



Special Trees Part of Arsenic Cleanup Plan

Ansul Fire Protection Stanton Street Facility

Marinette, Wisconsin

August 2007

Share your opinions

EPA invites your comments on its recommended plan to clean up and contain arsenic-contaminated soil, ground water and sediment. To submit your comments you can mail, e-mail, fax or use the online comment site.

Your comments must be postmarked by the last day of the comment period:

Wednesday, Sept. 12 – Monday, Oct. 29, 2007

Submit your written comments to:

Rafael P. Gonzalez

EPA Community Involvement
Coordinator

EPA Region 5 (mail code P-19J)

77 W. Jackson Blvd.

Chicago, IL 60604-3590

Fax: 312-353-1155

E-mail: gonzalez.rafaelp@epa.gov

Phone: 800-621-8431, Ext. 60269,

9 a.m. – 4:30 p.m., weekdays.

Online comments:

Documents and more information
online:

www.epa.gov/reg5rcra/wptdiv/permits/index.htm

Public hearing, open house

You can share your views on the Ansul site by attending a public hearing:

Thursday, Sept. 20, 2007

6 – 8 p.m.

Marinette City Hall

1905 Hall Ave.

A court reporter will record comments, or you can submit your written statements at the meeting.

Before the hearing, from 4:30 to 5:30 p.m. on the second floor of City Hall, EPA representatives will be available to meet one-on-one.

In an effort to clean up and contain arsenic contamination, U.S. Environmental Protection Agency Region 5 is recommending a plan that includes dredging Menominee River mud, covering 4 acres of the Ansul Fire Protection site, installing underground barrier walls to contain contaminated water and planting hybrid poplar trees to keep the site dry. These actions are among several cleanup alternatives proposed by the Ansul Co. The cleanup options are designed to minimize arsenic exposure to people and aquatic life from unsafe levels of contamination in the soil, underground water (called ground water in environmental terms) and river mud (sediment). EPA picked its recommended plan from five cleanup alternatives presented by Ansul for soil and ground water, and from five options for sediment cleanup. All of the alternatives are summarized later in this fact sheet. After EPA decides on a final cleanup plan, Ansul will pay for and conduct the cleanup.

EPA and state partner Wisconsin Department of Natural Resources will explain their recommended plan and the other alternatives at a public hearing Sept. 20. People have from Sept. 12 until Oct. 29 to comment on the cleanup options and the Agency's recommendation (see box at left to find out how you can comment). Based on public comments, EPA may modify its proposed cleanup plan or pick another option, so your input is important.

This fact sheet summarizes more detailed information contained in a document titled *Statement of Basis for Ansul Fire Protection Stanton Street Facility EPA ID No. WID 006 125 215*. This publication and other material such as the facility investigation report and the corrective measures study can be read in the administrative record at the Stephenson Public Library in Marinette. Cleanups at working facilities such as Ansul fall under regulations associated with the federal Resource Conservation and Recovery Act.

Cleanup standards

Almost all soil in the highly industrialized United States contains pollutants to varying degrees, so the goal is to keep levels of potentially dangerous substances within safe levels. A health risk evaluation at the Ansul property demonstrated that for soil arsenic the upper safe limit is 32 parts arsenic per million parts soil (parts per million, abbreviated ppm). Think of a part per million as comparable to 1 second in 11 days. Areas of the site containing more than 32 ppm arsenic would be capped with soil, gravel, asphalt or concrete under EPA's recommended plan. A small area outside the property near the football field will be cleaned to 16 ppm, based on a safe recreational exposure level.

Sediment cleanup standards are a little different. EPA wants to target river mud containing more than 50 ppm arsenic. Sediment containing arsenic levels less than that would be allowed to decrease naturally over

the next several years.

Ground water with very high arsenic levels, like at Ansul, is difficult to treat and would take a long time. At Ansul the main goal is containing the deeper contaminated ground water and preventing it from moving into the river rather than trying to clean it to a certain standard. The preferred cleanup option also calls for planting thirsty poplar trees that would absorb shallow ground water and keep it from flooding parts of the property.

About the Ansul site

Ansul currently manufactures hand-held fire extinguishers and blends fire suppression agents at its 60-acre facility at One Stanton St. Ansul or its predecessors have occupied the site since 1915. Ansul's initial activities included production of cattle feed, refrigerants and specialty chemicals. Production of fire suppression chemicals began in 1934, and by 1983 Ansul had stopped producing other products at the facility.

