SANITATION DISTRICT NO. 1

March 12, 2008

Acting Director of the Division of Enforcement
Department for Environmental Protection
300 Fair Oaks Lane
Frankfort, KY 40601

Chief, Environmental Enforcement Section
Environmental and Natural Resources Division
U.S. Department of Justice
601 D street NW
Washington, DC 20005
DOJ Case No. 90-5-1-1-08591

Chief, Water Program Enforcement Branch
Water Management Division
U.S. Environmental Protection Agency, Region 4
Atlanta Federal Center
61 Forsyth Street, S.W.
Atlanta, Georgia 30303

Re: Consent Decree Case No. 2:05-cv-00199-WOB

Dear Gentlemen:

Pursuant to the above-referenced Consent Decree, Sanitation District No. 1 (District) is required to submit the enclosed document, which demonstrates our current status of compliance with the Nine Minimum Controls (NMC) for combined sewer overflows (CSO) as set forth in the CSO Control Policy

> **35. Nine Minimum Controls Compliance**. Within twelve months of entry of this Consent Decree, the District shall submit to the Cabinet/EPA for review and joint approval documentation demonstrating the status of the District's compliance with the NMCs for CSOs as set forth in the CSO Control Policy and, if the District cannot document in the submittal that all NMC requirements are being met, the submittal shall include proposed projects to be performed with compliance schedules for ensuring that compliance with the NMCs is achieved by no later than twenty-four months after entry of this Consent Decree.

1045 EATON DRIVE • FT. WRIGHT, KENTUCKY 41017-9681 • PH: (859) 578-7450 • FAX: (859) 331-2436

A certification as required by the Consent Decree is also enclosed (Consent Decree paragraph 38). 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 (Consent Decree paragraph 44).

I am confident in the integrity of the enclosed document, and I am certain that the proposed projects and associated schedules contained within the NMC Compliance Report not only satisfy regulatory requirements, but also help further the mission and vision of the District by outlining aggressive measures to protect water resources and enhance the quality of life in Northern Kentucky.

I look forward to receiving your comments in the near future. If you have any questions or concerns, do not hesitate to contact me at 859-578-7465 or by e-mail at jeger@sd1.org.

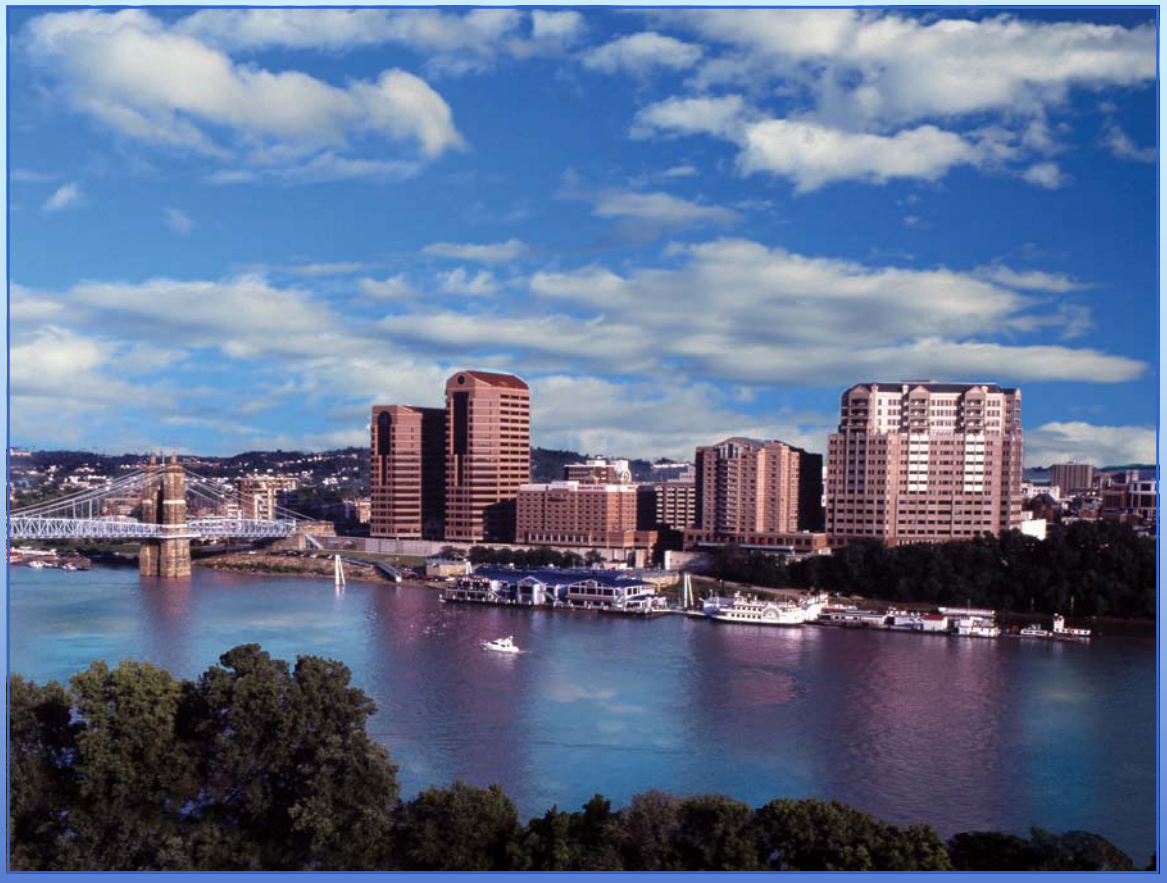
Best regards,

Jeffery A. Eger
General Manager

JAE/mm
Enclosures

Nine Minimum Controls Compliance Report

Sanitation District No. 1
March 12, 2008



(This page intentionally left blank for double-sided printing.)

CERTIFICATION

Nine Minimum Controls Compliance Report
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

March 12, 2008
Date

COMMONWEALTH OF KENTUCKY

COUNTY OF Kenton)ss.

The foregoing instrument was acknowledged before me this 12 day of March, 2008 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

(This page intentionally left blank for double-sided printing.)

NINE MINIMUM CONTROLS COMPLIANCE REPORT

March 12, 2008

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

(This page intentionally left blank for double-sided printing.)

TABLE OF CONTENTS

SECTION 1 INTRODUCTION 1
1.1 Federal Background 1
1.2 Sanitation District No. 1 of Northern Kentucky Background 2
1.3 Watershed Consent Decree 2
1.4 Report Objective 3

SECTION 2 ORGANIZATIONAL STRUCTURE AND STAFFING 5
2.1 Board of Directors 5
2.2 Management Team 5
2.3 Operating Departments 8

SECTION 3 WASTEWATER COLLECTION SYSTEM OVERVIEW 19
3.1 District Background/History 19
3.2 Wastewater Assets 20
3.2.1 Separate Sewer System 20
3.2.2 Combined Sewer System 22
3.3 MS4 Storm Systems 24
3.4 Treatment Systems 25
3.5 Capital and Operations and Maintenance Budget 26

SECTION 4 NINE MINIMUM CONTROLS 27
4.0.1 Introduction 27
4.0.2 Past Compliance Documentation 27
4.0.3 Nine Minimum Controls Compliance Measures 28
4.1 Proper Operation and Regular Maintenance Programs for the Sewer System and CSO Outfalls 29
4.1.1 Operation and Maintenance Organization 30
4.1.2 Information Management Tools 35
4.1.3 Asset Operation and Maintenance 36
4.1.4 Summary and Recommendations 59
4.2 Maximum Use of Collection System for Storage 65
4.2.1 Adjustment of Regulator Settings 65
4.2.2 Addition of Tide Gates at Outfalls 66
4.2.3 Maximizing Storage Volume 67
4.2.4 In-Line Storage Analysis 68
4.2.5 Summary and Recommendations 76
4.3 Review and Modification of Pretreatment Requirements 79
4.3.1 Inventory and Characterization of Non-Domestic Dischargers 80
4.3.2 Basic Programmatic Functions/Control Measures 86
4.3.3 Pretreatment Program – Operations and Budget 94
4.3.4 Enhanced Pretreatment Program 95
4.3.5 Summary and Recommendations 98
4.4 Maximization of Flow to POTW for Treatment 101
4.4.1 Interceptor Capacity Analysis 102

4.4.2 Bromley PS Capacity 106
4.4.3 Dry Creek WWTP 107
4.4.4 Benefits of the Eastern and Western Regional Water Reclamation Facilities 124
4.4.5 Summary and Recommendations 125
4.5 Elimination of CSOs During Dry Weather 129
4.5.1 Known Dry Weather Overflow Identification and Elimination 129
4.5.2 Investigations to Identify Potential DWO Locations 134
4.5.3 River Water Intrusion Mitigation Feasibility 135
4.5.4 Pump Station Back-Up Power 138
4.5.5 Summary and Recommendations 139
4.6 Control of Solid and Floatable Materials in CSOs 143
4.6.1 Public Education Program 143
4.6.2 Street Sweeping 144
4.6.3 Management of Construction Site Storm Water Runoff 145
4.6.4 Catch Basin Modifications and Cleaning 147
4.6.5 Grit Pits 148
4.6.6 In-Line and End-of-Pipe Floatables Control 148
4.6.7 Summary and Recommendations 156
4.7 Pollution Prevention 161
4.7.1 Catch Basin Cleaning 161
4.7.2 Public Education Programs 162
4.7.3 Land Disturbance/Sediment and Erosion Control 164
4.7.4 Best Management Practice Guides – Commercial/Retail Establishments 165
4.7.5 Best Management Practice Guides – Residential 166
4.7.6 Spill Control 166
4.7.7 Fats, Oil and Grease (FOG) Program 167
4.7.8 Solid Waste Management 169
4.7.9 Household Hazardous Waste Management 170
4.7.10 Automotive Hazardous Waste Management 171
4.7.11 Litter Abatement 172
4.7.12 Street Sweeping 172
4.7.13 Summary 172
4.8 Public Notification 173
4.8.1 Signage 173
4.8.2 Public Service Announcements 174
4.8.3 Website and Hotline Notifications 174
4.8.4 Real-time Data 175
4.8.5 Potential Public Notification Projects 177
4.8.6 Summary and Recommendations 178
4.9 Monitoring to Characterize CSO Impacts 181
4.9.1. Current Flow Monitoring Program 182
4.9.2. Overflow Occurrence, Volume and Loading Estimates 184
4.9.3. Overflow Discharge Characterization 184
4.9.4. Summary and Recommendations 187

SECTION 5 REFERENCES..... 189

APPENDIX A: Flood Station Operations SOP Excerpt
APPENDIX B: Continuous Sewer Assessment Program
Preliminary Process Design
APPENDIX C: Continuous Sewer Assessment Program
Preventative O & M Basin Prioritization Phasing Summary
APPENDIX D: Schedule of Ongoing Compliance Measures
APPENDIX E: Standard Operating Procedure #14
APPENDIX F: Categorical Industrial User Sample Industrial Wastewater Discharge Permit (PKI, Inc.)
APPENDIX G: Non-Categorical Industrial User
Sample Industrial Wastewater Discharge Permit (McGinnis)
APPENDIX H: Non-Categorical Industrial Users in the Combined Sewer Area
APPENDIX I: Sample Wet Weather Operating Permit (Imperial Sugar Company)
APPENDIX J: Sample Spill Control Plan (Louis Trauth Dairy)
APPENDIX K: Spill Prevention for Hazardous Waste
APPENDIX L: Industrial Waste Questionnaire/Permit Application
APPENDIX M: Sample Unusual Discharge Request (Millers Pond)
APPENDIX N: Industrial Monitoring Inspection Report
APPENDIX O: Enforcement Response Plan & Enforcement Response Guide
APPENDIX P: Dry Weather Overflow Recommendations
APPENDIX Q: Not Down My Drain Mailer
APPENDIX R: Copy of SD1 Debris Violation Notification Letter
APPENDIX S: Example Land Disturbance, Grading, & Clearing Permits
APPENDIX T: Erosion Prevention Sediment Control Form & Non-Compliance Form
APPENDIX U: Fabrication and Installation Details of Pilot Controls
APPENDIX V: Example Monitoring Forms
APPENDIX X: Best Management Practice Guides
APPENDIX W: Best Management Practices Featured at Public Service Park
APPENDIX Y: Swimming Pool Water – An Illicit Discharge
APPENDIX Z: Illicit Discharges Pamphlet
APPENDIX AA: Northern Kentucky Solid Waste Resource Guide

TABLES

Table 3.1 Sanitation District No. 1 Infrastructure Asset Comparison; Pre 1995-Current
Table 3.2 WWTP List and Applicable KPDES Permit Numbers
Table 4.1.1 Construction Equipment
Table 4.1.2 Collection System Maintenance Equipment
Table 4.1.3 Diversion Types
Table 4.1.4 Catch Basin Debris Summary by Pump Type
Table 4.1.5 Implementation of Measures to Collection System O&M
Table 4.2.1 Potential for In-Line Storage Locations

Table 4.2.2 Current In-Line Storage Program
Table 4.2.3 Projected In-Line Storage Benefit
Table 4.2.4 Implementation of Measures to Maximize Collection System Storage
Table 4.3.1 Dry Creek WWTP Service Area Local Wastewater Discharge Limits
Table 4.3.2 Implementation of Measures to Modify Pretreatment Requirements
Table 4.3.2 Additional Measures to Modify Pre-Treatment Requirements
Table 4.4.1 Typical Year Simulation Results
Table 4.4.2 Bromley Pump Station Modeled Capacities
Table 4.4.3 Summary of Major Liquid Stream Processes at the Dry Creek WWTP
Table 4.4.4 Summary of Major Projects at the Dry Creek WWTP Since 2003
Table 4.4.5 Summary of Documented Capacities in Recent Process Evaluations
Table 4.4.6 Dry Creek WWTP KPDES Permit Limits
Table 4.4.7 Historical Flows to Dry Creek WWTP 2003-2007
Table 4.4.8 Historical Primary Clarifier Performance 2003-2007
Table 4.4.9 Historical Liquid Stream Treatment Efficiency 2003-2007
Table 4.4.10 Dry Creek WWTP 2003-2007 Flow Range Comparison
Table 4.4.11 CBOD Removal Efficiency at Different Flows – 2003-2007
Table 4.4.12 TSS Removal Efficiency at Different Flows – 2003-2007
Table 4.4.13 Summary of Dry Creek WWTP Wet Weather Capacity
Table 4.4.14 Summary of Capacity Analysis
Table 4.4.15 Additional Measures to Maximize Collection and Treatment
Table 4.5.1 DWO Corrective Measures from January through Mid-August 2004
Table 4.5.1 One-Time DWOs (2006 to 2007)
Table 4.5.3 Backup Power for Sanitary Pump Stations
Table 4.5.4 Additional Measures to Eliminate DWOs
Table 4.6.1 Current Solids and Floatables Control Program
Table 4.6.2 Implementation of Measures to Control Solids and Floatables
Table 4.8.1 Implementation of Measures for Public Notification
Table 4.9.1 Auto Sampler Schedule
Table 4.9.2 Sampling Parameters
Table 4.9.3 Additional Measures to Characterize CSOs

FIGURES

Figure 2.1 Management Team Organizational Chart
Figure 2.2 Administration Department Organizational Chart
Figure 2.3 Engineering Department Organizational Chart
Figure 2.4 Water Resource Management Organizational Chart
Figure 2.5 Collection Systems Department Organizational Chart
Figure 2.6 Field Technical Services Organizational Chart
Figure 3.1 Sanitation District No. 1 Service Area Overview
Figure 3.2 Sanitation District No. 1 Bromley Pump Station Sewer Area
Figure 3.3 Capital Spending and Budget Projections (2002 Through 2012)
Figure 4.1.1 Collection System O&M Organization
Figure 4.1.2 Horizontal Orifice Plate
Figure 4.1.3 Elevated Outfall
Figure 4.1.4 Weir with Side Outlet

Figure 4.1.5 CSO Database
Figure 4.1.6 Catch Basin with Bell
Figure 4.1.7 Grated Inlet
Figure 4.1.8 Overall Structure of Continuous Sewer Assessment O&M Programs
Figure 4.1.9 Projected Cumulative Inspection Footage
Figure 4.1.10 Projected Annual Inspection Footage
Figure 4.1.11 Projected CCTV Crews
Figure 4.1.12 Projected Annual Cleaning Footage
Figure 4.2.1 Map of CSO Location with Potential for In-Line Storage
Figure 4.2.3 James Ave. Max. Hyd. Profile (25yr, 30-Min, Existing Conditions)
Figure 4.2.4 Locations of or Proposed for In-Line Storage
Figure 4.3.1 Significant Industrial Users
Figure 4.3.2 Map of SIUs Tributary to CSS
Figure 4.3.3 Map of NSUs in Kenton County
Figure 4.3.4 Industrial Monitoring Organization Chart
Figure 4.4.1 Dry Creek WWTP Service Area
Figure 4.4.2 Model Output Hydrograph with Interceptor as Free Discharge
Figure 4.4.3 Combined System TISCIT Inspected Sewers
Figure 4.4.4 Sample Sonar Image
Figure 4.4.5 Combined System Service Grades from TISCIT Inspection
Figure 4.4.6 Bromley Pump Station Wet Well Settings
Figure 4.4.7 Simplified Liquid Stream Process Schematic for the Dry Creek WWTP
Figure 4.4.8 Hydraulic Analysis of the Influent Screens at Dry Creek WWTP
Figure 4.5.1 Examples of Blocking in Select Diversions
Figure 4.5.2 Blocking at Eastern Avenue Diversion
Figure 4.5.3 Flood Protection System
Figure 4.5.4 Frequency of Attainment of Various River Stages
Figure 4.6.1 Type "A" Bar Rack at 4th Street
Figure 4.6.2 Type "B" Bar Racks at Pleasant Street and Geiger Avenue
Figure 4.6.3 Weirs and Baffles at Saratoga, 10th and 17th Streets
Figure 4.6.4 Black Nets at Carmel Manor and Wildcat Run
Figure 4.6.5 Green Nets at Manor Lane and Mary Ingles
Figure 4.6.6 NSBB Unit at Greenup Street
Figure 4.7.1 Splash McClean and Students
Figure 4.7.2 Save-a-Stream Catch Basin Marking
Figure 4.8.1 Existing CSO and SSO Signage
Figure 4.8.2 Link to Local Weather Forecast Data
Figure 4.8.3 Link to Real-Time Water Quality Data
Figure 4.8.4 Link to Real-Time Water Level Data
Figure 4.9.1 Flow Monitoring Locations
Figure 4.9.2 Priority CSO Monitoring Locations
Figure 4.9.3 Water Quality Sampling Sites

LIST OF ACRONYMS AND ABBREVIATIONS

ARV	Air Relief Valves
Cabinet	Kentucky Environmental and Public Protection Cabinet
CB	Catch Basin
CCTV	Closed-Circuit Television
CIP	Capital Improvement Program
CMOM	Capacity, Management, Operation, and Maintenance
CSAP	Continuous Sewer Assessment Program
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 (computerized maintenance 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
MH	Manhole
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
WRF	Wastewater Reclamation Facility
WWTP	Wastewater Treatment Plant

EXECUTIVE SUMMARY

A Consent Decree between the Sanitation District No. 1 (the District) of Northern Kentucky, the USEPA, and the Commonwealth of Kentucky was entered by a Federal court on April 18, 2007, that requires the District to finalize, develop, submit, and implement plans for the continued improvement of the separate sanitary sewer system (SSS), combined sewer system (CSS), and the District's wastewater treatment plant (WWTP). As part of this agreement, the District was tasked to provide "documentation demonstrating the status of the District's compliance with the Nine Minimum Controls (NMCs) for CSOs as set forth in the CSO Control Policy and, if the District cannot document in the submittal that all NMC requirements are being met, the submittal shall include proposed projects to be performed with compliance schedules for ensuring compliance with the NMC is achieved within 24 months of the entry of the Decree" (Paragraph 35).

The enclosed report is intended to fully satisfy the NMC compliance requirements outlined in the Consent Decree and has been prepared in accordance with the previously discussed USEPA publication "Guidance for Nine Minimum Controls". It is the objective of the Report to demonstrate the District's current and proposed level of compliance with each of the NMCs. A summary of the District's compliance efforts toward each NMC is summarized below and discussed in detail in this report. In addition to the summary provided here, the activities discussed throughout this report are recounted in the context of the findings and recommendations from the July 6, 2005 NPDES Compliance Evaluation Report by USEPA Region 4 to demonstrate that the District has addressed the issues and recommendations that were raised and has implemented actions to come into compliance with the NMCs. Appendix D includes specific responses to comments received as part of the 2005 compliance report as well as an overall schedule of additional measures that are being implemented in addition to the continuing activities and programs summarized herein. The District believes that the ongoing programs summarized within this report, along with the implementation of proposed activities will result in compliance with the NMCs. Continued compliance with the NMCs will be documented as required in periodic summary reports submitted to the USEPA and State of Kentucky.

District Background/History

The District was established in 1946 by the Kentucky Board of Health under Kentucky Revised Statute Chapter 220. The Bromley WWTP provided primary treatment for 17 communities in Campbell and Kenton counties. In 1979 the Bromley WWTP was replaced by the Dry Creek WWTP, a 30 MGD secondary treatment plant that is located in Villa Hills. In 1993, the Dry Creek WWTP was expanded to 46.5 MGD to accommodate the growing population base in northern Kentucky.

Up until the mid-1990's, each municipality within the District owned and was responsible for the operation and maintenance of the sewer infrastructure that conveyed the municipal flow to the regional interceptor system. The municipalities' responsibilities also included all Combined Sewer Overflows.

Because of legislation adopted by Kentucky's General Assembly in April 1994 allowing transfer of sanitary and combined sewer and drainage systems from Municipalities within the District's service area, the cities of Florence and Walton are the only municipalities in Campbell, Kenton and Boone counties that still retain ownership, operation and maintenance rights of their sanitary sewer systems at the present time. The asset transfers that occurred from this legislation significantly increased the amount of infrastructure owned and maintained by the District. Table ES-1 shows the increase in infrastructure responsibilities when the District took over these systems.

in April 1994, Kentucky's General Assembly adopted legislation that gave each municipality the option to transfer the ownership, operation and maintenance responsibilities of their individual sanitary and combined sewer and drainage systems to the District as of July 1, 1995

Table ES-1 District Infrastructure Asset Comparison Pre 1995 to Current

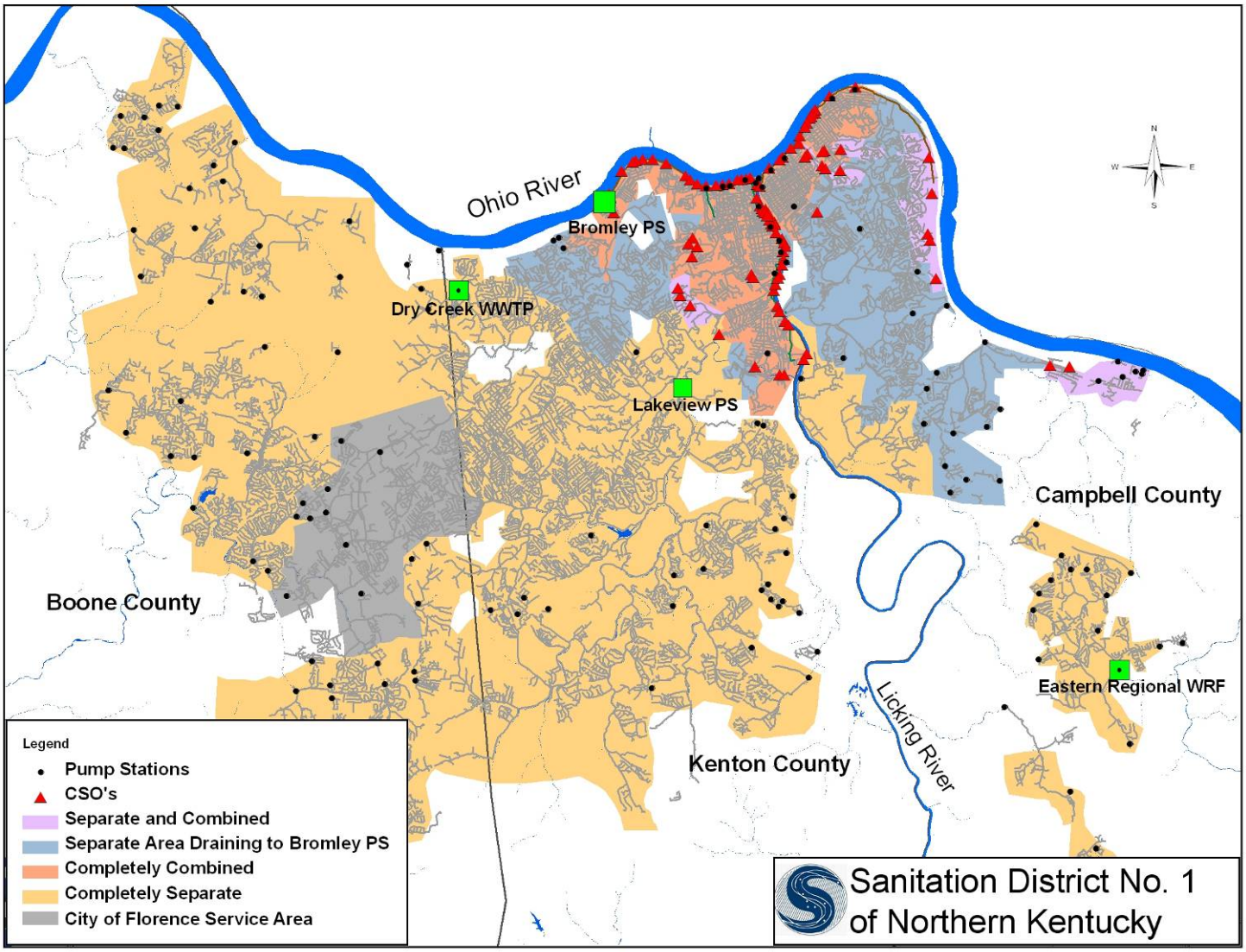
Asset	Before 1995	Current
Miles of sewer lines	128	>1,600
Sanitary Pump Stations	16	129 (1)
Catch Basins	0	3,302
Flood Pump Stations	0	15
Combined Sewer Overflows	0	96

(1) Two are owned by the airport and maintained by the District.

Wastewater Assets

The District's current service area encompasses 200 square miles and includes approximately 90,000 customer accounts. The overall potential service area extends to essentially all of Campbell, Kenton, and Boone Counties. The separate sewer system (SSS) comprises 184 square miles, or 92% of the District's service area and approximately 1,250 miles (just over 75%) of the total pipe length. The separate area also includes 124 pump stations. The combined sewer system (CSS) covers approximately 12 square miles and includes 260 miles of combined sewers located in the older river cities of Dayton, Bellevue, Newport, Covington, Ludlow and Bromley. Some portions of the combined system date back to the mid 1800's. The combined area also includes all 15 Flood Pumping Stations, as well as 5 sanitary wastewater pump stations that lift flow along the interceptors. Two of the sanitary pump stations (8th Street and Patton Street) are also Flood Pumping Stations. The Bromley Pump Station pumps all flows from the combined Sewer System to the Dry Creek WWTP. Figure ES-1 shows the extent of the overall collection system.

Figure ES-1 Sanitation District No. 1 Service Area Overview



NMC 1: Proper Operation and Regular Maintenance Programs for the Sewer System and CSO Outfalls

The District is implementing an integrated Asset Management approach to the operation and maintenance of both the separate and combined sewer systems, which was developed in coordination with the District's CMOM efforts. This approach will maximize efficiency and effectiveness of the District and prevents the development of institutional silos within the organization. As a measure of the District's current commitment to O&M, in 2007 about $20 million was spent for O&M in the collection system and has increased an average of 8% per year over the last 5 years. See Section 3 for more detail on spending and budgeting.

Within the overall program, the District's approach recognizes that there are features, assets, and objectives within the CSS that are different than in the SSS. Overall, the main goal of CSS O&M is to minimize spill frequency and to eliminate dry-weather overflows. Some of the key assets within the CSS and their associated O&M characteristics include diversions, catch basins, combined trunk sewers, interceptors, grit pits, and pump stations

Diversions

Proper operation and maintenance of diversions is critical to prevent dry-weather overflows and to maximize the diversion of flow into the interceptor for conveyance to treatment. Key District O&M activities include frequent surface inspections, cleaning, and record keeping. There are two full-time 1-man crews dedicated to inspecting the District's 137 CSO diversions. The target frequency is to inspect each diversion once per week as well as after every rainfall event. CSO inspections are currently recorded in the District's maintenance management system (gbaMS) and are reviewed periodically to verify that this goal is being met.

The inspectors are currently transitioning to entering the inspection data directly into gbaMS in the field via laptop computers. Key data from the spreadsheets is transferred into gbaMS as an inspection record. Because each inspector maintains his own area, they develop a comprehensive understanding of the behavior of each diversion and know particular sites where debris must be cleared more frequently.

If a dry weather bypass is found, the Dry Creek WWTP is notified immediately at which time KDOW is notified and an overflow record is placed into gbaMS and is included in the annual System Release Report. The procedure for entering the bypass data into gbaMS is being revised to have a work order created when a dry weather overflow is resolved so that dry weather overflows can be tracked in more detail on an annual basis.

Catch basins

The District owns and maintains all of the approximately 3,302 catch basins located in the CSS. Currently, there are 1,643 catch basins on the District's PM list in gbaMS for

annual catch basin cleaning in the combined system. Therefore, roughly half of the catch basins are currently cleaned annually.

In 2007, the District developed and implemented a Combined Sewer Catch Basin Inspection Program which started with a system-wide inventory and inspection of all catch basins in the CSS. Inventory and condition data that was gathered and entered in gbaMS was used to help develop a list of 501 cleaning work orders and 704 catch basin repair work orders. The inspection results showed that the catch basins with a bell are the most effective in trapping debris and preventing solids and floatables from entering the CSS. The District has 1,335 catch basins with bells, and it is estimated that an additional 343 are configured such that they can be retrofitted with bells with only minor modification.

Based on the results of the Combined Sewer Catch Basin Inspection Program, a plan for a new Catch Basin O&M program was developed. The key features of this program are to:

1) Complete the current 501 cleaning work orders by August 30, 2008 (222 have already been completed).

2) Inspect all catch basins yearly and record inspection data within gbaMS. Develop work orders within gbaMS to clean or repair as needed. Continue to utilize PM system to identify basins where more frequent cleaning is needed. Record and document amount of debris removal.

3) Add bells to catch basins identified as able to be retrofitted with bells or other retrofit to trap solids and floatables (343).

4) When a catch basin needs repair or replacement, retrofit or replace with a catch basin designed to capture solids and floatables such as a grated inlet and a bell on the outlet or some other device to trap solids and floatables. Verify that hydraulics allow for the installation of a grated inlet type.

Grit Pits

The District currently has 3 Grit Pits located along the Ohio River interceptor to help reduce the amount of grit material that settles in the pipes and at the pump stations (see Figure 3.2 in Section 3) in order to maximize capacity in the interceptors. A fourth grit pit is currently under construction along the Licking River Interceptor, and two replacement diversions have been designed and are under construction in Dayton, which will collect grit and control floatables.

Proper operation and maintenance of the grit pits is needed to prevent short circuiting that can cause grit to pass through and settle within the interceptor or cause re-suspension of previously captured grit. These grit pits serve to help with the operation and maintenance of the interceptor system to maximize capacity and flow to the WWTP. Key District O&M activities include visual inspection and regular cleaning of the 3 grit removal pits in operation along the Ohio River Interceptor (ORI). The Bromley (May

2004) and Newport (June 2007) grit pits have been in operation the longest and remove an average of 14 CYs and 11 CYs of grit per month, respectively. The Dayton pit was installed in November 2007. Each grit pit is scheduled to be cleaned on average every 4 weeks. In addition, there 1 grit pit under construction along the Licking River Interceptor, and 2 more under design for the ORI.

Pump stations

There are a total of 18 pump stations in the Combined Sewer System. Of these, 15 are the Flood Pump Stations, 2 of which (Patton St. and Eighth Street) contain both a, sanitary lift station and a flood station, and 3 of these are stand alone sanitary lift stations (Banklick PS, Second St PS, and Bromley PS). Therefore, there are a total of 5 sanitary lift stations in the combined sewer service area – 2 at flood pump stations and 3 stand-alone. Pump station operation and maintenance is carried out by the Field Technical Services department except when wetwell cleaning is needed. This cleaning operation is done by the Collection System Department.

There is a standard operating procedure (SOP) for the flood pumping stations, which includes key contact numbers and has been distributed to appropriate individuals. Select information from the SOP is included in Appendix A. .

The District's pump station operations group is responsible for pump station operations, and perform the following duties:

- *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 are performed.
  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. Hard copy inspection forms are kept on file as well, as this provides a more effective means to store comments. Telemetry data including run time, pump starts and stops, wet well levels, flow, power failures, and pump failures and, in some cases, flow are stored on the SCADA system for 30 days and then backed up on a server to store the historical data. Data monitored through SCADA includes information such as. The District is working to switch to new Intellution software that will make this process more web based, which will enable any employee to remotely monitor the pump stations and retrieve historical data and flows, not just the operator at the Dry Creek WWTP.

The District's pump station maintenance group is responsible for pump station maintenance, and perform the following duties:

- *Preventive Maintenance:* The District performs both electrical PM and mechanical PM on a set schedule based upon clock run times and calendar intervals.
- *Corrective Maintenance:* Pump station maintenance technicians perform corrective maintenance in response to work orders resulting from routine

inspections and trouble calls, which are developed and tracked within the District's computerized maintenance management software (CMMS) gbaMS.

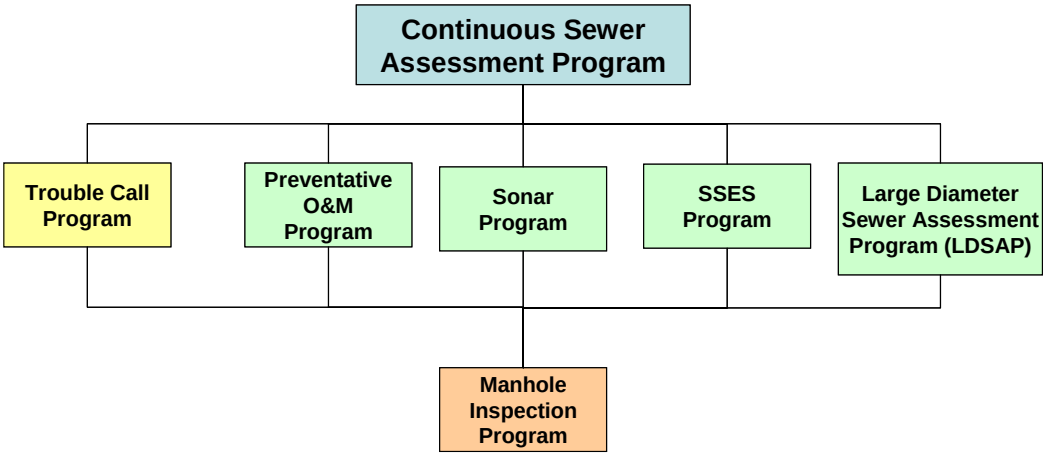
- *Backup Power:* Per the Consent Decree, the District submitted a Pump Station Operation Plan for Backup Power December 14, 2007 that evaluates the District's pump stations and includes schedules for providing backup power or other appropriate measures for addressing power outages at the District's pump stations as soon as practicable; provided, however, that such schedules shall not extend beyond December 31, 2015.

Combined trunk sewers and Interceptors

Proper operation and maintenance of trunk sewers is needed to prevent costly and dangerous sewer collapses and to maintain capacity to avoid surface flooding as well as damage to property.

The District decided early on to take an Asset Management based approach to operation and maintenance of the entire collection system. The result was the development and implementation of an aggressive prioritized Continuous Sewer Assessment Program (CSAP) that comprises both the combined and separate sewer systems. The program was developed with the goal of assessing all pipes within the District's CSS and SSS within 10 years. The CSAP is currently being implemented and comprises six sub-programs as shown in Figure ES-2 below.

Figure ES-2 Overall Structure of Continuous Sewer Assessment O&M Programs



The purpose of the District's CSAP is to utilize a proactive and coordinated asset management-based approach to assessing the infrastructure's condition and life cycle in both the CSS and SSS, and managing and prioritizing the cleaning and rehabilitation/replacement of the system. Using the process diagram provided in Appendix B as a guide for 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 during both dry and wet weather in both the CSS and SSS, and eliminate SSOs.

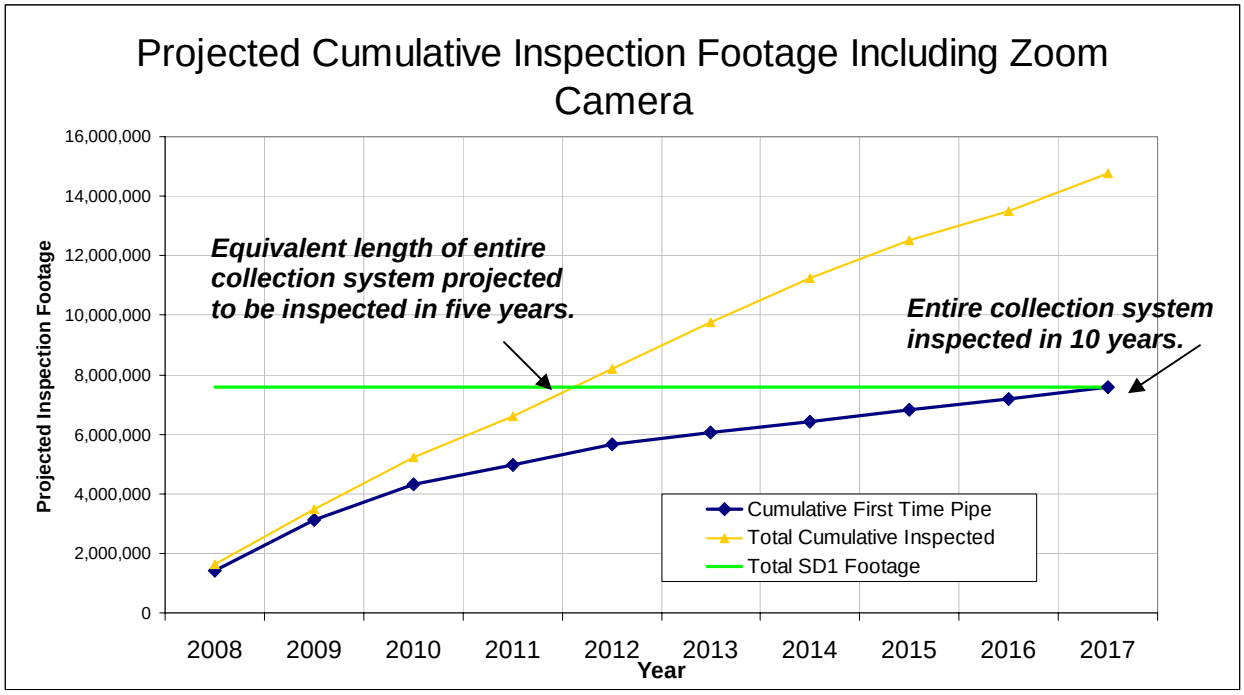
One of the key goals of the CSAP is to inspect all of the District's sewers within 10 years, with some sewers being inspected more than once in accordance with the program structure. Figure ES-3 summarizes preliminary projected inspection rates for the next ten years. These are early projections based on available historic data and will change as the program implementation continues. The District's CSAP is discussed in detail in Section 4.1 of this report. The key programs related to the CSS are the Sonar program and the Large Diameter Sewer Assessment Program (LDSAP). Each program is briefly summarized below.

- *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.
- *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. A key feature of this program is the use of the zoom camera system as a screening tool to assess sewer and manhole condition.
- *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 or combined sewer.
- *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 (see process diagram in Appendix B).
- *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.
- *Manhole Inspection Program:* The manhole inspections will be performed at the same time as the sewer inspections associated with the above sewer programs.

Inspection Projections

The prioritized CSAP will result in a goal of having every pipe in the system being inspected on a 10-year cycle, but the actual rate of sewer inspections and projected re-inspections will cover the entire equivalent length of the collection system in five years because some pipes will be assessed on a more frequent basis based on the prioritization. Figure ES-3 summarizes the approximate footage of pipeline to be assessed every year based on program forecasting.

Figure ES-3 Projected Cumulative Inspection Footage



Data Management

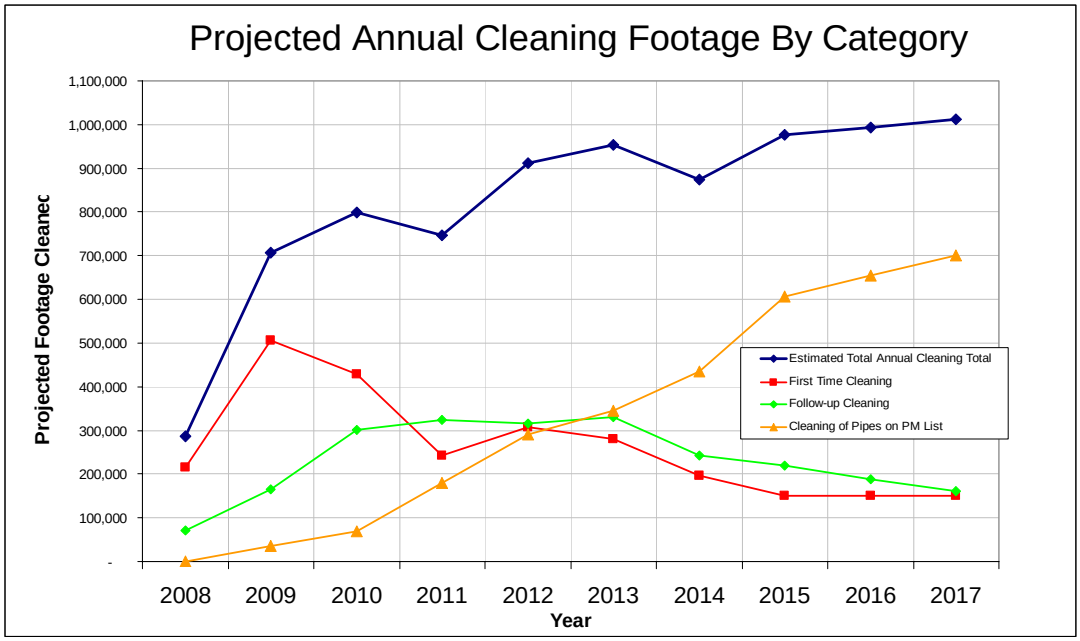
The District converted to a new sewer and manhole defect coding system in December 2007 that utilizes the Sewer Condition Risk Evaluation Analysis Model™. SCREAM is a sewer and manhole condition assessment tool that provides a standardized defect coding system and a definitive scoring and ranking process, eliminating subjectivity by the operator.

Video inspection footage is currently recorded on DVDs on the CCTV trucks but will soon be recorded directly to an electronic file for storage on a hard drive, bypassing the need for recording video on DVD.

Cleaning Projections

Cleaning following inspection will also be done on a prioritized basis. Figure ES-4 shows the projected annual cleaning footage. First time cleaning refers to pipes cleaned for the first time under this program, follow-up cleaning refers to pipes that are re-cleaned under the program. Through this program certain pipes will be put on a PM for cleaning where it makes sense and is cost effective. 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 ES-4 Projected Annual Cleaning Footage



NMC 2: Maximum Use of Collection System for Storage

Compliance with this control requires analysis and implementation of relatively simple modifications to the collection system to store wet weather flows until capacity is available in the downstream collection and treatment systems. The District has implemented and maintains several specific measures directed at maximizing collection system storage. These measures are listed below and further described in this section in terms of their support for compliance with this NMC.

Adjustment of regulator settings to maximize flow to the interceptors

Storage in the District's combined sewer interceptors is controlled by in-line pump stations, which are designed to induce a capacity limit above a certain threshold wet-weather flow condition. By maximizing flow to the interceptors during wet-weather events through adjustment of regulator settings, the District ensures that any available interceptor storage is maximized. The District has worked to maximize conveyance of flow from the collection system to the interceptor by fully opening or removing the orifice plate in almost all of the horizontal orifice plate type regulators where feasible.

Addition of tide gates to control river water and sediment intrusion

River water intrusion during wet-weather events has the potential to occupy in-line storage volume that would otherwise be available to combined sewer flows. The District currently maintains tide gate installations on 24 of their 96 outfalls to eliminate river water and sediment intrusion into the collection system and the District continues to add tide gates as it implements its CIP.

In addition, the District maintains 72 flood control gates as part of the flood protection system designed by the U.S. Army Corps of Engineers. As part of the Consent Decree related activities, the District will be conducting a detailed river water intrusion mitigation feasibility analysis, which will incorporate the flood protection systems operation and look at sources of intrusion including outfalls, catch basins in the floodway upstream of diversions, and where the interceptor is below the water table in order to keep river water out of the collection system during elevated river levels and maximize system capacity.

Maximization of available storage volume by minimizing in-line deposition

Deposition of grit and sediments is unavoidable in an operating collection system. The Districts operation, maintenance and inspection activities in the combined sewer system are discussed under NMC 1. Through these routine, scheduled activities and as part of other initiatives, the District continuously monitors and maintains the system and works to identify other measures to improve flow.

Hydraulic analysis of the collection system to identify potential for in-line storage

Inducing storage in combined sewer trunks through simple mechanisms such as raising weirs has the potential to reduce overflow volumes, especially during smaller events.

As part of the NMC related activities, the District analyzed the combined sewer system to determine locations where simple but effective modifications to the collection system could be utilized to maximize in-line storage as described below.

- A screening level analysis using available GIS to identify trunk sewers in the combined sewer system that are candidates for inline storage by utilizing simple volumetric screening measures to either eliminate a trunk sewer from further consideration, or identify the trunk sewer as one where inline storage may be a viable control measure and for which a more detailed analysis is warranted.
- The retained locations were then further analyzed using the District's preliminary collection system model to further screen potential in-line storage locations. A total of 7 potential storage locations remained after the screening process.
- After this final screening, the model was utilized to determine the highest possible static weir that could be installed at each of the potential storage locations without creating an unacceptable risk of flooding.

In addition to the 7 locations noted above, two additional in-line storage locations (at the Main Street and McKinney Street diversions) have been created as part the District's efforts to identify opportunities for collection system upgrades in concert with new development.

To determine the projected benefits of the planned inline storage program, 3 typical year model runs were completed using the current models. The first run looked at the 4 most likely candidates for a simple static weir adjustment under the NMC program, 9th, 10th, Parkway/Highway, and James, as well as the 2 new development locations, Main and McKinney. The second run added Willow Run and 4th Street, which are candidates

for static weirs, but each would require significant system modifications and complicated construction. The third typical year model run looked at the benefits of installing bending weirs at Willow Run and 4th Street in lieu of static weirs, as well as adding a bending weir at Pleasant Street, where additional static weir height could not be added due to the existing configuration.

Planned In-Line Storage Program

To determine the projected benefits of the planned inline storage program, 3 typical year model runs were completed using the current models, with results shown in Table ES-2. With the exception of the interceptor and diversion replacement near Main and McKinney Streets, the model confirms that very limited storage volumes are available in the trunk sewers upstream of the proposed inline storage locations, and that projected reductions in overflow volume and occurrences at the proposed locations may lead to significant increases in overflow volume at other nearby outfalls due the lack of capacity in the interceptor. Finally, the model projects that overflow reductions due to inline storage in the combined system may lead to slight increases in SSO volume elsewhere in the collection system.

Table ES-2 Projected In-Line Storage Benefit [(1)]

Statistic	Plan 1 (6 Static Locations)[(2)]	Plan 2 (8 Static Locations) [(3)]	Plan 3 (6 Static Locations & 3 Dynamic Locations)[(4)]
Baseline Typical year CSO Volume (MG)	1,452	1,452	1,452
Plan Typical Year CSO Volume (MG)	1,391	1,360	1,316
Percent CSO Volume Reduction from Baseline	4.2%	6.3%	9.4%
Projected SSO Volume Change (MG)	3	2	0
Baseline Typical Year CSO Occurrences	2,450	2,450	2,450
Plan Typical Year CSO Occurrences	2,340	2,370	2,409
Total Overflow Volume Reduction from Baseline (MG)	58	90	136
Percent Overflow Volume Reduction from Baseline	4.0%	6.2%	9.4%

(1) The current models were utilized to make planning level projections of the inline storage benefits and have undergone only a preliminary level of calibration. These models will be upgraded, recalibrated, and verified by the fall of 2008.
(2) Main St, McKinney, 9th, 10th, James Ave., Parkway
(3) Main St, McKinney, 9th, 10th, James Ave., Parkway, 4th St., Willow Run
(4) Static: Main St, McKinney, 9th, 10th, James Ave., Parkway & Dynamic: Willow Run, 4th St., Pleasant St.

In addition to ongoing work to expand and re-calibrate the District's hydraulic model, other investigations are required in the tributary sewershed to confirm that there is no increased risk of flooding at the potential inline storage locations. These efforts will lead to a more accurate assessment of the benefit of in-line storage at each location.

The incorporation of the 6 static locations (Main, McKinney, 9th, 10th, James Avenue, and Parkway/Highway) is predicted to decrease the annual overflow volume in a typical year by 58 million gallons, or approximately 4 percent, based on the preliminary modeling. While a 4 percent reduction is not high, it represents the kind of cost-effective improvement worth pursuing with simple, low-cost NMC solutions. Incorporation of additional capital projects with either static or dynamic controls which are projected to further reduce overflow volumes will be assessed in more detail under the Watershed Planning Process. More detail associated with activities to address this NMC are included section 4.2 and in Appendix D.

NMC 3: Review and Modification of Pretreatment Requirements

The District's Pretreatment Program is administered by their Industrial Monitoring Department, which is part of the Plant Operations Department (under the direct supervision of the Operations Manager). The Industrial Monitoring Department currently consists of a full-time staff of three pretreatment specialists and one college co-op to assist with database management and other duties. The pretreatment specialists perform a range of duties to ensure compliance, including issuing permits, performing reviews, conducting field investigations, issuing notices of violations and fines, overseeing sampling procedures and managing various related programs/procedures, such as the Fats, Oil and Grease Program. The District submits semi-annual and annual compliance reports to the Kentucky Division of Water (KDOW). The District's pretreatment enforcement efforts are discussed below.

Inventorying and characterizing non-domestic dischargers

At this time, it is estimated that approximately 14 percent of the Dry Creek Wastewater Treatment Plant's average dry weather flow is generated from non-domestic dischargers. There are currently 6 permitted non-categorical, significant industrial users (SIUs) in the District's service area that discharge to the combined sewer system or the separate sewer system tributary to the combined system (see Figure ES-5), however the District has been notified that one of these six is scheduled for shutdown in April 2008. In addition, there are also two permitted categorical SIUs in the combined sewer area that collect their waste, and do not discharge to the District's sewer system. These two categorical industrial users dispose of their small volumes of waste offsite and are required to annually sign a "Certification of Non-Discharge".

An engineering desktop level analysis of the SIUs in the combined system were analyzed to determine their potential for impacting water quality given that their discharge may be directly discharged to a receiving water without further treatment as part of a combined sewer overflow. The results of the engineering desktop analysis indicated that there was potential for the SIUs to impact CSO and receiving water

quality based on the current local limits in their discharge permit. Therefore the District moved forward with conducting a SIU sampling program that is being conducted in coordination with the District's current CSO outfall sampling program. The program includes sampling at the 4 non-categorical SIU sites that may discharge during wet weather, at a former SIU site to monitor for possibly contaminated stormwater runoff, and at the 5 CSOs downstream of these industries. The five CSOs and their tributary SIUs are listed in Table ES-3.

Figure ES-5: Map of SIUs Tributary to the CSS

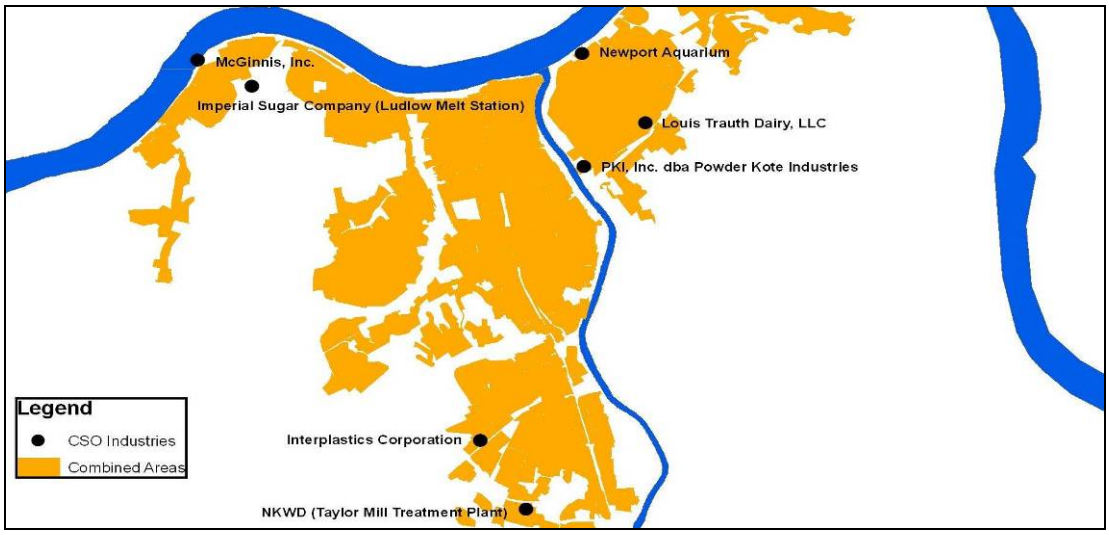


Table ES-3: Implementation of Measures to Modify Pretreatment Requirements

SIU	Associated CSO
Norfolk Southern (former SIU)	Adela Street (1710003)
NKWD	Church Street (1850158) and 44th Street (1880013)
Louis Trauth Dairy	10th Street (1420115)
Newport Aquarium	Columbia Street (0790084)
Imperial Sugar	Adela Street (1710003)

The SIU sampling program will occur in two phases and began in January 2008. The goal is to obtain 2 to 3 synoptic samples at each SIU/CSO pair. At the conclusion of the sampling program, baseline levels for pollutants of concern will be established, which will be utilized to estimate the SIUs impact. It is the District's intent to modify the SIUs discharge permit to address the specific pollutants of concern. These modifications may likely be in the form of revised discharge limits or a prohibition of discharge during wet weather.

Programmatic functions and control measures

The District's pretreatment program includes several standard programs and control measures. These are described below in more detail.

Standard Permit Requirements

The permits issued to SIUs in the combined system currently include by reference the SIUs approved Wet Weather Operating Plan, as well as Spill/Slug Prevention and hazardous waste discharge notification requirements and other standard language.

Fats, Oil and Grease (FOG) Program

The District's FOG Control Program was formally implemented in 2004. As required in the District's Consent Decree, on September 17, 2007, the District submitted a FOG Control Program to USEPA Region 4 and KDOW for review, which was subsequently approved by USEPA and KDOW on January 8, 2008. The Industrial Monitoring Department is responsible for all activities associated with the FOG Control Program.

Compliance Monitoring

Both SIUs and non-significant users (NSUs) with the potential to be an SIU are monitored throughout the year. Monitoring of the NSUs on the "potential SIU list" may involve:

- A yearly inspection, or less often, depending on the NSU;
- Submitting to the NSU a permit application which serves as a questionnaire to be completed;
- Sampling, including the installation of a sampling manhole, where necessary;
- A meeting if more information is needed, such as, in determining if the NSU may be a SIU; and,
- If the NSU is new or under construction, initial contact may be performed by an inspection of the construction site and a call to the new NSU, their consultant, or contractor.

Further, the District has prepared a Standard Operating Procedure (SOP 14) to establish procedures for monitoring and evaluating NSUs.

In addition to the two classifications of non-domestic dischargers, the District has also implemented three different types of short term specialty industrial discharge permits on an "as-needed" basis:

1. Underground Storage Tanks – A one-time or long-term discharge of accumulated water from a UST removal or repair site that may be subjected to a pollution control device and discharged to the sanitary sewer.

2. Soil Remediation – The removal of contaminated ground water from a site where ground water will be collected, subjected to a pollution control device (if needed) and discharged to the sanitary sewer.

3. Unusual Discharge Request – An Unusual Discharge Request is a discharge that does not readily fall into any established categories. Some examples include floor cleaning operations in warehouses, discharge of glycol from an HVAC system, a bad batch discharge from a food manufacturer, etc. A sample copy of an Unusual Discharge Request approval letter has been provided in Appendix M.

Enhanced Pretreatment Program

As part of the Consent Decree related activities, the District has identified enhancements to its pretreatment program to address the potential for direct discharge of industrially influenced combined sewage that could impact CSO discharges and receiving water quality. The overall program, including enhancements is described in detail in Section 4.3 of this report.

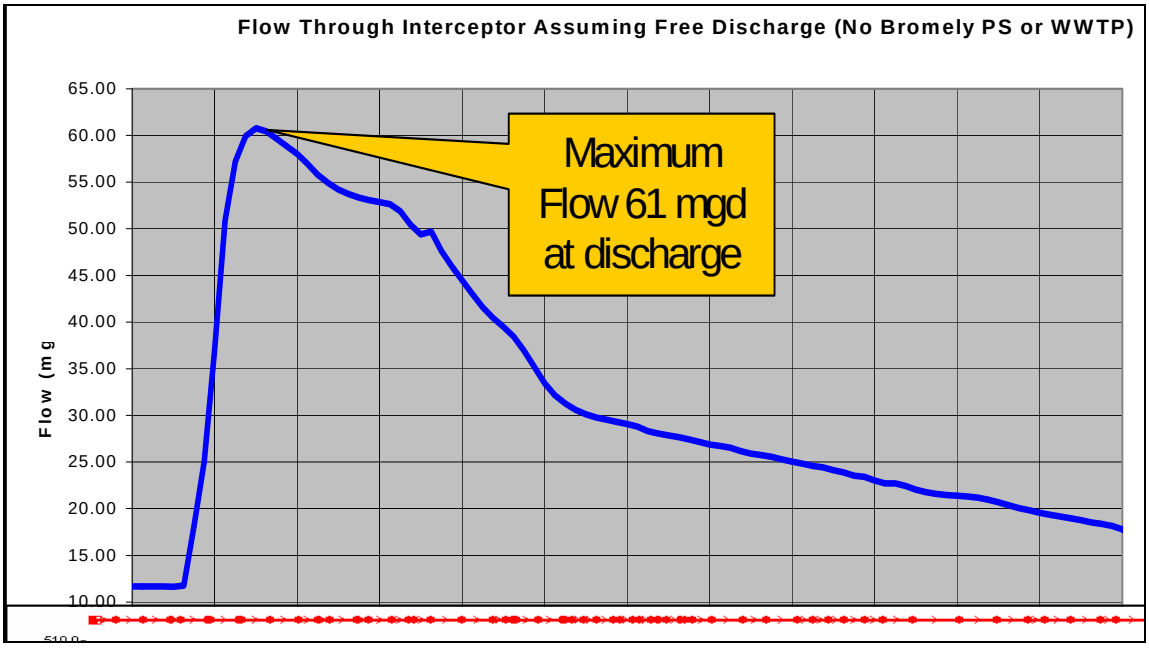
NMC 4: Maximization of Flow to POTW for Treatment

The issue of maximizing flows to the Dry Creek WWTP hinges on the capacity of each portion of the collection and treatment system associated with the WWTP. In this case, the combined sewer system interceptor, the Bromley pump station, and the Dry Creek WWTP are the three pieces that must be examined. Limitations in any one of these would limit the flow to treatment from the CSS. This section will detail the capacity analysis as well as the results and recommendations.

Interceptor Capacity Analysis

The District's hydraulic collection system model was used to determine the approximate maximum hydraulic capacity of the interceptor if other limitations such as pump stations or the WWTP were not present. The model analysis showed that the interceptor capacity was approximately 61 MGD at the downstream end before reverse flow occurs through some diversions. Figure ES-6 shows the model output hydrograph.

Figure ES-6 Model Output Hydrograph with Interceptor as Free Discharge



Bromley PS Capacity

Bromley pump station has four constant speed pumps which can be operated in multiple combinations. Two pumps are 900 HP (the "large" pumps) and two pumps are 300 HP (the "small" pumps). Pump testing was completed in 2002, but all four pumps were not run together due to potential impacts of these slug load flows to the Dry Creek WWTP. Therefore, to estimate the pumping capacity of all of the potential combinations of pumps, a hydraulic model (waterCAD) was calibrated to the testing data and used to examine all possible combinations. The model results are shown in Table ES-4

Table ES-4 Bromley Pump Station Modeled Capacities

Operation Condition (pumps on)	Modeled Output (MGD)
1 small	7-8
2 small	15
1 large	28
1 large, 1 small	35
1 large, 2 small	37 (FIRM)
2 large	42
2 large, 2 small	45 (PEAK)

However, Based on operational experience, the Bromley pump station can only be operated to its firm capacity of 37 MGD and cannot be operated up to its peak capacity of 45 MGD because the use of both large pumps at the same time during rain events causes flooding within the headworks of the Dry Creek WWTP.

The model analysis of the Bromley Pump Station showed that the current wet well settings impact the ability to convey more flow from the interceptor into the wet well. The level settings cause flow in the interceptor to reverse through diversions from wet well backwater before full interceptor capacity is reached in some locations. The current wet well settings were developed to reduce the potential for excessive vibration and cavitation in the pumps, which was found to occur. The District will evaluate further the feasibility of lowering the wet well setting that triggers the first large pump by May 2008.

Dry Creek WWTP

The Dry Creek WWTP was originally designed for an average daily flow of 30 MGD and a wet weather peak capacity of 72 MGD. Facility upgrades in 1991 were designed to increase the average daily flow capacity of the plant to 46.5 MGD. The maximum sustained secondary capacity as designed was 55.5 MGD. Figure ES-7 shows a schematic of the liquid stream process. As part of the NMC compliance efforts, Dry Creek WWTP capacities were analyzed and documented. Further, an analysis was conducted to determine if low-cost improvements could increase the available capacity.

Figure ES-7 below illustrates the treatment process at the Dry Creek WWTP and Table ES-5 summarizes the results of the capacity analysis.

Figure ES-7 Simplified Liquid Stream Process Schematic for the Dry Creek WWTP

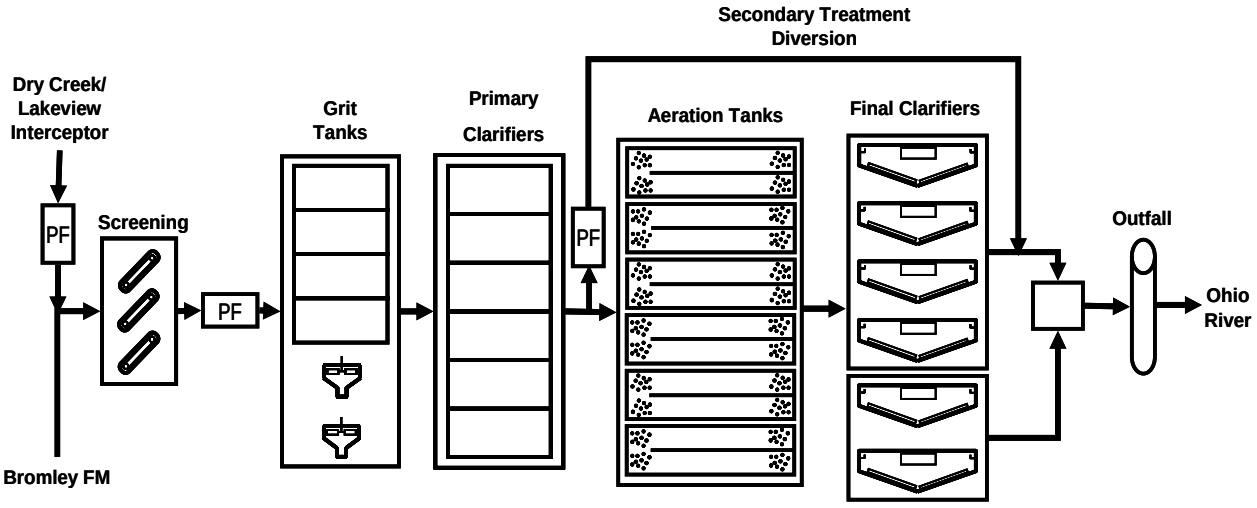


Table ES-5 Summary of Dry Creek WWTP Wet Weather Capacity

Unit Process	Number	Capacity per Unit (MGD)	Peak Capacity[1]
Influent Screening	3	25	75
Influent Flow Measurement	1	128	128
Grit Removal	2	50	100
Primary Clarifiers	6	17.1	102.6
Aeration Basins	6	NA	57[2]
Secondary Clarifiers	6	11.5	69
Effluent Disinfection	1	93	93[3]

NOTES:
[1] Unless noted otherwise, peak capacity is total capacity (with all units in service) based on optimal conditions. If less than ideal conditions exist or if one or more units is taken out of service, the capacity will be reduced by the amount corresponding to the capacity of each unit process.
[2] Peak capacity for the aeration basins is limited by the process air provided. All flows above 55 MGD are currently diverted around aeration basins and secondary clarifiers.
[3] Effluent disinfection capacity is based on the detention time available in the outfall pipe

The results show that the influent screening is the limiting factor for primary treatment and disinfection, while secondary treatment is limited by aeration basin capacity. As a result, any improvements to unit processes within the liquid train must be accompanied by improvements to screening capacity. The screens limit capacity due to headloss which causes flooding in the headworks building at sustained flows above 75 mgd.

Based on the current analysis of the existing unit processes at the Dry Creek WWTP, there was no low cost process modifications identified that would significantly increase the capacity or reliability of the plant. Several options for modifications of larger scope and cost were identified, and further evaluation of these options will be conducted as

part of system-wide alternative evaluation in the Watershed Plans under the Consent Decree. Therefore, the maximum sustained primary treatment capacity at the Dry Creek WWTP is 75 MGD and the maximum sustained capacity through secondary treatment is approximately 55 MGD.

Table ES-6 below summarizes the peak capacity of each portion of the system. When evaluating the available capacity to take combined flows from Bromley, it is important to note that the Dry Creek WWTP also receives SSS flow from the Taylorsport PS system and the Dry Creek Interceptor system which combine to contribute 50-55 mgd during heavy rainfall events. Therefore, this limits the amount of flow that can be allowed into the plant from the Bromley PS.

Table ES-6 Summary of Capacity Analysis

Facility	Peak Capacity (mgd)	Firm Capacity (mgd)
Ohio River Interceptor	61	61
Bromley Pump Station	45	37
Dry Creek WWTP	75[(1)]	50
[(1)] Dry Creek also receives flows from the separate system up to 50-55 MGD		

More details regarding the capacity analyses are included in Section 4.4 and ongoing efforts to achieve compliance with this NMC are included in Appendix D.

NMC 5: ELIMINATION OF CSOS DURING DRY WEATHER

This control consists of the elimination dry weather overflows (DWOs), which is considered essential to improving receiving water quality. In addition to being one of the nine minimum controls, DWOs are strictly prohibited in the District's NPDES discharge permit.

The District’s collection system inspection and maintenance programs are two of the the primary measures for eliminating dry weather overflows. As detailed under NMC 1, the District has recently implemented a CSAP that will focus the District’s resources on problem areas throughout the entire service area and identify the resources necessary to maintain a high level of service and aggressively reduce DWOs in both the combined sewer system (CSS) and sanitary sewer system (SSS). This section provides additional detail about how the sewer assessment and maintenance programs identify and correct DWOs in the CSS. In addition, several other measures to address DWOs have been undertaken as part of the District’s Consent Decree related activities and include identification of diversions where the existing configuration or structural condition indicated a potential for DWO, an analysis of the impacts of the flood protection system

on the collection system during dry weather, and addressing power outages at the District's pump stations by providing back-up power or other appropriate measures.

Known Dry Weather Overflow Identification and Elimination

Dry weather overflows have historically been identified by the District through weekly inspections of every diversion and bypass during dry weather and by responding to trouble calls. There are two full-time 1-man crews dedicated to inspecting the District's 137 CSO diversions. The target frequency is to inspect each diversion about once per week as well as after every rainfall event. To better detect dry weather overflows using visual inspections from the surface, approximately 15 diversions have been outfitted with a bright orange block secured to the chamber, and the District is working to block all diversions.

More recently as part of the Consent Decree related collection system characterization, the District has added 23 outfall flow monitors whose status is frequently monitored, and additional visual inspections are conducted during routine meter maintenance. Because meter maintenance requires entry, more detailed visual inspections can be completed. Additionally, dry weather overflow alarms have been set up on 5 of the 23 outfall flow monitors, which provide for real-time notification of a dry weather overflow. If a high level is detected, an auto-dialer is set to call the individuals assigned to respond.

Once logged into gbaMS, DWOs are evaluated for a permanent solution, which for one time occurrences may include more frequent monitoring of that diversion and tracking. Diversions where multiple DWOs have occurred are further evaluated for additional actions, which may include:

- Catch basin modifications to reduce solids that may cause dry weather overflow risk at the downstream diversion.
- Permanent modifications to the diversion, such as removing a weir plate, removing the bar rack over the diversion or upsizing the diversion pipe.
- Targeted cleaning upstream or at diversions to address solids deposits.
- More frequent inspections for those with a configuration considered susceptible to DWOs or for previously modified locations to confirm that the issue has been sufficiently addressed.
- Permanent monitoring for early warning at locations where other measures have failed to address the issue.

A review of the dry weather overflow records for 2006 and 2007 shows that 25 DWOs occurred in 2006 and 20 DWOs occurred in 2007. Of the 45 DWOs that have occurred in the last two years, 35 occurred at just 12 diversions. The diversions with multiple DWO occurrences are listed below along with a discussion of the District's corrective measures.

- Saratoga Street (0770006) – 3 DWOs. This diversion was outfitted with a 30-inch high weir plate and baffle in December of 2007 as part of the floatables control pilot. Because of potential hydraulic issues with the weir and baffle

configuration, the weir and baffle are planned to be replaced by a weir, which is currently being designed.

- 8th and Philadelphia (1480129) – 4 DWOs due to debris blocking the dry weather flow opening. The weir plate was opened fully in mid 2007 and this location continues to be monitored to ensure these improvements have eliminated the DWOs.
- 8th Street in Covington (1420025) – 5 DWOs due to debris blocking the dry weather flow opening. Catch basins were repaired to limit debris and the weir plate opened fully in mid 2007. No DWOs have occurred at this location since 2006. This location continues to be monitored to ensure these improvements have eliminated the DWOs.
- 11th Street in Covington (1420079) – 4 DWOs due to debris blocking the dry weather flow opening. Catch basins were repaired to limit debris and the weir plate fully opened. This location continues to be monitored to ensure these improvements have eliminated the DWOs.
- 3rd Street in Covington (1480097) – 2 DWOs occurred with one occurring after, the weir plate was removed when debris blocked the diversion pipe. The District is monitoring this location and reviewing the location further to determine additional actions.
- 47th Street in Covington (1870031) – 2 DWOs with the weir plate already fully open, so the District is examining the potential to retrofit catch basins in the area to keep debris out of the system or to replace these catch basins with ones that can contain debris.
- 4th Street in Newport (0820001) – 2 DWOs due to debris blocking the bar rack to the dry weather flow opening. The District will increase the frequency of cleaning the bar rack protecting the diversion pipe, and continue to monitor. If this location continues to be a problem, the bar rack may be removed.
- Dalton Street in Covington (1480123) – 2 DWOs due to debris blocking the dry weather flow opening. Leaping weir was fully opened after reoccurrence in June 2007 and is being monitored to ensure these improvements have eliminated the DWOs.
- 9th Street in Newport (0840005) – 2 DWOs due to a grit blockage in the diversion line and leakage at the existing weir plate. As discussed in Section 4.1, the District has implemented a new CSAP program which will better address cleaning in the combined sewer system. A new weir is under design to provide in-system storage in addition to flow diversion.
- Ash Street in Ludlow (1710098) – 2 DWOs due to debris blocking the dry weather flow opening. The weir plate has been removed; however DWOs due to blockages continue to occur. The District is examining the following to eliminate this DWO:
  - Potential to retrofit or replace the catch basins tributary to the diversion to reduce debris that is contributing to the blockage.
  - The Bromley pump station wet-well levels are being examined to be lowered as discussed in Section 4.4.
  - The District is also evaluating river water intrusion prevention in order to keep river debris and sediment from backing up into the diversion.

- Eastern Avenue in Covington (0910055) – 3 DWOs due to debris blocking the dry weather flow opening. The District is currently examining the potential to retrofit the catch basins to keep debris out of the system or to replace these catch basins with ones that can contain debris.
- Taylor Avenue in Bellevue (0610029) – 4 DWOs but diversion was eliminated as part of a CIP project in early 2007.

Investigations to Identify Potential DWO Locations

As part of the Consent Decree infrastructure characterization activities, the District in inspected all of their diversions, bypasses and CSOs with the express intent of identifying locations with higher potential to overflow during dry weather. The analysis also considered information from the hydraulic model and from the District's gbaMS. The analysis identified 27 regulators that either had a history of DWOs or were considered to have the potential to overflow during dry weather.

Each diversion considered to have the potential to overflow during dry weather was then evaluated and a recommended course of action was identified. Recommended actions included additional monitoring, weir replacement, and catch basin modifications to trap debris. The documentation and recommendations are included as Appendix P. Additonal detail regarding DWO histories and efforts to address these are included in section 4.5 and Appendix D.

River Water Intrusion Mitigation Feasibility

The Consent Decree requires the District to ensure that if CSOs occur, they only occur as a result of wet weather and that "this goal shall include addressing those discharges resulting from the District's compliance with the requirements of the United States Army Corps of Engineer's (ACOE) Ohio River Flood Protection System Pumping Operations Manual" [Paragraph 39 (b) (1) (A)]. As part of the Watershed Plans in the Consent Decree, the District is conducting a detailed River Water Intrusion Mitigation Feasibility analysis. The goal of this analysis is to fully understand the effects that the ACOE's Flood Protection System has on the District's collection system and to identify alternatives to mitigate sources of river water intrusion including outfalls, catch basins in the floodway upstream of diversions, and where the interceptors and manholes are below the water table both under normal and elevated river levels.

This study must be undertaken to determine actions that can be taken that will not jeopardize the health, welfare, and safety of the citizens of Northern Kentucky during elevated river levels. Additionally, while not driven by local rainfall, the elevated river stages that activate the Flood Protection System are in fact due to wet weather. As such, potential solutions to address river water intrusion will be examined as part of other system-wide needs in the Watershed Plans.

To be proactive, the District has already begun this river water intrusion mitigation study to determine and understand sources of river water intrusion and its impacts on the sewer collection system and flood protection systems, which is scheduled to be completed by April 2009.

Pump Station Back-Up Power
The District recognizes the importance of the reliability of the lift stations along the combined interceptor system. In accordance with the Consent Decree, the District submitted a Pump Station Operation Plan for Backup Power on December 14, 2007 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.

This separate report also details the significant actions already undertaken by the District to address pump station back-up power needs throughout the combined and separate systems. Of the 18 pump stations in the combined system, 15 are flood pump stations, with 2 of these, Patton Street and Eighth Street, also serving as interceptor lift stations. The 15 flood stations already have dual dedicated power feeds from separate sources. See Table ES-7 for the status of backup power for the remaining combined system pump stations based on the District's Pump Station Operation Plan for Backup Power.

Table ES-7: Backup Power for Sanitary Pump Stations

Pump Station	Backup Power Status
Bromley PS	Existing dual dedicated power feeds from separate sources.
Banklick PS	Permanent generator to be installed in 2009.
Second St. PS	Initial action PS. Diesel generator to be installed in 2008.

NMC 6: CONTROL OF SOLID AND FLOATABLE MATERIALS IN CSOs

This control consists of the reduction, or possible elimination, of solid and floatable materials from CSO effluent discharge using simple, low cost controls. There are many effective measures for reducing the discharge of solids and floatables such as source reduction through public education, litter control or street sweeping, in-line controls that screen, skim or settle, and end-of-pipe controls that capture and hold materials for later removal. Solids and floatables can also be reduced through maximizing use of the collection system for storage, and conveying as much flow as possible to the POTW for treatment. The District's efforts at reducing overflow volumes, which lead to corresponding reductions in solids and floatables discharges are discussed under NMC 2 and NMC 4. This section focuses on the District's efforts to keep floatables out of the collection system and at containing and removing floatables already in the collection system.

Public education to reduce solids and floatables originating from sanitary waste
As recommended in the USEPA's NPDES Compliance Evaluation Report, the District has implemented a program to notify the public of the proper disposal procedures for

personal hygiene items in order to reduce the amount of floatables that originate from the sanitary component of combined sewer overflows.

Street sweeping to reduce solids and floatables originating as street litter

Street sweeping does not fall within the District's jurisdiction as the individual municipalities and counties are financially and physically responsible for street sweeping within the District's service area. In April 2007, the District undertook a detailed survey of the municipalities within its jurisdiction to determine their street sweeping frequency (i.e. the number of times a street gets swept each year). The street sweeping frequency of the major municipalities within the combined area as reported by them is as follows:

	Municipality	Street Sweeping Frequency (Times/Year)
1.	Covington	3 – 4 (commercial areas 1/week)
2.	Newport	10
3.	Dayton	1
4.	Bellevue	2 – 3
5.	Ludlow	1
6.	Taylor Mill	1
7.	Park Hills	2
8.	Bromley	3 – 4
9.	Villa Hills	As needed
10.	Fort Wright	1

The individual counties (Kenton and Campbell) do not provide street sweeping services; however, the interstate highways through the Kentucky Transportation Cabinet are swept approximately 12 times per year.

Construction site stormwater runoff management program

Under the auspices of the Regional Storm Water Management Program, the District has been able to adopt Rules and Regulations establishing a "Land Disturbance Permit" to be administered by the District to control storm water runoff from construction sites for new developments and redevelopments in Boone, Campbell, and Kenton Counties in both the SSS and CSS. These regulations require the implementation of proper erosion and sediment control practices; and controls for other wastes among other requirements in areas undergoing development or re-development. Therefore, these measures help reduce the amount of solids and floatables entering the combined system.

Catch basin modifications

The primary objective of catch basin cleaning is to remove solids and floatables that have collected within the catch basin, before they enter the collection system.

In addition, the District acknowledges the effectiveness of catch basin modifications, which are recommended in the USEPA Guidance for Nine Minimum Controls and can

lead to litter reduction of between 60 and 80 percent (NYCDEP, 1997). Based on the inventory and field inspection, 1,335 of the District's catch basins have bells or hoods installed to contain floatables within the catch basin for removal prior to their entering the collection system.

In the summer and early fall of 2007, the District undertook an inventory and a field inspection of all 3,302 catch basins within the CSS. Among the many parameters that were noted during the field inspection process was an estimate of the amount of debris present in the catch basin and basins that needed to be rehabilitated or replaced. Based upon that inventory there were 501 work orders written for cleaning, and 704 for repairs. The District has developed a catch basin O&M program that will result in cleaning and retrofits to reduce solids and floatables entering the CSS. See NMC 1 for more details regarding the proposed catch basin O&M program.

Grit pits on the interceptor to capture solids and increase flows to treatment

In addition to storm water, grit enters the District's CSS during storm events along with grit, sediment and debris from river water due to high river stages as well as through catch basins and stream connections. Grit and other settleable solids can reduce the capacity of the CSS to store and convey flows to treatment. Additionally, settleable solids can be a considerable source of pollutants including pathogens, nutrients, pesticides, and other chemicals and debris. The District's grit pits are described further under NMC 1.

In-line and end-of-pipe controls to reduce floatables discharged through CSOs

While source control measures have been proven to be effective when implemented on a large scale, some additional controls are necessary to provide the level of reductions necessary to meet narrative aesthetic water quality standards. As such, in the fall of 2007, the District developed a solids and floatables program to increase end of pipe control of solids and floatables. One component of the program is to install effective simple solids and floatables controls at as many CSOs as is feasible. The initial step of the program was to identify a suite of simple, but effective solids and floatables controls that could be implemented at as many CSOs as possible. Prior to developing the pilot solids and floatables program, the District had also began a study and design to add a pilot engineered floatables control at the Greenup Street outfall in Covington (1440121). The result of this study was the design and construction of a proprietary screening and baffle device.

The next step was to pilot the simple solids and floatables controls, which is currently ongoing, with the goal of better understanding the effectiveness and maintenance requirements of the different diversion/floatables combinations.

To date, the District has installed 13 solids and floatables controls at its 96 CSO locations, including nets at 6 CSOs, bar racks at 3 CSOs, weirs and/or baffles at 3 CSOs, and one engineered control. Construction of 2 more solids and floatables controls combined with grit chambers for the Main Street and McKinney Street CSOs

are currently scheduled to be completed by December 31, 2008 in conjunction with the new riverfront development.

Table ES-8 lists the locations of existing or currently planned solids and floatables controls and the type of control installed.

Table ES-8: Current Solids and Floatables Control Program

CSO	Diversion	Name	Type of Control
1490172	1490015	Swain Court	Black Net
0910065	0910055	Meiken/Eastern	Black Net
0650098	0650025	Wildcat Run	Black Net
0340051	0340044	Manor Lane	Green Net
0200069	0200066	617 Mary Ingles	Green Net
0030031	0030017	Carmel Manor	Black Net
0650100	0650041	Geiger Avenue	Type "B" Bar Rack
1440205	1440121	Greenup Street	Nutrient Separating Baffle Box
0770096	0770006	Saratoga Street	Weir and Baffle (1)
1420145	1420043	10th Street	Weir and Baffle
0930104	0930026	17th Street	Weir and Baffle
1480187	1480108	4th Street	Type "A" Bar Rack
1730259	1730029	Pleasant Street	Type "B" Bar Rack
0570090	0570030	Main Street	Weir and Baffle w/Grit Chamber (2)
0570089	0570011	McKinney Street	Weir and Baffle w/Grit Chamber (2)

(1) A weir is currently being designed to replace the installed weir and baffle due to hydraulic concerns.

(2) Currently Scheduled to be completed by December 31, 2008 in conjunction with the new riverfront development.

NMC 7: POLLUTION PREVENTION

It is the objective of NMC 7 to minimize various forms of pollution (littering, illicit discharges, etc.) from entering into the combined sewer system and compromising the water quality of the receiving water body and/or the District's conveyance and treatment infrastructure.

To date, both the District and the communities in Northern Kentucky have undertaken significant steps to mitigate pollution from entering into the District's CSS. The District has developed a strong public education initiative, assumed the regional leadership role for sound land disturbance/soil erosion and sediment control for Northern Kentucky, provided Best Management Practice Guides for commercial/retail establishments and residents that may be susceptible to illegal discharges and recently implemented a fats, oil and grease (FOG) program. The District's solid waste management duties are overseen by the Northern Kentucky Solid Waste Management Area (NKSWMA). The NKSWMA is generally responsible for the management of solid waste pick-up, recycling, household/automotive hazardous waste and litter abatement events in Boone, Campbell and Kenton counties. The individual communities in Northern Kentucky

provide pollution prevention support as well, by sweeping the streets, contracting with solid waste contractors (in many, but not all communities) and the enforcement of litter regulations.

In the July 6, 2005 NPDES Compliance Evaluation Report, the District's compliance efforts toward NMC 7 did not receive any recommendations for improvement.

NMC 8: PUBLIC NOTIFICATION

It is the objective of NMC #8 (Public Notification) to properly notify the public of the presence of CSO outfalls, inform the public when a CSO event has/will occur and to advise of an increased risk to public health during a wet weather event. Both the public and affected businesses (like a marina) must be educated and given access to the proper information so that they can make informed decisions about when and where to recreate in the streams and rivers affected by CSOs.

As further discussed in Section 4.7, the District maintains a major public education program on many facets of the water environment and one of the major aspects of that education program is public notification of CSOs and the risks associated with them.

The District's public notification activities are discussed in detail throughout this section and generally include the following:

Signage at effected areas
The District has previously posted signs near CSO outfalls that warn the public of the presence of a combined sewer outfall and that "Pollution May Occur During & Following Rainfall". In addition, the signs provide a District phone number to call to report any unusual and/or dry weather discharges. The existing signs have this text in English, with a graphic of a swimmer with a line through it to warn against contact.

The District is currently working to update their CSO signage to include more graphics and text in Spanish, so that someone who is illiterate or not literate in English can more fully comprehend the sign.

Additionally, the District is working to create additional signs that will be posted in places the public would typically access the water, such as marinas, boat launches, etc. All new signs will include the District's website address where the public can access and review the water quality data before entering the receiving water body.

Public service announcements
The District has been airing televised public service announcements on Insight Cable channels since the beginning of 2004. These public service announcements broadcast a warning about the dangers of using public waterways immediately following a rain event. The most recent run of these announcements aired for three months on ICN6 in the fall of 2007.

Website and hotline notifications
For the last two years the District has been warning the public about CSOs and their effects on water quality through their hotline warning system. The hotline number is posted on the District's website at www.sd1.org/wastewater/overflow.asp. More recently, the District launched an e-mail warning system alerting those who have asked to be added to the email list of a wet weather event that could potentially cause a CSO discharge. Under this notification program, the District issues an advisory when a 0.25 inch or more of rainfall is predicted or has occurred in the Boone, Campbell and Kenton County service areas. These advisories remain in effect for 72 hours after the rainfall event.

Real-time data
The District has recently added three real-time data links on its website to provide the public with current weather, water quality and water level information.

NMC 9: Monitoring to Characterize CSO Impacts

The implementation of this NMC is critical for the District as the Consent Decree required Watershed Plans are developed. The Consent Decree requires the District to develop the first round of Watershed Plans by June 30, 2009 that include a LTCP component. In order to meet this date, the District initiated a comprehensive Infrastructure and Watershed Characterization effort including flow and rain monitoring, in-stream, and overflow sampling to include CSOs, SSOs and storm water outfalls. This program goes beyond this NMC in characterizing CSO impacts.

In addition, the District has already conducted studies aimed at quantifying the volume, frequency, and impacts of CSOs. These include:

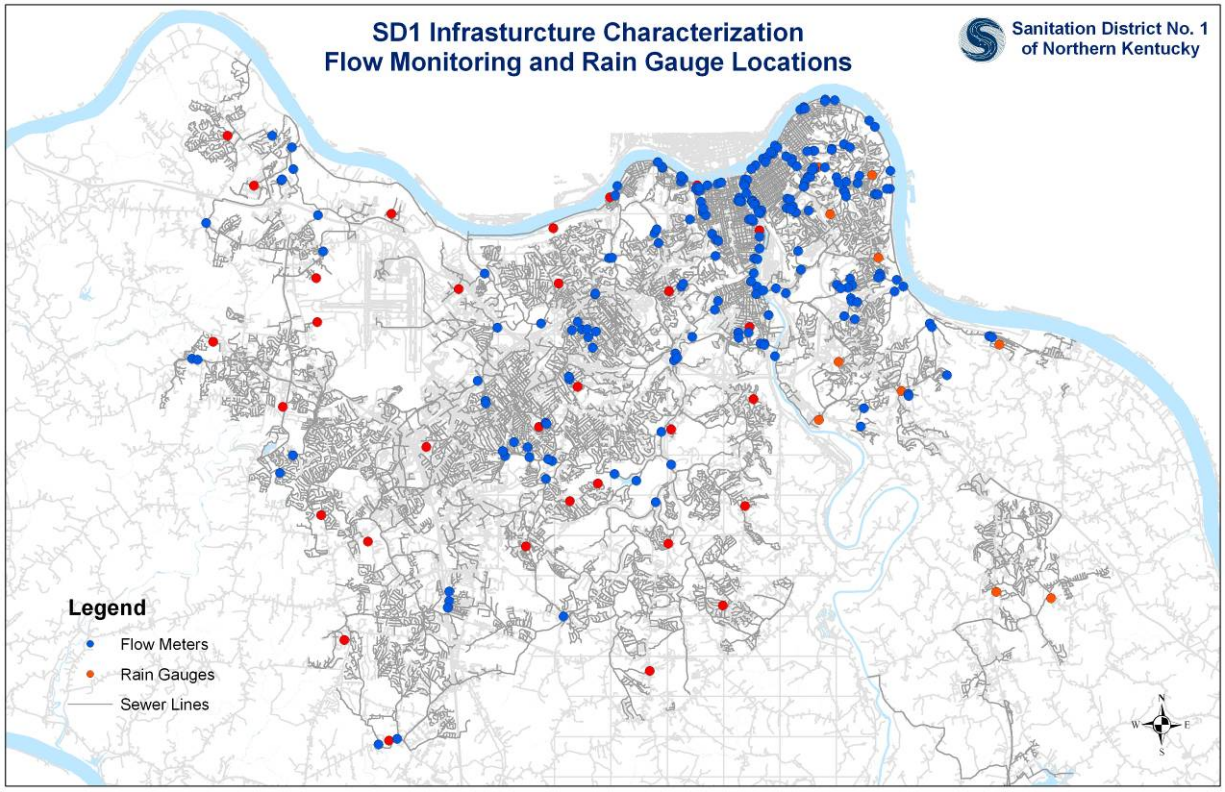
- 1996 Banklick and Licking River Model and Study – This project included the use of an early collection system model and water quality models to evaluate the impacts of overflows in Banklick Creek and on the Licking River.
- 2002 System-wide Model Development – 2003, the District completed a system-wide, fully dynamic collection system model utilizing HydroWorks (now InfoWorks) that included the combined and separate sewer systems. This model was used in the early stages of the Infrastructure Characterization effort to help prioritize the placement of meters for the model calibration and verification update that is currently underway.
- Banklick Sampling – In 2002 and 2003 the District conducted sampling along the Banklick watershed to gain an understanding of the water quality during dry and wet weather events and to develop and calibrate an HSPF model of the entire Banklick watershed. This model is being updated and recalibrated based on the current in-stream and outfall sampling program being conducted.
- Ongoing CSO Inspections – The District inspects each CSO diversion once per week and after every rainfall event to verify if CSOs have activated. This data is now recorded in gbaMS. In addition, 15 CSOs have been blocked to monitor activation frequencies and the remaining CSOs are being blocked as part of

NMCs 1 and 5. Other CSOs are either being flow monitored or characterized utilizing in-system flow monitors as described below.

Current Flow Monitoring Program

As part the Infrastructure Characterization effort for development of the Watershed Plans, the District currently has a total of 245 flow meters and 45 rain gauges installed that will be used to help update and recalibrate the hydraulic models and to further understand the behavior of the collection system (see Figure ES-8). Of these, 23 CSO locations are included. These locations were prioritized and selected based on size, activation frequency, type of tributary land use, sensitivity of their discharge location to streams and rivers, and potential contact with the population. These 23 locations also represent approximately 80% of the District's total annual CSO volume based on the current hydraulic model results. The recalibration to these 23 meters, along with other meter locations will help better understand the volume and frequency of all CSO locations.. The use of calibrated and verified models is a widely accepted method for understanding system-wide CSO volumes and frequency.

Figure ES-8 Flow Monitoring Locations



Overflow Occurrence, Volume and Loading Estimates

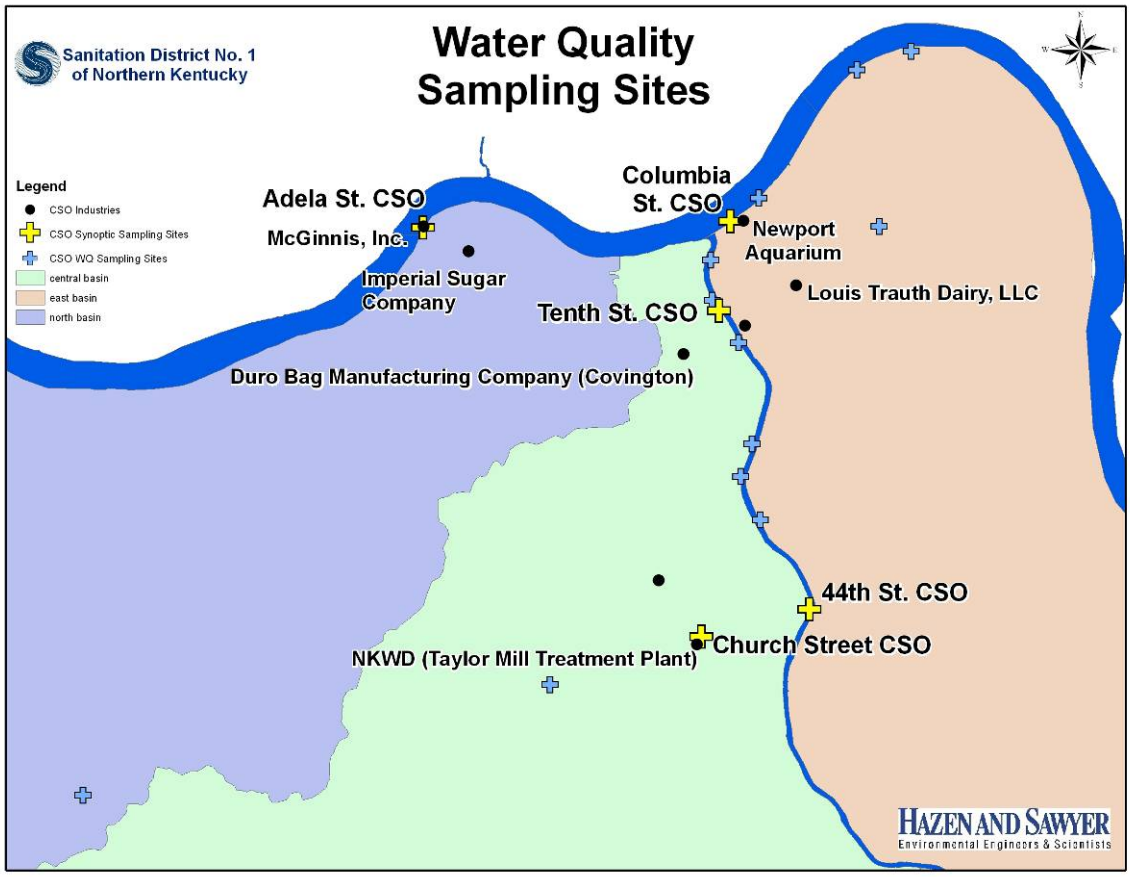
Following the conclusion of the flow monitoring program, the updated model will be available to use in estimating both the activation frequency and overflow volumes from the District's CSO locations. Concurrent to the model development, the District will be continuing to collect field data through CSO inspections following rain events as well as

select manual monitoring (blocking) of specific sites to provide additional data to support the models' calibration and verification.

Overflow Discharge Characterization

Another component of the Districts plan to characterize CSO impacts is the outfall water quality sampling program. This program is being conducted at 20 outfall locations (10 CSOs, 4 SSOs, and 6 storm water outfalls) for 10 rainfall events and includes synoptic sampling at SIUs. Figure ES-9 shows the locations of the CSO sampling sites and the tributary SIUs. This program will allow for more detailed knowledge of constituents entering the surface water system during overflow activity in lieu of using information based on national averages. The goal of selecting these sites was to gain an overall understanding of the spatial and temporal nature of the overflows and associated water quality in the District's system. Results will be used to develop concentrations and pollutagraphs for input to the water quality models that are currently being refined by the District's Watershed Team. More detail is included in section 4.9 and Appendix D.

Figure ES-9 Water Quality Sampling Sites



SECTION 1 INTRODUCTION

This section introduces the Nine Minimum Controls (NMCs), and provides a brief background on the District's past compliance documentation, the Consent Decree requirements, and the objectives of this report.

1.1 Federal Background

In 1994, the United States Environmental Protection Agency (USEPA) developed the CSO Control Policy to provide guidance to permittees with CSOs, to ensure coordination among the appropriate parties in various levels of CSO practices, and to facilitate public involvement during the process. As stated in the USEPA publication "Guidance for Nine Minimum Controls", (USEPA, 1995), one of the expectations of the CSO Policy is that "Permittees should immediately implement the nine minimum controls, which are minimum technology based actions or measures designed to reduce CSOs and their effects on receiving water quality, as soon practicable but no later than January 1, 1997". NMCs are generally defined as low cost, easy-to-implement action items that an authority/municipality should utilize to reduce CSO and improve receiving water quality:

1. Proper operation and regular maintenance programs for the sewer system and CSO outfalls;

2. Maximum use of the collection system for storage;

3. Review and modification of pretreatment requirements to ensure CSO impacts are minimized;

4. Maximization of flow to the POTW for treatment;

5. Elimination of CSOs during dry weather;

6. Control of solid and floatable materials in CSOs;

7. Pollution prevention programs to reduce containments in CSOs;

8. Public notification to ensure that the public receives adequate notification of CSO occurrences and CSO impacts; and,

9. Monitoring to effectively characterize CSO impacts and the efficacy of CSO controls

1.2 Sanitation District No. 1 of Northern Kentucky Background

As further discussed in Section 3.0 (System Characterization), the Sanitation District No. 1 of Northern Kentucky (the District), was established in 1946 to provide wastewater treatment to municipalities in Northern Kentucky. The District operated the Bromley wastewater treatment plant (WWTP) from 1954 to 1979. Due to the growing population in Northern Kentucky and more stringent environmental regulations, the Bromley WWTP was replaced by the Dry Creek WWTP in Villa Hills. In the mid-1990's, legislation adopted by the Kentucky General Assembly changed the District from a regional wastewater conveyance and treatment purveyor to essentially the owner/operator of every sanitary and flood sewer system in Boone, Kenton, and Campbell Counties in Northern Kentucky except for the cities of Walton and Florence. As a result, in 1995, the District's responsibilities grew exponentially – from over 120 miles of sewer to almost 1,400 miles of sewer and the addition of over 100 pump stations and 9 wastewater treatment plants. Most importantly, as it relates to the CSO policy, the District became the permit holder for all CSOs. Until 1995, the District did not own or operate any CSOs.

In July 2002, the District issued their *Compliance with Nine Minimum Controls and Combined Sewer Overflow Plan Progress Update to the USEPA* (SD1, 2002). The progress update documented the District's continued compliance with each of the nine minimum controls and provided a list of CSO abatement projects that were currently underway so as to demonstrate their intended commitment to NMC compliance.

USEPA Region 4, along with its contractor (Science Applications International Corporation), conducted an inspection in August 2004 and then issued a NPDES Compliance Evaluation Report on the District's NMC compliance in July 2005 (USEPA, 2005). The report evaluated the District's performance with regard to the NMCs and stated that the District was not completely in compliance with the NMCs. The Evaluation Report was critical of the District's NMC compliance efforts to date – eight of the nine NMCs received a "not fully implementing this NMC" rating from the USEPA. Additionally for the one exception, NMC#7 (Pollution Prevention), the USEPA wrote that "the implementation of NMCs 1, 3 & 6 will also benefit this NMC".

1.3 Watershed Consent Decree

A Consent Decree between the Sanitation District No. 1 of Northern Kentucky, the USEPA, and the Commonwealth of Kentucky was entered by a Federal court on April 18, 2007, that requires the District to finalize, develop, submit, and implement plans for the continued improvement of the separate sanitary sewer system (SSS), combined sewer system (CSS), and the District's waste water treatment plants (WWTPs) and water reclamation facilities (WRFs). The Consent Decree addresses sanitary sewer overflows (SSOs) and discharges from the combined sewer overflow (CSO) outfalls which are currently identified or will be identified in the future in any Kentucky Pollutant Discharge Elimination System (KPDES) permit issued to the District.

As part of this agreement, the District was tasked to provide "documentation demonstrating the status of the District's compliance with the NMCs for CSOs as set forth in the CSO Control Policy and, if the District cannot document in the submittal that all NMC requirements are being met, the submittal shall include proposed projects to be performed with compliance schedules for ensuring compliance with the NMC is achieved within 24 months of the entry of the Decree" (Paragraph 35).

1.4 Report Objective

The enclosed report is intended to fully satisfy the NMC compliance requirements outlined in the Consent Decree and has been prepared in accordance with the previously discussed USEPA publication "Guidance for Nine Minimum Controls". It is the objective of the Report to demonstrate the District's current and proposed level of compliance with each of the NMCs. Each NMC will be discussed in further detail in the ensuing sections of this report.

The District recognizes that compliance with the NMCs is an ongoing process, which is why regular updates are necessary. Even when requirements are achieved, their implementation is perpetual and compliance must be sustained and documented regularly.

SECTION 2 ORGANIZATIONAL STRUCTURE AND STAFFING

This section provides a detailed description of the District's organization and staffing and begins to introduce the individual positions and departments who are responsible for compliance with the Nine Minimum Controls. Additionally, Section 4.1, Proper Operation and Maintenance Programs for the Sewer System and CSO Outfalls, provides additional detail on staffing related to NMC compliance.

The District is governed by a Board of Directors, with the daily operational activities supervised by the General Manager and the District's management team and carried out by a staff of over 220 employees within 4 operating departments.

2.1 Board of Directors

The District is governed and operated by a Board of Directors (Board). The Board consists of eight Directors from Boone, Campbell and Kenton counties, and members serve four-year overlapping terms. Four Directors are appointed by the Kenton County Judge Executive, two are appointed by the Campbell County Judge Executive, and two are appointed by the Boone County Judge Executive. Representation on the Board of Directors is determined by the populations of the counties which comprise the District.

The Board is required to employ a General Manager to act as administrative officer for all District operations and who is responsible to the Board to execute the policies adopted by formal action of the Board and generally to supervise and to direct the District's daily operations.

