



June 21, 2011

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

To Whom It May Concern:

Pursuant to the above-referenced Consent Decree, Sanitation District No. 1 (SD1) was required to document its compliance with the Nine Minimum Controls (NMC), including proposed projects to be performed to ensure that compliance with the NMC is achieved by no later than twenty-four months after entry of the Consent Decree. SD1's NMC Compliance Report was submitted on March 12, 2008 to the EPA and Cabinet and received regulatory approval on July 6, 2008.

SD1 is required to submit an annual report on its implementation of the NMCs within sixty days after each anniversary date of the original submission. The enclosed report serves as the second annual report to demonstrate SD1's continued implementation of the NMCs. Please note that the report is being submitted earlier than the September 4 annual deadline.

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

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June 21, 2011

I am confident in the integrity of the enclosed document, and I am certain that its content not only satisfies regulatory requirements, but also helps further the mission and vision of SD1 by establishing aggressive, proactive, achievable measures to protect water resources and enhance the quality of life in Northern Kentucky.

If you have any questions or concerns, do not hesitate to contact me at 859-578-6762 or by e-mail at [mwurschmidt@sd1.org](mailto:mwurschmidt@sd1.org).

Best regards,

A handwritten signature in cursive script that reads "Mark W. Wurschmidt".

Mark W. Wurschmidt, P.E., BCEE  
Interim Executive Director

MWW/vf  
Enclosures

Sanitation District No. 1  
June 21, 2011

# **Nine Minimum Controls 2011 Annual Compliance Report**





## CERTIFICATION

Nine Minimum Controls 2011 Annual 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.

Mark W. Wurschmidt  
Mark W. Wurschmidt, P.E., BCEE  
Interim Executive Director

6/17/11  
Date

COMMONWEALTH OF KENTUCKY

COUNTY OF Kenton )ss.

The foregoing instrument was acknowledged before me this 17th day of June, 2011 by Mark W. Wurschmidt, P.E., BCEE, Interim Executive Director of Sanitation District No. 1.

Ina Marie Bono  
NOTARY PUBLIC

Kenton County, Kentucky

My commission expires: 7/6/2014

# **NINE MINIMUM CONTROLS 2011 ANNUAL COMPLIANCE REPORT**

June 21, 2011



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

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## **LIST OF ACRONYMS AND ABBREVIATIONS**

Cabinet	Kentucky Energy and Environment Cabinet
CSAP	Continuous Sewer Assessment Program
CSO	Combined Sewer Overflow
CSS	Combined Sewer System
DWO	Dry Weather Overflow
EPA	U.S. Environmental Protection Agency
gbaMS	GBA Master Series (information tracking system)
NMC	Nine Minimum Controls
O&M	Operations and Maintenance
SD1	Sanitation District No. 1

## **SECTION 1. INTRODUCTION**

### **1.1 Overview**

On April 18, 2007, Sanitation District No. 1 (SD1) entered into a Consent Decree with the U.S. Environmental Protection Agency (EPA) and the Kentucky Energy and Environment Cabinet (Cabinet) to address sanitary sewer overflows and combined sewer overflows (CSOs) in an effort to improve water quality throughout SD1's service area. As part of this agreement, SD1 was required to document its compliance with the Nine Minimum Controls (NMC) for CSOs as set forth in the CSO Control Policy, including proposed projects to be performed to ensure that compliance with the NMC is achieved by no later than twenty-four months after entry of the Consent Decree.

SD1's NMC Compliance Report was submitted on March 12, 2008 to the EPA and Cabinet and received regulatory approval on July 6, 2008.

### **1.2 Report Objective**

Pursuant to the Consent Decree, SD1 is required to submit an annual report on its implementation of the NMCs within sixty days after each anniversary date of the original submission. The enclosed report serves as the third annual report to demonstrate SD1's continued implementation of the NMCs.

## **SECTION 2. NINE MINIMUM CONTROLS**

The following sections present detailed descriptions of SD1's continued compliance efforts. These compliance efforts are in direct response to the Consent Decree requirements, to the guidance provided in the CSO Control Policy and the EPA's Guidance for Nine Minimum Controls.

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

The purpose of this control is to establish operation, maintenance, and inspection procedures to ensure that the CSS and treatment facility will perform as effectively as possible to maximize treatment of combined sewage and reduce the magnitude, frequency, and duration of CSOs.

SD1 has continued to effectively utilize its computerized maintenance management system, GBA Master Series (gbaMS), to schedule and track its operation and maintenance (O&M) activities. Table 2.1 provides an overview of the major activities performed in both the separate sewer system and CSS through implementation of regularly scheduled O&M activities, as well as SD1's formal Continuous Sewer Assessment Program (CSAP). The data represents approximate amounts of work

completed by both internal and external crews and has been updated from previous years based on SD1's continued improvements in gbaMS recordkeeping.

