identify and address wet weather I/I sources, assure sufficient capacity in both dry and wet weather, and eliminate SSOs.

The Continuous Sewer Assessment Program is a high-level program comprised of several more specific CMOM activities and does not mirror the same format presented throughout the rest of this report. The Program Purpose, Connection to SSO Elimination, Documentation & Procedures, Training & Staffing, Performance Goal(s), Performance Measures, Periodic Evaluation, and Summary of Recommended Improvements & Implementation Schedule for the Continuous Sewer Assessment Program are contained within the more specific assessments found in the eight subsequent sections of this report (Sections 4.2.14, 4.2.15, 4.2.16, 4.2.17, 4.3.1, 4.3.2, 4.3.3, and 4.3.4).

O&M Programs

As shown in Appendix F, the District has identified six O&M programs that are incorporated into our larger-scale Continuous Sewer Assessment Program. Each of these programs includes an assessment phase followed by an action phase, which includes activities such as cleaning and rehabilitation/replacement. Figure 4.7 below represents the overall structure of the O&M programs. Following the graphic are more detailed descriptions of each program.

Figure 4.7 Overall Structure of Continuous Sewer Assessment O&M Programs



- *Trouble Call Program:* The trouble call program is the program where the District reactively responds to calls from customers who suspect they have a problem related to their sanitary sewer. The trouble call can be a result of a basement back-up, sinkhole formation, surface flooding, or other type of service problem. The District will immediately send a crew to investigate the cause of the problem and will apply necessary corrective action such as cleaning and/or structural repair. Under certain circumstances, the trouble call will result in the investigation of surrounding sewers to see if other issues exist in the vicinity. Since this program is generally reactive, the goal of the overall Continuous Sewer Assessment Program is to reduce the frequency of trouble calls. The District has always tracked customer calls in a database of some form, depending on available technology. Trouble calls have been tracked and stored in gbaMS since 2000.

- *Preventive O&M Program:* The Preventive O&M program comprises activities designed to proactively prevent system failure such as pipe collapses and blockages that can cause or exacerbate overflows in the SSS. These activities include closed-circuit television (CCTV) initial inspection, pipeline re-inspection, cleaning, and rehabilitation/replacement. This program is iterative and progressively proactive and includes continuous prioritized pipeline inspection and assessment, and re-inspection and re-assessment, cleaning and re-cleaning (see process diagram in Appendix F). The program is designed so that the District can develop an accelerated understanding of the overall condition of the system so that inspection, cleaning, and rehabilitation priorities can be quickly identified, schedules can be developed, and work can be performed. The goal of this program is to reduce the need for the Trouble Call program and allow the District to better plan and budget system cleaning and rehabilitation.

- *Sonar Program:* The Sonar program is an assessment program the District currently uses for the interceptors in the combined system and large trunk sewers in the separate system where the dry weather flow level is too high or, in some cases such as a siphon, the pipe is continually surcharged and does not allow CCTV inspection of the sewer. In these cases, Sonar equipment is combined with CCTV equipment to develop a 360° view of the sewer. This allows for an understanding of the structural condition of the pipe, as well as an understanding of the level of sediment in the bottom of the pipe. This program is designed to help the District maintain capacity in the main trunk and interceptor sewers and to help prevent very costly collapses where significant spill volumes are possible due to the large tributary area to these sewers.

- *Sanitary Sewer Evaluation Survey (SSES) Program:* The SSES program comprises activities designed to help find sources of I/I, evaluate the potential to cost effectively remove I/I, and subsequent activities designed to cost effectively remove I/I sources in targeted areas. This program will initially focus on areas

where significant I/I is entering the sewer basin as quantified by flow monitoring. Assessment activities include, but are not limited to CCTV, smoke testing and dye testing. The overall goal of this program is to identify sources of I/I entering the system and identify opportunities to remove the I/I cost effectively. The SSES program has been used by the District since 1995 when the District took over the cities sewer systems. The new Continuous Sewer Assessment Program will formalize the procedures for the SSES program and provide a prioritized structure and format for conducting the program throughout our collection system. Initially, the SSES program will focus on basins where 10% – 20% of the area contributes to rainfall derived I/I. These basins will be assessed first and then remaining basins will be assessed in coordination with our Watershed Plans in our Consent Decree.

- *Large Diameter Sewer Assessment Program (LDSAP):* The LDSAP program is targeted toward District sewers where the consequence of failure (criticality) is high. These sewers tend to be in the older, combined system with pipes typically 15-inches and larger in diameter, most of which are located under roads and buildings. This program was originally developed and has been active since 2001. A copy of the original report is kept on file on the District's server.

  A key feature of this program is the use of the AquaZoom camera system as a screening tool to assess sewer and manhole condition. This system is essentially a high-powered, high-optical zoom video camera attached to a powerful lighting system that allows the user to take a virtual trip through the length of the length of the sewer with the camera. The camera also conducts a highly detailed video inspection of the upstream and downstream manholes as it travels down to inspect the upstream and downstream sewers. The results of the AquaZoom screening inspection are used to identify where cleaning and/or detailed CCTV inspections are needed to further assess defects identified by the AquaZoom camera.

  The benefit of this approach is that system assessment utilizing the AquaZoom system can be performed much more cost effectively and faster than detailed CCTV inspection of all pipes. This is due to the fact that the AquaZoom system identifies and scores each defect along the length of the pipe and then provides an overall structural condition grade and potential for blockage grade based on a 1 to 5 scale (1=best, 5=worst). This score then allows the user to target CCTV inspection on only the highest scored pipes (4's and 5's). Because CCTV inspection of larger diameter pipes is typically much more expensive than inspection of smaller diameter pipes this targeted approach saves money on inspection costs. The AquaZoom system targets inspection and cleaning dollars where they are needed most.

Based on the results of the screening, which occurs at set intervals determined by inspection results, sewers will be initially cleaned and/or inspected via CCTV and an overall structural assessment will be done to determine if rehabilitation or replacement is needed. The sewers needing cleaning are then put on a frequent interval for re-cleaning. The sewers found to not need rehabilitation/replacement are then put on a frequent interval for re-inspection. Collection system rehabilitation/replacement projects will then be developed based on a combination of condition and criticality.

- *Manhole Inspection Program:* A key component in the overall Continuous Sewer Assessment Program is the manhole inspection program. Manholes can be a significant source of I/I and must be kept structurally sound so they can serve their purpose as locations of entry for maintenance of the piping system. The manhole inspections will be performed at the same time as the sewer inspections associated with the above sewer programs.

  Manholes will be inspected using industry-standard assessment techniques and defect descriptions based on the SCREAM Manhole program and will be tracked in the same software (gbaMS) that is being used to manage the condition assessment of the sewers. The results will be used to assess the extent of structural defects, signs of sewer surcharge, as well as the risk of significant I/I entering the manhole. The inspection will include photos and, in the case of the AquaZoom program, video of the entire manhole.

<u>Assessment Prioritization</u>

The District is implementing an asset management-based approach to the overall Continuous Sewer Assessment Program. One key feature of this approach is the prioritization of assets for assessment and subsequent rehabilitation or replacement. Typically, areas where problems are known to exist or where there is a high likelihood of problems should be inspected first. Other factors such as consequence of failure (criticality) also play a key role. These factors must be balanced against the need to perform assessments in a logical, contiguous manner.

For the combined system, which includes larger diameter pipe than most of the separate system, but is much lower in total linear footage, criticality ratings were used to help develop priority scores for the combined sewer basins, which feed the LDSAP portion of the assessment program. These criticality ratings were developed using a slightly modified version of the industry-standard Water Research Centre (WRc) criticality methodology. All sewers are then given a screening inspection using AquaZoom.

In the smaller diameter separate sewer area, which comprises most of the system, a "prioritized basin" approach was developed for the District's Continuous Sewer Assessment Program. The District's 183 separate sewer drainage basins have been

given priority scores based upon proximity to SSOs, work order history, overflow history, structural and service performance, and existing PM listings. See Appendix G for detailed information regarding the District's basin prioritization process and priority scoring results.

While this basin approach will logically dictate most of the sewer and manhole inspections, there are certain conditions that require priority inspection regardless of basin locations. These include:

- All pipes within 50' of a stream to ensure stream water is not being taken in by the sewer
- Pipes downstream of SSOs where blockages could be present and causing or contributing to overflow problems
- Pipes in areas where high I/I is known to exist. These pipes will become part of the SSES program

By utilizing this overall approach to continuous sewer assessment, the District will allocate resources in the most cost-effective manner possible by aggressively addressing high priority areas with earlier initial inspections and shorter re-inspection intervals than less critical areas. This tailored approach allows for the entire collection system of approximately 7.9 million feet to be inspected via CCTV within 10 years, with re-inspection of critical lines occurring throughout the 10-year cycle. Refer to the process diagram in Appendix F and the Inspection Projections section below for a more detailed description of inspection intervals.

Basin inspections will be broken into three phases based on the priority scores. As a result of the comprehensive scoring process, the following characteristics of each phase are:

- Phase 1 comprises all basins with priority SSOs and other basins with known problems. Priority SSOs have been identified as part of the District's Watershed Plans development.
- Phase 2 comprises all other basins with Consent Decree listed SSOs and other basins with problems that are not as concentrated as Phase 1 basins.
- Phase 3 comprises newer basins where available data shows few structural or service related problems.

Refer to Appendix H for a detailed map of the outcome of the District's basin prioritization process. This map also displays the locations of the 106 recurring SSOs identified in Exhibit A of the District's Consent Decree, which visually demonstrates the correlation between our prioritized approach to assessment activities and the benefit our targeted approach will have in addressing critical areas of the system first.

Inspection Projections

As stated previously, the program as laid out will result in every pipe in the system (7.9 million feet) being inspected on a 10-year cycle. However, it is important to note that

the actual rate of sewer inspections and re-inspections could cover the entire equivalent length of the collection system in five years. This is due to the fact that some pipes will be assessed on a more frequent basis if they are found to have some structural or service-related issues, but the initial inspection did not trigger moving the pipe to the rehabilitation/replacement program. These frequencies are illustrated in the process diagram found in Appendix F. Figure 4.8 below is a summary of the footage of pipeline to be assessed every year based on program forecasting. These projections were used to develop an understanding of the resource needs to implement the program as laid out in the flow charts. These footages and the Continuous Sewer Assessment Program will be assessed on a yearly basis and adjusted if needed as more data on condition is gathered.

In order to develop these projections, assumptions had to be made regarding the results of initial inspections. These assumptions were developed by analyzing the structural and service condition results from historic inspection data. All inspection projections and frequencies contained within the Continuous Sewer Assessment portion of this report are initial estimates and may change as we move forward with program implementation. These assumptions will be assessed on a yearly basis and adjusted as needed as more data is collected during the program. The projections of footage assessed may also change yearly depending on if the initial assumptions require adjustment.

Figure 4.8 Projected Cumulative Inspection Footage

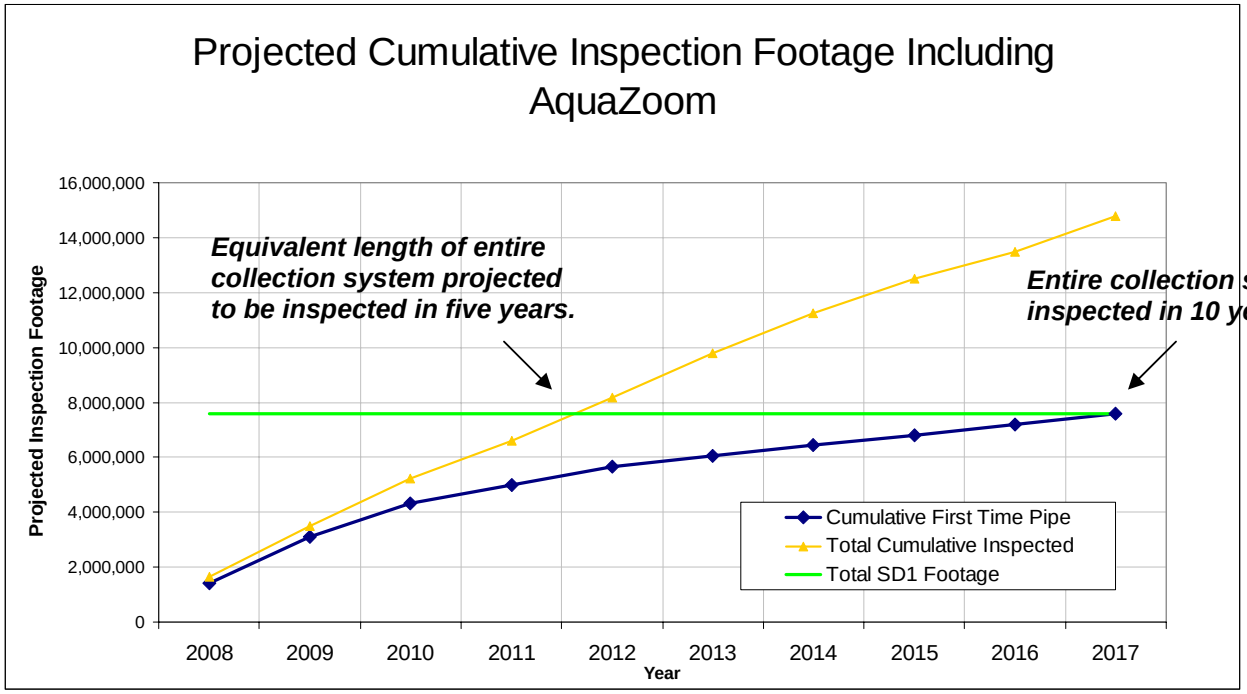
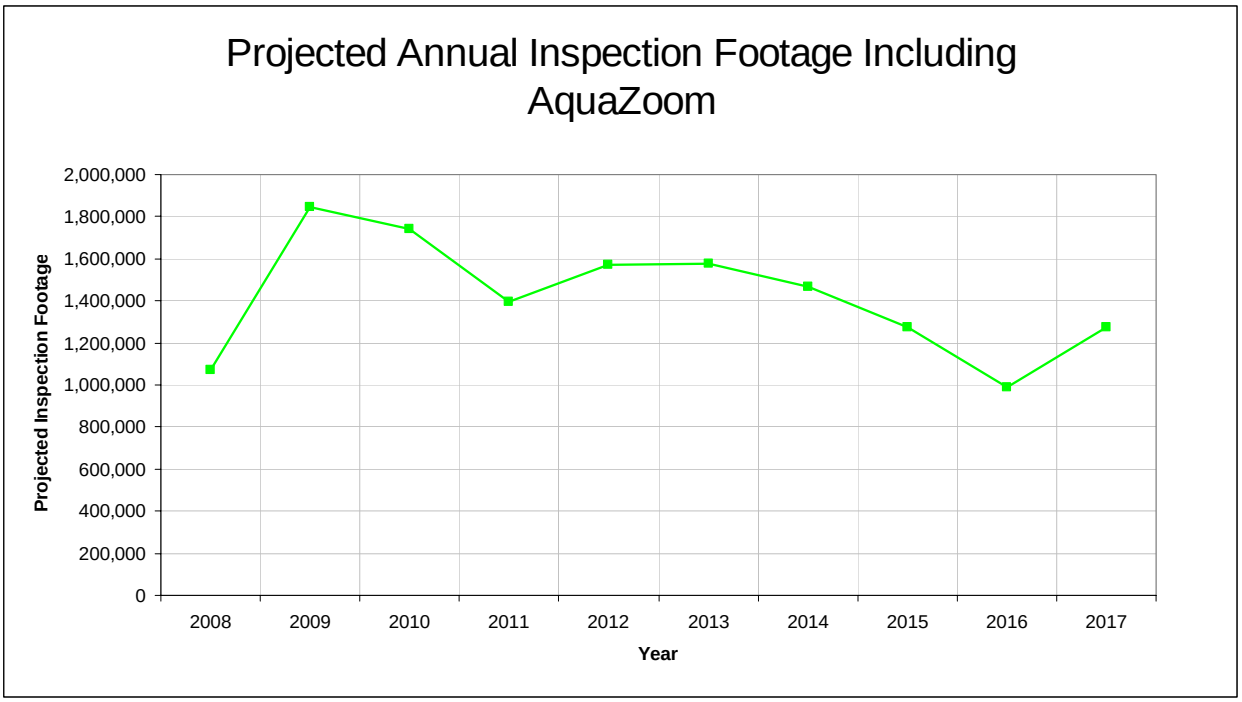


Figure 4.9 shows the projected inspection footage by year. The District intends to begin this Continuous Sewer Assessment Program in January 2008 and ramp up and acquire resources in 2008 to fully implement the program starting in 2009. However, as Figure 4.9 demonstrates, the District intends to inspect approximately 1.1 million feet of sewer in 2008 and obtain the resources necessary to increase these inspections to approximately 1.9 million feet in 2009.

Figure 4.9 Projected Annual Inspection Footage



Cleaning Projections

One key feature of the overall Continuous Sewer Assessment Program is the cleaning program. Cleaning of sewers is critical in maintaining the design capacity of the system and preventing SSOs. Sound engineering practice dictates sewer slopes necessary to prevent significant deposits of solids. In reality, however, many pipes were laid at very flat slopes to reduce installation costs or have subsided over time, resulting in sags and sedimentation. In addition, with the advent of kitchen disposals and the growing number of fast food restaurants, some pipes are susceptible to grease buildup. Roots are also a significant problem in many areas. Nevertheless, in most systems, a majority of the pipes do not need cleaning. Therefore, it is not logical, efficient, or cost effective to implement a cleaning program where all pipes are cleaned on a rotating basis. Only the pipes that are found to need cleaning should be cleaned on a routine basis.

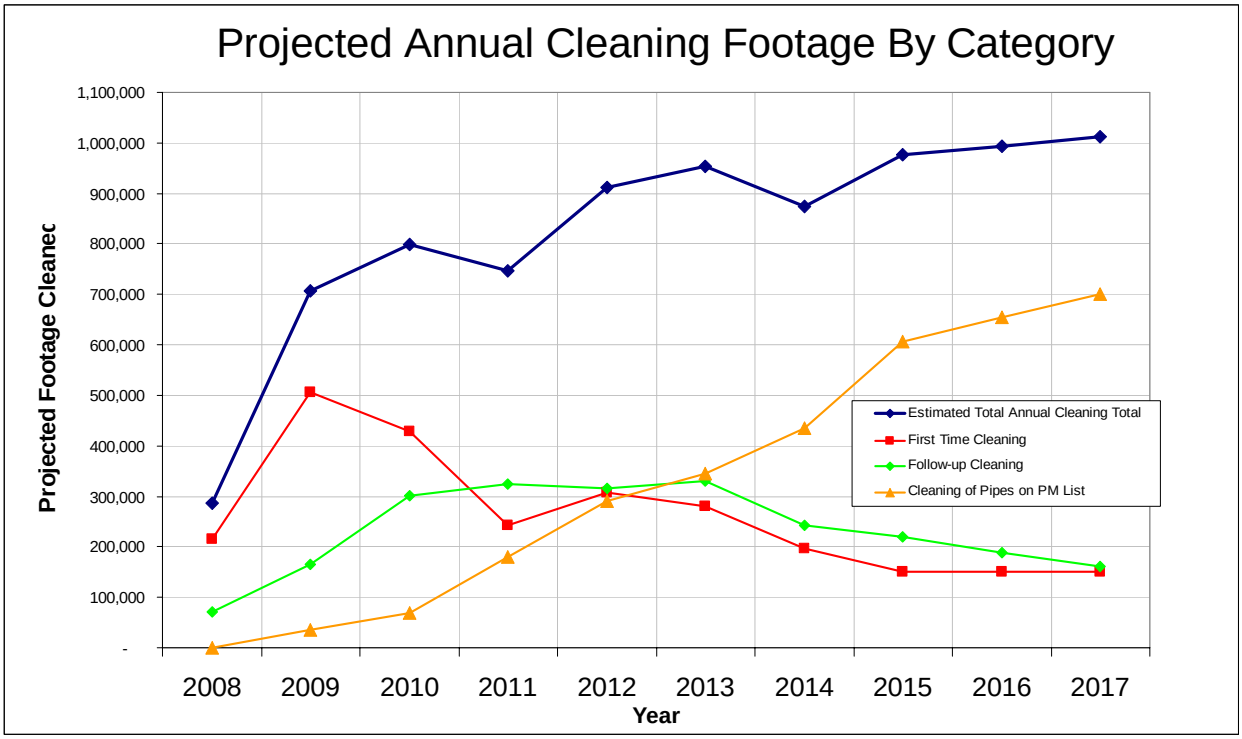
Because of the prioritization process developed by the District for the entire collection system, a cleaning program has been developed to make sure that cleaning activities

are done in a cost-effective manner and only on pipes that need cleaning. The inspection program described in the previous section will be used to implement the cleaning program. The overall approach of the cleaning program is to use the inspection program to develop an early understanding of the overall cleaning needs of the system and to implement capital solutions to eliminate the need for frequent cleaning where it makes sense and is cost-effective. For example, continuing to clean a sewer every six months or every year to remove roots is likely not cost-effective given that roots are a source of I/I because the pipe joint has been compromised. The District's program takes this fact into account and will evaluate opportunities to rehabilitate or replace this pipe in a cost-effective manner.

As with the inspection program described in the previous section, certain assumptions were made in order to forecast the cleaning needs over the next 10 years. These assumptions were made based on an analysis of the historic cleaning needs in all basins where the District has data and reflects the difference in cleaning needs by phase of assessment. Cleaning of the sewers will be conducted at the same time as the initial CCTV inspection if the sewer is identified to need cleaning. The cleaning program will classify pipes by their known cleaning needs as they are assessed and include new cleaning (pipes cleaned after initial assessment), re-inspection cleaning (follow-up cleaning of pipes prior to being placed on a permanent PM cycle or prior to implementation of a capital solution), and PM cleaning where it is cost effective to clean the pipes on a fixed schedule. The assumptions used to develop the projected yearly cleaning needs shown in Figure 4.10 will be assessed on a yearly basis and adjusted as needed as more data is collected through the program. The projections of footage cleaned may also change yearly depending on if the initial assumptions require adjustment.

The District has designed a program where the total annual cleaning tends to level out as the program matures, represented by the blue line in Figure 4.10. The "First Time Cleaning" pipes represented by the red line in Figure 4.10 are heavily front loaded due to the fact that known problem areas will be inspected and cleaned in the first years of the program. It is important to note that "First Time Cleaning" pipes are those that are cleaned for the first time within this program but may have been cleaned in the past. The District has performed significant cleaning for many years but this definition is being applied due to the change in cleaning strategy in this program. Figure 4.10 shows that the middle part of the first 10 years will reflect much of the follow-up re-cleaning, represented by the green line. These are pipes that are re-cleaned in accordance with the Cleaning Program portion of the process diagram found in Appendix F. This list decreases as pipes are put onto a permanent PM list or a permanent capital improvement is implemented. The orange line in Figure 4.10 represents the PM cleaning footage, which increases with time as more footage is inspected and the follow-up cleanings are completed. The PM list reflects those pipes where the cleaning needs are well understood and the preventative cleaning is proven to be more cost effective than a capital improvement solution.

Figure 4.10 Projected Annual Cleaning Footage



Rehabilitation/Replacement

For a more detailed description of the District's Rehabilitation & Replacement Program, refer to Section 4.3.2 of this report.

Applicable CMOM Programs

There are several CMOM activities that play an integral role in the District's Continuous Sewer Assessment Program, including Smoke & Dye Testing, Flow Monitoring, CCTV Inspections, Manhole Inspections, Manhole Repairs, Rehabilitation & Replacement, Sewer Cleaning, and Mainline Sewer Repair. Each program has been further evaluated in the eight subsequent sections

4.2.14 Smoke & Dye Testing

Program Purpose

The purpose of the District's Smoke & Dye Testing Program is to identify specific sources of storm water I/I into the SSS after larger problem areas have been discovered through CCTV inspection and flow monitoring of the sewers. Smoke & dye testing along with CCTV inspection and flow monitoring comprises the District's Sanitary Sewer Evaluation Survey (SSES) program elements. Smoke testing helps to identify significant sources of storm water I/I, including private service laterals and illegal connections such as downspouts and area drains. Smoke testing can also be used to

determine the location of sewer main defects likely contributing to an I/I problem. Dye testing is used primarily to verify the results of smoke testing.

The Smoke & Dye Testing Program is one integral part our high-level Continuous Sewer Assessment Program.

Connection to SSO Elimination

This program contributes to the identification of I/I sources, which aids in the process of prioritizing further investigations and implementing repairs and rehabilitation efforts to remove the I/I and provide sufficient capacity to eliminate SSOs.

Program Documentation & Procedures

Smoke and/or dye testing is performed only in targeted areas of the collection system after CCTV inspection and flow monitoring of the sewers have revealed problems or high wet weather flows. A formalized schedule for smoke and dye testing is not developed until problem areas have been identified that warrant implementation of this program. A formalized and prioritized program for SSES work throughout the collection system was not developed in the past. Realizing this need, the District is currently developing a formal and prioritized SSES program as part of our Continuous Sewer Assessment Program.

Once the need for smoke and/or dye testing has been identified, affected residents are notified through a variety of communication channels, including letters, signs, published public notices, and door hangings. Public Relations and Collection System personnel determine the most effective way of notifying homeowners, depending on factors such as the extent of the project and historical work that has been conducted in the area.

Written SOPs do not currently exist for smoke and dye testing procedures, but the District plans to develop written procedures during FY 2008. These SOPs will include the best methods of notifying homeowners.

An Interior Dye Test Form, Exterior Dye Test Form, Building Inspection Form, Smoke Test Form, and a combined Smoke & Dye Test Form are used for all data collection and recordkeeping associated with this program. These forms contain pertinent information pertaining to the results of the I/I investigation, including sketched drawings of the project area. Work orders associated with smoke and dye testing activities are entered into gbaMS. Inspection forms and sketches are not in an IMS; however, hard copies are stored in project files.

Program Training & Staffing

The District has a designated Special Projects Crew, composed of six Customer Service crew members and one crew leader from the Collection System Department. This crew is largely charged with investigatory work related to I/I and works closely with members of the Regulatory Compliance and Engineering staff. This crew will be folded

into the CCTV crews needed for the District's Continuous Sewer Assessment Program. Outside contractors are used as needed to assist with large-scale projects. All training for internal crew members is on the job.

Performance Goal(s)

The ongoing goal of the Smoke & Dye Testing Program is to accurately identify specific locations where storm water is entering the sanitary sewer system, either through illegal connections, private service laterals, or defects in the pipe. A specific performance goal for FY 2008 is to develop a prioritized SSES program for the collection system. This program has been developed and is discussed further in the Continuous Sewer Assessment portion of this report. A second goal is to evaluate the possibility of inputting inspection form content and project area sketches into gbaMS to allow for more effective data management and evaluation.

Performance Measures

The success and effectiveness of the Smoke & Dye Testing Program is measured through the content and accuracy of data collected during field investigations. Content and accuracy of data is measured on a continuous basis through project and team meetings, as well as occasional CCTV follow-up work to verify inspection results. In addition, the implementation of the program is measured through personnel performance reviews.

Periodic Evaluation

To date, our Smoke & Dye Testing Program has been successful in identifying sources of I/I throughout the collection system. The program is evaluated both during and after special projects to assess its effectiveness. In addition, the Smoke & Dye Testing Program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule

The self-assessment process helped to identify three main areas of improvement for the Smoke & Dye Testing Program – planning, documentation, and data management. By the end of the 2007 calendar year, a plan for formalized and prioritized SSES work throughout the collection system will be developed as part of the high-level Continuous Sewer Assessment Program. In addition, by June 30, 2008, the following improvements will be implemented:

- Written SOPs will be developed for operational, public notification, and data management procedures related to the Smoke & Dye Testing Program.
- Crew members will begin entering inspection form data, sketches, and project photos into gbaMS. This will require additional training for some staff members.

4.2.15 Flow Monitoring

Program Purpose

The purpose of the District's Flow Monitoring Program is to assess system capacity during both dry and wet weather in order to assure adequate current and future capacity. Flow monitoring serves as both an investigative tool and a planning tool by providing data used to:

- Refine and calibrate hydraulic models to be used for capacity assurance for current and future growth
- Assess capacity for additional connections
- Understand the frequency and volume of spills during wet weather
- Support I/I studies in targeted areas

The District's 1995 Regional Facilities Plan identified the need to develop a Flow Monitoring Program for the purpose of assessing capacity in targeted areas of the system. Since then, the District has used flow monitoring as a means for capacity analysis, I/I investigations, and model development and calibration.

The Flow Monitoring Program is one integral part our Continuous Sewer Assessment Program.

Connection to SSO Elimination

Flow monitoring activities contribute to the elimination of SSOs by generating data critical to assessing capacity and determining parts of the system where capacity is exceeded during rain events. In turn, this data helps the District characterize problem areas and develop effective solutions to eliminate recurring overflows and prevent future overflow occurrences.

Program Documentation & Procedures

The District currently owns 127 portable flow meters and 40 portable rain gauges. Internal crews place temporary flow meters and rain gauges at select locations throughout the service area to conduct I/I investigations. The number of active flow meters is continuously in flux based upon project needs. Permanent flow meters are housed in the District's collection system at all treatment plants and at the Allen Fork, Bromley, Burlington, Gunpowder, Lakeview, Richwood, and Taylorsport pump stations.

In addition to the flow meters that the District owns and operates, there are currently 242 flow meters and 45 rain gauges installed in the collection system as part of the District's current Flow Monitoring Program to characterize priority areas and understand capacity limitations to support the development of the Watershed Plans in the Consent Decree. The District has subcontracted this work to ADS Environmental Services, and the meters and gauges will be installed for one year to assess dry and wet weather capacity under varying seasons and groundwater levels. This data will then be used to update the calibration and verification of the District's InfoWorks hydraulic models.

The meters owned by the District are Sigma 910 and Sigma 920 flow meters. Each is manually observed and data downloaded on an average of every two weeks by internal staff members. The meters and rain gauges currently installed and maintained by the District's subcontractor utilize wireless communication where available (203 sites). The sites with wireless telemetry are reviewed once per week, and the sites with manual communication (where wireless signal is not available – approximately 39 sites) are reviewed biweekly. In addition, sites where meters are located at overflow points are reviewed after each rain event. The types of meters being used for this portion of the Flow Monitoring Program are Sigma 920, ADS Flowshark, and Teledyne-Isco ADFM meters.

Log Sheets and Maintenance Forms are filled out for each flow meter during site visits, digital pictures are taken of the installations, and hard copies are stored in specific project files. Data collected through routine inspections includes independent water levels, desiccant observations, velocity readings, battery condition, graph quality, and scatter plot quality. Also during site visits, District crew members download data directly from the meters into InSight®, which is a data analysis software system used to support American Sigma flow meters. This data is then transferred to a File Transfer Protocol site for use by outside consultants. For the meters installed and maintained by the District's subcontractor, data for all meter and rain gauge locations are available from the internet using Intelliserve software. Text files of flow meter data are also stored on the organization's hard drive and Intelliserve.

