

**U.S. Environmental Protection Agency  
Region 5**

**STATEMENT OF BASIS  
Henkel Surface Technologies Site  
Morenci, Michigan  
MID 058 723 867**

**INTRODUCTION**

This Statement of Basis for the site of the former Henkel Surface Technologies facility in Morenci, MI (“Site”) explains the process for cleaning up contaminated soils and groundwater, protecting future harm from the Site, and provides the rationales for the proposal. The U.S. Environmental Protection Agency (U.S. EPA) is issuing this Statement of Basis as part of its public participation responsibilities under the Resource Conservation and Recovery Act (RCRA). As described below, members of the public are being afforded opportunity to review and comment on the cleanup and protection proposal set forth below.

This document summarizes information that can be found in greater detail in the Administrative Record for this Site. The U.S. EPA and the Michigan Department of Environmental Quality (MDEQ), which directed the closure of regulated units at the Site, encourage interested members of the public to review these documents in order to gain a more comprehensive understanding of the Site and the RCRA-related activities that have been conducted, and are being proposed, at the Site.

**PROPOSED REMEDY**

The U.S. EPA, in conjunction with the MDEQ, is proposing the following remedy to address the contaminated soils and groundwater at the Site:

**Land Use Restrictions** (Declaration of Restrictive Covenants, Lenawee County, MI) for the remaining Site property. Site property is identified as Lenawee County TAX ID HM0-305-0330-00. The restrictions shall provide that:

- a) The owner shall restrict the use of the property to uses compatible with commercial, II, III or IV land use categories, as defined by MDEQ pursuant to Section 20120a(1) of Part 201 of NREPA, as in effect as of November 22, 2005, or other use that is consistent with the assumptions and basis for the cleanup criteria established pursuant to Section 20120a(1)(b),(d),(g) or (i). The owner must also comply with MDEQ’s Part 201 requirements regarding physical hazards. This will involve a deed notice that broken glass and china existing in the subsurface soil of the creek bank in the area formerly known as Waste Area 6 could present a hazard to construction workers. Cleanup criteria for land use-based remedial action plans are located in the Government Documents Section of the State of Michigan Library.

b) The owner shall prohibit the construction of wells or other methods or devices on the property to extract groundwater from the shallow aquifer under the property for consumption, irrigation, or any other use unless approved by MDEQ. Short term de-watering for construction purposes is permitted provided that such de-groundwater, is conducted in accordance with all applicable local, state and federal laws and regulations.

It should also be noted that the owner must obtain a mixing zone approval from MDEQ under the State regulations implementing the Clean Water Act, because the concentration of vinyl chloride in the groundwater discharging from the site to Bean Creek currently exceeds the MDEQ groundwater/surface water interface criteria. The MDEQ review of the mixing zone is already underway. Such approvals usually require semiannual groundwater monitoring to verify compliance with the conditions of the MDEQ mixing zone approval, and a financial assurance requirement. A more detailed discussion of the proposed remedy is set forth below.

## **FACILITY BACKGROUND**

The Site is located in Morenci; Lenawee County, Michigan, on the west side of Mill Street approximately 350 feet north of Main Street (see Site Location Map on Page 5). The Site contains approximately four acres of grass-covered land and is completely fenced. Bean Creek trends north/south near the western property boundary. The Site is located in a predominantly urban area. Commercial properties are located south and southeast of the Site. Bean Creek and a public park are located west of the Site, residential properties are located east of the Site, and agricultural land is located north of the Site.

Prior to 1928, the site was used for a dairy farm and creamery. The Site has been subsequently owned and operated by Oxy Metals Corporation (a division of Occidental Chemical Company), Hooker Chemical Company, Ford Motor Company, Parker Chemical, and Henkel Corporation. These companies had active operations at the Site from 1928 to 1988. During October 1981, Oxy Metal merged into Hooker Chemicals and Plastics Corporation, and during August 1982, Hooker changed its name to Occidental Chemical. In October 1983, Parker Division of Occidental Chemical was sold to Parker Chemical Company. In April 1987, Henkel Corporation acquired Parker Chemical. Parker Chemical continued to operate at the Site. On January 1, 1989, Amchem Products, Inc. and Parker Chemical Inc. merged into Henkel Corporation. Henkel Corporation operated on the Site until February 1988.

