SD1
Managing Northern Kentucky's
Wastewater and Storm Water

April 30, 2015

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

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

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

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

To Whom It May Concern:

Pursuant to the above-referenced Consent Decree, Sanitation District No. 1 (SD1) 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, 2015 through March 31, 2014. The report also contains an outlook for the upcoming calendar quarter period of April 1, 2015 through June 30, 2015. Additionally, an annual revision to SD1's Recurring Wet Weather SSO list is provided in this report.

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 drager@sd1.org.

Best regards,

David E. Rager
Executive Director

DER/wck
Enclosures

Sanitation District No. 1
April 30, 2015

Consent Decree
Quarterly Report No. 30
(January 1, 2015 through March 31, 2015)

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CERTIFICATION

Consent Decree Quarterly Report No. 30
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.

David E. Rager
Executive Director

Date 4/28/15

COMMONWEALTH OF KENTUCKY

)ss.

COUNTY OF Kenton

The foregoing instrument was acknowledged before me this 28 day of April, 2015 by David E. Rager, Executive Director of Sanitation District. No. 1.

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

Angela M. Cook
NOTARY PUBLIC

Kenton County, Kentucky

My commission expires: 7-30-16

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CONSENT DECREE
QUARTERLY REPORT NO. 30

April 30, 2015

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

TABLE OF CONTENTS

TABLES

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
USACE	United States Army Corps of Engineers
WRWRF	Western Regional Water Reclamation Facility

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, 2015 through March 31, 2015. This report also contains an outlook for the upcoming calendar quarter period of April 1, 2015 through June 30, 2015.

1.3 Consent Decree Compliance Schedule

A comprehensive compliance schedule for meeting the requirements of the Consent Decree can be found in Appendix A. Additionally, 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. SD1 has also incorporated into Appendix B the status of the projects proposed in the first five years of the Watershed Plans for Northern Kentucky, submitted on March 31, 2011, approved by

a letter from the Cabinet and EPA 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 the initial watershed projects. A request to remove Western Regional – Richwood project C-039-00 was included in the revised Watershed Plan submitted on March 31, 2011. Approval of the request 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.

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 or collapse 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 wet weather crew continues to perform routine inspections before, during and 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 ensure they are categorized 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.

- 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 exception to this calculation methodology is at the Lakeview Pump Station, which has a metered bypass pipe. This method has been used historically for reporting purposes, and its results are included in this Quarterly Report.

- 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 separate sewer systems, that was utilized 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 60 flow meters throughout the year, which are used to continuously update and refine the models. In addition to the use of the models for planning future capital improvements, the models are also 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 system. This tool confidently provides 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 and private developments, and 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 18 rain gauges located across the district, to simulate the wet weather that occurred between January 1, 2015 and March 31, 2015. The results of the model simulations have been summarized and included in this report to indicate the frequency, total volume, and location of the overflows within SD1's system for this period. These results are not a summary of observed or confirmed activations, but are a confident estimate of the overflow statistics that are based upon the calibrated and field verified model.

SD1 actively realigns and optimizes field operations and modeling activities on a continual basis. Through regular inspections and flow monitoring, model predictions are verified against actual field conditions. This process ensures the continuous improvement of modeling accuracy and precision. Field verifications improve model predictions by correcting and minimizing discrepancies found with observed conditions.

The ongoing refinement and calibration of SD1's modeling tools provide the most accurate estimations of overflow location, activity, and volume.

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 will constantly vary over time, with or without system improvements, due to natural variations in rainfall patterns and the associated groundwater 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 quarter, in order to understand the relative impact of 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.

Table 2.1 Summary of Storm Events
(January 1, 2015 through March 31, 2015)

Month	Approximate # of Storm Events[1]	Rainfall (in)
January	7	2.35
February	6	1.82
March	9	6.30
Total	**22**	**10.47**

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

The remainder of this section reports overflows that occurred throughout SD1's service area during the period of January 1, 2015 through March 31, 2015. 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. 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 have been observed to overflow 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.

Recurring Wet Weather SSOs

Modeled activation and volume statistics for SD1's 145 Recurring SSO locations for the current reporting period can be found in Appendix D. This list has been revised subsequent to the January 2015 Quarterly Report, based upon a review of field inspections and hydraulic modeling updates for the past two years. As discussed in previous reports, 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 in 2015 can be found in Appendix E.

Recurring Wet Weather SSO Pump Stations Listed in the Consent Decree

Along with the 145 recurring wet-weather SSOs, there are also 14 pump stations identified in the Consent Decree that have historically documented 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 wet-weather SSO occurrences during the current reporting period.

Of the 14 pump stations listed in the Consent Decree, only Lakeview Pump Station discharged due to a lack of capacity in wet weather, during the current reporting period. Lakeview Pump Station discharged three times and released a combined total of approximately 628,000 gallons.

As previously described, SD1 uses the Manning's Gravity Flow and Pipe Calculation to estimate discharge volumes from pump stations; the only exception to this calculation methodology is at the Lakeview Pump Station, which has a metered bypass pipe.

Table 2.2 Discharges from Consent Decree Pump Stations Due to Lack of Capacity during Wet Weather
(January 1, 2015 through March 31, 2015)

Name of Pump Station	Number of Wet-Weather Related Discharge Occurrences	Total Estimated Volume (gallons)
Crestview	0	0
Lakeview	3	628,000
Alex-Licking	0	0
Allen Fork	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
Taylorsport	0	0
Union	0	0
TOTAL	**3**	**628,000**

Gray denotes where required improvements have been made to 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, the Highland Heights Pump Station was the only pump station not listed in the Consent Decree that experienced recurring wet-weather capacity issues. Highland Heights Pump Station discharged three times, and released a combined total of approximately 224,865 gallons.

Highland Heights Pump Station also experienced intermittent bypasses during the historic high-river conditions that are documented in Section 2.5 Overflows Due to High River Impacts. The intermittent Highland Heights Pump Station bypasses caused by the prolonged high-river conditions are not included in the wet-weather lack of capacity discharges documented in this section. The SSOs documented in Section 2.1 are only associated with lack of capacity issues during wet weather at river levels below the flood stage of 56 feet.

Inactive Wet Weather SSOs

SD1 observed an inactive wet-weather SSO in the first quarter of 2015 at structure number 0150003 in the City of Wilder. The SSO was found discharging on March 16, 2015 and did not stop until March 17, 2015. The location of the observed inactive wet-weather SSO is upstream of the Licking River Siphon, which was also heavily influenced by the historic high-river conditions documented in Section 2.5 Overflows Due to High River Impacts. The inactive SSO was discovered and recorded while the Ohio River was cresting at 57.7 feet. Approximately 737,800 gallons discharged from the SSO into Moock Creek before the river receded enough for the system to contain the spill. The manhole has been added to the Recurring SSO list in 2015 and will be monitored for recurring activity for at least the next two years, as documented in the SSO revisions transaction table provided in Appendix E.

Two additional SSOs at deactivated pump stations along the Licking River were caused by the same historic flood conditions between March 14 and March 17, 2015. These two occurrences have been categorized as Inactive Wet Weather SSOs. More detailed descriptions of the two inactive pump station occurrences are given in Section 2.5 Overflows Due to Historic High River Conditions.

2.2 SSOs Due to Operational Issues

This category of overflows includes discharges from SD1's sanitary sewer system 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 11 SSOs due to operational issues throughout SD1's service area, with a total estimated overflow volume of 329,500 gallons.

On the following page, Figure 2.1 demonstrates the primary causes of the overflows and Figure 2.2 demonstrates the corresponding volumes of all SSOs due to operational issues during the first quarter of 2015.

Figure 2.1 Occurrences of SSO Due to Operational Issues per Cause
(January 1, 2015 through March 31, 2015)

