

# **STATEMENT OF BASIS**

**for**

**Laufen International, Inc.  
East Sparta, Ohio**

**EPA I.D. No. OHD 077 752 566**



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**Table of Contents**

INTRODUCTION .....1

PROPOSED REMEDY .....1

FACILITY BACKGROUND .....2

SUMMARY OF FACILITY RISKS .....6

SCOPE OF CORRECTIVE ACTION.....7

SUMMARY OF POTENTIAL REMEDY ALTERNATIVES.....9

DESCRIPTION OF THE PROPOSED REMEDY .....10

EVALUATION OF THE PROPOSED REMEDY .....15

PUBLIC PARTICIPATION .....17

FIGURE 1. SITE LOCATION AND TOPOGRAPHY MAP

FIGURE 2. LOCATION OF AREAS OF INTEREST

FIGURE 3. AERIAL PHOTO OF SITE FEATURES AND LOCATION OF IM AREA

## List of Acronyms

AOI	- Area of Interest
BERA	- Baseline ecological risk assessment
CG	- Cleanup goal
CD	- Consent Decree
CMS	- Corrective Measures Study
EPA	- U.S. Environmental Protection Agency
IM	- Interim Measure
mg/kg	- milligrams per kilogram or ppm
O&M	- Operation and maintenance
ppm	- part per million
RCRA	- Resource Conservation and Recovery Act
RFI	- RCRA Facility Investigation
SB	- Statement of Basis
USCT	- United States Ceramic Tile
UTNC	- Unnamed tributary to Nimishillen Creek

# ***Statement of Basis for the Proposed Remedy at Laufen International, Inc. Located in East Sparta, Ohio***

## **INTRODUCTION**

This Statement of Basis (SB) presents the proposed remedy to address contaminated soil, surface water, sediment, and groundwater at the Laufen International, Inc. (Laufen) facility located in East Sparta, Ohio. Laufen was formerly known as United States Ceramic Tile Company (USCT). The SB includes summaries of potential remedy alternatives evaluated by Laufen. The U.S Environmental Protection Agency (EPA) will select a final remedy after a public comment period and consideration of substantive public comments.

This SB is being issued by EPA as part of its public participation responsibilities under the Resource Conservation and Recovery Act (RCRA). It summarizes information that can be found in greater detail in the Interim Measures (IM) plan and report, RCRA Facility Investigation (RFI), Corrective Measures Study (CMS), and other pertinent documents contained in the Administrative Record. An Index to the Administrative Record is attached. EPA encourages the public to review these documents in order to gain a more comprehensive understanding of the RCRA corrective action activities conducted at the Laufen facility over the last four years.

EPA may modify the proposed remedy or select another remedy based on new information or public comments. Therefore, the public is encouraged to review and comment on the SB. All documents supporting this SB are contained in the Administrative Record located at the Stark County District Library, 9754 Cleveland Avenue SE, Magnolia, Ohio 44643 and the EPA, Region 5 Record Center (7<sup>th</sup> Floor), 77 W. Jackson Boulevard, Chicago, Illinois 60604.

## **PROPOSED REMEDY**

Site investigations found that metals, mainly lead, zinc, and cobalt, exceed cleanup goals protective of human health and the environment in soil, surface water, sediment, and groundwater at the Laufen facility. A number of remedy alternatives were developed and reviewed for their ability to protect human health and the environment, attain media cleanup standards, control the source of releases, demonstrate long and short term effectiveness, reduce toxicity, ease of implementation, and cost. From a list of remedy alternatives consisting of source removal, pathway elimination, stabilization, institutional controls, monitoring, and operation and maintenance, EPA proposes the following remedy to address contaminated media at Areas of Interest (AOIs) and the Interim Measures (IM) Area at the Laufen facility.

- 1) Excavate and consolidate contaminated soil and sediment.
- 2) Remove ponds and construct new drainageways.

- 3) Cover fill areas with a protective cap.
- 4) Revegetate affected areas.
- 5) Monitor groundwater, surface water, and sediment after remedy construction is complete.
- 6) Maintain the protective caps, vegetation, and drainageways.
- 7) Establish institutional controls.
- 8) Provide financial assurance for all components of the remedy.
- 9) Replace wetlands as needed.

### **FACILITY BACKGROUND**

The Laufen facility is located at 10233 Sandyville Road SE in East Sparta, Ohio, in Stark and Tuscarawas Counties. The residential area of East Sparta in Stark County bounds the facility to the northeast. The north, west, and south sides are bounded by open and forest land. Nimishillen Creek forms the eastern boundary (see *Figure 1*). Unincorporated Sandyville is located just to the south in Tuscarawas County.

Land use surrounding the Laufen facility is mixed agricultural, woodland, industrial, and residential. Some of the facility and surrounding area has been strip-mined for clay and coal. In the Village of East Sparta, groundwater is used as a source of drinking water. The East Sparta wellfield is located approximately 0.75 miles northeast of the Laufen facility. The residential area in Sandyville is serviced by private wells.

USCTs and Laufen's predecessors began operations in 1913, manufacturing brick and roofing tile. Glazed ceramic tile production began in the 1920s. Compania Roca Radiadores headquartered in Barcelona, Spain acquired the Laufen facility in 1999. The Laufen facility ceased tile manufacturing operations in September 2007.