Written SOPs do not currently exist for the Flow Monitoring Program, but the District plans to develop written procedures during FY 2008. In the interim, American Sigma provides a 910/920/930 Flow Meter Operating and Maintenance Manual and an Insight® Data Analysis Software User's Guide. Both of these manuals are kept on file at the District and referenced by internal staff members. Written SOPs are in place by the District's subcontractor, and meter scattergraphs and hydrographs are reviewed on a weekly basis by the District's subcontractor and consultants.

Program Training & Staffing

The District has a team of six crew members and one crew leader dedicated full time to implementation of the Flow Monitoring Program. Outside contractors are used as needed to assist with data analysis and model calibration, as well as data collection during large-scale projects. The District currently has a $4 million, 12-month contract with ADS Environmental Services to conduct the flow monitoring work associated with the watershed characterization discussed in the previous section.

Internal crew members are trained primarily through on-the-job training, supplemented by the use of owner/operator manuals and periodic training provided by American Sigma. On-the-job training topics include installation, programming, and downloading

procedures. Flow Monitoring crew members also receive formal safety training relevant to their specific job duties, such as confined space entry.

The District's Flow Monitoring crew identified the need to attend data analysis training in order to enhance their ability to interpret data, to be more adept at identifying issues in the field, and to better manage outside contractors. This may require participation in formalized classroom training.

Performance Goal(s)

The ongoing goal of the Flow Monitoring Program is to provide adequate and accurate data to support the District's capacity assessment and assurance analyses and I/I investigation needs. A specific performance goal for FY 2008 is to complete the data collection necessary to update the calibration of our five hydraulic models (refer to Appendix I for a map of the District's hydraulic sewer models):

- Bromley Model
- Dry Creek Model
- Eastern Regional Model
- Taylorsport Model
- Western Regional Model

Over the next year, we will continue to assess capacity in the overall backbone of our collection system and at priority overflow locations. Data collection for model calibration began in June 2007 and will continue through June 2008, dependent upon rainfall.

Performance Measures

The success and effectiveness of the Flow Monitoring Program is measured by the accuracy and completeness of data collected, which is continuously analyzed through project-specific meetings and ongoing communication with both internal and external groups involved in implementing the program. The internal Flow Monitoring team meets daily to discuss pertinent issues and to review upcoming schedules. It is through these project and team meetings that staff can determine whether or not we are collecting the quantity and quality of data needed for this program to be successful. In addition, the implementation of the program is measured through personnel performance reviews.

A specific performance measure for the current fiscal year is completion of full calibration of the five hydraulic models referred to in the previous section.

Periodic Evaluation

To date, our Flow Monitoring Program has been successful in generating data pertinent for developing hydraulic models and investigating sources of I/I throughout the collection system. For example, in 2004, flow meter data was used to assess alternatives for wet weather remediation at the Allen Fork Pump Station. Flow meter data has also been used to identify sources of I/I that were overwhelming the Pond Creek WWTP. Several other projects throughout the service area that have been

completed since 1995 have required flow meter data to help with problem identification and remediation. Most of the projects listed as Initial Action Watershed Projects in the District's Consent Decree, including the Eastern and Western Regional collection system projects, utilized flow monitoring as the backbone for the design of solutions.

In addition, the Flow Monitoring Program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree

Summary of Recommended Improvements & Implementation Schedule
The self-assessment process helped to identify two main areas of improvement for the Flow Monitoring Program – documentation and training. By June 30, 2008, written SOPs will be developed for internal flow monitoring activities. In addition, the District will assess data analysis training for internal flow monitoring crew members.

4.2.16 CCTV Inspection

Program Purpose
The purpose of the District's CCTV Inspection Program is to collect sewer condition information through the use of a visual inspection tool. CCTV is used to inspect the inside of mainline sewers to determine the condition of the pipe, which may reveal issues such as corrosion, blockage caused by roots and grease, leaking joints, or deteriorated and collapsed sections of pipe.

Video footage from CCTV inspections is captured onto a DVD disk for further evaluation and archiving. The footage is analyzed by a team of collection system and engineering personnel to determine the extent of rehabilitation required to remediate problems identified through the televised inspection.

The CCTV Inspection Program is one integral part our Continuous Sewer Assessment Program. Historically, this program has been implemented only in known problem areas; however, once the Continuous Sewer Assessment Program is implemented, CCTV will be used to inspect all sanitary sewer lines in our collection system over a 10-year period. High priority areas will be inspected via CCTV several times during the 10-year cycle based upon the re-inspection frequencies associated with specific structural and service grades.

Connection to SSO Elimination
This program contributes to the identification of I/I sources and structural defects and blockages, which aids in the process of prioritizing further investigations and implementing rehabilitation and replacement efforts to remove the I/I and blockages and provide sufficient capacity to eliminate SSOs.

Program Documentation & Procedures

The District operates a fleet of five CCTV inspection vehicles (from a variety of manufacturers) that are fully equipped with cameras, control units, rods, and all other items necessary to perform CCTV inspections. This technology enables us to survey pipes ranging from 6 to 48 inches in diameter. This technology also enables District crews to record audio information and observations. Once footage is captured, staff uses the data to rate the criticality of pipes and determine whether it needs to be placed on PM or if it requires rehabilitation or replacement. To aid in this process, District crews currently use standards developed in house to rate the criticality of pipes on a 1-3 scale, with 3 representing pipe segments with severe defects. The District is currently switching over to a new defect coding system that utilizes the Sewer Condition Risk Evaluation Analysis Model™ (SCREAM) tool. SCREAM™ is a sewer and manhole condition assessment tool developed by CH2MHill. The software provides a standardized defect coding system and a definitive scoring and ranking process, eliminating subjectivity by the operator. The scores for each pipe segment are based on a scale of 1-100 for both structural and maintenance conditions, which allows for a better understanding of assigning relative risks of failure. SCREAM™ training will take place for Collection System and Engineering personnel in November 2007, and this new tool will begin to be utilized in December 2007.

In addition to the CCTV work performed by District crews, large diameter and some smaller diameter sewer lines in the District's collection system are inspected by outside contractors through the use of AquaZoom screening technology. AquaZoom is a high-powered, high-optical zoom video camera that provides a rapid evaluation of the District's collection system. The results of the AquaZoom screening inspection are used to identify where cleaning and/or detailed CCTV inspections are needed to further assess defects identified by the AquaZoom camera. In some cases, however, the AquaZoom inspection provides sufficient condition information to move forward with rehabilitation/replacement planning, and further inspection is not necessary.

The District has also included a Sonar Inspection Program into our Continuous Sewer Assessment activities. This program focuses on large trunk sewers and interceptors where the flow is too high for just CCTV inspection and where information is needed to assess sediment levels. In these cases, Sonar equipment is combined with CCTV equipment to develop a 360° view of the sewer. However, as with the AquaZoom inspections, Sonar inspections sometimes provide sufficient condition information and do not need to be further supplemented with CCTV work.

Once footage is obtained from CCTV inspections, the DVDs are stored at the District and filed according to truck number and project. Comments and/or work orders associated with the footage are entered into gbaMS. We have been entering CCTV data into GBA since 1999. The District will have the ability within the next year to input video footage directly onto a hard drive, which will give us the capability of hyperlinking

footage to gbaMS and GIS. This is a process currently being developed by the District's IT staff.

Written SOPs are in place for internal CCTV inspection procedures.

Program Training & Staffing

The District currently has five crews available full-time to perform CCTV inspections. Each crew consists of one truck and two operators. CCTV crews are often paired with a cleaning crew, consisting of two operators and one Vactor cleaning truck. These crews are responsible for trouble calls, PM program implementation, I/I investigations, CCTV inspection, and cleaning in dedicated project areas, service lateral inspections, and pre/post-construction inspections associated with capital improvements. Most of the training for these crews has been on the job; however, this has been supplemented with formal operator training conducted by the equipment provider. In addition, approximately six members of our Collection Systems staff have attended formal National Association of Sewer Service Companies Pipeline Assessment and Certification Program (NASSCO PACP) defect coding training and are PACP-certified. This training will be replaced with SCREAM™ training, which is the new defect coding system the District will use to rate pipe condition. In addition to internal crews, the District also utilizes an outside consultant for the AquaZoom work and outside CCTV crews for special projects.

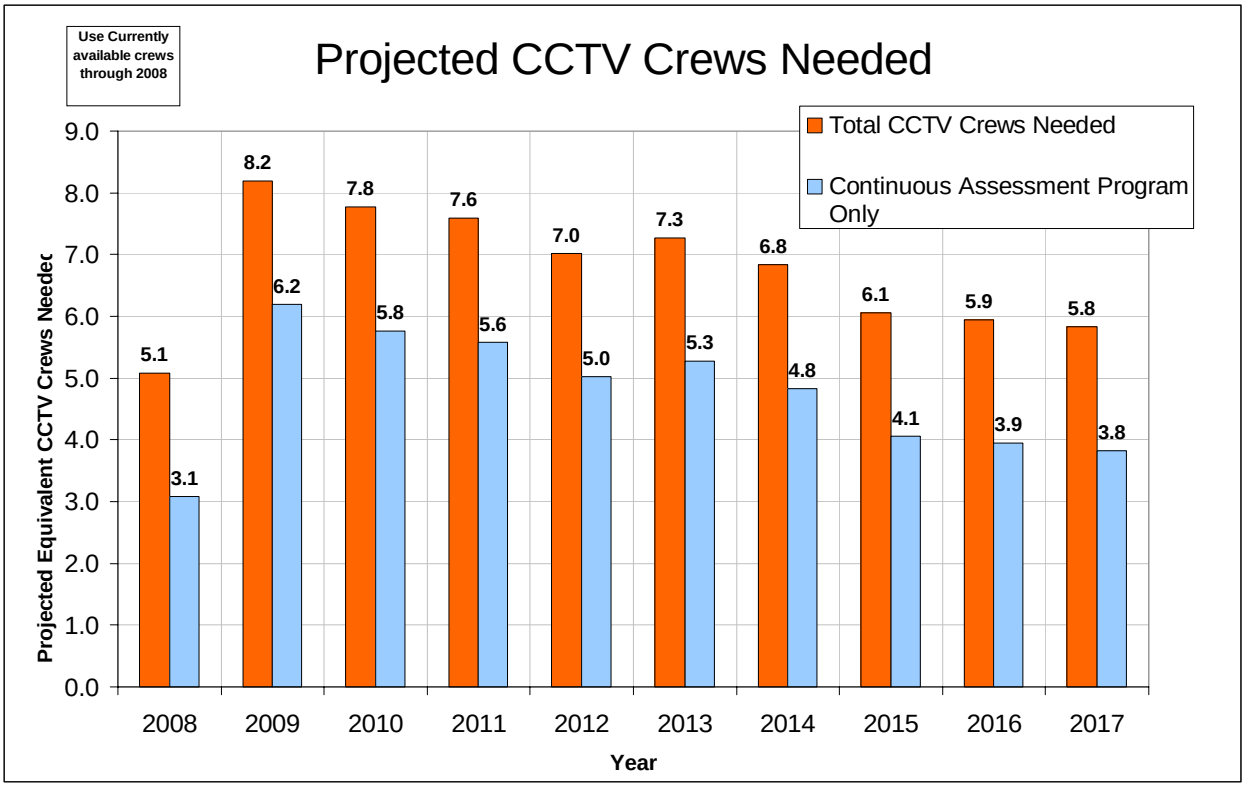
Projected Resource Needs

In order to implement the CCTV inspection portion of the Continuous Sewer Assessment Program detailed in Section 4.2.13 of this report, it is necessary to determine the resources needed. The inspection projections described in Section 4.2.13 of this report were used to forecast resource needs. In order to develop the projections, it was assumed that CCTV crews could inspect on average 1,000 linear feet of sewer per day. This amount is based on historic average CCTV inspection production at the District.

Figure 4.11 below shows estimated CCTV crew needs for the Continuous Sewer Assessment Program, as well as the estimated total number of CCTV crews needed to address other demands such as trouble call responses, inspection of sewers where pavement replacement is planned, and the sewer overflow response plan activities. The figure summarizes total CCTV crew needs, but does not assume that in-house only resources will be used. Outside CCTV crews will be used as needed to supplement the in-house crews. A CCTV crew is defined as one CCTV inspection truck and one Vactor truck. Figure 4.11 shows that five total CCTV crews are needed in 2008 as the District begins implementing our Continuous Sewer Assessment Program. Three dedicated CCTV crews will be used for the CCTV inspection and cleaning program. The AquaZoom portion of the inspection program will continue to be subcontracted out to a local firm. Beginning in 2009, five dedicated CCTV crews will be solely utilized for the continuous sewer assessment program and two crews will continue to be used to

address the other demands listed above. CCTV crew needs will be assessed and adjusted annually as work is completed and initial assumptions are evaluated.

Figure 4.11 Projected CCTV Crews



Performance Goal(s)

The ongoing goal of the CCTV Inspection Program is to proactively obtain sufficient visual records of our sewer lines in order to make more informed rehabilitation decisions, eliminate SSOs, and plan for future infrastructure needs. Specific performance goals for FY 2008 are guided by the District's Continuous Sewer Assessment Program. In 2008, the District will begin conducting systematic inspections of all sewer lines within our service area, with our entire system being inspected at least once within a 10-year period. Specific details of this program are outlined in the Continuous Sewer Assessment portion of this report.

A specific administrative performance goal for FY 2008 is to gain the appropriate combination of internal staff and outside contractors, as well as the equipment necessary to meet the CCTV inspection schedule outlined in the Continuous Sewer Assessment Program. In addition, all staff members responsible for implementation of the CCTV Inspection Program will be trained on SCREAM™ during the current fiscal year.

Performance Measures

The success and effectiveness of the CCTV Inspection Program is measured on a continual basis through frequent project-specific meetings and ongoing communication with both internal and external groups involved in implementing the program. CCTV crews meet regularly to discuss pertinent issues and to review upcoming schedules. It is through these project and team meetings that staff can determine whether or not we are collecting the quantity and quality of data that we need for this program to be successful. In addition, the implementation of the program is measured through personnel performance reviews.

More specifically, performance for FY 2008 will be measured by determining whether or not we are on schedule with the CCTV inspection and cleaning projections portion of our continuous sewer assessment activities and have fully trained staff and adequate resources in place to implement the program.

Periodic Evaluation

To date, our CCTV Inspection Program has been successful in obtaining visual footage of more than four million feet of pipe, some of which has been visited more than once. We have been collecting visually recorded data of our collection system since 1995, and have since greatly expanded the internal resources for program implementation. The District has stayed current with technological advances. We started with VHS recordings, are currently using DVD recordings, and plan to switch to digital media files in the near future. The program is evaluated on a consistent basis through project and team meetings to assess its effectiveness. In addition, the CCTV Inspection Program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree. It will also be evaluated as one piece of the larger Continuous Sewer Assessment Program.

Summary of Recommended Improvements & Implementation Schedule

All recommended improvements to the CCTV Inspection Program are related to the development of the District's Continuous Sewer Assessment Program. By the end of the 2007 calendar year, the following improvements will be implemented:

- A plan for formalized and prioritized CCTV work throughout the collection system will be developed.
- The necessary resources to implement the CCTV inspection schedules outlined in the Continuous Sewer Assessment portion of this report will be identified and will begin to be acquired.
- All applicable staff will be fully trained on how to use the new SCREAM™ defect coding system and implement the formal Continuous Sewer Assessment Program.

4.2.17 Manhole Inspection

Program Purpose

The purpose of the District's Manhole Inspection Program is to conduct visual inspections of the manholes in our service area in order to confirm the accuracy of system mapping, determine the extent of I/I problems, and to provide an overall assessment of rehabilitation/replacement needs for each manhole.

The Manhole Inspection Program is one integral part of our Continuous Sewer Assessment Program. It will be linked to the same schedule as CCTV inspections, with visual inspections of the upstream and downstream manholes occurring at the same time as televised inspections of sewer segments.

Connection to SSO Elimination

The Manhole Inspection Program contributes to the elimination of SSOs by identifying sources of I/I, which aids in the process of prioritizing further investigations and implementing rehabilitation/repair efforts to remove the I/I and provide sufficient collection system capacity to eliminate SSOs.

Program Documentation & Procedures

Implementation of this program is tied closely to the televised inspections of sewer lines. CCTV crews will typically conduct visual inspections of manholes when performing CCTV work. AquaZoom footage includes visual inspections of the manholes in the large-diameter, combined portions of our sewer system. Crews will also typically conduct manhole inspections during responses to trouble calls and during special projects such as I/I investigations and smoke and dye testing in targeted areas. In addition, manhole inspections are occasionally performed in association with flow monitoring activities, and are routinely performed for newly constructed manholes by our Engineering Inspectors. Upon commencement of the Continuous Sewer Assessment Program in January 2008, manhole inspections will begin to be performed on an established, routine basis and will follow the same inspection schedule and frequencies as our sewer CCTV Inspection Program.

A Manhole Inspection Form is filled out in the field and later entered into gbaMS; however, staff has identified the need to promote more consistent use of this form and documentation procedures. Crew members will fill out the Manhole Inspection Form when conducting routine, scheduled inspections in special project areas; however, a work order is typically generated from reactive manhole inspections, rather than completing the Manhole Inspection Form. Written SOPs do not currently exist for manhole inspection procedures; however, staff has identified certain standard procedures that can be formalized in written form. A combined CCTV/manhole inspection SOP will be developed during FY 2008 to align with the Continuous Sewer Assessment Program.

The new SCREAM™ CCTV inspection program the District will be implementing will not only be used to inspect and rate pipes, but also to inspect and rate manhole condition. As mentioned in the CCTV Inspection portion of this report, all appropriate staff members will be trained on SCREAM™ before the end of the 2007 calendar year.

Program Training & Staffing

There is not one specific crew designated to perform manhole inspections. As mentioned previously, CCTV crews, Flow Monitoring crews, and Engineering Inspectors are all used to implement this program. Once the Continuous Sewer Assessment Program is implemented, CCTV crews will be performing all formal manhole inspections associated with our continuous sewer assessment activities. Engineering inspectors will continue to be used for new manhole inspections associated with new construction.

All training is conducted on the job, although formal instruction will be offered for SCREAM™ training.

Performance Goal(s)

The ongoing performance goal of the Manhole Inspection Program is to gather sufficient and accurate data regarding the condition of manholes throughout our service area to identify sources of I/I and plan for rehabilitation needs. A more specific goal for FY 2008 is to meet the inspection schedule identified in the District's Continuous Sewer Assessment Program, which involves formally conducting and documenting manhole inspections during televised mainline inspections. This will ensure that all manholes are also inspected on a 10-year cycle.

Another performance goal for FY 2008 is to improve data management and documentation associated with manhole inspections. Developing a combined SOP for CCTV and manhole inspections will aid in this process, as it will outline specific procedures for filling out a Manhole Inspection Form and entering the data into gbaMS. In addition, staff identified during the self-assessment process that inventory is not being consistently updated in GIS and gbaMS, such as changes in location and/or material of manholes. Written SOPs will also improve this process. This issue is also addressed in the System Mapping portion of this report (Section 4.1.7).

Performance Measures

Historically, the success of the Manhole Inspection Program has been measured by determining if sufficient manhole condition data related to special projects has been properly gathered and documented. More specifically, performance for FY 2008 will be measured by determining whether or not we are on schedule with the inspections associated with the Continuous Sewer Assessment Program, and whether or not the inspection data has been properly documented and entered into gbaMS.

Periodic Evaluation

To date, our Manhole Inspection Program has been successful in obtaining and documenting the manhole condition data needed for special projects. However, unscheduled, reactive inspections have lacked proper documentation and data management. Staff has identified that there are a number of manhole inspections that have been performed that have not necessarily been properly documented. Formalizing the Continuous Sewer Assessment Program is designed to standardize this process.

The Manhole Inspection Program has historically been evaluated on a continuous basis through project and team meetings, in which routine manhole inspections associated with special projects have been discussed. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree. It will also be evaluated as one piece of the larger Continuous Sewer Assessment Program.

Summary of Recommended Improvements & Implementation Schedule

Most of the recommended improvements to the Manhole Inspection Program are related to documentation and data management. As with all other SOPs for CMOM activities, SOPs for this program will be developed by June 30, 2008. These written, standard procedures will include measures to properly document and enter data into gbaMS. In addition, more consistent use of the Manhole Inspection Form will be promoted among all District personnel responsible for conducting inspections, including new construction inspectors, special projects crews, CCTV crews, flow monitoring crews, and trouble call crews.

Inspections of newly constructed manholes will be improved by the New Development I/I Prevention Program being created as part of the Acquisition Considerations Program, which can be found in Section 4.1.4 of this report. The development of this program will reduce the number of buried and damaged manholes found after the one-year punch list and warranty for new construction has expired.

Lastly**,** by the end of the 2007 calendar year, the following improvements will be implemented in conjunction with the Continuous Sewer Assessment Program:

- A plan for formalized, prioritized, and routine manhole inspections will be developed and will mirror CCTV inspection schedules.
- All applicable staff will be fully trained on how to use the new SCREAM™ defect coding system for pipes and manholes.
- A standardized method for getting manhole inspection data utilizing SCREAM™ into gbaMS will be developed.

4.3 Equipment and Collection Systems Maintenance

4.3.1 Manhole Repairs

Program Purpose
The purpose of the Manhole Repairs Program is to ensure the structural integrity of manholes located throughout the District's service area in an effort to reduce I/I, control odor, and prevent public harm that may result from structural failure. This program also exists in order to increase accessibility to buried manholes**.**

The Manhole Repairs Program plays an integral role as one of our continuous sewer assessment activities.

Connection to SSO Elimination
Implementation of the Manhole Repairs Program helps prevent surface water from entering manholes and overwhelming the system, which may otherwise lead to an SSO caused by lack of capacity. In addition, maintaining the structural integrity of the interior of the manhole helps to keep wastewater in the public sewer system, preventing it from being released to the environment.

Program Documentation & Procedures
Activities associated with this program include repairing structural defects or leakage in individual manholes and castings. Structural repair work the District performs includes:

- Complete manhole replacement
- Slip lining
- Casting replacement
- Grouting
- Sealing
- Riser work

The type of repair chosen is unique to each situation and is determined using sound judgment to select the best immediate and long-term solution. Inflow dishes are used for odor control and some minor I/I issues. Crews will typically gel seal the manhole for I/I issues and then go back and inspect approximately six months later. Water-tight frames and lids are used for more serious issues, particularly those in ponding areas. Although good judgment is currently used to determine which type of lid to use to address I/I, staff has identified the need to standardize this process by instituting written guidelines to aid in the decision-making process.

A significant amount of time implementing this program is spent on responding to street paver requests to raise manholes. Staff has identified the need for better coordination with cities, counties, and the state in regards to street paving schedules so we can better plan for upcoming projects rather then responding to immediate needs. This

issue will also be addressed through the development of a formal Maintenance of Rights-of-Way Program (see Section 4.3.7).

Aside from requests associated with street paving, work orders for manhole repairs are typically generated as a result of manhole inspections. A hard copy of the Work Order Form is completed by members of the District's Collection System Construction crews and later entered into gbaMS. Construction reports are generated and distributed to management on a weekly basis. A spreadsheet of all daily work orders associated with manhole repairs is maintained and used to prioritize distribution of work. Manhole repair work is prioritized based upon safety concerns, criticality, and special project needs.

Program Training & Staffing

The District has two crews dedicated full time to manhole repair work. Each crew is composed of two construction personnel. There is one crew leader that supervises both crews. All training is on the job, with the exception of applicable, formal safety training.

Performance Goal(s)

The ongoing goal of the Manhole Repairs Program is to keep manholes throughout the service area accessible and in proper structural condition. Specific performance goals for FY 2008 are to:

- Standardize the decision-making process for manhole repair work associated with I/I
- Improve coordination with cities, counties, and the state regarding street paving projects
- Ensure consistent use of the Manhole Inspection Form when inspections are performed by Manhole Repair crews
- Utilize the Rehabilitation & Replacement process being developed as part of the Continuous Sewer Assessment Program to help prioritize manhole repairs (refer to the Rehabilitation & Replacement portion of this report)

Performance Measures

The effectiveness of the Manhole Repairs Program is measured by reductions in I/I through follow-up inspections and flow monitoring. The Continuous Sewer Assessment Program will also track manhole repairs that are conducted within each sewer basin and develop a formalized program for basin-wide repairs to sewers and manholes increasing efficiency, cost effectiveness of repairs, and reductions in I/I.

Periodic Evaluation

The Manhole Repairs Program is evaluated on a continuous basis through frequent team meetings with Collection System and Engineering personnel and through weekly construction reports reviewed by management. The effectiveness of repairs is also evaluated by post-repair inspections in critical areas. In addition, this program will be

evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule

Beginning immediately, manhole repair crews will consistently fill out Manhole Inspection Forms when performing an inspection in the field. This data will be brought back to the office and entered into gbaMS. By March 30, 2008, there will be a more standardized process in place for selecting the type of repair implemented. This will most likely take the form of written, standard operating guidelines (SOG). This process will also address the need to have a standard system for I/I removal at frame and casting. Finally, stronger coordination will be in place with cities, counties, and the state by the Spring 2008 street paving season. The development of a formal Maintenance of Rights-of Way Program will more specifically address this issue.

4.3.2 Rehabilitation & Replacement

Program Purpose

The purpose of the District's Sewer System Rehabilitation & Replacement Program is to provide structure to the planning and decision making associated with addressing infrastructure repairs and replacements. This program serves several functions, including:

- Ensuring adequate staff resources and data management tools are in place to address immediate needs and to prioritize the rehabilitation/replacement needs that arise from a variety of sources, including trouble calls, city requests, street paving projects, and all Continuous Sewer Assessment Program activities
- Determining the "next-step" actions required to address system deficiencies that arise from continuous sewer assessment activities such as AquaZoom, sonar, CCTV, flow monitoring, and trouble call responses. Actions could include immediate repair, re-inspection in the near future, as well as remediation measures such as PM cleaning, rehabilitation, or further SSES investigation.
- Making cost-effective rehabilitation decisions and allocating resources appropriately using an asset management approach and coordinating repairs and replacement with projects identified in the District's Watershed Plans in the Consent Decree

The District's Sewer System Rehabilitation & Replacement Program is the evaluation and planning portion of our larger Continuous Sewer Assessment Program. It is the internal process used to determine what repairs need to happen and when. Pipe segments and manholes with severe defects identified in the Trouble Call Program, LDSAP Program, Preventive O&M Program, and Sonar Program will be brought into the Rehabilitation & Replacement Program, as shown in Appendix F. Taking a big-picture approach to this assessment process enables us to make more informed, cost-effective, system-wide decisions.

Connection to SSO Elimination

Actions resulting from the Rehabilitation & Replacement Program are at the heart of eliminating SSOs, as the remediation measures are designed to reduce I/I, ensure system capacity, and remove blockages.

Program Documentation & Procedures

Prior to the development of a formal Continuous Sewer Assessment Program, there have been several processes in place to address rehabilitation and replacement needs; however, the District has recognized the need to increase the connectivity and structure associated with these processes. Sewer Repair meetings were established in 2006 with the purpose of sorting through the backlog of work orders, reviewing inspection results, prioritizing project areas, and determining the most appropriate solutions. Both Collection Systems personnel and Engineering personnel attended these meetings. During the time these meetings were held, a "Does This Pipe Need Rehab/Replace?" flow chart was created, which described a formal process for assigning priority scores. This was the District's first attempt at a formal, written program that addressed how to prioritize our work flow. These procedures have since been updated, and the newly revised process for assigning priority scores for the Rehabilitation & Replacement Program is outlined in the Continuous Sewer Assessment process diagram found in Appendix F.

The process diagram helps guide the first part of the decision-making process by placing individual pipe sections into preliminary priority rankings. As the flow chart shows, sewers that become part of the rehabilitation program are given a priority ranking of 1-3 based on factors such as criticality, SSES status, condition, and proximity to planned watershed projects.

While this individual priority ranking is critical, it is only the first step in the timing and method of subsequent rehabilitation or replacement. Groups of pipes must be selected for inclusion into real world projects. There are many more factors and decisions needed to develop these discrete projects for implementation. The following are some guiding principles that the District has developed to identify rehabilitation project extents and timing:

- Sewer collapses, which are defined as >50% pipe cross-sectional area loss due to material collapse, will be repaired immediately.
- Individual projects within each sewer basin will not be developed until a significant amount of data is collected and assessed within each basin. Having a bigger picture of overall needs for each basin and how the needs vary across basins will allow for better prioritization and planning. The previous approach taken was almost a "find-and-fix" method that resulted in significant opportunity costs.
- The projects that will be developed will tend to be large in scale and will be focused within sewer basins. This approach maximizes efficiencies and minimizes construction costs. In addition, it allows better integration with the

implementation of the District's Watershed Plan projects to address CSO LTCP and SSOP by maximizing the chance of having holistic solutions. This provides the ability for a project to simultaneously address hydraulic, blockage, and structural issues.

- Rehabilitation/replacement decisions will be made using an asset management approach and will be integrated with other ongoing programs such as the LTCP and SSOP. These programs may significantly impact the timing and method of repair. For example, sewers in a priority watershed as determined during watershed planning may result in acceleration or protraction of the schedule a project may normally receive due to the condition factors alone.
- Project prioritization will strongly consider watershed priorities but these will not be the only factor. Other priority factors include:
    - Average "priority score" of pipes in the project area which includes criticality, condition, and proximity to detailed watershed project.
    - Proximity to detailed watershed solution
    - Hydraulic level of service
    - Criticality (if needed for consideration beyond priority score use)
    - Service issues (e.g., high concentration of root intrusion)

These criteria are not necessarily comprehensive and may be modified as the Rehabilitation & Replacement program is implemented and matures.

The discussion above focused mainly on factors affecting the extent and timing of individual projects. There are other key questions that must be answered for individual sections of pipe when developing projects:

- Point repair versus manhole-to-manhole
    - Dig and replace point repair
    - Trenchless point repair
- Rehabilitation versus replacement
- Rehabilitation method
- Dig and replace manhole-to-manhole versus "trenchless" pipe replacement

A key to the success in these decisions will be a decision matrix to help guide the answers to these questions. This matrix will be developed early in the implementation of this program. Some of the key factors that will be used in the matrix include:

- Pipe capacity
- Pipe accessibility
- Asset management goals (i.e., prefer to replace clay pipe instead of rehab)
- Pipe maintenance (i.e., sags, sediment deposition, root intrusion)
- Area sensitivity
- Corrosion potential
- Pipe condition (ovality)
- I/I removal goals

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Program Training & Staffing

The District utilizes both Collection System and Engineering personnel to implement the Rehabilitation & Replacement Program. We also use several outside engineering consulting firms to assist with program implementation. Most training occurs on-the-job; however, the District has three in-house Professional Engineers that obtain the formal education required to maintain their PE license. Engineering and Collection Systems staff involved in this program also attend industry-specific workshops, seminars, and conferences where they learn nationwide best-practices for sewer system rehabilitation and replacement.