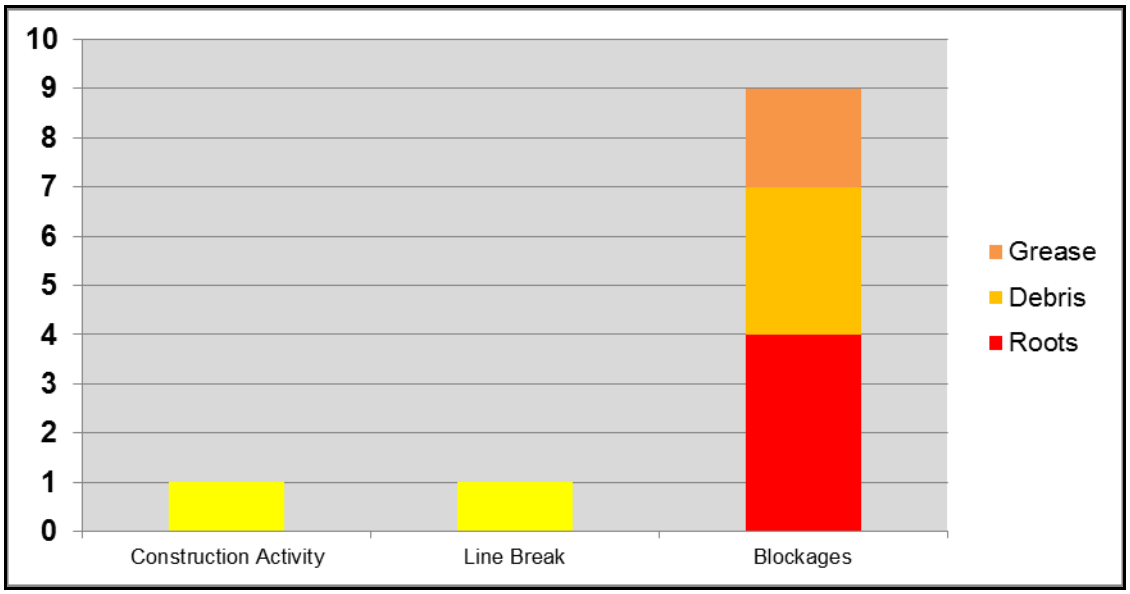
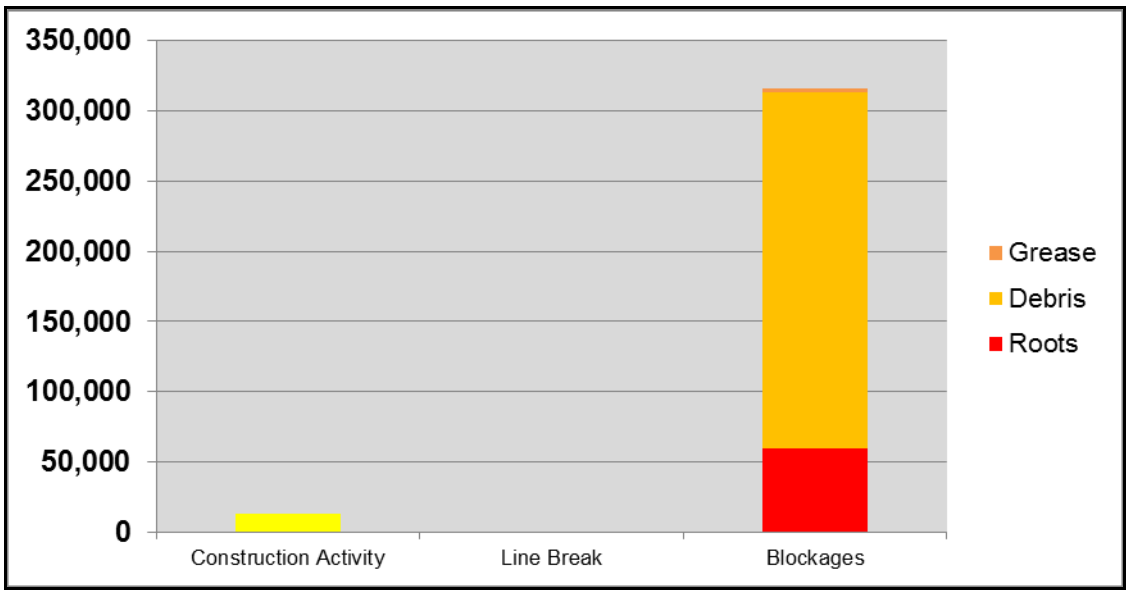


Figure 2.2 Gallons of SSO Due to Operational Issues per Cause
(January 1, 2015 through March 31, 2015)



The single overflow due to Construction Activity occurred at the Crestview Pump Station. SD1's capital project (C-414-52) to eliminate the overflow at Crestview Pump Station by the Consent Decree deadline of December 31, 2015, requires a larger pump station to be built approximately 300 feet from the existing pump station. SD1's contractor broke the existing force main on February 13, 2015, during the excavation

work for the foundation of the new pump station. The force main was not accurately located by SD1 prior to the excavation. The broken force main spilled approximately 13,500 gallons of sewage, which was contained inside of the excavated hole and then pumped back into the system. The affected soils were removed and there were no observed impacts on local waterways.

All SSOs documented in this section were immediately acted upon and corrected, in accordance with SD1's Sewer Overflow Response Plan (SORP) procedures. 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 overflow events are recorded in Lucity and are periodically reviewed to identify if any trends or localized problem areas (such as past overflows or proximity to recurring SSOs) exist that warrant the need for a larger-scale inspection or rehabilitation project.

2.3 Wet Weather CSOs

Included in Appendix F are the modeled activation and volume statistics for SD1's 95 CSOs. This data was generated from the hydraulic modeling program previously described in the introduction to Section 2 Overflow Data.

2.4 Dry Weather CSOs

One dry-weather CSO was recorded in the first quarter of 2015. On January 23, 2015, along Riviera Drive in the City of Bellevue, SD1 observed a 24-inch clay sewer collapse while attempting to retrieve a CCTV camera stuck in the line. Emergency bypass pumping was immediately set up to convey flows to the interceptor downstream of the collapse. On January 27, 2015, it was observed during routine post-wet weather CSO inspections following the storm event of January 25, 2015, that the emergency bypass pumps were no longer keeping up with the flows in the 24-inch sewer. The failure of the bypass pumping caused a backup of approximately 700 feet in the sewer, which led to a discharge out of CSO number 0650098 into Taylor Creek. SD1 and its pumping contractor made immediate adjustments to the pumps to contain the flow. SD1

estimates that approximately 500 gallons were spilled into Taylor Creek, during this event. The CSO outfall is fitted with a Tideflex check valve and a netbag, which contained many of the spilled solids. SD1 cleaned the check valve and replaced the netbag, and removed affected soils surrounding the outfall. The emergency bypass pumping operation was replaced with a larger system on January 29, 2015 and has not experienced any further mechanical problems since the replacement. SD1 is currently evaluating alternatives for the rehabilitation and replacement of approximately 1,300 feet of deteriorating main line along Riviera Drive.

2.5 Overflows Due to Historic High River Impacts

SD1 operates the flood protection system in accordance with the United States Army Corps of Engineers' (USACE) Flood Protection Operation and Maintenance Manuals. When the Ohio River reaches specified river stages during flood conditions, CSO outfall flood gates are closed to isolate the sewer system from high-river conditions. Other flood gates are then opened or closed to isolate portions of the interceptor and combined sewers to re-route sewer flows to the flood pumping stations. The flood pump stations and gates were designed by the USACE to protect the cities from flooding internally due to elevated river levels, or during rain events when the flows in the combined sewers cannot discharge to the river due to the elevated river levels.

During March of 2015, Northern Kentucky experienced prolonged flood stage conditions on the Ohio River that impacted SD1's combined sewer system, as well as portions of the separated sewer systems along the Licking River. The Ohio River exceeded the Northern Kentucky flood stage of 41 feet for 18 consecutive days and crested at 57.7 feet on March 15, 2015. On average, the Ohio River exceeds 41 feet at Northern Kentucky for 26 days of the year. Since 1970, the Ohio River has only been above 41 feet for 18 or more consecutive days on nine occasions; the most recent event lasting 31 consecutive days, during the record-rainfall year of 2011. Additionally, the only other time since 1970 that the Ohio River reached 57 feet was in the historic flood of 1997, when the river crested at 64.3 feet and caused more than a billion dollars in losses and 63 deaths in the Ohio River Valley. To illustrate the historic river stage observed in March of 2015, Figure 2.3 provides the average annual frequency of attainment of various river stages in Northern Kentucky and Figure 2.4 demonstrates the river stages attained in the first quarter of 2015.