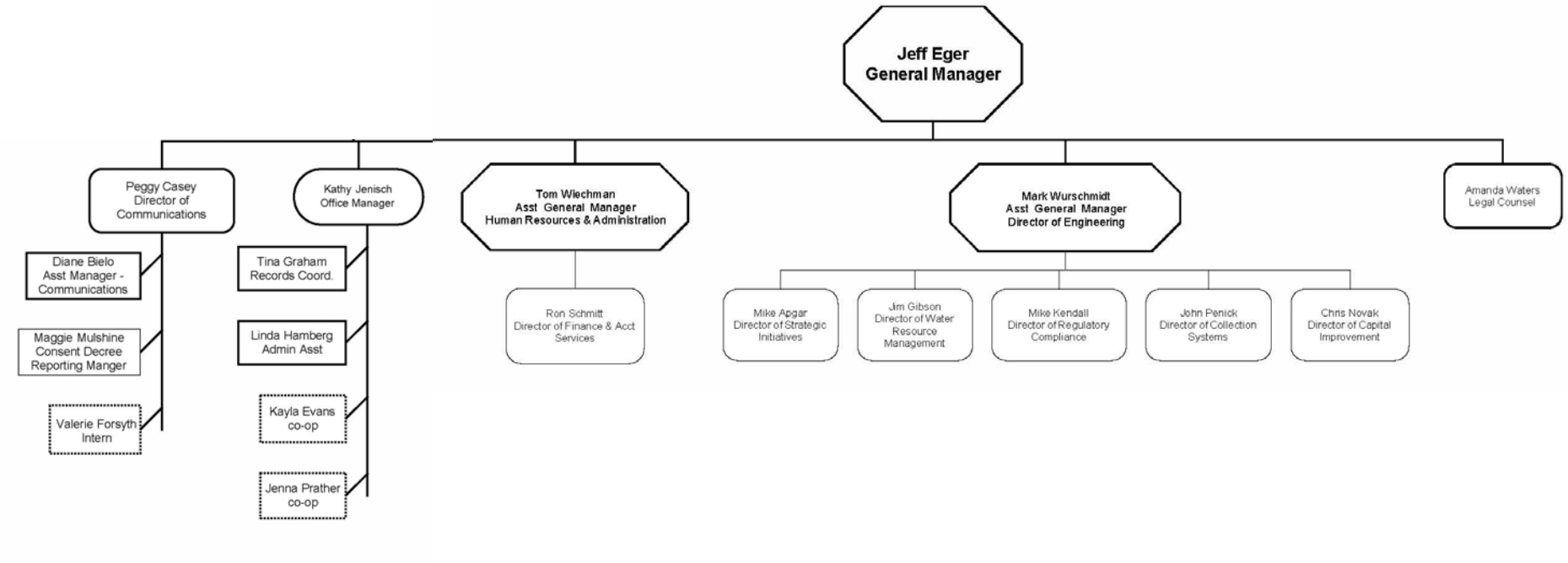
2.2 Management Team

The management team is responsible for overseeing the District's daily operations and employees. The management team organizational chart is shown in Figure 2-1 and a detailed description of key management roles is provided below:

A. General Manager: Responsible for executing District policies and directing daily operations. The General Manager must prepare and submit an annual budget for consideration and approval by the Board and provide a monthly operating statement at each Board of Directors meeting. The General Manager is also responsible for the employment of all District personnel.

B. Assistant General Manager Human Resources & Administration: Responsible for managing the Human Resources and Administration Department and all aspects of the District's Human Resources operations including staffing, employee benefits, payroll, regulatory compliance and employee development. The Assistant General Manager Human Resources oversees the Account Services and finance, Safety, Information Technology, Purchasing and Employee Benefits and Development.

Figure 2-1: Management Team Organizational Chart



C. Assistant General Manager Director of Engineering: Responsible for the management of the Engineering Department, including capital improvements, water resource management, regulatory compliance, plan review, and collection systems. All sewer line and treatment plant projects are completed under the supervision and coordination of the Engineering Department.

D. Director of Strategic Initiatives: Responsible for the management of the District's efforts in governmental affairs and strategic planning. In addition, this group manages the District's storm water capital improvements program and is responsible for developing a plan for the storm water asset transfer (further explained in Section 3).

E. Director of Communications: Responsible for overseeing the District's public information and outreach efforts. These responsibilities include developing and implementing the District's public relations strategies; production of all written publications, including educational materials and BMPs, coordinating public hearings, workshops and focus groups, managing the District's website, and Consent Decree reporting.

F. Director of Water Resource Management: Responsible for the coordination and implementation of the District's watershed management programs and the Phase II regional storm water permit program.

G. Director of Regulatory Compliance: Responsible for overseeing Field Technical Services including operation and maintenance of all the WWTPs, pump station operation and maintenance, overseeing flow monitoring, assessment of the condition of the collection system infrastructure as it relates to wet weather issues and combined sewer overflow inspections.

H. Director of Capital Improvement: Oversees all of the infrastructure improvements of the District, which includes sewer lines, treatment plants and pump stations. The department staff includes engineers, technicians and inspectors.

I. Director of Collection Systems: Responsible for overseeing the District's Collection Systems Department. The Director of Collection Systems coordinates the use of nearly 80 pieces of major equipment and supervises sewer maintenance of currently over 1,600 miles of sewer line in Northern Kentucky.

J. Director of Finance & Account Services: Responsible for overseeing the Customer Billing, Customer Service and Accounting Departments.

K. Legal Counsel: Responsible for coordinating and managing the District's legal matters, providing staff with legal support and advice, interpreting and enforcing

the District's Rules & Regulations, assuring compliance with state and federal law and working closely and cooperatively with outside counsel.

2.3 Operating Departments

The District manages Northern Kentucky's sanitary and combined sewer systems through four operating departments: Administration, Engineering, Collection Systems, and Field Technical Services. Each of these departments plays a role in the District's Nine Minimum Controls compliance efforts. Discussion on each of the four operating departments is provided below:

A. Human Resources & Administration: The Human Resources & Administration Department is responsible for managing purchasing, human resources, information technology, and accounting. It is directly overseen by the Assistant General Manager of Human Resources and Administration, who reports to the General Manager, and includes other administrative positions.

   The Administrative Department staff consists of approximately 33 full-time positions, 1 part-time position, and 3 co-ops. The Administration Department's organizational chart is included as Figure 2-2.

B. Engineering: All sewer line and treatment plant projects are completed under the supervision and coordination of the Engineering Department. The Engineering Department is directly overseen by the Assistant General Manager Director of Engineering and staff consists of approximately 46 full-time positions, 1 part-time position, and 2 co-ops/interns. This department is supervised by the Assistant General Manager Director of Engineering, who reports to the General Manager.

   There are 3 groups included within the Engineering Department: Plan Review, Regulatory Compliance, and Capital Improvements. Regulatory Compliance includes the Flow Monitoring group, which is responsible for installing and maintaining flow meters, inspecting CSO diversions and outfalls, and reporting overflows. The Engineering Department's organizational chart is included as Figure 2-3.

C. Water Resource Management: Water Resource Management is directly overseen by the Director of Water Resources, who reports to the Assistant General Manager Director of Engineering. The Water Resource Management Department includes the Watershed Group and the Storm Water Group. The Water Resource Management Department's organizational chart is shown in Figure 2-4.

Figure 2-2: Administration Department Organizational Chart

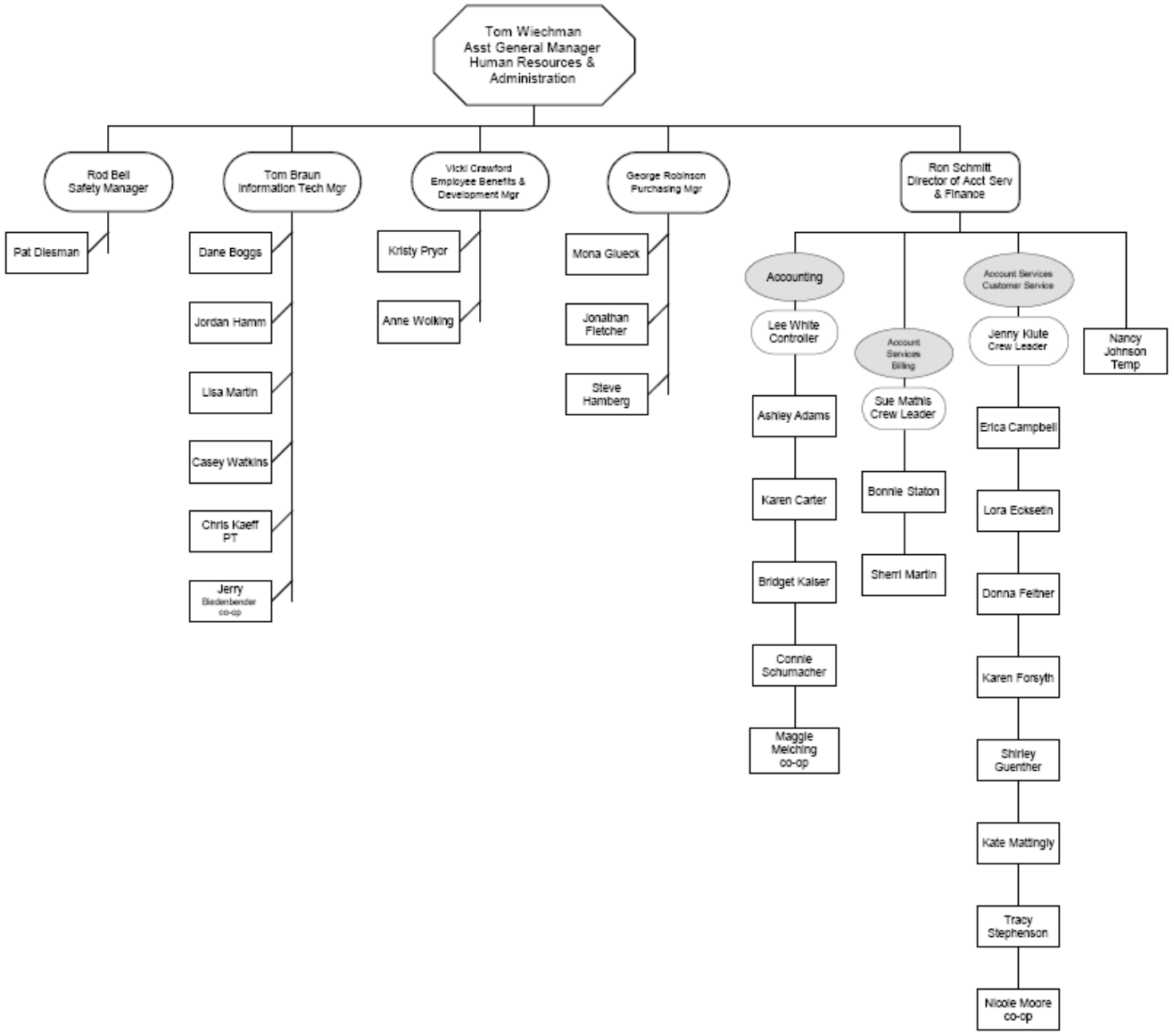


Figure 2-3: Engineering Department Organizational Chart

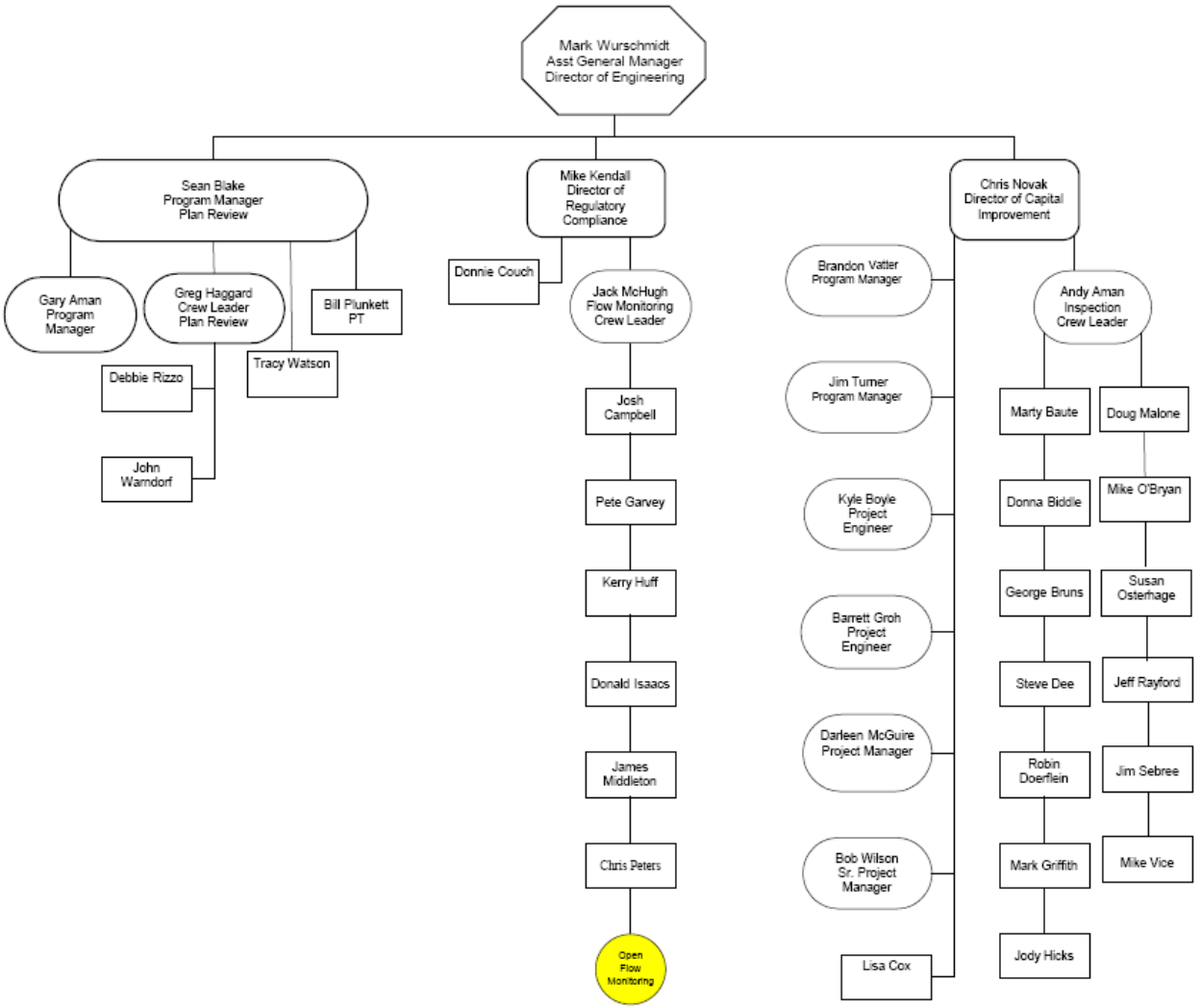
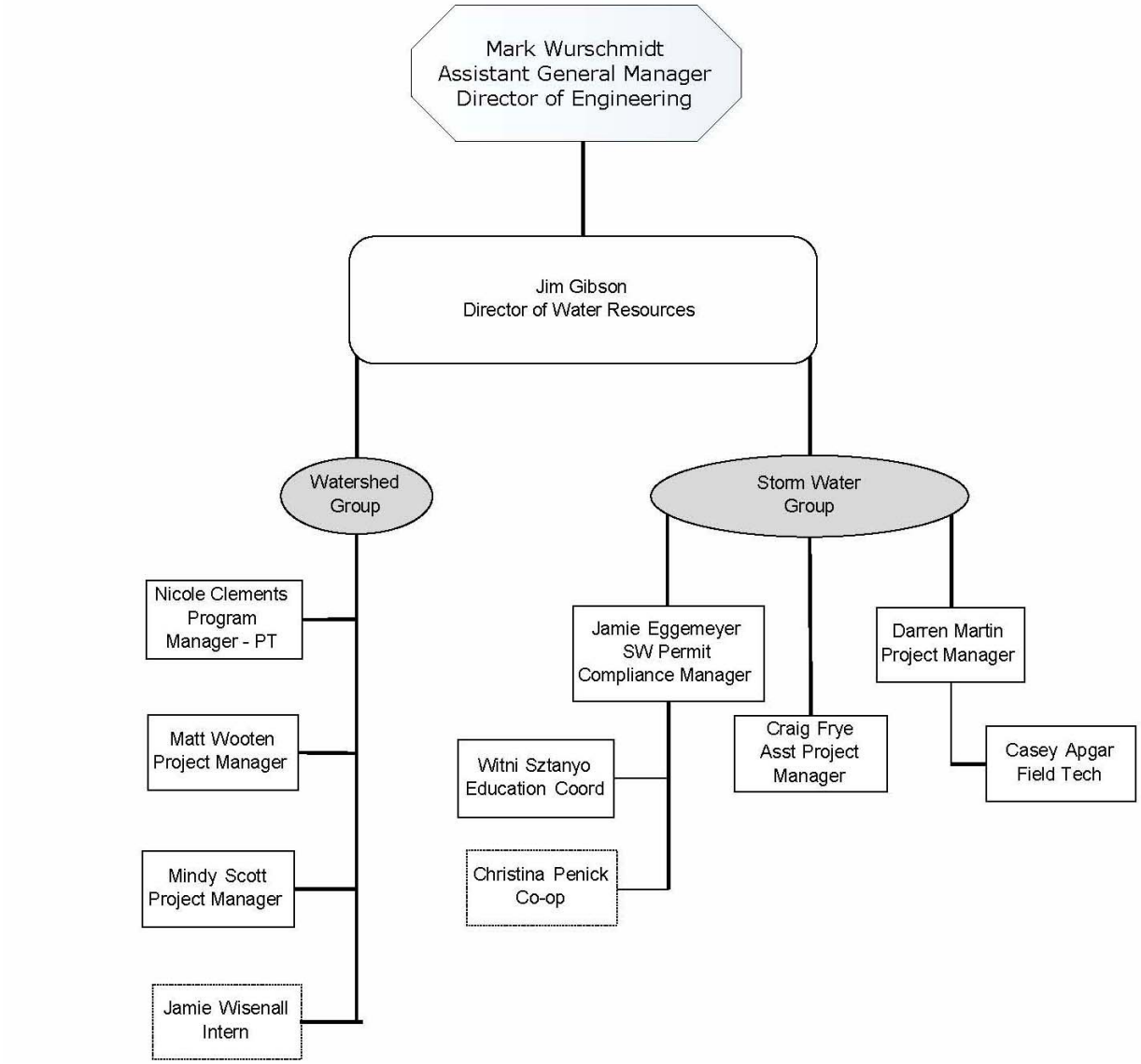


Figure 2-4: Water Resource Management Department Organizational Chart



D. Collection Systems: The Collection Systems Department manages the operation and maintenance of over 1,600 miles of sewer line.

The Collection Systems Department staff consists of approximately 89 positions. This department is supervised by the Director of Collection Systems who reports to the Assistant General Manager Director of Engineering.

Collection Systems is comprised of two groups, Customer Service and Construction. The Customer Service group is comprised of dispatch personnel, trouble call investigators, 5 CCTV crews and 7 vactor crews. This group is responsible for responding to and investigating trouble calls, cleaning and televising sewer lines in both the combined and separate sewer systems, cleaning catch basins in the combined sewer system only, and cleaning pump station wet wells. The storm sewers and catch basins in the separate sewer system areas are owned, operated and maintained by the local cities.

The Construction Group is comprised of personnel in charge of inventory, maintenance, equipment delivery, equipment refueling, stock material delivery, as well as six construction field crews. The construction field crews are responsible for collection system repairs and replacement. The Collection Systems organizational chart is included in Figure 2-5.

The District recently re-organized the Collection Systems Department to better support the ongoing Watershed Planning Initiative and to align with the newly created Continuous Sewer Assessment Program, which is described in detail in Section 4.1. This re-organization is reflected in Figure 2-5, which shows that the re-organization created several new positions that the District is working to fill.

E. Field Technical Services: The Field Technical Services Department manages two regional and four small wastewater treatment plants; with the largest regional plant being the Dry Creek WWTP in Kenton County with an average daily flow of 36 MGD, and which services the entire combined collection system. The new Eastern Regional Water Reclamation Facility and associated new collection and conveyance system in Campell County was put into service in September 2007 with an average daily flow of 1 MGD.

The Field Technical Services Department staff consists of approximately 71 full-time positions, 3 part-time positions and 4 co-ops. This department is supervised by the Director of Regulatory Compliance who reports to the Assistant General Manager Director of Engineering.

There are four groups within Field Technical Services: Plant Operations, Plant Maintenance, Pump Stations Operation, and Pump Stations Maintenance (see Figure 2-6).

The District operates and maintains 2 pump stations owned by the airport in addition to the 127 pump stations that are District owned and operated. In

addition, the District owns and operates the 15 flood pump stations. The Pump Stations Operations group performs inspections and does limited preventative maintenance such as greasing of equipment. The Pump Stations Maintenance group does normal maintenance and is sometimes supported by the District's Collection Systems Customer Service group if cleaning is required.

Figure 2-5: Collection Systems Department Organizational Chart

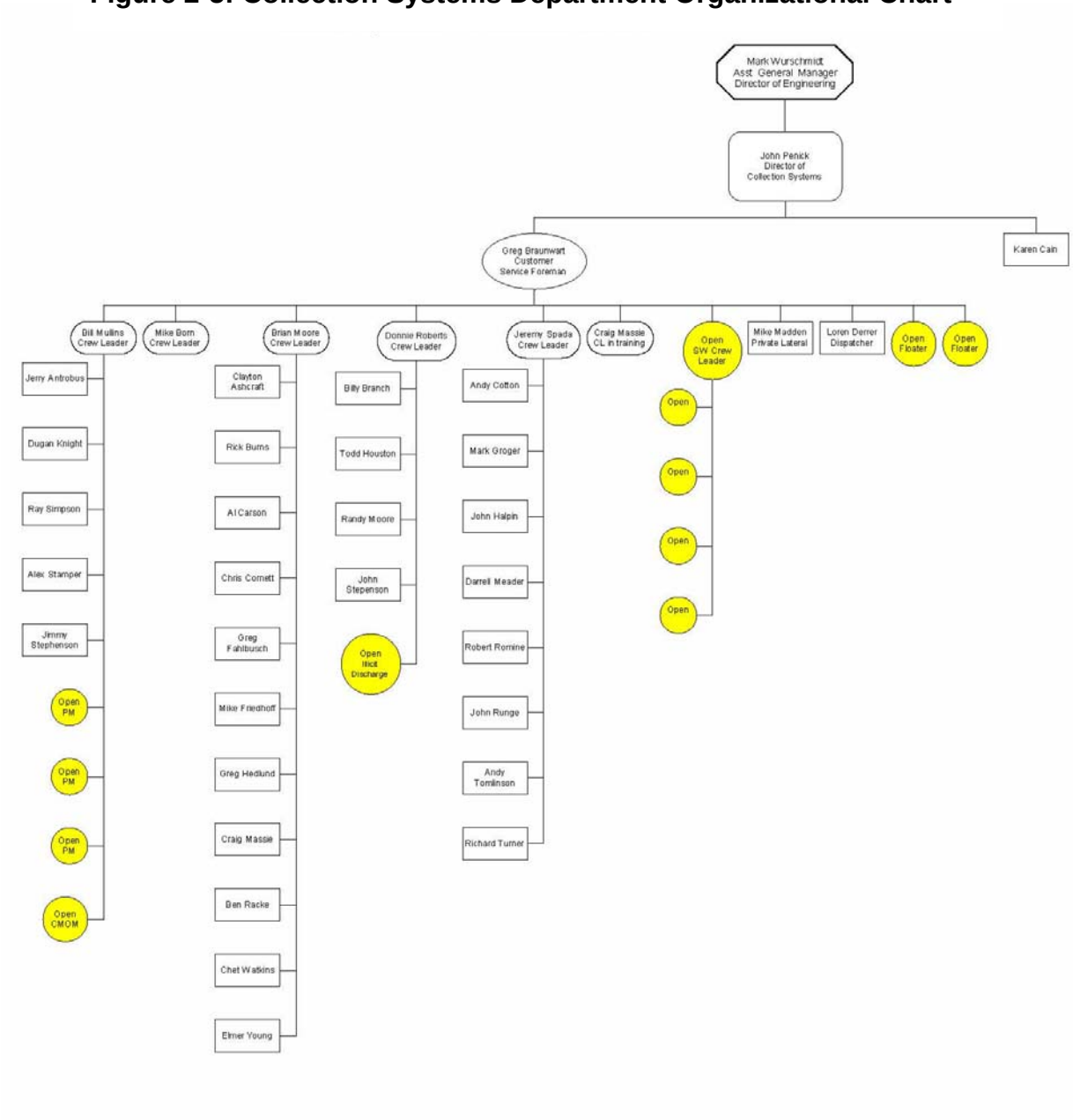


Figure 2-5 (Continued): Collection Systems Department Organizational Chart

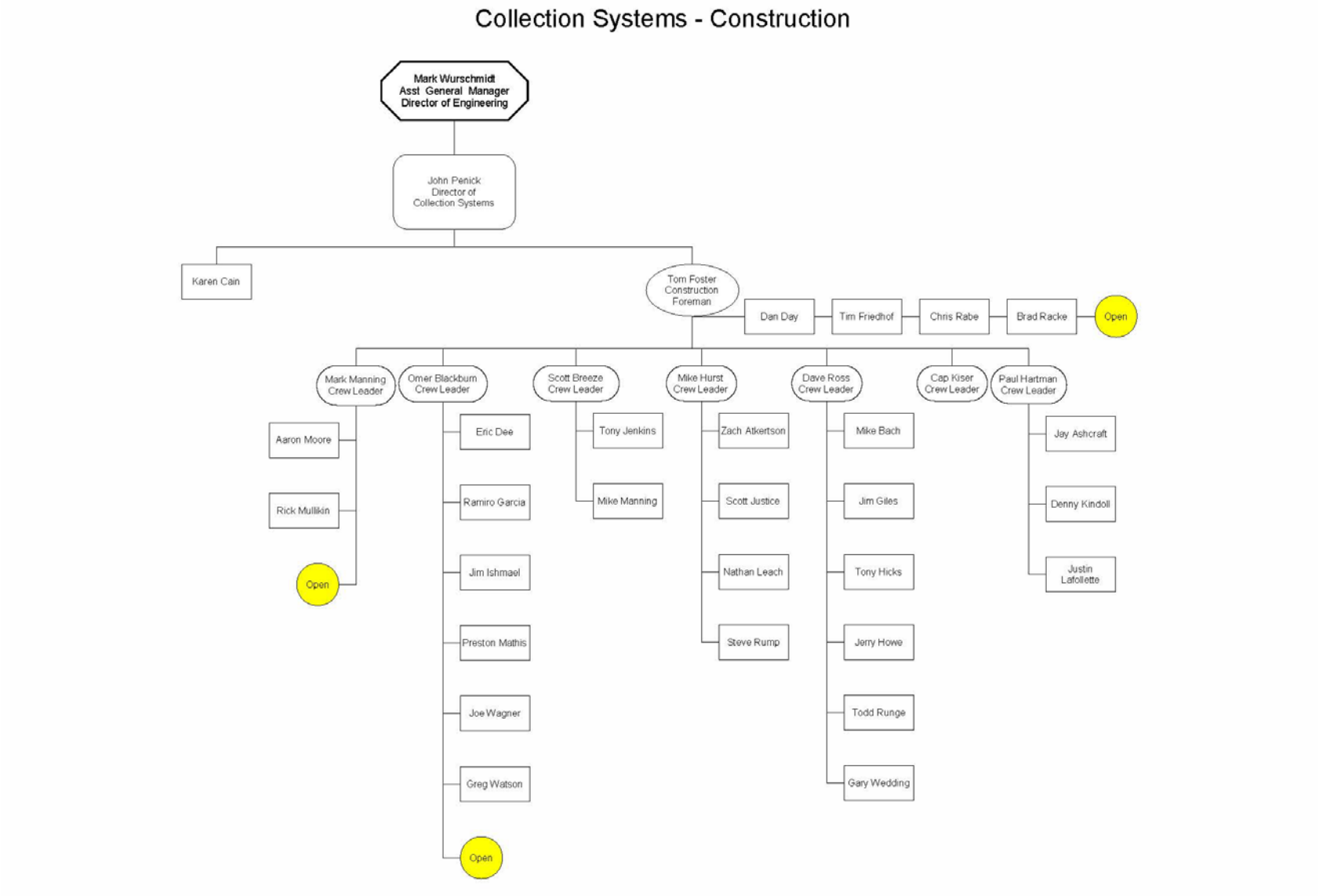


Figure 2-6: Dry Creek WWTP Operations Organizational Chart

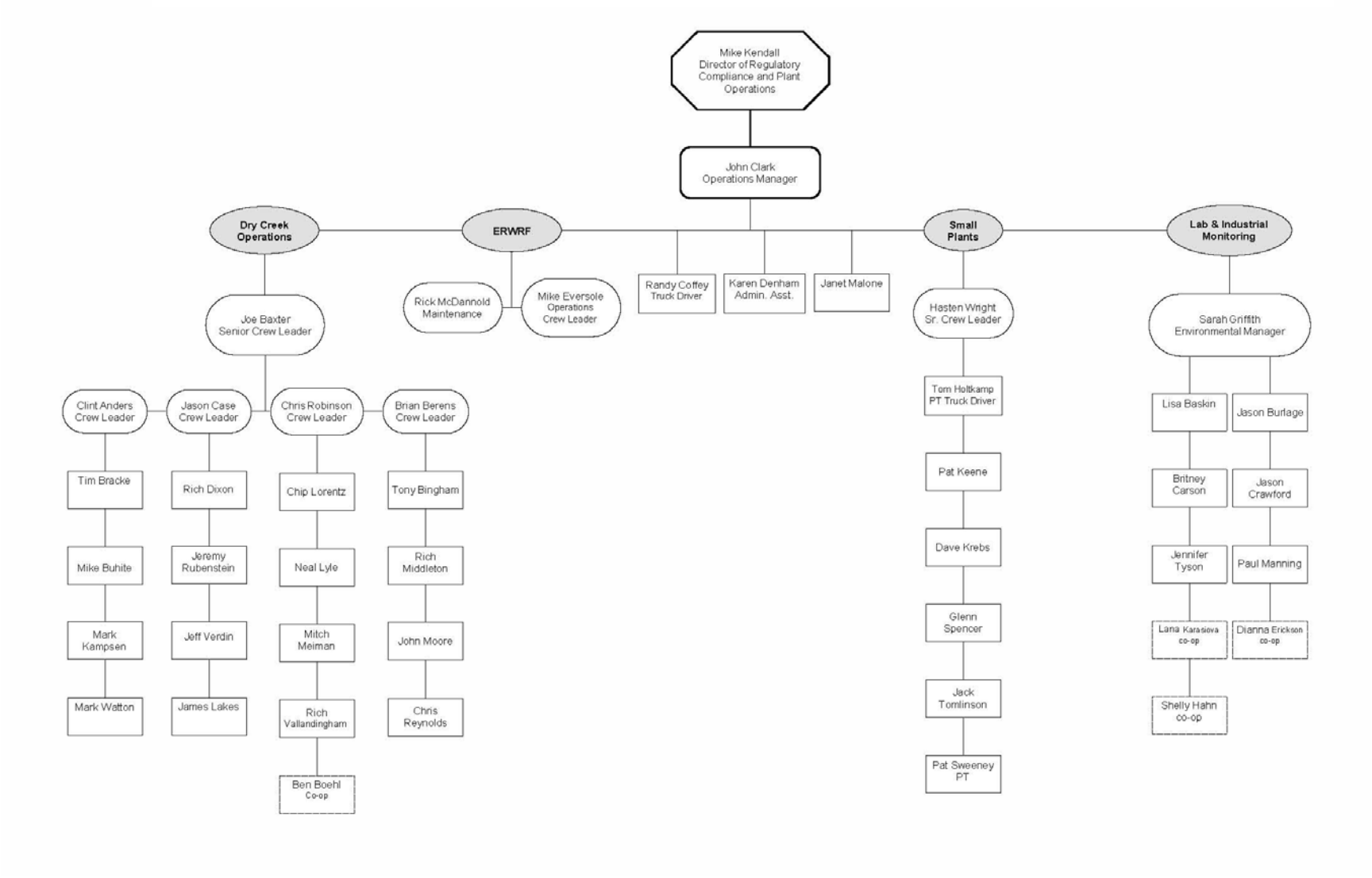


Figure 2-6 (Continued): Dry Creek WWTP Maintenance Organizational Chart

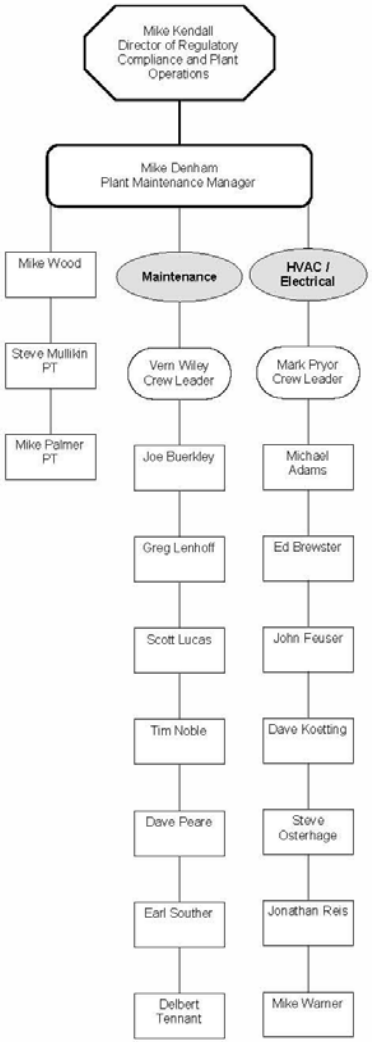
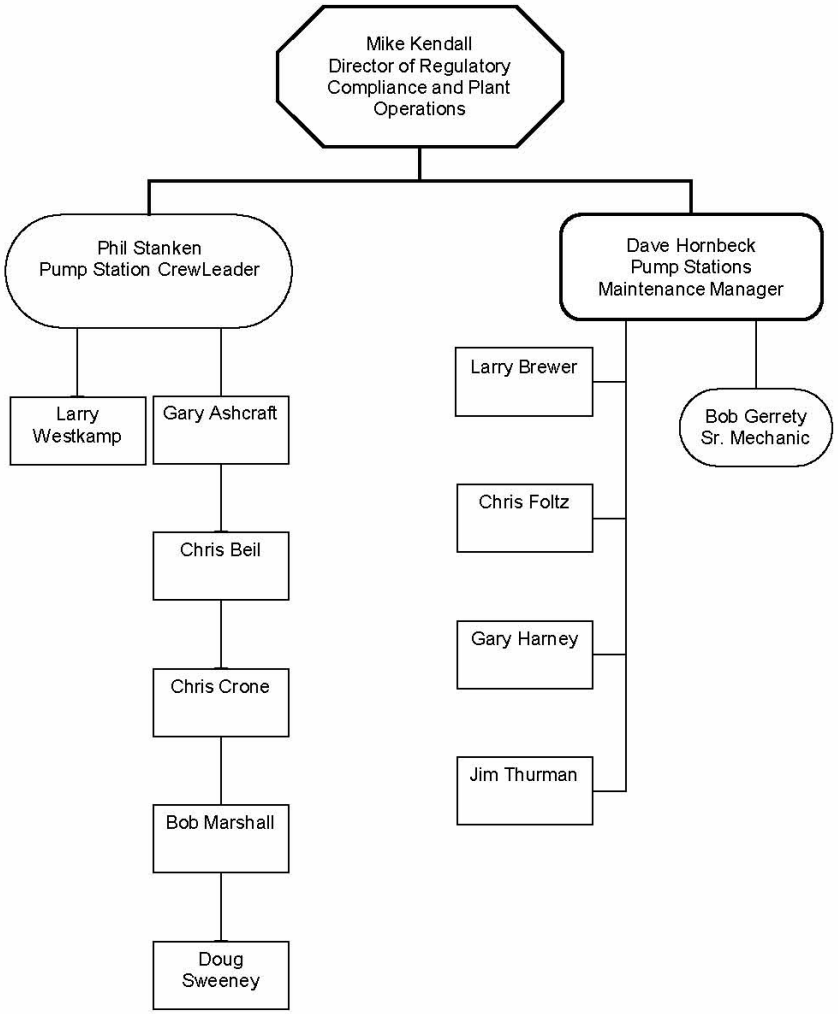


Figure 2-6 (Continued): Field Technical Services – Pump Stations O&M Organizational Chart



SECTION 3 WASTEWATER COLLECTION SYSTEM OVERVIEW

3.1 District Background/History

The District was established in 1946 by the Kentucky Board of Health under Kentucky Revised Statute Chapter 220. The District's mission is to "*provide affordable, sustainable protection of our water resources and enhance economic opportunities*". In 1954, the District completed construction on northern Kentucky's first wastewater treatment plant, which was located in the City of Bromley. The Bromley WWTP provided primary treatment for 17 communities in Campbell and Kenton counties. With the passage of more stringent environmental regulations, including the Clean Water Act in 1977, the Bromley WWTPs treatment capabilities eventually became outdated/obsolete. As a result, in 1979 the Bromley WWTP was replaced by the Dry Creek WWTP, a 30 MGD secondary treatment plant that is located in Villa Hills. In 1993, the Dry Creek WWTP was expanded to 46.5 MGD to accommodate the growing population base in northern Kentucky.

Up until the mid-1990's, each municipality within the District owned and was responsible for the operation and maintenance of the sewer infrastructure that conveyed the municipal flow to the regional interceptor system. The municipalities' responsibilities also included all Combined Sewer Overflows. The District was responsible for conveying the wastewater regionally, from each municipality to the treatment plant. However, in April 1994, Kentucky's General Assembly adopted legislation that gave each municipality the option to transfer the ownership, operation and maintenance responsibilities of their individual sanitary and combined sewer and drainage systems to the District as of July 1, 1995. On that date, 28 municipalities in northern Kentucky turned over the ownership and operational responsibilities of their sewer sanitary and/or combined systems to the District. On December 31, 1995, Boone County merged with the District, with most of the Boone County municipalities transferring their ownership and operational responsibilities of the sanitary sewer system to the District. In 1999, two of the hold-out municipalities – the cities of Independence and Alexandria – decided to transfer their ownership and operational responsibilities of the sanitary sewer system to the District.

At present time, the cities of Florence and Walton are the only municipalities in Campbell, Kenton and Boone counties that still retain ownership, operation and maintenance rights of their sanitary sewer systems. These asset transfers significantly increased the amount of infrastructure owned and maintained by the District. Table 3-1 shows the increase in infrastructure responsibilities when the District took over these systems.

Table 3.1 Sanitation District No. 1 Infrastructure Asset Comparison Pre 1995-Current

Asset	Before 1995	Current
Miles of sewer lines	128	>1,600
Sanitary Pump Stations	16	129 (2 are owned by the airport and maintained by the District)
Catch Basins	0	3,302
Flood Pump Stations	0	15
Combined Sewer Overflows	0	96 (see next section)

3.2 Wastewater Assets

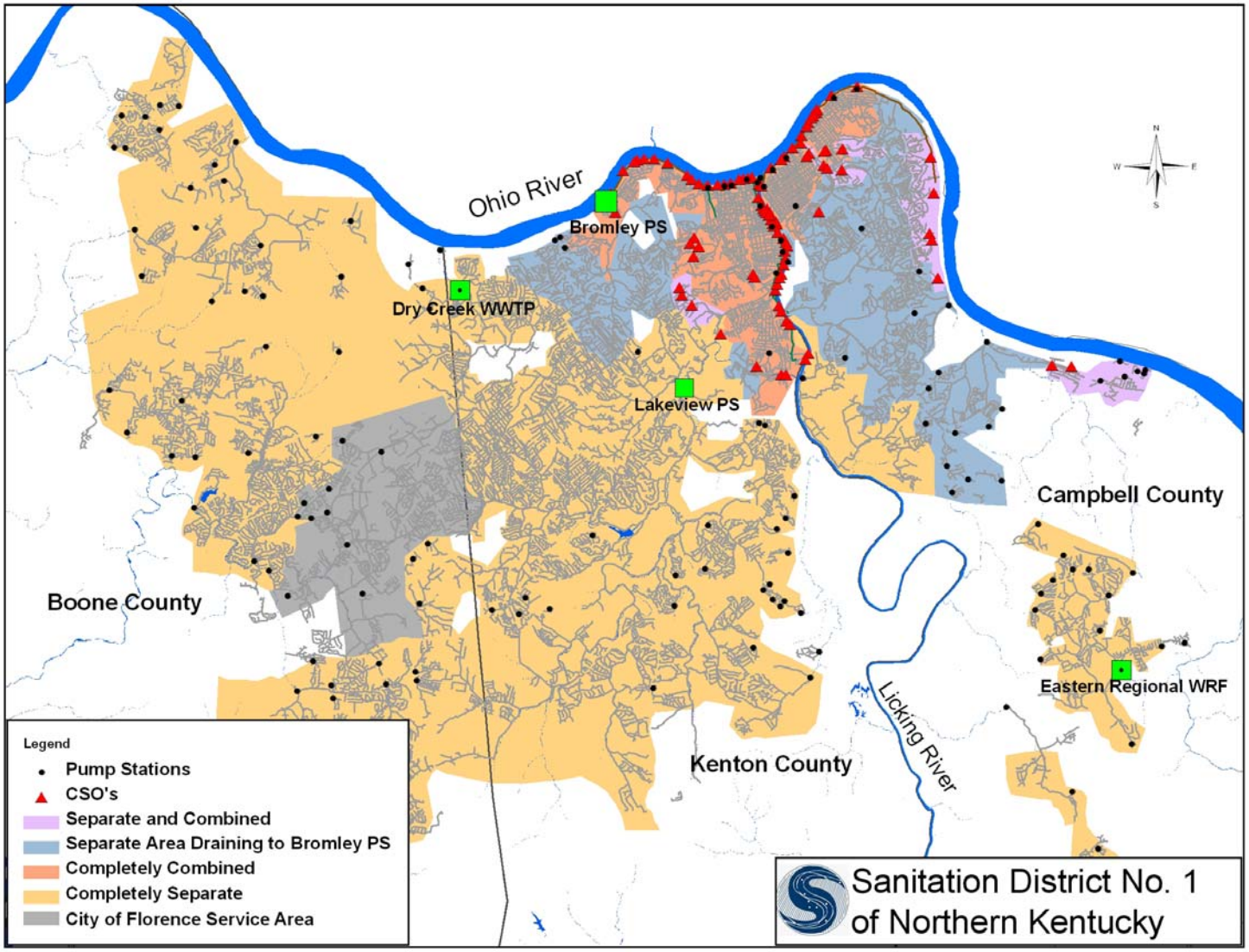
The District's current service area encompasses 200 square miles and includes approximately 90,000 customer accounts. The overall potential service area extends to essentially all of Campbell, Kenton, and Boone Counties except for Florence and Walton. Figure 3.1 shows the extent of the overall collection system. The District's collection and treatment systems are composed of approximately:

- 1,600 miles of sewer lines
- 47,000 manholes
- 3,302 catch basins in the Combined Sewer System (CSS)
- 129 pump stations
- 2 regional WWTPs
- 4 small WWTPs
- 15 flood pump stations
- 96 CSOs
- 137 diversion structures.

3.2.1 *Separate Sewer System*

The separate sewer system comprises 184 square miles, or 92% of the District's service area and approximately 1,250 miles or just above 75% of the total pipe length. The separate area also includes 124 pump stations. Figure 3.1 shows the boundaries of the separate sewer system. Sewers are shown in gray with areas outside the colored boundaries being undeveloped or outside the District's service area.

Figure 3.1 Sanitation District No. 1 Service Area Overview



3.2.2 *Combined Sewer System*

The CSS covers approximately 12 square miles and includes 260 miles of combined sewers located in the older river cities of Dayton, Bellevue, Newport, Covington, Ludlow and Bromley. Some portions of the combined system date back to the mid 1800's. The combined area also includes all 15 Flood Pumping Stations that protect the cities from flooding during elevated Ohio River and Licking River levels, as well as 5 sanitary wastewater pump stations that lift flow along the interceptors. Two of the sanitary pump stations (8th Street and Patton Street) are also Flood Pumping Stations. The Bromley Pump Station pumps all flows from the combined Sewer System to the Dry Creek WWTP. Figures 3.1 and 3.2 show the key features of the combined system, including locations of the CSOs, pump stations, grit pit facilities, and interceptor sewers.

Trunk Sewers and Interceptors

Flow from the combined trunk sewers is conveyed to the Bromley Pump station via the interceptor system. There are four main interceptors in the system as shown in Figure 3.2. These are the Ohio River Interceptor, Licking River Interceptor, 4th St. Interceptor, and the Willow Run Interceptor.

The Ohio River Interceptor also conveys flow from a portion of the separate sanitary sewer system as well as flow from areas with a mixture of combined and separate sewers as shown in Figure 3.2. These areas include approximately 21 square miles of separate area or about 13% of the separate system, and 4 square miles of area that comprises a mixture of sanitary and combined sewers. These areas will be investigated in greater detail during the development of the District's Watershed Plans.

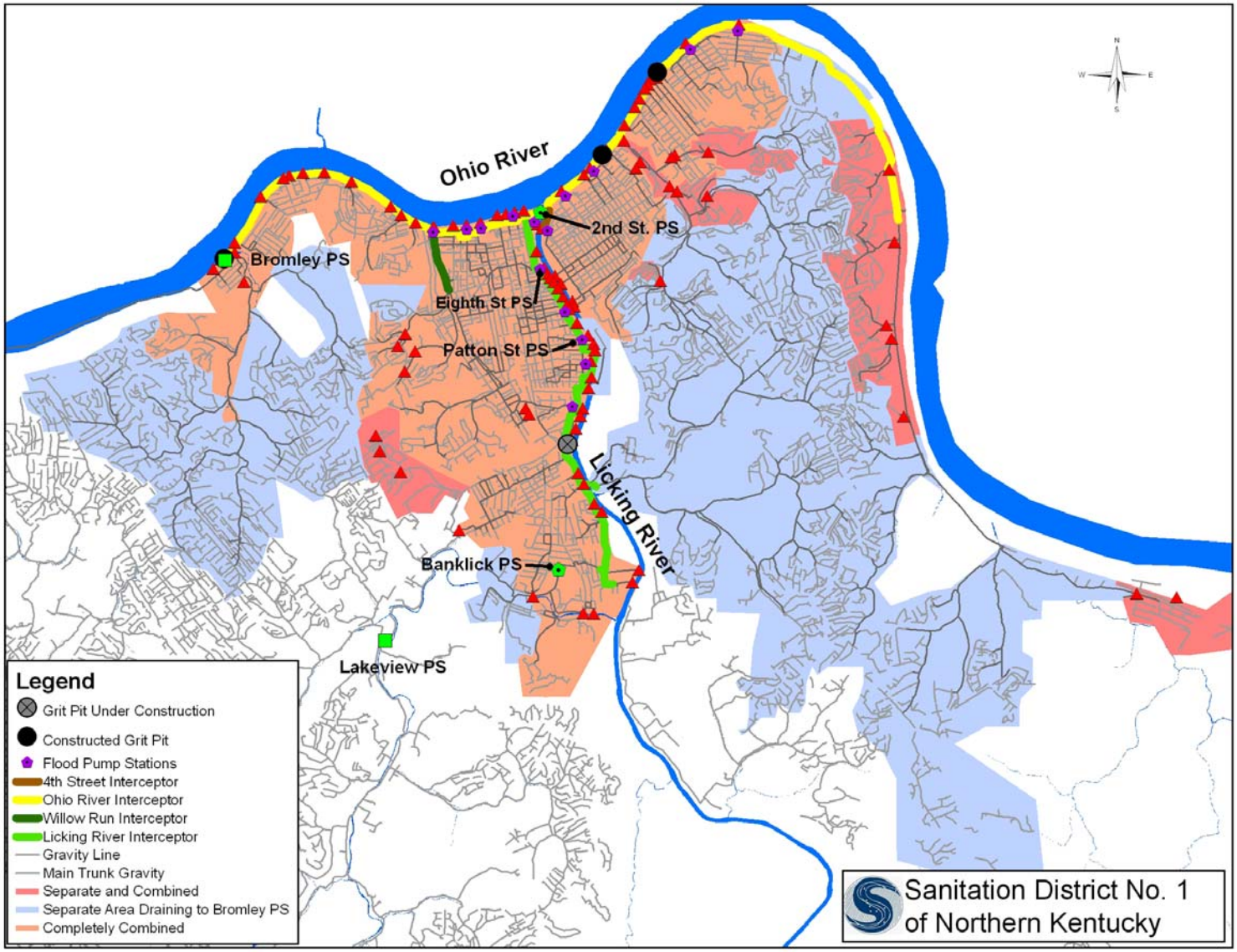
Combined Sewer Overflows

The District maintains a database of all CSOs, which is updated annually. In addition, the District has photos of all CSO locations and diversions on file. Currently there are a total of 96 CSO outfalls that receive flow from 137 diversions. Sixty nine (69) CSO outfall locations are currently 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. Figures 3.1 and 3.2 show the locations of each CSO.

Flood Pump Stations

As part of the infrastructure transfer in 1995, the District also received the existing flood protection pumping system infrastructure designed by the Army Corp of Engineers in the cities of Newport, Dayton and Covington. These areas are served by the combined sewer system, where high river levels result in intrusion of river water into the combined sewer system and widespread flooding and basement backups could occur if uncontrolled.

Figure 3.2 Sanitation District No. 1 Bromley PS Sewer Area



Overall, the flood protection system consists of almost 5 miles of earthen levee, 1.7 miles of concrete/steel sheet piling flood wall, 15 flood pump stations and approximately 72 flood control/sluice gates. The flood protection system was designed by the Army Corps of Engineers and is operated at pre-determined levels by the District consistent with the Flood Protection Operation and Maintenance manuals developed by the Army Corps. Portions of the sewer system are isolated using flood control gates from the Ohio River, Licking River and the Dry Creek WWTP. While the flood system is operational, flow is routed to the flood pump stations using the flood control gates and flow is pumped to the river side of the levee/flood wall. The design and operation of the flood protection system has a significant impact on the combined sewer system and the ability to convey and treat flow at the Dry Creek WWTP during elevated river levels.

Catch Basins in Combined Sewer System

The District owns and maintains 3,302 catch basins in the combined sewer system. In 2007, the District conducted an inventory and detailed inspection of all of the catch basins in the combined sewer area. While the District does clean and maintain the catch basins and associated structures, the individual cities are responsible for removing blockages and cleaning debris at the street-level entrance to the catch basins.

Grit Pits

The District currently has 3 Grit Pits located along the Ohio River interceptor to help reduce the amount of grit material that settles in the pipes and at the pump stations (see Figure 3.2) in order to maximize capacity in the interceptors. A fourth grit pit is currently under construction along the Licking River Interceptor, and two replacement diversions have been designed and are under construction in Dayton, which will collect grit and control floatables. Additional locations are being evaluated. The Bromley (May 2004) and Newport (June 2007) grit pits have been in operation the longest and remove an average of 14 CYs and 11 CYs of grit per month, respectively, that would normally settle in the interceptor and pump station wet wells and restrict the District's capability to maximize capacity of the existing interceptors and convey flow to treatment.

3.3 MS4 Storm Systems

Pursuant to legislation enacted by the Kentucky General Assembly in 1998 and inter-local agreements with the affected northern Kentucky municipalities, the District became responsible for overseeing a regional stormwater management program for over 30 communities in Boone, Campbell and Kenton counties in accordance with USEPA NPDES Phase II MS4 regulations. The District is currently the regional storm water management agency and is responsible for the development and implementation of the area's Storm Water Management Plan. Included among the District's storm water management duties are the following:

- Detection and elimination of illegal connections;
- Educating the public on storm water issues;
- Development and enforcement of storm water regulations and permitting guidelines;

- Submission of an annual storm water report to the Kentucky Division of Water (KDOW); and,
- Encourage the use of best-management-practices (BMPs) to mitigate storm water discharge.

Currently, the 30 plus municipalities in Campbell, Kenton and Boone counties that turned over their sanitary, combined, and flood control sewer systems to the District in the 1990's continue to retain ownership and operational responsibilities of their individual storm sewer systems.

The District is currently undergoing a study to evaluate the feasibility of transferring ownership of some or all of the stormwater assets similar to the asset transfer of the sewer assets in the late 1990's. Stormwater-based capital improvements initiated by the cities are done under cost-sharing agreements between the District and the MS4 communities.

3.4 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 WRF began accepting flow on September 24, 2007 after nearly three years of construction. The Eastern Regional WRF service area is entirely separate. It was constructed to eliminate recurring SSOs due to deteriorated infrastructure, and to replace and receive the sanitary flows from the City of 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 the Dry Creek WWTP and Eastern Regional WRF, 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.

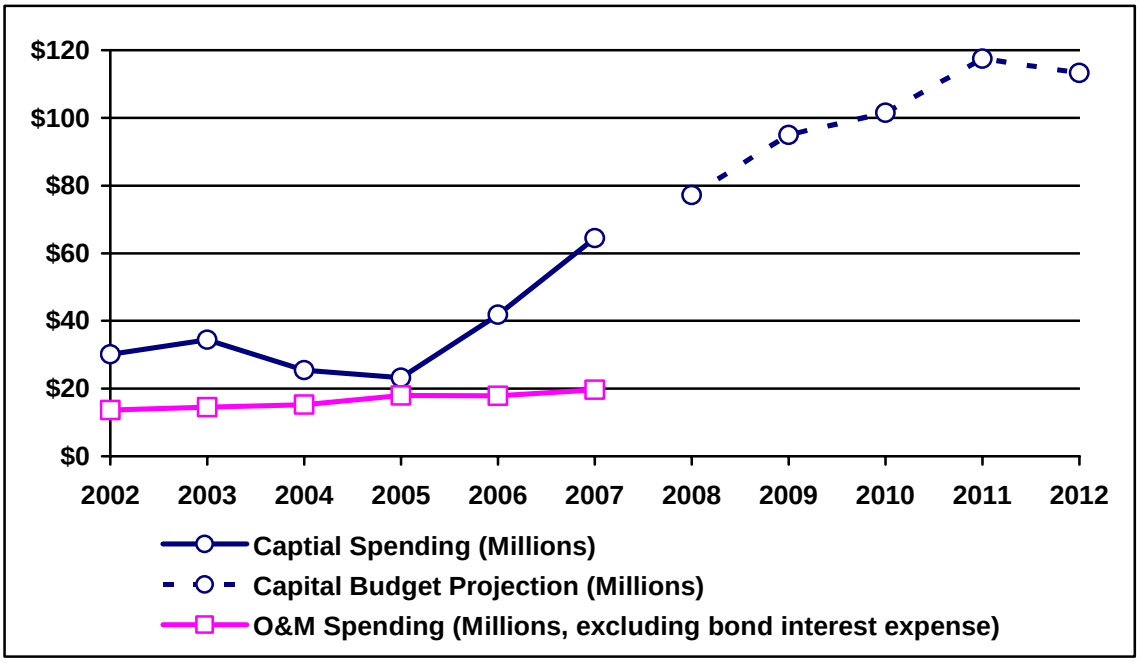
Table 3.2 WWTP List and Applicable KPDES Permit Numbers

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

3.5 Capital and Operations and Maintenance Budget

The District is committed to providing the resources necessary to be compliant with the Nine Minimum Controls. Figure 3.3 shows the District's actual capital and O&M spending for the period from 2002 through 2007 and the projected capital budget for the years 2008 through 2012. As shown in the figure, the District's capital spending for Fiscal Year 2007 was $64.44 million, which equates to a 54% increase over 2006 capital spending and a 178% increase since 2005. Additionally, the District's O&M spending increased an average of almost 8% per year from 2002 through 2007. Furthermore, through 2012, the District's capital budget is projected to increase an additional 76% over the 2007 capital spending to support the ongoing compliance with the NMCs as well as other Consent Decree related activities.

Figure 3.3 Capital Spending and Budget Projections (2002 through 2012)



SECTION 4 NINE MINIMUM CONTROLS

4.0.1 *Introduction*

The CSO Control Policy promulgated on April 19, 1994 established a consistent national approach for controlling discharges from CSOs. As its first milestone, the CSO Control Policy required utilities with combined sewer systems to implement the nine minimum controls, which are technology-based actions or measures to minimize the impacts of combined sewer overflows on water quality. The Consent Decree requires that the District shall submit to the Cabinet/USEPA for review and joint approval within 12 months of entry, documentation demonstrating the status of the District's compliance with the NMCs for CSOs as set forth in the CSO Control Policy and, if the District cannot document in the submittal that all NMC requirements are being met, the submittal shall include proposed projects to be performed with compliance schedules for ensuring that compliance with the NMCs is achieved by no later than twenty-four months after entry of the Consent Decree. In doing so, the Consent Decree acknowledges that the nine minimum controls are not one time actions and should be incorporated and documented as part of long-term efforts to control CSO impacts.

The purpose of this section is to document the activities and measures that have been and will be undertaken by the District to comply with the nine minimum controls as required by the Consent Decree and CSO Control Policy.

4.0.2 *Past Compliance Documentation*

The District first reported on their nine minimum control compliance activities as part of the Short-Term CSO Control Plan in 1995 (Woolpert, 1995). An update was submitted in 2002 (SD1, 2002), and again in 2004 (SD1, 2004) in response to the USEPA's Section 308 information request in May of that year. Later that year, representatives of the USEPA, Region IV, their contractor, and the Kentucky Department of Environmental Protection visited the District and performed an inspection of the Dry Creek WWTP, numerous pump stations, and several CSO diversions. Based on this inspection and the District's earlier Section 308 response, the USEPA reported their findings and recommendations in a report dated July 2005 (USEPA, 2005).

The District also submits information concerning their nine minimum controls compliance in their Wet Weather Annual Reports. These reports include discussion on general compliance status as well as details on specific projects that support various NMCs.

4.0.3 *Nine Minimum Controls Compliance Measures*

The sections that follow present detailed descriptions of the measures taken by the District to comply with the nine minimum controls. These compliance efforts are in direct response to the Consent Decree requirements, to the guidance provided in the CSO Control Policy and the USEPA's Guidance for Nine Minimum Controls, and take into account the findings and recommendations listed in the 2005 NPDES Compliance Evaluation Report. Where appropriate, actions relating to specific requirements or recommendations from the 2005 Compliance Evaluation Report are highlighted.

4.1 Proper Operation and Regular Maintenance Programs for the Sewer System and CSO Outfalls

Proper operation and maintenance of the collection system is critical to ensure that the system operates at its design level of service. Even though NMC guidance focuses on traditional O&M of facilities and structures related to combined sewer overflows, a comprehensive O&M program really includes all aspects of service, including the structural and maintenance condition of the combined sewer collection system. To this end, the District is implementing an integrated Asset Management approach to the operation and maintenance of both the separate and combined sewer systems. The District had developed in coordination with the District's CMOM efforts, a Continuous Sewer Assessment Program that comprises both the combined and separate sewer systems. Furthermore, while NMC 1 is typically seen as focusing on the CSS, the District recognized the need to develop an overall program (including staff resources, equipment, and software tools) to assess, clean, rehabilitate, and repair both the CSS and SSS. This approach will maximize efficiency and effectiveness of the District and prevents the development of institutional silos within the organization. As a measure of the District's current commitment to O&M, in 2007 about $20 million was spent for O&M in the collection system and has increased an average of 8% per year over the last 5 years. See Section 3 for more detail.

Within the overall program, the District's approach recognizes that there are features, assets, and objectives within the CSS that are different than in the SSS. Overall, the main goal of CSS O&M is to minimize spill frequency and to eliminate dry-weather overflows. Some of the key assets within the CSS and their associated O&M characteristics include:

1. **Diversions**: Proper operation and maintenance of diversions is critical to prevent dry-weather overflows and to maximize the diversion of flow into the interceptor for conveyance to treatment. Key O&M activities include frequent surface inspections, cleaning, and record keeping.

2. **Catch basins**: Proper operation and maintenance of these assets is needed to maintain their function which can vary depending on the type of catch basin and to help reduce the volume of solids and floatables entering the combined sewers. Key O&M activities include inspection, cleaning and record keeping.

3. **Combined trunk sewers**: Proper operation and maintenance of these assets is needed to prevent costly and dangerous sewer collapses and to maintain capacity to avoid surface flooding as well as damage to property. Key O&M activities include CCTV inspection, cleaning, record keeping, and rehabilitation and replacement.

4. **Interceptors**: Proper operation and maintenance of the interceptors is needed so that capacity is maximized to convey flow to the WWTP. Sediment and debris can severely restrict interceptor capacity and can

increase the frequency and volume of overflows. Key O&M activities include Sonar and CCTV inspection as well as targeted cleaning. The District has also constructed grit pit facilities along the interceptor that serve to prevent debris and grit from settling in the mainline interceptor and reducing capacity. Structural condition is also critical, as collapses of interceptors can be very expensive and cause large spills to the environment since they are the main artery of flow to the WWTP.

5. **Grit Pits**: Proper operation and maintenance of the grit pits is needed to prevent short circuiting that can cause grit to pass through and settle within the interceptor or cause re-suspension of previously captured grit. These grit pits serve to help with the operation and maintenance of the interceptor system to maximize capacity and flow to the WWTP. Key O&M activities include visual inspection and regular cleaning.

6. **Pump stations**: Proper operation and maintenance of the interceptor pump stations is critical since they convey flow from one portion of the interceptor to another. Loss of service of an interceptor pump station can result in significant dry weather spills. Key O&M activities include visual inspection, wet-well cleaning, preventative maintenance, and equipment repair/replacement.

This section of the NMC report includes a summary of the overall structure of the District staff since they all play a vital role in the O&M of the collection system. This section also includes a description of the District's CSAP that comprises both the combined and separate sewer systems. Other tools critical to the O&M of the collection system are also discussed. These measures are listed below and further described in this section:

- Operation and Maintenance Organization
- Information Management Tools
- Asset Operation and Maintenance

It is important to note that O&M efforts in the combined system are integral and coordinated with the CMOM program. More detail associated with overall collection system maintenance can be found in the District's CMOM Self Assessment Report submitted to the USEPA Region 4 and KDOW on October 18, 2007.

4.1.1 Operation and Maintenance Organization

The District's organizational structure is discussed in detail in Section 2. Additional information is provided here as it relates to the operations and maintenance of the combined sewer system.

A summary organizational chart of groups with responsibility over the collection system is shown in Figure 4.1.1, with the number of field staff in each group shown in

parentheses. Sewer system inspection, operation, and maintenance activities fall within the responsibilities of several specific groups; Collection Systems, Field Technical Services, and Engineering Regulatory Compliance. All of these groups are dedicated to the combined and separate sewer systems. Appropriate staffing levels will be key to the success of the District's O&M program moving forward. Since the last Compliance Evaluation in 2004, the District has increased its collection system staff by 21%.

4.1.1.1 Collection Systems Department

The Collections Systems Department is responsible for O&M of the gravity sewers as well as repair and replacement-related activities in the collection system. The Collection Systems department is broken into two subgroups, Customer Service and Construction. The Customer Service Group currently includes dispatch personnel, trouble call investigators, 5 field inspection crews, and associated Vactor and cleaning equipment. See Section 2 for the District's current organization charts for the Collection Systems department showing current staffing as well as projected additional staffing needs. There are approximately 38 positions in the Customer Service Group with plans to add several positions in preparation for implementation of the expanded O&M program. The other half of the department is the Construction Group. This department includes personnel for inventory, maintenance, equipment delivery, equipment refueling, stock material delivery, and 6 construction field crews. There are approximately 37 positions in the Construction Group.

Customer Service is responsible for responding to and addressing trouble calls, cleaning and televising pipelines, cleaning catch basins in the CSS only, cleaning pump station wet wells, and Sewer Overflow Response Plan related activities.

Construction is responsible for collection system point repairs and pipeline replacement projects that are done in-house. Table 4.1.1 shows the District's construction equipment. The District also receives significant support from their maintenance contractor to support the Construction group with system repairs and replacement. The maintenance contractor is selected based on competitive bids and is paid on a time and materials basis. Other pipe replacement projects as well as pipeline rehabilitation projects are competitively bid and contracted out on a project by project basis.

Figure 4.1.1 Collection System O&M Organization

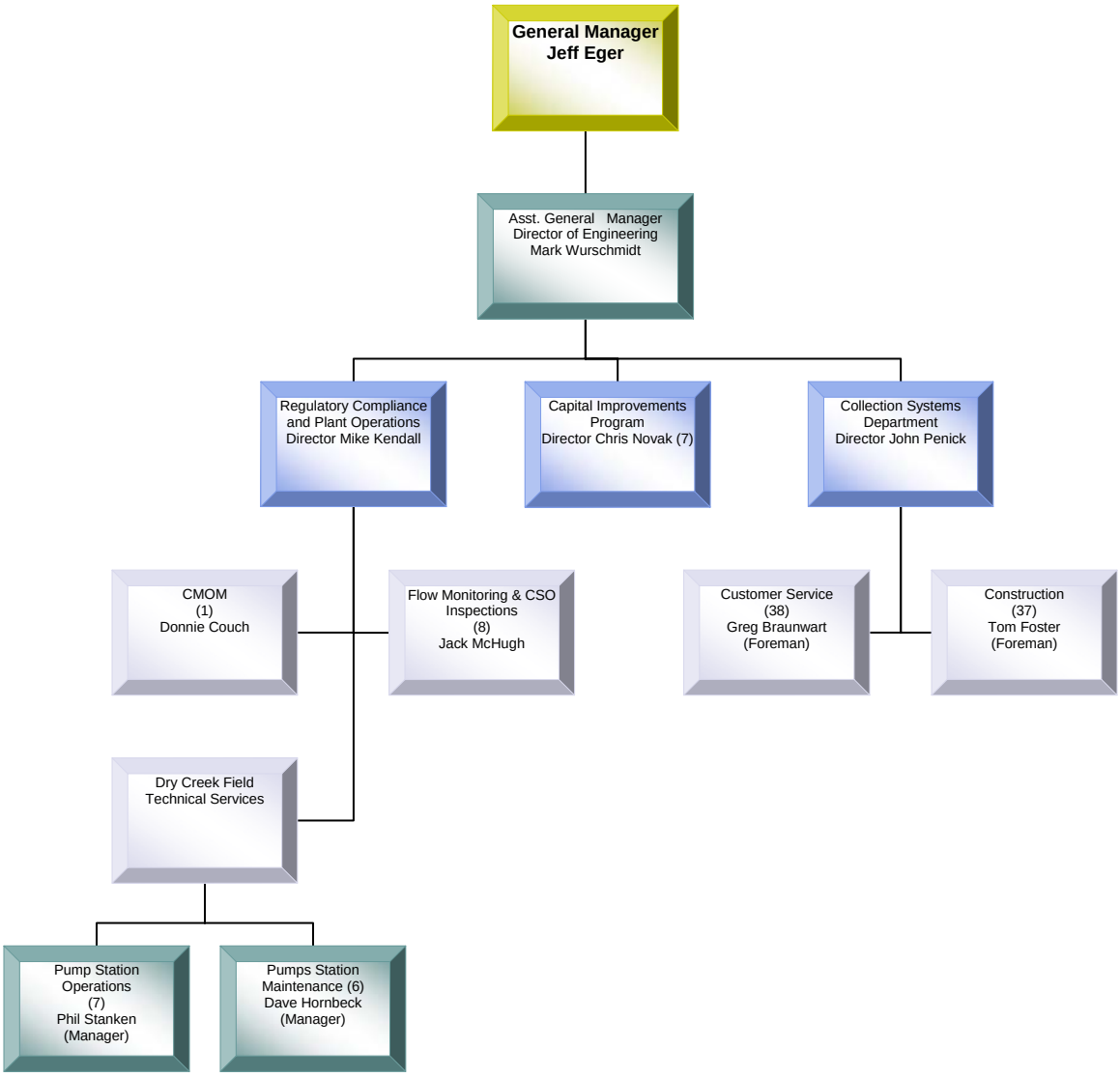


Table 4.1.1 Construction Equipment

Equipment	No.	Notes
Pickup	10	Crew leaders, foreman, inventory control.
Tractor/Drag Trailer	1	Dump site grading and project site restoration.
Trackhoe	8	
Utility Truck	9	
Dump Truck	8	
Skid Steer	6	
Loader	4	

There are currently 5 CCTV crews within the Customer Service Group. A CCTV crew generally includes four people (2 for CCTV and 2 for cleaning), a CCTV truck, and a Vactor truck for cleaning. These CCTV crews are highly trained and all are certified in the SCREAM defect coding system. The duties of the CCTV crews include:

- Preventative maintenance inspection and cleaning of sewers and manholes in the SSS and CSS
- Sewer lateral investigation
- Illicit discharge investigations
- Trouble calls
- Pavement replacement sewer inspections
- Pre and post inspection for repairs

The division of work among the crews has recently been reorganized to be in alignment with the new Continuous Sewer Assessment Program which is described in this section. Table 4.1.2 below summarizes the currently available equipment for collection system operation and maintenance:

Table 4.1.2 Collection System Maintenance Equipment

Equipment	No.	Notes
Closed Circuit Television Trucks	5	
Vactor Trucks	7	1 more is on order for a total of 8.
Water Truck	1	Formerly a Vactor. Jetter is still on front of unit.
Rodder Truck	1	
Bucket Truck	1	For grit/debris removal from lines.
Root Saws	7	Jet saws on Vactors/water truck and knives on Rodder
Easement Machine	1	For CCTV inspections in areas not accessible by truck.
Step Truck	1	Used to clean out CBs.
Boom Truck	1	Unit has a clam for removing debris from CBs & MHs.

Additional preventative sewer inspections are done each year by InfraMetrix, who use their zoom camera system to perform screening inspections of critical sewers. The District has an annual budget of $500,000 for these inspections, which generally include about 1,500 sewer segments per year for a total length of approximately 375,000 feet.
Over the past 24 months, the District's crews have been aggressively inspecting District sewers in advance of the implementation of the Continuous Sewer Assessment Program (CSAP), which is presented in this document as well as the District's CMOM Self Assessment Report. The District has inspected a total of 154 miles of pipe in the last 24 months which is approximately 10% of the entire system.

4.1.1.2 Field Technical Services

Field Technical Services is responsible for the operation and maintenance of all of the 129 pump stations (127 pump stations are owned by the District; 2 pump stations are owned by the Greater Cincinnati/Northern Kentucky Airport and are operated and maintained under contract by the District) within the District's service area, including the 15 flood pump stations. There are currently a total of 13 full-time staff within the group; 7 in Operations and 6 in Maintenance. 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 group performs inspections and performs limited PM at the pump stations such as greasing. If more extensive maintenance is required, Operations issues a work order, and the work is completed by the group's maintenance staff with periodic support from Collection Systems Customer Service if cleaning 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 to 20 years.

There are 5 field maintenance technicians that report to the pump stations maintenance manager and are dedicated to pump station maintenance. 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.

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.

4.1.1.3 Regulatory Compliance

The Regulatory Compliance group is responsible for all flow monitoring as well as routine inspection of CSO regulators and recurring and inactive SSO locations. There are 9 full-time staff members with one dedicated to CMOM Implementation and 8 dedicated to other field activities. There are two, one-man CSO regulator inspection crews with remaining staff dedicated to SSO inspections and flow monitoring. The regulatory compliance group works closely with and assists the Collection System Department, Field Technical Services, and the Capital Improvement Program group as needed.

4.1.1.4 Capital Improvements Program

While not tasked with performing O&M, the Capital Improvements Program group plays a critical role in O&M in that key decisions must be made based on evaluations of the field data that is gathered as part of the O&M programs. The Capital Improvements Program group helps decide whether a capital improvement is needed for a particular

asset or whether continued maintenance is more cost-effective. The group includes 7 full time staff dedicated to managing all of the District's capital improvement projects. The group also utilizes selected consultants as extensions of the District staff to help manage select capital improvement projects.

4.1.2 Information Management Tools

Proper data management tools are critical to the success of any asset management based O&M program. The District is an industry leader in the use and application of information management tools to help track and manage O&M. The District also has aggressive plans to more fully utilize the tools at their disposal as part of the NMC and CMOM compliance efforts. Reviews of current O&M practices prior to and through the District's CMOM self-assessment revealed gaps in how and where data was stored in key locations. More detail associated with data management for each O&M activity is included in subsequent sections. The following is a brief summary of the tools used.

The District utilizes a wide range of Information Management System (IMS) tools and software programs. The IMS tools most relevant to the management, operation, and maintenance of the 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 GIS and 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, writing work orders, tracking and scheduling preventative maintenance activities, setting priorities, providing timetables, tracking system inspections and 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 that is used to store and manage all of the District's income and expenditures.
- *InfoWorks* – A hydraulic computer model 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 the complex hydraulic structures found in the District's sewer systems.
- *LABWORKS* – A laboratory IMS used at the 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 Food Service Establishments (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 to more fully define and efficiently prioritize needed repairs and cleaning of the collection system to lower risk.
- *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 that currently have 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.
- *WennSoft*® – Job costing software system that will be used to help track capital projects. The District currently uses Multi-Dimensional Analysis software but will switch over to *WennSoft*® by June 2008. *WennSoft*® is closely integrated with Great Plains – both will be able to efficiently communicate as part of a combined package. *WennSoft*® will enable the District to track more detailed cost information for each capital project.

4.1.3 Asset Operation and Maintenance

Operation and Maintenance activities specific to different asset classes are further described below. The District's combined sewer system asset classes include CSO diversions, catch basins, grit pits, pump stations and the sewer system.

4.1.3.1 CSO Diversions

There are two full-time 1-man crews dedicated to inspecting the District's 137 CSO diversions. The target frequency is to inspect each diversion once per week as well as after every rainfall event. CSO inspections are currently recorded in gbaMS and are being reviewed periodically to verify that this goal is being met.

During dry weather, the inspectors visually look for debris and blockages that may trigger a dry weather overflow or would affect the ability of the diversion to maximize the flow entering the interceptor during rainfall. In addition, the inspector checks for evidence of activation. Information is currently entered into a spreadsheet and tracked in a master database by the Regulatory Compliance team. The inspectors are currently transitioning to entering the inspection data directly into gbaMS in the field via laptop computers. Key data from the spreadsheets is transferred into gbaMS as an inspection record. Because each inspector maintains his own area, they develop a comprehensive understanding of the behavior of each diversion and know particular sites where debris must be cleared more frequently.

If some debris is found during an inspection, the inspector will try to clean it himself. If heavier cleaning is needed, a work order is issued by the inspector to the Collection System Department to clean the regulator. If a dry weather bypass is found, the Dry Creek WWTP is notified immediately at which time KDOW is notified and an overflow record is placed into gbaMS and is included in the annual System Release Report. The procedure for entering the bypass data into gbaMS is being revised to have a work order created when a dry weather overflow is resolved so that dry weather overflows can be tracked in more detail on an annual basis. More detail regarding dry-weather overflows is included in Section 4.5.

Overall, the CSO diversions within the District's service area are quite simple in design and do not rely on a mechanical type of control. Table 4.1.3 shows the types of diversions that the District maintains and how many of each type there are in the system, and Figures 4.1.2 through 4.1.4 show example photos of the three main diversion types.

Table 4.1.3 Diversion Types

Diversion Type	Current Number
Horizontal Orifice Plate (leaping weir)	73
Elevated Outfall	41
Weir with Side Outlet	23

Figure 4.1.2 Horizontal Orifice Plate



Figure 4.1.3 Elevated Outfall

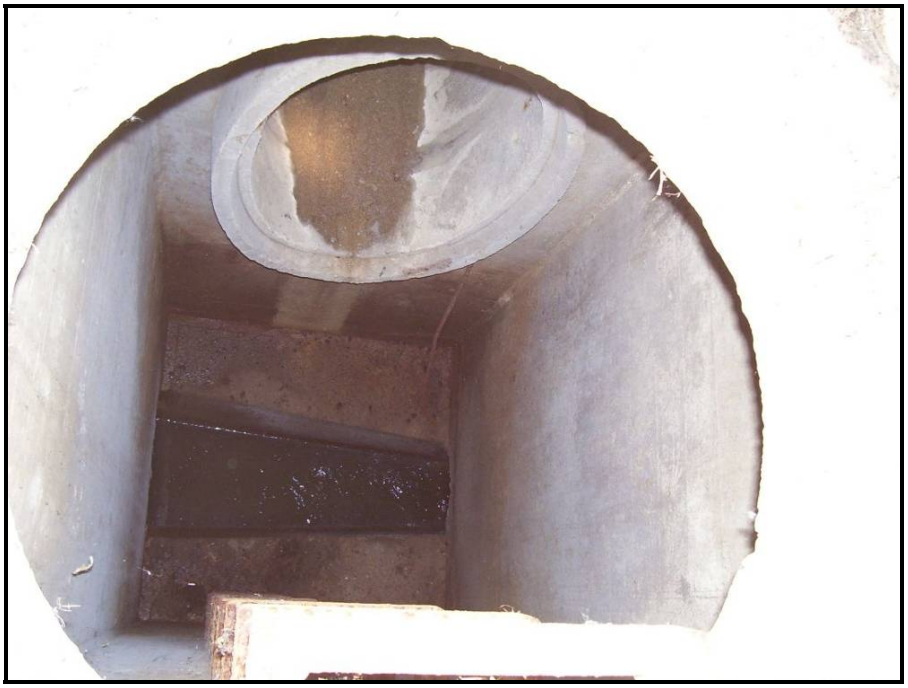
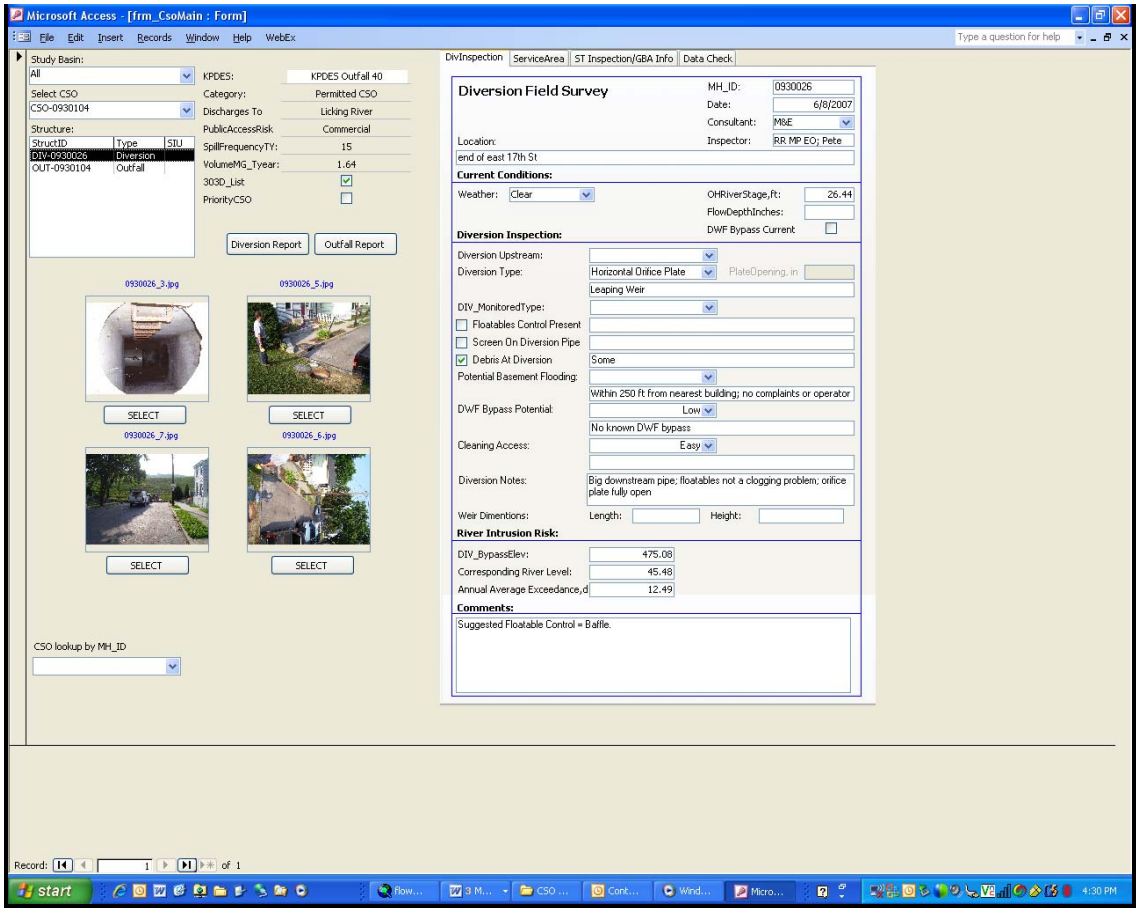


Figure 4.1.4 Weir with side outlet



As part of the NMC compliance efforts, a detailed database was developed and used to document each CSO diversion and outfall based on existing data and field inspections. The purpose for inspection was to support NMC compliance as well as other goals for the overall Infrastructure Characterization effort. Key attribute data as well as photos were captured as part of the inspection. Figure 4.1.5 below shows a sample screen capture of the database. Work is underway to transfer this data into gbaMS and it will ultimately be linked to the GIS.

Figure 4.1.5 CSO Database



4.1.3.2 Catch Basins in Combined System

The District owns and maintains all of the approximately 3,302 catch basins located in the CSS. Currently, there are 1,643 catch basins on the District's PM list in gbaMS for annual catch basin cleaning in the combined system. Therefore, roughly half of the catch basins are currently cleaned annually.

As part of the NMC compliance efforts, the District has recognized the need to gain a better understanding of the maintenance and cleaning needs for the catch basins in the CSS in order to meet the goals of this and other Nine Minimum Controls, specifically NMC 6, Solids and Floatables Control.

As a first step, the District developed and implemented a Combined Sewer Catch Basin Inspection Program which started with a system-wide inventory and inspection of all catch basins in the CSS. The inspections and associated collected data, including photos of each basin and the surrounding area, were entered into gbaMS in the field via laptop computers. The catch basin inspections were conducted from July 2007 to October 2007. The inventory and condition data that was gathered and entered in

gbaMS was used to help develop a list of 501 cleaning work orders and 704 catch basin repair work orders.

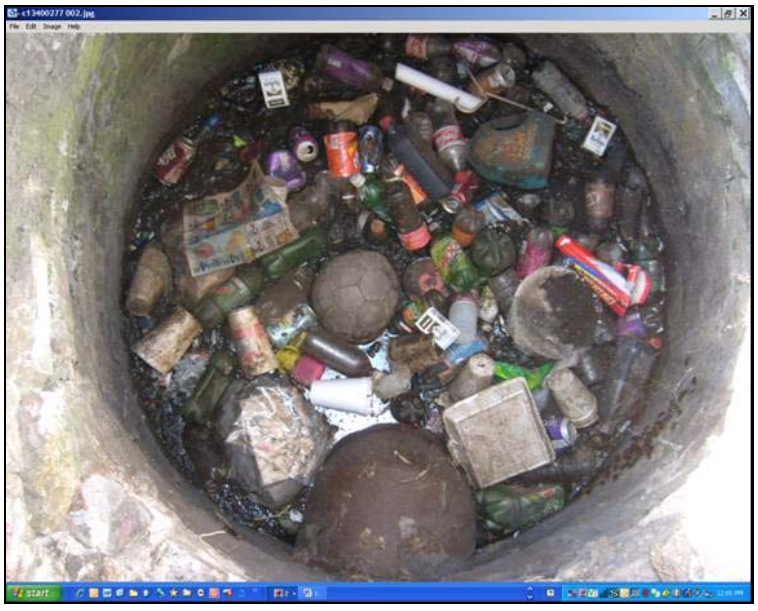
The inspection and inventory results showed a direct correlation between the type of catch basin and the amount of debris in the sump, which points to the need to better refine the frequency of cleaning as well as understanding the effectiveness of different sump types in capturing solids and floatables. Table 4.1.4 summarizes the number of catch basins with debris greater than 0.1 yd^3 by sump type. This amount does not necessarily mean that cleaning was needed; it was used as a measure of the number of catch basins that appear to be capturing significant amounts of solids and floatables.

Table 4.1.4 Catch Basin Debris Summary by Sump Type

Sump Type	Current Number	Percent with Debris > 0.1 yd^3
Washout (outlet invert same as CB invert)	329	9%
Catch basin with bell (hood)	1,335	69%
Elevated outlet with no bell	1,638	37%

The results in Table 4.1.4 expectedly show that the catch basins with a bell are the most effective in trapping debris and preventing solids and floatables from entering the CSS. Figure 4.1.6 depicts how effective a catch basin with a bell can be in trapping solids and floatables. This capture, in turn, increases the cleaning needs for each catch basin, but eliminates solids and floatables from entering the CSS. This reduction in solids & floatables can reduce CSS O&M needs and prevents these materials from discharging out of the CSO outfalls.

Figure 4.1.6 Catch Basin with Bell



The catch basin inventory and inspection program showed that in addition to the 1,335 catch basins that already have bells, an additional 343 were identified as being able to be retrofitted with bells since the outlet pipe was far enough above the bottom of the catch basin to allow a bell to be installed and operate effectively.

One goal of the District's catch basin O&M program is to replace the catch basins that have an open curb inlet with catch basins that have a grated inlet when replacement is needed. This type of catch basin helps prevent the entry of solids and floatables into the catch basin which will reduce the frequency of cleaning within the basin and improves its efficiency. This is important due to the fact that the District is not responsible for street sweeping in the CSS, and thus offsets the District's inability to increase the frequency or coverage of street sweeping. Before any open curb inlets are replaced, consideration must be given to the required hydraulic capacity of the inlet. Figure 4.1.7 shows a photo of a grated inlet basin and floatables that were prevented from entering.

Figure 4.1.7 Grated Inlet



Based on the results of the Combined Sewer Catch Basin Inspection Program, a plan for a new Catch Basin O&M program was developed. The key features of this program are to:

1) Complete the current 501 cleaning work orders by August 30, 2008 (222 have already been completed).

2) Inspect all catch basins yearly and record inspection data within gbaMS. Develop work orders within gbaMS to clean or repair as needed. Continue to utilize PM system to identify basins where more frequent cleaning is needed. Record and document amount of debris removal.

3) Add bells to catch basins identified as able to be retrofitted with bells or other retrofit to trap solids and floatables (343).

4) When a catch basin needs repair or replacement, retrofit or replace with a catch basin designed to capture solids and floatables such as a grated inlet and a bell on the outlet or some other device to trap solids and floatables. Verify that hydraulics allow for the installation of a grated inlet type.

The District feels strongly that this is an effective and expeditious program approach and reflects the overall asset management based approach that the District is taking with all of its O&M efforts. The role of the proposed program as a Solids and Floatables Control measure is discussed in Section 4.6.

4.1.3.3 Grit Pits

The District currently has 3 grit removal pits in operation along the Ohio River Interceptor (1 each in Bromley, Newport, and Bellevue). There are 2 more under design; the 2 diversions with grit and floatables control in Dayton. One grit pit is currently under construction along the Licking River Interceptor in Covington. The 2 replacement diversions in Dayton will include a floatables baffle with a static bar rack above the baffle to the roof. The Bromley (May 2004) and Newport (June 2007) grit pits have been in operation the longest and remove an average of 14 CYs and 11 CYs of grit per month, respectively. The Dayton pit was installed in November 2007. Each grit pit is scheduled to be cleaned on average every 4 weeks.

4.1.3.4 Pump Stations

Since the Field Technical Services department operates and maintains the pump stations in both the SSS and CSS, this section includes efforts that apply to both the combined and separate system pump stations and contains the same information presented in the CMOM Self Assessment Report submitted on October 18, 2007.

There are a total of 18 pump stations in the Combined Sewer System. Of these, 15 are the Flood Pump Stations, 2 of which (Patton St. and Eighth Street) contain both a, sanitary lift station and a flood station, and 3 of these are stand alone sanitary lift stations (Banklick PS, Second St PS, and Bromley PS). Therefore, there are a total of 5 sanitary lift stations in the combined sewer service area – 2 at flood pump stations and 3 stand-alone. Pump station operation and maintenance is carried out by the Field Technical Services department except when wetwell cleaning is needed. This cleaning operation is done by the Collection System Department.

Flood Pump Stations

The Flood Protection System basically serves to prevent property damage when the Ohio and Licking Rivers reach elevated levels.

After 1995, the District became responsible for operation and maintenance of the 15 flood pumping stations. There is a standard operating procedure (SOP) for the flood pumping stations, which includes key contact numbers and has been distributed to appropriate individuals. Select information from the SOP is included in Appendix A. The SOP is frequently updated to reflect the current operating strategy and conditions in the field.

The flood protection system includes manually operated tide gates, which are exercised twice per year. Preventative maintenance tasks for the flood pump stations are tracked within gbaMS, and gbaMS issues work orders based on the PM schedule. Pump station operations are tracked and recorded via SCADA at the Dry Creek WWTP.

Sanitary Pump Stations

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 remotely monitoring pump station operations through the use of a telemetry SCADA system.

Pump Station Operations

The District's pump station operations group is comprised of seven employees and the team is housed within the Field Technical Services Department in the District's organizational structure. The activities of the pump station operations group are as follows:

- *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, such as greasing, generated by work orders in gbaMS are also performed. The frequency of inspections is determined by the criticality of the pump station. All pump stations, with the exception of nine, have telemetry and are remotely monitored by the SCADA system by the plant operator at the District's Dry Creek WWTP. Two of the nine are in the process of having telemetry installed. In addition to routine inspections and monitoring, there are

five pump stations that are on a routine PM list to be cleaned using a Vactor truck to address grease issues. All of these pump stations are in the separate sewer system. The District's Collection System 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 PDA for approximately one month before turning it into the administrative assistant to download onto the District's server. The categories on the Palm PDA 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 PDA 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 schedule for beginning to use gbaMS for PS inspections and data entry is June 30, 2008 as listed in the District's CMOM Self Assessment Report.

Telemetry data is stored on the SCADA system for 30 days and then backed up on a server to store the historical data. Data monitored through SCADA includes information such as run time, on/offs, well levels, flow, power failures, and pump

failures. Some large stations have permanent flow meters, and these readings are captured in spreadsheets. Over the course of the next year, the District intends to switch to new Intellution software that will make this process more web based. This will enable any employee to remotely monitor the pump stations and retrieve historical data and flows, not just the operator at the Dry Creek WWTP.

Pump Station Maintenance

There are six District employees dedicated full time to maintenance, one manager and five maintenance technicians. The activities of the pump station maintenance group are as follows:

- *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.
- *Corrective Maintenance:* Pump station maintenance technicians 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 manager 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 technicians' time is spent on corrective maintenance activities.
- *Backup Power:* Per the Consent Decree, the District submitted a Pump Station Operation Plan for Backup Power December 14, 2007 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. The District submitted its plan for providing backup power to all of its PSs to USEPA and KDOW in December 2007.

4.1.3.5 Continuous Sewer Assessment

As part of the NMC and CMOM compliance review efforts, the District realized the need to develop a more proactive collection system inspection, cleaning, and rehabilitation/replacement program. The District also identified the need to establish a coordinated approach to this program to address both NMC requirements for the CSS and the CMOM requirements for the SSS. In concert with the CMOM self-assessment

and NMC activities, the District began developing a holistic Continuous Sewer Assessment Program in 2007 to address both the CSS and SSS. This formalized CSAP will guide the assessment and rehabilitation/replacement work in both the CSS and SSS into the future.

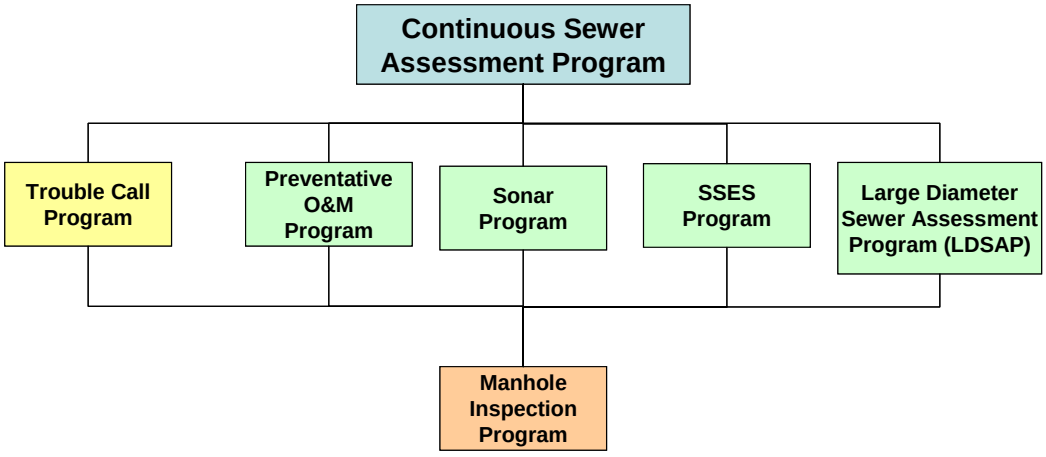
The key programs related to the CSS are the Large Diameter Sewer Assessment Program (LDSAP) and the Sonar program.

The purpose of the District's CSAP is to utilize a proactive and coordinated asset management-based approach to assessing the infrastructure's condition and life cycle in both the CSS and SSS, and managing and prioritizing the cleaning and rehabilitation/replacement of the system. Using the process diagram provided in Appendix B as a guide for 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 during both dry and wet weather in both the CSS and SSS, and eliminate SSOs.

O&M Programs

As shown in Appendix B, 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 4.1.8 below represents the overall structure of the O&M programs. Following the graphic are more detailed descriptions of each program.

Figure 4.1.8 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 or combined 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 B). 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. To provide additional screening in the SSS, the District may use the zoom camera approach to prioritize the CCTV inspections, as described under the Large Diameter Sewer Assessment Program.
- *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 costly collapses where significant spill volumes are possible due to the large tributary area to these sewers. The first Sonar inspection of the interceptors has been completed and is summarized in Section 4.4.2.
- *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 will enter the sewer basin as quantified by flow monitoring. Assessment activities include, but are not limited to CCTV, smoke testing and dye testing. The identified opportunities and costs for I/I removal are then incorporated into the overall overflow solutions being developed in the Watershed Plans. The SSES program has been used by the District since 1995

when the District took over the local city sewer systems. The new CSAP will formalize the procedures for the SSES program and provide a prioritized structure and format for conducting the program throughout the District's collection system. Initially, the SSES program will focus on separate basins where flow monitoring and modeling indicate high levels of rainfall derived I/I. These basins will be assessed first and then remaining basins will be assessed in coordination with the Watershed Plans developed under the 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 zoom camera system as a screening tool to assess sewer and manhole condition. This camera is essentially a high-powered, high-optical zoom video camera attached to a powerful lighting system that allows the user to view the length of the sewer with the camera. The camera also provides a highly detailed video record of the upstream and downstream manholes as it travels down to inspect the upstream and downstream sewers. The zoom approach consists of the camera inspection, the evaluation of the inspection results, and the prioritization of future actions. The results of the zoom screening inspection are used to identify where cleaning and/or detailed CCTV inspections are needed to further assess defects identified by the zoom camera.

  The benefit of this approach is that system assessment can be performed much more cost effectively and faster than detailed CCTV inspection of all pipes. This is due to the fact that the zoom approach identifies and scores each defect along the length of the pipe and then provides an overall structural condition grade (SCG) and potential for blockage grade (PBG) 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 zoom system targets inspection and cleaning dollars where they are needed most. Manholes are also evaluated to identify needs for repair or replacement.

  Based on the results of the screening inspection, 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 put on a frequent interval for re-cleaning. The sewers found to not need rehabilitation/replacement are put on a frequent interval for re-inspection. Collection system rehabilitation/replacement projects will be developed based on a combination of condition and criticality.

- *Manhole Inspection Program:* A key component in the overall CSAP 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 gbaMS software 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 LDSAP program, video of the entire manhole.

Assessment Prioritization

One key feature of the CSAP 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. These scores help guide the staging of the ongoing 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. Over time, all sewers in the CSS will be assessed and given a screening inspection using the zoom approach.

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.

Basin inspections in the separate sewer area 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 widespread structural and maintenance-related defects. Priority SSOs have been identified as part of the District's Watershed Plan development process.

- Phase 2 comprises all other basins with Consent Decree listed SSOs and other basins with structural and maintenance-related defects 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 C 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.

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

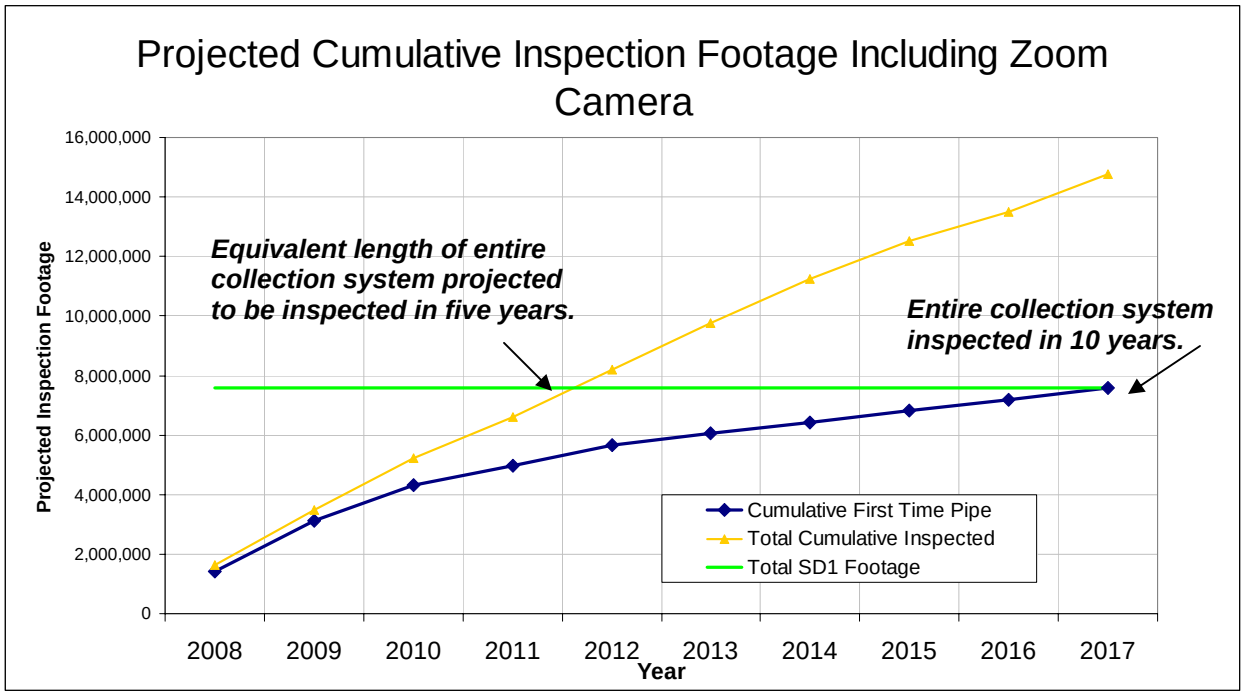
- All pipes within 50' of a stream to ensure stream water is not being taken in by the sewer.
- Pipes downstream of SSOs where blockages could be present and causing or contributing to overflow problems.
- Pipes in areas where high I/I is known to exist. These pipes will become part of the SSES program.

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 in both the CSS and SSS 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 B and the Inspection Projections section below for a more detailed description of inspection intervals.

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 projected re-inspections will 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 B. Figure 4.1.9 below is a summary of the approximate 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 process diagram. 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.

Figure 4.1.9 Projected Cumulative Inspection Footage



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 maintenance 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 the District moves 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 the degree of adjustment required in the initial assumptions.

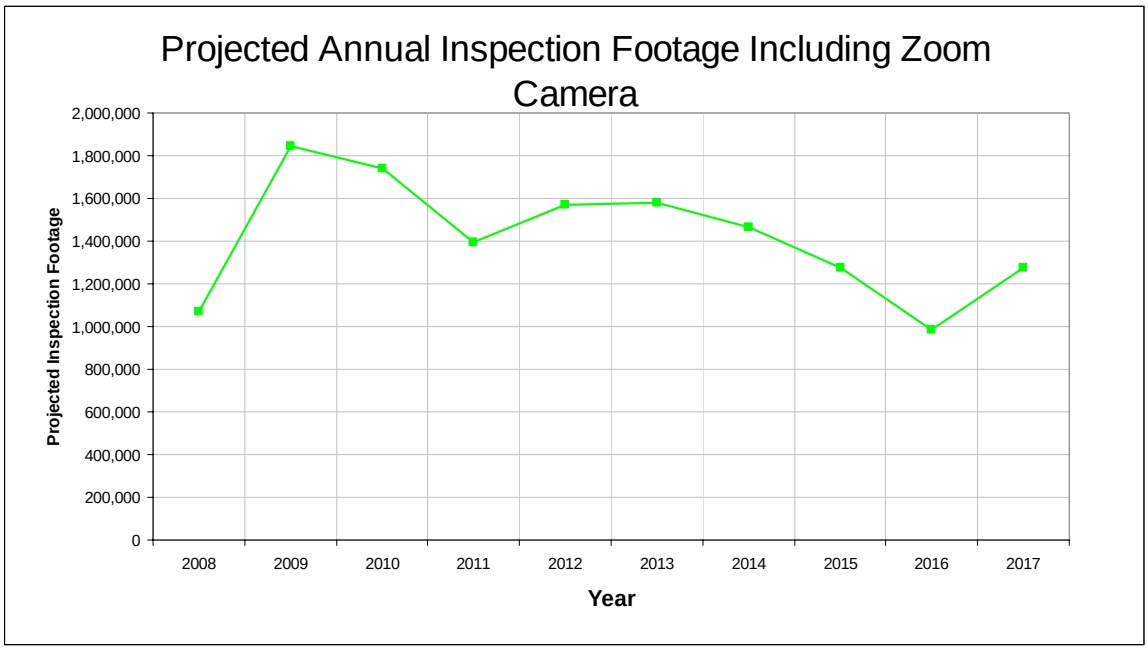
Figure 4.1.10 shows the projected inspection footage by year. The District began the CSAP in January 2008 and will ramp up and acquire resources in 2008 to fully implement the program starting in 2009. As Figure 4.1.10 demonstrates, the District intends to inspect approximately 1.1 million feet of sewer in 2008 and obtain the resources necessary to increase these inspections to approximately 1.9 million feet in 2009.

Data Management

The District converted to a new sewer and manhole defect coding system in December 2007 that utilizes the Sewer Condition Risk Evaluation Analysis Model™. SCREAM is 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, 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 in assigning relative risks of failure and prioritizing repairs or replacement.

Figure 4.1.10 Projected Annual Inspection Footage



Video inspection footage is currently recorded on DVDs on the CCTV trucks. 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. The District has been entering CCTV data into gbaMS since 1999. The District will have the ability within the next year to record video directly to an electronic file for storage on a hard drive, bypassing the need for recording video on DVD, which will provide the capability of hyperlinking footage to gbaMS and GIS. This capability will increase efficiency in accessing, reviewing video, and making decisions for rehabilitation or repair. This is a process currently being developed by the District's IT staff.

