



April 30, 2016

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

Ms. Denisse Diaz, Chief
NPDES Permitting and Enforcement Branch
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) is required to submit quarterly reports that demonstrate SD1's compliance with the Consent Decree:

42. Quarterly Reports. The District shall submit to the Cabinet/EPA a quarterly report that describes the District's progress in complying with this Consent Decree for the previous quarter no later than thirty days after the end of each calendar quarter. The first such report shall be submitted to the Cabinet/EPA no later than thirty days after the second full quarter after entry of this Consent Decree.

Information contained within the enclosed Quarterly Report describes SD1's compliance with Consent Decree Case No. 2:05-cv-00199-WOB for the period of January 1, 2016 through March 31, 2016. The report also contains an outlook for the upcoming calendar quarter period of April 1, 2016 through June 30, 2016. Additionally, an annual revision to SD1's Recurring Wet Weather SSO list is provided in this report.

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April 30, 2016

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

To the best of my knowledge and belief, the enclosed report is true, accurate, and complete, and further demonstrates SD1's commitment to the mission of protecting and enhancing the water resources and 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.

Best regards,

A handwritten signature in black ink, appearing to read "Mark W. Wurschmidt". The signature is written in a cursive style with some flourishes.

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

MWW/wck
Enclosures

Sanitation District No. 1
April 30, 2016

Consent Decree
Quarterly Report No. 34
(January 1, 2016 through March 31, 2016)



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CERTIFICATION

Consent Decree Quarterly Report No. 34
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

4/29/16
Date

COMMONWEALTH OF KENTUCKY

)ss.

COUNTY OF Kenton

The foregoing instrument was acknowledged before me this 29 day of April, 2016 by Mark W. Wurschmidt, Interim Executive Director of Sanitation District No. 1.

Angela M. Cook
NOTARY PUBLIC

Angela M. Cook Notary Public Kentucky, State at Large Comm. Exp. 07-30-16 Notary ID 471543
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Kenton County, Kentucky

My commission expires: 7-30-16

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CONSENT DECREE QUARTERLY REPORT NO. 34

April 30, 2016



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
CVG	Cincinnati-Northern Kentucky International Airport
EPA	U.S. Environmental Protection Agency
KDOW	Kentucky Division of Water
SD1	Sanitation District No. 1
SORP	Sewer Overflow Response Plan
SSO	Sanitary Sewer Overflow

SECTION 1. INTRODUCTION

1.1 Purpose

This Quarterly Report is submitted to fulfill the requirements of Sanitation District No. 1's (SD1) Consent Decree, as entered on April 18, 2007. This Consent Decree is a legal agreement with the U.S. Environmental Protection Agency (EPA) and the Kentucky Energy and Environment Cabinet (Cabinet). The purpose of the Consent Decree is to address sanitary sewer overflows (SSOs) in SD1's sanitary sewer system and combined sewer overflows (CSOs) in the combined sewer system, in an effort to improve water quality throughout SD1's service area. Specifically, Section V Reporting Requirements, states that:

42. Quarterly Reports. The District shall submit to the Cabinet/EPA a quarterly report that describes the District's progress in complying with this Consent Decree for the previous quarter no later than thirty days after the end of each calendar quarter.

1.2 Report Period

Information contained within this report describes SD1's compliance with Consent Decree Case No. 2:05-cv-00199-WOB for the period of January 1, 2016 through March 31, 2016. This report also contains an outlook for the upcoming calendar quarter period of April 1, 2016 through June 30, 2016.

1.3 Consent Decree Compliance Schedule

A comprehensive compliance schedule for meeting the requirements of the Consent Decree can be found in Appendix A. A more detailed listing of the projects and activities conducted to comply with the requirements of the Consent Decree, including schedules, project updates for the current reporting period, and planned activity for the subsequent quarter, can be found in Appendix B.

Additionally, Appendix B provides a schedule of the projects proposed in the first five years of the Watershed Plans for Northern Kentucky, as well as status updates on CSO

and SSO reduction projects that have not been formally proposed. The Watershed Plans were submitted on March 31, 2011, approved by the Cabinet and EPA in a letter dated February 14, 2014, and resubmitted March 14, 2014 with agreed to revisions, as requested in the February 14, 2014 letter.

Initial Watershed Projects

As shown in Appendix B, SD1 has completed its Initial Watershed Projects. A request to remove a project (Western Regional – Richwood C-039-00) was included in the revised Watershed Plans, submitted on March 31, 2011. Approval of the request to remove the project was granted in a letter dated May 13, 2013 from the Cabinet and EPA. SD1 submitted its final Initial Watershed Projects Annual Report on June 7, 2013.

Pump Station Operation Plan for Backup Power

As shown in Appendix B, SD1 has completed the Pump Station Operation Plan for Backup Power, before of the Consent Decree deadline of December 31, 2015. SD1 submitted its Pump Station Operation Plan for Backup Power on December 14, 2007 and received regulatory approval on May 14, 2008. Of the 127 pump stations identified in the plan, 15 have been permanently eliminated, and 112 have fully implemented backup power solutions to mitigate overflows due to power failures during dry weather.

The schedule provided in Appendix B of this report only identifies 110 pump stations, because 17 of the 127 pump stations that required backup power were completed prior to the approval of the plan in 2007. The 17 projects that were identified as complete in Table 3.1 of the Pump Station Operation Plan for Backup Power, submitted on December 14, 2007, are not included in the final schedule provided in Appendix B of this report.

SECTION 2. OVERFLOW DATA

This section of the Quarterly Report presents SD1's estimates of overflow activity in the collection systems.

Overflow Categories

For reporting and system performance measurement purposes, SD1 has categorized sewer overflows throughout the service area into five distinct categories:

- *SSOs Due to Wet Weather Capacity Issues* – Recurring and inactive overflows from SD1’s sanitary sewer system due to a lack of capacity during wet weather. This category includes wet-weather discharges at pump stations that may or may not have a constructed bypass. Overflows are determined to be “recurring” if they have been observed to overflow twice in a running twelve month period. Overflows are determined to be “inactive” until they occur more than once in a running twelve month period. Inactive overflows are generally under investigation as suspected or predicted hydraulic model overflow points in the collection system.
- *SSOs Due to Operational Issues* – Overflows from SD1’s sanitary sewer system, including pump stations that are not a result of wet weather capacity issues. Many of these are one-time, dry-weather occurrences caused by temporary system issues that are investigated and corrected as soon as practicable.
- *Wet Weather CSOs* – Wet-weather discharges from the combined sewer system.
- *Dry Weather CSOs* – Dry-weather discharges from the combined sewer system.
- *Building Backups* – The release of raw sewage from a service lateral into a building in SD1’s service area. Building backups can be caused by several factors, such as constrained capacity during wet weather, or a blockage in the private service lateral or public main line. Building backups can be determined to be associated with the public sewer system or can be due to other causes beyond the control of SD1.

Quantitative Estimates

SD1 uses three general methods for developing quantitative overflow estimates:

- Field inspections during or shortly after wet-weather events to identify activations. This inspection program has been in place since 2005 and is expanded as warranted for ongoing reporting and sewer overflow response cleanup. SD1’s Collection Systems Department continues to perform routine inspections after rain events at prioritized recurring, inactive, and suspected SSO locations to understand and verify overflow activity, and the need for sewer overflow response

cleanup. This is part of SD1's ongoing effort to characterize and verify overflows throughout the collection systems, and to ensure they are recorded accurately and cleaned up after rain events. Proper characterization of overflows ensures that the hydraulic models that SD1 utilizes are maintained and improved upon, which helps identify the most appropriate and effective solutions for mitigation.

- Simple hydraulic estimating using Manning's Gravity Flow and Pipe Calculation to report overflows from pump stations with constructed bypasses, and industry standard volume estimations techniques and calculations are used for spills or for any witnessed overflow from a manhole. The only exceptions to this calculation methodology are at the Lakeview Pump Station and, as of January 2016, at the Highland Heights Pump Station. These two pump stations have flow meters in the bypass pipes that will be used as the primary sources of volumes estimates. If a flow meter malfunctions during an overflow, the Manning's Gravity Flow and Pipe Calculation will be used as the default method of volume estimation. These methods have been used historically for reporting purposes.
- SD1's collection systems hydraulic models are used for quarterly activation and volume estimations of wet-weather CSOs and SSOs. SD1 completed a year-long flow monitoring program in 2008, consisting of more than 245 flow meters and 45 rain gauges installed throughout the combined and separated systems, to update the calibration of SD1's system-wide hydraulic models. This calibration was undertaken to provide a model network that could confidently be used as an accurate tool in preparing SD1's Watershed Plans. Currently, SD1 maintains approximately 70 flow meters and 25 rain gauges throughout the year, which are used to continuously update and refine the models. Additionally, the models are being used to provide information about the current performance of SD1's system. With the historical and current flow monitoring and inspection data collected, SD1 maintains its highly calibrated network of hydraulic models to provide an accurate representation of the sewer systems. These modeling and monitoring tools confidently provide estimates of overflow activations and volumes from the sewer system as a result of wet weather. The models are updated on a quarterly basis to incorporate rehabilitation and maintenance activities, completed capital projects, private developments, data gathered from GPS surveys, and mapping of discovered infrastructure. This process ensures

that the models are kept up-to-date and accurately reflect the current state of the collection system. This approach is consistent with SD1's commitment to provide the best available information on overflow activity.

For this submittal, SD1 has collected rainfall data from a series of 23 rain gauges located across the system, to simulate the wet weather that occurred between January 1, 2016 and March 31, 2016. The results of the model simulations have been summarized and included in this report as estimates of the frequency and total volume of the overflow locations within SD1's service area, for this period. For the modeled locations, these results are not a summary of observed or confirmed activations, but are a confident estimate of the overflow statistics based on the calibrated and verified models.

Precipitation Data

Rainfall statistics are an important component of overflow reporting, as rainfall conditions represent an uncontrolled variable impacting SD1's wet-weather CSO and SSO activity. Quarterly CSO and SSO activations and volumes change over time, due to natural variations in rainfall patterns and antecedent moisture conditions. Over time, SD1 expects system improvements to show a clear trend in reduced overflow activity. However, reviewing overflow reports for any individual quarter, relative to the previous quarter, also requires careful review of the rainfall associated with each period, in order to understand the impact of shifting rainfall patterns. For this reason, storm event summaries are included in all overflow reporting submittals. The data in Table 2.1 is from the Cincinnati-Northern Kentucky International Airport (CVG) rain gauge, maintained by the National Weather Service, in northeast Boone County.

**Table 2.1 Summary of Storm Events
(January 1, 2016 through March 31, 2016)**

Month	Approximate # of Storm Events¹	Rainfall (in)
January	8	1.39
February	8	5.24
March	8	3.94
Total	24	10.57

¹ A storm event is defined as at least 0.01" of rain with a minimum inter-event time of 7 hours.

The historical average of cumulative rainfall depth for the first quarter, from 1951 through 2005, at CVG, is approximately 9.6 inches. For further comparison, the cumulative rainfall depth in the first quarter of the typical year (1970) is approximately 7.7 inches. The National Weather Service's recorded cumulative rainfall depth for the first quarter of 2016, 10.57 inches, is approximately 10 percent greater than the 50-year average, and 38 percent greater than the typical year's first quarter. The 2016 El Niño conditions likely increased the magnitude of the first-quarter wet-weather events in Northern Kentucky, especially in the month of February, when approximately 2.5 inches more than the average fell.

The remainder of this section reports overflows that occurred throughout SD1's service area during the period of January 1, 2016 through March 31, 2016. Annual comparisons and a cumulative accounting of SD1's overflows from January 2008 through the current reporting period can be found in Appendix C.

2.1 SSOs Due to Wet Weather Capacity Issues

As previously described, this category includes recurring and inactive overflows from SD1's sanitary sewer system due to lack of capacity during wet weather. This includes wet-weather discharges at pump stations that may or may not have a constructed bypass. Sanitary Sewer Overflows are determined to be "Recurring" if evidence of overflow is found at least twice in a running twelve month period. Sanitary Sewer Overflows are classified as "Inactive" until evidence of overflow is confirmed more than once in a running twelve month period. An Inactive SSO is generally under investigation for at least two years as a suspected or predicted hydraulic model overflow point in the collection system, until it is confirmed as a Recurring SSO or is declassified from the Inactive SSO list.

Recurring Wet Weather SSOs

Modeled activation and volume statistics of SD1's 108 recurring wet-weather SSOs for the current reporting period can be found in Appendix D. The Recurring SSO list is updated annually in the April Quarterly Report to reflect the latest information from ongoing system characterization, based upon field inspections, flow monitoring, and hydraulic modeling. A detailed list of structure numbers and transaction descriptions for the revisions made to the Recurring SSO list for 2016 can be found in Appendix E.

Recurring Wet Weather SSO Pump Stations Listed in the Consent Decree

Along with the 108 recurring wet-weather SSOs, there are also 14 pump stations identified in the Consent Decree that have historically experienced recurring wet-weather capacity issues. Table 2.2 lists each of the 14 pump stations identified in Exhibit E of the Consent Decree, and demonstrates their quarterly wet-weather SSO occurrences and discharge volumes.

As previously described, SD1 uses the Manning's Gravity Flow and Pipe Calculation to estimate discharge volumes from most pump stations. Lakeview Pump Station has a metered bypass to calculate overflow volumes. However, the flow meter at the Lakeview Pump Station has a damaged probe that is preventing accurate velocity measurements. SD1 will be replacing the damaged probe in the near future. For this quarter, the Manning's Gravity Flow and Pipe Calculation has been used to estimate the volume of the two overflows from the Lakeview Pump Station.