**Table 2.1 O&M and Repair Work (2008 through 2010)**

Activity	2008	2009	2010	Total
<b>Combined System</b>				
Catch Basins Cleaned	1,211	888	787	<b>2,886</b>
Catch Basin Cleaning (Yards of Debris Removed)	N/A	427	469	<b>896</b>
Catch Basins Inspected	2,057	3,328	4,070	<b>9,455</b>
New Catch Basin Installation	0	5	2	<b>7</b>
Catch Basins Replaced	159	224	140	<b>523</b>
Catch Basins Repaired	128	65	78	<b>271</b>
Grit Pit Cleaning (Yards of Debris Removed)	358	439	355	<b>1,152</b>
<b>Manholes</b>				
Manholes Inspected	5,985	4,688	1,254	<b>11,927</b>
Manholes Repaired	485	332	320	<b>1,137</b>
Manholes Replaced	55	59	96	<b>210</b>
New Manholes Installed	26	53	39	<b>118</b>
<b>Sewer Cleaning</b>				
Sewer Lines Cleaned – Feet (Length of Pipe)	706,441	530,303	657,709	<b>1,894,453</b>
<b>Sewer Inspection</b>				
Sewer Line Initial Inspection - Feet	1,126,198	855,962	463,299	<b>2,445,459</b>
Sewer Line Follow-up Inspection – Feet	288,605	555,856	631,781	<b>1,476,242</b>
Sewer Lines Inspected - Total Feet	1,414,803	1,411,818	1,095,080	<b>3,921,701</b>
<b>Sewer Line Rehab/Replacement Stats</b>				
Sewer Lines Rehabilitated (CIPP) - Feet	953	2,251	29,528	<b>32,732</b>
Sewer Lines Repaired - Feet	2,609	2,864	2,608	<b>8,081</b>
Sewer Lines Replaced - Feet	15,833	14,794	24,549	<b>55,176</b>
Misc. Sewer Line Repairs - Count	45	40	8	<b>93</b>

### Catch Basin Inspection and Maintenance

#### *SD1-Owned Catch Basins*

All SD1 owned catch basins were inspected at least once during the reporting period and cleaning or repair work orders were written as-needed. Since 2008, SD1 has been regularly inspecting trapped catch basins in four pilot areas, approximately every three to four months, in an effort to determine what an appropriate inspection and cleaning schedule should be for trapped catch basins. The information collected from these pilot areas has shown no consistencies in the inspection or cleaning frequencies. Instead, the information suggests that inspections and cleanings are dependent on numerous variables that are unique to the individual catch basin. Because of this, SD1 is currently investigating and exploring other strategies for assigning appropriate regularly scheduled inspection and cleaning frequencies to ensure that all catch basins are maintained to an appropriate level. Since SD1 completed its process of performing quality assurance and quality control review of its 2007 initial system-wide catch basin inventory, this data can now be confidently used to assist in this effort. In the interim, SD1 will continue to inspect all catch basins at least once each year and clean, if

needed. In addition, crews will continue to inspect and clean the catch basins in the pilot areas at the preventive maintenance schedules that have proven to be effective for them.

#### *Private-Owned Catch Basins*

During 2010, SD1 conducted follow-up inspections of privately owned catch basins, and installed two new catch basins upstream of where several are connected to the CSS. In many cases, this approach has been found to be more effective for SD1 to keep solids and floatables from private basins out of the CSS rather than taking enforcement action. However, SD1 will pursue enforcement action, as needed, on privately owned catch basins.

#### *KTC – Owned Catch Basins*

SD1 and Kentucky Transportation Cabinet (KTC) are continuing to work together to develop a program in which SD1 would be reimbursed to clean and maintain the catch basins owned by Kentucky Transportation Cabinet. Negotiations for an agreement between SD1 and Kentucky Transportation Cabinet began in 2010. A final agreement has been delayed due to budget constraints that KTC is currently facing. A meeting with SD1 and KTC was held in May 2011 to discuss follow-up actions needed to finalize the agreement. SD1 is currently working to identify the number of catch basins in the CSS that are owned by KTC, along with their current conditions and cleaning needs. SD1 and KTC hope to finalize the catch basin maintenance agreement by the end of 2011. Presently, SD1 notifies KTC when its catch basins are inspected and are in need of cleaning.

#### Diversion and CSO Outfall Inspection and Maintenance

SD1 also inspects each diversion and the associated CSO once per week as well as after every rainfall event. Cleaning is also performed on an as-needed basis at the CSO locations that have solids & floatables controls installed at the diversion manhole or the outfall (see NMC #6 below for further details on SD1's solids & floatables program). When needed, inspections and cleaning frequencies are modified in response to dry weather overflows that have occurred. The information gathered from inspections is used to identify the location of dry weather overflows and measures to eliminate them from reoccurring (described further in Section 2.5). Inspection records for 2010 indicate that very little debris was found during inspections, and inspectors were able to clean diversions, if needed, with simple cleaning measures. There were only 28 work orders generated for Customer Service crews to perform more intensive cleaning.

## **2.2 NMC #2: Maximum Use of Collection System for Storage**

The purpose of this control is to maximize the use of the collection system by making relatively simple modifications to the CSS to enable the existing sewers to store wet weather flows until capacity is available in the downstream collection and treatment systems in order to reduce CSO volume.

### In-Line Storage Analysis

SD1 conducted an investigation of the Eight Street and Patton Street pump stations during 2009 after the targeted interceptor cleaning project identified significant amounts of debris in the combined sewer segments upstream of each pump station. From this investigation, SD1 determined that both pump stations had originally been designed by the Army Corp of Engineers and that the pump operating wetwell levels were designed to utilize the influent combined sewer as part of the wetwell volume. This design allows flow to backup into the upstream combined sewers during normal pump operation, which lowers the velocities in the sewer and causes debris and sediment to settle in the sewer. Because of this existing design, SD1 must conduct more frequent preventive maintenance inspection and cleaning to remove the settled debris, and the collection system experiences reduced conveyance and inline storage capacity.

The existing design also causes the flow in the influent sewers and associated wetwell to be detained for long periods of time, which makes the pump stations more susceptible to corrosion due to hydrogen sulfide attack. The concrete walls and ceilings of the wetwells in both pump stations are severely corroded and must be rehabilitated in order to extend the life of the pump stations.

Based on this investigation, SD1 is currently evaluating the feasibility of lowering the pump operating wetwell levels in both pump stations in order to prevent the use of the influent sewers for wetwell volume. Lowering the operating levels will reduce the amount of debris settlement and allow for increased conveyance capacity, reduce detention time, and provide the ability to store flows in the upstream combined sewers during wet weather to reduce CSO volumes.