Figure 2.3 Average Annual Frequency of Attainment of Various Ohio River Stages

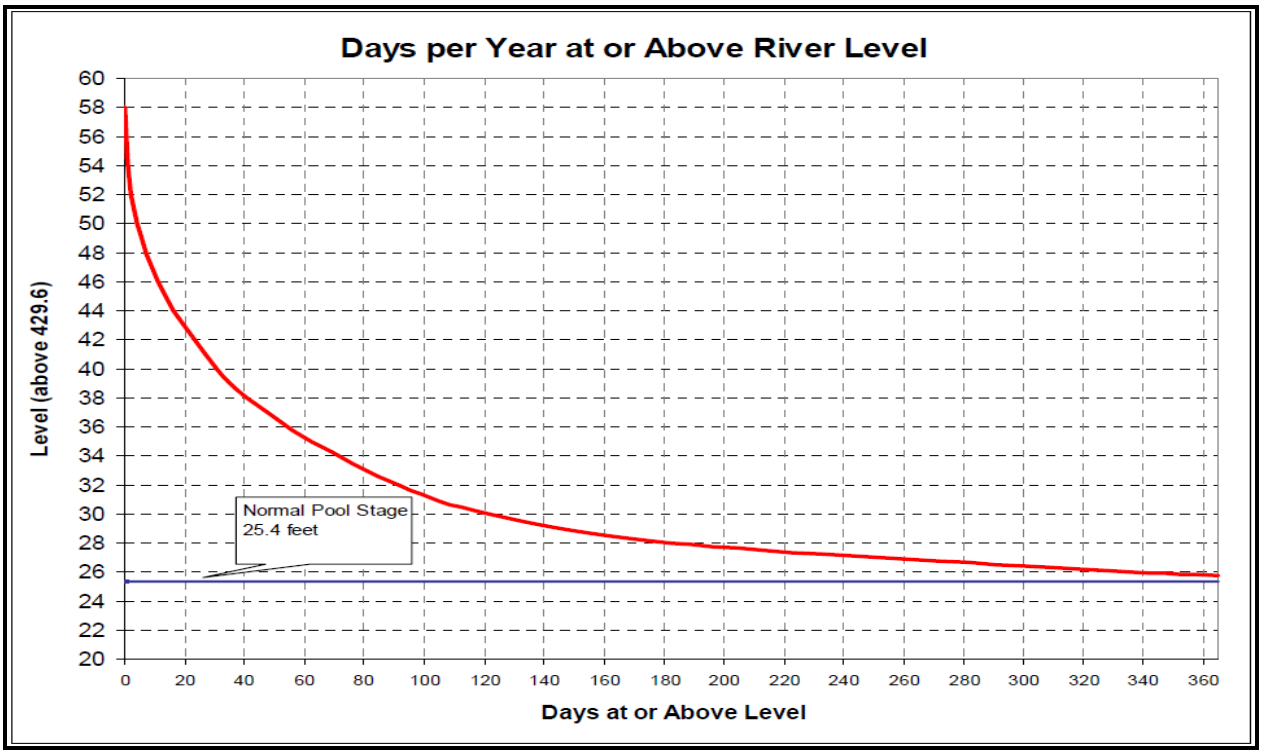
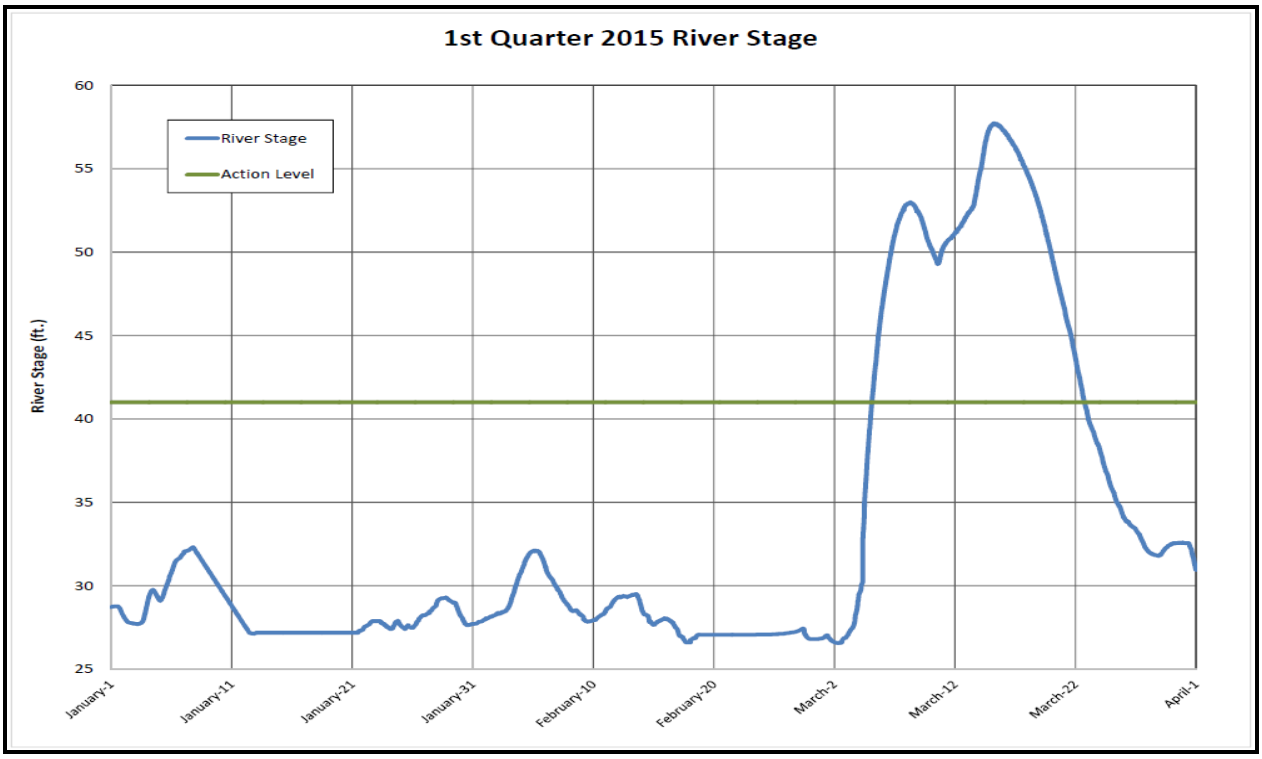
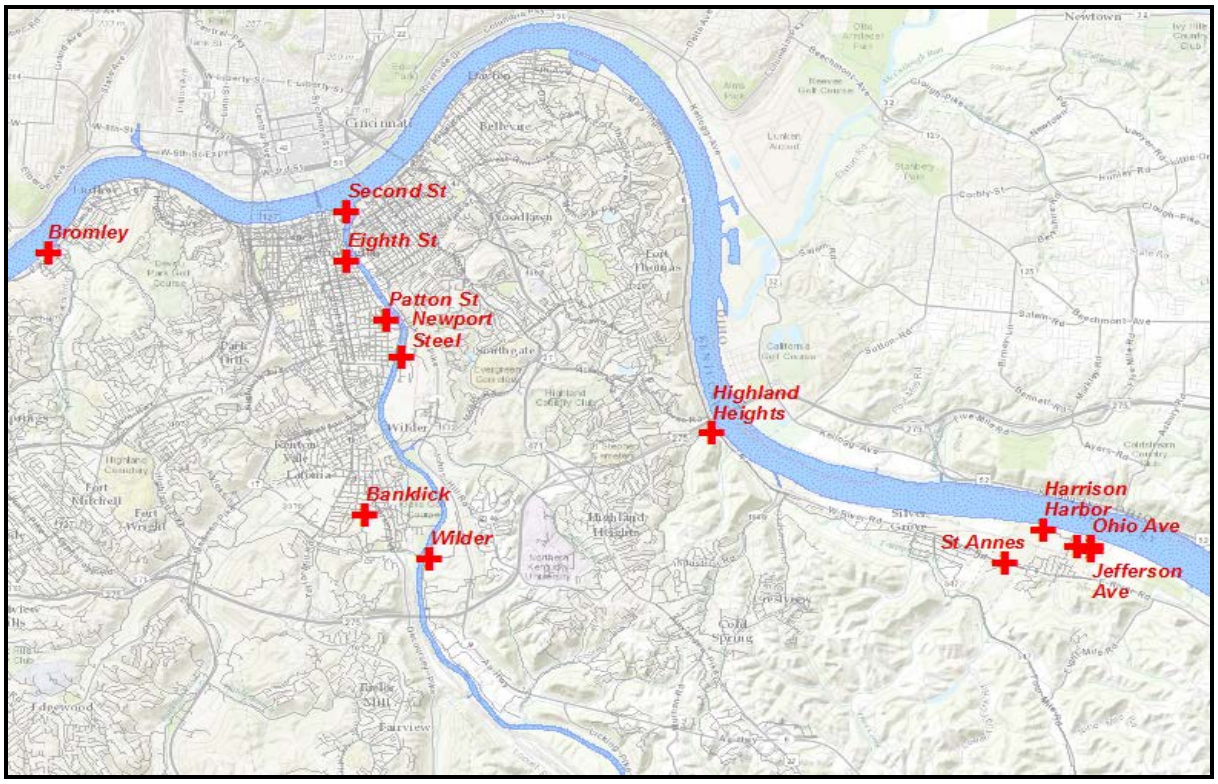


Figure 2.4 Stages of the Ohio River during the First Quarter of 2015



The historic nature of the March 2015 flood event caused SD1 to temporarily suspend pumping operations in portions of the collections system that are not typically impacted by high-river conditions. The estimated wet-weather impacts of the high-river conditions on SD1's pumping operations, in terms of SSO and CSO, are included in the modeled overflow statistics provided in Appendices D and F, respectively. SD1 operators provided initial notification to KDOW that approximately 331 million gallons were discharged by deactivating approximately 13 sanitary pump stations during the high-river event between March 4 and March 23, based upon the known dry-weather base flows at those pump stations. SD1's hydraulic model estimates that approximately 528 million gallons (70 percent of the total quarter's CSO volume) were discharged during this period, which better accounts for the additional wet weather that occurred while the river was above flood stage. The larger estimate provided by SD1's model has been used for the cumulative overflow totals recorded in Appendix C. Figure 2.5 identifies the locations of the pump stations affected by the high river conditions in March of 2015.