**Table 2.2 Discharges from Consent Decree Pump Stations,
Due to Lack of Capacity during Wet Weather
(January 1, 2016 through March 31, 2016)**

Name of Pump Station	Number of Wet-Weather Related Discharge Occurrences	Total Estimated Volume (gallons)
Lakeview	2	311,800
Alex-Licking	0	0
Allen Fork	0	0
Crestview	0	0
Harrison Harbor	0	0
Highland Acres	0	0
Kentucky Aire	0	0
Riley Road	0	0
Ripple Creek	0	0
South Hampton	0	0
South Park	0	0
Sunset	0	0
Taylorport	0	0
Union	0	0
TOTAL	2	311,800

Gray denotes where remedial measures have been completed for Exhibit E pump stations.

Wet Weather SSO Pump Stations Not Listed in the Consent Decree

In addition to tracking the recurring wet-weather SSOs at the pump stations listed in the Consent Decree, SD1 continuously monitors all pump stations throughout the service area for recurring wet-weather capacity issues.

During the current reporting period, three pump stations that are not listed in the Consent Decree experienced wet-weather capacity issues. As previously described, SD1 uses the Manning's Gravity Flow and Pipe Calculation to estimate discharge volumes from most pump stations. As of January 2016, the Highland Heights Pump Station has a metered bypass to calculate overflow volumes.

The three pump stations discharged 13 times during wet weather for an approximate combined total of 3,978,500 gallons. Table 2.3 provides the number of discharges and the approximate total volumes for each of the three pump stations.

**Table 2.3 Discharges from Pump Stations not in the Consent Decree,
Due to Lack of Capacity during Wet Weather
(January 1, 2016 through March 31, 2016)**

Name of Pump Station	Number of Wet-Weather Related Discharge Occurrences	Total Estimated Volume (gallons)
Bullitsville	2	4,300
Highland Heights	10	3,970,400
Mafred	1	3,800
TOTAL	13	3,978,500

Inactive Wet Weather SSOs

No inactive wet-weather SSOs were observed by SD1 in the current reporting period.

2.2 SSOs Due to Operational Issues

This category of overflows includes discharges from SD1's sanitary sewer collection system and pump stations that are not a result of wet-weather capacity issues. Many of these are one-time, dry-weather occurrences caused by temporary system issues that are investigated and corrected as soon as possible.

During the current reporting period, there were a total of 21 SSOs due to operational issues throughout SD1's service area, resulting in a total estimated overflow volume of 1,270,200 gallons.

Pump Station Overflows

On three separate occasions, the Highland Heights Pump Station experienced electrical failures due to a recurring malfunction of a program logic board that burned up two transformers inside of a control panel. On February 5, in light wet weather, the pump station discharged approximately 544,000 gallons, due to a tripped breaker. SD1 reset the tripped breaker and operations returned to normal. On February 8, with elevated river conditions, the breaker tripped again and the pump station spilled 312,000 gallons. After investigating the second tripped breaker in one week, a transformer located inside the control panel that is associated with the backup power generator, was found to be bad. SD1 replaced and rewired the transformer. On February 15, in dry weather, the new transformer burned up and breakers tripped once again, which led to a spill of 167,000 gallons. Upon further troubleshooting, the program logic board associated with a power generation transfer switch was found to be malfunctioning and causing the transformer issues. SD1 replaced the wire harnesses, the program logic board, and the transformer. On March 1, 2016 SD1 tested all of the new equipment to ensure the power generation switches were working properly. No further electrical issues have occurred at the Highland Heights Pump Station since the repairs. All approximate overflow volume estimates were determined by the newly installed flow meter in the bypass pipe.

SD1 also experienced recurring mechanical and electrical failures at the Riverview Farms Pump Station in the City of Villa Hills, during the first quarter. The pump station has a bypass pipe to a separate storm sewer that outfalls to the Ohio River. In December of 2015, the 15-year-old pumps were pulled for routine maintenance. SD1 found the pumps were past their useful life and replaced them with new pumps that were designed to pump 50 gallons per minute faster than the old pumps. On three separate occasions in February and early March, the new pumps experienced mechanical and electrical failures during wet weather that led to a combined total discharge volume of approximately 25,000 gallons. SD1 consulted with the pump manufacturer, but could not immediately identify the cause of the failures with the new pumps. Following the third failure, SD1 pulled the new pumps and replaced them with the old pumps. The new pumps have been sent back to the manufacturer for further

evaluation. No wet-weather operational failures have occurred since SD1 replaced the new pumps with the old pumps. SD1 will not reinstall the new pumps until the manufacturer can identify and correct the issue.

On March 14, 2016, SD1 provided initial notification of an electrical failure that led to a discharge of approximately 9,000 gallons from the Towne Center Pump Station, in the City of Walton. SD1 provided notification to KDOW as a courtesy to the City of Walton. The Request ID Number for the KDOW notification is 51378. The SSO was not the responsibility of SD1, and is not included in this report or any other official summary of SD1's SSOs.

Collection System Overflows

The sewers where blockages occurred were put into the Continuous Sewer Assessment Program (CSAP) to be inspected and cleaned as determined by the CSAP logic, which also provides appropriate next actions to address the cause of the blockages with regular maintenance routines.

All SSOs documented in this section were immediately acted upon and corrected, in accordance with SD1's SORP procedures. Additionally, all overflow events are recorded in Lucity and are periodically reviewed to identify if any trends or localized problem areas exist that warrant the need for a larger-scale inspection or rehabilitation project.

On the following page, Figure 2.1 demonstrates the primary causes of the SSOs due to operational issues, recorded during the first quarter of 2016. Figure 2.2 demonstrates the corresponding estimated volumes of the SSOs due to operational issues.

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Figure 2.1 Occurrences of SSO Due to Operational Issues per Cause
(January 1, 2016 through March 31, 2016)

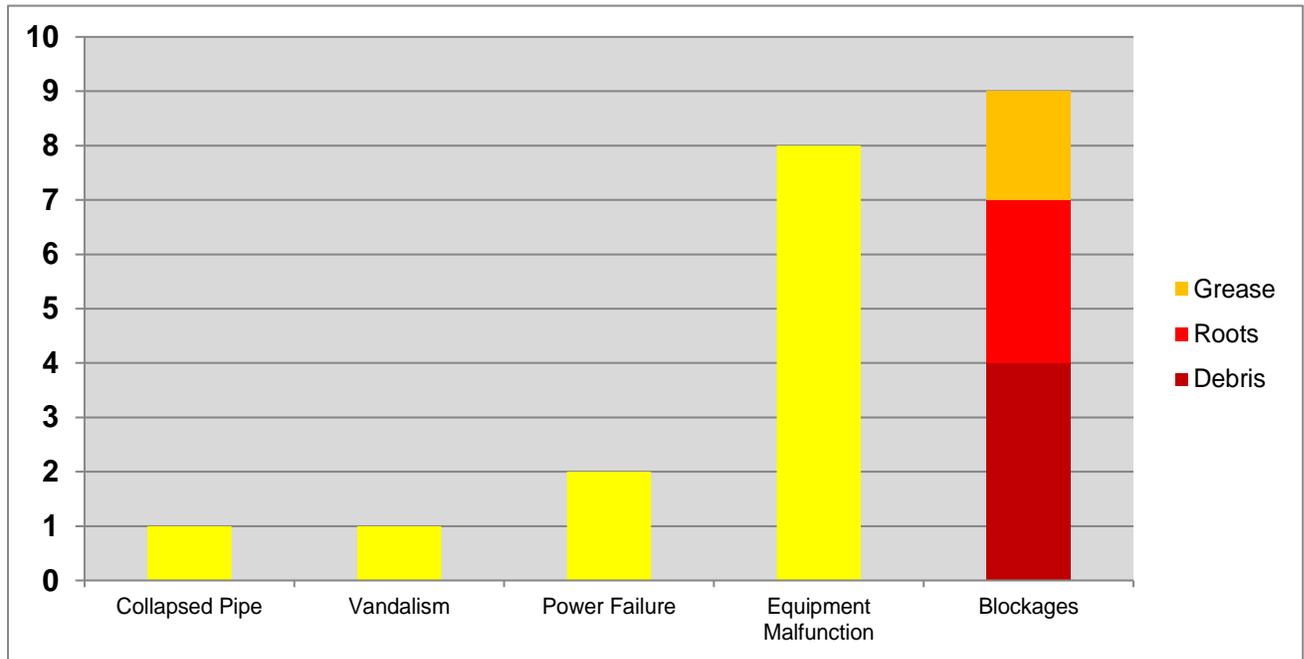
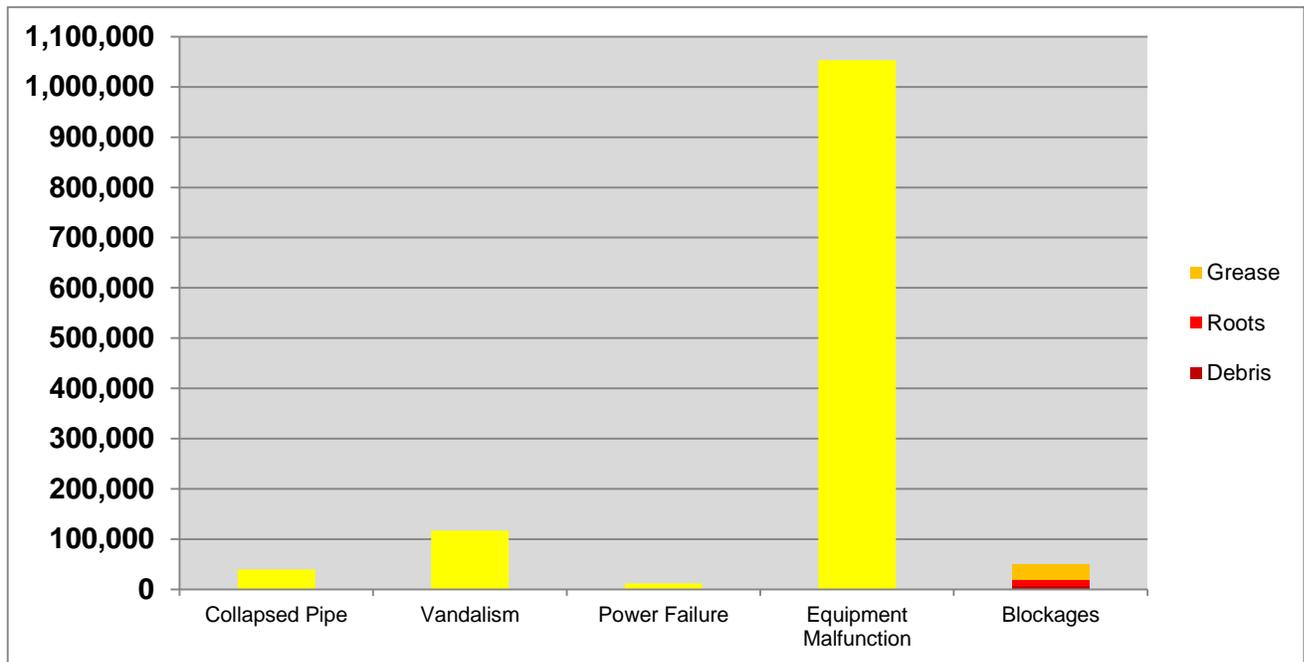


Figure 2.2 Gallons of SSO Due to Operational Issues per Cause
(January 1, 2016 through March 31, 2016)



2.3 Wet Weather CSOs

Included in Appendix F are the modeled activation and volume statistics for SD1's 95 CSOs.

2.4 Dry Weather CSOs

SD1 observed four dry-weather CSOs in the first quarter of 2016.

On January 6, 2016, a blockage of debris caused a dry-weather discharge from the Adela CSO (structure number 1710116, KY0021466 – Outfall 68), in the City of Ludlow. Approximately 15,000 gallons were spilled into the Ohio River.

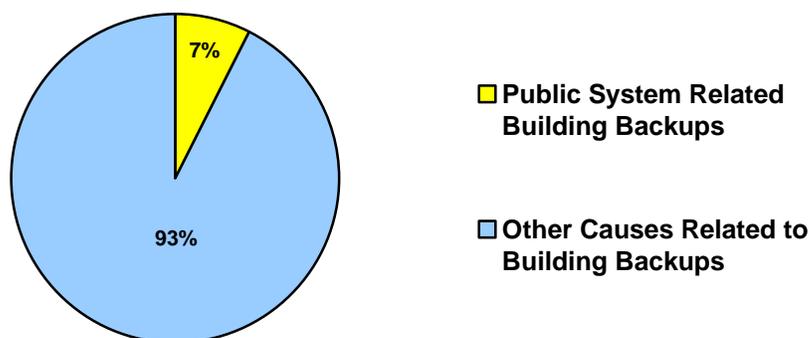
On January 7, 2016, an electrical failure at the Eighth Street Pump Station, in the City of Covington, caused a dry-weather discharge of approximately 988,000 gallons into the Licking River, from the Eighth St CSO (structure number 1420142, KY0021466 – Outfall 51). The electrical failure was due to a loose connection in the control cabinet. All connections in the cabinet were tightened and power was restored to the pump station in approximately four hours.

