



Superfund Record of Decision:

St. Louis River, MN

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16. Abstract (Limit: 200 words) The 230-acre St. Louis River site (also known as the St. Louis River/Interlake Duluth Tar site) is on the north bank of the St. Louis River in Duluth, Minnesota, with portions of the site within the 100-year floodplain. The bank of the river consists of a series of inlets and peninsulas, including the Stryker Embayment and the boat slip inlets. This site is the former location of several pig iron and coking plants, as well as separate tar and chemical companies, which used byproducts from the plants. The chemical companies closed in the 1940s, and the pig iron coking plants closed during the 1960s. Tar seeps are present onsite in several locations, including the embayment and boat slip areas where tar producers had disposed of tars directly onto the ground. Soil and underlying ground water are contaminated with high levels of PAHs as a result of past onsite disposal activities. Chemicals released from the sediments are the source of a thick layer of tar-like material in portions of the embayment and boat slip areas. This Record of Decision (ROD) addresses Operable Unit 1 (OU1), the remediation of the onsite tar seeps, which are a potential source of ground water and surface water contamination. A future ROD will include a (See Attached Page)				
17. Document Analysis a. Descriptors Record of Decision - St. Louis River, MN First Remedial Action Contaminated Medium: soil Key Contaminants: organics (PAHs) b. Identifiers/Open-Ended Terms c. COSATI Field/Group				
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EPA/ROD/R05-90/139
St. Louis River, MN
First Remedial Action

Abstract (Continued)

treatability study to address the contamination of the soil, sediment, ground water and surface water at the site (OU2). The primary contaminants of concern affecting the soil are organics including PAHs.

The selected remedial action for this site includes excavating 300-2300 cubic yards of visible tar seeps with offsite disposal to a power plant or a similar facility for use as recyclable fuel, and landfilling the tar and ash residues offsite. This ROD provides a contingency for incineration of up to 10% of the materials at a RCRA incinerator if the power plant will not accept the contaminated soil/tar mixture. The estimated present worth cost for this remedial action ranges from \$700,000 to \$2,700,000, depending on the extent of excavation required. There are no O&M costs associated with this remedial action.

PERFORMANCE STANDARDS OR GOALS: No chemical-specific goals are provided; however, this remedial action will reduce the current excess lifetime cancer risk for ground water to acceptable levels and prevent migration of contaminants to surface and ground water.

RECORD OF DECISION

SITE NAME AND LOCATION

St. Louis River/Interlake/Duluth Tar Site
Duluth, Minnesota

STATEMENT OF BASIS AND PURPOSE

This decision document presents the selected source control remedial action for the St. Louis River/Interlake/Duluth Tar Site in Duluth, Minnesota, chosen in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), and, to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The decision is based on the Administrative Record for the St. Louis River/Interlake/Duluth Tar site. The attached index identifies the items which comprise the administrative record upon which the selection of the remedial action is based.

The State of Minnesota has been consulted and concurs with the selected remedial action.

ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from this site, if not addressed by implementing the source control remedial action selected in this Record of Decision, may present an imminent and substantial endangerment to the public health, welfare, or the environment.

DESCRIPTION OF THE SELECTED REMEDY

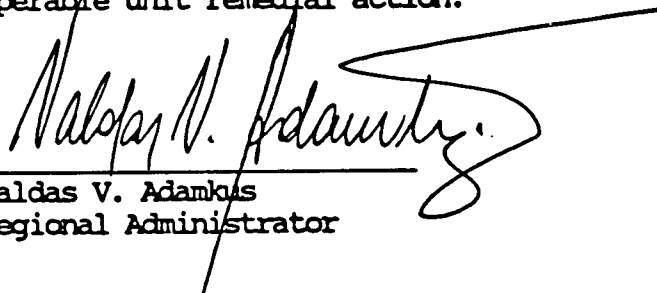
This operable unit is the first of two that are planned for this site. The first operable unit is a source control operable unit. It addresses tar seeps present on the site. The function of this operable unit is to remove the tars, which are a potential source of ground water and surface water contamination, and to reduce the risks to humans and wildlife associated with exposure to the contaminated tar materials. While the remedy does address one of the principal threats at the site, the second operable unit will involve continued investigation and a treatability study of the other contaminated media on the site, followed by remediation.

The major components of the selected remedy include:

- Excavation of the tar; and
- Burning the tar for energy recovery at an acceptable utility company, steel blast furnace, or other suitable facility.

STATUTORY DETERMINATIONS


Consistent with CERCLA and, to the extent practicable, the NCP, 40 C.F.R. Part 300, the selected source control remedial action is protective of human health and the environment, complies with Federal and State requirements that are legally applicable or relevant and appropriate to the remedial action, and is cost-effective. The remedy utilizes permanent solutions and alternative treatment technologies and resource recovery technologies to the maximum extent practicable, and satisfies the statutory preference for remedies that employ treatment that reduces toxicity, mobility, or volume as a principal element. Because this operable unit remedy addresses only part of the contamination present on-site, and hazardous substances will remain on-site above health-based levels, the five year review will apply to this action, if contaminants are not reduced to health-based levels as a result of the second operable unit remedial action.



Valdas V. Adamkus
Regional Administrator

9/28/90.

Date



for Gerald L. Willet, Commissioner
Minnesota Pollution Control Agency

9-26-90

Date

SUMMARY OF REMEDIAL ALTERNATIVE SELECTION
St. Louis River/Interlake/Duluth Tar Site
Duluth, Minnesota

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- Summary of Remedial Alternative Selection
St. Louis River/Interlake/Duluth Tar Site
Operable Unit 1
Duluth, Minnesota

I. Site Name, Location and Description

The St. Louis River/Interlake/Duluth Tar (SLRIDT) site is located in Duluth, Minnesota. The site lies on the north bank of the St. Louis River, approximately four river miles from Lake Superior. The site includes approximately 230 acres of land and river/embayment area. (See Figures 1 and 2.)

The SLRIDT site is bounded on the north by the Burlington Northern Railroad right-of-way. A peninsula at the base of 54th Avenue constitutes the eastern portion of the site, and the St. Louis River defines the southern boundary. Stryker Embayment, a river embayment of approximately 35 acres, is on the western boundary of the site. Another peninsula, located south of 59th Avenue, is also part of the site. This peninsula is known as the Hallett Peninsula. The tip of the Hallett Peninsula is actually part of Superior, Wisconsin. However, this area is not being remediated as part of this operable unit.

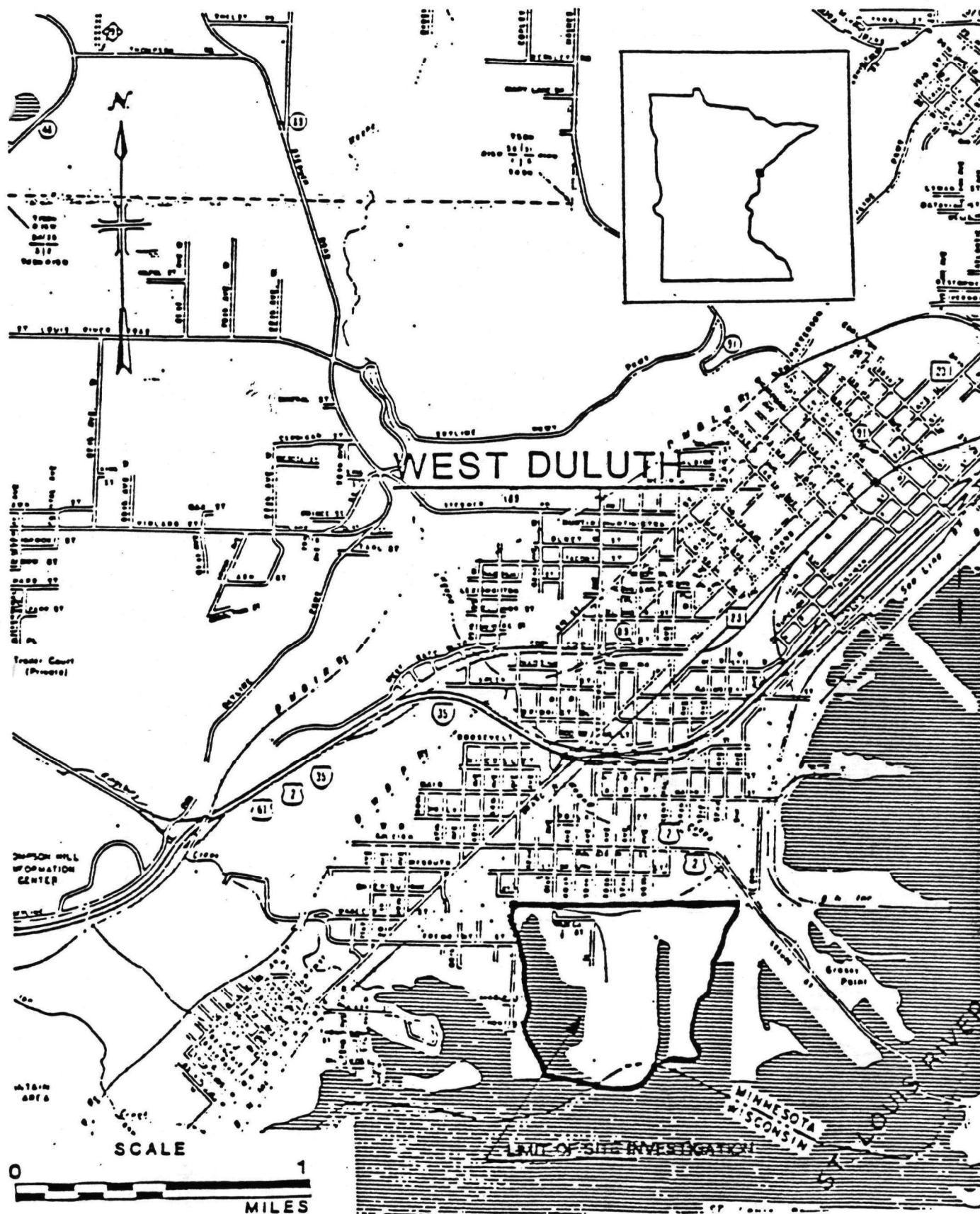
The site is zoned for manufacturing use. However, residences are located west of the site on the 63rd Avenue Peninsula, and to the north of the railroad tracks. Approximately 800 persons live within one mile of the site. There is a walking trail along the western bank of the embayment, and some residents have been known to swim and fish in the embayment, despite repeated warnings not to do so. "No swimming" and "No fishing" signs have been posted. A campground, a school, and a school playfield are located within one mile of the site boundaries.

The two peninsulas that are included in the SLRIDT site consist largely of fill material. (See Figure 2.) The topography of the site is uneven, and slopes slightly away from the St. Louis River. Portions of the site are located within the 100 year floodplain.

The contamination at the site is found as tar seeping at the ground surface; tar deposits within the fill material; solid wastes such as coal and coke particles, ash, slag, and clinker; and slicks of oily wastes. Contaminants are found in ground water on a localized basis, at ground surface, within both the native soil and the fill, in floating slicks on surface water, and in river embayment sediments.

This Record of Decision focuses on the tar seeps and associated tar contamination only. Tar seeps are present at the following locations: (See Figure 3.)

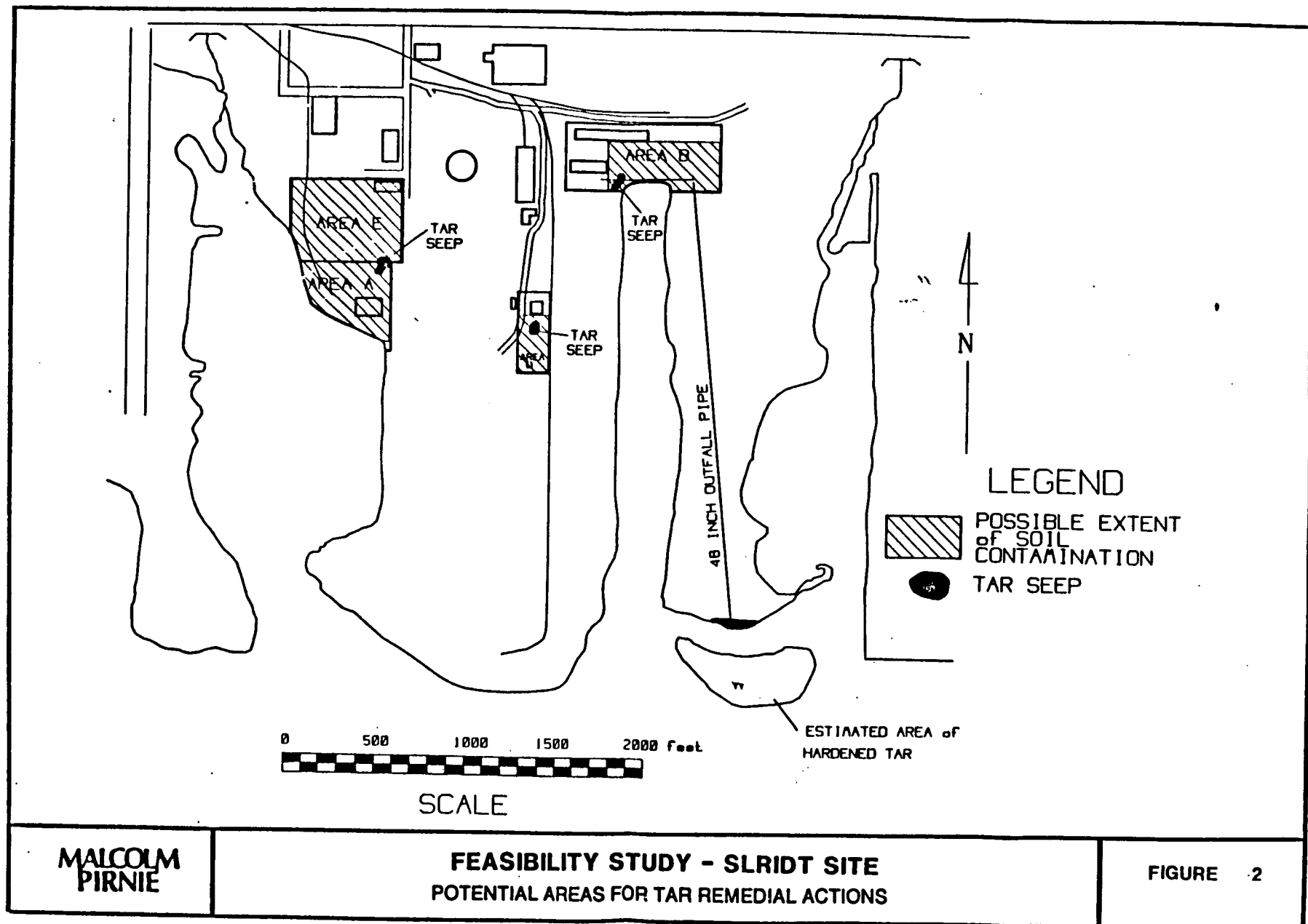
- o In the central portion of the Hallett Peninsula immediately south of the Hallett Dock Company office;
- o On the Hallett Peninsula near the northwest corner of the Hallett