Figure 2.5 Map of Pump Stations Affected by March 2015 High River Conditions



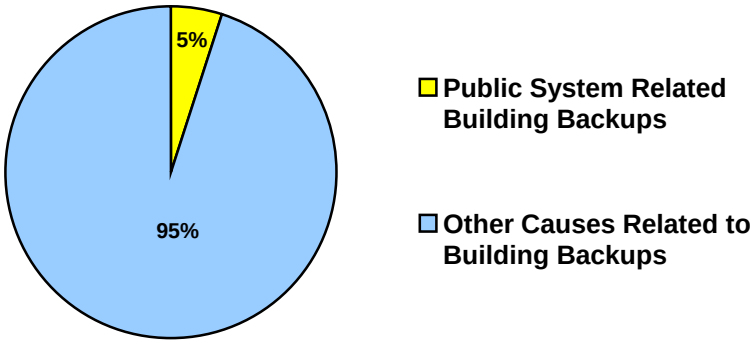
The only pump stations impacted by high-river conditions that are not included in the modeled statistics for recurring wet-weather SSO (provided in Appendix D) are Wilder

Pump Station and Newport Steel Pump Station. Statistics are not provided in Appendix D for these two stations, because they are not recurring SSO locations and they do not have wet-weather capacity issues when the river stage is below 56 feet. SD1 provided KDOW with initial notification of these two pump station releases when the Ohio River was cresting at from March 14 to March 17. Each station was turned off for approximately three days, while the system was inundated by the Licking River. The SD1 operator estimated that approximately 872,000 gallons were spilled from the system surrounding these two pump stations, by using the Manning's Gravity Flow and Pipe Calculation. However, SD1's hydraulic model predicted approximately 1,380,000 gallons were released while the two pump stations were shut down. The larger estimate produced by the model has been used in the cumulative SSO volumes reported in Appendix C. These occurrences will be categorized as Inactive Wet Weather SSOs.

2.6 Building Backups

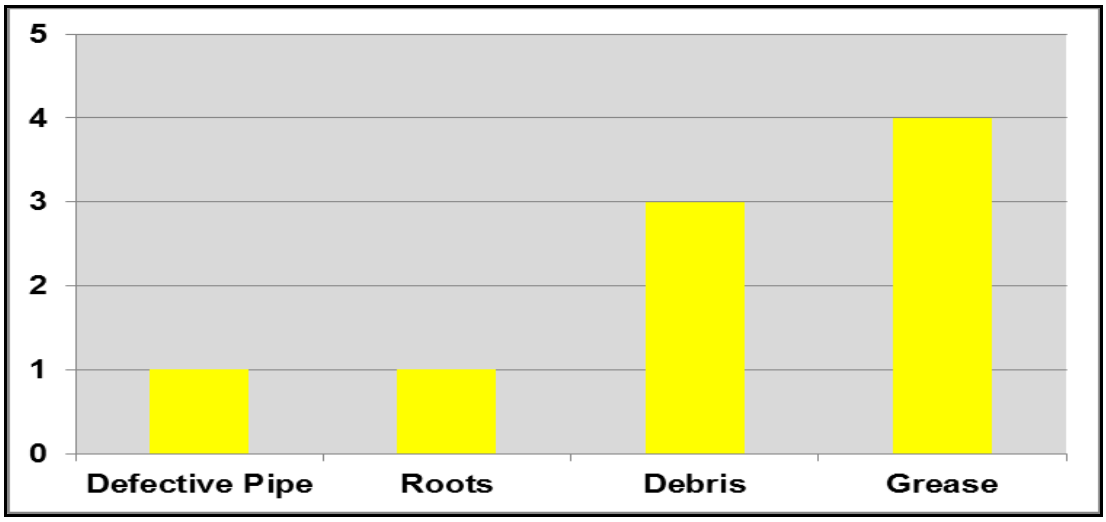
During the first quarter of 2015, there were approximately 181 building backups throughout SD1's service area. Of these 181 backups**,** approximately nine were related to the condition or operation of the public sewers and 172 were caused by other issues, as shown in Figure 2.6. The building backups that were not related to the condition or operation of the public sewers were caused by blockages in private service laterals, internal plumbing issues, water main breaks, and high-river flooding.

Figure 2.6 Building Backups: Public System vs. Other Causes
(January 1, 2015 through March 31, 2015)



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 2.7.

Figure 2.7 Causes of Public System Related Building Backups
(January 1, 2015 through March 31, 2015)



The sewers where these 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 warrants the need for a larger-scale inspection routine, rehabilitation, or repair project.

SECTION 3. QT. REPORT NO.29 CORRECTION

SD1's submission of Quarterly Report No. 29 on January 30, 2015 contained an error in the annual summary, regarding modeled SSO volume avoidance associated with the Western Regional Water Reclamation Facility (WRWRF). In Section 3.2.1 Recurring Wet Weather SSOs, the report contains a comparison of the 2014 modeled SSO volumes with a model of hypothetical SSO spills that would have occurred with the same 2014 precipitation, but without the benefits of the WRWRF improvements. Quarterly Report No. 29 provides an estimate of 139.8 million gallons of SSO without the WRWRF improvements, and an overall avoidance in 2014 of 100.5 million gallons.

After the submission of the report, it was discovered that the wrong evaporation rate was used in the model without the WRWRF improvements, which inflated the SSO volume and the estimated avoidance. After correcting the evaporation rate and rerunning the model, it was determined that approximately 80.1 million gallons of SSO would have been spilled without the WRWRF improvements. Therefore, the revised avoidance of SSO in 2014 due to the improvements of the WRWRF and its collection system is approximately 40.8 million gallons.

A revised map of the SSO avoidance due to WRWRF is provided in Appendix G.

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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, between 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 2014			
✓	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	0%	12/31/15	
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)		94%	12/31/2015	
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	0%	11/10/15	
	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 2014			
✓	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	0%	09/04/15	

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 2014			
✓	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	0%	05/14/15	
	REPORTING – 2007 through 2014			
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	0%	07/30/15	

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			
	Complete all Consent Decree Compliance Measures	44%	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

Updated: April 30, 2015

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.		

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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 10/01/2014 to 12/31/2014	Planned Activity for 4/01/2015 to 6/30/2015
(Schedules listed in this section are subject to change based on the approval of SD1's Watershed Plans.)							
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 effecitve and feasible upstream of the Lakeview Pump Station	Reduce I/I and SSOs in Lakeview PS service area	Beyond 2014	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 effecitve and feasible upstream of the Licking River Siphon	Reduce I/I and SSOs in Licking River Siphon area	Beyond 2014	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 effecitve and feasible in the Taylor Creek area	Reduce I/I and SSOs in Taylor Creek area	Beyond 2014	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 biolfiltration 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 Mongan 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	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	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	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 2014	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 1/01/2015 to 3/31/2015	Planned Activity for 4/01/2015 to 6/30/2015
(Schedules listed in this section are subject to change based on the approval of SD1's Watershed Plans.)							
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	Post-Construction Monitoring	
Lakeview PS Pump Replacement	Central	Replaceament 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	Disconnection of downspouts from approximately 130 homes, 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	n/a	Construction	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	Eliminate Vernon Ln. SSO and improve water quality	Beyond 2014	Ph 1 - 2014 Ph 2 - n/a	Ph 1 Complete Construction	 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 2014	n/a	Initial Design	Initial Design
Lakeside Park – Public Sewer Rehab and Private Source Removal	North	Combinbination of private I/I removal, sewer rehabilitation/replacment and manhole lining, and stormwater BMPs where feasible in Lakeside Park	Eliminate SSOs in Lakside Park	Beyond 2014	n/a	In Progress	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	2015	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 1/01/2015 to 3/31/2015	Planned Activity for 1/01/2015 to 3/31/2015
(Schedules listed in this section are subject to change based on the approval of SD1's Watershed Plans.)							
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 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 cpacity at Dry Creek WWTP	2013	2013	Complete	

Pump Station Overflow Elimination Plan

CIP Title	Basin	Scheduled Completion Date	Actual Completion Date	Activity for 1/01/2015 to 3/31/2015	Planned Activity for 4/01/2015 to 6/30/2015
Pump Station Overflow Elimination Projects					
Alex-Licking	East	12/31/2010	2008	Complete	Complete
Allen Fork	North	12/31/2015	2014	Complete	Complete
Harrison Harbor	East	12/31/2010	*See PS Oveflow 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
Crestview	East	12/31/2015	n/a	Phase 1 - Sewer and MH rehab is complete. Private service rehab is under evaluation. Phase 2 - Pump station improvement is under Construction.	
Lakeview	Central	12/31/2023[1]	n/a	In-Progress	In-Progress

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

Updated: April 30, 2015

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Pump Station Backup Power Plan