Projected Resource Needs

In order to implement the CCTV inspection portion of the CSAP, the District must determine and ensure the availability of the required resources. The inspection projections described above were used to forecast resource needs. In order to develop the resource 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 4.1.11 below shows estimated CCTV crew needs for the CSAP, as well as the estimated total number of CCTV crews needed to address other demands such as trouble call responses, illicit inspections, sewer lateral inspections for the repair program, inspection of sewers where pavement replacement is planned, and the sewer

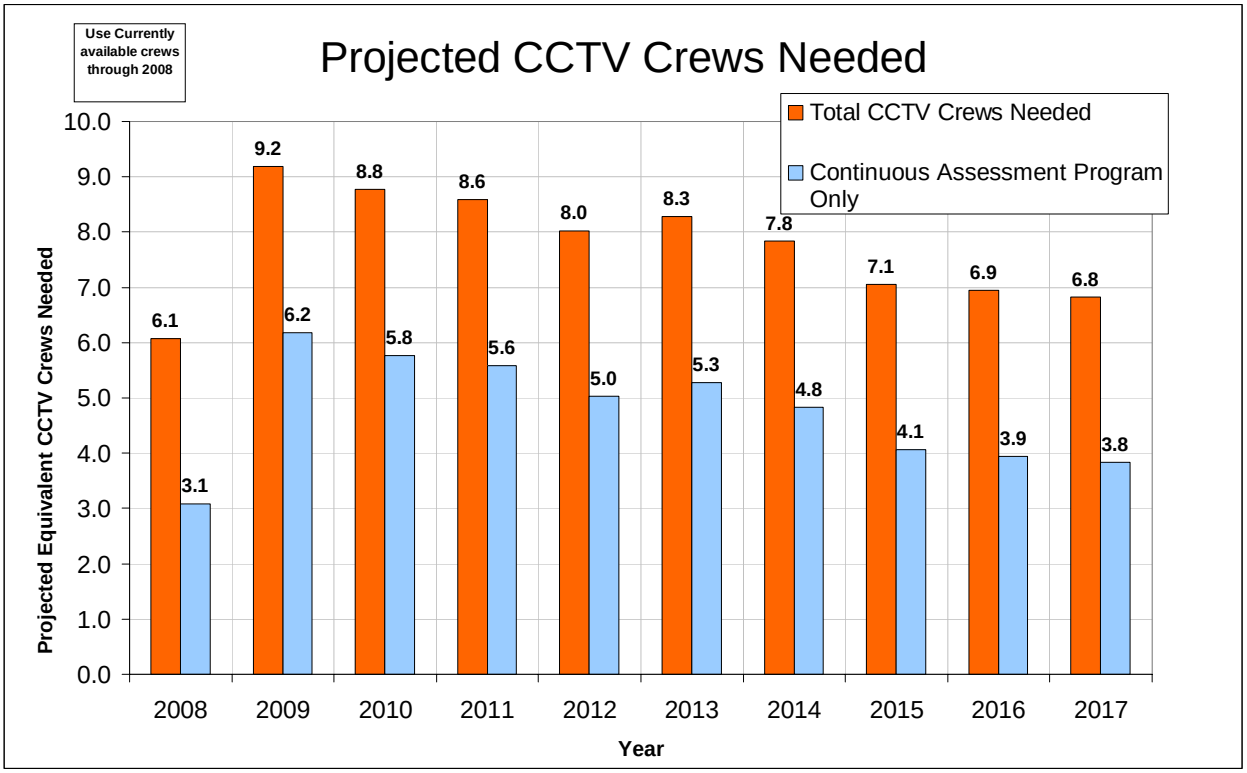
overflow response plan activities. The figure summarizes total CCTV crew needs, but does not assume that in-house only resources will be used. Outside CCTV crews will be used as needed to supplement the in-house crews. A CCTV crew is defined as one CCTV inspection truck and one Vactor truck. Figure 4.1.11 shows that six total CCTV crews are needed in 2008 as the District begins implementing the CSAP. Three dedicated CCTV crews will be used for the CCTV inspection and cleaning program for the CSAP. The remaining crews will be used to address the other demands listed above. The LDSAP portion of the inspection program will continue to be subcontracted out to a local firm. Beginning in 2009, 6 dedicated CCTV crews will be solely utilized for the CSAP and the remaining 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.

Cleaning Projections

One key feature of the overall CSAP is the cleaning program. Cleaning of sewers is critical to maintaining the design capacity of the system, preventing SSOs, and minimizing CSOs. Sound engineering practice dictates sewer slopes necessary to prevent significant deposits of solids. In reality, however, many of the pipes in the District's collection system 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 routine 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 for the CSS and SSS. 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.

Figure 4.1.11 Projected CCTV Crews

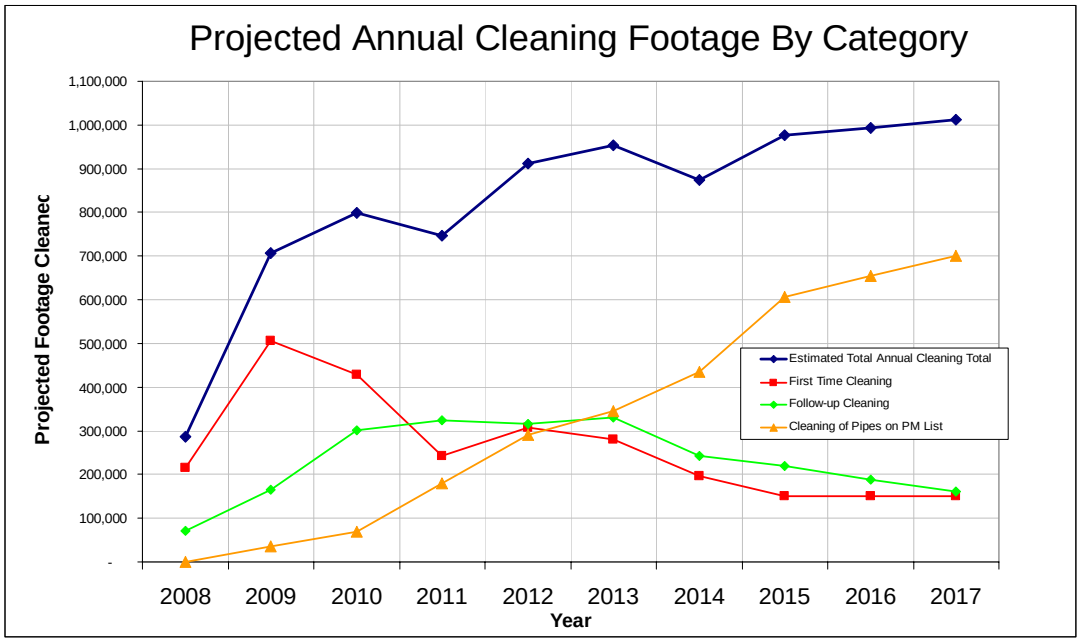


As with the inspection program described in the previous section, certain assumptions were made in order to forecast the cleaning needs over the next 10 years. These assumptions were made based on an analysis of the historic cleaning needs in all basins where the District has data and reflects the difference 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 4.1.12 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 the degree of adjustment in the initial assumptions.

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 4.1.12. The “First Time Cleaning” pipes represented by the red line in Figure 4.1.12 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 4.1.12 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 B. This list decreases as pipes are put onto a permanent PM list or a permanent capital improvement is implemented. The orange line in Figure 4.1.12 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 4.1.12 Projected Annual Cleaning Footage



Rehabilitation/Replacement

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 in both the CSS and SSS. 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, illicit detections, sewer lateral inspections for the repair program, street paving projects, and all CSAP activities.
- Determining the "next-step" actions required to address system deficiencies that arise from continuous sewer assessment activities such as zoom, sonar, CCTV,

SSES, 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 under the Consent Decree.

The District's Sewer System Rehabilitation & Replacement Program is the evaluation and planning portion of the larger CSAP. 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, the LDSAP, Preventive O&M Program, and Sonar Program will be brought into the Rehabilitation and Replacement Program, as shown in Appendix B. Taking a big-picture approach to this assessment process enables the District to make more informed, cost-effective, system-wide decisions.

Program Documentation & Procedures

Prior to the development of a formal CSAP, 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 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 B.

The process diagram helps guide the first part of the decision-making process by placing individual pipe sections into preliminary priority rankings. As the process diagram 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 selection of method for subsequent rehabilitation or replacement. Groups of pipes must be selected for inclusion into actual 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 the extent and timing of rehabilitation projects:

- 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 essentially 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 needs by maximizing the development of holistic solutions. This provides the opportunity 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 a project schedule developed based on condition factors alone.
- Project prioritization will strongly consider watershed priorities, but these will not be the controlling 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, including SSES findings.
    - Criticality (if needed for consideration beyond priority score use).
    - Maintenance 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 successful decision making under this process will be a matrix to help guide the District's decision makers. 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

.

Continuous Sewer Assessment Program Engineering Staffing

The District utilizes both Collection System and Capital Improvement Program personnel to implement the Rehabilitation & Replacement Program. The District also uses 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. The District also has two Engineers in Training (EIT) that work under the Professional Engineers. CIP and Collection Systems staffs 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 CSAP 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 potential for a higher percentage of pipes assessed in the early stages of the CSAP to move into the rehabilitation & replacement program as compared to the later stages of the program. Therefore in the early stages of this program, there may be a 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.

4.1.4 Summary and Recommendations

Based on the above summary, the District has made significant progress and is making a significant investment towards achieving full compliance with NMC 1. It is important to note that the District recognizes that compliance with NMC 1 is an ongoing perpetual process. Therefore, the programs that are being implemented will continue to be updated and modified to better meet the goals of reducing the frequency, volume and impacts of overflows.

To further show how the District is fully implementing this minimum control, the activities discussed above are recounted below in the context of the findings and recommendations from the July 6, 2005 NPDES Compliance Evaluation Report by USEPA Region 4. These comments are shown in Table 4.1.5 to demonstrate that the District has addressed the issues and recommendations that were raised and has implemented actions to come into compliance with NMC 1:

Table 4.1.5 : Response to Compliance Evaluation Comments

Comment	Activity
"Aggressively" improve operation and maintenance programs	• The Continuous Sewer Assessment Program outlined above is currently being implemented and clearly demonstrates a commitment to a very aggressive O&M program.
Provide copy of CMOM program	• The CMOM self assessment was submitted in October 2007 to KDOW and USEPA for review. • As discussed previously in this section, the Continuous Sewer Assessment Program was developed for the entire Collection System, not just the Separate or Combined Systems.
Increase staffing levels for required inspection and preventative maintenance efforts	• The staffing levels will increase accordingly to achieve the goals of the CSAP and O&M programs as outlined above. Already, collection system staffing has increased 21% since 2004, which is the date of the previous Compliance Evaluation. • Outside Contractors will also be hired to help achieve the goals of the CSAP and O&M programs outlined above as needed.
Implement "Asset Management" approach to O&M	• The entire approach outlined above that the District is implementing utilizes an Asset Management focus. This approach is just good business and minimizes failures and will allow the District to spend our rate-payer's money where it achieves the most benefit.
Add and replace equipment necessary to achieve O&M goals	• Additional equipment has already been purchased in anticipation of implementing this program. See Table 4.4.1above and the CMOM Self Assessment for more information regarding equipment.
Prioritized cleaning, inspection and rehabilitation schedules	• The prioritization process for inspection, cleaning, and rehabilitation has been completed with the CSAP described above and the process diagram included in Appendix B. For the combined area, initial priorities are by criticality, and then priorities are based on actual inspection results.

Table 4.1.5 : Response to Compliance Evaluation Comments

Comment	Activity
Catch basins cleaned every 2 years until enough information is available to prioritize cleaning.	• The District is responsible for cleaning and maintaining the 3,302 catch basins in the combined sewer system. The proposed Catch Basin O&M program described in section 4.1.3.2 above will prioritize cleaning and maintenance needs and in addition will retrofit catch basins in a prioritized and timely fashion to trap solids and floatables.
Complete inspection of entire system (combined and separate) in 5 years	• The current goal is to inspect every pipe in the system within 10 years. However, because this is an asset management approach, some pipes will be inspected twice before others are inspected because of priorities and previous inspection results. The projected rate of inspection is a system-wide equivalent within 5 years as shown in figure 4.1.7 above.
Telemetry on CSOs or more aggressive CSO inspections	• Weekly CSO diversion inspections will be conducted and verified within gbaMS. Efforts discussed in section 4.5 and improved record keeping will ensure that dry weather overflow risks are minimized. • Instead of more frequent inspections, problem areas will be fixed with permanent solutions. The District has already begun with telemetry based dry weather overflow alarming at select outfalls through flow monitors. • The District will also be installing blocking on all CSOs to aide in inspection and determination of an overflow occurrence. • Through the ongoing system characterization work to support the development of the Consent Decree required Watershed Plans, the District is upgrading and expanding its InfoWorks hydraulic computer model of its collection system. This effort will be complete by the middle of 2008, and will produce a comprehensive and accurate tool for planning purposes, and for determining the reductions in CSOs due to near term and long term projects.

To comply with NMC1, Proper Operation and Regular Maintenance Programs for the Sewer System and CSO Outfalls, the District will continue all of the activities and programs described above. As part of that effort, the District will implement additional measures as indicated in Table 4.1.6. An overall schedule of activities is included in Appendix D.

Table 4.1.6: Implementation of Additional Collection System O&M Measures

Item	Activity	Implementation Schedule
Collection System O&M - Diversions	Review periodically, the actual rate of inspections and verify that the goal of one inspection per week is being met.	Monthly
Collection System O&M – Catch Basins	Complete all catch basin cleaning work orders (501).	August 30, 2008
	Add bells to the catch basins identified as able to be retrofitted with bells (343 catch basins).	Ongoing
Collection System O&M – Catch Basins	When a catch basin is being repaired or replaced, retrofit or replace with grated, trapped type with bells, or other retrofit to trap solids and floatables.	Ongoing
	Inspect all catch basins yearly and record inspection data within gbaMS. Develop work orders within gbaMS to clean or repair as needed. Continue to utilize PM system to identify basins where more frequent cleaning is needed. Record and document amount of debris removal.	Ongoing
Collection System O&M – Pump Stations	In coordination with CMOM, compile a list of stressed pump stations in both the CSS and SSS and identify either an internal or external engineer to perform a critical assessment of the PS to identify solutions in coordination with CMOM program.	March 31, 2008
	In coordination with CMOM, begin utilizing the pump station inspection module in gbaMS to record and track pump station inspections.	June 30, 2008

Table 4.1.6: Implementation of Additional Collection System O&M Measures

Item	Activity	Implementation Schedule
Collection System O&M – Pump Stations	In coordination with CMOM, prospective classes for pump station maintenance personnel at Gateway Community College will be identified, and coordination with the District's Human Resources will occur to assess the feasibility of attendance at these classes.	Throughout 2008
Collection System O&M – Gravity Sewers	In coordination with CMOM, continue to make progress to automate work-order generation based on CSAP process diagram.	Throughout 2008
	In coordination with CMOM, assign one in-house staff member to filter all work orders and serve as the liaison between the Collection Systems Department and Capital Improvement Program Group.	June 30, 2008
	Develop recommendations for targeted cleaning of interceptor.	February 29, 2008
	Develop specifications for targeted cleaning of the interceptors based on the TISCIT sonar/CCTV inspection results, bid targeted cleaning contract, and hire contractor to perform interceptor cleaning.	July 31, 2008
	Hire CCTV Contractor to supplement District CCTV crews for the implementation of the District's CSAP.	April 30, 2008

4.2 Maximum Use of Collection System for Storage

Compliance with this control requires analysis and implementation of relatively simple modifications to the collection system to store wet weather flows until capacity is available in the downstream collection and treatment systems. The collection system inspection program discussed in detail in Section 4.1, including scheduled inspection of all diversions weekly and after each rain event, is an ongoing mechanism for compliance with this NMC, as it identifies and corrects blockage and deposition issues in order to maintain collection system capacity for storage and conveyance. In addition, the District has implemented and maintains several specific measures directed at maximizing collection system storage. These measures are listed below and further described in this section in terms of their support for compliance with this NMC:

- Adjustment of regulator settings to maximize flow to the interceptors
- Addition of tide gates to control river water and sediment intrusion
- Maximization of available storage volume by minimizing in-line deposition
- Hydraulic analysis of the collection system to identify potential for in-line storage

4.2.1 Adjustment of Regulator Settings

Storage in the District's combined sewer interceptors is controlled by in-line pump stations, which are designed to induce a capacity limit above a certain threshold wet-weather flow condition. By maximizing flow to the interceptors during wet-weather events through adjustment of regulator settings, the District ensures that any available interceptor storage is maximized.

Of the 137 diversions and by-passes maintained by the District in the combined sewer system, 73 are horizontal orifice plate type, and the rest have weirs or elevated overflow pipes. The District has previously worked to maximize conveyance of flow from the collection system to the interceptor by fully opening or removing the orifice plate in almost all of the horizontal orifice plate type regulators (see figure 4.2.5). The settings on each diversion were confirmed by inspections related to Consent Decree activities in May and June of last year. A database was created specifically to capture information gained during these inspections, including regulator settings. Information contained in this database was later transferred to the District's gbaMS maintenance management system. In a number of locations, the District found that fully opening the plate may lead to blockages in the diversion to the interceptor. Many diversion pipes are as small as 8-inches in diameter. In order to mitigate the potential for dry weather overflow due to blockages, the District has had to reset a number of the diversion plates to keep large objects from entering and clogging the diversion pipes and to address other field conditions. Based on inspection, 10 of the orifice plates have been removed, and 27 are fully open, and the remaining 36 have been adjusted, by the District to address field conditions.

Figure 4.2.5: Horizontal Orifice Regulator with the Diversion Plate Removed



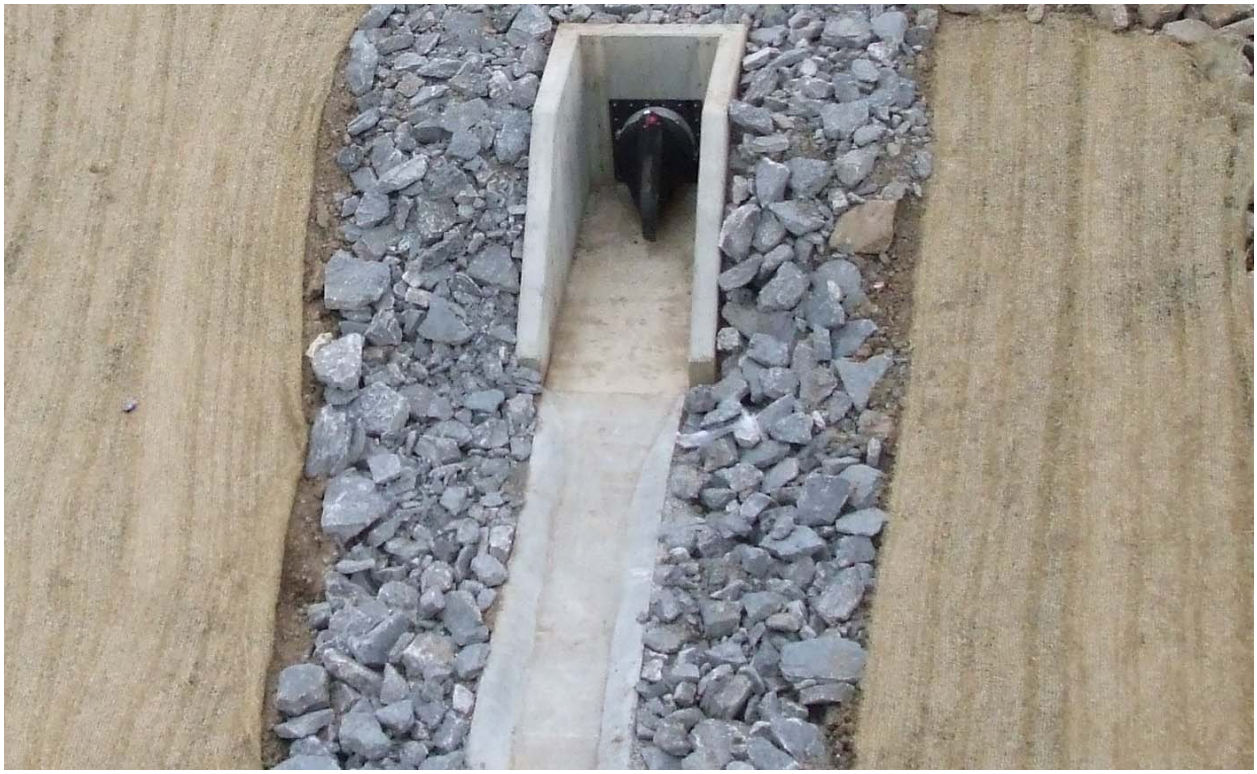
4.2.2 Addition of Tide Gates at Outfalls

River water intrusion during wet-weather events has the potential to occupy in-line storage volume that would otherwise be available to combined sewer flows. Therefore, the addition of tide gates at outfalls to reduce river water intrusion increases the available storage volume and so maximizes the storage of wet-weather flows.

The District currently maintains tide gate installations on 24 of their 96 outfalls to eliminate river water and sediment intrusion into the collection system and the District continues to add tide gates as it implements its CIP. For example, a new tide gate was installed when the Nutrient Separating Baffle Box was installed at the Greenup Street CSO outfall (see Figure 4.2.6) and two more will be added at the Main and McKinney Street CSOs as part of the inline storage upgrade discussed later in this section.

In addition, the District maintains 72 flood control gates as part of the flood protection system designed by the U.S. Army Corps of Engineers. As part of the Consent Decree related activities, the District will be conducting a detailed river water intrusion mitigation feasibility analysis, which will incorporate the flood protection systems operation and look at sources of intrusion including outfalls, catch basins in the floodway upstream of diversions, and where the interceptor is below the water table in order to keep river water out of the collection system during elevated river levels and maximize system capacity.

Figure 4.2.6: Tide Gate at Greenup Street Outfall



4.2.3 Maximizing Storage Volume

Deposition of grit and sediments is unavoidable in an operating collection system. Aggressive efforts to minimize deposition will support compliance with this NMC by maximizing the storage volume available for wet-weather flows.

Section 4.1 details the Districts operation, maintenance and inspection activities in the combined sewer system. Through these routine, scheduled activities and as part of other initiatives, the District continuously monitors and maintains the system and works to identify other measures to improve flow. As an example, the District currently has 3 grit removal pits in operation along the Ohio River Interceptor and there are 3 more under design; the 2 diversions with grit and floatables control at the Main Street and McKinney Street CSOs in Dayton, and 1 along the Licking River Interceptor in Covington.

In addition, the District completed a sonar inspection of the Ohio and Licking River Interceptors (almost 79,000 feet of sewer) in 2007. The results of that inspection, discussed in more detail in Sections 4.1 and 4.4, are currently being used by the District to implement a prioritized cleaning program of the interceptors and to identify locations along the interceptors where additional grit pits would be beneficial.

4.2.4 In-Line Storage Analysis

The traditional approach to compliance with this NMC is to identify and, where viable, implement simple in-line storage opportunities in the combined sewer system. Inducing storage in combined sewer trunks through simple mechanisms such as raising weirs has the potential to reduce overflow volumes, especially during smaller events.

EPA guidance recognizes that an in-line storage analysis conducted as part of NMC compliance may identify two types of categories of projects. The first category includes simple, low-capital projects to induce storage, such as passive raising of weirs, which can and should be implemented as a minimum control. The second category includes more complex, higher-capital solutions, such as dynamic storage controls, that can be incorporated as part of the LTCP solution (or, in the District's case, as part of the Watershed Plans). As part of the Consent Decree related activities, the District analyzed the combined sewer system to determine locations where simple but effective modifications to the collection system could be utilized to maximize in-line storage.

Screening Level Analysis for Storage Candidates

The initial step in the analysis was to identify trunk sewers in the combined sewer system that are candidates for inline storage by utilizing simple volumetric screening measures to either eliminate a trunk sewer from further consideration, or identify the trunk sewer as one where inline storage may be a viable control measure and for which a more detailed analysis is warranted.

The initial screening analysis was completed in late 2006 and utilized the following methodology to evaluate the storage potential for all of the combined trunk sewers:

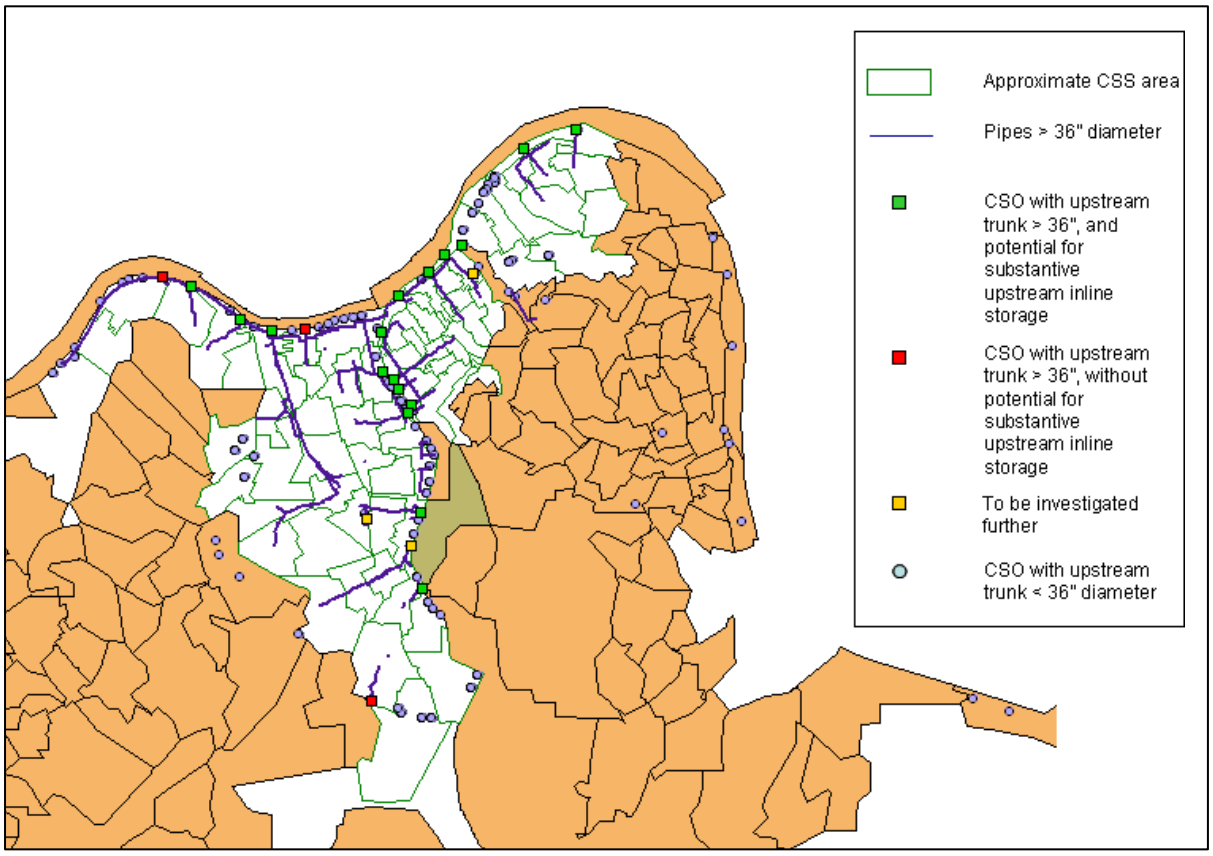
- Utilizing available GIS information, subbasins with trunk sewer sizes larger than 36 inches in diameter were identified. The subbasins with smaller trunk sewer sizes (i.e. less than or equal to 36-inch diameter) were initially eliminated from further evaluation based on the assumption that these subbasins would not have viable inline storage volume to cost-effectively store adequate wet weather flows. Where appropriate, further analysis on the locations screened out during the first step was completed during the detailed model analysis phase (described below) to confirm this assumption.
- For the subbasins that had trunk sewer sizes greater than 36-inch diameter, the full volumes of trunk sewers greater than 36-inch diameter were calculated.
- The maximum volume that could theoretically be stored in the greater than 36-inch diameter piping upstream of the regulator was estimated, irrespective of slope and dry weather flow and compared against the model-predicted overflow hydrographs. Each overflow event in the predicted hydrograph was examined relative to the calculated maximum storage. Where the event overflow volume was less than the available storage, the event was assumed to be captured in its entirety. If the overflow volume was more than the available storage, the portion in excess of the available storage was assumed to overflow. This process provided both initial activation and volume estimates with in-line storage. Note

that this is an intentionally conservative methodology intended to capture and screen all locations to determine a subset of locations with storage potential.

- Locations were eliminated from further analysis if the estimated reduction in annual overflow volume with in-line storage was less than 20 percent, or if the estimated activation reduction due to storage was less than 20 percent.

Based on this desktop level screening analysis a total of 17 out of 96 CSO locations were shown to have potential for in-line storage. A map of the identified locations is shown in Figure 4.2.1.

Figure 4.2.1: Map of CSO Locations with Potential for In-Line Storage



Model Analysis of Storage Candidates

To further investigate the storage potential of the retained locations, the model was used to examine the impact of raising weirs at the identified regulators. It is important to note that the hydraulic models being used for this evaluation are preliminary and not fully calibrated and verified. The results provided by the models discussed below will be verified and confirmed when the Models are fully calibrated and verified in the fall of 2008. The purpose of the analysis was to identify where the mechanism to induce in-line storage, i.e. raising weirs, created an unacceptable risk of basement or surface flooding. The criterion utilized to identify unacceptable risk was when the model predicted less than 8 feet of freeboard above the maximum projected water surface

upstream of the potential storage location without in-line storage in place during any of the following four storm event/river stage combinations:

- 25 year , 30 minute storm event with no river influence
- 25 year, 1 hour storm event with no river influence
- 2 year, 30 minute storm event with the Ohio River set at stage 40'
- 2 year, 1 hour storm event with the Ohio River set at stage 40'

An Ohio River stage of 40 feet was utilized because it is an estimate of the Ohio River stage that causes the District to enter flood operations. At higher river levels, sections of the District's collection system are isolated and the flood pumping stations are operated. At flood stage, the system is not operated under the same conditions as during non-flood stage operation.

Based on this analysis, and consideration of local conditions at locations where 8 feet of freeboard could not be provided but risk of basement or surface flooding is low (several locations justified relaxation of the freeboard criteria), 7 of the 17 locations previously identified were selected as having in-line storage potential. Table 4.2.1 lists the locations that remained as candidates with potential for in-line storage.

Table 4.2.1: Potential In-Line Storage Locations

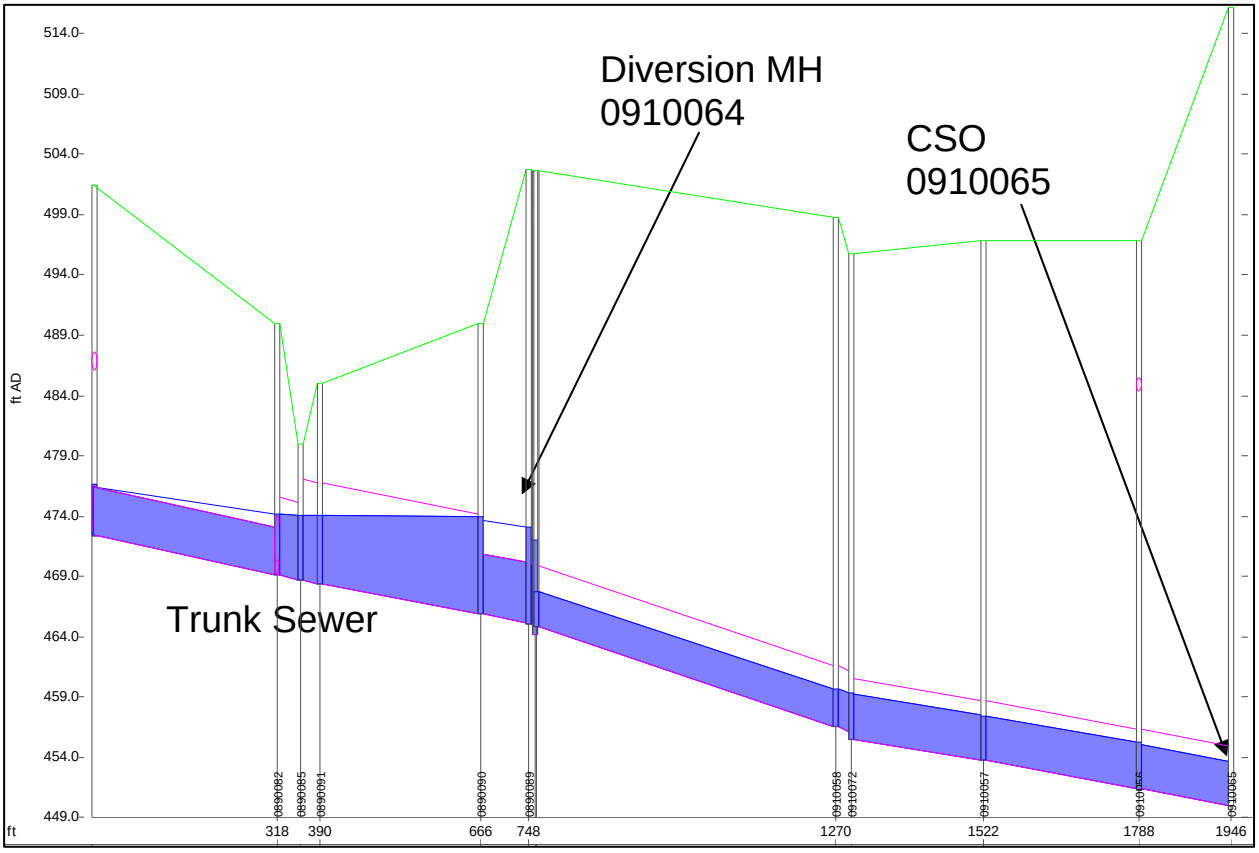
CSO	Diversion	Name
0790086	0820001	4th Street CSO
0840111	0840005	9th Street CSO
0840027	0840027	10th Street CSO
0910065	0910064	James Avenue CSO
0980081	0980036	Pleasant/Maryland Street CSO
1480187	1480116	Willow Run CSO
1490132	1490027	Parkway/Highway CSO

Additionally, the model results from this phase provided the opportunity to revisit locations screened based on trunk sewer size alone during the earlier desk top screening analysis. From a review of the existing condition model results (no in-line storage), and using the criteria discussed above, one additional CSO location with a 30-inch trunk sewer was identified as having storage potential (Diversion 0770006, Saratoga Street). However, subsequent modeling showed that there was no additional benefit for adding in-line storage at this location. Other adjacent combined sewer overflow volumes increased the same as the decrease in overflow volume at the Saratoga St CSO.

After this final screening, the model was utilized to determine the highest possible static weir that could be installed at each of the 7 potential storage locations without creating an unacceptable risk of flooding. An example of this analysis for one of the CSOs (Diversion 0910064, James Avenue) with storage potential is provided here.

Diversion 0910064 (James Avenue) and the tributary trunk sewers were examined using the existing conditions model and the 4 identified extreme wet weather events identified above to determine if the addition of a weir to provide inline storage would increase the potential for upstream flooding. Figure 4.2.3 shows the upstream hydraulic profile from the 25 year, 30 minute storm using the existing conditions model (no weir).

Figure 4.2.3 James Ave. Maximum Hydraulic Profile
(25-Yr, 30-Min, Existing Conditions)



The figure shows that even during the 25 year storm the model predicts some available storage within the trunk sewer under existing conditions (no in-line storage). In this particular case, the minimum 8-foot freeboard criterion is not met because the sewer is very shallow at manhole 0890085. Based on a review of the area it was determined that it would be acceptable to raise the hydraulic profile to the crown of the sewer without adverse impacts. The model was then modified to simulate the insertion of a weir at the diversion. Through iteration, a maximum acceptable weir height of 6 feet was determined. The "acceptable height" was based on the requirement to provide an acceptable level of protection against surface and basement flooding by maintaining a minimum of 8 feet of freeboard, or maintaining the HGL within the crown of the pipe, in the upstream trunk sewer during the 25 year, 30 minute storm event.

In preparation for including more sophisticated in-line storage controls as part of potential alternatives in the Watershed Planning process, bending weirs and other

dynamic controls were also assessed when static weirs created the potential for flooding concerns. This analysis will be used to determine if and where dynamic controls to increase storage may be cost-effective components of the Watershed Plans.

In-Line Storage as Part of New Development

In addition to the 7 locations noted above, two additional in-line storage locations (at the Main Street and McKinney Street diversions) have been created as part the District's efforts to identify opportunities for collection system upgrades in concert with new development. During the early stages of the Watershed Planning process, a local developer submitted plans to develop a portion of the Northern Kentucky Riverfront in Dayton, Kentucky along the upper portion of the District's Ohio River Interceptor (ORI). The development proposed to add a significant amount of fill material along 8,000 feet of the ORI, which functions as the main interceptor for the entire combined sewer system, and over 2 existing permitted CSOs. It was determined that the existing interceptor would not be able to support this additional load, which would cause significant settlement of the already very flat pipe that currently has reverse grade in some locations. In addition, the interceptor would more difficult to access in the future due to the amount of fill over the pipe and location within the development. Therefore, replacement of the interceptor with new, stronger pipe was required. Initially, the developer proposed to replace the existing pipe with one of the same size (24"-30"), with the developer covering the costs. The District seized this opportunity to develop long-term improvements to decrease CSO volume while the opportunity existed to improve the interceptor, while sharing the costs.

Alternatives were evaluated that included conveyance and local storage. The District's system-wide model was used to develop sizes for conveyance and storage facilities, as well as identify the preferred locations for future storage facilities. A range of control levels were examined, including full control, i.e. conveying the largest event in the typical year. The alternatives analysis determined that the pipe size needed to convey the typical year flow through the development ranged from a 36" to 84" pipe. For the storage option, a total volume of 6.9 MG of storage was needed to capture the largest event during the typical year. As a result, it was decided to install an 84-inch pipe through the entire development that would provide the needed long-term conveyance capacity and an additional in-line storage capacity of 2.2 million gallons. Any remaining volume needed to bring these CSOs into compliance will be addressed by the Watershed Plans in the Consent Decree.

In conjunction with this project, the diversion chambers at Main and McKinney Streets have to be replaced. To take advantage of this project, the new diversions have been designed to serve as grit chambers and employ a weir and baffle arrangement to control solids and floatables. Construction of the 2 solids and floatables controls and grit chambers for the Main Street and McKinney Street CSOs is currently scheduled to be completed in the summer of 2008 in conjunction with the new riverfront development.

Planned In-Line Storage Program

Table 4.2.2 presents the locations currently identified by the preliminary modeling for potential inclusion in the planned in-line storage program. These locations are also mapped in Figure 4.2.4.

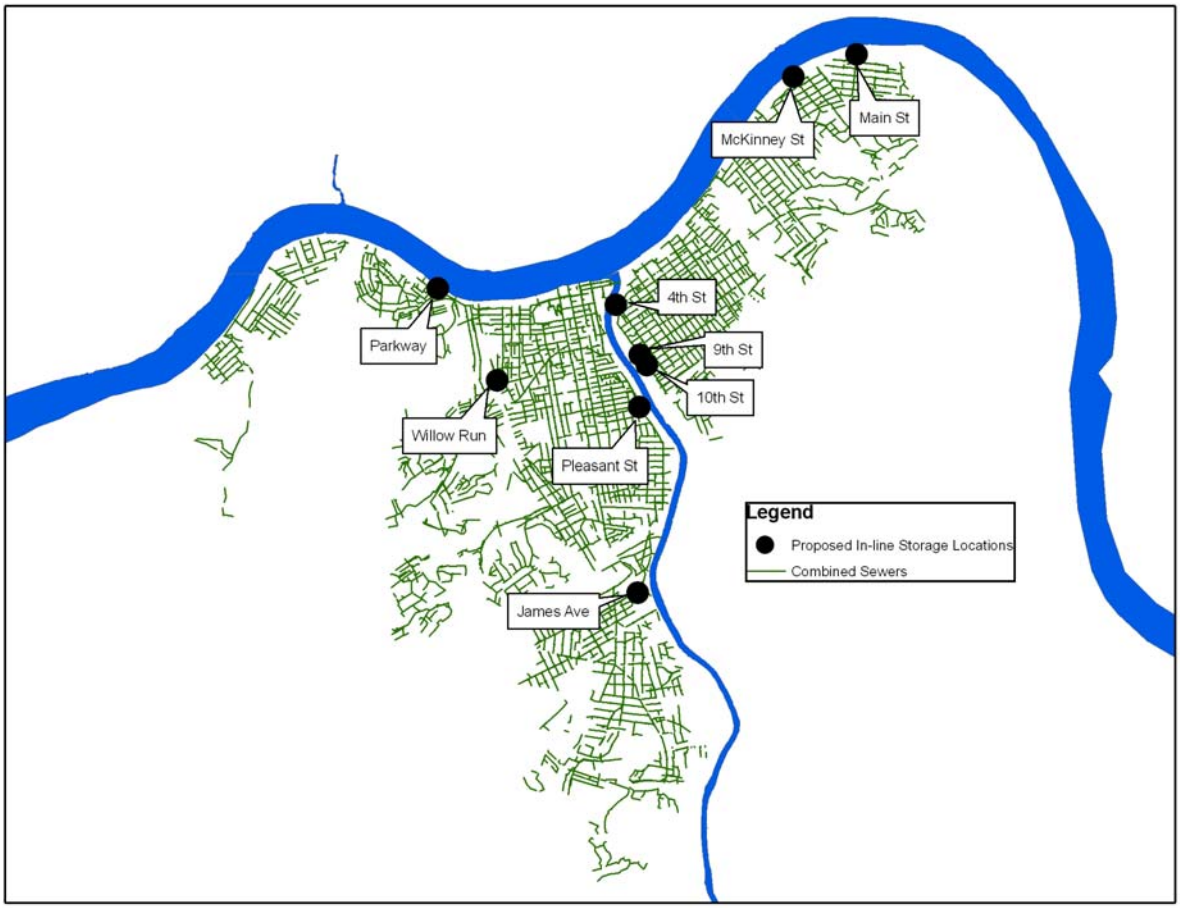
Table 4.2.2: Current In-Line Storage Program

CSO	Diversion	Name	Current Status
0570089	0570011	McKinney Street	Replacement diversion designed to include a grit chamber, weir and baffle. Storage provided in an oversized 84-inch interceptor
0570090	0570030	Main Street	Replacement diversion designed to include a grit chamber, weir and baffle. Storage provided in oversized 84-inch interceptor.
0790086	0820001	4th Street CSO	Preliminary recommendation is to close off existing lower 72-inch opening and lower the invert of an existing upper 84" x 24" opening to the outfall effectively raising the weir in this diversion by 12.4-feet. Addition of a bending weir may be considered as part of the Watershed Plans.
0840111	0840005	9th Street CSO (Newport)	Finalizing design to replace existing weir plate covering the lower portion of the outfall with a longer weir farther back in the diversion chamber. Modeling is being done to determine if a taller weir can be installed.
0840027	0840027	10th Street CSO (Newport)	Recommendation is to remove existing weir plate covering the lower portion of the outfall and install a weir of the same height farther back in the diversion chamber to mitigate upstream impacts of the proposed modifications at 4th Street by reducing headloss through the outfall.
0910065	0910064	James Avenue CSO	Preliminary recommendation is to raise the existing weir by approximately 5½ -feet to 6-feet. Addition of a bending weir may be considered as part of the Watershed Plans.
1480187	1480116	Willow Run CSO	Preliminary recommendation is to raise existing weir by 18-inches. Addition of a bending weir may be considered as part of the Watershed Plans.
1490132	1490027	Parkway/ Highway CSO	Preliminary recommendation is to install 15-foot high weir in diversion since sewer is located along a steep slope.

Table 4.2.2: Current In-Line Storage Program

CSO	Diversion	Name	Current Status
0980081	0980036	Pleasant/ Maryland Street CSO	Existing diversion is lower than the interceptor and the existing weir backs up flow until it diverts to interceptor. Increase in static weir height would cause unacceptable flooding risk. Preliminary recommendation is to consider bending weir as part of the Watershed Plans.

Figure 4.2.4: Locations of or Proposed for In-Line Storage



To determine the projected benefits of the planned inline storage program, 3 typical year model runs were completed using the current models. The first run looked at the 4 most likely candidates for a simple static weir adjustment under the NMC program, 9th, 10th, Parkway/Highway, and James, as well as the 2 new development locations, Main and McKinney. The second run added Willow Run and 4th Street, which are candidates for static weirs, but each would require significant system modifications and complicated construction. The third typical year model run looked at the benefits of installing

bending weirs at Willow Run and 4th Street in lieu of static weirs, as well as adding a bending weir at Pleasant Street, where additional static weir height could not be added due to the existing configuration.

Results of the modeling analysis are shown in Table 4.2.3. With the exception of the interceptor and diversion replacement near Main and McKinney Streets, the model confirms that very limited storage volumes are available in the trunk sewers upstream of the proposed inline storage locations. Further the model demonstrated that projected reductions in overflow volume and occurrences at the proposed locations may lead to significant increases in overflow volume at other nearby outfalls due the lack of capacity in the interceptor. Finally, the model projects that overflow reductions due to inline storage in the combined system may lead to slight increases in SSO volume elsewhere in the collection system. It is important to note that at this stage of the analysis, the current models were utilized to make planning level projections of the inline storage benefits. These current models have undergone only a preliminary level of calibration and will be upgraded and recalibrated and verified by the fall of 2008.

Table 4.2.3 Projected In Line Storage Benefit Based on Preliminary Hydraulic Modeling

Statistic	Plan 1 (6 Static Locations)(1)	Plan 2 (8 Static Locations) (2)	Plan 3 (6 Static Locations & 3 Dynamic Locations)(3)
Baseline Typical year CSO Volume (MG)	1,452	1,452	1,452
Plan Typical Year CSO Volume (MG)	1,391	1,360	1,316
Percent CSO Volume Reduction from Baseline	4.2%	6.3%	9.4%
Projected SSO Volume Change (MG)	3	2	0
Baseline Typical Year CSO Occurrences	2,450	2,450	2,450
Plan Typical Year CSO Occurrences	2,340	2,370	2,409
Total Overflow Volume Reduction from Baseline (MG)	58	90	136
Percent Overflow Volume Reduction from Baseline	4.0$	6.2%	9.4%

(5) Main St, McKinney, 9th, 10th, James Ave., Parkway
(6) Main St, McKinney, 9th, 10th, James Ave., Parkway, 4th, St., Willow Run
(7) Static: Main St, McKinney, 9th, 10th, James Ave., Parkway
Dynamic: Willow Run, 4th St., Pleasant St.

In addition to ongoing work to expand and re-calibrate the District's hydraulic model, other investigations are required in the tributary sewershed to confirm that there is no

increased risk of flooding at the potential inline storage locations. These efforts will lead to a more accurate assessment of the benefit of in-line storage at each location. As part of the District's NMC compliance efforts, the District is committing to:

- Completing the interceptor and diversion modifications near Main and McKinney Streets, and installing planned static weirs at 9th Street, and 10th Streets in Newport.
- Conducting field investigations and final hydraulic modeling for potential static weir installations at Parkway/Highway and James Avenue. These sites have been evaluated at a desktop level and by utilizing the preliminary hydraulic models, but require more detailed analysis to confirm that increased weir heights would not cause undesirable impacts. Modifications to these locations would be done as part of the District's NMC compliance efforts, should these sites be deemed acceptable for installation based on the results of the final hydraulic modeling and field inspection, and no substantial challenges are found to construction.
- Examining the potential for installation of larger capital projects identified at Willow Run, 4th Street, and Pleasant Street. Due to the complexity and magnitude of these locations, these sites will be further reviewed during longer term planning activities to support the District's Consent Decree requirements. Hydraulic modeling and field inspections will be conducted as part of the review process. The installations at these locations may consider dynamic controls as well as static solutions and require integration with the larger system-wide plans as part of the Watershed Plans in the Consent Decree.

The incorporation of the 6 static locations (Main, McKinney, 9th, 10th, James Avenue, and Parkway/Highway) is predicted to decrease the annual overflow volume in a typical year by 58 million gallons, or approximately 4 percent, based on the preliminary modeling. While a 4 percent reduction is not high, it represents the kind of cost-effective improvement worth pursuing with simple, low-cost NMC solutions. Incorporation of additional capital projects with either static or dynamic controls are projected to further reduce overflow volumes as shown in Table 4.2.3. These additional capital projects will be assessed in more detail under the Watershed Planning Process.

4.2.5 Summary and Recommendations

The District has implemented and continues to maintain many measures that maximize storage within the collection system including: pipeline, diversion, and outfall inspections, tide gate maintenance and repair, opening diversion regulators where practical, and modifying the collection system to maximize in-line storage. The District will continue to look for opportunities to enhance the collection system and implement measures to reduce inflows to the collection system such as opportunities that arise from new development and those described in Sections 4.2.2 and 4.2.4.

To further show how the District is fully implementing this minimum control, the activities presented above are recounted below in the context of the findings and

recommendations from the July 6, 2005 NPDES Compliance Evaluation Report by USEPA Region 4. These comments are highlighted in Table 4.2.4 to demonstrate that the District has addressed the issues and recommendations that were raised and has implemented actions to come into compliance with NMC 2.

Table 4.2.4: Response to Compliance Evaluation Comments

Item	Response
Document leaping weir maximization	• Opening of the leaping weir regulators is discussed in Section 4.2.1. Regulator plates have been fully opened or removed at all diversions where it was practical to do so. • The leaping weir settings were confirmed through inspections carried out in May and June of 2007 and findings were logged into a database, which is in the process of being transferred to the District's maintenance management system.
Evaluate all fixed dam and gated regulators as well as larger low slope sewers for in-line storage opportunities	• The in-line storage analysis is discussed in Section 4.2.4. The analysis identified 6 locations within the collection system where the District is reasonably certain that additional in-line storage capacity exists and where modifications to utilize that capacity will not cause undue risk of basement or surface flooding. • Additional actions required to finalize the in-line storage program are identified below along with their proposed implementation schedule.

To maintain compliance with NMC 2, Maximization of Storage in the Collection System, the District will continue with all of the activities and programs described above. As part of that effort, the District will implement additional measures to maximize the use of the collection system for storage as indicated in Table 4.2.5. An overall schedule of activities for all of the nine minimum controls is included in Appendix D.

Table 4.2.5: Additional Measures to Maximize Collection System Storage

Item	Activity	Implementation Schedule
In-Line Storage Program	Design and install static weirs at, 9th Street and 10th Street in Newport.	October 31, 2008
	Complete installation of new diversions at Main and McKinney Streets in conjunction with new development.	December 31, 2008
	Conduct field investigations and final hydraulic modeling for potential static weirs at Parkway/Highway and James Avenue.	August 30, 2008

Table 4.2.5: Additional Measures to Maximize Collection System Storage

Item	Activity	Implementation Schedule
In-Line Storage Program	Complete planned in-line storage modifications at Parkway/Highway and James Avenue, if found to be feasible.	April 18, 2009
In-Line Storage Program	Examine the potential for capital projects to increase in-line storage at Willow Run, 4th Street and Pleasant Street and incorporate projects into the Watershed Plans.	To be conducted as part of the Watershed Plans

4.3 Review and Modification of Pretreatment Requirements

This control involves the following elements:

- Regulation of non-domestic dischargers within the District, including managing the impact of any non-domestic flow into the District's infrastructure and impacts on CSO quality and the receiving waters,
- Minimizing (and eliminating, where possible) non-domestic discharge in the combined sewer area during wet weather events, and
- Ensuring compliance with federal, state and District Rules and Regulations for industrial and non-domestic dischargers.

At this time, it is estimated that approximately 14 percent of the Dry Creek Wastewater Treatment Plant's average dry weather flow is generated from non-domestic dischargers. There are currently six permitted non-domestic dischargers in the District's service area that discharge to the combined sewer system or the separate sewer system tributary to the combined system. In addition, there are also two permitted non-domestic industrial users in the combined sewer area that collect their waste, and do not discharge to the District's sewer system. These two non-domestic industrial users dispose of their small volumes of waste offsite and are required to annually sign a "Certification of Non-Discharge".

The District's Pretreatment Program is administered by their Industrial Monitoring Department, which is part of the Plant Operations Department (under the direct supervision of the Operations Manager). The Industrial Monitoring Department currently consists of a full-time staff of three pretreatment specialists and one college co-op to assist with database management and other duties. The pretreatment specialists perform a range of duties to ensure compliance, including issuing permits, performing reviews, conducting field investigations, issuing notices of violations and fines, overseeing sampling procedures and managing various related programs/procedures, such as the Fats, Oil and Grease Program. The District submits semi-annual and annual compliance reports to the Kentucky Division of Water (KDOW).

The District's pretreatment enforcement efforts are discussed in detail throughout this section and generally cover:

- Inventorying and characterizing non-domestic dischargers
- Programmatic functions and control measures
- Pretreatment operations and budget
- Enhanced program to address the potential for direct discharge of industrially influenced combined sewage that could impact CSO discharges and receiving water quality

4.3.1 Inventory and Characterization of Non-Domestic Dischargers

Within the District's sewage collection system, there are two classifications of non-domestic dischargers, Non-Significant Users (NSUs) and Significant Industrial Users (SIUs).

Non Significant Users

A Non-Significant User is an industrial or commercial user that generally does not pose an obvious threat, potential harm, or a measurable impact (discharge volumes of less than 25,000 gallons per day) to the District's wastewater collection system, CSOs, wastewater treatment plants, or to the District's employees. Examples of NSUs include retail commercial users, restaurants, warehouses, small industrial manufacturers, low volume food processors, etc.

While a single industry may not have a measurable impact, a grouping of several similar industries may add a specific pollutant to the waste stream in a concentration that could impact CSO quality and the receiving waters. The evaluation of the potential for a cluster of NSUs to have an adverse affect on the wastewater discharge is an ongoing process for the District. The CSS is located in Kenton and Campbell Counties in the District's service area. Recently, the District has begun to utilize GIS information to locate clusters of small industries/NSUs specifically within the combined sewer service area of Kenton County. At this time, no industrial clusters have been identified that offer the potential for a pollutant concentrated wastewater. However, NSU information for the combined sewer service area in Campbell County is not currently developed sufficiently to complete a similar analysis. The District is currently working to collect this data and the schedule for completing collection and analysis of this data for Campbell County is presented in Table 4.3.3 at the end of this section. To assist in this work, the District hired a college co-op in December 2007 to help monitor NSUs. If clusters are identified in the future, the cluster area will be evaluated for special water quality monitoring. The District utilizes Standard Operating Procedure #14 (provided in Appendix E) to identify NSUs, which is fully implemented for industries located in the CSS.

Significant Industrial Users

A Significant Industrial User is defined in the District's Rules and Regulations as "(a) all industrial users subject to Categorical Pretreatment Standards under 40 CFR 403.6 and 40 CFR Chapter I, Subchapter N; and (b) any other industrial user that; discharges an average of 25,000 gallons per day or more of process wastewater to the POTW (excluding sanitary, non-contact cooling and boiler blow-down wastewater); contributes a process waste stream which makes up five percent (5%) or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or is designated as such by the Sanitation District as defined in 40 CFR 403.12(a) on the basis that the industrial user has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement [in accordance with 40 CFR 403.8 (f) (6)]."

There are currently 54 permitted SIUs within the District as shown in Figure 4.3.1. The SIUs are further broken down into the following sub-classifications:

- Categorical Industrial Users (CIUs) – There are 20 CIUs in the District. A CIU is defined as an industrial user subject to categorical pretreatment standards which have been promulgated by the USEPA. A CIU must adhere to discharge limits and sampling procedures/collection methods outlined by the USEPA and further defined in their District Pretreatment Permit.

  All but 2 of the CIUs are located in the separately sewered area that is not tributary to the CSS. The 2 CIUs located in the CSS – Interplastics Corporation and PKI, Inc. (dba Powder Kote Industries) – collect their waste for off-site disposal and submit a yearly Certification of Non-Discharge. Interplastics Corporation is classified under the organic chemicals/plastics/synthetic fiber category and PKI, Inc is classified as a metal finisher. Because both of the CIUs contain their waste for offsite disposal, there are no CIUs that discharge into the District's CSS. A copy of an example CIU wastewater discharge permit and non-discharge certification has been included in Appendix F.

  Non-categorical Industrial Users – There are 34 non-categorical industrial users, 28 of which are located in the separately sewered area that is not tributary to the CSS, with 6 located in the CSS. A seventh non-categorical industrial user, Norfolk Southern Railway, eliminated their oil water separator process and decommissioned their industrial tank farm at the end of 2007 and thus is no longer classified as a SIU. One of the 6 non-categorical SIUs in the CSS, Duro Bag, is shifting production from its Covington site in the CSS to their facility in Florence. They have notified the District in writing that they anticipate significantly limited or no production at the Covington site past April 2008. Another one of the 6 non-categorical SIUs, McGinnis, Inc., only discharges for short periods of time after receiving approval to do so from the District. McGinnis is only allowed to discharge during dry weather. The 2 categorical and 5 non-categorical SIUs (excluding Duro Bag's Covington site) are shown in Figure 4.3.2.

  A non-categorical user must follow the local wastewater discharge limits (shown in Table 4.3.1) and sampling methods established in the District's Rules and Regulations and further defined in their Pretreatment Permit. A non-categorical user is generally sampled on a semi-annual basis, but on occasion occurs more frequently. A sample copy of a non-categorical industrial user wastewater discharge permit (in the combined sewer area) has been included in Appendix G.

  The 6 non-categorical industrial users that discharge into the combined sewer system are further described in Appendix H.

Figure 4.3.1: Significant Industrial Users

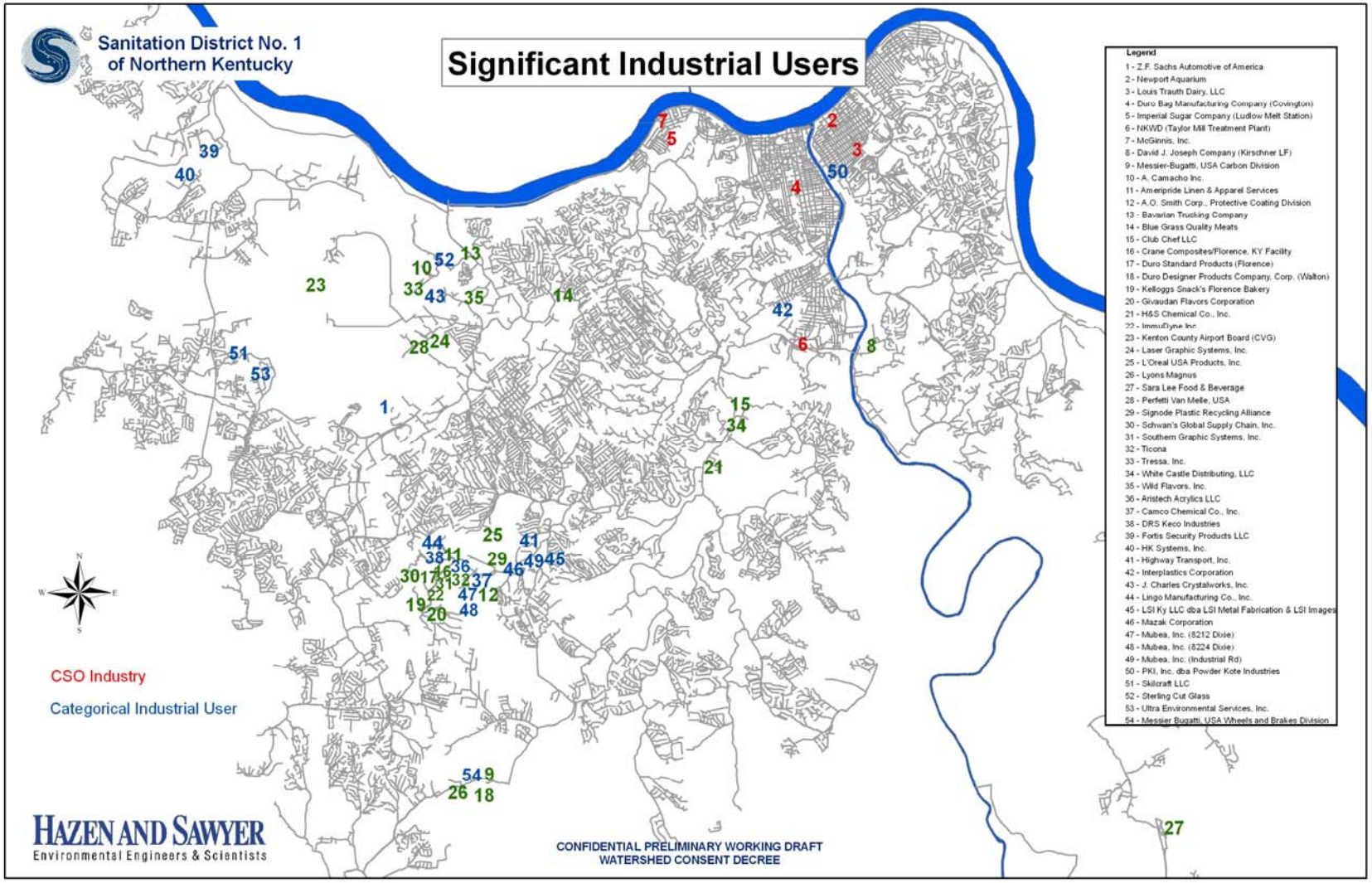
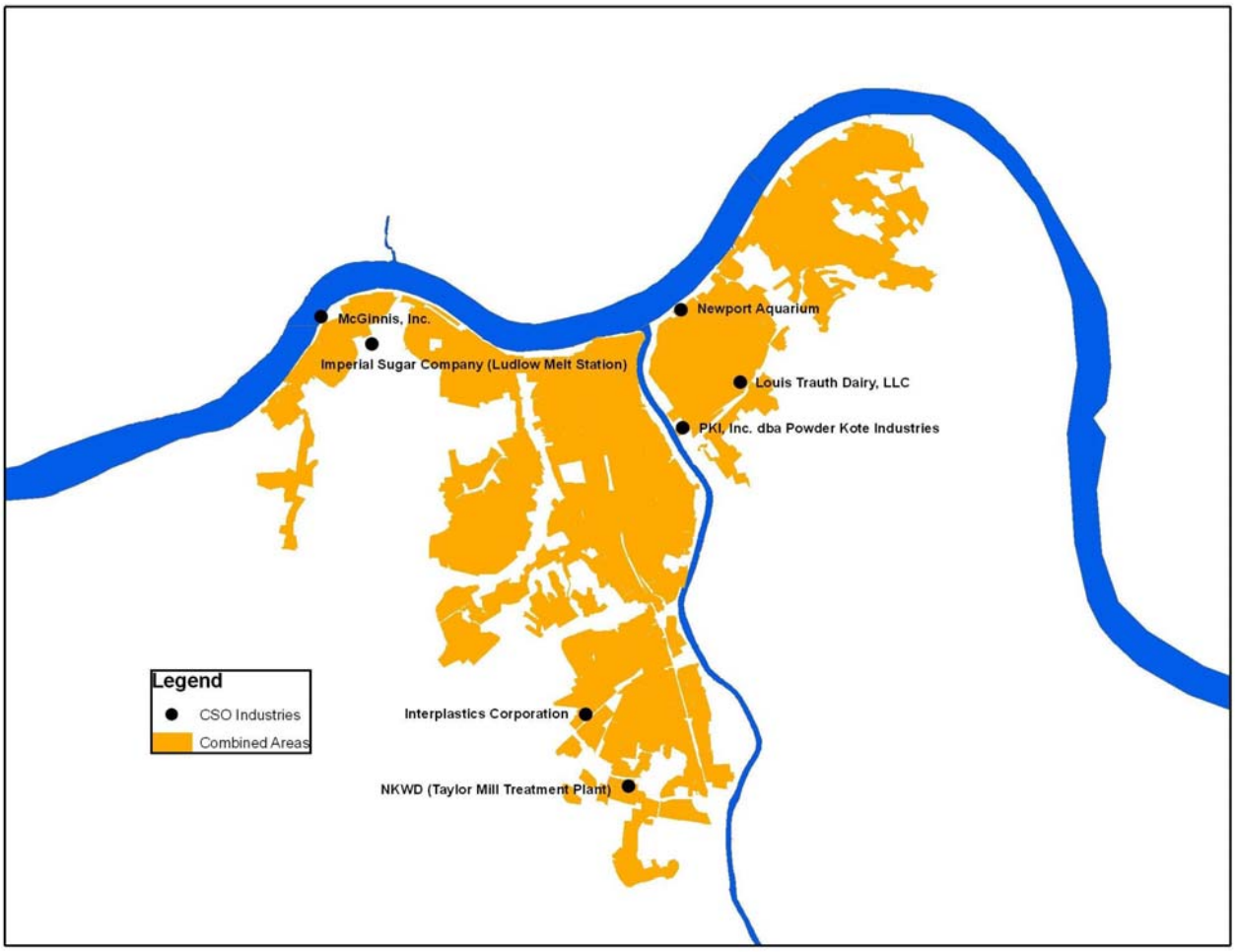


Figure 4.3.2: Map of SIUs Tributary to the CSS



Pollutants of Concern

Each SIU located in or tributary to the CSS is issued a discharge permit with site specific discharge permit limits (see Table 4.3.1). While these limits have been developed to protect the District's sewer system infrastructure, they may also impact receiving water quality in the event of a CSO discharge. The District has undertaken two pollutant loading analyses to understand if the receiving water and CSO quality is being impacted by SIUs discharging during rain events. An engineering desktop analysis was first performed to help identify pollutants of concern and then a sampling program was developed and is currently being conducted to collect samples at both the CSO discharge and the SIU discharge during rain events.

Pollutant Loading – Engineering Desktop Analysis

A pollutant load analysis was conducted by the District to determine the potential for a CSO to exceed acute end of pipe water quality standards due to a tributary SIU discharge. The analysis was conducted utilizing the SIU permit limits, results of the Industrial Monitoring Department's semi-annual sampling of SIU discharges from January 2002 through April 2007, and dilution factors determined using the District's existing hydraulic models.

Table 4.3.1 Dry Creek WWTP Service Area Local Wastewater Discharge Limits

Discharge Pollutant Parameters	Type Sampling Method	Maximum Limit (mg/L)
Arsenic, Total	Composite	2.7
Barium, Total	Composite	100
Cadmium, Total	Composite	1.3
Chromium, Total	Composite	6
Copper, Total	Composite	5
Lead, Total	Composite	2
Mercury, Total	Composite	0.0005
Nickel, Total	Composite	5
Selenium, Total	Composite	2.4
Silver, Total	Composite	1
Zinc, Total	Composite	3.5
Cyanide, Amenable (CN, A)	Grab	2
Cyanide, Total (CN,T)	Grab	3.5
pH	Grab	6.0 - 10.0 (S.U.)
Temperature	Grab	150 degrees F. (65 degrees C)
Phenols	Composite	31.0
Grease & Oil	Grab	50

These effluent limitations have been established to assure compliance with the objectives presented in the Introduction of these Rules and Regulations. The Sanitation District reserves the right to establish more stringent limitations or requirements on discharges to the wastewater disposal system if deemed necessary to comply with the objectives presented in the Introduction to these Rules and Regulations.

This analysis determined that if the SIUs discharge at their current permit limits and flows, that most of the monitored pollutants would be significantly below acute end of pipe standards. However, under certain conditions CSOs downstream from 3 SIUs (Louis Trauth Dairy, LLC, NKWD and the Newport Aquarium) may exceed acute end of pipe water quality standards for some or all of the following: cadmium, copper, lead, selenium, silver and zinc. It is important to note, however, that based on results of the Industrial Monitoring Department's semi-annual sampling of SIU discharges from January 2002 through April 2007, the SIUs discharge most of the monitored pollutants significantly below (an order of magnitude in most cases) their permit limits. Based on actual sample results, only cadmium levels from NKWD flagged as a concern. Several assumptions were required to complete the engineering desktop analysis that limit the usefulness of the results to identifying potential pollutants of concern. Therefore, the identified pollutants of concern were incorporated into the SIU sampling program.

Pollutant Loading – SIU Sampling Program

The results of the engineering desktop analysis indicated that there was potential for the SIUs to impact CSO and receiving water quality, therefore the District moved forward with conducting a SIU sampling program. Under the SIU sampling program, which began in December 2007, each CSO with a tributary SIU that may discharge during wet weather is being sampled at the same time as its tributary SIU to understand the impacts of the SIUs' discharges on the water quality from the CSO and on the receiving water body. In addition, as part of the Overflow Characterization Wet Weather Sampling Program, samples are being collected at CSOs that do not have tributary SIUs or non-domestic discharges, to determine a baseline for comparison. The program includes sampling at 4 of the 6 non-categorical SIU sites (Duro Bag and McGinnis were left out of the program for reasons described earlier), at a former SIU site (Norfolk Southern), and at the 5 CSOs downstream of these industries. Norfolk Southern is remains in the program despite being de-listed because of the concern for potential ground contamination effecting stormwater runoff quality. The five CSOs and their tributary SIUs are listed in Table 4.3.2.

Table 4.3.2: Implementation of Measures to Modify Pretreatment Requirements

SIU	**Associated CSO**
Norfolk Southern (former SIU)	Adela Street (1710003)
NKWD	Church Street (1850158) and 44th Street (1880013)
Louis Trauth Dairy	10th Street (1420115)
Newport Aquarium	Columbia Street (0790084)
Imperial Sugar	Adela Street (1710003)

The SIU sampling program is testing for the following parameters:

- Total Copper
- Total Lead
- Total Zinc
- Total Cadmium
- Total Selenium
- Total Silver
- TSS
- TKN
- Ammonia
- CBOD5
- pH
- Temperature
- Oil and Grease (sample collected downstream of Norfolk Southern)

The monitoring conducted at each SIU and representative overflows across the District's collection system were performed in accordance with the methodology detailed

in both the Field Monitoring and Sampling Plan (FMSP) and the associated Quality Assurance Project Plan (QAPP) associated with the Overflow Characterization Program. Each wet weather event includes discrete samples by means of auto samplers at each of the locations across the collection system. The sample sites are located at the SIU and the downstream CSO. Because the SIU sampling program was designed to occur synoptically (at the same time or soon after) with the Overflow Characterization Program, the criteria used to define a wet weather sampling event include:

- No precipitation greater than 0.1 inch in a sewershed 72-hours before a sampling event. This requirement is void if the Overflow Characterization Program precedes the SIU Sample Program by less than 72-hours;
- A minimum of approximately 0.5 inches of rainfall over a 6-hour period in a sewershed;
- Sources discharging into the Ohio River and/or tributary streams are active;
- If local knowledge and review of available flow meter data indicates the sewer system has recovered hydraulically, then sampling could occur based on the judgment of the team as guided by the FMSP.

The SIU sampling program will occur in two phases and began in January. The goal is to obtain 2 to 3 synoptic samples at each SIU/CSO pair. At the conclusion of the sampling program, baseline levels for pollutants of concern will be established, which will be utilized to estimate the SIUs impact. It is the District's intent to modify the SIUs discharge permit to address the specific pollutants of concern. These modifications may likely be in the form of revised discharge limits or a prohibition of discharge during wet weather.

4.3.2 Basic Programmatic Functions/Control Measures

The District's pretreatment program includes several standard programs and control measures. These are described below in more detail.

Standard Permit Requirements

The permits issued to SIUs in the combined system currently include by reference the SIUs approved Wet Weather Operating Plan, as well as Spill/Slug Prevention requirements and other standard language.

Wet Weather Operating Plan

Each industrial user that is tributary to a CSO must have an approved Wet Weather Operating Plan on file with the District. At this time, there is no standard format for Wet Weather Operating Plans. The current Wet Weather Plans were developed by contacting the industry and requesting their wet weather plan of action or capability to contain their discharge during a storm event. At this time 5 of the 6 SIUs that discharge to District's CSS have indicated an inability to hold their flow during a wet weather event. This includes Duro Bag, who is expected to cease operations in early 2008, with McGinnis being the only SIU with the ability to hold during wet weather.

The District is currently in the process of developing more rigorous wet weather operating plan guidelines and regulations, which will be based on the results of the SIU sampling program and include more frequent inspections and/or inspections during a rain event. The schedule for developing the updated Wet Weather Operating Plan is presented in Table 4.3.3 at the end of this section. A sample copy of an existing Wet Weather Operating Plan has been included in Appendix I.

Spill/Slug Prevention
Each industrial user is responsible for providing facilities for protection from accidental discharge of prohibited materials or other regulated wastes and slug discharges.

1. Slug Loading - The discharge of any pollutant, including oxygen demanding pollutants (BOD, etc.) released at a flow rate and/or pollutant concentration which may cause interference with the wastewater treatment system must be reported to the District prior to the discharge and abide by all the conditions of the District's Rules and Regulations and any conditions the District imposes on the discharge.

2. Accidental Discharge/Spill Reporting – Users must notify the District immediately (within 24 hours) of any slug loading, accidental discharges or any other discharges or highway spills of wastes in violation of their Rules and Regulations to enable countermeasures to be taken by the District to minimize damage to the wastewater treatment system and/or the receiving waters. This notification shall be followed, within five calendar days of the date of occurrence, by a detailed written statement from the user describing the causes of the discharge and the measures being taken to prevent future occurrences.

When the District determines that chemicals or other materials stored on a site may represent a possible hazard to the sewer system, the District may require the development of an accidental spill prevention or slug control plan in accordance with 40 CFR 403. All SIUs that discharge into the District's combined sewer system must have approved Spill/Slug Prevention plans on file, which must be updated every two years. The District sent a letter to all of the SIUs in February 2008 requesting their updated spill plan. It is expected that the updated spill plans will be on file at the Dry Creek WWTP by May 2008. A sample copy of an existing Spill Control Plan has been provided in Appendix J.

In addition, as further discussed in Section 4.7, the District has prepared Best Management Plans (BMPs) for several industry categories to assist with their education on the safe handling of chemicals, oils, and wastewater discharge. These are discussed further in Section 4.7.

Hazardous Waste Discharge
The industrial user must notify the Sanitation District, the USEPA Regional Waste Management Division Director and the state hazardous waste authorities, in writing, of

any discharge into the treatment system of a substance, which, if otherwise disposed of, would be a hazardous waste under 40 CFR Part 261. The industrial user shall provide the notification no later than 180 days after the discharge of the listed or characteristic hazardous waste.

The District has also developed a spill prevention plan for hazardous waste and utilizes it to protect the sewer system and local environment (see Appendix K).

Fats, Oil and Grease (FOG) Program

As further discussed in Section 4.7, the District's FOG Control Program was formally implemented in 2004. As required in the District's Consent Decree, on September 17, 2007, the District submitted a FOG Control Program to USEPA Region 4 and KDOW for review. The FOG Control Program was approved by USEPA and KDOW on January 8, 2008.

The Industrial Monitoring Department is responsible for all activities associated with the FOG Control Program.

Compliance Monitoring

Both NSUs and SIUs are monitored throughout the year. The District's monitoring procedures are discussed below.

Non-Significant Users

NSUs are generally managed as follows:

1. The District monitors new industries, as well as existing non-permitted industries.

2. Surveys of the existing NSUs in the District service area are periodically performed to track NSUs that exist, have moved, have changed the type of business/product, went out of business, or are new. Industrial processes are known to change which is why the District tracks existing industries to keep track of any changes and potential changes to their wastewater discharges.

3. Resources utilized for locating new industries include reading newspapers or other forms of media, word of mouth, reviewing water consumption information from billing, reviewing tap-in forms from engineering, contact from municipal zoning/planning departments, contact from consultants, internet searches, or if the District has experienced problems.

4. Based on the information accumulated as a group, a "potential SIU list" is created from the NSUs. The identified NSUs may be SIUs or NSUs that need to be monitored more in depth. These potential industrial sources are monitored to determine if there is a need to issue them a permit.

5. The monitoring of the NSUs on the "potential SIU list" may involve:

- A yearly inspection, or less often, depending on the NSU;
- Submitting to the NSU a permit application which serves as a questionnaire to be completed (included in Appendix L);
- Sampling, including the installation of a sampling manhole, where necessary;
- A meeting if more information is needed, such as, in determining if the NSU may be a SIU; and,
- If the NSU is new or under construction, initial contact may be performed by an inspection of the construction site and a call to the new NSU, their consultant, or contractor.

As previously discussed, the District has prepared a Standard Operating Procedure (SOP 14) to establish procedures for monitoring and evaluating non-significant users. The District has also undertaken an evaluation to determine if clusters of NSUs in a particular area have any potential for an adverse impact on wastewater discharges or receiving water quality. This is done by updating the District's GIS information to include each location of a non-significant user along with its land use type and other pertinent information. Once mapped, clusters of certain types of non-significant industries, if they exist, can be detected and marked for additional monitoring or inspections. Figure 4.3.3 shows a map of the non-significant users in a portion of Kenton County.

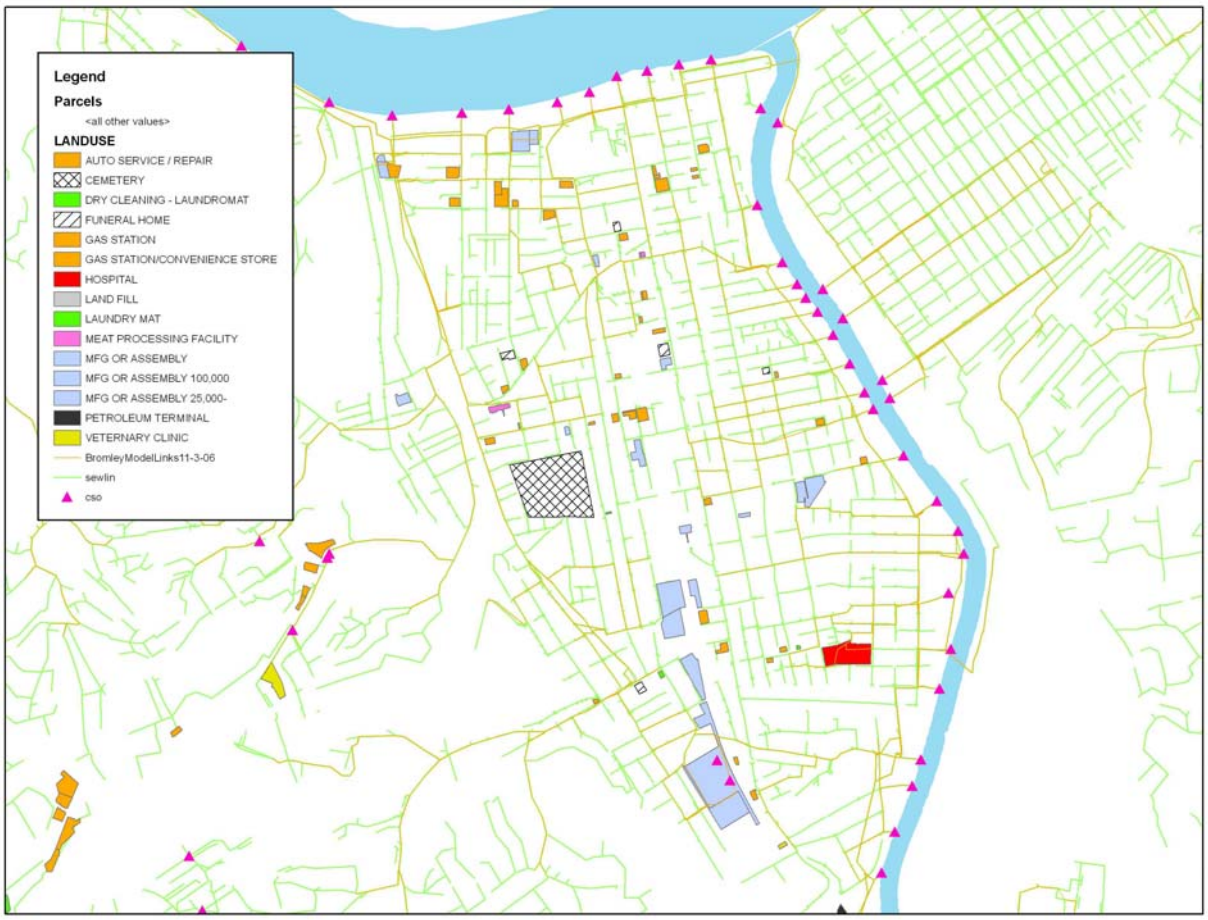
Significant Industrial Users

SIUs are generally managed in conformance within the requirements of their permits. Permits are valid for three years. The District's Pretreatment Program complies with USEPA guidelines and is annually audited by the Kentucky Division of Water.

1. Categorical Industrial Users – CIUs are required to comply with federal pretreatment standards for their particular industrial subcategory, unless more stringent limitations are set forth by the District.

2. Non-categorical Industrial Users – Significant non-categorical industrial users are required to submit to the District, at least once every six months (or on dates specified by the District), a description of the nature, concentration and flow of pollutants required to be reported by the District. This sampling and analysis may be performed by the District in lieu of self-monitoring by the significant non-categorical industrial user.

Figure 4.3.3: Map of NSUs in Kenton County



SIUs are monitored throughout the year by the District, noting all activities of the SIU industrial/commercial users through their permits, by un-announced inspections and/or sampling, and visual observations.

Management of Short Term Specialty Industrial Discharges
In addition to the two classifications of non-domestic dischargers, the District has also implemented three different types of short term specialty industrial discharge permits on an "as-needed" basis:

1. Underground Storage Tanks – A one-time or long-term discharge of accumulated water from a UST removal or repair site that may be subjected to a pollution control device and discharged to the sanitary sewer.

2. Soil Remediation – The removal of contaminated ground water from a site where ground water will be collected, subjected to a pollution control device (if needed) and discharged to the sanitary sewer.

3. Unusual Discharge Request – An Unusual Discharge Request is a discharge that does not readily fall into any established categories. Some examples include floor cleaning operations in warehouses, discharge of glycol from an HVAC system, a bad batch discharge from a food manufacturer, etc. A sample copy of an Unusual Discharge Request approval letter has been provided in Appendix M.

Inspection

As per Section 901 of the District's Rules & Regulations, the General Manager and other duly authorized employees bearing proper credentials and identification are permitted to enter all properties for the purpose of effluent record inspection and/or transcribing surveying, inspection, observation, measurement, sampling and testing of all wastewater treatment works under management of the District.

Each industrial user receives a minimum of one unscheduled inspection by the District's Industrial Monitoring Department yearly. Additional inspections are made based on concerns with the industries discharge or known problems occurring in the local service area. These inspections are typically unannounced to the industrial user, but regularly scheduled by the District. The Kentucky Division of Water normally accompanies the District's staff on 1 - 2 inspections per year to observe their procedures.

A copy of the District's Industrial Monitoring Inspection Report has been provided in Appendix N.

Enforcement

The Enforcement Response Plan (ERP) is used by the District to determine the appropriate enforcement response to a specific violation of the pretreatment requirements. The Emergency Response Guide (ERG), which is part of the ERP, is used to ensure that violations of the District's Pretreatment Program are properly addressed and remedied. The ERP was approved by the USEPA on May 17, 1991 and updated on June 1, 2003. Both the ERG and the ERP have been included in Appendix O.

The following criteria are used by the District when determining the level of enforcement:

- Determine the magnitude of the violation from minor up to and including Significant Non-Compliance;
- Duration of the violation;
- Effect on the POTW;
- Effect on the receiving stream;
- The compliance history of the Industrial User (IU); and,
- The good faith of the IU

The District does not utilize a monetary penalty schedule, but instead determines the amount of a fine on a case-by-case basis. Repeat violations are assessed fines in increasing amounts to achieve compliance.

Enforcement Response Description and Implementation
Once a violation to the pretreatment requirements has been determined, an enforcement response is initiated against the responsible IU. The response is proportional to the violation's severity and sufficient to ensure compliance in a timely manner. The following responses may be used individually or in any combination:

1. A telephone call is used as an initial enforcement response when violations are of a minor nature.

2. A Notice of Violation (NOV) is an official written response that informs the IU a pretreatment violation has occurred. The District issued 76 NOVs to 33 different industries in 2007. Of the 76 NOVs, 64 went to 28 different SIUs but only 3 went to SIUs in the combined system. The combined system SIUs issued an NOV are listed below with the violation identified:

   - Louis Trauth Dairy, LLC – pH went about 11 for 32 minutes and above 10 for 1 hour and 9 minutes.
   - Duro Bag in Covington – The copper daily limit (5.0 mg/L) was exceeded in a sample taken on November 14, 2007 (6.190 mg/L).
   - Northern Kentucky Water District – The copper daily limit was exceeded in a sample taken on July 11, 2007 (18.89 mg/L).

   All 3 of these violations occurred on dry weather days based on readings from the District's rain gage network.

3. Administrative fines are issued as a monetary penalty for violations to the pretreatment program; the fine is issued by and at the discretion of the General Manager. The amount of the fine is determined on a case-by-case basis for each violation. Only a portion of the NOVs issued in 2007 included fines and when fines were assessed they ranged from $500 to $1,500 dollars. The total amount of fines issued with NOVs in 2007 was $36,601. The three combined system SIUs with violations in 2007 were not fined.

4. The cost recovery provision of the ERP allows the District to recover from the non-compliant IU the full cost incurred resulting from the violation. Payment and documentation are handled the same as an administrative fine.

5. An Administrative Order (AO) is an enforcement document issued by the General Manager that directs the IU to undertake or cease a specific activity. There are four types of AOs:

   - Cease and desist orders
   - Consent Orders
   - Show Cause Orders
   - Compliance Orders

6. Supplemental Responses may also be used or be required when issuing enforcement responses. There are four types of supplemental responses:

    - A public notice of Significant Non-Compliance (SNC) is required by 40 CFR 403.8 (f) (2) vii. The Industrial Monitoring Department publishes in the largest daily local newspaper the name, violation and fine that was issued to the IU in SNC.
    - Increasing the frequency of self-monitoring and reporting will be used when the IU has a history of non-compliance.
    - Short-term discharge permits, not to exceed three (3) years.
    - Permit termination

7. Civil litigation – The District's Pretreatment Program establishes the authority to file a civil suit against alleged violators of applicable pretreatment standards for the purpose to seek injunctive relief or a civil penalty. Injunctive relief may require such actions as installation of facilities needed to bring the discharger into compliance.

8. Criminal prosecution – Section 309(c) of the USEPA Pretreatment Act authorizes the federal government to seek criminal punishment for any person who willfully or negligently violates pretreatment standards or who knowingly makes a false statement regarding any report, application, record or other document required by the Pretreatment Regulations. The District's USEPA approved Pretreatment Program establishes similar authority for the District.

9. Termination of service – In extreme circumstances, the only relief from a consistent violator or to stop an ongoing problem may be disconnection of sewer service. The District's Pretreatment Program grants the authority to pursue termination of service.

Compliance and Enforcement Tracking

Several methods for screening compliance data are used to ensure that data is complete, correct, submitted in a timely manner and any violations are identified.

1. Initial screening of compliance data, whether generated through self-monitoring reports submitted by the IU or from sampling events conducted by the Industrial Monitoring Department are reviewed within five days. Generally, the screening occurs on an "as received" basis, within one day.

    - If the result does not exceed the limit then there is no violation.
    - If the result exceeds the limit, sample analysis is re-run as long as the holding times are not exceeded and there is sufficient volume to do so. When the sample result is from a self-monitoring report it will be assumed that the IUs contract lab confirmed the result.

- The results from the first and second run are averaged. If the average result does not exceed the limit then there is no violation. If the average result exceeds the limit then there is a violation and an NOV will be issued.
- If an NOV is issued, a fine and/or further enforcement action may be undertaken.
- The IU must then re-sample within thirty-days to demonstrate a return to compliance.

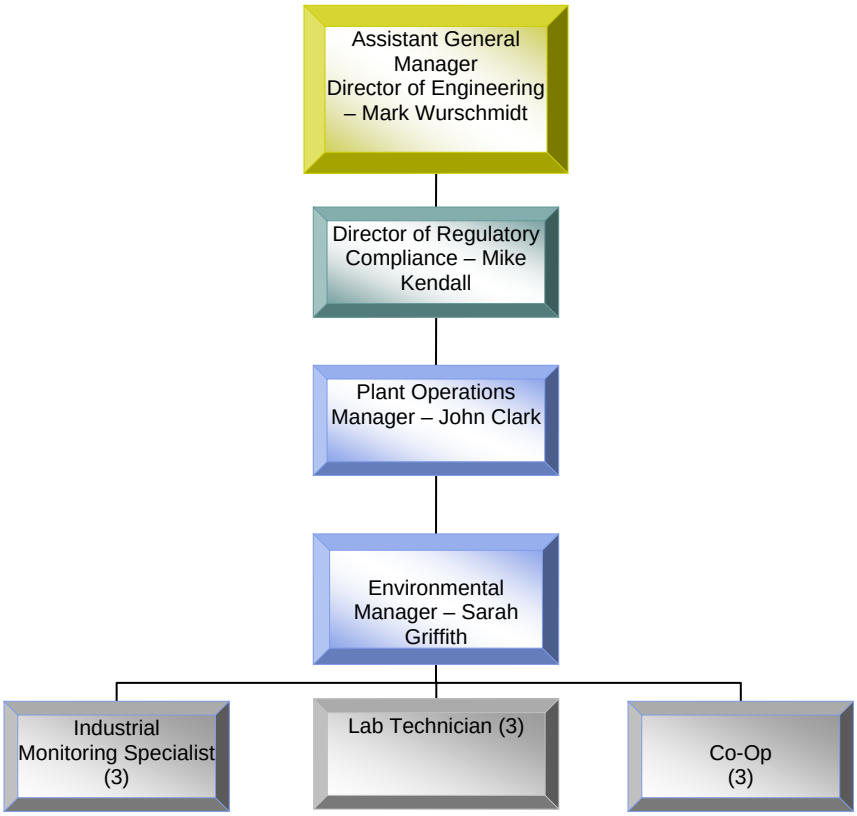
2. All compliance data is entered into the Linko-CTS (Compliance Tracking System), which is managed by the District's Industrial Management Department. Linko-CTS, is a computer program used in tracking industrial user's compliance with applicable pretreatment standards. The District utilizes Linko-CTS 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. Enforcement statistics presented in the enforcement section above were pulled from a report exported from the Linko-CTS system.

4.3.3 Pretreatment Program – Operations and Budget

Staffing and Management

As previously discussed, the District's Pretreatment Program is administered by the Lab and Industrial Monitoring Department and consists of a full-time staff of three pretreatment specialists, three lab technicians, and three college co-ops. The Industrial Monitoring Department handles all functions of the Pretreatment Program, with assistance from other District support personnel, as needed. The Industrial Monitoring Department is part of the District's Plant Operations Department, under the direct supervision of the Operations Manager. The Operations Manager reports to the Director of Regulatory Compliance and the Assistant General Manager of Engineering. The Lab and Industrial Monitoring Department is structured shown in Figure 4.3.4.

Figure 4.3.4 Lab and Industrial Monitoring Organization Chart



Budget

The 2007 annual budget for the Pretreatment Program is estimated to be $272,480. An additional student co-op was employed during the year which will increase the year 2008 budget. The Pretreatment Program is under the control of the Industrial Monitoring Department which monitors, inspects and issues fines. All money generated from fines is routed to the Accounting/Finance Department and returned to the general budget.

4.3.4 Enhanced Pretreatment Program

The District has been conducting evaluations and determined the best approach to upgrade their Program is to initiate a 5 point action plan. This action plan addresses the strengthening of their Pretreatment Program to further protect CSO influenced areas. The District is now working towards implementing the following 5 point plan, which includes the District's current efforts as well as improvements to its permitting, investigation, coordination, response, and educational processes/efforts. The schedule for implementation of this enhanced program is provided in Table 4.3.3 at the end of this section.

Permitting

1. Re-evaluate permits of existing SIU industries tributary to CSOs, including:

    - Evaluate permits with respect to the potential of direct discharges from the combined system, and modify the permits accordingly. The permits for the existing CSS SIUs have been reviewed and will be revised once the synoptic sampling results are available.
    - Review water quality samples to see if there are pollutant concentrations of concern (currently ongoing).
    - Revise the permit to mandate specific wet weather operational or pollutant limit changes, if needed. This will be completed once the synoptic sampling results are available.

2. Unusual Discharge Approval Letters – Unusual discharge approvals are used to control a short term discharge for such activities as decommissioning tanks/plants, redevelopment areas, remediation projects, including:

    - Limit time frame and volume of discharge (ex. prohibit discharge during wet weather).
    - Provide pollutant limits through reference to the District's Rules and Regulations.
    - Establish sampling and analysis record keeping.
    - Periodically inspect site to ensure compliance. All discharges greater than 1 day in length are inspected pre-discharge, during the discharge, and post-discharge.

3. Maintain records and utilize SOP 14 to identify areas where the combined effects of multiple non-domestic dischargers are a potential concern. Additional staff has been added to ensure this occurs.

4. Non-Significant Wastewater Discharge Permits - Establish control of non-categorical dischargers that are not considered Significant Industrial Users, but offer the potential of a harmful discharge based on mapping and sampling.

5. Increase sampling frequency of SIUs tributary to CSOs by adding 1 wet weather sampling event at each CSS SIU. This was added to the program in 2007 and all CSS SIUs were inspected during wet weather events as discussed below.

Investigation

1. Inspect SIUs tributary to CSOs during a rain event to view actual procedures and observe routing of discharged flow. This is used to ensure compliance with permitted wet weather operations. All SIUs in the combined system were inspected during wet weather in 2007.

2. Upgrade list of all non-domestic dischargers on a semi-annual basis and analyze for Industrial Dischargers that offer the potential of being permitted. Upgrading and maintaining the list is the primary function of the new co-op.

3. Periodically sample CSO discharge locations to evaluate potential affects of industries. The SIU sampling program is the first round of addressing this.

4. Periodically sample areas of clustered NSU industries to determine their combined effect, if clusters are identified through analysis.

Coordination

1. Restaurants are monitored under the FOG program. Service stations are analyzed along with other NSUs.

2. Hazardous Waste – Each SIU is required to submit an updated spill plan every 2 years and hazardous chemicals and containment are inspected during each annual inspection.

3. GIS - Update CSO industry maps to list areas of public use downstream of the SIU. These maps have been updated and are included on the data sheets in Appendix H.

4. Pump Station Operations - Pump station crews to notify of unusual discharge flow and indications of pollutants.

5. LDSAP - Coordinate with the District's sewer line group on inspections of sewer lines and indications of defects potentially caused by industrial discharges.

6. Northern Kentucky Water District - Coordinate with the Water Resource Management Department on notification of water tank draining or line flushing.

7. Fire Department - Establish notification procedure of fires at industries, industrial spills, vehicle accidents. The Industrial Monitoring department is designing and creating an informational pamphlet to provide to fire departments with the important information on industrial fires and spills. The information will be distributed to local fire departments by the District's Safety Manager.

Response

1. The District's safety manager responds to spills to provide oversight and technical information to first responders in order to protect the collection system.

Education

1. Establish and continuously update educational and technical assistance programs for industries, including BMPs. The District's Water Resources department currently creates and distributes educational and technical

assistance material for susceptible industries on an annual basis. This is further discussed in Section 4.7.

2. Educate businesses on the Federal Pollution Prevention Act. The District's Water Resources department partners with local cities to provide pollution prevention educational materials. This is further discussed in Section 4.7.

3. Exhibit at local trade shows or school programs to provide educational material. This is handled by the District's Water Resources department and the most recent example of this is the Northern Kentucky Home Expo that was held on February 8th through the 10th, 2008.

4. Work with local waste oil companies to establish volunteer waste oil disposal. The District's Water Resources department coordinates with the Household Hazardous Waste Action Coalition (HHWAC) in conjunction with the Boone, Kenton and Campbell County Hazardous Waste Management Departments. The HHWAC hosts a public information hotline describing how to properly dispose of hazardous wastes, including used motor oil. This is further discussed in Section 4.7.

4.3.5 Summary and Recommendations

The District has and continues to maintain a very effective and award winning (KY/TN Water Environment Association Control Authority Pretreatment Excellence Award) Pretreatment Program. While the program previously has been utilized to protect the District's sewer facilities, it has now been modified to protect the environment and the receiving waters from the potential of direct industrial discharges from the combined sewer area during rain events. The District will continue to look for and identify both significant and non-significant users and to monitor permittees in the combined system.

To further show how the District is fully implementing this minimum control, the activities discussed above are recounted below in the context of the findings and recommendations from the July 6, 2005 NPDES Compliance Evaluation Report by USEPA Region 4. These comments are highlighted in Table 4.3.3 to demonstrate that the District has addressed the issues and recommendations that were raised and has implemented actions to come into compliance with NMC 3.

Table 4.3.3: Response to Compliance Evaluation Comments

Item	Response
Provide information about its evaluation of SIU impacts on CSOs	• This information is provided throughout this section. Additional evaluation will occur when data collected from the ongoing SIU sampling program is available for analysis. • Additional actions required to finalize the District's Wet Weather Operating Plan for non-significant users are identified below along with their proposed implementation schedule.
Modify permits for the SIUs with wet weather holding capability	• As discussed in Section 4.3.1, the permits of the SIUs within the CSS will be modified once the results of the SIU sampling program are available. • Modifications may include prohibition of discharges during wet weather, or industry specific permit limits. Additional actions required to finalize this item are identified below along with their proposed implementation schedule.
Consider implementation of batch discharge requirements for "one time" and special permits (such as groundwater remediation systems)	• As described in Section 4.3.2, the District currently utilizes three types of special or short term permits for underground storage tank remediation, for soil remediation, and for unusual discharge requests. • See Appendix M for an example permit.
Evaluate non-domestic discharges to the combined sewer system other than SIUs	• NSUs in the CSS or areas tributary to the CSS within Kenton County have been analyzed as discussed in Section 4.3.1. • The District is currently working to upgrade its database of NSUs in the CSS and areas tributary to the CSS within Campbell County and will utilize the information to determine if there is a potential for water quality impacts. Additional actions required to finalize this item are identified below along with their proposed implementation schedule.
Conduct an inventory of non-domestic discharges and an assessment of the impact of all non -domestic discharges (including SIUs) on CSOs and receiving waters	• As reported in the previous bullets, a desktop engineering analysis was performed for the identified SIUs that discharge to the CSS or sewers tributary to the CSS, and based on the results of this analysis; a synoptic SIU sampling program is underway to evaluate any impacts of these discharges on CSO quality and the receiving waters.

Table 4.3.3: Response to Compliance Evaluation Comments

Item	Response
Conduct an inventory of non-domestic discharges and an assessment of the impact of all non -domestic discharges (including SIUs) on CSOs and receiving waters	• Based on the results of the SIU sampling program, the industries' wet weather operating plans will be updated by the District to address any restrictions required for discharges during rain events. • Also, an inventory of the NSUs has been completed for a portion (in Kenton County) of the CSS and areas tributary to the CSS and is underway for the remaining portion (in Campbell County). • Additional actions required to finalize this item are identified below along with their proposed implementation schedule.

To comply with NMC 3, Review and Modification of Pretreatment Requirements, the District will continue with all of the activities and programs described above. As part of that effort, the District will implement additional measures to protect the environment and receiving waters from any adverse effects related to industrial discharges as indicated in Table 4.3.4. An overall schedule of activities for all of the nine minimum controls is included in Appendix D.

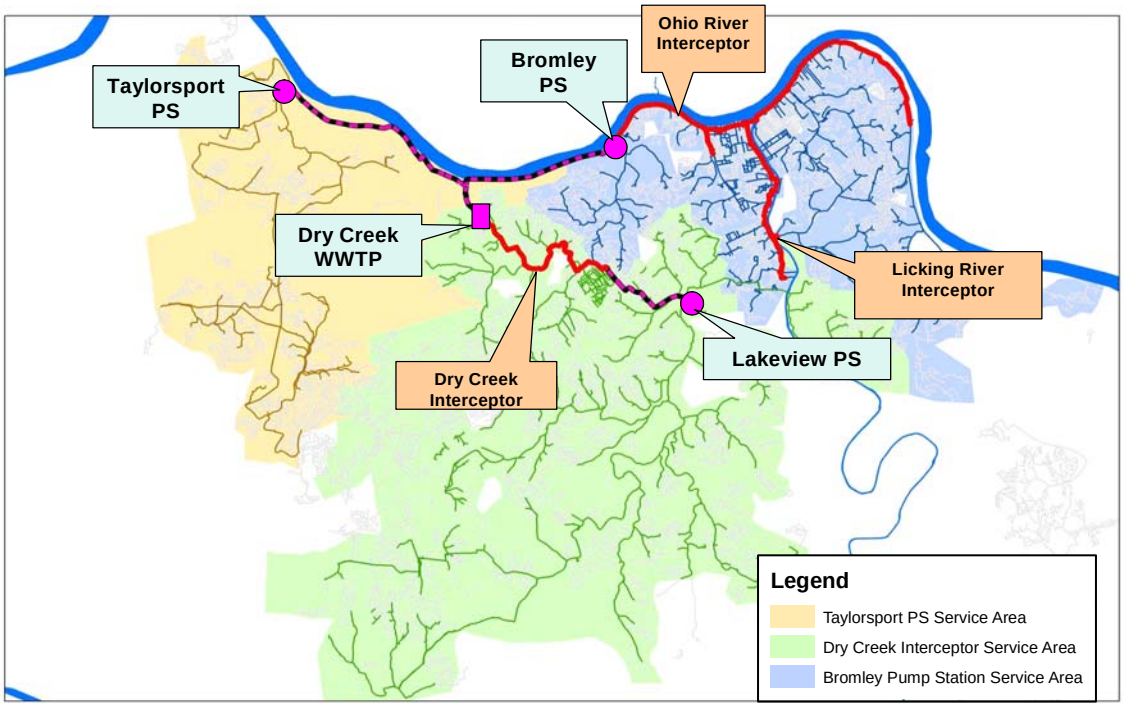
Table 4.3.4: Additional Activities to Modify Pretreatment Requirements

Item	Activity	Implementation Schedule
Revise CSS SIU permits	Complete synoptic sampling	June 30, 2008
	Analyze sampling data and complete revisions to SIU permits	September 30, 2008
NSU Evaluation	Update database on NSUs in Kenton and Campbell Counties	March 31, 2008
	Evaluate NSUs in Kenton and Campbell Counties to determine if clusters exist with the potential to impact water quality. Permit NSUs as necessary.	December 31, 2008
Fire Department Notification	Design and create a pamphlet for distribution to local fire departments to educate them on whom to contact in the event of an industrial fire or spill.	September 30, 2008

4.4 Maximization of Flow to POTW for Treatment

The issue of maximizing flows to the Dry Creek WWTP hinges on the capacity of each portion of the collection and treatment system associated with the WWTP. This is a complicated issue that must focus on all aspects of conveyance and treatment and the capacity of the entire system is dependent upon the limiting factor. In this case, the combined sewer system interceptor, the Bromley pump station, and the Dry Creek WWTP are the three pieces that must be examined. Figure 4.4.1 shows the District's entire service area. The combined system is included in the shaded blue area and is tributary to the Bromley pump station.

