



Radium Removal System

Mason, Michigan



Radium levels for the city of Mason, Michigan fluctuated from below to just slightly above the limit. Since Radium was an issue that had never been dealt with by Mason officials, Layne was asked to join Wolverine Engineering to present options on the Radium removal treatments. Layne presented six techniques, with Hydrous Manganese Oxide (HMO) being the most effective, with the added benefit of iron removal. Iron was found at higher levels in at least 2 of the city's 4 wells.

Layne conducted pilot tests and determined the HMO system was the most suitable and cost efficient option available. Since there were 4 wells, an engineering evaluation determined that treating at one central location was preferable over treating at each well facility. All wells were piped to a central location where Layne installed eight 6-ft diameter vessels for radium removal using HMO with LayneOx catalytic media. The system's combined operating capacity is 2.5 MGD. Layne's Bridgewater plant fabricated the skid and controls. Layne also provided extensive technical support for start-up and program debugging. Results included:

- The system has been performing well since September of 2008.
- Fully automated backwash system for minimal operator oversight.
- A high loading rate was achieved.
- System redundancy allowed for n for maintenance without taking the whole system off-line, saving time and money.
- The HMO system has lower chemical costs compared to other radium treatment technologies
- HMO also removed iron without any additional processes, which provided better quality water and no extra time or cost.

Owner:

- City of Mason, Michigan

Engineer:

- Wolverine Engineering

Contacts:

- Jim Groose, Water Treatment Specialist
- Mike Tracy, P.E., Senior Project Engineer
- Chris Zeeb, Branch Manager

Completed:

- September, 2008



Wolverine Engineering won "Project of the Year" award from AWWA in 2010.

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