

February 2010 Update

## Arsenic Trioxide Superfund Site

Richland and Sargent Counties, North Dakota  
(Review Date: 9/26/08)

### *H*ighlights Since the 2008 5-Year Review

- **The project received \$1.8 million in remedial design and \$12 million in remedial action funding through the American Recovery and Reinvestment Act (ARRA) of 2009. This design and construction work is being done under Segment 5.**
- **Approximately 150 rural users are being connected to a public water supply during the summers of 2009 and 2010 under Segment 4. Additionally, 2 water supply reservoirs and pump stations are being upgraded.**
- **Segment 3 construction was completed in September 2009, connecting 60 rural water users to the Southeast Water Users District (SEWUD) rural water system.**
- **Bottled water is being provided to users with contaminated wells while they are waiting to be connected to the water system. The lead for this program transferred to the North Dakota Department of Health (NDDH) in October 2008.**
- **An Explanation of Significant Differences (ESD) was signed in February 2009.**

**Brief Site History:** The site is located in southeastern North Dakota. It covers approximately 20 townships (approximately 568 square miles), encompassing portions of Richland and Sargent counties. The site area is sparsely populated and comprised of farmland with a few small cities including Lidgerwood, Wyndmere and Milnor. During the 1930's and early 1940's, arsenic-laced bait was used extensively throughout North Dakota to combat grasshopper infestations. The bait, which included arsenic trioxide, sodium arsenate, Paris Green and other arsenic compounds, was commonly applied to farm fields. Unused materials were often buried or dumped in pits or low-lying areas.

Routine water quality monitoring of municipal water supplies by the North Dakota Department of Health in 1979 identified elevated levels of arsenic at Lidgerwood. These levels exceeded the maximum contaminant level (MCL) of 50 parts per billion (ppb) designated by the EPA under the Safe Drinking Water Act and were determined to be a health risk by the State and the EPA. The State ordered Lidgerwood to act appropriately to provide drinking water that met the MCL for arsenic, and in response, Lidgerwood constructed a new water treatment plant by 1986. The site was initially proposed for the

National Priorities List (NPL) in 1981. Final listing of the site on the NPL occurred on September 8, 1983.

The remedy for the Arsenic Trioxide Site included expansion of three water treatment plants and associated distribution systems to provide safe drinking water to municipal and rural users that were using treated and untreated groundwater containing elevated arsenic concentrations. Other remedy components included monitoring of the source water aquifer; sampling of private wells outside the contamination boundaries; financial incentives to increase public participation in the project; institutional controls (ICs) to restrict private supply well use within the project area and new state regulations that would require water quality monitoring of new wells within the project area. The remedy was considered fully implemented and operational in 1993. The site was deleted from the National Priorities List (NPL) in July 1996.

EPA set new drinking water standards, effective February 2002 and enforceable January 2006, lowering the MCL for arsenic from 50 ppb to 10 ppb to protect consumers served by public water systems from the effects of long-term exposure to arsenic.

The second five-year review in 2003 showed that the remedy for the Arsenic Trioxide Site was no longer protective due to the lowered arsenic MCL. It was decided that, in order for the remedy to be protective, additional remedial action was needed, and a number of actions have been taken or are planned to return the site to a protective status. An extensive rural user well sampling program was initiated to determine if additional rural users in the 26 townships were drinking water over the arsenic MCL. Approximately 375 wells were sampled and 84% were at or above the MCL, many of them significantly above the MCL.

**Cleanup Activities Completed:** The decision in 2003 that the remedy was no longer protective without additional actions being taken has resulted in a series of actions to achieve long-term protectiveness at the site. This work has been divided into phases which are referred to as segments. The project has been implemented using a “segmented” design and construction approach.

Since 2003 the following cleanup activities have been completed:

- Segment 1: connection of the cities of Hankinson and Wyndmere to the SEWUD rural water system (November 2006).
- Segment 2: expansion of SEWUD treatment facility, storage and water supply well system to handle the increase in demand from additional users (March 2008).
- A bottled water program initiated by EPA Region 8 removal program for rural users with arsenic sampling results 10 ppb or greater (October 2007).
- The lead for the bottled water program transferred to NDDH in October 2008.
- Segment 3: construction started in June 2008 to connect approximately 60 rural water users. This work was completed in September 2009.

**Current Status:** Construction work on Segment 4, which was not funded with ARRA dollars, began in May 2009. Approximately 150 rural users are being connected to a public water supply during the summers of 2009 and 2010 under Segment 4. Additionally, 2 water supply reservoirs and pump stations are being upgraded. This work will be completed during the 2010 construction season.