As part of the development of this program, the District analyzed the sewer inspection projections for the Continuous Sewer Assessment Program and estimated the number of full-time engineers needed to manage and conduct the rehabilitation & replacement program up to the point where rehabilitation projects are developed. The projections for staff needs were done for each year for the first 10 years of the program and are as follows:

- 3-4 full time staff needed in first two years
- 2-3 full time staff needed in years 3-6
- 1-2 full time staff needed years 7-10

The need for more people in the first few years of the program reflects the likelihood that a higher percentage of pipes assessed in the early stages of the Continuous Sewer Assessment Program will move into the rehabilitation & replacement program as compared to the later stages of the program. Therefore in the early stages of this program there will be greater need for detailed assessment of condition results, the need to develop overall rehabilitation plans, and coordination with the Watershed Planning. It is important to note that these needs are the result of preliminary projections and are subject to change based on the actual results of the inspections. These staffing needs will be reassessed annually.

Performance Goal(s)

The goal of the District's Rehabilitation & Replacement Program is to plan and manage system rehabilitation and renewal using asset management principles that will result in a cost-effective, prioritized program to minimize unplanned system failures and eliminate SSOs. A specific performance goal for FY 2008 is to formalize the Continuous Sewer Assessment Program and begin implementing the new written procedures for the Rehabilitation & Replacement portion of this larger program.

Performance Measures

The success of this program is measured by several performance indicators, including:

- Meeting project deadlines
- Maximizing flow to the treatment plants
- Reducing the occurrence of collapsed pipe

- Reducing the occurrence of SSOs caused by blockages
- Reducing the number of backlogged work orders

Periodic Evaluation

This program has proven to be successful, as the average daily flow to the Dry Creek WWTP (DCWWTP) has remained consistent over the past 10 years. In 1995 when the District took over the cities' sewer systems the average daily flow to the DCWWTP was 35 mgd. The average daily flow at the DCWWTP in 2007 is still approximately 35 mgd despite over 12 years of significant growth tributary to the plant. This signifies that we are doing a good job keeping flow in the pipe, removing I/I, and transporting flow for treatment. The Rehabilitation & Replacement Program is continuously evaluated during frequent CIP meetings, Collection Systems team meetings, and project-specific meetings. It is also evaluated as part of the annual budget review process. The Actual Cost of Work Performed on rehabilitation and replacement projects during FY 2007 was approximately $13 million, which is typical of the average year. The effectiveness of the selected remediation measures is evaluated by post-construction inspections and testing. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree. It will also be evaluated as one piece of the larger Continuous Sewer Assessment Program.

Summary of Recommended Improvements & Implementation Schedule

The primary improvement that needs to be made to this program is to formalize the Rehabilitation & Replacement portion associated with the Continuous Sewer Assessment Program. This will be accomplished no later than December 31, 2007. In addition, staff has identified the need to visually map via a flow chart the stream of work orders coming into the Construction Foreman and asses the amount of time currently spent on each category of work orders (i.e., street re-pavement, city requests, etc.). This flow chart and assessment will be developed by June 30, 2008.

The District has also identified the need to assign one in-house staff member to filter all work orders and serve as the liaison between the Collection Systems Department and Engineering Department. The purpose of this role is to always maintain a holistic point-of-view regarding sewer system rehabilitation efforts and prioritization of daily work assignments. The staff member responsible for this role will also be determined by June 30, 2008.

4.3.3 Mainline Sewer Repairs

Program Purpose

The purpose of the Mainline Sewer Repairs Program is to make upgrades and improvements to our mainline sewers as needed to keep flow in pipes, reduce and eliminate I/I, and to maintain the design conveyance of the pipes in our system.

The Mainline Sewer Repairs Program plays an integral role as one of our continuous sewer assessment activities. Whereas the Rehabilitation & Replacement Program encompasses the thought process and prioritization scheme for sewer system repairs, the Mainline Sewer Repairs Program encompasses the actual physical repairs that are made to our gravity sewer lines.

Connection to SSO Elimination

Fixing deteriorating pipes helps to keep flow in the collection system and eliminate leakage, as well as to eliminate I/I entering the pipes which prevents the release of untreated wastewater to the environment. Maintaining the pipe also removes restrictions that could potentially cause blockages and overflows and helps assure capacity. Lastly, there are several mainline repairs that are performed as part of a larger, comprehensive I/I removal program, eliminating one significant cause of SSOs.

Program Documentation & Procedures

The type of repair method used is dependent upon several factors, including pipe size, type, location, flow, surface conditions, and the severity of I/I. There are currently no written guidelines in place to help determine the most appropriate repair method for each situation; however, staff will develop these written guidelines during FY 2008. The District utilizes several repair technologies, including:

- Open cut
- Cured in place lining
- Horizontal Directional Drilling
- Boring & jacking
- Tunneling
- Pipe bursting
- Sliplining
- Grouting of joints
- Point repairs

Procedures for prioritization of repair work are described in the Rehabilitation & Replacement portion of this report. A newly refined process for prioritizing work orders will be developed as part of the Continuous Sewer Assessment Program. Historically, work orders have been prioritized by a designated Sewer Repair Group, consisting of both Collection Systems and Engineering personnel. This group reviews available assessment information and makes repair decisions based upon sound judgment.

Work orders associated with mainline sewer repairs are tracked and stored in gbaMS. Repair work performed by in-house construction crews is entered into gbaMS by Collection Systems personnel, and repair work performed by outside contractors is entered into gbaMS by Engineering personnel. Engineering inspectors also keep hard copy Daily Inspection Reports on file at District headquarters.

Program Training & Staffing

There are three crews available full time to implement the Mainline Sewer Repairs program, with a total of 16 Collection Systems staff members. Engineering staff assist internal construction crews with repair projects as needed. There is also a significant amount of mainline sewer repair work completed by outside contractors. The District uses outside contractors for emergency repair work, and for more extensive construction work that we are unable to perform in house. Work conducted by our subcontractors is managed by an in-house Project Manager from the Engineering Department and is monitored by in-house inspectors. Specifications for construction work are included in formal contracts used to manage outside firms.

All training for construction crews is on the job. HR will typically find applicants with previous construction experience to join these crews. In addition, Engineering staff who help implement this program attend several industry conferences, seminars, and workshops throughout the year to keep informed of current trends and technology.

Performance Goal(s)

The ongoing goals of the Mainline Sewer Repairs Program are to make cost-effective repairs in an accurate and timely manner and to ensure that we have resources and processes in place to do so. A specific performance goal for FY 2008 is to develop written guidelines that help determine the type of repair technology used (i.e., point repair vs. manhole to manhole) and that specify the responsible parties for making this decision.

Performance Measures

The success of the Mainline Sewer Repairs Program is measured by several performance indicators, including:

- Project schedules and costs
- Periodic CCTV inspections
- Evaluation of customer complaints regarding specific project areas
- QA/QC performed by District inspectors to ensure compliance with construction specifications

Periodic Evaluation

The Mainline Sewer Repairs Program is continuously evaluated during frequent CIP meetings, Collection Systems team meetings, and project-specific meetings. The effectiveness of the selected repairs is also evaluated by post-construction inspections and testing. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree. It will also be evaluated as one piece of the larger Continuous Sewer Assessment Program.

Summary of Recommended Improvements & Implementation Schedule

The recommended improvements for the Mainline Sewer Repairs Program are as follows:

- Develop written guidelines that help determine the type of repair technology used (i.e., open-cut or type of trenchless repair) and that specify the responsible parties for making this decision
- Develop SOPs for the actual physical repairs that are performed in-house. Both will be developed by June 30, 2008

4.3.4 Sewer Cleaning

Program Purpose

The purpose of the District's Sewer Cleaning Program is to maintain proper service of sewer lines and the design capacity of the system, and prevent the occurrence of SSOs caused by non-structural blockages such as roots and grease. This program is the heart of our gravity line PM activities, which we have been asked to apply special emphasis to under Paragraph 36 of the Consent Decree. Approximately 90% of sewer cleaning we perform is on lines that are part of a routine, scheduled PM list.

The Sewer Cleaning Program is one integral part our Continuous Sewer Assessment Program, and moving forward, the sewer cleaning PM list and frequencies will be driven by the guidelines of this program. Pipe segments in need of cleaning identified in the Trouble Call Program, LDSAP Program, Preventive O&M Program, and Sonar Program will move into the Sewer Cleaning Program, as shown in Appendix F.

Connection to SSO Elimination

The District's sewer cleaning PM activities prevent the occurrence of SSOs by removing non-structural blockages.

Program Documentation & Procedures

District crews perform corrective cleaning in response to stoppages, trouble calls, and city requests. If a stoppage is determined to be caused by grease, roots, or sags, the line is then placed on PM. There are currently 1,439 line segments on a routine PM schedule. The majority of our lines are placed on PM due to root intrusion. Televised inspection of lines is conducted in conjunction with reactive sewer cleaning; however, crews do not currently CCTV lines on PM unless a special issue arises that warrants the need for a televised inspection. The new Sewer Cleaning Program outlined in the District's Continuous Sewer Assessment Program does include specific measures to ensure the use of CCTV inspections in conjunction with sewer cleaning activities.

PM cleaning currently takes place every six months. We visit all PM lines once during the first four months of the year, and then a second time over a four-month period during the second half of the year. The frequency of our PM cleaning will change once the new process for our continuous sewer assessment activities is implemented, as it contains specific guidelines for determining cleaning frequencies and CCTV inspections. The guidelines of the Continuous Sewer Assessment Program enables us

to tailor the cleaning schedule to the need of the pipe, rather than having a standard schedule for cleaning all pipes on PM.

The Industrial Monitoring group is notified once a pipe is placed on PM due to grease. After notification, this group follows the procedures outlined in the Grease Control Program Program, which is a required component of the Consent Decree and was submitted on September 18, 2007. Staff identified the need for better communication between Industrial Monitoring and Collection Systems personnel in regards to remediation steps that have been taken to permanently address the underlying grease problem that is causing the line to be on PM.

The District performs both hydraulic and mechanical cleaning. Mechanical cleaning is performed using a rod machine only in winter months when temperatures make it unfeasible to operate the hydraulic jetting machine. We do not perform any chemical cleaning. We have experimented with chemical cleaning in the past but have found it to be ineffective.

The following equipment is available to District crews that implement the Sewer Cleaning Program:

- 6 Vactor trucks
- 2 rod machines
- 1 flusher truck
- 1 set of bucket machines
- 1 easement machine (A portable extension of the Vactor used in hard-to-reach areas.)

All data related to the Sewer Cleaning Program is stored as a work order in gbaMS. Cleaning records include information such as the date, time, and location of the cleaning, whether or not the line is on PM, the method of cleaning used, the names of staff members who performed the cleaning, and any further actions that were initiated from the cleaning. The cause of the stoppage that prompted the cleaning is documented; however, staff have identified it is not consistently documented and could be more clearly specified in gbaMS as being roots, grease, etc.

Written SOPs do not currently exist for sewer cleaning procedures; however, staff has identified certain standard procedures that can be formalized in written form. These SOPs will be developed during FY 2008 in conjunction with all other SOPs associated with continuous sewer assessment activities.

<u>Program Training & Staffing</u>

The District has one, two-person crew dedicated full time to PM cleaning eight months of the year. This crew sometimes pulls from other Collection Systems crews when they need help in hard-to-reach areas. There are four, two-person crews available for all corrective maintenance cleaning. The number of personnel assigned full time to sewer

cleaning responsibilities may change once the Continuous Sewer Assessment Program is formally implemented.

All training for program implementation is conducted on the job, with the exception of annual equipment trainings conducted by our vendors.

Performance Goal(s)

The overarching goal of the Sewer Cleaning program is to maintain the service performance of our sewer lines through both emergency and PM cleaning. Specific performance goals for FY 2008 are to:

- Execute 100% of the current PM schedule and continue identifying lines that need to be placed on PM
- Formalize the Continuous Sewer Assessment Program and begin implementing the new written procedures for the Sewer Cleaning portion of this larger program This will include educating District personnel on the new procedures
- Develop stronger lines of communication with the Industrial Monitoring team regarding updates to grease investigations

Performance Measures

The performance of the Sewer Cleaning Program is measured by determining the success in meeting PM schedules, and by tracking the number of non-structural blockages per year.

Periodic Evaluation

This program is continuously evaluated by tracking PM work and through regular communication between crews conducing the cleaning and their crew leaders and foreman. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree. It will also be evaluated as one piece of the larger Continuous Sewer Assessment Program.

Summary of Recommended Improvements & Implementation Schedule

Recommended improvements to the Sewer Cleaning Program identified during the CMOM self-assessment process include:

- Begin to consistently track the specific cause of why lines are put on PM in gbaMS (i.e., roots, grease, debris, etc.). This improvement will be implemented by January 7, 2008.
- Update lines already in gbaMS so that each line on PM has a cause tracked in the data management system. This process will be started by the end of the 2007 calendar year, and will be completed by the end of the 2008 calendar year.
- Written SOPs for sewer cleaning activities will be developed by June 30, 2008
- By June 30, 2008, hold a meeting between Collection Systems and Industrial Monitoring managers to determine the best method for improving communication regarding grease investigations

- Formalize the Continuous Sewer Assessment Program and begin implementing the new written procedures for the Sewer Cleaning portion of this larger program beginning in January 2008. This will include educating District personnel on the new procedures.

4.3.5 Equipment & Tools Maintenance

Program Purpose

The purpose of the District's Equipment & Tools Maintenance Program is to ensure adequate supply of the vehicles, spare parts, equipment, and tools necessary to perform District operations. It is also the responsibility of this program to ensure that all equipment and tools are well maintained, are readily accessible, and are accurately tracked in a data management system.

Connection to SSO Elimination

Keeping equipment adequately supplied, properly maintained, and readily accessible enables District crews to perform the work required to eliminate SSOs in a timely and efficient manner.

Program Documentation & Procedures

The District houses several pieces of equipment on site at both the Dry Creek WWTP and at our main office facility, including:

- Construction equipment
- Plumbing equipment
- Safety equipment
- Vehicle fleet

All ductile pipe and pipe greater than 18 inches in diameter are stored at the Dry Creek WWTP. All other equipment and tools are housed in lockup, in the rear parking lot, or at the Lakeview Pump Station at the District's main office facility. All crew leaders and on-call personnel have keys to access equipment that is stored in lockup. Centralized storage of all parts and equipment increases convenience and accessibility for use. The District is currently under negotiations to purchase additional property near the main office facility for future storage needs.

We do not categorize critical spare parts. Rather, we consistently maintain an appropriate amount of parts at all times. The District's Inventory Controller places at least one order per week to fill equipment needs. There is not enough equipment stored on site for two point repairs on all parts of the system; however, we do have the ability to get this when needed through our suppliers. For parts and equipment that we do not own and store on site, we have the ability to obtain them from outside suppliers. We have a total of 208 vendors that are available to supply our crews with equipment and parts as needed. Of these 200, we work with approximately 30 on a regular basis to fill routine orders. We also supplement District-owned equipment with rentals when

pieces of our inventory are down for repair. Construction materials are annually bid, with a statement noting that the order must be received within seven days. In an emergency situation, however, we are able to contact other local vendors and do not need to use the company in our contract. Materials used by the District and outside contractors are standardized and are outlined in bid specifications.

Nearly all inventory is tracked through gbaMS. There are two modules in gbaMS that are used to manage the Equipment & Tools Maintenance Program – the Inventory/Parts module and the Equipment/Fleet module. The modules in gbaMS that manage and track inventory allow users to designate numbers to each piece of equipment, which automatically track reordering needs by identifying a Reorder Point, Reorder Quantity, and Maximum on Hand Quantity. We also keep a comprehensive equipment database separate from gbaMS, which is maintained by our Account Services Department.

Equipment Maintenance
The District performs a minimal amount of equipment maintenance in house. There is one Chief Mechanic in the Collection Systems Department that is responsible for managing, scheduling, and sometimes performing PM work on all applicable equipment. There are written equipment maintenance procedures in place for maintenance work performed in house. Equipment PM schedules are based upon hours and mileage and are tracked in gbaMS. The large majority of vehicle maintenance is subcontracted out, and is managed by the District's Purchasing staff. Equipment that is no longer of use is salvaged and pieces that are still operational are reused. The District is currently performing an efficiency and cost analysis on performing maintenance work in house as opposed to utilizing subcontractors.

Program Training & Staffing
There is one full-time Inventory Controller and one full-time Chief Mechanic in the District's Collection Systems Department, as well as one full-time Administrative Assistant in the Field Technical Services Department. These three personnel are largely responsible for the implementation of this program. All three personnel are long-time employees of the District and have obtained program knowledge through on-the-job experience.

Performance Goal(s)
The ongoing goals of the Equipment & Tools Maintenance Program are to ensure an adequate amount of equipment and tools are available to staff for both emergency and scheduled needs, that District-owned equipment is kept in good working condition and is accurately tracked in a data management program, and that PM schedules are met for all equipment maintenance work. Specific performance goals for FY 2008 are to:

- Perform a spare parts assessment for pump station inventory and begin to track pump station inventory in gbaMS

- Perform in-house vs. outsourcing cost analysis research for equipment maintenance work to determine the most cost-effective method of maintaining District equipment

Performance Measures
The success and effectiveness of the Equipment & Tools Maintenance Program is measured through a variety of performance indicators, including maintenance work tracked in gbaMS, results of periodic equipment audits, and comments received in regards to having sufficient access to appropriate equipment and tools as needed.

Periodic Evaluation
This program is regularly evaluated by pulling equipment twice per year for auditing purposes. The first time equipment is pulled, it is to measure the accuracy of gbaMS records, and the second time equipment is pulled is for budgeting purposes. In addition to our internal audits, external accounting auditors perform spot checks of our inventory on an annual basis.

This program is also continuously evaluated when crew members communicate with their crew leaders if there is an issue of not having a sufficient supply of necessary equipment, or when they are not able to access the equipment. This program will also begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule
- By March 31, 2008, asses pump station inventory, evaluate stock that is currently maintained, and adjust the capital budget appropriately to adequately stock necessary spare parts. This will warrant the need for pump station staff to begin managing inventory in gbaMS.
- By June 30, 2008, assess the use of a bar code scanning system to automatically update inventory and reduce inefficiencies of manual logging procedures
- By June 30, 2008, complete cost analysis research regarding performing our equipment maintenance in-house as opposed to utilizing subcontractors for maintenance needs
- Throughout FY 2008, continue to make progress toward purchasing additional property near the District's main office for storage purposes

4.3.6 Pump Station Maintenance

Program Purpose
The purpose of the District's Pump Station Maintenance Program is to perform the necessary predictive, preventive, and corrective maintenance required to sustain the reliability of our pump stations and ensure that all pump stations throughout the service area are operating at maximum efficiency. This program is executed in conjunction with

the Pump Station Operations Program (Section 4.2.9 of this report) to complete work orders generated from routine inspections, trouble calls, and PM schedules.

Connection to SSO Elimination

Maintaining the reliability of pump stations helps to decrease the chance of pump station failure that could potentially cause an SSO. Pump station reliability is increased by performing predictive and preventive maintenance, which help to correct problems before they become an emergency situation in which sewage is released from the system.

Program Documentation & Procedures

Predictive Maintenance (PDM)

The purpose of the District's pump station PDM activities is to track equipment performance through physical inspections to uncover early warning signs of impending failure. PDM activities are performed by both the pump station operations and maintenance crews, and include tasks such as routine inspections of all pump stations, electrical checks, insulation testing, resistance checks, bearing temperature readings, and pump clock readings. We have also hired contractors in the past to perform PDM work such as infrared scanning, transformer oil sampling, and inspections of emergency generators. The District used to keep hard copy maintenance cards for recordkeeping purposes; however, pump station maintenance is now managed and tracked using gbaMS.

Preventive Maintenance

The purpose of the District's pump station PM activities is to minimize system costs and environmental impacts by reducing equipment failure, and consequently the need for corrective or emergency maintenance. The District performs both electrical PM and mechanical PM on a set schedule based upon clock run times and calendar intervals. There is also some light PM work performed by the pump station operations crew such as exercising valves, greasing, and cleaning. PM work is typically based on manufacturer's recommendations, which are accompanied by written procedures and checklists for specific tasks. The Administrative Assistant in the Field Technical Services Department inputs the recommendations from O&M manuals into gbaMS in the form of a work order. Due to a lack of personnel, staff has acknowledged that adequate, regular PM work at all pump stations has been suffering. Recognizing that they are understaffed, pump station crew members prioritize their time by closely monitoring large pump stations with known problems and addressing less severe needs as time allows.

Corrective Maintenance

Pump station maintenance crews perform corrective maintenance in response to work orders generated from routine inspections and trouble calls. Work orders are filtered each morning by the Administrative Assistant in the Field Technical Services

Department and then given to the pump station maintenance crew leader to prioritize the work flow for the day. Work orders for pump station maintenance are tracked in gbaMS and given priority scores of low, medium, and high to help guide delegation and scheduling. The majority of the pump station maintenance crew members' time is spent on corrective maintenance activities. Sometimes corrective maintenance is given emergency status. Refer to Section 4.2.10 for a more detailed assessment of the District's Pump Station Emergencies Program.

Program Training & Staffing

There are five District employees dedicated full time to the implementation of this program – one crew leader and four crew members. Two of these personnel are seasoned employees, with nearly 50 years of combined experience at the District. This crew is responsible for the maintenance needs of 129 pump stations throughout the service area. Staff has identified that this program lacks adequate personnel, and there are currently two open positions included in the budget for this group.

Most training for this program is through on-the-job instruction; however, this has been supplemented in the past with maintenance technician classes offered through Gateway Community College. In addition, two pump station maintenance employees hold their Master Electrician's License.

Performance Goal(s)

The ongoing performance goals of the Pump Station Maintenance Program are to keep sewage contained within the collection system and ensure that all pump station equipment is kept in safe working condition to protect both internal staff and the general public in close proximity to the District's pump stations. Specific performance goals for FY 2008 are to fulfill staffing needs, provide adequate training for new hires, and produce a more regimented PM program.

Performance Measures

The success and effectiveness of the Pump Station Maintenance Program is measured by a variety of performance indicators, including:

- Number of pump station failures or number of pumps out of service
- Number of repetitive work orders
- Operational readiness at pump stations
- Work being accomplished and tracked through gbaMS

Periodic Evaluation

This program is evaluated on a consistent basis through daily team meetings and regular tracking of work orders. Tracking work orders in gbaMS enables staff to identify patterns that may require further evaluation. All flood pump stations are evaluated annually through formal audits conducted by the Army Corps of Engineers. In addition, this program will also begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule

Recommended improvements identified for the Pump Station Maintenance Program during the self-assessment process include:

- By February 29, 2008, a more aggressive schedule for PM work will be developed and all necessary resources for implementation will be identified.
- Throughout FY 2008, prospective classes for pump station maintenance personnel at Gateway Community College will be identified, and coordination with HR will occur to assess the feasibility of attendance at these classes.
- The District will continue to recruit and interview for the two open positions in the pump station maintenance crews. Staffing needs will be fulfilled once well-qualified applicants are found.

4.3.7 Maintenance of Rights-of-way

The District does not currently have a formal program to address regular maintenance needs of rights-of-way throughout the service area. There are areas in which we perform maintenance as needed; however, this work is currently reactive. Although a formal program does not exist, we do have written Easement for Sewer agreements that require property owners to adequately maintain the easement, and provide the District with the legal authority to perform maintenance activities as needed to uphold the physical condition of the easement. The following text has been extracted from the District's Easement for Sewer agreement:

> "Grantor further grants to the District the right (i) to use such additional land on either side of the Easement as may be required during the time the sewer is being constructed, repaired or reconstructed; (ii) of ingress and egress in and over existing ways and lanes to the extent suitable, and other reasonable routes to and upon and along the Easement at such times and at such points as may reasonably be necessary or desirable for the construction, maintenance and/or reconstruction of said sewer; and (iii) to remove, clear and keep cleared, any and all trees, roots, brush or other obstructions within or immediately adjacent to the Easement, which may, in the District's reasonable opinion, endanger the safety of, or interfere with the construction, operation, maintenance, repair and/or reconstruction of, said sewer and its appurtenances.
>
> Grantor shall have the right to use the surface of the Easement and the adjacent lands for any purpose, provided (i) such use does not interfere in any way with the District's use of the Easement as contemplated herein, (ii) no building or other structure shall be erected upon, across, over or through the Easement, (iii) no other easement shall be granted or construction of related facilities within such easement commenced without the prior written consent of the District, and (iv) Grantor shall not excavate or fill within the Easement or the adjacent lands, other than in connection with another easement to which the District has

> consented in writing. It is the obligation of Grantor to maintain the Easement and the adjacent lands in such a manner as to prevent erosion or waste of the Easement area and not interfere with the operation and/or maintenance of the Easement or any appurtenances installed by the District therein. Before taking any action which might affect said Easement or the District's use, Grantor agrees to (i) give notice of such proposed action in writing to the attention of the General Manager of the District at least fifteen (15) days prior to taking such action, and (ii) obtain written approval of such proposed action from the District, which approval shall not be unreasonably withheld, but which may be conditioned upon the Grantor taking such precautions as the District deems appropriate to protect the Easement and avoid interference with its use thereof. The District's consent to any action proposed by Grantor shall not relieve Grantor from liability to the District for damage caused by such action to the Easement or the District's appurtenances installed therein."

During FY 2008, the District will begin to develop a formal Maintenance of Rights-of-way Program. We will start by conducting a study of comparable utilities to see what they are doing to maintain their rights-of-way. This benchmarking research will help to identify best practices that will guide the development of our program. Through the CMOM self-assessment process, staff identified the need to build stronger channels of communication with the Home Builders Association, cities, counties, and the state in regards to coordination of street repairs and paving projects. This issue will be addressed as part of the formal Maintenance of Rights-of-way Program. Updates on the progress made toward developing this program will be included as part of the CMOM Annual Report that is required to be submitted under the Consent Decree by December 31, 2008.

4.4 Collection Systems Capacity

4.4.1 Capacity Assessment & Assurance

Program Purpose

The purpose of the District's Capacity Assessment & Assurance Program is to determine the overall capacity of the collection, transmission, and treatment components of our system, identify areas that are lacking adequate capacity, and develop programs and solutions to provide sufficient capacity in these areas. This program provides staff with a holistic understanding of our system's capacity, which allows for better management, design, and control of the system.

Connection to SSO Elimination

Continuously assessing our system's capacity enables us to prioritize where we need to focus our efforts and financial resources in order to proactively assure adequate capacity and prevent future overflow occurrences. Eliminating capacity constrained areas consequently eliminates overflows.

Program Documentation & Procedures

Hydraulic Modeling

The District utilizes Wallingford Software's InfoWorks for its hydraulic computer modeling of the sanitary and combined wastewater collection systems. InfoWorks is a fully dynamic modeling program that actively operates within GIS to maximize functionality and efficiency. It is capable of simulating complex hydraulic structures found in today's sewer systems (e.g. weirs, pumps, CSOs, storage tanks, etc.).

The District's service area is divided into three drainage areas – Taylorsport, Dry Creek, and Bromley. Hydraulic models have been developed for each of these three service areas. The District has also developed hydraulic models of our new Western Regional Collection and Treatment System in Boone County and our Eastern Regional Collection and Treatment System in Campbell County. The models include all pipes 10 inches and larger in the separate sanitary systems and all pipes 18 inches and larger in the combined sewer system. They also include all pump stations and force mains located along this network. In some cases, the models were extended to pipes of a smaller diameter where local problems or certain hydraulic conditions (e.g. looped sewers, overflows and special diversions) were known to exist. An attempt was made to include all known constructed bypasses and overflows (i.e. SSOs and CSOs) in the models. Additionally, the model networks were extended to include locations where local manhole overflows are known to occur so the model will provide an accurate mass balance on the total conveyed sewage volumes.

The modeling program began in 2001, and these three models are continually undergoing further calibration and verification to improve accuracy in assessing the system's dry and wet weather capacity for identification of capacity limitations and overflows. Once fully calibrated and verified, these models will be used to further address dry and wet weather capacity limitations and overflows in these parts of the sewer system.

Flow Monitoring

For a detailed description of the District's Flow Monitoring Program, refer to Section 4.2.15 of this report.

Reservation of Capacity

Article 6 of the District's Sanitary Rules and Regulations outlines the processes and guidelines associated with reserving and allocating sanitary sewer capacity. Capacity may be limited to the system as a whole or to the capacity at one or more pump stations affected by a proposed development. Due to the location of projects and the tributary pump stations, capacity may be available for one development while unavailable for another development. Consequently, capacity must be calculated, monitored, reserved, and allocated for each pump station, as well as for the system as a whole. Once

development plans are submitted to the District, we have historically used a model titled the Planning Tool to assess system capacity based on a request for capacity; however staff recognizes that this process has become outdated. We currently compare requests for capacity against pump station capacity, and it is through this assessment that a decision is made as to whether or not there is sufficient capacity to grant the reservation request. We will begin to use the hydraulic models to predict the impacts of the proposed development on the capacity of our sanitary sewer system once the models have been calibrated and verified. The District occasionally uses flow metering data to process requests in sensitive areas, such as upstream of critical pump stations.

A registered P.E. on staff at the District certifies the adequacy of the sewer system to carry additional flow as part of the new connection approval process. The District's Board of Directors has final authority to grant reservation of capacity. A sanitary sewer capacity reservation granted by the District is effective for a period of two years, commencing on the date of capacity approval. An extension to this two-year reservation may be granted by the District upon the occurrence of extraordinary circumstances, not to include general economic or market fluctuations or circumstances substantially attributable to the applicant. A request for extension must be made in writing and must be filed with the District no less than 90 days prior to the expiration of the two-year period.

Comprehensive records associated with reservations of capacity are kept on file in the District's Engineering Department and in the Board of Directors files. The reservation of sewer capacity application process is currently tracked in Microsoft FoxPro; however, the District will soon be switching to Microsoft Access to manage this process.

Program Training & Staffing

A combination of both internal and external resources is used to implement the District's Capacity Assessment & Assurance Program. There are four registered P.E.'s and one Engineer-in-Training on staff, in addition to seven well-trained and experienced plan review personnel. External consultants are currently used as an extension of our staff to develop and run our hydraulic models; however staff has identified the need have at least one in-house staff member well trained on modeling to provide overall management of this process.

Staff receives formal training through a variety of sources, including the InfoWorks Users Conference, WEF conferences, KY/TN Water Professionals Conference, brown bag lunches hosted by manufacturers, and on-going classes required to maintain P.E. licensure. There are also written training procedures in place for internal purposes that outline the process of reviewing capacity permit applications.

Performance Goal(s)

The ongoing goal of the Capacity Assessment & Assurance Program is to continuously monitor capacity throughout the collection, transmission, and treatment components of

our system, understand reasons for overflows, determine alternatives to eliminate capacity constrained areas that are causing overflows, and to adequately provide wastewater infrastructure to support future growth in the Northern Kentucky region. A specific performance goal for FY 2008 is to continue to assess capacity in the overall backbone of our collection system and at priority overflow locations and complete the data collection necessary to update and calibrate our five hydraulic models to aid in the development of our Watershed Plans for our Consent Decree. We will also develop an ongoing program to keep these models updated on a five-year cycle.