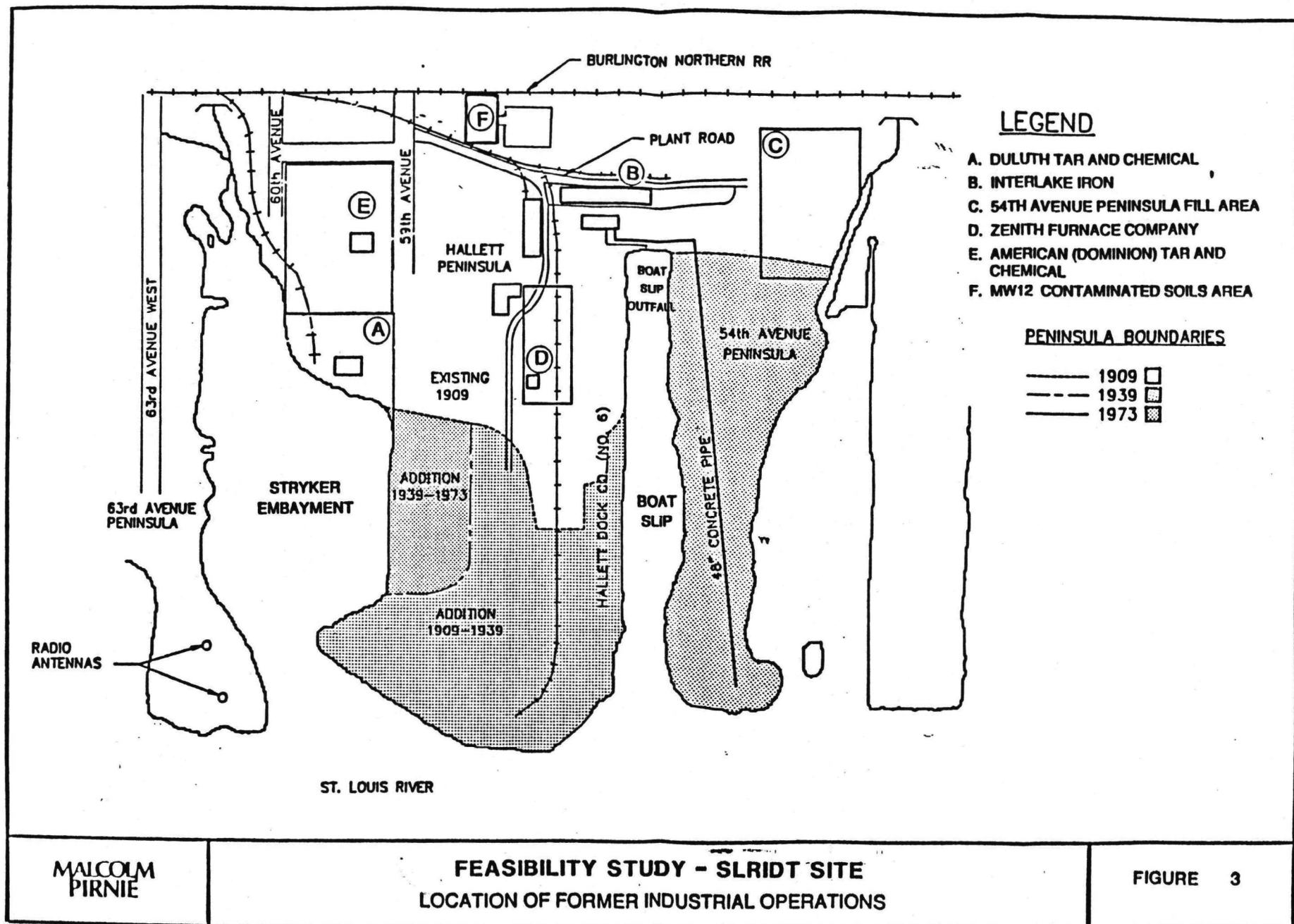


MALCOLM
PIRNIE

FEASIBILITY STUDY - SLRDT SITE
SITE LOCATION

FIGURE 1





Boat Slip:

- o On the Hallett Peninsula at the southeastern edge of Duluth Auto Wrecking and extending into the northern portion of A. Kemp fisheries (Junction of Areas E and A); and
- o At the south end of the 54th Avenue Peninsula, at the 48-inch outfall pipe.

Soil, sediment, ground water, and surface water contamination will be addressed in a future operable unit. Ground water from the site is not currently used as a source of drinking water.

II. Site History and Enforcement Activity

The SLRIDT site is the former location of pig iron and coking plants and separate tar and chemical companies. The tar and chemical companies used the tar byproducts of the iron companies' coking operations to make other products, including tar paper and shingles. The tar and chemical companies closed in the 1940's, and the most recent pig iron plant has not operated since the 1960's.

The tar seeps are a result of past disposal activities on-site. The seep located near the Hallett office and the seep near the head end of the boat slip are in areas where tar producers once disposed of tars directly on the ground. The seep at the end of the 54th Avenue Peninsula is located at a point where a pipe discharged wastes to the St. Louis River. The seep near Duluth Auto Wrecking is located where a tar storage tank is believed to have stood.

Soil on-site is contaminated in areas where the iron and tar facilities were located, and near where tar seeps occur. Ground water is contaminated beneath surface "hot spots", where contaminated soil or tar seeps are located. Sediments are contaminated with a thick layer of tar-like material in portions of the embayment and boat slip. A tar blanket occurs at the end of the 48-inch outfall pipe beneath the St. Louis River. Oil slicks frequently occur on surface water in the embayment and boat slip. These slicks seem to be caused by the release of chemicals from the sediments.

The Minnesota Pollution Control Agency (MPCA) learned of the site when a local resident reported oil rising to the surface of Stryker Embayment. MPCA staff then inspected the site in July and November 1981. The U.S. Environmental Protection Agency (U.S. EPA) conducted a preliminary assessment of the site on February 16, 1983, and a site investigation on May 27, 1983. In 1983, the U.S. EPA consolidated the SLRIDT site and the St. Louis River/U.S. Steel site and added them to the National Priorities List (NPL) as one site—the St. Louis River Site. Although the two sites are listed as one on the NPL, they are being investigated and will be addressed separately. This is because they are separated by a distance of four river miles, and because U.S. Steel is conducting the cleanup at the U.S. Steel site.

Because no Potentially Responsible Party (PRP) was found who was willing to

undertake the site investigation and cleanup of the SLRIDT site, the MPCA and U.S. EPA executed an agreement in April 1986 for the MPCA to conduct a Remedial Investigation (RI) using money from the Federal Superfund. The investigation was delayed because the funding mechanism for the Federal Superfund expired in October 1985 and was not reauthorized by Congress until a year later. The MPCA began the RI in the summer of 1987. Two phases of investigation were conducted, and the RI report, which discusses these two phases, was reviewed and approved by both MPCA and U.S. EPA in February 1990. The RI Report was placed in the information repository at the Duluth Public Library for public review. A public meeting to discuss the results of the RI was held on March 27, 1990.

A site-wide feasibility study was started; however, it became apparent that treatability studies on the soils and sediments were necessary due to the large volumes of contaminated media and the potentially high costs associated with remediation. Since the tars could be addressed at the present time, and due to a strong desire to begin cleanup on-site, it was decided to separate out the tar seeps operable unit. A Focused Feasibility Study (FFS) for this source control operable unit was completed in July 1990. The FFS report, as well as the Proposed Plan, were made available to the public on July 28, 1990. A public meeting to discuss the alternatives was held on August 15, 1990. U.S. EPA accepted verbal comments at the meeting, and written comments through August 26, 1990.

MPCA is responsible for conducting the search for Potentially Responsible Parties (PRPs). This report is scheduled for completion by September, 1990. One known PRP, the Interlake Iron Company, was sent letters requesting their involvement in the cleanup process on February 11, 1985 and August 30, 1985. They declined then, but have recently sought to have input into the FFS; Interlake has commented on the FFS report. Interlake has also conducted a search for other PRPs. This search report will be incorporated into the report prepared by MPCA.

Special notice letters have not yet been issued to PRPs. MPCA will issue Requests for Response Action (RFRAs) to PRPs in the near future.

III. Community Relations History

The St. Louis River/Interlake/Duluth Tar Site has generated a great deal of public interest. Superfund activities at the site have also received attention from local organizations, public officials, and the media.

Community relations have largely been handled by MPCA. A public meeting was held in July of 1988, and numerous fact sheets have been published to keep the public informed of site activities. On March 27, 1990, a meeting was held with a local group known as the Technical Advisory Committee, and later that day, a public meeting was conducted to discuss the results of the RI. On July 28, 1990, after completion of the Operable Unit FFS for the tar seeps, the FFS and Proposed Plan were placed in the Information Repository located at the Duluth Public Library. On that day, a notice of their availability was published in the Duluth News Tribune. The RI Report and the Administrative

Record were also made available for public review at the library. The Administrative Record is also available for review at the U.S. EPA Regional Office in Chicago, Illinois.

To encourage public participation in the remedy selection process, U. S. EPA set a 30-day public comment period from July 28, 1990, through August 26, 1990, during which comments on the Proposed Plan would be accepted. A public meeting was held in Duluth on August 15, 1990, to discuss the Proposed Plan, accept verbal comments on it, and to answer questions.

Interested parties provided comments on the alternatives which were presented in the Proposed Plan and the FFS. The remedy for the SLRIDT site described herein was selected after a detailed review of all public comments received. The attached Responsiveness Summary addresses comments received.

This decision document presents the selected remedial action for the SLRIDT site in Duluth, Minnesota, chosen in accordance with CERCLA as amended by SARA and, to the extent practicable, the National Contingency Plan. The decision for this site is based on the Administrative Record.

IV. Scope and Role of Operable Unit or Response Action

The problems at the SLRIDT Site are complex. As a result, EPA has divided the work into two components called operable units (OUs). These are as follows:

- o OU One: Tar Seeps; and
- o OU Two: Contamination present on the remaining portions of the site.

The first OU addresses tar seeps at the SLRIDT Site. These seeps are a principal threat at the site because of the potential for direct contact with the tars by humans and wildlife. The tars also are likely to impact ground water and surface water quality. Chemicals that volatilize from the tars also pose a potential threat of inhalation exposure to people who go near the seeps. The cleanup objectives for this OU are to prevent exposure to tars, to prevent migration of contaminants to surface water and ground water, and to prevent exposure of non-human animals to the tars through cleanup and/or containment of the tar seeps.

The second OU will address contamination of soil, sediments, ground water, and surface water on the remaining portions of the site. Threats associated with these contaminated media are as follows:

Soil - direct contact, inhalation, and ingestion exposures;

Sediments - direct contact exposure;

Surface Water - direct contact and ingestion exposure; and

Ground Water - a potential threat only, as drinking water is supplied by

the public water system, and there is little chance that the site ground water will be consumed in the future. The site consists largely of fill material and is partially within a floodplain; both of these factors make well development on-site unlikely.

Ingestion of contaminated fish is also a potential threat.

In order to minimize these threats before remedial action can be taken, certain measures have been employed. "No swimming" and "No fishing" signs have been posted on-site. A fish consumption advisory is in effect. Fences are also present on-site to minimize trespassing.

Although the above-mentioned media were studied in the RI along with the tar seeps, many questions remain as to the most effective way to remediate these site problems. Preliminary estimates of remediation costs for the remainder of the site have been as high as \$100,000,000. Because of this potentially high cost, the large areas that need to be remediated, and the uncertainties associated with various treatment technologies, the agencies are delaying their decision as to how to clean up the remainder of the site until further information can be gathered.

Treatability studies are being planned for the contaminated soils and sediments on-site. Surface water contamination is expected to be corrected once sediment contamination problems are addressed. General ground water quality will likely improve in those areas where it is contaminated after action has been taken to clean up the contaminated soil and tar seep areas present on the surface.

