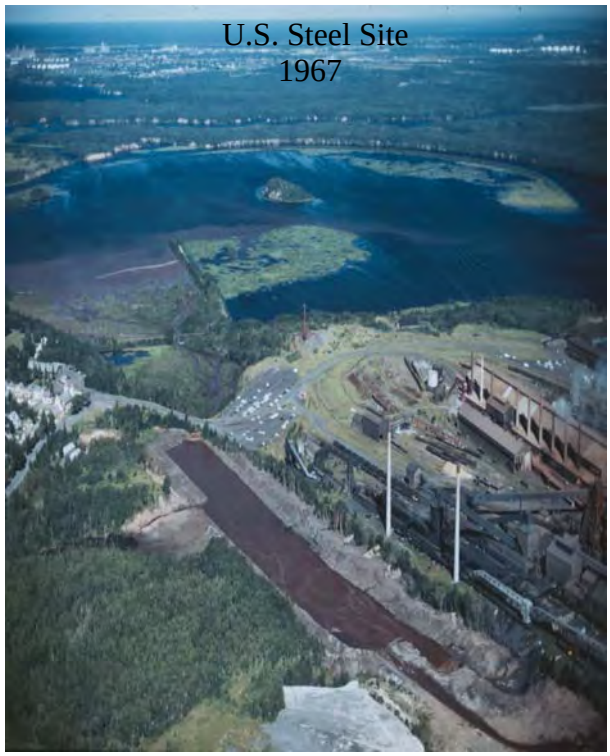
FIVE-YEAR REVIEW REPORT
First Review

For

St. Louis River Superfund Site


St. Louis River/Interlake/Duluth Tar Site
1947


U.S. Steel Site
1967

Prepared for U.S. EPA Region 5
by
U.S. Army Corps of Engineers

Date
September 2003

U.S. Environmental Protection Agency

Minnesota Pollution Control Agency

FIVE-YEAR REVIEW REPORT
First Review

St. Louis River Superfund Site
Duluth
St. Louis County, Minnesota

U.S. Steel Site - EPA OU 02
St. Louis River/Interlake/Duluth Tar Site, Tar Seep OU – EPA OU 01
St. Louis River/Interlake/Duluth Tar Site, Soil OU – EPA OU 03

Prepared for
U.S. Environmental Protection Agency
Region 5
by
U.S. Army Corps of Engineers
Omaha District

Date
September 2003

Approved by:

Wm. E. Muno

William E. Muno, Director
Superfund Division
U.S. EPA, Region 5

9/24/03
Date

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LIST OF ACRONYMS

amsl	Above Mean Sea Level
AOI	Area of Interest
Barr	Barr Engineering Company
BOD	Biological Oxygen Demand
BTU	British Thermal Unit
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
COC	Chemical of Concern
cPAH	Carcinogenic Polynuclear Aromatic Hydrocarbon
ESD	Explanation of Significant Differences
FAV	Final Acute Value
FS	Feasibility Study
FIT	Field Investigation Team
HRS	Hazard Ranking System
IAG	Interagency Agreement
MDH	Minnesota Department of Health
mg/kg	Milligrams per Kilogram
msl	Mean Sea Levels
MPCA	Minnesota Pollution Control Agency
MPI	Malcom Pirnie Inc.
MS	Maximum Standards
NCP	National Contingency Plan
NPL	National Priorities List
O&M	Operation and Maintenance
OU	Operable Unit
PAH	Polynuclear Aromatic Hydrocarbon
PCB	Polychlorinated Biphenyls
PLP	Permanent List of Priorities
ppm	Parts per Million
PRP	Potentially Responsible Party
QA/QC	Quality Assurance/Quality Control
RA	Remedial Action
RAO	Remedial Action Objective
RAP	Response Action Plan
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RFRA	Request for Response Action
RI	Remedial Investigation
ROD	Record of Decision
RP	Responsible Party
RPM	Remedial Project Manager
SARA	Superfund Amendments and Reauthorization Act of 1986
SedOU	Sediment Operable Unit (USEPA OU04)

SLRIDT	St. Louis River/Interlake/Duluth Tar Site
SOU	Soil Operable Unit (USEPA OU03)
SPM	State Project Manager
TCL	Target Cleanup Levels
TCLP	Toxic Characteristic Leaching Procedure
TPT	Twin Ports Testing, Inc.
TSOU	Tar Seeps Operable Unit (USEPA OU01)
URS	URS Corporation
USACE	United States Army Corp of Engineers
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
USS or USX	U.S. Steel Site/ Duluth Works Site (USEPA OU02)
VOC	Volatile Organic Compound
WLSSD	Western Lake Superior Summary District
WQC	Water Quality Criteria

