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I. ANNUAL REPORT PURPOSE AND SCOPE

On September 27, 2010, the Federal Consent Decree and its associated appendices related to reducing overflows in the City of Kansas City, Missouri's sewer system became effective. In accordance with Section IX.B of the Consent Decree, this document constitutes the third annual report to be submitted by March 31, 2014 to regulatory agencies and covers the reporting period between January 1, 2013 and December 31, 2013. (The third semi-annual report, which covered the reporting period from January 1, 2013 through June 30, 2013, was submitted on September 29, 2013.)

Pursuant to the Consent Decree, the annual report includes Kansas City's progress on implementing control measures defined in Appendix A of the Consent Decree as well as all other Consent Decree activities.

II. KANSAS CITY'S SEWER SYSTEM OVERVIEW

More than 150 years ago, the City of Kansas City, Missouri began building the basic sewer infrastructure that would allow the city to grow and prosper. Some of that original infrastructure is still in use today.

Kansas City's overall sanitary sewer system comprises both combined and separate sewer systems. A combined sewer system (CSS) is a single sewer system that carries both wastewater and stormwater. Kansas City has 58 square miles of combined sewers. Typically, these systems are in the oldest areas of the city and at times struggle to carry the large volumes of stormwater that now run off from our urban landscape. During moderate to heavy rainfall events, the system will reach capacity, overflow, and discharge a mixture of wastewater and stormwater directly to our streams and rivers. Although these overflows will be reduced over time, the discharge of combined sewer overflows (CSOs) is not uncommon in CSS and is allowed under a National Pollutant Discharge Elimination System (NPDES) permit issued to Kansas City Water Services by the Missouri Department of Natural Resources (MDNR).

The remaining 260 square miles of Kansas City's sanitary sewer system are considered a separate system. A separate sanitary sewer system (SSS) is designed to collect only wastewater. However, groundwater can enter the system through pipe joints, broken pipes, manholes and unpermitted direct connections, causing the system to overload during rain events. When this system exceeds its capacity, it too overflows a mixture of wastewater and stormwater. Kansas City does have one constructed Sanitary Sewer Overflow (SSO), which will be eliminated as part of the Overflow Control Program (OCP).

III. OVERFLOW CONTROL PROGRAM OVERVIEW

Individual elements of the OCP became part of an enforceable document on September 27, 2010, with the entry of a Consent Decree in United States District Court. The Consent Decree is a culmination of nearly a decade of negotiation between the City, the Environmental Protection Agency (EPA) and MDNR related to reducing overflows. The Consent Decree includes requirements for capital construction, management, operations and maintenance of the City's sewer systems.

Kansas City's OCP was developed to meet regulatory requirements related to reducing overflows from the CSS and preventing overflows from the separate sewer system. The City and its regulatory partners have agreed to meet those objectives over a 25-year period by completing a planned list of improvements targeted at treating 88 percent of combined sewer flows and eliminating sanitary sewer overflows during a five-year rainfall event.

Consent Decree components include:

- Capital projects targeted at reducing overflows through Combined Sewer Overflow (CSO) Control;
- Separate Sewer Overflow (SSO) Control Measures;
- Nine Minimum Controls (NMC) Plans targeted at operationally reducing and addressing CSOs through a series of minimum control efforts;
- A Capacity Management Operation and Maintenance Plan targeted at reducing overflows by adequately operating and maintaining the separate sewer system;
- A Post Construction Monitoring Plan targeted at long-term monitoring and assessment of overflow reduction;
- Supplemental Environmental Projects to reduce septic system use in sewered areas; and
- Installation of Disinfection Technology at wastewater treatment plants.

IV. REPORTING PERIOD ACTIVITY

All of the following specific scheduled milestones, as laid forth in Consent Decree Appendices A, D, and F, were met on schedule during the reporting period from January 1, 2013 through December 31, 2013. Annual activities associated with Appendices B, C and E that were met during the reporting period are discussed in their respective sections of this report.

1. Appendix A – Performance Measures

Town Fork Creek

- Neighborhood Sewer Rehabilitation
 - Consent Decree Required Start Date- 2015
 - Actual Start Date- September 2013

North of the Missouri River Separate Sewer System

- Inflow and Infiltration Reduction: North of the Missouri River
 - Consent Decree Required Start Date – 2014
 - Actual Start Date – September 2013

South of the Missouri River Separate Sewer System

- Inflow and Infiltration Reduction: South of the Missouri River
 - Consent Decree Required Start Date – 2012
 - Actual Start Date – September 2011
 - Achievement of Full Operation: Round Grove I/I Reduction – August 15, 2013
- Force Main: Round Grove
 - Consent Decree Required Completion Date – December 31, 2013
 - Achievement of Full Operation – January 24, 2013

2. Appendix D – Post Construction Monitoring Program

- Implement Flow Monitoring Program for Outfall BR071
 - Consent Decree Required Implementation Date – 2013
 - Actual Implementation Date – March 2013
- Implement Flow Monitoring Program for Outfall BR072
 - Consent Decree Required Implementation Date – 2013
 - Actual Implementation Date – March 2013
- Implement Flow Monitoring Program for Outfall BR073
 - Consent Decree Required Implementation Date – 2013
 - Actual Implementation Date – March 2013
- Implement Flow Monitoring Program for Outfall BR074

- Consent Decree Required Implementation Date – 2013
- Actual Implementation Date – March 2013
- Implement Flow Monitoring Program for Outfall BR075
 - Consent Decree Required Implementation Date – 2013
 - Actual Implementation Date – March 2013
- Implement Flow Monitoring Program for Outfall BR077
 - Consent Decree Required Implementation Date – 2013
 - Actual Implementation Date – March 2013

3. Appendix F – Disinfection Technology at Wastewater Treatment Plants

- Installation of Disinfection Technology at Blue River Wastewater Treatment Plant
 - Consent Decree Required Installation Date – December 31, 2013
 - Disinfection Online – November 15, 2013
- Installation of Disinfection Technology at Fishing River Wastewater Treatment Plant
 - Consent Decree Required Installation Date – December 31, 2013
 - Achievement of Full Operation – October 30, 2013
- Installation of Disinfection Technology at Westside Wastewater Treatment Plant
 - Consent Decree Required Installation Date – December 31, 2013
 - Disinfection Online – March 11, 2013

V. DATA MANAGEMENT

Managing the large amount of data generated from the OCP program is a primary focus of Kansas City Water Services. In 2013, Water Services and its OCP program management team developed a Project Management Information System (MIS) Database to capture data pertaining to work activities, schedules, and budgets for all OCP projects. Templates were created that enable Water Services staff to readily update project information. The MIS is currently being used to create and update project status reports and is being expanded to develop trends and forecast projections regarding project costs and schedules.

Water Services is also updating its project creation system to streamline procedures to initiate wastewater capital improvement projects, which includes OCP projects. All projects will be created in Water Services' Master Primavera P6 schedule which will improve project schedule management. The updated project creation system will tie into the MIS database which will enhance project monitoring, forecasting, and performance management.

The OCP SharePoint document management system was updated to incorporate a more user-friendly file folder structure. The OCP program management team has been working over the past few months to upload historical OCP documents to the SharePoint site. The site was migrated to an Amazon Web Services (AWS) cloud environment in August 2013. OCP program management team and Water Services staff were trained on SharePoint functionality and new SharePoint folder structures.

VI. PUBLIC OUTREACH

Public outreach activities are critical to a successful Overflow Control Program. A brief overview of outreach activities for the Overflow Control Program is provided here; additional information can be found in NMC 7 which appears later in this document.

From January 1 through December 31, 2013, Kansas City Water Services:

- Made 47 presentations to more than 1,500 citizens and stakeholders about the Overflow Control Program.
- Mailed approximately 250 letters in July 2013 to neighborhood leaders requesting the opportunity for Water Services to present to their organizations an update on the progress of OCP.
- Conducted seven (7) public meetings for four (4) of its OCP projects, which are discussed in more detail later.
- Participated in and presented at multiple conferences and workshops to raise awareness of projects in Kansas City.
- Developed three articles for publication.
- Provided Overflow Control Program information on the Kansas City Water Services website.

VII. IMPLEMENTATION OF OVERFLOW CONTROL MEASURES

a. Post-Construction Monitoring Program

Post-construction monitoring activities completed in 2013, as outlined in Appendix D of the Consent Decree, are outlined later in this document.

b. Green Infrastructure

A final report for the Middle Blue River Basin Green Solutions Pilot Project was completed and submitted to EPA in accordance with the Consent Decree on November 19, 2013. Results from that report are briefly described in Appendix B, under NMC 2.

Water Services continues to administer a three-year maintenance service contract in the pilot project area, which runs through November 2015.

c. Compliance with Permits

The City strives to maintain compliance at all times with its current permits as they relate to the capacity at the WWTPs, capacity, management, operation and maintenance of the collection system and the stormwater system.

i. MS4 PERMIT

Municipal Separate Storm Sewer System (MS4) Permit: Part IV.B of the Missouri State Operating Permit MO-0130516 requires the City of Kansas City, Missouri to provide written notice of compliance or non-compliance with the schedule for permit implementation. The City submits yearly reports, with the most recent report covering the period of May 1, 2012 through April 30, 2013. The report documents the status of implementing the components of the stormwater management programs that are established as permit conditions and addresses the progress of programs that were required. As detailed in that report, the City is in compliance with the schedule for all interim milestones and final deadlines as identified in the permit schedule (Permit Part IV.A). The most recent version of this report is included in *Attachment B* of this report.

ii. DISCHARGE PERMITS

A collection of all Discharge Reports submitted to MDNR during 2013 is included as *Attachment A* to this report. These reports are submitted by two separate divisions within Water Services: Wastewater Treatment and Wastewater Line Maintenance. These reports are associated with Missouri State Operating Permits MO-0024911, MO-0024929, MO-0024961, MO-0048305, and MO-0049531.

iii. MONTHLY OPERATING REPORTS

The City's Monthly Operating Reports, submitted as part of the City's current NPDES permits, are included as *Attachment B* to this report.

VIII. COMBINED SEWER OVERFLOW CONTROL MEASURES – APPENDIX A

About 58 square miles within Kansas City are served by combined sewers. This area is generally bounded by the Missouri/Kansas state line on the west, 85th Street on the south, the Blue River on the east, and the Missouri River on the north. The area served by the CSS is subdivided into six principal basins: Brush Creek, Lower Blue River, Middle Blue River, Northeast Industrial District, Town Fork Creek and Turkey Creek/Central Industrial District. North of the Missouri River, the Charles B. Wheeler Municipal Airport is also served by combined sewers.

The Consent Decree defines improvements in the CSS estimated at approximately \$1.4 billion in 2008 dollars. Repairs to the existing system are scheduled to occur early in the implementation of the OCP. The early years will also include aggressive pilot projects focused on developing green infrastructure solutions. The middle years of the program will focus on maximizing the capacity within the existing system and analyzing the results of source volume reductions and pilot projects. The final years of the program will address necessary improvements to the City's wastewater treatment plants and construction of structural storage solutions, currently proposed as deep storage tunnels.

a. Brush Creek

Work in the Brush Creek Basin will begin in 2014. There is no progress to date for the 2013 reporting period.

b. Lower Blue River

Work in the Lower Blue River Basin is scheduled to begin in 2018. There is no progress to date for the 2013 reporting period.

c. Middle Blue River

i. **DISTRIBUTED STORAGE OUTFALL 069 (TARGET GREEN MARLBOROUGH EAST) AND DISTRIBUTED STORAGE OUTFALL 059 (TARGET GREEN MARLBOROUGH WEST)**

Field investigation activities for two projects within the Middle Blue River Basin were finished in 2013. The field work included: GPS survey of manholes and catch basins, catch basin cleaning, catch basin inspection, manhole inspection, smoke testing, sewer lateral inspection, pipe cleaning, CCTV inspection, and dyed water testing. In addition, the contractor created a geodatabase to store GIS data which identifies the location of features such as manholes, sewer lines, and catch basins.

Concurrent with field work, Water Services contracted with design consultants to provide conceptual designs of green infrastructure improvements in the project area(s). Two design firms were selected to provide detailed design services for two project areas to reduce combined sewer overflows through use of green infrastructure and strategic sewer separation. For easier recognition purposes, the Distributed Storage Project for Outfall 069 was renamed the Target Green Marlborough East project. Likewise, the Distributed Storage Project for Outfall 059 was renamed the Target Green Marlborough West project.

1. Target Green Marlborough East

The Notice to Proceed for design consultant services for the Target Green Marlborough East project was issued in August 2013. The design professional is tasked with designing green infrastructure solutions to reduce combined sewer overflows at outfall 069. During the reporting period, the design team prepared preliminary design of initial concepts that were presented to the public at a public meeting on November 14, 2013.

Approximately 45 people attended the open house at which participants were shown some preliminary technical information about the potential green infrastructure solutions and were asked to provide feedback. Participants also learned how they can make improvements on their own property to help improve water quality.

Approximately 15% of the work was completed by December 31, 2013. The project's deadline is December 31, 2017.

2. Target Green Marlborough West

The Notice to Proceed for design consultant services for the Target Green Marlborough West project was issued in August 2013. The design professional is tasked with designing green infrastructure solutions to reduce combined sewer overflows at outfall 059 and evaluating whether improved flood protection could be part of the project. During the reporting period, the design team prepared preliminary design of initial concepts that were presented to the public at a public meeting held on December 10, 2013.

Approximately 20 people attended the open house at which participants were shown preliminary technical information about the potential green infrastructure solutions and were asked to provide feedback. In addition, information about the Target Green Marlborough East Project was also available for those who were not able to attend the November 14 public meeting held for that project.

Approximately 10% of the work for the Target Green Marlborough West project has been completed through December 31, 2013. The project's deadline is December 31, 2017.

ii. NEIGHBORHOOD SEWER REHABILITATION

The Neighborhood Sewer Rehabilitation Project in the Middle Blue River Basin is being implemented throughout the basin to reduce basement backups and improve the reliability and performance of the combined sewer collection system. This project involves field investigations to identify and quantify sewer system defects and the preparation of two sets of construction contract documents to rehabilitate sewer pipes 12-inch and smaller within the collection system. A Notice to Proceed was issued to the design professional on July 7, 2013.

During the reporting period, a project information letter was mailed to approximately 9,800 residents in the project area. The letter invited residents to attend one of three public meetings which were held August 20, August 27 and August 28. These public meetings had an overall attendance of 135 people. Field investigations also were conducted during the reporting period, including collection system characterization, manhole inspections, smoke testing, sewer pipe CCTV inspections, and data collection and analysis.

The first of two bid packages is currently being prepared for Area 1 (covering the area tributary to outfalls 059 and 069) and is expected to be completed in February 2014.

Approximately 44 percent of the work was completed by the end of December 2013. Construction of neighborhood sewer rehabilitation work is expected to be completed in the entire Middle Blue River basin by December 31, 2017.

d. Northeast Industrial District

Work in the Northeast Industrial District Basin will begin in 2014. There is no progress to date for the 2013 reporting period.

e. Town Fork Creek

i. NEIGHBORHOOD SEWER REHABILITATION

The Neighborhood Sewer Rehabilitation Project in the Town Fork Creek Basin is being implemented to reduce basement backups and improve the reliability and performance of the combined sewer collection system. This project will involve field investigations to identify and quantify sewer system defects and the preparation of construction contract documents to rehabilitate sewer pipes 12-inch and smaller. The scope includes inspection of the public sanitary sewer pipes 12-inch and smaller and related manholes in the area and review of the CCTV inspection data previously collected by Water Services.

An RFQ/P was developed and advertised in late September for design professional services. Five proposals were received and selection interviews will be conducted with three design professional firms in early 2014. The Consent Decree deadline for this project is December 31, 2018.

f. Turkey Creek/Central Industrial District

i. PUMP STATION REHABILITATION

An update of the design documents to rehabilitate the Turkey Creek Pump Station was completed in late August 2013. The project construction contract documents were advertised on September 23, 2013 and bids were received on October 29, 2013. Because the apparent low bidder did not meet the established MBE and WBE goals for the project, the project was re-advertised on November 19, 2013 with a second bid opening on December 17, 2013. Bid packets are currently under review. The construction project involves upgrades at the pump station, including electrical and instrumentation and control equipment and structural and architectural modifications. The project is expected to be completed in 2016.

g. Blue River Wastewater Treatment Plant

Work at the Blue River Wastewater Treatment Plant is scheduled to begin in 2025. This work will include flow diversion, a new wet weather treatment facility, and solids handling improvements.

h. Westside Wastewater Treatment Plant

Work at the Westside Wastewater Treatment Plant is scheduled to begin in 2017. This work will include treatment capacity enhancements and a new wet weather treatment facility.

IX. SEPARATE SEWER OVERFLOW CONTROL MEASURES – APPENDIX A

Kansas City's Separate Sanitary Sewer (SSS) system comprises nine drainage basins covering 260 square miles of the City. The four separate SSS basins north of the Missouri River are the Northern and Northwestern watersheds and the Line Creek/Rock Creek and Birmingham/Shoal Creek basins. The five SSS system basins south of the Missouri River are the Blue River North, Round Grove, Blue River Central, Blue River South and Little Blue basins.

As required by the Consent Decree, I/I removal is scheduled to occur within the basins in distinct sub-basins that can be individually monitored for I/I removal effectiveness. The Overflow Control Plan includes costs and a schedule for I/I removal in the Separate Sewer System basins. The Consent Decree defines improvements in the SSS system estimated at approximately \$1 billion in 2008 dollars. The Overflow Control Program is based on Water Services being able to reduce inflow and infiltration (I/I) in separate sanitary sewer basins by as much as 45%. Without this reduction, structural controls and storage will have to be increased, thus increasing the cost of the program.

Much of the early projects and program strategy in the separate sanitary sewer basins relate to reducing the amount of stormwater and inflow and infiltration entering the sanitary sewer system to prevent overflows from the system. This reduction in stormwater entering the system is a combination of reducing or eliminating points of direct rainwater inflow into the system and reducing stormwater infiltration through collection system defects. A combination of wet weather storage and treatment will be utilized to address system needs as outlined in the Plan.

a. Private Inflow and Infiltration Reduction Program

In 2013, Water Services and its OCP program management team began developing a private inflow and infiltration (I/I) reduction program to be implemented in 2014 in conjunction with public sewer I/I reduction projects. Sources of rainwater from private property can have a significant impact on the performance of the City's sanitary sewer system by using up the sewer system's available conveyance capacity, even when repairs are being made in the public sewer system to improve performance. The focus of the program will be on disconnecting private I/I sources only when cost-effective to do so.