Performance Measures

The success of the Capacity Assessment & Assurance Program is measured through a variety of performance indicators, including a reduction in SSO volume through implementation of projects identified to assure system capacity, the number of reservations for sewer capacity granted and denied, amount of flow during both dry and wet weather, and whether or not there are fully calibrated models in place for assessment purposes,

Periodic Evaluation

The District's Capacity Assessment & Assurance Program is continuously evaluated using flow monitoring and modeling data. In addition, new flow to our sanitary sewer systems is evaluated and monitored on an ongoing basis through our capacity reservation program. Reservation requests are presented to the District's Board of Directors each month. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule

Recommended improvements for the Capacity Assessment & Assurance Program identified during the CMOM self-assessment process include:

- By April 30, 2008, develop a standard process for inputting submitted plans for new development into a hydraulic model and GIS to determine how it will affect our system
- By June 30, 2008, complete the data collection needed to fully calibrate the five hydraulic models dependent on sufficient rainfall
- By June 30, 2008, develop a job description and begin interviewing for a new staff member trained in managing modeling data to oversee the modeling program and assist with other CIP initiatives

4.4.2 New Connection Tap-In

Program Purpose

The purpose of the District's New Connection Tap-in Program is to ensure standard policies and procedures are in place to approve and perform connections to the CSS and SSS. The end results of this program are to:

- Accommodate economic development throughout the Northern Kentucky region
- Eliminate the number of illegal and improper taps made throughout the collection system
- Ensure all connection fees are paid and all new connections are put on billing
- Maintain the integrity of the sewer system by reducing the amount of I/I that can enter the system through bad taps or improper abandonment of service laterals
- Protect the integrity of our system by enforcing the use of proper materials
- Provide an avenue for the District to keep certified tappers informed about changes to the Rules and Regulations or specifications for tapping the system

Connection to SSO Elimination

The New Connection Tap-in Program helps to eliminate SSOs by monitoring and assuring adequate capacity throughout the system and by reducing the amount of I/I caused by faulty connections and use of improper materials.

Program Documentation & Procedures

The District has a formal Certified Tapper Program in place to ensure that all connections to the SSS are approved by District personnel and are performed accurately based upon written specifications and procedures. Only persons designated as Certified Tappers by the District have the authority to connect sanitary building sewers to the District's system. All connections to sewer lines and manholes, as well as abandonment of service laterals, require an inspection by a District representative. Those interested in obtaining their certification are required to attend training and pass a written exam before their certification is issued. Following the successful completion of this test, each applicant receives a photo certification identification (ID), which contains their individual certification number. Certified Tappers are required to display this ID at the time of the inspection. Certified Tappers are also required to renew their certification on an annual basis and receive a new ID. They are not required to attend the training program for this certification renewal, unless it is deemed necessary.

The District has a comprehensive Certified Tapper Manual that includes general program information, forms, applications, contact numbers, fee schedules, and detailed drawings associated with the Certified Tapper Program. This manual is kept on file at the District and is also available on the District's website. There are also written standard procedures on file for internal purposes to guide District personnel through the certification process. In addition, Article 7 of the District's Sanitary Rules and Regulations contains guidelines related to connections and permits.

When improper or illegal taps are installed and not corrected, certification may be revoked for a period of not less than one year, and certification will only be reissued after successful completion of the training program. Fines may be levied against individuals and/or companies that do not comply with the District's Rules and Regulations and complete a sewer tap without the required certification. Those

responsible will be liable for resulting damages and fines shall be levied as detailed in the associated fee schedule.

The District currently uses Microsoft's FoxPro system as the central computer-based data management tool for the certified tapper portion of the New Connection Tap-in Program. We will soon be switching to an Access program, which will enhance our search capabilities and will provide a more compatible interface with gbaMS. There are also separate Access databases in place to track all permits associated with this program.

The Certified Tapper Program is just one piece of the larger New Connection Tap-in Program; however, all procedures relating to the issuance of capacity permits for new construction have previously been described in Section 4.4.1 of this report. In addition, all procedures for mapping new connections are outlined in Section 4.1.7 of this report.

Program Training & Staffing

The New Connection Tap-in Program is primarily implemented by three personnel – one inspector, one administrative assistant, and one plan review technician. There are well-trained, back-up staff members in place to assist when needed. All training for these primary roles has occurred on the job. District inspectors, Collection Systems personnel, and administrative personnel in the Engineering Department receive formal training by going through the complete certification process required to become a certified tapper. Other members of the District's Engineering Department also assist in various aspects of program implementation, such as determining whether or not there is adequate capacity to approve new connections, and reviewing and issuing capacity permits.

Performance Goal(s)

The overarching goals of the New Connection Tap-in Program are to assure there is adequate capacity within the system to approve new connection requests; to review plans and applications in an accurate and timely manner; to ensure that only certified tappers are making connections to the District's system and that they are following the District's standards and specifications; and to ensure that all new connections are inputted into ArcGIS and placed on billing. Specific performance goals for FY 2008 are to:

- Notify internal personnel of changes to the Certified Tapper Program via email, bulletin boards, field crew meetings, etc.
- Provide better documentation of the new connection inspection process
- Send the first regularly scheduled annual letter to all cities informing them about the abandonment permit
- Switch from FoxPro to Access

Performance Measures

The success of the New Connection Tap-in Program is measured through a variety of performance indicators, including the number of fines and violations issued to developers and certified tappers, the accuracy of content contained within all databases associated with this program, and the outcome of new connection inspections.

Periodic Evaluation

The New Connection Tap-in Program is evaluated on a continuous basis through the District's new connection inspection process by monitoring the number of violations issued, by reviewing certified tapper test results, and through frequent communication among all personnel involved in program implementation. Members of the District's Board of Directors also evaluate all capacity requests and provide final approval. In addition, this program will begin to be evaluated on an annual basis as part of the CMOM review process required under the District's Consent Decree.

Summary of Recommended Improvements & Implementation Schedule

Recommended improvements for the New Connection Tap-in Program identified during the CMOM self-assessment process include:

- Beginning immediately, internal personnel will be notified of any changes to the Certified Tapper Program via email, bulletin boards, field crew meetings, etc.
- By March 31, 2008, staff will determine the most effective means for providing better documentation of the new connection inspection process.
- By June 30, 2008, the plan review staff will send the first regularly scheduled annual letter to all cities informing them about the Abandonment Permit.
- By June 30, 2008, the internal switch from FoxPro to Access will be complete.

SECTION 5. SUMMARY OF RECOMMENDED IMPROVEMENTS

The purpose of the CMOM Self-Assessment Program is to evaluate current programs and activities related to the capacity, management, operation, and maintenance of the District's collection systems. This review is intended to identify areas that are performing well, and areas that could be enhanced to improve performance.

Improved performance will ultimately improve water quality in the District's service area through the elimination and/or reduction in the number, frequency, and volume of SSOs and CSOs. Refer to Appendix J for a summarized list of recommended improvements and schedules for implementation for all 34 CMOM programs assessed in Section 4 of this report. Please note that the District has outlined a progressive timeline for these improvements, and milestone dates are subject to change as a result of unforeseen conditions and circumstances.

SECTION 6. CONCLUSION

Through the CMOM self-assessment process, the District has identified improvements that can be made to collection systems' activities in order to more effectively achieve regulatory compliance and eliminate SSOs throughout the service area. This report contains specific actions and milestone dates to complete these recommended improvements, as well as performance measures to determine the effectiveness of our programs. The overall goal of the activities contained within this report is to improve water quality and meet or exceed the requirements of the District's Consent Decree.

The District will provide annual progress updates on the CMOM Program to the Cabinet and EPA. Pursuant to the District's Consent Decree, the first CMOM Annual Report is required to be submitted by December 31, 2007:

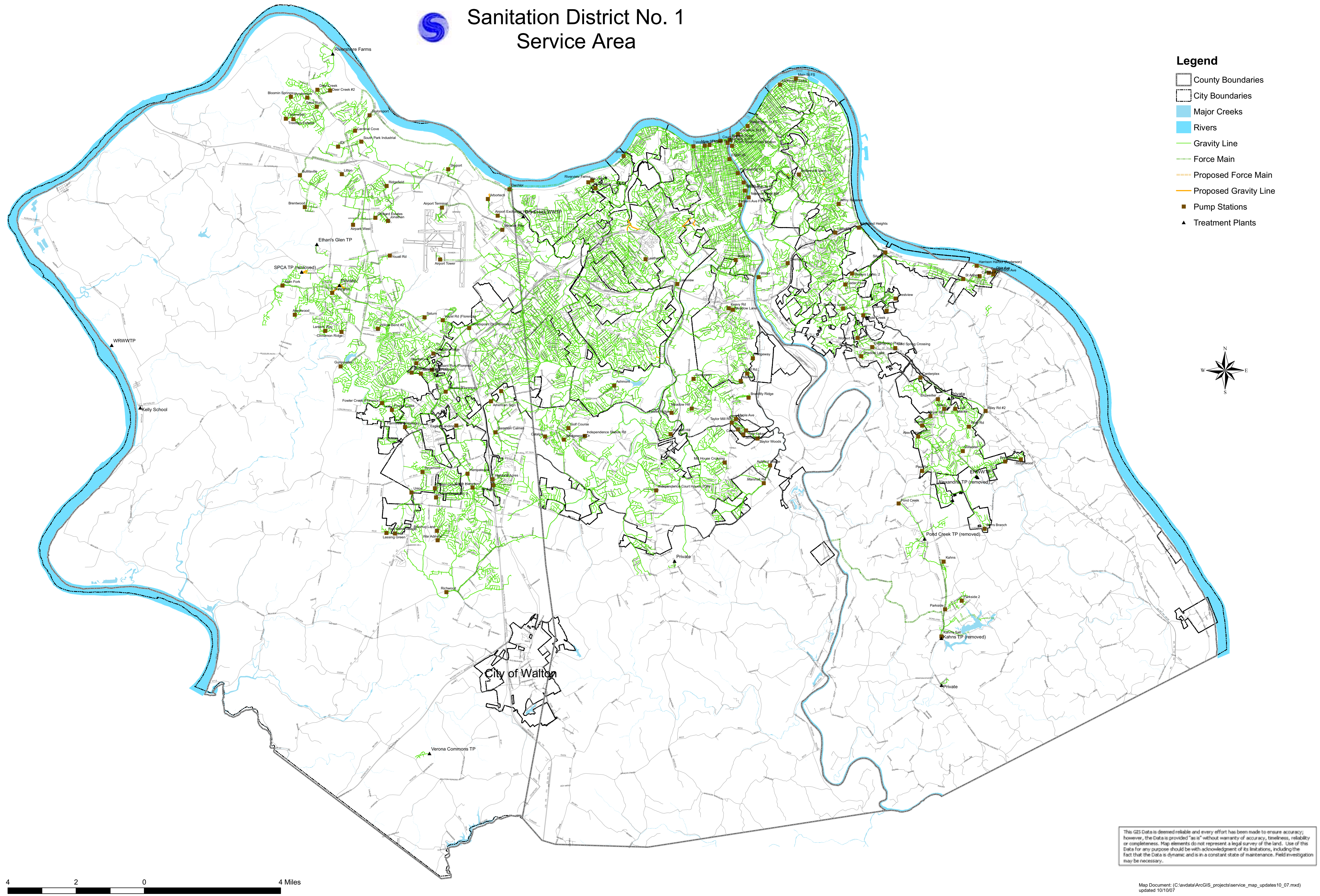
> **43. ANNUAL REPORTS.** The District shall submit to the Cabinet/EPA an annual report for the previous fiscal year, with the first report due December 31, 2007, and each year thereafter by December 31, with a summary of the CMOM Program's implementation pursuant to this Consent Decree, including a comparison of actual performance with any performance measures that have been established.

This annual report will also contain progress updates on the Grease Control Program (submitted September 18, 2007) and the SORP (submitted October 8, 2007). Both of these programs are considered CMOM components; however, they were required to be submitted separately from this CMOM Self-assessment document. In addition, the District is required to submit a Pump Station Operation Plan for Backup Power by April 18, 2008 that evaluates the District's pump stations and includes schedules for providing backup power or other appropriate measures for addressing power outages at the District's pump stations. This is also considered a CMOM component, and following initial submission, updates will be included in the CMOM Annual Report.

APPENDIX A:

Map of Service Area

Sanitation District No. 1
Service Area



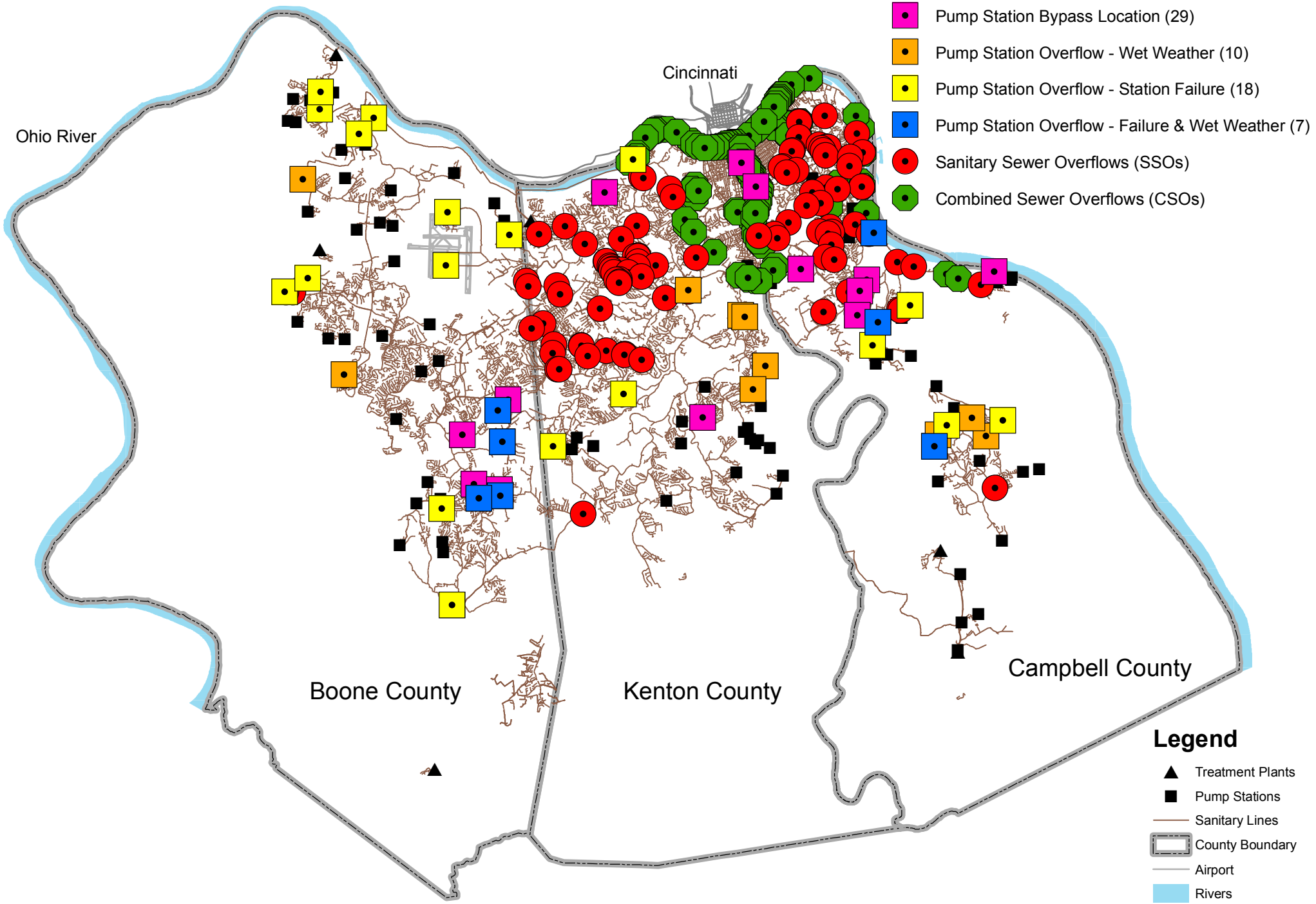
This GIS Data is deemed reliable and every effort has been made to ensure accuracy; however, the Data is provided "as is" without warranty of accuracy, timeliness, reliability or completeness. Map elements do not represent a legal survey of the land. Use of this Data for any purpose should be with acknowledgment of its limitations, including the fact that the Data is dynamic and is in a constant state of maintenance. Field investigation may be necessary.

Map Document: (C:\avdata\ArcGIS_projects\service_map_updates10_07.mxd)
updated 10/10/07

APPENDIX B:

Map of CSOs, SSOs, and Pump Station Bypass & Overflow Locations

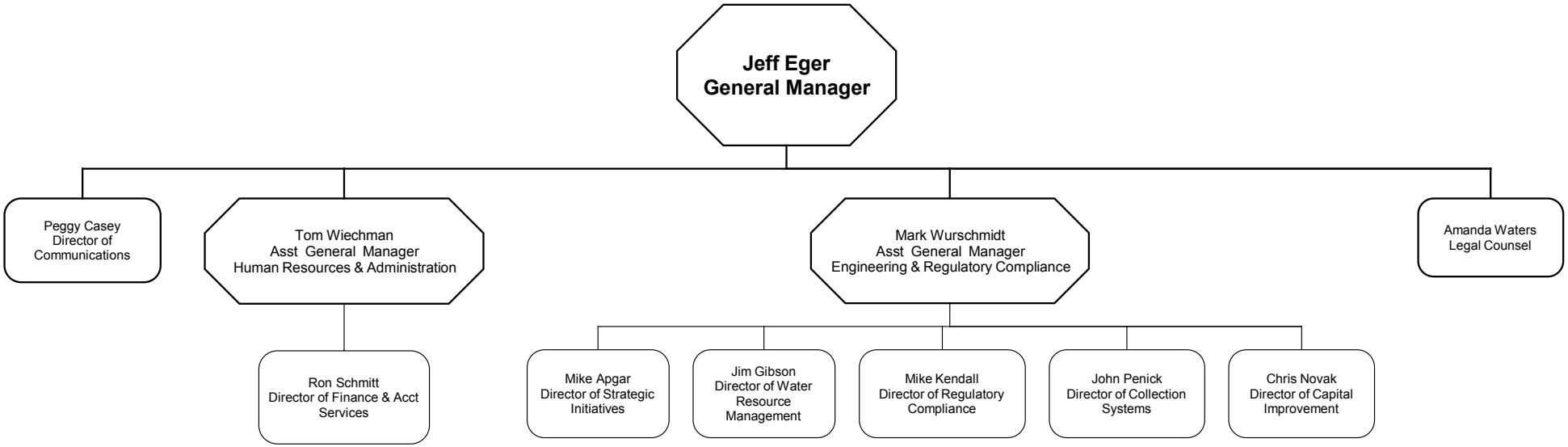
Sanitation District No. 1
Pump Station Overflows



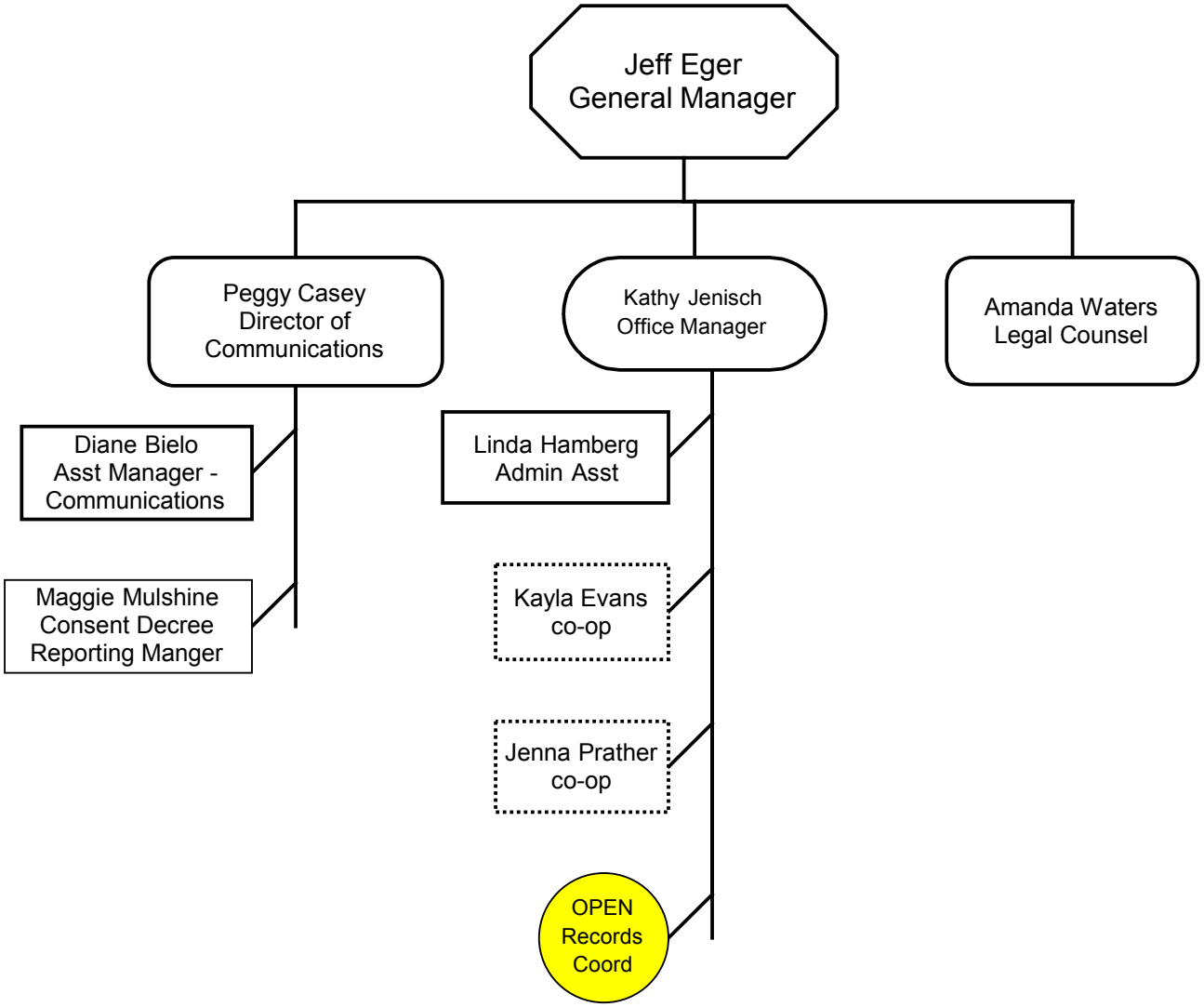
APPENDIX C:

Organizational Chart

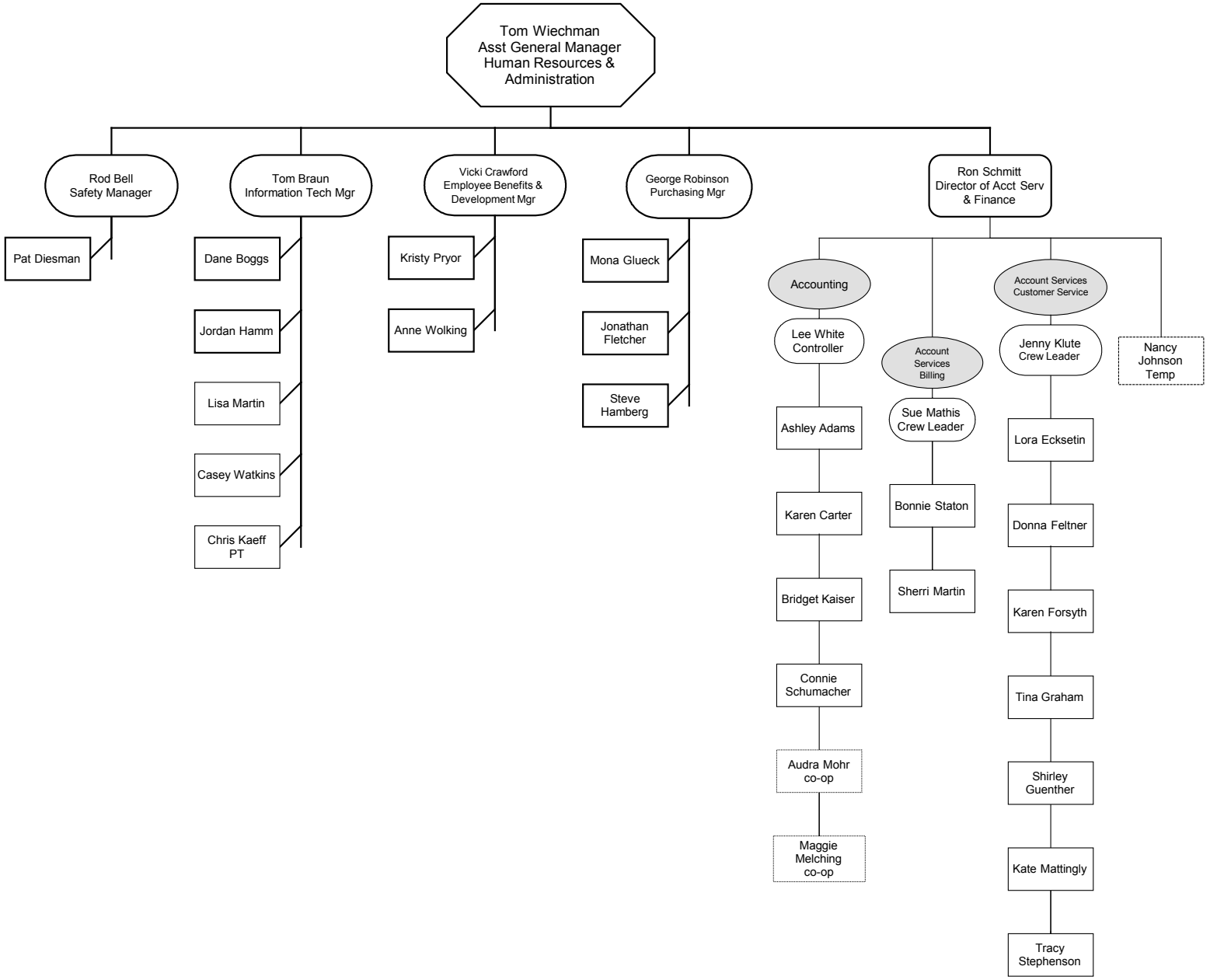
Sanitation District No. 1
General Management



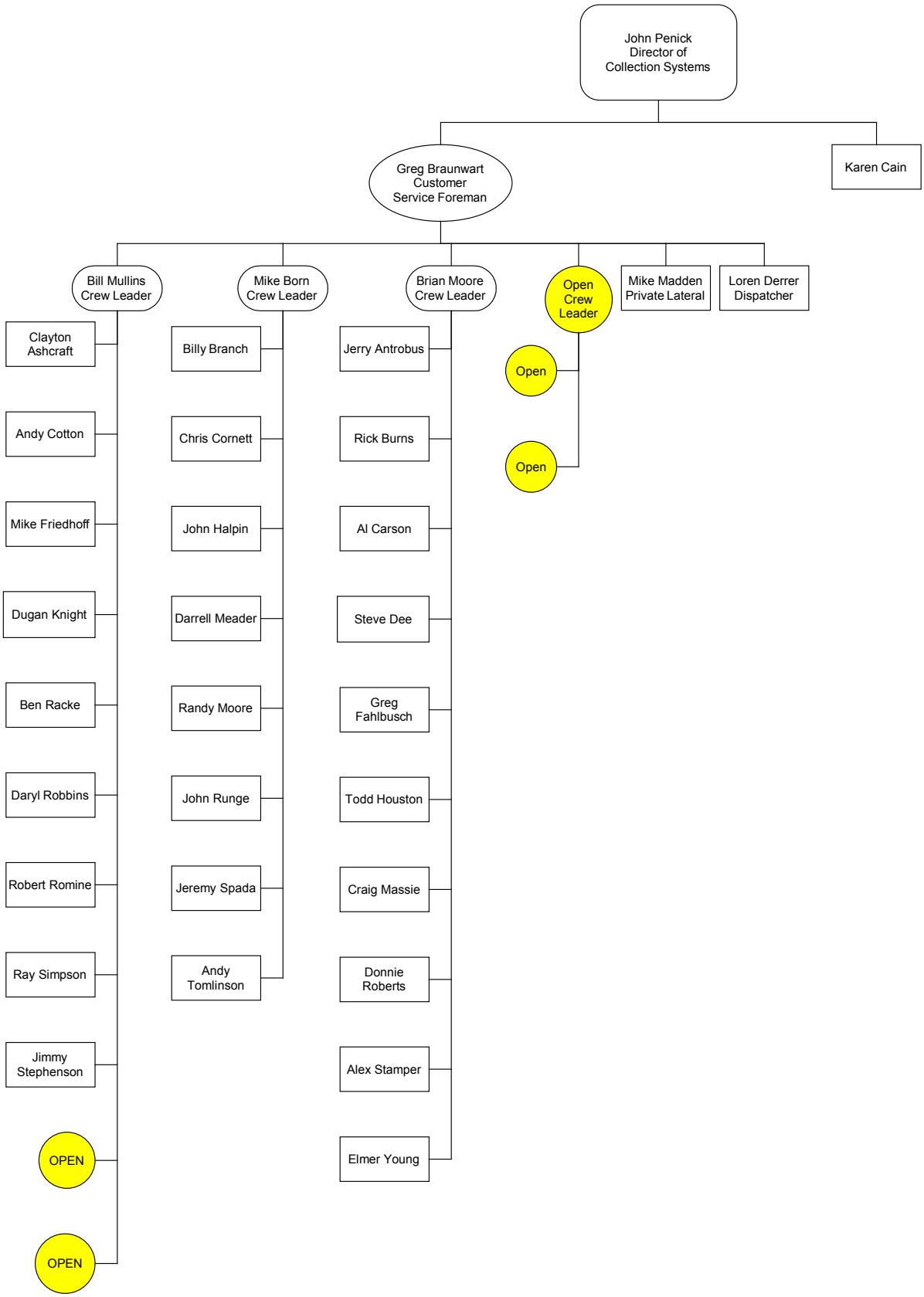
Sanitation District No. 1
Administration