Figure 4.4.1 Dry Creek WWTP Service Area



To examine the District's capacity to convey flows from their CSS to the Dry Creek WWTP, the approach was to answer the following questions about each section of the combined system (the combined interceptor, Bromley pump station, and Dry Creek WWTP):

- What is the peak sustained capacity?
- Is the District utilizing its full capacity?
- Are there low cost options for increasing capacity or more fully utilizing existing capacity?
- What is the overall peak sustained capacity considering all three?

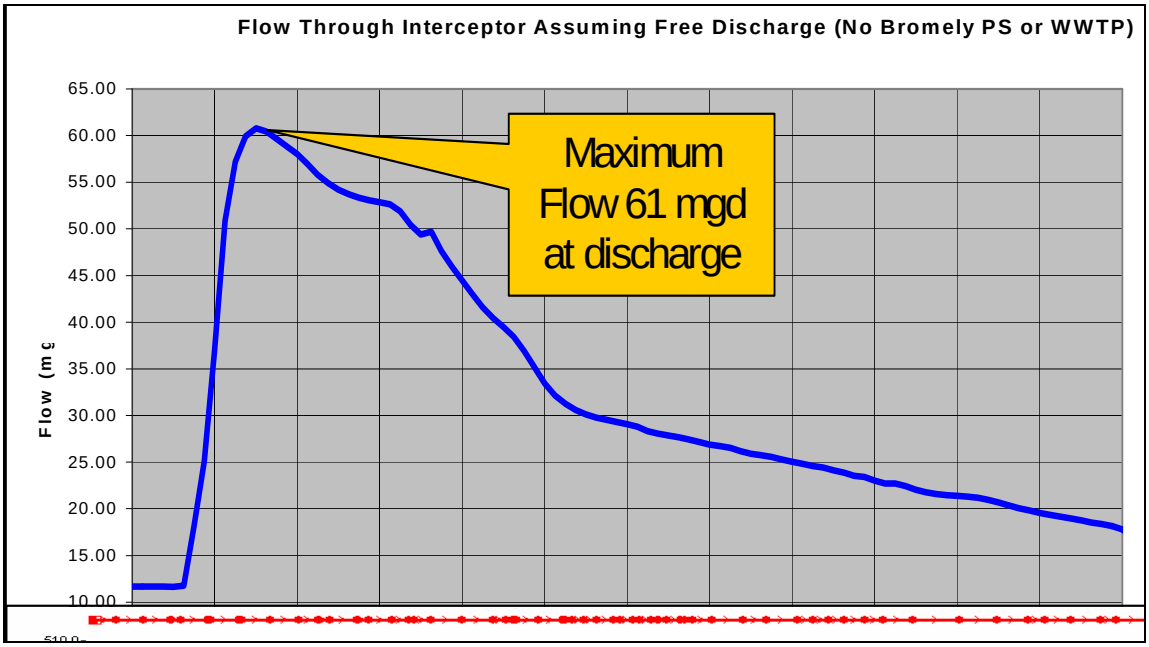
To fully understand the ability of the District to convey flows from the combined system, all aspects of conveyance needed to be examined: the interceptor system, Bromley

pump station, and the Dry Creek WWTP treatment capacity. Limitations in any one of these would limit the flow to treatment from the CSS. This section will detail the capacity analysis as well as the results and recommendations.

4.4.1 Interceptor Capacity Analysis

As part of the investigation into maximizing flows from the combined system, the District investigated the interceptor system that conveys flows to the Bromley pump station. To isolate the impact of the Bromley pump station on the ability of the interceptor to deliver flows, the District's hydraulic model was run with a free discharge outfall in the place of the Bromley pump station. This scenario would provide the approximate maximum deliverable capacity of the interceptor if there were no downstream restrictions. Figure 4.4.2 shows the output hydrograph at the downstream end of the interceptor; the approximate maximum hydraulic capacity of the interceptor was shown to be approximately 61 MGD as a result of this analysis. This is based on a 6-month storm. Larger storms were analyzed but only resulted in increased overflow volumes and no additional conveyance.

Figure 4.4.2 Model Output Hydrograph with Interceptor as Free Discharge

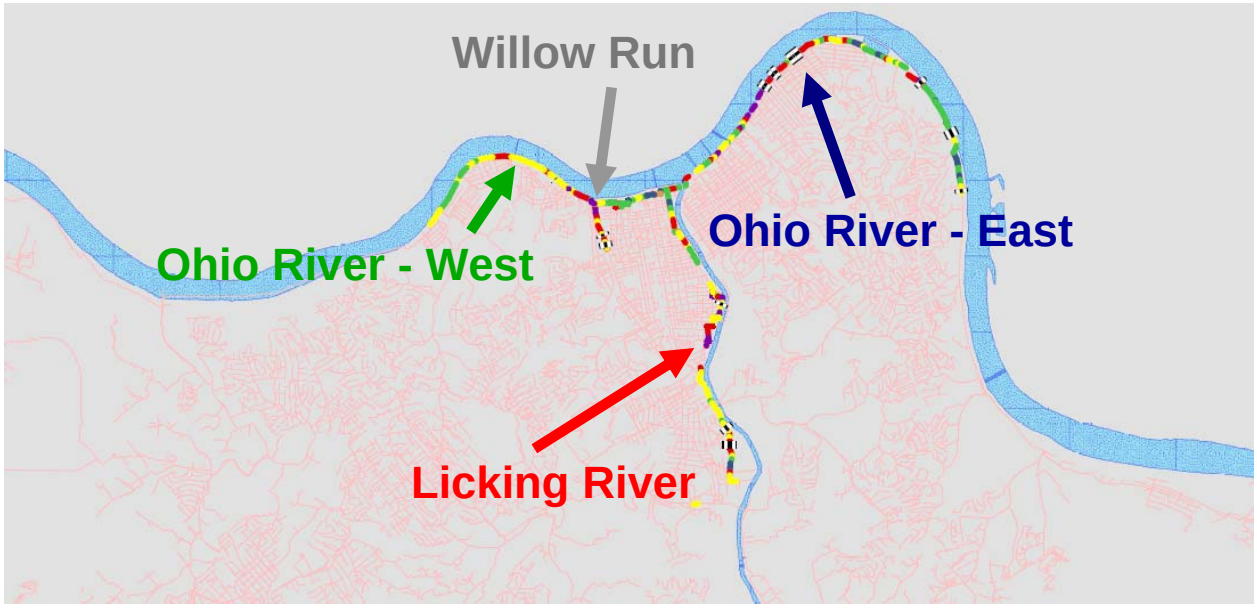


One of the factors that affect the ability of the interceptor to convey flows to the Bromley pump station is the level of sediment present within sections of the interceptor. The District was aware of location within the interceptor with significant buildup of sediment through their day-to-day O&M activities, but did not have a clear understanding of the extent of sedimentation and the impacts of sediment on conveyance capacity. Therefore, in 2007, the District hired a contractor to televise and sonar all of the interceptor sewers in the combined system. The contractor utilized a process called

TISCIT (Totally Integrated Sonar and Camera Inspection Technique) to capture video and still images along the length of the sewers both above and below the waterline.

The goal of this analysis was to document the service and structural condition of each inspected segment of the interceptors and to utilize this information to develop an understanding of the impacts of the sediment on the ability of the system to convey flow to the Bromley pump station. Figure 4.4.3 shows the sewer locations that were inspected, a total of almost 79,000 ft, as part of this analysis.

Figure 4.4.3 Combined System TISCIT Inspected Sewers



The TISCIT process allows for the use of sonar to develop images of the sewers below the water line that could not ordinarily be collected without costly bypass pumping, along with videos of the sewer above the water line collected with a CCTV camera. It is the sonar data that shows the sedimentation within the interceptor and which can be used to analyze impacts of the sedimentation on the ability of the combined sewer system to convey flow. The CCTV video provides information on the structural condition of the sewer and any blockages above the waterline. Figure 4.4.4 shows an example sonar image that was captured during the analysis.

The image shows that, at this specific location, there is approximately 9 inches of sediment within a 27 inch sewer. Images similar to this were taken all along the length of the interceptor and were utilized to develop an understanding and approximation of the sediment within the system. The worst defect in a pipe segment in terms of level of sediment and/or blockages was translated to a service grade of 1-5 (with 5 being the worst service level) for each pipe. The results of the service analysis for the combined system are shown in Figure 4.4.5. Only about 28% of the surveyed pipes were found to have a service grade of 4 or 5.

Figure 4.4.4 Sample Sonar Image

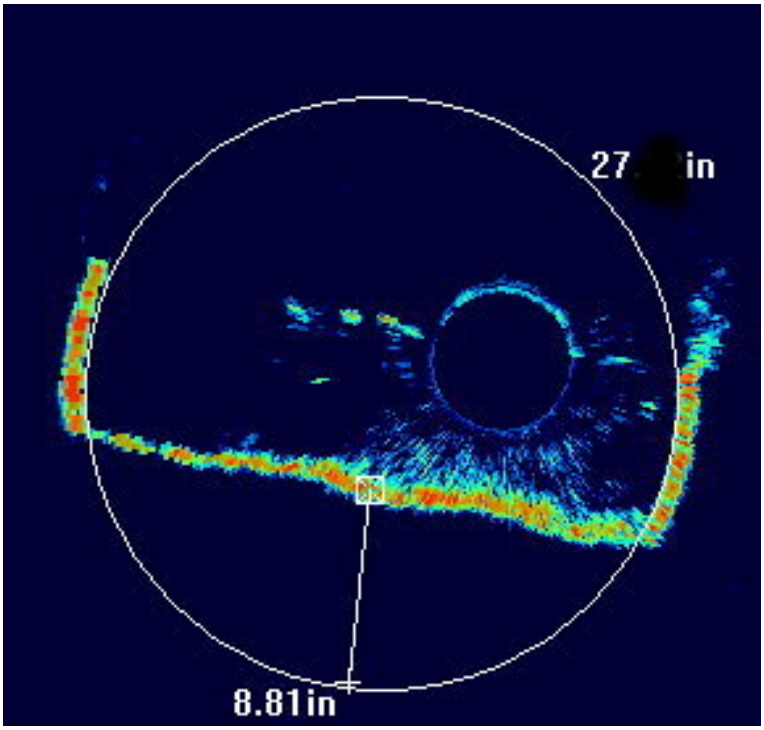
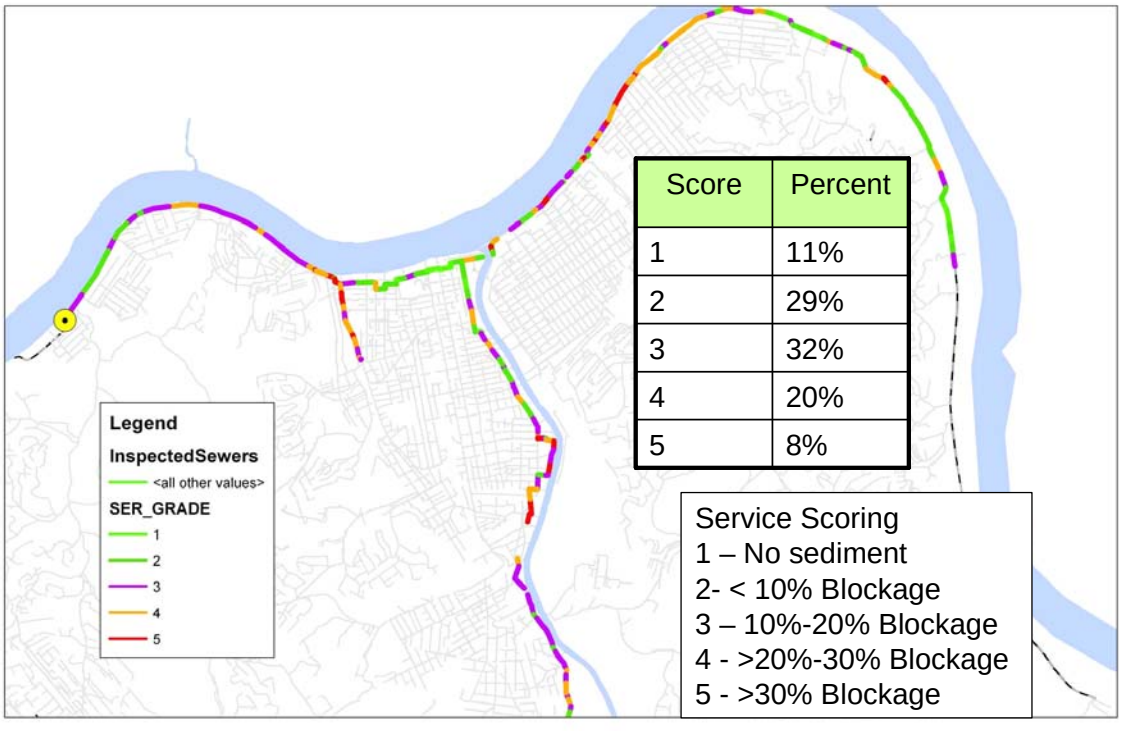


Figure 4.4.5 Combined System Service Grades from TISCIT Inspection



This data was utilized to examine any limitations in the interceptor that would impact the conveyance in the system. To investigate the impact of the sediment on the interceptor capacity, it was necessary to take the observed data and build the sediment impacts into the existing hydraulic model. The raw sediment depth data was synthesized and imported into the Bromley sewershed hydraulic model network within the Infoworks CS model. A total of 207 sewers were updated with sediment depth based on the observed field data. The model was run both with and without the sediment data in the inspected lines to determine the impact on system overflow volumes. The three different typical year simulation scenarios listed below were run to determine the impacts of sediment, and the results are presented in Table 4.4.1.

- Typical Year – existing sediment depths
- Typical Year – all sewers >=15% full of sediment are cleaned
- Typical Year – all sewers are cleaned

Table 4.4.1 Typical Year Model Simulation Results

Model	**Total Number of Cleaned Lines**	**Total Overflow Volume** (MG)	**Overflow Volume Reduction** (MG)
All Cleaned	207	1,358	2.4
>= 15% Cleaned	43	1,359	1.3
None Cleaned	0	1,360	0.0

These results show that for the typical year rainfall events, approximately 2.4 million gallons (MG) of overflow volume could be eliminated if the sediment was removed from all 207 lines. On a percentage basis, this is less than 0.2% of the total system wide overflow volume for the typical year, but still represents a significant quantity of overflow. Additionally, by cleaning only those lines filled with 15% or more of sediment (43 lines), over half of the total benefit could be achieved. Acknowledging the cost and effort that would be required to clean all 207 sections, the results of this analysis point to targeted cleaning programs that focus on the worst sections with sediment. As such, the District is utilizing this information to develop a cleaning program for the interceptors as part of its CSAP in order to increase the available capacity of the interceptors.

It should be noted that the removal of the sediment alleviates local capacity restrictions but this also results in “moving” overflow volume between outfalls. As shown in Table 4.1.1 the model projects a net reduction in overflow volume, but overflows at some individual outfalls (those downstream of sewers with removed sediment) are projected to increase, effectively moving overflow volume from outfalls upstream of the cleaning. There is a projected reduction, but this highlights the limitations of increasing capacity in the CSS through only interceptor cleaning.

4.4.2 Bromley PS Capacity

Bromley pump station has four constant speed pumps which can be operated in multiple combinations. Two pumps are 900 HP (the "large" pumps) and two pumps are 300 HP (the "small" pumps). To establish the capacity of the station, pump testing was completed in 2002. At the time of testing, all four pumps were not run together due to potential impacts of these slug load flows to the Dry Creek WWTP. To estimate the pumping capacity of all of the potential combinations of pumps, a hydraulic model (waterCAD) was calibrated to the testing data and used to examine all possible combinations. The results of the hydraulic model are shown in Table 4.4.2

Table 4.4.2 Bromley Pump Station Modeled Capacities

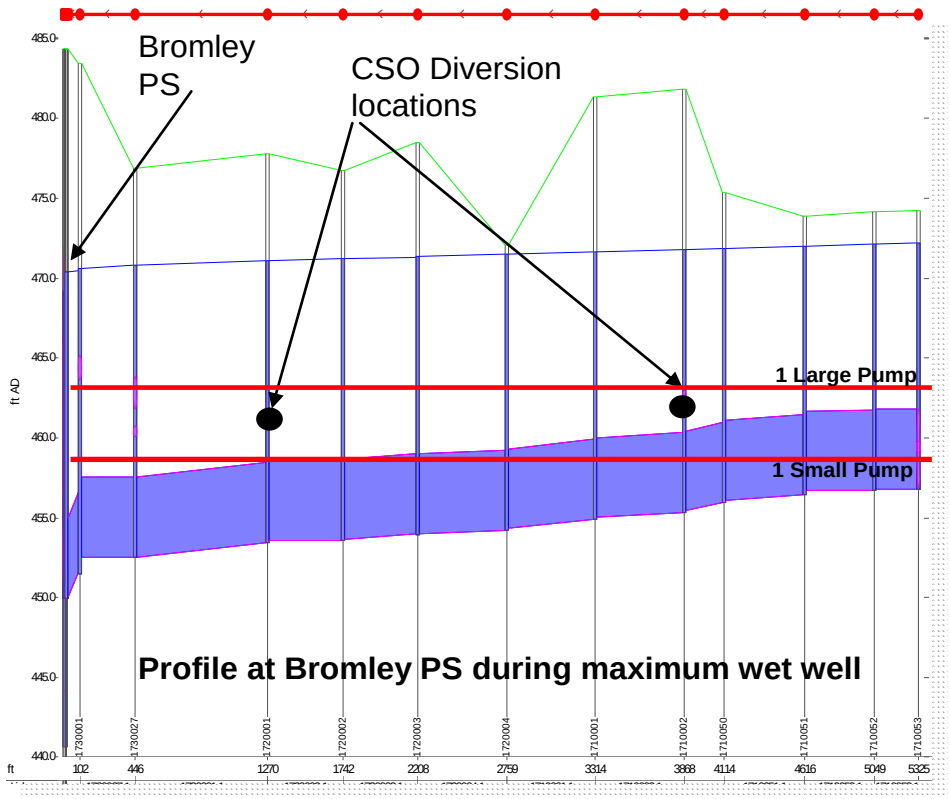
Operation Condition (pumps on)	Modeled Output (MGD)
1 small	7-8
2 small	15
1 large	28
1 large, 1 small	35
1 large, 2 small	37 (FIRM)
2 large	42
2 large, 2 small	45 (PEAK)

However, the Bromley pump station cannot be operated up to its peak capacity of 45 MGD and is only operated up to the firm pump station capacity of 37 MGD, because based on operational experience, the use of both large pumps at the same time during rain events causes flooding within the headworks of the Dry Creek WWTP.

With the current wet well settings at Bromley pump station, the hydraulic grade line in the upstream interceptor is above the crown of the pipe before the first small pump turns on. Additionally, the wet well level required to operate 1 large pump is higher than several upstream diversions. During higher flows the hydraulic gradeline backs up in the interceptor and causes overflows to occur due to backflow through the CSO diversions. Figure 4.4.6 shows the relationship between the wet well settings for pump operation, the interceptor, and the upstream diversions.

These current wet well settings were developed to reduce the potential for excessive vibration and cavitation in the pumps, which was found to occur. This occurs because these pumps require a significant amount of "suction head".

Figure 4.4.6 Bromley Pump Station Wet Well Settings



The District will begin evaluating the feasibility of lowering the wet well settings for the pumps to allow the first large pump to turn on at a lower wet well elevation. The schedule for this analysis is included in Table 4.4.15 at the end of this section.

4.4.3 Dry Creek WWTP

The majority of sewered flow in the Sanitation District system is conveyed and treated at the Dry Creek WWTP. The Dry Creek WWTP is a secondary wastewater treatment facility. The plant was constructed in the late 1970s to provide treatment to surrounding communities. At the time of construction, the Sanitation District was only responsible for the main trunk lines leading to the plant and operation of the plant. As discussed in Section 3, the District assumed ownership and responsibility for the majority of the tributary local collection systems in 1995.

The Dry Creek WWTP was originally designed for an average daily flow capacity of 30 MGD and a wet weather peak capacity of 72 MGD. After construction, flows greater than 60 mgd were routed from the primary effluent to disinfection, to be combined with secondary effluent before discharge. Following startup in May 1979, operations staff found that the sustained wet weather flow of 60 MGD to the secondary system resulted in process upsets and permit excursions. Based on operational experience, the maximum secondary treatment capacity was set at 30 MGD and operations staff then

routed all flows above 30 MGD only through primary treatment before it was combined with the main plant effluent flow.

The facility was modified in 1991 to include additional primary and secondary treatment units. These improvements were designed to increase the average daily flow capacity of the plant to 46.5 MGD with a peak hour flow of 93 MGD. The maximum sustained secondary capacity as designed was 55.5 MGD. Currently operations staff route any flows above 55 MGD around the secondary system and combined those flows with secondary effluent prior to disinfection. Routing is achieved via a motorized gate and Parshall flume.

Modifications were made to the solids treatment system in 1996 to increase the solids handling capacity. These improvements included addition of a third Zimpro train, the replacement of the existing filter presses and gravity thickeners with centrifuges and gravity belt thickeners, and the addition of a new sludge storage tank. The modifications did not include upgrades to the liquid trains at the plant.

The last major modifications at the plant were conducted in 2002 and 2003. During this project, the existing rectangular grit removal units were replaced with two 50 MGD vortex grit removal units. The project also included the addition of sodium hypochlorite storage and feed for influent odor control and effluent disinfection.

Summary of Existing Process Units

A summary of the major unit treatment processes and associated equipment is shown in Table 4.4.3, and a schematic of major liquid stream unit processes is shown in Figure 4.4.7.

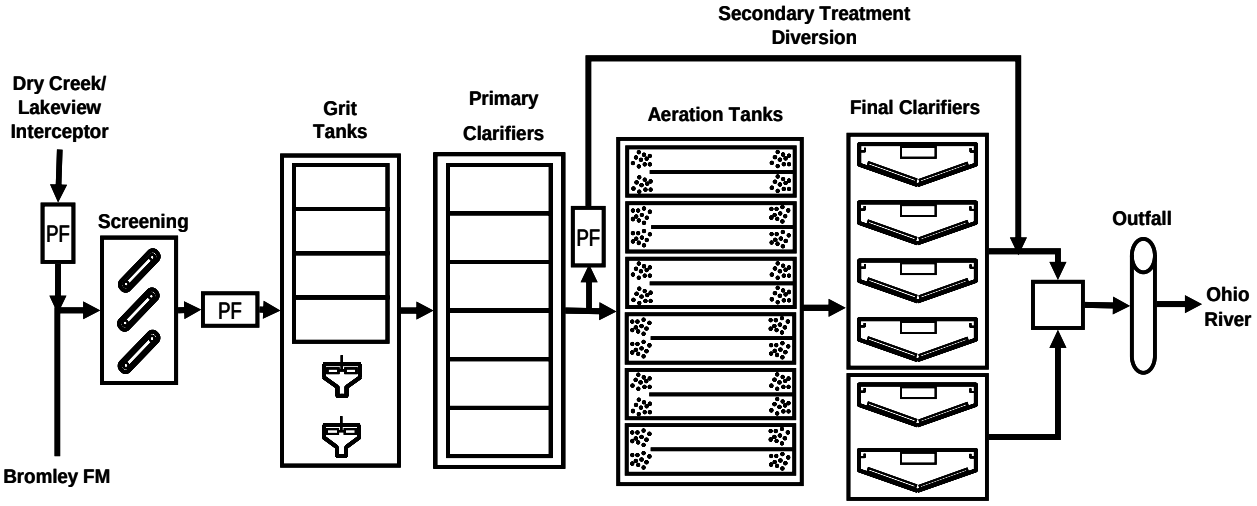
Table 4.4.3 Summary of Major Liquid Stream Processes at the Dry Creek WWTP

Unit Process	Description of equipment	Number of Process Units
Influent Screening	• Mechanically cleaned • Continuous cleaning field • Aquaguard (Parkson Corp). • 3 mm slotted opening • 4 ft screening field width	3
Influent Flow Measurement	• Lakeview Outfall – 5 ft throat width • Influent – 10 ft throat width	1 each
Grit Removal	*Vortex* • 20 ft diameter *Rectangular* • 84.5 ft long • 11 ft wide (top); 4 ft 8 inches (bottom) • 5 ft average depth	*Vortex – 2* *Rectangular* (Not in service – equipment removed)

Table 4.4.3 Summary of Major Liquid Stream Processes at the Dry Creek WWTP

Unit Process	Description of equipment	Number of Process Units
Primary Clarifiers	• Rectangular clarifiers • Sludge withdrawal at influent end • 178 ft long • 48 ft wide • 12 ft average depth	6
Aeration Basins	• Two pass plug flow • Fine bubble diffusers • 195 ft long • 40 ft wide (total) • 25 ft deep • Tank volume – 1.46 Mgal / tank	6
Aeration System	• Roots horizontal split case multi-stage blowers • 2 @ 40,000 scfm • 1 @ 20,000 scfm	3 total
Secondary Clarifiers	• Circular – suction type sludge withdrawal • 131 ft diameter • 14 ft sidewater depth	6
Effluent Disinfection	• Sodium hypochlorite for disinfection / sulfur dioxide for dechlorination • 66-inch outfall pipe used for disinfection	1 outfall pipe

Figure 4.4.7 Simplified Liquid Stream Process Schematic for the Dry Creek WWTP



The main tributary sources to the Dry Creek WWTP are shown in Figure 4.4.1. Influent flow to the plant comes from two sources: the Bromley force main and the Lakeview Outfall / Dry Creek Interceptor. The flow from the Bromley force main includes flow from Bromley Pump Station and the Taylorsport Pump Station. The flow from the

Lakeview Outfall / Dry Creek Interceptor includes pumped flow from the Lakeview Pump Station and gravity collection systems. Flow from the Bromley Pump station is derived from combined sewer systems, while flow from the Lakeview system is derived from separate sewer systems.

These flows are combined in the plant headworks prior to screening. The combination point is characterized by high turbulence and significant headloss. The combined Bromley / Taylorsport force main enters the combination point from below and enters at a right angle to the Parshall Flume effluent from the Lakeview system. The influent to the plant is screened with three mechanically cleaned bar screens. Flow is then metered through a single influent Parshall Flume, and grit is removed from the flow through two vortex grit removal units. Screened and degritted flow enters six rectangular primary clarifiers for primary treatment. Primary sludge is removed from the clarifiers by chain and flight scrapers and cross flight mechanisms and then pumped to the solids treatment system.

Primary effluent flows to the plant aeration basins, consisting of 6 two-pass tanks with fine bubble diffused aeration. Routing of wet weather flow around the secondary treatment system is achieved by operating a motorized gate upstream of the aeration with diverted primary flow sent through a Parshall flume for flow measurement. The gate is modulated to maintain a maximum calculated flow through the secondary process of 55 MGD.

Activated sludge mixed liquor is settled in six circular final clarifiers prior to disinfection. Return activated sludge pumps return biomass to the head of the aeration basins and waste activated sludge is pumped to the gravity belt thickener prior to treatment in the Zimpro solids system.

Secondary effluent and primary effluent routed around secondary treatment under wet weather high flow conditions are combined prior to disinfection. Sodium hypochlorite is added to the flow in neat form (i.e. approximately 12.5% solution) using tubular diaphragm pumps. Contact time for the plant effluent is achieved in the 66-inch diameter outfall pipe prior to dechlorination using sulfur dioxide. Plant effluent is discharged to the Ohio River through an effluent diffuser installed below the Ohio River.

Sludge is currently treated using the Zimpro process. The Zimpro process is a high heat, high pressure system that was originally intended to be a pretreatment step for incineration. Primary sludge is combined and stored with thickened waste activated sludge prior to treatment in the Zimpro system. Thermally treated solids are currently dewatered using the centrifuge. The District is currently replacing the existing centrifuges with units of significantly higher throughput and intends to take the Zimpro treatment system off-line in the near future. Dewatered solids from the process are trucked to a local landfill for final disposal.

Optimization of Wet Weather Capacity

The District has committed significant capital funds and resources to increase the reliability and capacity of the Dry Creek WWTP in recent years. A summary of major capital improvement projects at the Dry Creek WWTP and their associated benefit relative to optimization of wet weather capacity are summarized in Table 4.4.4.

Table 4.4.4 Summary of Major Projects at the Dry Creek WWTP Since 2003

Project Name / Year	Description of Improvements	Benefit to Wet Weather Capacity
Primary Clarifier Rehabilitation – 2003	• Replacement of chain and flight mechanisms • Rehabilitation of existing gear drives	• More effective sludge removal capacity • More reliable primary clarifier operation
Grit Removal and Sodium Hypochlorite Modifications – 2002/2003	• Installation of two vortex grit removal units in place of existing rectangular grit tanks • Installation of sodium hypochlorite for influent odor control and effluent disinfection	• More effective and reliable grit removal during wet weather.
Secondary Clarifier Rehabilitation – 2005/2006	• Physical rehabilitation of collection mechanisms • Rebalancing of rotating mechanisms	• More reliable operation of secondary clarifiers
Aeration Fine Bubble Diffuser Replacement – 2006	• Replacement of existing fine bubble tube diffusers in aeration basins	• Increased oxygen transfer efficiency
Influent Screen Rehabilitation – 2007	• Replacement of moving parts of existing screens	• Increased reliability of influent screens
Dewatering Centrifuge Replacement (ongoing)	• Replacement of the existing dewatering centrifuges	• Increased hydraulic capacity of solids treatment

The Sanitation District has performed the above improvements cost effectively, in some cases using internal labor to install / implement improvements. There are other minor improvements that have been made to the plant to increase reliability of existing unit processes.

Recent Process Analyses and Stress Tests

The District has actively evaluated the capacity of all aspects of treatment at the Dry Creek WWTP. Since the last major capacity upgrade in 1991, there has been several evaluations and stress tests performed at the plant.

Unit Process Evaluations

The following two documents have been produced since the last major treatment capacity expansion and document the capacity of the various process units at the plant:

- A June 1993 letter (MPI, 1993), which contains a summary of the capacities of the unit process capacities at the plant after the plant modifications performed in 1991.
- The District's approved regional facility plan (Woolpert, 2001).

A summary of the unit process capacities documented in each report are shown in Table 4.4.5.

Table 4.4.5 Summary of Documented Capacities in Recent Process Evaluations

Unit Process	Design Criteria for Capacity	1993 Letter Summary	2001 Woolpert Facilities Plan
Overall Plant Capacity	NA	• Design– 46.5 MGD • Peak secondary – 55.5 MGD • Peak hour – 93 MGD	• Design– 46.5 MGD • Peak Secondary – 55.5 MGD • Max daily– 77 MGD • Peak hour – 93 MGD
Influent Screening	3 screens in service with clean bars	93 MGD	93 MGD
Grit Removal (1)	1 ft/sec velocity (6 rectangular tanks in service)	180 MGD	
Primary Clarifiers	2000 gpd/ft2 (all 6 clarifiers in service)	102.6 MGD	
Aeration Basins	Aeration system	57 MGD	
Secondary Clarifiers	30 lb/day/ft^2 with all 6 clarifiers in service	55.5 MGD	
Effluent Disinfection	15 minutes detention time at peak flow	93 MGD	

(1) Rectangular grit tanks were replaced in 2002/2003 with vortex grit removal units.

Unless noted otherwise in the table, previous peak capacity has been documented on the assumption that all of the treatment units are in service. In addition, previous grit removal capacity was based on the assumption that the rectangular grit tanks were operational. As is discussed below, the District now utilizes their vortex tanks for grit removal.

Stress Testing

The District performed stress testing on the primary and secondary clarifiers in the summer of 1996 by progressively taking operating units offline and monitoring sludge blankets and influent and effluent solids and organics concentrations. Testing was performed on all of the clarifiers that are currently in service. The following conclusions / recommendations were offered in the report:

- Design treatment efficiencies were most often achieved in the primary clarifiers when 5 or 6 treatment units were in service. Therefore, it was recommended that the previous design loadings (2000 gpd/sf) for peak service be utilized and approximately half this value be used for average conditions.
- There were slight irregularities in the flow splits between the primary clarifiers.
- There was a significant change in settling properties during the secondary clarifier testing. The Sludge Volume Index during the first part of the testing was 56 mls/g during the and approximately 105 mls/g during the second part.
- The effluent TSS permit limit (30 mg/l) was not exceeded until solids loading rates exceeded 50 lb/day/sf. Based on the conditions during the test (MLSS concentration of 4200 mg/l and a 50% return rate), the capacity of the secondary clarifiers was listed as 77 MGD with 6 tanks in service.
- The effluent TSS permit limit (30 mg/l) was not exceeded until hydraulic loading rates exceeded 850 gpd/ft^2. The corresponding capacity of all six secondary clarifiers was determined to be 69 MGD.

Analysis of Historical Plant Performance

A review of four years of plant data from January 2003 through July 2007 was conducted for the Dry Creek WWTP. The purpose of the evaluation was to identify overall process performance and to identify potential treatment capacity limitations.

Selected permit limits for the Dry Creek WWTP are shown in Table 4.4.6, and a summary of flow characteristics during the historical period is shown in Table 4.4.7.

Table 4.4.6 Dry Creek WWTP KPDES Permit Limits

Criteria	Final Effluent Monthly Average	Final Effluent Weekly Average
Flow (MGD)[(1)]	Report	Report
CBOD, mg/L[(2)]	25.0	37.5
TSS, mg/L[(2)]	30.0	45.0
NH_3-N (mg/l)	20.0	30.0
Fecal Coliform (N/100)[(3)]	Summer – 200 Winter - 1000	Summer – 400 Winter - 2000
Total Residual Chlorine (mg/l)	-	0.076[(4)]

[(1)] 46.5 MGD Design annual average noted in permit.
[(2)] Monthly average removals for CBOD and TSS must be greater than 85% based on KPDES Permit No. KY0021466, effective from 8/1/02 to 7/31/07.
[(3)] Summer is May 1 through October 31; winter is November 1 through April 30.
[(4)] Daily maximum

Table 4.4.7 Historical Flows to Dry Creek WWTP 2003-2007

Flow Criteria	Flow (MGD)	Peaking Factor
Minimum Day[(1)]	10.2	0.29
Average Annual[(1)]	34.9	1.00
Maximum 30-Day[(1)]	46.8	1.34
Maximum 7-Day[(1)]	69.4	2.10
Maximum Day[(1)]	85.2	2.57
Peak Hour[(2)]	97.1	2.78

[1] Based on plant flow data from January 2003 to July 2007
[2] Based on hourly peak flow data from January 2006 to December 2006

Maximum day and peak hour flows recorded during the period actually exceeded the previously established capacities of 77 MGD and 93 MGD, respectively. Plant staff has verified that peak wet weather flows above 95 MGD have been recorded on multiple occasions.

TSS and CBOD removals through the primary clarifiers and the secondary clarifiers were analyzed as an indicator of plant performance over the historical period. Annual average influent and primary effluent concentrations and associated average removals through the primary clarifiers for all flows are shown in Table 4.4.8.

Table 4.4.8 Historical Primary Clarifier Performance – 2003-2007

Criteria	Influent Concentration[(1)]	Primary Effluent Concentration[(1)]	Primary Effluent Percent Removal[(2)]
CBOD, mg/L	205.2	124.2	26.6%
TSS, mg/L	225.1	82.9	63.1%

Unless otherwise noted, values based on historical plant data from January 2003 to July 2007.
[1] Average of data based on data within 2 standard deviations of the mean.
[2] Removal efficiencies based on the average of daily removal values within 2 standard deviations of the mean and only includes calculated values on days where both influent and primary effluent data were available.

Average primary clarifier removal efficiencies were close to typical values for TSS and VSS removal while CBOD removals were below typical values of 35%. Average final effluent concentrations and associated removal efficiencies are shown in Table 4.4.9.

Table 4.4.9 Historical Liquid Stream Treatment Efficiency – 2003-2007

Criteria	Influent Concentration[(1)]	Final Effluent Concentration[(1)]	Final Effluent Percent Removal[(2)]
CBOD, mg/L	205.2	14.0	94.2%
TSS, mg/L	225.1	10.0	95.3%

Unless otherwise noted, values based on historical plant data from January 2003 to July 2007.
[1] Average of data based on data within 2 standard deviations of the mean.
[2] Removal efficiencies based on the average of daily removal values within 2 standard deviations of the mean and only includes calculated values on days where both influent and final effluent data were available.

The performance of the liquid stream unit processes in the removal of TSS and CBOD during the historical period, were analyzed by grouping the historical data into ranges of

flow. The delineation between flow categories and the associated average flows within the specific category are shown in Table 4.4.10.

Table 4.4.10 Dry Creek WWTP 2003-2007 Flow Range Comparison

Flow Criteria	Average Flow (MGD)[(1)]	Peaking Factor
< 46.5 MGD	32.1	0.92
> 46.5 MGD	56.3	1.61
> 55 MGD	64.6	1.85
> 65 MGD	72.8	2.09
>75 MGD	80.0	2.29

[1] Based on plant flow data from January 2003 to July 2007 (within 2 standard deviations of the mean)

Average final effluent concentrations and associated removal efficiencies at the increasingly higher flow criteria for CBOD and TSS are shown in Tables 4.4.11, and 4.4.12, respectively.

Table 4.4.11 CBOD Removal Efficiency at Different Flows – 2003-2007

Flow Criteria	Influent CBOD (mg/l)[(1)]	Primary Effluent CBOD (mg/l)[(1)]	% CBOD Removal Primaries[(2)]	Final Effluent CBOD (mg/l)[(1)]	% CBOD Removal Finals[(2)]
<46.5 MGD	213.2	127.8	27.9	14.1	94.9
>46.5 MGD	142.2	92.3	14.6	12.5	92.8
>55 MGD	113.1	84.9	6.2	10.6	92.3
>65 MGD	92.9	81.2	-6.1	7.7	91.8
>75 MGD	128.8	70.3	-5.4	14.0	93.9

Unless otherwise noted, values based on historical plant data from January 2003 to July 2007.
[1] Average of data based on data within 2 standard deviations of the mean.
[2] Removal efficiencies based on the average of daily removal values within 2 standard deviations of the mean and only includes calculated values on days where both influent and effluent data were available.

Table 4.4.12 TSS Removal Efficiency at Different Flows – 2003-2007[(1)]

Flow Criteria	Influent TSS (mg/l)[(1)]	Primary Effluent TSS (mg/l)[(1)]	% TSS Removal Primaries[(2)]	Final Effluent TSS (mg/l)[(1)]	% TSS Removal Finals[(2)]
<46.5 MGD	230.5	82.5	63.8	9.9	96.0
>46.5 MGD	181.1	85.9	55.9	11.1	94.3
>55 MGD	169.1	90.1	55.0	10.0	94.2
>65 MGD	170.6	93.9	54.5	9.0	93.7
>75 MGD	169.0	102.0	72.5	8.1	93.5

Unless otherwise noted, values based on historical plant data from January 2003 to July 2007.
[1] Average of data based on data within 2 standard deviations of the mean.
[2] Removal efficiencies based on the average of daily removal values within 2 standard deviations of the mean and only includes calculated values on days where both influent and effluent data were available.

As would be expected, average CBOD and TSS removal efficiencies decrease as the flow increases. CBOD removal efficiency decreased more than did TSS removal efficiency, but the percentage removal efficiency remained above the required 85% for both parameters. For all flows, the plant has historically met effluent permit limits, including those for CBOD and TSS removal.

Evaluation of Potential Improvements to Dry Creek WWTP Wet Weather Capacity

The capacities of individual unit processes based on historical documented capacity and the current evaluation is shown in Table 4.4.13. The current unit process capacities are discussed below as well as an evaluation to determine if options for low cost improvements to increase peak capacity exist.

Table 4.4.13 Summary of Dry Creek WWTP Wet Weather Capacity

Unit Process	Number	Capacity per Unit (MGD)	Peak Capacity[(1)]
Influent Screening	3	25	75
Influent Flow Measurement	1	128	128
Grit Removal	2	50	100
Primary Clarifiers	6	17.1	102.6
Aeration Basins	6	NA	57[(2)]
Secondary Clarifiers	6	11.5	69
Effluent Disinfection	1	93	93[(3)]

NOTES:
[1] Unless noted otherwise, peak capacity is total capacity (with all units in service) based on optimal conditions. If less than ideal conditions exist or if one or more units is taken out of service, the capacity will be reduced by the amount corresponding to the capacity of each unit process.
[2] Peak capacity for the aeration basins is limited by the process air provided. All flows above 55 MGD are currently diverted around aeration basins and secondary clarifiers.
[3] Effluent disinfection capacity is based on the detention time available in the outfall pipe

When diversion around secondary treatment is considered, screening and effluent disinfection are the limiting unit processes relative to capacity. As a result, any improvements to unit processes within the liquid train must be accompanied by improvements to both screening and effluent disinfection capacity.

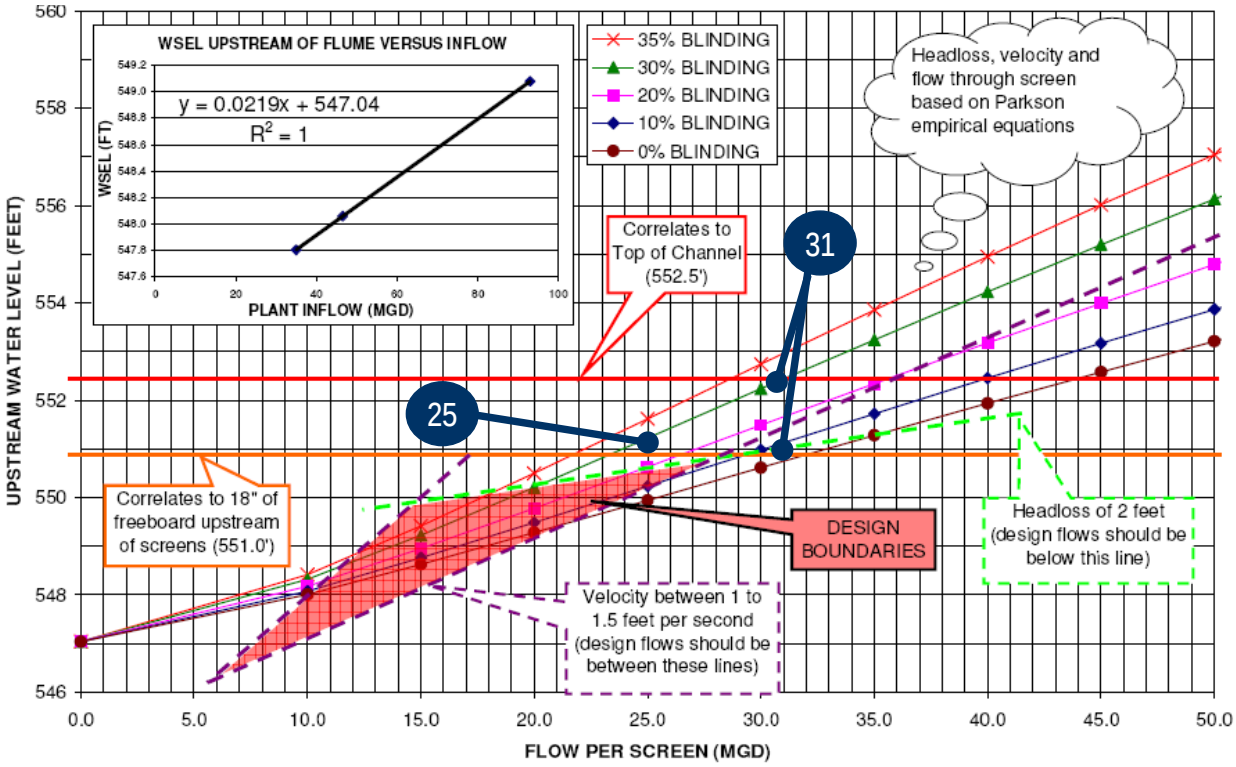
Influent Screening

The Dry Creek WWTP currently has three mechanically cleaned influent screens. The screens are Aquaguard (Parkson) and have 1/8-inch slot openings. The screens have a screen field approximately 4 ft wide and a channel depth of approximately 6 ft. The screens are immediately downstream of the combination point of the Bromley force main and the Lakeview Outfall. The water surface elevation in the channels immediately upstream of the screens is highly sensitive to flow and headloss through the screens. Operation of the Bromley Pump Station constant speed pumps causes instantaneous increases in flow to the Dry Creek plant. During transition between 2 small pumps to 1 large pump at Bromley pump station, the instantaneous flow increase is 13 MGD (see Table 4.4.2). Despite continuous mechanical cleaning, the screens are sometimes rapidly blinded by slugs of rags and/or floatables. When blinding occurs, water surface elevations often rise rapidly (within minutes) to elevations that are near

flood conditions. In addition, shear pin failure and motor overload have been observed during high flow conditions. When these failures occur, additional operator attention is required to keep all screens in service

The capacity of the existing screens depends on a host of factors, including level of blinding, upstream and downstream water levels, and the level to which the water can rise without flooding. A graphical representation of the hydraulics of the influent screens is shown in Figure 4.4.8.

Figure 4.4.8 Hydraulic analysis of Influent Screens at Dry Creek WWTP



The maximum capacity of each screen is 25 MGD based on commonly accepted design criteria of 18 inches of freeboard and 30% screen blinding. Higher flows are possible and have been achieved, but at much lower design safety factors and a higher potential for overflow due to increases in flow and rapid blinding. With the appropriate design safety factors, the maximum sustained capacity at the Dry Creek WWTP is 75 MGD with all three screens in operation.

As can also be observed from Figure 4.4.8, increases in flow to the plant such as those from a change in pumps at Bromley Pump Station can cause significant increases in water surface elevation upstream of the screens. Assuming all three screens are in service, an increase in Bromley Pump Station output of 13 MGD (equivalent to moving from 2 small pumps to 1 large pump at Bromley pump station) would cause an instantaneous increase in water surface elevation of approximately 1 ft. This increase is

significant, particularly if water levels are already approaching the 18-inch freeboard elevation.

The plant staff has made significant improvements in the current operation of the screens in order to minimize the potential for screen failure, to respond faster to rapid blinding and overflow situations, and to prevent overflows in the system. These improvements include the following:

- Installation of closed circuit cameras in the headworks to allow remote observation of screen operation and blinding.
- Installation of high level float switch to alarm operations when the water surface elevation upstream of the screens has increased to a high level.
- Installation of bulkheads along the floor upstream of the screens to contain flooding.

In addition, several options for increasing screening capacity were identified and evaluated:

- Replacing the screens with screens having larger openings and more hydraulic capacity,
- Splitting the influent prior to the headworks and installing additional screens,
- Installing a bypass pipe in the headworks with manual bar rack, and
- Widening existing screening channels and installing new screens.

All of the above options will increase the screening capacity at the plant, but at a significantly high cost, and therefore are considered beyond the scope of the NMCs. These improvements will be evaluated further in the context of the system wide improvements being considered as part of the Watershed Plans under the Consent Decree.

Influent Flow Measurement

Influent flow is measured by the existing Parshall Flume, which has a throat width of 10 ft and a hydraulic capacity of 128 MGD. Significant increases in the capacity of the influent screens would also require increase in the metering capacity of the existing influent Parshall Flume.

One way to increase capacity of the Parshall Flume is to construct a new wider flume. Another option for increasing influent flow measurement capacity is to construct an additional flow measurement structure at a significant capital cost. As with the screens, increased flow measurement capacity is considered beyond the scope of the NMCs, but will be evaluated further as part of the Watershed Plans under the Consent Decree.

Grit Removal

The plant currently uses two vortex grit removal tanks with equipment manufactured by Smith and Lovelace. The units are 270 degree units and are rated by the manufacturer at 50 MGD each. By design, vortex grit units have very little head loss, particularly at

high flows. The vortex units were installed in 2002 and 2003. At that time, the chain and flight mechanisms in the rectangular tanks were left in place to serve as backup. However, due to continued issues related its operation, the chain and flight equipment was later removed from the rectangular grit tanks. Therefore, based on operation of only the vortex units there is a total grit removal capacity of 100 MGD. During normal operation it is recommended that each unit be limited to 40 MGD each to ensure effective grit removal.

There are no low cost grit removal capacity improvements available. The most obvious options for the increase of capacity in the grit removal unit process is addition of more vortex grit units, or installation of new equipment in the existing rectangular basins.

Based on the previous issues with operation of the chain and flight mechanisms during high flows, installation of new equipment in the existing rectangular basins is not recommended. The installation of one or two more vortex grit units is possible, but will require significant capital investment. In addition, the ability to pass more flow through the grit removal system will also require modifications to the screening capacity at the plant. Therefore none of these improvements are recommended in the short term, but will be in the context of the system-wide improvements being evaluated as part of the Watershed Plans under the Consent Decree.

Primary Clarifiers

The plant currently has six rectangular primary clarifiers. Each is equipped with chain and flight removal mechanisms. Sludge removal is from effluent to influent and cross flights and troughs are located near the influent for sludge removal. Primary sludge is removed using a total of 10 air diaphragm pumps. Primary sludge is transferred to one of three raw sludge storage tanks and combined with thickened waste activated sludge prior to treatment in the Zimpro process. Modifications are currently underway to eliminate the Zimpro system and to dewater combined sludge prior to landfill.

The current capacity of the primary clarifiers is 102.6 MGD based on the recent reports / analysis and historical operational data. Plant personnel have found that the primary clarifiers can handle historic peak flows to the plant if all tanks are on line. Based on the above, the current rating of the primaries is appropriate. At these flows the surface overflow of the primaries is approximately 2000 gal/day/sf which is consistent with published values at peak flows.

The capacity of the primary clarifiers was evaluated based on the following major physical removal processes within the clarifier:

- Primary sludge pumps and associated force main,
- Primary clarifier chain and flight mechanisms, and
- Primary clarifier sludge storage capacity.

The analyses of each of these mechanisms indicated that there is sufficient capacity within the primaries to accommodate in excess of the current peak loading rates. Plant

personnel noted one issue with frequent lodging of solids in the discharge ball checks of the sludge pumps, but there are sufficient pumps to allow for maintenance of the pumps with continued operation of the clarifiers.

While sufficient capacity exists, the District still will consider options for increasing the capacity of the primary clarifiers if future conditions or upgrades require additional capacity. Several alternatives are available:

- Construction of additional primary clarifiers, or
- Installation of chemical feed and storage for use in chemically enhanced primary treatment.

Chemically enhanced primary treatment (CEPT) normally involves the addition of polymer and/or flocculant to aid in the settling process. Typical surface overflow rates for the CEPT process depend on a host of factors, but have been shown to be as high as 3000 gal/day/sf. Generally, the performance of the clarifiers relative to TSS and CBOD removal also increases with CEPT. CEPT would require the installation of chemical storage and feed systems but would also potentially require upgrades to the existing sludge removal mechanisms to accommodate more dense settled sludge. The addition of flocculant will result in more dense inorganic solids being settled out in the clarifiers. Prior to implementation of CEPT pilot testing would also be required.

Based on the capacity analysis there is no need for additional primary clarification capacity at this time. Modifications will be considered in the context of the system-wide improvements being evaluated as part of the Watershed Plans under the Consent Decree.

Aeration Basins

There are a total of six aeration basins at the Dry Creek WWTP. The basins are two pass, plug flow reactors with a depth of 25 ft. Fine bubble tube diffusers are used for air delivery into the tanks. Three Roots horizontal split case blowers are used to supply process air to the basins. Two of the Roots blowers have a capacity of 40,000 cfm each and the other has a capacity of 20,000 cfm. The basins are currently operated in a MLSS range of 2500 mg/l to 3500 mg/l.

The plant staff has the ability to feed primary effluent to the basins at either the head end of the basins or at the first pass. RAS and sidestream centrate are added at the head of the basins.

The current rated capacity of the aeration basins is 55.5 MGD and is based on the installed diffusers and the ability to provide process air during peak flow periods. Permitted diversion of flow around the activated sludge system is currently achieved using a motor operated gate. The diverted flow is routed through a Parshall Flume with a capacity of approximately 45 MGD based on throat width. Currently all flows above 55 MGD are routed around the aeration basins during wet weather operation in accordance with the KPDES permit.

Options for higher capacity in the activated sludge system during wet weather events would involve physical modifications to the basins to allow for modified operation and would include the following:

- Addition of diffusers for increased aeration capacity,
- Step feed of primary effluent to the mid point of the last pass of the aeration basins, or
- Operation of only a portion of the basins and storage of RAS solids in non-operational basins during wet weather events.

A study performed in 2004 considered the increase of dry weather capacity through the aeration basins through an increase in the number of diffusers. The increase in diffusers to provide additional capacity was significant, requiring approximately 50% more diffusers than in the current configuration. Under those modifications, it was determined that full aeration of up to 65 MGD could be achieved with one Roots blower in operation.

Step feed of primary effluent to the mid point of the last pass of the aeration basins or storage of RAS solids in non-operational basins would require additional piping and hydraulic modifications as well as modifications to the return activated sludge pumps to increase capacity of the pumps beyond the current capacity of 30 MGD.

No additional operation / physical modifications are recommended for the aeration basins under the NMCs. Model simulations and piloting of the biological system for potential wet weather scenarios will be considered in the context of the system-wide improvements being evaluated as part of the Watershed Plans under the Consent Decree.

Secondary clarifiers

There are 6 secondary clarifiers. Each clarifier has a side water depth of 14 ft and uses organ pipe type suction withdrawal for the removal of solids. Previous stress testing indicated a peak capacity of approximately 69 MGD for the secondary clarifiers (based on all six tanks in service). This peak capacity was based on an observed maximum surface overflow rate of 850 gpd/sf when the plant effluent TSS limit was exceeded. A slightly higher capacity was noted relative to solids loading (77 MGD for all six clarifiers in service).

Potential options to increase secondary clarifier capacity include the following:

- Addition of more clarifiers, or
- Polymer/flocculant addition.

There is no feasible space available for additional secondary clarifiers in the immediate vicinity of the existing units. Polymer/flocculant addition may be possible, but would require field testing to confirm effectiveness relative to capacity. Therefore, no

additional improvements are recommended at this time relative to peak capacity of the secondary clarifiers. Modifications will be considered in the context of the system-wide improvements being evaluated as part of the Watershed Plans under the Consent Decree.

Effluent Disinfection
Effluent disinfection is currently achieved through the addition of sodium hypochlorite to the secondary effluent. When the diversion is active, primary effluent is combined with a portion of the secondary effluent after addition of sodium hypochlorite. Contact time is currently achieved through the effluent outfall and associated plant piping after chlorine addition. The existing outfall pipe has a hydraulic capacity of 170 MGD and therefore does not limit treatment capacity. Current capacity is based on the volume of the effluent piping; the commonly required detention time of 15 minutes is achieved at a maximum flow of 93 MGD.

Potential for Low Cost Disinfection Capacity Improvements
Potential modifications to increase the capacity of the effluent disinfection system include the following:

- High rate disinfection, or
- Installation of UV system for disinfection.

High rate disinfection would require field testing and modeling to determine its effectiveness. The installation of a UV system would require extensive capital dollars to convert from the existing disinfection system. Based on the above discussion, no improvements are recommended under the NMCs, but improvements will be evaluated in the context of the system-wide improvements being evaluated as part of the Watershed Plans under the Consent Decree.

Summary of Dry Creek WWTP Unit Process Evaluation
Based on the current analysis of the existing unit processes at the Dry Creek WWTP, there was no low cost process modifications identified that would significantly increase the capacity or reliability of the plant. Several options for modifications of larger scope and cost were identified, and further evaluation of these options will be conducted as part of system-wide alternative evaluation in the Watershed Plans under the Consent Decree. Therefore, the maximum sustained primary treatment capacity at the Dry Creek WWTP is 75 mgd and the maximum sustained capacity through secondary treatment is 55.5 mgd.

Operations and Maintenance Activities
Operation and maintenance activities at the Dry Creek WWTP are extremely important measures in assuring peak capacity of the treatment system. Several O&M considerations are discussed below.

Stand-by Power

The Dry Creek WWTP has one main power feeder to the plant. Power is supplied by Duke Energy. The power feeder to the plant has a backup feed network. The backup feed network provides power redundancy at the plant. The backup power feed is a manual connection, requiring Duke Power operations staff to make a manual switch of power feeds when power is lost. Maximum response time from Duke is approximately 2 hours. In addition, the plant has one small generator for backup power to the headworks equipment. The generator is a diesel fuel powered generator with a rating of 1.125 kVA or 900 KW. The generator is intended to power equipment in the headworks to prevent screen blinding and subsequent overflow.

The 2005 NPDES Compliance Evaluation Report by USEPA Region 4 indicated that the District should provide adequate back-up power at the Dry Creek WWTP to all plant processes. However, the Dry Creek WWTP falls under Class 3 Reliability and Redundancy requirements per KAR401 5:005. As such, backup power is required for preliminary treatment, primary treatment, and disinfection processes. The District currently has adequate back-up power to meet this requirement.

Coordination of Maintenance with Process Control

Major maintenance activities, with the exception of emergencies, are carefully coordinated to avoid impacts on process operations. The Dry Creek WWTP staff use gbaMS to track maintenance tasks. Spreadsheets of open work orders from gbaMS are examined on a weekly basis to prioritize maintenance activities. All process units are inspected daily with maintenance problems reported to the control room staff that record the problem and issue a work order through gbaMS. The work orders are reviewed every morning by a committee consisting of the WWTP manager, the maintenance supervisor, and the shift crew leader. The committee's responsibility is to establish the priority of the work orders with the process facilities taking precedence. A key component of these daily review meetings is discussing how to conduct the work with the least interference on the treatment process. The gbaMS tracks all maintenance history and work orders can only be deleted by someone with administration rights providing recognition of completion.

As standard practice all maintenance is performed by an established team, lead by an experienced crew leader. Several members of the Dry Creek maintenance staff have professional trade licenses or certifications. Written Standard Operating Procedures (SOPs) are utilized for maintenance work, safety and confined space requirements, and other tasks. An example of one of the District's SOPs is included in Appendix E. In an effort to reduce the occurrence of equipment failures and reduce down time, the Dry Creek staff utilizes gbaMS to track their Preventive Maintenance program. The gbaMS automatically notifies the staff of the preventive maintenance schedule and tasks to be performed. As with major maintenance activities, gbaMS does not allow deletion of the PM task until the task has been completed.

Standard Operating Procedures
Operations control at the Dry Creek WWTP is divided into three categories: process control, maintenance, and safety. There are SOPs for each category and for each respective process unit. The SOPs are provided in both printed copy and digital format. Select SOPs are reviewed during weekly staff meetings as needed for staff training or review of existing process issues. Due to the number of SOPs, plant staff is currently working on the numbering system associated with each SOP and also grouping similar SOPs in the numbering for better organization.

Dry Creek personnel are classified as crew leaders, lead operators, and laborers. Each shift is designated to have a minimum of five people with a requirement that one person have a crew leader classification. Lead operators work with the crew leaders to gain experience in plant operations with a planned progression to crew leader. The operators' classification is based on his experience and proven performance of his duties. This designation always places an experienced person in a leadership role. The Dry Creek staff currently has four crew leaders and two lead men. The four crew leaders can be divided among three shifts per day, seven days per week.

Wet Weather Procedures
The Dry Creek staff has developed “Wet Weather” procedures to address required changes in operation during wet weather events. When a substantial rain occurs for more than twenty minutes, a second person is called to the control room to help monitor the plant operation. The control room becomes the central operator station for plant wide monitoring and trouble calls from the collection system. The second person on duty assists the first in monitoring and trouble calls. A video camera is located in the headworks to monitor the fine screens and allow a quick response to any blockages/ overflows. An electrician is also kept on-call during non-working hours and can respond if electrical issues arise during wet weather events. A printed copy of the established wet weather procedures and checklist is located in the control room.

Staff Training
On-site training consists of weekly staff meetings where SOPs are reviewed. Periodic classroom safety training is provided by the District’s safety coordinator. Respective safety SOPs are prepared for specific work duties and hazards at the Dry Creek WWTP. Formal process training is not provided at the Dry Creek WWTP, but operators are encouraged to attend outside training schools and approved training programs are paid for by the District. The District does not require professional licenses, but the District pays for all approved training and professional licenses as a monetary incentive program for staff members that acquire a license, recognizing the positive benefit of having professional staff members. All staff training and professional licenses are tracked by gbaMS.

4.4.4 Benefits of the Eastern and Western Regional Water Reclamation Facilities

The District has committed significant capital dollars in the next five years to construct two new wastewater treatment plants and to implement major additions to the existing

collection system to collect and convey flow to these plants. While designed to treat flows primarily from the separate system, the construction and startup of both plants will have a beneficial impact on operations at the Dry Creek WWTP through the re-direction of flow and reduction in solids loadings to the plant.

Eastern Regional Water Reclamation Facility

The newly constructed Eastern Regional Water Reclamation Facility (ERWRF) started operation in September 2007. The ERWRF is an oxidation ditch secondary treatment system with a rated average daily capacity of 4 mgd and a peak flow capacity of 20 mgd with utilization of an equalization basin. The ERWRF will serve the District's eastern service area, including the City of Alexandria.

ERWRF receives all flows that were previously treated at the Alexandria WWTP, the Kahn's WWTP and the Pond Creek WWTP. Consequently, solids that used to be hauled to Dry Creek WWTP from these plants will now be processed at the ERWRF. It is estimated that approximately 2,000 lbs per day or an equivalent of 24,000 gallons per day will no longer go to Dry Creek WWTP from this service area and reduce the total solids loading to the Dry Creek plant.

Western Regional Water Reclamation Facility

The Western Regional Water Reclamation Facility (WRWRF) is scheduled for completion of construction and start-up in year 2013. The WRWRF will be a secondary treatment facility with contact stabilization / extended aeration capabilities. The WRWRF is initially being designed to handle a design average daily flow of 20 MGD. Significant flow equalization will be provided ahead of the WRWRF through the use of the Western Regional Conveyance Tunnel. On-site solids storage and dewatering will also be provided at the WRWRF.

The WRWRF will have a significant impact on flows to the Dry Creek WWTP, both during dry weather and during wet weather conditions. The WRWRF will receive diverted flows from the Lakeview PS, Gunpowder PS, and Allen Fork/Burlington PS drainage areas and will also receive flow from future developments in the south and west. During dry weather, it is expected that the WRWRF will initially reduce dry weather flows to Dry Creek WWTP by 7-10 MGD. Reductions in wet weather flow will be more significant. The final impact to wet weather flows at the Dry Creek WWTP has not been specifically determined at this time. The impacts will be confirmed when the calibration and verification of the District's system-wide hydraulic models are completed in the fall of 2008 as part of the Watershed Plans under the Consent Decree.

4.4.5 Summary and Recommendations

Throughout this analysis, there were several identified measures that could be implemented to more fully utilize the existing capacities for the interceptor, pump station, and Dry Creek WWTP. The summary of the capacity analysis for each of these items is shown below in Table 4.4.14. The table indicates that the capacity through the Ohio River Interceptor is impacted by the wet-well settings at the Bromley pump station

and the capacity restrictions at the Dry Creek WWTP. In other words, the Dry Creek WWTP capacity controls the amount of flow that can be received and properly treated from the Interceptors. This is mainly due to the fact that the Dry Creek WWTP also receives elevated wet-weather flows from the separate Taylorsport and Dry Creek areas which encumber a large portion of the plant's capacity. As a rule, the District will maximize flow from the separate areas first and will then allow as much flow from the Bromley pump station as the Dry Creek WWTP can handle. Even though the stated peak sustained capacity is 75 mgd through the bar screens, there are times when higher flows can be processed for a brief time.

Table 4.4.14 Summary of Capacity Analysis

Facility	Peak Capacity (mgd)	Firm Capacity (mgd)
Ohio River Interceptor	61	61
Bromley Pump Station	45	37
Dry Creek WWTP	75[(1)]	50
[(1)] Dry Creek also receives flows from the separate system up to 50-55 MGD		

As the above analysis shows, much work has been done to try to maximize the flows through the Dry Creek WWTP. It is important to note that the results of this analysis will serve as the basis to conduct the Watershed Planning efforts under the Consent Decree.

To further show how the District is fully implementing this minimum control, the activities discussed above are recounted below in the context of the findings and recommendations from the July 6, 2005 NPDES Compliance Evaluation Report by USEPA Region 4. These comments are shown in Table 4.4.15 to demonstrate that the District has addressed the issues and recommendations that were raised and has implemented actions to come into compliance with NMC 4:

Table 4.4.15: Response to Compliance Evaluation Comments

Item	Response
No information verifying that full interceptor capacities are being utilized	• The above analysis shows that the capacity of the interceptor, at least near the downstream end, is not fully utilized due to capacity limitations from both the Dry Creek WWTP and the Bromley pump station.

Table 4.4.15: Response to Compliance Evaluation Comments

Item	Response
Accelerate pump station rehabilitation	• There are improvements being constructed at the Second St. lift station screening chamber and the Patton St. lift station received a new screening facility in the late 1990s. • These were not covered specifically in this section, but due to the interceptor being the capacity limiting factor in the CSS, acceleration in pump station rehabilitation would not produce a measurable reduction in CSO volume.
Analyze entire system to determine capacities of all facilities and determine if full capacity is available and/or utilized	• The above analysis addresses this in detail. Recommendations are shown below to implement some potential low-cost improvements to more fully utilize capacity.
Provide adequate back-up Power to the Dry Creek WWTP	• The Dry Creek WWTP falls under Class 3 Reliability and Redundancy requirements per KAR401 5:005. As such, back-up power is required for preliminary treatment, disinfection processes. The District currently has adequate back-up power to meet this requirement.
Construct proposed ERWRF and WRWRF	• ERWRF came online in the fall of 2007. WRWRF is scheduled to be advertised for bid in June 2008 and operational in 2013. These two facilities are further discussed in Section 4.4.4.

To comply with NMC 4, Maximization of Flow and Treatment, the District will continue with all of the activities and programs described above. As part of that effort, the District will implement additional measures to maximize flow to treatment as indicated in Table 4.4.16. An overall schedule of activities for all of the nine minimum controls is included in Appendix D.

Table 4.4.16: Additional Activities to Maximize Collection and Treatment

Item	Activity	Implementation Schedule
Maximize Collection – Interceptor	Develop recommendations for targeted cleaning of the interceptor based on the TISCIT sonar/CCTV inspection results.	February 29, 2008
	Develop specifications, bid cleaning contract, and hire a contractor to perform interceptor cleaning.	July 31, 2008

Table 4.4.16: Additional Activities to Maximize Collection and Treatment

Item	Activity	Implementation Schedule
	Complete the installation of the Covington grit pit on the Licking River Interceptor.	August 30, 2008
	Document the effectiveness of the grit pits in terms of sediment removed from the interceptor.	Ongoing
	Follow the CSAP program for continued inspection and cleaning of the interceptor.	Ongoing
Maximize Collection – Bromley Pump Station	Evaluate the feasibility of lowering the wet well settings for the pumps to allow the first large pump to turn ON at a lower HGL to potentially reduce upstream overflows.	Begin March 2008 and complete investigation by May 31, 2008. Implement any resulting changes by July 31, 2008

4.5 Elimination of CSOs During Dry Weather

This control consists of the elimination of CSOs during dry weather, also known as dry weather overflows (DWOs). The elimination of DWOs is considered essential to improving receiving water quality. In addition to being one of the nine minimum controls, DWOs are strictly prohibited in the District's NPDES discharge permit.

The District's collection system inspection and maintenance programs are the primary measure for eliminating dry weather overflows. As detailed in Section 4.1, the District has recently implemented a new continuous sewer assessment program that will focus the District's resources on problem areas throughout the entire service area and identify the resources necessary to maintain a high level of service and aggressively reduce DWOs in both the CSS and SSS. This section provides additional detail about how the sewer assessment and maintenance programs identify and correct DWOs in the CSS. In addition, several other measures to address DWOs have been undertaken as part of the District's Consent Decree related activities and include identification of diversions where the existing configuration or structural condition indicated a potential for DWO, an analysis of the impacts of the flood protection system on the collection system during dry weather, and addressing power outages at the District's pump stations by providing back-up power or other appropriate measures.

4.5.1 Known Dry Weather Overflow Identification and Elimination

The USEPA Compliance Evaluation Report notes that from January 1999 through April 2005, the District experienced 91 DWOs, an average of over 14 DWOs per year during that time period. The same report also noted that the District had 18 DWOs between May 2004 and April 2005 and 21 DWOs between January 2004 and mid-August 2004. The 21 DWO events that occurred between January and August 2004 were individually listed in the USEPA report, with a table noting the date of the event, regulator location/number and outfall number. A slightly modified version of that table is included here as Table 4.5.1, and identifies the permanent measures being taken by the District where applicable, or the immediate corrective measures taken during that occurrence.

Table 4.5.1 DWO Corrective Measures from January through Mid-August 2004

Date	Location	Diversion Number	Corrective Measure
4/5/2004	Main Street	0570030	Diversion to be replaced by mid-2008
4/5/2004	McKinney Street	0570011	Diversion to be replaced by mid-2008
4/20/2004	4th Street chamber	0820001	Corrective measures described below
4/20/2004	Columbia St. Ch.	0790015	Blockage removed
4/20/2004	Saratoga St.	0770006	Corrective measures described below
4/20/2004	Washington Ch.	0640081	Blockage removed
5/5/2004	Earle @ Gilbert	0870052	Blockage removed

Table 4.5.1 DWO Corrective Measures from January through Mid-August 2004

Date	Location	Diversion Number	Corrective Measure
6/22/2004	33rd Street	0880004	Blockage removed
6/22/2004	34th St – Ln Bridge	0880016	Blockage removed
6/22/2004	44th St – S. of Club	1880010	Blockage removed
6/22/2004	47th Street	1870031	Corrective measures described below
6/22/2004	Ashland Oil	0910064	Blockage removed
6/22/2004	Balt. – Golf Course	1880028	Plate fully open
6/22/2004	Church – East	1850032	One outfall (1850158), Blockage removed
6/22/2004	Church – North	1850150	
6/22/2004	Church – West	1850024	
6/22/2004	Decoursey	1870025	Blockage removed
6/22/2004	Earle @ Gilbert	0870052	Blockage removed
6/22/2004 6/29/2004 7/1/2004	Eastern – Meinken	0910055	Corrective measures described below
7/20/2004	Church – North	1850150	Blockage removed
8/2/2004	Fitzsimmons	0730005	Blockage removed
8/10/2004	34th St – Ln Bridge	0880016	Blockage removed

Dry weather overflows have historically been identified by the District through weekly inspections of every diversion and bypass during dry weather and by responding to trouble calls. There are two full-time 1-man crews dedicated to inspecting the District's 137 CSO diversions. The target frequency is to inspect each diversion about once per week as well as after every rainfall event. To better detect dry weather overflows using visual inspections from the surface, approximately 15 diversions have been outfitted with a bright orange block secured to the chamber (see Figure 4.5.1), and the District is working to block all diversions.

More recently as part of the Consent Decree related collection system characterization, the District has added 23 outfall flow monitors as described further in Section 4.9. Flow monitor status is frequently monitored, and additional visual inspections are conducted during routine meter maintenance. Because meter maintenance requires entry, more detailed inspections can be completed. For example, an inspection in December of 2007 found that the weir in the 9th Street diversion (0840005) was leaking. The District's as-needed contractor repaired the leak and replacement of the weir was added to the CIP. A new weir is currently being designed to replace the existing weir. In conjunction with NMC2, the new weir will be sized to maximize storage in the existing combined sewer upstream of the diversion. To better monitor for DWOs, dry weather overflow alarms have been set up on 5 of the 23 outfall flow monitors, which provide for

real-time notification of a dry weather overflow. If a high level is detected, an auto-dialer is set to call the individuals assigned to respond. The 5 locations with real-time dry weather flow alarms are Latonia (CSO 1840130), Parkway/Highway (CSO 1490132), Willow Run (1480167), Columbia Street (CSO 0790084), and 10th Street (CSO 0840112). These locations were selected due to their potential to have DWOs.

Figure 4.5.1: Examples of Blocking in Select Diversions



The inspection crews respond immediately to any DWO, whether it is found through inspection, monitoring, alarm, or responding to a trouble call, and will clear the obstruction or relieve the issue if possible. If additional cleaning is necessary, the District's Customer Service group is notified and a Work Order is issued to remove the remainder of the obstruction. All dry weather activations are entered into gbaMS and dry weather releases are also included in the System Release Report. If the situation requires repairs it is assigned to the District's Construction group, which at times is supported by the District's as-needed services contractor.

Once logged into gbaMS, DWOs are evaluated for a permanent solution, which for one time occurrences may include more frequent monitoring of that diversion and tracking. Diversions where multiple DWOs have occurred are further evaluated for additional actions, which may include:

- Catch basin modifications to reduce solids that may cause dry weather overflow risk at the downstream diversion.
- Permanent modifications to the diversion, such as removing a weir plate, removing the bar rack over the diversion or upsizing the diversion pipe.
- Targeted cleaning upstream or at diversions to address solids deposits.

- More frequent inspections for those with a configuration considered susceptible to DWOs or for previously modified locations to confirm that the issue has been sufficiently addressed.
- Permanent monitoring for early warning at locations where other measures have failed to address the issue.

A review of the dry weather overflow records for 2006 and 2007 shows that 25 DWOs occurred in 2006 and 20 DWOs occurred in 2007. Of the 45 DWOs that have occurred in the last two years, 35 occurred at just 12 diversions. The diversions with multiple DWO occurrences are listed below along with a discussion on what the District has done to correct the DWO.

- Saratoga Street (0770006) – 3 DWOs occurred on February 13th and 22nd, and March 27th, 2006. This diversion was outfitted with a 30-inch high weir plate and baffle in December of 2007 as part of the floatables control pilot. Because of potential hydraulic issues with the weir and baffle configuration, the weir and baffle are planned to be replaced by a weir, which is currently being designed.
- 8th and Philadelphia (1480129) – 4 DWOs occurred on March 6th and 20th, August 14th, 2006 and on May 21, 2007 due to debris blocking the dry weather flow opening. The weir plate was opened fully in mid 2007 and this location continues to be monitored to ensure these improvements have eliminated the DWOs.
- 8th Street in Covington (1420025) – 5 DWOs occurred on February 27th, May 15th, June 28th, October 2nd, and December 12th, 2006 due to debris blocking the dry weather flow opening. Catch basins were repaired to limit debris and the weir plate opened fully in mid 2007. No DWOs have occurred at this location since 2006. This location continues to be monitored to ensure these improvements have eliminated the DWOs.
- 11th Street in Covington (1420079) – 4 DWOs occurred on February 8th and 22nd, and May 31st 2006 and on February 9th, 2007 due to debris blocking the dry weather flow opening. Catch basins were repaired to limit debris and the weir plate fully opened. This location continues to be monitored to ensure these improvements have eliminated the DWOs.
- 3rd Street in Covington (1480097) – 1 DWO occurred on May 1st 2006. The weir plate was removed and a second DWO occurred on December 26th, 2007, after the weir plate was removed due to debris blocking the dry weather flow opening. The District is monitoring this location and reviewing the location further to determine additional actions.
- 47th Street in Covington (1870031) – 2 DWOs occurred on January 24th, and December 19th, 2007 due to debris blocking the dry weather flow opening. The weir plate is already fully open, so the District is examining the potential to retrofit catch basins in the area to keep debris out of the system or to replace these catch basins with ones that can contain debris.
- 4th Street in Newport (0820001) – 2 DWOs occurred on December 15th, 2006 and September 20th, 2007 due to debris blocking the bar rack to the dry weather flow opening. Significant debris has been noted in upstream catch basins and

cleaning work orders have been issued. The District will increase the frequency of cleaning the bar rack protecting the diversion pipe, and continue to monitor. If this location continues to be a problem, the bar rack may be removed.

- Dalton Street in Covington (1480123) – 2 DWOs occurred on January 9th, 2006 and June 14th, 2007 due to debris blocking the dry weather flow opening. Leaping weir was fully opened after reoccurrence in June 2007 and is being monitored to ensure these improvements have eliminated the DWOs.
- 9th Street in Newport (0840005) – 2 DWOs occurred on August 24, 2006 and December 12, 2007. The 2006 occurrence was due to a grit blockage in the diversion line and the 2007 occurrence was due to leakage at the existing weir plate. As discussed in Section 4.1, the District has implemented a new CSAP program which will better address cleaning in the combined sewer system. In addition, the existing weir was repaired and a new weir added to the District's CIP. The new weir is under design to provide in-system storage in addition to flow diversion.
- Ash Street in Ludlow (1710098) – 2 DWOs occurred on March 12th, and April 23rd, 2007 due to debris blocking the dry weather flow opening. The weir plate has been removed; however DWOs due to blockages continue to occur. This diversion is one of the first to backup into the interceptor in wet weather due to the hydraulic grade line from the Bromley pump station as discussed further in Section 4.4 which means there is an increased chance for floatables to hang up and block the diversion when levels in the interceptor subside. This diversion is also highly impacted by high river levels and debris from the river has been noted to enter through the CSO outfall. The District is examining the following to eliminate this DWO:
    - Potential to retrofit or replace the catch basins tributary to the diversion to reduce debris that is contributing to the blockage.
    - The Bromley pump station wet-well levels are being examined to be lowered as discussed in Section 4.4.
    - The District is also evaluating river water intrusion prevention in order to keep river debris and sediment from backing up into the diversion.
- Eastern Avenue in Covington (0910055) – 3 DWOs occurred on March 12th, June 12th, and December 4th, 2007 due to debris blocking the dry weather flow opening. The weir was previously fully opened, but there have been additional DWO occurrences. Several nearby catch basins are washout type and therefore do not contain debris. The District is currently examining the potential to retrofit these catch basins to keep debris out of the system or to replace these catch basins with ones that can contain debris.
- Taylor Avenue in Bellevue (0610029) – 4 DWOs occurred on January 1st, August 25th, November 27th, and December 1st, 2006. This diversion was eliminated as part of a CIP project in early 2007.

The remaining locations where only a single DWO occurred in 2006 or 2007 are identified in Table 4.5.2.

Table 4.5.2 One Time DWOs (2006 to 2007)

Date	Location	Diversion	Corrective Measure
5/19/2007	Taylor Avenue	0610080	Replaced failed tear drop that failed during construction bypass pumping. No longer bypass pumping.
8/30/2007	34th Street	0880017	Removed blockage.
12/26/2007	3rd Street	1480012	Removed blockage.
3/22/2006	Eastern Avenue	0910031	Removed blockage.
5/3/2007	Oliver Street	0960027	Removed blockage.
4/23/2007	Adela Street	1710003	Removed blockage.
12/5/2006	Oakland & Forrest	0910005	Removed blockage.
4/9/2007	Pleasant Street	1730027	Removed blockage.
2/24/2006	Foote Street	0600002	Removed blockage.
4/23/2007	Lagoon Street	1720005	Removed blockage.

4.5.2 Investigations to Identify Potential DWO Locations

As part of the Consent Decree infrastructure characterization activities, the District in May and June of 2007 inspected all of their diversions, bypasses and CSOs with the express intent of identifying locations with higher potential to overflow during dry weather. Information gathered during these inspections was used to understand why existing diversions with a history of DWOs were prone to overflows and to identify additional diversions where the existing configuration or structural condition indicated potential for dry weather overflows. The analysis also considered information from the hydraulic model and from the District's gbaMS. A summary of the results of this analysis are presented herein.

The analysis identified 27 regulators that either had a history of DWOs or were considered to have the potential to overflow during dry weather based on the diversion meeting one or more of the following criteria:

- Configuration considered susceptible to DWO, but no known issue;
- Horizontal orifice plate was found substantially closed during 2001 Severn-Trent inspections; and,
- Records in gbaMS indicate recurring DWO entries.

Each diversion considered to have the potential to overflow during dry weather was then evaluated and a recommended course of action was identified. Recommended actions included additional monitoring, weir replacement, and catch basin modifications to trap debris. For example, the horizontal orifice plate at Eastern Avenue (Diversion 0910055) was found to have multiple DWO occurrences in the last two years. The orifice plate has been fully opened and DWOs continued to occur due to blockages, so the District is

currently examining the potential to retrofit upstream catch basins to keep debris out of the system or to replace these catch basins with ones that can contain debris. A monitoring block was installed at this location in October 2007 (see Figure 4.5.2) to make it easier to confirm DWO occurrences while a permanent fix is being investigated. To date one additional dry weather overflow has occurred. The documentation included as Appendix P lists all of the locations identified, the reason for consideration, the recommended course of action, and the action taken. All locations will continue to be monitored as part of the normal inspection routine.

Figure 4.5.2: Blocking at Eastern Avenue Diversion



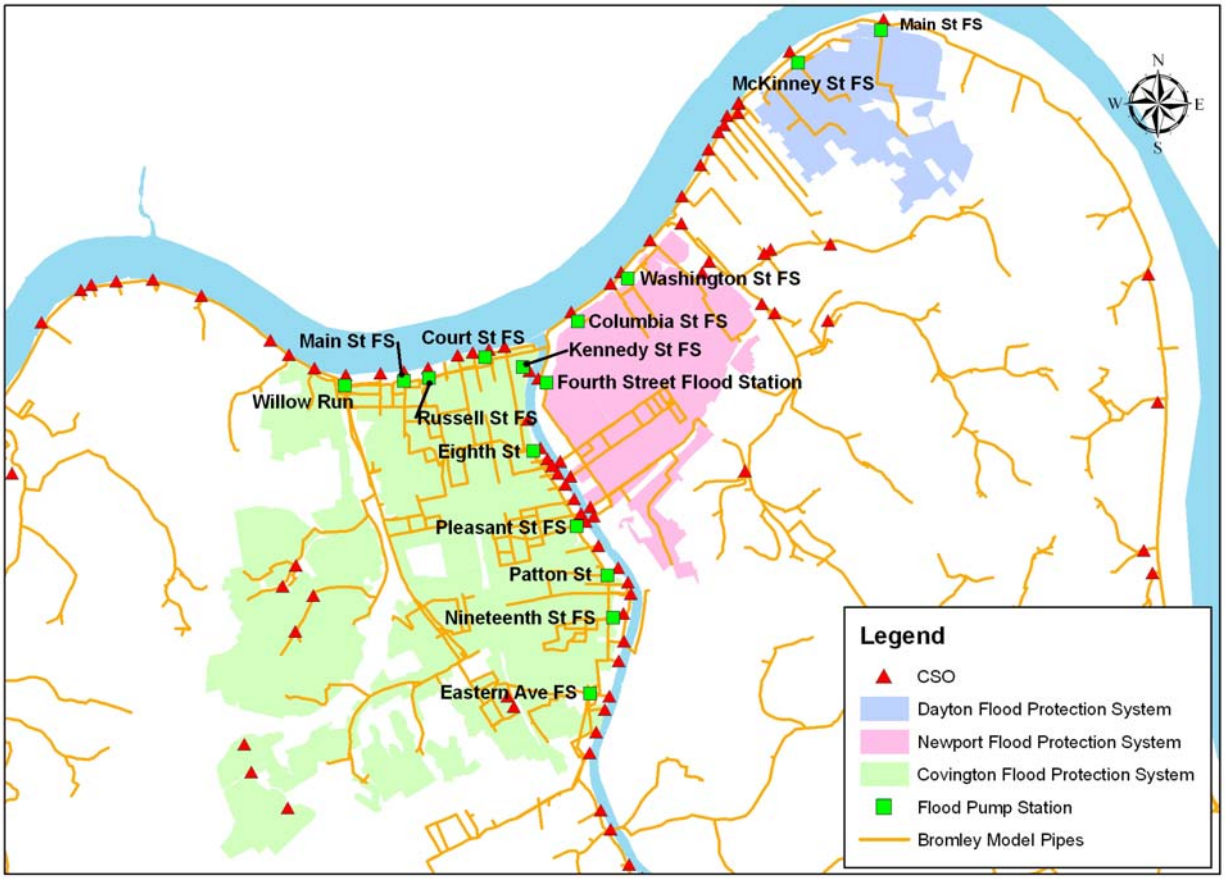
4.5.3 River Water Intrusion Mitigation Feasibility

The Consent Decree requires the District to ensure that if CSOs occur, they only occur as a result of wet weather and that "this goal shall include addressing those discharges resulting from the District's compliance with the requirements of the United States Army Corps of Engineer's (ACOE) Ohio River Flood Protection System Pumping Operations Manual" [Paragraph 39 (b) (1) (A)]. As part of the Watershed Plans in the Consent Decree, the District is conducting a detailed river water intrusion mitigation feasibility analysis. The goal of this analysis is to fully understand the effects that the ACOE's Flood Protection System has on the District's collection system and to identify alternatives to mitigate sources of river water intrusion including outfalls, catch basins in the floodway upstream of diversions, and where the interceptors and manholes are below the water table both under normal and elevated river levels.

Background

The ACOE constructed flood protection systems for the Cities of Newport (1951) and Dayton (1986) in Campbell County, and the City of Covington (1955) in Kenton County. The three flood protection systems are now consolidated into the Flood Protection System for Campbell and Kenton Counties (Flood Protection System), which is under the jurisdiction of the Sanitation District. The Flood Protection System includes 4.8 miles of earthen levee, 1.7 miles of concrete and steel flood wall, 15 pumping stations, and 72 flood control gates (Woolpert, 2001). The area served by the Flood Protection System, and the locations of the flood pump stations and the District's CSOs are shown in Figure 4.5.3.

Figure 4.5.3: Flood Protection System

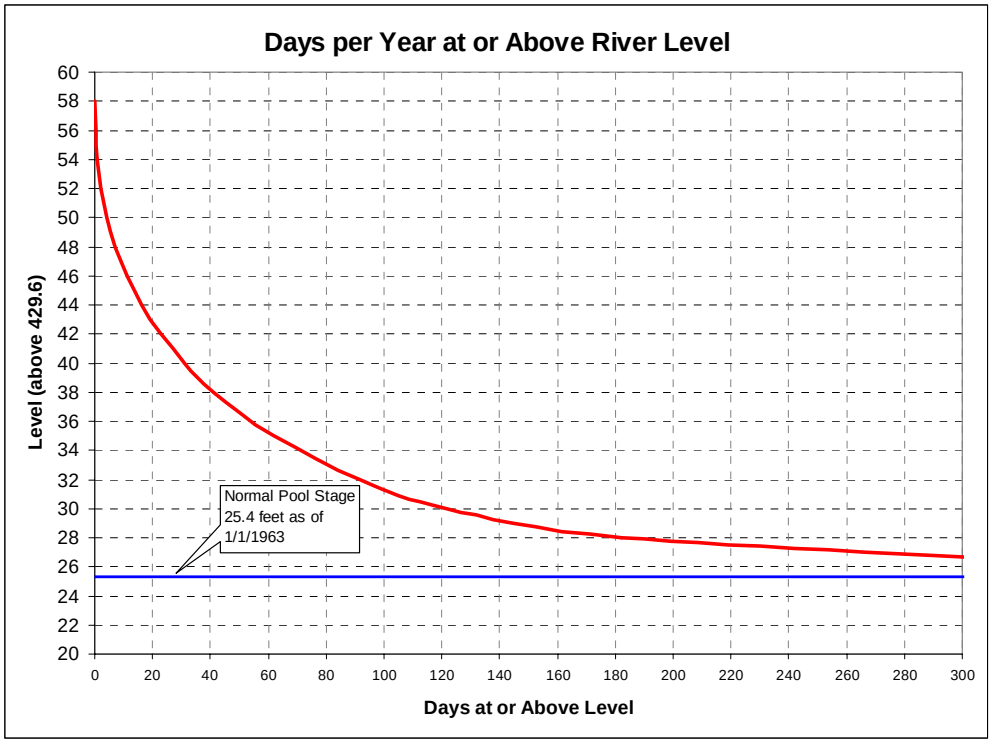


The Flood Protection System is operated by the District in accordance with the ACOE's Flood Protection Operation and Maintenance Manuals (COE, 1951, 1955, & 1986). When the Ohio River reaches specified river stages during flood conditions, CSO outfall flood gates are closed to isolate the sewer system from high river water and other sewer collection system flood gates are opened or closed to isolate portions of the interceptor and to re-route sewer flows to the flood pumping stations. The flood pump stations and gates were designed by the ACOE to operate to protect the cities from flooding

internally due to elevated river levels or during rain events when the flows in the combined sewers could not flow out into the river due to the elevated river levels. In Newport, the outfall gates are on the combined trunk sewer upstream of the CSO diversion chambers. With this configuration river water that enters through the CSO outfalls can back up through the diversion and flow down into the interceptor. Once the system is isolated the flood pump stations are placed on-line to pump the sewer flows to the river side of the flood wall or levee until the river levels drop below the flood stage.

Additionally, most of the District's combined sewer system pre-dates the construction of the Markland Dam on the Ohio River in the mid-1960s located down river from the District's service area in Gallatin County, Kentucky. Prior to construction of the dam Ohio River pool stage around northern Kentucky ranged from 2 to 12 feet. The deep channel in the Ohio River generally runs along the Ohio side, and many of the CSO outfalls were extended out to that channel when originally constructed in the early 1900s. When the Markland Dam was constructed as part of the ACOE's flood protection and river navigation measures, normal pool stage was raised to 25.4 feet (COE, 2007) putting many of what are now the District's CSO outfalls permanently under water and increasing the frequency of higher river elevations and backups into the District's combined sewer system. Figure 4.5.4 shows the frequency of attainment of various river stages based on data from 1970 to 2005. For example in an average year, there are 267 days where the Ohio River is above normal pool elevation.

Figure 4.5.4: Frequency of Attainment of Various River Stages



The critical control elevations of diversions throughout the District's combined sewer system vary substantially, but there are numerous diversions in the system being flooded by the river for some time during each year. River water then enters into the interceptors via the diversions causing the entire interceptor system to fill with river water. At 44 feet, the flood protection system begins operation and starts to completely isolate the combined sewer collection system. These flood protection systems isolate the CSO outfalls from the Ohio River and convey all combined sewer flow to the flood pumps, which in turn pump the flow over the flood wall/levee and into the Ohio River.

River Water Intrusion Mitigation

While the District agrees that there is a need to understand and address the impact of the United States Army Corps of Engineers' flood protection system on their collection system, particularly during dry weather, it is apparent that an extensive study must be undertaken to determine actions that can be taken that will not jeopardize the health, welfare, and safety of the citizens of Northern Kentucky during elevated river levels. Additionally, while not driven by local rainfall, the elevated river stages that activate the Flood Protection System are in fact due to wet weather. As such, potential solutions to address river water intrusion will be examined as part of the other system-wide needs in the Watershed Plans.

To be proactive, the District has already begun this river water intrusion mitigation study to determine and understand sources of river water intrusion and its impacts on the sewer collection system and flood protection systems. This analysis will be completed in accordance with the schedule shown in Table 4.5.4 at the end of this section.

4.5.4 Pump Station Back-Up Power

In accordance with the Consent Decree, the District submitted a Pump Station Operation Plan for Backup Power on December 14, 2007 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.

This separate report also details the significant actions already undertaken by the District to address pump station back-up power needs throughout the combined and separate systems. Of the 18 pump stations in the combined system, 15 are flood pump stations, with 2 of these, Patton Street and Eighth Street, also serving as interceptor lift stations. The 15 flood stations already have dual dedicated power feeds from separate sources. See Table 4.5.3 for the status of backup power for the remaining combined system pump stations based on the District's Pump Station Operation Plan for Backup Power.

Table 4.5.3: Backup Power for Sanitary Pump Stations	
Pump Station	**Backup Power Status**
Bromley PS	Existing dual dedicated power feeds from separate sources.
Banklick PS	Permanent generator to be installed in 2009.
Second St. PS	Initial action PS. Diesel generator to be installed in 2008.

4.5.5 Summary and Recommendations

The District's collection system inspection and maintenance programs are the primary measure for eliminating dry weather overflows. As detailed in Section 4.1, the District has recently implemented a new continuous sewer assessment program that will focus the District's resources on problem areas and identify the resources necessary to maintain a high level of service and significantly reduce DWOs. The District has also undertaken and will work to finalize programs to assess and eliminate other sources of dry weather overflows, including river water intrusion prevention and providing reliable backup power to the District's facilities as discussed in Sections 4.5.2 through 4.5.4.

To further show how the District is fully implementing this minimum control, the activities discussed above are recounted below in the context of the findings and recommendations from the July 6, 2005 NPDES Compliance Evaluation Report by USEPA Region 4. These comments are shown in Table 4.5.4 to demonstrate that the District has addressed the issues and recommendations that were raised and has implemented actions to come into compliance with NMC 5:

Table 4.5.4 Response to Compliance Evaluation Comments	
Item	**Response**
Commit sufficient resources to satisfy its stated regulator inspection objectives	• The District's new continuous sewer assessment program and the measures taken to provide sufficient resources for its effective implementation are discussed in detail in Sections 2 and 4.1 of this report • In addition, the District maintains 2 full-time 1-man crews dedicated to inspecting the District's 127 CSO diversions. The target frequency is to inspect each diversion about once per week as well as after every rainfall event.

Table 4.5.4 Response to Compliance Evaluation Comments	
Item	**Response**
Carry out a comprehensive dry weather overflow potential evaluation of all its regulators that considers both past DWO history and individual regulator physical and hydraulic characteristics.	• Section 4.5.2 above summarizes how the District has accomplished this through field analysis, modeling, and review of existing data to provide recommendations to eliminate DWOs. The recommendations are included in a comprehensive site-specific table in Appendix P.
Consider utilization of telemetry to monitor overflow status	• Weekly CSO diversion inspections will be conducted and verified within gbaMS. Improved record keeping will ensure that dry weather overflows are minimized. • Instead of more frequent inspections, problem areas will be fixed with permanent solutions. • Additionally, as noted above and as further discussed in Sections 4.1 and 4.9, the District is monitoring 23 outfalls as part of the ongoing collection system characterization and the District has already begun with telemetry based warning of DWOs at selected outfalls; Latonia (CSO 1840130), Parkway/Highway (CSO 1490132), Willow Run (1480167), Columbia Street (CSO 0790084), and 10th Street (CSO 0840112). • The District has also added blocking in a number of diversions to make it easier to visually assess if overflows have occurred. At this time the District intends on blocking all CSOs to aide in inspection and determination of an overflow occurrence.

To comply with NMC 5, Elimination of CSOs During Dry Weather, the District will continue with all of the activities and programs described above. As part of that effort, the District will implement additional measures to mitigate DWOs as indicated in Table 4.5.5. An overall schedule of activities for all of the nine minimum controls is included in Appendix D.

Table 4.5.5: Additional Activities to Eliminate DWOs

Item	Activity	Implementation Schedule
Corrective Measures for Chronic DWO Diversions	Continue implementing action plan in Appendix P developed for each location susceptible to DWOs.	April 18, 2009
	Implement Catch Basin O&M program.	See NMC 1
CSO Inspections	Add blocking to remaining CSO diversions where feasible.	June 30, 2008
RWI Mitigation Feasibility Analysis	Complete analysis and recommend alternatives for reducing river water intrusion into the collection system. Recommendations to be incorporated into the Watershed Plans.	April 18, 2009
Backup Power Implementation for CSS PS Facilities	Implement backup power at Banklick and 2nd Street Pump Stations.	Described in Table 4.5.3. Progress being tracked as part of the Pump Station Operation Plan for Backup Power

4.6 Control of Solid and Floatable Materials in CSOs

This control consists of the reduction, or possible elimination, of solid and floatable materials from CSO effluent discharge. There are many effective measures for reducing the discharge of solids and floatables such as source reduction through public education, litter control or street sweeping, in-line controls that screen, skim or settle, and end-of-pipe controls that capture and hold materials for later removal. Solids and floatables can also be reduced through maximizing use of the collection system for storage, and conveying as much flow as possible to the POTW for treatment. This section focuses on the District's efforts to keep floatables out of the collection system and at containing and removing floatables already in the collection system. Other sections of this report, specifically Sections 4.2 and 4.4, discuss the District's efforts at reducing overflow volumes, which lead to corresponding reductions in solids and floatables discharges.

In addition to the volume reduction measures addressed in Sections 4.2 and 4.4, other measures have been initiated or continue to be implemented to control discharges of solids and floatables in combined sewer overflows. These measures are listed below and further described in this section:

- Public education to reduce solids and floatables originating from sanitary waste
- Street sweeping to reduce solids and floatables originating as street litter
- Construction site stormwater runoff management program
- Catch basin modifications to capture and remove solids and floatables prior to entering the combined system
- Grit pits on the interceptor to capture solids and increase flows to treatment
- In-line and end-of-pipe controls to reduce floatables discharged through CSOs

4.6.1 Public Education Program

As recommended in the USEPA's NPDES Compliance Evaluation Report, the District has implemented a program to notify the public of the proper disposal procedures for personal hygiene items in order to reduce the amount of floatables that originate from the sanitary component of combined sewer overflows.

The following text was drafted by the District as part of a public education program targeting proper disposal of personal hygiene products, grease and oil, and household cleaning products:

> Did You Know?
>
> Did you know that what you flush or pour down your drain can affect local waterways and the environment? Protect Northern Kentucky's watersheds by:
>
> ✔ Disposing of excess household grease (meat fats, lard, cooking oil, shortening, butter and margarine, etc.) diapers, condoms, and personal hygiene products in the garbage can.

If these materials are flushed or washed down the drain, they can clog pipes, and could cause raw sewage to overflow in your home or yard, or in public areas, including local waterways. Additionally, high flows that occur in the sewer system during periods of rainfall or snowmelt and can result in basement backups, overflows at manholes, or discharges directly to rivers and streams. When this occurs these materials can be discharged directly to our local waterways.

- Properly disposing household products such as cleansers, beauty products, medicine, auto fluids, paint, and lawn care products at your local household hazardous waste facility.

  Wastewater treatment facilities are designed to treat organic materials, not hazardous chemicals. If you pour hazardous chemicals down the drain, they might end up in your local rivers, lakes and coastal waters.

- Properly disposing used motor oil.

  Used motor oil can diminish the effectiveness of treatment process, and might allow contaminates to be discharged. If you pour used motor oil down the drain, the contaminants could pollute local waterways or harm aquatic life.

This educational material will be included in the next addition of What's Happening! Kenton County. This periodical is published by Rivertown Communications as a way for publicly-funded organizations to publicize their services and is sent to every resident in the county. The District also intends to release the information in similarly titled periodicals produced for Boon and Campbell counties. Further, a bill insert has been drafted that will be sent out later this year and is included in Appendix Q.

4.6.2 Street Sweeping

The primary objective of street sweeping is to remove litter, sediment and other debris that has accumulated on the streets; thereby preventing it from entering the collection system. Street sweeping has been proven to be an effective method of floatables control; however, it does not fall within the District's jurisdiction as the individual municipalities and counties are financially and physically responsible for street sweeping within the District's service area. Another limiting factor with regard to street sweeping is that litter and other debris can accumulate in areas that are inaccessible to a street sweeper, like sidewalk, median and natural ground areas or on private property (such as store or restaurant parking lots).

In April 2007, the District undertook a detailed survey of the municipalities within its jurisdiction to determine their street sweeping frequency (i.e. the number of times a street gets swept each year). The street sweeping frequency of the major municipalities within the combined area as reported by them is as follows:

	Municipality	Street Sweeping Frequency (Times/Year)
11.	Covington	3 – 4 (commercial areas 1/week)
12.	Newport	10
13.	Dayton	1
14.	Bellevue	2 – 3
15.	Ludlow	1
16.	Taylor Mill	1
17.	Park Hills	2
18.	Bromley	3 – 4
19.	Villa Hills	As needed
20.	Fort Wright	1

The individual counties (Kenton and Campbell) do not provide street sweeping services; however, the interstate highways through the Kentucky Transportation Cabinet are swept approximately 12 times per year.

Since the USEPA's Compliance Evaluation Report was issued in July 2005, the District has worked with the municipalities to ensure that most streets within the combined area are cleaned at least once a year, and more frequently in many of the major municipalities. In addition, the District notifies individual cities in writing that targeted cleaning is required if they find debris, including ice or leaves obstructing a curb inlet. A copy of one of these notifications is included as an example in Appendix R. Since street sweeping does not fall under the jurisdiction of the District, floatables will continue to be addressed as they enter the system and individual municipalities will be notified when additional street cleaning is necessary.

4.6.3 Management of Construction Site Storm Water Runoff

Management of storm water run-off through the use of best management practices is critical to reducing sediment and pollutant loads to surface waters. Sediment from construction sites has been shown to exceed that from agricultural lands by 10 to 20 times and 1,000 to 2,000 times that of forested lands. As such, storm water run-off entering the combined system from construction sites can contribute a significant quantity of solids and pollutants that may potentially be discharged through a CSO (SD1, 2004).

Under the auspices of the Regional Storm Water Management Program, the District has been able to adopt Rules and Regulations establishing a "Land Disturbance Permit" to be administered by the District to control storm water runoff from construction sites for new developments and redevelopments in Boone, Campbell, and Kenton Counties in both the SSS and CSS. These regulations require the implementation of proper erosion and sediment control practices; and controls for other wastes among other requirements in areas undergoing development or re-development. These regulations are administered through review of improvement plans by the District for new developments

and re-developments; site inspections and enforcement activities of control measures and sanctions to ensure compliance. The District's Rules and Regulations established a land disturbance permit process, which is applicable for any land disturbance activity greater than or equal to 1 acre that occurs within the storm water service area, which is inclusive of the CSS. All construction activities within the storm water service area that disturb greater than or equal to 1 acre of land must receive a permit from the District prior to the commencement of the activity (SD1, 2005).

The following are three types of permits that the District administers to regulate sediment and erosion control practices:

- Land Disturbance Permit - The Land Disturbance Permit is required for either the alteration of the earth's surface where natural or man-made ground cover is altered and for which the applicant has not received a Clearing or Grading Permit (described below) and/or the installation of a storm sewer system (including storm sewer structures and pipes, detention ponds, etc.).
- Grading Permit - The Grading Permit is required for grading activities on a property. Grading activities include excavation, filling, stockpiling, or other earth moving activities, and any combination thereof. The Grading Permit may include the construction of sanitary sewers and other utility infrastructure (water, gas, electric, etc.).
- Clearing Permit - The Clearing Permit is required for clearing activities on a property. Clearing activities include stripping and cutting of trees and ground cover and the removal of roots and associated material. The Clearing Permit does not include any earth moving activities, including rough shaping of the site.

These requirements extend throughout the entire service area and not just the separate storm sewer system. Therefore, these stormwater requirements will help mitigate pollution from entering the combined sewer system. Examples of these permits have been included in Appendix S.