The Site is currently vacant and no industrial operations are being conducted on the Site. The former east portion of the Site has been legally separated and sold to the City of Morenci

## **REGULATORY AND REMEDIAL HISTORY**

On September 29 1982, U.S. EPA issued a Notice of Complaint vs. Parker Chemical (a subsidiary of Occidental Chemical, predecessors of Henkel) and assessment of a proposed civil penalty of \$25,000 for RCRA violations involving improper storage, treatment and disposal of hazardous waste at the Site. Several hundred drums, some of which were leaking and damaged were noted on site, with inspection reports and photos provided by MDEQ inspectors. On July 8, 1983, a cashier's check in the amount of \$25,000 was paid to the U.S. Treasury as payment for the civil penalty for these violations (U.S. EPA Docket #V-W-82-R-021).

On April 23, 1986, a Preliminary Assessment/Visual Site Inspection (PA/VSI) was conducted for the Site by Ecology and Environment Inc, a contractor to the U.S. EPA. Leaking and damaged drums had been removed by this time. Included in the PA/VSI report was information derived from review of the MDEQ inspection reports and sampling events, and the PA/VSI assigned a hazard ranking to the Facility taking into account materials of concern at the Site, including but not limited to polychlorinated biphenyls (PCBs), toluene, benzene, ethylbenzene, hydrofluoric acid, ethylamine, chromium, cadmium, arsenic, nickel, lead and copper. No soils had been cleaned up or removed at that time. The PA/VSI report summarized information from MDEQ inspection reports on releases of chemicals of concern from the Site to Bean Creek, including PCBs.

The Site was operated by Henkel Corporation as a hazardous waste management facility from November 19, 1980, to 1988 (MID 058 723 867). During that time, seven distinct hazardous waste storage areas were present (see Facility Map, p.5). Beginning in 1988, all drums and waste materials were removed. All structures on the Site were razed in 1993. No industrial or commercial operations have been conducted on the Site since that time.

In accordance with an Approved Closure Plan dated November 24, 1993, a soil investigation was conducted by Henkel in January, 1995, addressing the closure of seven former hazardous waste storage areas. Soil investigations continued from 1994 through 1999. Based on lead being found present in Waste Area 6 above the "Type B" cleanup criteria, a limited soil removal was conducted by Henkel in August of 1999 from this area of the Site. (see Facility Map, page 6). The removal involved excavation (and disposal at a Type II landfill) of 1560 cubic yards of soil, filling with clean sand, and collection and testing of 85 soil verification samples. The verification samples showed lead at less than the direct contact criteria of 400 parts per million.

In September of 2002, under an agreement with U.S. EPA, Henkel conducted additional soil and groundwater sampling at and around the Site. Henkel sampled four groundwater monitoring wells (MW) on the Site, and volatile organic compounds (VOCs) - (vinyl chloride, 1,1-dichloroethene (1,1 DCE), cis 1,2-dichloroethene (1,2 DCE) and trichloroethylene (TCE) were detected in MW3. Only vinyl chloride was present in excess of both the drinking water criterion and the Groundwater/Surface Water Interface Criterion (GSI), at between 19 and 30 ppb. Applying mixing zone criteria, Henkel's engineering firm calculated that the GSI criterion would be met, but confirming this will require a GSI analysis by the appropriate MDEQ authorities. Although vinyl chloride was found in excess of drinking water standards, the groundwater was not used for drinking purposes, nor did it flow beyond Bean Creek, which forms a hydraulic boundary. Since the sources of the groundwater contamination were removed several years ago,

natural attenuation is already underway. We expect that the vinyl chloride levels will decrease as time goes on.

Sampling of soils at the Site in 2002 revealed that VOCs were detected in one soil sample above residential standards, but below commercial II standards found in the MDEQ Part 201 Cleanup Criteria. Part 201 direct contact cleanup criteria are chemical concentrations that correspond to fixed levels of risk ( i.e., either a one-in – hundred thousand ( $10^{-5}$ ) excess cancer risk or a non-carcinogenic hazard quotient of 1 when an individual is exposed to soil or water through skin contact and ingestion. Polynuclear Aromatic Hydrocarbons (PAHs) were detected in one soil sample in excess of residential standards, but below commercial II MDEQ Part 201 Cleanup Criterion. Soil sampling did not reveal the presence of levels of concern of polychlorinated biphenyls (PCBs).