On November 30, 1988, USCT entered into a federal Consent Decree (CD) settling a RCRA complaint filed by the United States. The 1988 CD required USCT to cease all unpermitted treatment, storage, and disposal of RCRA hazardous waste. A subsequent RCRA complaint alleges that USCT violated the 1988 CD by failing to comply with the approved closure plan requirements for properly disposing of sediment and soil contaminated with lead, cadmium, and barium exhibiting the toxicity characteristic of hazardous waste. On April 5, 2005, a new CD was entered by the United States District Court for corrective action of uncontrolled contamination at the facility and payment of a civil penalty for violations of the 1988 CD requirements. The CD required USCT to implement interim measures (IMs) to address deficiencies in the closure of the former hazardous waste management units at the facility,

conduct a RFI to determine the full nature and extent of hazardous constituents released at or from the facility, complete a CMS to evaluate remedies addressing risk posed by hazardous constituents, and implement the corrective measures chosen by EPA.

EPA identified eight areas that were filled with waste tile, waste clay body material, and waste glaze material during historical operations at the USCT/Laufen facility. High metal concentrations, such as lead, are associated with glazes. The fill areas identified by EPA in aerial photographs and confirmed during facility visual inspections are identified as Areas of Interest (AOIs). The AOI designations and their approximate years of disposal are 5-1 (1930 to 1965), 5-3 (1945 to 1965), 5-4 (1955 to 1995), 5-5 (1965 to 1980), 5-6 (1965 to 1995), 5-7 (1965 to 1985), 5-9 (1975 to 1990), and 5-10 (1972 to 1990). AOI locations are provided in *Figure 2*. The 2005 CD requires an RFI and CMS to be performed at all AOIs.

The IM Area consists of the former surface impoundment and waste pile in the lowland area at Sandyville Road, and a 3-acre hazardous waste landfill constructed by USCT in the early-1990s to dispose of waste from the cleanup of the former surface impoundment and waste pile. The location of the IM Area is provided in *Figure 3*. USCT submitted a closure certification for the IM Area to U.S. EPA and Ohio EPA on August 1, 1994, as required by the 1988 CD. U.S. EPA and Ohio EPA alleged that USCT did not comply with the requirements of the closure plan submitted pursuant to the 1988 CD and the IM Area closure certification was not accepted.

### **Interim Measures Already Implemented**

IMs were used to control releases of hazardous wastes and constituents at the Laufen facility prior to implementing the final corrective measures. The IMs performed at the Laufen facility include: 1) determining the extent of metals contamination remaining in the vicinity of the former surface impoundment and waste pile that were improperly closed in the 1990s; and 2) proper closure of the 3-acre hazardous waste landfill using enhancement projects such as settlement monitoring, surface water drainage system improvements, leachate storage system improvements, landfill cap improvements, and flood resistance improvements. Laufen implemented the landfill enhancement projects to improve the landfill design, protect against a catastrophic failure, and ensure long-term integrity as required in the CD and completed the projects on October 17, 2007.

IM investigations determined that significant metals contamination remained in the area of the former surface impoundment and waste pile that posed a significant risk to human health and the environment. Average concentrations of lead and zinc in sediment in the unnamed tributary to Nimishillen Creek (UTNC) in the IM Area are 2,400 and 5,800 mg/kg, respectively. Average concentrations of lead and zinc in surface soil in the IM Area are 1,365 and 2,735 mg/kg, respectively. There is an unacceptable risk posed to industrial and construction workers coming into direct contact with lead in soil and sediment at the IM Area at the Laufen facility. There is also an unacceptable risk posed to ecological receptors in the IM Area from lead and zinc in soil, surface water, and sediment.

Because of extensive residual metals contamination and associated risks to human health and the environment, corrective measures for the IM Area are addressed in this proposed remedy and are made available for public comment.

### RCRA Facility Investigation Results

The purpose of the RFI is to fully characterize the nature and extent of contamination at the Laufen facility. Sixteen metals were analyzed, however lead and zinc are used as the main indicators of contamination due to their prevalence at the site in soil, surface water, and sediment, and because their present levels exceed site-specific cleanup goals (CGs). Cobalt was also found to exceed its CG at a few locations. The average exposure point concentrations or CGs developed by EPA to protect ecological receptors in the environment are 123 mg/kg for lead, 160 mg/kg for zinc, and 43 mg/kg for cobalt in soil. Meeting the CGs will reduce adverse effects to plants, invertebrates, birds, and mammals, and likely reduce exposure to higher levels of other metals found at the site. The RFI determined that:

- The CG for zinc at all AOIs is exceeded in surface soil and the CG for lead is exceeded at AOIs 5-1, 5-4, and 5-5. Average concentrations of lead and zinc from composite samples of surface soil at each AOI are:

AOI	Lead Average in Surface Soil (mg/kg)	Zinc Average in Surface Soil (mg/kg)
5-1	<b>790</b>	<b>880</b>
5-3	80	<b>234</b>
5-4	<b>152</b>	<b>470</b>
5-5	<b>1,360</b>	<b>1,570</b>
5-6	42	<b>260</b>
5-7	112	<b>830</b>
5-9	78	<b>34,000</b>
5-10	60	<b>510</b>

Average concentrations in **bold** exceed the CG.