CIP Title	Basin	Original Proposed Solution	Updated Proposed Solution	Scheduled Completion Date	Actual Completion Date	Status as of April 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 Proposed Solution**	**Scheduled Completion Date**	**Actual Completion Date**	**Status as of April 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	2008	Complete
				2012 - 2015	2010	
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	2008	Complete
				2012 - 2015	2008	Complete
South Park Industrial	North	PS Elimination Study	Backup Dry Prime Pump with a Diesel	Study - 2008	2008	Complete
				2012 - 2015	2010	Complete
Wedgewood Dr	Central	PS Elimination Study	Electrical hook up for portable generator	Study - 2008	2008	Complete
				2015	n/a	In Progress
Willow Bend No. 2	West	PS Elimination Study	PS Elimination	Study - 2008	2008	Complete
				2013	2013	Complete
Army Reserve	East	PS Elimination Study	Electrical hook up for portable generator	Study - 2008	2008	Complete
				2013-2014	2014	Complete
Eagles Landing	West	PS Elimination Study	Electrical hook up for portable generator	Study - 2008	2008	Complete
				2013-2014	2014	Complete
Evergreen	Central	PS Elimination Study	Electrical hook up for portable generator	Study - 2008	2008	Complete
				2014	2014	Complete
Lamphill	East	PS Elimination Study	Electrical hook up for portable generator	Study - 2008	2008	Complete
				2011	2011	Complete
Mill House Crossing	Central	PS Elimination Study	Backup Dry Prime Pump with a Diesel	Study - 2008	2008	Complete
				2012	2012	Complete
Ridgefield	North	PS Elimination Study	Backup Dry Prime Pump with a Diesel	Study - 2008	2008	Complete
				2014	2014	Complete
War Admiral	West	PS Elimination Study	PS Elimination	Study - 2008	2008	Complete
				2012 - 2015	2011	Complete
Blackstone	West	PS Elimination Study	Electrical hook up for portable generator	Study - 2008	2008	Complete
				2015	n/a	In Progress
Dublin Green No. 1	West	PS Elimination Study	PS Elimination	Study - 2008	2008	Complete
				2015	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

Updated: April 30, 2015

Pump Station Backup Power Plan

CIP Title	Basin	Original Proposed Solution	Updated Proposed Solution	Scheduled Completion Date	Actual Completion Date	Status as of April 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	n/a	In Progress
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	n/a	In Progress
Stillwater	East	Permanent Generator	Electrical hook up for portable generator	2015	n/a	In Progress

Pump Station Backup Power Plan

CIP Title	Basin	Original Proposed Solution	Updated Proposed Solution	Scheduled Completion Date	Actual Completion Date	Status as of April 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 Proposed Solution	Scheduled Completion Date	Actual Completion Date	Status as of April 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	n/a	In Progress
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	n/a	In Progress
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 Proposed Solution	Scheduled Completion Date	Actual Completion Date	Status as of April 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	n/a	In Progress
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 Proposed Solution**	**Scheduled Completion Date**	**Actual Completion Date**	**Status as of April 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	3
Total Complete	**102**
2015 Active Projects	8
Total Project Activity	**110**

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APPENDIX C:

Cumulative and Annual Overflow Data

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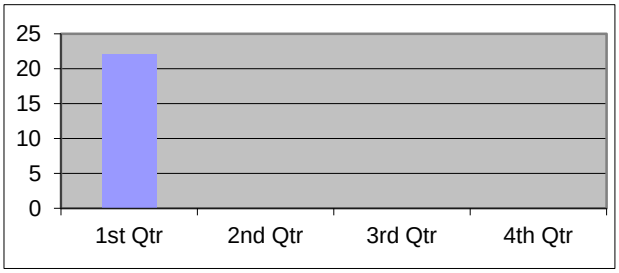
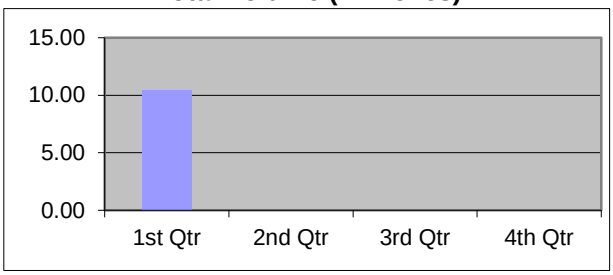
Cumulative Overflow Data
January 1, 2015 through December 31, 2015

Rainfall

Total Occurrences

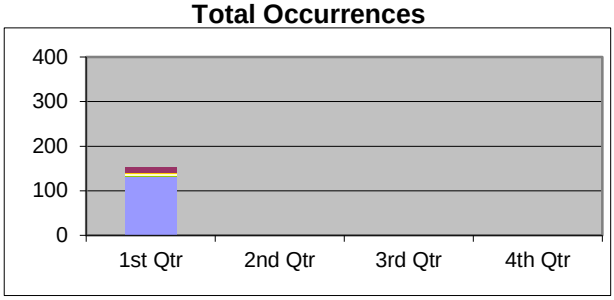


Total Volume (In Inches)

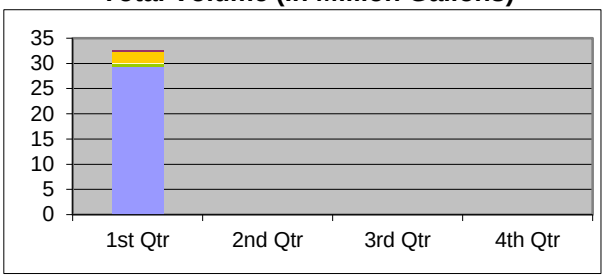


SSOs - Due to Wet Weather (WW) and Operational Issues

Total Occurrences



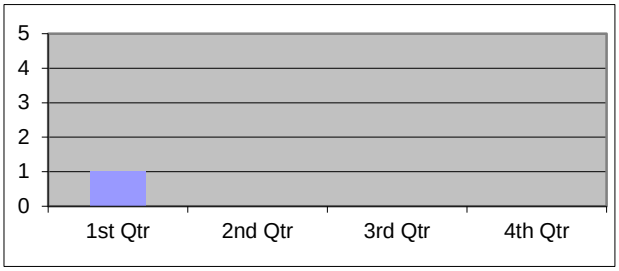
Total Volume (In Million Gallons)



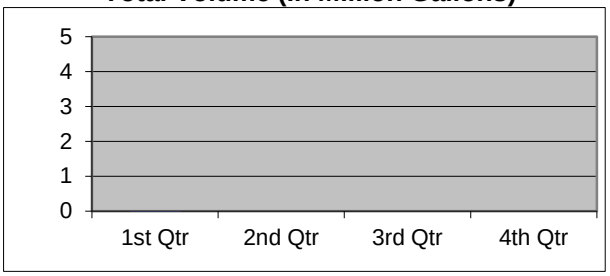
Recurring WW SSOs
Recurring WW CD Pump Station Overflows
Recurring WW Other Pump Station Overflows
Inactive WW Overflows
SSOs Due to Operational Issues

Dry Weather CSOs

Total Occurrences

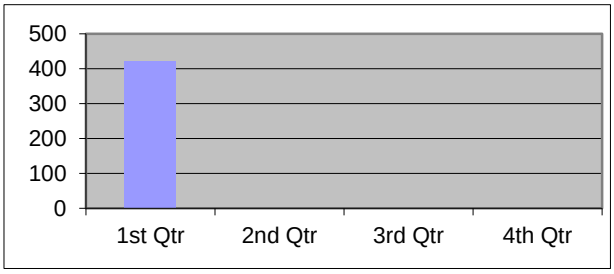


Total Volume (In Million Gallons)

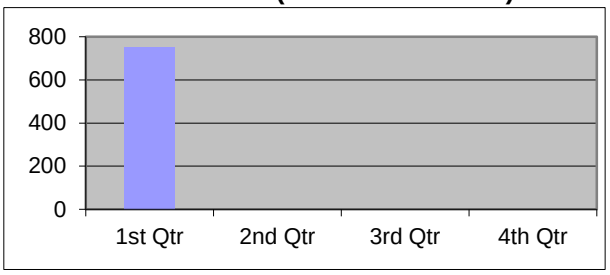


Wet Weather CSOs

Total Occurrences

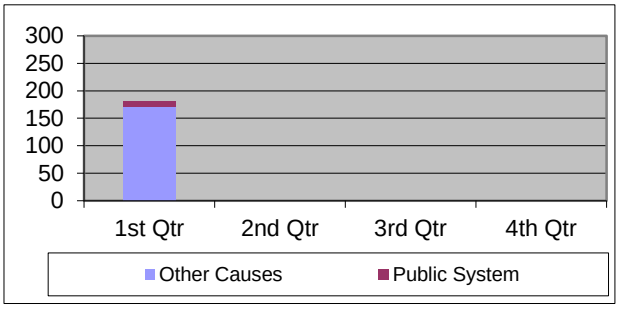


Total Volume (In Million Gallons)



Building Backups

Total Occurrences



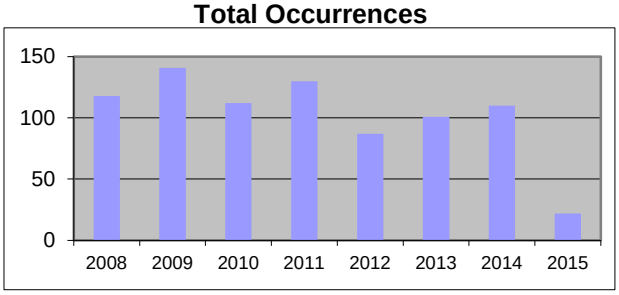
2015 Overflow Summary			
	Occurrences	**Volume**	
Rainfall	22	10.470	inches
Recurring WW SSOs	138	30.163	MG
Inactive WW SSOs	3	2.118	MG
Operational SSOs	11	0.330	MG
Dry Weather CSOs	1	0.001	MG
Wet Weather CSOs	420	751.830	MG
Building Backups (Other Causes)		172	
Building Backups (Public System)		9	