The District's plan review process includes examination of sediment and erosion controls to ensure that adequate controls are designed and included in the construction drawings. Appropriate Best Management Practices (BMPs) must be sited and installed properly for plans to be approved. The District's process is consistent with Kentucky's requirements, as outlined in Kentucky Best Management Practices for Construction Activities. This year the District issued 91 Land Disturbance Permits, 51 Grading Permits and 7 Clearing Permits. Since the program started, the District has issued 382 Land Disturbance Permits, 206 Grading Permits and 36 Clearing Permits. After a District plan reviewer has issued a permit, the permitted site is entered into a database, where it is assigned to a District field inspector. The inspector will then initiate the inspection process, which includes verifying that the approved permit plans for the land disturbing activity are being complied with and preparing written reports for every inspection. The inspection reports indicate that the approved plan is or has been properly implemented and maintained, if the plan is approved or has deficiencies, and the corrective actions to be taken. Examples of an Erosion Prevention Sediment

Control (EPSC) inspection form and a non-compliance form can be found in Appendix T. Enforcement measures may include stop-work orders or issuance of fines for failure to comply with EPSC regulations.

In addition to regulation and enforcement, the District, in partnership with the USEPA, the Kentucky Division of Water, the City of Florence, and the Boone, Campbell and Kenton County Conservation Districts, sponsored two Regional Sediment and Erosion Control Expos in 2005. A total of 160 contractors, homebuilders and engineers learned the latest technologies to prevent silt, sediment and mud from leaving their construction sites. Erosion Sediment Control Field Guides were distributed to each participant.

4.6.4 Catch Basin Modifications and Cleaning

The primary objective of catch basin cleaning is to remove solids and floatables that have collected within the catch basin, before they enter the collection system. Catch basin cleaning in a combined sewer service area as large as the District's (almost 7,800 acres) can be labor and cost intensive; however, the District recognizes this as a vital step in controlling solids and floatables.

In addition, the District acknowledges the effectiveness of catch basin modifications, which are recommended in the USEPA Guidance for Nine Minimum Controls and can lead to litter reduction of between 60 and 80 percent (NYCDEP, 1997). Based on the inventory and field inspection, 1,335 of the District's catch basins have bells or hoods installed to contain floatables within the catch basin for removal prior to their entering the collection system.

In the summer and early fall of 2007, the District undertook an inventory and a field inspection of all 3,302 catch basins within the CSS. Among the many parameters that were noted during the field inspection process was an estimate of the amount of debris present in the catch basin and basins that needed to be rehabilitated or replaced. Based upon that inventory there were 501 work orders written for cleaning, and 704 for repairs. The District has developed a catch basin O&M program as described in Section 4.1.3.2 that will result in cleaning and retrofits to reduce solids and floatables entering the CSS.

The District is also investigating opportunities for the incorporation of green infrastructure (GI) into its Consent Decree activities and other operations. The District defines green infrastructure as concepts such as low impact development, better site design, or any other source reduction practices seeking to preserve or restore the environment's natural hydrologic cycle. The primary goals of the District's green infrastructure program include the reduction of combined sewer overflow volumes, reduced stream erosion problems resulting from new development, and improvements in storm water runoff quality.

With respect to catch basin modifications and cleaning, the District has plans to investigate the use of alternative drainage features that promote infiltration and reduce

storm water inflow to combined sewers as a replacement for standard curb inlets and catch basins. These features could include infiltration structures or bioretention basins and rain gardens. These kinds of drainage features would have the added benefit of reducing or eliminating the solids and floatables contribution from those drainage areas.

4.6.5 Grit Pits

In addition to storm water, grit enters the District's CSS during storm events along with grit, sediment and debris from river water due to high river stages as described in Section 4.5.3, as well as through catch basins and stream connections. Grit and other settleable solids can reduce the capacity of the CSS to store and convey flows to treatment. Additionally, settleable solids can be a considerable source of pollutants including pathogens, nutrients, pesticides, and other chemicals and debris.

The District currently has 3 grit removal pits in operation along the Ohio River Interceptor (1 each in Bromley, Newport, and Bellevue). There are 3 more under design, the 2 diversions with grit and floatables control in Dayton, and 1 along the Licking River Interceptor in Covington. The 2 replacement diversions will include a floatables baffle with a static bar rack above the baffle to the roof. The Bromley (May 2004) and Newport (June 2007) grit pits have been in operation the longest and remove an average of 14 CYs and 11 CYs of grit per month, respectively. The Dayton pit was installed in November 2007. Each grit pit is scheduled to be cleaned on average every 4 weeks.

4.6.6 In-Line and End-of-Pipe Floatables Control

While source control measures have been proven to be effective when implemented on a large scale, some additional controls are necessary to provide the level of reductions necessary to meet narrative aesthetic water quality standards. As such, in the fall of 2007, the District developed a solids and floatables program to increase end of pipe control of solids and floatables. One component of the program is to install effective simple solids and floatables controls at as many CSOs as is feasible. The initial step of the program was to identify a suite of simple, but effective solids and floatables controls that could be implemented at as many CSOs as possible. This effort identified five general types of diversion structures within the CSS and developed three general types of solids and floatables controls as follows:

<u>Diversion Types:</u>

- Horizontal Orifice Plate Manholes (Leaping Weir)
- Horizontal Orifice Plate Chamber @ Interceptor
- Diversion Dam Regulator Manhole
- Regulator Gate Chamber / Diversion Dam
- Elevated Overflow Pipe Manhole

<u>Simple Solids and Floatables Controls:</u>

- Bar Rack (two distinct configurations)

- Weir and baffle
- Net Bag

The simple solids and floatables controls were selected and developed such that they could be utilized on multiple diversion types based on individual diversion characteristics, such as hydraulic conditions, structure configuration, dimensions, depth, accessibility for maintenance, diversion pipe size, etc.

Solids and Floatables Pilot Program

Prior to full scale implementation, the District developed a pilot solids and floatables control program with the goal of better understanding the effectiveness and maintenance requirements of the different diversion/floatables combinations. The pilot program is described below and the information gained from this program will then be utilized to guide future selections and installations of effective controls at other CSO diversion locations.

Candidate diversions were chosen based on a desktop level analysis of available data from the diversion inspections that were completed by Severn Trent in 2001, the May and June 2007 diversion inspections, the most recent GIS data and existing collection system model projections. The existing collection system hydraulic model was used to identify locations where solids and floatables controls would not create an unacceptable risk of basement or surface flooding. The criterion utilized to identify unacceptable risk was when the model predicted less than 8 feet of freeboard above the maximum projected water surface to existing grade upstream of the potential control location without the control in place during any of the following four storm event/river stage combinations:

- 25 year , 30 minute storm event with no river influence
- 25 year, 1 hour storm event with no river influence
- 2 year, 30 minute storm event with the Ohio River set at stage 40’
- 2 year, 1 hour storm event with the Ohio River set at stage 40’

The hydraulic models were then utilized to make the final selection for new diversion/control combinations. The size of the solids and floatables control at each location was maximized through an iterative process using the hydraulic model to confirm that the control was not projected to cause unacceptable risk of basement or surface flooding. The fabrication and installation details for the new pilot controls are included in Appendix U. The entire program is described in further detail below, and includes some existing simple controls, such as net bags, and one proprietary screening device in addition to the new simple solids and floatables control locations.

Bar racks (Types “A” & “B”)

These are simple bar racks with parallel bars to remove coarse and floating debris. In general, the bar racks are placed into the existing diversion structure downstream of the diversion but upstream of the outfall.

- Type “A”: This configuration utilizes 1-inch bar spacing and was developed to screen floatables from CSOs prior to discharge. The configuration is such that captured debris is transported in the underflow through the diversion and into the interceptor for conveyance to the WWTP for removal. The pilot program included one Type “A” bar rack installed on a horizontal orifice plate regulator at 4th Street in Covington (1480108). See Figure 4.6.1.

Figure 4.6.1: Type “A” Bar Rack at 4th Street



- Type “B”: This configuration also utilizes 1-inch bar spacing; however it is installed such that it screens all incoming flow, even during dry weather. This configuration is intended to protect the diversion pipe from clogging and may be used at diversions to the interceptor upstream of a pump station that is not otherwise protected by a bar screen or where there is a concern of debris clogging the diversion pipe. The pilot program included one new installation on a horizontal orifice plate regulator at Pleasant Street in Ludlow (1730029) and an existing location at Geiger Avenue in Belleview (0650041). See Figure 4.6.2. The existing location at Geiger Avenue is installed on a weir with side outlet and has bars spaced at 2½ inches and has historically needed cleaning on a weekly basis.

Figure 4.6.2: Type "B" Bar Racks Pleasant Street and Geiger Avenue

Pleasant Street



Geiger Avenue



Weir and Baffle

In a weir and baffle system, the baffle is partially submerged in the flow to skim floating debris from the top of the water. Turbulence and neutrally buoyant debris can reduce the effectiveness of this control. To maximize the effectiveness a weir is installed downstream to create a back water effect to slow the flow and further submerge the baffle. As with the bar racks, the baffle is placed between the diversion to the interceptor and the outfall. The configuration is such that captured debris is transported in the underflow through the diversion and into the interceptor for conveyance to the WWTP for removal. Because of local conditions two types of configurations were utilized. New weir and baffle plates were installed at Saratoga Street in Newport (0770006), but because of hydraulics only a baffle plate could be installed at the other two new locations at 10th (1420043) and 17th (0930026) Streets in Covington. In these cases, the baffle plate was extended down into the dry weather flow sump, effectively making the downstream end of the sump the weir. See Figure 4.6.3.

Figure 4.6.3: Weirs and Baffles at Saratoga, 10th and 17th Streets

Saratoga Street



10th Street



17th Street



The Saratoga location is currently being redesigned and will be replaced. The configuration of the Saratoga Street diversion was significantly different than the information available at the time of the original design. The contractor modified the weir

and baffle to fit the structure based on new field dimensioning to enable installation, which resulted in a shorter weir and baffle length and a hydraulic restriction at the outfall. After installation, the installed configuration was re-checked using the model and found to increase the potential for street flooding to an unacceptable level. The new configuration will consist of a taller weir with no baffle. The taller weir will protrude above the diversion benches and be wider than the installed configuration. The exact height of the new weir is still being confirmed by modeling.

Net Bags

Prior to developing the pilot solids and floatables program, the District's field personnel had begun installing nets at the ends of elevated outfall pipes in the combined system. They had discovered a local manufacturer that produces sheet and tubular netting material and the field personnel fashioned net bags out of the netting material using plastic zip ties. They originally were using 3 different types of netting material, each of a different color and different opening sizes in order to determine the best types for the applications. The District has since standardized on two types, best identified by color:

- Black – this material comes in bulk/rolled/flat form and must be cut, and assembled by the field personnel. Because the nets are formed from flat sheet they can be constructed to fit any size pipe. The mesh openings are 5/8 inch x 3/4 inch. Two existing locations, Wildcat Run in Bellevue (0650025) and Carmel Manor in Fort Thomas (0030017) were included in the pilot program. See Figure 4.6.4.

Figure 4.6.4: Black Nets at Carmel Manor and Wildcat Run



- Green – this material comes in tube stock and is tied closed at the end by the field personnel. The mesh openings are smaller than the black material at ½

inch x ½ inch, but the tubular configuration limits its installation to pipes 8 inches and smaller. Two existing locations, Manor Lane (0340044) and Mary Ingles (0200066) in Fort Thomas were included in the pilot program. See Figure 4.6.5.

Figure 4.6.5: Green Nets at Manor Lane and Mary Ingles

Manor Lane



Mary Ingles

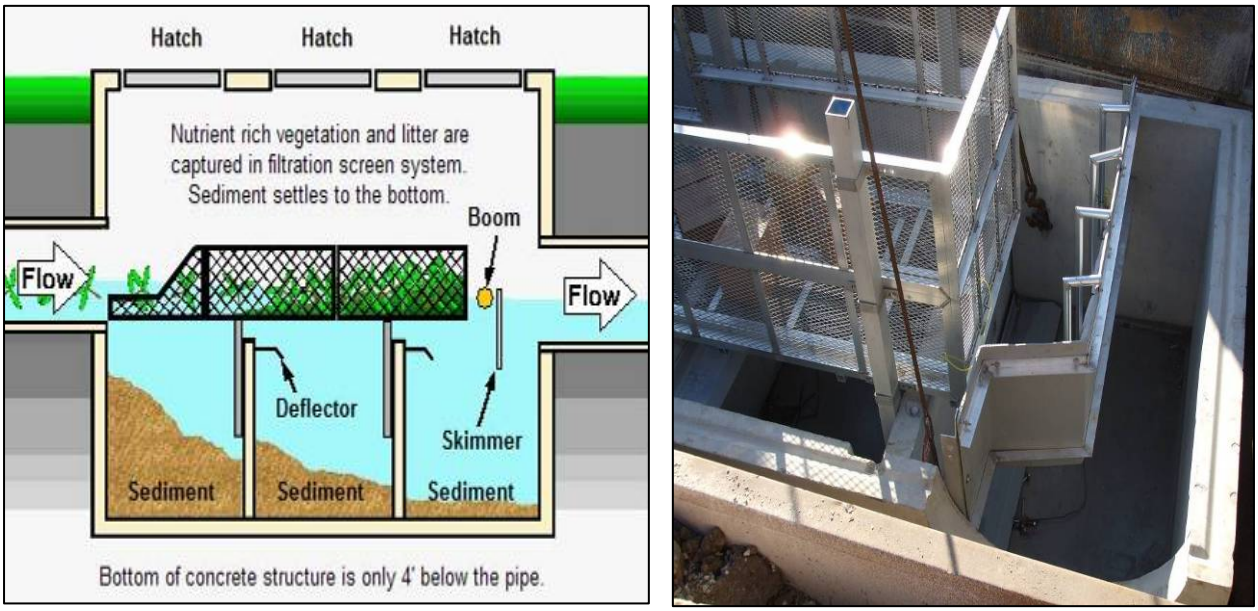


Nutrient Separating Baffle Box

Prior to developing the pilot solids and floatables program, the District had also began a study and design to add a pilot engineered floatables control at the Greenup Street outfall in Covington (1440121). The study reviewed several types of solids and floatables technologies including nets, screens, vortex separators, and nutrient separating baffle boxes. The study selected a Nutrient Separating Baffle Box (NSBB), which is a proprietary in-line screening, settling and skimming device installed within a concrete chamber and is designed to capture organic matter, litter, sediment and hydrocarbons prior to discharge through an outfall. The internal screen basket is fabricated using expanded metal with 1-3/4 inch x 5/8 inch diamond shaped openings. The NSBB was originally designed for storm water treatment, but after review of the unit and its design, it was determined that it could be used effectively for CSO solids and floatables capture. The manufacturer reports that the NSBB is designed to capture approximately 80 percent of the total suspended particles from 0.125 – 2.0 mm at a peak design velocity. Downstream of the screen is an absorbent boom to remove Hydrocarbons and a baffle plate.

The construction completion date coincided with the start of the pilot monitoring program so the NSBB was added to the program to assess its effectiveness for use in CSO solids and floatables capture. See Figure 4.6.6.

Figure 4.6.6: NSBB Unit at Greenup Street

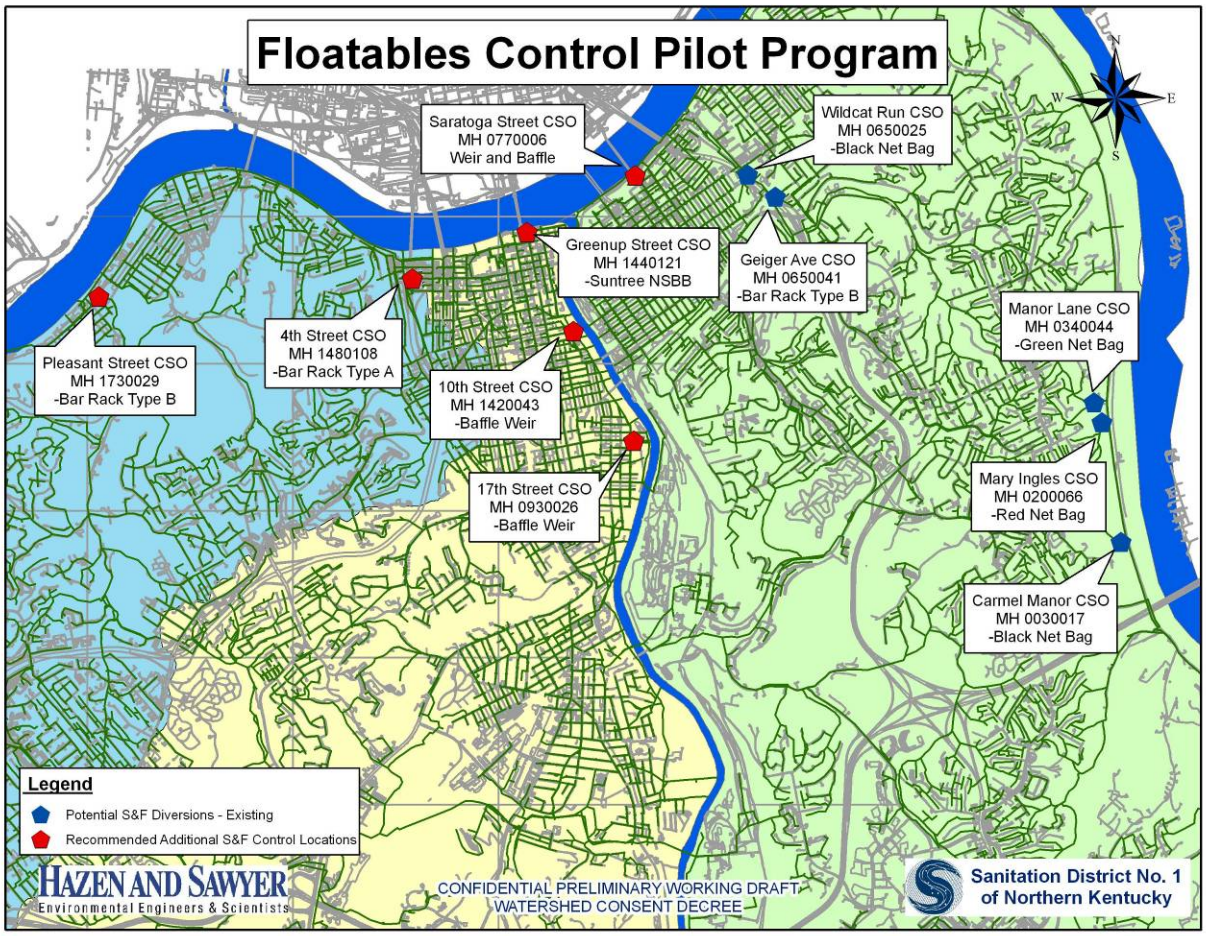


Solids and Floatables Control Pilot Monitoring

The pilot monitoring program was developed to understand the effectiveness and maintenance requirements of the different diversion/floatables combinations. In order to determine these attributes, a subset of the control locations were chosen for increased monitoring. The pilot monitoring includes at least one location of each type of simple solids and floatables control and is being performed by the District's field staff. Beginning in December 2007, the pilot program has been monitoring the locations depicted in Figure 4.6.7. A special monitoring form was created to track the performance of each type of control for pre-event, during event, post-event, and office evaluations of effectiveness and maintenance requirements. Example copies of 2 completed monitoring forms are provided in Appendix V.

In the early stages of monitoring it has been difficult to get the desired observations throughout the event. Some storms have dissipated quickly not causing an overflow while others have developed unexpectedly, not allowing the observers to get observations before or during the event. To date, the District has been able to fully observe only 2 rain events and CSO activations, and has partial observations for several others. The District would like to observe the controls during at least 1 more rain event in order to have sufficient data to assess their effectiveness, but from the limited data that has been collected, preliminary indications are that some controls are being overtopped even during small events, highlighting the difficulty of installing effective controls within the existing infrastructure.

Figure 4.6.7: Solids and Floatables Control Pilot Monitoring Program



Expanding In-Line and End-of-Pipe Solids and Floatables Controls Program

Utilizing findings from the pilot monitoring program, the District intends to expand installation of the simple solids and floatables controls described above to all CSOs where effective controls are feasible in order to meet the compliance deadline of April 18, 2009 set forth in the Consent Decree. However, the District anticipates that simple solids and floatables controls will not be applicable at some diversions due to upstream hydraulic concerns, and that some CSO locations may require engineered solids and floatables controls to be effective. Engineered controls can take many forms, from the stand-alone technology currently being piloted at Greenup Street to controls incorporated in the selected CSO solution. Locations requiring engineered controls will be identified after the pilot study is complete. Engineered controls for locations where simple solids and floatables controls will not be effective will be identified and addressed as additional pilot locations or as part of the Watershed Plans under the Consent Decree due to the expected high costs.

To date, the District has installed 13 solids and floatables controls at its 96 CSO locations, including nets at 6 CSOs, bar racks at 3 CSOs, weirs and/or baffles at 3

CSOs, and the NSBB at Greenup Street. Construction of the 2 solids and floatables controls and grit chambers for the Main Street and McKinney Street CSOs are currently scheduled to be completed by December 31, 2008 in conjunction with the new riverfront development.

Table 4.6.1 lists the locations of existing or currently planned solids and floatables controls and the type of control installed.

Table 4.6.1: Current Solids and Floatables Control Program

CSO	Diversion	Name	Type of Control
1490172	1490015	Swain Court	Black Net
0910065	0910055	Meiken/Eastern	Black Net
0650098	0650025	Wildcat Run	Black Net
0340051	0340044	Manor Lane	Green Net
0200069	0200066	617 Mary Ingles	Green Net
0030031	0030017	Carmel Manor	Black Net
0650100	0650041	Geiger Avenue	Type “B” Bar Rack
1440205	1440121	Greenup Street	Nutrient Separating Baffle Box
0770096	0770006	Saratoga Street	Weir and Baffle (1)
1420145	1420043	10th Street	Weir and Baffle
0930104	0930026	17th Street	Weir and Baffle
1480187	1480108	4th Street	Type “A” Bar Rack
1730259	1730029	Pleasant Street	Type “B” Bar Rack
0570090	0570030	Main Street	Weir and Baffle w/Grit Chamber (2)
0570089	0570011	McKinney Street	Weir and Baffle w/Grit Chamber (2)

(1) A weir is currently being designed to replace the installed weir and baffle due to hydraulic concerns.
(2) Currently Scheduled to be completed by December 31, 2008 in conjunction with the new riverfront development.

4.6.7 Summary and Recommendations

The District has implemented and continues to maintain many measures that minimize solids and floatables discharging from the collection system including: public education regulation of construction site runoff, catch basin modifications, end of pipe controls, and modifying the collection system to maximize in pipe storage. The District will continue to look for opportunities to enhance the collection system and implement measures to reduce introduction of solids and floatables to the collection system as well as to remove them at points of discharge as described in Sections 4.6.5 and 4.6.6.

To further show how the District is fully implementing this minimum control, the activities discussed above are recounted below in the context of the findings and recommendations from the July 6, 2005 NPDES Compliance Evaluation Report by USEPA Region 4. These comments are shown in Table 4.6.2 to demonstrate that the District has addressed the issues and recommendations that were raised and has implemented actions to come into compliance with NMC 6.

Table 4.6.2: Response to Compliance Evaluation Comments

Comment	Response
The District needs to better document catch basin cleaning and street sweeping activities	• As indicated in Sections 4.1.3.1 and 4.6.4 the District has completed an inspection and audit of all the 3,302 catch basins in the CSS and is implementing an O&M program based on the findings from these inspections to schedule cleaning, repairs, and modifications to the catch basins to trap solids and floatables. • The District is also evaluating the use of "green" basins to trap solids and floatables and filter storm water entering the basins prior to discharge. • As noted in Section 4.6.2, the street sweeping is not in the District's jurisdiction; however, since the USEPA's Compliance Evaluation report was issued, street sweeping frequencies have been documented for each city and municipality in the CSS. • The District has also worked with the cities and municipalities in the CSS to ensure that most streets within the combined area are cleaned at least once a year, and more frequently in many of the major cities.
Optimize catch basin cleaning and street sweeping frequencies, so as to improve solids and floatables control	• Catch basin cleaning frequencies will be optimized and modifications to catch basins to trap solids and floatables will be performed as part of the O&M program currently being implemented as discussed in Section 4.6.4. • The District has also worked with the cities and municipalities in the CSS to ensure that most streets within the combined area are cleaned at least once a year, and more frequently in many of the major cities.
Carry out an end-of-pipe floatables control pilot study	• The Greenup St. pilot floatables control is in operation and results are being documented. • Section 4.6.6 details the District’s floatables pilot study and the implementation status of its system-wide program, which aims to install some type of solids and floatables control at every CSO location where effective and feasible. • Additional actions required to finalize the solids and floatables control program are identified below along with their proposed implementation schedule.

Table 4.6.2: Response to Compliance Evaluation Comments

Comment	Response
Undertake a source control program to prevent extraneous solids and floatables, such as personal hygiene products, from entering the combined sewer system	• The District's source control programs are discussed in Sections 4.6.1 through 4.6.4, and include educational materials as well as physical source controls. • In addition, the District is also committed to source reduction of flow and pollutant loadings to the combined system and the surface waters of Northern Kentucky by utilizing sustainable low impact development and green infrastructure practices where cost effective.

To comply with NMC 6, Control of Solids and Floatable Materials in CSOs, the District will continue with all of the activities and programs described above and emphasize three core components in their long-term solids and floatables control program:

- Implementation of additional simple in-line or end-of-pipe solids and floatables controls (described in Section 4.6.6) at diversions/outfalls where system hydraulics allow, and where the necessary effectiveness is anticipated (guided by results of the ongoing pilot study).
- Implementation of the catch basin modification and cleaning program (described in Section 4.6.4 and 4.1.3.2) to control solids and floatables at their source.
- Incorporation of engineered solids and floatables controls at CSO locations where necessary, beginning with additional pilot locations. These additional pilot locations will incorporate a range of technologies and complement the pilot engineered control currently installed at Greenup Street.

The District's additional solids and floatables control compliance measures will be implemented as indicated in Table 4.6.3. An overall schedule of activities for all of the nine minimum controls is included in Appendix D.

Table 4.6.3: Additional Activities to Control Solids and Floatables

Item	Activity	Implementation Schedule
Public Education	Source reduction (including personal hygiene products) material in What's Happening!	May 30,2008
	Source reduction (including personal hygiene source) mail insert	February 29, 2008
Grit Pits	Construct replacement diversions on Main and McKinney St CSOs with grit sumps and floatables baffle and bar rack	Scheduled under NMC 2

Table 4.6.3: Additional Activities to Control Solids and Floatables

Item	Activity	Implementation Schedule
Grit Pits	Complete the installation of the Covington grit pit on the Licking River Interceptor.	August 30, 2008
Solids and Floatables Control Program	Complete simple solids and floatables control pilot study and summarize results.	March 31, 2008 Weather Dependent
	Depending on results of pilot study, recommend locations to install additional simple solids and floatables controls.	Recommendations by July 31, 2008
	Install additional simple solids and floatables controls where found to be feasible and effective.	Complete installations by April 18, 2009
	Identify locations for pilot engineered solids and floatables controls installations.	Complete recommendations by April 18, 2009
	Install pilot engineered solids and floatables controls and monitor.	As part of the Watershed Plans
	Identify engineered solids and floatables controls for remaining outfalls as part of CSO solutions.	As part of Watershed Plans
	Document solids and floatables capture under catch basin and simple solids and floatables control programs	Ongoing

4.7 Pollution Prevention

It is the objective of NMC #7 to minimize various forms of pollution (littering, illicit discharges, etc.) from entering into the combined sewer system and compromising the water quality of the receiving water body and/or the District's conveyance and treatment infrastructure.

In 1990, the United States Congress promulgated the Pollution Prevention Act. In summary, the Pollution Prevention Act established a four tiered approach to the management of pollution:

- **First Tier** – Where possible, pollution should be prevented or reduced at the source;
- **Second Tier** – If pollution can not be prevented, it should be recycled in an environmentally safe way;
- **Third Tier** – If pollution can not be prevented or recycled, it should be treated in an environmentally safe way; and,
- **Fourth Tier** – The disposal of pollution into the environment should only be utilized as a last resort and it should be done in an environmentally safe way.

To date, both the District and the communities in Northern Kentucky have undertaken significant steps to mitigate pollution from entering into the District's CSS. As further explained in this section, the District has developed a strong public education initiative, assumed the regional leadership role for sound land disturbance/soil erosion and sediment control for Northern Kentucky, provided Best Management Practice Guides for commercial/retail establishments and residents that may be susceptible to illegal discharges and recently implemented a fats, oil and grease (FOG) program. The District's solid waste management duties are overseen by the Northern Kentucky Solid Waste Management Area (NKSWMA). The NKSWMA is generally responsible for the management of solid waste pick-up, recycling, household/automotive hazardous waste and litter abatement events in Boone, Campbell and Kenton counties. The individual communities in Northern Kentucky provide pollution prevention support as well, by sweeping the streets, contracting with solid waste contractors (in many, but not all communities) and the enforcement of litter regulations.

In the July 6, 2005 NPDES Compliance Evaluation Report, the District's compliance efforts toward NMC #7 did not receive any recommendations for improvement. However, the report did stipulate that the further implementation of NMCs 1, 3 & 6 will also benefit this NMC. Nevertheless, it is still important to highlight and reaffirm the District's commitment to this minimum control.

4.7.1 Catch Basin Cleaning

As further discussed in Section 4.6 (Control of Solid and Floatable Materials), in the summer and early fall of 2007, the District undertook an inventory and a field inspection of all 3,302 catch basins within the combined sewer area. Based upon that inventory,

the District is now in the process of setting up an operation and maintenance schedule for the catch basins, including a regular cleaning schedule for each catch basin in the combined area.

4.7.2 Public Education Programs

Public Service Park

The District recently constructed a state-of-the-art outdoor environmental park/education center in Fort Wright, Kentucky as part of its headquarters expansion. The 18.4 acre park, known as Public Service Park, is educational, instructional and interactive. Over 2,000 students visit the park annually and over 9,000 have visited to date. The park provides the following educational activities:

1. Demonstration of various environmental best management practices (BMPs) and green infrastructure for mitigating storm water, including:

   - Vegetative roof
   - Porous pavement
   - Detention basin
   - Oil water separator
   - Cistern
   - Biofiltration swale
   - Wetland,

   through an interactive race, where students learn which surfaces increase/decrease surface run-off during a wet weather event. These BMPs are featured in Appendix W.

2. Water testing in a wetlands area.

3. Illustration of how an urban forest can reduce storm water flow.

4. Dye test demonstration that shows how storm drains are interconnected to receiving water bodies.

Classroom Presentations (by District Staff)

A District representative along with the District's mascot, a fish known as Splash McClean, can be scheduled to make classroom visits, where District staffers give presentations on wastewater or storm water related issues. Splash McClean is shown posing with some students in Figure 4.7.1.

Figure 4.7.1 Splash McClean and Students



Classroom Presentations (by a certified teacher)

The District provides training sessions for teachers to administer their Elementary Environmental Unit. The Elementary Environmental Unit is included into the 4th grade curriculum of almost every elementary school in Boone, Campbell and Kenton counties – to date approximately 400 teachers have been trained and over 5,000 students are taught the District's Environmental Unit curriculum every year. The Environmental Unit consists of five hours of classroom learning on topics such as point/nonpoint source pollution, watershed management, wetlands and BMPs.

Other Educational Resources

- Storm Drain Marking – The program "Save-A-Stream...Block by Block" is an activity whereby students and service organizations mark the message "Dump no waste, drains to stream" on catch basins in their community. The project kit contains fanny packs, a map, a brush, adhesive, storm drain markers, safety vests, traffic cones, instructions, and door hangers. The storm drain marking program is promoted on the District's website (see Figure 4.7.2) and to schools, scouts and community groups and participation varies from year to year.

Figure 4.7.2 Save-A-Stream Catch Basin Marking



In addition to the voluntary public marking program, the District's field personnel mark drains when they are out working on other duties. Catch basins marked by the District are tracked in a database, and 76 were marked by the District in 2007. Throughout the first permit cycle, from 2003-2007 the District marked over 1,000 catch basins.

- Enviroscape – The Enviroscape demonstrates to students that water quality can be affected by land use and how environmental BMPs can reduce pollution. The Enviroscape is a teaching tool that the District lends out to local schools. This tool also demonstrates the foundation of the District's approach to the Watershed Plans in the Consent Decree. The Enviroscape is shown in figure 4.7.3.

Figure 4.7.3 Enviroscape Lesson



- Contour Kits - An interactive activity that teaches students about watersheds, how to make a contour and topographical map, and what watershed they live in.

4.7.3 Land Disturbance/Sediment and Erosion Control

Pursuant to legislation enacted by the Kentucky General Assembly in 1998 and interlocal agreements with the affected Northern Kentucky communities, the District became responsible for overseeing a regional storm water management program for over 30 communities in the Boone, Campbell and Kenton counties in accordance with USEPA NPDES Phase II MS4 regulations. The District will act as the regional storm water management agency that develops and implements the area's Storm Water Management Plan. Included among the District's storm water management duties are the approval of land disturbance activities, plan review, sediment and erosion control review, including maintenance inspections and enforcement with federal sediment and erosion control requirements.

The following are three types of permits that the District administers to regulate sediment and erosion control practices:

- Land Disturbance Permit - The Land Disturbance Permit is required for either the alteration of the earth's surface where natural or man-made ground cover is altered and for which the applicant has not received a Clearing or Grading Permit (described below) and/or the installation of a storm sewer system (including storm sewer structures and pipes, detention ponds, etc.).
- Grading Permit - The Grading Permit is required for grading activities on a property. Grading activities include excavation, filling, stockpiling, or other earth moving activities, and any combination thereof. The Grading Permit may include the construction of sanitary sewers and other utility infrastructure (water, gas, electric, etc.).
- Clearing Permit - The Clearing Permit is required for clearing activities on a property. Clearing activities include stripping and cutting of trees and ground cover and the removal of roots and associated material. The Clearing Permit does not include any earth moving activities, including rough shaping of the site.

These requirements extend throughout the entire service area and not just the separate storm sewer system. Therefore, these stormwater requirements will help mitigate pollution from entering the combined sewer system. Examples of these permits have been included in Appendix S.

4.7.4 Best Management Practice Guides – Commercial/Retail Establishments

The District has prepared Best Management Practice Guides that describe the impacts of contaminated storm water run-off and provide recommended guidelines for the usage of (chemical) cleaning agents and the proper disposal of spent wastewater for several different types of commercial/retail establishments. These Best Management Practice Guides are generally distributed to the commercial establishments. These guides were mailed directly to businesses under each industry.

These commercial/retail establishments, which are considered non-significant users, are subject to regular unannounced inspections by the District's Industrial Monitoring Department for compliance with these guidelines and the District's Rules and Regulations. To date, the District has issued Best Management Practice Guides for the following types of establishments:

- Car Washing Facilities
- Dry Cleaning & Laundry Services
- Vehicle Service Facilities
- Carpet/Upholstery Service Facilities

Each of these Best Management Practice Guides has been provided in Appendix X.

4.7.5 Best Management Practice Guides – Residential

In addition to Best Management Practice Guides for commercial and retail establishments that may be susceptible to illegal/contaminated discharges into the storm sewer system, the District has also produced guidelines for residential use, including:

- "Swimming Pool Water: An Illicit Discharge" – a brochure that provides written guidelines/procedures for general pool maintenance, describes why a swimming pool discharge to the storm sewer system or to a waterbody is harmful and how/when it is safe to discharge pool water. In 2007 the District mailed the brochure to over 100 commercial pool supply stores in the District's service area and included a copy on its website. These brochures are also available and clearly displayed at the entrance to the District's administration building. A copy of this brochure has been provided in Appendix Y.
- "Make Your Home the Solution to Storm Water Pollution" – an USEPA publication that provides "healthy household" recommendations for clean storm water for the vehicles, lawn and garden, home repair/improvement projects, pet care, swimming pools and septic systems. This publication is available on both the District's and the USEPA's website.
- "What You Can Do to Help" – a webpage on www.sd1.org that encourages homeowners to "be a solution to storm water pollution". This webpage provides recommendations on the proper disposal of household hazardous waste, litter reduction guidelines, the clean-up of garages and vehicle fluids, removal of animal waste, the use of lawn/garden pesticides and fertilizers, and the impact of soapy water on aquatic life.
- "Help Detect and Eliminate Illicit Discharges" – a pamphlet describing illicit discharges, their effects on the environment, and what to do if detected. A copy of this pamphlet is provided in Appendix Z.
- "Not Down My Drain" – a mailer discussing the proper disposal of household cleaning products, grease, medicine, diapers, and personal hygiene products. A copy of the mailer, which will go out later this year, is included in Appendix Q.

4.7.6 Spill Control

The District has separate spill control procedures in place for both the collection system and the wastewater treatment plants. Both the Collection System Spill Control and Notification Procedures and the (Dry Creek) WWTP Notification Procedure were approved by the USEPA in May 1991 and updated in June 2003. The Collection System Spill Control and Notification Procedures and the (Dry Creek) WWTP Notification Procedure have been provided in Appendix K.

Each procedure was developed primarily to ensure the safety and well being of both personnel and equipment downstream from the spill location. Each procedure lists step-by-step instructions as to the information to get from a caller reporting a spill, the

possible courses of action, and/or what to do in the event that a spill reaches the WWTP without prior notification.

Industrial Spill/Slugs
As further discussed in Section 4.3, each industrial user is responsible for providing facilities for protection from accidental discharge of prohibited materials or other regulated wastes and slug discharges.

Vehicular Accidents
The District's Safety Manager responds to spills that occur as the result of vehicular accidents, like overturned tanker trucks. The Safety Manager monitors the clean-up efforts for compliance with District regulations and ensures that there is no adverse effect/impact on the District's operations or the local receiving waters.

4.7.7 Fats, Oil and Grease (FOG) Program

An aggressive FOG Control Program will help the District meet NMC 7 by helping prevent the discharge of deleterious materials into the combined sewer system and potentially through CSO outfalls. FOG materials can collect at regulators and increase the risk of dry weather overflows or can increase the frequency and volume of overflows during wet weather. Oils and greases can also cause significant water quality problems.

Current FOG Program
In September 2007, the District submitted their FOG Control Program as required by the Consent Decree. The District's FOG Program was approved by USEPA Region 4 and KDOW in January 2008. This program will help improve the implementation of the District's existing Grease Control Program which was formalized in 2004.

The District's FOG Control Program is designed to prevent the introduction of FOG into the sewer system; thereby, reducing sewer overflows, maximizing sewer capacity and decreasing sewer maintenance costs. The District's program is intended to regulate/manage operators of local food service establishments and to increase awareness of homeowners about measures they can take to limit or prevent the introduction of FOG into the drains and sewer systems. The Industrial Monitoring Department is responsible for all activities associated with the FOG Control Program.

In general, the District's FOG Control Program works as follows:

- All new food service establishments which apply for a sewer connection permit are also provided with FOG information. This information includes FOG management recommendations, grease trap specifications and a copy of Section 504 of the District's Rules & Regulations, which covers FOG requirements for restaurants and commercial users.
- Existing food service establishments are inspected by the Industrial Monitoring Department to determine if they have any FOG related issues. At this inspection,

the food service establishment is required to complete a Restaurant/Food Service Grease Handling Questionnaire (3 pages). The results from the inspection and the questionnaire determine if the establishment must secure a Food Service Discharge Permit.

- Food service establishments with a Food Service Discharge Permit are monitored and regulated by the District, including being subjected to surprise inspections to determine compliance with the District's Rules & Regulations. Any violators are subject to the Notices of Violation (NOVs), fines, etc. that were previously discussed in NMC 3 (Pretreatment).
- The District inputs all FOG observations and trouble calls into its gbaMS to track and help diagnose recurring problems. If a sewer line is found to have regular FOG blockages, it is put on a preventative maintenance list and cleaned regularly. The source(s) of the FOG blockages are then identified and corrective actions are taken with the source(s) to reduce or eliminate the FOG discharge to the District's collection system.
- The District circulates door hangers and letters in areas where FOG problems occur.

The FOG Control Program submitted by the District, and recently approved in January 2008 by USEPA Region 4 and KDOW, includes a phased implementation plan to meet the requirements of the Consent Decree and increase the effectiveness of the current grease control program. The plan consists of four consecutive phases that will each last twelve months.

In general, the FOG Program implementation phases are as follows:

Phase 1

- Conduct self assessment
- Review District Rules & Regulations and Enforcement Response Plan
- Seek FOG reduction design standards from appropriate governmental agencies
- Continue with public education efforts

Phase 2

- Compile data from self assessment
- Revise District Rules & Regulations and Enforcement Response Plan
- Continue coordination with appropriate governmental agencies on FOG design standards
- Continue with public education efforts

Phase 3

- Secure approval for revised District Rules & Regulations and Enforcement Response Plan
- Modify Food Service Discharge Permit
- Revise Domestic Holding Tank Waste Hauler Manifest to better monitor the method and disposal of grease
- Evaluate staffing and equipment requirements

Phase 4

- Public readings of revised District Rules & Regulations and Enforcement Response Plan
- Re-evaluation of all previously permitted food service establishments
- Educate all food service establishments via compliance assistance workshops
- Evaluate staffing and equipment requirements
- Monitor results of new FOG Program.

4.7.8 Solid Waste Management

The solid waste management duties in Boone, Campbell and Kenton counties are overseen by the Northern Kentucky Solid Waste Management Area (NKSWMA) Governing Body. Each of the three counties has a solid waste coordinator who is responsible for all solid waste activities within its jurisdiction. Included among those activities are solid waste pick-up coordination, recycling programs, composting, landfill and disposal issues, household hazardous waste, public education programs, community affairs, litter abatement, illegal dumping and enforcement issues.

Solid waste disposal information is provided to residents and businesses in Boone, Campbell and Kenton counties in the "Northern Kentucky Solid Waste Resource Guide", which is written and distributed by the NKSWMA, as well as being located on its website (http://www.boonecountyky.org/NKSWMA/default.asp). The "Northern Kentucky Solid Waste Resource Guide" has been provided in Appendix AA.

Solid Waste Pick-up

Generally, the larger/incorporated cities or developments with homeowner's associations have contracted with a solid waste collection contractor for the pick-up and disposal of residential solid waste. In the smaller/unincorporated cities, residents may be responsible for contracting with a solid waste collection contractor. All commercial/retail businesses in the three counties are responsible for hiring their own solid waste collection contractor for the pick-up and disposal of residential waste.

Residential/Household Recycling Items

Each of the three counties have their own list of acceptable household recycling materials; however, in general, plastics (#1 & #2), glass, aluminum and food cans, corrugated cardboard and newspapers are considered recyclables in all cities in Northern Kentucky. Curbside recycling is available in many of the Campbell and Kenton County cities, although depending upon the city, the separate pick-up of recycling materials may be a subscription cost. Both Campbell and Kenton County also have two recycling drop box locations where residents can drop-off recyclables at no cost. Most of the cities in Boone County do not have separate residential recyclable collection; however, there are seven drop box locations where residents can drop-off recyclables at no cost.

Appliances/White Goods Recycling
Each of the three counties have free appliance/white goods recycling programs where items like refrigerators, stoves, washers, dryers, dishwashers, hot water heaters, metal objects, etc. can be safely disposed.

Composting
The NKSWMA currently does not have any composting operations; however, many of the Northern Kentucky communities pick-up organic yard waste separately and operate/maintain their own composting facilities. The NKSWMA encourages home composting through the distribution of literature (Don't Bag It) and the sale of compost bins.

4.7.9 Household Hazardous Waste Management

The Northern Kentucky Independent District Health Department has established a Household Hazardous Waste Action Coalition (HHWAC) for four counties in Northern Kentucky – Boone, Campbell, Grant and Kenton. The HHWAC, which is made up of public, private and governmental agencies, is responsible for making the public aware of the proper disposal methods for household hazardous waste. The HHWAC's primary focus has been a public education program that includes information printed in newsletters/newspapers and the distribution of materials to elementary school children.

Representatives of the District chair this coalition and the District has been a partner for several years. As part of this partnership, the District has developed several HHW bill inserts. Copies of these bill inserts have been provided in previous Storm Water Annual Reports.

The HHWAC's hotline and website, and the Northern Kentucky Solid Waste Resource Guide, which is made available to all residents in Northern Kentucky, provide a detailed description of how/where to dispose of common household hazardous waste, including:

- Computer and electronic components;
- Toner and inkjet cartridges;
- Packing peanuts;
- Wooden pallets;
- Tyvek envelopes;
- Compact and floppy diskettes;
- Transparencies;
- Ni-Cd cell phone batteries;
- Paint;
- Solvents;
- Pesticides;
- Propane tanks;
- Fire extinguishers; and,
- Household cleaners

Fall & Spring Household Hazardous Waste Clean-ups
Twice a year, typically in the fall and spring, the NKSWMA holds waste clean-up and litter abatement collection events. At these events, residents of the three counties can dispose of most items considered to be household hazardous waste (each collection site and/or county has certain prohibited items). The last Clean-up and Litter Abatement Event in 2007 was October 15 – 21 in Boone County, October 26 – 28 in Campbell County and October 5 – 7 in Kenton County.

Mercury and Computer Disposal
Once a year, the NKSWMA, in conjunction with the District, holds a free mercury and computer recycling event to allow for the safe disposal of the following items:

- Thermometers, barometers, thermostats & manometers;
- Fluorescent lamps;
- Pressure or vacuum gauges;
- Personal computers and accessories (mouse, keyboards, etc.);
- Fax machines, scanners, printers; and,
- Cell phones

The last Free Mercury and Computer Recycling Event was held in November 2007 at the District's headquarters.

4.7.10 Automotive Hazardous Waste Management

Automotive waste is accepted by a number of public and private entities.

Batteries
Used automotive batteries are accepted at most, if not all, automotive retail/repair centers in the three counties.

Oil
Waste motor oil can be disposed for no cost at the Boone and Kenton Counties' Public Works Departments, as well as several automotive repair/oil change businesses in the three counties.

Antifreeze
Antifreeze can be disposed for no cost at the Boone and Kenton Counties' Public Works Departments. The Boone County Public Works building is available to any Northern Kentucky resident for disposal of antifreeze.

Tires
Tires – Automotive tires can be disposed for a fee at over 30 automotive retail/repair centers in the three counties. In addition, every four years, the NKSWMA holds a Tire Amnesty Program whereby residents in the three counties can dispose of an unlimited number of automotive tires at no cost. The last Tire Amnesty Program was held in September 2007.

Junk Cars

The NKSWMA allows for the disposal of junk automotive vehicles at no cost through a private contractor (Webster's General Contracting).

4.7.11 Litter Abatement

The NKSWMA has a four tiered approach to reduction and prevention of litter:

1. The cleanup of areas - includes the use of county public works personnel, prison detention crews and community volunteers. The NKSWMA holds several annual community litter clean-ups, including:

    - Fall and Spring Clean-up Events
    - Commonwealth Cleanup Week – held in March
    - Ohio River Sweep – held in June
    - Great American Cleanup – held in April

2. Enforcement - through fines and other means of punishment.

3. Public Education/Awareness Campaigns - via signs, public service announcements, newspaper/newsletter articles, websites, etc.

4. Citizen involvement - including volunteering and the monitoring/reporting of littering.

4.7.12 Street Sweeping

As further discussed under NMC 6, Control of Solid and Floatable Materials, the District has worked with the municipalities in the combined sewer service area to ensure that most streets are cleaned at least once a year. Many of the major municipalities sweep their streets more frequently, including the cities of Bellevue (2 to 3 times per year), Newport (1/month), Covington (3 to 4 times/year) and Dayton (up to 10 times per year). These communities represent over 65 percent of the District's combined sewer service area. However, the District will continue to try to work with the cities to increase their street sweeping frequencies.

4.7.13 Summary

Through its past and more recent efforts, the District is fully compliant with NMC 7. The District, the NKSWMA and the host communities will remain vigilant by continuing to implement pollution prevention programs that stress proper waste disposal, increased recycling efforts, public education and public participation efforts. In addition, the District is in the process of implementing its recently approved FOG Control Program to comply with the Consent Decree requirements.

4.8 Public Notification

It is the objective of NMC #8 (Public Notification) to properly notify the public of the presence of CSO outfalls, inform the public when a CSO event has/will occur and to advise of an increased risk to public health during a wet weather event. Both the public and affected businesses (like a marina) must be educated and given access to the proper information so that they can make informed decisions about when and where to recreate in the streams and rivers affected by CSOs.

As further discussed in Section 4.7, the District maintains a major public education program on many facets of the water environment and one of the major aspects of that education program is public notification of CSOs and the risks associated with them.

The District's public notification activities are discussed in detail throughout this section and generally include the following:

- Signage at effected areas;
- Public service announcements;
- Website and hotline notifications;
- Real-time data.

4.8.1 Signage

The District has previously posted signs near CSO outfalls that warn the public of the presence of a combined sewer outfall and that "Pollution May Occur During & Following Rainfall". In addition, the signs provide a District phone number to call to report any unusual and/or dry weather discharges. The existing signs have this text in English, with a graphic of a swimmer with a line through it to warn against contact.

The District is currently working to update their CSO signage to include more graphics and text in Spanish, so that someone who is illiterate or not literate in English can more fully comprehend the sign. The new signs will look similar to the recently updated SSO signage. Figure 4.8.1 shows pictures of the existing CSO signage as well as the SSO sign, which the new CSO sign will be modeled after.

Additionally, the District is working to create additional signs that will be posted in places the public would typically access the water, such as marinas, boat launches, etc. All new signs will include the District's website address where the public can access and review the water quality data before entering the receiving water body.

Figure 4.8.1: Existing CSO & SSO Signage





4.8.2 Public Service Announcements

The District has been airing televised public service announcements on Insight Cable channels since the beginning of 2004. These public service announcements broadcast a warning about the dangers of using public waterways immediately following a rain event. The most recent run of these announcements aired for three months on ICN6 in the fall of 2007.

Additionally, during the 2004 recreational season, the District distributed free can koozies at marinas. The koozies included the message:

"after a rainy day…check the data before you play!
Visit www.sd1.org for local water quality data.
Sanitation District No. 1
Protecting the Environment"

4.8.3 Website and Hotline Notifications

For the last two years the District has been warning the public about CSOs and their effects on water quality through their hotline warning system. The hotline number is posted on the District's website at www.sd1.org/wastewater/overflow.asp. More recently, the District launched an e-mail warning system alerting those who have asked to be added to the email list of a wet weather event that could potentially cause a CSO discharge. Under this notification program, the District issues an advisory when a 0.25 inch or more of rainfall is predicted or has occurred in the Boone, Campbell and Kenton

County service areas. These advisories remain in effect for 72 hours after the rainfall event.

4.8.4 Real-time Data

The District has recently added three real-time data links on its website to provide the public with current weather, water quality and water level information.

Weather

A link to the weather forecast at Fort Wright, KY has been provided. The website includes a seven day forecast with radar/satellite images and links to other weather related data/information.

Figure 4.8.2: Link to Local Weather Forecast Data





Water Quality Data

A link to a USGS real time data website has been provided which displays relevant water quality data at eight water bodies in northern Kentucky. The provided data includes: flow, precipitation within the last 24 hours, temperature, dissolved oxygen, pH and specific conductance. The eight monitored sites are as follows:

1. Twelve Mile Creek, near Alexandria, KY (Campbell County)
2. Four Mile Creek near Alexandria, KY (Campbell County)
3. Cruises Creek, near Piner, KY (Kenton County)
4. Banklick Creek, near Erlanger, KY (Kenton County)
5. Elijahs Creek, near Hebron, KY (Boone County)
6. Woolpert Creek, near Burlington KY (Boone County)
7. Gunpowder Creek, near Union, KY (Boone County)
8. Mud Lick Creek, near Beaverlick, KY (Boone County)

At this time, none of the real-time water quality data sites are located within CSO outfall water bodies and the water quality metrics do not include those that may affect public health.

Figure 4.8.3: Link to Real-Time Water Quality Data



USGS Water Resources — National Water Information System: Web Interface

Data Category: Real-time | Geographic Area: Kentucky | GO

News: Available Now in NWISWeb

Real-time Data for Kentucky -- 8 site(s) found

PROVISIONAL DATA SUBJECT TO REVISION

--- Predefined displays --- (Current Custom Display) | Group table by (-- no grouping --) | Select sites by number or name (go)

Customize table to display other real-time parameters

Station Number	Station name	Date/Time	Gage height, feet	Dis-charge, ft³/s	Precipitation in inches during the previous 24 hours	Temper-ature, water, deg C	Dis-solved oxygen, mg/L	Dis-solved oxygen, percent of sat-uration	pH, water, unfltrd field, std units	Specif. conduc-tance, wat unf uS/cm 25 degC	Tur-bidity, NTU	DCP battery voltage volts
03238745	TWELVEMILE CREEK AT HIGHWAY 1997 NR ALEXANDRIA, KY	12/04 10:45	2.06	38	0	4.4	11.8	92	7.3	385	--	--
03238772	FOURMILE CREEK AT POPLAR RIDGE RD NR ALEXANDRIA,KY	12/04 10:00	1.43	3.5	0	3.8	11.5	88	6.9	570	--	--
03254480	CRUISES CREEK AT HWY 17 NR PINER, KY	12/04 10:45	3.06	22	0	3.1	12.5	94	8.1	422	--	--
03254550	BANKLICK CREEK @ HIGHWAY 1829 NR ERLANGER, KY	12/04 10:00	4.09	47	0	3.4	12.8	97	8.1	509	--	--
03260100	ELIJAHS CREEK @ ELIJAHS CREEK RD NR HEBRON, KY	12/04 10:00	1.54	0.37	0	2.8	12.8	96	7.7	889	--	--
03262001	WOOLPER CREEK AT WOOLPER ROAD NEAR BURLINGTON, KY	12/04 10:45	1.58	19	0	3.2	13.0	98	7.3	517	--	--
03277075	GUNPOWDER CR AT CAMP ERNST RD NR UNION, KY	12/04 10:00	1.45	41	0	3.6	12.6	96	7.6	618	--	--
03277130	MUD LICK CR AT HWY 42 NR BEAVERLICK, KY	12/04 10:45	1.61	41	0	3.4	13.3	101	8.1	521	--	--

Water Level Data

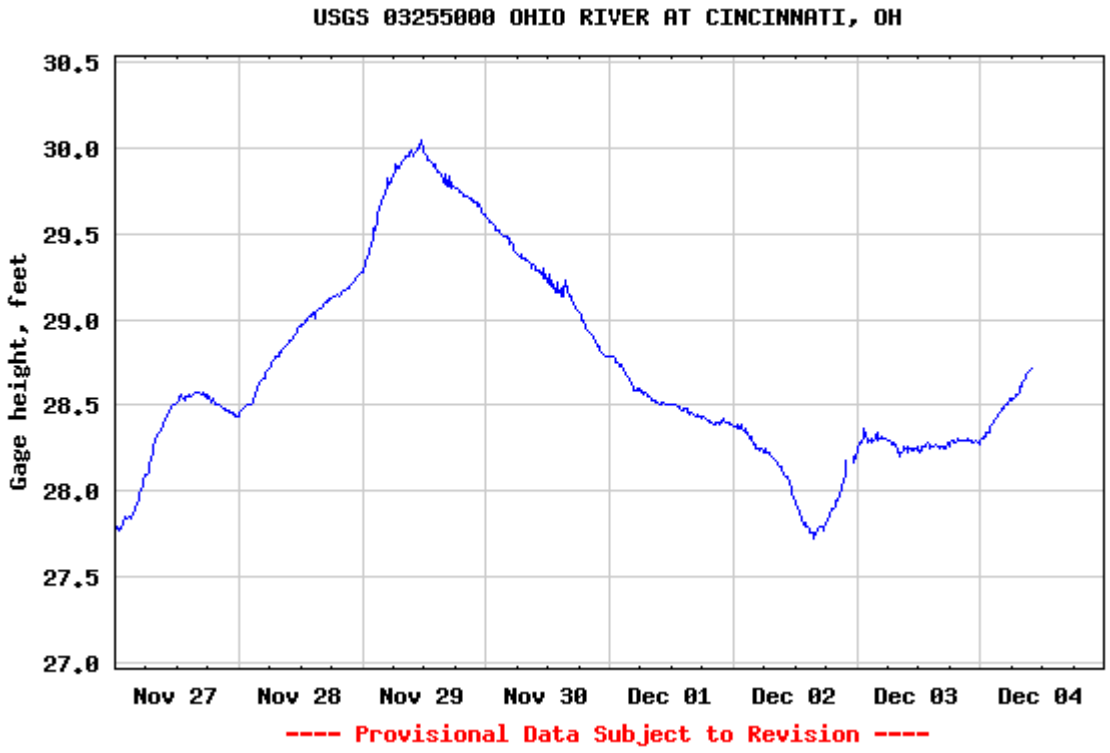
A link to a USGS real time data website has been provided which displays the water level on the Ohio River, at Cincinnati, Ohio.

Figure 4.8.4: Link to Real-Time Water Level Data

USGS 03255000 OHIO RIVER AT CINCINNATI, OH
PROVISIONAL DATA SUBJECT TO REVISION

Gage height, feet

Most recent instantaneous value: 28.71 12-04-2007 10:00



4.8.5 Potential Public Notification Projects

In addition to what has been previously discussed in this section, the following public notification projects are currently in the review and/or planning stages:

Coordination with Ohio River Sanitary Authorities

At present time, the District has not coordinated efforts or shared water quality data with other relevant sanitary authorities that have an overlap in jurisdiction, particularly with regard to the Ohio River. As such, the District will coordinate a meeting with the Metropolitan Sewer District (MSD) of Greater Cincinnati and the Ohio River Valley

Water Sanitation Commission (ORSANCO) to discuss the potential of operating and maintaining a shared real time data system, as well as coordinating real time notification procedures at public access areas.

CSO Monitoring

The District is in the process of evaluating the use of real-time alarming at CSO outfalls. These alarms would "trip" during an overflow event, sending a signal to the District's website; thereby allowing the District to provide real-time data of a CSO event to the public. In addition to wet weather monitoring, sensors would also be beneficial in determining if dry weather overflow events are occurring at particular CSO outfalls.

A similar CSO notification system was recently implemented by the Greater Cincinnati MSD.

4.8.6 Summary and Recommendations

Since the USEPA inspection in 2004, the District has implemented several significant upgrades to their public notification system, including an e-mail/hotline warning system that notifies the public when an actual or predicted wet weather event could potentially cause a CSO discharge. In addition, there are several other projects in the planning or implementation stage. The District recognizes the significance of an effective public notification system and will continue to make strides to improve this NMC.

To further show how the District is fully implementing this minimum control, the activities discussed above are recounted below in the context of the findings and recommendations from the July 6, 2005 NPDES Compliance Evaluation Report by USEPA Region 4. These comments are shown in Table 4.8.1 to demonstrate that the District has addressed the issues and recommendations that were raised and has implemented actions to come into compliance with NMC 8:

Table 4.8.1: Response to Compliance Evaluation Comments

Item	Response
Banners or other notification at public access points during and immediately after CSO events	• The District feels that this implementation can be done in phases with the first phase being the placement of signs at marinas and other places where people recreate on the Ohio River. • Additional actions required to finalize the public notification program are identified below along with their proposed implementation schedule.

Table 4.8.1: Response to Compliance Evaluation Comments

Item	Response
Install signage at access point near affected CSO areas	• As discussed above in Section 4.8.1, the District is developing the signs for public access points. • Future phases for public notification may include more real-time notification at marinas and other public places and may include certain types or color of flags or lights to notify boaters that there is an increased risk of coming in contact with raw sewage. • These signs could be coordinated with Cincinnati MSD or the District may even attempt to develop an Ohio River standard with ORSANCO and other river cities. Additional actions required to finalize the public notification program are identified below along with their proposed implementation schedule.
The District's CSO signs should be improved to include more information about avoiding contact with wastewater discharges and avoiding recreation activities in that area during wet weather	• As discussed in Section 4.8.1, the District has updated their signs and begun replacing existing signs. Additional actions required to finalize the public notification program are identified below along with their proposed implementation schedule.
Signage should include more graphics for people who cannot read	• These signs have been made and are in the process of being installed at all outfalls and overflow points. Additional actions required to finalize the public notification program are identified below along with their proposed implementation schedule.

To maintain compliance with NMC 8, Public Notification, the District will continue with all of the activities and programs described above. As part of that effort, the District will implement additional measures to notify the public about CSOs, their occurrences, and the potential health effects. It was decided that, due to the complexity and cost of some of the potential improvements, a phased approach will be taken. This phased implementation approach will still allow the District to improve their programs related to NMC 8 by April 18, 2009. Following are a summary of the recommended improvements and related implementation schedules for NMC 8. An overall schedule of activities for all of the nine minimum controls is included in Appendix D.

Table 4.8.2: Additional Activities for Public Notification

Item	Activity	Implementation Schedule
Public Notification	Evaluate feasibility of automated real time notification on the website in conjunction with Cincinnati MSD and ORSANCO.	April 18, 2009
	Automate real time hot-line & email notifications.	December 31, 2008
	Develop and install signs to put at locations other than CSO outfalls to warn about potential unsafe conditions during and after rainfall events and include the web address where they can get real time information on CSOs. These locations could be locations where the public accesses the Ohio River for recreation such as a marina.	August 30, 2008
	Replace all signs with new signs with better graphics in Spanish and English, and with the District's web site address on the sign prompting people to check the website for more information.	July 31, 2008

4.9 Monitoring to Characterize CSO Impacts

The implementation of this NMC is critical for the District as we develop our Watershed Plans in the CD and the, Long Term Control Plan for our CSOs in context with other pollution sources. Without an understanding of the performance and impacts of the District's CSOs along with other pollution sources in the watershed, we cannot hope to prioritize and focus controls on areas where the greatest benefit can be achieved.

The Consent Decree requires the District to develop the first round of Watershed Plans by June 30, 2009 that include a LTCP component. In order to meet this date, the District initiated a comprehensive Infrastructure and Watershed Characterization effort including flow and rain monitoring, in-stream, and overflow sampling to include CSOs, SSOs and storm water outfalls. This program goes beyond this NMC in characterizing CSO impacts.

In addition, the District has already conducted studies aimed at quantifying the volume, frequency, and impacts of CSOs. These include:

- 1996 Banklick and Licking River Model and Study – This project included the use of an early collection system model to evaluate the impacts of overflows in Banklick Creek and on the Licking River. The study included a significant amount of water quality monitoring, modeling and characterization of overflow impacts on various water quality parameters. This study also included the development of a lower Banklick, Licking River and Ohio River mainstream hydraulic and water quality model. This model is currently being updated based on the in-stream sampling the District is currently performing along with and in cooperation with MSD of Greater Cincinnati.
- 2002 System-wide Model Development – In 2003, the District completed a system-wide, fully dynamic collection system model utilizing HydroWorks (now InfoWorks) that included the combined and separate sewer systems. The model was calibrated to a network of 112 meters in the Bromley pump station area, including the entire CSS. This model was used in the early stages of the Infrastructure Characterization effort to help prioritize the placement of meters for the model calibration and verification update that is currently underway.
- Banklick Sampling – In 2002 and 2003 the District conducted sampling along the Banklick watershed to gain an understanding of the water quality during dry and wet weather events and to develop and calibrate an HSPF model of the entire Banklick watershed. This model is being updated and recalibrated based on the current in-stream and outfall sampling program being conducted.
- Ongoing CSO Inspections – The District inspects each CSO diversion once per week and after every rainfall event to verify if CSOs have activated. This data was recorded with hard copy records and then manually transferred to gbaMS. The District is now utilizing laptop computers to enter this data directly in the field to increase efficiency and ensure proper data collection. In addition, 15 CSOs have been blocked to monitor activation frequencies and the remaining CSOs

are being blocked as part of NMCs 1 and 5. Other CSOs are either being flow monitored or characterized utilizing in-system flow monitors as described below.

Further, other sections of this report, including Sections 4.1 and 4.6, discuss visual inspections and other simple methods the District uses to determine the occurrence and apparent impacts of CSOs. The District's other monitoring and characterization activities are discussed in detail throughout this section and generally include the following:

- Current flow monitoring program;
- Current overflow occurrence, volume and loading estimates; and
- Overflow discharge characterization.

4.9.1. Current Flow Monitoring Program

In order to update the hydraulic model and also to begin to monitor critical CSO locations, a comprehensive flow monitoring program across the SSS and CSS was implemented in June 2007 as part of the current Infrastructure Characterization work. To achieve the goal of characterizing all of the District CSO locations, the District worked with the selected consultants to develop this flow monitoring program across the entire combined and separate systems. Two types of information are being utilized to provide the required characterization of the CSO locations: the flow monitoring data and the hydraulic model output. For specific locations, the District installed flow meters in the outfalls at 23 CSO locations. These 23 locations were prioritized and selected based on size, activation frequency, type of tributary land use, sensitivity of their discharge location to streams and rivers, and potential contact with the population. These 23 locations also represent approximately 80% of the District's total annual CSO volume based on the current hydraulic model. To characterize the remaining CSO locations, in-system flow monitors were installed to understand flow balance in the system for use in updating the calibration and verification of the hydraulic model.

The current flow monitoring program officially began on June 25, 2007 and is scheduled to continue for a complete calendar year until June 2008. Figure 4.9.1 below shows the location of all of the flow meters across the entire system while Figure 4.9.2 highlights the specific CSO locations which are being explicitly monitored by flow meters. A total of 245 flow meters and 45 rain gauges have been installed that will be used to help update and recalibrate the hydraulic models. This updated calibration is critical to understand the behavior of the CSOs under various rainfall and antecedent moisture conditions. At the conclusion of the monitoring program, the hydraulic models will be updated to reflect the flows observed at the system-wide flow monitoring locations. The flow meters that are located at the individual CSO sites will be used to verify that the models are accurately predicting both frequency and magnitude of overflows at these locations. For the CSO locations that are not being explicitly monitored, the calibrated and verified model will be used to estimate the frequency and magnitude of these overflows. The use of calibrated and verified models is a widely accepted method for understanding system-wide CSO volumes and frequency.

Figure 4.9.1 Flow Monitoring Locations

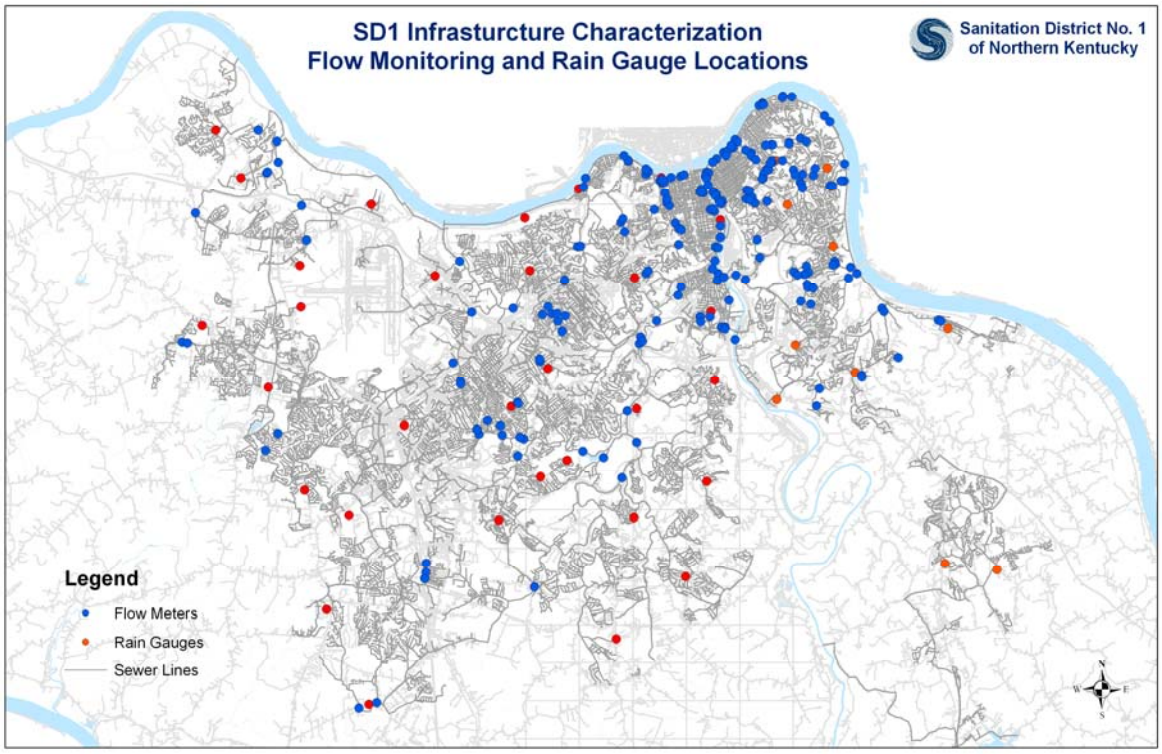
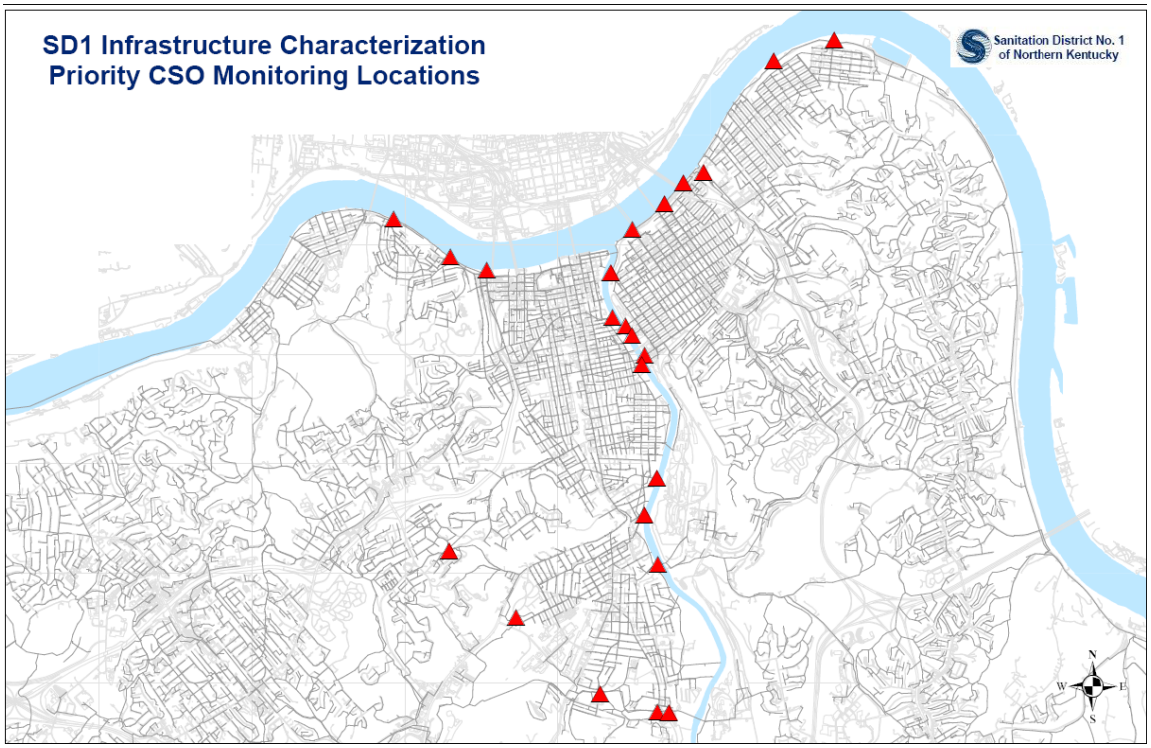


Figure 4.9.2 Priority CSO Monitoring Locations



4.9.2. Overflow Occurrence, Volume and Loading Estimates

As noted in the previous section, the results from the flow monitoring program are designed to be used in the update of the District hydraulic models. Following the conclusion of the flow monitoring program, the updated model will be available to use in estimating both the activation frequency and overflow volumes from the District's CSO locations. Concurrent to the model development, the District will be continuing to collect field data through CSO inspections following rain events as well as select manual monitoring (blocking) of specific sites to provide additional data to support the models' calibration and verification.

Additionally, in conjunction with NMC 5, real time overflow alarms have been set up on 5 of the 23 outfall flow monitors, which provide for real-time notification an overflow. If a high level is detected, an auto-dialer is set to call the individuals assigned to respond. The 5 locations with real-time flow alarms are Latonia (CSO 1840130), Parkway/Highway (CSO 1490132), Willow Run (1480167), Columbia Street (CSO 0790084), and 10th Street (CSO 0840112). These locations were selected due to their potential to have DWOs.

4.9.3. Overflow Discharge Characterization

Another component of the Districts plan to characterize CSO impacts is the outfall water quality sampling program. This program is being conducted at 20 outfall locations (10 CSOs, 4 SSOs, and 6 storm water outfalls) for 10 rainfall events of 0.5" of rain or more through at least June 2008 and has 3 primary objectives:

- Provide water quality data sufficient for characterizing pollutants discharged from CSOs, SSOs and stormwater runoff. Characterization analysis will include assessment of total loads and the time varying nature of concentrations and loads throughout the discharge event, i.e., first flush effect. Analysis will also include correlations (e.g. tributary land use, outfall size, discharge frequency, etc.) of sampled outfalls to non-sampled outfalls to provide a basis for extrapolating results.
- For selected events, samples will be collected from outfalls synoptically with in-stream sample collection to provide a basis for water quality model calibration and accuracy assessment. This effort will focus initially on the Banklick Creek and Licking River where receiving water quality models have already been developed and calibrated to historic data. Data from these synoptic sampling events will also be used as part of the outfall characterization process.
- Provide data at selected SIU locations to characterize the impacts of the industrial discharges per NMC3. Three additional CSO locations not included in the 10 above are being sampled as part of this SIU sampling work.

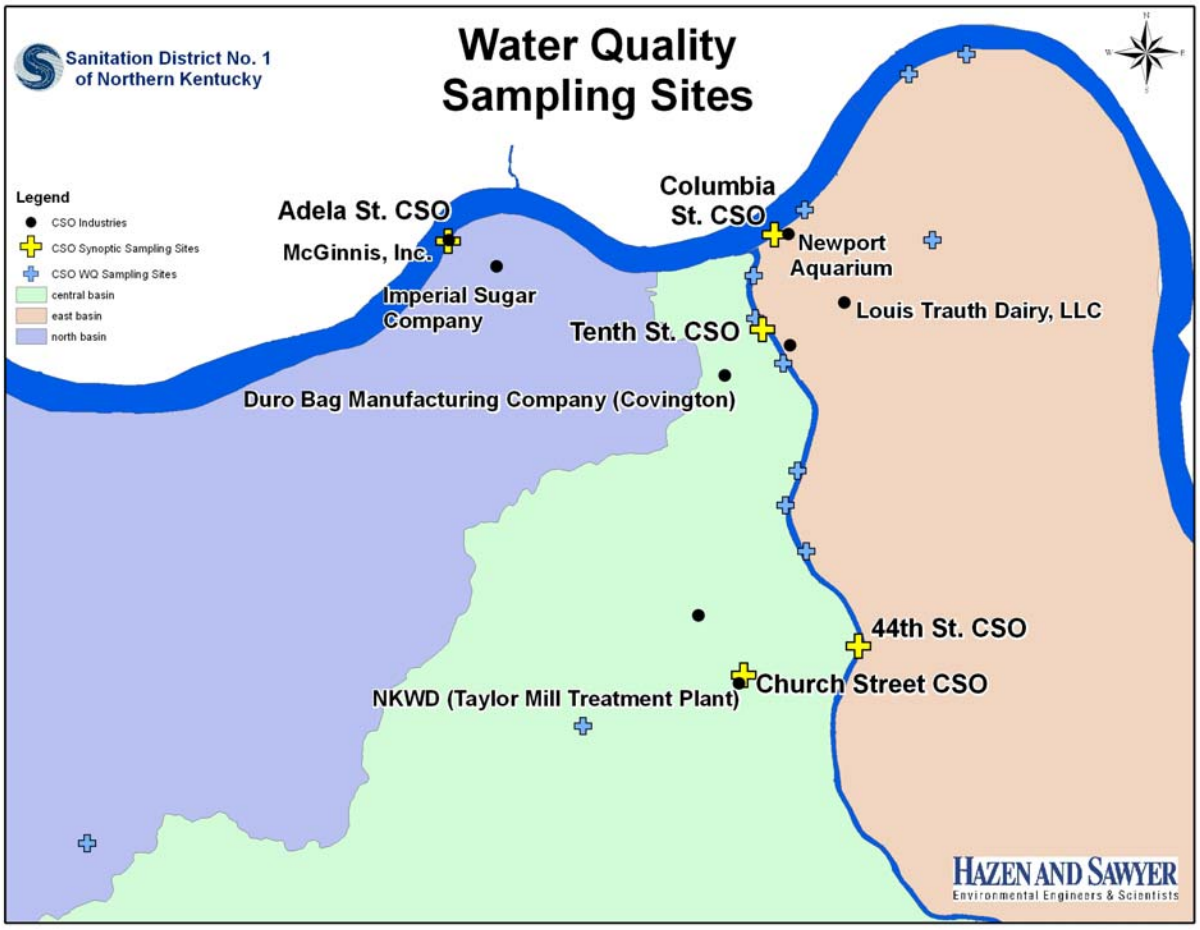
This program will allow for more detailed knowledge of constituents entering the surface water system during overflow activity in lieu of using information based on national averages. The goal of selecting these sites was to gain an overall understanding of the

spatial and temporal nature of the overflows and associated water quality in the District's system. Results will be used to develop concentrations and pollutagraphs for input to the water quality models that are currently being refined by the District's Watershed Team.

To better ensure success of the program and consistency of sampling activities, the District developed a Field Monitoring and Sampling Plan (FMSP) and an associated Quality Assurance Project Plan (QAPP). These plans together describe the water quality monitoring program to be undertaken and set forth the quality control requirements.

Figure 4.9.3 shows the location of the CSOs that are currently being sampled and includes those added to capture flows from SIU locations. Samples are collected by auto samplers that are installed either in the CSO diversion chamber or the outfall pipe. Each auto sampler has a tray that contains 24 bottles. Three bottles are used to make 1 discrete sample. A total of 8 samples are collected with 1 tray.

Figure 4.9.3 Water Quality Sampling Sites



The auto samples are activated by either a flow meter (used in the program described in Section 4.9.1) or a level actuator and follow a pre-installed sample schedule. The

sample schedules are designed to collect more samples at the beginning of the storm in order to capture and determine any fist flush effects. Table 4.9.1 shows the two schedules selected for this program.

Table 4.9.1 Auto Sampler Schedule

Time Since Activation (hh:mm)			
First Tray Moderate Storm [(1)]	**Second Tray Moderate Storm [(1)]**	**First Tray Large Storm [(1)]**	**Second Tray Large Storm [(1)]**
0:05	5:00	0:05	7:00
0:15	6:00	0:15	8:00
0:30	7:00	0:45	9:00
1:00	8:00	1:30	10:00
1:30	9:00	2:30	11:00
2:00	10:00	3:30	12:00
3:00	11:00	4:45	13:00
4:00	12:00	6:00	14:00

[(1)] The call is made on whether a storm will be moderate or large based on the forecast. A moderate storm is one that is 0.46 to 0.99-inches of rain and a large storm is any storm greater than 1-inch of rain.

The collected samples are transported to a local laboratory for analysis. The parameters shown in Table 4.9.2 are included in the analysis.

Table 4.9.2 Sampling Parameters

Parameter Name	**Sampling Frequency**
Fecal coliform	All events
E. coli	All events
CBOD (5 day)	All events
COD	All events
Ammonia	All events
TSS	All events
TKN	All events
Total P	All events
Cu (total and dissolved)	Events 4 through 10
Pb (total and dissolved)	Events 4 through 10
Zn (total and dissolved)	Events 4 through 10
Chromium VI	Events 4 through 10
Surfactants	Events 4 through 10
Mercury (total and dissolved)	Events 4 through 10
Cyanide	Events 4 through 10
Hardness	Events 4 through 10
Conductivity	Events 4 through 10
Oil/grease	Events 6 through 10
Total Cadmium [(1)]	SIU sampling events

Table 4.9.2 Sampling Parameters

Parameter Name	Sampling Frequency
Total Selenium [(1)]	SIU sampling events
Total Silver [(1)]	SIU sampling events
[(1)] These parameters were added as part of the synoptic sampling supporting NMC 3.	

In addition to the outfall sampling program described above, the District's Watershed Team has undertaken a comprehensive water quality sampling program to help construct and calibrate the water quality models and to better understand the impacts that overflows and other pollution sources in the watershed have on water quality. The District will utilize these models in our Watershed Plan activities to quantify the impact CSOs, SSOs, stormwater, and other pollution sources have on water quality, and estimate the improvements expected with various levels of controls on pollution sources.

4.9.4. Summary and Recommendations

The implementation of the Infrastructure and Watershed Characterization effort exceeds the intent of NMC 9 and this detailed analysis is needed since the District is taking an innovative watershed approach to addressing overflows as well as other sources of pollution with the main goal of improving water quality in the local streams and Rivers while complying with the CSO policy. The District recognizes the need to monitor throughout the development and implementation of these Watershed Plans so that impacts of controls on Water Quality can be tracked. Therefore, the District will be evaluating the feasibility of installing permanent monitors at select overflow locations.

To further show how the District is fully implementing this minimum control, the activities discussed above are recounted below in the context of the findings and recommendations from the July 6, 2005 NPDES Compliance Evaluation Report by USEPA Region 4. These comments are shown in Table 4.9.3 to demonstrate that the District has addressed the issues and recommendations that were raised and has implemented actions to come into compliance with NMC 9:

Table 4.9.3: Response to Compliance Evaluation Comments

Item	Response
The District should develop measures to effectively characterize CSO impacts and the efficacy of CSO controls, including frequency, duration, and volume of overflows	• As discussed in Sections 4.9.1 and 4.9.3, the District is in the middle of an extensive monitoring and characterization effort as part of the Consent Decree related activities. • Also as discussed in Sections 4.1 and 4.5, the District intends on blocking all CSOs to aide in inspection and determination of overflow occurrence and continues to inspect outfalls and diversions on a regular basis and tracks overflows in its gbaMS system.

Table 4.9.3: Response to Compliance Evaluation Comments

Item	Response
Collect sufficient bacteria data on all CSO receiving streams	• The District has established a comprehensive monitoring program as part of the Consent Decree related activities to collect instream water quality, habitat, macroinvertebrate and fish data to inform the watershed characterization process. • In addition to event based sampling, this includes continued operation of the District's 13 continuous flow and instream water quality measurements and the addition of baseline (dry weather) data collection in every watershed. • The event-based and dry weather sampling is being conducted in the watersheds on a rotating basis in priority watersheds first. The District expects to complete the first round of event-based sampling (three wet weather surveys) by the end of 2009.

To comply with NMC 9, Monitoring to Characterize CSO Impacts, the District will continue with all of the activities and programs described above. As part of that effort, the District will implement additional measures to characterize the CSOs and their impacts as indicated in Table 4.9.4. An overall schedule of activities for all of the nine minimum controls is included in Appendix D.

Table 4.9.4: Additional Activities to Characterize CSOs

Item	Activity	Implementation Schedule
Infrastructure Characterization	Update and Calibrate Hydraulic Models based on the 12 month Flow and Rain monitoring program.	June 12, 2008
Watershed Characterization	Update and Calibrate Ohio River, Licking River, and Banklick Creek Hydrodynamic and Water Quality Models	August 29, 2008
CSO Inspections and Monitoring	Test up to three locations for permanent monitoring and real time alarming	Complete evaluation June 30, 2008
Revise CSS SIU Permits	Analyze sampling data and complete revisions to SIU	Schedule under NMC 3

SECTION 5 REFERENCES

Code of Federal Regulations, Title 40. Part 403 – General Pretreatment Regulations for Existing and New Sources of Pollution, January 28, 1981 (and revisions/amendments).

District of Columbia Water and Sewer Authority (DCWASA). 1996. Combined Sewer Overflow Abatement Program Nine Minimum Controls Compliance Report, December 1996.

Louisville and Jefferson County Metropolitan Sewer District. 2006. Nine Minimum Controls Compliance Report, February 10, 2006.

Malcolm Pirnie, Inc. (MPI). 1993. Letter to Gary Richardson (SD1) from Guy Jameson regarding Dry Creek WWTP Permit, June 25, 1993.

New York City Department of Environmental Protection (NYCDEP). 1997. CSO Abatement in the City of New York: Report on Meeting the Nine Minimum CSO Control Standards, January 1997.

Northern Kentucky Solid Waste Management Area. 2003. Solid Waste Management Plan, Five Year Update 2003 – 2007, September 23, 2003.

Northern Kentucky Solid Waste Management Area, Northern Kentucky Solid Waste Resource Guide, undated.

Sanitation District No. 1 (SD1). 2002. Compliance with Nine Minimum Controls and Combined Sewer Overflow Plan Progress Update, July 2002.

Sanitation District No. 1 (SD1). 2003. Collection System Spill Control and Notification Procedures, June 1, 2003.

Sanitation District No. 1 (SD1). 2003. Dry-Creek Wastewater Treatment Plant Notification Procedure, June 1, 2003.

Sanitation District No. 1 (SD1). 2003. Enforcement Response Plan & Guide, June 1, 2003.

Sanitation District No. 1 (SD1). 2004. KPDES Phase II Storm Water Management Plan, December 2004.

Sanitation District No. 1 (SD1). 2004. Response to U.S. EPA Section 308 Clean Water Act, July 12, 2004.

Sanitation District No. 1 (SD1). 2005. KPDES Phase II Stormwater Annual Report, 2005.

Sanitation District No.1 (SD1). 2005. Rules and Regulations, October 2005.

Sanitation District No. 1 (SD1). 2007. Grease Control Program: Proposed Phased Implementation Plan, September 17, 2007.

Sanitation District No. 1 (SD1). Spill Prevention Control and Countermeasures, Collection System and Dry Creek Wastewater Treatment Plant, Notification Procedures Hazardous Materials, undated.

Sanitation District No. 1 (SD1). Standard Operating Procedure 04 (SOP-04) Calculation of Surcharges for Significant Industrial Users, undated.

Sanitation District No. 1 (SD1). Standard Operating Procedure 05 (SOP-05) Enforcement Response and Violation Tracking, undated.

Sanitation District No. 1 (SD1). Standard Operating Procedure 06 (SOP-06) Standard Procedures for Conducting Inspections, undated.

Sanitation District No. 1 (SD1). Standard Operating Procedure 08 (SOP-08) Data Entry (Linko), undated.

Sanitation District No. 1 (SD1). Standard Operating Procedure 10 (SOP-10) Permit Writing (Industrial), undated.

Sanitation District No. 1 (SD1). Standard Operating Procedure 11 (SOP-11) Underground Storage Tank (UST) Removal or Repair, Soil Remediation (SR) & Unusual Discharge Request, undated.

Sanitation District No. 1 (SD1). Standard Operating Procedure 14 (SOP-14) Non-Significant Users, undated.

Sanitation District No. 1 (SD1). Standard Operating Procedure 16 (SOP-16) Public Notice/Public Comment, undated.

Sanitation District No. 1 (SD1). Standard Operating Procedure 17 (SOP-17) Existing Fats, Oil or Grease (FOG) Program Procedures, undated.

U.S. Army Corps Of Engineers, Louisville District (ACOE). 1951. Flood Protection Operation and Maintenance Manual, Newport Kentucky, 1951.

U.S. Army Corps Of Engineers, Louisville District (ACOE). 1955. Flood Protection Operation and Maintenance Manual, Covington Kentucky, 1955.

U.S. Army Corps Of Engineers, Louisville District (ACOE). 1986. Flood Protection Operation and Maintenance Manual, Dayton Kentucky, 1986.

U.S. Army Corps Of Engineers, Ohio River Division (ACOE). 2007. "Ohio River Statistics." Kenton County Public Library.
http://www.kenton.lib.ky.us/gen/ohioriver.html, December 7, 2007.

United States Environmental Protection Agency (USEPA). 1995. Guidance for Nine Minimum Controls (EPA 832-B-95-003), May 1995.

U.S. Environmental Protection Agency (USEPA), 2005. NPDES Compliance Evaluation Report (KY0021466), July 6, 2005.

Woolpert. 1995. Short-Term CSO Control Plan. Prepared for the Sanitation District No. 1 of Campbell and Kenton Counties, Kentucky, October 1995.

Woolpert. 2001. Regional Facility Plan. Prepared for the Sanitation District No. 1 of Boone, Campbell and Kenton Counties, Kentucky, August 2001.

In addition to the above references, the following websites were used to access information or are otherwise referenced in this report:

1. Sanitation District No. 1 of Northern Kentucky – http://www.sd1.org

2. Northern Kentucky Solid Waste Management Area - http://www.boonecountyky.org/NKSWMA/default.asp

3. Boone County, Kentucky - http://www.boonecountyky.org/

4. Kenton County, Kentucky - http://www.kentoncounty.org/

5. Campbell County, Kentucky - http://www.campbellcounty.ky.gov/

6. Electronic Code of Federal Regulations - http://ecfr.gpoaccess.gov/

7. Sherman Dixie - http://www.shermandixie.com/products/bmp/index.php

8. U.S. Environmental Protection Agency - http://www.epa.gov/

9. Rivertown Communications – www.rivertown.com

(This page intentionally left blank for double-sided printing.)

APPENDIX A:

Flood Station Operations SOP Excerpt

(This page intentionally left blank for double-sided printing.)

CONTENTS

- Ground Rules and Standards for Training Purposes, Flood Events and Preventative Maintenance
- Standard Operating Procedures for Flood (rising river), Dry Creek and Flood Response Team
- Flood Station Operation – Bringing Stations Up and Down
- Flood Station Checks
- Flood Station Flood Gate Operating Sheets
- Flood Gate Operation Associated with Flood Stations
- Army Corp. of Engineers Annual Inspection
- Fall Protection

Flood Control Team

- Four (4) people will be needed to bring stations up and close the gates. The people responsible for this will be Paul Hartman, Mike Wood, Hasten Wright and Donnie Roberts.

- Two (2) people responsible for the scheduling are Mike Wood and Hasten Wright.

- Three (3) operators from Dry Creek will be responsible to inspect and operate all active flood stations from 19:00 – 07:00. Two (2) on shift and one (1) backup.

- Between 15:30 – 19:00 there will be four (4) people, Monday thru Friday, responsible for flood inspections will be Donnie Roberts, Brian Moore, Paul Hartman and Bill Mullins. Two (2) people / day / shift.

- Bob Marshall and Jake Sweeney will be performing daily checks and coordination of flood events.

- On Saturdays the inspections will be performed by Bob Gerrety and Vern Wiley, Sunday will be Hasten Wright and Mike Wood.

- Rain events fill-in people will include Donnie Roberts, Brian Moore, Paul Hartman, Bill Mullins, Bob Marshall, Jake Sweeney, Brian Berens, Chip Lorentz, Mike Buhite, Chris Crone, Gary Harney and Chris Robinson.

- Heavy rain events will involve Tom Foster's crew.

SOP – Hazard Analysis

All employees involved with Flood Response need to consider every hazard before taking any action.

Being trained and comfortable with each task is imperative to the safety of every individual. If not trained to handle a particular situation, call someone who is.

Electrical Department – Dave Hornbeck – Home 485-4207; Cell 240-3780

Maintenance Department – Bob Gerrety – Home 341-8985; Cell 240-3035; Pager 240-5866

Safety Department – Rod Bell – Home 341-6893; Cell 240-0252; Pager 730-4012
Pat Diesman – Home 441-2580; Pager 730-9649; ERT 736-5884

C.G.&E. – 513-651-4182

Flood Station Operation – Bob Marshall – Home 581-7616; Cell 240-4084

Dry Creek Control Room – 331-6674

Lakeview Dispatch – 578-7466

City Dispatch Police (Campbell Co.) 292-3622 (Kenton Co.) 292-2222
(Snow and ice removal etc.)

Emergency – 911

Training that is necessary for Flood Station Operations and possible hazards include, but not limited to:

Electrical – resetting breakers, overloads, operation of Zetron Controller and Lockout/Tagout

Fall Protection – use of harness, lanyards and D-ring applications (climbing towers)

Confined Space Entry and Rescue – use of harness, fall protection, TMX412 Gas Detector and Scott Air Packs, etc.

Use of drills, adapters, extensions, T-handles, ground fault interrupters, extension cords and generators.

Siphon breaker adjustments – use of torch and necessary readjustment of freezing or sticking siphon breaker.

Weather Related Issues – freezing on floodwalls, towers and roadways, etc. Wet and muddy conditions associated with closing of outfall gates.

Traffic Control – use of signs, cones and the detouring of traffic.

NOTE: Any hazard observed needs to be considered. Take all appropriate action and precautions. If necessary call departments or individuals needed, if not trained or comfortable to handle situations.

Ground Rules and Standards For Training Purposes,
Flood Events and Preventative Maintenance

In order to have the necessary structure, it is necessary for us to have a standard and required amount of time for training before we can properly respond during a flood event.

However, the need to be flexible also exists concerning the priorities and demands of our regular jobs and personal lives. Most problems concerning departmental needs and participation have been, or are in the process of being addressed. Any future problems concerning these needs simply need to be communicated and resolved.

In consideration of our new concept of the formation of the District Flood Response Team, these requirements are subject to change as the need to do arises.

1). Input from all team members is encouraged.

2). Fairness in participation opportunity and distribution of overtime.

3). Saturdays have been set aside for training purposes. If you work on Saturday, other arrangements for training will be made on the individuals off day.

4). Each individual has the responsibility to fulfill training requirements.

5). Two training sessions of at least 4 hours each needs to take place on 3 particular training tasks.

A (8 hours) – Bringing up and taking down stations after closing or reopening appropriate gates. (The preventative maintenance and exercising of gates needs to be part of this training).

B (8 hours) – Association and location of gates to a particular station.

C (8 hours) – Checking of stations and troubleshooting problems.

D (8 hours) – Possible refreshers for individual's need for training in a particular area or task (not a requirement)

E For individuals who have an assigned role or volunteer to bring stations up and close gates, take down stations and open gates, that amount of time will be deducted from yearly requirement.

Standard Operating Procedures For Flood – (Rising River)

Dry Creek

1. Monitor river level hourly with weather radio. Computer is not reliable.

2. If hourly forecast seems to be the same level – call weather at 1-937-383-0031, ext. 6 to see what is going on. Sometimes the radio does not give a proper update of current conditions and the river could be rising.

3. River level can be at a stage that we need to start closing gates and bringing up stations any time of day or night. Someone has to be notified. During regular working hours we can stay on top of this, but during the evening hours, someone needs to be notified.

4. Bob Marshall or Bob Gerrety will notify Dry Creek of current stations being brought up. Make sure telemetering is working at the stations that have been brought up!

5. Contacts for bringing stations up and closing gates are:
   Bob Marshall - 581-7616 (home)
   Bob Gerrety - 341-8985 (home); 240-3035 (cell); 240-5866 (pager)

6. Critical River Stage Levels:

   4th Street – 44.0 feet
   Main Street (Dayton) – 47.0 feet
   Willow Run – 45.9
   Washington Street – 48.0 feet
   Columbia Street – 49.0 feet
   McKinney Street – 49.2 feet
   24th Street & Eastern – 49.4 feet
   19th Street – 45.9 feet
   Patton Street – 51.0 feet
   Russell Street – 51.3 feet
   Main Street (Covington) – 52.0 feet
   8th Street – 54.3 feet
   Pleasant Street – 55.6 feet
   Court Street – 55.7 feet
   Kennedy Street – 64.1 feet

SOP – Emergency Power

C.G. & E. – 513-651-4182

SOP – City Dispatch Police (Non-emergency)

Campbell County Dispatch – 292-3622

Kenton County Dispatch – 292-2222

Snow and ice (inaccessible route to stations, etc.), you can call these numbers you to confirm that snow removal crews have been out salting streets, etc.

SOP – River Stations Protection

Flood stage of Ohio River is 52 feet, we have to have a policy to start looking at Melbourne stations, Silver Grove, Highland Heights, Wilder and Newport Steel for removal of electrical equipment.

SOP – Normal Flow at Flood Stations

Minimal amount of crews scheduled during slow operations of station, one crew, one truck per shift. In case of power failure, we have approximately one hour response time from Dry Creek Control Room to catch problem at station and 2-1/2 to 3-1/2 hour response time for crews to catch power failure, etc. at station due to the time it takes for crew to get possibly 15 stations up and running.

If telemetry goes down, we have to put individuals at stations or stations not receiving a signal. Voltage check and routine checks at stations will reveal any problems as well as telemetry at Dry Creek.

If not experiencing any electrical, mechanical or operating problems at stations, this will work. If problems start occurring, we will adjust the schedule.

Flood Station Operation

Bringing on Flood Stations:

- Make sure all associated gates are closed (fall protection required)
- Close outfall behind station – turn breaker lock off
- Grease all pumps – record date and time
- Check voltage – record date and time
- Zero all run times on Zetron
- Turn on bubbler
- Turn breakers on for pumps
- Turn HOA[5] on auto
- Turn auto control on in Zetron
- Bring up pumps in pump mode (manual to auto)
  (Willow Run the exception, needs to be pumped down in hand to keep pumps from short cycling until Goebel Park backups caught up with and pumped down before putting station on Zetron.)
- Check amps when pumps running – record on station sheet
- Check wetwell barrack, gauges, bubbler operation, and pumps when operating for vibration, excessive heat, etc.
- Note: Willow Run siphon breakers can freeze, if pumps leaking water and vibrating, take torch and unfreeze siphon breaker. (Pump will prime itself, leakage and vibration will disappear.)
- Water lines at Main St. and McKinney St. in Dayton will need valves opened
- Influent gates will have to be opened at Main St. and McKinney St. in Dayton as well as outfall closed

Bringing Stations Down:

- Turn auto control off on Zetron
- Open outfall behind station – turn breaker off!
- Turn bubbler off
- Turn breakers and HOA[5] off
- Record all run times on station sheets and then re-zero times
- Leave main breakers on

Flood Coordination Information

44.0 4th St. Flood

CCW 44.0 9th & Lowell Close Power Drill Ext. Adapter
CCW 44.0 9th & Lowell Close Power Drill Ext. Adapter
44.0 Station outfall Close electric
56.5 9th & Lowell Floodwall Close Long Handle Drill Adapter @ 4th St.
56.5 10th & Lowell Floodwall Close Long Handle Drill Adapter @ 4th St.
CW 56.5 9th & Lowell Reopen
CW 56.5 10th & Lowell Reopen
CCW 56.5 Kirshners Close T-Handle in Chamber Close
CCW 56.5 12th & Lowell Sewer # 2 Open Power Drill Ext. Adapter- T- Handle & Pipes
CCW 59.5 12th & Lowell Sewer #1 Open Power Drill Ext. Adapter- T-Handle & Pipes
CCW 59.6 Route #9 Closure Gate Close Power Drill Ext. Adapter- T-Handle & Pipes
66.0 L & N Closure Gate T-Handle

45.5 19th St. Flood

45.5 Durette Close Speed Drill Adapter Red Handle Wrench
45.5 20th St. Tall Tower Close Speed Drill Adapter Red Handle Wrench
45.5 17th St. Tower Close Speed Drill Adapter
45.5 17th St. Tower Close Speed Drill Adapter
CCW 45.5 Thomas & Glenway Close T-Handle Wrench
45.5 Station Outfall Close Electric
57.1 20th St. Short Tower Close

45.9 Willow Run

CW 45.9 Bakewell Speed Drill Ext. Adapter Close
CW 45.9 Philadelphia T-Handle Close
45.9 Crescent Tower Electric Close
45.9 Willow Run Tower Electric Close
45.9 2nd & Scott Flapper on Chain Close
65.7 Hwy Closure T- Handle Close

47.0 Main St. Dayton Flood

47.0 Influent Gates Close Electric
47.0 Station Outfall Close Electric

48.0 Washington St. Flood

CW 48.0 Nelson & Linden Close Power Drill Ext. Adapter
CW 48.0 9th & Linden T-Handle Close
48.0 Don Pablo's Speed Drill Close
48.0 Saratoga Speed Drill Adapter Close
64.0 Party Source Tower Handle in Washington St. Close

49.0 Columbia St. Flood

49.0 Barack – Let down with hoist @ 4th St. Station
49.0 Station Outfall Close Electric

49.2 McKinney St. Dayton

49.2 Influent Gate Close Electric
49.2 Outfall Gate Close Electric

49.4 Eastern (Ave. 24th St.) Flood

49.4 Adams Tower Close Speed Drill Adapter
49.4 Lavassor Tower Close Speed Drill Adapter
CW 49.4 Miller Florist Close Speed Drill Adapter
49.4 Station Outfall Close Electric
62.0 Miller Florist Closure Close T-Handle
CW 70.0 Lavassor St. Close T-Handle

51.0 Patton St. Flood

51.0 16th St. Closure Close T-Handle
51.0 15th St. Ball park Close Speed Drill Ext. Adapter
51.0 15th St. Tower ½ Moon Adapter Speed Drill
51.0 Station Outfall Electric

51.3 Russell St. Flood

51.3 Johnson St. Close T-Handle
CW 51.3 Embassy Close T-Handle
CW 51.3 Greenup Close Speed Drill Ext. Adapter

52.0 Main St. Cov. Flood

52.0 Station Outfall Adapter at station Open socket Power Drill

54.3 Eight St. Flood

CCW 54.3 11th St. Main Speed Drill Adapter Close
54.3 11th St. Tower Speed Drill Adapter Close
54.3 10th St. Tower Speed Drill Adapter Close
54.3 9th St. Tower Speed Drill Adapter Close
54.3 Robbins Tower Speed Drill Adapter Close
54.3 Station Outfall Electric Close
CW 58.8 6th Gerrard Speed Drill Ext. Adapter Close

55.6 Pleasant St. Flood

CW 55.6 Gate in front of station Open T-Handle
55.6 13th St. Tower Close Speed Drill Adapter
55.6 12th St. Tower Close Speed Drill Adapter
55.6 Station Outfall Close Electric

55.7 Court St. Flood—Access to Gate Code #6002

55.7 Station Outfall Close T-Handle

64.1 Kennedy St. Flood

64.1 Gate in St. Close T-Handle
64.1 Gate in St. Close T-Handle
64.1 Closure Gate Close T-Handle
64.1 Flower Bed Close T-Handle
64.1 Check Flapper Close Should be closed

Telephone #'s

Hastin Wright	859-261-4581	Cell 859-640-6726
Mike Eversole	859-282-6757	Cell 859-380-6185
Bob Gerretty	859-341-8985	Cell 859-240-3035
Chris Reynolds	859-342-0407	Cell 859-663-1348
Tony Bingham	859-586-9465	Cell 859-486-9746
Bill Mullins		Cell 859-640-7961

Brian Moore	859-578-0668	Cell	859-572-0247	
Paul Hartman	859-363-9067	Cell	859-240-4481	
Chris Crone		Cell	859-750-1956	
Vern Wiley	859-586-5816	Cell	859-803-5495	
Donnie Roberts	859-472-1224	Cell	859-240-6473	814-7030
Tom Foster	859-291-9909	Cell	859-240-5865	
Dave Hornbeck		Cell	859-240-3780	
Phil Stanken	859-384-9298	Cell	859-240-6668	
Bob Marshall	859-581-7616	Cell	859-240-4084	
Rod Bell	859-341-6893	Cell	859-240-0252	
Dry Creek	859-331-6674			
Larry Westkamp	859-578-7459			
John Clark	859-466-4942	Cell	859-466-4982	

Pump Station Settings/ High River

35.0 Silver Grove- only one pump in auto with discharge closed or choked down to bring AMPS down to 20.0 Amps. Turn other pumps off.