- Surface soil was sampled at perimeter locations downslope of the AOIs to determine if releases of metals beyond the waste boundaries had occurred. Average lead and zinc concentrations in surface soil downslope of the waste areas exceeded their CGs at AOIs 5-1, 5-3, and 5-4.
- The average concentrations of lead and zinc in subsurface fill/waste samples at each AOI are:

AOI	Lead Average in Subsurface (mg/kg)	Zinc Average in Subsurface (mg/kg)
5-1	286	880
5-3	266	465
5-4	375	820
5-5	57	590
5-6	39	590
5-7	138	1270
5-9	114	410
5-10	76	344

- The CG for cobalt is exceeded at AOIs 5-1 and 5-6. The average concentration of cobalt from composite samples of surface soil and all subsurface fill/waste samples is:

AOI	Cobalt Average in Surface Soil (mg/kg)	Cobalt Average in Subsurface (mg/kg)
5-1	81	95
5-6	73	181

- Sediment samples were collected at certain AOIs where drainage and ponding was present adjacent to the fill areas. Surface runoff and/or leaching of metals from some fill areas impacted these drainageways and ponds. Laufen calculated a CG of 83 mg/kg for lead and 290 mg/kg for zinc in sediment to protect ecological receptors. These levels would minimize toxicity to bottom-dwelling benthic organisms which provide food for amphibians and fish. The CGs for lead and zinc that are protective of the environment are exceeded in sediment at all seven locations at AOI 5-1, one of seven locations at AOI 5-3, three of eight locations at AOI 5-4, one of three locations at AOI 5-5, two of five locations at AOI 5-9, and five of six locations at AOI 5-10. In a drainageway just northwest of AOI 5-10, zinc in sediment exceeded its CG. CGs protective of human health were also exceeded in sediment at four of seven locations in drainageways at AOI 5-1, and two of three locations in the east pond at AOI 5-4.
- Surface water samples were also collected at the sediment sample locations. Levels protective of the aquatic environment are exceeded in surface water at four of seven locations at AOI 5-1, one of seven locations at AOI 5-3, two of seven locations at AOI 5-4, both locations at AOI 5-5, all four locations at AOI 5-7, three of five locations at AOI 5-9, and three of six locations at AOI 5-10.
- Sediment, surface water, and fish were collected from Nimishillen Creek and assessed for metals potentially associated with the Laufen facility. There were no unacceptable risks to recreational users consuming fish or coming into contact with sediment or surface water in Nimishillen Creek.

- Fish were collected at the large pond at AOI 5-3 to assess any impacts from the fill area. The pond is used for recreational fishing. Fish tissue was analyzed for metals and a risk assessment was performed for recreational users and ecological receptors such as mink and great blue heron. There was no unacceptable risk posed to people consuming largemouth bass, bluegill, and black crappie from the pond. There are no adverse effects indicated by the consumption of pumpkinseed, bluegill, largemouth bass, and warmouth by mink and great blue heron.
- The former wastewater treatment conveyance system in the Laufen plant is designated as AOI 6. One area of concern was found at sump #2 within the former glaze laboratory area. Lead concentrations in soil of 15,000 mg/kg are found down to at least two-feet below the bottom of the brick floor sump.
- There are areas at AOIs 5-1, 5-4, and 5-5 that pose a risk to industrial and construction workers coming into direct contact with lead in soil.
- The first laterally continuous groundwater aquifer is the Boggs limestone unit which is deep beneath the surface. In the upland area where most AOIs are located, this aquifer is separated from the fill waste by at least 67 feet of dry competent bedrock. Isolated perched groundwater is located at AOIs 5-5, 5-7, and 5-9. The IM Area located in the Nimishillen Creek bottoms has a groundwater monitoring system installed in the surficial alluvium and Boggs Limestone unit. There have been no exceedances of groundwater drinking standards for metals in groundwater in the IM Area since 2003.

### **SUMMARY OF FACILITY RISKS**

#### **Groundwater**

The total lead concentration in perched groundwater within the fill area at AOI 5-5, and the total lead and barium concentrations in perched groundwater within the fill area at AOI 5-7 exceed human health target decision levels and pose a potential risk to construction workers.

#### **Soil**

Lead in surface soil, subsurface soil, and sediment at some locations at AOI 5-1 may pose a potential risk to industrial/construction workers. Average lead levels in surface soil at AOI 5-5 pose a potential risk to industrial/construction workers. Lead in soil beneath sump #2 in the manufacturing building may pose a potential risk to construction workers.

This table summarizes the exceedances of ecological CGs in soil at each AOI posing a potential adverse effect to plants, invertebrates, birds, and mammals.

AOI	Total Lead in AOI Surface Soil	Total Lead in Release to Surface Soil	Total Zinc in AOI Surface Soil	Total Zinc in Release to Surface Soil	Total Cobalt in AOI Surface Soil
5-1	●	●	●	●	●
5-3		●	●	●	
5-4	●	●	●	●	
5-5	●		●		
5-6			●		●
5-7			●		
5-9			●		
5-10			●		

Summarizing the potential risks posed to workers and ecological receptors from the presence of average levels of lead, zinc, and cobalt in soil that substantially exceed CGs, it appears that AOIs 5-1, 5-4, and 5-5 present the greatest risk.

### **Surface Water and Sediment**

This table summarizes the exceedances of ecological CGs for sediment and surface water at each AOI that may result in sediment toxicity and not be protective of the aquatic environment.

AOI	Total Lead in Surface Water	Total Lead in Sediment	Total Zinc in Surface Water	Total Zinc in Sediment	Total Lead or Zinc in Seep Water/Sediment
5-1	●	●	●	●	
5-3		●			
5-4	●	●	●	●	
5-5	●	●	●		●
5-6					
5-7			●		●
5-9	●	●	●	●	
5-10	●	●	●	●	●
NW of 5-10				●	

Summarizing the potential risks posed to the environment from the presence of elevated levels of lead and zinc in surface water and sediment, it appears that AOIs 5-1, 5-4, 5-5, 5-9, and 5-10 present the greatest risk.