Updated: April 30, 2015

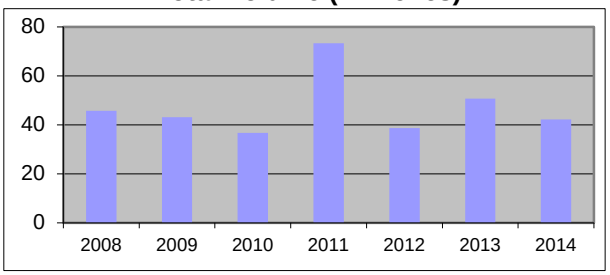
Annual Cumulative Overflow Data
2008 through 2015 Q1

Rainfall

Total Occurrences

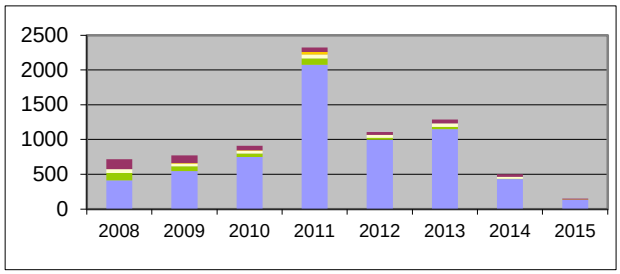


Total Volume (In Inches)

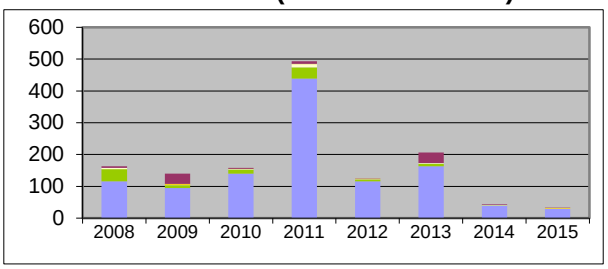


SSOs - Due to Wet Weather (WW) and Operational Issues

Total Occurrences



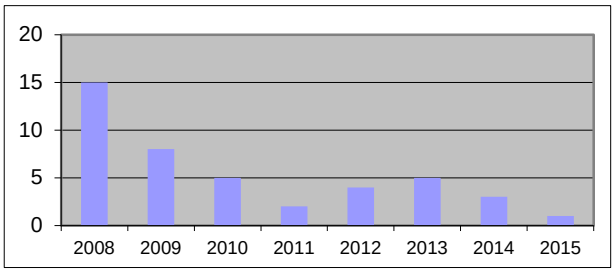
Total Volume (In Million Gallons)



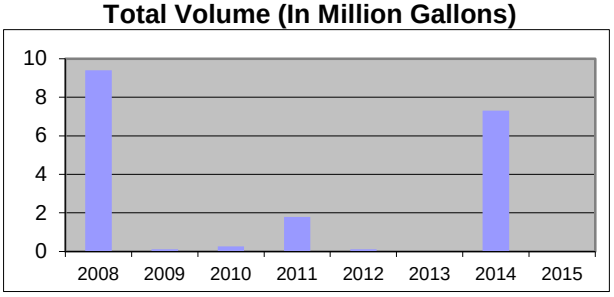
Recurring WW SSOs
Recurring WW CD Pump Station Overflows
Recurring WW Other Pump Station Overflows
Inactive WW Overflows
SSOs Due to Operational Issues

Dry Weather CSOs

Total Occurrences

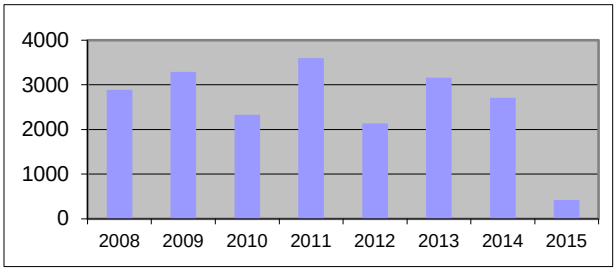


Total Volume (In Million Gallons)

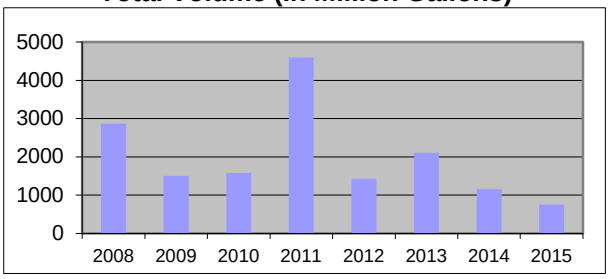


Wet Weather CSOs

Total Occurrences

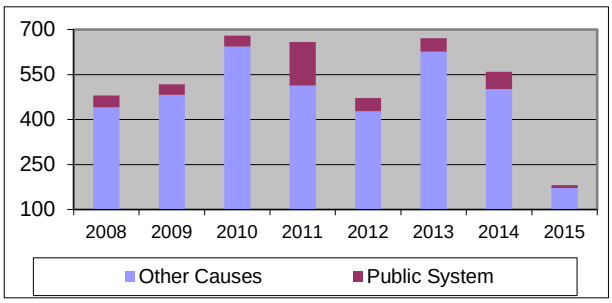


Total Volume (In Million Gallons)



Building Backups

Total Occurrences



Change from 2014 to 2015(Q1)			
	Occurrences	Volume	
Rainfall	-88	-31.75	inches
Recurring WW SSOs	-325	-11.413	MG
Inactive WW SSOs	3	2.118	MG
Operational SSOs	-28	-1.020	MG
Dry Weather CSOs	-2	-7.308	MG
Wet Weather CSOs	-2286	-395.79	MG
Building Backups (Other Causes)		-330	
Building Backups (Public System)		-48	

Updated: April 30, 2015

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	6	4.61
2	0020007	Silver Grove	Campbell	5	0.13
3	0020008	Unicorp Campbell County	Campbell	5	0.07
4	0020032	Unicorp Campbell County	Campbell	1	0.01
5	0040003	Fort Thomas	Campbell	0	0.00
6	0050022	Fort Thomas	Campbell	2	0.01
7	0060001	Unicorp Campbell County	Campbell	1	0.00
8	0060002	Unicorp Campbell County	Campbell	0	0.00
9	0060004	Unicorp Campbell County	Campbell	0	0.00
10	0110002	Fort Thomas	Campbell	0	0.00
11	0110010	Highland Heights	Campbell	3	0.11
12	0120018	Highland Heights	Campbell	0	0.00
13	0150003	Wilder	Campbell	0	0.00
14	0150005	Wilder	Campbell	0	0.00
15	0150009	Wilder	Campbell	5	0.47
16	0150063	Wilder	Campbell	0	0.00
17	0150064	Wilder	Campbell	0	0.00
18	0150065	Wilder	Campbell	0	0.00
19	0150085	Fort Thomas	Campbell	0	0.00
20	0150086	Fort Thomas	Campbell	4	0.35
21	0150087	Fort Thomas	Campbell	0	0.00
22	0150356	Southgate	Campbell	0	0.00
23	0150399	Wilder	Campbell	4	0.47
24	0200003	Fort Thomas	Campbell	0	0.00
25	0220056	Fort Thomas	Campbell	0	0.00
26	0220058	Fort Thomas	Campbell	0	0.00
27	0230016	Fort Thomas	Campbell	0	0.00
28	0260001	Fort Thomas	Campbell	0	0.00
29	0270020	Fort Thomas	Campbell	0	0.00
30	0270026	Fort Thomas	Campbell	0	0.00
31	0270062	Fort Thomas	Campbell	0	0.00
32	0270103	Fort Thomas	Campbell	0	0.00
33	0280001	Fort Thomas	Campbell	0	0.00
34	0300035	Fort Thomas	Campbell	0	0.00
35	0360004	Dayton	Campbell	0	0.00
36	0360074	Dayton	Campbell	0	0.00
37	0370001	Fort Thomas	Campbell	0	0.00
38	0380005	Fort Thomas	Campbell	0	0.00
39	0400002	Fort Thomas	Campbell	3	0.02
40	0400017	Fort Thomas	Campbell	0	0.00
41	0400034	Fort Thomas	Campbell	0	0.00
42	0410010	Fort Thomas	Campbell	2	0.01
43	0410036	Fort Thomas	Campbell	0	0.00
44	0430006	Newport	Campbell	4	0.04
45	0490073	Newport	Campbell	0	0.00