Because the existing wetwells are shallow and have limited volumes unless the upstream combined sewers are used, SD1 is currently considering either lowering the wetwell bottom elevation and installing new suction-lift pumps or providing a new dry weather pump station adjacent to the existing pump station. This new dry weather pump station would be installed deep enough to prevent using the influent sewer as part of the wetwell volume under dry weather flows. Under wet weather flows, the influent sewer would then be used as inline storage and the existing pump station would be utilized to pump wet weather flows in conjunction with the new dry weather pump station. SD1 is currently completing the alternatives and cost-benefit analysis to determine the best approach to address the wetwell operating levels, the corrosion in the existing wetwells, and reduction in CSO volume. The evaluation of these options and the methods to repair the corroded wetwells is anticipated to be complete by the summer of 2011.

## **2.3 NMC #3: Review and Modification of Pretreatment Requirements**

The purpose of this control is to minimize the impacts of discharges into the CSS from non-domestic sources during wet weather events, and to minimize CSO occurrences by modifying inspection, reporting and oversight procedures within the approved pretreatment program.

### Standard Permits

SD1 permitted one new Significant Industrial User during 2010: United States Playing Card Co. in Erlanger (Categorical Industrial User), which is not located within the CSS. With this addition, SD1 had a total of 54 permitted Significant Industrial Users in its collection system as of December 31, 2010.

### Compliance Monitoring

SD1 did not issue any short term specialty discharges in 2010.

### Enforcement

SD1 issued the following enforcement actions during 2010:

- 30 Notice of Violations
  - Louis Trauth Dairy, LLC, which is located in the CSS, was issued 4 violations for the following reasons: 2 for pH violations detected, 1 for failure to submit the pH chart, and 1 for failure to respond to the Notice of Violation.
- \$6,000 in administrative fines were issued for 10 Notice of Violations

### Pretreatment Modifications

No pretreatment requirements or modifications were required for industries in the CSS.

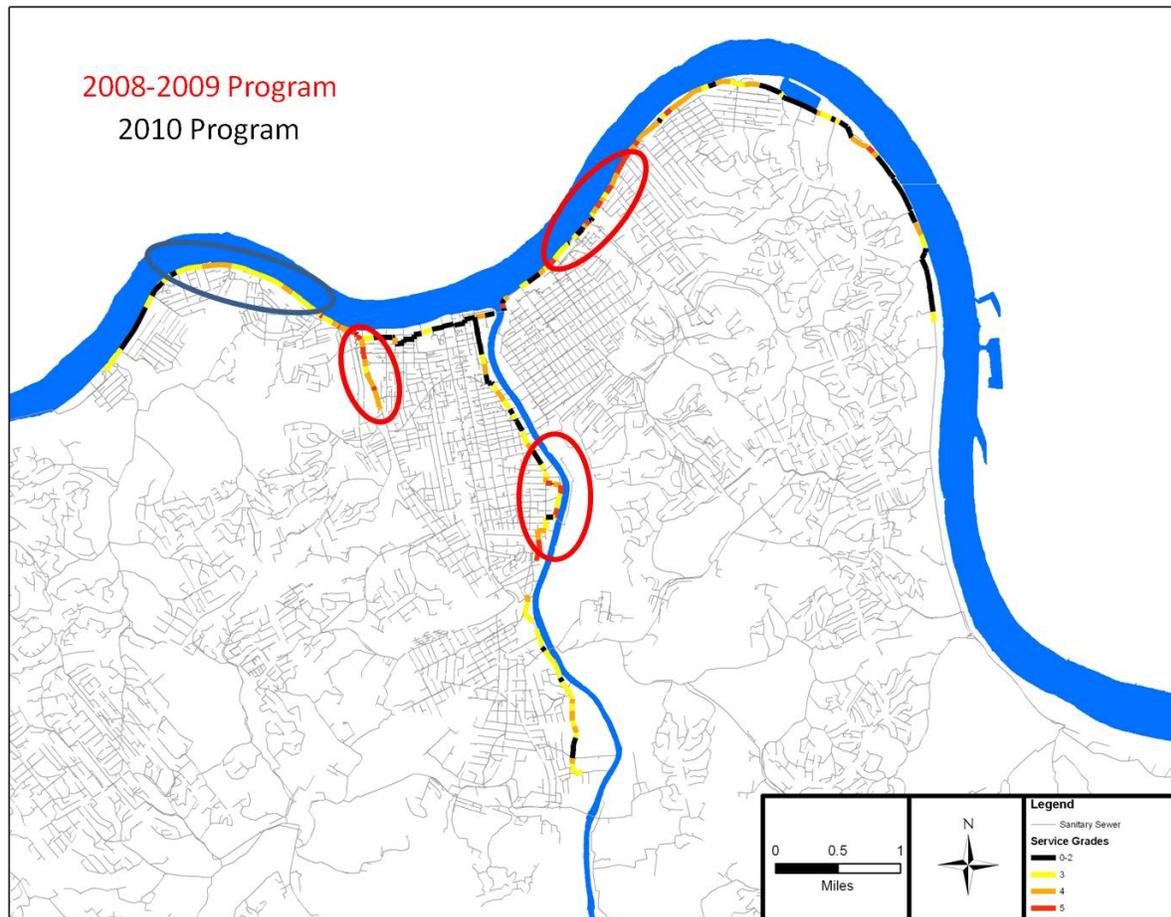
## **2.4 NMC #4: Maximization of Flow to POTW for Treatment**

The purpose of this control is to maximize flow to the treatment plant by making simple modifications to the CSS and treatment plant to enable as much wet weather flow as possible to reach the treatment plant, thereby minimizing the magnitude, frequency, and duration of CSOs that flow untreated into receiving waters.