To cost-effectively meet I/I reduction targets defined in the Consent Decree, the City will likely have to not only rehabilitate public sewers, but also reduce private I/I sources. To help establish a private I/I reduction program that reflects the needs and desires of Kansas City ratepayers, Water Services is working with the City mayor's office to identify candidates to participate in a Community Advisory Group. This group will assist with defining the program's implementation strategies, which will directly tie to the technical work taking place. Water Services will recommend a private I/I reduction program implementation plan based on the input received and present it to the mayor and city council for approval in 2014.

b. North of the Missouri River Separate Sewer System

i. LINE CREEK I/I REDUCTION PROJECT- AREA 1

The Line Creek/Rock Creek Basin Inflow and Infiltration Reduction Project: Area 1 involves design services to perform field investigations and gather collection system condition information to identify and quantify structural deficiencies,

develop rehabilitation recommendations, and prepare construction contract documents to improve reliability and performance of the separate sanitary sewer system. Design services include the inspection of public sanitary sewers 8-54 inches in diameter, related manholes in the area, and review of the CCTV inspection data previously collected by Water Services. The targeted amount of I/I reduction in the entire Line Creek/Rock Creek basins is 35 percent.

An RFQ/P was developed and advertised in late September 2013 for design services. Four proposals were received and selection interviews will take place in early 2014 with three design professional firms. This I/I reduction project is part of Water Services' efforts to reduce the amount of I/I flows in the City's separate sewer system north of the Missouri River. This work is required to be completed by December 31, 2023.

c. South of the Missouri River Separate Sewer System

i. BLUE RIVER SOUTH I/I REDUCTION PROJECT- AREAS 1 AND 2

The Blue River South Basin has been divided into five sub-basins. Design services for the first I/I reduction projects in areas one and two of this basin began in 2013. The work includes preconstruction flow monitoring and data analysis; public sewer cleaning; CCTV data analysis; smoke and dye testing to assess the condition of the separate sewer system and identify I/I sources; manhole inspections; design of sewer system rehabilitation improvements for I/I source removal; and the preparation of construction contract documents for implementation of recommended system rehabilitation improvements.

The design professional's scope of work for Areas 1 and 2 was divided into two separate contracts – 1) to perform pre-construction flow monitoring in the Spring of 2013 and 2) for the remaining scope of work involving field investigations, sewer condition assessments, and design of the recommended sewer rehabilitation improvements. The flow monitoring contract began April 10, 2013 and was completed July 10, 2013. Notice to Proceed for the second design professional services contract was issued on July 10, 2013. A project information letter was mailed to approximately 2,200 residents in the project area. The letter also invited residents to attend a public meeting which was held August 15. Field investigations, including public sewer cleaning and CCTV data analysis and smoke and dye testing were performed, with approximately 20 percent of the design services completed by the end of 2013.

The forecasted completion date for development of the construction contract documents is November 2014, and construction is expected to be completed by November 2016. Post-construction flow monitoring is expected to occur through the end of 2017 to estimate the amount of I/I reduction achieved. The targeted amount of peak I/I reduction in this basin (including all five sub-basins) is 45 percent.

ii. ROUND GROVE I/I REDUCTION PROJECT

Achievement of Full Operation for the Round Grove Inflow and Infiltration Reduction Project was issued on August 15, 2013. A previous Sanitary Sewer Evaluation Study was completed in 2007 for the Round Grove drainage basin. The

report provided details to begin design and construction activities related to reducing I/I into the separate sanitary sewer system in this basin. This project included multiple sewer point repairs, replacement of manhole castings, installation of manhole cementitious linings, and the installation of cured-in-place pipe (CIPP) within existing sewer pipes. In addition, repairs were made at private service lateral connections to the sewer main. Final completion of the work was achieved on September 5, 2013.

Flow monitoring also began in the Round Grove Basin during this reporting period as part of post-construction efforts to determine the level of I/I reduction that was achieved. Five flow meters were installed in September (for a period of approximately 60 days) to monitor system performance and collect flow data. This post construction flow data will be compared with pre-construction flow data to provide a preliminary indication of whether the targeted 29% I/I reduction is achieved. Additional flow monitoring will be performed in the Spring of 2014 to collection additional flow data and confirm the estimated amount of I/I reduction.

iii. ROUND GROVE FORCE MAIN

Construction work to rehabilitate the Round Grove Force Main began in late Summer 2012. The project involves the rehabilitation of an abandoned 24-inch force main that will help increase the capacity flowing to the Round Grove Pump Station and provide redundant force mains. The contractor re-established 3,135 linear feet of a 24-inch force main, including 684 linear feet of directional drilling under the Blue River. The project is complete and the Certificate of Achievement of Full Operation was issued January 24, 2013, ahead of the Consent Decree deadline of December 31, 2013.

iv. 87TH STREET PHASE 1 STORAGE PROJECT

Phase 1 of the 87th Street Storage Project was initially planned to include rehabilitation of the existing pump station along with the construction of wet-weather pumping and storage improvements using underground storage tanks. Flows to the 87th Street Pump Station come from Kansas City residents and Johnson County Wastewater (JCW). The necessity of wet-weather pumping and storage at the 87th Street Pump Station site is almost exclusively driven by the need to accommodate current and future flows from JCW. After the entry of Kansas City's Consent Decree, JCW has taken significant steps towards leaving Kansas City's sewer system. JCW commissioned a study (update) on the feasibility of expanding the treatment capacity at its Tomahawk Creek Wastewater Treatment Plant as a way to avoid forecasted rate increases necessitated by Kansas City's Overflow Control Program. On May 30, 2013, JCW presented its study to its Board of County Commissioners, illustrating that the lowest cost alternative was to eliminate flows to Kansas City.

JCW has met with Water Services to discuss the potential for JCW to store and treat its flows within their own jurisdictional boundary. As a result, in 2013, Water Services began discussions with U.S. EPA Region VII officials about the potential for a schedule modification for the wet-weather pumping and storage improvements portion of the Phase I Project. In early November 2013, the City submitted a formal request for modification of its Consent Decree

implementation schedule to U.S. EPA to defer the construction of the wet-weather pumping and storage improvements at the 87th Street Pump Station until the planned construction of Phase 2 improvements, which are to be completed in 2024. The deferral is necessitated by the uncertainty regarding the ultimate amount of wet-weather storage that is needed given the real possibility of JCW leaving Kansas City's system.

The City and U.S. EPA are currently discussing the terms of the proposed Consent Decree implementation schedule modification. The City's modification request includes the strategic advancement of other projects to reduce the frequency of overflow events in the combined sewer system and to reduce the amount of excessive inflow and infiltration into the City's separate sewer system, all designed to prevent the occurrence of wet-weather overflows. Like the 87th Street Pumping Station wet-weather pumping and storage improvements, these projects will help to improve water quality in the Blue River watershed.

The City is proceeding with rehabilitation of the existing 87th Street Pump Station, including the replacement of duty pumping units, to improve the station's reliability of existing pumping capacity. These improvements will be completed by the Phase 1 Date of Achievement of Full Operation (currently December 2016). A design professional services agreement was executed by Water Services in December 2013 which includes professional services for preliminary and detailed design; development of construction contract documents; bidding assistance; construction phase office and field support; resident project representative field services; and control system configuration and programming. A project kick-off meeting with the design consultant was held on December 17, 2013 and preliminary design activities are underway.

X. SCHEDULED ACTIVITY FOR THE NEXT REPORTING PERIOD

From January 1, 2014 to June 30, 2014, the following activities are expected to take place; however, this list should not be construed as an explanation of all activities that will be occurring in the first half of 2014. Certain Consent Decree and OCP activities, such as NMC; Capacity, Management, Operations and Maintenance (CMOM); Public Participation; Project Planning; and Data Management, will continue for the duration of the Consent Decree, but are not specifically discussed in this section.

- Request for Qualifications/Proposals for twelve OCP projects will be developed and advertised for selection of a design consultant:
 - Sewer Pipe Consolidation at Outfall 063
 - Sewer Separation at Diversion Structure 006
 - Inflow and Infiltration Reduction Project- Blue River South Basin: Area 3
 - Inflow and Infiltration Reduction Project- Blue River South Basin: Area 4
 - Inflow and Infiltration Reduction Project- Blue River South Basin: Area 5
 - Inflow and Infiltration Reduction Project- Blue River Central: Area 1
 - Inflow and Infiltration Reduction Project- Blue River Central: Area 2
 - Inflow and Infiltration Reduction Project- Blue River North Basin
 - Inflow and Infiltration Reduction Project- Line Creek /Rock Creek Basins: Area 2
 - Neighborhood Sewer Rehabilitation- Brush Creek Basin
 - Gooseneck Creek Arch Sewer Gates and Pump Station Improvements
 - Green Infrastructure Pilot Project
- Water Services will select and commence contracts with design consultants for several contracts advertised at the end of 2013:
 - Neighborhood Sewer Rehabilitation- Town Fork Creek Basin
 - Inflow and Infiltration Reduction Project- Line Creek/Rock Creek Basins: Area 1
 - In-line Gates at Santa Fe Pump Station
- Work will continue on the following existing projects:
 - Inflow and Infiltration Reduction Project- Blue River South Basin: Areas 1 and 2
 - Neighborhood Sewer Rehabilitation- Middle Blue River Basin
 - Target Green Marlborough West
 - Target Green Marlborough East
 - 87th Street Pump Station Rehabilitation Improvements
 - Turkey Creek Pump Station Modifications
 - Flow monitoring- short term (up to 50 meters installed)
 - Flow monitoring- long term (eight permanent installed)

- Work will continue to expand the capabilities of the new Management Information System to provide enhanced project management, project delivery, and monitoring of various project performance metrics.
- Conceptual design of two green infrastructure projects will begin. The two projects will be located in the Northeast Industrial District (NEID) and the Central Industrial District (CID).
- A wastewater system master plan study as part of the Overflow Control Program will begin.
- The Private I/I Reduction Plan will continue to be developed with input from a community advisory group.

XI. NINE MINIMUM CONTROLS – APPENDIX B

This section focuses on documenting NMC program accomplishments in 2013. *Table 1* identifies each of the NMC and summarizes significant measure accomplishments for 2013. Control measure accomplishments are explained in further detail under the applicable NMC section.

Table 1: 2013 NMC Accomplishments

NMC	Description	Accomplishment
1	Proper Operation and Regular Maintenance Program	<ul style="list-style-type: none"> ✓ Conducted routine maintenance procedures ✓ Conducted routine inspection schedules ✓ Carried out the emergency response protocol ✓ Inspected flow regulating structures ✓ Conducted CCTV inspections ✓ Cleaned CSS interceptor and collection lines
2	Maximization of Storage in the Collection System	<ul style="list-style-type: none"> ✓ Source control technologies ✓ Optimized sewer system ✓ Performed inflow reduction and storage
3	Review and modification of pretreatment requirements	<ul style="list-style-type: none"> ✓ Inventory non-domestic CSS discharges ✓ Assessed non-domestic CSO discharge impacts
4	Maximization of Flow to the POTW for Treatment	<ul style="list-style-type: none"> ✓ Updated wet weather operating guidelines
5	Elimination of CSOs during Dry Weather	<ul style="list-style-type: none"> ✓ Inspected to identify dry weather overflows ✓ Corrected primary causes of dry weather overflows ✓ Performed dry weather overflow reporting procedures ✓ Performed routine preventative cleaning of system
6	Control of Solids and Floatable Material in CSOs	<ul style="list-style-type: none"> ✓ Repaired and cleaned catch basins ✓ Conducted street sweeping ✓ Performed construction site erosion control
7	Pollution Prevention Programs to Reduce Contaminants in CSOs	<ul style="list-style-type: none"> ✓ Conducted street sweeping ✓ Carried out Oil and Grease Management Program ✓ Conducted Solid Waste and Recycling activities ✓ Conducted Household Hazardous Waste Program ✓ Leaf and Brush Collection and Recycling ✓ Conducted Public Education and Outreach Programs
8	Public Notification	<ul style="list-style-type: none"> ✓ Provided CSO notification ✓ Conducted warning sign inspections
9	Monitoring to Characterize CSO Impacts and the Efficacy of CSO Controls	<ul style="list-style-type: none"> ✓ Identified and mapped CSO structures and outfalls ✓ Monitored water quality

a. NMC 1- Proper Operation and Regular Maintenance Program

Per U.S. EPA, CSO Guidance for Nine Minimum Controls: *“The first minimum control should consist of a program that clearly establishes operation, maintenance, and inspection procedures to ensure that a CSS and treatment facility will function in a way to maximize treatment of combined sewage and still comply with NPDES permit limitations. Implementation of this minimum control will reduce the magnitude, frequency, and duration of CSOs by enabling existing facilities to perform as effectively as possible. Essential elements of a proper operation and maintenance (O&M) program include maintenance of suitable records and identification of O&M as a high management priority.”*

i. ORGANIZATION

Kansas City operates and maintains its wastewater systems through its Water Services Department. Water Services is organized into eight functional groups. The Wastewater Line Maintenance Division and the Wastewater Treatment Division are primarily responsible for the O&M of the City’s CSS. The Stormwater Maintenance Division is responsible for street cleaning activities in the CSS area.

The Wastewater Treatment Division is responsible for the O&M of the two WWTPs within the CSS area (Blue River and Westside).

Several Line Maintenance sections are responsible for the O&M of the City’s CSS including the:

- Sewer Investigation Section;
- Sewer Cleaning Section; and
- Sewer Repair Section.

ii. RESOURCES

Water Services maintains adequate personnel and capital resources to maintain O&M activities throughout the CSS. In fiscal year 2013, the operating expenses for sewer operations were as follows:

- Wastewater Treatment and Pumping \$21,350,652
- Sewer Maintenance \$19,163,129
- Administration and General \$18,581,619
- Industrial and Household Hazardous Waste \$1,318,222

iii. LIST OF CRITICAL FACILITIES

Water Services maintains a list of critical CSS facilities, including diversion structures, flow splitters and outfalls. Diversion structures divert excess wet weather flow to receiving streams. Often, several diversion structures direct excess wet weather flow to the same outfall. Flow splitters are structures that divide flows within the CSS but do not direct flow to receiving waters (one or more flow regulating structures are downstream of the structure, upstream of the receiving waters). *Attachment C* contains a list of critical facilities. Inspection intervals vary from three to 30 days depending on the history of required

cleaning. If inspections reveal the interval is not adequate, it is adjusted accordingly.

CSS outfalls are points where combined flow discharges to a receiving stream. *Attachment C* lists the identification number, location, map number, and receiving stream of the CSOs. Any CSOs listed in the report that do not have an inspection interval have been eliminated from the system.

iv. CSO SEWER MAINTENANCE MANUAL

The Line Maintenance Division adheres to guidelines set forth in the CSO Operations and Maintenance Manual, which can be found in hard copy form at Water Services offices. The manual provides guidelines to personnel for the proper operation and maintenance of the CSS. Guidelines include:

- Schedules for routine inspections;
- Emergency response protocol;
- Dry weather overflow reporting procedures; and
- Training and safety practices.

v. LOG OF MAINTENANCE ACTIVITIES

Water Services currently uses the Hansen computerized maintenance management system to log maintenance activities. The system tracks maintenance activities with work orders. Work orders are initiated from sources including customer complaints, 3-1-1 Action Center calls, and investigation activities. Work orders are prioritized using a system that categorizes each work order into one of three levels based on the critical nature of the defect. Work orders are closed out upon completion of the work. Work orders track parameters, including:

- Date initiated;
- Initiating party;
- Date completed;
- Line segment;
- General supervisor;
- All costs, including materials;
- Labor hours including overtime; and
- Permitting.

Table 2 shows a summary of the maintenance activities performed during the reporting period.

Table 2: 2013 Maintenance Activities

Activity (Maintenance Work Orders)	Quantity
Sewer- Main Stoppages Opened	140 work orders
Sewer- Main Repairs	221 work orders
Sewer- Manhole Repair/Resurfacing	179 work orders
Sewer- Water in the Basement	1,606 work orders
Sewer Cleaning	253 miles
Sewer CCTV	97 miles

vi. CLOSED CIRCUIT TELEVISION INSPECTION

The Wastewater Line Maintenance Division maintains a CCTV inspection program. The division utilizes both internal and subcontracted equipment. In 2013, approximately 97 miles of CSS were televised, thereby meeting the Consent Decree requirements of 26 miles annually. Documentation for mileage cleaned is stored in Hansen and verified using WinCan software.

vii. SEWER CLEANING

Water Services maintains a fleet of sewer cleaning equipment including:

- Jet trucks;
- Jet-Vac trucks; and
- Bucket machines.

Local contractors may be used for specialized cleaning services on large diameter sewers through contractual agreements maintained by Water Services. In 2013, approximately 253 miles of CSS were cleaned, thereby meeting the Consent Decree requirements of 106 miles annually. This mileage is documented in Hansen.

viii. OVERFLOW AND BYPASS RESPONSE

The Line Maintenance Division has several procedures and a response checklist that guides actions following a dry weather overflow in both the combined and separate sanitary sewer systems. When an overflow is recognized, Water Services responses have met the intent of the MDNR to respond quickly, control the release of wastewater, and perform appropriate cleanup tasks. This activity is documented by Wastewater Line Maintenance supervisors and reported to MDNR. Copies of overflows reported to MDNR are included in *Attachment A*. In 2013, a total of 63 dry weather overflows were reported.

ix. EMERGENCY CONTACT

The City maintains a 3-1-1 Action Center for reporting collection system problems. The emergency contact number is (816) 513-8000. The Action Center can also be reached by dialing 3-1-1 in Kansas City, Missouri. The Action Center is staffed from 7 a.m. to 7 p.m. weekdays. An emergency can be reported outside of these hours

via 3-1-1, which connects to dispatch after hours. In 2013, approximately 2,922 3-1-1 calls related to collection system problems were received.

Signs have been installed at each of the system's 90 combined sewer outfalls. Each sign identifies the outfall by number and lists the emergency contact number. The signs solicit public reports of dry weather overflows. The emergency contact number directs the caller to the City's 3-1-1 Action Center. More information about the signs can be found in NMC 8 later in this document.

b. NMC 2- Maximization of Storage in the Collection System

Per U.S. EPA, CSO Guidance for Nine Minimum Controls: *“The second minimum control consists of making relatively simple modifications to the lines to enable the system to store wet weather flows until downstream sewers and treatment facilities can handle them. More complex modifications should be evaluated as part of the LTCP.”*

Measures described in this section consist of those that have been implemented without the need for a complex analysis of their system impacts to maximize storage in the existing collection system.

i. COLLECTION SYSTEM INSPECTIONS

All CSO diversion structures and flow splitters are inspected and cleaned regularly to identify overflows, remove debris and blockages, assess operational status of the structure, and make needed repairs. Using a diversion structure inventory, inspection crews are able to readily view detailed structure information such as inspection log forms, inventory sheets, schematics, profiles, and sectional views. All structures are inspected on intervals ranging from three days to 30 days as indicated in *Attachment C*. CSS diversion structure inspection logs are tracked in a Microsoft Access Database.

ii. DIVERSION STRUCTURE MODIFICATION

Diversion structures are modified as deemed necessary after inspections or maintenance activities. The modifications are tracked in Hansen.

iii. REDUCE AND/OR ELIMINATE INFLOWS AND ENCOURAGE LOCALIZED UPSTREAM DETENTION

Kansas City has been actively identifying City-funded projects that have the opportunity to produce multiple benefits by integrating green solutions that reduce and/or eliminate inflows or provide localized detention. Opportunities, obstacles, and project development process recommendations will be identified upon completion of these projects so that future projects can provide greater environmental benefits.