As described in Quarterly Report No. 30, a section of the 24-inch Riviera Drive interceptor in the City of Bellevue collapsed in January of 2015. SD1 declared the collapsed interceptor an emergency, and replaced approximately 1,300 feet of the interceptor. On February 12 and 13 of 2016, SD1 observed two separate dry-weather discharges at the Wildcat CSO (structure number 0650098). Approximately 86,000 gallons were spilled into Taylor Creek from the two events. The dry-weather CSOs were a result of mechanical failures of the downstream bypass pumping operation, at the Riviera interceptor collapse. An ultra-sonic level sensor was installed at the upstream diversion of the Wildcat CSO to continuously monitor flows in the interceptor, in order to alarm staff and improve response times to dry-weather CSOs. As of March 9, 2016, the Riviera interceptor replacement has been completed, and the bypass pumps have been removed. SD1 does not anticipate any further dry-weather complications at the Wildcat CSO.

2.5 Building Backups

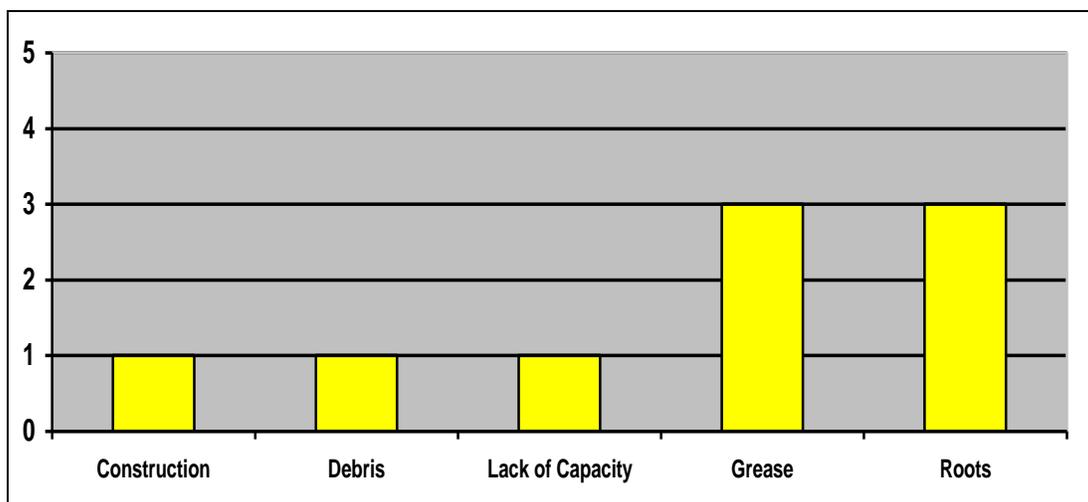
During the first quarter of 2016, there were approximately 122 building backups throughout SD1’s service area. Of these 122 backups, approximately nine were determined to be related to the condition or operation of the public sewers and 113 were caused by other issues, as shown in Figure 2.3. The building backups that were not related to the condition or operation of the public sewers were caused by blockages in private service laterals and internal plumbing issues, or were undetermined.

Figure 2.3 Building Backups: Public System vs. Other Causes
(January 1, 2016 through March 31, 2016)



The causes of the nine building backups determined to be related to the condition or operation of the public sewer lines are detailed in Figure 2.4.

Figure 2.4 Causes of Public System Related Building Backups
(January 1, 2016 through March 31, 2016)



The sewers where debris blockages occurred were put into or updated in SD1's CSAP, to be inspected and cleaned as determined by the program logic that provides appropriate next actions for maintenance issues.

All building backups are recorded in Lucity and are periodically reviewed to identify if any trends or localized problem areas exist that warrant the need for a larger-scale inspection routine, rehabilitation, or repair project.

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APPENDIX A:

Consent Decree Compliance Schedule

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Consent Decree Compliance Schedule

CONSENT DECREE ACTIVITY		PERCENT COMPLETE	DUE DATE	DATE OF COMPLETION
ASSESSED STIPULATED PENALTY				
✓	\$14,000 for 9 DWOs occurring April 18, 2009 through June 30, 2010	100%	1/9/2011	12/21/2010
CIVIL PENALTY				
✓	Pay Civil Penalties to EPPC and US EPA	100%	06/18/07	06/18/07
CMOM PROGRAM REQUIREMENTS – 2007 through 2015				
✓	Submit CMOM Program Self-Assessment	100%	10/18/07	10/17/07
✓	Submit Grease Control Program	100%	10/18/07	09/17/07
✓	Submit Pump Station Backup Power Plan	100%	04/18/08	12/14/07
✓	Submit Sewer Overflow Response Plan (SORP)	100%	10/18/07	10/09/07
Submit CMOM Annual Report				
✓	CMOM Annual Report 1	100%	12/31/07	12/28/07
✓	CMOM Annual Report 2	100%	12/31/08	12/19/08
✓	CMOM Annual Report 3	100%	12/31/09	12/18/09
✓	CMOM Annual Report 4	100%	12/31/10	12/21/10
✓	CMOM Annual Report 5	100%	12/31/11	12/21/11
✓	CMOM Annual Report 6	100%	12/31/12	12/31/12
✓	CMOM Annual Report 7	100%	12/31/13	12/31/13
✓	CMOM Annual Report 8	100%	12/31/14	12/31/14
✓	CMOM Annual Report 9	100%	12/31/15	12/31/15
	CMOM Annual Report 10	0%	12/31/16	
Phased Grease Control Implementation				
✓	Phase 1 Tasks	100%	01/08/09	01/08/09
✓	Phase 2 Tasks	100%	01/08/10	01/08/10
✓	Phase 3 Tasks	100%	01/08/11	01/08/11
✓	Phase 4 Tasks / Full Implementation	100%	01/08/12	12/31/11
Complete Pump Station Backup Power Projects (110 Total)		100%	12/31/2015	10/30/15
Complete SORP Annual Review				
✓	SORP Annual Review 1	100%	05/14/09	07/10/09
✓	SORP Annual Review 2	100%	11/10/10	10/01/10
✓	SORP Annual Review 3	100%	11/10/11	11/10/11
✓	SORP Annual Review 4	100%	11/10/12	11/10/12
✓	SORP Annual Review 5	100%	11/10/13	11/08/13
✓	SORP Annual Review 6	100%	11/10/14	11/11/14
✓	SORP Annual Review 7	100%	11/10/15	11/10/15
	SORP Annual Review 8	0%	11/10/16	
INITIAL WATERSHED PROJECTS				
✓	Complete Initial Watershed Projects (51 Total)	100%	12/31/14	06/06/12
Submit Initial Watershed Projects Annual Report				
✓	Initial Watershed Projects Annual Report 1	100%	04/18/08	04/08/08
✓	Initial Watershed Projects Annual Report 2	100%	06/07/09	06/05/09
✓	Initial Watershed Projects Annual Report 3	100%	06/07/10	06/04/10
✓	Initial Watershed Projects Annual Report 4	100%	06/07/11	06/07/11
✓	Initial Watershed Projects Annual Report 5	100%	06/07/12	06/07/12
✓	Initial Watershed Projects Annual Report 6 (Final Submission)	100%	06/07/13	06/06/13
NMC PROGRAM REQUIREMENTS – 2007 through 2015				
✓	Submit NMC Documentation of Compliance	100%	04/18/08	03/12/08
✓	Complete Additional NMC Compliance Activities (51 Total)	100%	04/18/09	4/18/09 ¹
Submit NMC Annual Report				
✓	NMC Annual Compliance Report 1	100%	09/04/09	05/11/09
✓	NMC Annual Compliance Report 2	100%	09/04/10	06/04/10
✓	NMC Annual Compliance Report 3	100%	09/04/11	06/21/11
✓	NMC Annual Compliance Report 4	100%	09/04/12	07/02/12
✓	NMC Annual Compliance Report 5	100%	09/04/13	09/04/13
✓	NMC Annual Compliance Report 6	100%	09/04/14	09/04/14
✓	NMC Annual Compliance Report 7	100%	09/04/15	09/04/15
	NMC Annual Compliance Report 8	0%	09/04/16	

Consent Decree Compliance Schedule

CONSENT DECREE ACTIVITY		PERCENT COMPLETE	DUE DATE	DATE OF COMPLETION
PUBLIC PARTICIPATION				
✓	Watershed Summit	100%	N/A	08/30/07
✓	Watershed Community Council Meeting 1	100%	N/A	11/27/07
✓	Watershed Community Council Meeting 2	100%	N/A	02/26/08
✓	Watershed Community Council Meeting 3	100%	N/A	05/20/08
✓	Watershed Community Council Meeting 4	100%	N/A	08/19/08
✓	Watershed Community Council Meeting 5	100%	N/A	11/18/08
✓	Watershed Community Council Meeting 6	100%	N/A	02/17/09
✓	Watershed Community Council Meeting 7	100%	N/A	05/20/10
✓	Watershed Community Council Meeting 8	100%	N/A	11/03/10
PUMP STATION OVERFLOW ELIMINATION PLAN (PSOEP) – 2007 through 2015				
✓	Submit PSOEP	100%	10/18/07	09/18/07
Submit PSOEP Annual Report				
✓	PSOEP Annual Report 1	100%	05/14/09	05/11/09
✓	PSOEP Annual Report 2	100%	05/14/10	05/14/10
✓	PSOEP Annual Report 3	100%	05/14/11	05/13/11
✓	PSOEP Annual Report 4	100%	05/14/12	05/14/12
✓	PSOEP Annual Report 5	100%	05/14/13	05/14/13
✓	PSOEP Annual Report 6	100%	05/14/14	05/13/13
✓	PSOEP Annual Report 7	100%	05/14/15	05/14/15
	PSOEP Annual Report 8	25%	05/14/16	
REPORTING – 2007 through 2015				
Submit Quarterly Report				
✓	Submit Quarterly Report 1	100%	01/30/08	01/30/08
✓	Submit Quarterly Report 2	100%	04/30/08	04/30/08
✓	Submit Quarterly Report 3	100%	07/30/08	07/30/08
✓	Submit Quarterly Report 4	100%	10/30/08	10/30/08
✓	Submit Quarterly Report 5	100%	01/30/09	01/30/09
✓	Submit Quarterly Report 6	100%	04/30/09	04/30/09
✓	Submit Quarterly Report 7	100%	07/30/09	07/30/09
✓	Submit Quarterly Report 8	100%	10/30/09	10/30/09
✓	Submit Quarterly Report 9	100%	01/30/10	01/29/10
✓	Submit Quarterly Report 10	100%	04/30/10	04/30/10
✓	Submit Quarterly Report 11	100%	07/30/10	07/30/10
✓	Submit Quarterly Report 12	100%	10/30/10	10/29/10
✓	Submit Quarterly Report 13	100%	01/30/11	01/28/11
✓	Submit Quarterly Report 14	100%	04/30/11	04/29/11
✓	Submit Quarterly Report 15	100%	07/30/11	07/29/11
✓	Submit Quarterly Report 16	100%	10/30/11	10/28/11
✓	Submit Quarterly Report 17	100%	01/30/12	01/30/12
✓	Submit Quarterly Report 18	100%	04/30/12	04/30/12
✓	Submit Quarterly Report 19	100%	07/30/12	07/30/12
✓	Submit Quarterly Report 20	100%	10/30/12	10/30/12
✓	Submit Quarterly Report 21	100%	01/30/13	01/30/13
✓	Submit Quarterly Report 22	100%	04/30/13	04/30/13
✓	Submit Quarterly Report 23	100%	07/30/13	07/30/13
✓	Submit Quarterly Report 24	100%	10/30/13	10/30/13
✓	Submit Quarterly Report 25	100%	01/30/14	01/30/14
✓	Submit Quarterly Report 26	100%	04/30/14	04/30/14
✓	Submit Quarterly Report 27	100%	07/30/14	07/30/14
✓	Submit Quarterly Report 28	100%	10/30/14	10/30/14
✓	Submit Quarterly Report 29	100%	01/30/15	01/30/15
✓	Submit Quarterly Report 30	100%	04/30/15	04/30/15
✓	Submit Quarterly Report 31	100%	07/30/15	07/30/15
✓	Submit Quarterly Report 32	100%	10/30/15	10/30/15
✓	Submit Quarterly Report 33	100%	01/30/16	01/29/16
✓	Submit Quarterly Report 34	100%	04/30/16	04/30/16
	Submit Quarterly Report 35	0%	07/30/16	

Consent Decree Compliance Schedule

CONSENT DECREE ACTIVITY		PERCENT COMPLETE	DUE DATE	DATE OF COMPLETION
STATE ENVIRONMENTAL PROJECTS				
✓	Setup 6 Separate Escrow Accounts	100%	10/18/07	10/18/07
✓	Conservancies	100%	04/18/12	04/18/12
✓	Boone County	100%	04/18/12	03/26/12
✓	Campbell County	100%	04/18/12	02/23/12
✓	Kenton County	100%	04/18/12	04/17/12
✓	Licking River Watershed Watch	100%	04/18/12	09/28/11
✓	Split Rock	100%	04/18/12	12/18/08
✓	Education Programs	100%	04/18/12	08/04/11
✓	State Environmental Project Completion Report	100%	06/17/12	06/15/12
SUPPLEMENTAL PROJECTS				
✓	Supplemental Environmental Projects	100%	04/18/12	04/12/12
✓	SEP Completion Reports	100%	06/17/12	06/15/12
WATERSHED PLANS				
Framework for Developing Watershed Plans				
✓	Obtain Public Input on Framework for Watershed Plans	100%	04/09/08	04/09/08
✓	Submit Framework for Watershed Plans	100%	04/18/08	04/17/08
First Round Watershed Plans				
✓	Obtain Public Input on First Round of Watershed Plans	100%	06/27/09	06/08/09
✓	Public Comment Period (5/7/09-6/8/09)	100%	06/08/09	06/08/09
✓	Boone County Public Meeting	100%	N/A	05/14/09
✓	Campbell County Public Meeting	100%	N/A	05/19/09
✓	Kenton County Public Meeting	100%	N/A	05/21/09
✓	Submit First Round of Watershed Plans	100%	06/30/09	06/30/09
✓	Resubmit First Round of Watershed Plans	100%	03/31/11	03/31/11
✓	Resubmit First Round of Watershed Plans - Revision	100%	10/03/13	10/01/13
✓	Final Submission of First Round of Watershed Plans	100%	03/15/14	03/14/14
Second Round Watershed Plans				
	Obtain Public Input on Second Round of Watershed Plans	0%	To Be Determined ²	
	Submit Second Round of Watershed Plans	0%	To Be Determined ²	
Third Round Watershed Plans				
	Obtain Public Input on Third Round of Watershed Plans	0%	To Be Determined ²	
	Submit Third Round of Watershed Plans	0%	To Be Determined ²	
Consent Decree Compliance				
	Consent Decree Compliance - Percentage of Term Complete	50%	12/31/25	

¹ Project schedules for three of the 51 projects were extended beyond 4/18/2009, as described in the 2009 NMC Annual Report. The three projects were complete as of December 2009.

