

Project Profile

Uranium Treatment System Village of Marshfield, VT



Background

Following a very successful pilot test, AdEdge Technologies Inc. (AdEdge) was selected in 2007 by the Village of Marshfield, VT and the site's engineer, Forcier Aldrich & Associates (FA&A), to supply and install a full scale uranium treatment system using its AD92 regenerative Ion Exchange (IX) Technology. Given the high naturally occurring uranium of 76 ug/L (nearly 3X the acceptable level), the municipal system had not utilized the two supply wells for several years. Bottled water was being provided to residents in the interim awaiting a solution. The affected wells serve a portion of the town and can produce up to 80 gpm with an expected average daily demand of 28,500 gallons per day. AdEdge was contracted to fabricate and install the treatment system by FA&A and the Village. The AdEdge team prepared the design documents to install a twin vessel parallel treatment system to reduce the high uranium levels to below MCLs. Both regenerative and throw away options were explored with the conclusion that the regenerative AD92 IX approach was the preferred and most cost-effective option for this site.



Treatment System

Designed to provide high efficiency removal of naturally-occurring uranium from groundwater supplies, the packaged, pre-engineered AdEdge AD92 system featured a twin vessel configuration flowing 160 gpm in parallel or 80 gpm per vessel. The system came complete with a manual regeneration/brine system to regenerate the IX resin periodically on demand. The complete system was packaged and delivered for site installation in July of 2007. AD92 IX media is a specialty strong base anion resin with high capacity for uranium removal. It provides superior removal efficiency for uranium and greater resistance to organic fouling than other media. The negatively charged uranium species binds to the anion resin as it passes through the bed and is periodically regenerated with salt brine solution periodically as the resin reaches a certain loading level. The system was permitted by the Vermont Water Supply Division and utilizes a local discharge permit for the periodic wastewater.

pH**	7.3-7.6	
Total U**	0.076	mg/L
Alkalinity	57-88	mg/L @CaCO3
Sulfides**	no data	mg/L
Hardness**	56	mg/L @CaCO3
Silica**	no data	mg/L SiO2
Phosphate**	no data	mg/L PO4
Sulfate**	no data	mg/L SO4
Iron**	0.10	mg/L Fe
Manganese**	<0.005	mg/L Mn

The system was placed into full time operation in early July, 2007 processing 80 gpm through the system. Initial results reported by the site's State Certified Laboratory and reported to the State of Vermont Water Supply Division show excellent uranium reduction from 75 ug/L of uranium to below 2 ug/L (non-detectable) in the treated water. The system will be monitored regularly according to the terms of the operating permit.

Performance

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For More Information Contact

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