1. Kansas City Area Transportation Authority

Since the winter of 2012, Water Services has been maintaining ten green infrastructure elements within the Kansas City Area Transportation Authority (KCATA) improvements on Troost Avenue. Through the Stormwater Division, Water Services formed a Green Solutions Maintenance Crew that provides routine services such as trimming, mulching, and weeding. Water Services also has a senior landscape architect that helps to train and coordinate work with the Green Solutions Maintenance Crew and acts as a resource to Water Services staff regarding green infrastructure. These staff members continually oversee and maintain the green infrastructure improvements that are within the purview of Water Services.

2. Middle Blue River Basin Green Solutions Pilot Project

Throughout the reporting period, and in a manner consistent with the OCP, inflows have been reduced through the continued implementation, maintenance and monitoring of the Middle Blue River Basin Green Solutions Pilot Project. The project was completed in November 2012 after 15 months of construction. In the end, approximately 135 vegetated green infrastructure improvements and 5,400 linear feet of porous or permeable pavement was installed throughout the 100-acre project area. Although construction is complete, work continues in the form of maintenance.

The Middle Blue River Basin Green Solutions Pilot Project Final Report was issued to U.S. EPA on November 19, 2013. Within that report, the City documents preliminary results that show that the project improvements are effective in reducing stormwater volume at the pilot project area outlet in the amount of 292,000 gallons and reducing the peak flow by 76 percent.

3. WaterWorks!

From 2011 through 2013, Water Services coordinated with Kansas City's Office of Environmental Quality and its contractor to implement activities in accordance with WaterWorks!, a subset of the larger EnergyWorks KC grant program. As part of the program, the contractor conducted water and energy conservation activities in designated portions of the community. In total, contractors installed 375 rain barrels and 10 downspouts were disconnected. Additional work included the development of a water quality educational video, found online at http://www.youtube.com/watch?v=i4WFCU_gSvc. In October 2013, the contractor also worked with Water Services and the Kansas City Parks and Recreation Department to plant nine shade trees at the Water Treatment Plant.

4. Future Projects

As the program continues, additional projects will be implemented that will aid in reducing and/or eliminating inflows. These projects could include private inflow source reduction that may consist of downspout disconnects, sump pumps and other sources of stormwater inflow from private property.

iv. UPGRADE/ADJUST PUMP OPERATIONS AT INTERCEPTOR LIFT STATIONS

Six pump stations are within the boundaries of Kansas City's CSS. Four pump stations (Turkey Creek, Santa Fe, Northeast industrial District (NEID), and Blue River) function as influent pump stations for the Blue River and Westside WWTPs. These pump stations are operated according to the Wet Weather Operating Plans defined in NMC 4. Flows reaching the pump stations greatly exceed capacity during wet weather, and it is not possible to adjust the pump operations to store water in the upstream systems without affecting backwater conditions that would result in upstream overflows and basement back-ups. The OCP includes provisions

for additional system storage and some sewer separation upstream of these stations to reduce overflow frequency.

Two very small pump stations in the CSS (12th and 15th Street stations) are operated to maximize storage in the upstream system during wet weather.

Pump operations at the interceptor lift stations will be upgraded or adjusted, as practical, and in accordance with the OCP and Consent Decree.

v. REMOVAL OF OBSTRUCTIONS TO FLOW

Cleaning of existing interceptors to maintain available conveyance and storage capacity is a normal procedure performed by the City's Line Maintenance Division. The division utilizes its own crews and contract cleaning crews on an as-needed basis to remove and prevent accumulation of debris and sediment that restrict flow. This information is tracked in a Microsoft Access database (route cleaning as a result of inspections) or Hansen (if a work order is needed).

c. NMC 3- Review and Modification of Pretreatment Requirements

Per U.S. EPA, CSO Guidance for Nine Minimum Controls: *“Under the third minimum control, the municipality should determine whether non-domestic sources are contributing to CSO impacts and, if so, investigate ways to control them. Once implemented, this minimum control should not require additional effort unless CSS characterization and modeling indicate that a pollutant from a non-domestic source is causing a specific health, water quality, or environmental problem.”*

The Wastewater Treatment Division regulates non-domestic discharges. The division is responsible for implementing and enforcing Chapter 60, Article IV of the Kansas City Code of Ordinances and several city-wide programs, including:

- Federal Pretreatment Program;
- Surcharge Program for high strength wastewaters;
- Oil and Grease Management Program; and
- Annual review of pretreatment requirements.

These activities incorporate the following control measures.

- Inventory non-domestic CSS discharges - Identification of significant industrial users (SIUs)
- Assess non-domestic CSO discharges - Implementation of the surcharge program to evaluate the impact of non-domestic wastewater
- Evaluate feasible modifications - Periodic review of pretreatment requirements as necessary

i. **FEDERAL PRETREATMENT PROGRAM**

The Wastewater Treatment Division’s administration of the Federal Pretreatment Program is subject to regular review by both the MDNR and the U.S. EPA Region VII. An annual report of the City’s Pretreatment Program activities is filed with the MDNR in March of each year. The 2012 Industrial Pretreatment Program Annual Report was submitted to the MDNR on March 27, 2013 and can be found in *Attachment B*.

The report includes the following information:

- Companies in significant non-compliance
- Inter-jurisdictional agreement status
- Permit activity
- Annual enforcement log
- Notices of violations (NOVs)

The Wastewater Treatment Division identifies the regulated discharge flow volume, potential pollutants of concern, drainage basins, and the pump station(s) serving each SIU. According to the 2012 Industrial Pretreatment Program Annual Report, there are 67 SIUs permitted under the program. Each SIU is inspected

annually and monitored periodically for conformance with its wastewater discharge permit conditions.

ii. SURCHARGE PROGRAM

The Surcharge Program applies a surcharge for biological oxygen demand (BOD), total suspended solids (TSS), or fat, oil and grease (FOG) concentrations above that in “normal sewage” as defined in Chapter 60 of the City’s Code of Ordinances. Food handling operations such as restaurants are most affected by this ordinance. The surcharge program makes SIUs aware of the effects their discharge has on the sewer system and is an incentive to reduce their waste discharge through modifications or improved housekeeping procedures.

iii. OIL AND GREASE MANAGEMENT PROGRAM

The Oil and Grease Management Program objective is to encourage non-domestic sources to limit discharge of fats, oils and grease (FOG). The primary non-domestic sources of FOG discharges are restaurants. The Oil and Grease Management Program encompasses training, outreach, inspections, and enforcement.

The Health Department requires food establishments to either have a trained food service operations manager on site at all times or certify 80% of their staff through the food handler course. A portion of both the operations manager and the food handler training is devoted to BMPs for FOG management. The courses are held up to three times a month or can be completed online. Certification is valid for three years for food handlers and five years for operations managers. During 2013, the Health Department trained 650 operations managers and 7,610 food handlers through both online and in person training.

Inspections of grease traps at food handling facilities are completed by the City’s Health Department and Water Services’ Wastewater Treatment Division. There were 5,965 facility inspections completed in 2013. At the time of inspection, facility personnel are informed about ordinance requirements regarding FOG discharges and about the potential for enforcement actions if these requirements are not met. The inspector reviews grease trap cleaning records and performs a sink test to make sure the lines are not clogged with FOG. If a FOG issue is discovered during the inspection, the inspector will suggest one of the following enforcement options:

- Shorter cleaning cycles
- Replacement of grease traps with grease interceptors
- Temporary shut-down of food facilities until grease trap problems are resolved

iv. REVIEW OF PRETREATMENT REQUIREMENTS

Every year, the Wastewater Treatment Division reviews the pretreatment program to determine whether changes are warranted. Economic and environmental impacts are taken into account when evaluating potential changes. These include an assessment of the non-domestic discharges to the CSS and the impact of non-domestic discharges on CSOs.

d. NMC 4- Maximization of Flow to the POTW for Treatment

Per U.S. EPA, CSO Guidance for Nine Minimum Controls: *“The fourth minimum control entails simple modifications to the CSS and treatment plants to enable as much wet weather flow as possible to reach the treatment plants. The objective of this minimum control is to reduce the magnitude, frequency, and duration of CSOs that flow untreated into receiving waters. Municipalities should identify and evaluate more complex CSS and publicly owned treatment works (POTWs) modifications as part of their LTCPs.”*

i. **WASTEWATER TREATMENT PLANT (WWTP) PERFORMANCE AND FLOW CAPACITIES**

Previously, capacity studies were performed for both the Blue River WWTP and Westside WWTP. The findings from the capacity studies are summarized in the Blue River Wastewater Treatment Plant Capacity Study dated March 2, 2006 and the Westside Wastewater Treatment Plant Capacity Study dated April 6, 2006. Plant stress tests were also performed on both plants. The findings of the stress tests are summarized in two technical memorandums titled Blue River Wastewater Treatment Plant Stress Test Report dated August 2008 and Westside Wastewater Treatment Plant Stress Test Report dated December 2007. These studies compared flows processed during wet weather and dry periods to determine the relationship between performance and flow.

The treatment capacity at the Blue River Wastewater Treatment Plant and the Westside Wastewater Treatment Plant are being fully utilized and no simple modifications have been made in 2013. Water Services plans to increase wet weather capacity in the future as part of the Overflow Control Program.

ii. **WET WEATHER OPERATING GUIDELINES FOR WWTPS**

1. Blue River WWTP

The Wet Weather Operating Guidelines for the Blue River WWTP summarize the operating procedures at the facility during wet weather events. The guidelines specify that the Blue River WWTP processes combined (primary plus secondary) treat wastewater only to the maximum capacity of the secondary treatment plant. The operating guidelines indicate that the secondary treatment plant has a design capacity of 105 MGD and a total capacity of 140 MGD. The primary treatment capacity of 220 MGD is not achieved due to capacity limitation of secondary treatment.

Field stress testing results indicate the maximum wet weather plant capacity is limited by secondary treatment capacity at 156 MGD. The theoretical capacity of the entire plant assumes all equipment is on-line and operating as designed.

Additional information in the Wet Weather Operating Guidelines addresses the control room, diversion chamber, rock box, screen house, NEID pumping station, Blue River pumping station, grit removal system, distribution box and primary clarifiers, primary junction box, secondary pumping, trickling filters, and effluent pump station.

In May 2013, Water Services worked to address a leakage problem with a sluice gate at the influent diversion structure. Because the sluice gate would not tightly seal after being opened to divert flows to the Blue River during wet weather events, it is no longer opened and the operating practices have been changed. This change will be documented in an updated Wet Weather Operating Guidelines for Blue River WWTP.

2. Westside WWTP

The Wet Weather Operating Guidelines summarize the procedure for operations at the facility during wet weather events. The operating guidelines provide the following recommended wet weather pump station conveyance rates:

- Turkey Creek PS-11.4 MGD
- Santa Fe PS-4.5 MGD
- Line Creek PS-8 MGD

Water Services is initiating operating guideline revisions to increase the pumping rate of these stations during wet weather to fully utilize the plant treatment capacity. The current plant operating procedure is to treat a greater volume of wet weather flow than is recommended in the Wet Weather Operating Guidelines.

The current design capacity of the Westside WWTP is 40 MGD. Stress testing has confirmed that 40 MGD is the peak capacity this WWTP can process without affecting process performance.

Additional information in the Wet Weather Operating Guidelines relates to the Turkey Creek pump station, Santa Fe pump station, Line Creek pump station, grit chambers, primary clarifiers, aeration basins, final clarifiers, and the effluent pump station.

e. NMC 5- Elimination of CSOs during Dry Weather

Per U.S. EPA, CSO Guidance for Nine Minimum Controls: *“The fifth minimum control, elimination of CSOs during dry weather, includes any measures taken to ensure that the CSS does not overflow during dry weather flow conditions. Since the NPDES program prohibits dry weather overflows (DWOs), the requirement for DWO elimination is enforceable independent of any programs for the control of CSOs. DWO control measures include improved O&M, as well as physical changes to regulator and overflow devices...”*

The Line Maintenance Division actively works to eliminate dry weather overflows. The measures taken include:

- Routine preventative cleaning of system
- Inspection to identify dry weather overflows
- Correction of primary causes of dry weather overflows
- Notification to MDNR when a dry weather overflow occurs

i. **FLOW REGULATING STRUCTURE INSPECTION**

The CSS contains flow regulating structures that include diversion structures and flow splitters. These structures are inspected on a routine basis to verify proper functioning. Diversion structures direct excess wet weather flows to receiving waters. The inspection interval varies for each structure and is based on historical records of performance and the sensitivity of the area surrounding the structure. *Attachment C* of this report lists inspection intervals for each diversion structure in the system. Flow splitters are structures that divide flows within the CSS but do not direct flow to receiving waters. *Attachment C* of this report lists the inspection intervals for flow splitters in the CSS.

ii. **DRY WEATHER OVERFLOW CORRECTIVE ACTION**

Water Services implements DWO corrective actions to address operational problems believed to be the cause of the overflows. The corrective actions include:

- Interceptor cleaning
- Sewer repair

The Line Maintenance Division’s sewer cleaning program relies on jetters and bucket machines to remove materials that may restrict flow leading to blockages and DWOs at upstream locations. The Line Maintenance Division’s sewer repair program is responsible for repairing localized sewer defects linked to the occurrence of DWOs. These steps are taken immediately (as is practical) upon notification that a DWO has occurred.

iii. **DRY WEATHER OVERFLOW NOTIFICATION**

The Line Maintenance Division notifies MDNR within 24 hours of discovery of a DWO. Follow-up written reports are made within five days of the original notification. In all occurrences, the area around the overflow is cleaned and inspected for any debris or contaminants. In the case of DWOs caused by

vandalism, the standard manhole covers are replaced with bolt-down covers to deter future vandalism. In 2013, 17 dry weather overflows in the CSS and 8 dry weather overflows from CSOs were reported to MDNR.

The Wastewater Treatment Division notifies MDNR of DWOs at either pump stations or treatment plants within 24 hours of discovery. A follow-up written report is submitted to the MDNR within five days of the occurrence. In 2013, zero dry weather overflows were reported at pump stations or treatment plants.

Copies of these reports submitted in 2013 are included in *Attachment A* of this report.

f. NMC 6- Control of Solids and Floatable Material in CSOs

Per U.S. EPA, CSO Guidance for Nine Minimum Controls: *“The sixth minimum control is intended to reduce, if not eliminate, visible floatables and solids using relatively simple measures. Simple devices including baffles, screens, and racks can be used to remove coarse solids and floatables from combined sewage . . .”*

i. PREVENTING EXTRANEOUS SOLIDS AND FLOATABLES FROM ENTERING THE CSS

Water Services and other City departments employ various measures that minimize extraneous solids and floatables from entering the CSS, including:

- **Street Sweeping** – Water Services sweeps streets on a routine schedule to reduce trash, silt and other debris on the streets. In August of 2013 the city replaced eight of its 10 street sweepers with new compressed natural gas vehicles to help improve service levels and reduce emissions. During 2013, Water Services swept a total of 15,184 lane miles throughout both the combined and separate sewer system areas. Street sweeping was conducted three times on all streets with curbs within the CSS area. This exceeded the Consent Decree requirement of sweeping all streets with curbs within the CSS area twice annually.
- **Repair and Clean Catch Basins** – To maintain the proper function of stormwater inlets, the Stormwater Line Maintenance Division performs catch basin cleaning and repairs through its Catch Basin Replacement Program. This information is stored and tracked in Hansen. In 2013, 21,187 catch basins were cleaned and 506 catch basins were repaired or replaced.
- **Construction Site Erosion Control** – Soil erosion from construction activity can increase the quantity of turbidity, nutrients, metals and sediment in the sewer system and receiving waters. Sedimentation problems can potentially reduce the hydraulic capacity of sewer lines, leading to overflows. The implementation and enforcement of erosion control regulations can be an extremely effective method of reducing these constituents in the CSS. In 2013, the Stormwater Utility Division inspected 36 City-contracted construction sites which were one acre or larger in size for compliance with stormwater erosion control regulations.

Construction work is required to conform to the following City engineering and construction standards for all public or private work.

- Section 2100 – Grading and Site Preparation, May 2008
- Section 5100 – Site Work and Erosion and Sediment Control, August 2003
- Section 5600 – Storm Drainage Systems and Facilities, February 2006
- Manual of Best Management Practices for Stormwater Quality, March 2008

g. NMC 7- Pollution Prevention Programs to Reduce Contaminants in CSOs

Per U.S. EPA, CSO Guidance for Nine Minimum Controls: *“The seventh minimum control, pollution prevention, is intended to keep contaminants from entering the CSS and thus receiving waters via CSOs. Most of the suggested measures involve behavioral change rather than construction of storage or treatment devices.”*

Kansas City has a long standing record of implementing pollution prevention measures throughout the City and providing pollution prevention options to residents. The following measures continue to be implemented by the City to help reduce pollution entering the combined sewers and, in turn, the rivers and streams.

- Street sweeping (See NMC 6)
- Oil and Grease Management Program (See NMC 3)
- Solid Waste and Recycling
- Household Hazardous Waste Program
- Leaf and Brush Collection and Recycling
- Public Education and Outreach Programs

i. SOLID WASTE AND RECYCLING

Kansas City offers curbside pickup of solid waste, recycling, and bulky items to give residents a convenient way to dispose of unwanted waste and ultimately reduce illegal dumping. The City also manages three drop-off recycling centers that can be used by businesses and residents of multi-family dwellings who may not have curbside recycling options available. In addition to these programs, the City also provides services for cleanup of illegal dump sites, a drop-off facility for waste tires, and reduced cost dumpsters for neighborhood cleanups. The total amount of solid waste collected through City programs in 2013 is listed in *Table 3*.

Table 3: 2013 Amount of Solid Waste Collected (Tonnage)

Waste	Quantity (Tons)
Solid Waste	77,958
Recycling	20,368
Bulky Items	6,167
Leaf and Brush	4,490
Waste Tires	194
Household Hazardous Waste	557
Illegal Dumping	3,617

ii. HOUSEHOLD HAZARDOUS WASTE PROGRAM

The household hazardous waste (HHW) program is hosted by Water Services and consists of two subprograms: an HHW drop-off facility and HHW mobile collection events. In 2013, the program served 33 communities from five counties in the region. The program continues its success in collecting, recovering and recycling hazardous materials and producing reusable chemicals for the public.

