

SEMI-ANNUAL REPORT

KANSAS CITY'S OVERFLOW CONTROL PROGRAM

REPORTING PERIOD: JANUARY 1, 2019 TO JUNE 30, 2019



KANSAS CITY
MISSOURI



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September 27, 2019

Greetings,

Please find enclosed the ninth semi-annual report related to Kansas City's overflow control program. This report covers the semi-annual period from January 1, 2019, to June 30, 2019. Pursuant to the Consent Decree, this report has a required submittal date of no later than September 30, 2019.

Additionally, and as required by the Consent Decree, any report, plan, or other submission that the City is required to submit, including documents as required by its current NPDES Permits, shall be signed and certified by an official or authorized agent of the City.

By signing below, I certify under penalty of law that the document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted, and that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Please contact me if you have questions.

Best regards,

Terry Leeds,
Director, KC Water

cc: Troy M. Schulte, City Manager, City of Kansas City, Missouri
Matthew J. Gigliotti, Assistant City Attorney, City of Kansas City, Missouri
Matt Bond, Chief Engineering Officer, KC Water

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I. SEMI-ANNUAL REPORT PURPOSE AND SCOPE

On September 27, 2010, The United States District Court for the Western District of Missouri entered a Consent Decree in the case U.S. vs. The City of Kansas City, Missouri. The Consent Decree was amended by the parties and approved by the court on January 9, 2015 (Civil Action No. 4:10-cv-0497-GAF). A second amendment was presented by the parties and approved by the court on January 5, 2018 (Civil Action No. 4:10-cv-0497-GAF).

In accordance with the Consent Decree's Section IX.A, this Semi-Annual Report provides an update on the City of Kansas City, Missouri's (City) efforts to implement control measures defined in Section VII and Appendix A of the Consent Decree. The report reflects the status of program implementation that occurred between January 1 and June 30, 2019.

II. KANSAS CITY'S OVERFLOW CONTROL PROGRAM

Individual elements of the City's Overflow Control Plan (Plan) became part of an enforceable document 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, U.S. Environmental Protection Agency (USEPA) and the Missouri Department of Natural Resources (MDNR) related to reducing overflows. The Consent Decree includes requirements for:

- Capital projects targeted at reducing overflows through Combined Sewer Overflow (CSO) Control Measures and Separate Sewer Overflow (SSO) Control Measures;
- Nine Minimum Controls (NMCs) Plan targeted at operationally reducing and addressing combined sewer overflows through a series of minimum control efforts;
- Capacity, Management, Operation and Maintenance (CMOM) Plan targeted at reducing separate sewer system overflows by adequately operating and maintaining the sewer system;
- Post-Construction Monitoring Plan aimed at long-term monitoring and assessment of overflow reduction;
- Supplemental Environmental Project (SEP) Plan which includes the incorporation of best management practices and green infrastructure at two project locations, along with the initial SEP to reduce septic tank use in sewered areas; and
- Implementation of disinfection at all six wastewater treatment plants.

The City and its regulatory partners have agreed to meet the objectives over a 25-year period from 2010 through 2035. The Plan involves a list of improvements that are structured to eliminate, or capture for treatment, approximately 88 percent of total wet weather flow in the combined sewer system and sanitary sewer overflows during a five-year, 24-hour rainfall event. This implementation is referred to as the Overflow Control Program (OCP). Kansas City's Smart Sewer program team implements the Overflow Control Program to ensure compliance with the City's federal Consent Decree.

The occurrence of overflows is not uncommon in combined sewer systems and is authorized in Kansas City pursuant to the terms of two of the City's National Pollutant Discharge Elimination System (NPDES) permits (Westside WWTP and Blue River WWTP). NPDES permits are issued by MDNR to Kansas City and implemented by the Water Services Department (Water Services) at each treatment facility.