From 1957 to 1977, Ansul manufactured a herbicide at its Marinette plant using cacadylic acid, and one byproduct was a waste salt containing a small amount of arsenic. From the early 1960s until 1973, the waste salt was stored in uncovered, unlined waste piles. Between 1960 and 1966 liquid wastewater containing the arsenic salt also discharged directly to the river. Moisture runoff from salt piles on-site also contaminated river mud with arsenic. By 1977, around 95,000 tons of waste salt had been stored in an area called the salt vault. Ansul began disposing of the waste salt by shipping it to landfills and none remained on-site after 1978.

Wisconsin DNR began investigating environmental issues at Ansul in 1973. Since then more than 25 investigations have been completed, and the company has signed two administrative consent orders. The legal orders required Ansul to perform several interim cleanup actions while a site-wide, comprehensive plan was being formed. All the investigations and interim measures have culminated in the cleanup plan currently under consideration.

Risks to people and the environment

Ansul evaluated health risks to people, plants and animals from arsenic exposure as well as from other chemicals at the site and in the Menominee River. Using information from the risk evaluations, EPA and Wisconsin DNR developed acceptable cleanup levels for the arsenic-contaminated areas. EPA determined surface soil must be covered or removed to protect on-site industrial and construction workers as well as recreational users near the site from exposure. Construction workers must be required to follow safety measures, and restrictions will be placed on the use of ground water at the facility.

The risk study found very little habitat in the manufacturing portion of the Ansul property so plants and animals are not considered to be at risk from the arsenic there. A risk estimate for the natural area on the eastern portion of the site also showed that plants and animals were not at risk from arsenic exposure.

Some "hot spots" in the Menominee River sediment contain more than 10,000 ppm of arsenic, but the health risk assessment found people are not

being excessively exposed, even if they eat fish from the river.

Since a healthy, reproducing river community is one of the cleanup goals, EPA's recommended plan proposes reducing the arsenic levels until they reach 20 ppm or less.

Cleanup options

EPA looked at five alternatives presented by Ansul for cleaning up on-site ground water and soil contamination and another set of five options for Menominee River sediment. The alternatives were compared with nine evaluation criteria (see box, Page 3).

Each cleanup alternative includes a number of legal agreements called "institutional controls" that will prevent human exposure to contaminated ground water at the site. Ansul will ban the use of underground water and prohibit digging in the manufacturing area. Ansul already requires workers to wear protective gear whenever they work in contaminated areas, and this policy will be enforced for all tenants that may use the property in the future. All costs are estimates.

Soil and Ground Water Cleanup Options

Alternative 1 – Cap and Contain:

Under this option, a below-ground barrier wall would surround the Ansul property to prevent deep ground water from moving into the river. The subsurface wall built to bedrock depth would consist of sheet piling or a natural material called slurry. This type of wall was successful in containing underground water at Ansul's former salt vault and another structure on the site called the Eighth Street Slip. Shallow ground water, however, would be treated using a passive collection system. Under this system, ground water

would be kept at a constant depth to prevent the site from becoming wet. The passive collection system would have a special membrane filter to remove pollutants for off-site disposal. Soil at the surface would be capped by clean earth, gravel, asphalt or former building slabs to prevent rain and snowmelt from soaking into the ground and picking up arsenic. **Cost - \$8.2 million**

Alternative 2 – Funnel, Gate and Permeable Reactive

Barrier: Under this option, an underground wall would be built similar to the wall in Alternative 1, but it would be smaller and placed along the property line bordering the Menominee River. The wall system would “funnel” ground water toward a gate made of a material that would collect arsenic and keep it from entering the river. **Cost - \$8.3 million**

Alternative 3 – Cap and Contain with Hydraulic Control: (This is EPA’s recommended cleanup option)

Under this option, the barrier wall and surface soil caps from Alternative 1 would be constructed. In addition, large areas of the site would be planted with hybrid poplar trees that would pump large volumes of shallow ground water through their roots to keep the site dry. This process is called “phytopumping.” A back-up mechanical pumping system would be used during the trees’ dormant periods. **Cost - \$17.3 million**

Alternative 4 – Permeable Reactive Barrier with

Phytoremediation: This option combines the funnel and gate system from Alternative 2 with the phytopumping poplars from Alternative 3. **Cost -- \$7 million**

Alternative 5 – In-place

Stabilization: Under this option, a stabilizing substance would be added to the soil. The material would bond with the arsenic making it less likely to dissolve in ground water. **Cost -- \$71 million**

Menominee River Sediment Cleanup Options

The cleanup actions in these alternatives target sections of river bottom containing arsenic levels of 50 ppm or greater. The final cleanup target is 20 ppm so in some places where arsenic levels are between 20 ppm and 50 ppm, natural processes such as dispersion would be relied on to attain the cleanup target over the course of 10 years. Sampling would be done to ensure the natural processes are working. Sediment cleanup actions would begin about a year after the ground-water containment barrier is installed. About 74,000 cubic yards of Menominee River sediment near the Ansul property is contaminated with more than 50-ppm arsenic.