EXECUTIVE SUMMARY

The USEPA St. Louis River Superfund Site, located in the West Duluth neighborhood of Duluth, St. Louis County, Minnesota is comprised of two state Superfund (MERLA – Minnesota Environmental Response and Liability Act) listed sites: US Steel (USS) and St. Louis River/Interlake/Duluth Tar (SLRIDT). Although the two sites are listed as one on the National Priorities List (NPL), they are listed separately on the state's Permanent List of Priorities (PLP). Both sites are part of the U.S. EPA Deferral Pilot Project and were placed under Minnesota Pollution Control Agency (MPCA) jurisdiction in 1995. The sites have separate project teams, are in different phases of construction, have different Responsible Parties, and different community group interests. A distance of four river miles separates the two sites. This is the first five-year review performed for this site.

The first post-ROD remedies at both sites were completed in 1992 with source removals. This was followed by additional remedial actions during the 1990s to further reduce the risk due to direct exposure to contaminated soil, sediments and reduce contaminant migration to ground water. The remedial actions performed to date, in response to the decision documents, are generally protective in the short-term. However, in order to ensure long-term protectiveness, follow-up actions will be required for most of the remedies. The issues and recommendations that must be addressed in response to the completed remedies are detailed in Chapter VIII of each volume of this report and summarized individually below. Protectiveness statements were developed for each OU at both sites as detailed in Chapter IX of each volume.

U.S. Steel Site

The USS site has 18 Operable Units (OUs) and two areas identified within the ROD for remedial actions. Remedial actions have been completed, as required in the ROD with the exception of the "Tar and Tar Contaminated Soil in the Coke Plant Settling Basin Located between (but not included in) OU-J and I". OU-N and OU-R were designated in the ROD as a no action remedy. Both are currently being evaluated as a component of the on-going sediment investigation. Documentation of the remediation of the "Tar and Tar Contaminated Soil in the Coke Plant Settling Basin Located between (but not included in) OU-J and I" could not be verified.

The result of this five-year review indicates that most of the remedial activities appear to be protective of human health and the environment in the short term because that the actions have decreased the migration of contaminants from the operable units to the St. Louis River. A protectiveness statement was developed for each OU and the two other response actions that were identified in the ROD with the exception of OU-N and OU-R. Protectiveness determinations were not developed for OU-N and R during this 5-year review because these areas are being evaluated as a component of an on-going sediment investigation.

Several areas are not considered protective in the short term for the following reasons:

- It was not possible to verify that the area identified in the ROD as the "Tar and Tar Contaminated Soil in the Coke Plant Settling Basin Located between (but not included in) OU-J and I" was remediated.
- There is an oil sheen located beyond the toe of the cap at OU-J.
- Non-native materials are exposed at the ground surface at OU-Q.
- A seep with an oil sheen was found discharging from the south spoil pile into the bank of the Wire Mill Pond.

Trespassers are encroaching into the site and could be exposed to these areas.

In order to assure the long term protectiveness of the site, most of the remedial areas require follow-up activities. The ROD did not establish Target Clean-up Levels for soils. Therefore, the remedial actions that included removal of contaminated soil require an ecological and human health risk-based screening in order to assure long term protectiveness. The operable units that had soil excavation as a component include OUs A, D, E, H and the Soil Contaminated by Above and Below Ground Petroleum Storage Tanks.

To assure the long term protectiveness of the operable units where non-native materials were left in-place, formal institutional controls such as deed restrictions should be implemented. These operable units are OUs I, J, K, L, M, O, P and Q.

It is being recommended to expand the monitoring program by adding nested wells and collecting sediment and plant tissue samples in the Unnamed Creek. Nested wells would monitor the ground water gradient, contaminant movement and attenuation. Obtaining sediments samples from the Unnamed Creek would monitor a potential contaminant source and conveyance mechanism. Collecting plant tissue samples would determine if the vegetation is bioaccumulating contaminants or if toxic by-products are being formed.

Sampling and testing is being recommended at several sheen locations; OU-Q; suspected Seep #2; the Unnamed Pond; and near Well 7 at the Former Gatewell Structure and non-native material.

Several features, not documented in the ROD, were observed during the site inspection. These include demolition landfills, both used and unused, a demolition stockpile and a former flue dust disposal area (also known as demolition landfill No. 3). Location verification and literature searchs are recommended for these areas.

A comprehensive USS site-wide protectiveness statement cannot be developed until the issues of this five-year review are addressed and the OU-N and OU-R remedy is selected, implemented and completed.