Sanitation District No. 1
Human Resources & Administration



Sanitation District No. 1
Collection Systems



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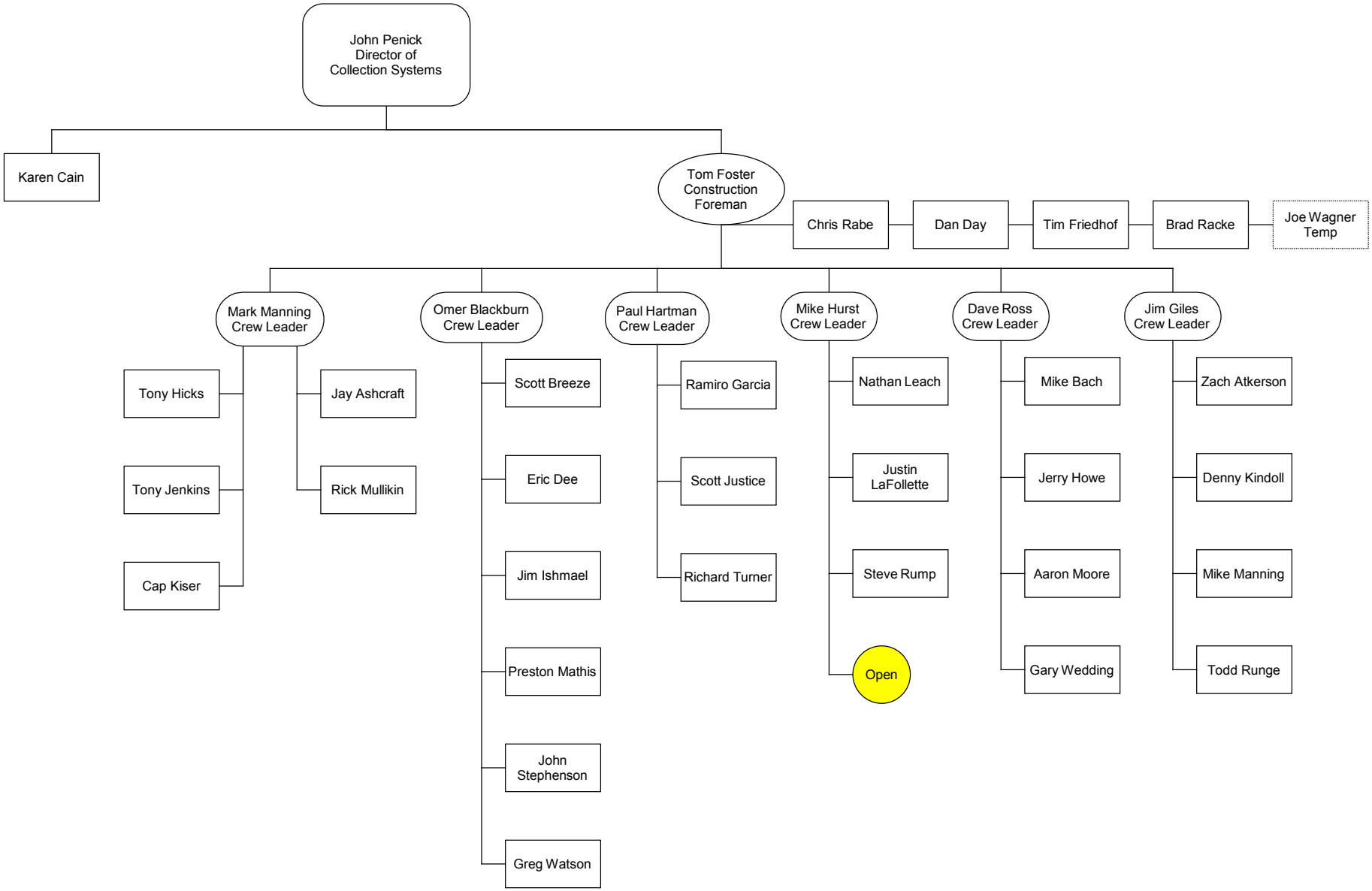
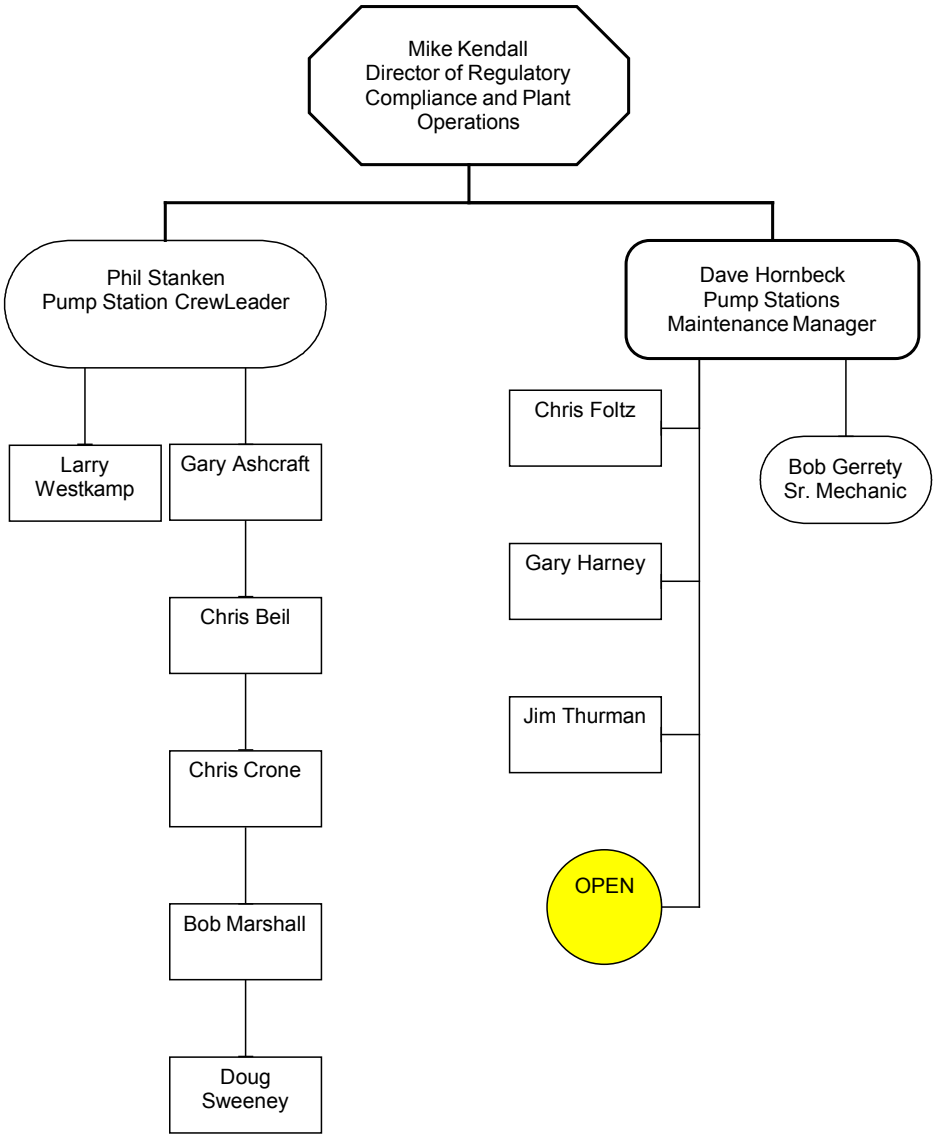
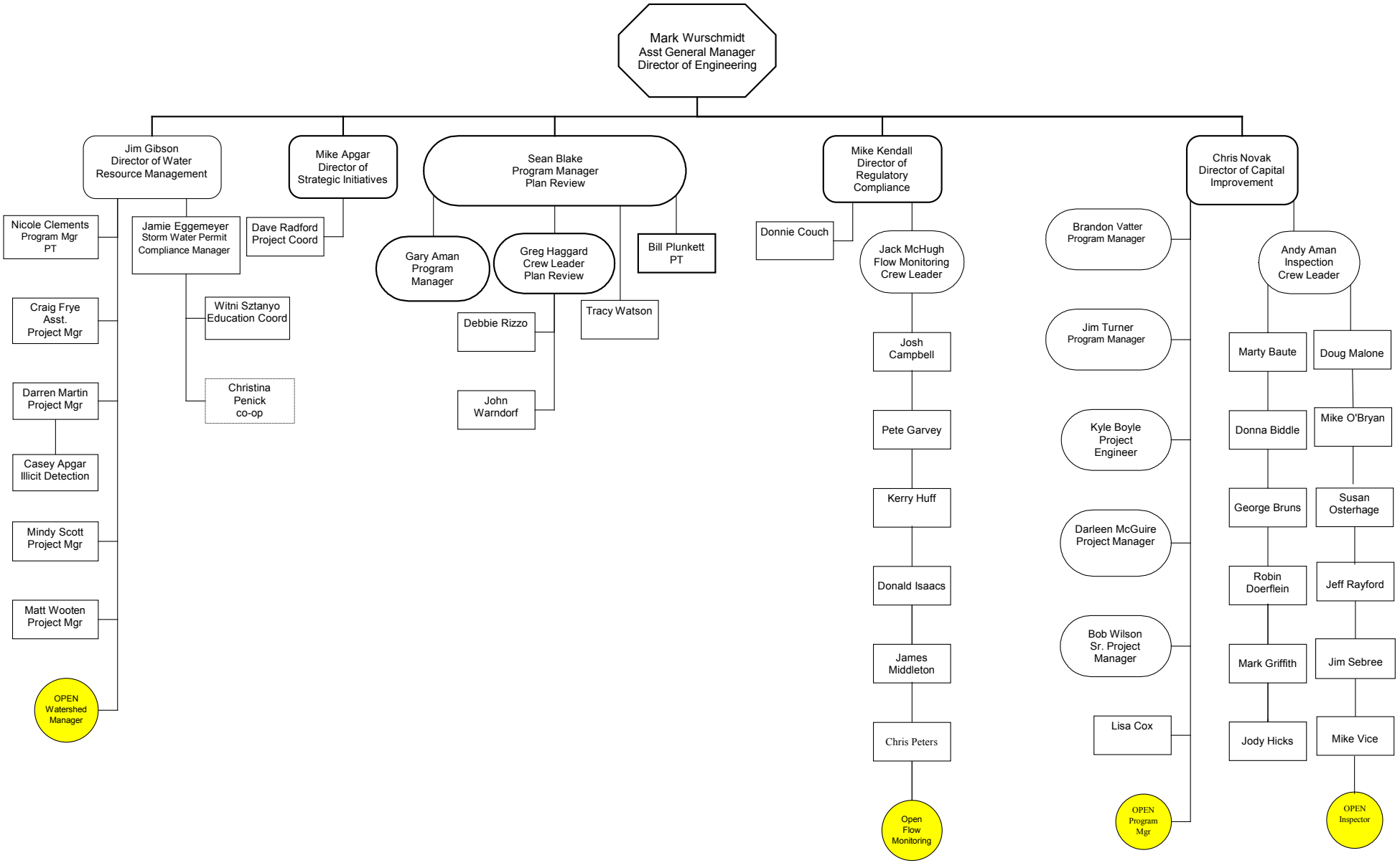
Collection Systems



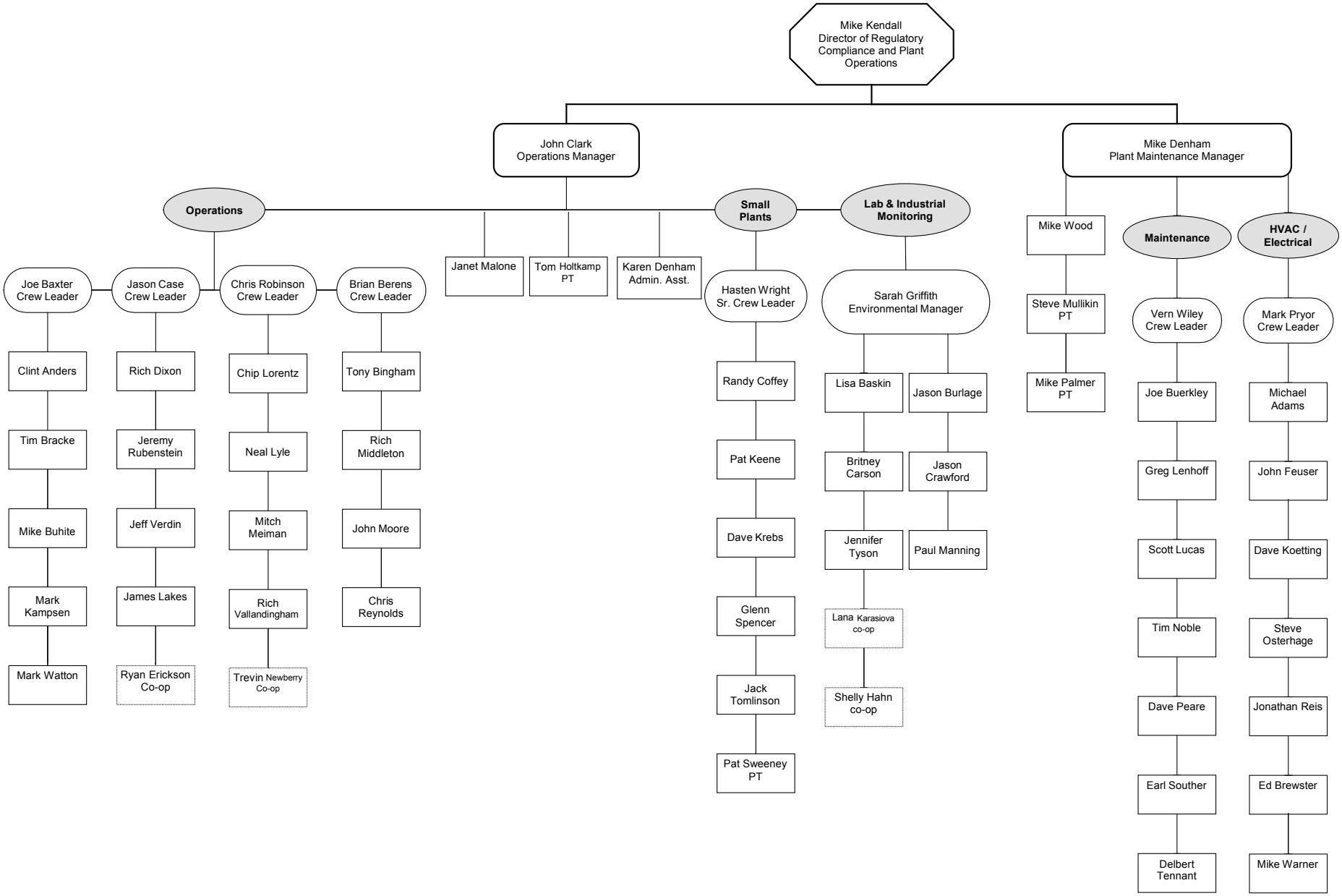
Sanitation District No. 1
Field Technical Services



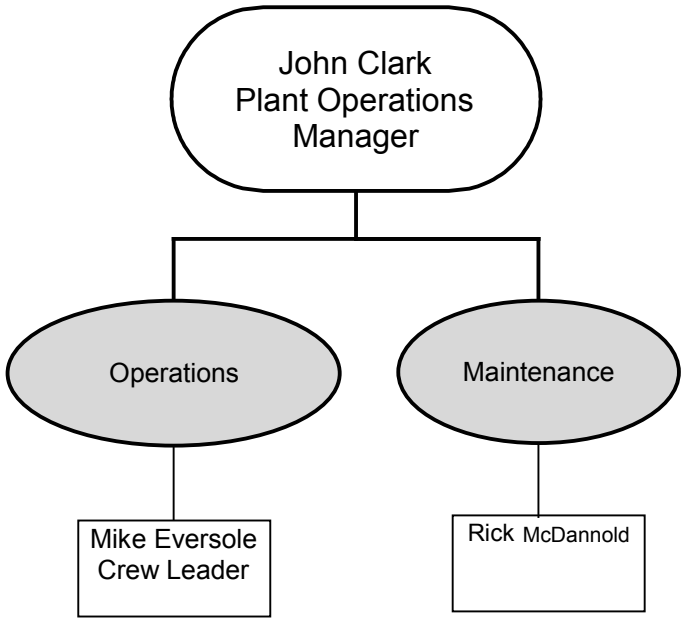
Sanitation District No. 1
Engineering



Sanitation District No. 1
Dry Creek Operations & Maintenance



Sanitation District No. 1
Eastern Regional Treatment Plant



APPENDIX D:

Sewer Lateral Repair Policy

SANITATION DISTRICT NO. 1

SEWER LATERAL REPAIR POLICY

Background

Since the consolidation of the sanitary sewer system in 1995, the Sanitation District No. 1 (the "District") policy relating to ownership and maintenance of building sewers (also known as sewer laterals) was stated in Article 7, Section 701.1.G, of the District's Rules and Regulations:

> The owner of the premises, served by a sewer shall be responsible for all maintenance, operation, cleaning, repair and reconstruction of the building sewer from the building to the point of connection with the public sewer.

This regulation fully complies with Kentucky law. Nevertheless, the result of this regulation was that in certain instances, property owners were being required to perform excavation and repair work beneath public roadways. Accordingly, the District provided some assistance to property owners faced with this difficult and costly situation with subsequent revisions to Article 7, Section 701.1.G, of the District's Rules and Regulations and sewer lateral policy amendments made between 1995 and 2004. Article 7, Section 701.1.G, of the Rules and Regulations currently states:

> The owner of the premises, served by a sewer shall be responsible for all maintenance, operation, cleaning, repair and reconstruction of the building sewer from the building to the point of connection with the public sewer unless the building sewer is located under a public roadway. If the building sewer is damaged under the paved roadway, the District will share in the cost repair as determined by the Board of Directors.

At the November 21, 2006 Board Meeting, the Board of Directors adopted, as an interpretation of Section 701.1.G, the following sewer lateral policy:

Amended Policy (11/21/06):

> The owner of the premises, served by a sewer shall be responsible for all maintenance, operation, cleaning, repair and reconstruction of the building sewer from the building to the point of connection with the public sewer**. However, if a property owner conclusively demonstrates, in accordance with the guidelines set out in the Sewer Lateral Repair Policy, that the private sewer lateral is not functioning as a result of a structural problem occurring at a section of the private lateral located beneath the public roadway, the Sanitation District will repair the structural problem of the private lateral from the public sewer to the edge of the public roadway at no cost to the property owner.**

NOTE: *The cost aspects of this Policy will only apply to structural problems occurring in the section of the private lateral located beneath the "public roadway." For the purposes of this policy, the "public roadway" is defined as the public road from edge of pavement to edge of pavement, including the abutting street curb or the abutting sidewalk, if present, and excluding segments of driveways within the right-of-way.*

Ownership and maintenance responsibilities shall remain with the individual property owner from the building to the public sewer, including the length of sewer lateral beneath the public roadway.

This policy shall only apply to private laterals 6 inches in diameter and smaller.

1. Problem Identification:

The property owner is responsible for hiring a licensed plumber to identify the location of the lateral line and, specifically, the location of the structural defect. Locating the defect should be accomplished through the use of a "locating device." Measuring distances to the defect is not considered an adequate method to locate the problem. Once the location of the defect has been identified, the plumber should clearly mark the location of the defect on the surface of the ground with spray paint or by other appropriate means.

If requested, the plumber will provide the District with a videotape of the sewer lateral, which clearly shows the structural problem causing the sewer lateral malfunction. However, it is recognized that this is not always possible.

Note: *In all cases, the property owner is responsible for 100% of the costs associated with locating the private sewer lateral problem.*

2. District Review:

The District will review the available information, and determine if the information provided is in accordance with the requirements of this policy. If the information is sufficient, the District will approve the project for repair. If additional information is required, District representatives will notify the property owner of the additional requirements.

Note: *In those instances where the lateral damage extends beyond the public roadway as defined in this policy, the property owner is solely responsible for the costs associated with the repair work outside the "public roadway" as defined above.*

In all cases, the District reserves the right to require the installation of a vertical cleanout riser near the edge of pavement.

3. Payment

If the necessary work to repair the damaged lateral extends beyond the "public roadway" as defined above, the property owner will reimburse the District for the total costs expended to locate and identify the defect and repair the private lateral beyond the "public roadway." The District will determine these costs separately and invoice the property owner accordingly.

If payment is required from the property owner, the District may offer a finance option to allow the property owner to repay the District over time via the property owner's quarterly sanitation bill. If work is conducted beyond the "public roadway" as defined above, the property owner shall grant a consensual lien to the District to be placed on the property in order to guarantee payment recovery.

4. Indemnity:

The property owner agrees to, and does hereby, indemnify and hold the District harmless from any causes of action, claims, liability, judgment or expenses, including attorneys' fees and the costs of investigation and litigation, arising out of the project.

5. Authorization:

This policy only applies when the District has been notified by the property owner that the sewer lateral is not functioning properly and when it is conclusively demonstrated to the District, in accordance with the provisions of this policy, that the malfunction is a result of a structural failure of the private sewer lateral at a point beneath the public roadway.

APPENDIX E:

Enforcement Response Plan

ENFORCEMENT RESPONSE PLAN

SANITATION DISTRICT NO. 1
1045 EATON DRIVE
FT. WRIGHT, KENTUCKY 41017

MAY 17, 1991 (Approved by EPA)
UPDATED June 1, 2003

TABLE OF CONTENTS

I. INTRODUCTION

The Enforcement Response Plan has been developed by the Sanitation District pursuant to the requirements of the U. S. Environmental Protection Agency. The stated purpose of the Enforcement Response Plan is to ensure that violations of the Sanitation District's pretreatment program are remedied.

A. REGULATIONS

The Federal Regulations requiring the development and implementation of an Enforcement Response Plan by the Sanitation District were published in the Federal Register on July 24, 1990 and are detailed in the Code of Federal Regulations at 40 CFR 403.8(f)(5).

B. PERSONNEL AVAILABLE

The following Sanitation District personnel are available for responding to instances of industrial user noncompliance.

General Manager

Environmental Manager

Pretreatment Coordinator

Industrial Waste Specialist

In addition, other personnel within the Sanitation District are available as needed to assist in any necessary support operations in connection with violations. These include legal services, engineering support, clerical and accounting, treatment plant superintendent and operating personnel, collection system personnel and laboratory support services.

II. PROVISIONS FOR ENFORCEMENT IN EXISTING SEWER USE ORDINANCE

See the current Rules and Regulations of the Sanitation District.

III. PROPOSED PROVISIONS FOR ENFORCEMENT IN SEWER USE ORDINANCE

The proposed revisions to the existing Rules and Regulations of the Sanitation District are contained in the following section. Revisions have been incorporated to comply with the requirements contained in the Federal Regulations issued July 24, 1990 to amend the General Pretreatment Regulations (40 CFR Part 403). These regulations were issued to implement the Domestic Sewage Study (DDS) recommendations. In addition, the Sanitation District Rules and Regulations were reviewed for compliance with the Federal Regulations issued October 17, 1988 that amended the Pretreatment Regulations based upon the Pretreatment Implementation Review Task Force (PIRT) recommendations.
Article III and Article V, which deal with use of the wastewater treatment system and industrial waste, respectively, have been reorganized to facilitate the logical flow of information and are included in their entirety. Other section numbers are included only if they were revised from the current Rules and Regulations.

IV. ENFORCEMENT RESPONSE GUIDE

The enforcement response guide will be used by the Sanitation District to determine the appropriate enforcement response to a specific violation of pretreatment requirements. The purpose of the enforcement response is to define the range of appropriate enforcement actions based on the nature and severity of the violation and the overall degree of noncompliance and to promote consistent and timely use of the enforcement remedies available to the District by eliminating uncertainty and confusion concerning enforcement options. Anticipated types of violations have been listed in the guide and a range of several alternate initial and follow-up enforcement responses have been developed for each type of violation.

A. ENFORCEMENT RESPONSE CRITERIA

In order for the enforcement response guide to be an effective tool, the following criteria will be considered when making determinations on the level of enforcement to be utilized.

1. Magnitude of the Violation

The magnitude of the violation is one of the primary determinates in evaluating the degree of enforcement required. Isolated violations of a minor nature require only informal contact with the noncompliant industrial user. Major noncompliance instances may require more severe enforcement such as judicial action or termination of service. The U. S. Environmental Protection Agency has also defined "significant noncompliance" [40 CFR 403.8(f)(2)(vii)] in regards to violation by industrial users. Significant noncompliance is defined as:

i) Chronic violations - Exceedances 66 percent of the time during a 6-month period.

ii) Technical review criteria (TRC) violations - 33 percent or more of measurements for each pollutant during a 6-month period exceed the TRC value.

iii) A violation of pass through or interference.

iv) A discharge of imminent endangerment to human health, welfare, or the environment, or which require the POTW to use its emergency authorities.

v) Violation of a compliance schedule milestone by 90 days.

vi) Violations of report submittal deadlines by 30 days.

vii) Failure to report noncompliance.

viii) Any other violation deemed significant by the Sanitation District.

2. Duration of the Violation

Violations, regardless of the severity, which continue over a prolonged time period, will subject the industrial user to escalating enforcement actions.

3. Effect On the Receiving Water

Any violation, which results in environmental harm, will warrant a severe response. This includes pollutants discharged by an industrial user which "pass-through" the treatment system and enter the environment; causes a violation

of the Districts NPDES permits; or has a toxic effect on the receiving waters.

4. Effect On the POTW

Violations, which have a negative impact on the POTW, will be addressed through formal enforcement action and penalties to ensure that adequate treatment and compliance is achieved promptly. Effects on the POTW may include significant increases in treatment costs, interference or harm to POTW personnel, equipment, processes, or cause sludge contamination. Expenses incurred by the District will also be recovered through formal enforcement actions.

5. Compliance History of the User

Industrial users exhibiting recurring compliance problems will warrant more severe enforcement response action than those industries with the same type violations, which have a history of good compliance.

6. Good Faith of the User

Good faith is defined as the user's honest intention to remedy its noncompliance coupled with actions, which show intent to remedy. Good faith is demonstrated by cooperation and completion of corrective measures in a timely manner. A user's demonstrated willingness to comply will generally result in less stringent enforcement responses.

B. USE OF THE ENFORCEMENT RESPONSE GUIDE

1. Locate the type of noncompliance in the first column and identify the most accurate description of the violation in the second column.

2. Assess the appropriateness of the recommended response(s) in column three. First offenders or users demonstrating good faith efforts may merit a more lenient response. Similarly, repeat offenders or those demonstrating negligence may require a more stringent response.

3. Apply the enforcement response to the industrial user. Specify corrective action or other responses required of the industrial user, if any. Column four indicates personnel to take each response and the time frame in which that response should be taken.

4. Follow-up with escalated enforcement action if the industrial user's response is not received or violation continues.

C. DESCRIPTION OF TERMS

AO	-Administrative order
GM	-General Manager
EM	-Environmental Manager
I	-Industrial Waste Specialist
NOV	-Notice of Violation
PC	-Pretreatment Coordinator
POTW	-Publicly Owned Treatment Works

D. Enforcement Response Guide (see attachment)

V. ENFORCEMENT RESPONSES

A. ENFORCEMENT RESPONSE DESCRIPTION AND IMPLEMENTATION

Once a violation of the District's pretreatment program by an industrial user has been identified, an enforcement response will be initiated. The response will be proportional to the violation's severity and be sufficient to insure compliance in a timely manner. The types of enforcement responses utilized by the District are designed to cover the full range of possible violations. The responses may be used individually or in combination. The range of enforcement responses available are listed below and described in the following discussion.

Telephone Call

Notice of Violation

Administrative Fines

Cost Recovery

Administrative Orders:
- Cease and Desist Order
- Consent Order
- Show Cause Order
- Compliance Order

Supplemental Responses:
- Public Notices
- Increased Monitoring and Reporting
- Short Term Permits
- Permit Termination

Civil Litigation:
- Injunctive Relief
- Cost Recovery
- Civil Penalties

Criminal Prosecution

Termination of Sewer Service

1. Telephone Call

A telephone call will be used as an initial enforcement response in those instances where the violation is of a minor nature, where additional information is required, to seek clarification of information submitted or to serve as a form of notification that other enforcement may be taken. The telephone contact can be initiated by any member of the pretreatment staff.

2. Notice of Violation

The notice of violation (NOV) is an official written communication from the District to the noncompliant industrial user, which informs the user that a pretreatment violation has occurred. The notice of violation is normally issued for relatively minor and/or infrequent violations of the pretreatment standards and requirements. However, the notice of violation can also serve as the initial response prior to

issuing more severe enforcement and as a vehicle to assess administrative fines or other enforcement options. The notice of violation can be issued by any member of the designated pretreatment staff. The notice of violation is issued in the form of a letter on Sanitation District letterhead and sent to the industrial user by certified mail with return receipt requested or hand-delivered by District personnel. The delivery will normally be made by certified mail to insure proper documentation of delivery and receipt by the industrial user. A copy of the notice of violation and the certified mail receipt will be placed in the industrial user's file.

Although the contents of the notice of violation letter may vary depending upon the type of violation detected, the following minimum items will be addressed:

i) Inform the industrial user that the Sanitation District has detected a violation of the pretreatment program.

ii) State the nature of the violation that has occurred.

iii) Cite and reference the regulation violated (whether Federal, State or Sanitation District Rules and Regulations).

iv) Request remedy of the violation or establish a time frame for further action on the part of the industrial user.

The notice of violation for minor or infrequent violations will normally be issued within five (5) business days after discovery of the noncompliance. When the notice of violation is used as a vehicle for more severe actions against an industry, the notice of violation may require a longer period, but in no case should more than thirty (30) days elapse between detection of the violation and initiation of notice of violation.

3. Administrative Fines

An administrative fine is a monetary penalty that will be used by the Sanitation District for violations of pretreatment standards and requirements. The administrative fines are punitive in nature and are not related to a specific cost born by the District. The amount of the fine should be proportional to any economic benefit enjoyed by the industrial user from the noncompliance and harm caused by the violation. The amount of the fine should also be sufficient to deter future violations. The fine is assessed by and at the discretion of the General Manager directly upon the noncompliant industrial user. The amount of the fine is determined on an individual, case-by-case basis. This allows for broader consideration of appropriate fine amounts than adherence to a predetermined fine schedule. In some cases, the District may consider reducing or suspending the fine as the result of subsequent discussion with the noncompliant industrial user where doing so would provide for more effective achievement of the compliance.

The vehicle for assessment of administrative fines is usually one of the various administrative orders, which are discussed in a later section of this enforcement response plan. The notice of violation letter can also be used to assess fines. The notice of an administrative fine is sent to the violating industry by certified mail, with return receipt requested. The original notice and return receipt are kept in the

individual industrial user file. Payment of administrative fines are required within thirty (30) days of the notice date. Failure to pay the fine within the prescribed time subjects the industrial user to further enforcement action, up to and including termination of service.

The Rules and Regulations of the Sanitation District [Article 10(Section 1001)2.A.(3)a.] provide for the assessment of a penalty up to One Thousand Dollars ($1,000.00) for each violation of the regulation. Each day in which a violation occurs is considered a separate violation.

4. Cost Recovery

The cost recovery provision of the Sanitation District's enforcement response differ from administrative fines in that they are designed to allow the District to recover from a noncompliant industrial user the full cost incurred by the District resulting from violation of the pretreatment regulations. [Article 10(Section 1001)1.A&D, 2.A.(2)d.1 and 2.B.(2)] of the Sanitation District's Rules and Regulations address cost recovery issues. The General Manager assesses the cost recovery expense. Payment is handled and documented the same as with the administrative fine procedures.

