

OVERCOMING Treatment Hurdles

Great Salt Bay Sanitary District (GSBSD) is a joint water and wastewater utility located in Damariscotta, Maine, a mid-coast community of about 2,000 people. Originally a wastewater treatment facility, the GSBSD began supplying drinking water in 1994 to Damariscotta and its sister city, Newcastle, Maine.

By Sandy Bolotsky

How one Maine utility retained its filtration waiver and came back into compliance

The source water for GSBSD is Little Pond, a pristine 77-acre pond about a mile into the Maine woods. Since arriving at the district in 1986, Superintendent Mary Bowers has worked diligently to protect and proactively manage this source water by acquiring 95% of the watershed property. As a result of this management program, plus Little Pond's outstanding water quality, low turbidity and absence of coliform bacteria, GSBSD has been granted a waiver from the surface water filtration requirement of the 1986 Safe Drinking Water Act.

Until 2006, the district treated its water only with chlorine. During the regularly scheduled tests for maximum contaminant level (MCL) standards, however, the district was found to be in noncompliance with the Disinfection Byproduct Rule because of the presence of excessive amounts of haloacetic acid.

This noncompliance triggered a treatment technique violation and as a result, the Maine Drinking Water Program (DWP), which oversees federal drinking water laws within the state, began making plans to withdraw the GSBSD filtration waiver. Additionally, excessive levels

with the waiver intact.

In March 2007, the DWP issued a formal consent order which outlined the activities and milestones that could bring GSBSD back into compliance. Shortly thereafter, with the assistance of a grant from the DWP, Bowers began working with the engineering firm Woodard & Curran to decide the most practical and cost-effective methods for meeting the treatment requirements.

Compliance Measures

One of the first projects was to search for accessible groundwater to blend with the Little Pond surface water, but no suitable groundwater was found. GSBSD then began a pilot project in which two relevant treatment changes were made; sodium silicates were added to sequester the lead, and ammonia was added to convert the chlorine to chloramines, thereby preventing the formation of the haloacetic acid. These additions successfully put GSBSD back into compliance, and the district is now in the process of constructing a permanent chemical feed building.

In line with the U.S. Environmental Protection Agency's Long Term 2 Enhanced Surface Water Treatment Rule (LT2), the consent order also required GSBSD to install an ultraviolet (UV) disinfection system, to be validated by June 2009. Because the district has a small customer base, cost was an important issue for this requirement. In addition, with only a few district employees available to handle system operations, the level of required maintenance was a significant consideration.

The following items were carefully researched during the decision-making process:

- Medium-pressure lamps vs. low-pressure high-output as to: range of effective germicidal wavelengths emitted; number of lamps needed to achieve the required UV dose; size of system lamps as they affect the installation and piping system headloss; required regular maintenance; and number of components needing replacement in the event of a problem;
- Initial capital cost for purchase and installation, plus average annual outlay for parts and maintenance;
- Safety concerns;
- Design life of the system;
- Ease of integration with current system and upgrading; and
- Available company support services and industry reputation.

of lead were found in some of the district's older homes because lead was leaching from the outdated plumbing.

Keeping the waiver was critical to district customers because it averted the considerable expense of constructing and running a filtration plant. Thus, Bowers began working closely with the DWP to locate any potential legal exceptions that might allow GSBSD to retain its filtration waiver. Fortunately, there existed such a law—the Seattle Amendment, which was applicable due to the pristine nature of the source water. This law, along with the cooperation of the DWP, allowed the district to resolve the haloacetic acid issue

Woodard & Curran created a list of potential district-appropriate UV systems, and Bowers called for references and the location of working installations. She visited several of them and talked primarily with the UV system operators, believing that their hands-on knowledge would be most valuable for her purposes. Upon completion of this research, Bowers and the engineer found the Trojan 2L12 MP unit to be most suitable for the district and recommended its purchase to GSBSD's trustees. At the time of print, units were just scheduled to begin operation, so no feedback was available on the working system.



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Lessons Learned

When asked if she had any advice for other small, rural communities facing similar treatment choices, Bowers suggested the following steps for making a difficult task a bit easier:

- Work closely with regulatory agencies to take advantage of their knowledge. In the case of GSBSD, it was the DWP who found the exception that allowed the district to keep its filtration waiver.
- Select an engineering firm with substantial prior knowledge about the issue and a willingness to explore various solutions.
- Visit UV installations, paying special attention to the comments and suggestions of the operators who run and maintain the systems.
- Keep customers, town officials and district trustees well informed from beginning to end.
- Educate the public and decision makers via newspapers, letters and meetings avoided unpleasant surprises for GSBSD and fostered positive responses to the recommended solutions.

GSBSD has additional upcoming challenges as a result of a new Maine law set to take effect, which regulates surface water withdrawals. Nevertheless, the district has successfully resolved its treatment issues and hopes that this experience may be instructive for others in similar situations. www

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