### Collection Interceptor

The targeted sewer cleaning program was continued in 2010 to further improve system performance. This cleaning program helps to lower the number of CSO activations by ensuring that the full interceptor capacity is available for wet weather conveyance.

In the first phase of work (2008-2009), SD1's cleaned approximately 31,500 linear feet of interceptor ranging in size from 18-inch to 96-inch and removed approximately 1,500 tons of debris. In the second phase of the work (completed in fall 2010), SD1 cleaned 18,000 linear feet of 60-inch diameter pipe and removed 1,200 tons of debris. Figure 2.1 shows the segments of interceptor cleaned as part of both phases of work. Hydraulic model results indicate that SD1 has reduced annual CSO volume by approximately 24 million gallons on a system-wide basis by completing this cleaning. Flow monitors are planned to be put in place in the summer of 2011 after the Ohio River flooding season to assess the changes in capacity and confirm the model predicted overflow volumes.

**Figure 2.1 Targeted Sewer Cleaning Program**

### Improvements at Dry Creek Wastewater Treatment Plant

SD1 was able to secure low interest loan monies from the state revolving loan fund through the Kentucky Infrastructure Authority in the amount of \$16 million in order to perform additional capacity improvements at the Dry Creek Waste Water Treatment Plant. These improvements are intended to provide the following benefits:

- Increase in plant screening and grit removal capacity from 75 million gallons per day to 160 million gallons per day. This improvement will remove the current screenings capacity limitation identified in the NMC report dated March 12, 2008 and is consistent with the Watershed Plans long-term strategy to increase the wet weather capacity of the Dry Creek Waste Water Treatment Plant to 160 million gallons per day.
- Equalized flow splits between plant final clarifiers to allow for more consistent operation and accommodate future increases in flow.
- Odor control for solids storage and dewatering.
- Reduce typical year CSO volume by 34 million gallons.

Final designs of these improvements are anticipated by August 2011 and construction is currently estimated to begin at the end of 2011.

## 2.5 NMC #5: Elimination of CSOs during Dry Weather

The purpose of this control is to ensure overflows do not occur in the CSS during dry weather conditions by implementing measures that focus on proper and efficient collection system operation.

### Investigations to Identify Potential Dry Weather Overflow (DWO) Locations

In conjunction with the routine CSO diversion inspections described under NMC 1, inspectors visually look for debris and blockages that may trigger a DWO or would affect the ability of the diversion to maximize the flow entering the interceptor during rainfall. Diversions that are found to have DWOs or have the potential to overflow during dry weather are evaluated in further detail to determine a recommended course of action 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:

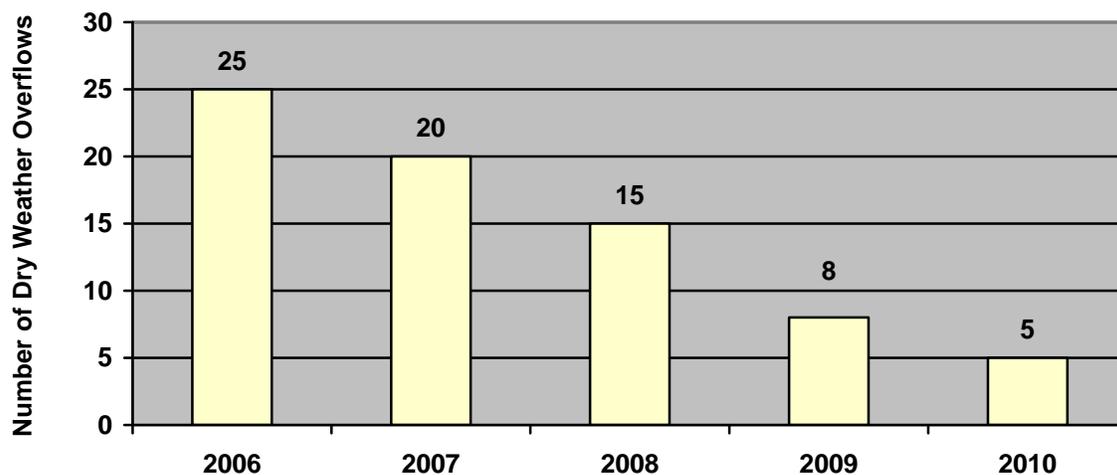
- Catch basin modifications to reduce solids that may cause DWO risk at the downstream diversion.
- Permanent modifications to the diversion, such as removing a weir plate, removing the bar rack over the diversion or upsizing the diversion pipe.
- Targeted cleaning upstream or at diversions to address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

During 2010, SD1 also completed its inspection of all dry weather flow diversion pipes (approximately 140 locations). The pipes were assessed for the appropriate next action and rehabilitation or replacement as part of SD1's CSAP. None of the pipes were determined to have any significant structural deficiencies and no repairs were required. Currently, SD1 is planning to investigate 2,500 feet upstream of each CSO diversion to ensure that any pipes with maintenance or structural deficiencies will be fixed so that dry weather overflows do not occur as a result of pipe defects or accumulated debris. The investigations of these pipes are being prioritized by their dry weather diversion pipe inspection score.

SD1 has continued to make significant progress with these efforts in eliminating dry weather CSOs, as summarized in Figure 2.2.

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**Figure 2.2 Elimination of Dry Weather CSOs (2006 through 2010)**



Corrective Actions

A summary of the five DWO events that occurred in 2010, including the locations, causes of the overflows, estimated overflow volumes, and the actions taken to prevent the overflows from re-occurring is provided in Table 2.2. (A more detailed description of the overflows can be found in SD1’s 2010 quarterly reports submitted to the Cabinet and EPA.)