### **SCOPE OF CORRECTIVE ACTION**

Corrective measures are necessary to address metals contamination present in soil, surface water, sediment, and groundwater at the Laufen facility.

The baseline ecological risk assessment (BERA) determined that there are potential adverse effects to mammals and birds such as the inability to survive and reproduce associated with lead or zinc in soil, surface water, and sediment at the AOIs and IM Area. The human health risk assessment for the IM Area determined that lead levels are significant enough to potentially increase lead blood levels for the construction worker and commercial/industrial worker within the IM Area. In addition, lead levels at certain locations in soil and sediment at AOI 5-1, and average lead concentrations in surface soil at AOI 5-5 exceed 1,075 mg/kg. Continued exposure to soil lead levels greater than 1,075 mg/kg would result in unacceptable blood lead level concentrations.

The immediate and long-term cleanup objectives for soil and sediment at AOIs and the IM Area are to restrict access to these areas for workers and place a protective soil cover over the fill areas to eliminate the pathway for contact to ecological receptors and incidental contact to workers and trespassers. This objective requires environmental covenants to manage site use. At the IM Area, hot spots of lead and zinc will be removed and appropriately disposed of offsite at a hazardous or non-hazardous waste landfill. Then the areas will be backfilled with clean soil and the IM Area will be covered with 18" of clean soil and stabilized with plants. The removal of highly contaminated soil will lower the remaining average concentrations of metals and be more protective long-term. The reduction of soil contaminant concentrations at the IM Area is also expected to minimize any migration of metals to the UTNC.

The BERA determined that there are potential adverse effects to plants such as the inability to survive and reproduce associated with lead, zinc, and/or cobalt in surface water at AOIs 5-5, 5-7, and 5-10. The immediate and long-term cleanup objectives for surface water are to eliminate the seeps and ponds at AOIs 5-5, 5-7, and 5-10, and therefore eliminate the pathways for exposure to plants.

The BERA determined that there are potential adverse effects to plants such as the inability to survive and reproduce associated with lead or zinc in surface water adjacent to AOI 5-1. The immediate and long-term cleanup objectives for surface water are to remove associated contaminated sediment and cover AOI 5-1 with 18" of clean soil to eliminate surface runoff of contaminated soil and minimize the migration of metals to adjacent drainageways, wetlands, and the UTNC.

Contaminated perched groundwater at AOIs 5-5 and 5-7 is a potential threat to human health because of the long-term potential for contact by construction and redevelopment workers. The immediate cleanup objective is to restrict access to those areas and avoid contact with groundwater in AOIs 5-5 and 5-7 to construction and redevelopment workers. This objective requires environmental covenants to manage site use. The re-routing of drainage at AOI 5-5 and placement of a 12" to 18" soil cover, promotion of runoff, and establishment of native plants at AOIs 5-5 and 5-7 is also expected to minimize or eliminate the presence of contaminated perched groundwater. Therefore, the intermediate or long-term cleanup objective is to eliminate the potential of groundwater at AOIs 5-5 and 5-7 to pose a risk to construction and redevelopment workers.

## SUMMARY OF POTENTIAL REMEDY ALTERNATIVES

The potential remedy alternatives evaluated by Laufen to address soil, surface water, sediment, and groundwater are presented below. These alternatives are discussed in detail in the revised CMS Report dated December 24, 2008.

### **For Areas of Interest (AOIs 5-1, 5-3, 5-4, 5-5, 5-6, 5-7, 5-9, and 5-10) (see *Figure 2*)**

- **No Action with Institutional Controls (IC):** Access would be restricted using institutional controls such as fencing, posting, and land use and deed restrictions. There would be a long-term surface water monitoring program.
- **Source Removal with Disposal (SR):** Impacted waste and soils exceeding CGs would be excavated and disposed offsite as non-hazardous and/or hazardous waste. Excavated areas would be backfilled with clean fill and seeded. Appropriate stormwater drainage features would be established to limit run on. Contaminated sediment at AOI 5-1 would be excavated and incorporated under the soil cover.
- **Pathway Elimination (PE):** Direct contact with waste and impacted media would be eliminated by the placement of a cap and cover system. The type of cap and cover system would be geotextile and 6" soil cap, 18" soil cap, 18" soil and pozzolanic cap, a 24" RCRA Subtitle D cap, or a RCRA Subtitle C cap.

### **For the IM Area (former surface impoundment, former waste pile, and 3-acre hazardous waste landfill) (see *Figure 3*)**

- **Institutional Controls (IC):** Access would be restricted using institutional controls such as fencing, posting, and land use and deed restrictions. There would be a long-term surface water monitoring program. This alternative would complement remediation activities described below.
- **Source Removal with Disposal (SR):** Impacted soil and sediment exceeding CGs would be excavated and disposed offsite as non-hazardous and/or hazardous waste. Excavated areas would be backfilled with 6" to 12" of clean fill and seeded. Appropriate stormwater drainage features would be established.
- **Pathway Elimination (PE):** Direct contact with waste and impacted media would be eliminated by the placement of a cap and cover system in total or in combination with other alternatives such as selective excavation. The type of cap and cover system would include geotextile and 6" soil cap, 18" soil and pozzolanic cap, a 24" RCRA Subtitle D cap, or a RCRA Subtitle C cap. UTNC sediment would be excavated and relocated beneath the soil cover. The reshaped channel would be covered with a Pyramat<sup>®</sup> polypropylene liner or geotextile and riprap system. Earthen berms would be constructed

on each side of the UTNC to reduce the potential for erosion and sediment transport from the IM Area.