III. KANSAS CITY'S SEWER SYSTEM OVERVIEW

More than 150 years ago, Kansas City began building the basic sewer infrastructure that would allow the city to grow and prosper. Some of that infrastructure is still in use today. Kansas City's overall sanitary sewer system comprises both combined and separate sewer systems totaling approximately 350 square miles.

The combined sewer system consists of 58 square miles, primarily located in the oldest areas of the City. During moderate to heavy rainfall events, the system will reach capacity, overflow, and discharge a mixture of wastewater and rainwater directly into local streams and rivers. By implementing control measures in accordance with the Consent Decree, the occurrence of overflows will be reduced over time.

The remaining 292 square miles of Kansas City's sanitary sewer system are a separate sewer system. A separate sanitary sewer system is only intended to collect and convey wastewater. However, rainwater can enter the system through leaky sewer pipe joints, broken sewer pipes, manholes, and illicit stormwater direct connections causing the system to become overloaded during rainfall events. When flow in this system exceeds its capacity, it too overflows a mixture of wastewater and rainwater from various manholes throughout the system. Kansas City has eight constructed sanitary sewer overflows (SSOs), four of which were identified in 2016 and three of which were identified in 2017 during field investigations. Two of the constructed SSOs located in the Blue River South basin were removed in December 2018. The City is actively working to eliminate the remaining six constructed overflows in concert with its ongoing Capacity Management Operation and Maintenance (CMOM) Program and implementation of the Overflow Control Program.

IV. REPORTING PERIOD MILESTONES

The following specific milestones, as laid forth in Consent Decree Appendices A and D, were timely met during the reporting period between January 1 and June 30, 2019. In addition to these milestones, the City submitted the 2018 Annual Report to USEPA and MDNR on March 30, 2019.

Work has continued on several other projects that began in previous reporting periods, including the continuation of inflow/infiltration reduction projects in areas north and south of the Missouri River. To date, all Consent Decree schedule milestone dates have been met.

1. APPENDIX A – PERFORMANCE MEASURES

Lower Blue River Basin

- Relief Sewer: Hardesty Ave and 31st Street
 - Consent Decree Required Start Date: 2020
 - Actual Start: January 2019
- Relief Sewer: Vineyard and Lawn Street
 - Consent Decree Required Start Date: 2020
 - Actual Start: January 2019

2. APPENDIX D – POST-CONSTRUCTION MONITORING PROGRAM

The PCMP CSS Flow Metering was performed in accordance with the revised CSS Metering Plan approved by USEPA in December 2015.

- Outfall BR048 (Pre-Design – Commenced)
- Outfall BR054 (Pre-Design - Commenced)
- Outfall BR055 (Pre-Design – Commenced)
- Outfall W003 (Post Construction - Continued)
- Outfall BR059 (Post Construction - Continued)
- Outfall BR069 (Post Construction - Continued)
- Outfall BR056 (Post Construction – Commenced)
- Outfall BR063 (Post Construction - Commenced)
- Outfall BR064 (Post Construction - Commenced)

V. IMPLEMENTATION OF SEWER SYSTEM REMEDIAL MEASURES AND POST-CONSTRUCTION MONITORING

a. POST-CONSTRUCTION MONITORING PROGRAM

i. WATER QUALITY TESTING

The 2019 reporting period is the ninth year of monitoring conducted under the Integrated Water Quality Monitoring Program (IWQMP). Since April 2011, City staff members have conducted sampling and field measurements at 20 smaller water locations. In addition, a City contractor has conducted large river sampling and field measurements at three locations on both the Kansas River and Missouri River. The Kansas City Water Services Department laboratory conducted analysis of the samples. Sampling and analyses were conducted according to the methods prescribed in the Integrated Water Quality Monitoring Program and the associated Quality Assurance Project Plan.

ii. FLOW MONITORING PROGRAM

Short-term flow monitoring was conducted by the City's Overflow Control Program Management team at 158 locations for multiple projects, including those listed below, beginning in April 2019. Flow metering durations varied from 90 days to seven months. Flow monitoring was performed for the following I/I reduction project areas:

Post-construction

- Blue River South Areas 1 and 2
- Blue River South Area 3
- Line Creek/Rock Creek Area 1
- Blue River North
- Blue River Central Areas 1 and 2
- Private I/I Reduction Program Pilot Project Areas (Middle Blue River & Line Creek/Rock Creek)

Pre-construction

- Middle Blue River (MBR) Area 13
- Blue River South Area 4 Additional Area
- Round Grove Basin
- Line Creek/Rock Creek Area 4
- Birmingham Areas 2 and 3
- Northern Basins Areas 1 & 2
- Buckeye Creek Basin

The City also installed 8 rain gauges in or near the project areas to supplement coverage provided by the City's existing ALERT gauging system.

Flow and rainfall monitoring were performed at 57 locations to support design of sewer separation and relief sewer projects, and hydraulic model recalibration efforts.

b. GREEN INFRASTRUCTURE

i. ADDITIONAL GREEN INFRASTRUCTURE PILOT PROJECTS

Additional green infrastructure pilot projects in the Lower Blue River Basin moved into the bid and construction phases during the reporting period. These projects include three sites:

- East High School
- Veterans Administration (VA) Hospital and Linwood Green Park
- Avenues of Life Mattress Business Training Center

The green infrastructure project at East High School is a joint effort between Kansas City Public Schools and the City. The first phase of green infrastructure at East High School is completed and includes open bottom underground storage, removal of an asphalt parking lot, and a rain garden. The second phase of green infrastructure at East High School was bid and has started construction. The second phase will be completed in 2019 and includes a series of bioretention facilities.

The green infrastructure design for the VA Hospital and Linwood Green Park site was completed in 2018. Construction is scheduled to begin in the fall of 2019. Green infrastructure facilities at the site include a series of bioretention swales and bioretention basins.

The green infrastructure design for the Avenues of Life site was also completed in 2018. Construction is scheduled to begin in the fall of 2019. Green infrastructure facilities at the site include three bioretention basins.

ii. CONSENT DECREE GREEN INFRASTRUCTURE PROJECTS

During the reporting period, the City progressed the implementation of the green infrastructure pilot projects located in the Northeast Industrial District and the Turkey Creek/Central Industrial District basins as required by the Consent Decree. Refer to Table 1 for progress update.

For the Northeast Industrial District project, a Design Professional was selected in 2016 to complete green infrastructure conceptual designs for two green infrastructure locations. The primary green infrastructure site, along Gardner Avenue at Monroe Avenue, completed final design and bid in 2018. Green infrastructure included with this project consists of a gravel wetland facility at Nicholson Park, and five bioretention facilities. Construction for the Gardner Avenue project began in March of 2019; however, construction was put on hold due to high groundwater conditions influenced by flood stage levels of the Missouri River. It is anticipated that construction will resume in the fall of 2019 when groundwater levels recede. The second location, Admiral Plaza, was abandoned as a viable site due to physical site constraints and high cost per gallon of captured flow. The City considered an alternative site at 10th and Main Street in 2017. A concept design was completed, and stakeholder meetings were held. The city does not anticipate moving forward with preliminary design at this site, due to the feedback from stakeholders and relatively high cost per gallon of captured flow.

For the Turkey Creek/Central Industrial District project, a Design Professional was selected in 2016 to complete design of green infrastructure solutions at three locations. Final design was completed in 2018. Green infrastructure included with this project consists of infiltration trenches, cisterns, permeable paver parking, infiltration dry wells, bioretention, and a bioretention swale. Construction commenced in June of 2019.

iii. GREEN INFRASTRUCTURE MAINTENANCE

During the reporting period, Water Services' in-house green solutions maintenance crew continued maintenance activities for the pilot project area. An additional project area at 81st and Lydia Avenue that was part of the Outfall 059 green infrastructure improvements will transition to green solutions maintenance in November 2019. Additional sites will transition in 2020 as the contractor establishment and maintenance period concludes. More frequent maintenance tasks, including weeding and mulching, are performed by the Green Stewards. The Green Stewards program, contracted through Bridging the Gap (BTG), has been extended through 2019 as part of the City's green workforce development program.