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**Table 2.2 2010 Dry Weather CSOs**

Structure ID#	Location	Date	Overflow Cause	Est. Volume	Corrective Action Taken
0610080	Taylor Avenue CSO Diversion	2/19/2010	Blockage of Debris from River Water Intrusion	8,000 gallons	The blockage was removed, and the dry weather pipe was inspected to insure that there was no reoccurring problem.
1490027	Parkway/ Highway Avenue CSO Diversion	4/12/2010	Blockage of Roots and Debris	32,000 gallons	Bypass pumping was setup and a construction crew dug up the diversion pipe. The blockage was removed and the section of dry weather pipe was replaced.
0570011	McKinney CSO Diversion	07/01/2010	Blockage of Debris	5,100 gallons	The debris was removed from the line and re-inspected to ensure the blockage was completely cleared. The pipe was evaluated for repairs and was found to be in good condition. The pipe was re-inspected in six months.
0570011	McKinney CSO Diversion	11/01/2010	Outlet gate on the Dayton Grit Pit left partially closed / debris built-up behind the gate	213,250 gallons	SD1 has since modified the standard operating procedures for cleaning the grit pits to include a verification step to ensure that all inlet and outlet gates are fully opened before personnel leave the grit pit. This will ensure that future dry weather overflows do not occur due to this issue.
1710003	Adela Street CSO Diversion	11/9/2010	Blockage of Debris	5,700 gallons	The debris was removed from the line and re-inspected to ensure the blockage was completely cleared. The upstream combined sewers were inspected and additional debris was removed. The catch basins upstream of the diversion were replaced and retrofitted with bells to trap solids and floatables. A project is currently under design to replace the diversion manhole with a baffle and weir wall structure and replace the dry weather diversion pipe to provide inline storage and additional solids & floatable control.

### River Water Intrusion Mitigation

SD1's planned improvements to protect against river water intrusion consist of the installation of duckbill-type check valves at the outfall pipes of 42 CSO diversion locations to provide passive check valve service. In addition, manholes in low lying areas near the outfalls will be sealed at the frame and lid along with ensuring watertight lids are properly functioning to protect against river water intrusion. The rubber duckbill style check valves will either be installed on the end of the existing outfall pipes or in chambers constructed upstream of the existing outfall, depending on accessibility to the existing end of pipes. In some locations, the headwalls may be replaced or modified to accommodate the check valves. Table 2.3 summarizes SD1's current progress in river water intrusion mitigation.

**Table 2.3 Check Valve Installation Progress**

<b>Location</b>	<b>CSO ID</b>	<b>Diversion ID</b>	<b>Status</b>
16th Street Covington	CSO-0930106	DIV-0930002 DIV-0930014	Complete
Adela	CSO-1710116	DIV-1710003	Complete
Anchor Inn	CSO-0360079	DIV-0360018	Complete
Donnermyer and Lafayette	CSO-0540044	DIV-0540044	Complete
Garrard Street Covington	CSO-1440206	DIV-1440156	Complete
Kenner Street	CSO-1710114	DIV-1710054	Complete
Lagoon Street	CSO-1720109	DIV-1720005	In-Progress
Rohman Street	CSO-1730263	DIV - 1730008	In-Progress

## **2.6 NMC #6: Control of Solid and Floatable Materials in CSOs**

The purpose of this control is to reduce the amount of solid and floatable material discharged to water bodies through wet weather CSOs through the implementation of simple measures such as: baffles, screens, catch basin modifications, and nets.

### Storm Drain Marking Program

SD1 has continued to implement its volunteer storm drain marking program geared towards Girl Scouts, Boy Scouts, school groups and concerned citizens. SD1 provides all materials and storm drain markers for groups interested in completing a project. To promote the program, brochures are distributed at city buildings, mailed to scout leaders and displayed at SD1's front counter. SD1 employees also assist in marking catch basins while on the job. In 2010, approximately 311 drains were marked in the Northern Kentucky area (127 by community groups, 84 by Northern Kentucky University students and 100 by SD1 staff).

### Catch Basin Modification

In 2008, SD1 began retrofitting catch basins with bells and grated inlets as a method of reducing the amount of solid and floatable materials entering the CSS. Catch basin rehabilitation and replacement work, including these modifications, are scheduled based on established priority areas upstream of past and recurring DWOs. Crews focus on completing the projects in the highest priority area before moving onto projects in the next priority area. The following methodology is used to determine which modification is appropriate:

- Catch basins that are in need of structural repair have a bell installed at the time of repair.
- Catch basins that are in need of total rehabilitation are replaced with both grated inlets and bells.
- Catch basins that have no rehabilitation or repair needs but are able to be retrofitted have a bell installed.
- All SD1-owned catch basins in priority areas upstream of recurring DWOs are retrofitted or replaced to have a bell installed. SD1 also evaluates the need to install a trapped catch basin at the location where multiple private-owned catch basins tie into the CSS to trap debris at one location owned by SD1.

From January 1, 2010 to December 31, 2010, SD1's construction performed 78 catch basin repairs with bells installed and 140 catch basin replacements with grated inlets and bells installed, for a total of 218 catch basins in the CSS retrofitted to trap solids & floatables. As indicated in Section 2.1, SD1 also installed 2 new catch basins during this period to trap solids and floatables from private basins.