The HHW facility serves as a core location for providing a cooperative regional collection system for the Missouri side of the metropolitan area. The facility accepts residential hazardous wastes including pesticides, herbicides, and fertilizers. The permanent facility is open to the public on Thursdays, Fridays and Saturdays year-round, with the exception of City-observed holidays. Mobile events throughout the City and the region provide convenient opportunities for proper disposal. These mobile events typically occur on Saturdays from April 1 through October 31 and can be held in any city or county participating in the regional HHW program. The program provides a viable alternative to improper disposal in landfills, storm sewers, or sanitary sewer facilities. In 2013, the program collected a total of 1,113,957 pounds of HHW, including 580,224 pounds from Kansas City residents.

iii. LEAF AND BRUSH COLLECTION AND RECYCLING

The leaf and brush recycling program allows residents to drop off or place these items curbside for free pickup by the City. The leaf and brush is then composted or mulched by a local company and made available to residents for a small fee or, in the case of first ground mulch, for free. Removal of excess leaf and brush from residences curtails illegal dumping of these items down storm drains and into local creeks, streams, and rivers. In September 2013, the leaf and brush program became a collaborative effort between Water Services and the Kansas City's Public Works Department. Prior to the Fall of 2013, the Public Works Department oversaw both the leaf and brush drop-off facilities and the curbside collection program. Going forward, Water Services will be responsible for the collection of curbside leaf and brush and the Public Works Department will continue to run the drop-off facilities. Water Services collects leaf and brush from residents twice a year, once in the Spring and once in the Fall, on regularly scheduled trash pickup days. In 2013, 4,490 tons of leaf and brush were collected and recycled.

iv. PUBLIC EDUCATION AND OUTREACH PROGRAMS

In addition to the pollution prevention measures implemented, Water Services provides additional outreach and education to encourage residents and business owners to minimize or eliminate contaminants from entering the CSO. Descriptions of active outreach and education initiatives, including those that are part of the Overflow Control Program, follow.

1. Presentations, Conferences, and Tours

From January 1 through December 31, 2013, presentations were made to more than 1,500 citizens and stakeholders about OCP. In 2013, 47 presentations were made to professional associations, metropolitan

planning and non-governmental organizations, and neighborhood groups.

To maintain contact with neighborhood groups, approximately 250 letters were mailed in July 2013 to neighborhood leaders offering a presentation by Water Services on the progress of the City's Overflow Control Program. A detailed presentation was developed to provide an overview of the Overflow Control Program and structured such that it could be tailored to provide more specific information about specific watershed/ basin improvements, when appropriate. Since the letters were distributed, 15 neighborhood presentations (roadshows) were completed. Water Services is planning a second mailing in early 2014 to again request the opportunity to make presentations to those neighborhood groups that have not yet participated.

The following is a listing of the organizations and presentations that were given from January to December 2013:

- Minority and Women Coalition – January 5, 2013
- Missouri Prairie Foundation – January 7, 2013
- Coffee with the City Manager, Tower Homes Association – January 12, 2013
- Climate Protection Steering Committee – January 2013
- Heavy Contractors Association – January 29, 2013
- Kansas City Society of Black Engineers and Architects – January 2013
- Fairness in Construction Board – January 2013
- Urban Summit – February 2013
- American Council of Engineering Companies (ACEC) Kansas City Liaison Committee – February 2013
- Brush Creek Coordinating Committee – February 5, 2013
- New Partners for Smart Growth Conference – February 7, 2013
- Blue Valley Industrial District – February 12, 2013
- Middle Blue River Basin Green Solutions Pilot Project Lessons Learned Meeting – February 12, 2013
- ASP Clean and Green Expo – March 7, 2013
- Nebraska Post-Construction Stormwater Management Workshop – March 21, 2013
- KC Chamber Energy Environment Sustainability Initiative – March 26, 2013
- Sierra Club – April 2, 2013

- Water Services Capital Improvements Program – April 2, 2013
- KU Environmental Engineering Conference – April 17, 2013
- Wet Weather Partnership Conference – May 21, 2013
- KC Chamber Congressional Spotlight Tour – May 30, 2013
- Marlborough Community Coalition – July 23, 2013
- Kansas City Government Contracting and Procurement Forum (display booth) – August 6, 2013
- Midwest Society of Trenchless Technologies Conference – August 7, 2013
- Winwood Sunnybrook OCP Roadshow – August 13, 2013
- Missouri Legislative Roundtable – August 14, 2013
- Coachlight Square OCP Roadshow – August 15, 2013
- Society of American Military Engineers – August 19, 2013
- Armour Hills OCP Roadshow – August 20, 2013
- Blue Hills OCP Roadshow – August 24, 2013
- ACEC-KCMO Liaison Meeting – August 26, 2013
- MidAmerica Minority Supplier Development Council – August 29, 2013
- Kansas City Society of Black Architects and Engineers – September 5, 2013
- Environmental Management Commission – September 11, 2013
- Tower Homes OCP Roadshow – September 14, 2013
- South Oakwood OCP Roadshow – September 19, 2013
- US Water Alliance, One Water Leadership Summit – September 22, 2013
- Center Planning and Development Council OCP Roadshow – September 24, 2013
- Ward Parkway Homes OCP Roadshow – October 8, 2013
- Innisbrook Homes OCP Roadshow – October 9, 2013
- Sterling Acres OCP Roadshow – October 10, 2013
- Sunset Dixon OCP Roadshow – October 17, 2013
- Ravenwood Summerset OCP Roadshow – November 7, 2013
- Installation and Maintenance of Stormwater Treatment BMPs Workshop – November 7, 2013

- Citadel Center OCP Roadshow – November 9, 2013
- ASCE/S.A.M.E. Joint Luncheon – November 12, 2013
- 5 Cities Plus Conference – November 12, 2013

2. Public Meetings

Table 4 below displays information about the public meetings held in 2013. Additional details about the meetings can be found with each project update.

Table 4: Public Meeting Information (2013)

Date	Project	Meeting Purpose	No. of Attendees
February 12, 2013	Middle Blue River Basin Green Solutions Pilot Project	Lessons learned meeting with Middle Blue River Basin Green Solutions Pilot Project area residents; input requested	10
August 15, 2013	Blue River South I/I Reduction Project: Areas 1 and 2	Project information meeting	20
August 20, 2013	Middle Blue River Neighborhood Sewer Rehabilitation Project	Project information meeting	45
August 27, 2013	Middle Blue River Neighborhood Sewer Rehabilitation Project	Project information meeting	30
August 28, 2013	Middle Blue River Neighborhood Sewer Rehabilitation Project	Project information meeting	70
November 14, 2013	Distributed Storage Tributary to Outfall 069	Project information meeting; input requested	45
December 10, 2012	Distributed Storage Tributary to Outfall 059	Project information meeting; input requested	20

3. Other Outreach

During the reporting period, Water Services updated its website, including portions for the Overflow Control Program. The revised website acts as the sole location of all public information relating to the Overflow Control Program. The site is designed to include topical information and detailed project information, including descriptions, implementation schedules, milestones and project updates and statistics. The website can be found at www.kcwaterservices.org/overflow-control-program. More information is expected to be included on the website in 2014, including the addition of project fact sheets.

Project fact sheets were developed in 2013 for each active OCP project to provide citizens information about a particular project, including

what they should expect, why the project is being completed, and who they should contact with questions. The fact sheets are posted on the Water Services website at www.kcwaterservices.org/projects/current-projects/. Fact sheets for completed OCP projects are provided at the bottom of the OCP webpage.

v. NEWSLETTERS

Water Services produces both internal and external newsletters for disseminating information to employees and customers respectively. Both newsletters were redesigned and rebranded in 2013. The internal newsletter, titled “News on Tap,” is distributed monthly to employees electronically and in hard copy. Information regarding OCP projects and initiatives was included in seven of the employee newsletters in 2013. The external newsletter, known as “What’s On Tap,” had been sent to customers every other month with their water bills. However, in May, the external newsletter was redesigned, leaving only four newsletters for the year. Information relevant to OCP and water quality was included in one of the external newsletters in 2013.

vi. KC GREEN TEAM

In 2008, the KC Green Team was created under Administrative Regulation 5-5 Green Solutions and Sustainability. City staff from various departments volunteer their time to effectively execute its mission. The KC Green Education and Outreach Team, one of the program’s four Green Teams, organizes a variety of events and activities to educate City staff and residents about green solutions and sustainability within City operations and the City as a whole. On April 22, 2013, to correlate with Earth Day, the KC Green Team launched the KC Green Neighborhood Recognition Program. This program allows neighborhoods that are proactive in sustainability to receive recognition for their green initiatives. Neighborhoods can apply for the program and are scored based on their efforts in six categories: Natural Environment, Waste and Recycling, Transportation, Energy, Food and Urban Agriculture, and Water and Stormwater Management. Practices included in the Water and Stormwater Management category include rain barrel use, planting and maintaining rain gardens, utilizing pervious pavement, and routing downspouts to green space. Depending on the number of homes implementing sustainable practices and the amount of collaborative special neighborhood projects, the neighborhoods are given a rating of Platinum, Gold, Silver, or Not Eligible. Four neighborhoods applied in 2013, and all received a “Silver” designation.

vii. KC TO THE SEA

In 2010, Water Services created the KC to the Sea curriculum to help educate 4th through 6th grade students on the role of stormwater management in protecting the water quality in local rivers, lakes and streams. The five-day interactive curriculum teaches students how precipitation moves through a watershed, how stormwater becomes polluted by point and non-point source pollutants, and how BMPs implemented on public and private property can improve water quality and reduce the quantity of stormwater that flows to our creeks, streams, and rivers.

The program continued to grow in 2013 with a total of 1,839 students from 26 schools throughout Kansas City participating in the program.

viii. REGIONAL WATER QUALITY EDUCATION PROGRAM (RWQEP)

In 2013, Water Services continued to contribute funding and staff time to a Regional Water Quality Education Program (RWQEP) sponsored by Mid-America Regional Council. The RWQEP allows metro area cities to pool resources and provides a regional approach to raising public awareness about water quality issues affecting Kansas City for the benefit of both MS4 and combined sewer cities. The program accomplishes this through a bi-annual community survey, yearly media campaign, printed materials, and a grant program that funds projects designed to improve public understanding about the negative impact that stormwater runoff has on our local rivers and streams. Due to the success of the 2012 media campaign, “If It’s On The Ground – It’s In Our Water,” the RWQEP decided to continue the campaign in 2013. The program also partnered with a local community college on an educational training series entitled “Installation and Maintenance of Stormwater Treatment Best Management Practices”. The series included a local BMP site visit, native plants species selection and establishment, and a design and maintenance workshop. The effort resulted in a successful series that highlighted the benefits of native plants and key stormwater treatment and best management principles. A total of 22 local governments supported the 2013 program.

ix. PARTNERSHIPS IN PUBLIC OUTREACH

1. Blue River Watershed Association

Water Services continued to work with BRWA to provide staff to support the T.R.U.E (Teaching Rivers in an Urban Environment) Blue Program, which trains and equips area teachers, students, and community members to establish school-based “stream teams” to monitor water quality in local streams. The program is implemented through the Blue River Watershed Association (BRWA), a nonprofit, grassroots community organization that engages Kansas Citians in protecting and restoring the area watersheds. The organization focuses its efforts on community education, environmental stewardship and strategic partnerships. In 2013, Water Services staff continued to volunteer their time to mentor small groups of students as they collected water quality data in local streams.

2. Project Blue River Rescue

Project Blue River Rescue is an outreach event hosted by the Friends of Lakeside Nature Center operated by the City’s Parks and Recreation Department. The event is sponsored by MDNR and is supported by many governmental entities and businesses. The City’s Parks and Recreation, Public Works and Water Services departments continue to provide facilities, equipment, expertise and assistance with program coordination.

On April 6, 2013, approximately 1,030 volunteers participated in this event. Nearly 78 tons of trash and about 650 used tires were collected and disposed. In addition to trash removal, a group of 20 volunteers organized by the Heartland Tree Alliance planted 500 tree seedlings along the Blue River. The project provided economic and environmental benefits to the City by removing debris, refurbishing the floodplain and river banks, and safeguarding habitats along the river.

h. NMC 8- Public Notification

Per U.S. EPA, CSO Guidance for Nine Minimum Controls: *“The intent of the eighth minimum control is to inform the public of the location of CSO outfalls, the actual occurrences of CSOs, the possible health and environmental effects of CSOs, and the recreational or commercial activities curtailed as a result of CSOs. The measure selected should be the most cost-effective measure that provides reasonable assurance that the affected public is informed in a timely manner.”*

i. COMBINED SEWER OVERFLOW PUBLIC NOTIFICATION PLAN

The City recognizes the need to notify the public of CSOs. The purpose of the City’s notification plan is to inform and educate the public of potential overflows in the urban waterways during and following storm events. The goals of the public notification program are to:

- Notify citizens when overflows are likely to occur;
- Educate the public about the potential health impacts associated with overflows in waterways;
- Educate the public about the potential danger and health impacts of high waters in waterways during heavy rainstorms; and
- Enable citizens to take appropriate steps to protect themselves and their families from such hazards.

Water Services utilizes these methods to inform the public of the potential for CSOs:

- **Telephone Hotline** –The telephone number to report an overflow is 816-513-8000, which rolls directly to Kansas City’s 3-1-1 Action Center. The telephone voicemail number is also printed on the CSO public access signs.
- **Signs** – Two types of warning signs have been installed to notify citizens of the hazards of CSOs. The first type, a Pedestrian Warning Sign (PWS), has been posted at public access points to streams and notifies citizens that the streams receive CSOs and to avoid contact with the water during and 72 hours after rainfall. The signs provide a phone number for the OCP information line that is staffed by Water Services employees if citizens want more information. There are currently 105 PWS locations identified. A CSS-wide PWS inspection was completed in November 2013. During the time of the inspections, the PWSs were each labeled with a number to allow more accurate inspections and give residents a point of reference when calling in with questions. During this inspection, seven signs were found damaged and 38 signs were missing. Two locations where signs were previously placed no longer had access to streams, so five new access locations were identified. PWS replacement and relocation will begin early in 2014.

A second type of warning sign has been posted at all outfall locations. The sign warns citizens to avoid contact with water and displays the phone number listed above for reporting of dry weather overflows. The signs are printed in English and Spanish and are readable from a distance of approximately 20 feet. The Line Maintenance Division is responsible for inspecting and maintaining the signs. Signs are inspected during overflow events and through routine inspections. A comprehensive CSS-wide outfall sign inspection began in the November 2013 and is expected to be completed early in 2014.

- **Water Bill Insert** – Water Services publishes a bi-monthly “What’s On Tap” newsletter that informs the public about the activities underway at Water Services. Information on OCP projects and CSOs are periodically included in the newsletter.

i. NMC 9- Monitoring to Characterize CSO Impacts and the Efficacy of CSO Controls

Per U.S. EPA, CSO Guidance for Nine Minimum Controls: *“The ninth minimum control involves visual inspections and other simple methods to determine the occurrence and apparent impacts of CSOs. This minimum control is an initial characterization of the CSS to collect and document information on overflow occurrences and known water quality problems and incidents that reflect use impairments by CSOs. Changes in the occurrences of such incidents can provide a preliminary indication of the effectiveness of the NMC.”*

The City completed a thorough characterization of the CSS as part of the development of the OCP. The following sections summarize what has been completed to aid the City in assessing the effectiveness of the NMC and the control measures described in the OCP.

i. MAPPING CSS DRAINAGE AREA DIVERSION STRUCTURES AND OUTFALLS

Water Services has completed mapping of the CSS drainage areas and has located and inspected all diversion structures and outfalls. The CSS drainage areas were verified during the development of the OCP. In 2013, mapping was updated to include a segment of the Middle Blue River Basin that was previously included in a different basin. No diversion structures are located in the specific area that was included.

Figure 1, as originally included in the October 2008 report entitled “Capacity, Management, Operations and Maintenance Plan (CMOM) and Nine Minimum Controls” and referenced herein, shows the locations of diversion structures, flow splitters and outfalls.

ii. RECEIVING WATER BODIES AND DESIGNATED USES

Kansas City’s combined sewers overflow to numerous receiving streams. Primary receiving streams include the Kansas River, the Missouri River, the Blue River, and Brush Creek. Brush Creek is tributary to the Blue River, which is tributary to the Missouri River. The Missouri River at the Broadway Bridge in Kansas City drains a total of 484,100 square miles. That area includes 59,756 square miles tributary to the Kansas River at De Soto, Kan. (approximately 30 miles upstream from the confluence of the Missouri River and Kansas River). All of Kansas City’s CSS basins are eventually tributary to the Missouri River. They represent only 0.01 percent of the total Missouri River tributary area at Kansas City. The Downtown Airport, the Central Industrial District, and the Northeast Industrial District are each directly tributary to the Missouri River. The Turkey Creek basin is the only Kansas City CSS basin tributary to the Kansas River. The remaining CSS basins in Kansas City (Gooseneck Creek; Lower Blue River; Brush Creek; Town Fork Creek; and the Middle Blue River) are tributary to the Blue River.

Figure 2, as originally included in the October 2008 report entitled “Capacity, Management, Operations, and Maintenance Plan (CMOM) and Nine Minimum Controls” and referenced herein, shows streams that receive overflows from Kansas City’s CSS, and indicates the current recreational water quality standard designated by the State of Missouri (or by the State of Kansas, for the Kansas

River). This figure defines (in blue) the CSS area directly tributary to the Missouri River (including those areas tributary via the Kansas River). It also shows all areas tributary to the Blue River. The map distinguishes between those tributary areas upstream of Kansas City's CSOs (e.g., upstream of the points marked with red stars), and areas directly tributary to those stream reaches that receive CSOs. Within the Blue River basin, areas directly tributary to those stream reaches that receive CSOs include both CSS (shown in yellow) and SSS (shown in green).

Of the total area tributary to the Blue River, 74 percent is located upstream of those reaches of the Blue River and its tributaries that are impacted by overflows from Kansas City's CSS. Kansas City's CSS serves 10 percent of the total area tributary to the Blue River. The remaining 16 percent of the Blue River tributary area is served by separate storm and sanitary sewer systems in Kansas City.

iii. DEVELOPMENT OF OVERFLOW OCCURRENCE ESTIMATES

The current performance of the CSS was estimated using computer models developed as part of the OCP. The models were calibrated to sewer flow meter and rainfall data. The estimated overflow volume from Kansas City's CSS in a typical year is just over six billion gallons.

Overflow frequency varies significantly, both within the individual basins and across the City. The estimated average overflow frequency at the 89 outfalls south of the Missouri River is more than 20 times in a typical year. A complete summary of the overflow frequency, volume and duration for each outfall can be found in the supporting documentation included in Kansas City's OCP. As control projects are implemented, estimates of overflow volume and frequency will be compared with these baseline values.

iv. DEVELOPMENT OF A LONG-TERM MONITORING PLAN FOR THE OVERFLOW CONTROL PROGRAM

The City is implementing a Water Quality Monitoring Program (WQMP) dated December 28, 2010 that was developed to address the requirements of Section II, Water Quality Monitoring Plan, of the Post-Construction Monitoring Program Performance Criteria included as Appendix D of the Consent Decree. The WQMP is being implemented city-wide and addresses water quality in both the CSS and SSS areas. A summary of the results from the WQMP for 2013 is presented in the section of this report that discusses Appendix D of the Consent Decree.