- **Solidification/Stabilization with Soil Cover (SS):** Solidification and stabilization agents would be applied to the IM Area soil to trap or immobilize contaminants. A grout injection bottom barrier would be installed to prevent vertical migration of contaminants. This alternative does not apply to the UTNC.

**For Select AOIs and the IM Area**

- **Operation and Maintenance (O&M):** Groundwater monitoring, maintenance, access control, and benchmark maintenance would be performed at the IM Area (3-acre hazardous waste landfill). Inspections, final cover and vegetation maintenance, and drainage and erosion control would be conducted at approximately 8.8 acres of AOIs and the IM Area (3-acre hazardous waste landfill and 3.55 acres of the former surface impoundment and waste pile).

Laufen estimates the site-wide design and implementation cost to range from \$300,000 to \$1,600,000, plus the capital cost for each potential remedy alternative, and O&M costs for the collective AOIs and IM Area as follows:

Potential Remedy Alternative	Estimated Capital Cost or Cost Range	Estimated O&M Cost*
AOI - IC	\$ 259,000	-
AOI - SR	\$36,720,000 to \$64,025,000	-
AOI - PE	\$ 1,106,000 to \$ 5,349,000	-
IM Area - SR	\$ 9,989,000 to \$17,085,000	-
IM Area - PE	\$ 890,000 to \$ 2,594,000	-
IM Area - SS	\$14,158,000	-
AOI/IM Area - O&M	-	\$1,082,000

\* O&M costs are for 30 years.

The remedy recommended by Laufen in its CMS Report consists of alternatives AOI - IC, AOI - PE and IM Area - PE using a geotextile and 6” soil cap, and AOI/IM Area - O&M. The estimated cost of the remedy is \$3,998,000.

**DESCRIPTION OF THE PROPOSED REMEDY**

EPA’s proposed remedy to address contaminated soil, surface water, sediment, and groundwater at the Laufen facility is:

- *Soil - A combination of source removal (SR) of hot spot areas with offsite disposal and pathway elimination (PE) at the IM Area and AOIs.* Hot spots exceeding the CG of 1,075 mg/kg for lead to protect workers will be removed from the IM Area. At this level of hot spot removal, the remaining soil in the IM Area will have an average lead level of 477 mg/kg and zinc level of 1,456 mg/kg. In combination with exposure pathway elimination using an 18” soil cover, this remedy will be protective of ecological receptors.

Contaminated surface soil and underlying waste at the AOIs will be remediated using a clean soil cover and geotextile to eliminate the exposure pathway to people, mammals, birds, and plants. An 18” soil cover will be placed on AOIs 5-1 and 5-5. A 12” soil cover with geotextile will be placed on AOIs 5-4 (eastern portion), 5-7, and 5-9. A 6” soil cover and geotextile will be placed on AOIs 5-3, 5-4 (western portion), and 5-6. AOI 5-10 will be excavated and disposed on the eastern portion of AOI 5-4. An area of tile waste northwest of AOI 5-10 will be covered with 6” of soil and geotextile. Contaminated soil at Sump #2 at AOI 6 exceeding 1,075 mg/kg of lead will be excavated and disposed offsite to protect workers.

- *Surface Water and Sediment - A combination of source removal (SR) with on-site consolidation or offsite disposal and pathway elimination (PE) at the IM Area and AOIs.* Contaminated surface water and sediment in the UTNC at the IM Area will be remediated by excavating and disposing offsite about 800 cubic yards of contaminated sediment exceeding CGs for lead and zinc to protect ecological receptors, and placement of a Pyramat<sup>®</sup> polypropylene liner to stabilize and vegetate the stream bank.

Contaminated surface water and sediment at AOIs 5-1, 5-4, 5-5, 5-7, and 5-10 will be remediated using a combination of sediment removal with onsite consolidation in the AOI or offsite disposal, re-routing drainage around the AOIs, and placement of a soil cover/geotextile and vegetating with native plants.

- *Groundwater - Pathway elimination (PE) at the AOIs.* The extent of contaminated groundwater is limited to perched zones within AOIs 5-5 and 5-7. Surface drainage will be re-routed and an 18” soil cover will be placed on AOI 5-5. Geotextile and a 12” soil cover will be placed on AOI 5-7. Slopes will be contoured to eliminate run on and promote runoff. Native vegetation will be established.
- *Institutional Controls (IC), Monitoring and Maintenance (O&M) -* An environmental covenant will be recorded to restrict land use and excavations. Covers and vegetation will be inspected and maintained. Long-term groundwater monitoring will be performed at the IM Area (3-acre hazardous waste landfill). Surface water monitoring will be conducted to assess the effectiveness of the remedy at the AOIs and IM Area.

- *Financial Assurance* - The total estimated cost of EPA's proposed remedy using SR, PE, IC, and O&M ranges from \$6,749,000 to \$7,747,000, depending on the depth of the protective soil cap and the volume of excavated soil that must be disposed of as a hazardous waste. Laufen is required to provide financial assurance to ensure that the proposed remedy can be implemented over its lifetime of approximately 30 years.