In 2010, SD1 began a targeted disconnection and retrofit of catch basins that discharge directly into CSO diversion manholes (in addition to making catch basin modifications according to the above-described methodology). To date, SD1 has identified 13 CSO diversion manholes where these types of catch basin arrangements exist and are moving forward with projects to disconnect the catch basins from the diversion manhole, retrofit them to trap solids and floatables, and move the flow downstream into the CSO discharge pipe. These improvements effectively remove storm water from the CSS, which reduces CSO volumes and traps the solid and floatable materials before the flow is discharged to a waterway. Six of these projects were complete during 2010 and one was completed earlier this year. Five of the six remaining locations are also expected to be completed during 2011. One location will be completed with the Church St CSO reduction project described in SD1's Watershed Plans.

### In-line and End-of-Pipe Controls

SD1's solids and floatables controls program is summarized in Table 2.4. The program includes 21 controls, including nets at 9 CSOs, a bar rack at one CSO, and weirs or baffles at 1 CSOs. The engineered solids and floatables control baffle chambers at Greenup Street, Main Street, McKinney Street and Garrard Street also include sumps to capture grit and other heavy solids. During July 2010, the baffle chamber project at Garrard Street was complete. A project is currently under design for the Adela CSO Diversion to replace the diversion manhole with a baffle and weir wall structure along

with replacing the dry weather diversion pipe to provide inline storage and additional solids & floatable control.

**Table 2.4: Current Solids and Floatables Control Program**

<b>CSO/Diversion</b>	<b>Name</b>	<b>Type of Control</b>	<b>Status</b>
0030031	Carmel Manor	Black Net	Installed
0200069	617 Mary Ingles	Green Net	Installed
0330100	Tower Hill	Green Net	Installed
0340050	Lester Ln.	Black Net	Installed
0340051	Manor Lane	Green Net	Installed
0360079	Anchor Inn	Black Net	Installed
0570011	McKinney Street	Engineered S&F Control Baffle Chamber w/Bar Rack Above Baffle	Installed
0570030	Main Street	Engineered S&F Control Baffle Chamber w/Bar Rack Above Baffle	Installed
0650041	Geiger Avenue	Type "B" Bar Rack	Installed
0650098	Wildcat Run	Black Net	Installed
0770006	Saratoga Street	Weir	Installed
0910005	Oakland Avenue	Weir	Installed
0910084	Meiken/Eastern	Black Net	Installed
0930026	17th Street	Baffle	Installed
0930050	19th St.	Baffle	Installed
0930066	19th St.	Weir and baffle	Installed
0650084	Taylor Bottoms	Baffle	Installed
1420043	10th Street	Baffle	Installed
1440121	Greenup Street	Engineered S&F Control Nutrient Separating Baffle Box (solids sump, screen and baffle)	Installed
1440156	Garrard Street	Engineered S&F Control Baffle Chamber (solids sump, screen and baffle)	Installed
1490172	Swain Court	Black Net	Installed
1710003	Adela Street	Weir and baffle	In-progress

## 2.7 NMC #7: Pollution Prevention

The purpose of this control is to minimize various forms of pollution from entering into the CSS and compromising the water quality of the receiving water body and/or SD1's conveyance and treatment infrastructure. As the Northern Kentucky regional storm water agency, many components of SD1's approach to pollution prevention is

implemented as required by EPA National Pollutant Discharge Elimination System Phase II MS4 regulations and reported in SD1's storm water annual reports.

In that regard, SD1 uses a wide-ranging approach to pollution prevention from public education and programmatic initiatives to physical efforts such as street sweeping and catch basin cleaning. Street sweeping operations occur on a regular basis by 21 communities throughout SD1's service area, and range in frequency from annually to weekly, depending on the city/county. The following sections describe some of the major activities that demonstrate SD1's continued commitment to this minimum control.

### **2.7.1 Public Education Programs**

#### Public Service Park

Dedicated to those who enhance Northern Kentucky's quality of life through public service, Public Service Park is an example of SD1's leadership in water pollution prevention practices, also known as best management practices. The park is an aggressive approach to empower and educate the public on the vital importance of protecting the waterways for future generations. Featuring storm water best management practices, a wide range of green infrastructure, and cutting edge public educational programming, Public Service Park is targeted at all audiences ranging from the development community, to students, to the general public who can follow a self-guided tour.

Thousands of people have toured Public Service Park over the past year, including local groups and groups from other states. Among SD1's visitors in 2010 were groups from the Kentucky Stormwater Association, the Federal Highway Department, Cincinnati State and Eastern Kentucky University. Overall, SD1 provided the following tours during 2010:

- Approximately 429 adults toured Public Service Park, including consultants, engineers, developers, environmentalists and parent chaperones.
- Over 2,000 tours for elementary through college age students and scouts.

#### Classroom Presentations

SD1 is committed to empowering students to protect the environment and has reached thousands of students this year through interactive school presentations. In 2010, these presentations introduced over 2,000 students and scouts to concepts such as point source and non-point source pollution. SD1 uses an interactive model called the Envirocape to teach the negative impact of polluted storm water runoff on local waterways.

#### Northern Kentucky University "Protecting Water Resources Course"

SD1 received the 2011 National Environmental Achievement Award in the Public Information and Education category from the National Association of Clean Water Agencies (NACWA). The award, which is given to a clean water agency for outstanding contributions to environmental protection and the clean water community, was presented to SD1 at NACWA's national conference on February 2, 2011.

The course - Protecting Water Resources - was launched in 2009 as a part of SD1's broader education and outreach program. SD1 worked closely with Dr. Kelly, an Assistant Professor at NKU in the Department of Biological Sciences, on developing the 200 level lecture and lab course, which was designed to educate the everyday student who knew little or nothing about storm water runoff and its impact on the local community.