VI. COMBINED SEWER OVERFLOW CONTROL MEASURES

The combined sewer system (CSS) makes up approximately 58 square miles of the city's sewer system running from 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.

Collection system field investigation activities for CSS projects are being completed through a City OCP Program Management contract and a city-wide sewer cleaning and closed-circuit television (CCTV) inspection contract. The work consists of sewer system network characterization and manhole inspections, sewer cleaning, and CCTV inspection of sewers in the Lower Blue River basin.

The City's 25-year Overflow Control Program is being implemented in three phases, each with a primary control strategy. The early years of the program include repairs to the existing sewer systems and pilot projects with a focus on developing and evaluating 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 later years of the program will address necessary improvements to the City's wastewater treatment plants and construction of structural storage solutions which are currently planned as deep storage tunnels.

The status of the projects in the combined sewer system basins is summarized in Table 1. During the reporting period, the combined sewer system had 22 active projects. Six (6) projects were under design, and sixteen (16) projects were either advertising for construction bids, or under construction during the reporting period.

Table 1: Project Status - Combined Sewer System Basin (through June 30, 2019)

Project Name	Description	Percent Complete through 6/30/2019 Planned Completion Date			CD Due Date
Combined Sewer System		Pre Design	Design	Construction AFO	
Brush Creek Basin					
Neighborhood Sewer Rehabilitation	Neighborhood sewer rehabilitation work in the Brush Creek Basin has been split into two (2) design projects and four (4) construction packages due to the size of the basin. These projects are being implemented to improve the reliability and performance of the combined sewer system and reduce basement backups. The projects involve identification of sewer system defects and the preparation of construction contract documents to rehabilitate sewer pipes that are 12-inches and smaller in diameter. Work also includes the rehabilitation of sewer pipes and manholes in a separate sewer system area located within the Brush Creek basin to reduce I/I flows contributing to SSOs.	100%	100%	Area 1 East 85% March 2019 Area 2 I&I 60% April 2019 Area 1 West 55% May 2019 Area 2 NSR 70% August 2019	12/31/2020

Project Name	Description	Percent Complete through 6/30/2019 Planned Completion Date			CD Due Date
Combined Sewer System		Pre Design	Design	Construction AFO	
Lower Blue River Basin					
Neighborhood Sewer Rehabilitation	This project is being implemented to improve the reliability and performance of the combined sewer system and reduce basement backups. This project involves identification of sewer system defects, the preparation of construction contract documents, and the rehabilitation of manholes and sewer pipes 12-inches and smaller in diameter	100%	100%	Package 1 July 2021 Package 2 September 2021	12/31/2021
15th Street Pump Station Upgrade and Sewer Separation	Design documents will be prepared for the separation of approximately 22 acres of combined sewer system and for improvements to the 15th Street Pump Station.	90% September 2019	January 2021	April 2022	12/31/2022
Relief Sewer Hardesty & 31st Street	Design documents will be prepared for the installation of approximately 3,500 linear feet of approximately 54-inch diameter relief sewer.	80% November 2019	January 2021	April 2022	12/31/2022
Relief Sewer Vineyard & Lawn Street	Design documents will be prepared for the installation of approximately 3,400 linear feet of approximately 48-inch diameter relief sewer.	80% November 2019	January 2021	March 2022	12/31/2022
Sewer Separation 40th & Monroe	The project will separate approximately 220 acres and eliminate typical year overflows that are located in the tributary area contributing to Combined Sewer Outfalls 041, 043, 044, 045, 046, 047, 049, and 050 of the Lower Blue River Basin in Kansas City, Missouri.	100%	5% December 2020	March 2023	12/31/2023