More specifically, EPA proposes the following remedy to address contaminated soil, surface water, sediment, and groundwater at AOIs and the IM Area at the Laufen facility. Since the levels of metals contamination vary, EPA proposes a range of soil covers from 6" to 18" deep at the AOIs and the IM Area. At lesser contaminated AOIs, a 6" soil cover and geotextile layer would be sufficient to isolate contaminated soil and reduce exposure to plants and mammals. At more contaminated AOIs and at the IM Area, an 18" soil cover is necessary to adequately prevent exposure to high levels of metals in soil to plants and mammals, and also to minimize water infiltration that could release metals to surface water and sediment. Further, some removal of waste and soils with very high levels of lead and zinc at the IM Area is also necessary to protect human health and the environment, and minimize releases to the UTNC. A 12" soil cover and geotextile layer is sufficient at some AOIs where contaminant levels are intermediate.

- ! Excavation and consolidation of contaminated soil and sediment at the perimeter of AOI 5-1 and AOI 5-5 on to the fill areas. Filling and re-grading of the southern and eastern drainage areas at the perimeter of AOI 5-1 to expedite surface flow to Nimishillen Creek. Engineered re-routing of the surface drainage around the perimeter of AOI 5-5 and elimination of the west pond and north seep. Placement of a 18" clean soil cover over the entire fill areas at AOI 5-1 and AOI 5-5. The approximate size of the areas to be covered is 4.7 acres.
- ! Excavation and consolidation of contaminated soil and sediment at the perimeter of AOI 5-7 on to the fill area. Placement of a nonwoven geotextile and 12" clean soil cover over the entire fill areas at AOI 5-7 and AOI 5-9. The approximate size of the areas to be covered is 2.5 acres. In the alternative, placement of a nonwoven geotextile and 6" clean soil cover may be appropriate provided surface and under drainage at the AOIs is properly engineered and controlled to eliminate runoff to wetlands and eliminate and/or collect seeps.
- ! Engineered re-routing of the surface drainage around the perimeter of AOI 5-4 and elimination of the west and east ponds. Excavation and consolidation of contaminated soil at the perimeter of AOI 5-4 and sediment from the east pond on to the fill area. Contaminated soil and sediment at the perimeter will be excavated and consolidated on the eastern portion of AOI 5-4 prior to placing a cover. Placement of a nonwoven geotextile and 6" (western portion) to 12" (eastern portion) clean soil cover over the entire fill area at AOI 5-4. Approximate size of the AOI is 4 acres. Since it is likely that AOI 5-4 will be significantly reconfigured and waste may be consolidated, the area and depth of a nonwoven geotextile and clean soil cover may be re-evaluated and modified based on the approved final design.

- ! Placement of a nonwoven geotextile and 6” clean soil cover over the flatter fill areas at AOI 5-6. The cover will be constructed to merge with the reclaimed mine spoils at the southern boundary and the steep slopes surrounding the western portion of the fill area. The steeper slope areas in grids 2 and 5 do not require a cover. The approximate size of the area to be covered is 1.83 acres.
- ! Excavation of the entire fill area at AOI 5-10 and associated contaminated soil and sediment, and placement of the contaminated material onto the eastern portion of AOI 5-4 to be covered with a nonwoven geotextile and 12” clean soil cover.
- ! Excavation and consolidation of contaminated sediment northwest of AOI 5-10 on to the adjacent fill area to the west and placement of a nonwoven geotextile and 6” clean soil cover over the entire fill area. In the alternative, sampling and analysis of surficial soil for lead, zinc, barium, and cobalt may be performed to determine whether CGs established to protect human health and the environment are exceeded. A cover is not required if CGs are not exceeded. In that case, excavated contaminated sediment northwest of AOI 5-10 will be consolidated onto the eastern portion of AOI 5-4 to be covered with a nonwoven geotextile and 12” clean soil cover.
- ! Delineation of lead levels in soil beneath sump #2 at AOI 6 exceeding the CG of 1,075 mg/kg to protect workers, and excavation and offsite disposal of all contaminated soil exceeding the CG.
- ! No action at AOI 5-3. AOI 5-3 is on property not owned by Laufen. There are no unacceptable risks posed to people from contact with the waste or soil. The average concentration of zinc in surface soil only slightly exceeds the CG protective of the environment. A human health and ecological risk assessment was performed for the large recreational pond at AOI 5-3. Analysis of fish tissue showed that there were no unacceptable risks posed to people eating the fish and that there were no adverse effects posed to mink and great blue heron eating the fish.
- ! Excavation and offsite disposal of approximately 3,200 cubic yards of residual waste and soil contaminated with high levels of lead and zinc at the former surface impoundment in the IM Area. The areas to be excavated have lead levels exceeding the CG of 1,075 mg/kg to protect workers and encompass sample locations GP-16 and GP-17; GP-21; GP-22; GP-25; GP-53; GP-30 and GP-31; GP-28, GP-29, GP-5, GP-4, GP-3 and GP-2; and GP-52. Since a rail spur is adjacent to the IM Area, rail transport of excavated soil to a permitted offsite disposal site may be considered to minimize cost and threats to the local community from truck traffic and spills. Excavated areas will be backfilled with clean soil. Clean soil 18” deep will be placed over approximately 4.8 acres of the IM Area where soil exceeds the CGs to protect ecological receptors of 123 mg/kg for lead and 160 mg/kg for zinc.