Thanks to Dr. Kelley, in just its second semester, the course is nearly full with 37 students and the lab is at its maximum capacity of 22 students. Her new idea for the class this semester involved a unique philanthropy element that has helped attract students but also allows students to give back to the local community. Through the Mayerson Foundation, the students in this semester's class were given \$2,000 to reinvest in the community. After learning about water quality issues, students select a local nonprofit organization that is focused on water quality issues and/or watersheds to give the funding to. The Mayerson Student Philanthropy program at NKU is administered with the help of the Scripps Howard Foundation.

In Dr. Kelley's class students:

- Delve into national and local water resources.
- Explore the chemistry of nature's water and life in the aquatic system.
- Study the connection between land and water and how land use impacts storm water runoff.
- Discuss contaminants of concern to Northern Kentucky.
- Learn about the Clean Water Act, Storm Water Regulations, federal mandates and environmental laws.

### **2.7.2 Land Disturbance/Sediment and Erosion Control**

SD1's Storm Water Rules and Regulations established a land disturbance permit process, which is applicable for any land disturbance activity greater than or equal to one acre that occurs within the storm water service area. All construction activities within the storm water service area that disturb greater than or equal to one acre of land now receive a permit from SD1 prior to the commencement of the activity. SD1's plan review process includes examination of sediment and erosion controls to ensure that adequate controls are put in place. Appropriate best management practices must be cited and installed properly for plans to be approved.

During 2010, SD1 issued 41 Land Disturbance Permits, 27 Grading Permits and 6 Clearing Permits. Since the program started, SD1 has issued 520 Land Disturbance Permits, 286 Grading Permits and 52 Clearing Permits.

### **2.7.3 Household Hazardous Waste Management**

SD1 continues its partnership with the Northern Kentucky Household Hazardous Waste Action Coalition. This unique coalition is comprised of local governments and

organizations and is sponsored by area businesses. SD1 serves as the chair of the coalition, which meets about once a quarter.

As a way to inform the public about the proper disposal methods of household hazardous waste, SD1 worked with the Household Hazardous Waste Action Coalition to form and, more importantly, promote the website [www.nkyhhw.org](http://www.nkyhhw.org). The website provides viewers with disposal and recycling methods for household items, especially those considered hazardous waste. By informing people of how to properly dispose of the waste, SD1 can work towards eliminating the illicit discharges associated with illegal and improper dumping.

#### Household Hazardous Waste Collection Events

Two household hazardous waste collection events for the residents of Boone, Campbell and Kenton counties were held in 2010. These events were promoted through various media outlets including: websites, flyers distributed in SD1's main office, mailed to governmental officials, emailed to environmental partners, a newspaper ad placed in the community papers, and local TV new stations. There were a total of 880 citizen participants at the collection event hosted on April 24, 2010 and 738 citizen participants at the event hosted on November 6, 2010. Participants dropped off items such as appliances, oil, antifreeze, lead acid batteries, paint, fluorescent bulbs, propane tanks, etc.

#### Bill Inserts

SD1 mailed one household hazardous waste related bill insert in 2010. This insert included the message: "Be Responsible: Properly Dispose of Unwanted Medications" and provided a list of 12 drop-box locations in the Northern Kentucky area, that citizens could drop off unwanted medications or expired drugs.

## **2.8 NMC #8: Public Notification**

The purpose of this control is to reduce exposure to potential health risks caused by CSOs by informing the public of the location of CSOs, the actual occurrences of CSOs, the possible health and environmental effects of CSOs, and the recreational or commercial activities curtailed as a result of CSOs.

SD1 maintains warning signage posted near CSO outfalls and public education signs located near public access to water to warn about unsafe conditions during and after rainfall events. In addition, SD1 has continued to issue email wet weather advisories to alert those who requested to be on the distribution list that weather conditions could potentially cause a CSO. There are currently over 60 individuals on the distribution list, which includes members of the general public, Northern Kentucky community leaders, local Water Districts, and SD1's Watershed Community Council members. Individuals can sign up to receive this e-mail notification by filling out a request form on SD1's website or by e-mailing a request to [info@sd1.org](mailto:info@sd1.org). SD1's website also includes other overflow related information.

## 2.9 NMC #9: Monitoring to Characterize CSO Impacts

The purpose of this control is to determine the occurrence and apparent impacts of CSOs through visual inspections and other simple methods, to gain an understanding on overflow occurrences and water quality problems that reflect use impairments caused by CSOs. Changes in such occurrences can provide a preliminary indication of the effectiveness of the NMC.

### Field Inspections and Flow Monitoring

During 2008, SD1 completed the development of a highly calibrated system-wide hydraulic model to be used as an accurate planning tool for capital improvements and to provide information about the current performance of SD1's system. To ensure that the hydraulic models continue to maintain and provide the most accurate information about the systems' performance, SD1's wet weather investigation group's SSO and CSO investigation crews continue to perform routine inspections during and after rain events.

As described previously, SD1's CSO investigation crew regularly inspects each CSO outfall and its associated diversions once per week as well as after every rainfall event. The CSO locations with solids & floatables controls are also cleaned as-needed. These inspections and cleanings not only provide opportunities to ensure proper operation and maintenance of the diversions as described in Section 2.1 but are also supportive of characterization efforts. Information gathered from diversion inspections is collected and stored in gbaMS, which is then used to characterize the activity of CSOs during wet weather and identify the location of dry weather overflows and measures to eliminate them from reoccurring.

These efforts are part of SD1's on-going process of verifying the model results against actual field conditions through monitoring and observation. Over time, these field verifications will continue to improve the model as appropriate to better reflect any discrepancies found with observed conditions.