Given the dynamic nature of assessment of water quality standards and evolution of regulations, the data collected will be periodically evaluated during the course of the program for usefulness in serving Water Services' needs. Based on such evaluations, Water Services will propose modification of the WQMP to the regulatory agencies and will make any modifications accepted by them. Modifications may include the addition, elimination or relocation of monitoring stations; the addition or elimination of pollutant parameters; modification of data collection techniques; and modification of data evaluation methods.

Figure 1: Diversion Structure, Flow Splitter and Outfall Locations

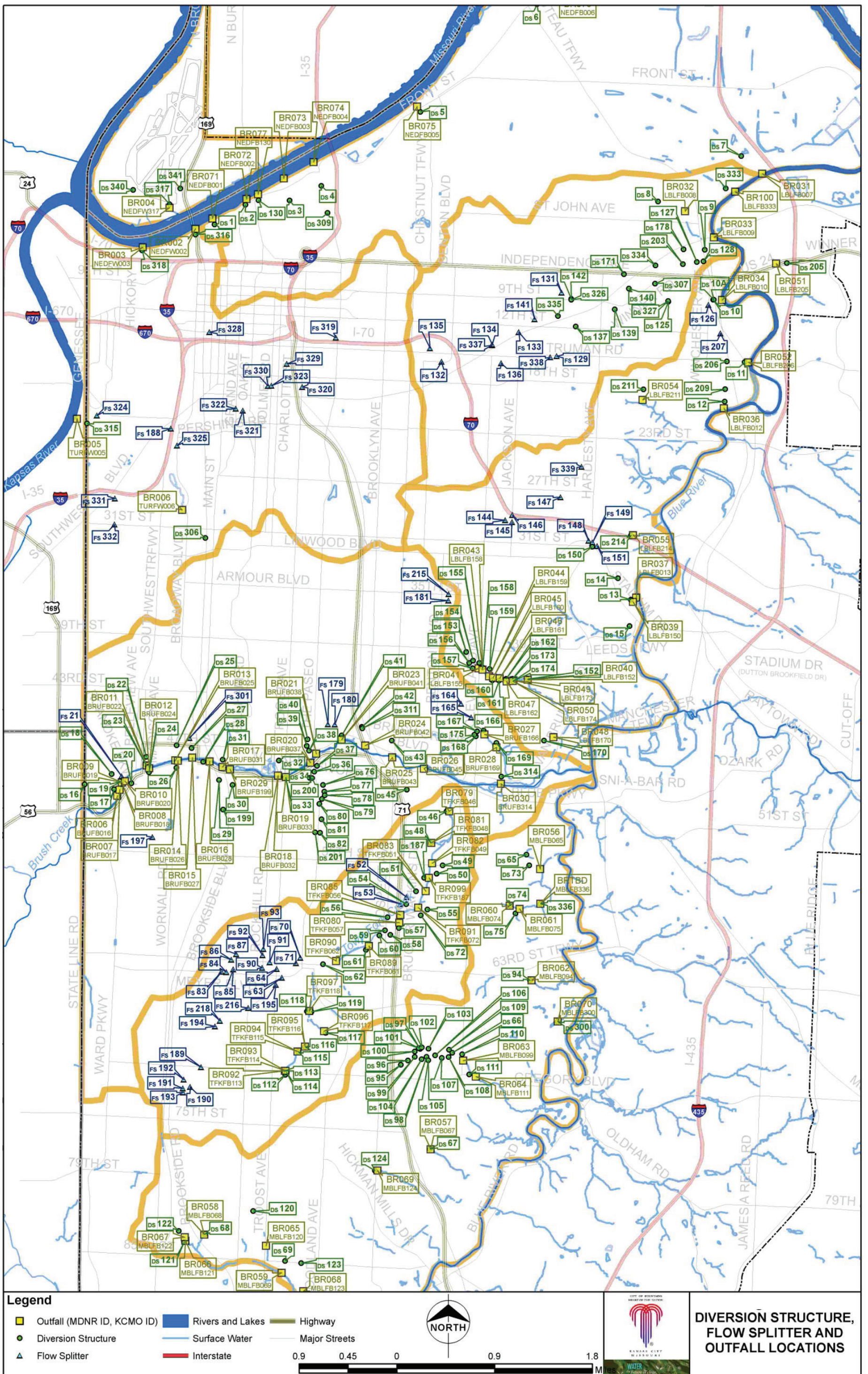
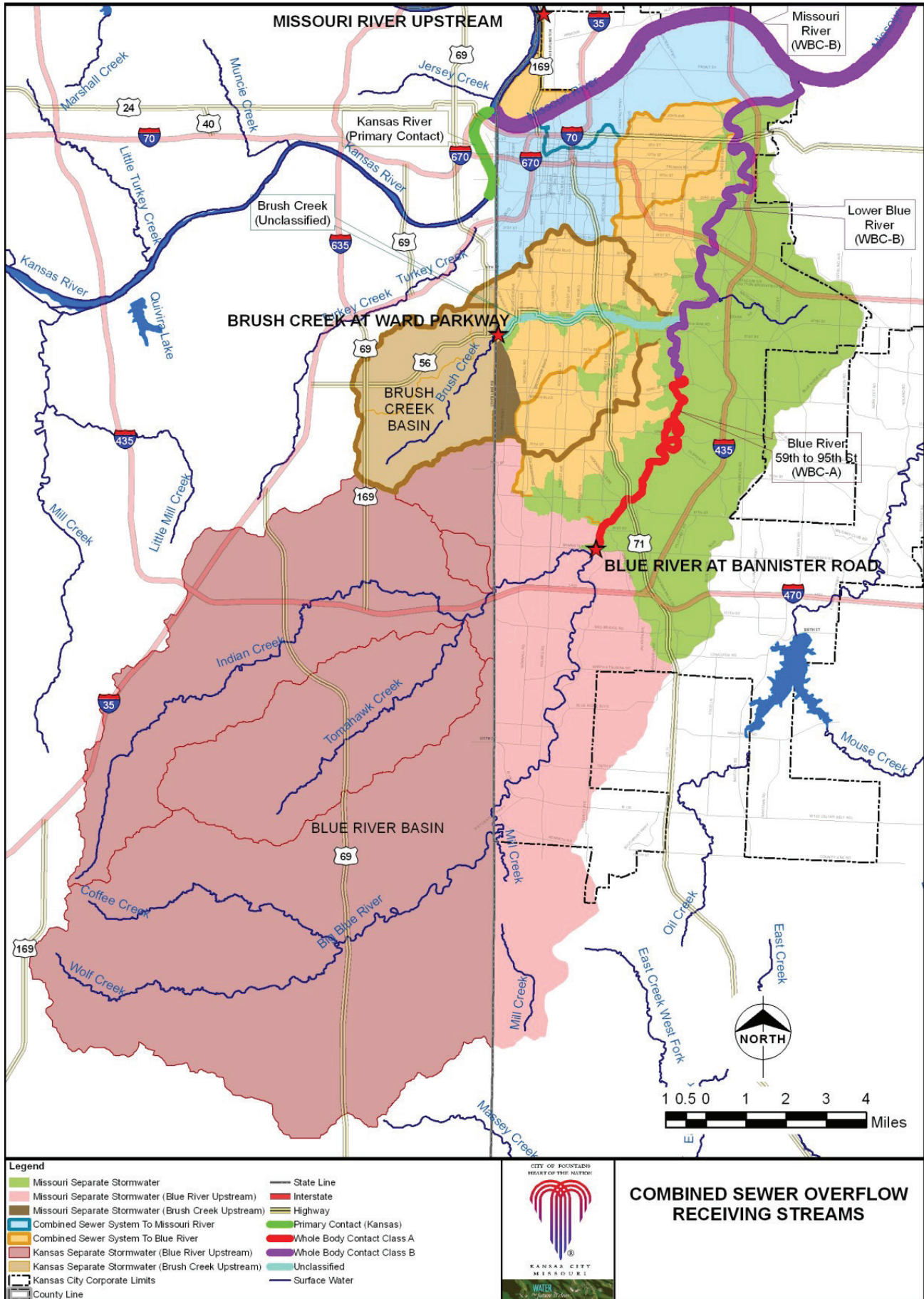


Figure 2: Combined Sewer Overflow Receiving Streams



XII. CAPACITY, MANAGEMENT, OPERATION AND MAINTENANCE PLAN PERFORMANCE CRITERIA – APPENDIX C

Water Services has developed a comprehensive Capacity, Management, Operation and Maintenance (CMOM) program aimed at improving the ability of the utility to manage its system and ultimately reduce the occurrence of sewer overflows and maintain compliance.

a. Collection System Management

i. ORGANIZATIONAL STRUCTURE

Water Services' organizational structure delineates job responsibilities, outlines opportunities for advancement, ensures effective employee to supervisor ratios, and guarantees adequate staff is in place to accomplish the mission and vision of the department. This structure is used during the annual budget process to determine staffing needs and allocate operational expenses appropriately. The City maintains job descriptions and organizational charts and effectively communicates job responsibilities to Water Services staff, and acquires and maintains the level of skills and abilities necessary to perform the responsibilities of Water Services.

Water Services' organizational structure chart outlines functional groups and classifications. It is used as a planning tool when evaluating staffing needs. In addition, the organizational chart visually presents the hierarchy and reporting structures, as well as career opportunities.

Hiring for all vacant positions is handled through the Department's Human Resources Division; positions are posted internally city-wide to provide advancement opportunities for existing staff members. Vacancies are filled once the appropriate level of talent is found.

The organizational structure is evaluated during the annual budget process and through frequent communication between Human Resources personnel and the operating divisions of Water Services. In addition, members of the management team evaluate staffing needs throughout the year, given needs arise that may not have been considered while developing the budget. The performance of all Water Services employees is evaluated using a formal performance review process. The Water Services' Director and the Human Resources Manager are responsible for ensuring that Water Services' organizational structure and staffing meets department needs.

In October 2012, Water Services reorganized the executive leadership team to emphasize six critical areas. Three of these positions-- the Customer Service Officer, Chief Financial Officer, and Chief Engineering Officer--lead their critical function areas that have a direct impact on the success of Water Services. The other three positions-- Water Utility Officer, Wastewater Utility Officer, and Stormwater Utility Officer-- provide the direct leadership for each of the three utilities. In 2013, Water Services filled several positions including the previously vacant Wastewater Utility Officer and Water Utility Officer and hired a new position, Construction Manager.

ii. COMMUNICATIONS AND CUSTOMER SERVICE

In 2013, Water Services communications staff continued to meet the unique needs of the many audiences the department serves. These audiences encompass:

- approximately 840 employees;
- 170,000 retail customers;
- 27 wholesale wastewater customers;
- local and national media outlets;
- neighborhood and civic groups;
- the Mayor, City Council, City Manager, and City Departments; and
- State and Federal elected officials and governmental entities.

In May 2013, the communications staff launched a new customer focused website and bi-monthly newsletter titled “What’s On Tap” to distribute in the water bills. The inaugural publication of the newsletter highlighted customer service and communications improvements including the updated website. The new website (www.kcwaterservices.org) is administrated by Water Services communications staff, which allows for real time updates when needed. Currently, the website supplies basic information on the Overflow Control Program and informs citizens of upcoming OCP projects.

iii. INQUIRIES, REQUESTS AND COMPLAINTS

The City tracks all customer service requests. The formal procedure is as follows: (Develop and implement written Standard Operating Procedures (“SOPs”) for customer service requests by December 31, 2010 that satisfy the requirements of this Consent Decree and its Appendices).

The primary point of contact for members of the public with complaints is Kansas City’s 3-1-1 Action Center. Calls to the Action Center are logged into a computer database that documents a description of the problem and location plus caller identification and contact data. An electronic ticket is then generated for routing to the appropriate City department. Complaints related to sanitary sewer or stormwater issues are routed to the Wastewater Line Maintenance staff by both phone and email. Each complaint is scanned by a supervisor and assigned to an investigator to determine the nature of the problem. In 2013, Action Center opened 2,922 cases for sewer related issues.

If the Wastewater Line Maintenance Inspector finds that the problem is with a facility for which Water Services is responsible, a work order is initiated. Once the work has been completed, the customer service ticket is closed out. In situations where Water Services repair activities require the involvement of other City departments, the appropriate departments are called in and the associated costs are charged back to the Line Maintenance Division for work completed on their behalf.

Occasionally, a member of the public will call Water Services directly. If the call is related to an ongoing customer service ticket, the operator accesses the customer service database, looks up the matter, and routes the call to the appropriate Wastewater Line Maintenance Supervisor.

iv. LEGAL AUTHORITY

The legal authority of Water Services rests in the City Charter of Kansas City, Missouri (KCMO), which sets forth each of the City departments and defines their responsibilities. Chapter 60 of the City Municipal Code defines the specific authority and responsibilities of Water Services regarding the sewer system.

Specifically, Chapter 60 of the Municipal Code provides the Department authority to do the following:

- Charge fees to all users of the sewer system, whether or not they are located within the City limits;
- Set rates for different classifications of sewer system users.
- Enter into agreements with communities outside the City limits for wastewater services;
- Measure and/or calculate the volumes of wastewater received from customers outside of the City limits;
- Solicit bids, select contractors, and construct public sanitary and combined sewers; Set standards for the use of private septic tanks or cesspools, including the cleaning of the tanks and the disposal of collected materials;
- Maintain the approved pretreatment program pursuant to 40 C.F.R. Part 403 and the Current NPDES Permits;
- Prohibit the discharge of flammable or other hazardous materials into the sewer system;
- Regulate the release of oil and grease into the sewer system by setting acceptable discharge concentrations and setting surcharge rates for higher concentrations of discharged oil and grease;
- Require the pretreatment of waste from industrial or commercial users in order to protect the POTW;
- Require industrial or commercial users to report on their releases into the sewer system;
- Inspect the facilities of industrial or commercial users to determine the types and quantities of materials being released into the sewer system; and
- Implement the City's approved pretreatment program against any industrial or commercial users who violate the terms of the ordinance or permits issued.

In addition, Section 60-346 of the City's sewer user ordinance gives the City the authority to regulate the connection of private sewers to the public system by

entering into contracts, assessing fees, requiring adherence to the City's Standard Specifications, and requiring bonds. The City has the authority to deny a building permit or sewer connection permit if it is determined the receiving sewers have inadequate capacity. The City has established Standard Specifications for the design and construction of new or upgraded sanitary and combined sewers.

Coordination between the Department of Public Works and Water Services is required to regulate the connection of private sewers to the public system by entering into contracts, assessing fees, requiring adherence to the City's Standard Specifications, and requiring bonds.

The City has also adopted standard specifications for the design and construction of new or upgraded sanitary sewers. In 2013, Water Services commenced the updating of 51 specifications.

An established Enforcement Program provides the City the support needed to interpret, adapt, and enforce Water Services Rules and Regulations as needed, which helps control root causes of SSOs such as I/I, corrosion and blockage due to industrial waste, and FOG. The Enforcement Program also provides the City the resources necessary to effectively manage and implement the requirements set forth in OCP, which will ultimately minimize overflows in the City's service area.

v. ACQUISITION CONSIDERATIONS

As part of the City's Acquisition Considerations Program the design and construction of infrastructure that is acquired into the sewer system complies with the City's technical specifications and construction standards. This program applies to prospective infrastructure from both new construction and privately-owned systems being considered for a transfer of ownership to the City. The City has established a formal, written policy and guidelines for assuming ownership of preexisting infrastructure and ensures that proper recordkeeping and documentation is performed.

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

This program is largely implemented and enforced through standard evaluation and inspection procedures. Located on the City's website, the City's standards (Design Criteria and Construction Specifications) are a source of information for contractors and developers. City inspectors monitor new construction activities for compliance with City standards and specifications. Prior to accepting new infrastructure, City inspectors witness post-construction performance tests to assess the integrity of the infrastructure. The City's in-house inspectors are dedicated full time to monitoring construction activities of infrastructure to be dedicated to the City. This team of inspectors is within the City Planning and Development Department. Water Services continues to work with City Planning and Development to ensure better coordination procedures.

The Land Development Permits staff (located in the City Planning and Development Department) is responsible for issuing private development project permits for construction of public infrastructure, including storm and sanitary sewer improvements. The group, working under City ordinance, issues permits to those individuals and companies who have obtained the necessary insurance, bonds and construction plan approvals. The group also maintains the public infrastructure records. All public infrastructure construction plans, permits and other pertinent records are identified with a unique file number, scanned, and permanently stored on a regular basis.

The Plans Management staff reviews and approves detailed plans required for permits. Upon submittal, the plans are reviewed for complete information and are then forwarded to the appropriate City departments for technical review and approval. Once all required approvals have been received, the permits are issued.

It should be noted that such acquisitions are extremely rare and will most likely require custom procedures. Generally the City follows the following procedure:

- City assigns a project manager to oversee potential acquisition activities.
- The owner of the infrastructure (owner) shall obtain and deliver to the City historical information on the infrastructure including proof of ownership, design guidelines, design calculations, as-built plans, specifications, rights-of-way, and any other information of interest.
- Owner shall obtain/perform a condition assessment (to be witnessed by the City).
- Owner shall test the performance (to be witnessed by the City).
- City may determine whether the infrastructure will meet the desired conveyance need.
- If improvements are required, the City may require the owner to make them before assuming ownership.

vi. INFORMATION MANAGEMENT SYSTEM

The City maintains an Information Management System (IMS) that provides tools for tracking collection systems' performance, costs, and work orders, and measures the effectiveness and efficiency of operation and maintenance (O&M) activities.

The City has adequate and effective computer-based tools to manage and track collection system data, written SOPs to ensure documentation of pertinent collection system data, and staff competent in using IMS tools. The City provides IMS training and continues to move forward with mobile data entry research.

Collectively, IMS tools give staff a well-defined, detailed understanding of how the collection system performs by monitoring and analyzing their performance measures. This helps categorize and prioritize problems throughout the system so that staff can make well-informed decisions regarding allocation of resources

and implement maintenance and rehabilitation activities that can minimize overflows.

Water Services has an extensive IMS to share data among divisions in several locations around the City. For the wastewater treatment and collection system, the primary data systems used include the Hansen for work/service order management and assignment of work crews, geographic information system (GIS) mapping with attribute tables, and WinCan CCTV data management system, plus other software applications to help manage the large quantity of data processed on a daily basis. The following is a list of the relevant systems maintained and used during the 2013 reporting period:

- **GIS – ESRI ArcGIS:** Discussed in more detail below.
- **WinCan CCTV data management system:** Used to organize and store CCTV investigation information. WinCan stores digital video, still images, and text data in a database format. The Division utilizes WinCan V8.24 with PAPC coding.
- **CMMS – Infor-Hansen System:** Water Services is currently using Hansen version 7.7 releases 4.1.1 for the CMMS system.
- **Customer Information System/Utility Billing – Ventyx- Banner System:** Used for Water, Wastewater, and Stormwater utility billing. Banner (Ventyx Customer Suite) is used to manage and bill approximately 170,000 customer accounts.
- **SCADA:** Used only by the Wastewater Treatment Division within the Wastewater Utility for data acquisition and for signaling alarms.
- **Inventory Data Management – Interface Systems- Storeroom:** Used to manage supplies, track the quantity, cost, and physical location of spare equipment, parts, and material.