During the 1999 soil removal, debris was found in subsurface soils at the Site on the bank of Bean Creek. The debris resembled that of a dairy/creamery operation, and contributed to lead levels in excess of the MDEQ Part 201 Direct Contact Cleanup Criterion.

Sediment Sampling of Bean Creek was performed in 2004 by US EPA and Henkel, and the sediments were tested for metals, VOCs, PAHs and PCBs. Review of the results showed no apparent impact from facility operations.

An Agreed Administrative Order between the U.S. EPA and Henkel was signed January of 2005. The Order, in part, called for the removal of soil from Waste Area #6. As a result, in May-June of 2005, approximately 45,600 cubic feet of soil was removed from the Site, and hauled to a Type II landfill. This amounted to 7600 square feet, excavated two to ten feet deep, depending on the creek bank stability. Verification sampling prior to filling revealed that some of the soil samples still indicated between 427 to 793 parts per million of lead, still in excess of the MDEQ Part 201 Direct Contact Cleanup Criterion, but further removal would have de-stabilized the creek bank, so the bank material, along with remaining fragments of broken glass from the old creamery operation was left in place and the creek bank excavation was re-filled with native coarse sand.

As a result of the existence of VOCs, PAHs (each in only one sample location) and lead above residential standards, but below commercial II MDEQ Part 201 Cleanup Criteria, state law requires that future land use of the Site should be limited to commercial/industrial activities.

## **SITE LOCATION MAP**



SOURCE: MORENCI, MICHIGAN-OHIO QUADRANGLE (U.S. GEOLOGICAL SURVEY, 1977).