Alternative A – Hydraulic

Dredging: Hydraulic dredging uses a submersible auger-like cutting head connected to a large diameter hose going to the surface. The sediment is pumped to either a barge or a staging area on land. The largest item in the cost estimate for this alternative is water treatment because of the large volume of water mixed with the sediment. **Cost - \$15 million**

Alternative B -- Mechanical

Dredging: (this is EPA’s recommended option) An advantage of mechanical over hydraulic dredging is that more mud versus water is removed in the dredged slurry, which means less water treatment and lower

Explanation of evaluation criteria

1. Overall protection of human health and the environment

addresses whether an option protects both human health and the environment. This standard can be met by reducing or removing pollution or by reducing exposure to it.

2. Compliance with applicable or relevant and appropriate requirements ensures that

options comply with federal, state and local laws.

3. Long-term effectiveness and permanence

evaluates how well an option will work over the long-term, including how any remaining contamination can safely be managed.

4. Reduction of toxicity, mobility or volume through treatment

addresses how well the option reduces the toxicity, movement and amount of pollution.

5. Short-term effectiveness

compares how quickly an option can help the situation and how much risk will remain while the option is under construction.

6. Implementability evaluates how feasible the option is and whether materials and services are available in the area.

7. Cost includes not only buildings, equipment, materials and labor but also the cost of maintaining the option for the life of the cleanup.

8. State acceptance asks does the state environmental agency accept the option. EPA evaluates this criteria after receiving public comments.

9. Community acceptance judges how well do nearby residents accept the option. EPA evaluates this standard after a public hearing and comment period.

costs. Disadvantages include the slower pace of mechanical over hydraulic dredging, less accuracy and the tendency to stir up contaminated sediment. **Cost - \$9.2 million**

Alternative C – Sand Cap: Under this option, a layer of sand would cap and contain the contaminated sediment. Sand caps have proven effective at isolating pollution, and the cost is much less than dredging. At Ansul, a sand cap would also be reinforced with rocks to limit erosion. The major disadvantage to capping is the area needs to be monitored for several years until the contamination decreases through natural processes or until testing shows the contaminants are stable and remain isolated from the river ecosystem. A sand cap might also require regular maintenance. **Cost - \$5.2 million**

Alternative D - Synthetic Cap: A synthetic cap is a fabric pillow filled with concrete. Synthetic caps have not been widely used and may require more monitoring and regulatory oversight than a sand cap, but maintenance should be less. A synthetic cap may not be effective in an area where fish habitat must be maintained, but a

Read the documents

Official documents about the Ansul site are on file at the **Stephenson Public Library**, 1700 Hall Ave., Marinette, or at the EPA Region 5 offices in Chicago.

combination sand and synthetic cap could be used on steep river bottom slopes where fish habitat is desired. **Cost -- \$9.2 million**

Alternative E – Dry Excavation:

This option is typically implemented in shallow water of 6 feet or less and where the target area is easy to isolate and drain. The cost for dry excavation is typically higher than dredging but becomes more reasonable if the contaminated area turns out to be small. **Cost - \$17 million**

Evaluation of alternatives

As a method of comparison, each option was evaluated using the criteria listed on Page 3. For soil cleanup and ground water control, EPA believes Alternative 3, Cap and Contain with Hydraulic Control, is the most cost-effective course of action. This alternative protects people from exposure to arsenic and limits pollution from moving into the Menominee River. As this option does not actually reduce the arsenic levels in the soil and underground water, construction workers digging on the site would need to wear protective gear to prevent exposure.

Alternative 3 is more expensive than Alternatives 2 and 4, which both use an underground funnel and gate with a reactive barrier to manage the ground water. Tests performed by Ansul showed the reactive barrier was not effective in treating arsenic.