² Deadline is dependent on the approval date of each Watershed Plan.

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APPENDIX B:
Watershed Improvement Projects

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Initial Watershed Projects

CIP Title	Basin	Scheduled Completion Date	Actual Completion Date	Status
Initial Watershed Projects				
Strawberry PS Elimination	North	2006	2005	Complete
Beechwood Outfall Sewer Replacement	North	2007	2007	Complete
Eastern Regional - Contract 1--Pond Creek Force Main and Gravity Sewer to Eastern Regional WRF	East	2008	2007	Complete
Eastern Regional - Contract 2--Kahn's Gravity Sewer and Gravity Sewer to the Pond Creek PS	East	2008	2007	Complete
US 27 at Summit Assessment	East	2008	2006	Complete
Eastern Regional - Contract 4--Alex-Licking Gravity Sewer & Force Main to Contract 1	East	2009	2008	Complete
Eastern Regional - Contract 6--Pond Creek PS	East	2008	2007	Complete
Eastern Regional - Contract 8A--Alex-Licking PS	East	2009	2009	Complete
Parkside PS Relocation	East	2008	2007	Complete
Eastern Regional Water Reclamation Facility	East	2008	2008	Complete
Highland Heights PS Study	East	2006	2006	Complete
Wilson/Waterworks Road Relief Sewer Study	East	2008	2007	Complete
Pinehill/Skyview Terrace Sewer	East	2006	2005	Complete
Eastern Regional - Contract 7--Riley Road #2 PS	East	2009	2009	Complete
Eastern Regional - Contract 3--Riley Force Main and Gravity Sewer to the ERWRF	East	2009	2010	Complete
Western Regional - KDOT - Turkeyfoot Road Force Main	West	2006	2005	Complete
Western Regional - Union Sewer (North and South)	West	2013	2008	Complete
American Sign PS Rehabilitation	West	2008	2008	Complete
Allen Fork Collection System - Phase I Improvements	West	2009	2007	Complete
Duncan Drive Assessment Project	West	2007	2006	Complete
Western Regional - Sunnybrook Sewer	West	2013	2010	Complete
Western Regional - Gunpowder Interceptor Sewer	West	2013	2010	Complete
Banklick PS Screening Facility	Central	2006	2005	Complete
Stevenson Road Relief Sewer Project Phase II	Central	2006	2006	Complete
Latonia Combined Sewer Separation	Central	2009	2007	Complete
Licking River Sewer Crossing Study	Central	2007	2007	Complete
McMillan PS Removal	Central	2006	2005	Complete
Meyer Road PS Rehabilitation	Central	2008	2008	Complete
Macke PS Rehabilitation	Central	2008	2008	Complete

Initial Watershed Projects

CIP Title	Basin	Scheduled Completion Date	Actual Completion Date	Status
Initial Watershed Projects				
Richwood PS Improvements	Central	2006	2005	Complete
Patton Street Sewer Study	Central	2006	2006	Complete
South Hills Outfall	Central	2008	2007	Complete
Grit Chamber Projects	Multiple	2010	2008	Complete
Fort Wright Illicit Discharge Removal	Multiple	2007	2006	Complete
Fort Wright Sanitary Sewer Rehabilitation Phase 1	Multiple	2007	2006	Complete
Fort Wright Outfall Sewer - Phase II	Multiple	2006	2006	Complete
Dry Creek Treatment Plant - Grit Removal Modifications	Multiple	2006	2005	Complete
Large Diameter Sewer Assessment Program - Phase III	Multiple	2007	2006	Complete
Brookwood Subdivision SSES Study	Multiple	2006	2006	Complete
Southern Kenton Drainage Study	Multiple	2007	2006	Complete
Wilson Road Sewer Assessment Project	Multiple	2006	2005	Complete
Apple Drive Sewer Outfall	Multiple	2006	2006	Complete
Bluegrass Swim Club Sewer Separation	Multiple	2008	2007	Complete
Eastern Regional – Sunset Pump Station and Force Main Improvements	East	2010	2010	Complete
Western Regional Conveyance System to Western Regional WRF	West	2013	2012	Complete
Western Regional Water Reclamation Facility	West	2013	2012	Complete
Western Regional - Narrows Road Diversion PS	West	2013	2012	Complete
Western Regional - Frogtown Interceptor Sewer (from Sunnybrook Dr. to Frogtown Rd.)	West	2014	2012	Complete
Western Regional - South Fork Gunpowder Interceptor Sewer and Rosetta Sewer	West	2013	2012	Complete
Western Regional - Turkeyfoot Industrial Road Force Main	West	2013	2012	Complete
Western Regional - Richwood Sewer and Force Main	West	Removed from Initial Watershed Projects. Approved in letter from Cabinet dated May 13, 2013.		

Watershed Plan Projects: Five Year Program

System-wide Programs

CIP Title	Basin	Project Description	Target Project Benefit	Scheduled Completion Date	Actual Completion Date	Past Activity for 01/01/2016 to 03/31/2016	Planned Activity for 04/01/2016 to 06/30/2016
Priority Inflow and Infiltration Source Identification & Removal Program							
Lakeview I/I Source Identification & Removal	Central	SSES activities and I/I removal in areas where found to be cost effective and feasible upstream of the Lakeview Pump Station	Reduce I/I and SSOs in Lakeview PS service area	Beyond 2016	n/a	Initial Design	Initial Design
Licking River Siphon Source Identification and Removal	Central	SSES activities and I/I removal in areas where found to be cost effective and feasible upstream of the Licking River Siphon	Reduce I/I and SSOs in Licking River Siphon area	Beyond 2016	n/a	Initial Design	Initial Design
Taylor Creek Source Identification and Removal	East	SSES activities and I/I removal in areas where found to be cost effective and feasible in the Taylor Creek area	Reduce I/I and SSOs in Taylor Creek area	Beyond 2016	n/a	Initial Design	Initial Design
Green Programs (DRIP & GrIPP)							
Boone Woods YMCA Detention Model	North	Partnership with Northern Kentucky University Center for Applied Ecology to retrofit a detention basin on Boone Woods YMCA property	Improve Water Quality	2010	2010	Complete	
City of Covington: 12th Street Bioswale	North	Partnership with City of Covington to install street planters leading to a bioswale and rain garden along 12th Street	Reduce CSO volume	2011	2011	Complete	
City of Covington: Main Strasse Gateway Biofiltration Swale	North	Partnership with City of Covington and Transit Authority of Northern Kentucky to install biofiltration swales on city property at the Bakewell parking lot	Reduce CSO volume	2012	2013	Complete	
Notre Dame Academy Basin Retrofit	North	Partnership with Notre Dame Academy to retrofit an existing detention basin on school property	Reduce CSO volume	2009	2009	Complete	
City of Ft. Thomas: Rossford Park Rain Garden	East	Partnership with City of Ft. Thomas to install rain gardens at Rossford Park	Improve Water Quality	2012	2012	Complete	
City of Ft. Thomas: Memorial Parkway Bioswale	East	Partnership with City of Ft. Thomas to install a bioswale at the Northern Kentucky Water District property located along Memorial Parkway.	Improve Water Quality	2010	2010	Complete	
Kenton County School District: Turkeyfoot Middle School	Central	Partnership with Kenton County School District to install rain garden at Turkeyfoot Middle School	Improve Water Quality	2010	2010	Complete	
City of Covington: Madison Ave. Rain Garden	North	Partnership with City of Covington to install two rain gardens or street planters within the right-of-way along Madison Avenue	Reduce CSO volume	2013	2013	Complete	
Kenton County Public Library: Mary Ann Morgan Branch	North	Partnership with Kenton County Library to install rain gardens and permeable pavers on site at the Mary Ann Morgan Branch	Reduce CSO volume	2013	2013	Complete	
Demonstration Projects (Pilot Projects & Innovative Technology Testing)							
St. Elizabeth Detention Basin Retrofit	North	Modification of an existing dry detention basin located on property owned by St. Elizabeth Medical Center.	Reduce CSO volume in the Willow Run Sewershed	2009	2009	Complete Post-Construction Monitoring	
Prisoner's Lake Rainwater Harvesting	North	Construction of a small storm water pumping station and force main to capture storm water runoff from Prisoner's Lake that will be re-used in an irrigation pond for a small public golf course.	Manage storm water entering the CSS	2010	2010	Complete	
Terraced Reforestation	North	Construction of a series of vegetated, terraced berms within the I-71/75 right-of-way in the City of Covington.	Manage storm water entering the CSS	2010	2011	Complete Post-Construction Monitoring	
Watershed Controls Pilot Projects - Regional and Decentralized Controls							
Regional Project: Banklick Regional Wetlands	Central	Constructed wetland that treats flow diverted from Banklick Creek to reduce bacteria concentrations.	Improve water quality of Banklick Creek	2011	2011	Complete Post-Construction Monitoring	
Decentralized Control Project	Central	Storm water control measures such as wetlands, biofiltration basins, and enhanced retention serving upstream drainage areas smaller than one square mile, but typically greater than five acres	Improve water quality of local streams	Beyond 2016	n/a	Initial Design	Initial Design

Watershed Plan Projects: Five Year Program

Specific Basin Projects

CIP Title	Basin	Project Description	Target Project Benefit	Scheduled Completion Date	Actual Completion Date	Past Activity for 01/01/2016 to 03/31/2016	Planned Activity for 04/01/2016 to 06/30/2016
<i>(Schedules listed in this section are subject to change based on the approval of SD1's Watershed Plans.)</i>							
Van Deren Sanitary Sewer Improvements	North	Sanitary and storm sewer improvements in a 100 home area to separate common manholes and remove illicit connections and I/I	Reduce SSOs and illicit discharges in Lakeside Park	2011	2011	Complete	
Avon Drive Sanitary Sewer Improvements	North	Replacement of 570 LF of 12-inch sewer with 24-inch pipe and installation of new storm sewer	Reduce SSOs in Lakeside Park	2010	2010	Complete	
Willow Run Direct Entry Point Bar Racks	North	Installed bar racks on 10 direct entry points where open storm channels discharge into sewer system	Reduce debris entry into system, maintain capacity and reduce blockages	2009	2010	Complete	
KYTC Basin - Green Infrastructure Retrofit	North	Conversion of traditional detention basin near I-75 to provide greater detention and infiltration by modifying the outlet structure and other improvements	CSO reduction, informs future green infrastructure design	2012	2011	Complete Post-Construction Monitoring	
Lakeview PS Pump Replacement	Central	Replacement of 8 pumps at the Lakeview pump station along with piping and electrical improvements to provide a reliable peak capacity of 22.5 MGD	Reduce SSOs at Lakeview PS and increase PS reliability	2014	2013	Complete	
Church Street (gray, green, and watershed controls) Phase 1	Central	The separation of street load on six streets, new biofiltration basin and installation of approximately 1,300 linear feet of new 72-inch sewer.	Reduce CSO frequency and volume into Banklick Creek and improve structural integrity of sewer infrastructure.	2014	Ph 1 - 2015	Ph 1 - Complete Post-Construction Monitoring	
					Ph 2 - n/a	Ph 2 - Construction	Ph 2 - Construction
Vernon Lane – Public & Private Source I/I Removal	Central	Combination of private I/I removal, sewer rehabilitation, manhole lining, and stormwater BMPs in area comprising approximately 270 homes	Eliminate Vernon Ln. SSO and improve water quality	Beyond 2016	Ph 1 - 2014	Ph 1 - Complete Post-Construction Monitoring	
					Ph 2 - n/a	Ph 2 - Construction	Ph 2 - Construction
Ash Street PS and Forcemain	East	Construction of a new approximately 7 MGD pump station in Silver Grove and new force main to the Riley Rd. Pump Station in Alexandria. Also includes new force main to redirect flow from the Silver Grove PS to the Ash St. PS	Reduce overflows from Silver Grove CSO and SSO reduction in the Highland Heights PS and Silver Grove PS service areas.	2017	n/a	Final Design	Final Design
Riviera Sewer Replacement	East	Replacement of approximately 4,100 LF of deteriorated 24-inch pipe in the Taylor Creek area	Reduce CSOs into Taylor Creek and address structural issues	Beyond 2016	n/a	Initial Design	Initial Design
		Emergency repair of approximately 1,300 LF of collapsed 24-inch pipe. Upsize to 54-inch pipe.	Replace collapsed inceptor and provide additional capacity.	2016	2016	Complete	Complete Post-Construction Monitoring
Lakeside Park – Public Sewer Rehab and Private Source Removal	North	Combination of private I/I removal, sewer rehabilitation/replacement and manhole lining, and stormwater BMPs where feasible in Lakeside Park	Eliminate SSOs in Lakeside Park	Beyond 2016	Ph 1 -2014	Ph 1 - Complete	
					Ph 2 - n/a	Ph 2 - In Progress	Ph 2 - In Progress
Willow Run Dynamic Control Facility	North	Construction of a dynamic weir facility at the Willow Run overflow diversion to provide in-line storage	CSO reduction using in-line storage	Beyond 2016	n/a	Initial Design	Initial Design