QUADRANGLE LOCATION

SCALE



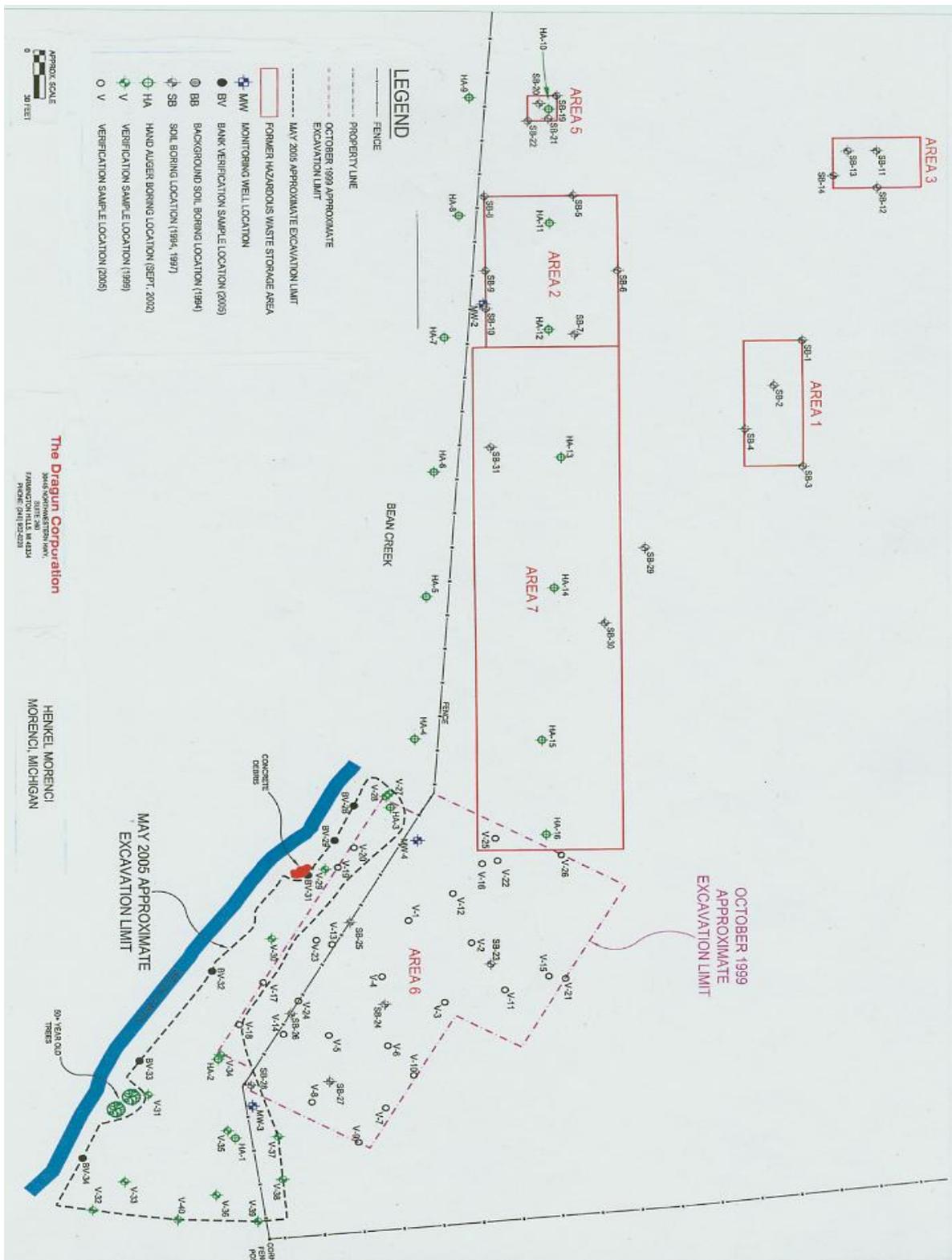
0 2000 FEET

**FIGURE 1**  
**SITE LOCATION MAP**  
**HENKEL MORENCI**  
**MORENCI, MICHIGAN**

CAD/USGS MORENCI\1004-05 07.18.05

**The Dragon Corporation**

**FACILITY MAP**



**SAMPLING SUMMARY FROM FACILITY MAP**

## SAMPLING SUMMARY

AREA 1	DATE
4 Soil Borings	1994
8 Soil Samples	1994
1 Soil Sample	1997

AREA 2	DATE
6 Soil Borings	1994
13 Soil Samples	1994
2 Hand Auger Soil Samples	2002

AREA 3	DATE
4 Soil Borings	1994
7 Soil Samples	1994

AREA 4	DATE
4 Soil Borings	1994
4 Soil Samples	1994
1 Soil Sample	1997

AREA 5	DATE
4 Soil Borings	1994
10 Soil Samples	1994
1 Soil Sample	1997
1 Hand Auger Soil Sample	2002

AREA 6	DATE
6 Soil Borings	1994
23 Soil Samples	1994
11 Soil Leachate Samples	1994
4 Soil Samples	1997
4 Soil Leachate Samples	1997
86 Verification Soil Samples	1999
20 Verification Soil Samples	2005

AREA 7	DATE
3 Soil Borings	1990
6 Soil Samples	1990
3 Soil Samples	1994
4 Soil Samples	1994
1 Soil Sample	1997
4 Hand Auger Soil Samples	2002

MONITORING WELLS MW-1, MW-2, MW-3, & MW-4	DATE
3 Soil Samples	1983
2 Groundwater Samples	1983
6 Groundwater Samples	1989
4 Groundwater Samples	1994/95
2 Groundwater Samples	1998
1 Groundwater Sample	2001
1 Groundwater Sample	2002

BEAN CREEK	DATE
5 Sediment Samples	1982
3 Surface Water Samples	1982
1 Seepage Water Sample	1982
4 Sediment Samples	2004

Background Soil Borings	DATE
2 Soil Borings	1990
2 Soil Samples	1990
24 Soil Samples	1994
5 Background Soil Borings	1994
1 Soil Leachate Sample	1994

BEAN CREEK BANK	DATE
9 Hand Auger Soil Samples	9/2002

**FIGURE 3  
SOIL AND GROUNDWATER SAMPLING  
SUMMARY MAP**

SCALE:	1" = 30'
PROJ.NO.:	1004-05
SHEET:	1 OF 1

### SUMMARY OF FACILITY RISKS

Sampling of Site soils, groundwater and Bean Creek sediments has been performed, and a human health risk assessment was conducted by Henkel using MDEQ Part 201 Cleanup Criteria.