Project Name	Description	Percent Complete through 6/30/2019 Planned Completion Date			CD Due Date
Combined Sewer System		Pre Design	Design	Construction AFO	
Middle Blue River Basin					
Sewer Separation: Outfalls 066 and 067	The project will separate approximately 270 acres of the combined system. The Consent Decree does not mandate separation of combined sewers upstream of Outfall 066; however, this 10-acre area was added to the Project because of its proximity to Outfall 067, its small size, and the relatively small number of known stormwater inflow connections. Upon completion of this separation work, both outfalls will not overflow in the typical year.	<u>100%</u>	<u>100%</u>	<u>90%</u> October 2019	12/31/2019
Diversion Structure 068 Storage Basin (formerly Relief Sewer Diversion Structure 068 to Blue River Sewer)	The Project is being completed to reduce combined sewer overflows at Ofutall 058. A new open storage basin will be constructed in lieu of a relief sewer.	<u>100%</u>	<u>100%</u>	<u>5%</u> November 2020	12/31/2020 12/31/2021*
MBR I/I Reduction Area 13	This project is being implemented to reduce water in basement occurrences in a separate sewer system area located within the Middle Blue River basin. The project will also increase the level of service achieved by downstream CSS interceptor sewers.	<u>100%</u>	November 2020	December 2021	N/A (City Project)
Northeast Industrial District Basin					
NEID Green Infrastructure Pilot Project	This project is being designed to reduce combined sewer overflows and provide aesthetic, social and economic enhancements within the Northeast Industrial District. The design will include a wetland facility and bioretention swales.	<u>100%</u>	<u>100%</u>	<u>10%**</u> April 2020	12/31/2020

Project Name	Description	Percent Complete through 6/30/2019 Planned Completion Date			CD Due Date
Combined Sewer System		Pre Design	Design	Construction AFO	
<i>Northeast Industrial District Basin Cont.</i>					
Gooseneck Arch Sewer Gates and Pump Station Improvements	The project consists of the design of an adjustable crest gate inside a new gate structure situated over the 18 ft. by 21 ft. arch sewer to provide in-line storage of combined sewer flow utilizing a real-time control (RTC) system and a new 4-MGD submersible pump station. The pump station will deliver the stored volume to the Blue River Interceptor through a new force main.	<u>100%</u>	<u>100%</u>	<u>40%**</u> January 2020	12/31/2019 12/31/2020*
NEID Neighborhood Sewer Rehabilitation	Neighborhood sewer rehabilitation work in the Northeast Industrial District Basin consists of one (1) design project and two (2) construction packages due to the size of the basin. This project is being implemented to improve the reliability and performance of the combined sewer system and reduce basement backups. This project involves identification of sewer system defects, the preparation of construction contract documents, and the rehabilitation of manholes and sewer pipes 12-inches and smaller in diameter.	<u>100%</u>	<u>100%</u>	<u>35%</u> North April 2020 <u>30%</u> South March 2020	12/31/2020
<i>Turkey Creek/Central Industrial District Basin</i>					
Green Infrastructure Pilot Project	This green infrastructure pilot project is being designed to reduce combined sewer overflows and to provide aesthetic, social and economic enhancements within the Central Industrial District. The design work includes infiltration trenches, cisterns, permeable paver parking, infiltration dry wells, bioretention, and a bioretention swale.	<u>100%</u>	<u>100%</u>	<u>10%</u> September 2020	12/31/2020
Neighborhood Sewer Rehabilitation	This project is being implemented to improve the reliability and performance of the combined sewer system and reduce basement backups. Two construction contracts will be issued for rehabilitation of manholes and sewer pipes that are 12-inches and smaller in diameter.	<u>100%</u>	<u>100%</u> 2019	Area 1 November 2020 Area 2 January 2021	12/31/2021
Turkey Creek Basin Sewer Separation: 31st and Broadway	The project will separate approximately 35 acres of the combined sewer system and eliminate typical year overflows at outfall W006 by removing Diversion Structure 306.	<u>100%</u>	<u>30%</u> July 2020	March 2022	12/31/2022
<i>Westside WWTP</i>					
Westside Wastewater Treatment Plant Wet-Weather Improvements	This project involves the construction of wet weather treatment and disinfection facilities sized for 32 MGD. Facility upgrades for non-OCP work will also be completed.	<u>100%</u>	<u>100%</u>	<u>0%***</u> May 2021	12/31/2020 12/31/2022*