V. Summary of Site Characteristics

Chemical contamination at the SLRIDT site consists predominantly of polynuclear aromatic hydrocarbons (PAHs). Metals have also been detected on-site at low levels. The following eight chemicals or chemical classes were identified during the RI as the site-wide indicator compounds:

- o arsenic
- o beryllium
- o bis(2-ethylhexyl)phthalate or DEHP
- o cadmium
- o chromium
- o lead
- o mercury
- o carcinogenic PAHs (as benzo[a]pyrene)

The compounds were selected based on frequency of detection, contaminant-specific information on environmental transport and fate, and toxicity. Table 1 presents a summary of the contaminant concentrations detected in the tar seep samples during the RI. Metals concentrations have not been toxicologically significant in tar seep samples collected during the RI. The main contaminants of concern for the tars are carcinogenic PAHs, or CPAHs. CPAHs, a subset of the larger group of chemicals known as PAHs, are known to

cause cancer. Benzo [a] pyrene is the most carcinogenic of the cPAHs; therefore, a potency factor is used for all cPAHs, so that the most conservative risk estimates can be made.

The contamination at the SIRIDT site is found as tar seeping at the ground surface; tar deposits within the fill material; solid wastes such as coal and coke particles, ash, slag, and clinker; and slicks of oily wastes. Contaminants are found in ground water on a localized basis, at ground surface, within both the native soil and the fill, in floating slicks on surface water, and in river embayment and boat slip sediments. This decision document focuses only on the tar seeps and associated tar contamination.

The tars are amorphous black residues from the coking process and other industrial activities. The tar materials are characterized by high concentrations of PAH compounds. Total PAH concentrations in the tars range from 1,650 to 107,200 mg/kg, with the average concentration being 28,200 mg/kg. CPAH concentrations in the tars range from 298 to 20,900 mg/kg. The average cPAH concentration is 5500 mg/kg. The total volume of tars is estimated to range from 500 cubic yards to 2300 cubic yards. The range is large due to uncertainty regarding the depth of the tar seeps.

Areas for potential tar remediation are shown in Figure 3. A tar seep is located at the junction of the southeastern boundary of Area E and the northeastern boundary of Area A on the Hallett Peninsula. The estimated volume of tar ranges from 400 to 2000 cubic yards; the tar extends to a depth of 2 to 10 feet. The tars are located in an area where a tar storage tank is believed to have stood. They cover about 5400 square feet. Concentrations of total PAHs in this seep exceed 1000 mg/kg and total cPAHs are equal to 250 mg/kg.

Area D on the Hallett Peninsula also contains a tar seep that extends between 2 to 10 feet below the surface. An estimated 14 to 70 cubic yards of tars are present, although recently gathered information indicates that a larger volume of tars may be undiscovered in the subsurface area. Field work to confirm this information has not been done. The tars are contained in a roughly square area of about 190 square feet. Concentrations of total PAHs exceed 100,000 mg/kg and total cPAHs are equal to 20,900 mg/kg.

A third area of tarry material is located in Area B northwest of the Hallett Boat Slip. An estimated 20 to 40 cubic yards of tar are contaminated with PAHs in excess of 1000 mg/kg and total cPAHs equal to 300 mg/kg. The tars are present to a depth of 1 to 2 feet, and are believed to be the result of past tar disposal. This area is about 540 square feet in size.

The southern tip of the 54th Avenue Peninsula, where the 48-inch outfall pipe meets the St. Louis River, contains an estimated 40 to 200 cubic yards of softened tars over an area of about 1100 square feet. These wastes extend 5 feet or more in depth and analysis shows total cPAHs equal to 700 mg/kg. Another estimated 25 cubic yards of tars may be present in sludges along the bottom of the 48-inch concrete pipe.

The following potential human exposure pathways to site contamination in the tars and adjacent tar contaminated soils have been identified:

- o Contact with tar and tar contaminated soils on-site by employees and trespassers;
- o Inhalation of contaminated dusts by employees and trespassers;
- o Exposure to volatile compounds by remediation workers, Hallett Dock Company employees, and other site employees during tar waste removal; and
- o Ingestion of tars.

Exposure to volatile organic compound emissions at times other than tar removal is also possible, although real-time monitoring for total VOCs did not detect any emissions during RI activities.

Wildlife could also come into contact with the tar seeps. Tars may migrate into surface water due to erosion. Tar seeps could be located in contact with ground water.

VI. Summary of Site Risks

During the FFS conducted on the tar seeps operable unit, an analysis was conducted to estimate the health problems that could result if the tar seeps at the SLRIDT site were not remediated. This analysis is commonly referred to as a risk assessment. In conducting this assessment, the focus was on the health effects that could result from direct exposure to the contaminants as a result of the tar coming into contact with the skin. However, inhalation of volatile organic chemicals present in the tars, and inhalation of tar contaminated dust, as well as ingestion of tars, are other possible exposure routes.

Those people most likely to come into contact with the tars are on-site workers and trespassers. The risk analysis focused on cPAHs as the major contaminant of concern. CPAHs are a class of semi-volatile organic compounds which are known to cause cancer in humans and/or laboratory animals, and thus are classified as carcinogens.

Sampling of the tars at the site determined that the concentration of total PAHs in the tars ranges from 1,650 to 107,200 mg/kg, with the average concentration being 28,200 mg/kg. The cPAH concentrations in the tars range from 298 to 20,900 mg/kg. The average cPAH concentration is 5500 mg/kg.

By using the average cPAH concentration (5500 mg/kg), an excess lifetime cancer risk of 9×10^{-2} was calculated based upon a lifetime ingestion exposure scenario. This means that if no cleanup action is taken, there is approximately an additional one in ten chance of contracting cancer as a result of ingestion exposure to the contaminated tars. This estimate was developed by taking into account various conservative assumptions about the likelihood of a person being exposed to the tars. This risk calculation

assumed a 70 kg adult ingests 0.1 g of tar per day, daily for 70 years, with 5500 mg/kg as the average cPAH concentration, and the toxicity of all cPAHs being the same as that of benzo[a]pyrene. This type of risk calculation is conservative and may over-estimate the actual risk if other assumptions were to be made.

U.S. EPA and MPCA have determined that by removing contaminated tars from the site and treating them, significant cancer risks associated with contacting the tars (either dermally, or through ingestion or inhalation) can be minimized quickly. Migration of contaminants to ground water and surface water from the tar seeps will also be prevented. In addition, wildlife will be kept from contacting the tars. Actual or threatened releases of hazardous substances from the seeps, if not addressed, may present an imminent and substantial endangerment to public health, welfare, or the environment.

VII. Description of Alternatives

The alternatives analyzed for the tar seep operable unit are presented below. These are numbered to correspond with the numbers in the FFS Report. The alternatives for the tar seep cleanup are the following:

- o Alternative 1: No Action
- o Alternative 2: Containment
- o Alternative 3A: Use as a Recyclable/Burnable Waste Fuel
- o Alternative 3B: Incineration
- o Alternative 3C: Reuse for Pavement Production

Cost breakdowns for these alternatives are shown in Tables 2 through 6.

Alternative 1:

NO ACTION

Capital Cost: \$0

Annual Operations and Maintenance (O&M) Costs: \$0

30-Year Present Worth (PW): \$0

Estimated Implementation Timeframe: None

The Superfund program requires that a "no action" alternative be evaluated at every site to establish a baseline for comparison. Under this alternative, U.S. EPA would take no further action at the site to prevent exposure to the tar seeps.

Alternative 2:

CONTAINMENT

Capital Cost: \$300,000
 Annual O&M Costs: \$30,000
 30-Year Present Worth: \$600,000
 Estimated Implementation Timeframe: 3 Months

The contaminated tar would be left in place and capped. Since the tar is similar to Resource Conservation and Recovery Act (RCRA) K087 listed waste, RCRA is relevant and appropriate to action taken at this site. The cap must therefore meet RCRA design standards. Two different cap designs are developed for the tar seep areas. Tars in trafficked areas would be covered with a 39.5-inch thick cap with a top layer of asphalt for protection. Tars in non-trafficked areas would have a total thickness of up to 8 feet to control infiltration and prevent frost damage. One tar seep is located in the St. Louis River floodplain. Executive Order 11988 prohibits capping such wastes within a floodplain. Capping this seep is therefore not acceptable. RCRA Land Disposal Restrictions (LDRs or "land ban") would preclude relocating these tars to other seep areas without treatment."

Alternative 3A:

USE AS A RECYCLABLE/BURNABLE WASTE FUEL

Capital Cost: \$700,000 to \$2,700,000
 Annual O&M Costs: \$0
 30-Year Present Worth: \$700,000 to \$2,700,000
 Estimated Implementation Timeframe: Up to 1 year

All tar seeps (500-2300 cubic yards) would be excavated until no further tar contamination is visible. The tar would be transported and burned as recyclable waste fuel at a coal-fired power plant, such as the Northern States Power facility in Minneapolis, in a steel blast furnace, in a cement kiln, or in a similar facility. U.S. EPA will approve the final destination of the tar, to ensure that the facility is acceptable for use. The burning process would destroy the cPAHs in the tar, while allowing the benefit of energy recovery from the high BTU values present in the tar. During excavation of the tars, the last tar removed may become mixed with soil. The power plant will not accept contaminated soil, so this option includes a contingency for burning up to 10% of the materials at a RCRA incinerator. Residues from burning tar as a recyclable waste fuel are landfilled in a proper manner along with ash from the power plant, blast furnace, or cement kiln. The facility chosen for burning must be equipped with the appropriate equipment, maintain stack emission standards, and meet regulations. This alternative complies with 40 CFR 261.6(a)(3)(vii) which states that K087 wastes may be burned for energy recovery. Volume 50, Federal Register, Number 230, Pages 49164 and 49170-49171, November 29, 1985, also discusses using the waste as a fuel, and can be referenced for further information.

Alternative 3B:**INCINERATION**

Capital Cost: \$1,400,000 to \$16,000,000

Annual O&M Costs: \$0

30-Year Present Worth: \$1,400,000 to \$16,000,000

Estimated Implementation Timeframe: Up to 6 years

All contaminated tars would be excavated and destroyed in a thermal destruction unit. If the volume of tar excavated was toward the low end of the estimated volume (500 cubic yards), the tars would be incinerated off-site. If the volume was toward the high end (2300 cubic yards), the tars would be incinerated on-site. U.S. EPA would approve the incinerator facility chosen. In either case, incineration would destroy cPAHs. Metals may remain in the ash, which would be disposed of, after any treatment necessary in order to meet the LDRs, in a RCRA compliant landfill. The scrubber water would also require proper disposal. If incineration were done off-site, the residuals would be disposed of by the incinerator operator, also in compliance with RCRA. The incinerator used would comply with all technical standards for incinerators, which include having stack scrubbers and other recovery mechanisms to ensure that untreated hazardous substances are not released into the environment.

Alternative 3C:**REUSE FOR PAVEMENT PRODUCTION**

Capital Cost: \$1,100,000 to \$3,300,000

Annual O&M Cost: \$0

30-Year Present Worth: \$1,100,000 to \$3,300,000

Estimated Implementation Timeframe: 6 months to 1 year

Tars would be excavated and reused in pavement production facilities. CPAHs would not be destroyed, but would be bound within the pavement matrix and stabilized. Metal and cPAH concentrations would be diluted by the process. Permits for this process would need to be obtained. Air emissions would likely be high, thus requiring a waiver of State of Minnesota air quality regulations and RCRA requirements to make implementation of this alternative possible. The final product would have to pass RCRA Toxicity Characteristic Leaching Procedure (TCLP) testing procedures and meet treatment standards for K087 listed wastes before being placed on the ground, or a waiver of these requirements would have to be issued.

VIII. Summary of the Comparative Analysis of Alternatives

The Focused Feasibility Study for the tar seep operable unit examined five remedial alternatives in detail, and evaluated them according to technical feasibility, environmental protectiveness, and public health protectiveness. The alternatives were evaluated according to the following nine criteria, which are used by the U.S. EPA to provide the rationale for the selection of the chosen remedial action for a site.

- o Overall Protection of Human Health and the Environment addresses whether or not a remedy provides adequate protection and describes how risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls.
- o Compliance with ARARs addresses whether or not a remedy will meet all of the applicable or relevant and appropriate requirements of other Federal and State environmental statutes and/or provide grounds for invoking a waiver.
- o Long-term effectiveness and permanence refers to the magnitude of residual risk and the ability of a remedy to maintain reliable protection of human health and the environment over time once cleanup goals have been met.
- o Reduction of toxicity, mobility, or volume through treatment is the anticipated performance of the treatment technologies that may be employed in a remedy.
- o Short-term effectiveness refers to the speed with which the remedy achieves protection, as well as the remedy's potential to create adverse impacts on human health and the environment during the construction and implementation period.
- o Implementability is the technical and administrative feasibility of a remedy, including the availability of materials and services needed to implement the chosen solution.
- o Cost includes capital and operation and maintenance costs.
- o State Acceptance indicates whether, based on its review of the RI/FS, Proposed Plan, and draft ROD, the State concurs with, opposes, or has no comment on the preferred alternative.
- o Community Acceptance is assessed based on a review of the public comments received on the RI/FS report and the Proposed Plan. Formal comments received are addressed in the attached Responsiveness Summary.

Each of the alternatives was evaluated using these nine criteria. The regulatory basis for these criteria comes from the National Oil and Hazardous Substances Pollution Contingency Plan and Section 121 of CERCLA (Cleanup Standards). Section 121(b)(1) states that, "Remedial actions in which treatment which permanently and significantly reduces the volume, toxicity or mobility of the hazardous substances, pollutants, and contaminants is a principal element, are to be preferred over remedial actions not involving such treatment. The off-site transport and disposal of hazardous substances or contaminant materials without such treatment should be the least favored alternative remedial action where practicable treatment technologies are available." Section 121 of CERCLA also requires that the selected remedy be protective of human health and the environment, be cost-effective, and use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable.

Each alternative is compared to the nine criteria in the following section. Table 7 presents a brief overview of the alternatives and how they compare to the nine criteria.