With respect to soil and fill testing, site analytical data was compared to MDEQ Part 201 Industrial and Commercial II, III and IV Cleanup Criteria, protective of direct contact risks from site soils, ambient air inhalation risks of site soils, inhalation risks from indoor air exposures from site soils, soil impacts on groundwater quality, and on potential impact on surface water quality. Zinc was detected in one soil sample at a concentration in excess of MDEQ drinking water criteria, and xylenes, fluoranthene, phenanthrene and hexavalent chromium were each detected in one soil sample above the groundwater/surface water interface (GSI) criterion. Benzo(a)pyrene and dibenzo(a)anthracene were detected in one soil sample (HA-10) at concentrations in excess of the residential contact cleanup criteria, but below industrial or commercial II, III or IV direct contact cleanup criteria. Lead was detected in soil location HA-1 in a concentration in excess of the residential direct contact cleanup criterion. Thus, U.S. EPA concludes that the Site is sufficiently safe for commercial or industrial land use, but residential land use of the Site should be prohibited.

Additionally, several groundwater exposure pathways were evaluated, including groundwater contact exposure, drinking water exposure, and groundwater as it affects surface water quality, and groundwater risks impacting indoor air inhalation exposure. Vinyl chloride was detected in Monitoring Well 3 at a concentration in excess of the drinking water and GSI criterion (15 ppb), but Bean Creek sediments collected upstream, at the site perimeter, and downstream did not reveal impacts of concern from the Site. A previous hydro-geological study conducted by Apollonius Inc. revealed that Bean Creek serves as a hydraulic boundary for shallow groundwater at the facility, and shallow groundwater is not used for drinking water purposes. Accordingly, the contaminated groundwater does not pose any human health or ecological risks as long as the construction of drinking water wells on the Site is prohibited.

It appears that the discharge of contaminated groundwater will not impair any of the uses of Bean Creek, however, this determination would have to be confirmed by mixing zone determination by MDEQ.

### **SCOPE OF CORRECTIVE ACTION**

The scope of this corrective action was to:

- 1) Identify the areas of lead contamination within and adjacent to Area 6, remove them by soil excavation, and perform conformational sampling and analysis for remaining lead, and
- 2) Require placement of deed restrictions on the use of shallow groundwater, and on future land use, limiting use to commercial II, III or IV or industrial uses, to comply with State law. The discharge of contaminated groundwater to Bean Creek must comply with any requirements imposed by MDEQ.

## **REMEDY SELECTION CRITERIA**

U.S. EPA has the following expectations for remediation to be incorporated into Resource Conservation and Recovery Act (RCRA) Corrective Action. The proposed remedy must:

- 1) Protect human health and the environment. The covenants restricting land and groundwater use mentioned earlier meet will be protective of human health.
- 2) Attain media cleanup standards. The restrictive covenants applied cause this site to meet the media cleanup standards for MDEQ Part 201 Commercial II land use. The discharge of contaminated groundwater to Bean Creek will comply with MDEQ requirements.
- 3) Control the source of releases. The removal of soils in Waste Area #6 controlled all known source areas of contamination from the site.
- 4) Comply with applicable standards for waste management. Soils removed from Waste Area # 6 were tested for leachability prior to removal and were found to be non-hazardous, and removed by Onyx Corporation to Arbor Hills Landfill in Northville, MI.. Remaining soils meet MDEQ Part 201 Commercial II land use requirements.

## **SUMMARY OF ALTERNATIVES**

It was the desire of Henkel Corporation and the City of Morenci Michigan that the Site be made available for commercial or industrial reuse. The deed restrictions facilitate this purpose.

## **PUBLIC COMMENT AND PARTICIPATION**

The U.S. EPA solicits input from the community, and interested members of the public, on the cleanup and protection methods chosen. The U.S. EPA has set a public comment period of **3/30/2006 through 5/15/2006**, to encourage public participation in the cleanup process. If significant comments at odds with the proposal are received, a Public Meeting will be arranged, at which U.S. EPA will present this Statement of Basis, answer questions, and accept both oral and additional written comments. Written comments on this proposal should be addressed to:

Project Manager, Henkel Surface Technologies Facility  
U.S. EPA Region 5  
RCRA Enforcement and Compliance Assurance Branch  
Corrective Action Section  
77 W. Jackson, DE-9J  
Chicago, Illinois 60604

All public comments received during the public comment period will be answered in writing.

The reports referenced above in this Statement of Basis for the Site are available at:

U.S. EPA - Region 5  
77 W. Jackson  
Federal Records Center - 7<sup>th</sup> Floor  
Chicago, Illinois 60604

City of Morenci, City Hall  
118 Orchard Street  
Morenci, Michigan 49256