* Proposed in 3rd Consent Decree modification.

** Adversely impacted by high river and or ground water levels stemming from flood stages along the Missouri River.

*** Adversely impacted by protected land acquisition issues.

VII. SEPARATE SANITARY SEWER SYSTEM OVERFLOW CONTROL MEASURES

Kansas City's Separate Sewer System (SSS) comprises nine drainage basins covering 292 square miles of service area. The four 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 Central, Blue River North, Blue River South, Little Blue River, and Round Grove basins.

Much of the early projects and program strategy in the separate sewer basins involve reducing the amount of Inflow and Infiltration (I/I) entering the SSS to reduce overflows from the system. This reduction in I/I is achieved by reducing or eliminating points of direct inflow into the system and reducing 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.

Collection system field investigation activities for the I/I reduction projects are being completed through a City OCP Program Management contract and city-wide Sewer Cleaning and Closed-Circuit Television (CCTV) Inspection contracts. The work consists of sewer system network characterization and manhole inspections, sewer cleaning, and CCTV inspection of sanitary sewers in the Blue River Central, Blue River North, Blue River South, Line Creek/Rock Creek, Round Grove, and Little Blue River separate sewer system basins.

The status of Consent Decree projects in the SSS basins is summarized in Table 2. The separate sewer system has 13 active projects. Eight (8) projects are currently in design, and five (5) projects are currently advertising for construction bids, or construction was underway, during the reporting period.

In an effort to identify excessive I/I sources attributed to sewer defects, the City is also evaluating and rehabilitating sewer defects at stream crossings and immediately adjacent to streams. The work is occurring under a multi-year design/build contract. The City evaluated and repaired 18 sites in 2017/18 and is in the process of evaluating and repairing an additional 15 sites in 2019/20.