Water Services' Information Technology (IT) Division manages the PC network and applications specific to Water Services. This also includes the integration of various application programs to facilitate user and work needs at each location. The IMS is continuously being enhanced to support a growing set of applications, improve efficiencies, monitor performance measures, improve access to data via mobile and provide real time reporting.

The systems are evaluated yearly to determine if an upgrade is required or if a replacement is needed. If a new requirement is identified, it is evaluated to determine if an existing system can accommodate the requirement or if a new solution is needed.

Water Services IT continues to work with each division to support the use of IMS in addition to providing training as requested with the core Water Services systems as new functionality becomes available or an enhancement is made. A combination of Water Services IT staff and vendor provided maintenance provide oversight and support for Water Services IMS tools.

1. GIS Software

During the reporting period, Water Services used the ESRI ArcGIS 10 suite of products. Within ArcGIS, ArcInfo is used for maintaining spatial data. In Water Services, there are a moderate number of users of ArcInfo (split between water distribution, sewer collection, and stormwater collection) that create and maintain GIS data. A small number of people are using ArcView to view the GIS and perform some analysis. The remaining people that use the GIS are using ArcReader, a free product used for viewing and plotting GIS data. This product has no editing capabilities and has limited analysis tools but it meets the needs of some GIS end users.

Field crews can access GIS data stored on their laptops, but they cannot access live GIS data. The GIS data that they can access is refreshed on a monthly basis by the GIS group. However, it is up to the field personnel to make sure that they have the latest data on their laptops.

The GIS contains asset type, material, size, install date, pipe elevation, and address information although not all fields are complete. These data fields also exist in Hansen. While the GIS contains a comprehensive list of assets, it does not contain the level of asset data that Hansen contains. This is because Hansen is seen as the source database for assets. It is unnecessary to replicate all data in both locations. This is especially true because integration between the two has been established. If staff wants to spatially analyze data that only exists in Hansen, then the data can be loaded temporarily into the GIS or join tables through open database connectivity.

vii. **GIS MAPPING**

The purpose of Water Services' GIS Mapping Program is to ensure that an accurate and comprehensive inventory of the collection and transmission systems is maintained, that it is assembled and presented in a manner conducive for use, and that it is easily accessible by Water Services personnel that depend on the data for both performance and planning purposes. Water Services GIS data is shown on the City's online mapping system which is accessible to employees on the city-wide network. For security reasons, the data discussed above is not available to the public.

Water Services' mapping software identifies several collection system components and attributes, including:

- Gravity sewer/force mains:
 - Property lines/parcels
 - Pipe attributes
 - Manholes and other access points
 - Diversion structures/flow splitters and outfalls
 - Ownership of infrastructure

- Sewer easements
- Stormwater inlets
- Septic tanks
- Impervious surfaces
- Aerial photography
- Wastewater facilities (including pump stations, flood pump stations, and wastewater treatment plants)
- Green infrastructure
- New construction locations
- Planimetric features (including contours, roads, surface water and land use)

Water Services continually includes comprehensive, accurate data to include in the mapping system. Updates to existing infrastructure are submitted by both internal crews and external consultants when routine field inspections or work in special project areas reveal changes or additions to system mapping data. New sewer extensions plus recent sewer additions installed by contractors or identified by crews are also included in the updates. In 2013, Water Services began to develop a green infrastructure layer for inclusion.

Digital maps generated from ArcGIS are available to field crews both in the office and via hard copies in the field. Field crews and CCTV crews record changes and inaccuracies by submitting hard copy revisions to Water Services' GIS staff. This data is transferred into the GIS as it is submitted, and monthly files are maintained by a GIS technician.

There are several employees throughout Water Services that utilize system mapping tools and provide updates to inventory data. In addition to internal staff, Water Services obtains planimetric data and aerial photography from partnering GIS organizations. All applicable staff members receive training from IT personnel on ArcGIS and ArcPad. The method of training for these applications ranges from formal classroom instruction to informal reference sheets. Personnel who utilize system mapping tools also attend relevant workshops and other GIS events.

The GIS Mapping Program is evaluated on a continuous basis through monthly team meetings and frequent communication between GIS administrators and users throughout Water Services.

viii. SANITARY SEWER OVERFLOW REPORTING AND NOTIFICATION

The City maintains an SSO reporting and notification program that ensures that discharges from the City's sewer system are properly documented, stored in a data management system, and properly reported to appropriate regulatory authorities and as appropriate the affected public which includes persons with the potential to come in contact with the sewage. This SSO reporting program includes listing of all Building/Private Property Backups discovered by or

reported to the City that have occurred. This tabular listing also includes the date of the Building/Private Backup incident, the location by (specific address), source of notification (property owner, field crew, etc.) the general cause(s) of the Building/Private Backup, and actions taken or suggested by the City to halt, mitigate, and prevent future incidents. The City shall follow its Current NPDES Permits for verbal and written notification to the NPDES permitting authority that a SSO has occurred.

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

The primary point of contact for members of the public with complaints is Kansas City's 3-1-1 Action Center. The 3-1-1 Center is the principal method in which SSO overflows are reported to Water Services. If a problem with a Water Services facility is identified upon receipt and investigation of a 3-1-1 service call, a work order is initiated. There were a total of 2,050 calls related to SSO's routed to the Line Maintenance Division during 2013. The breakdown of SSO call types includes:

- Water in basement dry weather (W) - 1,606
- Water in basement wet weather (WR) - 351
- Manhole overflow wet weather (MOR) - 15
- Manhole overflow dry weather (MO) - 78

In the event of a building/private property backup that resulted in the owner/tenant of the property calling 3-1-1 (between 7 a.m. and 7 p.m. weekdays) or calling Water Services Central Dispatch (afterhours, weekends or holidays), the City's Building and Private Property Response Plan comes into effect. At the onset of the call, the consumer is asked a series of questions to determine the appropriate cleaning response. If the call-taker and consumer cannot determine what the problem is, a Wastewater Maintenance Crew is dispatched to verify the condition of the appropriate section of the City's sewer main and to clean that section to ensure it is functioning properly. If, as a result of the call, it is agreed upon that City involvement is necessary, a Hansen service request will be initiated. Either a Code 2 (Urgent) or a Code 3 (Emergency) prioritization will be given. In the case of a Code 2 event, a maintenance crew will respond as soon it is available. In the event of a Code 3 event, a maintenance crew will be dispatched on an emergency basis and will respond as soon as possible. There is a certain amount of interpretation associated with the decision to label an event a Code 2 or a Code 3. As a general rule of thumb, if there is water coming into the house from an outside source, the event would be categorized as a Code 3. If water is slowly draining, then it would most likely

be a Code 2. If water comes up in the basement after using the facilities in the residence, it would most likely be a Code 2 event. If it is determined that the backup occurred due to issues on private property, a “Property Owners Responsibility letter” is given to the property owner with instructions and next steps to resolve the issue.

“Dry weather” backup complaints are documented as a “W” in the problem field on the Hansen caller log. Wastewater Maintenance Crews will respond based on the Code 2 or Code 3 priority. “Wet weather” backup complaints will be documented as a “WR” in the problem field on the Hansen caller log. Wastewater Maintenance Crews will respond to all wet weather backup complaints as a Code 3 priority. Crews will respond to inspect the city manholes for surcharge conditions. If a stoppage is found within the system, the crews will open it. If the sewer system is surcharging, a door tag will be given to the property owner to inform them of the surcharge and recommend that the owner contact a private plumbing company to install a backflow preventer at the property owner’s expense.

Historically, SSO responses have been designed to occur quickly, control the release of wastewater, and perform appropriate cleanup tasks; crews are dispatched 24 hours a day to investigate complaints. The SSO Reporting and Notification Program is evaluated continually. This review process helps Water Services determine how the program goals are being accomplished and whether the program is being implemented in the most efficient manner.

ix. PERMIT AUTHORITY NOTIFICATION

The Line Maintenance Division notifies the MDNR when a DWO occurs within 24 hours of discovery. Follow-up written reports are made within five days of the original notification. In all occurrences, the area around the overflow is cleaned and inspected for any debris or contaminants. In the case of DWOs caused by vandalism, the standard manhole covers are replaced with bolt-down covers to deter future vandalism.

The Wastewater Treatment Division notifies MDNR when dry weather overflows occur at either pump stations or WWTPs within 24 hours of discovery. A follow-up written report is submitted to the MDNR within five days of the occurrence. There were 63 dry weather overflows reported to MDNR in 2013 compared with 59 in 2012. See *Attachment A* for copies of all dry weather overflow reports submitted in 2013.

b. Collection Systems Operation

i. BUDGETING

The budgeting process provides adequate fiscal resources to the operating divisions to carry out their responsibilities. The Department’s division managers identify recommended staffing and funding levels, which are then adjusted based on City priorities.

Proper funding, budgeting, and planning are necessary for the Line Maintenance and Wastewater Treatment divisions to provide sufficient capital, labor, and

equipment to complete CMOM activities as needed to ensure the minimization of overflows.

Budgets are created by division managers on an annual basis. The budget process covers project costs and revenue sources for five years. The managers submit their budget requests to accounting. Accounting reviews the requests, compiles the budget and submits it to the Director of Water Services for review and approval. The Director then presents it to the City Manager who, in turn, presents it to the Mayor and City Council for review and approval. Ultimately, the City Council approves the budget, which takes effect at the beginning of each fiscal year.

ii. ENGINEERING

The purpose of engineering within Water Services is multi-faceted, as it encompasses several functional business units:

- Utility Planning
- Energy Management
- Stormwater Management
- Systems Engineering – for water distribution and wastewater collection systems.
- Safety Management
- Facilities Plant Engineering – for Water and Wastewater Supply, treatment and pumping facilities.
- OCP
- Waterways

The business units are the coordinating entities behind many collection system activities such as new construction, construction inspections, rehabilitation and replacement, and capacity assessment and assurance. The engineering business units confirm that new facilities are constructed according to standard construction specifications and do not contribute to future I/I problems. The engineering business unit also provides inspection and oversight on rehabilitative work to ensure proper execution.

The various engineering business units have unique areas of collection system responsibility as follows:

- Planning is responsible for GIS mapping.
- Energy Management is responsible for negotiating utility contracts for pump station and treatment plant operations.
- Stormwater Management is responsible for design of stormwater projects.
- Systems Engineering is responsible for design of gravity sewer system improvements and general collection system planning.

- Facilities Plant Engineering is responsible for the design of all above ground structures including pump stations and wastewater treatment plants.
- OCP is responsible for development and implementation of the City's Overflow Control Program.
- Waterways is responsible for stormwater management projects that are funded jointly with other government agencies such as the Corps of Engineers.

Water Services Engineering is responsible for design review, approval and inspection of new sanitary sewers and pump stations installed by private developers. This work is also closely inspected to ensure it meets the City's construction standards and technical specifications. The City takes ownership of these assets once construction is complete.

All engineering activities are performed under the supervision and direction of registered professional engineers. Staff members in the Engineering Department receive continuing education and training through industry seminars and workshops, as well as classes required to maintain PE licensure.

In addition, the City commonly uses engineering consulting firms and outside contractors to perform planning, design, and construction activities.

iii. WATER QUALITY MONITORING

Water Services has developed an integrated monitoring program intended to meet all water quality related objectives in a cost-effective manner as part of the Overflow Control Plan post-construction monitoring requirements set forth in Appendix D.

The Water Quality Monitoring Plan is divided into five sections:

- Objectives and Rationale
- Water Quality Monitoring Plan
- Field Methods and Procedures
- Quality Control
- Resource Assessment

Sampling and analysis efforts for the Water Quality Monitoring Program are conducted in accordance with Water Services' OCP Quality Assurance Project Plan, Water Services Laboratory's Quality Assurance Manual, and Health and Safety Plan.

More information on the Water Quality Monitoring Program can be found in the discussion related to Consent Decree Appendix D: Post Construction Monitoring Program Performance Criteria in this report.

iv. PRETREATMENT PROGRAM

The City continues to implement its approved pretreatment program pursuant to 40 C.F.R. Part 403 and the current NPDES permits. Information on the

pretreatment program may be found in NMC 3. Submittals to MDNR associated with the pretreatment program can be found in *Attachment B*.

v. PUMP STATION OPERATIONS

The purpose of the Pump Station Operations Program is to ensure reliable operations of Water Services' 46 wastewater pump stations and 15 flood pump stations. The department ensures reliable operations by:

- Conducting routine inspections
- Troubleshooting when situations arise
- Performing preventative maintenance
- Retaining appropriate records of pump station performance
- Remotely monitoring of pump station operations through the use of remote dialers and a SCADA system

This program is executed in conjunction with the Pump Station Maintenance Program (see below), as routine inspections typically generate work orders for the maintenance crew, and pump station operators are responsible for performing light maintenance work as needed.

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

Wastewater Treatment Division operators visit each wastewater pump station (WWPS), flood pump station, and headworks pump station at WWTP sites on a regular basis. The visits occur at varying frequencies ranging from daily to three times per week for larger stations, to once per week for small stations. Visit frequency is based on a number of factors including manpower availability, facility size, complexity, criticality, reliability, and past maintenance history. Maintenance staff performs tasks needed to keep WWPS equipment in serviceable condition, perform preventative and emergency maintenance, plus other tasks needed to maintain the overall wastewater treatment system.

The pump stations include remote monitoring using telephone dialers and SCADA. In 2013, Water Services continued to implement a SCADA system program for the wastewater system. Pump station inspections are recorded in log book and inspection forms and the data is archived by Water Services. There is pump station inspection data on record for all stations.

At some of the larger stations, more extensive data is collected and filled out on worksheets, which are kept on clipboards at the site so that operators can easily scan the data for trends during their inspections.

Water Services has assigned operations crews and maintenance crews to pump station O&M activities. Seven operators are assigned to perform pump station rounds and station monitoring. Maintenance has two supervisors and 12 associates assigned full time to mechanical investigation and repair activities at

the stations. Maintenance also has crews available for electrical, instrument and controls, and HVAC repairs as needed.

The majority of training for pump station operators occurs through on-the-job experience. However, Water Services provides considerable training through an in-house program in which staff is eligible to obtain continuing education credits required for certification.

vi. PUMP STATION MAINTENANCE

The purpose of the Pump Station Maintenance Program is to perform the necessary predictive, preventative, and corrective maintenance required to sustain the reliability of wastewater and flood pump stations and ensure that all pump stations throughout the service area are operating efficiently. This program is executed in conjunction with the Pump Station Operations Program to complete work orders generated from routine inspections, trouble calls, and preventative maintenance schedules.

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

Crews perform regular maintenance at each of the pump stations. All pump station maintenance is performed based on planned weekly maintenance schedules or when an emergency occurs. Typical tasks include verifying normal operation of pumps and equipment, checking for sewage leaks, servicing equipment for proper overall operation, and other corrective and preventative maintenance. Each location has a log book and work orders are recorded in the Hansen system.

Maintenance supervisors produce a weekly maintenance schedule and select specific projects based on crew availability, parts availability and the urgency of a particular repair. Plans are updated during a weekly meeting between the pump station maintenance planners, operators, and maintenance supervisors to facilitate coordination. As a result, 90 percent of all work performed consists of scheduled maintenance. This process has been used since 2010. Control of backlog has also improved since this process was initiated.

Hansen administration, procurement, and coordination consume the majority of the plant superintendent's time. Daily meetings with maintenance supervisors are conducted to communicate and coordinate the activities that need to be performed. Daily Maintenance Activity reports are emailed to plant personnel as warranted.

This program is evaluated consistently through daily team meetings and regular tracking of work orders. Tracking work orders in Hansen enables staff to identify patterns that may require further evaluation. All flood pump stations are inspected by the department quarterly and annual audits are conducted by the Army Corps of Engineers.

vii. PUMP STATION EMERGENCIES

Water Services has emergency response procedures that crews follow for pump station emergencies. The basic operations status is monitored via the SCADA alarm reporting system and telephone dial-out system, each used as appropriate to the pump station location and equipment type. The SCADA system is monitored 24 hours a day, seven days a week by a certified plant operator (CPO) at the Blue River WWTP. The alarms received by the CPO indicate the type of equipment problem and permit the CPO to tailor responses. The CPO has guidelines that specify whom to call and when to call them based on the time of day, weather conditions, and nature of the issue. Water Services also receives notification of trouble in the collection system from the public. External constituencies can hear an audible alarm or see a flashing red light at one of the pump stations and call Water Services' 24-hour response line to report trouble.

Emergency response is provided by Water Services staff. The CPO has the authority to call in additional resources as needed, including either staff with electrical and mechanical expertise or a contract hauler. This system ensures that quick response is available 24 hours a day and improves employee accountability.

Additional assistance for pump station trouble calls may be summoned by the CPO. Skilled and/or general labor is available, as well as equipment operators and their respective equipment. The responder will determine labor and equipment needs during the initial assessment of the issue. Equipment available for pump station emergencies includes:

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

Work orders associated with pump station emergencies are completed and documented in Hansen. The success and effectiveness of Water Services' efforts are measured through a variety of performance indicators, including response time, effectiveness of remedies, and the number of well-trained personnel available to monitor and respond to pump station emergencies. The formal Emergency Response Plan is included as part of the City's Sewer Overflow Response Plan (SORP) dated 2010.

viii. FORCE MAINS

In October 2011, the City issued SOPs for a Force Main Maintenance Program. The purpose of the document was to establish a uniform process for the implementation of a force main and air relief valve (ARV) maintenance program. The force main and ARV maintenance program consists of five elements: GIS, condition assessment, corrosion investigation, preventative maintenance, and documenting of maintenance activities.

ix. SMOKE TESTING

The purpose of the Smoke Testing Program is to identify specific public and private sources of stormwater I/I into the SSS and CSS that can be eliminated or reduced through rehabilitation or repair. Smoke testing along with CCTV inspection, manhole inspections, and flow monitoring comprise the Sanitary Sewer Evaluation Survey (SSES) program elements. Smoke testing helps to identify significant sources of stormwater I/I, including private service laterals and illegal connections such as downspouts and area drains. Smoke testing can also be used to determine the location of sewer main defects likely contributing I/I to the system.

The City has developed a standard protocol for smoke testing. A hard copy of this protocol is kept at Water Services and electronic copies are also available. This document accompanies all smoke testing based RFPs. Smoke testing is performed by outside firms as dictated by specific projects. Data is analyzed and used for system improvements as outlined in the Collection System Maintenance section below.