5. Administrative Orders

Administrative orders (AO) are enforcement documents issued by the Sanitation District, which direct industrial users to undertake or to cease specific activities. Administrative orders are issued by the General Manager and take the form of a letter issued on Sanitation District letterhead. They are sent to the industrial user by certified mail with return receipt to unsure proper documentation in case further enforcement is required. They are generally used as the first formal response to instances of significant noncompliance. They are also used as a vehicle for administrative fines when the District is also requiring the noncompliant industrial user to undertake certain duties or to cease specific activities. The terms of administrative orders may or may not be negotiated with the industrial user. The circumstances of an industrial user's noncompliance will dictate the type of order issued by the District to achieve compliance. In many instances, the administrative order will embody more than one type of order. The administrative order will normally be issued within thirty (30) days of detection of the violation addressed by the order.

Although administrative orders may take many forms, four different types, based upon their intended function, are discussed as follows:

a. Cease and Desist Orders

Cease and desist orders direct a noncompliant user to cease illegal or authorized discharges immediately or to terminate the discharge altogether. The cease and desist order will be used in situations where the discharge could cause interference or pass through, or otherwise create an emergency situation.

In an emergency situation the order can be issued immediately either by telephone or in person. The District may also order cessation of any discharge to

the collection system. A subsequent written order will be served on the industrial user by the normal procedure used for other type administrative orders. In non-emergency situations, the cease and desist order may be used when violations are recurring and notice of violations are ineffective.

b. Consent Orders

The consent order is a negotiated settlement between the Sanitation District and an industrial user not in compliance with the pretreatment requirements. The consent order differs from the other forms of administrative orders in that the signatures of both the District and industrial representative are required. The consent order may also contain a compliance schedule for meeting milestones and possibly fines or remedial actions.

c. Show Cause Orders

An order to show cause directs the industrial user to appear before the Sanitation District, explain its noncompliance, and show cause why more severe enforcement actions against the user should not be taken. The show cause order is generally issued after informal contacts or notice of violations have failed to resolve the noncompliance. The hearing can be at any level of formality desired. The show cause hearing does not preclude the subsequent use of other types of administrative orders, and indeed if necessary, can serve as a basis for further legal action if the results of the hearing indicate that it is necessary to achieve compliance.

d. Compliance Orders

A compliance order directs the noncompliant industrial user to achieve or restore compliance by a specific date. The compliance order is issued unilaterally by the District and its terms need not be agreed upon or discussed with the industrial user prior to issuing the order. Although the compliance order is usually issued when noncompliance cannot be resolved without construction, repair, or process changes, they may be used to establish compliance schedules, set milestone dates, prescribe additional or supplementary reporting requirements and any other actions allowed under the regulations to achieve compliance with pretreatment requirements. The order will document the noncompliance and state required actions to be accomplished by specific dates, including interim and final reporting requirements if applicable.

6. Supplemental Responses

The Sanitation District will utilize several enforcement responses, which are not covered under the more traditional responses, discussed in the other sections. These responses are often used in conjunction with other more traditional responses.

a. Public Notices

The Sanitation District will utilize the authority to at least on an annual basis publish, in the largest daily newspaper published in the municipality in which the District is located, a list of industrial users, which at any time during the previous twelve months, were in significant noncompliance with applicable pretreatment requirements. This public notification is required by the Federal Pretreatment Regulations [40 CFR 403.8(f)(2)(vii)].

b. Increased Monitoring and Reporting

Increasing the frequency of industrial user self-monitoring will be utilized when an industrial user demonstrated a history of noncompliance. Not only will the increased self-monitoring better enable the industry and the District to gauge the return to compliance, the additional expense involved in requiring the user to perform more frequent pollutant analysis will serve to deter further violations. Increased monitoring and reporting will generally be required by means of an administrative order from the Sanitation District.

c. Short Term Permits

The issuance of permits by the Sanitation District requires the industrial user to file a permit application prior to the permit expiration date. The permit reapplications provide current data on the industrial user and represents an opportunity to evaluate their compliance status. The length of a permit is limited to a maximum of three (3) years [Article 5(Section 502)3.C.(1)]. Consequently, the length of a permit's effective period is a discretionary matter and can be issued for any shorter period of time. In those instances where an industrial user is experiencing problems with compliance to the pretreatment regulations, a short term permit will allow a comprehensive review of the user status and provide leverage to ensure that necessary improvements to achieve compliance are undertaken. The additional cost involved with payment of a permit renewal fee will also serve to deter noncompliance. The short term permit can also be used to impose a compliance schedule, which concludes shortly before permit expiration.

d. Permit Termination

The District is empowered by [Article 10 (Section 1001) 2.A.5.]of the Rules and Regulations to revoke the permit of an industrial user for violations of the pretreatment program. The procedure for revoking a permit requires the General Manager to send a written notice fifteen (15) days in advance of the date of a hearing by the General Manager. The industrial user shall have the opportunity to present evidence at the hearing. The General Manager will notify the user in writing of his decision within fifteen (15) days after the hearing.

7. Civil Litigation

Civil litigation is the formal process of filing lawsuits against industrial users to secure court ordered action to correct violations and to secure penalties for violations, including the recovery of cost to the Sanitation District of the noncompliance. Civil action will be undertaken by the District when efforts to restore compliance when less formal forms of enforcement, such as notices of violation or administrative orders, have proven ineffective in returning the violating industrial user to compliance; when emergency situations require injunctive relief to halt or prevent discharges which threaten human health or the environment, or interfere with the treatment system; or to impose civil penalties and recover losses incurred due to noncompliance. All civil action will be taken at the discretion of the General Manager.

Civil actions will be of the following type:

a. Injunctive Relief

Injunctions are court orders, which direct parties to do something or refrain from doing something. Injunctions can be temporary in nature or permanent. Generally, the use of an administrative order to direct a noncompliant user to cease and desist will be sufficient to obtain remedy. In those cases where the administrative order does not achieve compliance, the injunction will be utilized. It will also be used where immediate action is required to prevent a danger to human health, the treatment works or the environment.

b. Cost Recovery

The civil process can also be used by the Sanitation District to recovery the cost associated with noncompliant acts of an industrial user. These cost may involve actual physical damage to the treatment works or collection system, personal injury to District personnel, fines imposed upon the District for violation of its permits and other related cost such as increased testing and monitoring.

c. Civil Penalties:

Civil penalties differ from administrative fines in that the court as a result of civil action awards them. [Article 10(Section 1001) 2.B. (3) a.] of the District's Rules And Regulations address the issue of civil penalties and allow for recovery in an amount up to Five Thousand dollars ($5000).

8. Criminal Prosecution

Criminal prosecution is the formal process of charging individuals and/or organizations with violations of the Sanitation District's Rules and Regulations that are punishable, upon conviction, by fines, imprisonment or both. Criminal prosecution will be reserved for those instances of industrial user noncompliance which show criminal intent, are most severe and have not responded to less formal methods of enforcement such as notice of violations and administrative orders. Two areas of noncompliance most likely to result in criminal prosecution involve falsification of records, reports, etc. and/or monitoring equipment and secondly, violations which are willful or negligent. Both areas are provided for by the District's Rules and Regulations [Article 10(Section 1001)2.C.1&2]. Criminal prosecution will at the discretion of the General Manager utilizing the legal resources available to the District.

9. Termination of Sewer Service

Termination of sewer service is the revocation of an industrial user's privilege to discharge industrial wastewater into the Sanitation District's sewer system. Termination may be accomplished by physical plugging or severance of the industry's connection to the sewer system, by issuance of an administrative order, which compels the user to terminate its discharge, or by a count ruling.

When other types of enforcement responses have been unsuccessful, termination of service may be used for the following types of violations:

i) Discharges, which cause the District to violate its NPDES, permit.

ii) Discharges, which create a dangerous situation threatening human health, the environment, or the treatment system.

iii) Violations of the regulations which have not been resolved by less formal means of enforcement.

Termination of service is also an appropriate response to immediately halt or prevent a discharge, which creates emergency situations.
The termination of sewer service, unlike civil and criminal proceeding, is an administrative response, which can be implement directly by the Sanitation District. The General Manager at his discretion may terminate the service to any industrial user found to be in violation of the District's Rules and Regulations [Article 10(Section 1001)2.B.(4).

B. COMPLIANCE/ENFORCEMENT TRACKING

The Sanitation District utilizes several methods for screening compliance data to insure that the submission of required data is complete, that the data is submitted in a timely manner, and that any violations are identified. This tracking system also ensures that enforcement actions occur within a reasonable time frame and that results of enforcement are documented and pursued to completion. The following specific compliance/enforcement tracking techniques are utilized.

1. Initial Data Screening

   All compliance data, whether generated through self-monitoring reports submitted by the industrial user or by Sanitation District field personnel will be systematically analyzed to identify any violations. This function will normally be handled by the Pretreatment Coordinator. All data submittals are also reviewed by the Environmental Manager. It is not anticipated that more than five working days will elapse between receipt of the information and initial screening. Generally the screening will occur on an "as-received" basis within one day of receipt.

2. Industrial Inspection

   Each industrial user is inspected by Sanitation District personnel a minimum of once yearly. Large dischargers, significant industrial users and especially those industries experiencing problems with compliance will be inspected on a more frequent basis. The routine inspection duties are generally handled by the Industrial Waste Specialist. The inspections are considered an enforcement tracking function as the visit inside the facility allows the Inspector to observe first-hand the operation of the pretreatment systems the industry is utilizing and ensure enforcement of any actions the Sanitation District has required of the industry.

3. Industrial Sampling

   All significant industrial users are sampled on a periodic basis to ensure compliance with the applicable Pretreatment Standards and Sanitation District Rules and Regulations. The sampling program also serves to confirm the validity of data submitted by the Industrial User. The Industrial Monitoring Inspector handles this function with assistance from other District support personnel as needed.

4. Violation Summary

   A summary of all violations specific to each industrial user is identified by the Sanitation District and is retained with each industrial user file. This Violation Summary serves as a log for the compliance history of each industrial user and the enforcement responses initiated by the Sanitation District. This ready summary of previous violations will ensure that past compliance history is taken into account when a proper enforcement response is being considered.

5. Linko Compliance Tracking Software (Linko-CTS)

   Linko-CTS is a computer program used in tracking industrial user's compliance with applicable pretreatment standards. The Sanitation District utilizes Linko-CTS as an automated means of maintaining an inventory of all significant industrial users; recording analytical sampling information; recording submittal of required reports, inspections and enforcement actions; and determining significant noncompliance. Linko-CTS also allows for the generation of summary reports for informational purposes and for reporting compliance monitoring and enforcement actions.

6. Reporting-Compliance Tracking

The Sanitation District has developed two additional forms to assist in tracking compliance. Each serves as an additional step to ensure timely reporting and achievement of compliance schedule milestones.

C. FINE SCHEDULE

As discussed under the enforcement response section earlier, the Sanitation District does not utilize a fine schedule, but instead determines the amount of a fine on a case-by-case basis. This approach allows for broader consideration of appropriate fine amounts than adherence to a predetermined fine schedule. However, the Sanitation District will only issue fines in an amount of One Hundred Dollars ($100.00) minimum. Repeat violations are assessed fines in increasing amounts to achieve compliance.

D. EMERGENCY PROCEDURES

Emergency situations may arise which call for immediate action. These situations can involve plant upsets, sewer line blockages, fires, explosions, etc., and require the immediate attention of Sanitation District personnel to prevent a possible safety and health hazard to the public and Sanitation District employees, upset or pass-through at the treatment plant, damage to the collection system or treatment works, or violation of applicable permit requirements.

The Sanitation District has established a "Collection System Spill Control Procedure" which is implemented whenever a spill is either reported to the Sanitation District or detected without prior warning at the treatment plant. These procedures were developed primarily to ensure the safety and well being of both men and equipment at the treatment works. The follow-up actions in response to the emergency first require the removal of any immediate hazards. If the source of the violation is unknown, the sampling of Demand Monitoring Locations is utilized. These manholes are located such that the effluent from a group of industrial users can be monitored at each selected manhole location. This sampling program represents a method of systematically tracking-down the sources of the problem discharge. A review of industrial waste questionnaires, which have been submitted by industries within the Sanitation Districts service area, can also be reviewed to attempt to identify industries with the potential to have created the emergency situation.

Possible damage to the collection/treatment system will be assessed through observation by operating personnel and by review of operational data and discharge parameters generated by analysis.

To ensure the validity of any analytical data generated as a result of demand sampling, all sample collection will be properly documented and handled using the Sanitation District's usual chain of custody procedures. This will ensure the integrity of any sample results that may later be offered as evidence in any judiciary proceedings. In addition, only EPA approved sample storage and analytical procedures will be utilized in handling samples (40 CFR Part 136).

APPENDIX F:

Continuous Sewer Assessment Process Diagram

Continuous Sewer Assessment Process Diagram Description

The flow charts presented in the following two pages provide an initial framework for implementation of five of the operation and maintenance (O&M) Programs that are part of the District's proposed Continuous Sewer Assessment Program. The flow charts mainly focus on the CCTV and AquaZoom screening inspection activities related to the O&M programs. Inherit to the program is manholes, which will be inspected and assessed as a part of the sewer inspection. The charts are divided into two pages, with the first page summarizing inspection and assessment phases and the second page summarizing the implementation phases, which includes the Cleaning Program and Rehab/Replacement Program.

Each of the individual O&M programs feed into the overall Cleaning and Rehab/Replacement Program. These flow charts were developed to provide a roadmap for implementing an asset management approach to the O&M activities of the District's gravity collection system. The chart lays out initial and follow-up assessment frequencies based on the results of initial inspections. The overall goal was to develop a program that resulted in inspection of all District gravity sewers and manholes within 10 years (approx 7.9 million linear feet). Inherit to the program is manholes, which will be inspected and assessed at the same time as sewers are inspected. However, a more critical feature of the flow chart is how sewers and associated manholes are prioritized to be inspected and sewers to be cleaned more frequently than other sewers. This feature results in a proactive O&M program that inspects and cleans a total equivalent inspection footage (approximately 15 million linear feet) over the first 10 years that greatly exceeds the total sewer length in the District's collection system (approx 7.9 million linear feet). Using this approach, the District will inspect and clean the highest priority sewers first and where it is needed the most in the collection system. It is important to note that these flow charts serve as the initial step in the program and will be re-evaluated on an annual basis to ensure that the system is cost-effectively maintained.

The overall flow of the inspection and assessment portion of the diagram (first page) is divided into structural and service scoring. The structural scoring process will guide the District in making decisions that feed into the rehabilitation/replacement program for our sewer infrastructure. The service scoring process will guide the District in making sewer cleaning decisions. This does not mean that the Cleaning and Rehabilitation/Replacement Programs exist independent of one another. Key decisions for each program are coordinated with each other to ensure that cleaning decisions are coordinated with rehabilitation/replacement decisions.

The scores shown in the diagram are SCG (Structural Condition Grade) and PBG (Potential for Blockage Grade). Each grade is 1-5, with 1 being excellent condition or clean, and 5 means collapsed or near collapse or near total blockage. These are based on the WRc and NASSCO scoring industry standards. In general, only those pipes that score a SCG 4 or 5 will be moved to

the Rehabilitation/Replacement Program, while those with a PBG 3, 4 or 5 will move into the Cleaning program. It is important to note that the CCTV inspections in the Phase 1-3 of the Preventive O&M program will be inspected on a basin-wide basis. That is, a CCTV crew will complete an entire basin before moving to another basin. This allows for efficient inspection, cleaning and assessment.

One important feature of the process is the reinspection frequency. The frequency of reinspection depends on the number of times that a particular segment has been inspected or cleaned. For example, if a pipe received a SCG of 3 in its first inspection, the pipe is reinspected in 5 years. If the pipe is still a 3 after the reinspection in 5 years, it is not to be reinspected until another 7 years. This is due to the fact that the pipe is not deteriorating. This allows for more frequent inspections of pipes that are assessed that really need more frequent inspections.

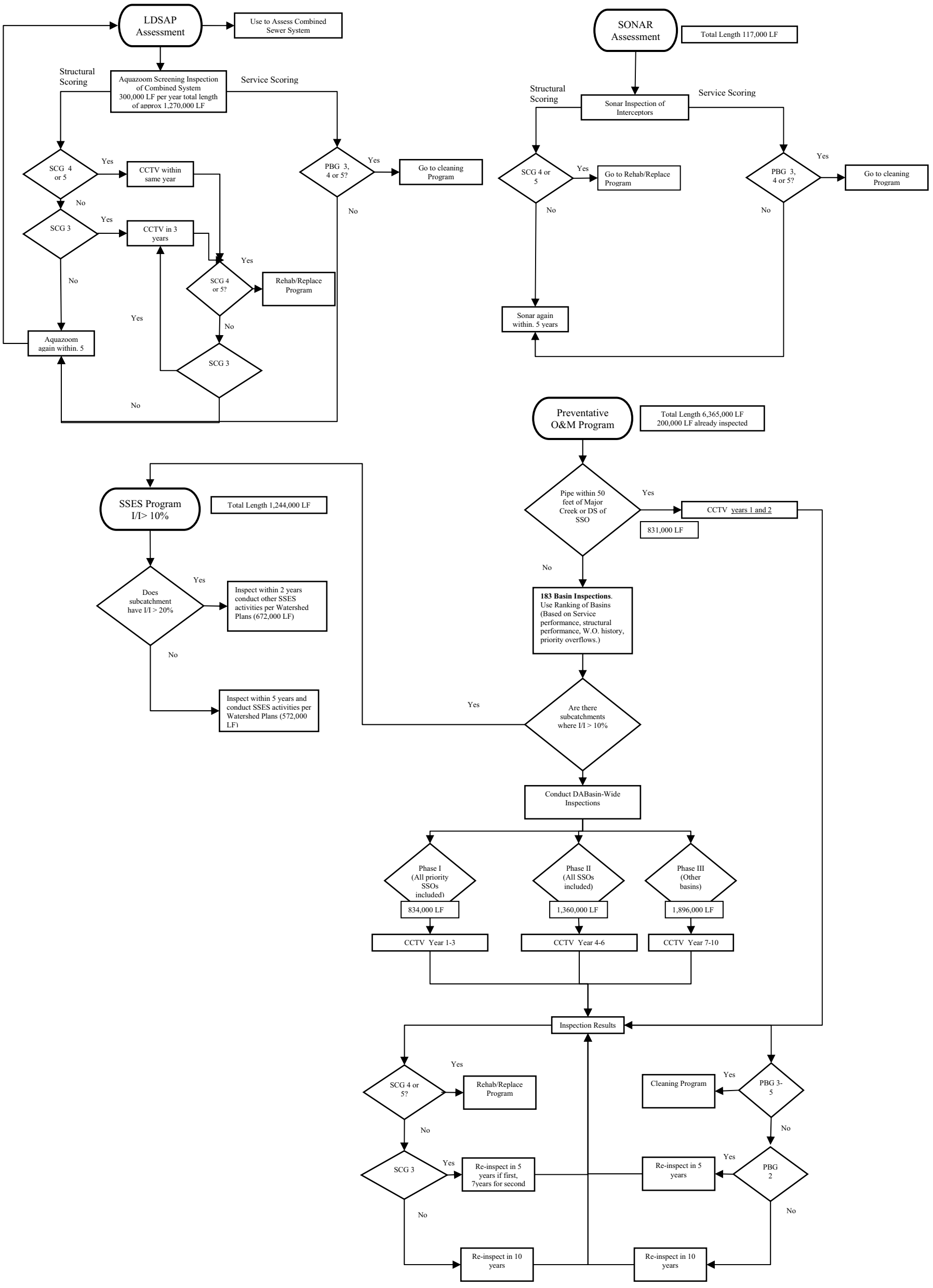
The Cleaning Program is designed to identify pipes that need frequent cleaning and to eventually permanently fix the cause of the problem or to put it onto a Preventive Maintenance (PM) program to be cleaned on a regular basis. The flow chart does include a box where the District performs an analysis to determine whether it is more effective to provide regular cleaning or whether it makes sense to implement a capital solution to permanently address the problem.

The Rehabilitation/Replacement Program is designed to immediately repair fully collapsed pipe and then to develop prioritized plans for system rehabilitation. The flow chart shows how individual pipes are placed onto priority lists, which are based on many factors as listed in the diagram. These priorities will be one of the factors used to develop larger scale rehabilitation projects. A key factor in the Rehabilitation/Replacement Program is that it is tied to and coordinated with the District's Watershed Plans in the Consent Decree. The goal is to gather a significant amount of condition data in each basin, coordinate with Watershed Plan projects that are planned or ongoing, and develop a rehabilitation project that addresses the entire basin and supports the overall Watershed Plan projects. Using this approach, the District can more fully understand the overall condition of their system and can implement the rehabilitation in a prioritized, cost-effective manner consistent with the Watershed Plans. The Rehabilitation/Replacement Program is discussed in more detail in Section 4.3.2 of the CMOM Self Assessment Report.

Sanitation District No. 1
Continuous Sewer Assessment Program

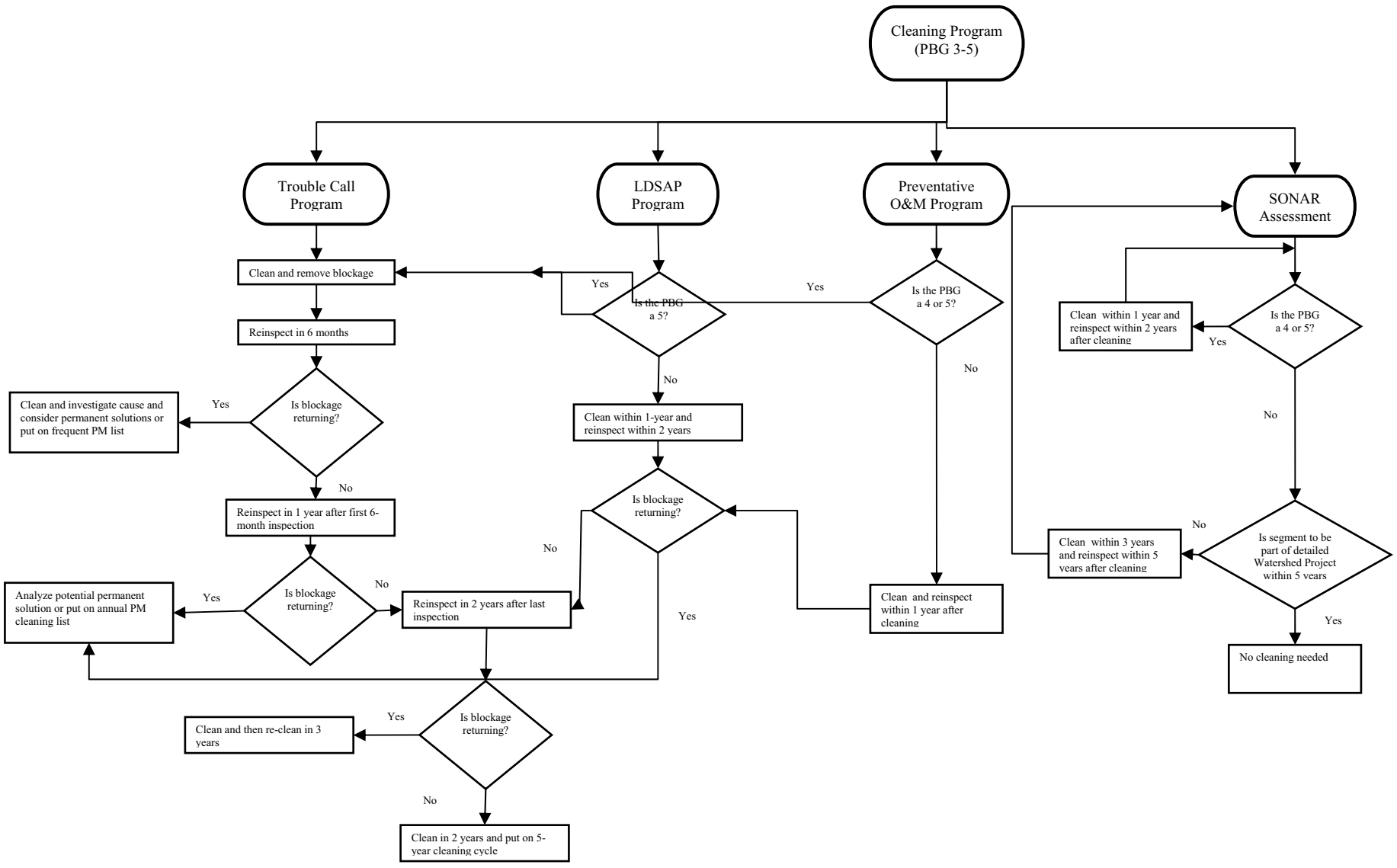
Preliminary Process Diagram
10/10/07

CONFIDENTIAL PRELIMINARY WORKING DRAFT WATERSHED CONSENT DECREE



Sanitation District No. 1
Continuous Sewer Assessment Program

Preliminary Process Diagram
10/10/07
CONFIDENTIAL PRELIMINARY WORKING DRAFT WATERSHED CONSENT DECREE



Rehabilitation Decision Considerations

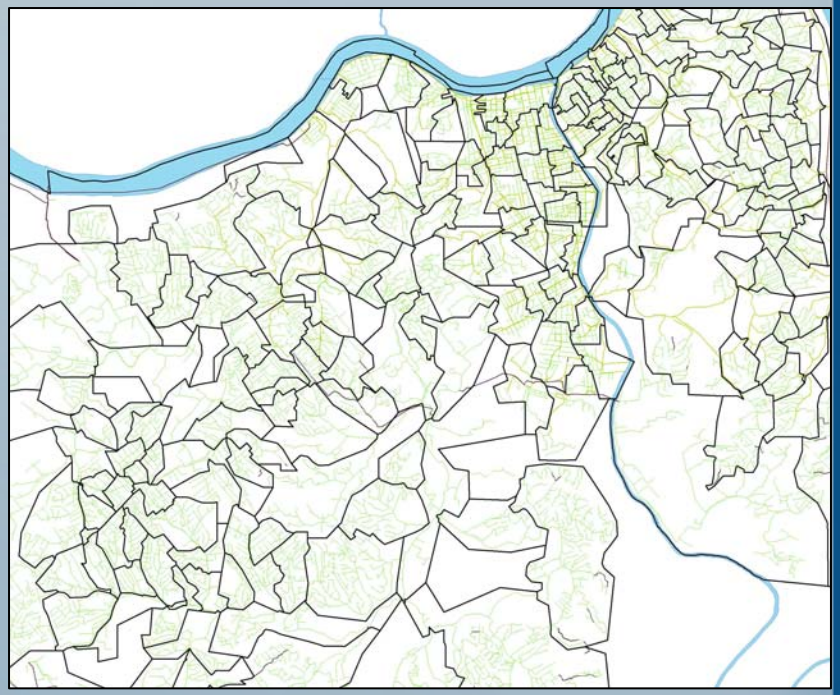
- Priority
- Current hydraulic capacity
- Proximity to other pipes (basin basis)
- Watershed Planning
- Extent of defects
- Constructiblity

APPENDIX G:

Basin Prioritization Process & Priority Scoring Results

Drainage Basin Approach

- With the availability of system performance data, it made more sense to summarize priorities on a larger scale that individual pipes.
- It is more efficient for crews to conduct continuous inspections in a specific area than jumping from pipe to pipe.
- Result of basin inspections could be rolled up into basin reports and summaries.
- Subsequent rehabilitation, cleaning and rehabilitation could follow a similar basin approach.
- Approach will help focus efforts and data collection.



Drainage Basin Summary

- The basins are defined by the first three letters of the manhole ID.
- There are just over 250 basins in the Sanitation District No. 1 service area.
- There is an average of 35,500 lf of pipe in each basin. This corresponds to approximately 30 days of inspection for a single crew assuming 1,200 feet per day.

Overall Basin Prioritization Approach

- Traditional prioritization approaches focus on indirect metrics to indicate risk of problems such as pipe age, material etc.
- We believe that there is enough available system performance data to identify “at risk” areas that should be addressed first.
- Summarize available system performance and risk data on a basin-wide basis for collapse and blockage prevention purposes.
- Develop prioritized scores based on available data and further refine based on focus

Basin Scoring Approach

- Summarize the available data for each basin for the following priority criteria:
  - Service performance priority (measures risks of blockages)
  - Structural performance priority (measures risks of collapse)
  - Work Order history priority (used to estimate frequency of problem occurring)
- Apply priority scores of 1-5 for each criteria and sum for a total score.
- Apply enhancement factor based on number and type of overflows in each basin for a final priority score.
- Rank basins based on final priority score.

Service Performance Scoring

- Goal of this criteria is to analyze the overall extent and risk of blockages occurring in the basin.
- Service defects were summarized by percent of pipes with service defects normalized by percent of pipes actually inspected
  - Summary was done for overall and severe service related defects
- Service defects used in analysis included:
  - Sags
  - Grease
  - Roots
  - Mineral deposits
  - Debris
  - Can’t get past this point
  - Camera under water
  - Survey abandoned

Severe Defects

Service Performance Scoring

- Score of 1-5 given to percent of pipe in basin with service defects and percent with severe service defects.
- Overall weighted score of 1-5 with the following weights:
  - Overall service defect weight: 0.4
  - Severe service defect weight: 0.6
- Score applied based on ranges of percent of pipe with defects.