**Table 2: Project Status – Separate Sanitary Sewer System Basin
(through June 30, 2019)**

Project Name	Description	Percent Complete through 6/30/2019 Planned Completion Date			CD Due Date
Separate Sewer System		Pre Design	Design	Construction AFO	
<i>Blue River South Basin Cont.</i>					
I/I Reduction Area 4	The project focuses on I/I reduction through rehabilitation of public sanitary sewers and manholes within the project area. There is an estimated 375,000 linear feet of sewer pipe and 1,900 manholes in the project area.	<u>100%</u>	<u>100%</u>	Phase 1 <u>99%</u> July 2019 Phase 2 0% June 2021	12/31/2021
I/I Reduction Area 5	The project focuses on I/I reduction through rehabilitation of public sanitary sewers and manholes within the project area. There is an estimated 120,000 linear feet of sewer pipe and 600 manholes in the project area.	<u>100%</u>	<u>100%</u>	Phase 1 <u>99%</u> July 2019 Phase 2 0% June 2021	12/31/2021
<i>Line Creek/Rock Creek</i>					
I/I Reduction Area 3	The project focuses on I/I reduction through rehabilitation of public sanitary sewers and manholes within the project area. There is an estimated 213,000 linear feet of sewer pipe and 1,000 manholes in the project area.	<u>100%</u>	<u>50%</u> July 2020	December 2022	12/31/2023
I/I Reduction Area 4	The project focuses on I/I reduction through rehabilitation of public sanitary sewers and manholes within the project area. There is an estimated 246,000 linear feet of 6-inch to 54-inch sewer pipe and 1,360 manholes in the project area.	<u>100%</u>	<u>30%</u> October 2020	December 2022	12/31/2023
<i>Round Grove</i>					
Round Grove Pump Station Rehabilitation	The project includes rehabilitation and expansion of the Round Grove Pump Station to provide additional wet weather capacity up to a 60 MGD firm capacity. This expansion will include new, larger pumps, new piping, and other capital improvements to accommodate the expansion and to meet building code requirements.	<u>100%</u>	<u>100%</u>	March 2021	12/31/2022
Round Grove Supplemental I/I Reduction	This project is being implemented to reduce the need for relief sewers upstream of Round Grove Pump Station.	<u>75%</u> November 2019	February 2021	June 2022	N/A
<i>Little Blue River</i>					
I/I Reduction Area 1	The project focuses on I/I reduction through rehabilitation of public sanitary sewers and manholes within the project area. There is an estimated 340,000 linear feet of sewer pipe and 1,400 manholes in the project area.	<u>100%</u>	<u>90%</u> August 2019	May 2021	12/31/2021
I/I Reduction Area 2	The project focuses on I/I reduction through rehabilitation of public sanitary sewers and manholes within the project area. There is an estimated 310,000 linear feet of sewer pipe and 1,410 manholes in the project area.	<u>100%</u>	South <u>60%</u> October 2019 North <u>50%</u> October 2019	March 2021	12/31/2021

Project Name	Description	Percent Complete through 16/30/2019 Planned Completion Date			CD Due Date
Separate Sewer System		Pre Design	Design	Construction AFO	
<i>Birmingham</i>					
I/I Reduction Area 2	The project focuses on I/I reduction through rehabilitation of public sanitary sewers and manholes within the project area. There is an estimated 238,000 linear feet of sewer pipe and 1,200 manholes in the project area.	<u>100%</u>	<u>15%</u> October 2020	April 2022	12/31/2023
I/I Reduction: North of the River (Formerly I/I Reduction Area 1)	The project consists of field investigations, data analysis, preparation of construction contract documents, and rehabilitation of sewers, manholes and service lateral connections to achieve targeted infiltration and inflow reduction. Work will be performed in select areas of Birmingham 1, Line Creek/ Rock Creek, and Buckeye Creek.	<u>32%</u> March 2020	September 2021	May 2023	12/31/2023
I/I Reduction Area 3	The project will focus on I/I reduction through rehabilitation of public sanitary sewers and manholes within the project area. There is an estimated 216,000 linear feet of sewer pipe and 975 manholes in the project area.	<u>100%</u>	<u>5%</u> April 2021	October 2022	12/31/2023

PRIVATE INFLOW/INFILTRATION REDUCTION PROGRAM

The City is currently implementing a private I/I reduction program called “Keep Out the Rain” (KOTR) in conjunction with public sewer I/I reduction projects. The focus of the program is to disconnect illicit private I/I sources where it is cost-effective to remove the excessive I/I flows into the separate sewer system. Approximately 70,000 properties are targeted for private I/I evaluation in the City’s SSS area.

For the reporting period, three design professional firms continued to perform private I/I reduction in the following basins: Birmingham, Blue River Central, Blue River South, Brush Creek, Line Creek/Rock Creek, Lower Blue River, Middle Blue River, and Round Grove (small pilot area). [OBJ] [OBJ] Through June 2019, each of the design professional firms continued to perform building evaluations, identify illicit connections and coordinate disconnections. Since commencement of the private I/I reduction program, approximately 60 percent of contacted property owners have granted interior and exterior building evaluations, while 37 percent of properties have had only an exterior building evaluation completed. Approximately ten (10) percent of all properties evaluated have been found to contain cost-effective I/I sources and 82 percent of property owners have voluntarily entered into agreements with the City to have disconnection work completed.