Recurring Wet Weather SSOs					
No.	**MHID**	**City**	**County**	**Model Predicted Overflow Activations**	**Model Predicted Overflow Volume (MG)**
46	0500047	Newport	Campbell	0	0.00
47	0530083	Newport	Campbell	4	0.07
48	0860001	Wilder	Campbell	18	15.74
49	0860003	Wilder	Campbell	0	0.00
50	0860016	Wilder	Campbell	0	0.00
51	1010002	Fort Thomas	Campbell	0	0.00
52	1010027	Fort Thomas	Campbell	0	0.00
53	1090069	Edgewood	Kenton	0	0.00
54	1110025	Erlanger	Kenton	0	0.00
55	1110067	Erlanger	Kenton	4	0.07
56	1110161	Erlanger	Kenton	0	0.00
57	1110174	Elsmere	Kenton	0	0.00
58	1110275	Elsmere	Kenton	0	0.00
59	1110294	Erlanger	Kenton	1	0.00
60	1190001	Erlanger	Kenton	0	0.00
61	1190012	Erlanger	Kenton	3	0.09
62	1210018	Erlanger	Kenton	0	0.00
63	1220016	Erlanger	Kenton	0	0.00
64	1220054	Erlanger	Kenton	2	0.01
65	1230019	Erlanger	Kenton	0	0.00
66	1240008	Erlanger	Kenton	5	0.12
67	1240012	Erlanger	Kenton	0	0.00
68	1330022	Park Hills	Kenton	0	0.00
69	1550036	Fort Mitchell	Kenton	0	0.00
70	1550053	Fort Mitchell	Kenton	0	0.00
71	1560016	Fort Mitchell	Kenton	0	0.00
72	1560019	Fort Mitchell	Kenton	0	0.00
73	1560074	Fort Mitchell	Kenton	0	0.00
74	1560092	Fort Mitchell	Kenton	3	0.03
75	1560121	Fort Mitchell	Kenton	0	0.00
76	1600029	Lakeside Park	Kenton	0	0.00
77	1610102	Fort Mitchell	Kenton	0	0.00
78	1690043	Fort Wright	Kenton	0	0.00
79	1690072	Fort Wright	Kenton	0	0.00
80	1700006	Ludlow	Kenton	0	0.00
81	1700008	Covington	Kenton	0	0.00
82	1700025	Park Hills	Kenton	0	0.00
83	1730086	Unicorp Kenton County	Kenton	3	0.93
84	1730100	Crescent Springs	Kenton	0	0.00
85	1730103	Fort Mitchell	Kenton	0	0.00
86	1760047	Edgewood	Kenton	2	0.24
87	1760048	Edgewood	Kenton	3	0.03
88	1790003	Crescent Springs	Kenton	0	0.00
89	1830020	Unicorp Boone County	Boone	0	0.00
90	1830067	Unicorp Boone County	Boone	0	0.00
91	1850140	Covington	Kenton	3	0.06
92	1850141	Covington	Kenton	3	0.79
93	1860108	Taylor Mill	Kenton	0	0.00
94	1870013	Covington	Kenton	0	0.00

Recurring Wet Weather SSOs					
No.	**MHID**	**City**	**County**	**Model Predicted Overflow Activations**	**Model Predicted Overflow Volume (MG)**
95	1870014	Covington	Kenton	0	0.00
96	1920086	Cold Spring	Campbell	0	0.00
97	1920097	Cold Spring	Campbell	0	0.00
98	1920163	Cold Spring	Campbell	N/A	N/A
99	1940006	Fort Wright	Kenton	2	0.02
100	1950014	Fort Wright	Kenton	2	1.24
101	1950232	Fort Wright	Kenton	0	0.00
102	1960002	Fort Wright	Kenton	2	0.01
103	1990018	Covington	Kenton	2	0.04
104	2020035	Taylor Mill	Kenton	3	0.04
105	2020203	Covington	Kenton	0	0.00
106	2040040	Edgewood	Kenton	0	0.00
107	2070012	Elsmere	Kenton	0	0.00
108	2070019	Elsmere	Kenton	3	0.01
109	2090008	Elsmere	Kenton	4	0.21
110	2100002	Elsmere	Kenton	0	0.00
111	2100007	Elsmere	Kenton	0	0.00
112	2100036	Elsmere	Kenton	0	0.00
113	2100037	Elsmere	Kenton	0	0.00
114	2100057	Elsmere	Kenton	0	0.00
115	2100106	Elsmere	Kenton	1	0.00
116	2100128	Elsmere	Kenton	0	0.00
117	2100129	Elsmere	Kenton	4	1.37
118	2110001	Elsmere	Kenton	2	0.01
119	2110002	Elsmere	Kenton	0	0.00
120	2110006	Elsmere	Kenton	0	0.00
121	2120001	Elsmere	Kenton	0	0.00
122	2120041	Elsmere	Kenton	0	0.00
123	2130026	Erlanger	Kenton	0	0.00
124	2130027	Erlanger	Kenton	0	0.00
125	2130028	Erlanger	Kenton	0	0.00
126	2130286	Erlanger	Kenton	0	0.00
127	2160004	Fort Mitchell	Kenton	0	0.00
128	2160005	Fort Mitchell	Kenton	0	0.00
129	2160006	Fort Mitchell	Kenton	0	0.00
130	2170008	Crestview Hills	Kenton	0	0.00
131	2170013	Lakeside Park	Kenton	0	0.00
132	2170097	Crestview Hills	Kenton	0	0.00
133	2280010	Unicorp Kenton County	Kenton	0	0.00
134	2280011	Unicorp Kenton County	Kenton	0	0.00
135	2280016	Independence	Kenton	0	0.00
136	2280023	Unicorp Kenton County	Kenton	0	0.00
137	2290001	Crescent Springs	Kenton	0	0.00
138	2300011	Erlanger	Kenton	0	0.00
139	2300016	Erlanger	Kenton	0	0.00
140	2300019	Erlanger	Kenton	0	0.00
141	2300121	Independence	Kenton	3	0.46
142	2300123	Unicorp Kenton County	Kenton	1	0.03
143	2301219	Erlanger	Kenton	4	1.38
144	2301274	Erlanger	Kenton	0	0.00

Recurring Wet Weather SSOs					
No.	**MHID**	**City**	**County**	**Model Predicted Overflow Activations**	**Model Predicted Overflow Volume (MG)**
145	2400001	Unicorp Boone County	Boone	0	0.00
			TOTAL	132	29.31

Threshold for model activation is 0.01 MGD and 0.001 MG

APPENDIX E:

Recurring Wet Weather SSO Locations Revision Transactions

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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		
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		
0110010	Highland Heights	Campbell		
0120018	Highland Heights	Campbell		
0150003	Wilder	Campbell	Added	Identified as a recurring SSO based on field inspections
0150005	Wilder	Campbell	Added	Identified as a recurring SSO based on field inspections
0150009	Wilder	Campbell		
0150063	Wilder	Campbell		
0150064	Wilder	Campbell		
0150065	Wilder	Campbell		
0150085	Fort Thomas	Campbell		
0150086	Fort Thomas	Campbell		
0150087	Fort Thomas	Campbell		
0150356	Southgate	Campbell		
0150399	Wilder	Campbell		
0200003	Fort Thomas	Campbell		
0220056	Fort Thomas	Campbell		
0220058	Fort Thomas	Campbell		
0220086	Southgate	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0230011	Fort Thomas	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0230016	Fort Thomas	Campbell		
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	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0300035	Fort Thomas	Campbell		
0330005	Fort Thomas	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0360004	Dayton	Campbell		
0360074	Dayton	Campbell	Added	Identified as a recurring SSO based on field inspections
0370001	Fort Thomas	Campbell		
0370009	Fort Thomas	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0380005	Fort Thomas	Campbell		
0390007	Fort Thomas	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0400002	Fort Thomas	Campbell		
0400017	Fort Thomas	Campbell		
0400034	Fort Thomas	Campbell		
0410010	Fort Thomas	Campbell		
0410019	Fort Thomas	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0410036	Fort Thomas	Campbell		
0430006	Newport	Campbell		
0440074	Fort Thomas	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
0490039	Newport	Campbell	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period

Recurring Wet Weather SSO Locations - Revision Transactions				
MHID	City	County	Revision	Comments
0490073	Newport	Campbell		
0500047	Newport	Campbell		
0530083	Newport	Campbell		
0860001	Wilder	Campbell		
0860003	Wilder	Campbell		
0860016	Wilder	Campbell		
1010002	Fort Thomas	Campbell		
1010027	Fort Thomas	Campbell		
1090069	Edgewood	Kenton		
1110025	Erlanger	Kenton		
1110067	Erlanger	Kenton		
1110161	Erlanger	Kenton		
1110164	Erlanger	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1110174	Elsmere	Kenton		
1110226	Elsmere	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1110275	Elsmere	Kenton		
1110294	Erlanger	Kenton		
1190001	Erlanger	Kenton		
1190012	Erlanger	Kenton		
1210018	Erlanger	Kenton		
1220016	Erlanger	Kenton		
1220054	Erlanger	Kenton		
1230019	Erlanger	Kenton		
1230036	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		
1550036	Fort Mitchell	Kenton		
1550053	Fort Mitchell	Kenton		
1560016	Fort Mitchell	Kenton		
1560019	Fort Mitchell	Kenton		
1560074	Fort Mitchell	Kenton		
1560092	Fort Mitchell	Kenton		
1560121	Fort Mitchell	Kenton		
1600029	Lakeside Park	Kenton		
1610053	Fort Mitchell	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1610054	Fort Mitchell	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1610102	Fort Mitchell	Kenton	Added	Identified as a recurring SSO based on field inspections
1690043	Fort Wright	Kenton		
1690072	Fort Wright	Kenton		
1700006	Ludlow	Kenton		
1700008	Covington	Kenton	Added	Identified as a recurring SSO based on field inspections
1700025	Park Hills	Kenton		
1730086	Unicorp Kenton County	Kenton		
1730100	Crescent Springs	Kenton		
1730103	Fort Mitchell	Kenton		
1760047	Edgewood	Kenton		
1760048	Edgewood	Kenton		
1770062	Erlanger	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1790003	Crescent Springs	Kenton		
1830020	Unicorp Boone County	Boone		
1830067	Unicorp Boone County	Boone		
1850140	Covington	Kenton		
1850141	Covington	Kenton		
1860108	Taylor Mill	Kenton		
1870013	Covington	Kenton		
1870014	Covington	Kenton		
1920086	Cold Spring	Campbell		
1920097	Cold Spring	Campbell		
1920163	Cold Spring	Campbell	Added	Identified as a recurring SSO based on field inspections