- ! Excavation and offsite disposal of approximately 800 cubic yards of sediment contaminated with high lead and zinc levels at the UTNC in the IM Area. All sediment exceeding the CGs to protect ecological receptors of 83 mg/kg for lead and 290 mg/kg for zinc shall be removed from the UTNC. The area of sediment to be excavated is estimated to be 1,500 feet long, 6.5 feet wide, and 2 feet deep with average lead levels of 2,400 mg/kg and zinc levels of 5,800 mg/kg. Since a rail spur is adjacent to the IM Area, rail transport of excavated soil to a permitted offsite disposal site may be considered to minimize cost and threats to the local community from truck traffic and spills. Sediment in the UTNC may be re-sampled and analyzed to properly delineate the current extent and volume of contaminated sediment required to be excavated and disposed offsite.
- ! After removal of contaminated sediment at the UTNC exceeding CGs protective of ecological receptors, excavation of approximately 2,000 cubic yards of soil adjacent to and under the UTNC as necessary to accommodate the construction of a new channel designed for a 25-year, 24-hour storm event, and placement beneath the 18” clean soil cover in the IM Area. A Pyramat<sup>®</sup> high performance turf reinforcement mat will be installed in the new UTNC channel for erosion control and establishment of riparian vegetation. Approximately 1,500 feet of the UTNC will be remediated. The work will be done in compliance with a federal Section 404 permit under the Clean Water Act and state Section 401 water quality certification requirements.
- ! Seed and establish shallow-rooted native plants requiring low maintenance on all AOIs and the IM Area described above.
- ! Implementation of a long-term program for monitoring groundwater (IM Area only), surface water, and sediment at the AOIs and IM Area to ensure the effectiveness of the proposed remedy in protecting human health and the environment.
- ! Implementation of a long-term O&M program for the AOIs and IM Area, including inspection and maintenance of the soil cover, drainageways, and the UTNC.
- ! Implementation of a long-term groundwater/leachate monitoring and O&M programs for the 3-acre hazardous waste landfill in the IM Area, including inspection and maintenance of the cap, leachate collection system, groundwater monitoring system, access controls, and disposal of leachate.
- ! Record an environmental covenant for Laufen property that restricts site use to industrial/commercial activities, provides notice of levels and locations of contaminated soil or waste left on the property, and imposes controls on excavation procedures for construction workers and redevelopment workers at on-site areas posing an unacceptable risk. For the 3-acre hazardous waste landfill and areas covered with 6” to 18” of protective soil cover, restrict use to open land and ensure proper procedures for any future excavation, including proper ecological restoration.

- ! Obtain financial assurance in the amount necessary (minimum of \$6,749,000) to complete the construction as well as O&M of the selected remedy. The minimum estimated amount is comprised of: \$1,200,000 for the site-wide design and implementation of the remedy; \$2,408,000 to cover, consolidate, and excavate/dispose contaminated media at the AOIs, and \$2,046,000 to cover, consolidate, and excavate/dispose contaminated media at the IM Area (SR and PE); and \$1,095,000 to monitor, inspect, operate, and maintain the remedy (O&M).
- ! Construct compensatory wetlands to replace those destroyed in the implementation of the remedy at the AOIs and IM Area, as required by the federal Section 404 permit under the Clean Water Act and state Section 401 water quality certification requirements.

### **EVALUATION OF THE PROPOSED REMEDY**

The following discussion profiles the performance of the proposed remedy against technical standards and other factors for evaluating a remedy.

1. **Protect Human Health and the Environment.** The overall protection of human health and the environment at the Laufen facility is effectively addressed by the source removal of highly contaminated soil and sediment, and placement of a protective soil cover to eliminate exposure pathways. The depth of soil cover will range from 6” to 18” depending on the residual levels of metals remaining in the exposed soil/waste. Areas with highest residual levels of metals will be covered with a deeper 18” of soil. An environmental covenant to restrict land use is an effective method to protect human health when combined with the proposed removal and covering of soil and sediment.
2. **Attain Media Cleanup Standards.** Source areas are addressed by selective removal and covering of contaminated soil and sediment. Contaminant mass removal is a quick and effective corrective measure to minimize the risks to human health and the environment. A clean soil cover will eliminate the exposure pathway to humans and ecological receptors and result in the achievement of CGs for surface soil, surface water, and sediment.
3. **Control the Sources of Releases.** Selective removal of the most highly contaminated soil/sediment in the IM Area and a protective soil cover will control future releases. Consolidation of contaminated soil and sediment under the cover at the AOIs will eliminate the exposures that currently pose a potential risk to human health and the environment. These actions provide an effective source control program to ensure the long-term effectiveness and protectiveness of the remedy.
4. **Comply with Any Applicable Standards for Management of Wastes.** Representative samples of waste generated during implementation of the remedy will be properly characterized for hazardousness and treated/disposed offsite in accordance with all applicable regulations and permits at a regulated facility. Soil and sediment in the IM Area exhibiting the toxicity

characteristic for lead may be treated within the area of contamination and rendered non-hazardous.

5. **Long-term Reliability and Effectiveness.** Reliability of the proposed remedy is evaluated through O&M requirements, demonstrated effectiveness of source removal, and achievement of CGs in surface soil, surface water, and sediment. Soil cover and removal/disposal are simple, proven technologies and the attainment of CGs will be assessed during field implementation. The establishment of a dense cover of native plants will protect the 6” to 18” soil/geotextile cover remedy and provide for a long useful life. Inspections will be conducted and necessary actions will be performed to repair erosion and establish a dense vegetative cover.