41.0 Patton St.> Turn Off

8th St. > Turn Off

2nd St.> Turn Off

41.0 Bromley> See high river SOP

*** Consider pulling pumps before river damages motors:**

51.0 St. Anne's> Turn Off

Harrison> Turn Off

Carlisle> Turn Off

Gerrard> Turn Off

Jefferson> Turn Off

Ohio> Turn Off

Npt. Steel 859-292-6060
City Of Cov. Public Works 859-292-2325
Steve Cline 859-291-7280
Jim Agalmeir 859-292-2292

Army Corp Of Engineers
Chris Avery 502-558-9566

Weather & River Wilmington
1-937-383-0031 Ext 6

*** Prior to Operation of Gates and Stations- Generators (gas and oil) operating condition fall protection available, special keys for lids, # 53 truck, or special arrangement necessary to have a generator. Tarps to cover tools if raining and notification of responders.**

Flood Station Checks

Check wetwell – check high water line in wetwell. A pump may not be running when there!!! Watch for low or high wetwell.

Check Gauge – confirms wetwell level

Check Bubbler – Confirms wetwell level

Check Voltage – Incoming power to station. CG&E will have to be called if highly irregular variance occurs.

Example	Leg	Leg	Leg
Irregular Reading	450	300	125

Example	Leg	Leg	Leg
Regular Reading	450	450	453
	(small amount of variance)		

Check AMPS – Variance in AMPS could mean motor going bad – can only check when pump is operating. Call electrician.

Check Grease Sheet – pumps that are operating (run times)
Need to be greased every six hours regardless of run times to be greasing in uniform procedure.

Check Run Times:

- Press setup menu on Zetron
- Press backspace to get to run time program
- Press enter to get run times
- Backspace to get all pump run times
- Press escape to get out and back to regular setting on Zetron

Note: If you press enter more than once you could erase run times.

Check pumps when operating – For excessive heat – "put hands on" for vibration and leaking of water, siphon breaker could be frozen.

Run Times (Record) From Zetron:

- Press setup menu
- Press backspace to run times program
- Press enter
- Backspace to # 1 through # 5 to get run times
- Record on sheet
- Escape will take you back to original setting on Zetron

Main St. and McKinney St., Dayton:

- Self-greasing pumps (don't have to grease)
- Check water to pumps when running
- **Note:** Sight glass on water line



Not Running



Running

Check water lines for severe leaking, etc.

Fourth St. Flood Gates

Gate Location	Date & Time	Open / Close
Outfall Gate @ 4th St.		
9th & Lowell		
10th & Lowell		

Willow Run Flood Gates

Bankwell		
Tower @ Crescent		
Willow Run Outfall Tower		
Philadelphia St.		

19th St. Flood Gates

Tower @ 17th & Floodwall (red)		
Tower @ 17th & Floodwall (silver)		
19th St. Outfall		
Thomas & Glennway		

Main St. Dayton Flood Gates

Main St. Outfall Gate		
Station Inlet Gate		

Washington St. Flood Gates

9th & Linden		
Nelson & Linden		
Don Pablo's		
Saratoga St.		
Washington St. Outfall		

Main St. Covington Flood Gates

Main St. Outfall		

8th St. Flood Gates

Robbins St.		
10th St		
9th St.		
8th St. Outfall		
11th St.		

Pleasant St. Flood Gates

Tower @ 11th St.		
12th St.		
13th St.		
Front of Station		
Pleasant St. Outfall		

Court St. Flood Gates

Court St. Outfall		

Kennedy St. Flood Gates

Manhole @ Kennedy		
Street Gate		
Flower Bed Gate		
Closure Gate		
Inlet to wet well		
Flapper valve		

Flood Gate Operation Associated with Flood Stations
05-19-05

Fourth St. Flood (44')
44.0' - Close 66"x 66" outfall gatewell at 4th St.
44.0' - Close gate at 9th & Lowell, use 2" tee handle (CCW)
44.0' - Close gate at 10th & Lowell, use 2" tee handle (CCW)

Willow Run (45.5')
45.5' - Close 48" gate on sewer main at the end of Bakewell, in the parking lot, use 2" tee handle (CW)
45.5' - Close 60" gate tower at 2nd & Crescent on sewer main, electrically operated (CW)
45.5' - Close Willow Run Outfall, electrically operated
45.5' - Close 20" gate at Philadelphia St. (Behind Holiday Inn), use 2" tee handle (CW)

19th St. (45.5')
45.5' - Close new gate on sewer main gate tower at 17th St. & floodwall, (painted red), use ½ moon wrench
45.5' - Close gate tower at 17th St. (painted silver), use ½ moon wrench
45.5' - Close 72" gate on 19th St. Outfall, electrically operated
45.5' - Close 15" gate in street at Thomas & Glenway, use 2" tee handle for 81 turns (CCW)

Main St. Dayton (47.2')
47.2' - Close 72"x72" Dayton outfall gate
47.2' - Open inlet gate to Main St. Dayton

Washington St. (48')
48.0' - Close 24"x 24" gate at 9th & Linden (CW)
48.0' - Close 48"x 48" gate at Nelson & Linden (CW)
48.0' - Close 42"x 42" gate at Linden & Floodwall, (Don Pablo's lot, direction on stem), use 2" tee handle
48.0' - Close 30"x 30" gate for Saratoga Street, Riverside Newport, use small ½ moon
48.0' - Close 54"x 54" gate at Washington St. Outfall, electrically operated

Columbia St, (49')
49.0' - Close 54"x 54" Outfall for Columbia St., electrically operated

McKinney St. (49.2')
49.2' - Close 96"x 96" McKinney St. Outfall gate, electrically operated
49.2' - Open inlet station gate for McKinney, electrically operated

Eastern Ave. (49.4')
49.4' - Close Greenup & Adams gate tower, uses ½ moon wrench
49.4' - Close Eastern & Levassor gate tower, uses ½ moon wrench
49.4' - Close 20th & Glenway gate tower on sewer main, (painted red), use ½ moon.
49.4' - Close gate in street at end of Oakland, use 2" tee handle (CW)
49.4' - Close Durrette St. gate tower, use ½ moon
49.4' - Close 60" Outfall at 24th St. station, electrically operated

Patton St (51')
51.0' - Close 24" gate on 16th St. at south end of street, closer has a 1" operator and tee handle wrench in Patton station, about 100 turns (CCW)
51.0' - Close 30" gate at 15th St. gate tower on riverside of wall, use ½ moon operator
51.0' - Close 48" Patton St. Outfall gate, electrically operated
51.0' - Close 36" gate on new sewer main in 15th St. ballpark, 210 turns to close (CW)

Fall Protection

Fall protection class required before climbing any towers or work in any wetwell chambers.

Fall protection equipment, lanyards, harnesses, d-rings, yokes, etc. to insure safety of individual responders to be used at all times.

Individuals to work in pairs in case of any mishaps or needed rescues, etc.

Fall protection 100% tie-off required at all times.

Army Corp. of Engineers Annual Inspection

- All day inspection on prescheduled date
- Mr. Chris Avery usually does inspections
  Telephone # 502-558-9566
- Main St. and McKinney St. in Dayton hotyards need to be energized before Army Corp. arrival (these are normally turned off)
- Preliminary voltage check done on stations before their arrival
- Stations need to be cleaned and grass cut before their arrival (this is normally already taken care of but needs to be checked)

Inspection Issues

- Check operation of stations, electric gates, closures, siphon breakers
- All pumps are run and checked for vibration etc. - only selected electric gates operated
- Explanation of wetwell gauges, bubblers, Zetron, etc. required
- Update on any changes, remodification, repairs, need to be explained (in process of adding bubblers and new caged ladders to station and towers as an example)
- Check for housekeeping, painting and security – these are observed.

After Inspection

- Final inspection results sent to Sanitation District
- Inspections are done in Covington, Newport and Dayton, Kentucky. Our results will be combined with the three city inspections. What pertains to the Sanitation District not to be confused with the results of Army Corp. inspection of the cities. Items needing attention should have pictures taken and duly noted on inspection sheet.

Safety and Other Critical Equipment For Flood Operations

4 Double Hook DBI Sala shock Absorbing Lanyards

S/N	Model
2631951	1224409
2631995	1224409
2631719	1224409
2631705	1224409

2 Single Hook DBI Sala shock Absorbing Lanyards

S/N	Model
2632986	1224302
2632990	1224302

5 Self Retracting Lifeline DBI Sala

S/N	Model
14935	3101001
14947	3101001
14916	3101001
14926	3101001
14928	3101001

6 Full Body Harness DBI Exofit

2 Medium
2 Large
2 Extra Large

1 Eibenstock Drill (Hand) EHP 32/2.2R RL

3 Ground Fault Circuit Interrupter Cord

2 Extension Cord - 100 ft. 10 ga

1 Dorcy Light and Charger

10 Rainsuits

10 Safety Vests, Green

Surfact mounted "D" Ring

2 Bromley Pump Room
1 Taylorsport for Hosing
1 Gunpowder for Hosing
1 Allenfork for Hosing
1 Richwood for Hosing

APPENDIX B:

Continuous Sewer Assessment Program Preliminary Process Diagram

(This page intentionally left blank for double-sided printing.)

The flow charts that are presented herein provide an initial framework for implementation of five of the O&M Programs that are part of the District's proposed Continuous Sewer Assessment Program. The flowchart mainly focuses on the CCTV and zoom camera screening inspection activities related to the O&M programs. The charts are divided into two pages with the first page summarizing inspection and assessment phase and the second page summarizing the implementation phase, 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 operation and maintenance 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 within ten years. However, a more critical feature of the flow chart is how some sewers will be inspected and cleaned more frequently than other sewers, resulting in total equivalent inspection footage over the first ten years of the program far beyond the total sewer length in the system. Using this approach, the District will inspect and clean where it is needed the most. It is important to note that these flowcharts serve as the initial step in the program and will be re-evaluated on a regular basis to ensure that the system is cost-effectively maintained.

The overall flow of the assessment portion of the diagram 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. The service scoring process will guide the District in making cleaning decisions. This does not mean that the cleaning and rehab programs exist independent of one another. While it is not explicitly shown in the diagram, key decisions for each program should be coordinated with each other.

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 Rehab/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 Preventative 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, 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 inspection of pipes that need it.

The cleaning program effort 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 PM where it is

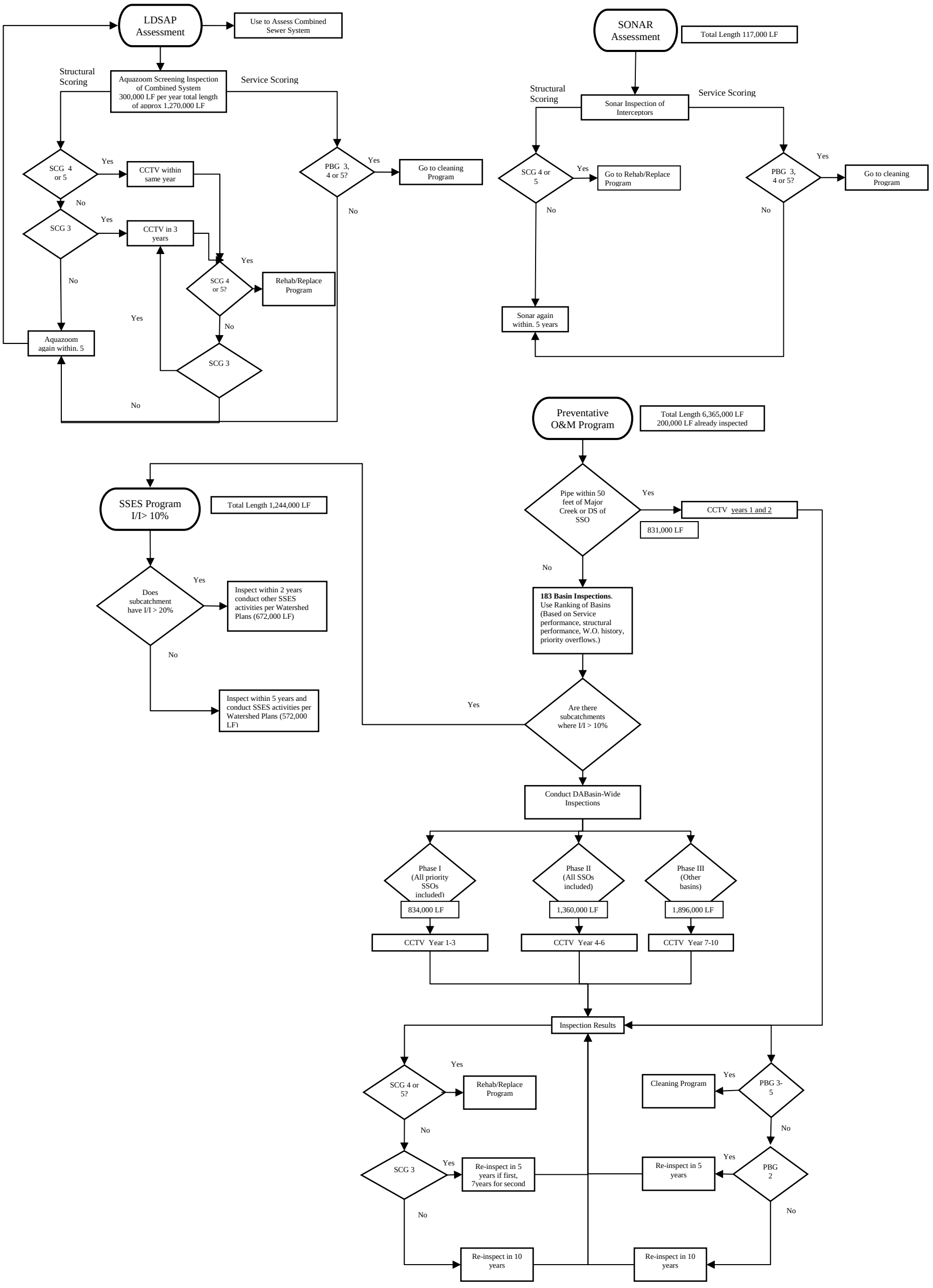
cleaned on a regular basis. The flowchart does include a box where the District performs an analysis to determine whether it is more effective to provide regular cleaning or whether it makes sense to implement a capital solution to permanently address the problem.

The rehabilitation/replacement program is designed to immediately repair fully collapsed pipe and then to develop prioritize plans for system rehabilitation. The flow chart shows how individual pipes are placed onto Priority lists, which are based on many factors as show. These priorities will be one of the factors used to develop larger scale rehabilitation projects. The goal is to gather a significant amount of condition data before significant rehabilitation is started. Using this approach, the District can better fully understand the overall condition of their system and can implement the rehabilitation in a prioritized, cost-effective manner. 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

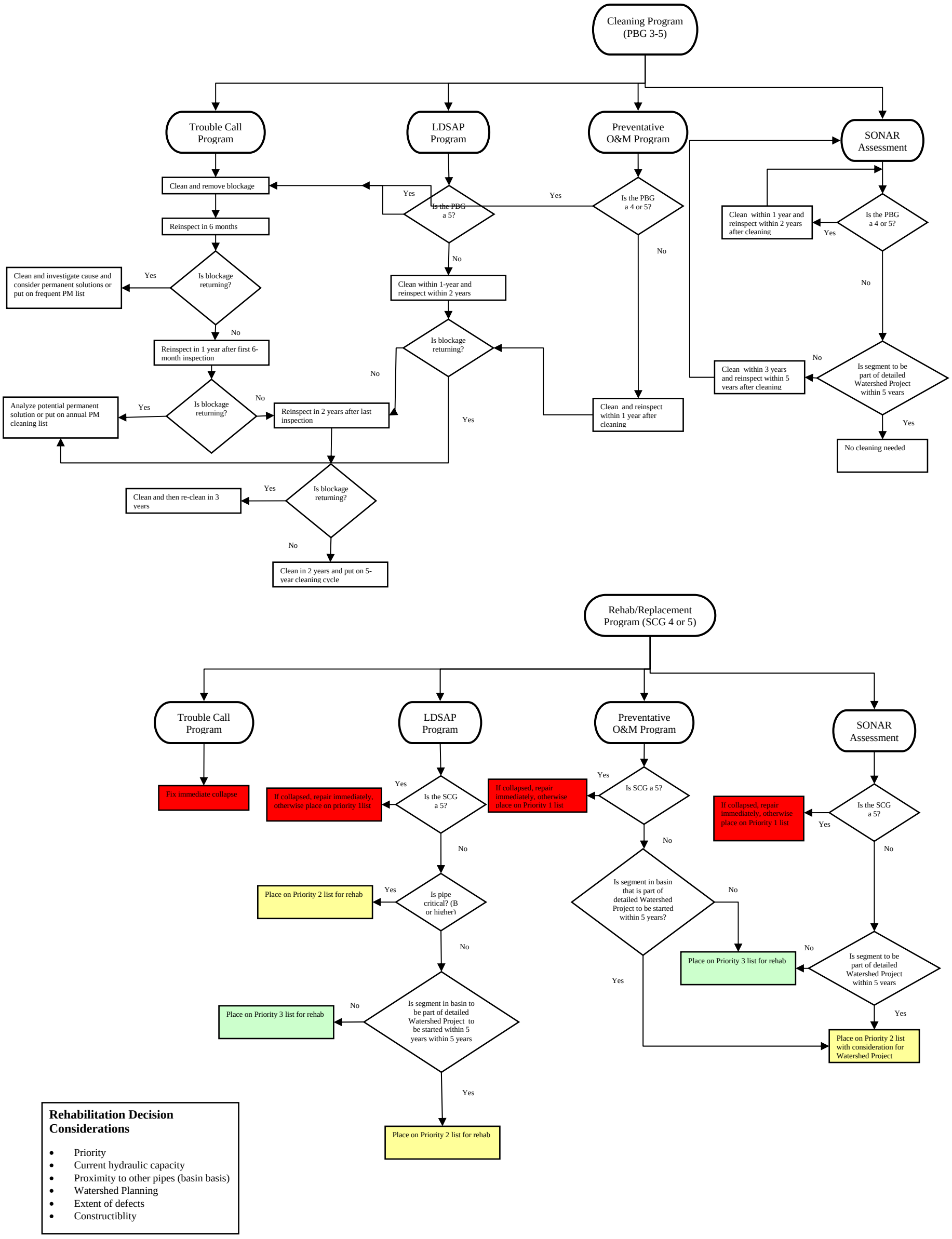
Preliminary Process Diagram
12/07/07

CONFIDENTIAL PRELIMINARY WORKING DRAFT WATERSHED CONSENT DECREE



Sanitation District No. 1
Continuous Sewer Assessment Program

Preliminary Process Diagram
09/28/07
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

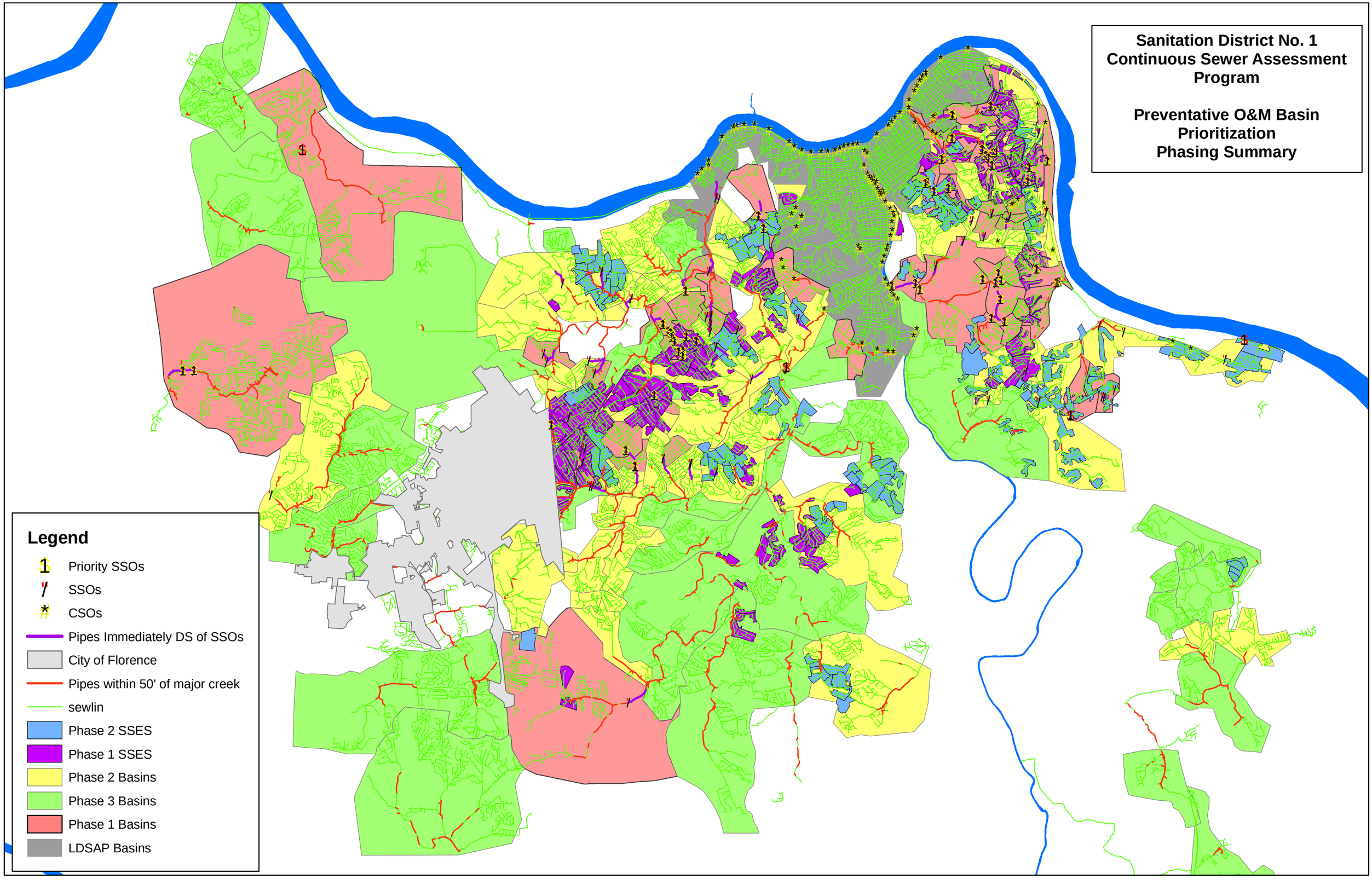
APPENDIX C:

Continuous Sewer Assessment Program
Preventative O&M Basin Prioritization Phasing Summary

(This page intentionally left blank for double-sided printing.)

Sanitation District No. 1
Continuous Sewer Assessment Program

Preventative O&M Basin Prioritization Phasing Summary



(This page intentionally left blank for double-sided printing.)

APPENDIX D:

Schedule of Ongoing Compliance Measures

(This page intentionally left blank for double-sided printing.)

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 1 Proper Operation and Regular Maintenance Response to Compliance Evaluation Comments	
Comment	**Response**
"Aggressively" improve operation and maintenance programs	• The Continuous Sewer Assessment Program is currently being implemented and clearly demonstrates a commitment to a very aggressive O&M program.
Provide copy of CMOM program	• The CMOM self assessment was submitted in October 2007 to KDOW and USEPA for review. • As discussed previously in this section, the Continuous Sewer Assessment Program was developed for the entire Collection System, not just the Separate or Combined Systems.
Increase staffing levels for required inspection and preventative maintenance efforts	• The staffing levels will increase accordingly to achieve the goals of the CSAP and O&M programs as outlined above. Already, collection system staffing has increased 21% since 2004, which is the date of the previous Compliance Evaluation. • Outside Contractors will also be hired to help achieve the goals of the CSAP and O&M programs outlined above as needed.
Implement "Asset Management" approach to O&M	• The entire approach outlined above that the District is implementing utilizes an Asset Management focus. This approach is just good business and minimizes failures and will allow the District to spend our rate-payer's money where it achieves the most benefit.
Add and replace equipment necessary to achieve O&M goals	• Additional equipment has already been purchased in anticipation of implementing this program. See Table 4.4.1above and the CMOM Self Assessment for more information regarding equipment.
Prioritized cleaning, inspection and rehabilitation schedules	• The prioritization process for inspection, cleaning, and rehabilitation has been completed with the CSAP described above and the process diagram included in Appendix B. For the combined area, initial priorities are by criticality, and then priorities are based on actual inspection results.

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 1 Proper Operation and Regular Maintenance Response to Compliance Evaluation Comments	
Comment	**Response**
Catch basins cleaned every 2 years until enough information is available to prioritize cleaning.	• The District is responsible for cleaning and maintaining the 3,302 catch basins in the combined sewer system. The proposed Catch Basin O&M program described in section 4.1.3.2 will prioritize cleaning and maintenance needs and in addition will retrofit catch basins in a prioritized and timely fashion to trap solids and floatables.
Complete inspection of entire system (combined and separate) in 5 years	• The current plan goal is to inspect every pipe in the system within 10 years. However, because this is an asset management approach, some pipes will be inspected twice before others are inspected because of priorities and previous inspection results. The actual projected rate of inspection is a system-wide equivalent within 5 years as shown in figure 4.1.7.
Telemetry on CSOs or more aggressive CSO inspections	• Weekly CSO diversion inspections will be conducted and verified within gbaMS. Efforts discussed in section 4.5 and improved record keeping will ensure that dry weather overflow risks are minimized. • Instead of more frequent inspections, problem areas will be fixed with permanent solutions. The District has already begun with telemetry based dry weather overflow alarming at select outfalls through flow monitors. • The District will also be installing blocking on all CSOs to aide in inspection and determination of an overflow occurrence. • Through the ongoing system characterization work to support the development of the Consent Decree required Watershed Plans, the District is upgrading and expanding its InfoWorks hydraulic computer model of its collection system. This effort will be complete by the middle of 2008, and will produce a comprehensive and accurate tool for planning purposes, and for determining the reductions in CSOs due to near term and long term projects.

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 1 Proper Operation and Regular Maintenance Additional Activities		
Item	**Activity**	**Implementation Schedule**
Collection System O&M - Diversions	Review periodically, the actual rate of inspections and verify that the goal of one inspection per week is being met.	Monthly
Collection System O&M – Catch Basins	Complete all catch basin cleaning work orders (501).	August 30, 2008
	Add bells to the catch basins identified as able to be retrofitted with bells (343).	Ongoing
	When a catch basin is being repaired or replaced, retrofit or replace with grated, trapped type with bells or other retrofit to trap solids and floatables.	Ongoing
	Inspect all catch basins yearly and record inspection data within gbaMS. Develop work orders within gbaMS to clean or repair as needed. Continue to utilize PM system to identify basins where more frequent cleaning is needed. Record and document amount of debris removal.	Ongoing
Collection System O&M – Pump Stations	In coordination with CMOM, compile a list of stressed pump stations in both the CSS and SSS and identify either an internal or external engineer to perform a critical assessment of the PS to identify solutions in coordination with CMOM program.	March 31, 2008
	In coordination with CMOM begin utilizing the pump station inspection module in gbaMS to record, track, and document pump station inspections.	June 30, 2008

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 1 Proper Operation and Regular Maintenance Additional Activities		
Item	**Activity**	**Implementation Schedule**
	In coordination with CMOM, prospective classes for pump station maintenance personnel at Gateway Community College will be identified, and coordination with the District's Human Resources will occur to assess the feasibility of attendance at these classes.	Throughout 2008
Collection System O&M – Gravity Sewers	In coordination with CMOM, continue to make progress toward automating work-order generation based on CSAP process diagram.	Throughout 2008
	In coordination with CMOM, assign one in-house staff member to filter all work orders and serve as the liaison between the Collection Systems Department and Engineering Department.	June 30, 2008
	Develop recommendations for targeted cleaning of interceptor based on TISCIT sonar/CCTV inspection results.	February 29, 2008
	Develop specifications, bid cleaning contract, and hire a contractor to perform the interceptor cleaning.	July 31, 2008
	Hire CCTV Contractor to support CSAP.	April 30, 2008

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 2 Maximum Use of Collection System for Storage Response to Compliance Evaluation Comments	
Item	**Response**
Document leaping weir maximization	• Opening of the leaping weir regulators is discussed in Section 4.2.1. Regulator plates have been fully opened or removed at all diversions where it was practical to do so. • The leaping weir settings were confirmed through inspections carried out in May and June of 2007 and findings were logged into a database, which is in the process of being transferred to the District's maintenance management system.
Evaluate all fixed dam and gated regulators as well as larger low slope sewers for in-line storage opportunities	• The in-line storage analysis is discussed in section 4.2.4. The analysis identified 6 locations within the collection system where the District is reasonably certain that additional in-line storage capacity exists and where modifications to utilize that capacity will not cause undue risk of basement or surface flooding. • Additional actions required to finalize the in-line storage program are identified below along with their proposed implementation schedule.

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 2: Maximum Use of Collection System for Storage Additional Activities		
Item	**Activity**	**Implementation Schedule**
In-Line Storage Program	Design and install static weirs at 9th Street and 10th Street in Newport.	October 31, 2008
	Complete installation of new diversions at Main and McKinney Streets in conjunction with new development.	December 31, 2008
	Conduct field investigations and final hydraulic modeling for potential static weirs at Parkway/Highway and James Avenue.	August 30, 2008
	Complete planned in-line storage modifications at Parkway/Highway and James Avenue, if found to be feasible.	April 18, 2009
	Examine the potential for capital projects to increase in-line storage at Willow Run, 4th Street, and Pleasant Street and incorporate projects into the Watershed Plans.	To be conducted as part of the Watershed Plans

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 3 Review and Modification of Pretreatment Program Response to Compliance Evaluation Comments	
Item	**Response**
Provide information about its evaluation of SIU impacts on CSOs	• This information is provided throughout this section. Additional evaluation will occur when data collected from the ongoing SIU sampling program is available for analysis. • Additional actions required to finalize the District's Wet Weather Operating Plan for non-significant users are identified below along with their proposed implementation
Modify permits for the SIUs with wet weather holding capability	• As discussed in Section 4.3.1, the permits of the SIUs within the CSS will be modified once the results of the SIU sampling program are available. • Modifications may include prohibition of discharges during wet weather, or industry specific permit limits. Additional actions required to finalize this item are identified below along with their proposed implementation schedule.
Consider implementation of batch discharge requirements for "one time" and special permits (such as groundwater remediation systems)	• As described in Section 4.3.2, the District currently utilizes three types of special or short term permits for underground storage tank remediation, for soil remediation, and for unusual discharge requests. • See Appendix M for an example permit.
Evaluate non-domestic discharges to the combined sewer system other than SIUs	• NSUs in the CSS or areas tributary to the CSS within Kenton County have been analyzed as discussed in Section 4.3.1. • The District is currently working to upgrade its database of NSUs in the CSS and areas tributary to the CSS within Campbell County and will utilize the information to determine if there is a potential for water quality impacts. Additional actions required to finalize this item are identified below along with their proposed implementation schedule.

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 3 Review and Modification of Pretreatment Program Response to Compliance Evaluation Comments	
Item	**Response**
Conduct an inventory of non-domestic discharges and an assessment of the impact of all non -domestic discharges (including SIUs) on CSOs and receiving waters	• As reported in the previous bullets, a desktop engineering analysis was performed for the identified SIUs that discharge to the CSS or sewers tributary to the CSS, and based on the results of this analysis, a synoptic SIU sampling program is underway to evaluate any impacts of these discharges on CSO quality and the receiving waters. • Based on the results of the SIU sampling program, the industries' wet weather operating plans will be updated by the District to address any restrictions required for discharges during rain events. • Additional actions required to finalize this item are identified below along with their proposed implementation schedule.

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 3 Review and Modification of Pretreatment Program Additional Activities		
Item	**Activity**	**Implementation Schedule**
Revise CSS SIU permits	Complete synoptic sampling	June 30, 2008
	Analyze sampling data and complete revisions to SIU permits	September 30, 2008
NSU Evaluation	Update database on NSUs in Kenton and Campbell Counties	March 31, 2008
	Evaluate NSUs in Kenton and Campbell Counties to determine if clusters exist with the potential to impact water quality. Permit NSUs as necessary.	December 31, 2008
Fire Department Notification	Design and create a pamphlet for distribution to local fire departments to educate them on whom to contact in the event of an industrial fire or spill.	September 30, 2008

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 4: Maximization of Flow and Treatment Response to Compliance Evaluation Comments	
Item	**Response**
No information verifying that full interceptor capacities are being utilized	• The above analysis shows that due to capacity limitations from both the Dry Creek WWTP and the Bromley pump station, the capacity of the interceptor, at least near the downstream end, is not fully utilized.
Accelerate pump station rehabilitation	• There are improvements being constructed at the Second St. lift station screening chamber and the Patton St. lift station received a new screening facility in the late 1990s. • These were not covered specifically in this section, but due to the interceptor being the capacity limiting factor in the CSS, acceleration in pump station rehabilitation would not produce a measurable reduction in CSO volume.
Analyze entire system to determine capacities of all facilities and determine if full capacity is available and/or utilized	• The above analysis addresses this in detail. Recommendations are shown below to implement some potential low-cost improvements to more fully utilize capacity.
Provide adequate back-up Power to the Dry Creek WWTP	• The Dry Creek WWTP falls under Class 3 Reliability and Redudancy requirements per KAR401 5:0005. As such, backup power is required for preliminary treatment, primary treatment, and disinfection processes. The District currently has adequate back-up power to meet this requirement.
Construct proposed ERWRF and WRWRF	• ERWRF came online in the fall of 2007. WRWRF is scheduled to be advertised for bid in June 2008 and operational in late 2012/early 2013. These two facilities are further discussed in Section 4.4.4.

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 4 Maximization of Flow and Treatment Additional Activities		
Item	**Activity**	**Implementation Schedule**
Maximize Collection - Interceptor	Develop recommendations for targeted cleaning of the interceptor based on the TISCIT sonar/CCTV inspection results.	February 29, 2008
	Develop specifications, bid cleaning contract, and hire a contractor to perform interceptor cleaning.	July 31, 2008
	Complete the installation of the Covington grit pit on the Licking River Interceptor.	August 30, 2008
	Document the effectiveness of the grit pits in terms of sediment removed from the interceptor.	Ongoing
	Follow the CSAP program for continued inspection and cleaning of the interceptor.	Ongoing
Maximize Collection – Bromley Pump Station	Evaluate the feasibility of lowering the wet well settings for the pumps to allow the first large pump to turn ON at a lower HGL to potentially reduce upstream overflows.	Begin March 2008 and complete investigation by May 31, 2008. Implement any resulting changes by July 31, 2008

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 5: Elimination of Dry Weather Overflows Response to Compliance Evaluation Comments	
Item	**Response**
Commit sufficient resources to satisfy its stated regulator inspection objectives	• The District's new continuous sewer assessment program and the measures taken to provide sufficient resources for its effective implementation are discussed in detail in Sections 2 and 4.1 of the report. • In addition, the District maintains 2 full-time 1-man crews dedicated to inspecting the District's 137 CSO diversions. The target frequency is to inspect each diversion about once per week as well as after every rainfall event.
Carry out a comprehensive dry weather overflow potential evaluation of all its regulators that considers both past DWO history and individual regulator physical and hydraulic characteristics	• The report summarizes how the District has accomplished this through field analysis, modeling, and review of existing data to provide recommendations to eliminate DWOs. The recommendations are included in a comprehensive site-specific table in Appendix P.

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 5: Elimination of Dry Weather Overflows Response to Compliance Evaluation Comments	
Item	**Response**
Consider utilization of telemetry to monitor overflow status	• Weekly CSO diversion inspections will be conducted and verified within gbaMS. Improved record keeping will ensure that dry weather overflows are minimized. • Instead of more frequent inspections, problem areas will be fixed with permanent solutions. • Additionally, as noted above and as further discussed in Sections 4.1 and 4.9, the District is monitoring 23 outfalls as part of the ongoing collection system characterization and the District has already begun with telemetry based warning of DWOs at selected outfalls; Latonia (CSO 1840130), Parkway/Highway (CSO 1490132), Willow Run (1480167), Columbia Street (CSO 0790084), and 10th Street (CSO 0840112). • The District has also added blocking in a number of diversions to make it easier to visually assess if overflows have occurred. At this time the District intends on blocking all CSOs to aide in inspection and determination of an overflow occurrence.

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 5 Elimination of Dry Weather Overflows Additional Activities		
Item	**Activity**	**Implementation Schedule**
Corrective Measures for Chronic DWO Diversions	Continue implementing action plan in Appendix P developed for each location susceptible to DWOs.	April 18, 2009
	Implement CB O&M Program.	See NMC 1
CSO Inspections	Add blocking to remaining diversions where feasible.	June 30, 2008
RWI Mitigation Feasibility Analysis	Complete analysis and recommend alternatives for reducing river water intrusion into the collection system. Recommendations to be incorporated into the Watershed Plans.	April 18, 2009
Backup Power Implementation for CSS PS Facilities	Implement backup power at Banklick and 2nd Street Pump Stations.	Described in Table 4.5.3. Progress being tracked as part of the Pump Station Operation Plan for Backup Power

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 6 Solids and Floatables Control Response to Compliance Evaluation Comments	
Comment	**Response**
The District needs to better document catch basin cleaning and street sweeping activities	• As indicated in Sections 4.1.3.1 and 4.6.4 the District has completed an inspection and audit of all the 3,302 catch basins in the CSS and is implementing an O&M program based on the findings from these inspections to schedule cleaning, repairs, and modifications to the catch basins to trap solids and floatables. • Inspections and cleaning results will be documented in gbaMS. • The District is also evaluating the use of "green" basins to trap solids and floatables and filter storm water entering the basins prior to discharge. • As noted in Section 4.6.2, the street sweeping is not in the District's jurisdiction; however, since the USEPA's Compliance Evaluation report was issued, street sweeping frequencies have been documented for each city and municipality in the CSS. • The District has also worked with the cities and municipalities in the CSS to ensure that most streets within the combined area are cleaned at least once a year, and more frequently in many of the major cities.
Optimize catch basin cleaning and street sweeping frequencies, so as to improve solids and floatables control	• Catch basin cleaning frequencies will be optimized and modifications to catch basins to trap solids and floatables will be performed as part of the O&M program currently being implemented as discussed in Section 4.6.4. • The District has also worked with the cities and municipalities in the CSS to ensure that most streets within the combined area are cleaned at least once a year, and more frequently in many of the major cities.

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 6 Solids and Floatables Control Response to Compliance Evaluation Comments	
Comment	**Response**
Carry out an end-of-pipe floatables control pilot study	• The Greenup St. pilot floatables control is in operation and results are being documented. • Section 4.6.6 details the District's floatables pilot study and the implementation status of its system-wide program, which aims to install some type of solids and floatables control at every CSO location where effective and feasible. • Additional actions required to finalize the solids and floatables control program are identified below along with their proposed implementation schedule.
Undertake a source control program to prevent extraneous solids and floatables, such as personal hygiene products, from entering the combined sewer system	• The District's source control programs are discussed in Sections 4.6.1 through 4.6.4, and include educational materials as well as physical source controls. • In addition, the District is also committed to source reduction of flow and pollutant loadings to the combined system and the surface waters of Northern Kentucky by utilizing sustainable low impact development and green infrastructure practices where cost effective.

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 6 Solids and Floatables Control Additional Activities		
Item	**Activity**	**Implementation Schedule**
Public Education	Source reduction (including personal hygiene products) material in What's Happening!.	May 30, 2008
	Source reduction (including personal hygiene) mail insert.	February 29, 2008
Grit Pits	Construct replacement diversions on Main and McKinney Street CSOs with grit sumps and floatables baffle and bar rack.	Scheduled under NMC 2
	Complete the installation of the Covington grit pit on the Licking River Interceptor.	August 30, 2008

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 6 Solids and Floatables Control Additional Activities		
Item	**Activity**	**Implementation Schedule**
Solids & Floatables Control Program	Complete simple solids and floatables control pilot study and summarize results.	March 31, 2008 Weather Dependent
	Depending on results of pilot study recommend locations to install additional simple solids and floatables controls.	Recommendations by July 31, 2008
	Install additional simple solids and floatables controls where found to be effective and feasible.	Complete installations by April 18, 2009
	Identify locations for pilot engineered solids and floatables controls installations.	Complete recommendations by April 18, 2009
	Install pilot engineered solids and floatables controls and monitor.	As part of the Watershed Plans
	Identify engineered solids and floatables controls for remaining outfalls as part of CSO solutions.	As part of the Watershed Plans
	Document solids and floatables capture under catch basin and simple solids and floatables control programs.	Ongoing

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 7: Pollution Prevention
No Further Activities Required for this NMC

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 8: Public Notification Response to Compliance Evaluation Comments	
Item	**Response**
Banners or other notification at public access points during and immediately after CSO events	• The District feels that this implementation can be done in phases with the first phase being the placement of signs at marinas and other places where people recreate on the Ohio River. • Additional actions required to finalize the public notification program are identified below along with their proposed implementation schedule.
Install signage at access point s near affected CSO areas	• As discussed above in Section 4.8.1, the District is developing the signs for public access points. • Future phases for public notification may include more real-time notification at marinas and other public places and may include certain types or color of flags or lights to notify boaters that there is an increased risk of coming in contact with raw sewage. • These signs could be coordinated with Cincinnati MSD or the District may even attempt to develop an Ohio River standard with ORSANCO and other river cities. Additional actions required to finalize the public notification program are identified below along with their proposed implementation schedule.
The District's CSO signs should be improved to include more information about avoiding contact with wastewater discharges and avoiding recreation activities in that area during wet weather	• As discussed in Section 4.8.1, the District has updated their signs and begun replacing existing signs. Additional actions required to finalize the public notification program are identified below along with their proposed implementation schedule;

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 8: Public Notification Response to Compliance Evaluation Comments	
Item	**Response**
Signage should include more graphics for people who cannot read	• These signs have been made and are in the process of being installed at all outfalls and overflow points. Additional actions required to finalize the public notification program are identified below along with their proposed implementation schedule.

NMC 8 Public Notification Additional Activities		
Item	**Activity**	**Implementation Schedule**
Public Notification	Evaluate feasibility of automated real time notification on the website in conjunction with Cincinnati MSD and ORSANCO.	April 18, 2009
	Automate real time hot-line & email notifications.	December 31, 2008
	Develop and install signs to put at locations other than CSO outfalls to warn about potential unsafe conditions during and after rainfall events and include the web address where they can get additional information on CSOs. These locations could be locations where the public accesses the Ohio River for recreation such as a marina.	August 30, 2008
	Replace all signs with new signs with better graphics in Spanish and English, and with the District's web site address and contact phone number on the sign prompting people to check the website for more information.	July 31, 2008

Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

NMC 9: Characterize Overflows Response to Compliance Evaluation Comments	
Item	**Response**
The District should develop measures to effectively characterize CSO impacts and the efficacy of CSO controls, including frequency, duration, and volume of overflows	• As discussed in Sections 4.9.1 and 4.9.3, the District is in the middle of an extensive monitoring and characterization effort as part of the Consent Decree related activities. • Also as discussed in Sections 4.1 and 4.5, the District intends on blocking all CSOs to aide in inspection and determination of overflow occurrence and continues to inspect outfalls and diversions on a regular basis and tracks overflows in its gbaMS system.
Collect sufficient bacteria data on all CSO receiving streams	• The District has established a comprehensive monitoring program as part of the Consent Decree related activities to collect instream water quality, habitat, macroinvertebrate and fish data to inform the watershed characterization process. • In addition to event based sampling, this includes continued operation of the District's 13 continuous flow and instream water quality measurements and the addition of baseline (dry weather) data collection in every watershed. • The event-based and dry weather sampling is being conducted in the watersheds on a rotating basis in priority watersheds first. The District expects to complete the first round of event-based sampling (three wet weather surveys) by the end of 2009.

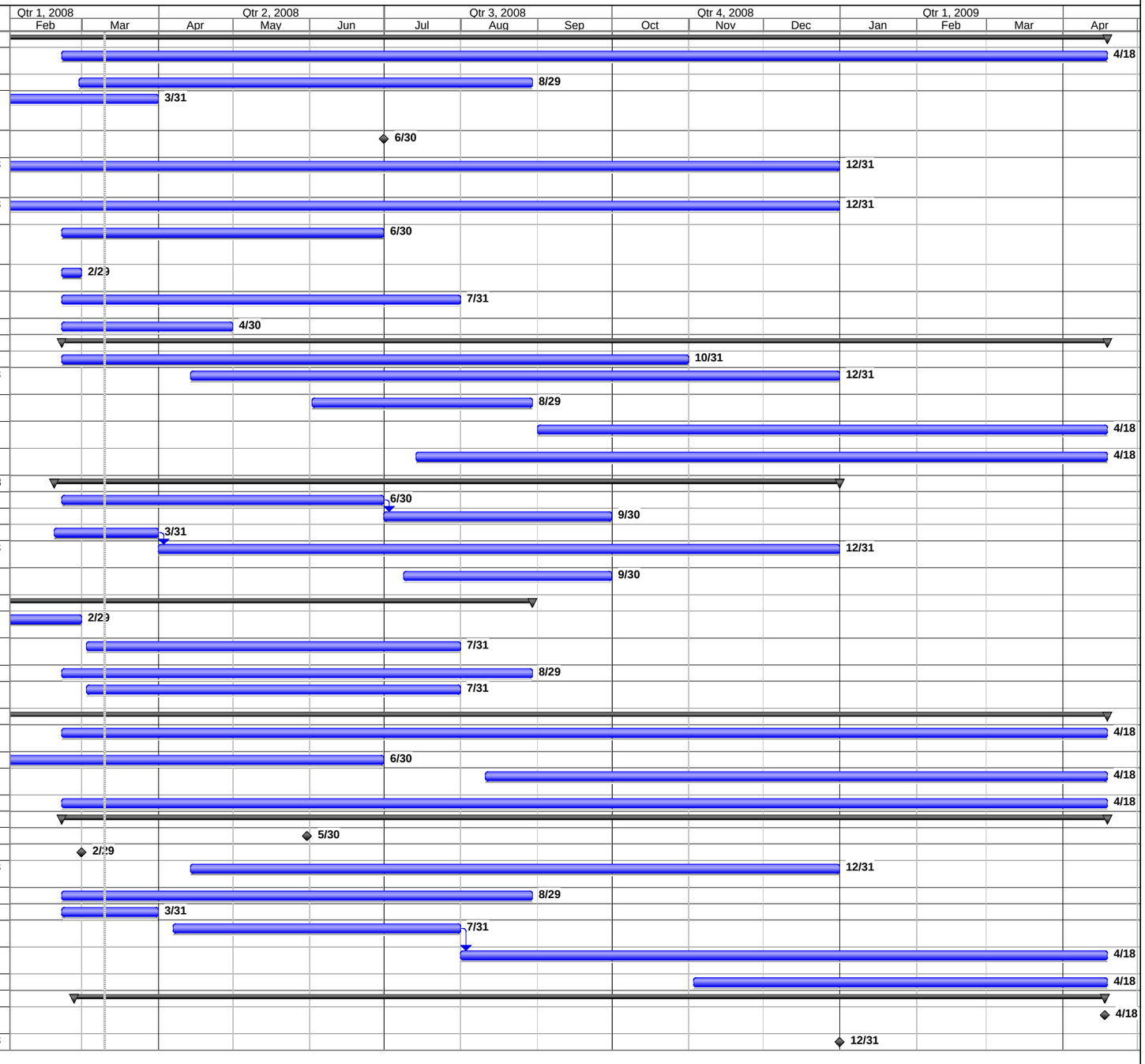
Appendix D
Sanitation District No. 1
Responses to 2005 NMC Compliance Evaluation Comments and Additional Activities
Summary 03/12/08

Sanitation District No. 1 NMC 9 Characterize Overflows Additional Activities		
Item	**Activity**	**Implementation Schedule**
Infrastructure Characterization	Update and Calibrate Hydraulic Models based on the 12 month Flow and Rain monitoring programs.	July 31, 2008
Watershed Characterization	Update and Calibrate Ohio River, Licking River, and Banklick Creek Hydrodynamic and Water Quality Models.	August 29, 2008
CSO Inspections and Monitoring	Test up to three locations for permanent monitoring and real time alarming.	Complete evaluation June 30, 2008
	Complete monitoring and sampling program of SIUs and CSO Outfalls.	June 30, 2008

(This page intentionally left blank for double-sided printing.)

Appendix D - Schedule of Activities to be completed by April 18, 2009
Start Date: 02/22/2008

ID	Task Name	Duration	Start	Finish
1	**NMC 1 Proper Operation and Regular Maintenance**	**394 days**	**Wed 10/17/07**	**Sat 4/18/09**
2	Review periodically, the actual rate of inspections and verify that the goal of one inspection per week is being met.	302 days	Fri 2/22/08	Sat 4/18/09
3	Complete all catch basin cleaning work orders.	131 days	Fri 2/29/08	Fri 8/29/08
4	In coordination with CMOM, compile a list of stressed pump stations in both the CSS and SSS and identify either an internal or external engineer to perform a critical assessment of the PS to identify solutions.	119 days	Wed 10/17/07	Mon 3/31/08
5	In coordination with CMOM, begin utilizing the pump station inspection module in gbaMS to record, track and document pump station inspections.	0 days	Mon 6/30/08	Mon 6/30/08
6	In coordination with CMOM, prospective classes for pump station maintenance personnel at Gateway Community College will be identified, and coordination with the District's Human Resources will occur to assess feasibility of attendance.	262 days	Tue 1/1/08	Wed 12/31/08
7	In coordination with CMOM, continue to make progress to automating work-order generation based on CSAP process diagram.	262 days	Tue 1/1/08	Wed 12/31/08
8	In coordination with CMOM, assign one in-house staff member to filter all work orders and serve as the liaison between the Collection Systems Department and Engineering Department.	92 days	Fri 2/22/08	Mon 6/30/08
9	Develop recommendations for targeted cleaning of interceptor based on TISCIT sonar/CCTV inspection results.	6 days	Fri 2/22/08	Fri 2/29/08
10	Develop specifications, bid cleaning contract, and hire contractor to perform interceptor cleaning.	115 days	Fri 2/22/08	Thu 7/31/08
11	Hire CCTV Contractor to support CSAP.	49 days	Fri 2/22/08	Wed 4/30/08
12	**NMC 2 Maximum Use of Collection System for Storage**	**302 days**	**Fri 2/22/08**	**Sat 4/18/09**
13	Design and install static weirs at 9th Street and 10th Street in Newport.	181 days	Fri 2/22/08	Fri 10/31/08
14	Complete installation of new diversions at Main and McKinney Streets in conjunction with new development.	188 days	Mon 4/14/08	Wed 12/31/08
15	Conduct field investigations and final hydraulic modeling for potential static weirs at Parkway/Highway and James Avenue.	65 days	Mon 6/2/08	Fri 8/29/08
16	Complete planned in-line storage modifications at Parkway/Highway and James Avenue, if found to be feasible.	166 days	Mon 9/1/08	Sat 4/18/09
17	Examine the potential for capital projects to increase in-line storage at Willow Run, 4th Street and Pleasant Street and incorporate projects into the Watershed Plans.	201 days	Mon 7/14/08	Sat 4/18/09
18	**NMC 3 Review and Modifications of Pretreatment Requirements**	**227 days**	**Tue 2/19/08**	**Wed 12/31/08**
19	Complete synoptic sampling.	92 days	Fri 2/22/08	Mon 6/30/08
20	Analyze sampling data and complete revisions to SIU permits.	66 days	Tue 7/1/08	Tue 9/30/08
21	Update database on NSUs in Kenton and Campbell Counties.	30 days	Tue 2/19/08	Mon 3/31/08
22	Evaluate NSUs in Kenton and Campbell Counties to determine if clusters exist with the potential to impact water quality. Permit NSUs as necessary.	197 days	Tue 4/1/08	Wed 12/31/08
23	Design and create a pamphlet for distribution to local fire departments to educate them on whom to contact in the event of an industrial fire or spill.	60 days	Wed 7/9/08	Tue 9/30/08
24	**NMC 4 Maximization of Flow to POTW for Treatment**	**190 days**	**Mon 12/10/07**	**Fri 8/29/08**
25	Develop recommendations for targeted cleaning of the interceptor based on the TISCIT sonar/CCTV inspection results.	60 days	Mon 12/10/07	Fri 2/29/08
26	Develop specifications, bid cleaning contract, and hire a contractor to perform interceptor cleaning.	109 days	Mon 3/3/08	Thu 7/31/08
27	Complete the installation of the Covington grit pit on the Licking River Interceptor.	136 days	Fri 2/22/08	Fri 8/29/08
28	Evaluate the feasibility of lowering the wet well settings for the pumps to allow the first large pump to turn ON at a lower HGL to potentially reduce upstream overflows.	109 days	Mon 3/3/08	Thu 7/31/08
29	**NMC 5 Elimination of CSOs During Dry Weather**	**337 days**	**Fri 1/4/08**	**Sat 4/18/09**
30	Continue implementing action plan in Appendix P developed for each location susceptible to DWOs.	302 days	Fri 2/22/08	Sat 4/18/09
31	Add blocking to remaining diversions where feasible.	127 days	Fri 1/4/08	Mon 6/30/08
32	Complete analysis and recommend alternatives for reducing river water intrusion into the collection system. Recommendations to be incorporated into the Watershed Plans.	181 days	Mon 8/11/08	Sat 4/18/09
33	Implement backup power at Banklick and 2nd Street Pump Stations.	302 days	Fri 2/22/08	Sat 4/18/09
34	**NMC 6 Control of Solids and Floatable Materials in CSOs**	**302 days**	**Fri 2/22/08**	**Sat 4/18/09**
35	Source reduction (including personal hygiene products) material in What's Happening!	0 days	Fri 5/30/08	Fri 5/30/08
36	Source reduction (including personal hygiene) mail insert	0 days	Fri 2/29/08	Fri 2/29/08
37	Construct replacement diversions on Main and McKinney Street CSOs with grit sumps and floatables baffle and bar rack.	188 days	Mon 4/14/08	Wed 12/31/08
38	Complete the installation of the Covington grit pit on the Licking River Interceptor.	136 days	Fri 2/22/08	Fri 8/29/08
39	Complete simple solids and floatables control pilot study and summarize results.	27 days	Fri 2/22/08	Mon 3/31/08
40	Depending on results of pilot study, recommend locations to install additional simple solids and floatables controls.	84 days	Mon 4/7/08	Thu 7/31/08
41	Install additional simple solids and floatables controls where found to be feasible and effective.	187 days	Fri 8/1/08	Sat 4/18/09
42	Identify locations for pilot engineered solids and floatables controls locations.	121 days	Mon 11/3/08	Sat 4/18/09
43	**NMC 8 Public Notification**	**298 days**	**Wed 2/27/08**	**Sat 4/18/09**
44	Evaluate feasibility of automated real time notification on the website in conjunction with Cincinnati MSD and ORSANCO.	0 days	Sat 4/18/09	Sat 4/18/09
45	Automate real time hot-line & email notifications	0 days	Wed 12/31/08	Wed 12/31/08

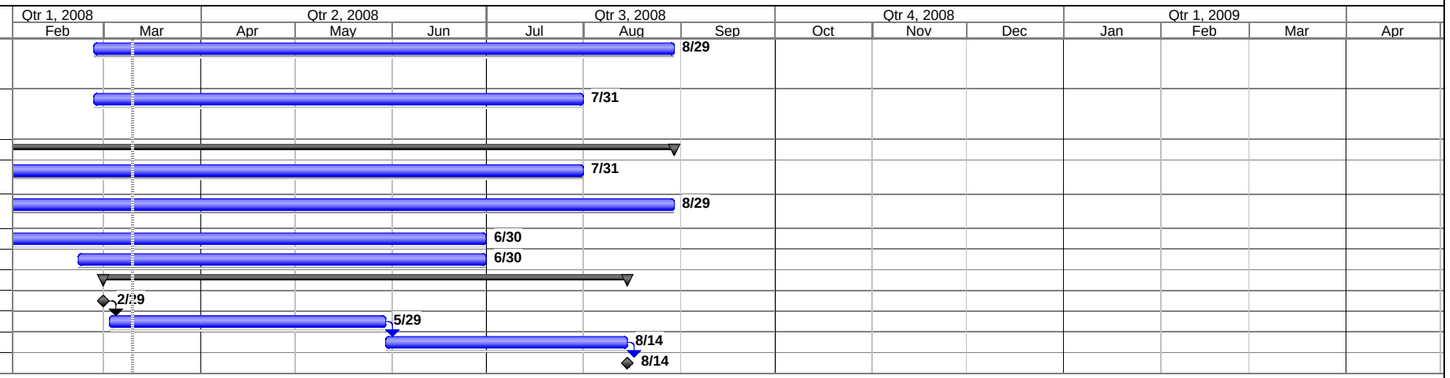


Project: Appendix D
Date: Mon 3/10/08

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone

Appendix D - Schedule of Activities to be completed by April 18, 2009
Start Date: 02/22/2008

ID	Task Name	Duration	Start	Finish
46	Develop and install signs to put at locations other than CSO outfalls to warn about potential unsafe conditions during and after rainfall events and include the web address where they can get real time information on CSOs.	133 days	Wed 2/27/08	Fri 8/29/08
47	Replace all signs with new signs with better graphics in Spanish and English, and with the District's web site address and contact phone number on the sign prompting people to check the website for more information.	112 days	Wed 2/27/08	Thu 7/31/08
48	**NMC 9 Monitoring to Characterize CSO Impacts**	**290 days**	**Mon 7/23/07**	**Fri 8/29/08**
49	Update and calibrate hydraulic models based on the 12 month Flow and Rain monitoring programs.	170 days	Fri 12/7/07	Thu 7/31/08
50	Update and Calibrate Ohio River, Licking River, and Banklick Creek Hydrodynamic and Water Quality Models.	290 days	Mon 7/23/07	Fri 8/29/08
51	Test up to three locations for permanent monitoring and real time alarming	114 days	Wed 1/23/08	Mon 6/30/08
52	Complete monitoring and sampling program of SIUs and CSO Outfalls.	92 days	Fri 2/22/08	Mon 6/30/08
53	**NMC Report**	**119 days**	**Fri 2/29/08**	**Thu 8/14/08**
54	Draft NMC Report Submittal	0 days	Fri 2/29/08	Fri 2/29/08
55	Regulatory Review	64 days	Mon 3/3/08	Thu 5/29/08
56	Address Regulatory Review Comments	55 days	Fri 5/30/08	Thu 8/14/08
57	Final NMC Report Submittal	0 days	Thu 8/14/08	Thu 8/14/08



Project: Appendix D
Date: Mon 3/10/08

Task | Progress | Summary | External Tasks | Deadline
Split | Milestone | Project Summary | External Milestone

APPENDIX E:

Standard Operating Procedure #14

(This page intentionally left blank for double-sided printing.)

SOP-14
Non-Significant Users

I) **Non-Significant Users (NSU)** are industrial or commercial users that are not a major concern to the Sanitation District. They pose no obvious threat, no potential harm, or no impact to the District's wastewater collection system, wastewater treatment plants, or to the District's employees. They are not covered by any Categorical Industrial User (CIU) regulations.

II) **A NSU** can be a retail commercial user, a restaurant, a hospital, a warehouse, a warehouse distribution center, an industrial manufacturer, or a food processor, etc. The District must monitor these NSU's; a NSU can change into a Significant Industrial User (SIU) at any time.

III) **Monitoring of a NSU** should be performed throughout the year noting all activities of the industrial/commercial users whether through: driving by NSU's (visual observations), reading newspapers or other forms of media, word of mouth, reviewing water consumption information from billing, reviewing tap-in forms from engineering, contact from municipal zoning/planning departments, contact from consultants hired by a NSU, or if the District has experienced problems with a NSU.

- **a)** An annual survey of the existing NSU's in the District service area should be performed at the beginning of the year to track NSU's that are existing, moved, changed the type of business/product, went out of business, or are new. The Industrial Monitoring Department (IMD) can perform this as a group.
- **b)** Based on the information accumulated as a group, a "potential SIU list" is created from the NSU's. The listed NSU's may be SIU's or NSU's that need to be monitored more in depth.
- **c)** The monitoring of the NSU's on the "potential SIU list" may involve:
  - **1)** A yearly inspection, or less often depending on the NSU.
  - **2)** Giving the NSU a questionnaire to be completed with in 30 days.
  - **3)** Sampling. A sampling manhole may need to be installed.
  - **4)** A meeting if more information is needed, such as, in determining if the NSU may be an SIU or a CIU.
  - **5)** If the NSU is new or under construction, initial contact may be performed by an inspection of the construction site and a call to the new NSU, their consultant, or contractor. Obtain information on the type of business or activities planned for the site, including any planned pretreatment.

(This page intentionally left blank for double-sided printing.)

APPENDIX F:

Categorical Industrial User
Sample Industrial Wastewater Discharge Permit
(PKI, Inc.)

(This page intentionally left blank for double-sided printing.)

SANITATION DISTRICT NO. 1

June 6, 2007

91 7108 2133 3933 3536 5238

CERTIFIED MAIL

Mr. Jeff Cox
President
PKI, Inc. dba Powder Kote Industries
1104 Lowell St.
Newport, KY 41071

Re: Industrial Discharge Permit 086-07

Dear Mr. Cox:

Attached is your three year Industrial Wastewater Discharge Permit that will take effect on July 1, 2007. Sanitation District No. 1 (District) must be notified in advance of any changes to your facility that would affect the conditions of this permit.

The permit has changed and should be reviewed thoroughly in order for PKI, Inc. dba Powder Kote Industries to be in compliance at all times during the term of the permit with applicable Federal EPA, Kentucky Environmental and Public Protection Cabinet and Sanitation District No. 1 Rules & Regulations. If your facility wishes to appeal or challenge any conditions of this permit you must respond, in writing, within 30 days of receipt of this permit.

A copy of the District's Rules & Regulations can be found on the District's website at www.SD1.org. If you have any questions regarding this permit, please contact our Industrial Monitoring Department at 859-331-6674 ext. 3105 or 3111.

Best regards,

Jeffery A. Eger
General Manager

JAE/jc
Enclosure
Cc: Industrial Monitoring Department

3045 Eaton Drive • Ft. Wright, Kentucky 41017-9681 • Ph: (859) 578-7450 • Fax: (859) 331-2436

© 1994 CYDES 34635
All Rights Reserved

SANITATION DISTRICT NO. 1
INDUSTRIAL WASTEWATER DISCHARGE PERMIT

Permit #: **086-07** Effective Date: **July 1, 2007**

Annual Fee: **$288** Expiration Date: **July 1, 2010**

In accordance with all of the terms and conditions of the Rules and Regulations of the Sanitation District No. 1 and any applicable provisions of Federal and/or State law or regulation, permission is hereby granted to: **PKI, Inc. dba Powder Kote Industries** to discharge* non-domestic wastewater to the sewer system from a facility located at **1104 Lowell St., Newport, KY 41071** and discharging at: **Manhole # 124-84**. This permit is granted in accordance with the "Industrial Waste Questionnaire/Permit Application" filed on **May 14, 2007** and in conformity with plans, specifications and other data submitted, all of which are filed with and considered as part of this permit.

General Manager

PERMIT MAY BE REVOKED IF:

(a) Fees are not paid within thirty (30) days of issue
(b) Nature of sewer discharge changes
(c) Transferred without approval
(d) State, Federal and/or Sanitation District Rules & Regulations change
(e) False information or data is given or if the attached conditions and/or requirements are not adhered to

LITHO. IN U.S.A.

FEDERAL PRETREATMENT DISCHARGE STANDARDS

Applicable Federal Pretreatment Program Standards are 40 CFR Part 433, Metal Finishing Point Source Category. Applicable discharge limits are listed in 40 CFR Part 433.17. **These standards are not applicable if there are no discharges from the regulated process(es).**

There shall be **NO DISCHARGES** from the processes regulated by the above standards. See Special Conditions on page 5 of this permit.

All non-domestic discharges into the sanitary sewer system are subject to the Prohibited Discharge Standards 40 CFR Part 403.5 and to the Sanitation District's Rules & Regulations.

WASTEWATER DISCHARGE STANDARDS

If there are no discharges from the regulated processes then no monitoring of the flows from all processes regulated by the Categorical Pretreatment Standards are required and a record shall be kept of measured or estimated average and maximum daily flows for each reporting period.

All records of monitoring activities and results shall be retained for a minimum of 3 years and such records shall be available for inspection and copying as required in 40 CFR 403.12(o).

The District reserves the right to re-open the permit, to establish more stringent limitations or requirements on discharges to the wastewater sewer system or change any other permit condition, if deemed necessary.

Should the permit expire, the permit and permit conditions shall remain in effect until a new permit is issued, unless the District has revoked the permit or determined the permit should expire.

MONITORING REQUIRMENTS

This facility shall not discharge wastewater in concentrations that exceed the values of the Local Limits listed in the current Rules & Regulations for the following pollutant parameters:

Parameter	Daily Max	Monthly Avg.	Sampling Frequency	Sample Type
Arsenic, total (mg/L)	2.7	NA	Upon Request	COMP
Barium, total (mg/L)	100	NA	Upon Request	COMP
Bio-chemical Oxygen Demand (mg/L)	> 240 Surcharge	NA	Upon Request	COMP
Cadmium, total (mg/L)	1.3	NA	Upon Request	COMP
Chromium, total (mg/L)	6	NA	Upon Request	COMP
Copper, total (mg/L)	5	NA	Upon Request	COMP
Cyanide, Amenable (mg/L)	2	NA	Upon Request	GRAB
Cyanide, total (mg/L)	3.5	NA	Upon Request	GRAB
Lead, total (mg/L)	2	NA	Upon Request	COMP
Mercury, total (mg/L)	0.0005	NA	Upon Request	COMP
Nickel, total (mg/L)	5	NA	Upon Request	COMP
Oil & Grease, Hydrocarbons (mg/L)	50	NA	Upon Request	GRAB
Oil & Grease, Total (mg/L)	*	NA	Upon Request	GRAB
pH (su)	6.0-10.0	NA	Upon Request	GRAB
Phenols (mg/L)	31	NA	Upon Request	GRAB
Selenium, total (mg/L)	2.4	NA	Upon Request	COMP
Silver, total (mg/L)	1	NA	Upon Request	COMP
Temperature (C)	65	NA	Upon Request	GRAB
Total Kjeldahl Nitrogen (mg/L)	> 30 Surcharge	NA	Upon Request	COMP
Total Suspended Solids (mg/L)	> 300 Surcharge	NA	Upon Request	COMP
Zinc, total (mg/L)	3.5	NA	Upon Request	COMP

* See Sanitation District No. 1 Rules & Regulations Section 501-2A-3.

SAMPLING LOCATION & COLLECTION PROCEDURE

If sampling is performed, samples shall be taken from the official sampling manhole using the collection procedures specified:

Time composite sampling:
Consists of a minimum of four grab samples taken over a 24-hour period, or operating period if less than 24 hours. The grab samples from the 24-hour period are to be combined to form a 24-hour time composite sample before analysis.

Flow proportional sampling:

1 Sampling representing the actual flow rate and volume of the wastewater discharges to the sewer in a 24-hour period. For example, having a wastewater flow meter operate the sampling frequency of the sampler.

2 In the case of batch wastewater discharges of several tanks at the same time, the combining of the grab samples from each tank must be in proportion to each tank volume discharged. For example, if tank 1 is twice as big as tank 2, then the combined sample must reflect this.

Grab samples must be taken when sampling for grease & oil, pH, phenols, temperature, and cyanides.

Sample containers must be EPA approved according to 40 CFR Part 136.

SAMPLE PRESERVATION AND ANALYSES

Grab samples must be preserved immediately. Composite samples must be kept iced during collection if ambient temperatures exceed 4° C, and preserved at end of sample collection period.

Appropriate chemical preservation as given at 40 CFR Part 136 must be provided when samples are collected, before samples are transferred to the laboratory for analysis.

Sample holding times for each parameter specified in 40 CFR Part 136 must be observed.

Sample analysis must be by EPA approved procedures, as given at 40 CFR Part 136.

SPECIAL CONDITIONS

In order to be exempt from the 433 Federal Regulation, this facility must not discharge from the E.P.A. regulated stage washer process and related processes to the sanitary sewer.

A Certification of Non-Discharge form must be signed and sent to the Sanitation District annually to remain in the non-discharging status.

The Certification of Non-Discharge form will be considered part of, and will coincide with the effective & expiration dates of the permit.

If your facility should want to discharge regulated production wastewater to the sanitary sewer in the future the Sanitation District No. 1 must be notified in writing, the proper paperwork must be filed and your facility must meet the limits stated in **40 CFR Part 433.17, Metal Finishing Point Source Category**. **This notification must be made at least 3 months prior to discharging.**

APPLICABLE CIVIL PENALTIES, CRIMINAL PENALTIES AND COMPLIANCE SCHEDULES

(Contained in the Sanitation District Rules & Regulations)

Violations of this permit are punishable by civil penalties of up to $5,000 per violation and by criminal penalties of up to $1,000 per violation or one year in prison or both. Violations of this permit may result in the development of a compliance schedule not to extend beyond the compliance date indicated by the applicable Federal Categorical Pretreatment Regulation [40 CFR 403.12(b)(7)].

REPORTING REQUIREMENTS

A. PERIODIC REPORTS ON CONTINUED COMPLIANCE [40 CFR 403.12(e)]

The Industrial User shall submit by the **20th** day of **January and July** a self-monitoring report corresponding to the reporting period, indicating the nature and **concentration** of pollutants in the effluent that are limited by the Categorical Pretreatment Standards. **No Periodic Reports are required due to no discharge from the EPA regulated processes.**

B. NOTICE OF SPILLS OR ACCIDENTAL DISCHARGES

Users shall notify the Sanitation District **immediately** by telephone (24 hour # 859-331-6674) of any discharges of wastes in violation of the District's Rules & Regulations to enable countermeasures to be taken by the District to minimize damage to the wastewater treatment system and/or receiving waters. The user shall identify the type chemical, volume of spill, location, time and date of occurrence and the countermeasures taken to control.

This notification shall be followed, within **five (5) calendar days** of occurrence, by a detailed written statement from the user describing the causes of the discharge and the measures being taken to prevent its future occurrence.

C. NOTICE OF SLUG LOADING [40 CFR 403.12(f)]

The Sanitation District must be notified at least 48 hours in advance of all batch discharges.

The District shall be notified **immediately** (859-331-6674) of all discharges that could cause problems to the District, including any slug loading. Slug loading is defined as any pollutant, including oxygen-demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration, which will cause interference with the District.

D. NOTICE OF CHANGED OPERATION

The user shall report to the District **90 days in advance** of any significant changes in operation, production and/or wastewater constituents and characteristics.

E. NOTICE OF CHANGED DISCHARGE

All industrial users shall **promptly** notify the Sanitation District in advance of any substantial change in the volume or character of pollutants in their discharge, including the listed or characteristic hazardous wastes for which the industrial user has submitted initial notification under 40 CFR 403.12(p).

F. All reports required by this permit shall be submitted to the following address:

Sanitation District No. 1
2999 Amsterdam Road
Villa Hills, Kentucky 41017

Attn: Industrial Monitoring Department

RECEIVED

MAY 14 2007

(QC)

SANITATION DISTRICT NO. 1
CERTIFICATION OF NON-DISCHARGE
FROM REGULATED PROCESS

This facility shall not discharge regulated categorical process wastewater to the sanitary sewer without the written authorization of the Sanitation District. Detection of any unauthorized process wastewater in the discharge will be a violation of this facility's Wastewater Discharge Permit and will result in enforcement action.

NON-DISCHARGE CERTIFICATION STATEMENT

I hereby certify that NO regulated process or rinse wastewater from the 3 stage washing process covered under 40 CFR Part 433, Metal Finishing Point Source Category will be discharged from this permitted facility to the sanitary sewer during the time period of the permit. I further certify that regulated process or rinse wastewater will not be discharged from this facility without prior approval from the Sanitation District. I will contact the Industrial Monitoring Department at (859)-331-6674 if a situation should arise necessitating process wastewater discharge.

SIGNATURE: _____
Authorized Company Representative

TITLE: President

COMPANY NAME: PRI, Inc.

DATE: 5/1/07

WASTEWATER DISCHARGE PERMIT NUMBER: _____

APPENDIX G:

Non-Categorical Industrial User
Sample Industrial Wastewater Discharge Permit
(McGinnis Inc.)

(This page intentionally left blank for double-sided printing.)

SANITATION DISTRICT NO. 1

91 7108 2133 3933 3512 6624

April 12, 2007

CERTIFIED MAIL

Mr. Russell E. Painter
Regulatory Affairs Manager
McGinnis, Inc.
P. O. Box 534
South Point, OH 45680

Re: Industrial Discharge Permit 062-07

Dear Mr. Painter:

Attached is your three year Industrial Wastewater Discharge Permit that will take effect on May 22, 2007. Sanitation District No. 1 (District) must be notified in advance of any changes to your facility that would affect the conditions of this permit.

The permit has changed and should be reviewed thoroughly in order for McGinnis, Inc. to be in compliance at all times during the term of the permit with applicable Federal EPA, Kentucky Environmental and Public Protection Cabinet and Sanitation District No. 1 Rules & Regulations. If your facility wishes to appeal or challenge any conditions of this permit you must respond, in writing, within 30 days of receipt of this permit.

A copy of the District's Rules & Regulations can be found on the District's website at www.SD1.org. If you have any questions regarding this permit, please contact our Industrial Monitoring Department at 859-331-6674 ext. 3105 or 3111.

Best regards,

Jeffery A. Eger
General Manager

JAE/jc
Enclosure
Cc: Industrial Monitoring Department

1045 Eaton Drive • Ft. Wright, Kentucky 41017-9681 • Ph: (859) 578-7450 • Fax: (859) 331-2436

SANITATION DISTRICT NO. 1
INDUSTRIAL WASTEWATER DISCHARGE PERMIT

Permit: # **062-07** Effective Date: **May 22, 2007**

Annual Fee: **$288** Expiration Date: **May 22, 2010**

In accordance with all of the terms and conditions of the Rules and Regulations of the Sanitation District No. 1 and any applicable provisions of Federal and/or State law or regulation, permission is hereby granted to: **McGinnis, Inc.** to discharge non-domestic wastewater to the sewer system from a facility located at **Foot of Adela St., Ludlow, Ky 41016** and discharging at: **Manhole # 171-2**. This permit is granted in accordance with the "Industrial Waste Questionnaire/Permit Application" filed on **March 5, 2007** and in conformity with plans, specifications and other data submitted, all of which are filed with and considered as part of this permit.

General Manager

PERMIT MAY BE REVOKED IF:

(a) Fees are not paid within thirty (30) days of issue
(b) Nature of sewer discharge changes
(c) Transferred without approval
(d) State, Federal and/or Sanitation District Rules & Regulations change
(e) False information or data is given or if the attached conditions and/or requirements are not adhered to

LITHO. IN U.S.A.
©1998 GREES 340/26
All Rights Reserved

DUTIES AND REQUIREMENTS

WASTEWATER TREATMENT SYSTEM SURCHARGE

Wastewater discharges are subject to a "Wastewater Treatment System (WTS) Surcharge" based on the discharge of sewage having a concentration greater than normal strength sewage, defined as follows:

Suspended Solids	300 mg/L
Biochemical Oxygen Demand	240 mg/L
Total Kjeldahl Nitrogen	30.0 mg/L

WASTEWATER DISCHARGE STANDARDS

All discharges into the wastewater treatment system are subject to the current Rules & Regulations of the Sanitation District and the Prohibited Discharge Standards of the General Pretreatment Regulations 40 CFR Part 403.5.

The District reserves the right to re-open the permit, to establish more stringent limitations or requirements on discharges to the wastewater sewer system or change any other permit condition, if deemed necessary.

Should the permit expire, the permit and permit conditions shall remain in effect until a new permit is issued, unless the District has revoked the permit or determined the permit should expire.

MONITORING REQUIRMENTS

McGinnis must sample for but not limited to BOD, Chlorides, TKN, and TSS for each batch prior to discharge to identify the nature and concentration of pollutants, in accordance with the 40 CFR 403 regulations. **The self-monitoring reports and analyses must be sent to the Sanitation District for review before a batch discharge will be allowed**. This report shall include the sampling time, date, location, method of sampling, methods of analysis, and the results of the analysis.

This facility shall not discharge wastewater in concentrations that exceed the values of the current Rules & Regulations for the following pollutant parameters:

Parameter	Daily Max	Monthly Avg.	Sampling Frequency	Sample Type
Arsenic, total (mg/L)	2.99	NA	Upon Request	COMP
Barium, total (mg/L)	100	NA	Upon Request	COMP
Bio-chemical Oxygen Demand (mg/L)	> 240 Surcharge	NA	Semi Annual	COMP
Cadmium, total (mg/L)	2.62	NA	Upon Request	COMP
Chlorides (mg/L)	**	NA	Upon Request	GRAB
Chromium, total (mg/L)	6	NA	Upon Request	COMP
Copper, total (mg/L)	5	NA	Upon Request	COMP
Cyanide, Amenable (mg/L)	2	NA	Upon Request	GRAB
Cyanide, total (mg/L)	4.3	NA	Upon Request	GRAB
Lead, total (mg/L)	2	NA	Upon Request	COMP
Mercury, total (mg/L)	0.0005	NA	Upon Request	COMP
Nickel, total (mg/L)	5	NA	Upon Request	COMP
Oil & Grease, Hydrocarbons (mg/L)	50	NA	Upon Request	GRAB
Oil & Grease, Total (mg/L)	*	NA	Upon Request	GRAB
pH (su)	6.0-10.0	NA	Continuous	GRAB
Phenols (mg/L)	0.5	NA	Upon Request	GRAB
Selenium, total (mg/L)	3	NA	Upon Request	COMP
Silver, total (mg/L)	1	NA	Upon Request	COMP
Total Kjeldahl Nitrogen (mg/L)	> 30 Surcharge	NA	Upon Request	COMP
Temperature (C)	65	NA	Upon Request	GRAB
Total Suspended Solids (mg/L)	> 300 Surcharge	NA	Semi Annual	COMP
Zinc, total (mg/L)	6	NA	Upon Request	COMP

* See Sanitation District No. 1 Rules & Regulations Section 501-2A-3.
** Informational purposes.

All records of monitoring activities and results shall be retained for a minimum of 3 years and such records shall be available for inspection and copying as required in 40 CFR 403.12(o).

SAMPLING LOCATION & COLLECTION PROCEDURE

Samples of the barge cleaning wastewater shall be taken from the cleaning water barge solids settling basin.

Grab samples must be taken for but not limited to: BOD, Chloride, pH, TKN and TSS.

Grab samples must be taken when sampling for grease & oil, pH, phenols, temperature, and cyanides.

Sample containers must be EPA approved according to 40 CFR Part 136.

SAMPLE PRESERVATION AND ANALYSES

Grab samples must be preserved immediately. Composite samples must be kept iced during collection if ambient temperatures exceed 4° C, and preserved at end of sample collection period.

Appropriate chemical preservation as given at 40 CFR Part 136 must be provided when samples are collected, before samples are transferred to the laboratory for analysis.

Sample holding times for each parameter specified in 40 CFR Part 136 must be observed.

Sample analysis must be by EPA approved procedures, as given at 40 CFR Part 136.

SPECIAL CONDITIONS

1) The District will only allow batch discharges of barge cleaning wastewater into manhole #171-2, upon approval.

2) The District will review sample results before allowing a batch discharge to ensure all Federal, State and Sanitation District No. 1 Rules & Regulations are followed.

3) A log must be kept for all barge cleanings showing the date of cleaning and commodity that was in the barge. Advanced notification is required when cleaning barges that haul commodities other than salt, fertilizer, grain or cement.

4) The District reserves the right to regulate the discharge rate.

5) The District reserves the right to halt any discharge

6) McGinnis Inc. is responsible for any costs and all complications caused by any discharge.

7) A water meter will be installed and maintained by McGinnis Inc. to measure barge-cleaning discharges. It is the responsibility of McGinnis Inc. to read and record the discharge meter readings on the special billing meter forms (SB-2) after each discharge and submit within three weeks to:

Sanitation District No. 1
2999 Amsterdam Rd.
Villa Hills, KY 41017

Attn: Industrial Monitoring Dept.

Wet Weather Conditions:

Due to your facility discharging into a combined sewer system you must control the discharge of process wastewater during wet weather events. Per your response letter dated June 12, 2003 on controlling discharges during wet weather, the Sanitation District will enforce your response and may ask that you hold all batch discharges until the wet weather event has ended.

The Sanitation District must be informed immediately of any changes made to your Wet Weather Discharge procedures.

APPLICABLE CIVIL PENALTIES, CRIMINAL PENALTIES AND COMPLIANCE SCHEDULES

(Contained in the Sanitation District Rules & Regulations)

Violations of this permit are punishable by civil penalties of up to $5,000 per violation and by criminal penalties of up to $1,000 per violation or one year in prison or both. Violations of this permit may result in the development of a compliance schedule not to extend beyond the compliance date indicated by the applicable Federal Categorical Pretreatment Regulation [40 CFR 403.12(b)(7)].

REPORTING REQUIREMENTS

A. PERIODIC REPORTS [40 CFR 403.12(h)]

The Industrial User shall submit, prior to each batch discharge, a report indicating the nature and concentration of pollutants in the barge cleaning wastewater. The discharge meter shall be read prior to and after every discharge and the readings shall be submitted to the Sanitation District No. 1 within three weeks.

B. NOTICE OF SPILLS OR ACCIDENTAL DISCHARGES

Users shall notify the Sanitation District **immediately** (24 hour #859-331-6674) of any slug loading or any other discharges of wastes in violation of the District's Rules & Regulations to enable countermeasures to be taken by the District to minimize damage to the wastewater treatment system and/or receiving waters. The user shall identify the type chemical, volume of spill, location, time and date of occurrence and the countermeasures taken to control.

This notification shall be followed, within **five (5) calendar days** of occurrence, by a detailed written statement from the user describing the causes of the discharge and the measures being taken to prevent its future occurrence.

C. NOTICE OF SLUG LOADING [40 CFR 403.12(F)]

The Sanitation District must be notified at least 48 hours in advance of all batch discharges.

The District shall be notified **immediately** (859-331-6674) of all discharges that could cause problems to the District, including any slug loading. Slug loading is defined as any pollutant, including oxygen-demanding pollutants (BOD, etc.) released in a discharge at a flow rate and/or pollutant concentration, which will cause interference with the District.

D. NOTICE OF CHANGED DISCHARGE

All industrial users shall **promptly** notify the Sanitation District in advance of any substantial change in the volume or character of pollutants in their discharge, including the listed or characteristic hazardous wastes for which the industrial user has submitted initial notification under 40 CFR 403.12(p).

E. NOTICE OF CHANGED OPERATION

The user shall report to the District **90 days in advance** of any significant changes in operation, production and/or wastewater constituents and characteristics.

F. All reports required by this permit shall be submitted to the following address:

Sanitation District No. 1
2999 Amsterdam Road
Villa Hills, Kentucky 41017

Attn: Industrial Monitoring Department

(This page intentionally left blank for double-sided printing.)

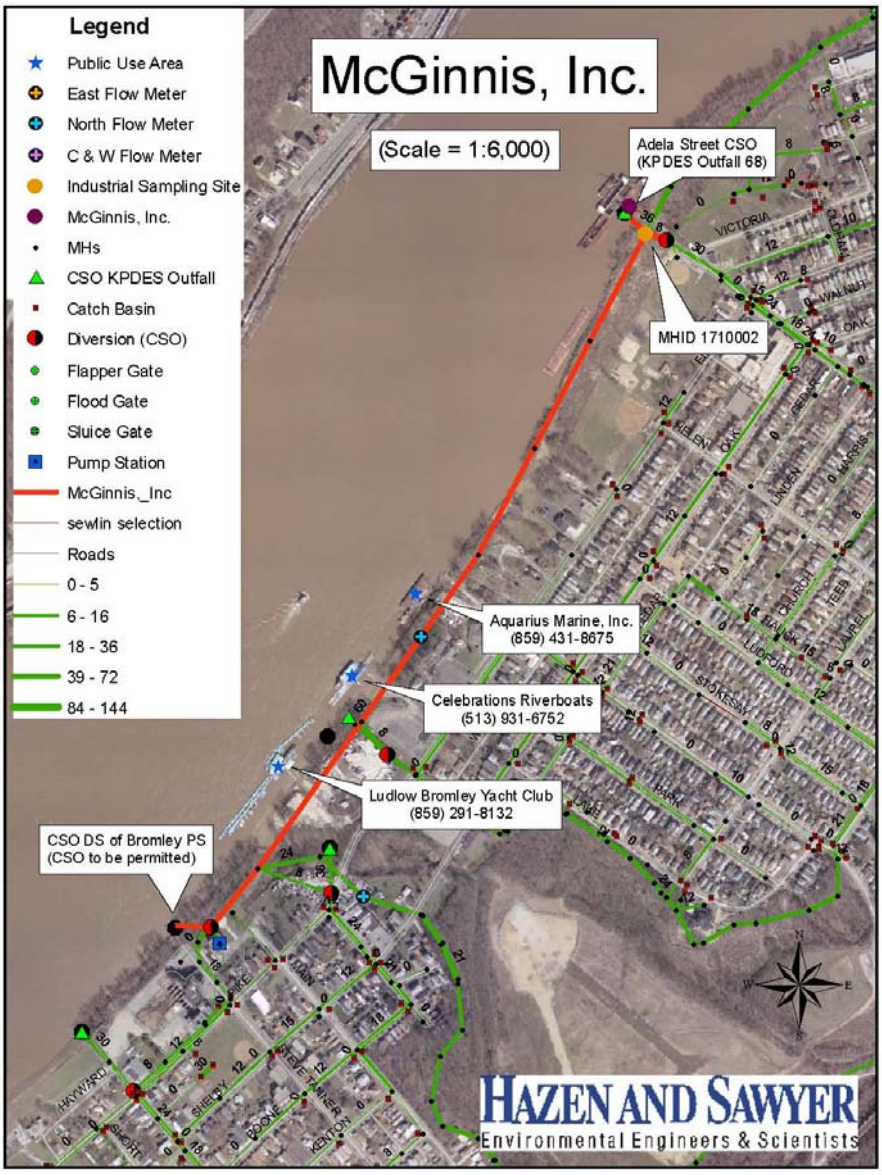
APPENDIX H:

Non-Categorical Industrial Users In the Combined Sewer Area

(This page intentionally left blank for double-sided printing.)

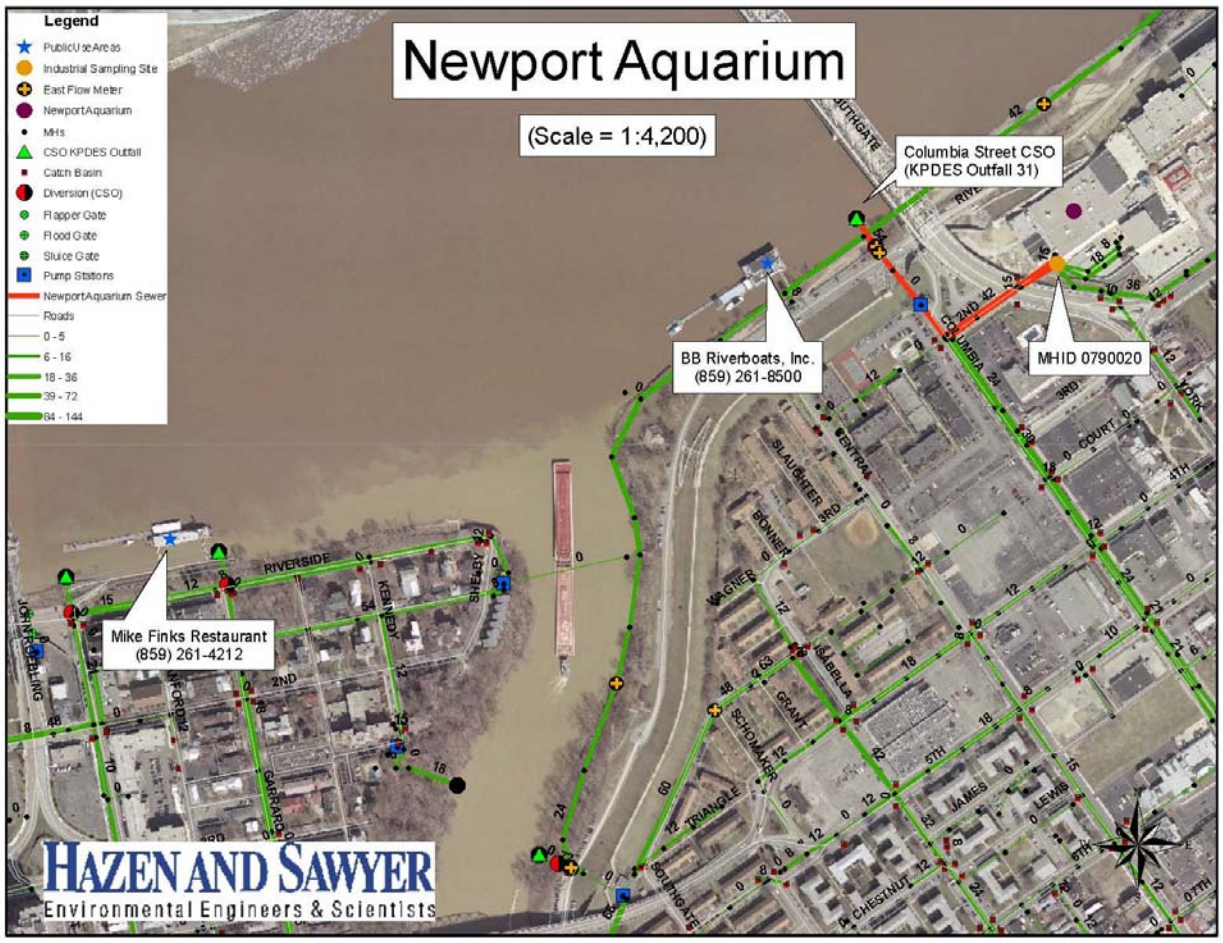
McGinnis, Inc.

- Use: Marine cargo handling
- Flow: Batch discharger (had one 54,000 gallon batch discharge in 2006)
- Location of Outfall Discharge: Ludlow, KY/Ohio River
- Waste Stream: Batch discharge
- Wet Weather Operating Plan: Permit prohibits discharge during wet weather
- Approved Spill & Slug Control Plan: Yes
- Recent NOV's: Non-reporting of barge replacement (2005)



Newport Aquarium

- Use: Educational/tourist facility
- Flow: 2,500 GPD
- Location of Outfall Discharge: Newport/Ohio River
- Waste Stream: Aquarium operations and cleaning
- Wet Weather Operating Plan: Will only discharge during a wet weather event to protect the animals/fish.
- Approved Spill & Slug Control Plan: Yes
- Recent NOV's: None



Louis Trauth Dairy

- Use: Manufacturer of dairy products (fluid, evaporated and frozen)
- Flow: 85,000 GPD
- Location of Outfall Discharge: Newport, KY/Licking River
- Waste Stream: Tank, process cleanings, area and milk tanker truck washdowns.
- Wet Weather Operating Plan: Can not contain discharge during wet weather event
- Approved Spill & Slug Control Plan: Yes
- Recent NOV's: Excessive pH levels (2005, 2006)



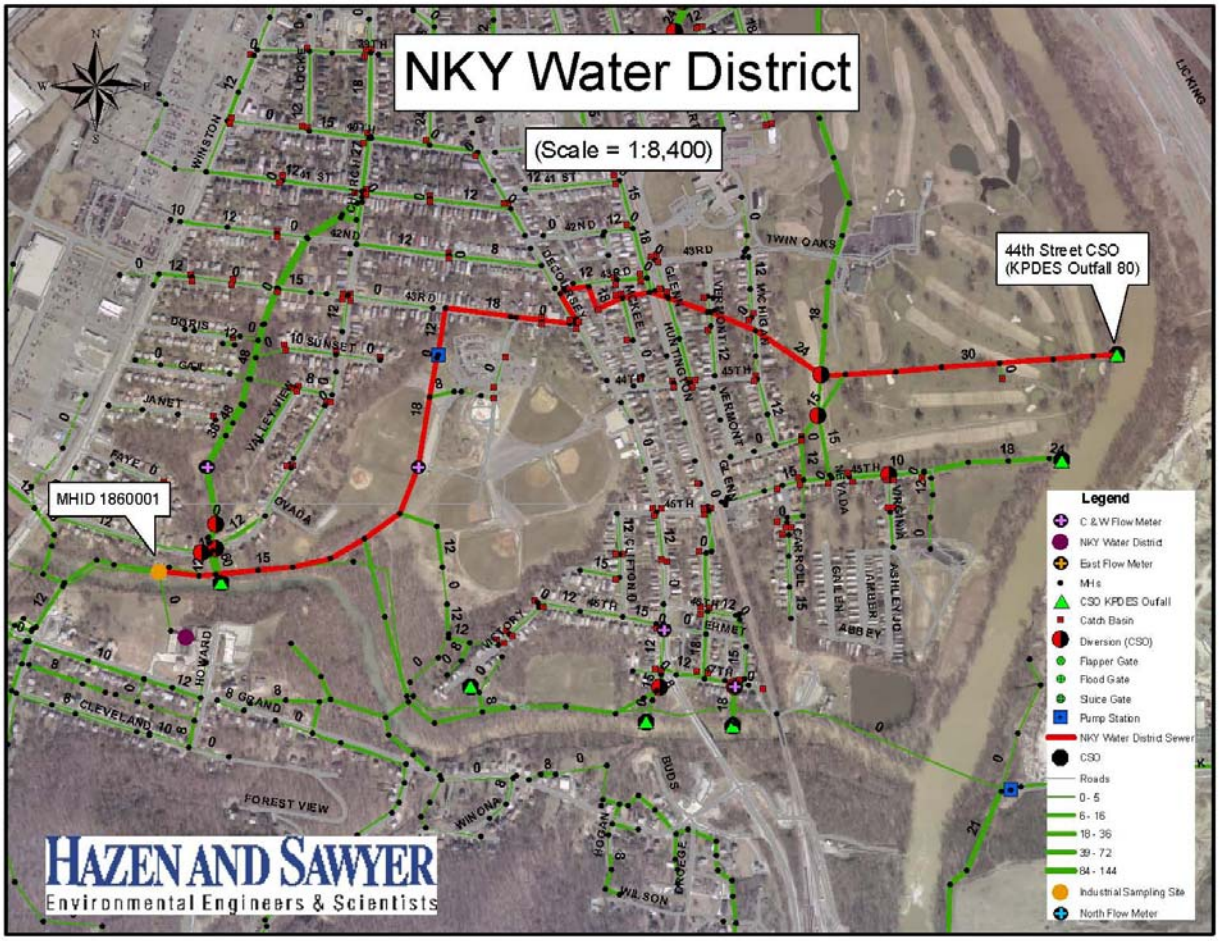
Imperial Sugar Company

- Use: Cane sugar refining
- Flow: 2,000 GPD
- Location of Outfall Discharge: Ludlow, KY/Ohio River
- Waste Stream: Tank cleaning, tanker truck cleaning, boiler blowdown and area washdown
- Wet Weather Operating Plan: Can not hold discharge
- Approved Spill & Slug Control Plan: Yes
- Recent NOV's: None



Northern Kentucky Water District

- Use: Potable water treatment plant
- Flow: 150,000 GPD
- Location of Outfall Discharge: Taylor Mill, KY/Licking River
- Waste Stream: Filter backwash and sludge decant
- Wet Weather Operating Plan: Can not hold discharge, would have to modify water treatment plant process.
- Approved Spill & Slug Control Plan: Yes
- Recent NOV's: Excessive copper levels (2006, 2007)



Duro Bag

- Use: Uncoated paper and multi-wall bags
- Flow: 8,900 GPD
- Location of Outfall Discharge: Covington, KY/Licking River
- Waste Stream: Paste making, ink pan wash-up, bucket wash-up and boiler blow down
- Wet Weather Operating Plan: Cannot discharge during wet weather.
- Approved Spill & Slug Control Plan: Yes
- Recent NOV's: None



APPENDIX I:

Sample Wet Weather Operating Permit (Imperial Sugar Company)

(This page intentionally left blank for double-sided printing.)

Imperial Sugar COMPANY

RECEIVED
JUL 20 2004
BY: JC

July 6, 2004

Mr. John R. Clark, Environmental Manager
Sanitation District No. 1
2999 Amsterdam Road
Villa Hills, KY 41017

Re: Control of Wet Weather Discharges to Combined Sewer System
Imperial Sugar Company, Ludlow Melt Station

Dear Mr. Clark:

As requested, Imperial Sugar Company has prepared this feasibility assessment of controlling the discharge of wastewater during or immediately after wet weather events at its Ludlow, KY Melt Station. We understand that this is required by EPA as a part of its CSO Management Program.

Introduction

Since 1983 Imperial Sugar Company's Ludlow, KY Melt Station has been located on leased property at 433 Davies Street. The property is owned by the Cincinnati, New Orleans and Texas Pacific Railway Company headquartered in Norfolk, VA. This two-acre facility consists of a loading/unloading bay for rail and trucks and a sugar processing building. Granulated sugar and molasses are raw products received via railcar and truck. These materials are melted and put into a water solution, and transported by tanker truck to customers making a variety of food grade products for consumer consumption. This relatively small facility employs three people and generally operates five days per week.

Wastewater Generation, Pretreatment and Storage

Wastewater generated at the facility is a combination of sanitary waste and process wastewater. Process wastewater is generated from tank cleanout, tanker truck cleanout, boiler blowdown and area washdown. Corporate Quality Assurance requirements for this food grade operation require strict cleaning and housekeeping standards be maintained. Product handling is designed to minimize losses during production. Wastewater volume is measured by water consumption adjusted for water shipped in the product. Based on metered billing records, the facility generates approximately 35,000 cubic feet of wastewater each quarter. This averages to approximately 4,000 gallons/day of process and sanitary flow for each day of operation.

Imperial Sugar COMPANY

The predominate constituents of the wastewater are sugar and water in a dilute form. As required by pretreatment regulations, process wastewater is collected in a 5000-gallon tank for batch pH neutralization prior to discharge to the city sewer. The tank is emptied periodically as it is filled and adjusted. There is no additional temporary storage capability on site.

Wet Weather Control Options

In the event of local wet weather, there is minimal opportunity to control wastewater discharges at the facility. Following an in-depth site evaluation, the following opportunities to minimize discharges during times of wet weather will be taken into consideration to the extent feasible:

- Wastewater is neither produced nor discharged over most weekends or on holidays when the facility is not operating. Therefore, there is no need for control during these periods.
- If wet weather is forecast, it may be possible to complete pH adjustment and discharge prior to the onset of rain. However, this ability is dependent on the timing of rain events and the timing of truck and railcar deliveries, which varies significantly and cannot be accurately predicted.
- If wet weather is occurring on Friday at the end of the workweek, discharges from the 5000-gallon holding tank may be postponed until the following Monday morning as long as deliveries and production is not adversely impacted.
- During wet weather conditions, the holding tank may be gravity drained at a slower rate so as to minimize the impact on the sewer system.

Summary

Following a site visit and detailed review of operations, it has been determined that it is not feasible to control wastewater discharges from Imperial Sugar's Ludlow Melt Station. However, the opportunities to minimize impacts detailed herein will be voluntarily implemented in order to assist the Sanitation District and EPA in reaching environmental protection goals and objectives.

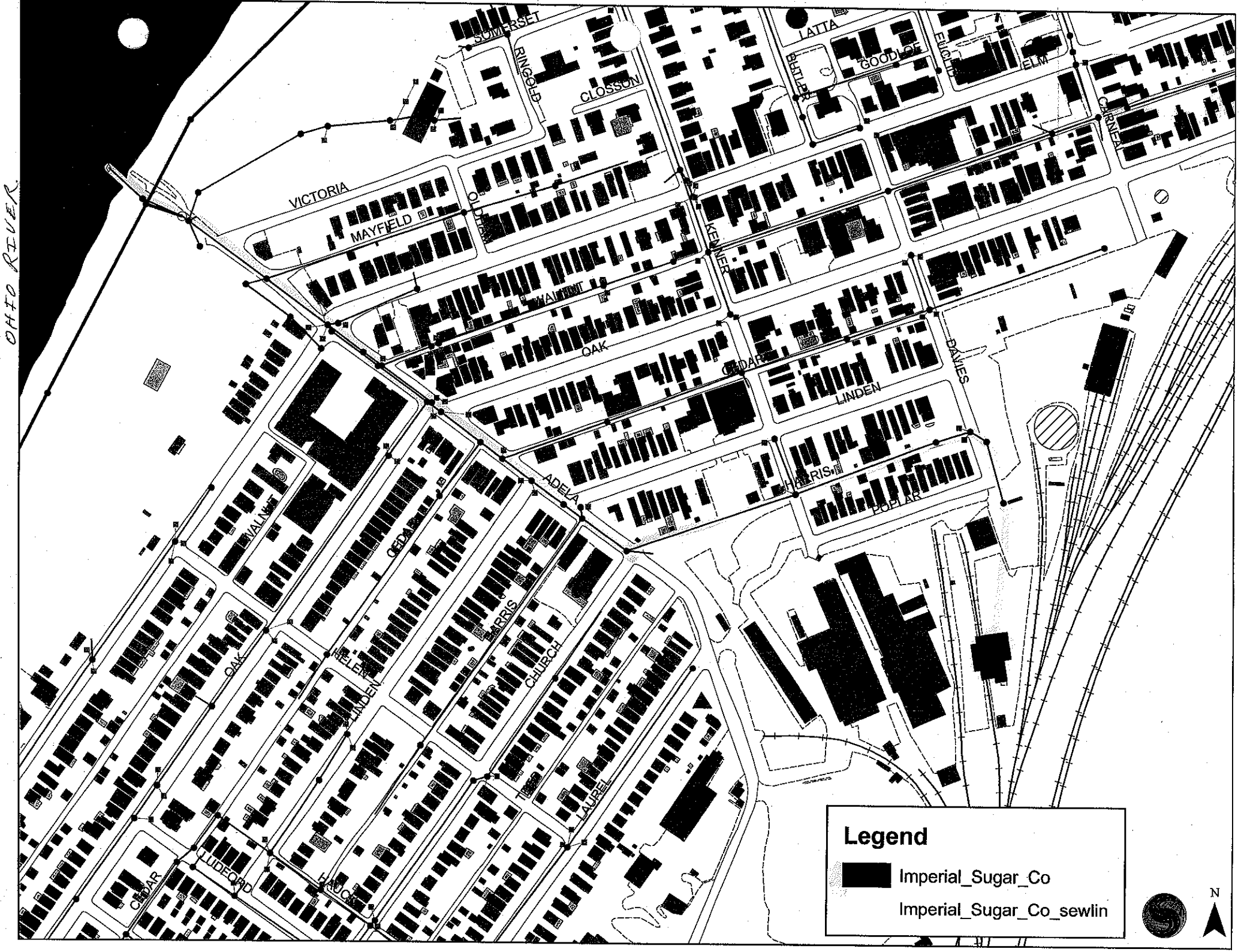
We appreciate the opportunity to participate in this evaluation and look forward to working together to improve and protect our community. If you have any questions, please contact Martha H. Martin, P.E. of our Corporate Environmental Department at 281-490-9527.

