

CORRECTIVE ACTION PLAN

For

**Sanitary Sewer Overflows Manholes #Q-14 & #Q-15 at the
Benton Utilities Wastewater Treatment Facility
City of Benton, Saline County, AR 72015**

January 3, 2023

NPDES Permit Number: AR0036498

AFIN:63-00063

MCE Project No. 23-5706

Background

Recently Arkansas Division of Environmental Quality's Office of Water Quality conducted a review of Benton Utilities NPDES Permit for the period of January 1, 2020 through December 11, 2023. Benton Utilities reported forty-four (44) Sanitary Sewer Overflows (SSOs) from Manholes Nos. Q-14 and Q-15 located within Benton Utilities' Wastewater Treatment Facility. The SSOs flowed offsite untreated. Influent wastewater is conveyed by gravity through manholes Q-14 and Q-15 via 36-inch gravity sewer to the headworks and then to Lift Stations Nos. 1 & 2.

Benton Utilities operates and maintains a wastewater collection and wastewater treatment system referred to as the Benton Utilities Wastewater Treatment Facility. The facility encompasses a wastewater treatment plant with lift stations and gravity sanitary sewer collection and conveyance systems. The wastewater treatment plant (WWTP) located at 616 West Hazel Street, Benton, AR is a activated sludge treatment system with a permitted rated capacity of 8.3 MGD of which 5.0 MGD is Biological Nutrient Removal (BNR) with their treated effluent regulated in accordance with NPDES Permit Number AR0036498.

The existing WWTP is comprised of fine screening, grit removal, activated sludge aeration (oxidation ditch), clarification, post aeration, and ultraviolet disinfection. This facility is classified as a major municipal since the design flow of the facility listed above is greater than 1.0 MGD.

During peak hour flows, Benton Utilities can redirect a portion of their wet weather flows to an equalization basin for temporary storage that can be released back to the wastewater treatment plant during lower dry weather flows.

Treated effluent discharges to a receiving stream: unnamed tributary of Depot Creek, thence to Depot Creek, thence to the Saline River in Segment 2C of the Ouachita River Basin. The receiving stream with USGS Hydrologic Unit Code (H.U.C.) of 08040203 and reach #913 is a Water of the State classified for secondary contact recreation, raw water source for domestic (public and private), industrial, and agricultural water supplies; propagation of desirable species of fish and other aquatic life; and other compatible uses.

Work that is Completed, Ongoing, and in the Future to Identify the Cause and Solution of the SSOs

Completed work to date includes:

- RJN Group conducted some flow metering studies to determine the flow and magnitude (peaking factor) of the influent wastewater during dry and wet weather flows to the WWTP.
- McClelland Consulting Engineers (MCE) has reviewed RJN Group's Flow Metering Studies
- MCE has met with the Operators of the Benton Utilities WWTP for their input to the cause of the SSOs.
- Benton Utilities since 2011 per the CAO LIS 11-069 has completed numerous projects to rehab their gravity sewer collection system, their lift stations, and the WWTP to reduce SSOs and effluent violations.

On-going work to date includes:

- MCE has designed improvements to Lift Station No. 1
- MCE has designed improvements to the WWTP's yard piping system to allow for wastewater being pumped from Lift Stations Nos. 1 & 2 to capable of being metered and distributed to either of the two of the racetrack activated sludge aerobic reactors for enhanced operations

Work planned for the Future includes:

- Further study and evaluations of the wet weather hydraulic flows into and through the WWTP to determine its maximum compliant flow limit
- Future study and evaluations of the pump operations and controls for sending influent wastewater to the Equalization Basin to determine if there is a more efficient and effective operational plan during wet weather flows.

- Conduct topographical surveys of manholes Q-14 and Q-15 including other associated manholes, the headworks, and Lift Stations Nos. 1 & 2 to determine the hydraulic relationship and evaluate the problems of managing wet weather flows.
- Review all WWTP operational procedures for managing wet weather flows
- Optimize control systems at the Willow Street lift station, this lift station is one of the major contributors of influent to the WWTP. Also, there is an auxiliary bypass lift station that will during high wet weather flows send flow directly to the Equalization Basin. By optimizing the control, Benton Utilities would hope to reduce peak flow into the WWTP helping reduce overflows.

Recommended Improvements (Prioritized)

- Upon completion of all the pertinent studies and evaluations, a prioritized plan of recommended improvements focused specifically on preventing SSOs from the subject manholes at the WWTP will be presented to Benton Utilities and possibly include:
 - Planning
 - System Improvements
 - WWTP Hydraulic Optimization
 - Necessary Improvements Project Costs
 - Staff Training
 - Wet Weather Operational Procedures
 - Lift Station Optimization

Procedures to Estimate the Volume of Reported SSOs

- Benton Utilities will develop their own staff training program to collect the data necessary to calculate the estimated SSO volume and for proper reporting
- Benton Utilities will evaluate and incorporate applicable procedures from the Sewer Spill Estimation Guide - <https://www.deq.nc.gov/water-quality/surface-water-protection/percs/wcs-ssso-documents/ssoflowestimationguiderevi/download>

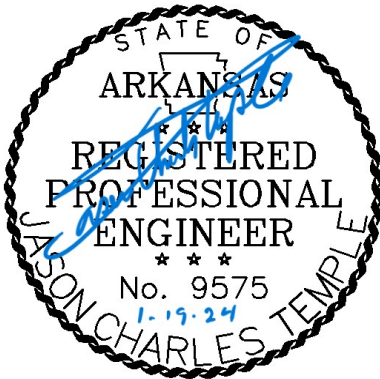
Milestone Schedule

The following milestones were developed based on the preceding:

Milestones	Date
Preliminary Engineering Studies to determine the cause and solution of SSOs at MH Q-14 & Q-15	December 31, 2024
WWTP & Lift Stations Operational Review	December 31, 2024
Financial Planning (if required)	April 1, 2025
Plans, Specifications, Cost Estimate (if required)	July 31, 2025
Permitting\ADH Engineering Review (If required)	January 31, 2026
Bid Phase (if required)	May 31, 2026
Start Construction (if required)	July 31, 2026
Finish Construction (if required)	January 31, 2027

The final compliance deadline would be January 31, 2027.

Quarterly reports will be provided upon approval by the Arkansas Division of Environmental Quality (DEQ).



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