Recurring Wet Weather SSO Locations - Revision Transactions				
MHID	**City**	**County**	**Revision**	**Comments**
1940006	Fort Wright	Kenton		
1950014	Fort Wright	Kenton		
1950232	Fort Wright	Kenton		
1960002	Fort Wright	Kenton		
1990018	Covington	Kenton		
1990028	Covington	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
1990032	Unicorp Kenton County	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
2020035	Taylor Mill	Kenton	Added	Identified as a recurring SSO based on field inspections
2020203	Covington	Kenton		
2040040	Edgewood	Kenton		
2070012	Elsmere	Kenton	Added	Identified as a recurring SSO based on field inspections
2070019	Elsmere	Kenton		
2090008	Elsmere	Kenton		
2090063	Elsmere	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
2100002	Elsmere	Kenton		
2100007	Elsmere	Kenton		
2100036	Elsmere	Kenton		
2100037	Elsmere	Kenton		
2100057	Elsmere	Kenton		
2100106	Elsmere	Kenton		
2100126	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		
2110002	Elsmere	Kenton		
2110006	Elsmere	Kenton		
2120001	Elsmere	Kenton		
2120041	Elsmere	Kenton		
2130026	Erlanger	Kenton		
2130027	Erlanger	Kenton		
2130028	Erlanger	Kenton		
2130286	Erlanger	Kenton		
2150050	Crestview Hills	Kenton	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
2160004	Fort Mitchell	Kenton		
2160005	Fort Mitchell	Kenton		
2160006	Fort Mitchell	Kenton		
2170006	Crestview Hills	Kenton	Removed	Eliminated as part of sewer improvements
2170008	Crestview Hills	Kenton		
2170013	Lakeside Park	Kenton		
2170097	Crestview Hills	Kenton		
2280010	Unicorp Kenton County	Kenton		
2280011	Unicorp Kenton County	Kenton		
2280016	Independence	Kenton		
2280023	Unicorp Kenton County	Kenton	Added	Identified as a recurring SSO based on field inspections
2290001	Crescent Springs	Kenton		
2300011	Erlanger	Kenton	Added	Identified as a recurring SSO based on field inspections
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	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
2390002	Unicorp Boone County	Boone	Removed	Eliminated based on lack of field inspection overflow evidence in a 2-year period
2400001	Unicorp Boone County	Boone		

Total SSO Locations Added= 10
Total SSO Locations Removed = 23

Total Recurring SSO Locations after Revisions = 145

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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	3	0.17
2	0030031	KY0021466 - Outfall 10	0	0.00
3	0200069	KY0021466 - Outfall 11	5	0.10
4	0330100	KY0021466 - Outfall 12	0	0.00
5	0340050	KY0021466 - Outfall 14	3	0.01
6	0340051	KY0021466 - Outfall 13	5	0.03
7	0360079	To Be Permitted	3	0.33
8	0540157	To Be Permitted	6	0.05
9	0540156	To Be Permitted	6	0.03
10	0540158	To Be Permitted	0	0.00
11	0550134	To Be Permitted	0	0.00
12	0570089	KY0021466 - Outfall 16	3	1.64
13	0570090	KY0021466 - Outfall 17	0	0.00
14	0600094	KY0021466 - Outfall 18	4	0.04
15	0600096	To Be Permitted	0	0.00
16	0600097	KY0021466 - Outfall 19	4	0.17
17	0600104	To Be Permitted	0	0.00
18	0610071	KY0021466 - Outfall 21	6	8.45
19	0610072	KY0021466 - Outfall 20	1	0.01
20	0620075	KY0021466 - Outfall 23	7	1.16
21	0620077	KY0021466 - Outfall 22	2	0.00
22	0630054	To Be Permitted	0	0.00
23	0630061	KY0021466 - Outfall 83	3	0.02
24	0640090	KY0021466 - Outfall 24	10	127.39
25	0650054	To Be Permitted	0	0.00
26	0650090	KY0021466 - Outfall 26	4	3.09
27	0650098	To Be Permitted	5	3.21
28	0650100	KY0021466 - Outfall 25	0	0.00
29	0660085	To Be Permitted	0	0.00
30	0690059	To Be Permitted	0	0.00
31	0690067	To Be Permitted	0	0.00
32	0730129	To Be Permitted	13	0.27
33	0770096	KY0021466 - Outfall 28	4	0.05
34	0790084	KY0021466 - Outfall 31	13	4.25
35	0790086	KY0021466 - Outfall 29	20	34.33
36	0840111	To Be Permitted	0	0.00
37	0840112	To Be Permitted	8	0.55
38	0840116	KY0021466 - Outfall 27	12	0.74
39	0870078	KY0021466 - Outfall 33	1	0.00
40	0870079	KY0021466 - Outfall 34	15	6.93
41	0880081	KY0021466 - Outfall 36	18	6.66
42	0880082	KY0021466 - Outfall 35	3	0.03
43	0890081	To Be Permitted	0	0.00
44	0910065	KY0021466 - Outfall 38	11	100.99
45	0910066	To Be Permitted	0	0.00
46	0910068	KY0021466 - Outfall 37	9	14.79
47	0910084	To Be Permitted	0	0.00

Wet Weather CSOs				
No.	CSO ID	KPDES Permit #	Model Predicted Activations	Model Predicted Overflow Volume (MG)
48	0930102	KY0021466 - Outfall 43	0	0.00
49	0930103	KY0021466 - Outfall 42	1	0.32
50	0930104	KY0021466 - Outfall 40	1	0.00
51	0930105	KY0021466 - Outfall 41	12	11.46
52	0930106	KY0021466 - Outfall 39	1	0.16
53	0960063	KY0021466 - Outfall 45	4	3.49
54	0960064	KY0021466 - Outfall 44	0	0.00
55	0980073	KY0021466 - Outfall 46	0	0.00
56	0980080	KY0021466 - Outfall 47	1	0.00
57	0980081	KY0021466 - Outfall 48	16	11.51
58	1320112	To Be Permitted	0	0.00
59	1350155	KY0021466 - Outfall 49	0	0.00
60	1380132	To Be Permitted	0	0.00
61	1380146	To Be Permitted	0	0.00
62	1420141	KY0021466 - Outfall 50	4	0.05
63	1420142	KY0021466 - Outfall 51	12	48.55
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	0	0.00
68	1440204	KY0021466 - Outfall 59	0	0.00
69	1440206	KY0021466 - Outfall 61	4	1.33
70	1440207	To Be Permitted	0	0.00
71	1440209	KY0021466 - Outfall 56	21	20.58
72	1440508	KY0021466 - Outfall 60	3	0.05
73	1470089	KY0021466 - Outfall 62	0	0.00
74	1470093	KY0021466 - Outfall 63	8	12.75
75	1480185	To Be Permitted	7	0.38
76	1480187	KY0021466 - Outfall 30	13	196.36
77	1490132	KY0021466 - Outfall 65	5	1.76
78	1490172	KY0021466 - Outfall 64	0	0.00
79	1500131	KY0021466 - Outfall 66	13	2.67
80	1510133	To Be Permitted	0	0.00
81	1710114	KY0021466 - Outfall 69	3	0.52
82	1710116	KY0021466 - Outfall 68	10	21.34
83	1710119	KY0021466 - Outfall 70	6	17.68
84	1710121	KY0021466 - Outfall 71	3	18.24
85	1710124	KY0021466 - Outfall 72	3	22.14
86	1720109	KY0021466 - Outfall 73	11	14.79
87	1730259	KY0021466 - Outfall 75	9	1.67
88	1730262	To Be Permitted	0	0.00
89	1730263	KY0021466 - Outfall 74	11	0.81
90	1840130	To Be Permitted	6	0.05
91	1850158	KY0021466 - Outfall 76	14	26.23
92	1870193	KY0021466 - Outfall 78	5	0.57
93	1870194	KY0021466 - Outfall 79	0	0.00
94	1880090	KY0021466 - Outfall 81	4	0.82

Wet Weather CSOs				
No.	CSO ID	KPDES Permit #	Model Predicted Activations	Model Predicted Overflow Volume (MG)
95	1880091	KY0021466 - Outfall 80	2	0.03
		TOTAL	420	751.83

Threshold for model activation is 0.01 MGD and 0.001 MG

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APPENDIX G:

Revised Map of WRWRF Impacts on 2014 SSO Volumes

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Revised WRWRF Impacts on 2014 SSO Volumes

Model Predicted Overflow		
	Pre-WR	Post-WR
Wet Weather SSO Volume	80.1 MG	39.3 MG