The ARRA is providing all of the funds for Segment 5 of the project. The funding from the ARRA will allow the site work to be completed one year sooner than originally planned.

Segment 5 is divided into 3 separate designs and related construction contracts for the pipeline, facilities and water supply wells. The pipeline design is complete, and a bid has been accepted for its construction. The facility design is 100% complete, and the construction contract is scheduled to be advertised in late February 2010. The design for the additional water supply wells is scheduled to be completed by the end of March 2010 and will be advertised in April 2010.

Construction work for all three remedial actions (pipeline, facilities and water supply wells) will begin as soon as weather allows, approximately in the May/June 2010 timeframe. The treatment facility and water supply well actions are expected to be completed during the 2010 construction season. The pipeline action will be completed by December 2011.

**Summary of Protectiveness:** The remedy is expected to be protective of human health and the environment upon completion, and in the interim, exposure pathways that could result in unacceptable risks are being controlled. Many rural users have well water that contains arsenic at or above the new arsenic MCL of 10 ppm. In order to be protective, EPA in coordination with North Dakota Department of Health and the SEWUD should connect qualified rural users to the SEWUD system and upgrade the SEWUD system to be able to handle the increased demand. Bottled water should continue to be provided to rural users until those rural users are connected to the SEWUD system or until they refuse to be connected. The SEWUD needs to continue operating and maintaining their water treatment plant in order to be able to continue providing safe drinking water to users. Finally, EPA and NDDH must work together to develop ICs that will ensure new rural users are informed of the health hazards associated with the consumptive use of groundwater from private wells in the project area.

**Issues Impacting Protectiveness:** Issues were noted during the five-year review of the site. The following table summarizes the status of the follow-up actions addressing these issues.

**Arsenic Trioxide Superfund Site  
Five-Year Review Update Table  
(Review Date: 9/26/08)**

Issues	Recommendations/ Follow-up	Follow-up Actions (Status/Due Date)	Status of Follow- up Actions 12/09	Responsible Party
1) The new arsenic MCL and additional sampling indicates a significant number of additional rural users are drinking water above the MCL. These rural users are being provided bottled water.	The lead for the bottled water program is transferring from the EPA Region 8 removal program to NDDH. NDDH needs to continue to provide bottled water to rural users until those rural users are connected or refuse to be connected to the SEWUD system.	Bottled water lead transfers to NDDH by October 2008. NDDH retains lead until all qualified rural users are connected or refuse to be connected.	The lead has transferred to NDDH (October 2008), which is continuing to supply bottled water.	EPA/NDDH
2) Connecting affected rural users of contaminated well water will necessitate modification of the SEWUD system.	Design and construct additional connections, treatment plant modifications, storage reservoir modifications and well field expansion.	Anticipate the majority of the modification to be done during Segment 5 with some additional work in Segment 6.	Users are being connected to the SEWUD system. This work will be completed one year early than expected due to receipt of ARRA funding.	EPA/NDDH
3) New rural users that purchase homes not connected to the SEWUD system may not be aware that their well contains arsenic concentrations above the MCL.	ICs should be implemented to address this situation and prevent it from occurring. See #6 below.	ICs addressing long term protectiveness will be documented in the next ROD Amendment (anticipated first quarter 2009)	The IC decision was documented in an ESD (February 2009). The ICs in the ESD still need to be implemented.	EPA/NDDH

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4) The Lidgerwood treatment plant is experiencing declining performance for arsenic removal.	The City of Lidgerwood decided to participate in the ORD Demonstration project and has taken on financial responsibility and operation and maintenance of their treatment system.	To be determined by City of Lidgerwood	Lidgerwood received ARRA funding from another federal agency and is being connected to the SEWUD system.	Lidgerwood
5) No records were available that indicated the groundwater monitoring component of the remedy had been performed previously.	EPA and NDDH need to decide if this earlier ROD component continues to be necessary	Decision to be documented in next ROD Amendment (anticipated first quarter 2009)	It was decided that on-going groundwater monitoring was not needed. (ESD signed 2/2009)	EPA/NDDH
6) No records were available that indicated full implementation of the ICs.	Coordinate with NDDH to develop and implement ICs that will provide long-term protectiveness for the site.	ICs for the site to be documented in the next ROD Amendment (anticipated first quarter 2009)	The IC decision was documented in an ESD (February 2009). The ICs in the ESD still need to be implemented.	EPA/NDDH