P.O. BOX 9 SUGAR LAND, TX 77487-0009 • 281-491-9181

Imperial Sugar
COMPANY

Sincerely,

Michael Kaminsky
Manager, Ludlow Melt Station


OHIO RIVER
SOMERSET
RINGOLD
CLOSSON
LATTA
BEITLER
GOODLOE
ELM
CHERRY
VICTORIA
MAYFIELD
DERBY
KEMPER
WALNUT
OAK
CEDAR
LINDEN
DAVIES
ADELA
HARRIS
POPLAR
CHURCH
LAUREL
LUDEWIG
FAUCK
Legend
Imperial_Sugar_Co
Imperial_Sugar_Co_sewlin
N

APPENDIX J:

Sample Spill Control Plan (Louis Trauth Dairy)

(This page intentionally left blank for double-sided printing.)

ENTERED INTO LINK 7/3/07 bsc
RECEIVED
JUN 05 2007
BY:

SPILL CONTROL PLAN

Prepared for:
Louis Trauth Dairy LLC
16 E. 11th Street
PO Box 1770
Newport, Kentucky 41071

Prepared by:
AWARE Environmental Inc.®
9305-J Monroe Road
Charlotte, North Carolina 28270-1490

AEI Project No. N248-34
AEI Document No. N24834r002

October 2002

TABLE OF CONTENTS

Section No.	Description	Page No.
	TABLE OF CONTENTS	i
	LIST OF TABLES	ii
1.0	INTRODUCTION	1
1.1	INTRODUCTION	1
1.2	COORDINATION WITH OTHER PLANS	1
2.0	EMERGENCY COORDINATOR	3
3.0	GENERAL SPILL RESPONSE PROCEDURE OUTLINE	4
4.0	SPECIFIC SPILL RESPONSE PROCEDURES	6
4.1	TANK TRUCK SPILL PROCEDURE	6
4.2	DRUM OR STORAGE TANK RUPTURE OR OVERFLOW SPILL PROCEDURE	6
4.3	RUPTURE OR LEAKING PIPE LINE/VALVE SPILL PROCEDURE	6
5.0	SPILL REPORTING	7
5.1	RESPONSIBILITY	7
5.2	OIL	7
5.3	HAZARDOUS SUBSTANCES	7
5.4	SPILLS TO WASTEWATER SYSTEM	8
6.0	CHEMICAL STORAGE INVENTORY AND SPILL POTENTIAL	11
6.1	OIL STORAGE	11
6.2	CHEMICAL STORAGE	11
7.0	INVENTORY OF WASTEWATER DISCHARGES	16
8.0	RESPONSE EQUIPMENT AND MATERIALS	17
9.0	FORMS	18

LIST OF TABLES

Table No.	Description	Page No.
3-1	General Spill Response Procedure Outline	5
5-1	Notifications	9
5-2	Spill Reportable Quantities	10
6-1	Oil Storage Inventory	14
6-2	Chemical Storage Inventory	15

LIST OF FIGURES

Figure No.	Description	Page No.
1	Site Location Plan	2
2	Site Map – Dairy Plant	12
3	Site Map – Garage Area	13

SECTION 1.0
INTRODUCTION

1.1 INTRODUCTION

Louis Trauth Diary is a producer of fluid milk, ice cream, cottage cheese, sour cream, buttermilk, bottled water, fruit juices and fruit drinks located at 16 E. 11th Street, Newport, Kentucky. Additional operations at the plant include truck maintenance and fueling operations. Figure 1 is a location map of the facility.

The purpose of this plan is to provide needed information to respond to a spill or release of oil, hazardous substance or slug load to the storm drain, sewer system, or environment.

In the event of any circumstances causing release of oil, chemicals or ammonia which may threaten human life or the environment, the first person to witness the release shall **report the spill to their supervisor**. Section 4.0 contains reporting phone numbers and reportable quantities.

1.2 COORDINATION WITH OTHER PLANS

This Spill Control Plan has been prepared to address accidental discharges and slug discharges to the sewer system and is included as part of the Plant Contingency Plan.

An SPCC Plan (Spill Prevention, Control and Countermeasure Plan) has been developed in compliance with 40 CFR 112 of the Federal Regulations, and addresses prevention and response of oil spillage. Spill Response actions are included here.

A Process Safety Management Plan and Risk Management Plan has been developed for prevention and response of ammonia releases.



© 1998 DeLorme. Street Atlas USA

Mag 16.00
Mon Jan 28 10:36 2002
Scale 1:10,937 (at center)
1000 Feet
200 Meters

- Local Road
- Major Connector
- State Route
- Interstate/Limited Access
- US Highway
- Exit
- Railroad
- Point of Interest
- Small Town
- County Boundary
- State Boundary
- Water
- River/Canal

GENERAL LOCATION PLAN
LOUIS TRAUTH DAIRY, LLC
NEWPORT, KENTUCKY

AEI PROJECT No. N248-34

FIGURE 1

SECTION 2.0
EMERGENCY COORDINATOR

The Emergency Coordinator/Incident Commander shall:

1. Report the emergency;
2. Direct control of and containment of the emergency;
3. Thoroughly investigate and invoke corrective action;
4. Collect, treat, and store materials until proper disposal;
5. Restore emergency equipment after emergency; and
6. Inventory emergency equipment and replenish to original status.

Primary: **Kevin Trauth, Assistant Plant Manager**
Facility: **(859) 431-7553**
Home: **(859) 448-9765**

Secondary: **Bill Thomason, Plant Manager**
Office: **(859) 431-7553**
Home: **(859) 384-7017**

Ed Kremer, Milk Plant Manager/Backup Incident Commander
Office: **(859) 431-7553**
Home: **(859) 635-2225**

Bob Younger, Milk Plant Foreman/Backup Incident Commander
Office: **(859) 431-7553**
Home **(859) 371-4315**

SECTION 3.0
GENERAL SPILL RESPONSE PROCEDURE OUTLINE

It is the duty of the Emergency Coordinator to direct spill response efforts including the use and disposal of spill response materials. In his absence the Backup Incident Commander Emergency Coordinator shall direct spill response.

Spill response includes the minimum procedures outlined in Table 3-1.

TABLE 3-1
GENERAL SPILL RESPONSE PROCEDURE OUTLINE

A. **SAFETY** is of greatest importance. Know and utilize all safety procedures and protective equipment in accordance with MSDS sheets. Respond only in accordance with appropriate training level completed.

B. **STOP** the source of the spill if possible by turning off transfer pumps, closing valves, etc. following established safety procedures for the operation in progress.

C. **NOTIFY** the Spill Prevention and Emergency Response Coordinator IMMEDIATELY:

Coordinator	Office	Home
Mr. Kevin Trauth	(859) 431-7553	(859) 448-9765
Mr. Bill Thomason	(859) 431-7553	(859) 384-7017
Mr. Ed Kremer	(859) 431-7553	(859) 635-2225
Mr. Bob Younger	(859) 431-7553	(859) 371-4315

D. **EVACUATE** all personnel from the area who are not properly trained to respond.

E. **SHUT OFF IGNITION SOURCE** (motors, electrical circuits). Ventilate area if indoors.

F. **CONTAIN** the spill
1. Barricade from a safe distance and keep personnel out
2. Confine to smallest area possible
3. Small spills: soak up with sorbent materials
4. Large spills: construct dikes, utilize sorbents, booms, sand, dry soil, etc.
5. Refer to MSDS's
6. Use dry clean-up where possible
7. Cover or surround floor drains and trench drains with impermeable materials
8. Use proper safety procedures and protective equipment
9. Water spray or chemical foam may be used to keep explosive vapors to a minimum during clean-up operations.

G. **REPORT** the spill: The Emergency Response Coordinator shall report the spill to the appropriate agencies. (see Section 5.0)

H. **RECORD** the spill/leak on the "Record of Spills, Leaks, and Other Discharges" form.

I. **CLEAN** up the spill: Dispose of recovered oil, oil contaminated soil and spent spill response materials in accordance with local, state, and federal environmental statutes and regulations. Contaminated absorbent materials may be disposed of in an approved chemical waste landfill. Liquid waste should be turned over to a licensed disposal company for disposal.

SECTION 4.0
SPECIFIC SPILL RESPONSE PROCEDURES

4.1 TANK TRUCK SPILL PROCEDURE

a. Stop loading/unloading of truck;
b. Immediately close loading valve to stop flow of material;
c. Check material compatibility for incompatible materials in spill area (MSDS, Tables 6-1, 6-2) (acids and bases, acids and chlorine, chlorine and ammonia);
d. If safe, contain spillage within facility;
e. Block floor drains;
f. Collect all spillage possible and/or use absorbent materials;
g. Maintain surveillance of the area; and
h. Report spill.
i. Fill out "Record of Spill" form in Section 9.0.

4.2 DRUM OR STORAGE TANK RUPTURE OR OVERFLOW SPILL PROCEDURE

a. Stop pumps and close tank valves;
b. Secure all electrical supply to tank pumps, etc.;
c. Check material compatibility for incompatible materials in spill area (MSDS, Tables 6-1, 6-2) (acids and bases, acids and chlorine, chlorine and ammonia);
d. Empty tank to a safe level by transferring product to another tank and make the necessary repairs;
e. Recover product as feasible by pumping, then pump remaining into waste tanks/drums for disposal or reclamation;
f. Recover remaining product using absorbent materials; and
g. After careful consideration of all facts and the area has been secured and is safe, report spill.
h. Fill out "Record of Spill" form in Section 9.0.

4.3 RUPTURE OR LEAKING PIPE LINE/VALVE SPILL PROCEDURE

a. Secure pumps and close valves before and after the leak;
b. Check material compatibility for incompatible materials in spill area;
c. Make permanent repairs when they can be made safely; and
d. Report Spill.
e. Fill out "Record of Spill" form in Section 9.0.

SECTION 5.0
SPILL REPORTING

5.1 RESPONSIBILITY

It is the responsibility of Emergency Coordinator to notify the appropriate individuals and agencies as listed in Table 5-1.

5.2 OIL

EPA regulations on the discharge of oil are contained in 40 CFR 110. This regulation applies to discharges of oil prohibited under Section 311 (b)(3) of the Clean Water Act in quantities that may be harmful to the public health or welfare.

Harmful quantities are defined as discharges of oil that (1) violate water quality standards, or (2) cause a film or sheen upon or discoloration of the surface of the water or adjoining shorelines or cause a sludge emulsion to be deposited beneath the water surface or upon adjoining shorelines.

In the event of a discharge of oil from the facility, both the fire department and the State Fire Marshall's office should be contacted immediately.

In the event of a spill of 1,000 gallons or more of oil into the navigable waters of the U.S., or two (2) spills of greater than 42 gallons into the navigable waters of the U.S. within twelve (12) months, the facility shall submit a copy of the SPCC Plan and a spill report including the Record of Spills, Leaks and Other Discharges to the EPA Regional Administrator within 60 days as described in 40 CFR 112.4.

5.3 HAZARDOUS SUBSTANCES

Spills or releases of hazardous substances are subject to reporting requirements under state and federal regulations.

Reportable spills includes all releases during a 24-hour period of oil or hazardous substance in an amount equal to or in excess of Reportable Quantities (RQs) under Section 311 of the Clean Water Act, Section 102 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and extremely hazardous substances under Section 304 of the Superfund Amendments and Reauthorization Act, Title III (SARA Title III). These regulations are listed in Title 40 of the Code of Federal Regulations, Parts 110, 117, 302 and 355 respectively.

For the current chemicals stored at Trauth, Table 5-2 summarizes the reportable quantity for each chemical.

To determine whether a spill or discharge requires reporting:

1. Check the MSDS of the released material for any hazardous constituents.
2. Look for the hazardous constituents in the most recent versions of 40 CFR 100, 117, 302, and 355 to see if an RQ is listed;
3. If the hazardous constituent has an RQ, calculate the amount spilled (in lbs) based on the % composition and specific gravity values found on the MSDS.

These regulations (copies of which are attached as an Appendix) are subject to future amendments. Current RQ lists should be consulted for each spill in 40 CFR 110, 117, 302, and 355.

5.4 SPILLS TO WASTEWATER SYSTEM

All drains inside the facility drain to the wastewater treatment system.

In the event of any batch discharges (slug loadings) or spills to storm drains or outside floor drains that could upset the POTW including any slug loadings as defined by 40 CFR Section 403, Part 5(b), the Emergency Coordinator shall immediately contact the Sanitation District. The Emergency Coordinator will file a written report describing the cause of the discharge and future preventative measures to the City within five (5) days of the discharge. The Emergency Coordinator will also notify the District 48 hours in advance (859/331-6674), if there are any controlled slugs discharges that will enter or entered the sanitary sewer. The emergency coordinator shall identify the following:

1. Type of chemical;
2. Volume of spill;
3. Location;
4. Time of occurrence;
5. Date of occurrence; and
6. Countermeasure.

Possible slug loadings to the POTW include spillage of bulk quantities of oils, bulk chemical storage, ammonia/water solutions, and large quantities of milk or sugar, such as tank, silo or tanker spillage. All floor drains inside the facility drain to the wastewater treatment system, which will help disperse any slug loading due to the detention time of the pH neutralization tank.

TABLE 5-1

NOTIFICATIONS
Louis Trauth Dairies
Newport, Kentucky

Emergency Contact	Phone Number
Primary Plant Emergency Coordinator: Kevin Trauth	(859) 431-7553
Secondary Plant Emergency Coordinator Bill Thomason Ed Kremer Bob Younger	 (859) 431-7553 (859) 431-7553 (859) 431-7553
Release of Any Substance Above Reportable Quantity	
National Response Center	(800) 424-8802
Kentucky Emergency Response Commission	(502) 564-7815
Cabinet for Natural Resources & Environmental Protection	(502) 564-2380
Campbell County Emergency Management 24-Hour (Public Safety Dispatch)	(859) 635-3122
For Ammonia Releases or Oil/Diesel Fuel Spill: Fire Department State Fire Marshall	 911 (502) 564-3626
For oil spills for transformers: Duke Energy 24-hour Emergency Phone	(513) 651-4182
For spills to the sanitary sewer or storm drains including large milk and sugar spills (tanks, tankers or silos): 24-Hour Sanitation District #1	(859) 331-6674
For spill occurring during tank filling, contact supplier	

TABLE 5-2
Spill Reportable Quantities
Louis Trauth Dairy
Newport, KY

Product	Reportable Chemical	Percentage of Chemical in Product	CERCLA Reportable Quantity lbs	Reportable Spill Volume gallons
AC 30	Nitric Acid	23	1,000	425
	Sulfuric Acid	5	1,000	1,975
	Phosphoric Acid	8	5,000	6,172 (>7 drums)
AC 101	Sodium Hydroxide	43	1,000	184 (>3 drums)
Enforce	Potassium Hydroxide	10	1,000	972 (bulk tank)
Mandate	Phosphoric Acid	22.5	5,000	2,100
Matrix	Acetic Acid	25	5,000	2,231
Microbac II	Sodium Hydroxide	2	1,000	5,737
	Ethylene Glycol	3	5,000	19,124
Mikroklene-DF	Phosphoric Acid	6.5	5,000	8,503
Ultra	Potassium Hydroxide	13	1,000	713 (bulk tank)
Ultrasil 76	Nitric Acid	33.5	1,000	297 (>5 drums)
Winter Lube	Ethylene Glycol	52	5,000	1,067 (>19 drums)
XY 12	Sodium Hypochlorite	10.5	100	98 (>1 drum)
2171 General Cleaner*	Sodium Dodecylbenzenesulfonate	10	1,000	10,000*

* - Dry product, reportable spill listed in pounds.
Note: Chemicals based on year 2000 product use.

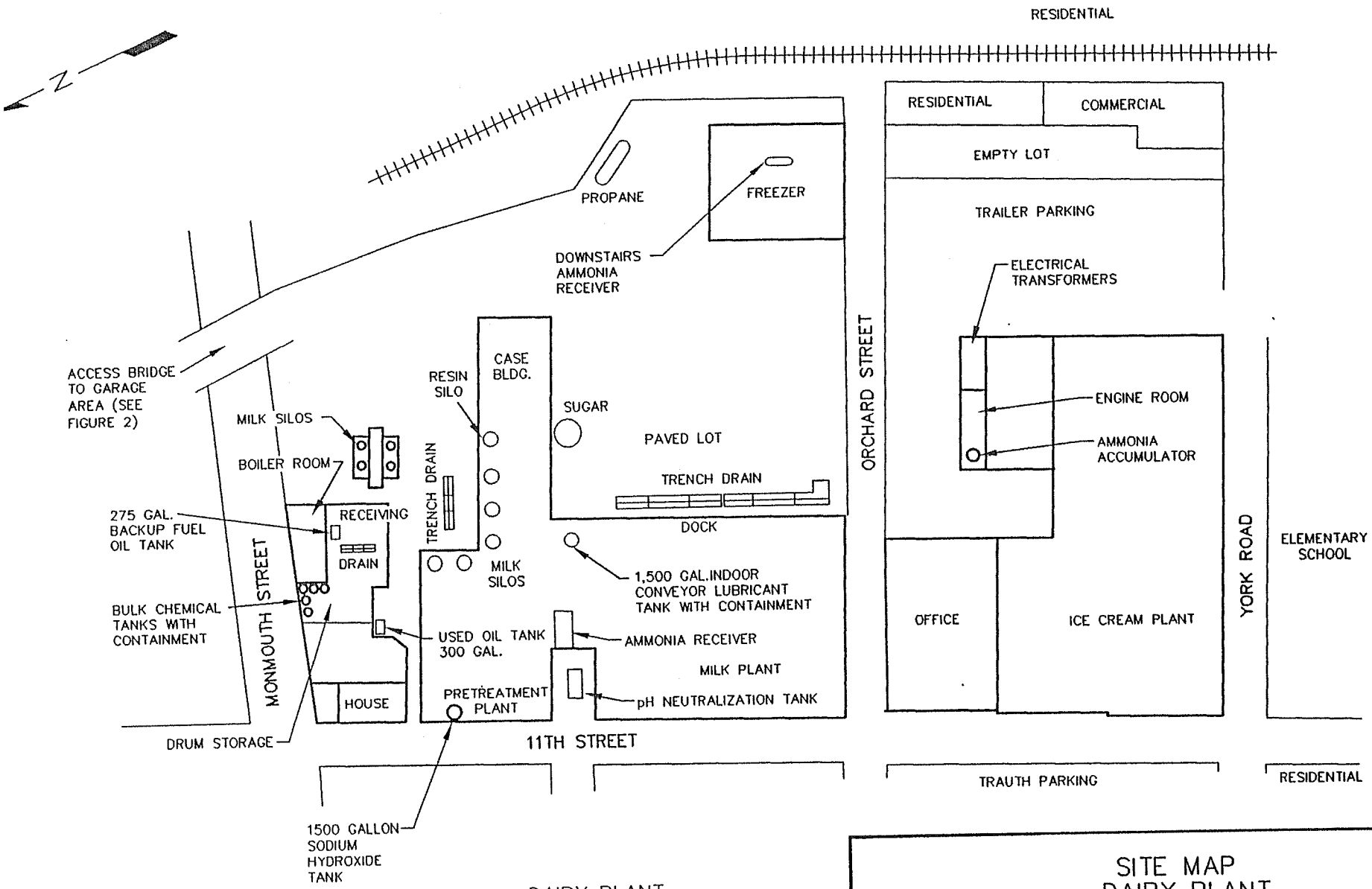
SECTION 6.0
CHEMICAL STORAGE INVENTORY AND SPILL POTENTIAL

6.1 OIL STORAGE

Table 6-1 provides a list of "oil" stored at the facility in tanks and drums including amounts, container description, predicted rate, location and direction of flow which would result from a discharge. "Oil" is defined as per 40 CFR 112.2(a) to include petroleum, fuel oil and waste oil and sludge. Specific "oil" storage areas, as identified in Table 6-1, are shown on the site maps for the Dairy Plant (Figure 2) and the Garage Area (Figure 3). Material Safety Data Sheets (MSDSs) for "oil" stored at the facility are maintained at the facility.

6.2 CHEMICAL STORAGE

Table 6-2 provides a list of "chemicals" stored at the facility in tanks and drums including amounts, container description, predicted rate, location and direction of flow which would result from a discharge. Chemicals stored at the facility include cleaners, sanitizers, ammonia refrigerant, solvents and paints. Specific "chemical" storage areas, as identified in Table 6-2, are shown on the Site Maps for the Dairy Plant (Figure 2) and the Garage Area (Figure 3). Material Safety Data Sheets (MSDSs) for "chemicals" stored at the facility are maintained at the facility.



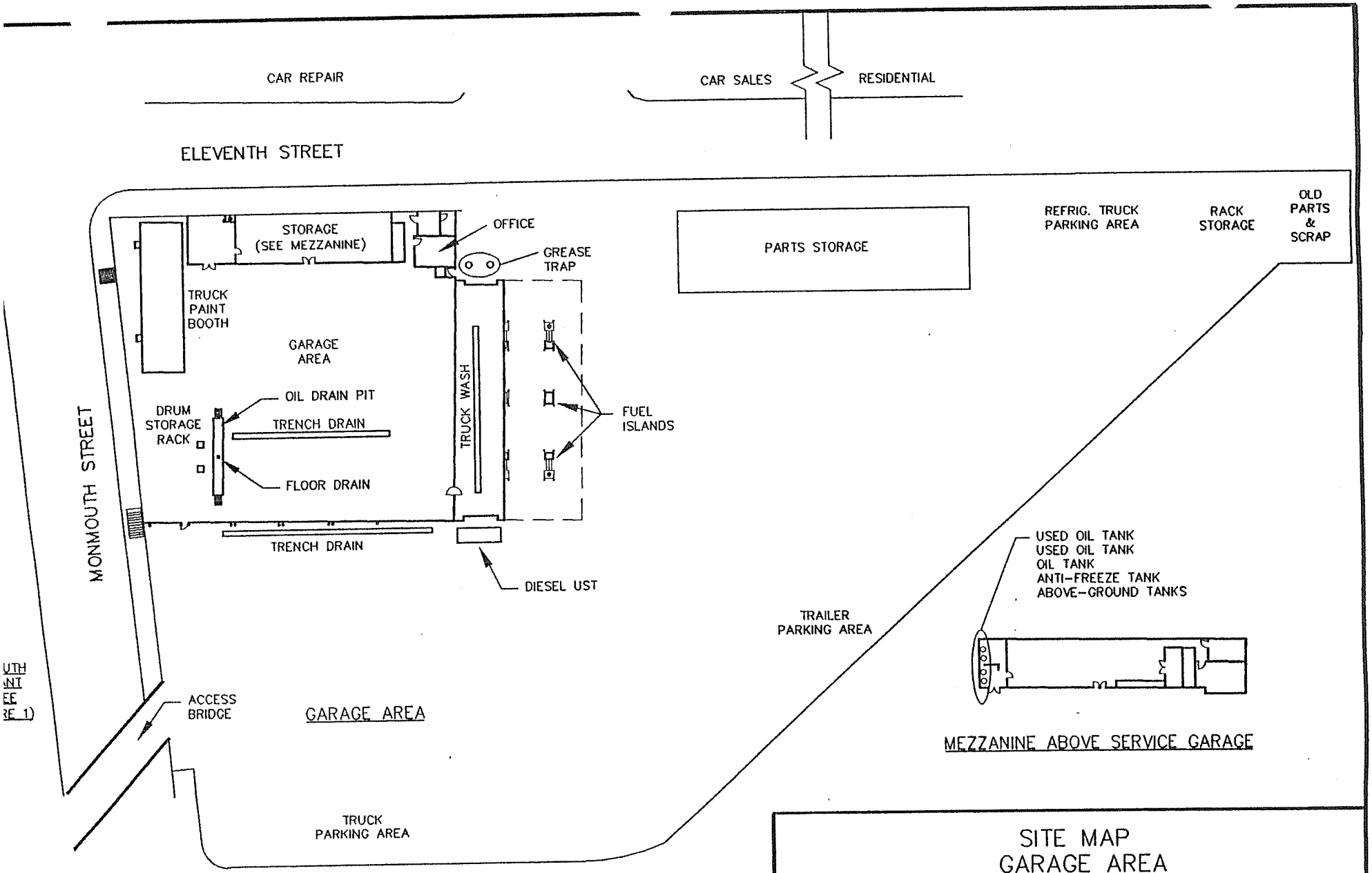
DAIRY PLANT

SITE MAP
DAIRY PLANT

LOUIS TRAUTH DAIRY
NEWPORT, KY

SCALE N.T.S.	APPROVED BY :	DRAWN BY: MRW
DATE FEBRUARY 2001	DESIGNED BY :	REVISED
PROJECT NUMBER N248-34	AWARE ENVIRONMENTAL INC. 9305-J MONROE RD. CHARLOTTE, NC 28270	DRAWING NO. FIGURE 2

April 03, 2002 2:15:02 p.m.
Drawing: 24834S02.DWG.DWG



NOTE:
ALL DRAINS IN AREA ROUTE THROUGH GREASE TRAP

SITE MAP
GARAGE AREA

LOUIS TRAUTH DAIRY
NEWPORT, KY

SCALE N.T.S.	APPROVED BY :	DRAWN BY: MRW
DATE FEBRUARY 2001	DESIGNED BY :	REVISED
PROJECT NUMBER N248-34	AWARE ENVIRONMENTAL INC. 9305-J MONROE RD. CHARLOTTE, NC 28270	DRAWING NO. FIGURE 3

April 03, 2002 2:15:54 p.m.
Drawing: 24834S02.DWG.DWG

TABLE 6-2
CHEMICAL STORAGE INVENTORY AND SPILL PREDICTION

Chemical	Description	Capacity (gallons)	Container		Secondary Containment		Spill Preventative/ Control Systems[2]	Potential Failures		Direction of Spill Flow
			Type	Material	Type	Discharge		Type [3]	Incompatible With	
Conveyor Lubricant (Mikron)	Milk Plant	1500	Above-ground	HDPE	HDPE Containment Tank	Manual	2° Containment Indoors, drains to waste treatment	Overflow Rupture Leak		To floor drain and waste treatment
AC101 - Base (Sodium Hydroxide)	Bulk Chemical Storage	1500	Above-ground tank	HDPE	HPDE Containment Tank	Manual	2° Containment Indoors	Overflow Leak	Acid (mandate, AC-30, sulfuric acid)	To floor drain and waste treatment
Ultra - Base Potassium Hydroxide Potassium Hypochlorite	Bulk Chemical Storage	1500	Above-ground vertical tank	HDPE	HDPE Containment Tank	Manual	2° Containment Indoors	Overflow Leak	Acid (ammonia mandate, AC-30, sulfuric acid, ultrasil)	To floor drain and waste treatment
Mandate LT - Acid Phosphoric Acid	Bulk Chemical Storage	1500	Above-ground vertical tank	HDPE	HDPE Containment Tank	Manual	2° Containment Indoors	Overflow Leak	Bases (AC-101, ultra, enforce)	To floor drain and waste treatment
AC-30 - Acid Sulfuric Acid, Nitric Acid, Phosphoric Acid	Bulk Chemical Storage	1500	Above-ground vertical tank	HDPE	HDPE Containment Tank	Manual	2° Containment Indoors	Overflow Leak	Acids, (ammonia mandate, AC-30, sulfuric acid, ultrasil)	To floor drain and waste treatment
Enforce - Base Potassium Hydroxide Potassium hypochlorite	Bulk Chemical Storage	800	Above-ground vertical tank	HDPE	HDPE Containment Tank	Manual	2° Containment Indoors	Overflow Leak	Acids, (ammonia mandate, AC-30, sulfuric acid, ultrasil)	To floor drain and waste treatment
Drum Storage	Bulk Chemical Storage	550 gal	Drums (approx. 10 drums)	Plastic	Indoors	--	Indoors	Leak		To floor drain and waste treatment
Thinners, Truck Paints	Service Garage	Max 55 gal	Drums	Plastic/Steel	Indoors	--	Grease trap Sorbent material	Leak		To pit/floor drain
Anti-Freeze (Ethylene Glycol)	Service Garage Mezzanine 1-drum in horizontal rack	500	Above-ground vertical tank	Carbon/Steel	Indoor Floor		Indoor, upstairs away from drains	Overflow Leak		To floor drains and grease trap

TABLE 6-1
OIL STORAGE INVENTORY AND SPILL PREDICTION

Oil Type[1]	Location	Capacity (gallons)	Container		Secondary Containment		Spill Preventative/ Control Systems[2]	Potential Failures	Direction of Spill Flow
			Type	Material	Type	Discharge		Type [3]	
Diesel Fuel	Truck Refueling	12000	Underground horizontal tank	FRP		--	Double Wall Overfill Protecting Monitor/Pressure System	Rupture Leak	Underground
Used oil (B)	Service Garage Mezzanine	500	Above-ground vertical tank	Carbon Steel	Indoor Floors	--	Indoor, upstairs away from drains	Overflow Leak	Indoors
Used Oil	Service Garage Mezzanine	500	Above-ground vertical tank	Carbon Steel	Indoor Floors	--	Indoor, upstairs away from drains	Overflow Leak	Indoors
Bulk Oil	Service Garage Mezzanine	500	Above-ground vertical tank	Carbon Steel	Indoor Floors	--	Indoor, upstairs away from drains	Overflow Leak	Indoors
Grease	Service Garage Mezzanine	55	Drum	Carbon Steel	Indoor Floors	--	Indoor, upstairs away from drains	Overflow Leak	Indoors
Oil Drums	Garage Floor	55	Horizontal Rack Drums	Carbon Steel	Indoor Floors	--	Grease trap	Leak	To floor drains and grease trap
Used Oil Drum	In Oil Change Pit	30	Drum	Steel	Pit	--	Grease trap	Overflow Leak	To floor drains and grease trap
New Oil Drums	Maintenance Shop	55	Drums	Carbon Steel	Indoor	--	Indoor, away from entrance or drains	Rupture Leak	Away from entrance within maint. shop
Fuel Oil	Receiving next to Boiler Room	275	Above-ground horizontal tank	Carbon steel	Indoors	--	Indoor Floor Drains to waste treatment	Rupture Leak	To floor drain and waste treatment
Used Oil	Next to Maintenance Shop	275	Above-ground horizontal tank	Carbon Steel	--	--	Overfill protection	Overflow Leak	To alley
Transformer	Next to Engine Room		Above-ground Transformer	Steel	Concrete containment with roof	Manual	2° Containment with roof	Leak	Toward Orchard St.

SECTION 7.0
INVENTORY OF WASTEWATER DISCHARGES

Wastewater discharges from the plant consist of automated CIP washdowns from tank and process cleanings, area washdowns and milk tanker washdowns at receiving. All high strength wastes (ice cream, mix, whey) from CIP washdowns are automatically directed to storage for resale for animal feed. All washwaters are discharged to the wastewater treatment system for neutralization prior to disposal. Tanker washdowns are also discharged to the treatment plant.

The principal wastewater discharge from the garage area consists of discharge from the truck washing facility. All floor drains and truck wash drains at the garage area are routed through a grease trap prior to discharge.

SECTION 8.0
RESPONSE EQUIPMENT AND MATERIALS

Oil dry is stored at garage for spillage. Emergency HazMat spill response equipment is maintained in the Maintenance Shop for emergency response of chemical spills or ammonia leaks. In addition to active spill response equipment, the plant has also installed and maintains passive spill response equipment, including secondary containment for all bulk chemical tanks, indoor storage for oil tanks, automatic leak detention at fueling systems, wastewater treatment system for bleed-in and neutralization of any process chemicals, and grease trap at oil handling areas for emergency oil spill capacity.

SECTION 9.0
FORMS

RECORD OF SPILLS, LEAKS, OR OTHER DISCHARGES

Louis Trauth Dairy
Newport, KY

Date and time of incident:_____
Weather conditions:_____
Type and estimated quantity of material released:_____
Destination of spill: (on-site, off-site, ditch, storm drain, wastewater sewer, ground, etc.)_____
_____
Is spill a reportable quantity?_____
Location of spill/leak:_____
Duration of spill/leak:_____
Cause (including failure analysis of failed system):_____
_____
Did spill/leak result in a release of material off property? Explain_____
_____
_____
Response procedures:_____
_____
_____
Measures taken to prevent reoccurrence (corrective actions and or countermeasures taken, include a description of equipment repairs/replacements):_____
_____
_____

PARTIES NOTIFIED (Required for Reportable Quantities)	YES	NOT REQUIRED	DATE AND TIME	NOTIFIED BY:
National Response Center (NRC) 1-800-424-8802				
Kentucky Emergency Response Commission 502-564-7815				
Cabinet for Natural Resources and Environmental Protection (502) 564-2380				
Campbell County Emergency Management (859) 635-3122				
Spills to Storm Drains or Sewer Pretreatment Coordinator - Sanitation District (859) 331-6674 **Gas Leaks, Uncontrolled Hazardous Materials** Fire Marshall: 502-564-3626 Fire Dept.: 911				

Recommended changes to SPCC/SC Plans:_____
_____
Reported by: _____Date:_____

APPENDIX K:

Spill Prevention Plan for Hazardous Waste

(This page intentionally left blank for double-sided printing.)

Sanitation District No.1
Spill Prevention Control and Countermeasures
Collection System and Drycreek Wastewater Treatment Plant
Notification Procedures Hazardous Materials

Internal/External All Facilities

(A) PURPOSE

To ensure the safety of all Sanitation District No.1 employees by providing information and training to identify the possible hazards for (employees) who perform work and they are aware of their responsibilities to know how to perform the work safely. Provide policies and procedures to establish safe work practices to protect employees, the general public, property and the environment. This will relate to all district operations and processes.

The purpose of this procedure is to ensure that all employees recognize hazardous and environmental conditions that they may encounter during normal and abnormal hours of operations in the course of employment. The following set of procedures was developed for the protection of employees, the public and the environment. This document addresses the methods and procedures by which Sanitation District No.1 develops and communicates potentially hazardous information and conditions that may have a detrimental affect. This document is intended to comply with the requirements of Federal and the State of Kentucky Statues in conjunction with all Federal, State, Local, and Sanitation District Policies, Procedures and Safety Requirements.

(B) RESPONSIBILITY

The Sanitation District No.1 Safety Department is responsible and accountable for the safety of all Sanitation District No.1 employees. This directly relates to safeguarding our employees, the environment, public property, and district equipment. The Sanitation District Safety Department working in conjunction with Department Managers shall have the responsibility to insure that the program is properly implemented.

a. Departmental Managers, Supervisors, Crew Leaders, and Designated Employees are in a leadership position. All employees of the District are responsible and accountable, according to their responsibilities for the administration and enforcement of this procedure. Willful violation of this procedure is a serious matter. The failure of an employee to comply with this standard will result in disciplinary action.

b. Under this program, all affected employees are to be informed of the contents of the Spill Prevention Control and Countermeasure and Notification Plan (SPCC). Each employees must have an understanding of policies and procedures and know the hazardous of working in or near roadways, vehicles, construction equipment, and safety-related work practices and procedures with measures to be taken to protect themselves, their co-workers and the general public from potential hazards.

c. All employees shall also be informed of the hazards associated with non-routine tasks. It is the responsibility of all employees of Sanitation District No.1 to understand and attend training in order to perform their duties per this procedure, regardless of position and/or classification.

(C) APPLICATION

Though proper notification with documentation of these established guidelines; the goal is to establish good communication and record-keeping internally-externally with immediate response-remediation coordinating with other agencies. This procedure applies to all areas of Sanitation District No.1 where any employee or the public may be exposed to a release of hazardous chemicals into the collection systems. This includes all transportation equipment, fixed facilities and properties; owned, maintained, controlled, or under the authority of Sanitation District No.1. It establishes uniform reporting-response criteria throughout the district.

(D) IDENTIFICATION AND REPORTING GUIDELINES COLLECTION SYSTEMS

A. If a report of a spill is received at the Main Office or the Dry Creek Wastewater Treatment Plant, OR ANY OTHER LOCATION, the person receiving the call will document the following information, using the Notification of Spill and Odor Complaint Form. (See attached form). The employees receiving the report of a spill will immediately notify the Lakeview Dispatcher, the Dry-Creek Wastewater Treatment Plant (DCWWTP) Control-room Operator, who will make contact with the Supervisor in Charge of Plant Operations, and the Industrial Monitoring Group and other agencies. All parties will verify spill information by a return call to the person or organization reporting the spill.

- Sanitation District No.1 Staff Member Receiving Call
- Name of person reporting the call
- Representing (Agency) or (Citizen)
- Telephone number of person calling
- Address of person calling
- Time of call: (AM-PM) (Date)
- Affected waterway if near report to: (Orsanco, KYDOW, EPA)
- Location of spill (City-County-State-Highway Road)
- Nearest street address
- Type of incident
- Name of type of material spilled
- Amount of material spilled
- Cause of spill/odor
- Spill occurred in Sanitary, Storm-water, or other system
- Date of spill
- Time of day spill
- Spill reported to
- Remarks

B. The Plant Supervisor, Industrial Monitoring Group, or any other employees in the case of an emergency will contact the Safety Department. They will then call the Collection Systems Field Supervisor where they will collectively determine what course of action is to be taken.

   a) If it is decided to allow the spill to be accepted at the Dry Creek Wastewater Treatment Plant (DCWWTP), the Plant Supervisor will notify all persons on the premises of the situation. They will be instructed to report any change in incoming flows or of any effects caused by the incoming substance (s). The plant will be operated in the usual manner exercising additional caution. All affected personnel will utilize all portable atmospheric monitoring equipment.

   b) If it is decided not to accept the spill at the Dry Creek Wastewater Treatment Plant, the Field Supervisor will take appropriate action to set up bypass procedures for the pump stations and/or sewer lines affected.

   c) The Plant and Field Supervisors will maintain contact with each other until the emergency has passed. The Field Supervisor will advise the local Fire and Police Departments, State Environmental Protection Agencies, Sanitation District Safety Department, and all other appropriate personnel that the contaminated wastewater is being bypassed and into what area so that they may take whatever action is needed.

C. The following procedure has been developed to control a spill that has reached the Dry Creek Wastewater Treatment Plant (DCWWTP) **without prior notification**.

   a) When any employee notices a strange substance by a physical means such as sight, smell, or bodily affects or by a mechanical means such as the alarms located inside of head-works, that employee will immediately notify the supervisor in charge of plant operations, and the industrial monitoring group.

   b) The Supervisor will immediately investigate, using our Industrial Scientific (ITX) Four-port (4) atmospheric monitoring analyzer or contact the Safety Department who provide a Photo Ionization Device (PID) to determine the level/type of contamination and the severity.

   c) If the Supervisor feels that the plant can accept the spill, he/she will take the same precautions as described in the previous procedures, Paragraph (III), Subparagraph (a).

   d) If the Supervisor feels that the plant and its employees are in danger, he/she will notify all persons on the premises of the situation. He/she will notify the Fire and Police Departments, Kentucky Environmental Protection Cabinet and all other appropriate organizations/personnel of the situation. He/she will initiate the shut down of plant processes and arrange to completely bypass the secondary system. Caution will be exercised throughout the entire plant. **Note**: If the situation is life threatening, the Supervisor will order the plant to be evacuated in accordance with the evacuation plan.

(E) Dry-Creek Wastewater Treatment Plant Notification Procedure (Other Facilities)

A. The Dry-Creek Wastewater Treatment Plant (DCWWTP) notification procedure was developed to protect employees, the public and the environment from the impact of a spill of hazardous materials that may be present in the plant process.

B. Spill Notification Contingency and Emergency-Response Action Plan

a) Notification of spills into the sewage system serving the Dry Creek Wastewater Treatment Plant (DCWWTP) will be immediately communicated to the supervisor in charge of plant treatment operations.

b) When a spill is detected at the DCWWTP immediately notify the Plant Supervisor, area employees, industrial monitoring group and the Safety Department.

c) Cordoned off the area if possible, and take precautions against explosion and/ or exposure.

d) The persons receiving the call shall refer to and follow the current District Spill Notification Procedure (See section (B).

e) Refer to the Dry-Creek Wastewater Treatment Plant Facility Incident Response Plan (FIRP) and follow the Evacuation Plans as outlined in (Section 2.1:)

f) Sanitation District No.1's Facility Incident Response Plan (FIRP), or know otherwise known as Integrated Response Plan (IRP) follows the format of the National Response Tea's Integrated Contingency Plan (ICP) it provides guidance in most situations.

g) This Integrated Response Plan (IRP) meets applicable federal, state, and local regulatory requirements for incident response planning and reporting by satisfying specific requirements of the following regulations:

- 40 CFR Part 265 Subpart C – Preparedness and Prevention and Subpart D- Contingency Plan and Emergency Procedures and 401 KAR 34:040 and 401 KAR 35:040
- 29 CFR Parts 1910.38 and 803 KAR 2:304-Employee Emergency Plans and Fire Prevention Plans, 1910.120 and 803 KAR 2:307-Hazardous Waste Operations and Emergency Response and 1910.1200 and 803 KAR 2:320-Hazard Communication
- 40 CFR Part 300, National Oil and Hazardous Substances Pollution Contingency Plan
- 40CFR Part 355, and KRS Chapter 39, Emergency Planning and Notification
- 49 CFR Part 172, subpart G- Emergency Response Information
- 40 CFR and 401 KAR Chapters 50-65 Clean Air Act
- 401 KAR 5:037 Groundwater Protection plan

C. If an emergency occurs, the following procedures are to be implemented: The person witnessing the incident shall follow the current district spill notification procedure. (See section (II) of this document), call the Main Control Room and give the following information:

- Type of emergency
- Location of emergency
- Injuries, if any
- Any other pertinent information

a) The person receiving the message shall follow the most recent directives as outlined in the Dry-Creek Wastewater Facility Incident Response Plan (FIRP), or know otherwise known as Integrated Response Plan (IRP) and follows the format.

b) The Plant Supervisor is responsible for seeing that the necessary actions are taken in accordance with contingency and emergency response planning using the Facility Incident Response Plan (FIRP) and Integrated Response Plan (IRP).

c) Evacuation of the facility shall be the responsibility of the area supervisor according to a posted evacuation plant.

d) When the emergency concludes, the area (Plant Supervision and/or Safety Department) shall determine that the area is clear and personnel can safely return to their positions for clean up and resumption of normal operations.

e) The process shall not be restarted until a thorough check of all equipment and supply lines has been made to determine that no safety or environmental hazards exists in the start-up operation.

f) Notification of Spill and Odor Complaint Form : See Attached

1. SANITATION DISTRICT NO.1 STAFF MEMBER RECEIVING CALL:
2. NAME OF PERSON CALLING:
3. REPRESENTING (AGENCY):
4. TELEPHONE # OF PERSON CALLING:
5. ADDRESS OF PERSON CALLING:
6. TIME OF CALL _____ A.M. _____ P.M. DATE OF CALL: (month) _____ (day) _____ (year) _____
7. AFFECTED WATERWAY:
8. LOCATION OF SPILL: TOWN/CITY _____ **COUNTY: _____ STATE: _____**
9. NEAREST STREET ADDRESS OR PUBLIC ROADWAY AND GENERAL DIRECTIONS (HIGHWAY OR RT. #, WHICH RAMP, ETC.)
10. TYPE OF INCIDENT: ( ) TRAFFIC ACCIDENT ( ) CUSTOMER COMPLAINT ( ) BYPASS ( ) EQUIPMENT FAILURE
( ) OTHER (IDENTIFY) _____
11. TYPE OF MATERIAL SPILLED: ( ) SEWAGE ( ) PETROLEUM ( ) HAZARDOUS MATERIAL ( ) OTHER (IDENTIFY) _____
12. AMOUNT OF MATERIAL: _____ LBS _____ GALS (INDICATE IF THIS IS AN ESTIMATE)
13. CAUSE OF SPILL OR ODOR?

14. SPILL OCCURRED: (check one)

( ) ON LAND NEAR CREEK ( ) ON ROADWAY ( ) DIRECTLY INTO RIVER ( ) OTHER (DESCRIBE) _____

( ) TO A STORM SEWER VIA A SEWER SYSTEM ( ) DIRECTLY INTO CREEK OR TRIBUTARY _____

15. DATE OF SPILL: (month) _____ (day) _____ (year) _____

16. TIME OF DAY SPILL: (began) _____ (stopped) _____

17. THE SPILL HAS BEEN REPORTED TO:

a. (Name) _____ (Agency) _____

b. (Name) _____ (Agency) _____

c. (Name) _____ (Agency) _____

d. (Name) _____ (Agency) _____

18. REMARKS / COMMENTS:

KENTUCKY NATURAL RESOURCES AND ENVIRONMENTAL MANAGEMENT: (502) 564-2741 U.S. EPA REGION IV (404) 562-8700

ORSANCO: (513) 231-7719 KENTUCKY DIVISION OF WATER: FRANKFORT: (502) 564-3410 FLORENCE OFFICE: (859) -292- 6411

(F) Sanitation District Spill Response Capabilities (Internal/External Response)

A. Response Spill Kit #1: Maintenance Hallway Dry Creek WWTP:

Note: This kit contains materials that: Chemically **bond** to any type of liquid petroleum substance,

- Chemically **repel** water and water based substances (including anti-freeze),
- Float on water regardless of the amount of oil absorbed,
- Serve as a dike when spill containment is required, Cannot be reused.
- The kit is designed to: Effectively collect 70 gallons of oil
- Optimally collect 110 gallons of oil
- Use this kit for oil spills when: a substantial amount must be collected
- The spilled oil will drain to a sewer system or into the ground

Spill Kit Inventory Items:

- Socks, Absorbent, 3”x 48”: 7
- Pads, Absorbent, 8”x 18”x 1”: 36
- Sheets, Absorbent, 17”x 19”x ¼”: 100
- Area Drain Cover, 3’x 3’ 1
- Small Tool Box:
- Disposal Bags: 10
- Gloves, Formed Neoprene: 1 pair
- Gloves, disposable: 10 pair
- Goggles: 1 pair

B. Response Spill Kit #2: Lakeview Pump Station Garage Field Technical Services

Note: This kit contains materials that: Chemically **bond** to any type of liquid petroleum substance,

- Chemically **repel** water and water based substances (including anti-freeze),
- Float on water regardless of the amount of oil absorbed,
- Serve as a dike when spill containment is required, Cannot be reused.
- The kit is designed to: Effectively collect 70 gallons of oil
- Optimally collect 110 gallons of oil
- Use this kit for oil spills when: a substantial amount must be collected
- The spilled oil will drain to a sewer system or into the ground

Spill Kit Inventory Items:

- Socks, Absorbent, 3”x 48”: 7
- Pads, Absorbent, 8”x 18”x 1”: 36
- Sheets, Absorbent, 17”x 19”x ¼”: 100
- Area Drain Cover, 3’x 3’ 1
- Small Tool Box:
- Disposal Bags: 10

- Gloves, Formed Neoprene: 1 pair
- Gloves, disposable: 10 pair

C. Response Spill Kit #3: North Utility Building Collection Systems

Note: This kit contains materials that: Chemically **bond** to any type of liquid petroleum substance,

- Chemically **repel** water and water based substances (including anti-freeze),
- Float on water regardless of the amount of oil absorbed,
- Serve as a dike when spill containment is required, Cannot be reused.
- The kit is designed to: Effectively collect 70 gallons of oil
- Optimally collect 110 gallons of oil
- Use this kit for oil spills when: a substantial amount must be collected
- The spilled oil will drain to a sewer system or into the ground

Spill Kit Inventory Items:

- Socks, Absorbent, 3”x 48”: 7
- Pads, Absorbent, 8”x 18”x 1”: 36
- Sheets, Absorbent, 17”x 19”x ¼”: 100
- Area Drain Cover, 3’x 3’ 1
- Small Tool Box:
- Disposal Bags: 10
- Gloves, Formed Neoprene: 1 pair
- Gloves, disposable: 10 pair

D. Response Spill Kit #4: Collection Systems Portable Overpack Drum:

Note: This kit contains materials that: Chemically **bond** to any type of liquid petroleum substance,

- Chemically **repel** water and water based substances (including anti-freeze),
- Float on water regardless of the amount of oil absorbed,
- Serve as a dike when spill containment is required, Cannot be reused.
- The kit is designed to: Effectively collect 70 gallons of oil
- Optimally collect 110 gallons of oil
- Use this kit for oil spills when: a substantial amount must be collected
- The spilled oil will drain to a sewer system or into the ground

Spill Kit Inventory Items:

- Socks, Absorbent, 3”x 48”: 7
- Pads, Absorbent, 8”x 18”x 1”: 36
- Sheets, Absorbent, 17”x 19”x ¼”: 100
- Area Drain Cover, 3’x 3’ 1
- Small Tool Box:
- Disposal Bags: 10

- Gloves, Formed Neoprene: 1 pair
- Gloves, disposable: 10 pair

(G) Spill Response Equipment Pump Station Back-up Generators

A. Spill control/collection equipment for emergency back-up generators diesel fuel storage tanks. Based on control/collection of 10% actual total contents of each tank; Tanks are 700 and 1,325 gallons each (70 and 133 gallons of recovery materials needed respectively); All items National Sorbents Brand "Maxx Select Adsorbent" We anticipate 80% actual effectiveness from adsorbent materials due to partially unused materials, etc.;

B. Guidelines and Inventory

- Use a combination of socks, sheets, and loose particulate for collection in immediate area;
- Use socks around the perimeter of each unit;
- Use sheets with thickest per sq. in. as surface area is limited;
- Make available a boom and floating pads in case of contamination of nearby creeks;
- Each unit to protect is nine by thirteen feet – (Estimated);
- 9' X 13' = 44' (lineal feet for each location);
- Socks available in 1', 4,' and 8' lengths;
- 3" X 96" (eight feet) Sock holds 2.5 gallons each (maximum);
- 3" X 1' foot holds 0.3 gallons (maximum);
- 44' X 0.3 gals = 13.2 gallons times 80% effective = 10.56 gallons actual;
- Five (5) -eight foot socks and one (1) –four foot sock = 44' needed for each location;
- Fifteen (15) -eight foot socks and three (3) –four foot socks total needed;

- 700-Gallon tank diesel
  - 10% of 700 gallon = 70 gal necessary for each 700 gallon storage tank;
  - Subtract 10.56 gal (socks-see above) from 70 = 59.44 gal additional;
  - 80% effective rate is 59.44 plus 20% = 71.33 gal rated adsorbent capacity necessary;
  - Two (2) SEL100, 17"x19"x3/8" sheets, 100/pkg.,
  - One (1) SEL2501, 25 lb loose particulate

- 1,325-Gallon tank diesel
  - 10% of 1,325 gallon = 132 gal necessary for each 1,325 gallon storage tank;
  - Subtract 10.56 gal from 132 = 121.44 gal additional;
  - 80% effective rate = 121.44 plus 20% = 145.73 gal rated adsorbent capacity necessary;
  - Four (4) SEL100, 17"x19"x3/8" sheets, 100/pkg.,
  - One (1) SEL2501, 25 lb loose particulate

- Mobile Immediate Response Units: 94 & 72:
  - Socks, Absorbent, 3"x 48": 7, Pads, Absorbent, 8"x 18"x 1": 20
  - Sheets, Absorbent, 17"x 19"x ¼": 15 Absorbent socks, pads,

C. Waterway Protection:

- Boom, SELB5, 5”x10”, 36/pkg.
- Pads, SEL1836, 8”x18”x1”, 4/pkg.
- Fifteen (15) -eight foot socks
- Three (3) –four foot socks
- Ten (10) SEL100, 17”x19”x3/8” sheets, 100/pkg.,
- Three (3) SEL2501, 25 lb loose particulate
- Boom, SELB5, 5”x10”, 4/pkgs.
- Pads, SEL1836, 8”x18”x1”, 36/pkgs.

D. Inventory Training Hazmat Entry Equipment: Dry-Creek Wastewater Treatment Plant

Hazmat Level “A” Suits	Hazmat Level “A” Boots	Hazmat Training Equipment
Manufacturer Kapler	Manufacturer Tingly	2 Level “A” suites: Large
1 Large	1Size 10	4-Level “B” suites: XX Large
2 X-Large	2 Size 11	2-Level “A” suites: X Large
4 XX- Large	2 Size 12	5-Level “B” suites: X Large
1 XXX- Large	1 Size 13	2 Level “A” suites XX Large

E. Miscellaneous Equipment

- 1 Emergency Response Guidebook
- 2 Rolls of Duct Tape
- 1 Level “A” suite test notebook
- 1 Roll of Paper Towels
- 1 Sheet of Black Plastic
- 8 Pairs of over-boot booties size X-Large
- 1 Box of sterile pads
- 1 Can Clorox disinfecting spray
- 1 Bottle of Isopropyl Alcohol 91%
- 6 ITX’s Industrial Scientific Atmospheric Monitors: Operations-Maintenance Departments
- 1 Industrial Scientific Cl2 capable located near the Laboratory/Industrial Monitoring at DCWWTP

F. Operator/Maintenance Training DCWWTP

- DCWWTP Operations/Maintenance Departments (24) Hour Operations Level Response
- DCWWTP Operations/Maintenance Departments (40) Hour Specialist Technician Level Response
- SD1ERT/GCHAZMAT Emergency Response Team (40) Hour Specialist Technician Level
- SD1ERT/GCHAZMAT (4) Incident Commanders



(H) Sanitation District Emergency Action Team (Call-Out Procedures)

In order to best prepare Sanitation District No.1's Emergency Response Team for emergency actions, the following document contains instructions on how to notify the team in the event of an emergency action. The team will become active in emergencies involving Hazardous Materials, Confined Space Rescue, and Excavation/Trench Rescue operations. The District is committed to the safety of its employees and the environment it supports the efforts and operations of the ERT as the best first response to an emergency involving District staff. While outside agencies will also be involved in emergency action involving our staff, the ERT will operate as a well-trained unit of rapid first response. For any emergency actions involving the response team, The District Safety Manager, Rod Bell, will be the initial point of contact. Should Rod not be available, please use the following notification procedures, with the following individuals as listed below. Followed in order:

Donnie Couch Incident Commander
George Bruns Assistant Incident Commander
Pat Diesman Safety Coordinator
Tom Wiechman Director of Human Resources

In the event of an emergency, you must contact the following people, in the order as listed. Inform them of the incident and they will give you further instructions on how to proceed. **DO NOT CONTACT INDIVIDUAL TEAM MEMBERS, UNTIL YOU ARE INSTRUCTED TO DO SO.** If you do not make contact with the first person, then proceed to the second, and so on.

Lakeview Dispatch Monday – Friday 7:30 AM - 4:00 PM (859) 578-7466		Drycreek Wastewater Treatment Plant Control Room After Hours 4:00 PM – 7:30 AM (859) 331-6674		After Hours
Emergency Action Team	Work	Home	DCWWTP 24 Hours	Cell
Rod Bell	578-7458	341-6893	331-3364	859-240-0252
Donnie Couch	578-7466	491-7771	331-3364	859-240-8522
George Bruns	578-7466	341-8784	331-3364	859-640-2834
Pat Diesman	578-7463	441-2580	331-3364	859-512-8360
Tom Wiechman	578-7454	586-5246	N/A	N/A

If, you are given instructions to page the Sanitation District Emergency Response Team, then do so, using the following the instructions as listed below:

In the event that you are to notify or page the Emergency Response Team, you must open GroupWise and send an Email to the group entitled, "ERT callout". In the subject line put ERT followed by the contact phone number, unless further instructed the contact number will be the number to either Lakeview Dispatch at the Main-Office or the Control Room locate at The Dry Creek Wastewater Treatment Plant. As team members call back, be sure to give them detailed instructions as to what they are supposed to do. During after hour notifications, All Emergency Response Team Members will report to the Lakeview Facility.

(I) Storm Water Pollution Prevention Plan: Reference District Storm Water Regulatory Background and Purpose

A. The United States Environmental Protection Agency (USEPA) developed the storm water regulatory program through the authority of the Clean Water Act (CWA) amendments of 1987, to reduce discharges of contaminated storm water associated with industrial facilities. The National Pollution Discharge Elimination System (NPDES) program is the means by which the USEPA regulates discharges of potentially contaminated wastewater and storm water into waters of the United States through the issuance of permits applicable to specific sources.

B. In accordance with the Kentucky Pollutant Discharge Elimination System (KPDES) Permit No. KYG200007, this document was prepared for Sanitation District No. 1 (District) located at 1045 Eaton Drive in Fort Wright, KY. The purpose of this plan is to identify potential pollutant sources in contact with storm water, identify spill prevention and response procedures, and implement best management practices (BMPs) to eliminate non-permitted, non-storm water discharges.

C. The District is committed to the prevention of pollutant discharges to the surface waters of Northern Kentucky and the environment, and maintains the highest standards of storm water pollution prevention through regular review, updating, and implementation of this Storm Water Pollution Prevention Plan (SWPPP) for its facilities.

(J) Best Management Practices General Information

A. Best Management Practices (BMPs) are the practices, procedures, policies, schedules of activities, structures or devices that are implemented to prevent or minimize pollutants coming in contact with precipitation, storm water runoff, or non-storm water flows. BMPs are also structures or devices that remove pollutants from storm water runoff before the runoff enters a storm water drainage system or surface water. This section describes BMPs for general facility-wide operations:

- Good Housekeeping Practices
- Preventative Maintenance
- Vehicle and Equipment Washing & Maintenance
- Proper Materials Handling and Storage
- Proper Waste Handling
- Storm Drain System Cleaning
- Landscaping and Lawn Care
- Public Service Park BMP Demonstration Site

B. Good Housekeeping: The District implements good housekeeping practices that include activities that are intended to maintain a clean site and keep equipment in good working order to prevent storm water quality problems from occurring. Daily clean up and inspections are the most effective means of achieving good housekeeping. For the most part, good housekeeping is a day-to-day activity that does not require a large expenditure of time or expense, and is implemented on an ongoing basis.

C. Preventative Maintenance: The District implements preventative maintenance BMPs that include regular inspections and maintenance intended to minimize storm water pollution by performing maintenance activities before problems arise. Equipment failures or equipment that functions poorly may result in the discharge of pollutants to the storm water drainage system. Therefore, to reduce the likelihood of breakdown or failure, major equipment has a preventative maintenance schedule for inspection, repair, or replacement of fluids (e.g., hydraulic, lubricating, cooling), greases, seals, hoses, pressure gauges, piping, etc. Paved areas and landscaping are not allowed to degrade to the point where they erode and contribute pollutants to runoff. Leaky roofs, broken doors, cracked pavement, berms, and other enclosure or structural defects that may impact the quality of storm water runoff are promptly repaired. Structural BMPs and storm drains within District facility boundaries are inspected and maintained regularly.

D. Vehicle and Equipment Washing/Vehicle and Equipment Maintenance: According to the U.S. Environmental Protection Agency (USEPA), automotive maintenance facilities are considered to be storm water “hot spots” where significant loads of hydrocarbons, trace metals, and other pollutants can be produced that can affect the quality of storm water runoff. Pollutants from maintaining and washing vehicles and equipment may include sediment, metals, toxic materials, oil, gasoline, sludge, etc. The District has properly designed and designated a wash area for vehicles and equipment.

E. Proper Materials Handling and Storage: Materials handling and storage BMPs relate to controlling the potential for leaks, spills, and losses of materials delivered, used, and stored at the District. Vehicles and equipment are stored inside. Material and chemical storage at the facility are covered and carefully protected minimizing the potentials for any storm water pollution.

F. Proper Waste Handling: Waste handling BMPs relate to properly controlling, collecting, storing and disposing of wastes that are generated at the District facility. All facility personnel are aware that disposing any waste (including wash waters) into a storm drain inlet or storm water conveyance (e.g., streets) is considered illegal dumping. Dumpsters and trash receptacles are covered at all times. Dumpsters are picked up twice per week. If materials must be store outdoors for a short period of time, waterproof tarps are used, checked periodically, and re-secured as needed.

G. Landscaping and Lawn Care: Research has indicated that nutrient runoff from lawns has the potential to cause eutrophication in streams, lakes, and estuaries (CWP 1999a, and Schueler, 1995a). Pesticide runoff can contribute pollutants that are toxic to both humans and aquatic organisms. Applying too much fertilizer and pesticides can significantly contribute to water quality problems. District employees are certified in proper application of pesticides and fertilizers.

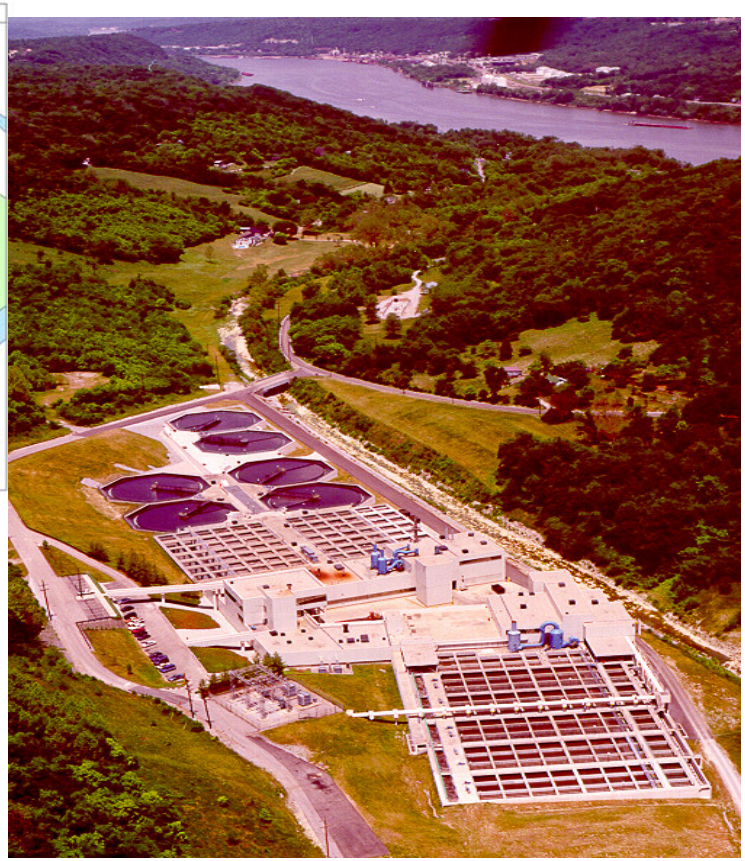
Lakeview Dispatch Primary Dispatch	**SD#1 Radio Frequency 800Mhz**	**Lakeview Dispatch**	**Hours of Operation 0730-1600**	**(859) 578-7466**
Dry Creek Waste Water Treatment Plant: Control Room Operator Secondary Dispatch	**SD#1 Radio Frequency 800Mhz**	**DCWWTP Dispatch (24Hr Operation)**	**Hour of Operation 1600-0730**	**(859) 331-6674**

Name		Pager(s)	NIMS Compliant	Phone Number
Rodney D. Bell HAZWOPER Specialist Tech Safety Manager	**WMD**	**Radio, Cell Phone, Telephone, E-Mail Paging System**	**100-700-200-800-300-400 Safety Dept**	**(859) 578-7458 Cell: (859) 240-0252**
Pat Diesman Specialist Tech Safety Coordinator	**HAZWOPER WMD**	**Radio, Cell Phone, Telephone, E-Mail Paging System**	**100-700-200-800. Safety Dept**	**(859) 578-7463 Cell: (859) 51-8360**
Donnie Couch Specialist Tech Incident Commander	**HAZWOPER**	**Radio, Cell Phone, Telephone, E-Mail Paging System**	**100-700-200-800. RegComp**	**(859) 578-6741 Cell: (859) 240-8522**
George Bruns Specialist Tech Assistant Incident Commander	**HAZWOPER**	**Radio, Cell Phone, Telephone, E-Mail Paging System**	**100-700-200-800. Eng Insptr**	**(859) 578-6747 Cell: (859) 640-2834**
Dennis Kindoll Specialist Tech Trench Entry Team Leader	**HAZWOPER**	**Radio, Cell Phone, Telephone, E-Mail Paging System**	**100-700-200-800. CS:Const**	**(859) 578-7466 Cell: (859) 991-2548**
Vern Wiley Specialist Tech HAZWOPER Team Leader PRCSE/TE Technician	**HAZWOPER**	**Radio, Cell Phone, Telephone, E-Mail Paging System**	**100-700-200-800. DCWWTP MTCE**	**(859) 331-6674**
Craig Massie Specialist Tech Training PRCSE/TE Technician	**HAZWOPER**	**Radio, Cell Phone, Telephone, E-Mail Paging System**	**100-700-200-800. CS: Srvcs**	**(859) 578-7466**

Karen Cain **Specialist Tech** **Logistics** **PRCS/TE Technician**	**HAZWOPER**	**Radio, Cell Phone, Telephone, E-Mail Paging System**	**100-700-200-800.** **CS: GBA**	**(859) 578-6883** **Cell: (859) 380-4835**
Donnie Roberts **Specialist Tech** **Confined Space Team Leader** **PRCS/TE Technician**	**HAZWOPER**	**Radio, Cell Phone, Telephone, E-Mail Paging System**	**100-700-200-800.** **CS: Srvs**	**(859) 578-7466** **Cell: (859) 240-6473**
Brian Berens **Specialist Tech** **PRCSE/TE Technician**	**HAZWOPER**	**Radio, Cell Phone, Telephone, E-Mail Paging System**	**100-700-200-800.** **DCWWTP: OPS**	**Home (days) (513) 528-0054 or 232-5567** **Work (shift worker) (859) 331-6674**
Scott Breeze **Specialist Tech** **PRCSE/TE Technician**	**HAZWOPER**	**Cell Phone Paging System**	**Ameritech**	**(859) 578-7466**
Elmer Young **Specialist Tech** **PRCSE/TE Technician**	**HAZWOPER**	**GCHAZ: (513) 530-3301** **(No SD1 Pager)**		**(859) 578-7466** **Cell: (859) 760-9542**
Chris Robinson **Specialist Tech** **PRCSE/TE Technician**	**HAZWOPER**	**(No SD1 Pager)**		**Home (days) (859) 448-0168** **Work (shift worker) (859) 331-6674**
Billy Branch **Specialist Tech** **PRCSE/TE Technician**	**HAZWOPER**	**(No SD1 Pager)**		**Cell: (859) 240-7060**
PRCSE/TE= (Permit Required Confined Space Entry Trench & Excavation Technician Level Training)				

I. Reference Information DCWWTP – Main-Office - Lakeview Pump Station





(This page intentionally left blank for double-sided printing.)

(K) Potential Pollution Sources

A. Material Inventory/Exposed Significant Materials: A number of materials are used or stored on-site. The table summarizes these materials and how they are received or stored with appropriate Material Safety Data Sheets/ Right to Know available. Each above ground storage tank is able to contain a leak. The underground heating tanks @ DCWWTP are exempt from the Underground Storage Tank requirements. The integrity of heating tanks and the contents are inspected as required and catholically protected.

Material Name	**Typical Quantity**	**Receiving & Shipping Location**	**Handling Location**	**Frequency**
Asphalt	½ ton	CS Garage	CSGarage	weekly
Brake fluid	1 g	Maintenance Garage DCWWTP	Maintenance Garage DCWWTP	once per year
Sodium Bisulfite	De-chlorination Building 2 Storage Tanks: 5,200g Total: 10,400g	DCWWTP	DCWWTP	weekly
Coolant	110 g aggregate	Maintenance Garage DCWWTP	Maintenance Garage	once per year
Diesel fuel AST's	2 (564g) Above Ground Storage Tanks & 1 (1,000g) Tank Total: 2,128 g	CS Garage DCWWTP	CSGarage DCWWTP	weekly
Gasoline	Each vehicle average (15g) unleaded fuel. (5g) gas can And (2g), 2-cycle fuel	CS Garage DCWWTP	CSGarage DCWWTP	weekly
Heating Fuel Exempt: UST's	3 (25,000g) Exempt Under Ground Storage Tanks	DCWWTP	DCWWTP	weekly
Diesel Fuel	Each vehicle average (25g) diesel fuel.	CS Garage DCWWTP	CSGarage DCWWTP	weekly
Hydraulic fluid	200 g aggregate	Maintenance Garage DCWWTP	Maintenance Garage DCWWTP	once per year
Lubricants	Small amounts	CS Garage DCWWTP	CSGarage	weekly
Sodium Hypochlorite	4 Storage Tanks Influent 6,000g 2 Storage Tanks Effluent 6,000g total 36,000g	DCWWTP	DCWWTP	weekly
Motor oil (new)	For vehicles 132 g 30 weight for small engines	Maintenance Garage DCWWTP	Maintenance Garage DCWWTP	once per year
Motor oil (old)	Total: 210 g 210 g 420 g	Maintenance Garage DCWWTP	Maintenance Garage DCWWTP	once per year

(L) General Incident Response Plan (IRP) Information

A. Purpose and Objective

a. This Facility Incident Response Plan (IRP) meets the Sanitation District No. 1 policy requiring each facility to have an on-site, facility-specific, comprehensive incident response plan which meets the objectives outlined below.

b. The purpose of this IRP is to provide clear and concise information to facility incident responders in the event of an emergency to minimize risk to personnel, the facility and the community. One-way to facilitate this is through the use of Rip and Run sheets. These sheets are provided in Section 2.0 - Core IRP Elements for each specific incident that may require a unique response.

c. An objective of this IRP is to reduce the potential for mistakes by condensing lengthy, technical information into an understandable, clearly organized format that an employee of any experience level can follow.

B. Response Manual

a. This IRP contains specific response actions, in separately tabbed sections, for incidents that involve, or could possibly result in injury to, the facility or off-site personnel and/or damage to the facility or the environment.

C. Incident Preparedness and Prevention

a. This IRP outlines procedures for employee training, inspections, proper material handling and storage, and includes fire and spill prevention procedures.

D. IRP Design and Scope

a. This IRP is designed for use by both facility personnel and outside incident responders in an actual incident, which may pose a safety, health or environmental risk to employees, the environment, and/or the community. This IRP addresses only those types of incidents, which have been identified as potentially causing harm to personnel, the environment or the facility.

b. **The IRP follows the format of the National Response Team's Integrated Contingency Plan (ICP) Guidance in most instances.**

c. The ICP format will minimize duplication in the preparation and use of emergency response plans for various regulatory requirements and will eliminate confusion for facility responders who often must decide which plan applies to a particular emergency. In addition, the ICP format improves economic efficiency, as expenditures for preparation, maintenance, submission, and update of a single plan are much lower than for multiple plans.

Sections 1.1 - 1.3 provide basic incident response plan information for the user and include IRP objectives and scope, IRP approvals and certifications (as applicable), and general facility information such as process and facility operations descriptions.

Sections 2.1 - 2.19 provide incident-specific information for use by the incident responder. Each section addresses discovery, initial response actions, and sustained actions for post-incident response, termination, and investigation and follow-up action. At the beginning of each section, a Rip and Run sheet is provided to assist the responder make the necessary notifications, assess the situation, and initiate appropriate response action. The Rip and Run sheet was designed to be torn away from the plan and be used by the responder or incident coordinator at any location at the facility. Basic information is provided in the Rip and Run sheet so that initial response action can be initiated. Detailed information will need to be extracted from the applicable section and annexes of the IRP.

Section 3.0 is comprised of annexes/attachments/supplemental information that includes important support information such as internal, community and regulatory notifications, initiation of the emergency response management system, incident documentation, training, and prevention.

d. IRP Distribution

The IRP will be distributed as indicated on the following table.

Location	Address	Reason	Form	
			Electronic	Hard Copy
Sanitation District No. 1 Safety Department Office	1045 Eaton Drive Fort Wright, KY 41017	To satisfy IRP requirements	X	X
Sanitation District No. 1 Lakeview Pump Station Maintenance Office	1045 Eaton Drive Fort Wright, KY 41017	To satisfy IRP requirements		X
Sanitation District No. 1 Dry Creek Wastewater Treatment Plant Control Room	2999 Amsterdam Road Erlanger, KY 41017	To satisfy IRP requirements		X
Sanitation District No. 1 Dry Creek Wastewater Treatment Plant Director of Plant Operations	2999 Amsterdam Road Erlanger, KY 41017	To satisfy IRP requirements		X

e. If a copy of this IRP is submitted upon request to any regulatory/response organizations, a transmittal form (Annex 8 – Attachment 4), in duplicate, must be submitted with each IRP. Copies of the transmittal forms sent and received, and any comments or approvals will be maintained in Annex 8 - Attachment 8 of the Safety Department's copy of the IRP. The local hospitals, fire departments, and various other agencies are outlined in the table below for reference.

Location	Address	Location	Address
Fort Wright Fire Department	409 Kyles Lane Fort Wright, KY 41011-5146	Kenton County Sheriff Department	3rd and Court Street Room 409 Covington, KY 41011 Or P.O. Box 632 Covington, KY 41012
Greater Cincinnati Area Hazardous Response Unit	Don Bennett 2000 Radcliff Drive Cincinnati, Ohio 45204 513-263-8209 Office 513-263-8248 Fax	St. Elizabeth South Hospital St. Elizabeth Business Health Center	Emergencies: 1 Medical Village Dr. Edgewood, KY 41017-3338 Non-emergencies: 301-2999 200 Medical Village Drive Edgewood, KY 41017-3338
Kenton County Emergency Management Homeland Security Agency	Attn: Bill Dorsey Emergency Management Director P.O. Box 792 303 Court Street Covington, KY 41011	Kentucky Division of Water Environmental Protection	Attn: Todd Giles Supervisor of Environmental Response Team Frankfort, KY 40601

APPENDIX L:

Industrial Waste Questionnaire/Permit Application

(This page intentionally left blank for double-sided printing.)

SANITATION DISTRICT NO. 1

INDUSTRIAL WASTE QUESTIONNAIRE/PERMIT APPLICATION

GENERAL INFORMATION

Company Name: _____

Mailing Address: _____

_____

Address of Premises: _____

_____

Account Number:
(Sanitation District) _____

CONTACT OFFICIAL

Name: _____

Title: _____

Address: _____

_____

Telephone Number: _____

FAX Number: _____

E-Mail Address: _____

The information contained in this questionnaire (pages 1 through 8) is familiar to me and to the best of my knowledge and belief, such information is true, complete and accurate.

DATE: _____ _____
SIGNATURE

_____
NAME AND TITLE OF SIGNING OFFICIAL

PLANT OPERATIONAL CHARACTERISTICS

1. Brief description of production, manufacturing or service activities on premises:_____

_____

_____

_____

_____

2. Indicate applicable Standard Industrial Classification Number(s) (SIC Code):_____

_____

and North American Industry Classification System Number(s) (NAICS Code):_____

_____

3. Indicate below the following information for each product:

   a. Type of production, batch or continuous?

   b. If batch, the average number of batches/24 hours?

   c. The average monthly production of each product (units)?

Product Name	**Type Of Production**	**Number Of Batches/ 24 Hours**	**Average Monthly Production**

4. Is there a scheduled shutdown? _____

   If yes, when and for what time period:_____

   _____

5. Is the production seasonal?_____

   If yes, describe seasonal production cycle:_____

   _____

6. Indicate below the beginning and ending time for each shift and show the number of employees per shift for each day of the week:

Shift Operating Hours	**Sun**	**Mon**	**Tue**	**Wed**	**Thu**	**Fri**	**Sat**

7. Are any process changes or expansions planned?_____. If so, describe these changes, completion date and their effects on the wastewater volume and characteristics:

_____

_____

_____

_____

WATER USAGE

8. Indicate water sources and usage:

	Usage (gallons per day) Average	Maximum
Municipal Water Supply Supplier: _____	_____	_____
Wells: _____	_____	_____
Other (list):_____	_____	_____

9. List water usage in plant:

	Average Usage (gallons per day)
Cooling Water: _____	_____
Boiler Feed: _____	_____
Process Water: _____	_____
Sanitary System: _____	_____
Contained in Product: _____	_____
Other (list): _____	_____
Total: _____	_____

10. List average volume of discharge or water loss:

	Average Discharge (gallons per day)
Wastewater Sewer: _____	_____
Natural Outlet:_____	_____
Waste Hauler:_____	_____
Evaporation: _____	_____
Contained in Product:_____	_____
Other (list):_____	_____
Total	_____

WASTEWATER DISCHARGE AND TREATMENT

11. Attach a detailed map of the plant site and show all production buildings and plant sewer outlets. Indicate location of any pretreatment processes.

12. List for each outlet (reference the outlet name or number to the site map), the size of the pipe and daily wastewater flows:

Outlet Name or Number	Sewer Outlet Size (Inches)	Average Flow (gallons per day)

13. Are the wastewater discharges to sewers: _____ intermittent, _____ continuous.

If intermittent, indicate reason and duration:

_____

_____

14. Does your firm have a Federal Categorical Pretreatment Standard for your plant? _____

If yes, what is the Code of Federal Regulation number? _____

15. Describe any wastewater pretreatment equipment and process currently in use: _____

_____

_____

_____

_____

16. Are additional pretreatment facilities planned? _____ . If so, indicate the additional facilities planned and indicate approximate timetable for their completion:

_____

_____

_____

_____

17. Please attach process flow diagram for each existing or planned pretreatment system.

18. The following list of chemical compounds can be considered significant pollutants by the EPA when present in wastewater discharges.

Please indicate, by circling the item number, all chemical compounds that are used, or contained in raw materials or manufactured products (primary or by-products) or stored on the premises.

Item No.	Chemical Compound	Item No.	Chemical Compound
1.	Acenaphthene	41.	Bis (2-chloroisopropyl) ether
2.	Acrolein	42.	Bis (2-chloroethoxy) methane
3.	Acrylonitrile	43.	Methylene chloride (dichloromethane)
4.	Benzene	44.	Methyl chloride (chloromethane)
5.	Benzidine	45.	Methyl bromide (bromoethane)
6.	Carbon tetrachloride (tetrachloromethane)	46.	Bromoform (tribromomethane)
7.	Chlorobenzene	47.	Dichlorobromomethane
8.	1,2,4-trichlorobenzene	48.	Chlorodibromomethane
9.	Hexachlorobenzene	49.	Hexachlorobutadiene
10.	1,2-dichloroethane	50.	Hexachlorocyclopentadiene
11.	1,1,1-trichloroethane	51.	Isophorone
12.	Hexachloroethane	52.	Naphthalene
13.	1,1-dichloroethane	53.	Nitrobenzene
14.	1,1,2-trichloroethane	54.	2-nitrophenol
15.	1,1,2,2-tetrachloroethane	55.	4-nitrophenol
16.	Chloroethane	56.	2,4-dinitrophenol
17.	Bis (2-chloroethyl) ether	57.	4,6-dinitro-o-cresol
18.	2-chloroethyl vinyl ether (mixed)	58.	N-nitrosodimethylamine
19.	2-chloronaphthalene	59.	N-nitrosodiphenylamine
20.	2,4,6-trichlorophenol	60.	N-nitrosodi-n-propylamine
21.	p-chloro-m-cresol	61.	Pentachlorophenol
22.	Chloroform (trichloromethane)	62.	Phenol
23.	2-chlorophenol	63.	Bis (2-ethylhexyl) phthalate
24.	1,2-dichlorobenzene	64.	Butyl benzyl phthalate
25.	1,3-dichlorobenzene	65.	Di-n-butyl phthalate
26.	1,4-dichlorobenzene	66.	Di-n-octyl phthalate
27.	3,3-dichlorobenzidine	67.	Diethyl phthalate
28.	1,1-dichloroethylene	68.	Dimethyl phthalate
29.	1,2-trans-dichloroethylene	69.	Benzo (a) anthracene (1,2-benzanthracene)
30.	2,4-dichlorophenol	70.	Benzo (a) pyree (3,4-benzopyrene)
31.	1,4-dichloropropane	71.	3,4-benzofluoranthene
32.	1,3-dichloropropylene (1,3-dichloropropene)	72.	Benzo (k) fluoranthane (11,12-benzofluoranthene)
33.	2,4-dimethylphenol	73.	Chrysene
34.	2,4-dinitrotoluene	74.	Acenaphthylene
35.	2,6-dinitrotoluene	75.	Anthracene
36.	1,2-diphenylhydrazine	76.	Benzo (ghi) perylene (1,12-benzoperylene)
37.	Ethylbenzene		
38.	Fluoranthene		
39.	4-chlorophenyl phenyl ether		
40.	4-bromophenyl phenyl ether		

(List continued on page 6)

Item No.	Chemical Compound	Item No.	Chemical Compound
77.	Fluorene	100.	b-BHC-beta
78.	Phenanthrene	101.	g-BHC-(lindane)-gama
79.	Dibenzo (a,h) anthracene (1,2,5,6-dibenzanthracene)	102.	d-BHC-delta
		103.	PCB-1242 (Arochlor 1242)
80.	Indeno (1,2,3-cd) pyrene (2,3-o-phenylenepyrene)	104.	PCB-1254 (Arochlor 1254)
		105.	PCB-1221 (Arochlor 1221)
81.	Pyrene	106.	PCB-1232 (Arochlor 1232)
82.	Tetrachloroethylene	107.	PCB-1248 (Arochlor 1248)
83.	Toluene	108.	PCB-1260 (Arochlor 1260)
84.	Trichloroethylene	109.	PCB-1016 (Arochlor 1016)
85.	Vinyl chloride (chloroethylene)	110.	Toxaphene
		111.	Antimony (total)
86.	Aldrin	112.	Arsenic (total)
87.	Dieldrin	113.	Asbestos (fibrous)
88.	Chlordane (technical mixture & metabolites)	114.	Beryllium (total)
		115.	Cadmium (total)
89.	4,4'-DDT	116.	Chromium (total)
90.	4,4'-DDE (p,p - DDE)	117.	Copper (total)
91.	4,4'-DDD (p,p - TDE)	118.	Cyanide (total)
92.	a-endosulfan-alpha	119.	Lead (total)
93.	b-endosulfan-beta	120.	Mercury (total)
94.	Endosulfan sulfate	121.	Nickel (total)
95.	Endrin	122.	Selenium (total)
96.	Endrin aldehyde	123.	Silver (total)
97.	Heptachlor	124.	Thallium (total)
98.	Heptachlor epoxide	125.	Zinc (total)
99.	a-BHC-alpha	126.	2,3,7,8 tetrachlorodibenzo-p -dioxin (TCDD)

19. List those chemical compounds circled in question number 18 and provide the following information: Indicate how used as: **RM** = Raw Material, **CI** =Catalyst or Intermediate, **PP** = Primary Production, **BP** = By-product Proudction, **O** = Other (please explain on reverse).

Item No.	Chemical Compound	How Used	Annual Use or Production (lbs.)	Discharge Concentration	Average Amount On Site

20. List chemicals and other materials (both liquid and solid) which are used or stored in bulk or present in quantities greater than 50 gallons. Do not list those already in question number 19. (Attach additional sheets if necessary.)

Material	**Quantity Used Per Year**	**Quantity Stored On Site**

21. Does your facility have a Spill Prevention & Control Plan?_____. If yes, please attach copy.

22. If any wastewater analyses have been performed on the wastewater discharges from your facilities, attach a copy of the most recent data. Also indicate the date samples were taken, laboratory performing the analysis and location from which samples were taken.

NON-SEWERED WASTE

23. Are any waste liquids or sludges generated and not disposed of in the sewer system? _____ . If yes, indicate below the type of waste and quantity:

	Quantity Per Year
Solvents/Thinners	
Oil/Grease	
Pretreatment Sludge	
Inks/Dyes	
Heavy Metal Sludges	
Organic Compounds	
Paints	
Acids and Alkalies	
Plating Waste	
Other (list): _____	

24. For each waste indicated in question number 23, describe the source of the waste and disposal method:_____

_____

_____

_____

_____

25. Does your company practice on-site disposal of any of the waste indicated above?____ . If yes, please indicate the type of waste and disposal method:_____

_____

26. If an outside firm removes any of non-sewered waste (such as in question 24), provide the following information for each waste material:

Waste Material: _____
Name: _____
Address: _____
Telephone Number: _____
Contact Person: _____

Waste Material: _____
Name: _____
Address: _____
Telephone Number: _____
Contact Person: _____

Waste Material: _____
Name: _____
Address: _____
Telephone Number: _____
Contact Person: _____

27. Do any of your substances require "Resource Conservation and Recovery Act" (RCRA) permits?_____ . If yes, attach a copy of your RCRA permit.

Thank you for your effort in completing the questionnaire. If there is any other pertinent information which you feel should be brought to our attention, please use the space below.

APPENDIX M:

Sample Unusual Discharge Request (Miller's Pond)

(This page intentionally left blank for double-sided printing.)

July 23, 2007

CERTIFIED MAIL

Mr. Lee J. Otte, Ph.D., C.P.G.
Otte Enterprises
505 Stevenson Road
Erlanger, KY 41018

Re: Millers Pond Restoration Project
Millers Pond Home Owners Association

Dear Mr. Otte:

Sanitation District No. 1 (District) has reviewed your request letter to discharge pond water from Millers Pond, located at the corner of Park Drive and Cleveland Drive in Park Hills, Kentucky, to the sewer system. The estimated amount of discharge is 600,000 gallons. This discharge is approved with the following conditions:

1. The Industrial Monitoring Department must be notified at least one week in advanced of the actual discharge. Contact me at 859-547-1113.

2. All water discharged must pass through a non-zeroing water meter with a serial number. The meter must be used to determine the amount of water discharged to the sewer system.

3. Upon completion of the project, a final report must be submitted to the District containing the total amount discharged to the sanitary sewer.

4. Otte Enterprises will be billed $2.00 per 100 cf for this discharge.

5. The District holds the right to sample and add a surcharge to the discharge, including Total Suspended Solids.

6. **This site is in a combined sewer area so discharge must not be made during a major rain event, (rainfall expected to exceed one inch in a twenty four period).**

7. All discharges must be in compliance with all rules and regulations of the District and applicable State and Federal regulations.

8. Millers Pond Homeowners Association shall be held responsible for any damage, interference, or problems caused by the discharge.

Please call me at (859) 547-1113 if you have any questions or concerns.

Sincerely,

Paul Manning

(This page intentionally left blank for double-sided printing.)

APPENDIX N:

Industrial Monitoring Inspection Report

(This page intentionally left blank for double-sided printing.)

INDUSTRIAL MONITORING

INSPECTION REPORT

GENERAL

Company Name: _____

Address: _____

Contact/Title: _____

Inspector(s): _____

Date/Time: _____ Inspection: Scheduled ____ Unscheduled ____ Demand * ___

*If Demand Inspection, indicate the circumstances that led to this visit: _____

_____

Employees/shift:_____ Shift hours:_____ Days/week:_____

Employees/shift:_____ Shift hours:_____ Days/week:_____

Employees/shift:_____ Shift hours:_____ Days/week:_____

Other:_____

_____

General business activity & comments:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Process changes since last visit: _____

_____

_____

_____

Scheduled shutdowns(Y/N):_____, time period:_____

Production seasonal(Y/N):_____, describe cycle:_____

DISCHARGES TO SEWER (other than sanitary)

Boiler blow down(Y/N):____ Cooling tower bleed(Y/N):____

Air pollution control scrubbers(Y/N):____

Process water(s):_____

SPECIAL WATER METERS

Meter S/N:_____ Reading/units:_____

Meter use/location:_____

Meter S/N:_____ Reading/units:_____

Meter use/location:_____

CHEMICALS ON SITE

Chemicals stored on site:_____

Waste chemicals stored on site & hauler:_____

Waste hauler manifests/hauling receipts reviewed(Y/N):_____

Chemical storage areas near floor drains(Y/N):__ _____

Spill Controls (in place/on site):_____

_____

_____

_____

SPCC Plan(Y/N):_____ SPCC Plan adequate(Y/N):_____ SPCC Plan needed(Y/N):_____

WASTEWATER PRETREATMENT

Pretreatment changes since last visit:_____

_____

Pretreatment process discription:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Is pretreatment operating(Y/N):_____

Is there evidence of: Dilution of pretreatment waste stream(Y/N):_____

Bypassing of the pretreatment facilities(Y/N):_____

If yes, explain:_____

_____

SELF MONITORING

Is self monitoring performed: "Categorical" (Y/N):_____, Category number:_____

Other (Y/N):_____, Explain:_____

_____

If "categorical" have they opted to NOT discharge from the regulated process(Y/N):_____

Are self-monitoring records adequate, kept for 3 years, and current(Y/N):_____

Waste hauler manifests/hauling receipts reviewed(Y/N):_____

Chemical storage areas near floor drains(Y/N):__ _____

Spill Controls (in place/on site):_____

_____

_____

_____

SPCC Plan(Y/N):_____ SPCC Plan adequate(Y/N):_____ SPCC Plan needed(Y/N):_____

WASTEWATER PRETREATMENT

Pretreatment changes since last visit:_____

_____

Pretreatment process discription:_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Is pretreatment operating(Y/N):_____

Is there evidence of: Dilution of pretreatment waste stream(Y/N):_____

Bypassing of the pretreatment facilities(Y/N):_____

If yes, explain:_____

_____

SELF MONITORING

Is self monitoring performed: "Categorical" (Y/N):_____, Category number:_____

Other (Y/N):_____, Explain:_____

_____

If "categorical" have they opted to NOT discharge from the regulated process(Y/N):_____

Are self-monitoring records adequate, kept for 3 years, and current(Y/N):_____

Process(es) or discharge(s) being monitored: _____

_____

_____

_____

Sample Point Location(s): _____

_____

_____

_____

Type of Sample(s): _____ Grab; _____ Time Composite _____ Hours

_____ Flow Proportional Composite _____ Hours

Sample preservation: Acid for metals(Y/N): _____ Caustic for cyanides(Y/N): _____

Organics(Y/N): _____ Samples refrigerated(Y/N): _____

Sampler person/sample method: _____

_____

Sampling equipment discription: _____

_____

_____

Sampling analysis: _____

_____

	Parameter	Method
1.		
2.		
3.		
4.		

	Parameter	Method
5.		
6.		
7.		
8.		

Are methods EPA approved(Y/N): _____

(This page intentionally left blank for double-sided printing.)

APPENDIX O:

Enforcement Response Plan
&
Enforcement Response Guide

(This page intentionally left blank for double-sided printing.)

ENFORCEMENT RESPONSE GUIDE

UNAUTHORIZED DISCHARGES

	NONCOMPLIANCE	NATURE OF VIOLATION	ENFORCEMENT RESPONSES	PERSONNEL
1.	Accidental Spill	No harm to POTW	Phone call; NOV	EM, I, PC
		Recurring- No harm to POTW	AO/Fine	GM
		Harm to POTW	AO/Fine	GM
			Public notice	GM
			Civil action	GM
		Recurring- Harm to POTW	AO/Fine	GM
			Public notice	GM
			Civil action	GM
			Terminate service	GM
2.	Slug Loading	No harm to POTW	Phone call; NOV	EM, I, PC
		Recurring- No harm to POTW	AO/Fine	GM
		Harm to POTW	AO/Fine	GM
			Public notice	GM
			Civil action	GM
		Recurring- Harm to POTW	AO/Fine	GM
			Public notice	GM
			Civil action	GM
			Terminate service	GM

UNAUTHORIZED DISCHARGES

	NONCOMPLIANCE	NATURE OF VIOLATION	ENFORCEMENT RESPONSES	PERSONNEL
3.	Un-permitted discharge	No harm to POTW	Phone call; NOV	EM, I, PC
		Harm to POTW	AO/Fine	GM
			Public notice	GM
			Civil action	GM
		Failure to apply for permit after notice by POTW.	Civil action	GM
			Criminal investigation	GM
			Terminate service	GM
4.	Expired Permit	Permit application not submitted before due date	Phone call; NOV	EM, I, PC
DISCHARGE LIMIT VIOLATION				
1.	Exceeding local or Federal Standard (permit limit)	Isolated, not significant	Phone call; NOV	EM, I, PC
		Isolated, significant- No harm	NOV	EM, I, PC
			AO/Fine	GM
		Recurring- No harm	AO/Fine	GM
			Public notice	GM
		Isolated, significant- Harm	AO/Fine	GM
			Public notice	GM
			Civil action	GM
		Recurring, significant- Harm	AO/Fine	GM
			Public notice	GM
			Civil action	GM
			Criminal investigation	GM
			Terminate service	GM

REPORTING VIOLATIONS

	NONCOMPLIANCE	NATURE OF VIOLATION	ENFORCEMENT RESPONSES	PERSONNEL
1.	General Reporting	Isolated, not significant (e.g., 5 days late)	Phone call; NOV	EM, I, PC
		Significant (e.g., 30 days or more late)	AO/Fine Public notice	GM GM
		Reports are always late or no report at all	AO/Fine Civil action Terminate service	GM GM GM
		Failure to notify of categorical limit violation within 24 hours	Phone call; NOV AO/Fine	EM, I, PC GM
		Failure to sample and report categorical violation re-sampling within 30 days	Phone call; NOV AO/Fine	EM, I, PC GM
		Report is improperly signed	Phone call; NOV	EM, I, PC
		Report is improperly signed after notice by POTW	AO/Fine	GM
		Falsification of any reports	AO/Fine Criminal investigation Terminate service	GM GM GM
2.	Spill Reporting	Failure to report spill or changed discharge- No harm	Phone call; NOV AO/Fine	EM, I, PC GM
		Failure to report spill or Changed discharge- Harm	AO/Fine Public notice Civil action	GM GM GM

REPORTING VIOLATIONS

	NONCOMPLIANCE	NATURE OF VIOLATION	ENFORCEMENT RESPONSES	PERSONNEL
2.	Spill Reporting (continued)	Recurring failure to report spills	AO/Fine Public notice Civil action Terminate service	GM GM GM GM
		Failure to provide written spill report within 5 days	Phone call; NOV AO/Fine	EM, I, PC GM

MONITORING VIOLATIONS

1.	Monitoring	Failure to monitor all required pollutants	Phone call; NOV AO/Fine	EM, I, PC GM
		Recurring- Failure to monitor	AO/Fine Civil action	GM GM
		Improper sampling	Phone call; NOV	EM, I, PC
		Improper sampling (evidence of intent)	AO/Fine Criminal investigation Terminate service	GM GM GM

MONITORING VIOLATIONS

	NONCOMPLIANCE	NATURE OF VIOLATION	ENFORCEMENT RESPONSES	PERSONNEL
2.	Failed to install monitoring equipment	Delay of less than 30 days	Phone call; NOV	EM, I, PC
		Delay of more than 30 Days	AO/Fine	GM
			Civil action	GM
			Terminate service	GM

OTHER VIOLATIONS

1.	Compliance Schedules	Missed milestone by less than 30 days, or will not affect final compliance	Phone call; NOV	EM, I, PC
			AO/Fine	GM
		Missed milestone by more than 30 days, or will affect final compliance (Good cause for delay)	AO/Fine	GM
		Missed milestone by more than 30 days, or will affect final compliance(No good cause for delay)	AO/Fine	GM
			Civil action	GM
		Recurring violations of compliance schedule	AO/Fine	GM
			Civil action	GM
			Terminate service	GM
		Missed any milestone date or final compliance date by 90 days	AO/Fine	GM
			Public notice	GM
			Civil action	GM
			Terminate service	GM

OTHER VIOLATIONS

	NONCOMPLIANCE	NATURE OF VIOLATION	ENFORCEMENT RESPONSES	PERSONNEL
2.	Failed to properly operate and maintain pretreatment facility	Results in no harm	Phone call; NOV	EM, I, PC
			AO/Fine	GM
		Results in harm	AO/Fine	GM
			Public notice	GM
			Civil action	GM
			Terminate service	GM
3.	Waste stream dilution in lieu of treatment	Initial violation	Phone call; NOV	EM, I, PC
			AO/Fine	GM
		Recurring	AO/Fine	GM
			Civil action	GM
			Terminate service	GM
4.	Failed to mitigate noncompliance or halt production	Results in no harm	Phone call; NOV	EM, I, PC
			AO/Fine	GM
			Public notice	GM
			Civil action	GM
			Terminate Service	GM
		Results in harm	AO/Fine	GM
			Public notice	GM
			Civil action	GM
			Terminate service	GM

VIOLATIONS DETECTED DURING SITE VISITS

	NONCOMPLIANCE	NATURE OF VIOLATION	ENFORCEMENT RESPONSES	PERSONNEL
1.	Denial	Entry denied or consent withdrawn, copies of records denied	AO/Fine Civil action; Return to IU	GM GM
2.	Illegal Discharge	Results in no harm	AO/Fine	GM
		Results in harm or evidence of intent/negligence	AO/Fine Public notice Civil action Criminal investigation	GM GM GM GM
		Recurring, violation of AO	Public notice Terminate service	GM GM
3.	Improper Sampling	Unintentional - incorrect sample location, sample type, or collection technique	NOV	EM, I, PC
4.	Inadequate Record-keeping	Files are incomplete or missing (No evidence of intent)	NOV	EM, I, PC
		Recurring	AO/Fine	GM
5.	Failed to report additional monitoring	Inspector finds additional files	NOV	EM, I, PC
		Recurring	AO/Fine	GM

TIMEFRAMES FOR POTW RESPONSES

A. All violations will be identified and documented within 5 days of receiving compliance information.

B. Initial enforcement responses [involving contact with the industrial users and requesting information on corrective or preventative action(s)] will occur within 30 days of violation detection.

C. Follow-up actions for continuing or recurring violations will be taken within 60 days of the initial enforcement response.

D. Violations, which threaten health, property, or environmental quality, are considered emergencies and will receive immediate responses such as halting discharge or terminating service.

E. All violations meeting the criteria for Significant Noncompliance will be addressed with an enforceable order within 30 days of the identification of significant noncompliance and Public Notice shall be provided as per 40CFR403.8(f)(2)(vii).

F. Personnel

GM – General Manager
EM – Environmental Manager
PC - Pretreatment Coordinator
I - Industrial Waste Specialist

APPENDIX P:

Dry Weather Overflow Recommendations

(This page intentionally left blank for double-sided printing.)

ID	Location	Configuration	DWF Bypass Potential	Diversion DWF Bypass Potential Comments	Notes from "leaping weir adjustments.xls"	Notes from CSO Inspection Visit	Notes from ADS email 3/27/07	Handwritten notes on GBA summary	Recommended Action
1870031	47th Street, Covington	Standard horizontal orifice	Known Chronic			Weir fully open; debris noted in street and nearby catch basins		Oveflows due to blockages	Weir is fully open but overflows have continued and appear to be related to debris; examine potential to retrofit or replace catch basins in area to reduce debris
0820001	4th Street, Newport	Weir with Side Outlet	Known Chronic			Upstream catch basins have significant debris.		Bar screen blockage	Clean upstream catch basins. Increase maintenance frequency of diversion bar rack and track performance. Issue work order to remove bar rack if necessary.
0840005	9th & Lowell, Newport	Weir with Side Outlet	Known Chronic	Almost bypassing when in field.		2006 blockage was due to grit in the main diversion. 2007 overflow was due to leaky weir. Several washout basins upstream of this diversion.			Replace plate on end of outfall with new weir and proceed with CSAP and monitor performance. Examine potential to replace washout catch basins.
1710098	Ash Street, Ludlow	Standard horizontal orifice	Known Chronic		Weir plate has been removed.	Diversion is one of the first to activate under Bromley backwater effect - so, this area is part of the Bromley "pool," meaning increased chance for floatables to sit around and block the diversion when levels subside. Diversion is also highly impacted by high river levels, with note that debris is even carried in through outfall sewer. More debris, more risk of diversion blockage when levels subside.			Examine the potential to retrofit or replace the catch basins tributary to the diversion to reduce debris that is contributing to the blockage. Continue tracking performance after Bromley wet-well levels are adjusted as much as possible (being pursued by SD1 under another NMC). Debris conditions contributing to blockages may be reduced. Consider prioritizing this outfall under the upcoming river intrusion prevention program, to be implemented under the Watershed Plan. After installation of river intrusion protection, continue tracking performance; again, debris conditions contributing to blockages may be reduced
0910055	Eastern Ave. near cross with James Avenue	Standard horizontal orifice	Known Chronic	4 of 6 catch basins upstream are washouts		Weir fully open. Lots of debris in nearby catchbasins.		Oveflows due to blockages	Weir is fully open but overflows have continued and appear to be related to debris; Several basins are washouts -examine potential to retrofit or replace catch basins in area to reduce debris
0770006	Saratoga St, Newport	Standard horizontal orifice	Known Chronic			Prior history of grease blockages due to Newport on the Levy. Opened orifice plate.		Debris was caught on bars protecting diversion during the first event in 2006. Bars later removed and subsequent blockages occurred in the main line.	Increase weir height in conjunction with NMC 2 and NMC 6 and track performance as part of simple solids and floatable control pilot to confirm that diversion is not adversely affected. Utilize FOG program to minimize grease from nearby restaruants.
0910027	in Eastern Ave, next to Flood station	Standard horizontal orifice			Adj. weir to fully open	Weir fully open; Problem prior to opening plate		NA	Track performance based on new weir settings
0930041	next to end of E 19th St	Standard horizontal orifice			w/o to remove plate will not fit thru m/h frame.	Weir fully open; Problem prior to opening plate		NA	Track performance based on new weir settings - Issue work order to remove plate if necessary
0930066	along Glenway Ave, next to pump station	Standard horizontal orifice			weir full open	Weir fully open; Problem prior to opening plate		NA	Track performance based on new weir settings
0930083	cross of Glenway Ave and Durrett St	Standard horizontal orifice			adj. weir full open	Weir fully open; no problems since plate was opened		NA	Track performance based on new weir settings
0910025	in the west side of Eastern Ave and near Flood station	Standard horizontal orifice			adj. weir to full limits still has an overhang of approx. 4 inches.	Weir fully open; yard waste is a problem		NA	Track performance based on new weir settings -Issue work order to remove plate if necessary - Examine catch basins in area for possible repairs
1420025	cross of E 8th St and Garrard St	Standard horizontal orifice			weir adj. 1/4 open will need w/o to move plate it is cemented in place.	Small gap in plate - can't open - mortared in; bad for debris; catch basins need repaired/replaced		Repaired catch basins in this area to keep debris out of system. Has decreased overflows	Track performance based on new weir settings -Issue work order to remove plate if necessary; Continue catch basin repair
0910031	along Eastern Ave; next to Flood Station	Standard horizontal orifice			adj. weir to full limits still has an overhang of approx.2 inches.	Weir fully open		Opening gap in leaping weir would solve problem	Track performance based on new weir settings -Issue work order to remove plate if necessary
1420079	Eastern edge of 11th St.	Standard horizontal orifice			adjusted weir to full limits still has an overhang of approx. 3-4 inches.	Weir fully open; repaired catch basins significantly reduced overflows		Repaired or replaced catch basins in this area to keep debris out of system. Has decreased overflows.	Track performance based on new weir settings -Issue work order to remove plate if necessary; Continue catch basin repair
0330099	Tower Hill Road	Weir with Side Outlet		Weir Damaged - H_2S has eaten away at weir wall. (2"-3" to weir)		Comfirm if FM to see if this site activates. (Brandon)			Chalk to confirm activation and evaluate elimination; replace diversion if necessary
0360018	Anchor Inn (Rte. 8)	Elevated Outfall Pipe	Possible			Overflow is only 12-inches above dwf pipe			Chalk to confirm issue
0530058	Wilson Road	Bypass Structure	Possible			Bypass to culvert under road. To be eliminated by SD1.			Being addressed under Wilson/Water Works Road Improvements
0600016	Ward Avenue	Standard horizontal orifice		Due to screen on incoming flow.					Increase maintenance frequency; Consider removing some or all of bars
0610029	Taylor Avenue	Special horizontal orifice	Known Chronic	Due to screen on incoming flow.		History of blockage in main line & release due to lack of adequate bypass pump capacity. (GBA)			Increase maintenance frequency; Open weir plate and track performance
0730028	12th Street	Elevated Outfall Pipe	Possible						No known history; chalk to confirm; if issue check hydraulics and raise weir
1480123	Dalton Street	Special horizontal orifice			Weir adjusted 1/4 open		NA	Opening gap in leaping weir would solve problem	Implement simple option first: open weir plate to full extent and track performance.
1480097	3rd Street at I-75	Standard horizontal orifice			Weir adjusted 1/4 open		Plate was open 5"; ADS removed for meter install	Opening gap in leaping weir would solve problem	Weir plate recently removed; track performance.
1490027	Parkway/Highway	Standard horizontal orifice			Weir adjusted 3/4 open		NA	NA	Implement simple option first: open weir plate to full extent and track performance.
1710068	Butler Street	Standard horizontal orifice			Weir full open		NA	Removed catch basin lead from diversion manhole. Has decreased overflows.	Track impact of catch basin change.
1480129	8th and Philadelphia Street	Special horizontal orifice			Weir adjusted 1/4 open		NA	Replaced and/or repaired catch basins in this D.H. has decreased overflows.	Implement simple option next: open weir plate to full extent and track performance.
1480012	3rd Street at Liquor Store (LS)	Standard horizontal orifice			Weir adjusted 1/2 open		Plate is open about halfway	NA	Implement simple option first: open weir plate to full extent and track performance.