Overall Protection

Alternatives 2, 3A, and 3B would provide adequate protection of human health and the environment by eliminating, reducing, or controlling risk through treatment and/or engineering controls. Alternatives 3A and 3B would remove the tars from the site and treat the cPAHs in them. This would reduce the risks associated with direct contact, and minimize migration of contamination to ground and surface water.

Alternative 2 would reduce contact risks and migration of contaminants to surface water. However, wastes in contact with ground water would remain in place.

Alternative 3C would stabilize the cPAHs, but contact with them would still be possible. Leaching of contaminants from the pavement might also occur. Air emissions during pavement production would likely present a risk to human health and the environment.

Alternative 1, "no action", is not protective of human health and the environment. Therefore, it is not considered further in this analysis as an option for this site.

Compliance with ARARS

Alternatives 3A and 3B would meet their respective applicable or relevant and appropriate requirements of Federal and State environmental laws. Alternative 3A is supported by 40 CFR 261.6(a)(3)(vii) which grants exemptions for the treatment of RCRA listed waste K087, allowing it to be burned for energy recovery or as a fuel in a steel blast furnace. This is further described in Volume 50 of the Federal Register, Number 230, Pages 49164 and 49170-49171, dated November 29, 1985. In Alternative 3A, residual ash would be disposed of in a proper manner. Alternative 2 would meet RCRA standards for cap design. However, building a cap in a floodplain must comply with Executive Order 11988 (Floodplain Management, May 24, 1977). Relocating tars from the floodplain to other areas of the site and then capping would likely be considered placement under RCRA and would trigger the LDRs. Alternative 3B would meet RCRA and both State and Federal air and water pollution standards for the operation of incinerators, and for disposal of ash and scrubber water. Alternative 3C would likely require a waiver of Minnesota air regulations due to high air emissions during pavement processing. The final pavement product in Alternative 3C would have to pass RCRA TCLP and meet treatment standards for K087. Based upon contaminant concentrations in the tars, it is unlikely that RCRA treatment standards could be achieved.

Table 8 presents the ARARS that apply to the alternatives considered at the SLRDT site in more detail.

Long-term Effectiveness and Permanence

Alternative 3A and Alternative 3B would destroy the cPAHs in the contaminated tars. The long-term risks of exposure to the tars would be greatly eliminated. The alternatives would prevent migration of contaminants in the tar to ground and surface water. The residual ash produced by off-site treatment would be managed by the EPA approved facility (blast furnace, utility company, or off-site incinerator) where the tars were burned. If the tars were burned in an on-site incinerator as in Alternative 3B, the ash would be treated as necessary and disposed of in a RCRA compliant unit to prevent the possibility of human contact. Scrubber water would also be disposed of properly.

Alternative 2 would reduce contact exposure risks that presently exist. Migration of contaminants to surface water would also be reduced. Future seepage of water through the tars would be decreased, but wastes would remain in contact with ground water. Wastes that are not treated constitute a principal threat that would remain at the site and would pose potential long-term risks of exposure. Long-term maintenance and monitoring of the cap would be required to assure the cap remains effective.

Alternative 3C would bind cPAHs within a pavement matrix, reducing their mobility. However, exposure to the contaminants would not be totally eliminated. The pavement produced may crack, allowing possible leaching of contaminants to the ground water. The pavement would also need to be disposed of when it ceases to be functional.

Reduction of Toxicity, Mobility, or Volume of the Contaminants through Treatment

Alternative 3A and Alternative 3B would involve treatment of a principal contaminant, the cPAHs. The cPAHs would be destroyed by burning the tars as recyclable waste fuel or by incinerating them. Toxicity, mobility, and volume of cPAH contaminants would be reduced. Metals may remain in the residual ashes; the ashes will be treated, if necessary, and disposed of properly to minimize the mobility and the toxicity of the metals.

Alternative 3C may reduce the mobility of the cPAHs, but the contaminants would not be destroyed. Neither the volume nor the toxicity of the contaminants would be reduced. Alternative 2 does not involve any treatment; toxicity and volume of contaminants are not reduced, though mobility may be reduced.

Short-term Effectiveness

Alternative 3A would treat the tar seeps and reduce the possibility of direct human contact with the contaminants in the least amount of time compared with other alternatives, except possibly Alternative 2 (i.e., capping).

Alternatives 3A, 3B and 3C that include excavation could pose some short-term risks of exposure due to air emissions of cPAHs or VOCs during the excavation

process. These risks are expected to be minimal. Alternatives 3A, 3B and 3C involve transportation of contaminants off-site and could present a short-term risk of exposure to the community due to the possibility of transportation accidents.

Due to the potential shortage of off-site incinerator capacity or potential unavailability of an on-site incinerator, Alternative 3B would likely require stockpiling of contaminated tars on-site. This could pose a short-term risk of exposure via direct contact or volatile organic compound emissions from the tars.

Risks of contact exposure would be greater for Alternative 3B than those under Alternative 3A, which would allow for more rapid destruction of the contaminants. Under both alternatives, there are some risks of exposure to air emissions from the treatment facilities.

Alternative 3C would result in the greatest amount of contaminant emissions to the air. Waivers of air regulations would likely be required. Contact with contaminants in the pavement product would still be possible. The need to obtain permits for this process may cause delays.

Implementability

Alternative 3A has few associated administrative difficulties that could delay implementation. The remedy has been used successfully to address similar problems at other similar facilities. Skilled workers needed to perform the remedy are readily available. Suitable facilities for burning the tars as a recyclable waste fuel are in existence. No long-term monitoring would be required for the preferred alternative, while Alternative 2 would require such monitoring of the remedy's integrity. Alternative 2 would also be administratively difficult to implement due to tars being located within a floodplain. There is uncertainty about the availability of adequate capacity to burn the tars in an incinerator for Alternative 3B. This could lead to long delays before implementation of Alternative 3B. Alternative 3C is likely not implementable because the pavement produced would have to pass TCLP and meet treatment standards for K087. A waiver of Minnesota state air regulations would likely be required during pavement production. Delays could be encountered when attempting to obtain permits to implement this alternative.

Cost

The present-worth cost range of the alternatives is as follows:

- o Alternative 3A is \$700,000-\$2,700,000.
- o The lowest cost alternative is Alternative 2 at \$600,000.
- o The highest cost alternative is Alternative 3B at \$1,400,000-\$16,000,000.
- o Alternative 3C has a present-worth cost of \$1,100,000 to \$3,300,000.

State Acceptance

The State of Minnesota concurs with and supports Alternative 3A.

Community Acceptance

The Community accepts the selected alternative, Alternative 3A, based upon public comment received. The specific comments received and U.S. EPA's responses are outlined in the attached Responsiveness Summary.

IX. The Selected Remedy

The selected alternative for cleanup of the tar seeps operable unit at the St. Louis River/Interlake/Duluth Tar Site is Alternative 3A - Use as a Recyclable/Burnable Waste Fuel. Based on current information, this alternative would appear to provide the best balance of trade-offs among the alternatives with respect to the nine criteria that EPA uses to evaluate alternatives. Alternative 3A would achieve substantial risk reduction through treatment of a principal threat at the St. Louis River/Interlake/Duluth Tar site. Alternative 3A achieves this risk reduction quickly and at a reasonable cost. This alternative also addresses the three remedial action objectives for the site—prevention of human exposure to tars via inhalation, ingestion, or direct contact routes; prevention of contaminant migration to surface water and ground water; and prevention of wildlife exposure to tars.

The costs for components of the selected remedy are presented in Table 3. The estimated cost range is \$700,000 to \$2,700,000.

X. Statutory Determinations Summary

1. Protection of Human Health and the Environment

This selected remedy provides for overall protection of human health and the environment, by treatment of contaminated tars present on-site. The tars will be burned as a recyclable/burnable waste fuel. Carcinogenic PAHs will be destroyed in the process. Tars will be prevented from contributing to future contamination of ground and surface water. Humans and wildlife will no longer be able to contact the tar.

Any short-term risks associated with excavation of contaminated materials (dust generation) will be minimized by the use of good construction practices. Air monitoring will be conducted to assess possible exposure during remedial action.

2. Compliance with ARARs

The selected remedy will attain Federal and State applicable or relevant and appropriate requirements as described in Section VIII of this Record of Decision. ARARs considered for this site are listed in Table 3. The Federal ARARs that apply to this remedy are as follows:

- o 40 CFR Part 261.6 (a) (3) (vii) regarding listed waste K087
- o 40 CFR Part 261 regarding TCLP and characteristic and listed hazardous waste definitions
- o 40 CFR Part 262 regarding off-site disposal of wastes in a RCRA landfill
- o 40 CFR Part 263 regarding transport of wastes off-site
- o 40 CFR Part 264 regarding facility standards
- o 40 CFR Parts 262 and 264 regarding incinerator standards
- o 40 CFR Part 268 regarding the Land Disposal Restrictions (may apply to the selected remedy if there are metals in the residual ash)
- o Clean Air Act, Air Pollution Prevention and Control, 42 U.S.C., §§7401 to 7642
- o 40 CFR Part 50 concerning National Ambient Air Quality Standards
- o 40 CFR Part 60, Subpart E concerning New Source Performance Standards for Incinerators
- o Federal Water Pollution Control Act, 33 U.S.C. §§1251 to 1387 regarding treatment of scrubber water
- o 33 U.S.C. §1342, Section 402, NPDES, and 40 CFR Parts 122-125 regarding treatment of scrubber water
- o 33 U.S.C. §1317, Section 307, Pretreatment Standards, and 40 CFR Part 403 regarding treatment of scrubber water

3. Cost-Effectiveness

The selected remedy provides overall cost-effectiveness. The cost is reasonable for the treatment obtained in comparison to the other alternatives. The selected remedy can be implemented at a cost that is potentially far less than incineration of the tars, the next best alternative.

4. Utilization of Permanent Solutions and Alternative Treatment Technologies or Resource Recovery Technologies to the Maximum Extent Practicable

The selected remedy provides the best balance with respect to the nine evaluation criteria as described in Section VIII of this Record of Decision. Treatment is utilized to the maximum extent practicable by burning tars found on-site as a recyclable/burnable waste fuel. This alternative is a permanent solution which destroys the cPAHs in the tars, the tar contaminants which pose the greatest risk to human health and the environment. The selected alternative is also preferred because it allows for beneficial reuse of the tars, taking advantage of their high BTU value.

This alternative reduces toxicity, mobility or volume of contaminants through treatment. It can be implemented in a relatively short time and with little impact on the local community. It is readily implementable, and can be done for a reasonable cost. The State concurs with and supports the selected remedy. The alternative was presented in the Proposed Plan and subjected to public comment. Based on comments received, the Community accepts the selected remedy.

5. Preference for Treatment as a Principal Element

The selected remedy eliminates a principal threat at the site (threat of direct contact, ingestion and/or inhalation exposure to the tars) by the use of treatment, through use of the tars as a recyclable/burnable waste fuel. A future operable unit will address other threats present at the SLRIDT Site.

TABLE 1
SLRIDT FEASIBILITY STUDY
TAR SEEP OPERABLE UNIT

CONTAMINANTS PRESENT IN TAR SAMPLES

<u>Compound</u>	<u>Concentration (or Range)</u> <u>(mg/kg)</u>	<u>Average Concentration</u> <u>(mg/kg)</u>
VOLATILES:		
Benzene	12 J	
Toluene	48 J	
Ethylbenzene	3.6 J	
Styrene	17 J	
Total Xylenes	78 J	
SEMI-VOLATILES:		
2-Methylphenol	76 J	
4-Methylphenol	160 J	
2,4-Dimethylphenol	77 J	
Naphthalene	200 - 38,000	9600
2-Methylnaphthalene	2300 J	
Acenaphthylene	170 - 13,000	4600
Acenaphthene	290 J	
Dibenzofuran	1400 J	
Fluorene	88 - 8000	2100
Phenanthrene	260 - 12,000	3600
Anthracene	80 - 3700	1000
Fluoranthene	170 - 6200	2000
Pyrene	120 - 5400	1500
Benzo(a)Anthracene	42 - 2700	800
Chrysene	71 - 2900	800
Benzo (b) Fluoranthene	32 - 1300	500
Benzo (k) Fluoranthene	16 - 2800	800
Benzo(a)Pyrene	37 - 2500	700
Indeno (1,2,3-cd) Pyrene	24 - 3200	900
Dibenzo (a,h) Anthracene	21 - 1600	600
Benzo(ghi)Perylene	14 - 4100	900
TOTAL PAHs:	1,650 - 107,200	28,200
TOTAL cPAHs:	298 - 20,900	5,500
INORGANICS:		
Aluminum	7400	
Arsenic	4.7	
Barium	93	
Beryllium	1.1 J	
Calcium	29,500	
Chromium	11	
Copper	30 E	
Iron	14,100	
Lead	39	
Magnesium	1580 E	
Manganese	2840	
Mercury	0.43	
Vanadium	19 E	
Zinc	118	
Cyanide	18	
Phenolics	195	
BTU Analyses		
BTU/lb	2100 - 16,200	10,500

Notes: E - Analysis did not pass QA/QC requirements
J - Indicates an estimated value

TABLE 2
SLRIDT FEASIBILITY STUDY
TAR SEEP OPERABLE UNIT

CAPPING CONCEPTUAL DESIGN PARAMETERS

<u>Capital</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit \$</u>	<u>Cost</u>
<u>Cap System:</u>				
Vegetative for Areas A & E ¹	0.5	acre	\$200,000	\$100,000
Asphalt for Areas B & D ¹	0.5	acre	\$165,000	\$80,000
Relocate Outfall Area	200	cy	\$25	<u>\$5,000</u>
			Subtotal:	\$185,000
Engineering and Permits (25%)				\$45,000
Administration (15%)				\$30,000
Contingencies (25%)				<u>\$45,000</u>
			Total: ²	\$300,000

¹ Cost estimates are based on similar designs done for other Minnesota sites.