Other Committed Projects

CIP Title	Basin	Project Description	Target Project Benefit	Scheduled Completion Date	Actual Completion Date	Past Activity for 01/01/2016 to 03/31/2016	Planned Activity for 04/01/2016 to 06/30/2016
<i>(Schedules listed in this section are subject to change based on the approval of SD1's Watershed Plans.)</i>							
Donnemeyer Improvements, Newport Pavilion Improvements, Bellevue Relief Sewer, Wilson/Waterworks Road, Covert Run	East	Multiple sewer projects including replacement with larger 18-30 -inch diameter sewers in the Taylor Creek area. Also included private source I/I removal	Reduce CSO and SSO in Taylor Creek area and address basement flooding	2011	2011	Complete	
Dry Creek WWTP Headworks Improvements	North	Construction of a new 110 MGD headworks facility at the Dry Creek WWTP	Increase reliability and wet weather treatment capacity at Dry Creek WWTP	2013	2013	Complete	

Additional CSO and SSO Reduction Projects

Project Title	Basin	Project Description	Target Project Benefit	Scheduled Completion Date	Actual Completion Date	Planned Activity for FY 2016
CSO Reduction						
Aqua on the Levee	East	In partnership with a developer to construct a 48" separate storm outfall through the Ohio River levee in Newport. Project will provide immediate separation opportunity of 5 acres, and extended opportunity for 19 acres of separation along Saratoga St. Maximum extent of full separation opportunity with new storm outfall will be 38 acres, including Washington St.	Reduce CSO volumes at Saratoga St and Washington St CSOs approximately 4 MG in typical year with proximal separation. Extended separation will provide approximately 7.5 MG reduction in typical year. The maximum extent separation will provide more than 17 MG of CSO reduction during the typical year.	2016	N/A	Permitting & Construction
Catch Basin Retrofits C480-11	Central & North	Strategically disconnect catch basins in the CSS that are tied into the collection lines, main interceptors, or the regulating diversion MHs. Reconnect the catch basins to the wet-weather CSO outfall line, effectively removing the inflows from the CSS mainlines. Retrofit all reconnected CBs with solids and floatable controls.	Kenner St (Ludlow) = 2 CBs Adams St + Eastern Ave (Covington) = 3 CBs Garrard St + Riverside Dr (Covington) = 4 CBs Greenup St + Riverside Dr (Covington) = 2 CBs Pike St + Rohmann Ave (Covington) = 4 CBs Virginia Ave + 45th St (Covington) = 2 CBs Warren St (Covington) = 3 CBs	2011	2011	Complete
Covington Detention Basins	North	In partnership with the City of Covington, construct detention basins in the low lying areas of the Peasleburg neighborhood to mitigate flooding from peak storm events.	The detention basins will provide approximately 2.5 to 3.5 MG of typical year CSO reduction in the Willow Run system.	2015	2015	Complete
Hazen Street, Ludlow Separation	North	In partnership with the City of Ludlow, replace and reconfigure CSS catch basins to improve drainage.	Consolidates CSS catch basins on Hazen St and at the entrance of River's Breeze Condominiums. Extends the initial scope of disconnection in Ludlow, beyond what was identified in Figure 8.2a of the Watershed Plans. Full disconnection will be possible with a new 42" separate storm pipe on West St.	2013	2013	Complete
Jacob Price Ph1	Central	Separation of approximately 7.5 acres of Covington Housing development	Reduce CSO approximately 5.5 million gallons at Robbins St and 11th St.	2014	2014	Complete
Jacob Price Ph3	Central	Additional separation of 9 acres adjacent to Jacob Price Ph 1 redevelopment, including installation of BMP for WQ..	CSO reduction at 9th St and 10th St.	Beyond 2017	N/A	Initial Design
Park Hills Separation	North	In partnership with the City of Park Hills, replace and locally separate CSS catch basins to improve drainage. Streets improved: Alhambra Ct, Exter Dr, Coram St, Harriet St, Irishrose Ln, Old State Rd, South Arlington Rd.	Removes catch basins from the local CSS and redirects to a drainage ditch. The ditch drains to Willow Run CSS, further downstream. This localized separation provides opportunity to completely remove the identified street flows from the Willow Run CSS with the replacement of the Brent Spence Bridge.	2015	2015	Complete

Additional CSO and SSO Reduction Projects

Project Title	Basin	Project Description	Target Project Benefit	Scheduled Completion Date	Actual Completion Date	Planned Activity for FY 2016
State Route KY9 Realignment	Central	In partnership with KY Transportation Cabinet, separate existing CSS on approximately 2.5 miles of newly realigned state route KY9, along the Licking River in Newport. KYTC's proposed 36" separate storm pipe will be upsized by SD1 to 60" to accommodate additional separations in the future. Utilizes two existing CSO outfalls and requires the construction of one new separate storm outfall through the levee.	Reduces CSO volumes in the short term at 4th St, 9th St, 10th St, and 12 St CSOs by approximately 10 MG. Maximum extent of potential separation in Newport is approximately 167 acres with the new separate storm outfall, which will provide approximately 63 MG of CSO reduction. Project also rehabilitates all intersecting sanitary assets and eliminates discovered illicit connections to the CSO outfalls.	2016	N/A	Construction
Victory Ave Storm Sewer Improvement	Central	Construct a new 15" separate storm sewer to alleviate flooding of private property in south Covington.	Allows disconnection of four existing CSS catch basins that collect approximately 0.3 acres of street runoff. Reduces combined flows tributary to the Banklick PS and offloads to the Banklick Creek.	2016	N/A	Design & Construction
Water's Edge	East	Construct a new 36" separate storm sewer and disconnect existing CSS catch basins on Taylor Ave in Bellevue. Integrate BMPs for WQ. Four phases of separation.	Reduce CSO volumes at Taylor Ave CSO and other local CSOs by approximately 6.1 MG in the typical year with Ph 1 and 15.68 MG with Ph 4. Improves flooding issues on Taylor and Eden Avenues.	2017	N/A	Design & Construction
SSO Reduction						
Richwood Forcemain Reroute	West	Remove Richwood PS from the Dry Creek/Lakeview PS sewershed and reroute to Western Regional Water Reclamation Facility with a new 20" force main.	Reduces SSO volume in the 2 year 6 hour event by approximately 1.4 MG, and eliminates six Recurring and Inactive SSOs.	2016	N/A	Design & Construction
43rd St and Decoursey Ave	Central	Evaluate and improve hydraulics in existing 18" main in south Covington.	Eliminate recurring basement backups in approximately 10 homes.	Beyond 2016	N/A	Flow monitoring, model calibration & alternatives analysis
Demonstration Projects (Pilot Projects & Innovative Technology Testing)						
Injection Wells Pilot	North, Central, East	Disconnect catch basins in portions of the CSS in Ludlow, Covington, and Bellevue for deep well injection into the alluvium, in three pilot areas.	Reduce activations and volumes at the Adella St CSO (Ludlow), E 6th St CSO (Covington), and Patchen St CSO (Bellevue)	Beyond 2016	N/A	Drill monitoring wells to determine WQ and infiltration rates. Permitting.

Pump Station Backup Power Plan

CIP Title	Basin	Original Proposed Solution	Updated Solution	Scheduled Completion Date	Actual Completion Date	Final Status as of October 2015
Category 1 Projects (4 total projects)						
Alex Licking	East	Permanent Generator	n/a	2008	2008	Complete
American Sign	West	Permanent Generator	n/a	2008	2008	Complete
Riley Road	East	Permanent Generator	n/a	2009	2009	Complete
Sunset	East	Permanent Generator	Backup Dry Prime Pump with a Diesel	2010	2010	Complete
CIP Title	Basin	Original Proposed Solution	Updated Solution	Scheduled Completion Date	Actual Completion Date	Final Status as of October 2015
Category 2 Projects (21 total projects)						
Kahns	East	PS Elimination	n/a	2007	2007	Complete
Meadow Hill	Central	PS Elimination Study	PS Elimination	Study - 2008 2012 - 2015	2008 2010	Complete
Riley Road No. 1	East	PS Elimination	n/a	2009	2009	Complete
Riley Road No. 2						
Riverwatch PS	North	PS Elimination Study	PS Elimination	Study - 2008 2012 - 2015	2008 2008	Complete
South Park Industrial	North	PS Elimination Study	Backup Dry Prime Pump with a Diesel	Study - 2008 2012 - 2015	2008 2010	Complete
Wedgewood Dr	Central	PS Elimination Study	Electrical hook up for portable generator	Study - 2008 2015	2008 2015	Complete
Willow Bend No. 2	West	PS Elimination Study	PS Elimination	Study - 2008 2013	2008 2013	Complete
Army Reserve	East	PS Elimination Study	Electrical hook up for portable generator	Study - 2008 2013-2014	2008 2014	Complete
Eagles Landing	West	PS Elimination Study	Electrical hook up for portable generator	Study - 2008 2013-2014	2008 2014	Complete
Evergreen	Central	PS Elimination Study	Electrical hook up for portable generator	Study - 2008 2014	2008 2014	Complete
Lamphill	East	PS Elimination Study	Electrical hook up for portable generator	Study - 2008 2011	2008 2011	Complete
Mill House Crossing	Central	PS Elimination Study	Backup Dry Prime Pump with a Diesel	Study - 2008 2012	2008 2012	Complete
Ridgefield	North	PS Elimination Study	Backup Dry Prime Pump with a Diesel	Study - 2008 2014	2008 2014	Complete
War Admiral	West	PS Elimination Study	PS Elimination	Study - 2008 2012 - 2015	2008 2011	Complete
Blackstone	West	PS Elimination Study	Electrical hook up for portable generator	Study - 2008 2015	2008 2015	Complete
Dublin Green No. 1	West	PS Elimination Study	PS Elimination	Study - 2008 2015	2008 2012	Complete
Fowler Creek	West	PS Elimination	These stations were eliminated after the Western Regional collection system became operational.	2013	2011	Complete
Gammon Calmet	West	PS Elimination		2013	2012	Complete
Gunpowder	West	PS Elimination		2013	2012	Complete
Union	West	PS Elimination		2013	2012	Complete

Pump Station Backup Power Plan

CIP Title	Basin	Original Proposed Solution	Updated Solution	Scheduled Completion Date	Actual Completion Date	Final Status as of October 2015
Category 3 Projects (24 total projects)						
Airport Exchange Ind Park	North	Permanent Generator	n/a	2009	2009	Complete
Barrs Branch	East	Permanent Generator	Portable Generator	2009	2009	Complete
Cedar Point	East	Permanent Generator	n/a	2009	2009	Complete
Bullitsville	North	Permanent Generator	n/a	2008	2008	Complete
Catalpa	Central	Permanent Generator	n/a	2009	2009	Complete
Centerplex	East	Permanent Generator	n/a	2008	2008	Complete
Hempsteade	West	Permanent Generator	n/a	2009	2009	Complete
Highland Heights	East	Portable Generator	n/a	2009	2009	Complete
Dublin Green No. 2	West	Permanent Generator	n/a	2009	2009	Complete
Brookwood	East	Permanent Generator	n/a	2009	2009	Complete
Ky Aire	West	Permanent Generator	n/a	2008	2007	Complete
Levi	West	Permanent Generator	n/a	2008	2007	Complete
Maple Ave	Central	Permanent Generator	n/a	2009	2009	Complete
Sand Run	North	Permanent Generator	n/a	2008	2008	Complete
Saturn	West	Permanent Generator	n/a	2009	2009	Complete
Second Street	Central	Permanent Generator	n/a	2009	2009	Complete
Skyport	North	Permanent Generator	n/a	2008	2008	Complete
South Hampton	West	Permanent Generator	n/a	2008	2007	Complete
Thornwilde	North	Permanent Generator	n/a	2008	2008	Complete
Bunning Lane	East	PS Elimination Study	Electrical hook up for portable generator	2015	2015	Complete
Kees	East	Permanent Generator	Backup Dry Prime Pump with a Diesel	2011	2011	Complete
Overlook	East	Permanent Generator	Electrical hook up for portable generator	2015	2015	Complete
Riverview Farms	North	Permanent Generator	Electrical hook up for portable generator	2015	2015	Complete
Stillwater	East	Permanent Generator	Electrical hook up for portable generator	2015	2015	Complete