Reconfiguring of the UTNC and placement of a Pyramat<sup>®</sup> polypropylene liner will ensure the long-term integrity of the IM Area remedy.

6. **Reduction in the Toxicity, Mobility, or Volume of Wastes.** Removal and covering of the contaminant mass at source areas will reduce the volume and toxicity of metals at the Laufen facility and prevent further uncontrolled migration of contaminants to surface water and sediment. Monitoring will assess the reduction in mobility of contaminants to surface water and sediment.

7. **Short-term Effectiveness.** Laufen will develop an O&M program for contaminated soil and sediment removal to ensure the remedy is safe. Corrective measure activities proposed by Laufen and associated with contaminated media at the facility include a health and safety plan to protect workers. Use of rail transport will be investigated to minimize potential threats to the local community from excessive truck traffic and spills. An onsite borrow area will decrease truck traffic and possible accidents in the local community.

8. **Implementability.** Onsite borrow areas of suitable soil are readily available at the Laufen facility. Necessary state and federal permits will be obtained for remediation and mitigation of wetlands within the IM Area and AOIs. A Corps of Engineers nationwide permit will be investigated to expedite the permitting process. Offsite facilities are available to manage the type of waste to be removed from the Laufen facility. Institutional controls in the form of an environmental covenant will be placed on the deed to restrict land use and excavation activities. Reuse of the vacant manufacturing building is not expected to impact implementation of the remedy unless future manufacturing would require a significant discharge of effluent water to the UTNC.

9. **Cost.** The total estimated cost of the potential remedy alternatives considered by Laufen to address site contamination ranged from \$1,641,000 for institutional controls and maintenance up to \$83,248,000 for complete removal and offsite disposal as hazardous waste. The remedy alternative recommended by Laufen in its CMS Report would cost \$3,998,000. It consists of the design and implementation of a 6” soil cover and geotextile placement over six AOIs and a portion of the IM Area, placement of a Pyramat<sup>®</sup> polypropylene liner in the reshaped UTNC, and O&M for 30 years.

The estimated cost of the EPA proposed remedy ranges from \$6,749,000 to \$7,747,000. This more costly remedy alternative is necessary to adequately protect human health and the environment. Specifically, very high levels of lead and zinc in soil and sediment must be selectively removed and disposed offsite (IM Area - SR). A protective soil cap thicker than 6" is also necessary at some AOIs and the IM Area to further minimize the exposure, uptake, and release of metals to the environment and ecological receptors. These concerns are not adequately addressed by the remedy alternative (AOI - PE and IM Area - PE) recommended by Laufen.

The EPA proposed remedy includes source removal along with pathway elimination and is not significantly more difficult to implement than the remedy recommended by Laufen. It would lower average levels of lead and zinc remaining in soil at the IM Area, eliminate potential risk to workers, and provide for protective caps that more effectively eliminate pathways by isolating contaminated soil and tile waste at the AOIs and IM Area remaining in the environment at the Laufen facility. The EPA proposed remedy is expected to be nearly as protective as complete source removal and offsite disposal evaluated as potential remedy alternative (AOI - SR and IM Area - SR) by Laufen, but at a substantial cost savings of \$42 to \$77 million.

Based on information currently available, the EPA proposed remedy provides the best balance with respect to the standards described above. EPA believes that the proposed remedy is protective of human health and the environment, and will effectively control human and environmental exposure to contaminants in soil, surface water, sediment, and groundwater. All applicable standards regarding surface water protection, worker protection, and onsite/offsite waste management will be addressed and complied with during implementation of the remedy.

### **PUBLIC PARTICIPATION**

EPA seeks input from the local community on the proposed remedy to address contaminated soil, surface water, sediment, and groundwater at the Laufen facility. There will be a public comment period open to May 31, 2009, for the public to participate in the final remedy selection. The Administrative Record for the Laufen facility is available at the following locations:

Stark County District Library  
9754 Cleveland Avenue SE  
Magnolia, Ohio 44643  
(330) 866-3366

U.S. EPA, Region 5  
RCRA Records Center  
77 West Jackson Boulevard, 7th Floor  
Chicago, Illinois 60604-3590  
(312) 886-0902

Hours: Mon-Fri, 8:00 a.m. - 4:00 p.m. (except federal holidays)

After consideration of public comments on the proposed remedy, EPA will select a final remedy and document its selection in the Final Decision and Response to Comments. In addition, EPA will summarize public comments and provide responses. The Final Decision and Response to Comments will be drafted at the conclusion of the public comment period and incorporated into the Administrative Record.

To request information on the public comment period for the proposed remedy at the Laufen facility, please contact:

Ms. Terri Rancher  
Community Relations Coordinator  
U.S. Environmental Protection Agency, Region 5  
77 West Jackson Boulevard  
Internal Services Section, LP-9J  
Chicago, Illinois 60604-3590  
(312) 886-4188  
E-mail: [rancher.terri@epa.gov](mailto:rancher.terri@epa.gov)

To send written comments or request technical information on the Laufen facility, please contact:

Mr. Kenneth Bardo  
EPA Project Manager  
U.S. Environmental Protection Agency, Region 5  
77 West Jackson Boulevard  
Corrective Action Section, LU-9J  
Chicago, Illinois 60604-3590  
(312) 886-7566  
E-mail: [bardo.kenneth@epa.gov](mailto:bardo.kenneth@epa.gov)