In 2013, smoke testing was performed as part of the Middle Blue River Basin Neighborhood Sewer Project as well as the Blue River South Basin I/I Reduction Project. Line segments within these two project areas totaling approximately 142 miles of sewer were smoke tested to detect I/I sources in the public and private sectors.

Each positively identified source was photographed and located using a GPS device. A defect feature class was created and is included in the geodatabase.

x. FLOW AND RAINFALL MONITORING

Flow and rainfall monitoring is being performed in conjunction with Appendix D of the Consent Decree. Additional flow and rainfall monitoring will be performed in individual sub-basins to aid in the design of proposed improvements.

Water Services has developed a standard protocol for flow and rainfall monitoring and data analysis. Once the flow and rainfall data is received, it is stored on a server at Water Services and is reviewed by the Overflow Control Program team. Analysis of the data for design of system improvements is conducted by the design professional. Additional details and project-specific information on the flow monitoring program is described in more detail in Appendix D updates as part of this report.

xi. CCTV INSPECTION

The purpose of the City's CCTV Inspection Program is to visually assess the condition inside of the collection system. The program relies on use of National Association of Sewer Service Companies (NASSCO) standardized ratings to characterize conditions. Currently, CCTV inspections are conducted to investigate a known trouble area and as a follow-up to line cleaning. Water Services has developed a standard protocol for CCTV inspections.

In 2013, the City televised approximately 272.5 miles of sewer lines, thereby meeting the Consent Decree requirements of at least 70 miles annually. This mileage includes the mileage in the combined sewer system previously discussed in NMC 1. CCTV inspection information is tracked in Hansen with information available in WinCan.

xii. REMOTE SEWER INSPECTION PROGRAM

The purpose of the Remote Sewer Inspection Program is to inspect remote portions of the sanitary sewer system in an economical and efficient manner to identify anomalies warranting further inspection.

Remote sewer inspections rely on use of an aircraft and infrared technology to detect temperature anomalies along remotely located portions of the collection system. The temperature anomalies indicate flow may be either exfiltrating or overflowing from the collection system and that further investigation is necessary. The City relies on contract services to implement this program.

After the flyover is performed, the infrared footage is analyzed and adjusted to remove any known anomalies such as lights, animals or other obvious heat sources. For those heat sources that cannot be characterized and that may be resulting from sewer system leaks, Water Services staff visually inspects those areas. If a leak is discovered, a work order is issued for repair.

A flyover was performed in January 2013. As a result, 86 anomalies were discovered. Using the supplied GPS coordinates, the Line Maintenance Division visually inspected the anomalies. Three anomalies were sewer related. The remaining anomalies were the results of small ponds, dried up creeks with small pools of water, natural groundwater seepage, storm drainage pipes, excessive dog waste, animal carcasses, and other similar items.

c. Collection Systems Maintenance

i. MANHOLE REPAIRS

The purpose of the Manhole Repair Program is to ensure the structural integrity of manholes in the system, to reduce infiltration into manholes, to control odor problems at manholes, to increase accessibility to buried manholes, and to prevent public harm due to structural failures.

Manhole repairs often reduce infiltration into manholes. This helps ensure capacity exists for conveyance of sanitary sewer flows. The Manhole Repair Program also addresses the structural integrity of manholes. This reduces the likelihood a manhole would structurally fail causing blockage in the system that may trigger either SSOs or CSOs. The Manhole Repair Program also helps to

minimize overflows by increasing the accessibility of buried manholes. Greater accessibility for inspection and maintenance activities will minimize overflows with maintenance related causes.

Activities associated with this program include the repair or replacement of manhole components in the upper three feet of the structure by the Line Maintenance Division manhole repair crew or manhole replacement by a heavy repair crew. The division's manhole repair crew implements various types of repairs, including:

- Lid and ring replacement
- Lid grade adjustment
- Brick replacement

The manhole repair crew does not repair manholes suffering severe structural failure. These manholes are typically removed and replaced. This work is conducted by a heavy repair crew in the Line Maintenance Division. In 2013, 271 manholes were repaired or replaced.

ii. MAINLINE SEWER REPAIRS

Actual physical repairs are made to the gravity sewer lines by the Line Maintenance Division. The repairs are performed to make upgrades and improvements to mainline sewers as needed to ensure adequate capacity, to keep flow in pipes, to reduce and eliminate I/I, and to maintain the design conveyance of the pipes in the system.

Overflows are minimized by reducing the levels of I/I entering the system and by fixing deteriorating pipes which keeps the flow in the collection system. A reduction in I/I levels leaves more system capacity available for conveyance of sanitary sewer flow, eliminating one significant cause of overflows. Maintaining the pipe also removes restrictions that could potentially cause blockages and overflows and further helps ensure capacity.

The type of repair method used is dependent upon several factors including;

- Pipe size
- Pipe type
- Pipe location
- Flow
- Surface conditions
- Severity of I/I

The City utilizes several repair technologies, including:

- Open cut
- Cured in place lining
- Horizontal directional drilling

- Boring and jacking
- Tunneling
- Pipe bursting
- Slip lining
- Grouting of joints
- Point repairs

Historically, work orders have been prioritized based on available assessment information and sound judgment. Work orders associated with mainline sewer repairs are tracked and stored in Hansen. Repair work performed by in-house construction crews is entered into Hansen by Collection Systems personnel, and repair work performed by outside contractors is entered into Hansen by Engineering personnel.

Water Services employs repair crews. However, there is also a significant amount of mainline sewer repair work completed by outside contractors. Water Services also relies on outside contractors for construction work that requires either special equipment or expertise to perform. Work conducted by outside contractors is monitored by in-house inspectors. Specifications for construction work are included in formal contracts used to manage outside firms.

In 2013, more than 330 sewer line repairs were performed as a part of OCP projects as well as Water Services' annual sewer repair contract.

iii. **SEWER CLEANING**

The two purposes of the Sewer Cleaning Program are to perform preventative maintenance cleaning on the gravity sewer system and to clean trouble or emergency areas. The preventative maintenance cleaning is intended to ensure the system design capacity is available and to prevent non-structural blockages caused by either root intrusion or buildup of grease or debris. A large percentage of annual sewer cleaning is on lines that are part of a routine preventative maintenance schedule. Emergency cleaning is conducted in response to emergency calls. The remaining cleaning activities are unscheduled trouble or emergency.

City crews also perform corrective cleaning in response to stoppages, trouble calls and city requests. If repeated trouble calls are received for a line segment, then the line segment is placed on a frequent interval preventative cleaning cycle. CCTV inspection typically follows all sewer cleanings. All sewer cleaning originates with a Hansen generated work order. Completed work is also tracked in Hansen.

The City performs both hydraulic and mechanical cleaning. Mechanical cleaning is performed using either a rod machine or a bucket machine. Hydraulic cleaning is performed using jetters. The following types of equipment are used by the Sewer Cleaning Program:

- Jet-Vac trucks

- Jet-CCTV trucks
- Jetters
- Easement reeling trucks
- Bucket machine sets
- Dump trucks

All data related to the Sewer Cleaning Program is stored in Hansen. Cleaning records include information such as the date, time and location of the cleaning, the method of cleaning used, the names of staff members who performed the cleaning, and any further actions that were initiated from the cleaning.

In 2013, the City cleaned approximately 526.5 miles of sewer lines, thereby meeting the Consent Decree requirements of at least 283 miles annually. This mileage includes the mileage in the CSS area previously discussed in NMC 1.

iv. RESPONSE PLAN

The City’s Building and Private Property Backup Response Plan was developed to provide procedures for response and preventative maintenance. The purpose of the plan is to restore the public sewer line to a functioning condition and perform any cleanup that may be required while working within the applicable laws of the City.

If, while conducting preventative cleaning activities, a basement backup occurs that is found to be the responsibility of Water Services, the property owner will be directed to contact the City’s Claims Department. The Claims Department will hire a private contractor to perform the clean-up work. If there is a claim or lawsuit, then the law department works with the property owner to install a backflow device (if they choose to have the device installed). This installation would be located on private property and Water Services is typically not informed if the homeowner elected to have the device installed or not.

d. Collection System Capacity

i. CAPACITY ASSESSMENT AND ASSURANCE

The City’s current procedure for capacity assurance is generally as follows:

- New development additions are reviewed by City Planning – Land Development Division. The developer’s engineering consultant is responsible for certifying that the proposed development will not overload the receiving sanitary sewer system. This includes 1) verifying the receiving trunk sewer was sized adequately according to APWA standards and verifying any receiving pump station has sufficient capacity to handle the additional flows.
- For single taps:
 - City Planning- Land Development Division grants or authorizes the connection;

- Water Services issues connection inspection permits for all connections;
 - Water Services performs the inspection of the physical connection;
 - Public Works (and/or Parks and Recreation Department for roads under its jurisdiction) issues excavation permits for excavation within the public right-of-way or easement;
 - Public Works issues any required traffic closure permits; and
 - Building Officials issue a plumbing permit for the service line on private property,
- City Planning – Land Development Division has the authority to refuse authorizing the connection if there is a history of capacity issues or if the City has issued a moratorium on new connections in a specific area.
 - City Planning is responsible for reviewing plans and inspecting connections to the existing sewer system for a major infrastructure permit per Chapter 64 of the Code of Ordinance. Water Services supports City Planning – Land Development when requested, generally on larger proposed developments, or unique drainage or sanitary sewer service areas.

XIII. POST CONSTRUCTION MONITORING PROGRAM PERFORMANCE CRITERIA – APPENDIX D

a. Flow Monitoring Program

i. SHORT-TERM FLOW MONITORING

The Consent Decree states, “Short-term flow monitoring of approximately one to two years’ duration before and after project completion and activation will be performed to measure and evaluate the performance of green infrastructure improvements, programmatic elements and sewer system improvements for the reduction of wet weather flow volumes and peak flow rates.”

Flow monitoring activities continued for two outfalls, BR059 and BR069, in the Middle Blue River basin as part of an on-going Temporary Flow Monitoring contract. The project consists of flow and rain monitoring to obtain detailed flow data within the basin. A total of 12 temporary flow meters and four rain gauges were initially installed in April 2012 in an attempt to collect Spring and Fall wet weather data, however, drought conditions throughout 2012 did not allow adequate data gathering. These meters were removed in November 2012 and were reinstalled in March 2013 to continue data collection.

Additional flow monitoring of the green infrastructure improvements in the pilot project and control areas were added to the Temporary Flow Monitoring contract in 2013. This additional monitoring included four flow meters: one in the pilot project area and three in the control area. These flow meters were previously monitored by the University of Missouri- Kansas City (UMKC) until the end of its U.S. EPA contract at the end of 2012. This data was provided to consultants for their use in designing distributed storage improvements in the areas upstream of outfalls 059 and 069.

Flow monitoring was also conducted in the Blue River South basin, beginning on April 10, 2013. Pre-construction flow monitoring was performed for 90 days to provide supplemental information for the identification and quantification of I/I sources for the Blue River South Basin, Project Areas 1 and 2. Five temporary flow meters were installed for Project Area 1, 9 temporary flow meters in Project Area 2, and 4 rain gauges were installed throughout both project areas.

Five flow meters were installed in September 2013, in the Round Grove Creek basin as part of post-construction efforts to estimate the level of I/I reduction that was achieved. The current post-construction flow data will be compared with pre-construction flow data to estimate if the targeted I/I reduction is achieved. Additional flow monitoring will be conducted in Round Grove in the Spring of 2014 to further estimate post -construction flow rates and quantify the amount of I/I removal.

ii. LONG-TERM FLOW MONITORING

The Consent Decree states that “long-term monitoring of the performance of major constructed facilities will be initiated upon the completion of construction and activation of such facilities.” Table 2 in Appendix D of the Consent Decree

presents the initially planned suite of flow monitoring locations for select CSO outfalls and combined sewer collection system locations, along with their required installation schedule.

A contract for long-term flow monitoring was executed in April 2013. The scope of services includes the installation and analysis of multiple metering sites in the Northeast Industrial District (NEID) basin, including outfalls BR071, BR072, BR073, BR074, BR075, and BR077. The meters will be maintained for a period of two to five years, as is outlined in Appendix D of the Consent Decree. Flow data is submitted on a quarterly basis to Water Services; the last report dated November 2013 contained data from the third quarter.

b. Water Quality Testing

Water quality monitoring objectives and activities are outlined in Water Services' Integrated Water Quality Monitoring Program (WQMP) dated December 28, 2010. This plan was developed to address the requirements of Section II, Water Quality Monitoring Plan, of the Post-Construction Monitoring Program Performance Criteria included as Appendix D of the Consent Decree.

The 2013 reporting period is the third year of monitoring conducted under the WQMP. Since April 2011, Water Services has worked with its contractor to conduct large river water quality monitoring. A draft summary report was developed by Water Services in 2013 after three years of sampling and monitoring. The Water Services OCP team is currently reviewing the report.

Sampling and field measurements were conducted by Water Services staff at 20 locations on the smaller waters, including Brush Creek, Town Fork Creek, Blue River, Penn Valley Lake, Mill Creek, and Indian Creek. A contractor conducted sampling and field measurements at three locations on each the Kansas River and Missouri River. Laboratory analyses were conducted by the Water Services laboratory. Sampling and analyses were conducted according to the methods in the WQMP and the associated Quality Assurance Project Plan (QAPP).

The details of the monitoring program, including sampling locations, frequency of monitoring, and water quality parameters are presented in the WQMP. The WQMP specifies monitoring to be conducted every other week. Field measurements include temperature, pH, dissolved oxygen, and aesthetic observations. Samples are collected and sent to the Water Services laboratory for analysis of E. coli, TSS, and conductivity. Monitoring was conducted during the 2013 recreation season, which extends from April 1 through October 31.

The implementation of the WQMP was successful in obtaining 103 percent of the planned samples for both the small stream sites and the large river sites. Also, the collection frequencies for field duplicate samples and field rinse blank (FRB) samples (both at 11 percent of samples) exceeded the planned numbers (10 percent for duplicates; 5 percent for FRBs). These numbers all exceeded the requirements specified in the sampling and quality assurance plans. Monitoring was also conducted outside the recreation season as weather conditions permitted.

A brief summary of the 2013 water quality monitoring results is presented for E. coli, dissolved oxygen, and TSS in *Table 5*.

Table 5. Summary of 2013 OCP Water Quality Monitoring

Site	E. Coli (Count/100 ml)				Dissolved Oxygen (mg/L)		TSS (mg/L)	
	No. of samples	Geometric mean	No. of Samples-recreational season	Geometric mean-recreational season	No. of samples	Average	No. of Samples	Average
BC-01	26	295	18	353	26	7.8	26	14
BC-02	23	407	18	529	23	7.4	23	6
BC-03	23	873	18	1,045	23	11.6	23	7
BC-04	20	770	18	706	20	7.3	20	7
BC-05	19	501	17	528	19	9.0	19	10
BC-06	22	396	18	444	22	10.0	21	11
BC-07	22	281	18	398	22	8.6	22	18
BR-01	23	150	16	309	23	9.6	23	38
BR-02	24	232	18	360	24	8.8	24	41
BR-03	24	216	18	339	24	8.7	24	44
BR-04	24	257	18	378	24	8.8	24	57
BR-05	25	349	18	607	25	8.4	25	25
BR-06	23	8,299	17	8,948	23	8.5	23	33
BR-07	24	7,803	17	6,439	23	8.0	24	27
BR-08	21	6,078	15	5,274	23	7.4	23	30
BR-09	24	147	17	163	24	9.9	24	14
IC-01	23	304	17	413	23	9.1	23	52
PV-01	23	175	17	417	23	9.3	23	21
TF-01	23	35,353	18	27,753	23	8.4	23	24
MC-01	23	201	17	198	23	7.7	23	13

		E. Coli (Count/100 ml)			Dissolved Oxygen (mg/L)		TSS (mg/L)		
Site	No. of samples	Geometric mean	No. of Samples- recreational season	Geometric mean- recreational season	No. of samples	Average	No. of Samples	Average	
Large River Sites	MR-01-R	16	143	16	143	16	8.4	16	118
	MR-01-C	16	133	16	133	16	8.2	16	128
	MR-01-L	16	139	16	139	16	8.2	16	118
	MR-02-R	32	283	32	283	30	8.0	32	185
	MR-02-C	16	544	16	544	16	7.8	16	205
	MR-02-L	16	2,277	16	2,277	16	7.6	16	117
	KR-01-R	16	104	16	104	16	8.5	16	159
	KR-01-C	16	120	16	120	16	8.6	16	232
	KR-01-L	16	140	16	140	16	8.7	16	231

Note: Three locations were monitored at each of the large river sites (MC, KR), one each in the right channel (R), the center channel (C), and left channel (L).

XIV. SUPPLEMENTAL ENVIRONMENTAL PROJECT PLAN – APPENDIX E

As described in Appendix E of the Consent Decree, the Supplemental Environmental Project (SEP) Plan includes the implementation of a Sewer Connection and Septic Tank Closure Program. The Consent Decree addresses the federal SEP Program. The program includes the installation of a sewer service line (i.e. lateral) to the homes of participating property owners, closure of their septic tanks from operation by capping, filling, or other means as determined and approved by the City and consistent with City ordinances. This program provides grant funding assistance on a sliding scale to households at or below 100 percent of the area median income. The grant amounts range from \$2,000 to \$4,000 and are based on family income and size. SEP funds are not to be used for City administrative expenses.

Water Services provides sanitary sewer service to nearly 135,000 homes, while approximately 6,700 homes are on a septic system. Some of the septic systems, particularly in the older developed areas, are near or exceeding their intended period of operation, which can be a cause for environmental and public health concerns.

The City has made an effort to provide sanitary sewers in non-sewered areas by implementing sewer assessment districts. The sewer assessment district approach has extended public sewers to many septic system users, but not all properties within the districts have connected to the system. Property owners who have functioning septic systems or who cannot afford the connection costs typically do not connect their homes to the public system.

The SEP targets septic system users that have access to public sewer systems nearby, but have not connected to it. Water Services sent mailings to households in infill sewer assessment districts that were recently completed or were under construction. Applications were accepted city-wide from property owners of single-family homes adjacent to existing public sewers. Once accepted to the program, owners were required to get bids from three licensed plumbers. Upon project completion, a voucher was required that ensured that all permits, lien waivers and other program requirements were met prior to Water Services' final payment to the plumber.

The City is required to spend at least \$1.6 million implementing the federal SEP. The City initially believed that 533 properties would be eligible for the program. After a re-evaluation, only 277 properties were eligible. Letters and applications were sent to those properties that are considered eligible for assistance. Approximately 30% of eligible properties have inquired about the program; however, only 21% of the eligible properties have connected to the system or are in the process of doing so. Because of low participation in the Federal SEP, Water Services began discussions with EPA Region VII officials in 2013 about the potential for expanding the program in 2014 to include other potential water quality improvement projects as an alternative SEP, all in accordance with the terms of the Consent Decree.