Pump Station Backup Power Plan

CIP Title	Basin	Original Proposed Solution	Updated Solution	Scheduled Completion Date	Actual Completion Date	Final Status as of October 2015
Category 4 Projects (50 total projects)						
Banklick	Central	Permanent Generator	n/a	2009-2014	2009	Complete
Cedar	Central	Permanent Generator	n/a	2009-2014	2009	Complete
Fowler Ridge	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2010	Complete
Lassing Green	West	Permanent Generator	n/a	2009-2014	2009	Complete
Leathers Rd	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2010	Complete
Marshall Rd	Central	Permanent Generator	n/a	2009-2014	2010	Complete
Mineola Pike	North	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2010	Complete
Newport Steel Mill	East	Permanent Generator	n/a	2009-2014	2009	Complete
Paul Rd	East	Permanent Generator	Portable Generator	2009-2014	2010	Complete
Rosewood Lane	East	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2010	Complete
Shadow Lake	East	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2009	Complete
Wolf Rd	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2009	Complete
Air Park West	North	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2011	Complete
Arbortech	North	Permanent Generator	Backup Dry Prime Pump with a Diesel	2012	2012	Complete
Arborwood	North	Permanent Generator	Backup Dry Prime Pump with a Diesel	2014	2014	Complete
Brandtly Ridge	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2012	2012	Complete
Brentwood	North	Permanent Generator	Electrical hook up for portable generator	2015	2014	Complete
Brushup Lane	West	Permanent Generator	PS Elimination	2012	2012	Complete
Carlisle Ave	East	Permanent Generator	Backup Dry Prime Pump with a Diesel	2014	2014	Complete
Cinnamon Ridge	West	Permanent Generator	Backup Dry Prime Pump with a Diesel	2012	2012	Complete
Cold Spring Crossing	East	Permanent Generator	Permanent Generator	2014	2014	Complete
Cold Spring Plaza	East	Permanent Generator	Backup Dry Prime Pump with a Diesel	2012	2012	Complete
Darma Ct	East	Permanent Generator	Electrical hook up for portable generator	2013-2014	2014	Complete
Deer Creek No. 1	North	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2011	Complete
Deer Creek No. 2	North	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2011	Complete
Eighth Street	Central	Connect to Grid Power	Permanent Generator	2015	2015	Complete
Gerrard Ave	East	Permanent Generator	Portable Generator	2009-2014	2011	Complete
Golf Course	Central	Permanent Generator	Electrical hook up for portable generator	2012	2012	Complete
Hampton Ridge	West	Permanent Generator	Electrical hook up for portable generator	2015	2015	Complete
Harrison Harbor	East	Permanent Generator	Portable Generator	2009-2014	2011	Complete

Pump Station Backup Power Plan

CIP Title	Basin	Original Proposed Solution	Updated Solution	Scheduled Completion Date	Actual Completion Date	Final Status as of October 2015
Category 4 Projects (continued)						
Harvest Hill	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2014	2014	Complete
ICH	Central	Permanent Generator	Electrical hook up for portable generator	2011	2011	Complete
IDI	North	Permanent Generator	Electrical hook up for portable generator	2012	2012	Complete
Independence Station Rd	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2009-2014	2011	Complete
Jefferson Ave	East	Permanent Generator	Portable Generator	2009-2014	2011	Complete
Jericho Rd	Central	Permanent Generator	Electrical hook up for portable generator	2011	2011	Complete
Jonathan	West	Permanent Generator	Electrical hook up for portable generator	2015	2015	Complete
Litton	North	Permanent Generator	Electrical hook up for portable generator	2012	2012	Complete
Ohio Ave	East	Permanent Generator	Portable Generator	2009-2014	2011	Complete
Orchard Estates	West	Permanent Generator	Backup Dry Prime Pump with a Diesel	2014	2014	Complete
Parkside No. 2	East	Permanent Generator	Electrical hook up for portable generator	2012	2012	Complete
Patton Street	Central	Dual Utility Power Feed	Permanent Generator	2015	2014	Complete
Ria Vista	North	Permanent Generator	Electrical hook up for portable generator	2011	2011	Complete
Silver Grove	East	Permanent Generator	Permanent Generator	2015	2015	Complete
St Annes	East	Permanent Generator	Backup Dry Prime Pump with a Diesel	2014	2014	Complete
Sycamore	West	Permanent Generator	PS Elimination	2015	2012	Complete
Taylor Mill Rd	Central	Permanent Generator	Electrical hook up for portable generator	2011	2011	Complete
Wilder	East	Permanent Generator	Backup Dry Prime Pump with a Diesel	2014	2014	Complete
Wyndemere	North	Permanent Generator	Electrical hook up for portable generator	2012	2012	Complete
Youell Rd	West	Permanent Generator	Electrical hook up for portable generator	2012	2012	Complete

Pump Station Backup Power Plan

CIP Title	Basin	Original Proposed Solution	Updated Solution	Scheduled Completion Date	Actual Completion Date	Final Status as of October 2015
Category 5 Projects (6 total projects)						
Keavy	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2010-2015	2010	Complete
Meadow Lane	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2010-2015	2009	Complete
Cardinal Cove	North	Permanent Generator	Permanent Generator	2015	2013	Complete
Crestview	East	Permanent Generator	Backup Dry Prime Pump with a Diesel	2015	2015	Complete
Ripple Creek	East	PS Elimination Study	PS Elimination	2010-2015	2010	Complete
Winters Lane No. 2	East	Permanent Generator	Electrical hook up for portable generator	2014	2014	Complete
CIP Title	Basin	Original Proposed Solution	Updated Solution	Scheduled Completion Date	Actual Completion Date	Final Status as of October 2015
Category 6 Projects (5 total projects)						
Enzweiller	East	Permanent Generator	n/a	2012-2015	2009	Complete
Mafred	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2012-2015	2009	Complete
Ridgeway	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2012-2015	2009	Complete
Richwood	West	Permanent Generator	Backup Dry Prime Pump with a Diesel	2012	2012	Complete
Twin Lakes	Central	Permanent Generator	Backup Dry Prime Pump with a Diesel	2014	2014	Complete

Progress Summary	Number
2007 Complete Projects	4
2008 Complete Projects	8
2009 Complete Projects	24
2010 Complete Projects	11
2011 Complete Projects	16
2012 Complete Projects	18
2013 Complete Projects	2
2014 Complete Projects	16
2015 Complete Projects	11
Total Complete	110

Pump Station Overflow Elimination Plan

CIP Title	Basin	Scheduled Completion Date	Actual Completion Date	Activity for 10/01/2015 to 12/31/2015	Planned Activity for 01/01/2016 to 03/31/2016
Pump Station Overflow Elimination Projects					
Alex-Licking	East	12/31/2010	2008	Complete	Complete
Allen Fork	North	12/31/2015	2014	Complete	Complete
Crestview	East	12/31/2015	2015	Complete	Complete
Harrison Harbor	East	12/31/2010	*See PS Overflow Elimination Annual Report May 11, 2009	Complete	Complete
Highland Acres	West	12/31/2010	2010	Complete	Complete
Kentucky Aire	West	12/31/2013	2014	Complete	Complete
Riley Road No.1	East	12/31/2010	2009	Complete	Complete
Ripple Creek	Central	12/31/2010	2010	Complete	Complete
South Hampton	West	3/31/2013	2012	Complete	Complete
South Park	North	12/31/2010	2010	Complete	Complete
Sunset	Central	12/31/2010	2010	Complete	Complete
TaylorSPORT	North	12/31/2010	2004	Complete	Complete
Union	West	3/31/2013	2012	Complete	Complete
Lakeview	Central	12/31/2023 ¹	n/a	In-Progress	In-Progress

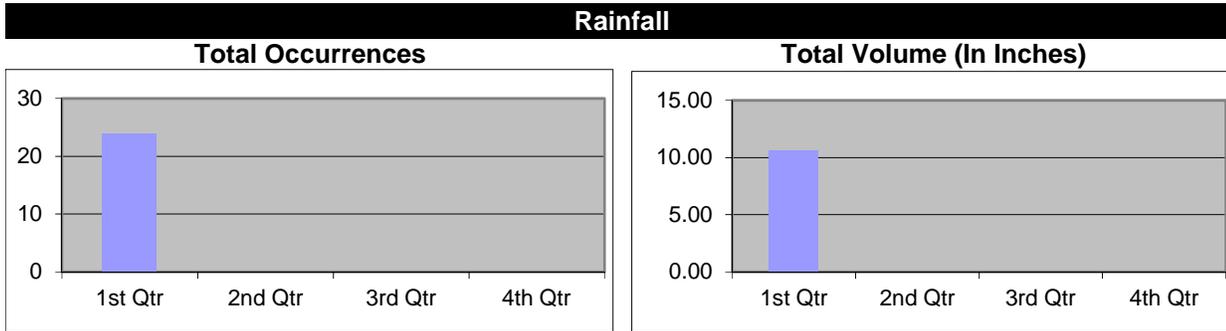
¹ Revised deadline approved in letter from Cabinet dated May 13, 2013.

APPENDIX C:
Cumulative and Annual Overflow Data

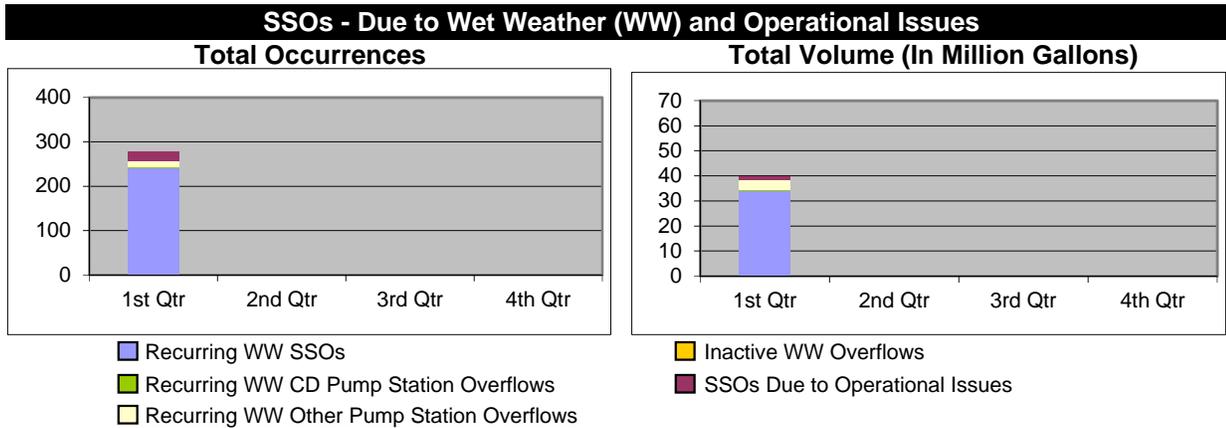
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Cumulative Overflow Data
January 1, 2016 through March 31, 2016

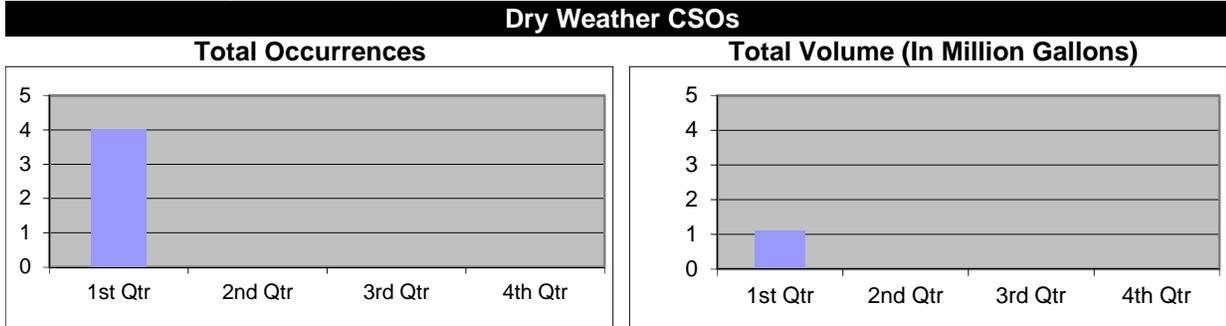
Rainfall



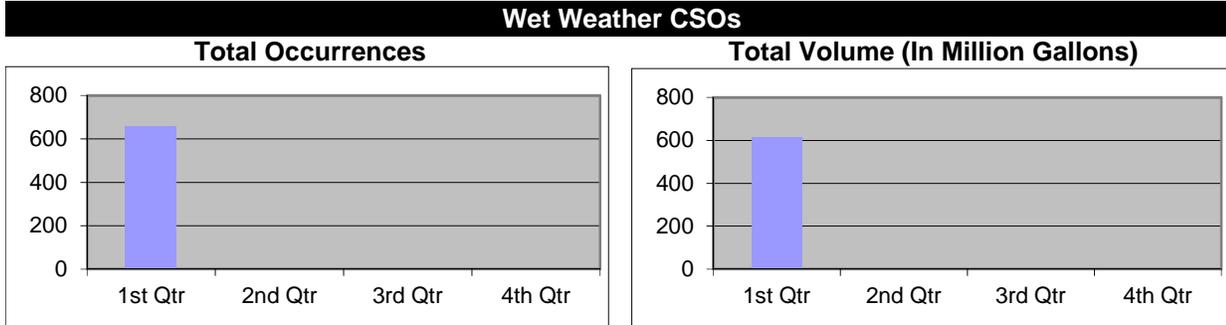
SSOs - Due to Wet Weather (WW) and Operational Issues



