

Remedial Action Options Report

**Neillsville Foundry
1200 E. 15th Street
Neillsville, Wisconsin
WDNR BRRTS No. 02-10-000048
FID No. 610031400**

Prepared for:

**Wisconsin Department of Natural Resources
Madison, Wisconsin**

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1200 E. 15th Street
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Executive Summary

The Wisconsin Department of Natural Resources (WDNR) retained Ayres Associates to conduct a supplemental site investigation and prepare a remedial action options report for the former Neillsville Foundry in Neillsville, Wisconsin. The project consisted of investigating and evaluating remedial action options of a foundry waste materials disposal site located adjacent to the foundry facility. Ayres Associates completed this work under a July 7, 2000, WDNR contract with amendments on March 30, 2001, and April 23, 2003. The site investigation was completed in September 2002 and is documented in a report titled "Supplemental Site Investigation, Neillsville Foundry, Neillsville, Wisconsin," September 2002. Following WDNR review of the site investigation report and a November 14, 2002, site meeting, Ayres Associates proceeded with the remedial action options phase of the project. This "Remedial Action Options Report" follows Wisconsin Administrative Code NR 722 requirements and identifies several remedial options, compares costs, and provides recommendations.

Background

The disposal site is in the NE ¼ of the NE ¼, Section 14, Township 24 North, Range 2 West, City of Neillsville, Clark County, Wisconsin. The WDNR BRRS No. for the site is 02-10-000048. O'Neill Industries, Inc., 161 E. 5th Street, Neillsville, Wisconsin, currently owns the property and historically leased the property to various operators. The facility was constructed in 1969, operated as a foundry until 2002, and is currently vacant. The facility generated foundry sand waste from the manufacturing of iron castings and operators historically disposed of waste south and east of the building. The waste disposal area is approximately 3.1 acres.

In 1989, the WDNR ordered Neillsville Foundry to conduct an investigation of soil and ground water quality because of concern that the foundry waste was being improperly disposed. The site owner at that time retained Exploration Technology Incorporated (ETI) to conduct an initial site investigation in 1990 and 1991. ETI installed 10 backhoe test pits; 9 soil borings, 3 water table monitoring wells, and 1 piezometer, and conducted laboratory analyses of soil and ground water samples. Because of the foundry operator's financial difficulties, a final report documenting the investigation was never prepared. This study never identified the depth of foundry sand waste but did determine that it was at least 6 feet deep in each of the 10 test pits that were installed.

Ayres Associates began a supplemental site investigation in July 2000. Site investigation activities included inspecting, surveying, and redeveloping existing monitoring wells; and installing 19 4-foot-deep hand auger soil borings. Activities also included analyzing samples for polynuclear aromatic hydrocarbons (PAHs), arsenic, cadmium, chromium, and lead; conducting hydraulic conductivity tests; installing two water table and four piezometer monitoring wells; collecting ground water samples; and preparing a September 2002 supplemental site investigation report. Soil sampling findings indicated that arsenic concentrations in the foundry sand surface layer (0 to 4 feet) ranged from 1.2 to 19.1 mg/kg. The NR 720.11 industrial site direct contact standard for arsenic is 1.6 mg/kg. PAHs and other metals were not detected or were detected at low concentrations.

Ground water sampling was completed for PAHs, dissolved metals, and volatile organic compounds (VOCs). Primary contaminants that exceeded the Wisconsin Administrative Code NR 140 Enforcement Standard (ES) and/or Preventive Action Limit (PAL) included

tetrachloroethane (PCE) and trichloroethene in down gradient wells MW-2A and MW-2B, and benzene in MW-4A, up gradient well MW-1B, and down gradient well MW-2A. The report concluded that the PCE contamination source appeared to be from a point source near MW-2A/2B or to have originated in the waste disposal area up gradient from MW-2A/2B. The benzene source was attributed to an on-site diesel fuel spill or potentially from a bus garage located north of the foundry. The direction of ground water flow is southerly and down gradient receptors include the wetland immediately south of the waste disposal area and O'Neill Creek, located approximately 950 feet down gradient from MW-2A/2B. No potable wells are located between O'Neill Creek and the foundry waste disposal site.

The September 2002 report recommended continued ground water monitoring to determine PCE and benzene trends, and a meeting with WDNR and local site representatives to discuss future development land use options and the range of potential remedial action options. A meeting was held on November 14, 2002, in Neillsville. Attendees included the site owner and representatives from Ayres Associates, WDNR, City of Neillsville, Clark County Economic Development Corporation, and the Western Wisconsin Regional Planning Commission. The meeting included a site tour, discussion of the supplemental site investigation findings, potential uses and marketability of the vacant foundry building, and remedial action options.

Remedial Action Options

Based on site investigation findings, the primary remedial action objective is to remove risk of direct contact with arsenic contamination in soils. A secondary objective is to reduce infiltration through the foundry sand waste to prevent leaching of known, and potentially unknown, contaminants into the ground water. Remedial action options considered include the following:

- Option 1: Cap with Native Fill Materials
- Option 2: Clay Cap
- Option 3: Geosynthetic Clay Liner Cap
- Option 4: Site Redevelopment and Cap
- Option 5: No Action and Soil Deed Restriction
- Option 6: Relocate Waste at Licensed Landfill

We prepared preliminary design parameters, cost estimates, and evaluations of anticipated performance for each remedial action option. Estimated costs for the various options ranged from \$133,870 to more than \$840,000.

Recommendations

Of the remedial action options considered, Option 1—Cap with Native Fill Materials is the most cost-effective option that meets the criteria of eliminating direct contact exposure and reducing surface water infiltration potential. The cost of implementing this option is \$225,775. This cost could be reduced by steepening sideslopes from 4:1 to 3:1, reducing the duration of long-term monitoring and care, and reducing the frequency of monitoring. A drawback for any of the capping Options 1, 2, and 3 is that the waste disposal area will not be available for future development.

Option 4—Site Redevelopment and Cap may be a viable alternative, depending on development potential and available Brownfield development grants and loans. The advantage of this option is that the waste disposal area would be available for development. The initial cost of this option is lower than Option 1; however, the Option 4 cost estimate does not include final grading and site capping costs (paving and/or foundations).

A final decision on the selected option should be made based on the available WDNR funding from the former Neillsville Foundry, Inc., settlement, site redevelopment potential, and available Brownfield grants and loans. If it is determined that site redevelopment is not feasible, we recommend Option 1 as the most cost-effective remedial action option.