² Does not include repair and maintenance costs. All numbers have been rounded and may not add up.

TABLE 3
SLRIDT FEASIBILITY STUDY
TAR SEEP OPERABLE UNIT

REQUIREMENTS & PARAMETERS FOR TAR DISPOSAL
AS A RECYCLABLE/BURNABLE WASTE FUEL

<u>Capital</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit \$</u>	<u>Cost</u>
Excavation	500 - 2300	cubic yards	\$25	\$13,000 to \$58,000
Backfill of Excavation	500 - 2300	cubic yards	\$5	\$2,500 to \$12,000
Work Area Prep/ Decontamination Pad	1	---	\$10,000	\$10,000
Loading/Transportation	30 - 150	end-dump load	\$900	\$27,000 to \$140,000
Burning/Tipping Fees	450 - 2100	cubic yards	\$500	\$225,000 to \$1,050,000
Soil Mixture Incineration	50 - 200	cubic yards	\$1,600	\$80,000 to \$320,000
Restoration	1	---	\$50,000	\$50,000
	<u>Subtotal</u>			\$410,000 to \$1,600,000
Engineering and Permits (25%)				\$100,000 to \$400,000
Administration (15%)				\$60,000 to \$250,000
Contingencies (25%)				\$100,000 to \$400,000
	<u>Total</u>			<u>\$700,000 to \$2,700,000</u>

TABLE 4
SLRIDT FEASIBILITY STUDY
TAR SEEP OPERABLE UNIT

OFF-SITE INCINERATION
CONCEPTUAL DESIGN

<u>Item</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit \$</u>	<u>Cost</u>
Pre-design Studies	1	each	\$50,000	\$50,000
Excavation	500	cubic yards	\$25	\$13,000
Transportation	43	80-pack loads	\$2,200	\$95,000
Incineration/Disposal	3400	30-gallon packs	\$200	\$680,000
Backfill/Restoration	500	cubic yards	\$10	\$5,000
	<u>Subtotal</u>			\$840,000
Engineering and Permits (25%)				\$210,000
Administration (15%)				\$140,000
Contingencies (25%)				\$210,000
	<u>Total</u>			<u>\$1,400,000</u>

TABLE 5
SLRDT FEASIBILITY STUDY
TAR SEEP OPERABLE UNIT

REQUIREMENTS & PARAMETERS FOR TAR TREATMENT
BY ON-SITE INCINERATION

<u>Capital</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit \$</u>	<u>Cost</u>
Excavation	2,300	cubic yards	\$25	\$60,000
Backfill of Excavation	2,300	cubic yards	\$5	\$10,000
Incineration - Fixed Costs	1	---		\$8,000,000
Incineration - Variable Costs	2,300	cubic yards	\$400	\$900,000
Restoration	1	---	\$50,000	\$50,000
	<u>Subtotal</u>			<u>\$9,000,000</u>
<u>Annual Operations/Maintenance</u>				
Labor	5,400	hour	\$25	\$140,000
	1,800	hour	\$40	\$ 70,000
Monitoring	1,800	hour	\$40	\$ 70,000
Ash & Waste Disposal	1,400	cubic yards	\$50	\$ 70,000
Maintenance	1	---	\$100,000	\$100,000
	<u>Subtotal</u>			<u>\$ 450,000</u>
	<u>Combined Subtotals</u>			<u>\$ 9,500,000</u>
Engineering and Permits (25%)				\$2,400,000
Administration (15%)				\$1,400,000
Contingencies (25%)				\$2,400,000
	<u>Total</u>			<u>\$16,000,000</u>

NOTE: Fixed costs include mobilization/demobilization, set-up, construction of staging areas, and burn tests prior to processing.

TABLE 6
SLRIDT FEASIBILITY STUDY
TAR SEEP OPERABLE UNIT

**REQUIREMENTS & PARAMETERS FOR TAR PROCESSING
BY ON-SITE COLD MIX PAVEMENT FACILITY**

<u>Capital</u>	<u>Quantity</u>	<u>Unit</u>	<u>Unit \$</u>	<u>Cost</u>
Pre-Design Studies	1	each	\$50,000	\$50,000
Excavation	500 - 2300	cubic yards	\$50	\$26,000 to \$120,000
Backfill of Excavation	500 - 2300	cubic yards	\$5	\$2,500 to \$12,000
Work Area Prep/Storage Pad	1	---	\$10,000	\$10,000
Mobilization Setup/ Demobilization			\$150,000	\$150,000
Materials/ Processing/Final Blacktop	9,000 - 40,000	tons	\$40	\$360,000 to \$1,600,000
Restoration	1	---	\$50,000	\$50,000
<u>Subtotal</u>			<u>\$650,000 to \$2,000,000</u>	
Engineering and Permits (25%)			\$160,000 to \$500,000	
Administration (15%)			\$100,000 to \$300,000	
Contingencies (25%)			\$160,000 to \$500,000	
<u>Total</u>			<u>\$1,100,000 to \$3,300,000</u>	

TABLE 7
SLRIDT FEASIBILITY STUDY
TAR SEEP OPERABLE UNIT

COMPARATIVE ANALYSIS AMONG ALTERNATIVES

<u>Evaluation Criteria</u>	<u>1 - No Action</u>	<u>2 - Containment</u>	<u>3A - Recyclable/Burnable Waste Fuel</u>	<u>3B - Incineration</u>	<u>3C - Reuse for Pavement</u>
Overall Protection of Human Health and the Environment	Not Protective	Protective of human health	Protective	Protective	Likely Protective
Compliance with ARARs	Inconsistent with RCRA	Complies with all standards. However, tars can not be capped in a flood plain, and relocation triggers land ban regulations.	Complies with all current standards	Complies with all standards	Requires waiver of <u>Minnesota Rules</u> asphalt facility regulations and RCRA guidelines.
Long-Term Effectiveness	Not effective	Likely effective with long-term maintenance.	Effective. Residuals are landfilled by treatment facility.	Effective, but residuals require long-term management by landfilling.	Likely effective at binding contaminants. However, pavement will eventually cease to be functional.
Reduction of Toxicity, Mobility, or Volume	Not applicable	Not applicable. May reduce mobility by preventing infiltration of water through contaminants.	Organic compounds are destroyed. May reduce mobility of inorganics by management of residuals.	Organic compounds are destroyed. May reduce mobility of inorganics by management of residuals.	May reduce mobility of organic and inorganic compounds.
Short-Term Effectiveness	Not applicable	Minimal risk to workers and the public.	Air releases likely during excavation. Potential for public exposure during transportation.	Air releases likely during excavation and treatment. Potential significant risks to on-site workers.	Air releases likely during excavation and asphalt processing.
Implementability	Not applicable	Materials and equipment are available.	Currently implementable.	Implementable, but specific equipment may be unavailable at the time of remedial action.	Requires extensive pre-design testing. Processing may not be implementable due to air permit and materials handling considerations, and RCRA ARARs.
Cost: Capital	\$0	\$300,000	\$700,000 to \$2,700,000	\$1,400,000 to \$16,000,000	\$1,100,000 to \$3,300,000
Annual O&M	\$0	\$ 30,000	0	0	0
30-Year Present Worth	\$0	\$600,000	\$700,000 to \$2,700,000	\$1,400,000 to \$16,000,000	\$1,100,000 to \$3,300,000
State Acceptance			Concurs, accepts		
Community Acceptance			Accepts		

Table 8
ARARs
SLRIDT Site
Tar Seeps Operable Unit

- o RCRA, as amended by HSWA, 42 U.S.C. §§ 6901 to 6992 K
- o 40 CFR Part 261 regarding characteristic and listed hazardous waste definitions and RCRA Toxicity Characteristic Leaching Procedure (TCLP)
- o 40 CFR Part 262 regarding off-site disposal of wastes in a RCRA landfill
- o 40 CFR Part 263 regarding transport of wastes off-site to a RCRA landfill
- o 40 CFR Part 264 regarding general facility standards
- o 40 CFR Parts 262 and 264 regarding incinerator standards
- o 40 CFR Part 266 and Subpart C and Subparts A-N of 40 CFR 264, 265, and 270 regarding recyclable materials used in a manner constituting disposal
- o 40 CFR Part 261.6(a)(3)(vii) regarding listed waste K087
- o 40 CFR Part 268 regarding the Land Disposal Restrictions
- o 40 CFR Part 264 regarding RCRA cap design standards
- o Executive Order 11988 and 40 CFR Part 6, Appendix A, which regulate remedial action implementation in floodplains
- o Clean Air Act, Air Pollution Prevention and Control, 42 U.S.C. §§ 7401 to 7642
- o National Ambient Air Quality Standards 40 CFR Part 50
- o New Source Performance Standards for Incinerators, 40 CFR Part 60, Subpart E
- o Minnesota Rules 7005.2000 through 7005.2040, Minnesota State air regulations regarding asphalt plant emissions controls, operations, air monitoring and reporting regulations
- o Federal Water Pollution Control Act, 33 U.S.C. §§1251 to 1387 regarding treatment of scrubber water
- o 33 U.S.C. §1342, Section 402, NPDES, and 40 CFR Parts 122-125 regarding treatment of scrubber water
- o 33 U.S.C. §1317, Section 307, Pretreatment Standards, and 40 CFR Part 403 regarding treatment of scrubber water

St. Louis River/Interlake/Duluth Tar Site
Duluth, Minnesota
Operable Unit 1

Responsiveness Summary

INTRODUCTION

The United States Environmental Protection Agency (U.S. EPA) and the Minnesota Pollution Control Agency (MPCA) entered into a Cooperative Agreement in April 1986 to undertake a Remedial Investigation and Feasibility Study (RI/FS) for the St. Louis River/Interlake/Duluth Tar (SLRIDT) Superfund site. The required RI report was completed in January 1990 and a Focused Feasibility Study (FFS) report regarding tar seeps which occur on the site was completed in July 1990. In the RI, the nature and extent of contamination on-site was investigated, and alternatives for appropriate remedial action at the SLRIDT site were developed and evaluated in the FFS. A Proposed Plan was then written by EPA which identified the recommended alternative. Throughout this process, public meetings have been held near the site so that U.S. EPA and MPCA could be available to discuss the RI/FS and Proposed Plan with the public and answer their questions. U.S. EPA offered a 30 day public comment period on the Proposed Plan and FFS from July 28, 1990 to August 26, 1990. At a public meeting held on August 15, 1990 in Duluth, U.S. EPA presented its Proposed Plan for the SLRIDT site.

The purpose of this Responsiveness Summary is to document the comments received during the public comment period, and U.S. EPA's responses to the comments. All of the comments summarized in this document were considered prior to U.S. EPA's final decision embodied in the Record of Decision for the site.

The Responsiveness Summary is divided into the following sections:

- I. Responsiveness Summary Overview: This section briefly outlines the proposed remedial alternatives as presented in the Proposed Plan, including the recommended alternative.
 - II. Background on Community Involvement: This section provides a brief history of community interest and community relations activities conducted for the SLRIDT site.
 - III. Summary of Public Comments Received During the Public Comment Period and U.S. EPA's Responses. Both oral and written comments are summarized, and followed by U.S. EPA's responses to those comments.
- I. Responsiveness Summary Overview

On July 28, 1990, U.S. EPA made the Focused Feasibility Study (FFS) report dated July 1990, and U.S. EPA's Proposed Plan for the SLRIDT site, also dated July 1990, available to the public for review and comment. The alternatives for the remedial action presented in these documents describe methods for cleaning up the tar seeps that are

present on-site. U.S. EPA's Proposed Plan described five (5) alternatives for remedial action at the site. The proposed remedial alternatives were as follows:

Alternative 1 - No action - No further action would be taken at the site to remediate the tar seeps.

Alternative 2 - Capping - The tar seeps would be left in place and covered with an impermeable cap.

Alternative 3A - Use as a recyclable/burnable waste fuel - The tar seeps would be excavated and the tars burned for energy recovery off-site, at either a utility company, steel blast furnace, or other similar facility.

Alternative 3B - Incineration - The tar seeps would be excavated and the tars burned in either an on-site or off-site incinerator, depending on the volume of tar found.

Alternative 3C - Reuse of Tars in Pavement - The tar seeps would be excavated and the tars reused in a pavement product.

After careful evaluation of the RI and FFS for the SLRIDT site, the U.S. EPA selected Alternative 3A as its preferred alternative in the Proposed Plan.

The following parties submitted formal written comments during the public comment period:

- | | |
|-------------------------------|--|
| 1. William J. Andersen | 2. Grant L. Johnson |
| Citizen - Superior, Wisconsin | Senior Vice President/General Counsel
The Interlake Corporation |

Numerous parties provided verbal comments during the public hearing portion of the August 15, 1990 Proposed Plan public meeting. Those parties included:

- | | |
|-------------------|---------------------|
| 1. William Spehar | 4. William Andersen |
| 2. Joe Stifold | 5. Jerome Bosich |
| 3. Allan Gummert | 6. Tim Leland |

II. Background on Community Involvement

The Minnesota Pollution Control Agency (MPCA) learned of the site when a local resident reported oil rising to the surface of Stryker Embayment, apparently from the slow release of oil from the sediments. "Oil slicks" are a common occurrence on the embayment.

MPCA staff inspected the site in July and November 1981. The U.S. EPA conducted a preliminary assessment of the site on February 16, 1983, and a site investigation on May 27, 1983. In 1983, the U.S. EPA consolidated the

SLRIDT site and the St. Louis River/U.S. Steel site and added them to the National Priorities List (NPL) as one site—the St. Louis River site. Although the two sites are listed as one on the NPL, they are being investigated and will be addressed separately.

