

CASE STUDY

Technology, Resident Collaboration Enable Removal of Rainwater From Sewer System

Through the combined efforts of GIS technology and resident support, the City of Kansas City, Missouri, and our team are finding new ways to improve overall water and wastewater services by removing rainwater from the city's sanitary sewer system.



Challenge

An average of 6.4 billion gallons of wastewater overflow is produced each year from rainfall in Kansas City, Missouri, creating water quality issues and impacting public health. To address the issues this massive amount of overflow was producing, the city entered into a federally mandated agreement with the Environmental Protection Agency (EPA), resulting in the \$2.3 billion Smart Sewer Program, which aims to capture and treat 85% of combined sewer overflows and eliminate sanitary sewer overflows during heavy rainfall within a 30-year period.

Alterations to sewers and residential plumbing mandated by the agreement would impact the separate sewer system in the newer parts of the city, an area covering over 300 square miles. This meant that getting a high level of voluntary participation from residents would be necessary to complete project goals. Additionally, the team would need the ability to share large amounts of data with field staff, coordinate and track the work being performed, and analyze the program's effectiveness toward removing rainwater from the sanitary sewer system.

Project Stats

Client

City of Kansas City, Missouri

Location

Kansas City, Missouri

99%

CUSTOMER SATISFACTION

77K

CUSTOMERS AFFECTED



Keep Out the Rain personnel conduct an exterior property inspection to detect improper sewer connections.

Solution

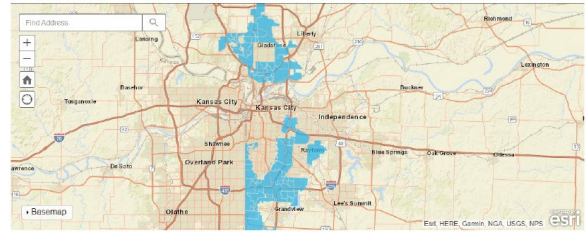
In an effort to leverage each dollar invested, Kansas City asked homeowners to voluntarily participate in the Keep Out the Rain program. It aims to reduce the overflows by fixing plumbing that is improperly connected to the city’s sanitary sewer mains, which is suspected of accounting for more than half the rainwater entering the system. In these target areas, the program will help ratepayers save millions of dollars in future capital improvements.

Through the Keep Out the Rain program, the project team addresses improper connections on private properties, to prevent water from entering sanitary sewers — mitigating conveyance to a treatment facility and saving on treatment costs. The project team comprises multiple companies with unique skills collaborating to support

Is My Property Eligible?

Enter your address below to see if your property is eligible for Keep Out the Rain, and to learn when we will be working in your area. Or call us at (816) 513-0200 or send us an [email](#).

Keep Out the Rain - Address Search



Keep Out the Rain is one piece of Kansas City’s largest infrastructure investment, the Smart Sewer program: KC Water’s multi-decade effort to reduce the volume of sewer overflows and improve water quality in the region for generations to come.

the city. The city covers cost-effective disconnections and repairs to rectify these connections for homeowners. First, the city will conduct an evaluation of the property and identify any improperly installed stormwater connections. If repairs are deemed cost effective, the city dispatches qualified plumbers to conduct the requisite work. This initiative not only preserves the environment but also contributes to significant cost savings in water treatment.

To engage residents in Keep Out the Rain and to help field crews collect data, the project team is using a configuration of the ArcGIS platform. ArcGIS allows project team members to share large amounts of information with one another, as well as to coordinate



Keep Out the Rain KC
Help reduce sewage backups & overflows in our community

Parcel ID	Parcel Status	Address	Evaluation ID	Evaluation Date
170713	Exterior Only Evaluation (No Contact Made)	7101 NW 73rd St	3C7A3441-0531-4074-28EA-1316642709129	10/9/2023
170715	Exterior Only Evaluation (No Contact Made)	7097 NW 73rd St	5503C4DF-F3A5-49F3-943A-28087C405578	10/9/2023
170716	Evaluation Complete - No Sources Found	7005 NW 73rd St	F1D90052-7C6F-447C-B888-325339F473C8	10/6/2023
170717	Exterior Only Evaluation (No Contact Made)	7003 NW 73rd St	39629088-8422-47E5-8F79-D83A33FCDC1D	10/9/2023
170718	Exterior Only Evaluation (No Contact Made)	6909 NW 73rd St	33581A3E-1AC7-48C6-8F72-F30DE7F851E7	10/9/2023
170719	Evaluation Complete - Sources Found Have Agreement	7214 N Avalon St	DD794514-EDED-472C-A738-FC99F31F406	10/5/2023
170723	Exterior Only Evaluation (No Contact Made)	7004 NW 72nd Ter	2F81FB03-1781-4F76-8215-DD81F1B55203	10/9/2023
170725	Exterior Only Evaluation (No Contact Made)	7100 NW 72nd Ter	FC49396C-F45A-4CAC-AD39-36C31C3D18C5	10/9/2023
170727	Exterior Only Evaluation (No Contact Made)	7104 NW 72nd Ter	83F3C899-13E8-40A2-8545-8259EAB4189F	10/9/2023

Parcel ID:	170719	Owner Name:	Johnson, Christy Lee
Evaluation ID:	DD794514-EDED-472C-A738-FC99F31F406	Updated Owner Name:	
Evaluation Date:	10/5/2023	Address:	7214 N Avalon St
Project Basin:		Primary Phone:	816-699-1521
Council District:		Evaluation Performed By:	owells_JCW5
Land Use Code:	1111	Land Use Description:	Single Family (Non-Mobile Home Park)
Parcel Status:	Evaluation Complete - Sources Found Have Agreement		
Agreement Comments:			
Inflow and Infiltration Source:	<input checked="" type="radio"/> Yes <input type="radio"/> No		

Project team dashboard for on-demand reporting and review of property evaluations.



A sump pump is connected to an inlet that discharges water into the yard, facilitating proper drainage.

and track project teams. Most importantly, ArcGIS helps Kansas City analyze the results of the program and report project success.

Existing GIS data is also being used to pinpoint areas where improperly installed plumbing connections on private property are suspected of contributing to the rainwater in the city's sanitary sewer mains. The city identified 77,000 properties where simple, cost-effective plumbing corrections could make a significant contribution toward reducing the city's overflow control issues.

The ArcGIS platform is also helping project teams communicate with residents and property owners by geographically selecting addresses to develop targeted mailings designed to notify stakeholders about the program and promote participation. The system was implemented to collect and display data in real time, which allows for on-demand reporting of project results.

Results

During the first five years of the program, Keep Out the Rain has evaluated more than 53,000 properties, confirmed nearly 6,300

cost-effective inflow and infiltration sources, completed more than 3,700 cost-effective repairs, identified and removed more than 42 million gallons during a typical five-year rainfall event from the system, and processed an average of 22,000 daily requests through the ArcGIS platform.

Having access to a variety of information in real time allows the Keep Out the Rain project team to stay ahead of the curve and continually improve upon its approaches and strategies to accomplish project goals.

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