Alternative 5, in-place

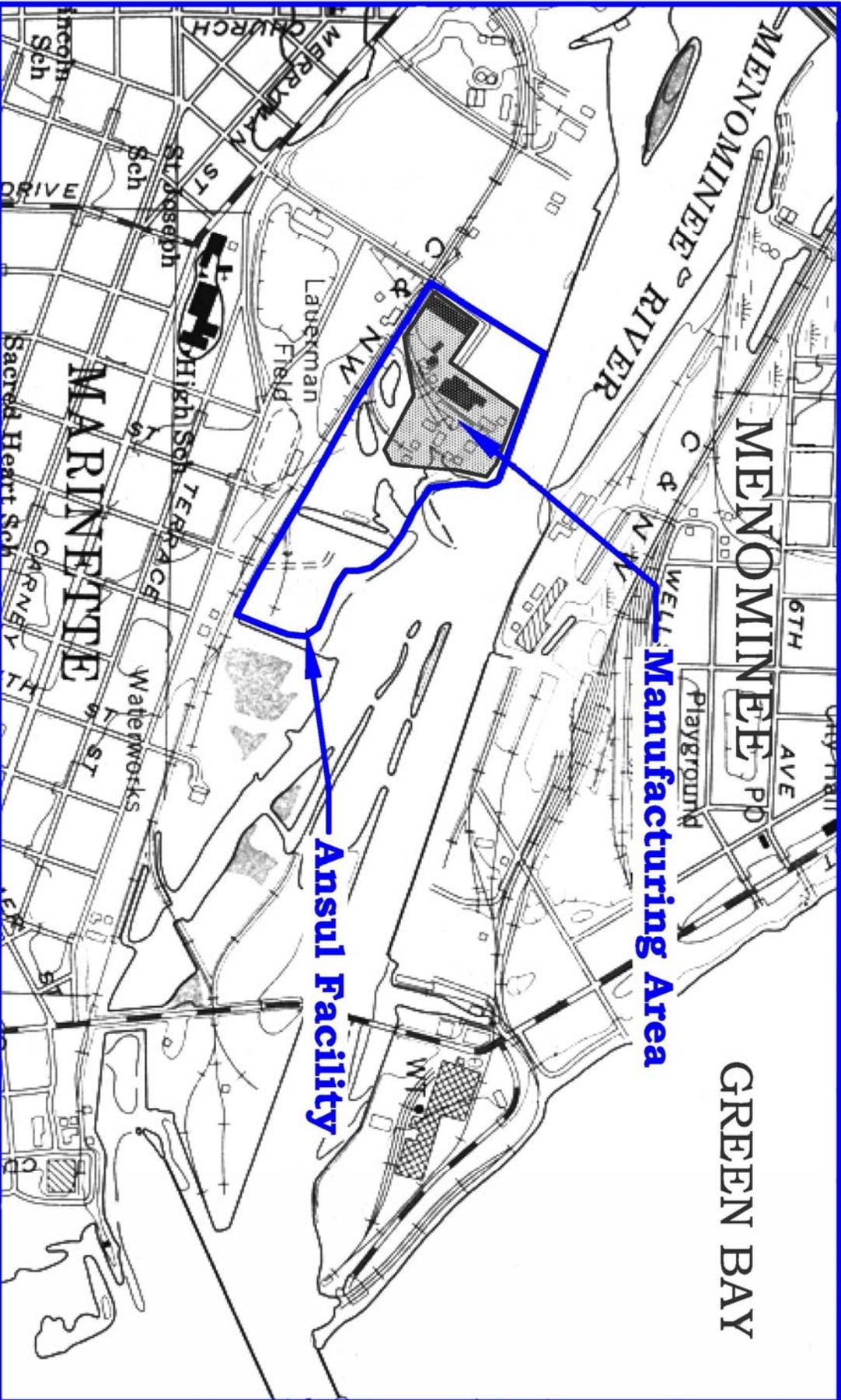
stabilization, is much more expensive than cap-and-contain, and it has proven difficult at other sites to work the stabilization material into the soil.

For sediment cleanup in the Menominee River, traditional mechanical dredging in Alternative B appears to be the most cost-effective plan. The hydraulic dredging of Alternative A is less desirable due to the large volume of contaminated water that would be produced. The sand cap of Alternative C would be cheaper, but the capped area would require monitoring for several years. The Alternative D synthetic cap costs just as much as dredging would, would require additional regulatory controls and would not provide good fish habitat. Alternative E, dry excavation, only works in small, shallow areas.

Next steps

EPA, Wisconsin DNR and Ansul representatives will meet with the public Thursday, Sept.20, to discuss these cleanup options. A written comment period runs until midnight Oct. 29. After considering all written and oral statements, EPA will decide to accept, reject or modify the recommended cleanup plan or pick another alternative. EPA will announce its decision with a notice in a local newspaper.

Once the cleanup plan is selected, Ansul will hire contractors to design the cleanup systems and build and operate them, a process that could take two years.



Arsenic Cleanup Plan Proposed for Ansul Property

Public Meeting Sept. 20, 2007

(details inside)

ANSUL FIRE PROTECTION SITE: Arsenic Cleanup Plan Proposed

United States
Environmental Protection
Agency
Region 5
Office of Public Affairs (P-19J)
77 W. Jackson Blvd.
Chicago, IL 60604-3590