Significant public outreach efforts have continued to educate residents about the voluntary program and encourage eligible property owners to participate in building plumbing evaluations. Project team members made 7 presentations about the KOTR program at neighborhood association meetings. In addition, door-to-door outreach was conducted along with personal phone calls. Through June 30, 2019, more than 8,000 properties have received door-to-door outreach or phone calls.

Through June 2019, 15 plumbers are under “indefinite delivery/indefinite quantities (ID/IQ) facility maintenance” contracts and they have performed disconnections on over 500 parcels.

VIII. ANNUAL SEWER REHABILITATION (ASR) PROGRAM

The OCP management team has worked with KC Water to develop a business risk exposure model to prioritize sewer assets for city-wide rehabilitation. The City intends to solicit bids for construction contracts for the execution of the work that will focus primarily on sewer point repairs, CIPP lining, and lateral connection rehabilitation within the combined and separate sewer systems.

During the reporting period, the City continued implementing the existing ASR contract. Concurrently the City developed construction contract documents for the fiscal year 2020 project utilizing the business risk exposure model.

IX. SCHEDULED ACTIVITIES FOR THE NEXT REPORTING PERIOD

The activities listed below are expected to occur during the next reporting period between July 1 and December 31, 2019. This list, however, should not be interpreted as a complete description of all activities that will occur in the second half of 2019. Certain Consent Decree and SSP activities (e.g., program management, NMC, CMOM, public participation, project planning, and data management) will continue for the duration of the Consent Decree but are not explicitly discussed in this section.

- Requests for Qualifications/Proposals for the following SSP projects are scheduled to be developed or advertised for selection of design professionals:
 - Relief Sewer: Outfall 055 Project
 - Relief Sewer: 45th Street and Emanuel Cleaver II Boulevard Project
 - Sewer Separation: Outfall 054 Area Project
 - I&I Reduction Northern Basins Area 1 Project
 - I&I Reduction Northern Basins Area 2 Project
- Requests for bid proposals will be advertised for selection of construction contractors for the following SSP projects:
 - I/I Reduction: Little Blue River Area 1 Project
 - I/I Reduction: Little Blue River Area 2 Project
- The City will issue a Notice to Proceed to Design Professionals or Construction Contractors for the following SSP projects:
 - Baseline Improvements: Town Fork Creek Project (design)
 - Sewer Separation: 15th Street Pump Station Area Project (design)
 - Relief Sewer: Vineyard Drive and Lawn Avenue Project (design)
 - Relief Sewer: Hardesty Avenue & 31st Street Project (design)
 - Supplemental I/I Reduction: Round Grove Basin Project (design)
 - Round grove Pump Station Rehabilitation Project (construction)
 - Neighborhood Sewer Rehabilitation Turkey creek/ CID Project Contract 1 (construction)
 - Neighborhood Sewer Rehabilitation Turkey creek/ CID Project Contract 2 (construction)
 - Diversion Structure 068 Storage Basin Project (construction)
 - Neighborhood Sewer Rehabilitation: Lower Blue River Area 1 Project (construction)
 - Neighborhood Sewer Rehabilitation: Lower Blue River Area 2 Project (construction)
 - Additional Green Infrastructures Demonstration Projects (Avenue of Life, VA Hospital) (construction)
- Work will continue pertaining to the implementation of the City's Private Inflow/Infiltration Reduction Program in conjunction with other I/I reduction projects in the SSS.
- Work will continue on the active Overflow Control projects shown in Table 1 and Table 2 that were not completed during the reporting period.
- Flow monitoring will continue in accordance with the CSS Metering Plan approved by USEPA in December 2015.
- Work will continue pertaining to implementation of the City's Sewer Rehabilitation within Waterways project to reduce inflow and infiltration.



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