Because no Potentially Responsible Party (PRP) was found who was willing to undertake the SLRIDT site investigation and cleanup, the MPCA and U.S. EPA executed an agreement in April 1986 for the MPCA to conduct a Remedial Investigation (RI) using money from the Federal Superfund. The investigation was delayed because the funding mechanism for the Federal Superfund expired in October 1985 and was not reauthorized by Congress until a year later. The MPCA began the RI in the summer of 1987. Two phases of investigation were conducted, and the RI report, which discusses these two phases, was reviewed and approved by both MPCA and U.S. EPA in February 1990. The RI Report was then placed in the information repository at the Duluth Public Library for public review.

A site-wide feasibility study was started; however, it became apparent that treatability studies on the soils and sediments were necessary due to the large volumes of contaminated media and the potentially high costs associated with remediation. Since the tars could be addressed at the present time, and due to a strong desire to begin cleanup on-site, it was decided to separate out the tar seeps operable unit. A Focused Feasibility Study (FFS) describing several cleanup alternatives for this operable unit was completed in July 1990.

The St. Louis River/Interlake/Duluth Tar Site has generated a great deal of public interest. Superfund activities at the site have also received attention from local organizations, public officials, and the media.

Community relations have largely been handled by MPCA. MPCA prepared a Community Relations Plan (CRP) in June 1987 for the site. The CRP outlined a community relations strategy to apply to the SLRIDT site. A public meeting was held in July of 1988, and numerous fact sheets have been published to keep the public informed of site activities. On March 27, 1990, a meeting was held with a local group known as the Technical Advisory Committee and, later that day, with the general public, to discuss the results of the RI. On July 28, 1990, after completion of the Operable Unit FFS for the tar seeps, the FFS and Proposed Plan, which describes EPA's preferred cleanup alternative, were placed in the Information Repository located at the Duluth Public Library. On that day, a notice of their availability was published in the Duluth News Tribune. The Administrative Record has also been made available for public review at the library.

To encourage public participation in the remedy selection process, U.S. EPA set a 30-day comment period from July 28, 1990, through August 26, 1990, during which comments on the Proposed Plan and FFS would be accepted. A public meeting was held on August 15, 1990, to discuss the Proposed Plan, accept verbal comments on it, and to answer questions. U.S. EPA accepted verbal comments at the meeting, and written comments through August 26, 1990. Specific responses to comments are presented in Section III of this Responsiveness Summary.

III. Summary of Comments Received During the Public Comment Period and U.S. EPA's Response to Comments

Comments raised during the St. Louis River/Interlake/Duluth Tar site Proposed Plan public comment period are summarized below. Comments are organized and paraphrased in order to effectively summarize and respond to them in this document. The reader is referred to the actual comments and the transcript of the public meeting (formal comments start on page 49) in the Administrative Record.

I. Comments Received from the Public During the August 15, 1990 Proposed Plan Public Hearing

I.A. Comment

Mr. William Spehar and Mr. Joe Stifold, citizens of Duluth, each made comments regarding the Engineer's Realty Demolition Landfill located in Gary-New Duluth. Both expressed disappointment that the MPCA would not provide any information regarding the facility.

I.A. Response

The Engineer's Realty Demolition Landfill could not be discussed because the Minnesota Attorney General's office has closed the MPCA's files on the landfill pending possible civil legal action. The MPCA issued a news release on September 14, 1990 stating that the MPCA citizens board will rule on closing the landfill at a meeting to be held on September 25, 1990. The landfill is not a Superfund site and is not connected in any way to the St. Louis River/Interlake/Duluth Tar Superfund site.

I.B. Comment

Mr. Allan Gummert, Duluth citizen, commented that he felt the MPCA and EPA were doing "a great job." He also expressed hope that all agencies involved with environmental issues in the area would coordinate their efforts and their funding to produce "greater overall impact and a better end result".

I.B. Response

The agencies thank Mr. Gummert for his support of their efforts. MPCA and EPA have communicated with the U.S. Army Corps of Engineers, the City of Duluth, and the Wisconsin Department of Natural Resources regarding activities taking place on and near the site. The site is also a part of a Remedial Action Plan (RAP). RAPs deal with Areas of Concern (AOC) on and near the Great Lakes. When complete, the RAP report will be submitted to the International Joint Commission, which deals with Great Lakes area cleanups in the United States and Canada. While funding for each of the agencies mentioned is separate and distinct,

every effort will be made to ensure that the work each agency does will be coordinated with the others in order to benefit the area as a whole. RAP coordinators are especially active in working toward this end.

I.C. Comment

Bill Andersen, citizen of Superior, Wisconsin, commented that the amount of commercial activity occurring on the site should be reduced because such activity may be stirring up dust into the air. He suggested that we consider closing the facilities until the site is cleaned up.

I.C. Response

The amount of dust generated by active facilities has not yet been thoroughly defined. This will be investigated further in the second operable unit. As such, there are no grounds for closing the facilities. The current operable unit deals only with the tar seeps present on-site.

I.D. Comment

Jerome Bosich, citizen of Duluth, commented that he is disappointed about the quality of the investigation and the length of time the investigation has taken. He does not believe that the agencies have determined the extent of the contamination. He feels he could conduct an investigation "checking every cubic foot of the site using only four or five men". He feels the agencies should "get going".

I.D. Response

The agencies recognize Mr. Bosich's frustration. The Superfund process is very complicated, and the time between site discovery, investigation, and cleanup often spans several years. This site is very large, and it has taken time to determine the extent of contamination and to determine how best to clean it up. While Mr. Bosich does not feel that the extent of contamination has been defined, the agencies feel it has. The volume of material has not been precisely determined, but the areal extent of contamination is known. The volume of tar cannot be precisely determined until the tar is excavated. The agencies are working diligently to begin treatability studies on the sediments and soils so that the best remedy for the rest of the site can be selected. The tars will be excavated and treated within the next year.

I.E. Comment

Tim Leland, Duluth citizen, commented that he wants the embayment cleaned up in the very near future. He lives by the river, and enjoys using and fishing it. New homes are being built in the

area, and a waterfront trail has been built next to the embayment. Signs were put up warning people not to swim or fish and people are being scared away. Enough testing has been done. The embayment is a small, manageable area that could easily be closed off, pumped out, and cleaned up. He wants action to be taken soon.

I.E. Response

The agencies are also interested in having the embayment cleaned up. Plans for a bioremediation treatability study to be completed next spring/summer on some of the embayment sediments are in the works. Such a test is necessary to determine if this method can effectively destroy the tars present in the embayment sediments. If the test works, bioremediation will be used to clean up all of the contaminated sediments. While the embayment could be closed off, the cleanup would still be very difficult and quite expensive. The Agencies are taking steps to involve the parties responsible for the contamination in the cleanup process and to have them pay for the actions taken.

II. Written Comments Received During the Public Comment Period and U.S. EPA's Response to Comments

II. A. Comment

Mr. William J. Andersen of Superior, Wisconsin submitted written comments at the public meeting held on August 15, 1990 in Duluth, Minnesota, and submitted additional written comments by mail. His comments were as follows. Comment 1 deals with information submitted at the public meeting. Comments 2 through 5 were provided by mail in a letter dated August 25, 1990.

1. At the public meeting, Mr. Andersen submitted two letters regarding harbor and channel modifications and dredging operations in the area near the site. One letter, dated March 5, 1981 and addressed to C.H. Grindy of the Hallett Dock Company by Alden E. Lind, discusses consolidation of businesses operating on harbor frontage to increase efficiency, lessen the need for dredging, improve fish and wildlife habitat, and enhance recreational activities in the harbor and river area. The other letter, dated August 16, 1983, deals with the U.S. Army Corps of Engineers' (U.S. ACE) plan to dredge the river and deposit the sediments in the Superior, Wisconsin Municipal Forest. The adequacy of the storage facility was questioned. Also, it was noted that dredging could interfere with spawning activities of fish in the area. This letter was written by William Andersen and addressed to the U.S. ACE.
2. Mr. Andersen requested an extension of the public comment period in order to hold another public hearing in Superior, Wisconsin, because it was not previously known that a portion of the site was located in Superior.
3. He requested that the site boundaries be extended to include the tar

blanket extending into the open waters of the St. Louis River and additional contaminated sediments which otherwise would be dredged during the proposed Duluth - Superior Harbor Channel Modification Project.

4. He asked that if incineration were the remedial alternative chosen, that the effluent standards be clearly identified in advance and that monitoring by a public agency be required to assure compliance with those standards.
5. He stated that it was not his intention to delay this important project. He requested that the EPA direct the MPCA and WDNR to immediately take steps to minimize the flow of tars into the St. Louis River.

II. A. Response

1. The U.S. EPA's Proposed Plan for cleaning up the tar seeps at the SLRIDT site will not have an impact on the activities mentioned in the letters Mr. Andersen provided. With regard to the first letter, the Office of Superfund has no authority to implement consolidation of land use. As to the second letter, the EPA and MPCA have been informed of U.S. ACE plans for dredging the river near the SLRIDT site as part of the "Harbor and Channel Modifications: Duluth - Superior Harbor, Minnesota and Wisconsin" Project. Both agencies have commented on the plan. It is their hope that the harbor and channel project will be coordinated with the St. Louis River RAP, and that the environmental impacts of the dredge project will be fully assessed. The dredge plan called for the sediments to be deposited on the SLRIDT site itself, on Erie Pier, or in the Superior Forest facility. Our comments objected to the proposal for disposal on the SLRIDT site, and requested further information regarding the suitability of the Erie Pier and Superior facilities. Future activities at the SLRIDT site may involve dredging; at that time, spawning runs will be taken into consideration to minimize the impact on the fish population as much as possible.
2. A letter was sent to Mr. Andersen on September 7, 1990 that denied the request for the extension and explained the reasons for it. However, the letter was returned. The reasons for denial are listed below:
 - o Mr. Andersen stated that it was not previously known that part of the site is in Superior, Wisconsin. However, EPA and MPCA did indeed know that was the case. The Wisconsin Department of Natural Resources (WDNR) also is aware of the circumstances and has advised the MPCA to conduct the necessary actions at the site. WDNR has asked only that they be kept informed of site activities. Accordingly, the WDNR is on the site mailing list and is aware of the proposed remedy.
 - o The portion of the site that is presently being addressed is not in Superior. When action is taken on those parts of the site that are considered to be in Wisconsin, further WDNR input will be sought.
 - o It is not practical to hold two public meetings on the same site.

Interested citizens from Superior may attend the meetings held in Duluth.

- o The request was not submitted in a timely manner. A request for an extension must be submitted in the first half of the public comment period. The request was postmarked on the last day of the public comment period.
- 3. The site boundaries do include the tar blanket that extends into the St. Louis River. The site cannot, however, be extended to include all other contaminated sediment that may be dredged during the proposed Duluth - Superior Harbor Channel Modification Project. That project will be reviewed by the Environmental Review Branch of the U.S. EPA in Region 5, but is not regulated under the Superfund program. There is also a Remedial Action Plan (RAP) which deals with pollution in the St. Louis River System. Dredging of contaminated sediments in the boat slip, Stryker Embayment, and off the end of the 54th Avenue Peninsula may be conducted as part of the SLRIDT site cleanup.
- 4. Incineration is not the chosen remedy. The tar will be excavated and used as a recyclable/burnable waste fuel. The facility at which the tar is burned must be acceptable to EPA and MPCA and meet applicable emissions standards. Such facilities are subject to monitoring by state agencies to ensure compliance with emissions regulations. The next phase of the SLRIDT site project is remedial design. In this phase, facilities will be evaluated and MPCA and EPA will make a determination as to their suitability for burning the tar.
- 5. The agencies recognize that Mr. Andersen does not intend to delay the project, and appreciate his concern and his input. EPA and MPCA are working to minimize further contamination of the St. Louis River, and to clean up the remainder of the site as soon as possible. WDNR is kept informed of site activities, as mentioned previously. The agencies would like to clarify that tars are not presently flowing into the river. There is a possibility that erosion is dispersing some tar particles from tar seeps into the river; also, tars are present in the river sediments. Tars are not, however, presently being discharged into the St. Louis River.

II. B. Comment

Grant L. Johnson, Senior Vice President and General Counsel for the Interlake Corporation, submitted a letter, as well as comments on the FFS and the Proposed Plan that were prepared by Interlake's consulting firm, International Technology Corporation (IT). The Interlake Corporation is a Potentially Responsible Party (PRP) for the contamination present at the SLRIDT site. The following comments were made.

General Comments

- 1. Interlake and IT have based their comments on the assumption that the

extent of tar seep contamination is as estimated in the studies undertaken to date. Should excavation of the material reveal that the amount of tar is substantially greater than previously estimated, and that remedial action costs are substantially greater, the remedy selection process should be revisited.

2. Interlake supports the approach of dividing the site into "operable" units for purposes of identifying the persons potentially responsible for undertaking remedial action or for paying the costs of remedial action. For example, some tar seeps are on property formerly owned by the Interlake Corporation, while one is on property formerly owned by a tar company. The embayment was contaminated by activities engaged in by the tar companies, and not by Interlake. A distinction should be made between the Interlake portion of the site and those portions of the site that are the responsibility of the tar companies and their successors.
3. Interlake did not undertake the RI/FS when asked to do so in 1985 because at that time, the agencies were concerned only with the embayment, and Interlake was not responsible for contamination of the embayment. Although Interlake sold tar to the tar companies on-site, Interlake did not "arrange for treatment or disposal" with those companies and thus was not liable for contamination of the embayment. The MPCA project manager agreed with this interpretation of Superfund statutes.
4. Responsibility for site contamination could not be ascertained until completion of the RI. The RI expanded the areas of concern to areas formerly owned and operated by Interlake. Since then, the Interlake Corporation has cooperated with the agencies in attempting to develop appropriate remedies. Interlake also conducted a PRP search and provided a copy of the report to MPCA.