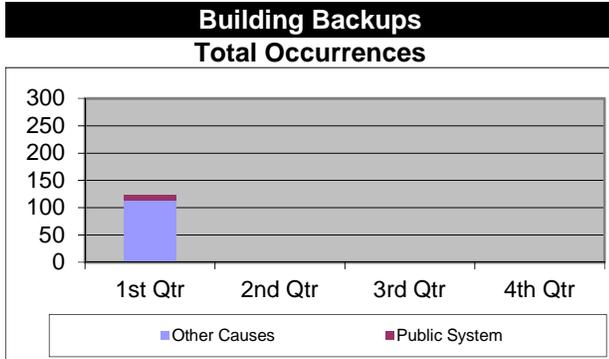
Dry Weather CSOs



Wet Weather CSOs



Building Backups



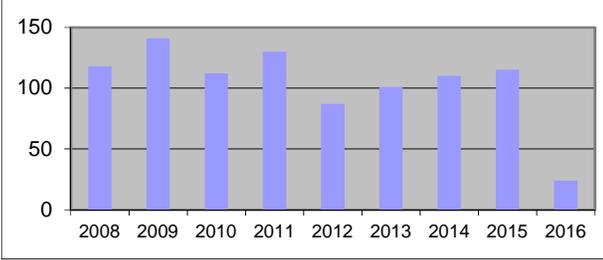
2015 Overflow Summary

	Occurrences	Volume
Rainfall	24	10.570 inches
Recurring WW SSOs	256	38.271 MG
Inactive WW SSOs	0	0.000 MG
Operational SSOs	21	1.270 MG
Dry Weather CSOs	4	1.089 MG
Wet Weather CSOs	655	613.930 MG
Building Backups (Other Causes)		113
Building Backups (Public System)		9

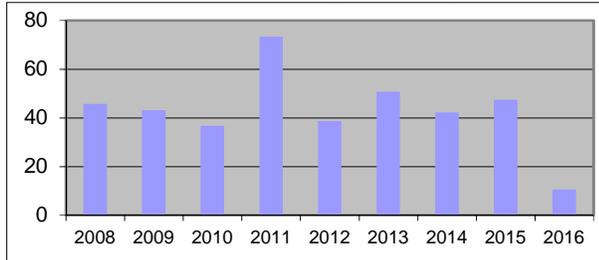
Annual Cumulative Overflow Data 2008 through 2016Q1

Rainfall

Total Occurrences

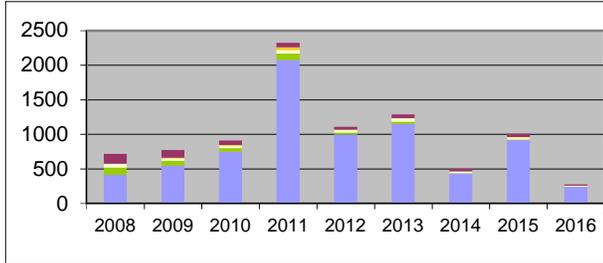


Total Volume (In Inches)

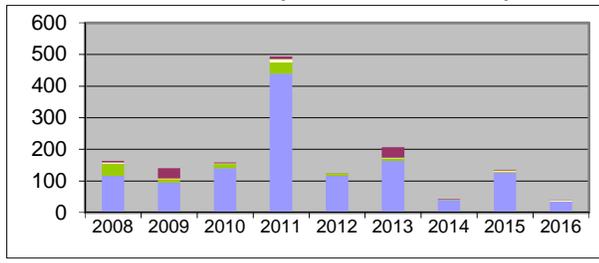


SSOs - Due to Wet Weather (WW) and Operational Issues

Total Occurrences



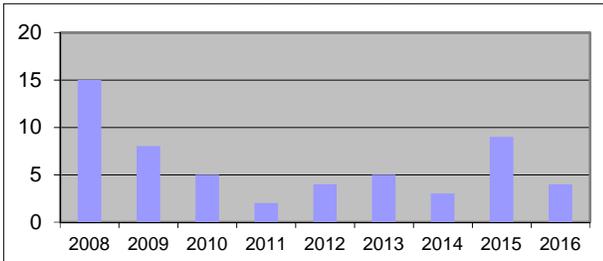
Total Volume (In Million Gallons)



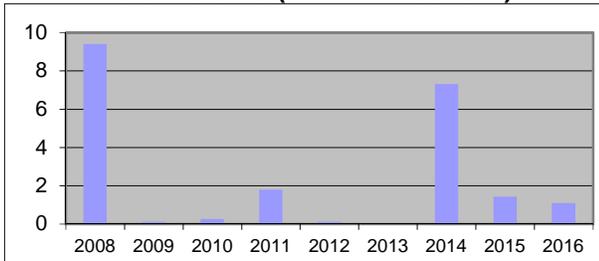
- Recurring WW SSOs
- Recurring WW CD Pump Station Overflows
- Inactive WW Overflows
- SSOs Due to Operational Issues
- Recurring WW Other Pump Station Overflows

Dry Weather CSOs

Total Occurrences

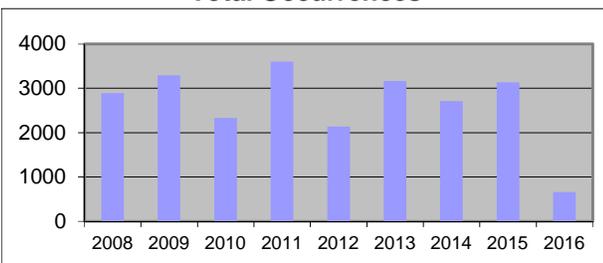


Total Volume (In Million Gallons)

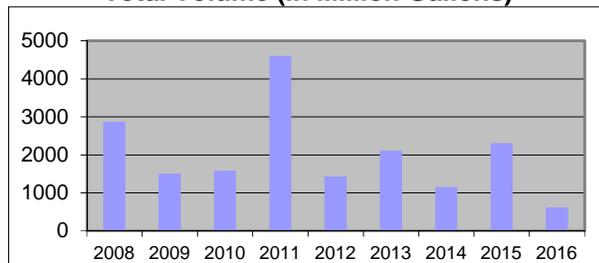


Wet Weather CSOs

Total Occurrences

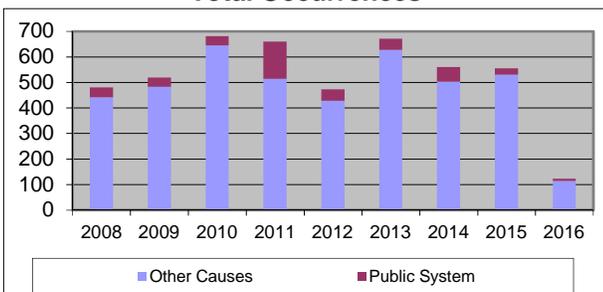


Total Volume (In Million Gallons)



Building Backups

Total Occurrences



Change from 2015 to 2016Q1

	Occurrences	Volume	
Rainfall	-91	-36.81	inches
Recurring WW SSOs	-702	-92.205	MG
Inactive WW SSOs	-3	-2.118	MG
Operational SSOs	-23	-0.764	MG
Dry Weather CSOs	-5	-0.327	MG
Wet Weather CSOs	-2479	-1695.63	MG
Building Backups (Other Causes)	-417		
Building Backups (Public System)	-16		

APPENDIX D:
Recurring Wet Weather SSOs

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Recurring Wet Weather SSOs

No.	MHID	City	County	Model Predicted Overflow Activations	Model Predicted Overflow Volume (MG)
1	0020006	Silver Grove	Campbell	10	2.30
2	0020007	Silver Grove	Campbell	8	0.12
3	0020008	Unicorp Campbell County	Campbell	6	0.07
4	0020030	Silver Grove	Campbell	0	0.00
5	0020032	Unicorp Campbell County	Campbell	3	0.08
6	0040003	Fort Thomas	Campbell	3	0.05
7	0050022	Fort Thomas	Campbell	5	0.17
8	0060001	Unicorp Campbell County	Campbell	4	0.08
9	0060002	Unicorp Campbell County	Campbell	1	0.01
10	0060004	Unicorp Campbell County	Campbell	1	0.03
11	0110010	Highland Heights	Campbell	5	0.25
12	0120018	Highland Heights	Campbell	0	0.00
13	0120019	Highland Heights	Campbell	0	0.00
14	0150003	Wilder	Campbell	0	0.00
15	0150005	Wilder	Campbell	0	0.00
16	0150009	Wilder	Campbell	6	0.97
17	0150063	Wilder	Campbell	1	0.00
18	0150064	Wilder	Campbell	3	0.03
19	0150065	Wilder	Campbell	0	0.00
20	0150356	Southgate	Campbell	0	0.00
21	0150399	Wilder	Campbell	8	1.50
22	0200003	Fort Thomas	Campbell	0	0.00
23	0220056	Fort Thomas	Campbell	4	0.03
24	0220058	Fort Thomas	Campbell	2	0.01
25	0260001	Fort Thomas	Campbell	2	0.01
26	0270020	Fort Thomas	Campbell	0	0.00
27	0270026	Fort Thomas	Campbell	4	0.08
28	0270062	Fort Thomas	Campbell	0	0.00
29	0270103	Fort Thomas	Campbell	0	0.00
30	0280001	Fort Thomas	Campbell	2	0.01
31	0280073	Fort Thomas	Campbell	0	0.00
32	0360004	Dayton	Campbell	0	0.00
33	0360074	Dayton	Campbell	0	0.00
34	0380005	Fort Thomas	Campbell	4	0.03
35	0400002	Fort Thomas	Campbell	6	0.24
36	0400017	Fort Thomas	Campbell	0	0.00
37	0410010	Fort Thomas	Campbell	5	0.07
38	0410019	Fort Thomas	Campbell	5	0.08
39	0410036	Fort Thomas	Campbell	0	0.00
40	0430006	Newport	Campbell	6	0.07
41	0530083	Newport	Campbell	6	0.25
42	0860001	Wilder	Campbell	21	17.88
43	0860003	Wilder	Campbell	0	0.00
44	0860016	Wilder	Campbell	0	0.00
45	1010002	Fort Thomas	Campbell	2	0.01
46	1090069	Edgewood	Kenton	0	0.00
47	1110067	Erlanger	Kenton	4	0.24
48	1110161	Erlanger	Kenton	1	0.02
49	1110174	Elsmere	Kenton	1	0.01
50	1190012	Erlanger	Kenton	5	0.06

Recurring Wet Weather SSOs

No.	MHID	City	County	Model Predicted Overflow Activations	Model Predicted Overflow Volume (MG)
51	1220016	Erlanger	Kenton	1	0.01
52	1220054	Erlanger	Kenton	3	0.12
53	1240008	Erlanger	Kenton	6	0.11
54	1240012	Erlanger	Kenton	0	0.00
55	1550036	Fort Mitchell	Kenton	0	0.00
56	1550053	Fort Mitchell	Kenton	0	0.00
57	1560092	Fort Mitchell	Kenton	5	0.23
58	1560121	Fort Mitchell	Kenton	0	0.00
59	1700008	Covington	Kenton	0	0.00
60	1730086	Unicorp Kenton County	Kenton	6	0.65
61	1730100	Crescent Springs	Kenton	1	0.00
62	1730103	Fort Mitchell	Kenton	0	0.00
63	1760047	Edgewood	Kenton	5	0.15
64	1760048	Edgewood	Kenton	3	0.05
65	1790003	Crescent Springs	Kenton	0	0.00
66	1830067	Unicorp Boone County	Boone	0	0.00
67	1850140	Covington	Kenton	3	3.23
68	1850141	Covington	Kenton	8	0.95
69	1870013	Covington	Kenton	0	0.00
70	1870014	Covington	Kenton	0	0.00
71	1920086	Cold Spring	Campbell	0	0.00
72	1920097	Cold Spring	Campbell	1	0.01
73	1920163	Cold Spring	Campbell	0	0.00
74	1940006	Fort Wright	Kenton	2	0.06
75	1940038	Fort Wright	Kenton	2	0.01
76	1940039	Fort Wright	Kenton	2	0.03
77	1940044	Fort Wright	Kenton	2	0.03
78	1990018	Covington	Kenton	2	0.15
79	2020035	Taylor Mill	Kenton	1	0.07
80	2020203	Covington	Kenton	0	0.00
81	2070019	Elsmere	Kenton	2	0.05
82	2090008	Elsmere	Kenton	6	0.20
83	2100002	Elsmere	Kenton	1	0.00
84	2100007	Elsmere	Kenton	0	0.00
85	2100036	Elsmere	Kenton	1	0.00
86	2100037	Elsmere	Kenton	0	0.00
87	2100057	Elsmere	Kenton	1	0.00
88	2100128	Elsmere	Kenton	0	0.00
89	2100129	Elsmere	Kenton	6	0.82
90	2110002	Elsmere	Kenton	4	0.05
91	2110006	Elsmere	Kenton	0	0.00
92	2120001	Elsmere	Kenton	1	0.01
93	2120041	Elsmere	Kenton	0	0.00
94	2130026	Erlanger	Kenton	0	0.00
95	2130027	Erlanger	Kenton	0	0.00
96	2130028	Erlanger	Kenton	0	0.00
97	2170097	Crestview Hills	Kenton	9	0.61
98	2280023	Unicorp Kenton County	Kenton	0	0.00
99	2290001	Crescent Springs	Kenton	0	0.00

Recurring Wet Weather SSOs

No.	MHID	City	County	Model Predicted Overflow Activations	Model Predicted Overflow Volume (MG)
100	2300011	Erlanger	Kenton	0	0.00
101	2300016	Erlanger	Kenton	0	0.00
102	2300019	Erlanger	Kenton	0	0.00
103	2300121	Independence	Kenton	5	0.56
104	2300123	Unicorp Kenton County	Kenton	3	0.14
105	2301219	Erlanger	Kenton	5	0.94
106	2301274	Erlanger	Kenton	0	0.00
107	2370003	Unicorp Boone County	Boone	0	0.00
108	2400001	Unicorp Boone County	Boone	0	0.00
TOTAL				241	33.98

