

Burr Oak Regional Water District

Client

Burr Oak Regional Water District

Project

Satellite System TTHM Compliance

Location

Glouster, OH

Commission Date

May 2008



Figure 1: MIEX® System at Burr Oak Regional Water District in Glouster, Ohio

“Our main objective was to provide potable water to our customers that meets the safe drinking water laws of Ohio and meet EPA’s timeframe. The quick implementation of the MIEX system allowed us to do just that.”

Willard Stanley, BORWD District Manager.

Project Summary

Burr Oak Regional Water District, BORWD, had a sense of urgency to upgrade its treatment plant when faced with the risk of losing some of its satellite customers due to total trihalomethane (TTHM) levels exceeding the EPA MCL.

Converting to chloramines might have been the quickest option. However the high risk of nitrification in buyers’ systems as well as complications associated with converting all of the satellite systems to chloramines made this option nearly impossible. BORWD investigated using membranes and GAC to reduce the treated water TOC levels but determined that operational costs for these treatment options would be prohibitively high.

As the deadline for compliance drew closer, the MIEX® process was identified as a cost-effective and quickly implemented solution to reducing the level of DBP precursors.

Challenge

BORWD in Glouster, Ohio is a water wholesaler whose 2.4 MGD water treatment plant serves seventeen satellite systems. While TTHM levels were within the EPA standard leaving BORWD, these levels increased within its customers’ distribution systems resulting in six of the water systems exceeding the TTHM maximum contaminant level (MCL) mandated by the EPA.

BORWD sources its raw water from Burr Oak Reservoir. Treatment consisted of conventional coagulation with alum. Sodium permanganate and powdered activated carbon was added to the raw water in an attempt to improve the TOC removal provided by coagulation.

Raw water TOC levels, in the range of 2.7 to 4.4 mg/L, were reduced by an average of 40% through the treatment process. In addition to chlorination at the water treatment plant, six of BORWD’s customers have chlorine booster

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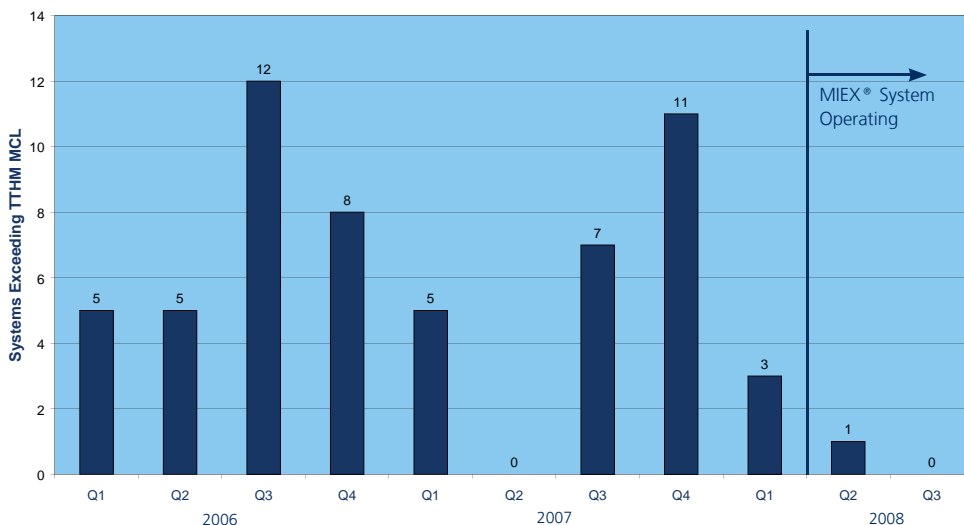
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Figure 2: Systems exceeding the TTHM MCL for a single quarterly sample



stations to maintain an adequate residual. The longest detention time to these customers is in the range from 14 to 15 days.

Solution

It was decided that installation of a MIEX® System would meet EPA compliance limits with reasonable capital and operational cost. The 2.4 MGD MIEX system was commissioned May 2008, less than 12 months from the decision to proceed with installation, with a total project cost of \$1.57M.

Project Outcomes

Since the MIEX® Installation, a significant reduction in treatment chemicals has been realized (See Table 1). Floc settleability has greatly improved with a subsequent 50% reduction in turbidity levels going onto the filters.

The lower treated water DOC level has significantly reduced the chlorine demand in the distribution system, allowing all six chlorination booster stations within the customers' service areas to be turned off.

An average reduction in quarterly TTHM levels of 36% across all systems served by BORWD has been realized in only three months (Figure 2).

Table 1: Summary of downstream benefits after MIEX® System start-up

Parameter	Before	After
TOC % Removal Range	10-59	58-67
TOC % Removal Average	40	64
Permanganate Dose (mg/L)	1.5	0
Alum Dose (mg/L)	35	8
Chlorine dose (mg/L)	2.9	2.1
Booster Stations in Use	6	0