XV. SCHEDULE FOR IMPLEMENTATION OF DISINFECTION TECHNOLOGY AT WWTPS— APPENDIX F

In 2013, disinfection improvements were completed at the City's Blue River, Fishing River and Westside Wastewater Treatment Plants.

a. Blue River

Disinfection improvements at the Blue River Wastewater Treatment plant received the Achievement of Full Operation Certificate on November 15, 2013 ahead of the December 31, 2013 Consent Decree deadline. The disinfection system has been temporarily put on hold and will be restarted in March 2014 in anticipation of the beginning of disinfection season. Additional work not related to disinfection and the Consent Decree will continue through the Spring of 2014.

b. Fishing River

Disinfection improvements at the Fishing River Wastewater Treatment plant received the Achievement of Full Operation Certificate on October 29, 2013 ahead of the December 31, 2013 Consent Decree deadline. The improvements involved expansion of the facility to handle 2 million gallons per day (MGD) and installation of an ultraviolet (UV) disinfection system. As of December 31, 2013, the contractor was working on finalizing punch list items and landscaping expected to be complete in the Spring of 2014. On May 20, 2013, MDNR issued a new operating permit.

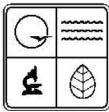
c. Westside

Disinfection improvements at the Westside Wastewater Treatment plant received the Achievement of Full Operation Certificate on March 11, 2013 ahead of the December 31, 2013 Consent Decree deadline. The improvements included construction of a new facility that houses sodium hypochlorite tanks, pump, miscellaneous equipment, and auxiliary electrical and mechanical systems and associated yard piping. The construction of a new chlorine contact chamber was also included in the project. The contract also includes electrical and control system improvements and integration of new control system hardware and software into the existing SCADA system.

All six of the City's water treatment plants are now equipped with a plant effluent disinfection system.

ATTACHMENT A: DISCHARGE REPORTS

The following is an example of a Discharge Report as submitted by the Kansas City Water Services Department to the Missouri Department of Natural Resources (MDNR). In order to conserve resources, electronic copies of all reports submitted to the MDNR in 2013 are included on the enclosed disc.



FIVE – DAY DRY WEATHER SELF-REPORTING FOR SANITARY SEWER OVERFLOWS OR WASTEWATER TREATMENT FACILITY BYPASSES

Notice: Under the Missouri Secretary of State's Code of State Regulations 10 CSR 20-7.015(9)(E), Effluent Regulations, Standard Conditions, Bypassing, and in accordance with reporting requirements listed in your Missouri State Operating Permit, or MSOP, all permittees shall provide the following notice(s) if an unscheduled Sanitary Sewer Overflow, or SSO, or Wastewater Treatment Facility Bypass occurs:

NOTIFICATION INFORMATION

PERMITTEE (MUNICIPALITY OR FACILITY NAME) WASTEWATER MAINTENANCE		PERMIT NUMBER MO-0024911	DATE 1/7/2013	TIME 9:52 AM
COUNTY Jackson	AUTHORIZED REPRESENTATIVE REPORTING J.PIERCE	CELL AND BUSINESS TELEPHONE NUMBER WITH AREA CODE		DNR OFFICE AND PERSON CONTACTED MDNR DATABASE

SANITARY SEWER OVERFLOW OR WASTEWATER TREATMENT FACILITY BYPASS DETAILS

Sanitary Sewer Overflow or Wastewater Treatment Facility Bypass
DEFINITION OF BOTH

Date discovered 1/4/2013	Time (to nearest 15 minutes) 11:30 AM	End Date 1/4/2013	Time (to nearest 15 minutes) 11:53 AM
Estimated volume of wastewater discharged (gallons) 115 Total Gallons Discharged			

Location of the Sanitary Sewer Overflow or Wastewater Treatment Facility Bypass (complete a separate form for each discharge location and complete all that apply)

- a. Street Location: 6300 YATES DRIVE
- b. Manhole #: S106-032
- c. Directions to the site from nearest highway:
- d. Location defined by GPS: 94.53091000,39.01098000
- e. Physical Address:
- f. Location determined by Map Search Tool:

Circumstances Causing Sanitary Sewer Overflow or Wastewater Treatment Facility Bypass (check all that apply):

- Power Outage
- Equipment Failure
- Snow Melt
- Plugged Sewer
- Widespread Flooding
- Vandalism
- Broken Sewer
- Other (describe):

See "Narrative Description" on back page to add additional details.

Type of Sanitary Sewer Overflow or Wastewater Treatment Facility Bypass (check all that apply):

- Pipe Break
- Lagoon/Basin Overflow
- Digester/ Solids handling
- Manhole
- Head Works
- Drying Beds
- Lift Station
- Clarifier/Filter/Batch Reactor
- Service Line (Grinder Pump, Basement Back-up, Clean out etc.
- Effluent Weir/Flume
- CSO Outfall (Dry Weather)
- Aeration/Biological Treatment
- Construction SSO
- Other (describe):

Strength of Sanitary Sewer Overflow or Wastewater Treatment Facility Bypass: Raw Partially Treated Diluted

WATERCOURSE INFORMATION

Discharge Course

<input checked="" type="checkbox"/> Absorbed into the soil	<input type="checkbox"/> Discharge entered losing stream or sinkhole
<input type="checkbox"/> Ditch. Name of surface water it drained to:	<input type="checkbox"/> Nearby public drinking water intake
<input type="checkbox"/> Storm sewer. Name of surface water it drained to:	<input type="checkbox"/> Other, describe:
<input type="checkbox"/> Surface water direct discharge (Name of stream):	Name of public drinking water intake:
<input type="checkbox"/> Was contained on private property: Address	Distance to public drinking water intake (feet): ft.

Impacts

Length of impact downstream:	<input type="checkbox"/> Nearby beach or other public area
<input type="checkbox"/> Fish kill or other impacted species	Name of beach or public area:
	Distance to a beach or public area (feet): ft.

RESPONSE/CLEANUP

Were samples taken? Yes No

Type of Samples Taken: BOD TSS E.Coli Fecal Coliform Ammonia
 Dissolved Oxygen None Other (describe):

Submit copies of any analytical results with next Discharge Monitoring Report (DMR).

Any corrective action taken? Yes No

Describe the action:

Clean up activity: Flushing Removing Chemical Application Damming Other (describe):

See "Narrative Description" on back page to add additional details.

NARRATIVE DESCRIPTION

Provide a narrative description to further explain why the Sanitary Sewer Overflow or Wastewater Treatment Facility Bypass occurred. For example, describe what equipment failed, what caused the power outage, or what plugged the sewer. Flooding should only be indicated as a cause if there is significant flooding caused by high river, stream or lake water levels (not just localized high water in the street).

6300 YATES DRIVE WASTEWATER MAINTENCANCE CREWS FOUND MH#032 CSO #094 OVERFLOWING AT A RATE OF 5 GPM. SEWAGE WAS CONTAINED IN A STORM DRAINAGE DITCH AND DID NOT REACH THE STATES WATERS. CLEANING CREWS OPENED THE STOPPAGE 10 FEET FROM MH#032. AREA HAS BEEN CLEANED AND NORMAL FLOW HAS BEEN RESTORED TO THE COLLECTION SYSTEM. SIGNS HAVE BEEN POSTED IN THE AREA OF THE OVERFLOW.

ACTIONS TO CORRECT THIS OCCURENCE AND PREVENT FUTURE OVERFLOWS OR BYPASSES

Describe what actions were taken to minimize the volume of wastewater discharged from the overflow or bypass reported on this form. The MSOP permit prohibits bypasses, unless certain specified conditions are met. If the permittee fails to operate and maintain the sewage collection system to prevent overflows and bypasses, they are subject to enforcement action.

PUBLIC NOTIFICATION

- Do you have a public notice protocol in place for Sanitary Sewer Overflows and Bypasses?
 Was the public notified of the Sanitary Sewer Overflow or Bypass?

REPORT COMPLETED BY

Authorized representative name (Please type or print)
J.PIERCE

Title
SR ENG TECH

Authorized representative signature

Date
1/7/2013 9:52:00 AM

ATTACHMENT B: REPORTS SUBMITTED UNDER CURRENT NPDES PERMITS

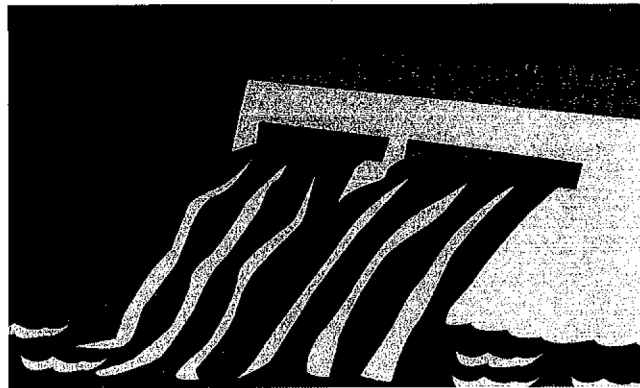
The following is an excerpt from the Industrial Pretreatment Program Annual Report dated March 27, 2013 submitted by the Kansas City Water Services Department to the MDNR. In order to conserve resources, electronic copies of the following reports submitted to the MDNR in 2013 are included in the enclosed disc.

- Monthly Operating Reports
- Industrial Pretreatment Program Annual Report – 2012
- Municipal Separate Storm Sewer System Permit Annual Report – May 1, 2012 – April 30, 2013

CITY OF KANSAS CITY, MISSOURI
WATER SERVICES DEPARTMENT
WASTEWATER TREATMENT DIVISION



Calendar Year 2012
Industrial Pretreatment Program
Annual Report



Submitted to:
State of Missouri
Department of Natural Resources
Division of Environmental Quality
Water Pollution Control Program

March 2013



Water Services Department

Office of the Director

4800 E. 63rd Street
Kansas City, Missouri 64130

(816) 513-0504
Fax: (816) 513-0185

March 27, 2013

Mr. Walter N. Fett
Pretreatment Coordinator
Missouri Department of Natural Resources
PO Box 176
Jefferson City, Missouri 65102

REF: KCMO IPP Annual Report for calendar year 2012

Dear Mr. Fett:

Enclosed is Kansas City's Pretreatment Implementation Report for 2012. If you have any questions, please do not hesitate to call me at (816) 513-0203 or e-mail me at terry.leeds@kcmo.org. You may also direct questions to Sherri Irving, Assistant Manager/Operations, Wastewater Treatment Division, (816) 513-7205 or Scott Hughes, Industrial Waste Superintendent, (816) 513-0604.

Sincerely,

Terry Leeds, P.E.
Director of Water Services

Enclosures

CITY OF KANSAS CITY, MISSOURI
INDUSTRIAL WASTE CONTROL DIVISION
WATER SERVICES DEPARTMENT

Pretreatment Implementation Annual Report
2012

1. All sixty-seven Significant Industrial User's (SIU's) had a valid Wastewater Discharge Permit issued by the Industrial Waste Control Division during the 2012 calendar year. The pretreatment program currently operated by the KCMO Industrial Waste Division, which was approved by the EPA and adopted by the City of Kansas City, Missouri, requires the issuance of Wastewater Discharge permits which are renewed on a 2-5 year cycle.

During the 2012 first reporting period, sixty-two SIU's (62) were in full compliance, three (3) were determined infrequently non-compliant, and two (2) SIU's were significantly non-compliant for submitting required report late more than 30 days.

During the second reporting period, fifty-five (55) SIU's were in full compliance, eleven (11) were determined infrequently non-compliant, and one (1) was significantly non-compliant for late reporting.

This information can be found in the "2012 SIU Chart" Attachment A.

2. The KCMO Water Services Laboratory samples each permitted facility that discharges at least once per calendar year. The SIU samples collected to date can be found in the "2012 SIU Chart" Attachment A.
3. There are no SIU's currently under a compliance schedule.
4. There were no SIU's that the Industrial Waste Control Division pursued criminal or civil actions against as of December 31, 2012.
5. The industries that were issued Notice of Violations (NOV's) can be found on the "2012 Notice of Violations" Attachment D. Attachment E will also provide information regarding type of violation and amount of penalties assessed. There were no Industries that were issued Administrative Orders during 2012.
6. The required publication of Significantly non-compliant SIU's is scheduled to be printed in the Kansas City Star on April 5, 2013. The companies that are to be published are as followed:

Boyles Famous Corned Beef	SNC-R 1 st reporting period & 2 nd reporting period
---------------------------	---
7. There were two spills, and/or discharges reported during the 2012 calendar year. Hallmark had a nitric acid spill which amounted to approximately 8 gallons.

Saint Luke's Hospital had a fuel oil spill of approximately 50-100 gallons.

Both SIU's have conducted investigations to determine cause, and have submitted reports regarding the incident determinations.

8. During the 2012 calendar year five (5) of the seven (7) Kansas City Missouri Water Treatment Plants experienced exceedance violations. The plants that had violations were Blue River, Birmingham, Fishing River, Rocky Branch, and Todd Creek.

The violations at the three Treatment Plants were determined to be caused by mechanical or equipment error, and also due to changes in processes at the Water Treatment Plants.

There were no SIU's that were known to cause any violations experienced at the KCMO Waste Water Treatment Plants.

9. The following attachments are being included in this 2012 Pretreatment Program Report:

2012 SIU Chart	Attachment A
2012 Permit Activity	Attachment B
2012 Compliance Schedule	Attachment C
2012 Spills and Discharges	Attachment D
2012 Notice of Violations	Attachment E
2012 NPDES Compliance	Attachment F

ATTACHMENT C: LIST OF CRITICAL FACILITIES AND INSPECTION FREQUENCY

Following is page 1 of the list of critical facilities and associated inspection frequencies. In order to conserve resources, an electronic copy of the full list is included in the enclosed disc.

Critical Structures Inventory – Kansas City, MO

STRUCTURE NUMBER	LOCATION	MAP NUMBER	MH NUMBER	RECEIVING STREAM	INSPECTION INTERVAL
1	100 DELAWARE DIVERSION	S028	35	MISSOURI RIVER	7
2	100 MAIN STREET DIVERSION	S028	302	MISSOURI RIVER	30
3	100 GILLIS AVE DIVERSION 600FT W	S028	954	MISSOURI RIVER	7
4	100 LYDIA AVE DIVERSION	S027	860	MISSOURI RIVER	30
5	* 101 PROSPECT AVE PUMP STATION	S009	800	MISSOURI RIVER	30
6	1931 N CHOUTEAU TRFY* MILWAUKEE PUMP STATION	S006	801	MISSOURI RIVER	30
7	7300 HAWTHORNE DIVERSION	S012	47	BLUE RIVER	30
8	320 BELMONT AVE	S024	209	BLUE RIVER	14
9	WILSON & CAMBRIDGE	S024	87	BLUE RIVER	30
10	801 E 9TH ST, IN PARKING LOT	S035	435	BLUE RIVER	7
11	7601 TRUMAN RD	S036	18	BLUE RIVER	14
12	1800 CRYSTAL AVE	S048	210	BLUE RIVER	14
13	3557 STADIUM DRIVE	S059	9	BLUE RIVER	14
14	3333 STADIUM DRIVE	S059	1	BLUE RIVER	14
16	5015 STATE LINE RD	S078	629	BRUSH CREEK	7
17	1308 W 50TH TER	S078	22	BRUSH CREEK	3
18	4941 WESTWOOD RD	S078	174	BRUSH CREEK	7
19	1204 W 50TH ST	S078	186	BRUSH CREEK	7
20	4979 WARD PARKWAY	S078	323	BRUSH CREEK	7
21	4938 HOLLY ST	S078	190	BRUSH CREEK	7
22	807 W 48TH ST	S078	354	BRUSH CREEK	14
23	4821 ROANOKE PARKWAY	S078	344	BRUSH CREEK	30

ATTACHMENT D: ROUND GROVE I/I REDUCTION PROJECT – CERTIFICATE OF ACHIEVEMENT OF FULL OPERATION



CERTIFICATE OF ACHIEVEMENT OF FULL OPERATION

Project Number 81000641 Contract Number 1064

Project Title Round Grove Creek Sewer I/I Reduction Effort

CONTRACT FOR: _____ Water Services Department


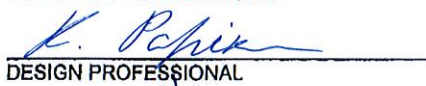
CONTRACTOR: _____ Havens Construction

DATE OF ISSUANCE: _____ 8/15/2013



PROJECT OR DESIGNATED PORTION SHALL INCLUDE:

The Work performed under this Contract has been reviewed and found, to the Design Professional's and/or Construction Manager's best knowledge, information and belief, to have achieved a state of full operation. Achievement of full operation is the state where, completion of construction and installation of equipment or infrastructure such that the equipment or infrastructure has been placed into full operation, and is expected to both function and perform as designed. The date of Achievement of full operation of Project or portion thereof designated above is hereby established as 8/15/2013 which is also the date of commencement of applicable warranties required by the Contract Documents, except as stated below:

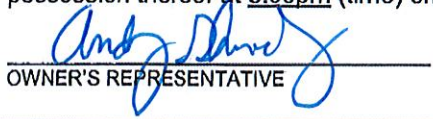
A list of items to be completed or corrected is attached hereto. The failure to include any items on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

	<u>Eric HAVENS</u>	<u>8/15/13</u>
CONSTRUCTION MANAGER	BY <u>HAVENS Construction</u>	DATE
	<u>KARINE PAPIKIAN</u>	<u>8/15/13</u>
DESIGN PROFESSIONAL	BY <u>WSD KCMO</u>	DATE

The Contractor will complete or correct the Work on the list of items attached hereto within 20 days from the above date of Substantial Completion.

	<u>Eric HAVENS</u>	<u>8/15/13</u>
CONSTRUCTION MANAGER	BY <u>HAVENS Construction</u>	DATE
	<u>KARINE PAPIKIAN</u>	<u>8/15/13</u>
DESIGN PROFESSIONAL	BY <u>WSD KCMO</u>	DATE

The Owner accepts the Work or designated portion thereof as substantially complete and will assume full possession thereof at 5:00pm (time) on 8/15/2013 (date).

	<u>Andy Shively</u>	<u>8/15/13</u>
OWNER'S REPRESENTATIVE	BY <u>KCMO Water Services</u>	DATE

- Distribution:
- Owner
 - Contractor
 - Construction Manager
 - Design Professional
 - Consultant
 - Other _____

Attachment to the Certificate of Achievement of Full Operation

Round Grove Creek Sewer Rehabilitation I/I Reduction Effort

Segment to be CIPP MH # to MH #	Sheet #	Pipe Size
S085-111 to S085-110	13	304' of 24"x15 mm CIPP
S085-110 to S085-109	13	288' of 24"x15 mm CIPP
S093-045 to S093-005	19	430' of 18"x12 mm CIPP
S085-122 to S085-121	14	263' of 21"x13.5 mm CIPP