Technical Comments on the Focused Feasibility Study

5. The FFS states on page 2-1 that certain Applicable or Relevant and Appropriate Requirements (ARARs) apply to tar seeps, and later says that these requirements are relevant and appropriate, but not applicable. IT believes these regulations are at most, relevant and appropriate. This distinction is most important for cap designs and ultimate disposal of soil incinerated on-site.
6. Page 2-2 and 2-3, Section 2.2.1 and 2.2.2. Each of these sections indicate that metals including arsenic, beryllium, chromium, lead and mercury are contaminants of interest identified for tars. These statements are not supported by Appendix A nor the data collected in the Remedial Investigation. As is indicated in the Proposed Plan for the site, it should be clearly stated in the FFS that the only constituents of concern for the tar seeps are the polynuclear aromatic hydrocarbons (PAHs).
7. Page 3-1, Section 3.1.2. IT believes that the wastes present at the

site are predominantly not K087 wastes. There are numerous technical differences between the coal tar that predominates throughout the site and the RCRA-listed K087 wastes. IT has previously enumerated these differences in a letter to MPCA dated June 13, 1990. IT believes that once excavated, the coal tar may be identified as characteristically hazardous by virtue of its benzene content but it should not be categorized as the listed K087 waste.

8. Page 3-1, Section 3.1.2 appears to conclude that if an ARAR is relevant and appropriate, its standards must be met. This is incorrect. Where RCRA regulations are considered relevant and appropriate, their design standards should represent a point of departure for identifying an appropriate, site-specific remedy at the Superfund site. Even if the listed K087 RCRA standard were relevant and appropriate, that conclusion alone does not result in the need for an 8 foot thick cap. Clearly the remedial objectives, the limited areal nature of the seeps and the present uses of the site dictate the need for a thinner cap. This alternative should be modified to reflect a thinner cap that is more consistent with site-specific conditions.
9. Page 4-7, Section 4.2.4.1. This section, describing the on-site incineration alternative, states that "ash from on-site incineration will be landfilled off-site." IT believes this assumption is erroneous and not consistent with the site-specific conditions. As demonstrated in Appendix A and as verified in EPA's Proposed Plan for the site, the sole constituents of concern for the tar seep material are PAHs. If the on-site incineration equipment meets the RCRA standard for destruction efficiency, the resulting soil/ash will clearly meet the risk-based value of less than eight ppm total carcinogenic PAHs. Since the standards for the listed K087 waste are not applicable, but are only relevant and appropriate, the criteria for on-site replacement of the treated soil should revert to the health-risk value of eight ppm. Applying this approach, the treated soil could be placed back at its point of origin or elsewhere on the site. It is wholly inappropriate to conclude that after complete on-site decontamination of soil, it must also be transported off-site for RCRA disposal. IT recommends that this alternative be modified to facilitate on-site placement of treated soil should it meet the cleanup objective of eight ppm.
10. Table 2-1. The criteria in this table should be modified to accurately reflect the criteria standard in the National Contingency Plan. This standard allows a 10^{-4} to 10^{-6} range of incremental cancer risk exposure.
11. Figure 3-1. The type of cap envisioned to cover the tar seeps in areas A and E should be revised to reflect a more modest thickness consistent with the objective of preventing infiltration, direct contact, and erosion of the tar material.
12. Section 4.0, Paragraph 2 of Appendix A contains a typographical error. Use of the oral potency factor may lead to an overestimate of risk potential for skin cancer, not an underestimate.

13. Section 4.1 of Appendix A. The Report concludes that the "maximum contaminant level" found at the site in the tar seeps for arsenic is 4.7 ppm. Such a conclusion is not factually based in the RI. The reported value is less than half of the Contract Required Detection Limit for this constituent and the spike recoveries on the QC samples were not within control limits. The value is suspect and therefore inappropriate for use in risk assessment. This appendix should clearly conclude that PAHs are the sole group of constituents of concern for the tar seep operable unit.

Comments Regarding U.S. EPA's Proposed Plan

14. Page 4, First paragraph. IT Corporation does not concur with the estimated potential range in cost for remediation of the site. Although potential costs for remediation of Superfund sites typically range over several orders of magnitude during initial studies, IT has seen no information (including previous draft FS's) that leads us to believe the potential costs approach \$100,000,000. Even as an upper bound, it is overstated and poorly estimated.
15. Page 6, First paragraph. IT continues to disagree with U.S. EPA regarding the application of regulations governing K087 wastes as relevant and applicable standards for the coal tars found at the site. Although the tars are similar to K087 wastes, EPA had the opportunity to list coal tars as K087 wastes when initially writing the regulation. EPA elected to narrow the range to coal tar decanter sludges. Consequently, at this time it is inappropriate to expand the definition to include coal tars in general. Additional arguments against the use of K087 regulations as relevant and appropriate were presented in letters to Mr. Cliff Twaroski of MPCA from IT Corporation dated June 13 and July 13, 1990.
16. Page 7, Alternative 3C. This paragraph indicates that metals are a constituent of concern in the tar seep materials and that these metals would be diluted by the process. The record should clearly state that metals are not a constituent of concern for the tar seep areas.
17. Page 9, "Compliance with ARARs". This paragraph states that relocating tars from the floodplain would constitute placement under RCRA and would trigger Land Disposal Restrictions (LDR). As an ARAR, EPA should indicate its authority to exempt RCRA LDR for "placement" of soil and debris from Superfund sites. This exemption could facilitate the excavation, treatment and placement of tar seep material at the site.
18. Page 9, "Long-Term Effectiveness and Permanence". The first paragraph under this heading is internally inconsistent. It states that Alternative 3B would destroy the cPAHs in the contaminated tars and that the long-term risk of exposure to the tars would be eliminated. However, it goes on to conclude that after this complete destruction of the risk, the ash would be treated as necessary and disposed of in a RCRA compliant unit to prevent the possibility of human contact. As stated in our comments on the Final Feasibility Study, IT believes there is no need to remove the treated soil/ash if the on-site incinerator treats the tarry material to a concentration below eight ppm--the threshold of concern calculated in

Appendix A of the Final Feasibility Study. The National Contingency Plan allows for placement of incinerated soil/ash back on a Superfund site when the risk has been adequately reduced or eliminated.

II. B. Response

Response to General Comments

1. The costs presented may vary by up to 50% greater or 30% less than originally estimated. If the costs are out of this range, the agencies may elect to reconsider the remedy selected and to reevaluate its cost-effectiveness. If a different remedy is selected, an Explanation of Significant Differences document will be prepared and presented for public comment.
2. The agencies divide sites into operable units when it makes sense to do so and aids the cleanup process. The agencies have not yet determined if the rest of the site will be broken out into separate operable units, or how such a breakdown would be done. Formal determinations of liability have not yet been made.
3. The agencies have not yet made formal determinations of liability. It should be noted that there are differences between the Minnesota Environmental Response and Liability Act (MERLA), Minnesota's Superfund Law, and the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), the Federal Superfund law. MPCA is not responsible for interpreting CERCLA. While ideally, each responsible party will pay for its fair share of the cleanup, there are provisions under CERCLA for joint and several liability.
4. The agencies recognize the cooperation shown recently by the Interlake Corporation, and appreciate their efforts in conducting a PRP search.

Response to Technical Comments on the Focused Feasibility Study

5. The regulations are relevant and appropriate to the cleanup. Relevant and appropriate requirements mean those cleanup standards which address problems or situations sufficiently similar to those encountered at the CERCLA site such that their use is well-suited to the particular site. Once a requirement is determined to be relevant and appropriate, it must be complied with as if it were applicable. The determination of relevant and appropriate relies on professional judgment, considering environmental and technical factors at the site. The cap designs presented are relevant and appropriate for the contamination found on-site. Incinerated soil is discussed in the response to Comment 9. Please note that neither capping nor incineration was selected as the remedy for the tar seeps.
6. The metals were named as contaminants of concern for the tar seeps in the FFS. The Proposed Plan, while naming several contaminants of concern, states that the major contaminants of concern for the tar seeps are the carcinogenic Polynuclear Aromatic Hydrocarbons (CPAHs). The CPAHs are driving the cleanup. The EPA is concerned that metals may concentrate in

the ash which results from burning of the tars, and will ensure that the ash is disposed of properly.

7. The wastes at this site have been identified in both the RI and FFS as coal tars from coking operations. The wastes were deposited prior to the effective date of RCRA. Also, although the waste at this site is known to have been generated from coking operations, it is not clear if this waste meets the definition of K087, decanter tank tar sludge from coking operations. The waste is, nonetheless, sufficiently similar to K087 for RCRA to be relevant and appropriate.
8. Once a requirement is determined to be relevant and appropriate, it must be complied with as if it were applicable. Relevant and appropriate design standards have been considered for the site remedy. The cap discussed in the FFS and Proposed Plan is described as being up to eight feet thick. This thickness could vary, but the cap must be impermeable, and allow for frost protection. Two types of caps are described in the documents which vary depending upon the land use in the area where the tar seep is located. Please note that capping was not the remedy selected for the site.
9. The main constituents of concern for the tar seeps are cPAHs. However, there was concern during development of the incineration alternative regarding whether the metals that are present in the tars would concentrate in the ash. After incineration, the ash would be tested. If metals were present in the ash at high levels (above Best Demonstrated Available Technology, or BDAT levels), they would be treated and disposed of off-site in a RCRA compliant landfill because it would not be feasible to build a RCRA unit on-site. If all contaminants in the ash were below levels of concern, the agencies would consider other methods of disposal. Please note that incineration was not chosen as the remedy for the tar seeps operable unit. Also, note that relevant and appropriate requirements must be complied with as if they were applicable.
10. The table states the following remedial action objective: "[p]revent significant impact to human health due to skin contact and inhalation exposures." The criteria for this objective concerns concentrations of PAHs present in the tars which correspond to a lifetime incremental cancer risk via contact exposure of greater than 10^{-6} (one in one million). This table is correct. 10^{-6} is the "point of departure", the risk level above which remedial action can be taken.
11. See Response #8. The cap is described as being up to 8 feet thick. The cap would be designed to prevent infiltration, direct contact, and erosion of tar material, as well as provide frost protection. Capping was not chosen as the remedy for the tar seeps.
12. After checking with Malcolm Pirnie, Inc., the authors of the FFS, it was determined that there was not a typographical error made. Use of the oral potency factor may lead to an underestimate of risk potential for skin cancer.

13. Review of the data has indicated that it is acceptable for use. The Risk Assessment stated that a level of 1 mg/kg Arsenic was associated with a 1 in 1 million (1×10^{-6}) excess cancer risk for workers. The maximum level of arsenic found in tar seeps was 4.7 mg/kg. In comparison, a level of 8 mg/kg of cPAHs was associated with a 10^{-6} excess cancer risk. The maximum level of cPAHs found was 20,900 mg/kg. CPAHs are the main contaminants of concern, and are driving the cleanup.

Response to Comments Regarding U.S. EPA's Proposed Plan

14. The costs were calculated based on tables prepared for the site-wide draft feasibility study report, which has not yet been completed. Costs included remediation of sediments, soils, surface water, and ground water. The potential for the site-wide remedy to cost \$100,000,000 does exist. The actual cost may not be that high, depending on the remedy chosen.
15. See Response #7. K087 is defined as "decanter tank tar sludge from cooking operations". The tar at the SLRIDT site is similar to K087. RCRA is relevant and appropriate.
16. The main contaminants of concern in the tar are the cPAHs. Some metals are present in the tar at low levels.
17. EPA did state that relocating tars that are located in the floodplain to other areas of the site without treating them first would constitute placement. The EPA can obtain a variance or waiver from the RCRA IDR for placement of soil and debris originating from Superfund sites. However, the EPA does not believe that the tar can be considered either soil or debris. Even if such a variance or waiver was obtained, capping would not be the preferred remedy.
18. While cPAHs would be destroyed by incineration, incinerator ash could possibly contain higher concentrations of metals than the tar itself. The ash would have to meet BDAT standards for the metals present. If it did not, it would have to be treated and landfilled in a RCRA compliant unit. If the ash were to meet health-based and BDAT standards, the agencies may consider other disposal methods. Incineration was not chosen as the remedy for the tar seeps.

III. Remaining Concerns

The following concerns were noted during the question and answer portion of the public meeting.

- A. How will the waste be transported?
- B. Will existing businesses on the site be moved?
- C. Will the whole area be cleaned up, or just certain parts of the site?
- D. Why does the cleanup process take so long?

- E. Why isn't bioremediation being used on the tars?
- F. Who will pay for the cleanup?
- G. Will the embayment be cleaned up?
- H. Will other debris (glass, metal, etc.) be removed from the embayment during cleanup?
- I. Where will the ash be disposed of? Will it be landfilled in Duluth?
- J. Where will the tar be burned?
- K. Will river dredging near the site as part of the channel modification project increase the rate at which contaminants from the sediments on-site will be transported into the St. Louis River?