Configuration considered susceptible to DWO, but no known issue
Visual evidence of recent overflow from field inspections
Input from field crews on weir plate settings
Recurring entries in GBA

(This page intentionally left blank for double-sided printing.)

APPENDIX Q:

Not Down My Drain Mailer

(This page intentionally left blank for double-sided printing.)



Did you know?

Did you know that what you flush or pour down your drain can affect local waterways and the environment?

Protect Northern Kentucky's watersheds by:

- **Disposing of household grease (meat fats, lard, cooking oil, shortening, butter and margarine, etc.), diapers, condoms and personal hygiene products in the garbage can.**

  When flushed or washed down the drain, these materials can clog pipes and cause raw sewage to overflow into your home or yard. In addition, when high flows occur in the sewer system during periods of rainfall or snowmelt, these materials can mix with sewage and be discharged directly into basements, public areas or local rivers and streams

- **Properly disposing household products such as cleansers, beauty products, medicine, auto fluids, used motor oil, paint, and lawn care products at your local household hazardous waste facility.**

  Wastewater treatment plants are designed to treat organic materials, not hazardous chemicals. When flushed or washed down the drain, these hazardous chemicals can diminish the effectiveness of the treatment process, and might allow contaminates to be discharged into local waterways.

RETHINK WATERSHEDS
www.sd1.org



Did you know?

Did you know that what you flush or pour down your drain can affect local waterways and the environment?

Protect Northern Kentucky's watersheds by:

- **Disposing of household grease (meat fats, lard, cooking oil, shortening, butter and margarine, etc.), diapers, condoms and personal hygiene products in the garbage can.**

  When flushed or washed down the drain, these materials can clog pipes and cause raw sewage to overflow into your home or yard. In addition, when high flows occur in the sewer system during periods of rainfall or snowmelt, these materials can mix with sewage and be discharged directly into basements, public areas or local rivers and streams

- **Properly disposing household products such as cleansers, beauty products, medicine, auto fluids, used motor oil, paint, and lawn care products at your local household hazardous waste facility.**

  Wastewater treatment plants are designed to treat organic materials, not hazardous chemicals. When flushed or washed down the drain, these hazardous chemicals can diminish the effectiveness of the treatment process, and might allow contaminates to be discharged into local waterways.

RETHINK WATERSHEDS
www.sd1.org



Did you know?

Did you know that what you flush or pour down your drain can affect local waterways and the environment?

Protect Northern Kentucky's watersheds by:

- **Disposing of household grease (meat fats, lard, cooking oil, shortening, butter and margarine, etc.), diapers, condoms and personal hygiene products in the garbage can.**

  When flushed or washed down the drain, these materials can clog pipes and cause raw sewage to overflow into your home or yard. In addition, when high flows occur in the sewer system during periods of rainfall or snowmelt, these materials can mix with sewage and be discharged directly into basements, public areas or local rivers and streams

- **Properly disposing household products such as cleansers, beauty products, medicine, auto fluids, used motor oil, paint, and lawn care products at your local household hazardous waste facility.**

  Wastewater treatment plants are designed to treat organic materials, not hazardous chemicals. When flushed or washed down the drain, these hazardous chemicals can diminish the effectiveness of the treatment process, and might allow contaminates to be discharged into local waterways.

RETHINK WATERSHEDS
www.sd1.org

(This page intentionally left blank for double-sided printing.)

APPENDIX R:

Copy of SD1 Debris Violation Notification Letter

(This page intentionally left blank for double-sided printing.)

January 17, 2000

Mr. Jeff Warneford
City Administrator
City of Covington
4399 Boron Drive
Covington, KY 41015

Dear Mr. Earlywine:

During the storm event of January 10, 2000, our crews responded to several calls related to flooded intersections. I know you are keenly aware that many catch basins are not able to handle extreme heavy amounts of rainfall in a short amount of time. This is often a reason why some intersections get flooded. However, most of the time the catch basin inlet or washout grating is clogged with debris.

The District assumed responsibility for the catch basin structure and the pipes that carry the combined wastewater to our facilities. We need your cooperation by assuring that streets are cleaned regularly, preventing buildup of debris on the catch basin grating.

In future rain events, please direct your police departments and dispatch to notify your public works department in the case of flooded intersections and streets. Your public works crews should first attempt to remedy the situation by checking and cleaning any accumulated debris from catch basin gratings. Our crews will be instructed to respond to private property calls first. They will not respond to flooded streets or intersections on a priority basis. Our dispatch will attempt to confirm that the municipal public works department has first checked the problem before we respond.

We believe this procedure will allow us both to better serve our customers.

Best regards,

John Penick
Field Manager

(This page intentionally left blank for double-sided printing.)

APPENDIX S:

Example Land Disturbance, Grading, & Clearing Permits

(This page intentionally left blank for double-sided printing.)

July 16, 2007

Mr. Paul Zeltwanger
City View Village, LLC
20 West 11th Street
Covington, Kentucky 41011

RE: The Views Condominiums – Land Disturbance Permit -LDP-0344-0707

Dear Mr. Zeltwanger :

Sanitation District No. 1 (District) has reviewed your application and is pleased to inform you that the District is issuing you a Land Disturbance Permit.

In no event shall the District's issuance of the permit be construed as relieving you from obtaining all other applicable local, state or federal permits and/or licenses prior to performing any land disturbing activities.

The person named on the permit (permittee) has agreed to comply with all applicable District rules and regulations. This permit must be retained by the permittee and made available for review upon request.

Please contact Andy Aman in our Inspection Department at 859-578-6880 at least 72 hours prior to beginning any land disturbing activities so inspections can be scheduled.

If you have any questions or comments regarding this notice, please contact Sean Blake in our Engineering Department at 859-578-7468 or by email at sblake@sd1.org.

Sincerely,

Sean J. Blake
Program Manager
Plan Review and Development Group

Cc: NKAPC

SANITATION DISTRICT NO. 1

LAND DISTURBANCE PERMIT

DATE: July 16, 2007 **NO.:** LDP-0344-0707

PERMITTEE: Mr. Paul Zeltwanger, City View Village, LLC,
20 West 11th Street, Covington, Kentucky 41011

TO: **PERFORM LAND DISTURBANCE & EROSION CONTROL WORK**

AT: The Views Condominiums, Dixie Hwy & Pike St., Covington, Kenton County

(LOCATION)

THE PERMITTEE NAMED ABOVE HAS AGREED TO COMPLY WITH ALL APPLICABLE DISTRICT RULES AND REGULATIONS.

THIS PERMIT MUST BE RETAINED BY THE PERMITTEE AND MADE AVAILABLE FOR REVIEW UPON REQUEST.

NOTIFY THE SANITATION DISTRICT AT LEAST 72 HOURS BEFORE COMMENCING WORK. CONTACT ANDY AMAN AT:

Phone: 859-578-6880
Cell: 859-250-5765
Email: aaman@sd1.org

October 17, 2006

Mr. Paul Zeltwanger
City View Village, LLC
20 West 11th Street
Covington, KY 41011

RE: The Views - Condominiums – Grading Permit, GRP-0145-1006

Dear Mr. Zeltwanger:

Sanitation District No. 1 (District) has reviewed your application and is pleased to inform you that the District is issuing you a Grading Permit.

In no event shall the District's issuance of the permit be construed as relieving you from obtaining all other applicable local, state or federal permits and/or licenses prior to performing any land disturbing activities.

The person named on the permit (permittee) has agreed to comply with all applicable District rules and regulations. This permit must be retained by the permittee and made available for review upon request.

Please contact Andy Aman in our Inspection Department at 859.578.6880 at least 72 hours prior to beginning any land disturbing activities so inspections can be scheduled.

If you have any questions or comments regarding this notice, please contact Sean Blake in our Storm Water Department at 859.578.7468 or by email at SBLAKE@sd1.org.

Sincerely,

Sean J. Blake
Program Manager
Plan Review and Development Group

Cc: NKAPC
City of Covington

SANITATION DISTRICT NO. 1

GRADING PERMIT

DATE: October 17, 2006 **NO.:** **GRP-0145-1006**

PERMITTEE: Paul Zeltwanger - City View Village, LLC
20 West 11th St., Covington, KY 41011

TO: **PERFORM GRADING & EROSION CONTROL WORK**

AT: The Views - Condominiums – Dixie Hwy & Pike St., Covington

(LOCATION)

THE PERMITTEE NAMED ABOVE HAS AGREED TO COMPLY WITH ALL APPLICABLE DISTRICT RULES AND REGULATIONS.

THIS PERMIT MUST BE RETAINED BY THE PERMITTEE AND MADE AVAILABLE FOR REVIEW UPON REQUEST.

NOTIFY THE SANITATION DISTRICT AT LEAST 72 HOURS BEFORE COMMENCING WORK. CONTACT ANDY AMAN AT:

Phone: 859-578-6880
Cell: 859-250-5765
Email: AAMAN@sd1.org

January 16, 2007

Mr. David C. Imboden
City of Dayton
514 Sixth Ave
Dayton, KY 41074

RE: The River's Edge – Clearing Permit No. CLP-0031-0107

Dear Mr. Imboden:

Sanitation District No. 1 (District) has reviewed your application and is pleased to inform you that the District is issuing you a Clearing Permit.

In no event shall the District's issuance of the permit be construed as relieving you from obtaining all other applicable local, state or federal permits and/or licenses prior to performing any land disturbing activities.

The person named on the permit (permittee) has agreed to comply with all applicable District rules and regulations. This permit must be retained by the permittee and made available for review upon request.

Please contact Andy Aman in our Inspection Department at 859.578.6880 at least 72 hours prior to beginning any land disturbing activities so inspections can be scheduled.

If you have any questions or comments regarding this notice, please contact Sean Blake in our Storm Water Department at 859.578.7468 or by email at SBLAKE@sd1.org.

Sincerely,

Sean J. Blake
Program Manager
Plan Review and Development Group

Cc: City of Dayton
Campbell County Planning Commission

SANITATION DISTRICT NO. 1

CLEARING PERMIT

DATE: January 16, 2007 **NO.:** **CLP-0031-0107**

PERMITTEE: Mr. David C. Imboden, City of Dayton

TO: **PERFORM CLEARING & EROSION CONTROL WORK**

AT: The River's Edge - between O'Fallon Avenue and Mary Ingles Highway, along the Ohio River north of the flood wall in Campbell County

(LOCATION)

THE PERMITTEE NAMED ABOVE HAS AGREED TO COMPLY WITH ALL APPLICABLE DISTRICT RULES AND REGULATIONS.

THIS PERMIT MUST BE RETAINED BY THE PERMITTEE AND MADE AVAILABLE FOR REVIEW UPON REQUEST.

NOTIFY THE SANITATION DISTRICT AT LEAST 72 HOURS BEFORE COMMENCING WORK. CONTACT ANDY AMAN AT:

Phone: 859-578-6880
Cell: 859-250-5765
Email: aaman@sd1.org

APPENDIX T:

Erosion Prevention Sediment Control Form

(This page intentionally left blank for double-sided printing.)

NON-COMPLIANCE FORM
LAND DISTURBING ACTIVITIES

SANITATION DISTRICT No. 1 – 1045 Eaton Drive, Ft. Wright, KY 41017 www.sd1.org ☒ **Correction Notice** ☐ **Violation**

PROJECT SITE INFORMATION

Project Name/Location: Boone County Library – Burlington Branch
Rt. 18 at Taylor Dr.

Permit No.: LDP-0194-0206

Permit Holder Name/Address: Cindy Brown – Boone County Library Board
8899 US 42, Union, Kentucky 41091

Contractor(s) Name:

Inspection Date/Time: 3-30-07

Inspector Name (print) & Signature: Mark Griffith

Sanitation District Has Determined The Following Non-Compliance Issues Exist And Must Be Addressed By The Date Specified Below. Non-Compliance issues Are In Violation of Northern Kentucky Regional Storm Water Management Program Rules And Regulations, Section 700 and Section 800.

COMMENTS

1. Install perimeter control on the south side of the project, there are no erosion controls installed in this area.
2. Maintain / reinstall existing silt fence on the SE side, this fence is failing.
3. Install inlet protection on the road south side of the project.
4. Clean and sweep all the roads particularly the road on the south side.
5. Maintain and install inlet protection on the NE side of the site.
6. Maintain and clean out the inlet on the SE side on the site.

PENALTIES FOR NON-COMPLIANCE ACTIVITIES/DISTRICT CONTACT

Continued non-compliance may result in a civil action by the District to recover a sum not less than one hundred dollars ($100.00) nor more than one thousand dollars ($1,000.00) for each offense, together with costs where each day constitutes a separate offense. Also, a stop work order may be issued. An appeal of this notice may be made according to Section 1000 of the District's Storm Water Rules and Regulations. Please contact Sean Blake at 859.578.7468 with questions or comments regarding this notice.

SPECIFIC PENALTIES

☒ Rectify non-compliance items noted above by (specify date or time limit): 4-5-2007

☐ Violation ☐ Fine of $_____/per day per violation for the non-compliance items noted above
☒ Correction Notice ☐ Stop Work Immediately for the non-compliance items noted above

Authorized District Representative Name(print)/ Signature: Sean Blake Date: 4/2/2007

SIGNATURE OF ON-SITE RECIPIENT

Printed Name : _____Signature: _____ Date:____/____/____

☐ Signature refused ☐ No-one available for signature

(This page intentionally left blank for double-sided printing.)

EROSION PREVENTION AND SEDIMENT CONTROL SITE INSPECTION FORM

INSPECTION INFORMATION

Inspection Type (check one): ☐ Routine Weekly ☐ Pre-Rain ☐ During Rain ☐ Post Rain

Inspection Date: _____ ☐ Pursuant to Violation / Correction Notice

Inspector Name (print name): _____ Inspector Signature: _____

PROJECT DATA

Project Name: _____ Permit No.:_____

Developer Name: _____

Contractor Name: _____

On-site Responsible Person (if applicable): _____

Notice of Construction Filed ☐Yes ☐No* ☐ NA,

SEDIMENT CONTROL

1. Are erosion and sediment controls (BMPs) installed according to the plans? ☐ Yes ☐ No ☐ Somewhat
2. Are BMP's installed correctly? ☐ Yes ☐ No ☐ Somewhat ; Are they effective ☐ Yes ☐ No ☐ Somewhat
3. Detention/sediment basin installed as the first land disturbing activity if applicable? ☐Yes ☐No ☐NA
4. Are BMPs being maintained according to the SWP3, or acceptable industry standards? ☐ Yes ☐ No ☐ Somewhat
5. Are all disturbed area being stabilized through the implementation of acceptable soil stabilization and according to the Regional SWMP requirements (If activity ceased for 21 days or more, temporary stabilization measures shall be installed within 14 days). ☐Yes ☐No ☐NA
6. Do the logs show inspections every 7 calendar days and/or within 24 hours of any ½ inch or greater storm event? ☐Yes ☐No ☐NA
7. Is there off-site impact from this development? ☐Yes ☐No ☐NA
   If yes, explain:
8. Is there additional BMPs needed to control runoff from the site? ☐ Yes ☐ No

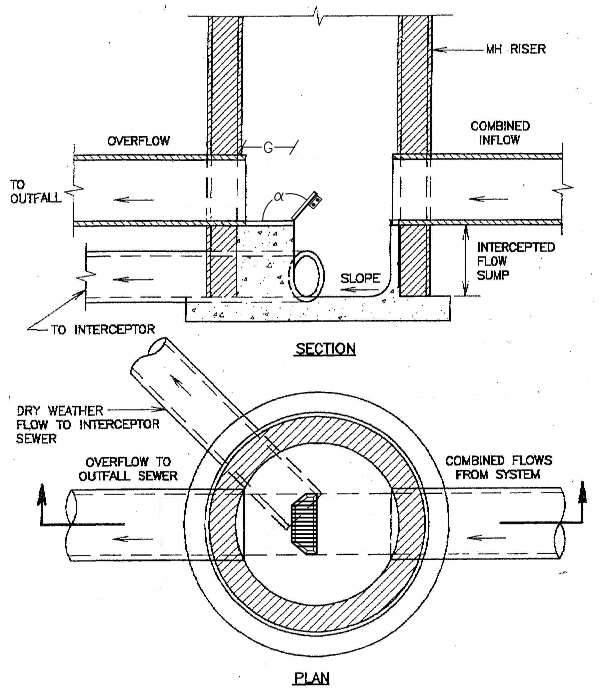
COMMENTS

APPENDIX U:

Fabrication and Installation Details of Pilot Controls

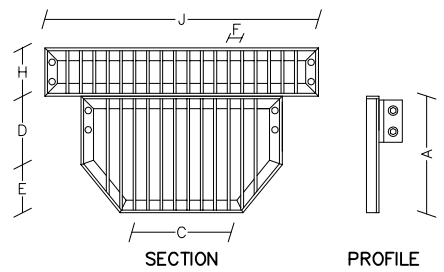
(This page intentionally left blank for double-sided printing.)

BAR RACK TYPE "A"



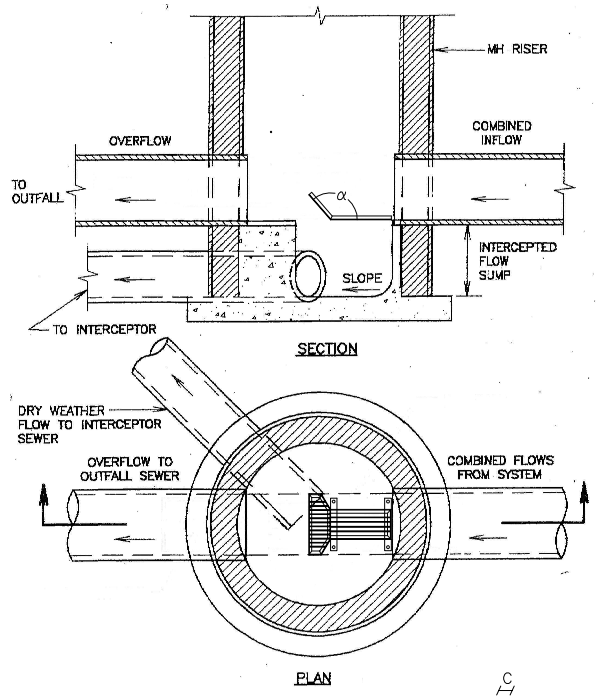
NOTES:

1. DIMENSIONS TO BE FIELD DETERMINED SUCH THAT BOTTOM OF RACK IS AT END OF BENCH OR AT END OF PLATE WHEN PLATE IS FULLY OPEN.
2. SPACING BETWEEN INSTALLED RACK FRAME AND WALLS SHALL BE LESS THAN BAR SPACING DIMENSION "F".
3. SEE SHEET 2 FOR FABRICATION DETAILS.



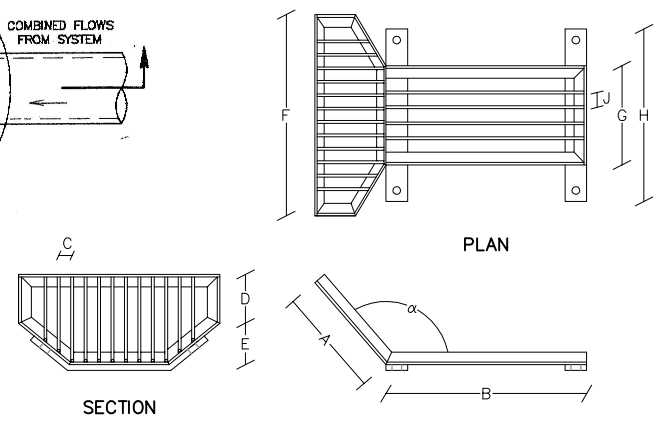
PILOT LOCATION	α	A	B	C	D	E	F	G	H	J
4th STREET AT COVINGTON	120°	7"	20.5"	7.5"	0.5"	6.5"	1"	SEE NOTE 1	–	–

BAR RACK TYPE "B"



NOTES:

1. SPACING BETWEEN INSTALLED RACK FRAME AND WALLS SHALL BE LESS THAN BAR SPACING DIMENSION "C".
2. SEE SHEET 2 FOR FABRICATION DETAILS.

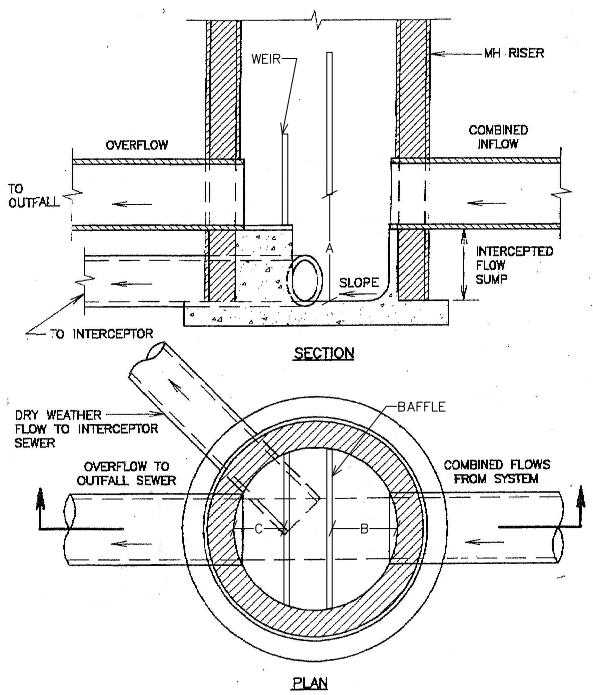


PILOT LOCATION	α	A	B	C	D	E	F	G	H	J
PLEASANT STREET	120°	7"	12"	1"	0.5"	6.5"	24"	11"	13"	2.5"

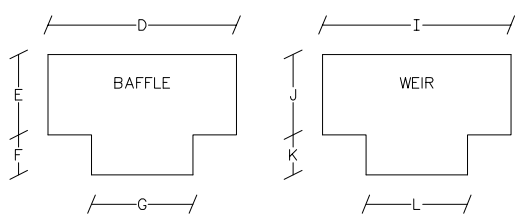
WEIR AND BAFFLE

NOTES:

1. SEAL GAPS BETWEEN WEIRS OR BAFFLES AND EXISTING SURFACES WITH ADEKA ULTRA SEAL.
2. SEE SHEET 2 FOR FABRICATION DETAILS.
3. USE OPTION 1 TYPE WIER AND BAFFLE FOR SAGATOGA STREET. RADIUS "r" EQUALS 15 INCHES AND IS AT BOTTOM OF WEIR DIMENSION "K", WHERE WEIR ABUTS DIVERSION PLATE.
4. BAFFLE TO BE CENTERED ABOVE THE DRY WEATHER DIVERSION SUMP PERPENDICULAR TO THE FLOW LINE.

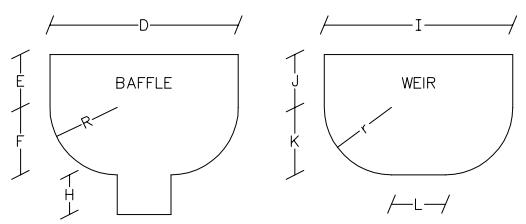


OPTION 1



OR

OPTION 2



SECTION

PILOT LOCATION	A	B	C	D	E	F	G	H	I	J	K	L	R	r
10th STREET COVINGTON	16"	SEE NOTE 4	–	18"	–	11"	12"	6"	–	–	–	–	9"	–
17th STREET COVINGTON	18"	12"	–	46"	–	17.5"	21.5"	6"	–	–	–	–	24"	–
SARATOGA STREET – NEWPORT	38"	15"	15"	44.5"	15"	3"	30"	–	44.5"	9"	21"	30"	–	SEE NOTE 3

GENERAL NOTES:

1. BAR RACKS, WEIRS, BAFFLES AND ANCHORAGE SHALL BE FABRICATED WITH TYPE 304 STAINLESS STEEL PLATES AND STRUCTURAL SHAPES.
2. MAJOR DIMENSIONS AT DIVERSION STRUCTURES WERE CONFIRMED THROUGH FIELD INVESTIGATIONS AND HAVE BEEN INCORPORATED INTO THE HYDRAULIC ANALYSIS AND PROPOSED CONFIGURATION OF THE PILOT SOLIDS AND FLOATABLES CONTROLS. HOWEVER, LOCAL VARIATIONS IN SURFACES OR CROSS SECTIONS AT SPECIFIC INSTALLATION LOCATIONS WILL LIKELY IMPACT RACK DIMENSIONS. CONTRACTOR SHALL MAKE TEMPLATES OR USE OTHER MEANS AND METHODS TO CONFIRM THAT CONTROLS, OF THE DIMENSIONS AND CONFIGURATIONS IDENTIFIED, CAN BE INSTALLED AS IS, OR IF FINAL ADJUSTMENT OF DIMENSIONS IS REQUIRED BEFORE FABRICATION OF COMPONENTS. PROPOSED MODIFICATIONS TO DIMENSIONS OR CONFIGURATION SHALL BE SUBMITTED FOR APPROVAL PRIOR TO FABRICATION.

NO.	ISSUED FOR	DATE	BY

DESIGNED CDC
DRAWN SOR
CHECKED SWF
PROJ. ENGR. CDC
APPROVED

HAZEN AND SAWYER
Environmental Engineers & Scientists
11311 CORNELL PARK DR. SUITE 135, CINCINNATI, OHIO 45242

SANITATION DISTRICT No. 1
OF NORTHERN KENTUCKY

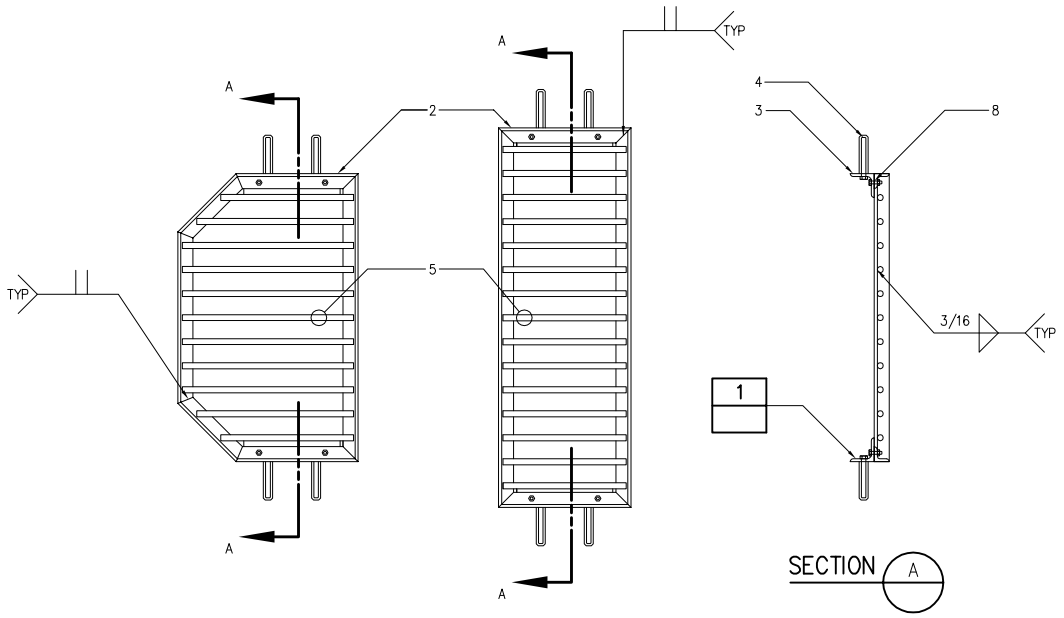
FLOATABLES CONTROL
PILOT PROGRAM

INSTALLATION DRAWING

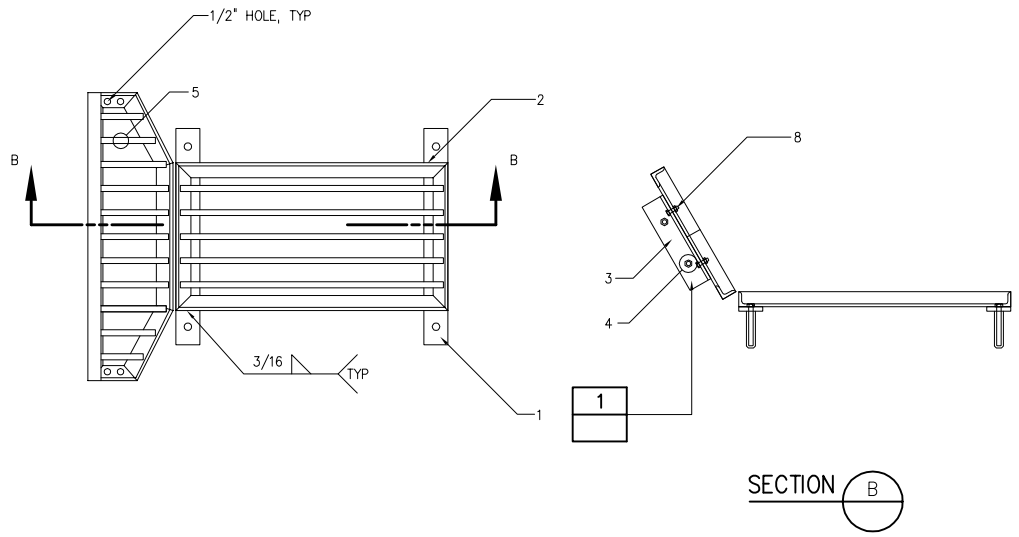
DATE SEPTEMBER 2007
H & S JOB NUMBER 30005-006
CONTRACT NUMBER
SHEET 1 OF 4

XREFs=

20070702 3:24P J:\Projects\30010\06_Infrastructure Characterization\Task 3 M&C Program\M&C 6 Floatables control\Floatables Control Pilot Program\09\typical ELS Floatable Control.DWG By:SORDURKE Last Saved By: SORDURKE



BAR RACK TYPE "A"

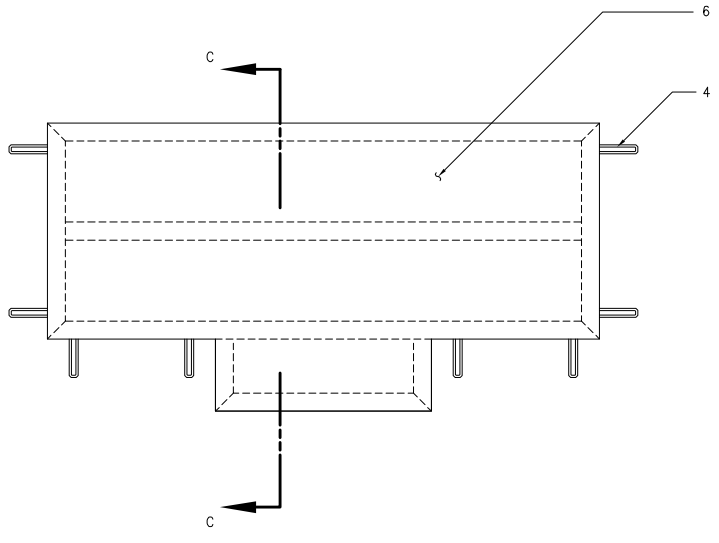


BAR RACK TYPE "B"

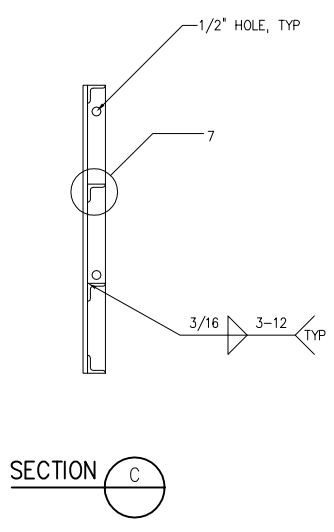
No.	ITEM DESCRIPTION	QUANT
1	SST 2"x1/4" BAR	
2	SST L1 1/4x1 1/4x1/4	
3	SST 2x2x1/4	
4	3/8" DIA HILTI HY 150/HIT-HIS INSERT W/ SST BOLT	
5	1/2 DIA SST SOLID ROD	
6	1/4" SST PLATE	
7	SST L1 1/2x1 1/2x1/4 STIFFENER	
8	3/8" SST BOLT W/ WASHER AND NUT	
9		
10		
11		
12		
13		
14		
15		
16		
17		
18		
19		
20		

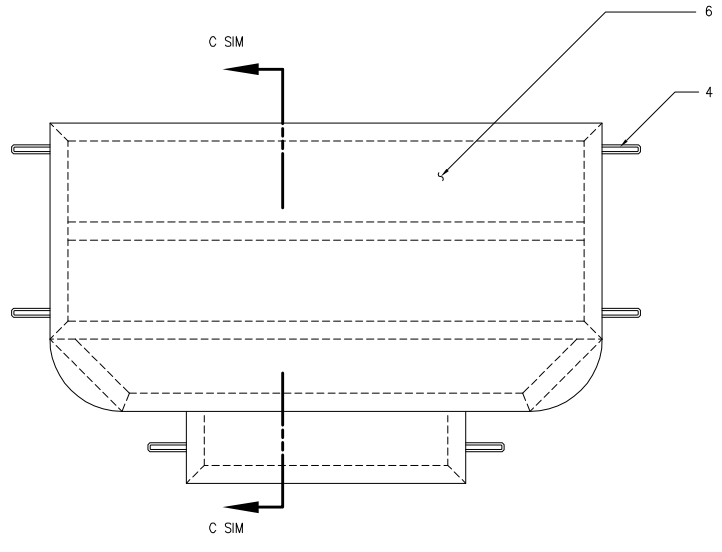
GENERAL NOTES:

1 ANCHORS SHALL BE SET USING HILTI HY 150/HIT-ICE, EPCON C6, OR EQUAL. PRE-DRILL HOLE IN ACCORDANCE WITH ADHESIVE MANUFACTURER SPECIFICATIONS.

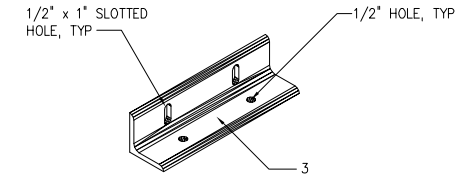


OPTION 1
WEIR AND BAFFLE





OPTION 2
WEIR AND BAFFLE



ANGLE FASTENER
DETAIL 1

NO.	ISSUED FOR	DATE	BY

DESIGNED JDW
DRAWN JDW
CHECKED SWF
PROJ. ENGR. CDC
APPROVED

HAZEN AND SAWYER
Environmental Engineers & Scientists
11311 CORNELL PARK DR. SUITE 135, CINCINNATI, OHIO 45242

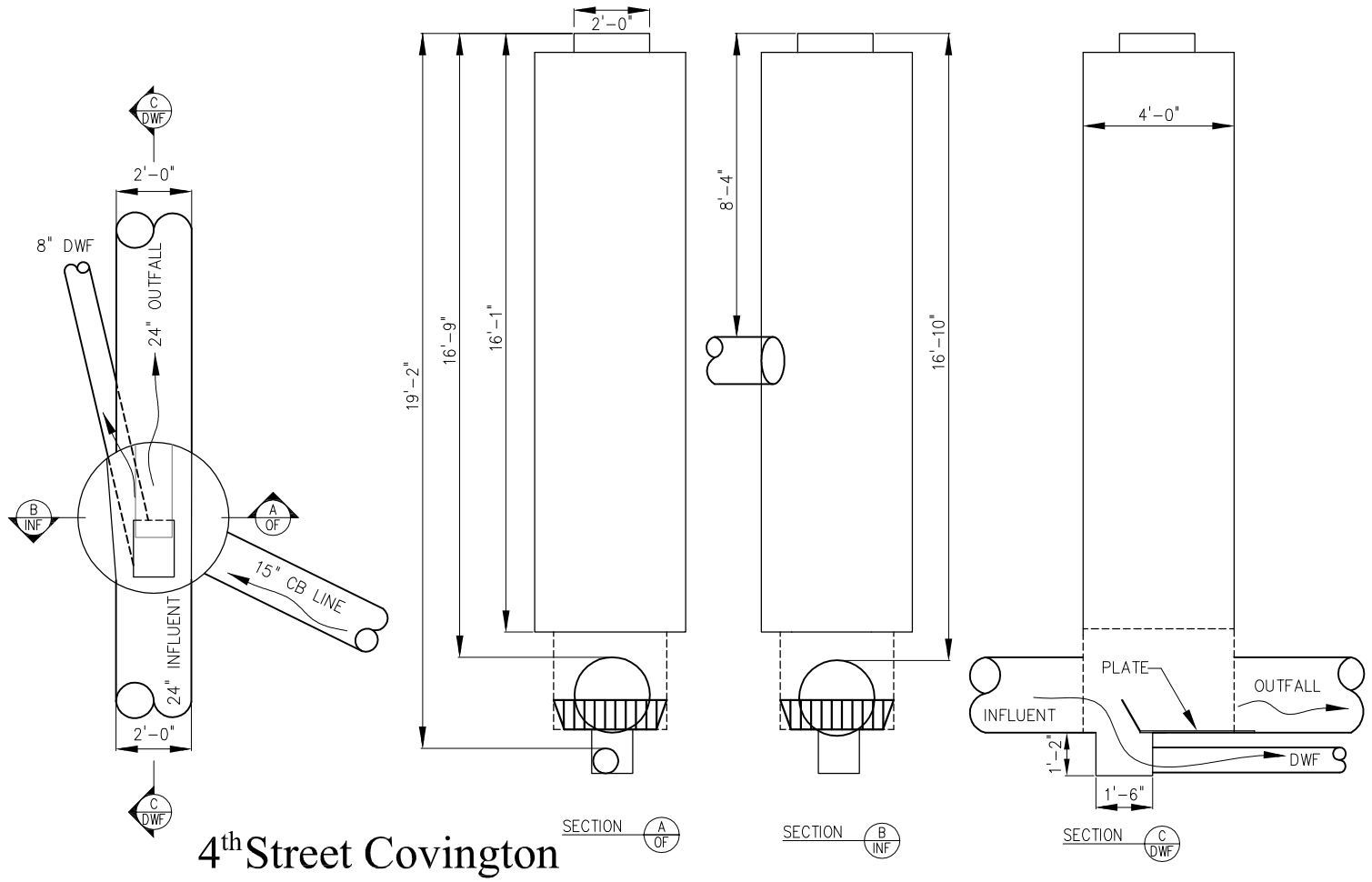
SANITATION DISTRICT No. 1
OF NORTHERN KENTUCKY

FLOATABLES CONTROL
PILOT PROGRAM

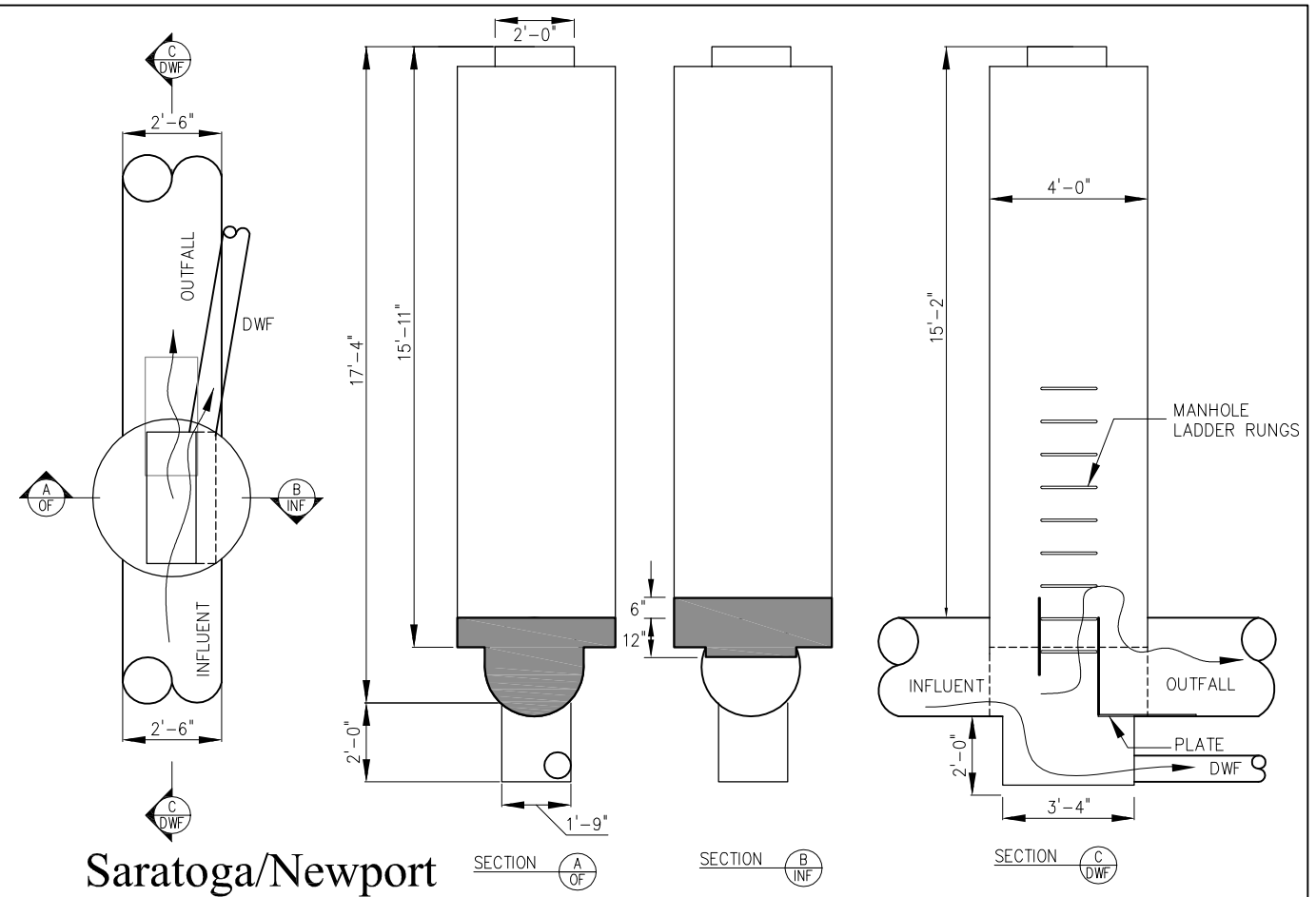
INSTALLATION DRAWING

DATE SEPTEMBER 2007
H & S JOB NUMBER 30005-006
CONTRACT NUMBER
SHEET 2 OF 4

20071102 3:19P a:\Projects\30\006_Infrastructure Characterization\Task 2 WAC Program\WAC 6 Floatables control\Floatables Control Pilot Program\Walter Rockaway By SORIANEZ Last Saved By jacqueline



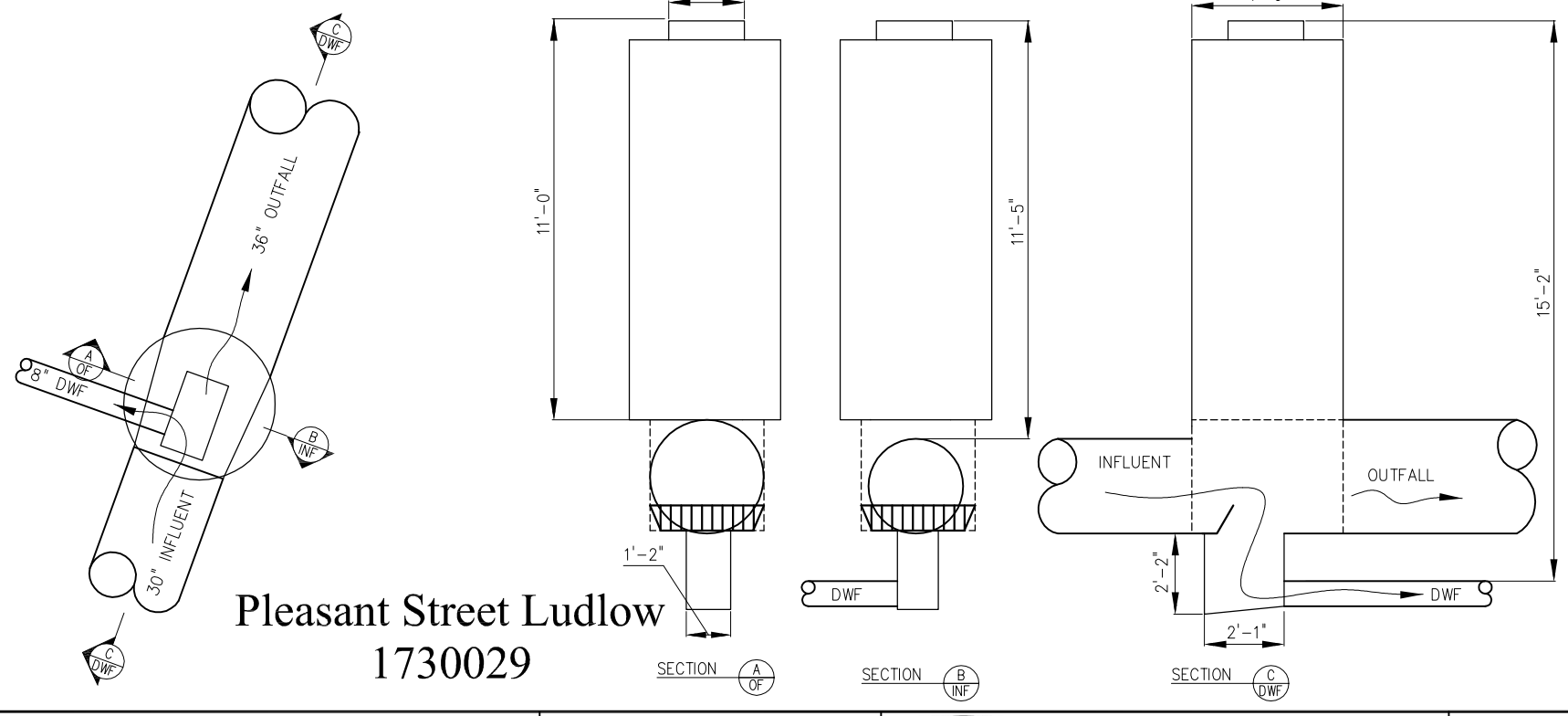
4th Street Covington
1480108



Saratoga/Newport
0770006

GENERAL NOTES:

1 THE CONFIGURATIONS AND DIMENSIONING SHOWN ON THIS SHEET WERE DRAWN BY METCALF & EDDY / AECOM BASED ON AVAILABLE DATA AND SOME ADDITIONAL FIELD MEASUREMENTS OF SELECT DIVERSION FEATURES PERFORMED BY SANITATION DISTRICT NO. 1 FIELD PERSONNEL. THE CONFIGURATIONS SHOWN ARE NOT NECESSARILY COMPLETE OR CORRECT AND ARE SHOWN FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING DIMENSIONS AND CONFIGURATIONS PRIOR TO DOING ANY WORK.



Pleasant Street Ludlow
1730029

NO.	ISSUED FOR	DATE	BY

DESIGNED CDC
DRAWN SOR
CHECKED SWF
PROJ. ENGR. CDC
APPROVED

HAZEN AND SAWYER
Environmental Engineers & Scientists
11311 CORNELL PARK DR. SUITE 135, CINCINNATI, OHIO 45242

SANITATION DISTRICT No. 1
OF NORTHERN KENTUCKY

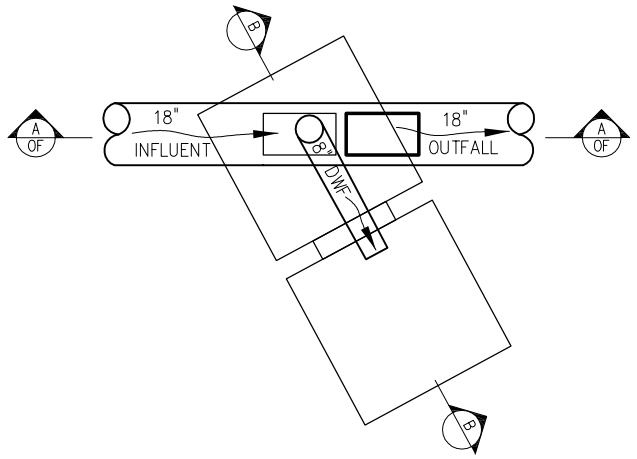
FLOATABLES CONTROL
PILOT PROGRAM

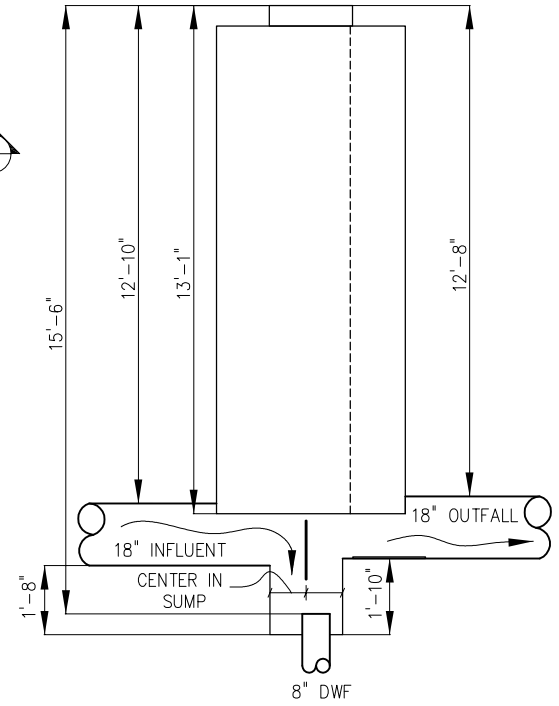
INSTALLATION DRAWING

DATE SEPTEMBER 2007
H & S JOB NUMBER 30005-006
CONTRACT NUMBER
SHEET 3 OF 4

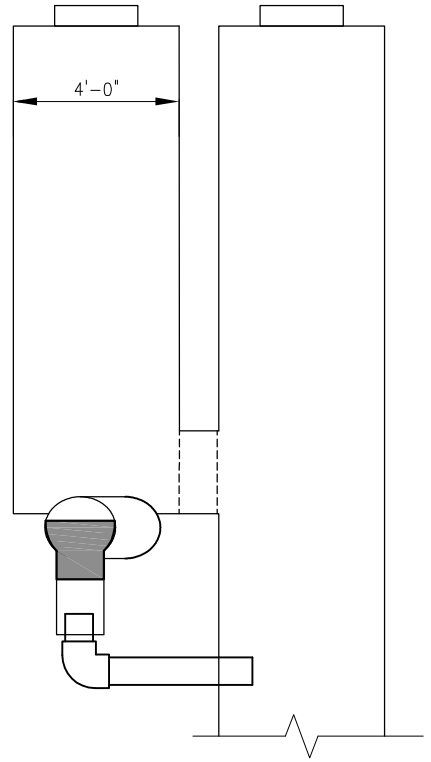
XREFs=

2007102 3:39P -k:\Projects\GS1\006_Infrastructure Characterization\Task 2 NMC Program\NMC 6 Floatables control\Floatables Control Pilot Program\WP\Typical ELS Floatable Control.DWG By:SORBOURKE Last Saved By: SORBOURKE





SECTION A

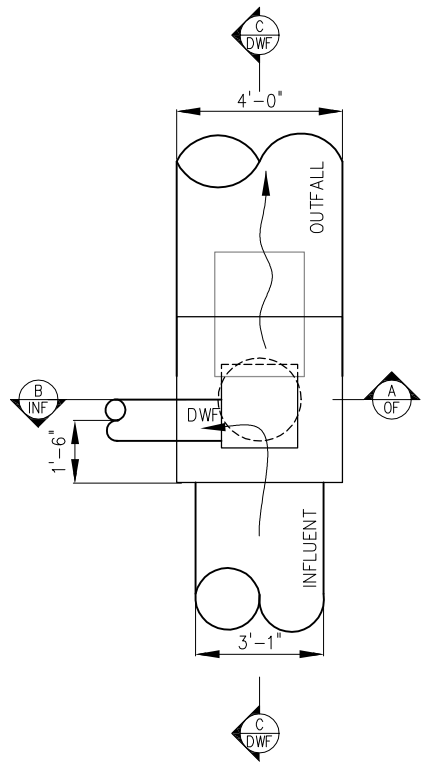


SECTION B
INF

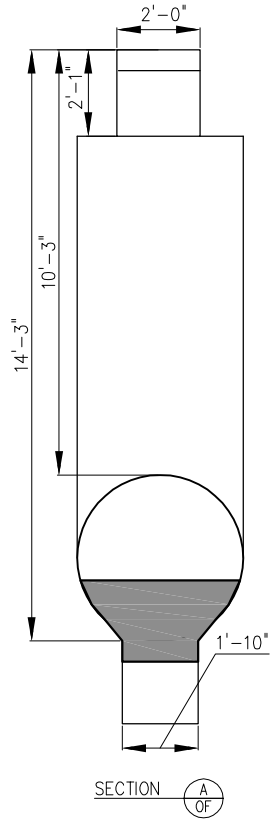
GENERAL NOTES:

1 THE CONFIGURATIONS AND DIMENSIONING SHOWN ON THIS SHEET WERE DRAWN BY METCALF & EDDY / AECOM BASED ON AVAILABLE DATA AND SOME ADDITIONAL FIELD MEASUREMENTS OF SELECT DIVERSION FEATURES PERFORMED BY SANITATION DISTRICT NO. 1 FIELD PERSONNEL. THE CONFIGURATIONS SHOWN ARE NOT NECESSARILY COMPLETE OR CORRECT AND ARE SHOWN FOR INFORMATION ONLY. CONTRACTOR IS RESPONSIBLE FOR CONFIRMING DIMENSIONS AND CONFIGURATIONS PRIOR TO DOING ANY WORK.

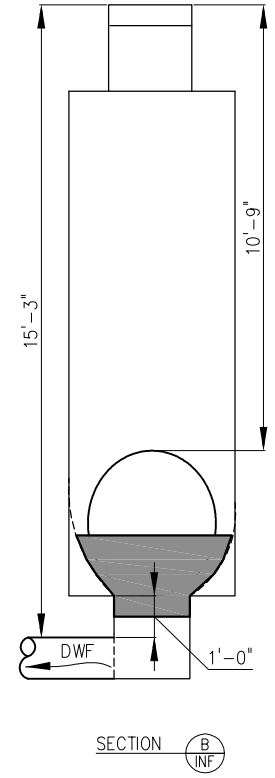
10th Street Covington
1420043



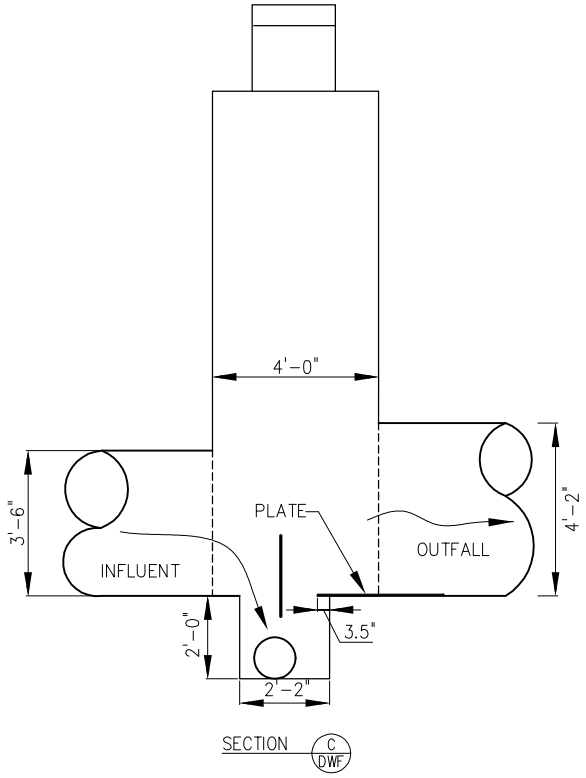
17th Street Covington
0930026



SECTION A
OF



SECTION B
INF



SECTION C
DWF

NO.	ISSUED FOR	DATE	BY

DESIGNED CDC
DRAWN SOR
CHECKED SWF
PROJ. ENGR. CDC
APPROVED

HAZEN AND SAWYER
Environmental Engineers & Scientists
11311 CORNELL PARK DR. SUITE 135, CINCINNATI, OHIO 45242

SANITATION DISTRICT No. 1
OF NORTHERN KENTUCKY

FLOATABLES CONTROL
PILOT PROGRAM

INSTALLATION DRAWING

DATE SEPTEMBER 2007
H & S JOB NUMBER 30005-006
CONTRACT NUMBER
SHEET 4 OF 4

XREFs=

20071012 3:34P J:\Projects\301\006_Infrastructure Characterization\Task 2 NMC Program\VMC & Floatables control\Floatables Control Pilot Program\07pilot ELS Floatable Control.DWG By:SOROURKE Last Saved By: SOROURKE

APPENDIX V:

Example Monitoring Forms

(This page intentionally left blank for double-sided printing.)

Sanitation District No. 1
Pilot Floatables Control Inspection Form

Date: 1·8·08 Control Type: BAFF WEIR

Location: 17th St. CSO CSO ID: 0930104 Diversion ID: 0930026

Inspector(s): DH GARVEY

Pre-Event

Floatables present in diversion prior to event: Yes _____ No ✓

Types of Floatables: (count) Sanitary Trash _____ Const. Debris _____ Natural _____
Street Litter _____ River Debris _____ Other: _____
Oil/Grease _____ Rags/Cloth _____ Other: _____ (type)

Pictures taken of diversion: Yes ✓ No _____ #11

Oufall inspected pre-event: Yes ✓ No _____

Floatables present at outfall prior to event: Yes _____ No ✓
(please take photos if possible)

Amount of floatables at outfall: (check one) High _____ Medium _____
Low _____ Not Present _____

Likely source of floatables at outfall: (by percentage) River _____ Dumping _____ CSO _____

Pictures taken at outfall: Yes ✓ No _____ #12

During Event

Was solids and floatables control overtopped during event? Yes ✓ No _____

- Was this caused by blinding or clogging of the control? Yes _____ No _____
- Was this caused by a blockage in the diversion? Yes _____ No _____

Were floatables released to the outfall prior to overtopping? Yes _____ No ✓

- What type of floatables were released? CONDOMS, PAPER AND PLASTIC BAGS

Sanitation District No. 1
Pilot Floatables Control Inspection Form

Were floatables observed to be retained by floatables control device during event? Yes _____ No ✓

- What type of floatables were retained? NONE. They were ramping over the baffle very rapidly leading up to the release.

Pictures Taken: Yes ✓ No _____ Pics #70 Pics 72-78 are during the event. Pics #79 and 80 are after release.

Were floatables diverted to the interceptor after the event? Yes _____ No ✓

- What type of floatables were retained in the diversion? NONE

Pictures taken: Yes ✓ No _____

Post Event

Was maintenance required at diversion after the event? Yes _____ No ✓

What type of maintenance: Vactor _____ Manual _____ Wash Down _____
(Check all that apply)

Manpower (1): _____ Duration (2): _____ hrs Total Hours (1 x 2): _____ hrs

Manned entry required? Yes _____ No ✓

Weight of items removed after event: _____ Lbs

Was outfall inspected after the event? Yes ✓ No _____

Was there evidence of floatables discharge? Yes _____ No ✓

Pictures taken: Yes ✓ No _____

To Be Completed by ICs Pics # 1-9-08 17th-1-3
CRG-02

Rainfall Duration: 5 hrs 10 min.s Peak Rainfall Intensity: 0.60 in/hr

Event Rainfall Depth: 0.43 in Avg. Rainfall Intensity 0.08 in/hr

General Notes Arrived @ site at 4:20 pm Hartman & Huff
Started raining about 6:30 pm light rain, stopped about 10 mins
8:20 steady down pour of rain, stopped at about 9:45 Took pics. # 100-0070
As flow was starting to build up during the event. Pictures 72-78 are taken during the release. Pics # 79 and 80 are taken after the rain stopped

Sanitation District No. 1
Pilot Floatables Control Inspection Form

Date: 1/8/08 Control Type: Suntree NSBB

Location: Greenup St. CSO CSO ID: ~~144012~~ 1440205 Diversion ID: 144012

Inspector(s): PHGarvey

Pre-Event

Floatables present in diversion prior to event: Yes ✓ No _____

Types of Floatables: (count)
Sanitary Trash ✓ Const. Debris _____ Natural ✓
Street Litter ✓ River Debris _____ Other: _____
Oil/Grease _____ Rags/Cloth _____ Other: _____ (type)

Pictures taken of diversion: Yes ✓ No _____ #4, #5+#6

Oufall inspected pre-event: Yes ✓ No _____

Floatables present at outfall prior to event: Yes _____ No ✓
(please take photos if possible)

Amount of floatables at outfall: (check one)
High _____ Medium _____
Low _____ Not Present _____

Likely source of floatables at outfall: (by percentage)
River _____ Dumping _____ CSO _____

Pictures taken at outfall: Yes ✓ No _____ #7

During Event

Was solids and floatables control overtopped during event? Yes _____ No ✓

- Was this caused by blinding or clogging of the control? Yes _____ No _____
- Was this caused by a blockage in the diversion? Yes _____ No _____

Were floatables released to the outfall prior to overtopping? Yes _____ No ✓

- What type of floatables were released? _____

Sanitation District No. 1
Pilot Floatables Control Inspection Form

Were floatables observed to be retained by floatables control device during event? Yes ✓ No _____

- What type of floatables were retained? WHISKEY & GATORADE BOTTLES

Pictures Taken: Yes ✓ No _____

Were floatables diverted to the interceptor after the event? Yes _____ No ✓

- What type of floatables were retained in the diversion? _____

Pictures taken: Yes ✓ No _____

Post Event

Was maintenance required at diversion after the event? Yes ✓ No _____

What type of maintenance: Vactor ✓ Manual _____ Wash Down _____
(Check all that apply)

Manpower (1): _____ Duration (2): _____ hrs Total Hours (1 x 2): _____ hrs

Manned entry required? Yes _____ No _____

Weight of items removed after event: _____ Lbs

Was outfall inspected after the event? Yes ✓ No _____

Was there evidence of floatables discharge? Yes ✓ No _____

Pictures taken: Yes ✓ No _____

To Be Completed by ICs Pic's# 1-9-08-Greenup Outfall, 1-9-08-Chamber 1, 1-9-08 Chamber 2, CRG-01

Rainfall Duration: 4 hrs 25 min.s Peak Rainfall Intensity: 0.48 in/hr

Event Rainfall Depth: 0.51 in Avg. Rainfall Intensity 0.11 in/hr

General Notes

1-9-08 Chamber 3 (1-9-08 greenup) is the manhole.

APPENDIX W:

Best Management Practices Featured at Public Service Park

(This page intentionally left blank for double-sided printing.)

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

Best Management Practices (BMPs) Featured at Public Service Park

Vegetated Roof



The District has installed a section of vegetated roof over its main office building. This roof consists of a six-inch soil medium, planted with decorative grasses and other drought resistant plants. The purpose of this technology is to minimize the amount of runoff that occurs from rain falling on a rooftop. The soil and vegetation serve as a natural sponge that absorbs smaller rain events without allowing any runoff.

Permeable Paver System



As we develop land, we tend to replace natural surfaces that allow infiltration of rainfall with hard, impervious surfaces such as roadways and rooftops. The result is an increase in the amount of rainfall that turns into runoff. The runoff from these man-made surfaces often contains pollutants such as heavy metals and hydrocarbons. Alternative paving materials can be used to minimize the amount of runoff and pollution that reach our local waterways.

Permeable Asphalt



Unlike conventional asphalt pavement, permeable asphalt is a porous pavement that allows water to drain through it. This pavement can be designed to handle traffic loadings and has been successfully used in many parts of the country, particularly in parking lot applications. Permeable asphalt pavements achieve their porous characteristics by removing the fine aggregates from the mix design.

Biofiltration Swale



Biofiltration is a natural process by which living organisms remove pollution. Certain plants, bacteria, and other soil-living microbes are able to remove and break down some types of water pollutants. Biofiltration can reduce the amount of toxic metals, oil, gasoline, and particulates carried by runoff. The District is using biofiltration to filter runoff from the parking areas before it reaches the wetland and pond.

Cistern



A cistern is a tank that stores collected rainwater. People around the world have been using rainwater cisterns for thousands of years. Cisterns remain a valuable way for homes and businesses to conserve water today. Collected rainwater can be used for landscape watering, vehicle washing, and other uses that don't require treated water.

Storm Water Pond & Wetland



A wetland is an area where the water level remains near or above the ground surface for most of the year. Marshes and swamps are examples of wetlands. Wetlands are usually found in a landscape's low spots where water naturally pools and the water table is high. Most wetlands also contain soils that drain slowly, which further retains the water.

Wetlands are home to an amazing diversity of plants and animals, including many endangered species. Many migrating birds depend on wetlands for food and water stopover points while making their long journeys. Wetlands are also natural water treatment facilities. Wetlands improve water quality by absorbing pollutants, slowing down rainwater runoff, and capturing sediment.

Permeable Concrete



Permeable concrete pavement is another form of porous material that allows water to pass through it. This system has been designed to handle traffic loadings. Porosity of this pavement is likewise achieved through selective use of aggregate material that creates void spaces between the larger stone material.

Wet Retention Basin



A retention pond is a constructed pond that maintains a permanent pool of water. Pollutant removal comes primarily by way of sedimentation. Solids, metals, nutrients in particulate form and organics are the target pollutants. Removal efficiencies are dependent upon the amount of time that runoff remains in the pond.

Oil/Water Separator



The District has installed an oil/water separator in the rear parking lot of the site. The separator tank is buried under the pavement and connected to the catch basins in the parking lot. Collecting runoff from the parking lot, this multi-chamber device is designed to remove solids such as silt and trash in the first chamber. The runoff then passes through a vertical baffle system, which separates oil from the water prior to discharging into the stream. The oil/water separator is designed with access so that it can be cleaned as necessary.

Dry Detention Basin



A dry detention basin is dry until a storm event occurs. Depending on the intensity and duration of the storm, the basin is designed to control the peak rate of storm water runoff from the site to a level that does not exceed pre-development conditions.

Urban Forest



Located on the trails of Public Service Park, the District's urban forest is a prime example of how easy it is to help clean our environment. By intercepting rainwater on their leaves, soaking up polluted water around their trunks, and reducing erosion by holding soil in place with their roots, urban forests (individual trees, parks, green space, woods and forests within an urban area) not only help control the quantity of storm water runoff, but also improve its quality.

Sanitation District No. 1's Public Service Park is located at the District's administrative office site:

1045 Eaton Drive
Ft. Wright, KY 41017

(This page intentionally left blank for double-sided printing.)

APPENDIX X:

Best Management Practice Guides

(This page intentionally left blank for double-sided printing.)

Best Management Practice Guide for Vehicle Service Facilities

The United States Environmental Protection Agency (USEPA) has identified storm water runoff as a leading cause of pollution in our national waterways. Oil, dirt, garbage, salt, grease, soap, litter and chemicals wash off roadways and lawns into roadside storm drains, which empty untreated storm water into our waterways.

Contaminated storm water is detrimental to local creeks and rivers. Our business community can make a difference by utilizing best management practices. Please refer to the reverse side of this card to learn what your company can do to protect waterways from storm water pollution.



© das Manufacturing, Inc.

Sanitation District No. 1
Protecting the Environment ~ Safeguarding Public Health

Best Management Practice Guide for Vehicle Service Facilities

- Wastewater from part cleaning, engine cleaning, drive train, undercarriage cleaning and radiator flushing should be contained. It should not be discharged, directly or indirectly, into the storm drain.
- All indoor floor drains that are connected to the storm drain system should be permanently plugged.
- Drip pans, adequate spill prevention and cleanup materials should be kept readily available for use.
- Used mop water from floor cleaning should be discharged to the sanitary sewer, not a storm drain.
- When changing, adding or draining vehicle fluids outside, all work should be conducted within areas where spills will be contained and cleaned immediately.
- Recycle and reuse vehicle fluids, such as oil and antifreeze.
- In the event of a spill, make sure there is a catch basin to capture the waste prior to discharging into the storm drain.

1045 Eaton Drive, Fort Wright, KY 41017
Phone: (859) 578-7450 Website: www.sd1.org

Best Management Practice Guide for Carpet/Upholstery Service Facilities

The United States Environmental Protection Agency (USEPA) has identified storm water runoff as a leading cause of pollution in our national waterways. Oil, dirt, garbage, salt, grease, soap, litter and chemicals wash off roadways and lawns into roadside storm drains, which empty untreated storm water into our waterways.

Contaminated storm water is detrimental to local creeks and rivers. Our business community can make a difference by utilizing best management practices. Please refer to the reverse side of this card to learn what your company can do to protect waterways from storm water pollution.



© das Manufacturing, Inc.

Sanitation District No. 1
Protecting the Environment ~ Safeguarding Public Health

Best Management Practice Guide for Carpet/Upholstery Service Facilities

- Educate home and business owners to treat stains with biodegradable cleaners to reduce the need for hazardous spot removers and sanitizers.
- Do not use the storm sewer system as an alternative to sanitary sewer disposal.
- Use water and chemicals sparingly.
- In the event of a spill, vacuum and dispose contaminated water properly.
- When possible, bring fresh water to the job site and take contaminated water back to the business location to be properly treated and discarded.

1045 Eaton Drive, Fort Wright, KY 41017
Phone: (859) 578-7450 Website: www.sd1.org

Best Management Practice Guide for Car Washing Facilities

The United States Environmental Protection Agency (USEPA) has identified storm water runoff as a leading cause of pollution in our national waterways. Oil, dirt, garbage, salt, grease, soap, litter and chemicals wash off roadways and lawns into roadside storm drains, which empty untreated storm water into our waterways.

Contaminated storm water is detrimental to local creeks and rivers. Our business community can make a difference by utilizing best management practices. Please refer to the reverse side of this card to learn what your company can do to protect waterways from storm water pollution.



© das Manufacturing, Inc.

Sanitation District No. 1
Protecting the Environment ~ Safeguarding Public Health

Best Management Practice Guide for Car Washing Facilities

- Wash vehicles in areas designed to collect and store the wastewater generated.
- Recycle, collect or treat wastewater prior to discharging it to the sanitary sewer system.
- Pressure cleaning and steam cleaning should be done off-site to avoid generating runoff with high pollutant concentrations.
- Map on-site storm drain locations to avoid discharges into the storm drain system.
- Immediately contain and treat spills.

1045 Eaton Drive, Fort Wright, KY 41017
Phone: (859) 578-7450 Website: www.sd1.org

Best Management Practice Guide for Dry Cleaning & Laundry Services

- Dispose of chemical recovery filters appropriately.
- Store chemicals indoors. If chemicals must be stored outside, construct a covered area with berms for protection and spill containment.
- Use cleaning chemicals sparingly. Reuse or recycle chemicals.
- Collect and dispose of wash water properly. Do not discharge wash water into storm drains, gutters or streets.
- Use biodegradable, phosphate-free detergents rather than solvents to clean equipment. Wastewater that is contaminated with any detectable amount of dry cleaning solvent is prohibited from being discharged into the sanitary sewer system.

1045 Eaton Drive, Fort Wright, KY 41017
Phone: (859) 578-7450 Website: www.sd1.org

Best Management Practice Guide for Dry Cleaning & Laundry Services

The United States Environmental Protection Agency (USEPA) has identified storm water runoff as a leading cause of pollution in our national waterways. Oil, dirt, garbage, salt, grease, soap, litter and chemicals wash off roadways and lawns into roadside storm drains, which empty untreated storm water into our waterways.

Contaminated storm water is detrimental to local creeks and rivers. Our business community can make a difference by utilizing best management practices. Please refer to the reverse side of this card to learn what your company can do to protect waterways from storm water pollution.



© das Manufacturing, Inc.

Sanitation District No. 1
Protecting the Environment ~ Safeguarding Public Health

APPENDIX Y:

Swimming Pool Water – An Illicit Discharge

(This page intentionally left blank for double-sided printing.)

Are There General Pool Maintenance Guidelines I Should Follow?

- Make sure backwash filters are directly connected to your property's sanitary sewer connection.
- Always rinse cartridge filters over soil, covering any residue with dirt. Never clean a filter near a creek, stream or storm drain.
- Before using copper algaecides, try less toxic alternatives. Ask your pool maintenance service or store for help resolving persistent algae problems without using copper algaecides.



Who Should I Contact with Questions?

If you have any questions regarding proper pool discharging procedures, or if you spot an illicit discharge, please contact Darren Martin with Sanitation District No. 1 at 859-547-1641.

Where Can I Purchase My Swimming Pool Supplies?

Swimming pool supplies can be purchased at any local pool company. We would like to recognize the following pool supply companies for their willingness to partner with us on this educational effort to protect our local waterways:

Lipps Pools & Spas
1033 Burlington Pike
Florence, KY 41042
(859) 371-3291
www.lippspools.com

Kramer Pools
53 Winston Hill Road
Ft. Thomas, KY 41075
(859) 441-1040
www.kramerpools.com

Burton Pools
8460 U.S. Highway 42
Florence, KY 41042
(859) 371-8805
www.burtonspools.com

SANITATION DISTRICT NO. 1
1045 Eaton Dr.
Fort Wright, KY 41017

859-578-7450
info@sd1.org
www.sd1.org

SWIMMING POOL WATER:

AN ILLICIT DISCHARGE



A Guide to:

Protecting Northern Kentucky's Waterways
By Properly Maintaining and
Correctly Disposing of
Your Pool Water.

Sanitation District No. 1
Protecting Water Resources

Why is Swimming Pool Discharge Harmful?

If not properly handled, swimming pool water can harm our creeks and streams. The chemicals used in pool maintenance (e.g., chlorine, bromine, copper and silver) are designed to sterilize pools and will also kill fish, insects and plants in our waterways.



What is an Illicit Discharge?

Federal regulations define an illicit discharge as "...any discharge to a municipal separate storm sewer system that is not composed entirely of storm water" (this does not include discharges from fire-fighting activities or permitted sources). Illicit discharges are considered "illicit" because storm sewer systems typically empty directly into local waterways -- not to a treatment facility.

How Should I Discharge My Pool Water?

The preferred method is to discharge pool water to the sanitary sewer system. If discharging to a sanitary system is not possible, either because it is unavailable or not allowed, the next best choices are to discharge pool water onto your property or to the storm water system. However, only water that is clear, dechlorinated and of a neutral pH may be discharged from a pool to the street, storm sewer system or a stream.

When discharging pool water onto your property, the water should not flow off your property. Do not allow the water to pond for a prolonged period of time. This could create odors as well as fly and mosquito breeding conditions.

Pool discharges should be done slowly to prevent soil erosion, flooding or damage to adjacent properties. The recommended discharge rate is 25 gallons/minute or less.

Water containing cleaning chemicals, acid buffering compounds, algae and other substances may not be discharged to the street, storm water system or a stream. Test your pool water for chemicals and other pollutants before discharging.

When is it Safe to Discharge My Pool Water?

- Pool water should be essentially free of chlorine (less than 0.1 parts per million total chlorine), algaecides and other potential pollutants prior to discharge. Chlorine Neutralizer can be used to reduce chlorine levels and can be purchased at many pool supply stores.
- As a general rule, a 10-day holding time after the last chemical treatment is usually adequate to dissipate chlorine prior to discharge.
- Before discharging your pool water, pH levels should be within a normal range (6 to 9). pH adjustment chemicals, instructions and test kits are available at many pool supply stores.



APPENDIX Z:

Illicit Discharges Pamphlet

(This page intentionally left blank for double-sided printing.)

SOURCES OF ILLICIT DISCHARGES

Sanitary wastewater
Failing septic systems
Commercial car wash discharges
Improper oil disposal
Swimming pool discharges
Laundry wastewater
Dumping/spills
Improper disposal of auto and household toxics



CONTACT INFORMATION

If you detect an illicit discharge, please contact Sanitation District No. 1 at 859-578-7450 during business hours, or call the Dry Creek Wastewater Treatment Plant's 24-hour telephone line at 859-331-6674. For more information on illicit discharges, visit www.sd1.org.

WHAT CAN HOMEOWNERS DO TO HELP?

- Clean up areas where dumping has occurred and prevent future dumping by posting signage or restrictions in the area.
- Mark storm drains to educate others not to dump.
- Use environmentally safe soaps and cleaning products when washing vehicles.
- Wash cars on lawn or a commerical car wash rather than cleaning them on the driveway.
- Make sure all interior plumbing lines are properly connected to a sanitary treatment system.
- Dispose swimming pool discharge through a wastewater line or dechlorinate before discharging into a local waterway or storm drain.
- Maintain septic systems and repair them immediately if damage is detected.



Sanitation District No. 1
1045 Eaton Drive, Ft. Wright, KY 41017
Phone: 859-578-7450 Fax: 859-331-2436
www.sd1.org

Help
detect & eliminate

ILLICIT DISCHARGES



A step in the right direction
to help clean and protect our
Northern Kentucky waterways

Sanitation District No. 1
Protecting Water Resources

WHAT IS REQUIRED?

Storm water runoff is considered to be one of the most significant sources of pollution to our nation's waterways. Polluted runoff is often transported to storm sewer systems, which discharge into local rivers and streams without treatment. The U.S. Environmental Protection Agency (EPA) has issued Storm Water Phase II regulations that require the implementation of programs and practices to control polluted storm water runoff. These regulations specifically require communities to develop and administer a plan to detect and eliminate illicit discharges to the storm sewer system.

WHAT IS AN ILLICIT DISCHARGE?

Federal regulations define an illicit discharge as "...any discharge to a municipal separate storm sewer system that is not composed entirely of storm water" (exceptions include discharges from fire-fighting activities and permitted industrial sources). Illicit discharges are considered "illicit" because storm sewer systems are not designed to process non-storm water wastes.



WHY IS IT IMPORTANT TO ELIMINATE ILLICIT DISCHARGES?

Illicit discharges enter the system through either direct connections (e.g., wastewater piping either mistakenly or diliberately connected to the storm drains) or indirect connections (e.g., inflitration into the storm sewers from cracked sanitary systems, spills collected by drain outlets, or other substances such as paint or used oil dumped directly into a drain).



The result is untreated discharges that contribute high levels of pollutants, including heavy metals, toxics, oil and grease, solvents, nutrients and pathogens (bacteria) to receiving waterbodies. Pollutant levels from these illicit discharges have been shown in EPA studies to be high enough to threaten aquatic life, wildlife, and public health.

HOW CAN AN ILLICIT DISCHARGE BE DETECTED?



- The presence of flow coming from storm water pipes during dry weather.
- The presence of color in the water, during both wet and dry weather.
- Distinct smells or odors that can be caused by sewage, chemicals, organic breakdown and more.
- Noticeable cloudiness in the water's appearance, during both wet and dry weather.
- Visable floatables, such as sewage, oil sheen, and suds, in waterways.

ILLICIT DISCHARGE = WATER POLLUTION

APPENDIX AA:

KY Solid Waste Resource Guide

(This page intentionally left blank for double-sided printing.)

NORTHERN KENTUCKY SOLID WASTE RESOURCE GUIDE

A Publication of the **Northern Kentucky Solid Waste Management Area**



Boone County	Campbell County	Kenton County
Judge/Executive	Judge/Executive	Judge/Executive
Gary Moore	Steven Pendery	Ralph Drees

The NKSWMA **is funded through the Fiscal Courts of Boone, Campbell and Kenton Counties**

IMPORTANT PHONE NUMBERS

If you only remember one number ...

NKSWMA COORDINATOR
MARY F. SHINKLE

Phone (859) 334-3151
Fax (859) 334-3598
E-Mail mshinkle@boonecountyky.org
Internet www.boonecountyky.org/NKSWMA

As the NKSWMA Coordinator, Mary is in charge of making sure you get the information you need. Not sure who to call? Can't decide what disposal method would be best? Call Mary and she will connect you with people that can help you. She has information on Boone, Kenton & Campbell solid waste programs as well as the Northern Kentucky Solid Waste Management Plan and Annual Report.

County Solid Waste Management

Each county has a Solid Waste Coordinator who deals with issues that include recycling programs, composting, landfill & disposal issues, household hazardous waste, education & community affairs, presentations, illegal dumping, litter abatement, enforcement, and resource material. Please call your local Solid Waste Coordinator for information on programs, special events, policies, etc., within your county jurisdiction.

- **Boone County Solid Waste Coordinator**
  Mary F. Shinkle
  859-334-3151
  Email: mshinkle@boonecountyky.org
  Website: www.boonecountyky.org/bcswm
- **Campbell County Solid Waste Coordinator**
  Reno Deaton
  859-441-5166/859-547-3670 direct line
  Email:rdeaton@campbellcountyky.org
  Website: www.campbellcountyky.org/solid_waste.htm
- **Kenton County Solid Waste Coordinator**
  Roger Wells
  859-392-1920
  Email: roger.wells@kentoncounty.org
  Website: www.kentoncounty.org

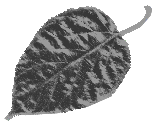
UK Cooperative Extension Services
Boone County: 859-586-6101
Campbell County: 859-572-2600
Kenton County: 859-356-3155

Natural Resources Conservation Service
Natural resources, educational materials and programs, workshops and agricultural issues.
Boone and Kenton Counties:
859-586-7903
Campbell County: 859-635-9587

Natural Resources Environmental & Public Protection Cabinet
Florence Regional Office
859-525-4923
Air, water, land, and waste contamination issues and environmental compliance enforcement.

Illegal Dump Hotline
Kentucky Division of Waste Management
1-888-NO DUMPS
Please call this number if you see a garbage pile on someone's property. If you actually see someone in the act of dumping, **CALL 911**. Dumping is a Class D felony, so please speak up!

Northern Kentucky Household Hazardous Waste Action Coalition
859-578-6744
Coalition dedicated to spreading awareness of the proper disposal/recycling of household hazardous waste in the home. Information as well as providing presentations and printed information are available.
Contact: Sara Zepf, Coalition Chair
www.nkyhhw.org



RECYCLING "BUY-BACK" CENTERS

The following businesses are able to buy recyclable materials from individuals:

Abitibi Consolidated
P.O. Box 17107, Cincinnati, OH
513-242-3671
Types: Paper; (for drop-box locations, see p. 4)

Able Recycling
5672 Commercial Drive, Burlington, KY
859-525-7717
Types: Cardboard in 800 lb. bales for commercial and industrial accounts

Bluegrass Recycling
1575 Distribution Drive, Burlington, KY
859-283-9560
Types: Aluminum, copper, brass, lead acid batteries, stainless, radiators, and other non-ferrous metals (anything a magnet will NOT attract); Industrial & trade scrap; Free pick-up

Can-Do Recycling
1510 Russell St., Covington, KY
859-261-8264
Types: Aluminum cans, scrap aluminum, copper, brass, wire, stainless steel, radiators.

Newport Recycling
527 W. 10th St., Newport, KY
859-261-9335
Types: Non-ferrous metals; Drop-off only

River Metals Recycling
Newport Yard, 1220 Licking Pike, Newport, KY 859-291-5509
Types: All types of scrap iron & metals

WASTE HAULERS

These are the companies that pick up trash at the curb.

Bavarian Waste Hauling and Disposal
12764 McCoy Fork
Road Walton, KY 41094
Tel 859-485-4416
http://
www.bavarianwaste.com/

CSI of Northern Kentucky
11563 Mosteller Road
Cincinnati, OH 45241
Tel 1-800-543-1339

Rumpke Waste Services
10795 Hughes Road
Cincinnati, OH 45251
Tel 1-800-543-0477
http://www.rumpke.com/

Rumpke Recycling
5535 Vine Street
Cincinnati, OH 45217
Tel 513-242-4401
http://www.rumpke.com/
recycling1.
html

Waste Management
Cincinnati Hauling
5723 Este Avenue
Cincinnati, OH 45232
(513) 242-5080
http://www.wm.com

For information about Construction Demolition Debris roll-off container service, please consult your local business directory.

Kenton County Open Dumping

Kenton County Solid Waste offers open dumping on the first Saturday of each month from 10 a.m. until 2 p.m. Please call 392-1920 for more info.

GETTING GARBAGE SERVICE

Just moved?

FIRST, if you live in a subdivision or planned neighborhood, find out if there is a Homeowners Association for your community. Often, the HOA contracts trash service for the neighborhood.
SECOND, if you don't have a Homeowners Association, contact your city. Cities usually manage garbage service for incorporated areas.
THIRD, if you live in an unincorporated region and not in a city, you are free to contract waste removal with any hauler that you prefer. Check the above list for hauler information.

RECYCLING DROP BOX LOCATIONS

BOONE COUNTY 859-334-3151 for information

- Northern Kentucky Airport Sound Insulation House
  3644 Limaburg Road, Hebron
- Florence Public Services Center
  7850 Tanners Lane, Florence
- Petersburg Community Center
  6517 Market Street, Petersburg
- Ryle High School (Behind stadium)
  10379 Highway 42, Union
- Walton Community Park
  35 Old Stephenson Mill Road
- Burlington
  Barney's Road, just past the Fairgrounds
- Belleview-McVille Fire Station
  6900 McVille Road, Belleview

Acceptable: Plastic #1 & 2 with a spout, glass, aluminum and food cans, corrugated cardboard, paperboard, magazines, office paper, and newspapers

KENTON COUNTY 859-392-1920 for information

- Covington Transfer Station (513-771-4200)
  4399 Boron Drive, Covington
  Behind Public Works, near Latonia Plaza
- Banklick Woods Park
  420 Independence Station Road, near the Public Works building

Acceptable: Plastic #1 & 2 with a spout, glass, aluminum and food cans, corrugated cardboard & newspapers

CAMPBELL COUNTY 859-635-9587

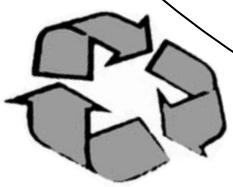
- Campbell County Police Station on U.S. 27, in Alexandria
- Newport Public Works Garage
  Underneath I-471 bridge at 6th & Wildcat

Acceptable: Plastic #1 & 2, glass, aluminum and food cans, corrugated cardboard, magazines and newspapers

Please remember to WASH & SQUASH and to put newspapers in paper grocery sacks. No lids on plastic or glass, no plastic bags of any kind and no other type of material other than what is stated above. "Off items" constitute contamination, causing whole loads to be taken to the landfill!

PAPER

Abitibi has paper recycling bins throughout Northern Kentucky. Please check http://www.boonecountyky.org/NKSWMA/BCKAbitibiLocations.pdf for bin locations.



CURBSIDE RECYCLING

Check with your garbage hauler to see what type of curbside program they offer. The following cities participate in curbside recycling service:

Alexandria	Fort Wright
Bellevue*	Highland Heights
Cold Spring	Independence*
Covington	Kentonvale
Crescent Springs	Lakeside Park
Crestview	Melbourne*
Crestview Hills	Newport *
Dayton*	Park Hills
Edgewood	Silver Grove*
Elsmere	Southgate
Erlanger	Taylor Mill
Florence*	Villa Hills
Fort Mitchell	Wilder
Fort Thomas	

* Subscription Service

APPLIANCE RECYCLING

Boone, Kenton and Campbell Counties accept certain items for free from the public year-round and recycle them. Acceptable items include refrigerators, stoves, air conditioners, washers, dryers, hot water heaters, and most other metal appliances.

- **Kenton County Public Works**
  420 Independence Station Road
  Independence 392-1920
  Drop off everyday from 7:00 a.m. to 3:30 p.m. Call our "WE CARE" hotline (392-1999) to have appliances picked up within three business days
- **Boone County Public Works**
  5645 Idlewild Road
  Burlington 334-3600
  Drop off Monday through Friday from 8:00 a.m. to 4:00 p.m.
- **Campbell County Transportation Garage**
  A.J. Jolly Park, Race Track Road
  Alexandria 635-9100
  Drop off Monday through Friday from 7:30 a.m. to 3:30 p.m.

COMPUTER/ ELECTRONICS DISPOSAL

These companies disassemble computers and recycle the individual components in them. See "Reuse Stores" below for donating functional computers for reuse.

Apex Technology Solutions
485-4444
7130 New Buffington Road
Florence, KY 41042
http://
www.apextecsol.com/

Kentucky E-Scrap
3519 Dixie Highway
Elsmere, KY 41018
Phone: 859-292-8696
Fax: 859-342-4911
Email: Info@KYescrap.com
http://www.kyescrap.com/pages/1/index.htm

Technology Recycling Group
513-761-5333
5139 Kieley Place
Cincinnati, OH 45217
http://
www.recyclegroup.net/index.asp

USA Lamp and Ballast
513-641-4149

Campbell County accepts **toner and Inkjet cartridges** for recycling, but check with manufacturers for recycling ideas, as some will accept spent cartridges and reuse them. To recycle **3.5" diskettes**, mail them to: USA City Link Project, Attn: Floppies for Kids, 20349 Highway 36, Covington, LA 70433

MISCELLANEOUS MATERIALS RECYCLING

Packing Peanuts:
- Plastic Loose Fill Council Peanut Hotline 1-800-828-2214
- Microwizard, 10007 US 42 in Union, 859-384-3571
- The UPS Store, 8459 US 42, 859-746-1182

Pallet Reuse (40" x 48"):
- Alpha Packaging, 513-769-5777
- Matthew 25: Ministries, 513-793-6256

Tyvek Envelopes:
Call DuPont's Recycling Line at 1-800-222-5676 to receive Tyvek envelope recycling info

CDs
Mail useless CDs to:
MRC Polymers
c/o DADC Recycling Program
3307 South Lawndale Ave.
Chicago, IL 60623

Transparencies:
Mail to:
3M Recycling, C/O Gemark
99 Stevens Lane
Exeter, PA 18643

REUSE/SECONDHAND STORES

Be Concerned 714 Washington Avenue Covington 859-291-6789 Clothing, toys, smaller appliances

Brighton Center 741 Central Avenue Newport 859-491-8303 Clothing, furniture, appliances

Fairhaven Thrift Store 601 W 9th Street Covington 859-655-3959 Clothing, small items, kitchen accessories, books

Goodwill Industries 7855 Tanners Lane Florence/25 W 7th Street Covington 859-371-1238 Clothing, toys, furniture, house wares, jewelry, books, computers

Laura's Closet 7736 US Highway 42 Florence 859-525-6684 Plus-size clothing, accessories; Will pay for quality donations

Office Furniture Connection 1616 Dolwick Drive Erlanger 859-371-9920

Once Upon A Child 8085 Connector Drive Florence 859-282-8922 Children's clothes, toys, furniture and supplies; Will pay for quality donations

Plato's Closet 8133 Connector Dr Florence 859-282-9800 Designer clothing, shoes, and accessories; Will pay for quality donations

Salvation Army 8061 Hamilton Avenue Covington 859-261-0835 Household items, furniture, clothing, useful appliances

Second Time Around Thrift Shop 2023 Pearl Street Covington 859-431-4636 Clothing, jewelry, toys, kitchen ware, etc.

St. Vincent de Paul 2655 Crescent Springs Road Erlanger/906 Monmouth Road Newport/712 6th Avenue Dayton, KY 513-341-3212 Clothing, furniture, house wares, working computers from the past five years

Vietnam Veterans of America Hamilton, OH 513-829-2800 Clothing, shoes, bedding, house wares, jewelry, toys, small furniture, tools, small appliances; Call for pick up in Northern Kentucky or visit website at www.vva.org

Village Discount Center Newport Shopping Center, Newport Clothing, shoes, bedding, jewelry, toys, small appliances

HOUSEHOLD HAZARDOUS WASTE

Batteries:
Auto batteries are accepted by most stores that sell batteries as well as by Bluegrass Recycling (see Recycling "Buy-Back" Centers). Rechargeable batteries can be handled by calling 1-800-8BATTERY (800-822-8837) for the Rechargeable Battery Recycling Corporation. Ni-Cd cell phone batteries can be dropped off at local retail stores including B&W Supply, Best Buy, Home Depot, Lowe's, Office Depot, Pete's PhotoWorld, Radio Shack, Staples, Target and wireless services companies such as Cingular and Verizon. Call for more info.

Paint:
First, try to reuse any waste paint by finding a neighbor, church, or local school who can use it. If you must dispose of it, remove the lid from the can and let the paint dry. It can then be set out for your normal trash pick up. Adding kitty litter to the paint will expedite drying—just pour it in and stir. The paint doesn't have to be perfectly solid, but it cannot be runny.

Antifreeze:
Waste antifreeze can be taken to the Kenton Co. Public Works building in Independence (392-1920) or to the Boone Co. Public Works building in Burlington (334-3151), which is open to any Northern Kentucky resident with a 5 gallon limit.

Solvents:
Solvents, such as paint thinner, do not go bad. Allow the particulates to settle out, drain off the clear liquid. Mix the remainder with kitty litter and dispose in trash.

Pesticides:
The Department of Agriculture can provide information about pesticide disposal at 1-800-205-6543. They offer a free pick-up service to farmers for disposal. Most household pesticides in small amounts are permissible to go to the landfill, though anyone with large amounts is encourage to call Environmental Enterprises (see column at right).

Propane Tanks:
Tanks can be turned into cylinder exchange companies at local convenience stores. Contact a store in your area. Empty tanks can also be put out for the garbage as long as the valve stem is completely removed from the tank or the valve is fully opened and "EMPTY" is written on the side. Call your garbage service for details.

Fire Extinguishers
For safe disposal, spray any remaining material out of the extinguisher and into a garbage bag. Once the container is empty, mark it as such. After that, it will be acceptable for pick up with your household trash.

Household Cleaners:
Most of these products are water-soluble and can be poured down the drain mixed with water. Never mix household cleaners when disposing. Special caution should be taken with septic systems or package treatment plants.

Environmental Disposal Services:

Safe and legal disposal of any hazardous materials for a small fee:

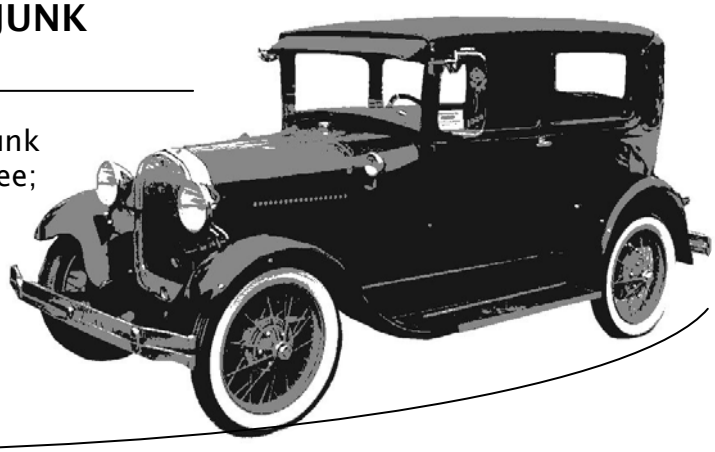
Environmental Enterprises, Inc. Cincinnati
4650 Spring Grove Ave. 513-541-1823

USA Lamp & Ballast: Free drop-off of light bulbs, thermostats, or batteries from households; Computers for a fee
5366 Este Ave.
Cincinnati 513-641-4149

If you have any questions about disposal please feel free to call your local Solid Waste Coordinator, the NKSWMA Coordinator or Ms. Sara Zepf with the **Northern Kentucky Household Hazardous Waste Action Coalition (NKHHWAC)** at 859-578-6744. Check out their website at www.nkyhhw.org. All three counties are members of the NKHHWAC.



NORTHERN KENTUCKY'S JUNK VEHICLE PROGRAM



The NKSWMA can help you remove old junk vehicles from your property! The program is free; a release form must be signed by the owner before the vehicle can be taken away. Call to set up removal:

Webster's General Contracting
David Webster
859-393-4890
11316 Taylor Mill Road

USED MOTOR OIL RECYCLING

Used motor oil from home oil changes must be taken to a facility that can dispose of it properly. Both Boone and Kenton Counties' Public Works Departments accept up to five gallons of used motor oil from private residents. Most instant oil change businesses accept used oil as well. Call your local oil change place before bringing your oil, though, as there may be restrictions.

Boone County
Public Works 334-3600

Kenton County
Public Works 392-1920

Campbell County
Auto Zone Alexandria 635-1607
Auto Zone Newport 781-8826
Quickie Lube Cold Spring 441-0257

TIRE DISPOSAL

Bavarian (859-485-4416), CSI (513-771-4200), and Rumpke (513-851-0122) will all accept waste tires for a fee. In addition, most tire dealers will take old tires, but make sure to call for info about quantity, size & fee charged for disposal.

A1 Garage
Walton 493-5300

Advanced Automotive Services
Alexandria 448-0100

Alexandria Tire Ctr.
Alexandria 635-0441

BP Oil Company
Bellevue 431-2221

Best One Tire
Burlington 371-4200

Bob Sumerel Tire
Alexandria 635-9777
Ft Wright 341-6222
Florence 283-1280
Erlanger 341-2728

Bob's Service & Sales
Florence 525-1999

Community Car Care
Alexandria 635-1788

Entire Auto Care Inc
Florence 525-8060

Firestone Tire
Newport 491-1400
Covington 291-2121

Fleet Tire
Covington 431-8600
Florence 371-8300

Goodwrench
Florence 371-8998

Goodyear Auto Serve.
Newport 491-1540

Hammond's Service
Covington 491-6385

Kentucky Tires
Covington 291-8999

Master Tech Auto
Ft. Thomas 781-8863

Michel Tires Plus
Florence 282-0800
Ft. Thomas 781-6400
Covington 291-9610

Pep Boys
Florence 647-9977

Performance Tire
Erlanger 371-7474

ProCare Service Ctr.
Florence 282-7935

Raaker Tire Serve.
Newport 292-0224

Scott's Service Center
Independence 356-7268

Sears
Florence 525-4528

Steele's Auto Service
Burlington 534-5900

Steve's Auto Repair
Covington 356-3000

Tire Discounters
Cold Springs572-2233
Florence 647-6333

ELIMINATE JUNK MAIL

Junk mail associated with major credit agencies can be stopped by calling 1-888-5OPT-OUT. A huge chunk of junk can be eliminated by sending your name(s) and address to:

Direct Marketing Association's Mail Preference Service
PO Box 643
Carmel, NY 10512

The Northern Kentucky Solid Waste
Management Area
5645 Idlewild Road
Burlington, KY 41005

STAMP
ME

The Northern Kentucky Solid Waste Management Area
consists of Boone, Kenton, and Campbell Counties.

LITTER ABATEMENT & SPECIAL EVENTS

Litter is an unhealthy, harmful and intolerable blight. It affects our quality of life, and it creates a negative impression of our community. It also pollutes our land and water and is detrimental to wildlife. Litter is also expensive to remove—Kentucky spends millions of dollars every year cleaning up roadways. **Littering is also illegal!**

Throughout the year, Northern Kentucky hosts litter clean ups and abatement programs to combat litter. If you would like to learn more about how to get involved and stop litter in your community, call your local Solid Waste Coordinator or the NKSWMA Coordinator. We would love to plan a community litter cleanup for your neighborhood or business. Join us for our spring & fall cleanups as well as Commonwealth Cleanup Week, River Sweep and the Great American Cleanup. Northern Kentucky is OUR home—help us keep it clean!

EDUCATION

Your Solid Waste Coordinators and NKSWMA Coordinator have a wealth of information to share with you. They are available to give presentations to schools, civic groups, churches, camps … anyone. We can discuss any subject related to solid waste management, such as recycling, waste reduction, household hazardous waste, litter and more. If you are interested in these programs, wish to schedule a presentation or need more information, just give us a call!

The NKSWMA and this Resource Guide do not seek to endorse or promote any company. The listings are provided as a service to inform the public of proper disposal and recycling options. Anyone with suggestions, additions or corrections of options **offered to the public** is invited to call NKSWMA at 859-334-3151.