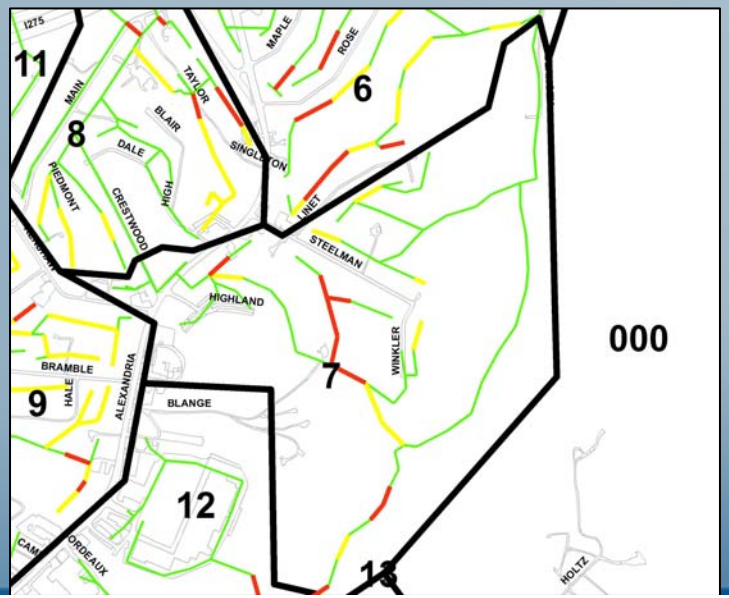
Overall Service Defect Score	% of Inspected Pipes with Service Defects	Severe Structural Defect Score	% of Inspected Pipes with Severe Service Defects
1	LT 20	1	LT 5
2	21-40	2	6-10
3	41-65	3	11-25
4	66-80	4	26-40
5	GT 80	5	GT 40

Service Performance Scoring

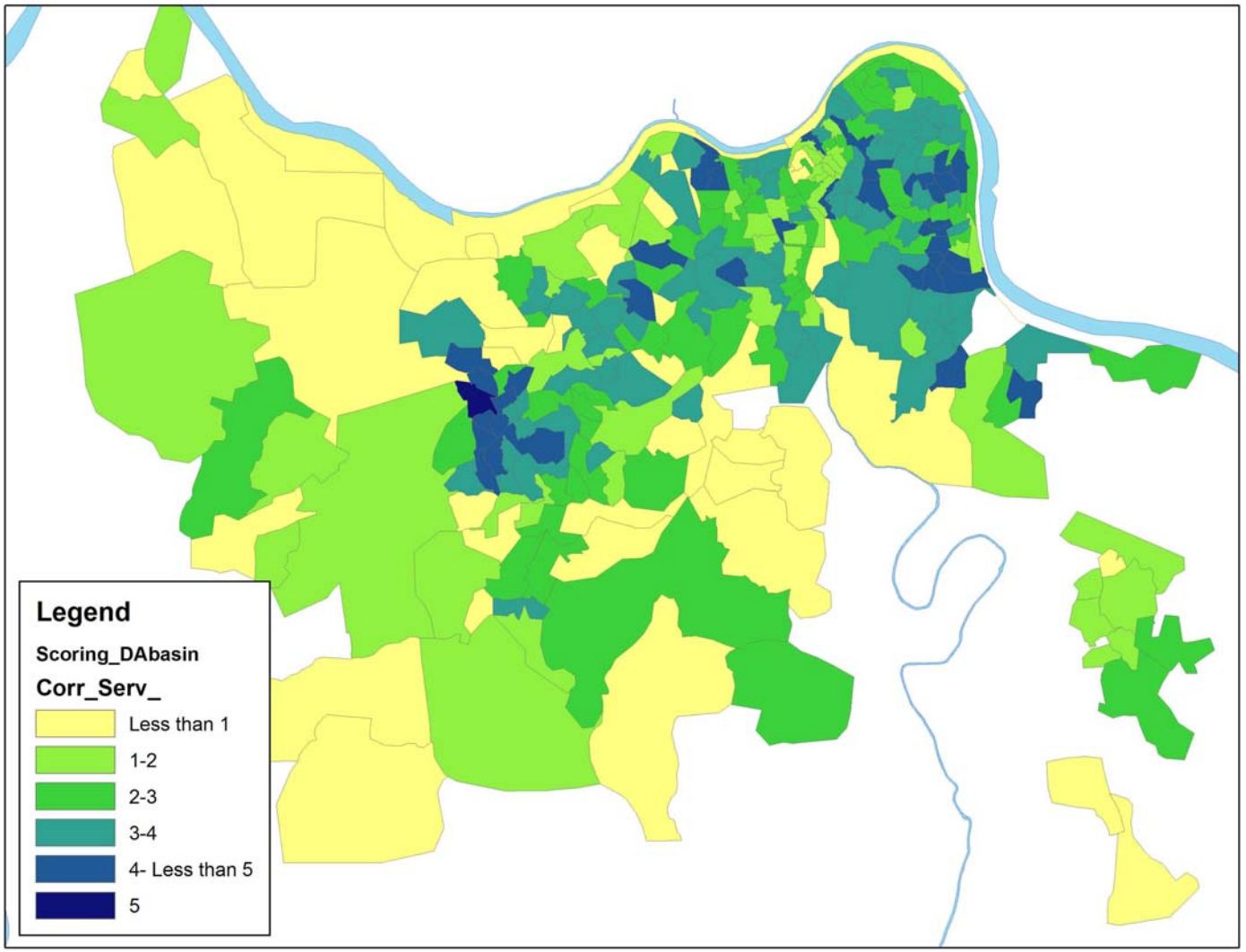
- A correction factor was applied to the score based on the total percentage of pipe inspected in the basin.

Percent of Pipe Inspected in Basin	Correction Factor
< 10%	0.5
10% - 20%	0.7
> 20%	1.0

DA Basin	Total Length of Sewer (lf)	Percent Inspected	Percent with Service Defects	Service Defect Ranking	Percent with Severe Defects	Severe Service Defect Ranking	Percent Inspection Correction	Overall Service Performance Score
7	15,122	40	54	3.0	27	4.0	1.0	3.6

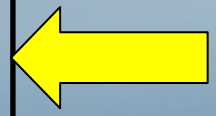


Service Performance Scoring



Structural Performance Scoring

- Goal of this criteria is to analyze the overall extent and risk of collapses occurring in the basin.
- Structural defects were summarized by percent of pipes with structural defects normalized by percent of pipes actually inspected
  - Summary was done for overall and severe structural related defects
- Structural defects used in analysis included:
  - Crack horizontal
  - Crack radial
  - Cracks multiple
  - Crack longitudinal
  - Hole in pipe
  - Collapsed pipe
  - Broken pipe
  - Area of sink hole



Severe Defects

Structural Performance Scoring

- Score of 1-5 given to percent of pipe in basin with structural defects and percent with severe structural defects.
- Overall weighted score of 1-5 with the following weights:
  - Overall structural defect weight: 0.4
  - Severe structural defect weight: 0.6
- Score applied based on ranges of percent of pipe with defects.

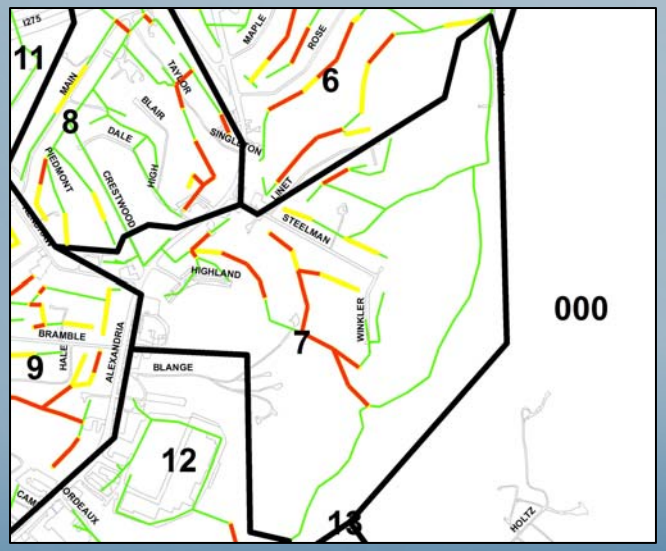
Structural Defect Score	% of Inspected Pipes with Structural Defects	Severe Structural Defect Score	% of Inspected Pipes with Severe Structural Defects
1	LT 20	1	LT 5
2	21-40	2	6-15
3	41-60	3	16-30
4	61-80	4	31-45
5	GT 80	5	GT 45

Structural Performance Scoring

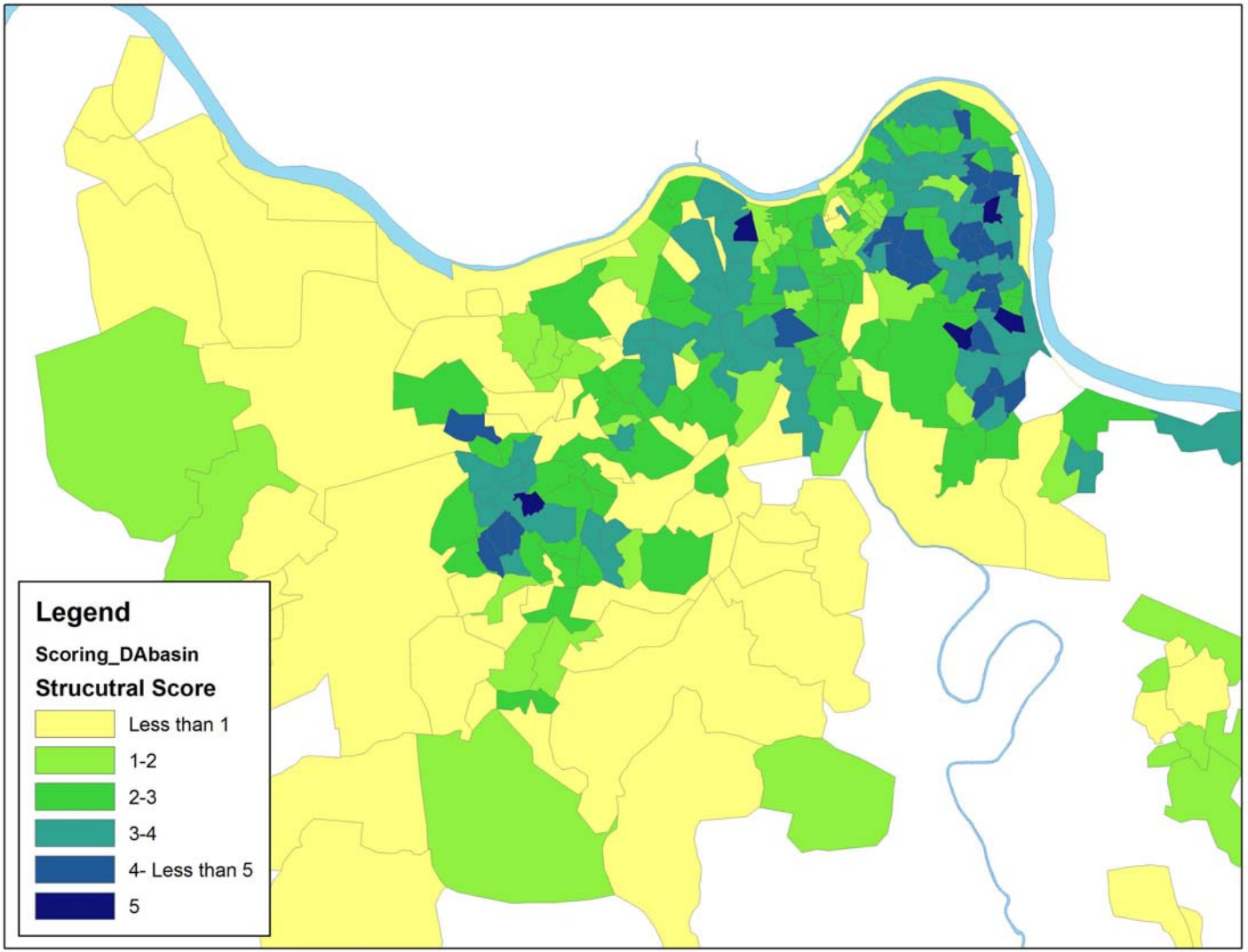
- A correction factor was applied to the score based on the total percentage of pipe inspected in the basin.

Percent of Pipe Inspected in Basin	Correction Factor
< 10%	0.5
10% - 20%	0.7
> 20%	1.0

DA Basin	Total Length of Sewer (lf)	Percent Inspected	Percent with Structural Defects	Structural Defect Ranking	Percent with Severe Defects	Severe Structural Defect Ranking	Percent Inspection Correction	Overall Structural Performance Score
7	15,122	40	66	4.0	47	5.0	1.0	4.6



Structural Performance Scoring



Overall Scoring

- An overall raw score was calculated by summing the individual service, structural, and Work Order scores
- Overall raw score was modified with enhancement factors based on the number of SRP/SSOs, priority SSOs, and priority CSOs. The overall enhancement is additive and multiplied by the raw score. The result is added to the total score.

Number of SRPs and SSOs	SRP/SSO Factor	Number of Priority SSOs	Priority SSO Factor	Priority CSOs	Priority CSO Factor
0	0.0	0	0.0	0	0.0
1	0.1	1	0.3	1	0.3
2	0.2	2	0.4	2	0.4
3	0.3	3	0.6		
4	0.4	more	1.0		
More	0.7				

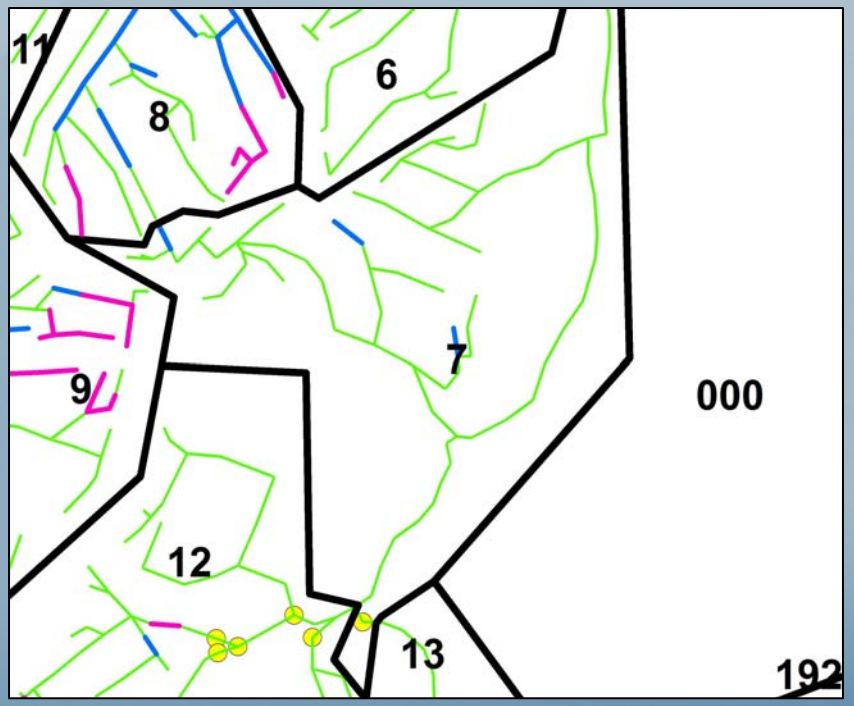
Work Order Scoring

- Goal of this criteria is to analyze the overall extent and frequency of work done in the basin.
- Criteria include PM list pipes and Work Order locations
- A score of 1-5 was given to PM Results and Work Order Results
- The percentages were normalized by length of pipe in basin
- The scores were weighted as follows:
  - PM List Score: 0.7
  - WO Score: 0.3

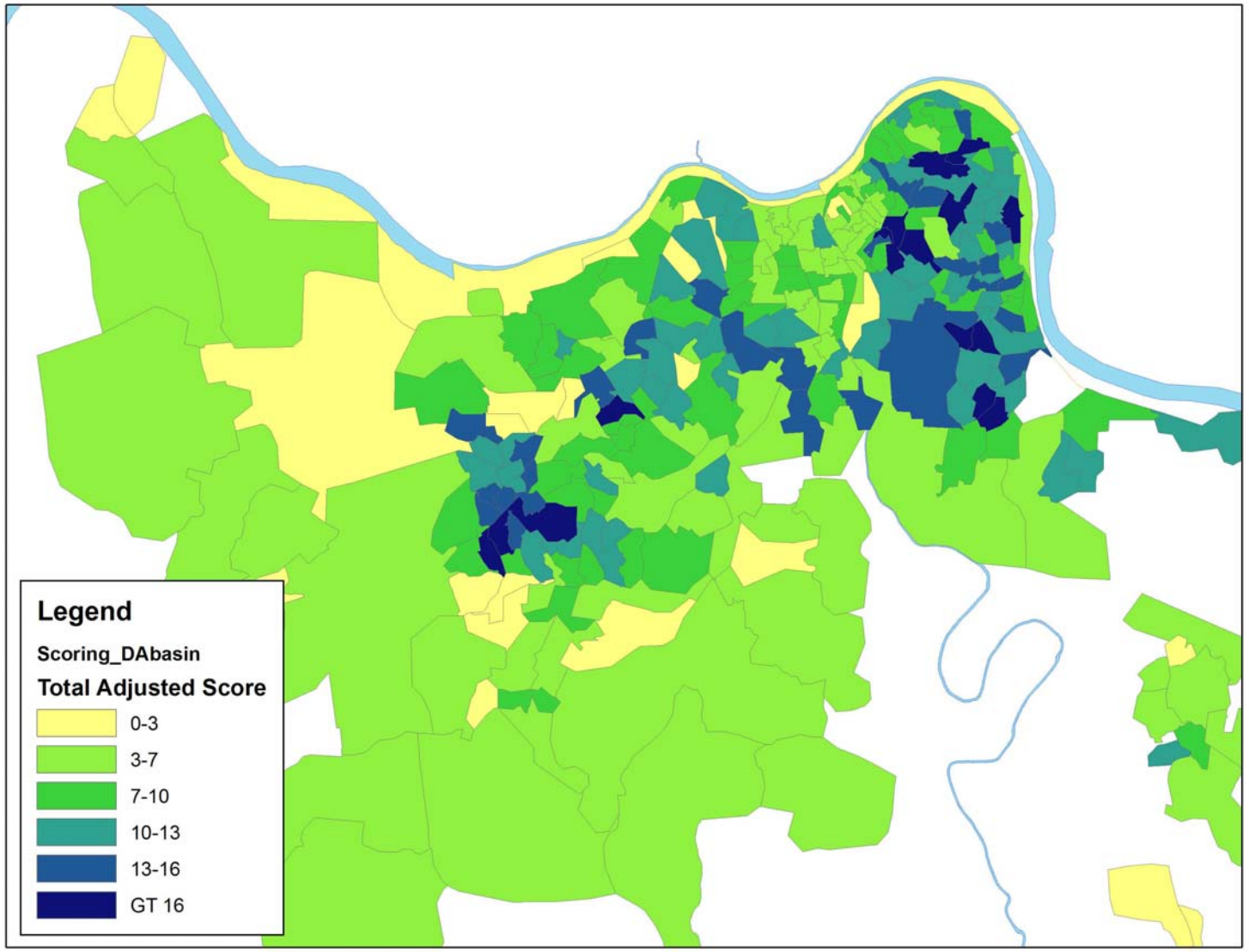
PM Score	% of Pipe on PM list	Work Order Score	% of Inspected Pipe with WO History
1	0	1	LT 2
2	0-3	2	2-5
3	3-7	3	5-9
4	8-15	4	9-15
5	GT15	5	GT15

Overall Scoring

DA Basin	Raw Overall Score	SSO/SRP	Priority SSO	Priority CSO	Total Enhancement Factor	Enhancement Adder	Total Adjusted Score	Overall Rank
7	10.5	0.1	0	0	0.1	1.05	11.55	69/250



Overall Scoring



Sanitation District No. 1
Continuous Sewer Assessment Program
Drainage Basin Priority Scoring

Drainage Basin ID	Total Sewer Length (ft)	Service Score	Structural Score	Work Order History Score	Total Raw Score	Total Priority SSO/CSO Factor	Total Adjusted Score	Basin Rank
41	16,152	3.00	3.00	3.40	9.40	1.70	25.38	1
49	23,950	4.00	4.60	3.70	12.90	0.70	21.93	2
210	19,395	4.00	4.00	3.60	11.60	0.70	19.72	3
160	26,450	3.00	2.00	3.30	7.30	1.70	19.71	4
111	53,122	4.00	3.00	3.30	9.30	1.10	19.53	5
183	20,629	4.40	4.60	4.30	13.50	0.40	18.90	6
16	10,652	4.00	5.00	1.70	11.70	0.60	18.72	7
55	22,466	3.00	3.40	3.70	10.50	0.70	17.85	8
12	18,151	3.40	3.40	3.70	10.50	0.70	17.85	8
69	8,882	3.60	4.60	1.90	11.10	0.60	17.76	10
50	16,659	3.60	4.40	3.70	12.50	0.40	17.50	11
17	17,511	4.00	4.00	3.30	11.30	0.50	16.95	12
9	14,419	3.40	4.00	4.10	12.10	0.40	16.94	13
189	12,730	3.00	3.00	2.90	8.90	0.90	16.91	14
31	15,739	4.00	3.40	3.70	10.50	0.60	16.80	15
209	16,719	3.00	3.00	3.70	9.70	0.70	16.49	16
44	12,449	3.80	3.80	4.00	11.60	0.40	16.24	17
161	25,270	3.40	2.40	3.40	8.20	0.90	15.58	18
211	21,691	4.00	4.00	2.90	10.90	0.40	15.26	19
6	22,673	3.60	3.60	2.00	9.20	0.60	14.72	20
27	12,363	2.20	3.40	3.70	10.50	0.40	14.70	21
30	12,607	4.60	3.40	2.30	9.10	0.60	14.56	22
124	16,365	4.00	3.00	3.70	9.70	0.50	14.55	23
53	16,013	3.60	3.00	3.00	9.00	0.60	14.40	24
4	15,217	4.60	5.00	3.00	13.00	0.10	14.30	25
24	11,225	4.00	4.00	5.00	13.00	0.10	14.30	25
165	18,005	3.20	3.00	2.40	8.40	0.70	14.28	27
151	36,535	3.00	3.60	2.30	9.50	0.50	14.25	28
65	21,782	4.20	3.00	2.30	8.30	0.70	14.11	29
15	74,659	3.00	2.00	2.70	6.70	1.10	14.07	30
25	21,455	2.80	3.80	4.00	11.60	0.20	13.92	31
215	30,566	4.00	3.00	4.70	10.70	0.30	13.91	32
212	16,081	3.60	4.00	2.60	10.60	0.30	13.78	33
46	6,575	2.20	4.40	3.70	12.50	0.10	13.75	34
20	10,701	3.00	3.60	3.30	10.50	0.30	13.65	35
70	9,128	3.20	4.00	1.60	9.60	0.40	13.44	36
112	17,115	3.40	5.00	2.20	12.20	0.10	13.42	37
119	14,224	4.00	3.00	4.30	10.30	0.30	13.39	38
123	12,589	4.00	3.40	4.30	11.10	0.20	13.32	39
121	12,675	3.40	3.00	5.00	11.00	0.20	13.20	40
169	23,656	2.40	3.00	2.70	8.70	0.50	13.05	41
122	19,257	4.00	3.00	3.30	9.30	0.40	13.02	42
110	17,166	3.80	3.40	5.00	11.80	0.10	12.98	43
156	22,893	3.00	3.00	1.60	7.60	0.70	12.92	44
40	13,986	4.00	5.00	1.60	11.60	0.10	12.76	45
39	11,532	3.40	4.00	4.70	12.70	0.00	12.70	46
11	18,400	3.60	3.00	2.30	8.30	0.50	12.45	47
37	10,574	3.60	3.60	1.60	8.80	0.40	12.32	48
8	11,516	3.40	4.00	4.30	12.30	0.00	12.30	49
86	15,238	3.00	2.40	2.40	7.20	0.70	12.24	50
26	7,827	4.40	4.00	3.00	11.00	0.10	12.10	51
116	15,306	2.60	2.80	3.00	8.60	0.40	12.04	52
23	11,750	3.60	3.60	3.70	10.90	0.10	11.99	53
10	19,975	1.54	1.68	3.40	7.48	0.60	11.97	54
141	8,393	3.40	3.60	4.70	11.90	0.00	11.90	55
120	14,859	4.00	3.60	3.60	10.80	0.10	11.88	56
155	27,529	4.40	3.00	3.00	9.00	0.30	11.70	57
113	20,546	3.00	2.00	3.30	7.30	0.60	11.68	58
101	9,475	4.40	4.00	1.70	9.70	0.20	11.64	59
7	15,122	3.60	4.60	1.30	10.50	0.10	11.55	60
157	22,703	2.60	2.60	3.00	8.20	0.40	11.48	61
162	34,855	3.40	2.60	3.00	8.20	0.40	11.48	61
170	20,285	3.20	3.60	1.00	8.20	0.40	11.48	61
239	314,866	1.68	1.12	2.70	5.42	1.10	11.38	64
48	30,356	3.60	4.00	3.30	11.30	0.00	11.30	65
186	29,082	2.40	3.60	3.00	10.20	0.10	11.22	66
152	22,641	3.60	3.60	4.00	11.20	0.00	11.20	67
43	13,976	3.00	1.40	3.70	6.50	0.70	11.05	68
33	15,595	3.00	4.00	2.00	10.00	0.10	11.00	69
1	60,959	2.40	3.00	3.00	9.00	0.20	10.80	70
32	6,180	2.20	3.40	4.00	10.80	0.00	10.80	70
35	12,985	3.00	3.40	4.00	10.80	0.00	10.80	70
5	31,782	4.00	3.00	1.70	7.70	0.40	10.78	73
127	13,201	4.20	2.60	3.70	8.90	0.20	10.68	74
109	39,817	2.80	3.00	3.70	9.70	0.10	10.67	75

Sanitation District No. 1
Continuous Sewer Assessment Program
Drainage Basin Priority Scoring

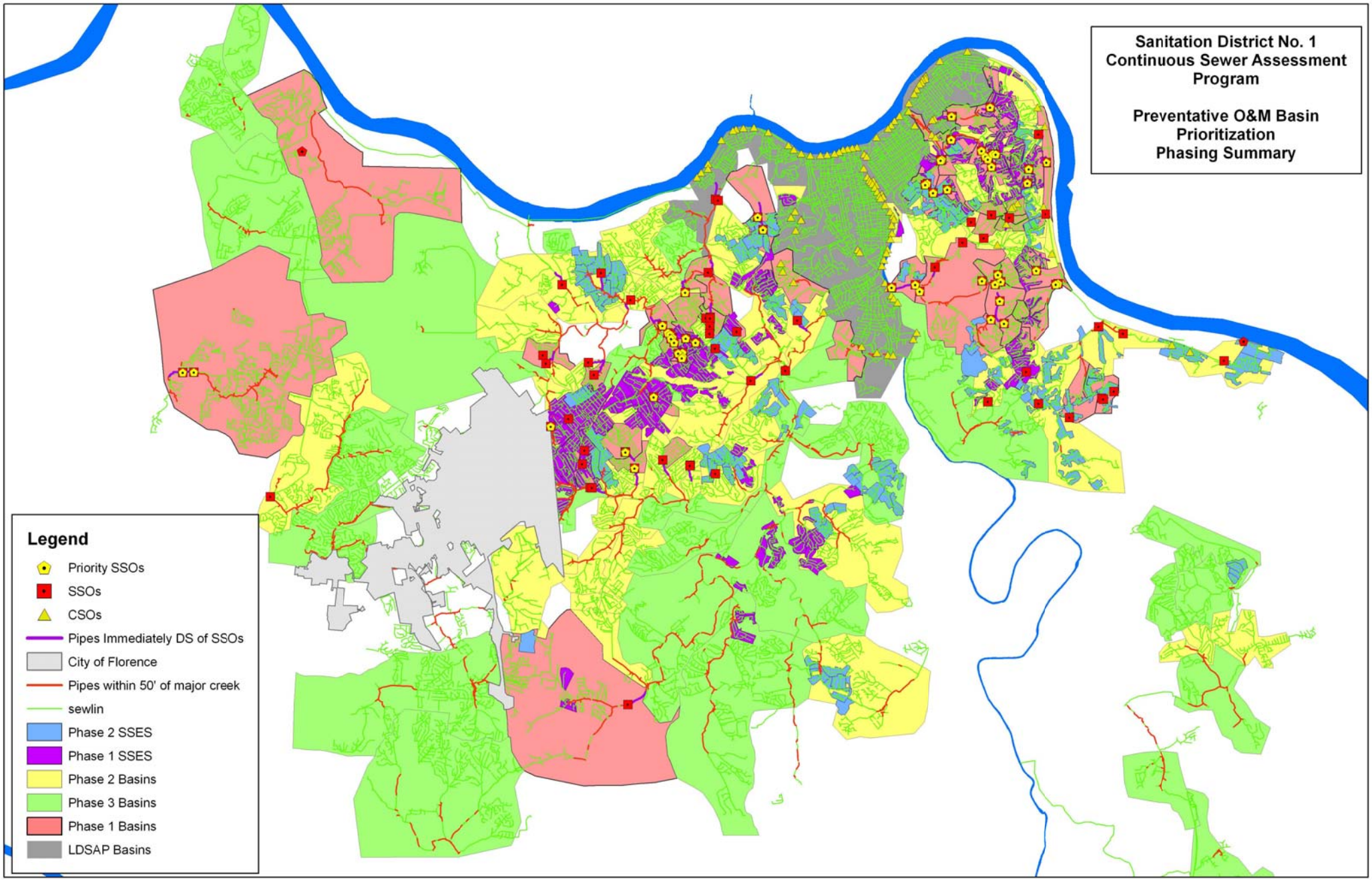
Drainage Basin ID	Total Sewer Length (ft)	Service Score	Structural Score	Work Order History Score	Total Raw Score	Total Priority SSO/CSO Factor	Total Adjusted Score	Basin Rank
38	9,141	2.40	4.00	2.60	10.60	0.00	10.60	76
166	22,098	2.40	3.40	3.70	10.50	0.00	10.50	77
128	11,905	2.20	2.00	4.70	8.70	0.20	10.44	78
29	6,998	3.60	4.40	1.60	10.40	0.00	10.40	79
99	14,163	3.60	4.00	2.40	10.40	0.00	10.40	80
126	20,547	5.00	3.40	2.60	9.40	0.10	10.34	81
154	19,230	3.00	3.00	4.30	10.30	0.00	10.30	82
18	8,307	4.20	3.60	3.00	10.20	0.00	10.20	83
168	20,882	1.80	2.60	4.00	9.20	0.10	10.12	84
19	10,251	4.00	4.20	1.70	10.10	0.00	10.10	85
190	18,714	2.20	1.00	4.70	6.70	0.50	10.05	86
107	20,853	2.40	2.60	3.00	8.20	0.20	9.84	87
102	10,061	4.20	4.40	1.00	9.80	0.00	9.80	88
13	23,640	4.00	2.60	3.70	8.90	0.10	9.79	89
193	31,460	2.30	1.80	2.00	7.40	0.30	9.62	90
115	29,303	2.40	2.60	4.40	9.60	0.00	9.60	91
159	10,440	1.80	1.60	3.60	6.80	0.40	9.52	92
3	10,109	1.26	3.50	1.00	9.50	0.00	9.50	93
36	17,052	2.40	2.60	2.70	7.90	0.20	9.48	94
28	9,164	2.60	3.40	1.00	7.80	0.20	9.36	95
139	8,468	2.80	3.40	1.00	7.80	0.20	9.36	95
105	23,139	2.20	2.60	4.00	9.20	0.00	9.20	97
51	7,129	3.00	3.60	1.90	9.10	0.00	9.10	98
217	38,512	3.00	2.60	3.00	8.20	0.10	9.02	99
108	16,253	2.80	2.00	5.00	9.00	0.00	9.00	100
71	10,014	3.60	3.60	1.60	8.80	0.00	8.80	101
181	85,102	1.80	2.00	4.00	8.00	0.10	8.80	101
22	19,832	2.60	2.00	2.70	6.70	0.30	8.71	103
203	82,047	2.40	2.00	2.70	6.70	0.30	8.71	103
85	4,304	1.80	2.80	3.10	8.70	0.00	8.70	105
167	23,732	4.00	2.60	3.30	8.50	0.00	8.50	106
246	4,939	2.50	2.50	1.00	8.50	0.00	8.50	106
100	9,241	3.00	2.00	3.70	7.70	0.10	8.47	108
179	31,436	3.00	1.40	3.70	6.50	0.30	8.45	109
14	44,636	3.60	2.00	3.00	7.00	0.20	8.40	110
197	18,513	3.00	2.00	4.40	8.40	0.00	8.40	110
114	20,128	3.00	2.00	4.30	8.30	0.00	8.30	112
180	7,096	1.80	1.60	5.00	8.20	0.00	8.20	113
208	31,333	3.00	2.60	3.00	8.20	0.00	8.20	113
192	118,103	1.26	0.98	2.40	4.78	0.70	8.13	115
2	29,087	3.20	2.40	1.00	5.80	0.40	8.12	116
52	8,644	4.60	2.40	1.00	5.80	0.40	8.12	116
226	11,023	1.40	1.80	4.40	8.00	0.00	8.00	118
224	24,159	1.26	1.68	3.80	7.88	0.00	7.88	119
158	21,435	2.60	2.00	3.00	7.00	0.10	7.70	120
118	23,372	3.20	2.00	3.70	7.70	0.00	7.70	121
174	3,383	4.60	2.60	2.40	7.60	0.00	7.60	122
195	30,856	2.24	1.12	1.70	4.42	0.70	7.51	123
21	6,981	2.40	2.40	2.70	7.50	0.00	7.50	124
218	23,704	3.80	2.60	2.30	7.50	0.00	7.50	125
163	30,000	3.40	1.40	4.00	6.80	0.10	7.48	126
182	46,396	2.80	1.40	4.00	6.80	0.10	7.48	126
194	56,037	2.00	2.00	2.70	6.70	0.10	7.37	128
176	32,015	1.80	1.00	4.00	6.00	0.20	7.20	129
235	140,921	2.30	1.00	2.00	5.00	0.40	7.00	130
164	26,538	2.10	0.98	3.40	5.78	0.20	6.94	131
104	37,782	2.20	1.00	3.70	5.70	0.20	6.84	132
228	156,245	1.00	1.00	2.00	4.00	0.70	6.80	133
191	56,772	3.00	2.00	2.70	6.70	0.00	6.70	134
225	59,458	2.40	1.00	2.70	4.70	0.40	6.58	135
153	7,981	3.50	1.40	2.70	6.10	0.00	6.10	136
42	20,199	2.00	2.00	2.00	6.00	0.00	6.00	137
206	43,157	2.52	1.40	2.60	6.00	0.00	6.00	137
219	3,723	1.40	2.00	1.30	5.30	0.10	5.83	139
103	75,952	1.30	0.70	2.70	4.80	0.20	5.76	140
213	75,642	0.70	0.80	2.00	4.40	0.30	5.72	141
238	185,600	2.00	1.60	2.00	5.20	0.10	5.72	141
198	38,199	0.98	0.98	2.30	4.68	0.20	5.62	143
106	26,136	1.68	0.70	2.30	4.00	0.30	5.20	144
175	35,160	1.26	0.70	3.40	5.10	0.00	5.10	145
202	160,551	0.98	0.70	2.70	4.40	0.10	4.84	146
196	50,658	1.30	0.50	2.40	3.90	0.20	4.68	147
216	33,272	0.90	0.70	1.70	3.80	0.20	4.56	148
34	14,357	2.10	0.50	1.70	3.20	0.40	4.48	149
244	64,085	1.50	0.80	2.00	4.40	0.00	4.40	150

