

CITY AVOIDS SUPERFUND STIGMA BY TAPPING ADVANCED WATER TREATMENT TECHNOLOGY

Being listed as a Superfund site is a dubious distinction that most community and business leaders consider detrimental to property values and economic development. So when groundwater contamination was found at a 1,240-acre site operated by the City of Hutchinson, Kansas, the mid-size community constructed a new, automated water treatment facility that uses a reverse osmosis (RO) process to clean the unusable water at a molecular level. Similar technology is used to remove salt from sea water to obtain fresh water and to purify fresh water for medical and industrial applications.



At the Hutchinson treatment plant, raw water is collected in two 50,000-gallon concrete reservoirs and pumped through greensand and anthracite pressure filters to remove iron and manganese. After being pretreated with chemicals, the water is forced through the RO membranes at high pressure to trap contaminants. The water is further treated to remove dissolved gases, carbon dioxide, and any remaining contaminants and then processed until the desired pH level is achieved. After the RO-treated water is blended with wellfield water and disinfected with chlorine, it is stored in a pair of 300,000-gallon clearwells prior to entering the city's distribution system.

Funded through the collaborative efforts of state, federal and private sources, the \$34.5 million treatment facility went on-line in April 2009 with a design capacity of 10 million gallons per day (MGD) of drinking water. The facility's modular design allows for capacity to be added as needed due to future industrial growth or economic development.

The fully automated facility features an advanced control system and three levels of redundancy. All of the treatment components are housed at one location, which was aesthetically designed using durable materials including concrete, stucco, and masonry protected by high-performance coatings from Tnemec. "You can tell from the plant's design that aesthetics were important," Tnemec coating consultant Rick Penner noted.

Floors throughout the treatment plant received a decorative, double-broadcast system consisting of Series 281 Tneme-Glaze and Series 284 Deco-Clear, which are modified polyamine epoxies that protect against mild chemicals, impact, and abrasion. "In addition to its high-gloss aesthetics, the coating system is skid-resistant," Penner explained. "These floors will frequently be wet, so a non-skid surface that is easy to clean was important."

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Series N140 Pota-Pox Plus, an innovative, polyamidoamine epoxy, was used as a lining for concrete and steel surfaces that come in contact with potable water. Series N140 is certified by NSF International in accordance with ANSI/NSF Std. 61, which is the standard that establishes minimum health effect requirements for products or systems that contact drinking water, drinking water treatment chemicals, or both.



The plant's masonry walls were sealed with Series 130 Envirofill, a waterborne, cementitious acrylic block filler, followed by a coat of Series 113 H.B. Tneme-Tufcoat, a waterborne acrylic epoxy, that offers abrasion, chemical, and moisture resistance. Exterior surfaces of steel tanks and piping were primed with Series 1 Omnithane, a moisture-cured, aromatic polyurethane, and topcoated with Series N69 Hi-Build Epoxoline, an advanced generation, polyamidoamine epoxy with excellent resistance to abrasion. Exterior metal received a finish coat of Series 1075 Endura-Shield II, an aliphatic acrylic polyurethane that's highly resistant to abrasion, wet conditions, and exterior weathering. "All of these coating products were specified for easy maintenance, durability, and corrosion protection against chemicals," Penner added.

Today the treatment facility is in full compliance with the U.S. Environmental Protection Agency (EPA) Long-Term 1 and 2 Enhanced Surface Water Treatment Rules and the Stage I and II Disinfection By-Products Rules. And instead of being designated as a Superfund site, the City of Hutchinson has been honored by the EPA with a pair of prestigious regional awards for improving the quality of drinking water in the community and for improving downstream water quality.

A Superfund site is a toxic site which has been placed on the National Priorities List (NPL), a list of polluted sites requiring cleanup which is maintained by the EPA. Placement on the NPL makes a Superfund site eligible for government-sponsored cleanup, or government assistance with cleanup. It also allows the EPA to put pressure on the responsible party to pay for or assist with cleanup. More than 1,000 Superfund sites have been identified around the United States.

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