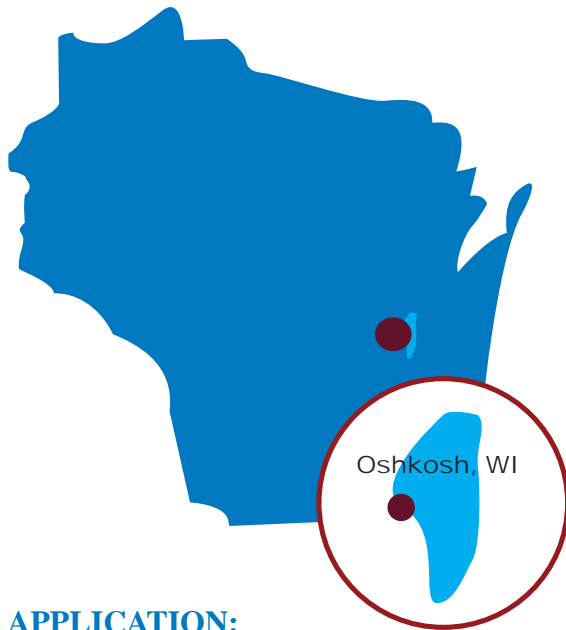




# TONKA EQUIPMENT COMPANY

## Project Profile

ALGOMA SANITARY DISTRICT NO. 1  
OSHKOSH, WI  
WATER TREATMENT PLANT



### APPLICATION:

Iron & Radium Removal

### TONKA PROCESS EQUIPMENT:

Tonka Horizontal Pressure Filters, isolated cell design  
Simul-Wash™  
TonkaBlend feed system; TonkaZorb HMO.

### PROJECT HISTORY:

The Algoma Sanitary District No. 1 is located northeast of Oshkosh, WI. They have turned to Tonka for their three most recent treatment systems.

In 2004 the District installed its first Tonka treatment system, which included a 400 gpm horizontal pressure system with a hydropneumatic tank. The system was designed to remove iron from the groundwater supply, and once the system was commissioned, it provided safe drinking water to about 50 homes in the area.

In 2005 the District installed its second Tonka treatment system. This system also incorporated a Tonka horizontal pressure filter, and was designed for iron and radium removal using Tonka's TonkaZorb Hydrous Manganese Oxide (HMO) process.

In 2009 a third Tonka water plant was installed in the District. This plant also incorporated a Tonka horizontal pressure filter designed for iron and radium removal using Tonka's TonkaZorb Hydrous Manganese Oxide (HMO). Today the Algoma Sanitary District supplies safe drinking water to 900 homes and has a maximum capacity to supply water to an additional thousand.

### TREATMENT PROCESS:

The treatment processes for the most recent additions are similar since they both are designed for iron and radium removal. Both treatment systems consist of pressure aeration for iron oxidation, followed by sodium

hypochlorite injection to assure complete iron oxidation. Following chlorine injection, TonkaZorb™ HMO is injected ahead of a horizontal pressure filter. The chemically treated raw water is filtered through a 30” bed of Tonka IMAR media, which is specifically designed for radium removal.

The treatment systems utilize TonkaZorb HMO, a pre-mixed, pre-formed Hydrous Manganese Oxide solution, which is delivered to the Sanitary District in a ready to feed form. The design system dosage rate of HMO was 1.0 mg/l, but since plant start-up, the dose has been optimized to approximately 0.25 mg/l, all the while meeting combined Radium 226 & 228 MCL standards.



The horizontal pressure filters include the value added Simul-Wash™ backwash process. This unique process uses air and water simultaneously at sub-fluidized water rates to provide the most effective means of backwashing granular media filters.<sup>1</sup> The Simul-Wash™ backwash troughs enable the air and water backwash cycle to continue indefinitely without media loss. This results in optimal filter cleaning efficiency and prolonged filter runs, while saving approximately 50% of backwash wastewater compared to conventional backwash methods.

**PERFORMANCE:**

The treatment process has been highly efficient in delivering quality water which exceeds current EPA standards for radium, as well as secondary standards for iron. Typical results are listed below.

	Raw Water	Finished Water
Iron (Fe)	0.88 mg/L	< 0.02 mg/L
Combined Radium (226/228)	9 pCi/L	<0.5 pCi/L
Gross Alpha	13 pCi/L	<5 pCi/L

**FOR ADDITIONAL DETAILS, PLEASE CONTACT:**

Tonka Equipment Company

<sup>1</sup> Amirtharajah, Appiah, et al. *Optimum Backwash of Dual Media Filters and GAC Filter-Adsorbers With Air Scour*, AWWA Research Foundation and American Water Works Association, 1991.



**TONKA EQUIPMENT COMPANY**

763-55-WATER • 763-559-2837 • FAX: 763-559-1979 • [www.tonkaWATER.com](http://www.tonkaWATER.com)

P.O. Box 41126 • Plymouth, MN 55441-0126 • 13305 Watertower Circle • Plymouth, MN 55441