III. Responses to Remaining Concerns

- A. The waste would most likely be transported by tanker truck. During the Remedial Design phase, issues such as this are investigated, and the best way to transport the waste will be determined. The waste would be manifested to ensure it ends up at the facility EPA has chosen to treat it. A paper trail will follow the waste.
- B. The businesses will not have to be moved. Access to contaminated areas of their property will have to be obtained to allow for cleanup. The areas will be monitored to ensure that the businesses do not further contaminate the portions of the site addressed under this remedial action.
- C. The portions of the site that show contamination above health-based levels will be subject to cleanup. Contamination is not present on all 230 acres of the site.
- D. The Superfund Process is very complicated and often takes several years to complete. Once a site is discovered it must be thoroughly investigated to determine the type and extent of contamination. Often, the volume of contaminated media can only be estimated. Studies must then be done to determine the best way to clean up the contaminants present. Many technologies used are complex and take a long time to implement. Legal issues often arise that can slow the process down. Funding shortages can also cause delays.
- E. The contaminants in the tars are too highly concentrated for bioremediation of the tars to be viable. A national team of experts, the EPA's START team, evaluated this option and did not think it would work on the tars. Bioremediation is, however, being considered for use on both soils and sediments as part of the future operable unit.
- F. The MPCA is in the process of contacting parties believed to have caused the contamination at the SIRIDT site. MPCA will take enforcement actions against such Potentially Responsible Parties (PRPs) to force them to pay

for, and perhaps conduct, the cleanup. If such efforts are not successful, the Superfund will be used to pay for the cleanup, and PRPs will later be sued for recovery of cleanup costs.

- G. The MPCA and EPA feel strongly that the embayment should be cleaned up. Our primary goal is protection of human health and the environment. The agencies will conduct further studies to determine how best to clean up the embayment.
- H. Debris in the embayment will almost undoubtedly have to be removed in order to proceed with any cleanup alternative.
- I. The agencies have not yet determined the exact location for ash disposal. Such details will be worked out in Remedial Design. The disposal facilities will have to be acceptable to EPA and MPCA. The ash will have to be treated in a proper manner. None of the facilities that have been considered for treatment of the tar are located in Duluth. Ash would most likely be disposed of near the location of the facility where the tar was burned.
- J. The agencies have not yet determined the exact location of the treatment facility. Utility companies including the Northern States Power (NSP) facility in Minneapolis, and two Minnesota Power facilities, one in Grand Rapids, and the other in Aurora-Hoyt Lakes, have been considered. (One resident recommended that Minnesota Power and Light be utilized.) Blast Furnaces would likely be located out of state. The regulatory agencies will make the final decision on the treatment facility in the Remedial Design Phase.
- K. The channel modification project has been in the works for a number of years. A date for dredging has not yet been set. There is a chance that site contamination could be removed before the larger dredging project takes place. If the channel modification project does occur first, the current of the river near the site might be increased. Contaminants in the "tar blanket" off the 54th Peninsula Avenue may be affected by this. Contaminated sediments in the boat slip and embayment are recessed from the river, however, and would not likely be affected.

ADMINISTRATIVE RECORD INDEX
 - USEPA Remedial Action Superfund site
 St. Louis River/Interlake-Duluth Tar & Chemical/US Steel
 Duluth, Minnesota

3/PAGE	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
2	00/00/00		Letter from the USEPA offering PRPs the opportunity to voluntarily undertake a Remedial Investigation/Feasibility Study	Constantelos, USEPA	Krikau, Interlake Iron	Correspondence	1
5	85/08/30		Letter offering Interlake Iron the opportunity to voluntarily perform the work required to abate any release or threatened release of hazardous substances	Constantelos, USEPA	Krikau, Interlake Iron	Correspondence	2
7	85/10/01		Letter from Interlake Iron indicating that they are willing to undertake any "necessary and appropriate actions", however they are uncertain of why they are considered a PRP and why the site has been listed on the National Priorities List	Porcelli, Interlake Iron	Oaks, USEPA	Correspondence	3
2	86/01/16		Letter acknowledging receipt of 10-1-85 letter, assuming the position that an RI/FS is necessary and that this letter does not release the PRP from any potential liability for the costs of performing these studies	Constantelos, USEPA	Porcelli, Interlake Iron	Correspondence	4
1	86/01/21		Letter approving MPCA's offer to conduct an RI	Wakat, USEPA	Christensen, MPCA	Correspondence	5
4	87/06/00		Superfund Program Fact	MPCA		Fact Sheet	6

ADMINISTRATIVE RECORD INDEX
USEPA Remedial Action Superfund site
St. Louis River/Interlake-Duluth Tar & Chemical/US Steel
Duluth, Minnesota

HS/FRAME	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
			Sheet for the St. Louis River/Interlake-Duluth Tar site				
87	87/09/01		Field Notes from the Interlake RI	Sparks, Malcom Pirnie	Bielke, MPCA	Handwritten Notes	7
7	85/03/06		Memo - Agenda Item Control Sheet for 3-26-85 meeting re: The request for approval of a Response Order by Consent with US Steel	Livesay, MPCA	MPCA	Memorandum	8
1	89/12/00		Memo re: MPCA Permanent List of Priorities describing site conditions, staff assigned to site and actions to be taken at the Interlake site	MPCA		Memorandum	9
1	89/12/00		Memo re: MPCA Permanent List of Priorities describing site conditions, staff assigned to site and actions to be taken at the U.S. Steel site	MPCA		Memorandum	10
53	85/03/26		Response Order by Consent MPCA in the matter of: US Steel in Duluth, MN before the MPCA with attachments			Pleadings/Orders	11
1	87/06/16		MPCA News Release: "Superfund Investigation of Former West Duluth Industrial Site to Begin"	MPCA		Press Release	12
5	83/02/16		Report: Preliminary Assessment of site	Perenchino, B & B	USEPA	Reports/Studies	13
14	83/05/27		Site Inspection Report	Bartholomew, B & B	USEPA	Reports/Studies	14
126	86/02/26		RI Work Plan- Scope of	Malcom Pirnie & Assoc.	MPCA	Reports/Studies	15

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ADMINISTRATIVE RECORD INDEX
- USEPA Remedial Action Superfund site
St. Louis River/Interlake-Duluth Tar & Chemical/US Steel
Duluth, Minnesota

REFRANCE	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
			Work				
148	87/03/05	RI Work Plan	NPCA			Reports/Studies	16
644	87/03/27	Quality Assurance Project Plan	NPCA			Reports/Studies	17
13	87/06/00	Community Relations Plan for the RI at the St. Louis River/Interlake-Duluth Tar & Chemical site	NPCA			Reports/Studies	18

ADMINISTRATIVE RECORD INDEX - UPDATE #1
ST. LOUIS RIVER/INTERLAKE/DULUTH TAR SITE
DULUTH, MINNESOTA

RE/FRANK	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCUMENT#
4		89/08/11	Letter re: St. Louis River/Interlake/Duluth Tar Phase II Field Work	L. Beilke NPCA	D. Siebers, USEPA	Correspondence	
1		89/09/11	Letter re: St. Louis River/Interlake/Duluth Tar Site Round 2 Ground Water Sampling	L. Beilke NPCA	M. Kunz, Malcolm Pirnie	Correspondence	
2		90/01/08	Letter re: St. Louis River/Interlake/Duluth Tar Site, Duluth, MN	G. Pulford NPCA	G. Johnson, Interlake	Correspondence	
3		90/04/23	Letter re: Interlake Feasibility Study Chapter 3	C. Michael Malcolm Pirnie	C. Tvaroski, NPCA	Correspondence	
13		90/06/13	Letter re: Comments on Ground Water and Tar Seep Operable Units	M. Costello, ITC	C. Tvaroski, NPCA	Correspondence	
4		90/06/19	Letter Re: Treatability Study Work Plan Interlake Site	C. Michael, P.E. Malcolm Pirnie	C. Tvaroski, NPCA	Correspondence	
6		90/07/13	Letter re: Comments on Tar Seep Draft Feasibility Study	M. Costello ITC	C. Tvaroski, NPCA	Correspondence	
3		90/07/21	Letter re: Meeting on May 24, 1990, discussing technology of disposing of coal tar in Blast Furnaces	T.G. Krikau T.G. Krikau & Assoc.	C. Tvaroski, NPCA	Correspondence	
1		90/08/30	Letter re: Feasibility Study Approval and Proposed Plan concurrence	R. Massey, P.E. NPCA	L. Betka, USEPA	Correspondence	
4		87/06/00	Superfund Program Fact Sheet St. Louis/Interlake Duluth Tar Site	NPCA		Fact Sheet	

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ST. LOUIS RIVER/INTERLAKE/DULUTH TAR SITE
DULUTH, MINNESOTA

LINE/FRAME	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCUMENT NUMBER
			exposure to constituents on or near St. Louis River/Interlake/Duluth Tar Site				
1		87/06/16	News release re: Superfund Investigation of former West Duluth Industrial Site to begin	MPCA		Press Release	
1		89/07/21	News release re: MPCA Starts Field Work Week of June 26 at Interlake/Duluth Tar Superfund Site	MPCA		Press Release	
2		90/02/14	News release re: Public meeting set to discuss investigation results on St. Louis River/Interlake Iron/ Duluth Tar Superfund Site	MPCA		Press Release	
1		90/02/20	News Release re: Date changed for the Public Meeting on the Interlake Superfund Site	K. Carlson, MPCA	Resident, Environment alist	Press Release	
2		90/02/20	Letter re: Date changed for the Public Meeting on the Interlake Superfund Site	K. Carlson MPCA	Resident, Environment alist	Press Release	
1		90/08/00	Letter re: notice of Public Meeting	USEPA		Press Release	
1		90/08/00	News Release re: Public meeting and Public comment Period regarding St. Louis River/Interlake/Duluth Tar Superfund Site Duluth, MN			Press Release	
134		87/11/00	Phase I Site Investigation Draft	Malcolm Pirnie	MPCA	Report/Studies	

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ADMINISTRATIVE RECORD INDEX - UPDATE #1
ST. LOUIS RIVER/INTERLAKE/DULUTH TAR SITE
DULUTH, MINNESOTA

5/PAGE	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
4		88/06/00	Superfund Program Fact Sheet - St. Louis River/Interlake/Duluth Tar Site	NPCA		Fact Sheet	
2		89/09/00	Fact Sheet for St. Louis River/ Interlake/Duluth Tar Site	NPCA		Fact Sheet	
4		90/02/00	Fact Sheet on the Remedial Investigation of the St. Louis River/ Interlake/Duluth Tar Site	NPCA		Fact Sheet	
7		90/07/00	St. Louis River/ Interlake/Duluth Tar Superfund Site Proposed Plan Fact Sheet	USEPA		Fact Sheet	
5		90/05/29	Meeting notes from the May 24th project meeting held in St. Paul	P. Caogialosi Malcolm Pirnie	C. Twaroski, NPCA	Meeting Notes	
3		90/06/22	Memo re: The legally acceptable methods for disposing of coal tar	R. Sczygelski	T. Kenney, USEPA	Memorandum	
5		90/07/12	Memo re: St. Louis River/ Interlake/Duluth Tar Site Focused Feasibility Study has been reviewed by RCRA for ARAEs	J. Kleinman USEPA	D. Siebers, USEPA	Memorandum	
2		90/08/09	St. Louis River/ Interlake/Duluth Tar Site Briefings on Proposed Plan	D. Siebers, USEPA	Official File	Memorandum	
6		90/03/21	Letter re: Comments on Operable Units	M. Costello, ITC	G. Johnson, Interlake Other Corp		
16		90/03/21	Letter re: Focused Risk Assessment that defines potential risks associated with	M. Costello, F.B. ITC	G. Johnson, Interlake Other Corp.		

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ST. LOUIS RIVER/INTERLAKE/DULUTH TAR SITE
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CHS/FRANK	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCDUMBER
			Report - St. Louis River/ Interlake/Duluth Tar Site				
114	88/12/00		Phase II RI Work Plan for - St. Louis River/Interlake/Duluth Tar Site	Malcolm Pirnie	MPCA	Report/Studies	
219	88/12/00		Appendices Volume I Phase II Quality Assurance Project Plan for -St. Louis River/ Interlake/Duluth Tar Site	Malcolm Pirnie	MPCA	Report/Studies	
165	88/12/00		Appendices Volume II Phase II Quality Assurance Project Plan for - St. Louis River/ Interlake/Duluth Tar Site	Malcolm Pirnie	MPCA	Report/Studies	
98	88/12/00		Phase II Quality Assurance Project Plan for - St. Louis River/Interlake/Duluth Tar Site	Malcolm Pirnie	MPCA	Report/Studies	
64	89/06/27		Health Assessment for St. Louis River/ U.S. Steel, St. Louis River/Interlake/Duluth Tar Duluth, MN	U.S. Public Health Service		Report/Studies	
243	90/01/00		Final Report Remedial Investigation Volume I	Malcolm Pirnie	MPCA	Report/Studies	
154	90/01/00		Final Report Remedial Investigation Volume II Appendices	Malcolm Pirnie	MPCA	Report/Studies	
10	90/02/26		Letter re: St. Louis River/ Interlake/Duluth Tar Site Remedial Investigation Report Approval - PS Work Plan Attached	G. Bddy MPCA	C. Michael, Malcolm Pirnie	Report/Studies	

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ST. LOUIS RIVER/INTERLAKE/DULUTH TAR SITE
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CHE/FRAME	PAGES	DATE	TITLE	AUTHOR	RECIPIENT	DOCUMENT TYPE	DOCNUMBER
126	90/03/21	Sediment Survey/Program and Results at the St. Louis River/Interlake/ Duluth Tar Site	N. Costello, ITC	G. Johnson, Interlake Report/Studies Corp			
94	90/06/00	Draft Report Feasibility Study for Tar Seeps Operable Unit St. Louis River/ Interlake/Duluth Tar Site	Malcolm Pirnie	C. Tvaroski, NPCA	Report/Studies		
94	90/07/00	Final Report Feasibility Study for Tar Seeps Operable Unit St. Louis River/ Interlake/Duluth Tar Site	Malcolm Pirnie	NPCA, USEPA	Report/Studies		
15	90/07/28	Proposed Plan St. Louis River/ Interlake/Duluth Tar Superfund Site Duluth, MN	USEPA		Report/Studies		