SD1 recently identified two new CSO locations through its inspection efforts that will need to be permitted and put on a routine inspection schedule. With the addition of the following two new locations SD1 has a total of 94 CSOs:

1. A bypass pipe at manhole 0890063 near 28th Street: The bypass pipe appears to have been installed to protect against basement backups along 28<sup>th</sup> Street. SD1's investigations and hydraulic models indicate that this bypass pipe has overflow activity during 2" rain events. SD1 is currently evaluating the appropriate solids & floatable control to implement.
2. A diversion manhole 0660057 at 9th & Linden Street: This manhole was constructed as part of the ACOE flood protection system. A sluice gate was installed over the normal dry weather flow pipe to be able to shut the gate and divert flow during elevated river levels away from the Washington Street Flood Pump Station and directly to Taylor Creek. The pipe that

carries flow to Taylor Creek was installed about 2" above the invert of the normal dry weather flow pipe and inspectors have observed that flow enters the Taylor creek outfall pipe under normal river levels during 1" rain events. SD1 is currently evaluating the construction of a weir in this structure to prevent the overflow from occurring until at least the dry weather pipe is flowing full and is also determining the appropriate solids & floatable control to implement.

In addition, SD1's flow monitoring crews are involved in a number of monitoring efforts to collect data in specific areas of the collection system to confirm model predictions, to identify and confirm areas that are suspected to have high inflow and infiltration (I/I), and to collect pre and post construction monitoring data in improvement projects areas. The map provided in Appendix A highlights the 60 monitoring locations crews monitored during the reporting period, which includes:

- 15 pre-construction only monitoring sites
- 7 post-construction only monitoring sites
- 6 pre and post-construction monitoring sites
- 8 sanitary sewer evaluation survey (SSES) monitoring sites
- 24 capacity monitoring sites

**APPENDIX A:**  
***Flow Monitoring Locations***

# C-MOM Meter Classification

## Legend

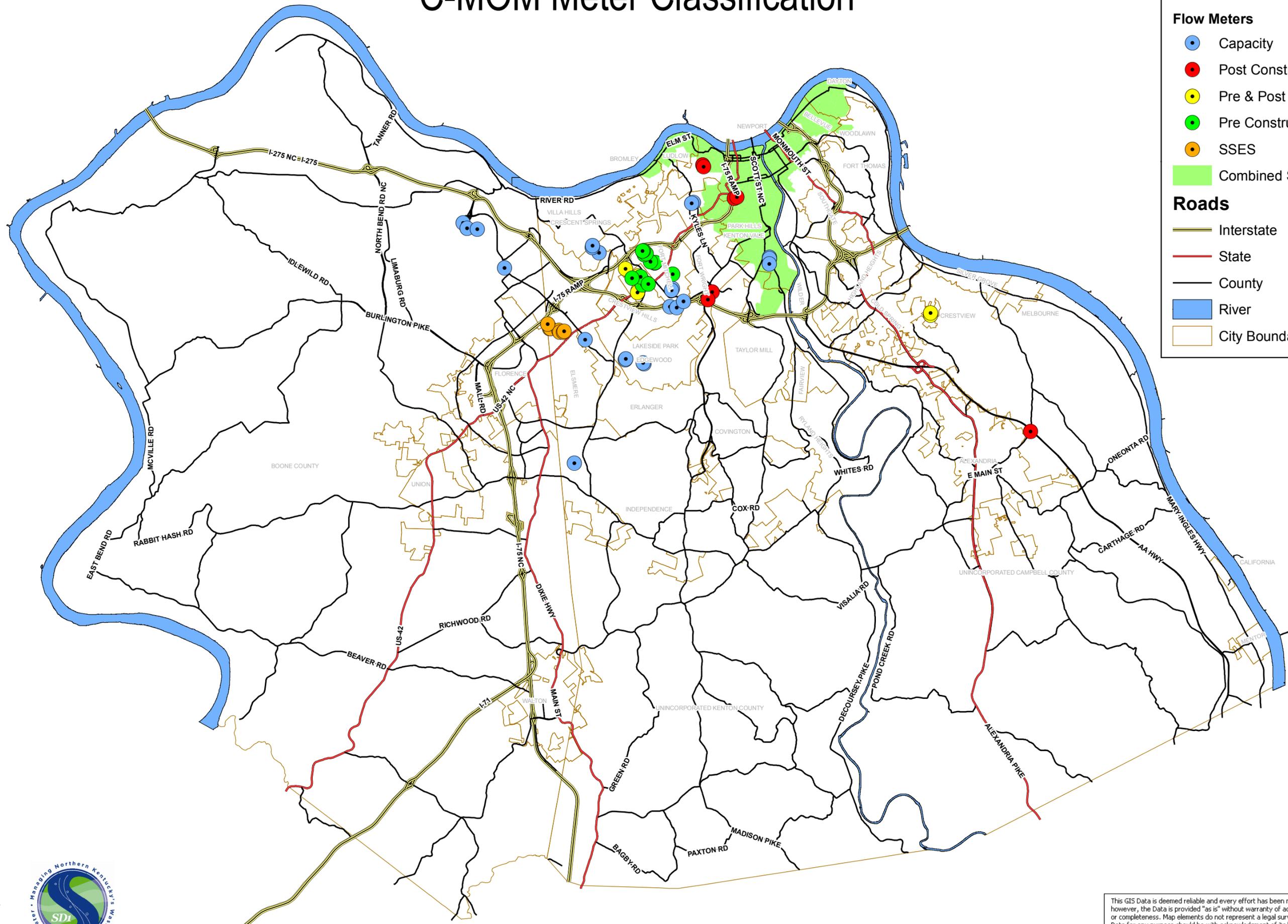
### Flow Meters

- Capacity
- Post Construction
- Pre & Post Construction
- Pre Construction
- SSES

Combined Sewer System

### Roads

- Interstate
- State
- County
- River
- City Boundary



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