Threshold for model activation is 0.01 MGD and 0.001 MG

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APPENDIX E:

***2016 Annual Revision Transactions of
Recurring Wet Weather SSOs***

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Recurring Wet Weather SSO Locations - Revision Transactions

MHID	City	County	Revision	Comments
0020006	Silver Grove	Campbell		
0020007	Silver Grove	Campbell		
0020008	Unicorp Campbell County	Campbell		
0020030	Silver Grove	Campbell	Added	Identified as a recurring SSO based on field inspections
0020032	Unicorp Campbell County	Campbell		
0040003	Fort Thomas	Campbell		
0050022	Fort Thomas	Campbell		
0060001	Unicorp Campbell County	Campbell		
0060002	Unicorp Campbell County	Campbell		
0060004	Unicorp Campbell County	Campbell		
0110002	Fort Thomas	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0110010	Highland Heights	Campbell		
0120018	Highland Heights	Campbell		
0120019	Highland Heights	Campbell	Added	Identified as a recurring SSO based on field inspections
0150003	Wilder	Campbell		
0150005	Wilder	Campbell		
0150009	Wilder	Campbell		
0150063	Wilder	Campbell		
0150064	Wilder	Campbell		
0150065	Wilder	Campbell		
0150085	Fort Thomas	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0150086	Fort Thomas	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0150087	Fort Thomas	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0150356	Southgate	Campbell		
0150399	Wilder	Campbell		
0200003	Fort Thomas	Campbell		
0220056	Fort Thomas	Campbell		
0220058	Fort Thomas	Campbell		
0230016	Fort Thomas	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0260001	Fort Thomas	Campbell		
0270020	Fort Thomas	Campbell		
0270026	Fort Thomas	Campbell		
0270062	Fort Thomas	Campbell		
0270103	Fort Thomas	Campbell		
0280001	Fort Thomas	Campbell		
0280073	Fort Thomas	Campbell	Added	Identified as a recurring SSO based on field inspections
0300035	Fort Thomas	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0360004	Dayton	Campbell		
0360074	Dayton	Campbell		
0370001	Fort Thomas	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0380005	Fort Thomas	Campbell		
0400002	Fort Thomas	Campbell		
0400017	Fort Thomas	Campbell		
0400034	Fort Thomas	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0410010	Fort Thomas	Campbell		
0410019	Fort Thomas	Campbell	Added	Identified as a recurring SSO based on field inspections
0410036	Fort Thomas	Campbell		
0430006	Newport	Campbell		
0490073	Newport	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0500047	Newport	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0530083	Newport	Campbell		
0860001	Wilder	Campbell		
0860003	Wilder	Campbell		
0860016	Wilder	Campbell		

Recurring Wet Weather SSO Locations - Revision Transactions

MHID	City	County	Revision	Comments
1010002	Fort Thomas	Campbell		
1010027	Fort Thomas	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1090069	Edgewood	Kenton		
1110025	Erlanger	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1110067	Erlanger	Kenton		
1110161	Erlanger	Kenton		
1110174	Elsmere	Kenton		
1110275	Elsmere	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1110294	Erlanger	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1190001	Erlanger	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1190012	Erlanger	Kenton		
1210018	Erlanger	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1220016	Erlanger	Kenton		
1220054	Erlanger	Kenton		
1230019	Erlanger	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1240008	Erlanger	Kenton		
1240012	Erlanger	Kenton		
1330022	Park Hills	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1550036	Fort Mitchell	Kenton		
1550053	Fort Mitchell	Kenton		
1560016	Fort Mitchell	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1560019	Fort Mitchell	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1560074	Fort Mitchell	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1560092	Fort Mitchell	Kenton		
1560121	Fort Mitchell	Kenton		
1600029	Lakeside Park	Kenton	Removed	Eliminated as part of sewer improvements
1610102	Fort Mitchell	Kenton	Removed	Eliminated as part of sewer improvements
1690043	Fort Wright	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1690072	Fort Wright	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1700006	Ludlow	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1700008	Covington	Kenton		
1700025	Park Hills	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1730086	Unicorp Kenton County	Kenton		
1730100	Crescent Springs	Kenton		
1730103	Fort Mitchell	Kenton		
1760047	Edgewood	Kenton		
1760048	Edgewood	Kenton		
1790003	Crescent Springs	Kenton		
1830020	Unicorp Boone County	Boone	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1830067	Unicorp Boone County	Boone		
1850140	Covington	Kenton		
1850141	Covington	Kenton		
1860108	Taylor Mill	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1870013	Covington	Kenton		
1870014	Covington	Kenton		
1920086	Cold Spring	Campbell		
1920097	Cold Spring	Campbell		
1920163	Cold Spring	Campbell		
1940006	Fort Wright	Kenton		
1940038	Fort Wright	Kenton	Added	Identified as a recurring SSO based on field inspections
1940039	Fort Wright	Kenton	Added	Identified as a recurring SSO based on field inspections
1940044	Fort Wright	Kenton	Added	Identified as a recurring SSO based on field inspections

Recurring Wet Weather SSO Locations - Revision Transactions				
MHID	City	County	Revision	Comments
1950014	Fort Wright	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1950232	Fort Wright	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1960002	Fort Wright	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1990018	Covington	Kenton		
2020035	Taylor Mill	Kenton		
2020203	Covington	Kenton		
2040040	Edgewood	Kenton	Removed	Eliminated as part of sewer improvements
2070012	Elsmere	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
2070019	Elsmere	Kenton		
2090008	Elsmere	Kenton		
2100002	Elsmere	Kenton		
2100007	Elsmere	Kenton		
2100036	Elsmere	Kenton		
2100037	Elsmere	Kenton		
2100057	Elsmere	Kenton		
2100106	Elsmere	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
2100128	Elsmere	Kenton		
2100129	Elsmere	Kenton		
2110001	Elsmere	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
2110002	Elsmere	Kenton		
2110006	Elsmere	Kenton		
2120001	Elsmere	Kenton		
2120041	Elsmere	Kenton		
2130026	Erlanger	Kenton		
2130027	Erlanger	Kenton		
2130028	Erlanger	Kenton		
2130286	Erlanger	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
2160004	Fort Mitchell	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
2160005	Fort Mitchell	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
2160006	Fort Mitchell	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
2170008	Crestview Hills	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
2170013	Lakeside Park	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
2170097	Crestview Hills	Kenton		
2280010	Unicorp Kenton County	Kenton	Removed	Eliminated as part of sewer improvements
2280011	Unicorp Kenton County	Kenton	Removed	Eliminated as part of sewer improvements
2280016	Independence	Kenton	Removed	Eliminated as part of sewer improvements
2280023	Unicorp Kenton County	Kenton		
2290001	Crescent Springs	Kenton		
2300011	Erlanger	Kenton		
2300016	Erlanger	Kenton		
2300019	Erlanger	Kenton		
2300121	Independence	Kenton		
2300123	Unicorp Kenton County	Kenton		
2301219	Erlanger	Kenton		
2301274	Erlanger	Kenton		
2370003	Unicorp Boone County	Boone	Added	Identified as a recurring SSO based on field inspections
2400001	Unicorp Boone County	Boone		

Total SSO Locations Added= 8

Total SSO Locations Removed = 45

Total Recurring SSO Locations after Revisions = 108

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APPENDIX F:

Wet Weather CSOs

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Wet Weather CSOs				
No.	CSO ID	KPDES Permit #	Model Predicted Activations	Model Predicted Overflow Volume (MG)
1	0010220	To Be Permitted	6	0.36
2	0030031	KY0021466 - Outfall 10	0	0.00
3	0200069	KY0021466 - Outfall 11	7	0.23
4	0330100	KY0021466 - Outfall 12	0	0.00
5	0340050	KY0021466 - Outfall 14	6	0.13
6	0340051	KY0021466 - Outfall 13	6	0.06
7	0360079	To Be Permitted	6	0.53
8	0540157	To Be Permitted	8	0.22
9	0540156	To Be Permitted	8	0.25
10	0540158	To Be Permitted	3	0.06
11	0550134	To Be Permitted	2	0.02
12	0570089	KY0021466 - Outfall 16	3	2.99
13	0570090	KY0021466 - Outfall 17	1	0.18
14	0600094	KY0021466 - Outfall 18	7	0.34
15	0600096	To Be Permitted	6	0.05
16	0600097	KY0021466 - Outfall 19	7	0.81
17	0600104	To Be Permitted	1	0.01
18	0610071	KY0021466 - Outfall 21	12	6.20
19	0610072	KY0021466 - Outfall 20	6	0.08
20	0620075	KY0021466 - Outfall 23	14	2.13
21	0620077	KY0021466 - Outfall 22	6	0.08
22	0630054	To Be Permitted	0	0.00
23	0630061	KY0021466 - Outfall 83	7	0.49
24	0640090	KY0021466 - Outfall 24	17	76.61
25	0650054	To Be Permitted	0	0.00
26	0650090	KY0021466 - Outfall 26	0	0.00
27	0650098	To Be Permitted	13	23.48
28	0650100	KY0021466 - Outfall 25	6	0.04
29	0660085	To Be Permitted	0	0.00
30	0690059	To Be Permitted	0	0.00
31	0690067	To Be Permitted	6	0.04
32	0730129	To Be Permitted	15	0.39
33	0770096	KY0021466 - Outfall 28	7	0.49
34	0790084	KY0021466 - Outfall 31	21	4.24
35	0790086	KY0021466 - Outfall 29	17	27.23
36	0840111	To Be Permitted	0	0.00
37	0840112	To Be Permitted	11	0.81
38	0840116	KY0021466 - Outfall 27	17	1.44
39	0870078	KY0021466 - Outfall 33	1	0.03
40	0870079	KY0021466 - Outfall 34	22	8.31
41	0880081	KY0021466 - Outfall 36	25	8.14
42	0880082	KY0021466 - Outfall 35	7	0.17
43	0890081	To Be Permitted	0	0.00
44	0910065	KY0021466 - Outfall 38	20	85.06
45	0910066	To Be Permitted	0	0.00
46	0910068	KY0021466 - Outfall 37	12	18.13

Wet Weather CSOs				
No.	CSO ID	KPDES Permit #	Model Predicted Activations	Model Predicted Overflow Volume (MG)
47	0910084	To Be Permitted	4	0.13
48	0930102	KY0021466 - Outfall 43	0	0.00
49	0930103	KY0021466 - Outfall 42	2	0.01
50	0930104	KY0021466 - Outfall 40	3	0.03
51	0930105	KY0021466 - Outfall 41	16	13.25
52	0930106	KY0021466 - Outfall 39	0	0.00
53	0960063	KY0021466 - Outfall 45	10	3.83
54	0960064	KY0021466 - Outfall 44	2	0.00
55	0980073	KY0021466 - Outfall 46	6	0.04
56	0980080	KY0021466 - Outfall 47	3	0.01
57	0980081	KY0021466 - Outfall 48	18	15.40
58	1320112	To Be Permitted	0	0.00
59	1350155	KY0021466 - Outfall 49	1	0.04
60	1380132	To Be Permitted	4	0.13
61	1380146	To Be Permitted	1	0.00
62	1420141	KY0021466 - Outfall 50	8	0.20
63	1420142	KY0021466 - Outfall 51	17	35.68
64	1420144	KY0021466 - Outfall 52	0	0.00
65	1420145	KY0021466 - Outfall 53	0	0.00
66	1420146	KY0021466 - Outfall 54	0	0.00
67	1420147	KY0021466 - Outfall 55	3	0.04
68	1440204	KY0021466 - Outfall 59	5	0.02
69	1440206	KY0021466 - Outfall 61	9	1.25
70	1440207	To Be Permitted	0	0.00
71	1440209	KY0021466 - Outfall 56	21	28.92
72	1440508	KY0021466 - Outfall 60	3	0.12
73	1470089	KY0021466 - Outfall 62	5	0.14
74	1470093	KY0021466 - Outfall 63	11	18.24
75	1480185	To Be Permitted	8	0.75
76	1480187	KY0021466 - Outfall 30	16	187.82
77	1490132	KY0021466 - Outfall 65	7	0.70
78	1490172	KY0021466 - Outfall 64	0	0.00
79	1500131	KY0021466 - Outfall 66	13	4.46
80	1510133	To Be Permitted	0	0.00
81	1710114	KY0021466 - Outfall 69	6	0.12
82	1710116	KY0021466 - Outfall 68	12	5.04
83	1710119	KY0021466 - Outfall 70	9	2.88
84	1710121	KY0021466 - Outfall 71	8	1.41
85	1710124	KY0021466 - Outfall 72	8	1.93
86	1720109	KY0021466 - Outfall 73	12	6.48
87	1730259	KY0021466 - Outfall 75	9	1.01
88	1730262	To Be Permitted	0	0.00
89	1730263	KY0021466 - Outfall 74	10	0.89
90	1840130	To Be Permitted	9	0.30
91	1850158	KY0021466 - Outfall 76	9	10.05
92	1870193	KY0021466 - Outfall 78	10	0.65

Wet Weather CSOs				
No.	CSO ID	KPDES Permit #	Model Predicted Activations	Model Predicted Overflow Volume (MG)
93	1870194	KY0021466 - Outfall 79	3	0.04
94	1880090	KY0021466 - Outfall 81	9	1.79
95	1880091	KY0021466 - Outfall 80	6	0.30
		TOTAL	655	613.93

Threshold for model activation is 0.01 MGD and 0.001 MG