Sanitation District No. 1
Continuous Sewer Assessment Program
Drainage Basin Priority Scoring

Drainage Basin ID	Total Sewer Length (ft)	Service Score	Structural Score	Work Order History Score	Total Raw Score	Total Priority SSO/CSO Factor	Total Adjusted Score	Basin Rank
177	43,108	1.30	0.50	2.00	3.50	0.20	4.20	151
207	13,456	1.40	1.00	1.00	3.00	0.40	4.20	151
236	205,196	0.70	0.50	1.70	3.20	0.30	4.16	153
117	12,348	2.24	0.70	2.40	4.10	0.00	4.10	154
231	235,056	0.70	0.70	2.00	3.70	0.10	4.07	155
241	139,699	1.20	0.50	2.00	3.50	0.10	3.85	156
230	255,079	2.10	0.50	1.70	3.20	0.20	3.84	157
229	43,976	0.98	0.70	1.70	3.40	0.10	3.74	158
220	36,157	1.00	0.80	1.30	3.70	0.00	3.70	159
223	58,605	1.40	1.00	1.70	3.70	0.00	3.70	159
227	48,560	2.00	1.00	1.70	3.70	0.00	3.70	159
199	42,018	0.50	0.50	1.30	2.80	0.30	3.64	162
201	130,024	0.70	0.70	1.70	3.40	0.00	3.40	163
222	54,881	1.26	0.70	1.70	3.40	0.00	3.40	163
242	208,515	0.98	0.70	1.70	3.40	0.00	3.40	163
245	16,243	1.00	1.00	1.30	3.30	0.00	3.30	166
232	236,287	0.70	0.50	1.70	3.20	0.00	3.20	167
234	117,650	0.80	0.50	1.70	3.20	0.00	3.20	167
237	140,279	0.70	0.50	1.70	3.20	0.00	3.20	167
221	18,060	0.50	0.50	1.30	2.80	0.00	2.80	170
233	54,928	0.70	0.70	1.00	2.70	0.00	2.70	171
903	37,502	0.50	0.50	1.00	2.50	0.00	2.50	172
200	26,952	0.50	0.50	1.00	2.50	0.00	2.50	172
204	39,246	0.50	0.50	1.00	2.50	0.00	2.50	172
205	79,687	0.50	0.50	1.00	2.50	0.00	2.50	172
214	17,811	0.90	0.50	1.00	2.50	0.00	2.50	172
240	75,261	1.10	0.50	1.00	2.50	0.00	2.50	172
243	42,893	0.50	0.50	1.00	2.50	0.00	2.50	172
247	47,000	0.50	0.50	1.00	2.50	0.00	2.50	172
248	31,416	0.50	0.50	1.00	2.50	0.00	2.50	172
249	39,382	1.00	0.50	1.00	2.50	0.00	2.50	172
250	98,121	0.50	0.50	1.00	2.50	0.00	2.50	172

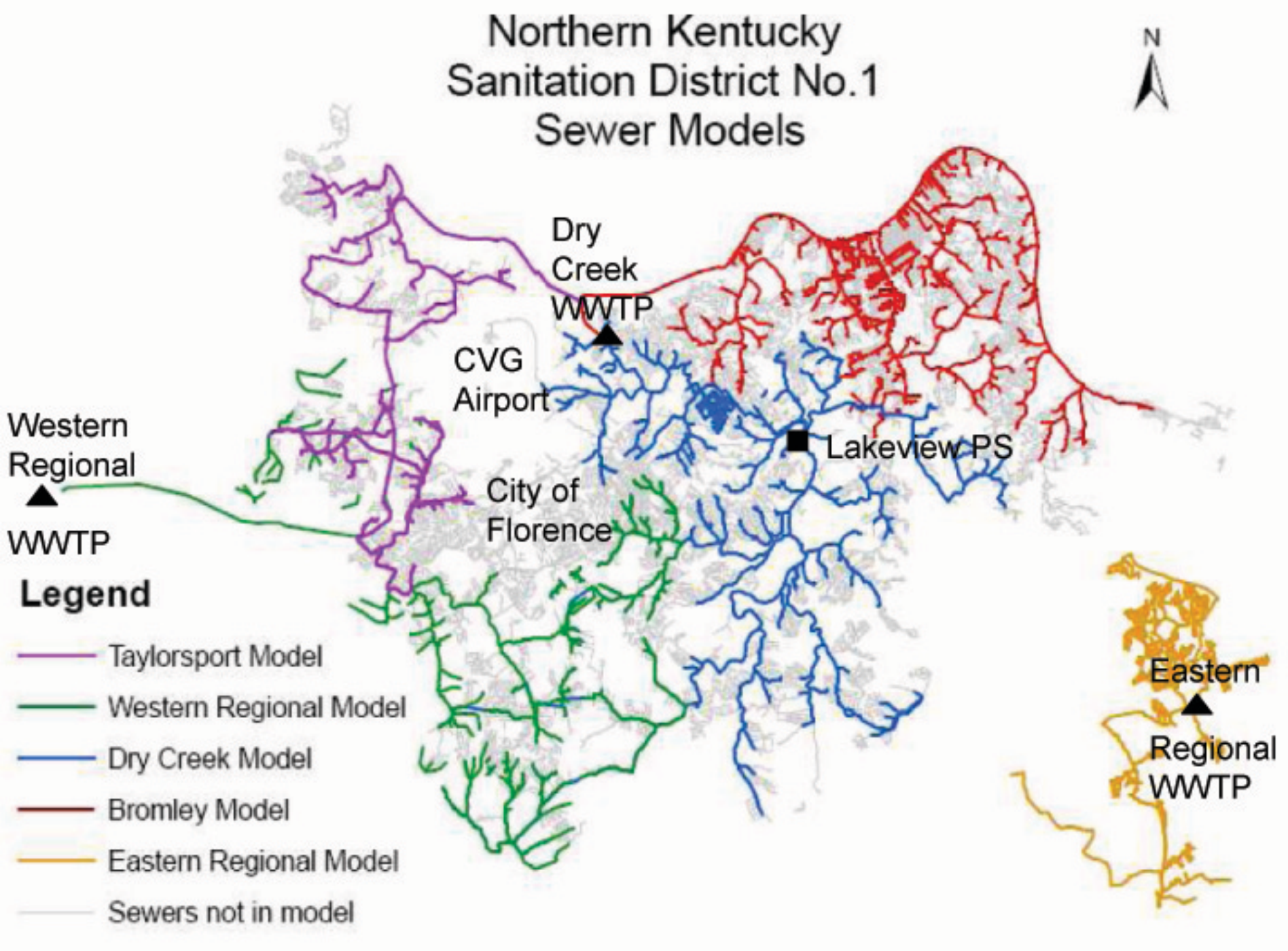
APPENDIX H:

Map of Outcome of the Basin Prioritization Process


Sanitation District No. 1
Continuous Sewer Assessment Program
Preventative O&M Basin Prioritization
Phasing Summary
Legend
Priority SSOs
SSOs
CSOs
Pipes Immediately DS of SSOs
City of Florence
Pipes within 50' of major creek
sewlin
Phase 2 SSES
Phase 1 SSES
Phase 2 Basins
Phase 3 Basins
Phase 1 Basins
LDSAP Basins

APPENDIX I:

Map of Hydraulic Sewer Models


Northern Kentucky
Sanitation District No.1
Sewer Models
N
Dry
Creek
WWTP
CVG
Airport
Lakeview PS
Western
Regional
WWTP
City of
Florence
Eastern
Regional
WWTP
Legend
Taylorsport Model
Western Regional Model
Dry Creek Model
Bromley Model
Eastern Regional Model
Sewers not in model

APPENDIX J:

List of Recommended Improvements to CMOM Program

Sanitation District No. 1 CMOM Program Self-Assessment Recommended Improvements & Implementation Schedule

Management Programs			
CMOM Program	**Recommendation Summary**	**Deliverable**	**Milestone Date**
Organizational Structure	Evaluate the Dry Creek WWTP's "Crew Leader In Training" program to determine if it would be beneficial to implement a similar program in the Collection Systems Department.	Evaluation meetings will be held and documented, and a determination will be made.	31-Dec-07
	Post job descriptions for Collection Systems crews on the Intranet	Job descriptions for Collection Systems crews will be made available to staff via the Intranet.	29-Feb-08
	Evaluate the Society of Human Resource Managers' Senior Professional Human Resource Certification process to determine if it would be beneficial for the Assistant General Manager and the Employee Benefits & Development Manager to obtain this certification	Evaluation meetings will be held and documented, and a determination will be made.	30-Apr-08
	Solicit external candidates for open job positions	External candidates will be solicited for open positions.	Ongoing
Communication & Customer Service	Track all trouble calls by logging them into the gbaMS database system	See Information Management System (IMS). This will be addressed as part of the organization-wide IMS assessment.	See IMS
	Continue to assess the need for a centralized call center	Evaluation meetings will be held and documented, and a determination will be made.	Ongoing (long-term goal)
	Develop a structured system for communicating daily construction activities to Account Services, Public Relations, Collection Systems and Dry Creek WWTP personnel	System for communicating daily construction activities will be developed.	29-Feb-08
	Develop a template for project-specific customer evaluations to measure the success of the District's customer service efforts	Template will be developed and distributed to appropriate personnel for use.	31-Mar-08
	Create an internal online survey to measure the success of the District's internal communication efforts	Internal online survey will be developed, and a schedule for launch of survey will be determined.	30-Apr-08
	Develop written standard operating procedures (SOPs) for customer complaints and customer notification procedures (for smoke & dye testing, CCTV inspection, and construction/maintenance activities)	Written SOPs will be in place, and appropriate personnel will be trained.	30-Jun-08

CMOM Program	Recommendation Summary	Deliverable	Milestone Date
Communication & Customer Service *(cont.)*	Evaluate the District's current basement back-up policy to identify areas where adjustments should be made	Evaluation meetings will be held and documented, and areas of adjustment identified.	30-Jun-08
	Develop educational campaigns directed toward customers throughout the service area on the following topics - I/I, service lateral maintenance, and basement back-up cleaning procedures. The campaigns will include tactical items such as on-hold messages, website content, bill inserts, or newsletter content.	Written campaign plans and a schedule for implementation will be developed.	Ongoing
Legal Authority	Use an outside web development firm to create a Consent Decree Repository on the District's website for all U.S. EPA-approved reports	Repository will be made available to the public via the website and kept up to date.	Pending U.S. EPA approval of reports
Acquisition Considerations	Begin to develop a New Development I/I Prevention Program for new sewers	New Development I/I Prevention Program for new sewers will be under development.	Ongoing
	Begin to develop a written policy and guidelines for assuming ownership of pre-existing infrastructure	Written policy and guidelines will be under development.	Ongoing
	Assess the use of gbaMS for inputting new construction inspection reports and applicable photos	See IMS	See IMS
IMS	Assess the data managements needs, IMS practices, and training needs of all operating departments via an employee meeting scheduled for October 31, 2007	Evaluation meeting will be held and documented, and determinations will be made.	31-Oct-07
	Prepare and issue a Scope of Work to recruit an outside firm to conduct a comprehensive, organization-wide assessment of all IMS activities and programs	Scope of Work will be developed and issued.	31-Dec-07
	Determine the most effective method for tracking labor hours spent on O&M activities	Evaluation meetings will be held and documented, and a determination made as to the most effective method.	31-Mar-08

CMOM Program	Recommendation Summary	Deliverable	Milestone Date
IMS *(cont.)*	Assess best practices for moving forward with mobile data entry and implement a broadband pilot study with one trouble call crew	"Lessons Learned" debrief meeting will be held to discuss catch basin project, and a determination will be made as to the best practices, and a second broadband study will commence.	31-Dec-07
	Develop a more extensive IMS training program that includes instruction for computer basics, gbaMS, and GIS	A training plan and schedule will be developed.	31-Dec-07
	Assess the use of the Inspection module in gbaMS for new construction inspections. Begin utilizing the Pump Station Inspection module in gbaMS for pump station inspections. Input smoke & dye testing results into gbaMS. Promote more extensive use of the Facility module in gbaMS.	gbaMS use will be assesed for new construction inspections, and utilized for pump station inspections, smoke & dye testing results, and to track facility improvements.	30-Jun-08
Training	Produce and distribute a 2008 safety training calendar that identifies class offerings, instructors, times, and dates of classes	Training calendar will be produced and distributed to District staff.	7-Jan-08
	Generate monthly reports from Training Tracker throughout 2008 for Collection Systems foremen and crew leaders to track training requirements for employees	Monthly Training Trackers reports will be generated and made available to District staff.	Ongoing
	Create a Certification Pilot Program for Field Technical Services crews to provide more structure for on-the-job training procedures for new employees. New employees would have to pass a proficiency test to obtain certification. The pilot program would be tested and evaluated for future use by other District departments.	Pilot program will be developed and ready to launch.	30-Jun-08
	Explore and identify the most efficient and comprehensive software to track all District training efforts. This assessment will include the current tool - Training Tracker.	Evaluation meetings will be held and documented, and a determination made as to the most effective method.	31-Dec-07

CMOM Program	Recommendation Summary	Deliverable	Milestone Date
Training *(cont.)*	Provide training throughout the remainder of FY 2008 for key administrators of the Training Tracker software to ensure optimal use of the tool	Training course for Training Tracker will be developed and implemented.	30-Jun-08
	Communicate with other District departments about how to best use the Training Tracker software and how much information needs to be kept on file. Develop District-wide training tracking procedures and a standardized form for entry. Develop a way to ensure that procedures are being followed.	Evaluation meetings will be held and documented, and a determination made as to how to most effectively use the Training Tracker software. Procedures and forms will then be developed, along with a method of ensuring procedures are followed.	30-Jun-08
System Mapping	Initiate the GPS pilot program with one CCTV crew	GPS pilot program will be launched.	31-Dec-07
	Develop an SOP to be submitted to developers and contractors for obtaining proposed digital files for new construction and capital improvement projects and updated as-builts once construction is complete	SOP will be written and submitted to developers and contractors.	31-Mar-08
	Begin updating maps to identify the separate and combined sewer systems, location of flow monitors, and creek names	Updated maps will be available.	Ongoing
	Promote use of the GIS Work Order Form throughout all departments	System will be in place to promote the use of GIS Work Order Forms.	Ongoing
	Assess the feasibility of linking scanned drawings and plats to gbaMS in order to interface with ArcGIS (during the IMS assessment)	See IMS. This will be addressed as part of the organization-wide IMS assessment.	See IMS

CMOM Program	Recommendation Summary	Deliverable	Milestone Date
SSO Reporting & Notification	Revise current internal documentation and data entry procedures and create a step-by-step procedural flow diagram outlining the revised plan in an effort to improve efficiency and consistency of SSO data entered into the gbaMS system	Revised written internal procedures and a step-by-step flow diagram will be created.	30-Jun-08
	Evaluate initial data collection and documentation at SSO overflow sites to determine if data is being compromised due to the response crew's focus on overflow containment	An internal meeting(s) to assess this issue will be held, and the outcome will be summarized in the District's 2008 Consent Decree Annual Report.	30-Jun-08
Operations Programs			
Emergency Preparedness & Response	Add a Significant Industrial Users (SIU) layer to GIS so staff can easily identify whether there is an SIU upstream of an overflow	An SIU layer will be added to GIS.	30-Jun-08
	Benchmark other utilities' call-in procedures to identify best practices. Modify our current call-in procedures as appropriate.	Evaluation meetings will be held and documented, and a determination will be made. Call-in procedures will be modified if necessary.	30-Jun-08
Safety	Begin requiring crew team members to sign a form verifying they have been informed of updates and revisions to safety policies and procedures. Create the verification forms and maintain records of the forms to serve as documentation that appropriate personnel have been notified of the changes.	Crew team members will begin signing verification forms for safety policies and procedures. The forms will be created, and records of signed forms will be maintained.	1-Jan-08
	Identify and purchase proper equipment for nighttime traffic control	Proper equipment for nighttime traffic control will be identified and purchased.	31-Mar-08
	Distribute an organization-wide safety survey to obtain employee feedback on the District's Safety Program	An organization-wide safety survey will be distributed to obtain employee feedback.	30-Jun-08
	Evaluate the Safety Buck Program on a more consistent basis to determine if it is meeting its goals. Modify the program as appropriate.	Evaluation meetings will be held and documented, and a determination will be made. The Safety Buck Program will be modified if necessary.	Ongoing
Budgeting	Conduct internal workshops for directors and supervisors involved in the budgeting process	Internal workshops for directors and supervisors will be conducted.	31-Jan-08
	Begin to develop a more effective process to track the life cycle of new and replaced infrastructure from this point forward	A process for tracking the life cycle of new and replaced infrastructure will be under development.	30-Jun-08
	Provide additional budgeting codes to allow for more detailed expense descriptions for tracking purposes	Additional budgeting codes will be developed.	Ongoing

CMOM Program	Recommendation Summary	Deliverable	Milestone Date
Engineering	Develop an approach to addressing the extent of the District's involvement in private source I/I investigations and improvement projects	An approach will be developed and documented.	30-Jun-08
	Upload technical specifications to the District's website	Technical specifications will be uploaded to the District's website.	30-Jun-08
Water Quality Monitoring	There are currently no recommended improvements to the District's Water Quality Monitoring Program.	n/a	n/a
Call Before You Dig	Assess the benefit of tracking all line marking requests that are received, not just those that generate work orders. If it is deemed beneficial, define the most effective procedures for tracking every call received by the Engineering Technician.	Evaluation meetings will be held and documented, and determinations will be made.	31-Mar-08
	Develop an SOP that contains both administrative tasks and physical inspection tasks associated with the program	An SOP will be developed, and appropriate personnel trained.	30-Jun-08
	Work with the Public Relations group to determine additional communication channels that can be used to advertise the program	Additional communication channels will be discussed and utilized if deemed appropriate.	Ongoing
Compliance	Develop a more structured and effective method for identifying new industries discharging to the collection systems	A structured and effective method for identifying new industries discharging to the collection system will be developed.	Ongoing
Mobile Waste Haulers	There are currently no recommended improvements to the District's Mobile Waste Haulers Program.	n/a	n/a
Pump Station Operations	Compile a list of stressed pump stations and assign either an internal or external engineer to perform a critical assessment of the situation	A list of stressed pump stations will be compiled, and an internal or external engineer will be identified to perform a critical assessment.	31-Mar-08
	Hold a coordination meeting with Engineering Plan Review personnel and Engineering inspectors to begin developing a SOP for involving specialized pump station staff members in the review of new pump station plans and drawings and performing inspections during construction of new pump stations	A coordination meeting will be held.	30-Apr-08
	Address staffing issues during the FY 2009 budget process	Staffing issues will be addressed during the FY 2009 budget process.	Spring 2008
	Begin using the pump station inspection module in gbaMS to record and track pump station inspections	The pump station inspection module in gbaMS will be used to record and track pump station inspections.	30-Jun-08

CMOM Program	Recommendation Summary	Deliverable	Milestone Date
Pump Station Operations *(cont.)*	Begin using Intellution SCADA software to remotely monitor the District's pump stations	The District will use Intellution SCADA software to remotely monitor its pump stations.	Ongoing
Pump Station Emergencies	Identify an appropriate solution for improving the SCADA system, which is becoming over-burdened and does not have adequate bandwidth to transmit data across the system	An appropriate solution will be developed to improve transmission errors in the SCADA system.	30-Apr-08
	Begin using Intellution SCADA software to remotely monitor the District's pump stations	See Pump Station Operations	See Pump Station Operations
	Develop a plan to provide more formal training for implementation of the Pump Station Emergencies Program	A plan to provide more formal training for implementation of the Pump Station Emergencies Program will be developed.	30-Jun-08
Pump Station Force Mains Preventive Maintenance	Begin to develop a formal Pump Station Force Mains Preventive Maintenance Program by collecting and documenting inventory of all force mains and air relief valves (ARVs) in the gbaMS system and completing a condition assessment	A formal Pump Station Force Mains Preventive Maintenance Program will be under development.	Ongoing
Odor & Corrosion Control	Request that Siemens Water Technologies begin mapping odor complaints and feed points in GIS so they can interface with the District's mapping system	Odor complaints will be mapped in GIS.	Dependent upon consultant's ability to purchase GIS software
Smoke & Dye Testing	Develop written SOPs for operational, public notification, and data management procedures related to the Smoke & Dye Testing Program	Written SOPs will be developed, and appropriate personnel trained.	30-Jun-08
	Assess the capability of entering inspection form data, sketches, and project photos into gbaMS	See IMS	See IMS
Flow Monitoring	Develop written SOPs for internal flow monitoring activities	Written SOPs will be developed, and appropriate personnel trained.	30-Jun-08
	Assess data analysis training opportunities for the District's Flow Monitoring crews	Evaluation meetings will be held and documented, and a determination made.	30-Jun-08

CMOM Program	Recommendation Summary	Deliverable	Milestone Date
CCTV Inspection	Develop a formalized and prioritized plan for CCTV work throughout the collection systems, in conjunction with the Continuous Sewer Assessment Program	A plan for CCTV work throughout the collection systems will be developed.	31-Dec-07
	Identify and begin to acquire the resources necessary to implement the CCTV inspection schedules outlined in the Continuous Sewer Assessment Program	The resources necessary to implement the CCTV inspection schedules will be identified and will begin to be acquired.	31-Dec-07
	Train all applicable staff on how to use the SCREAM™ defect coding system	All applicable staff will be trained on the SCREAM™ defect coding system.	31-Dec-07
Manhole Inspections	Develop written SOPs for the combined manhole inspection/CCTV procedures	Written SOPs will be developed, and appropriate personnel trained.	30-Jun-08
	Promote more consistent use of the Manhole Inspection Form by all District personnel responsible for conducting inspections, including new construction inspectors, special projects crews, CCTV crews, flow monitoring crews, and trouble call crews	System will be in place to promote the use of Manhole Inspection Forms.	30-Jun-08
	Develop a formalized and prioritized plan for manhole inspections in conjunction with CCTV inspection schedules identified in the Continuous Sewer Assessment Program	A plan for manhole inspections will be developed.	31-Dec-07
	Train all applicable staff on how to use the SCREAM™ defect coding system	All applicable staff will be trained on the SCREAM™ defect coding system.	31-Dec-07
	Develop a standardized method for entering manhole inspection data into gbaMS using SCREAM™	Written SOPs will be developed, and appropriate personnel trained.	31-Dec-07
Maintenance Programs			
Manhole Repairs	Fill out a Manhole Inspection Form when performing inspections in the field and enter data into gbaMS at the office	Manhole Inspection Forms will be completed during manhole repairs and entered into gbaMS.	7-Jan-08
	Create a more standardized process for selecting the type of repair implemented, which may take the form of written standard operating guidelines (SOGs). Create a more standardized system for I/I removal at frame and casting.	Written SOGs will be developed, and appropriate personnel trained.	30-Mar-08

CMOM Program	Recommendation Summary	Deliverable	Milestone Date
Manhole Repairs *(cont.)*	Improve coordination between the Home Builders Association, cities, counties, and the state on manhole repairs	See Maintenance of Rights-of-Way Program.	See Maintenance of Rights-of-Way Program.
Rehabilitation & Replacement	Formalize the Rehabilitation & Replacement thought process associated with the Continuous Sewer Assessment Program	The Rehabilitation & Replacement thought process will be formalized.	31-Dec-07
	Visually map (by flow chart) the work orders for the Construction Foreman, and assess the amount of time currently spent on each category of work orders	The flow chart and assessment of time spent on on each category of work orders will be completed.	30-Jun-08
	Assign one in-house staff member to filter all work orders and serve as the liaison between the Collection Systems and Engineering Departments	Identify the in-house staff member and assign him or her to this role.	30-Jun-08
Mainline Sewer Repairs	Develop written SOGs to help determine the type of repair technology used and that specify the parties responsible for making the decision	Written SOGs will be developed, and appropriate personnel trained.	30-Jun-08
	Develop written SOPs for the actual physical repairs performed in house	Written SOPs will be developed, and appropriate personnel trained.	30-Jun-08
Sewer Cleaning	Begin to more comprehensively track in gbaMS the specific cause of why sewer lines are put on PM (e.g., roots, grease, debris)	gbaMS will be used to comprehensively track the specific cause of why newly added sewer lines are put on PM.	7-Jan-08
	Update sewer lines already in gbaMS to track the specific cause as to why the lines were put on PM (e.g., roots, grease, debris)	gbaMS will be used to track the specific cause of why sewer lines already in the system were put on PM.	31-Dec-07 through 31-Dec-08
	Develop written SOPs for sewer cleaning activities	Written SOPs will be developed, and appropriate personnel trained.	30-Jun-08
	Hold a meeting between Collection Systems and Industrial Monitoring managers to determine the best method for improving communication regarding grease investigations	Evaluation meetings will be held and documented, and a determination made.	30-Jun-08
Equipment & Tools Maintenance	Assess pump station inventory, evaluate stock that is currently maintained, and adjust the capital budget to adequately stock necessary spare parts. Begin managing equipment & tools inventory in gbaMS.	Necessary spare parts will be adequately stocked, and equipment & tools inventory will be managed in gbaMS.	31-Mar-08

CMOM Program	Recommendation Summary	Deliverable	Milestone Date
Equipment & Tools Maintenance *(cont.)*	Assess the use of a bar code scanning system to automatically update inventory and reduce inefficiencies of manual logging procedures	Evaluation meetings will be held and documented, and a determination made.	30-Jun-08
	Complete cost analysis research regarding performing equipment maintenance in house, as opposed to using subcontractors for maintenance needs	Cost analysis research will be completed in regard to internal versus external equipment maintenance activities.	30-Jun-08
	Continue to make progress toward purchasing additional property near the District's main office for storage purposes	The District will purchase additional property near the main office for storage purposes.	Ongoing
Pump Station Maintenance	Develop a more aggressive schedule for pump station PM work, and identify all necessary resources for implementation	A more aggressive schedule for pump station PM work will be developed, and all necessary resources for implementation will be identified.	29-Feb-08
	Identify prospective classes for pump station maintenance personnel at Gateway Community College, and assess the feasibility of attendance at these classes with HR	Gateway Community College courses for pump station maintenance will be identified, and HR will determine if it is feasible for staff to attend.	Ongoing
	Recruit and interview for two open positions in the pump station maintenance crew	Two new crew members for the pump station maintenance crew will be hired.	Ongoing
Maintenance of Rights-of-Way	Begin to develop a formal Maintenance of Rights-of-Way program by conducting a study of comparable utilities to identify best practices	A formal Maintenance of Rights-of-Way program will begin to be developed.	Ongoing
	Build stronger channels of communication with the Home Builders Association, cities, counties, and the state in regard to coordination of street repairs and paving projects	The District will begin to improve coordination with the Home Builders Association, etc. regarding street repairs and paving projects.	Ongoing
Capacity Programs			
Capacity Assessment & Assurance	Develop an SOP for inputting submitted plans for new development into a hydraulic model and GIS to determine how it will affect our system	An SOP will be developed for submitted plans to be inputted into a hydraulic model and GIS.	30-Apr-08
	Complete the data collection needed to fully calibrate the five hydraulic models	The five hydraulic models will be fully calibrated, dependent on sufficient rainfall.	30-Jun-08
	Develop a job description for a position to oversee the modeling program and assist with other CIP initiatives, and begin interviewing qualified applicants for this job	A job description will be developed and interviewing will begin.	30-Jun-08
New Connection Tap-In	Notify internal personnel of any changes to the Certified Tapper Program via email, bulletin boards, field crew meetings, etc.	Internal personnel will be notified of any changes to the Certified Tapper Program.	Ongoing
	Determine the most effective means for providing better documentation of the new connection inspection process	Evaluation meetings will be held and documented, and a determination made.	31-Mar-08
	Send the first regularly scheduled annual letter to all cities informing them of the Abandonment Permit	The first annual letter will be sent.	30-Jun-08
	Complete the internal switch from FoxPro to Access	The switch from FoxPro to Access will be completed.	30-Jun-08