St. Louis River/Interlake/Duluth Tar Site
This site has three Operable Units (OUs): the Tar Seep OU (TSOU); the Soil OU (SOU); and the Sediment OU (SedOU). Remedial actions have been completed at the TSOU and the SOU. A remedy has not yet been selected for the SedOU.

The result of this five-year review indicates the TSOU remedy is protective of human health and the environment. The tar seeps identified in the TSOU ROD were location specific and have been removed.

The SOU remedy is protective of human health and the environment in the short term because soil above the direct exposure clean-up levels identified in the ROD for industrial land use and construction worker's has been removed. In order to assure the long term protectiveness, contaminant migration to ground water, additional assessment of risk, and enforcement of institutional controls must be addressed. The evaluation of soil contaminant transport to ground water has not been determined and ground water monitoring over time has not been performed as specified in the SOU ROD and ESD. Ground water sampling results in support of the SedOU investigation indicate the presence of low-level contamination but there is insufficient data to establish trends. Also preventing a long term protectiveness determination are incomplete or missing restrictive covenants, evidence of recreational trespassing, and the placement of fill in violation of the water well code.

A comprehensive SLRIDT site-wide protectiveness statement cannot be developed until the issues of this five-year review are addressed and the SedOU remedy is selected, implemented and completed.

USS and SLRIDT Overall Protectiveness Statement
A comprehensive site-wide protectiveness statement cannot be made at this time pending implementation of the recommendations contained within this five-year report. In addition, remedies have not been selected and/or constructed for the Sediment OUs at SLRIDT and OU-N and R at USS. The comprehensive site-wide protectiveness statement will be reevaluated in two years.

FIVE-YEAR REVIEW SUMMARY FORM

SITE IDENTIFICATION

Site name *(from WasteLAN)*: St. Louis River Superfund Site

EPA ID *(from WasteLAN)*: MND039045430

Region: 5	**State: MN**	**City/County: Duluth, St. Louis County**

SITE STATUS

NPL status: X Final Deleted Other (specify)

Remediation status (choose all that apply): Under Construction **X Operating** Complete

Multiple OUs?* X YES NO	**Construction completion date:** Construction is not complete.

Has site been put into reuse? X YES SLRIDT Site X NO USS Site

REVIEW STATUS

Lead agency: EPA X State Tribe Other Federal Agency _____

Author name: Janie Carrig/Don Moses/Kevin Siemann/Kim Witt

Author title: Chemist/Engineer/Industrial Hygienist-Risk Assessor/Chemical Engineer	**Author affiliation: U.S. Army Corps of Engineers**

Review period:** September 1992 to June 2003

Date(s) of site inspection: June 23 – 27, 2003

Type of review:
Post-SARA Pre-SARA NPL-Removal only
Non-NPL Remedial Action Site **X NPL State/Tribe-lead** Regional Discretion

Review number: **X 1 (first)** 2 (second) 3 (third) Other (specify) _____

Triggering action:
Actual RA Onsite Construction at OU #____ **X Actual RA Start at EPA OU01 (TSOU)**
Construction Completion Previous Five-Year Review Report
Other (specify)

Triggering action date *(from WasteLAN)*: September 1992

Due date *(five years after triggering action date)*: September 1997

* ["OU" refers to operable unit.]
** [Review period should correspond to the actual start and end dates of the Five-Year Review in WasteLAN.]

Five-Year Review Summary Form, cont'd.

The St. Louis Superfund Site is comprised of two state Superfund (MERLA – Minnesota Environmental Response and Liability Act) listed sites: US Steel (USS) and St. Louis River/Interlake/Duluth Tar (SLRIDT). Although the two sites are listed as one on the National Priorities List (NPL), they are listed separately on the state's Permanent List of Priorities (PLP) and are presented in this report in two separate volumes.

Issues For USS:

Reuse
Trespassing
Slope stability concerns for a cover
Oil Sheens
ATV trails, erosion runnels and trees on a soil cover
Disrepair of warning signs
Visible tar and tar-contaminated soil
Lack of surveyed locations and boundaries of OUs and Remedial Actions
The need for Deed Restrictions/Institutional Controls
Need to supplement the monitoring plan
One Remedial Action could not be documented
Lack of TCLs for soil in the ROD
Uncovered dredge spoils
Several uninvestigated features on site not covered in ROD

Recommendations and Follow-up Actions For USS:

Soil sampling/risk analysis prior to reuse
Repair warning signs at access points
Repair erosion/remove trees on soil cover
Test water quality and sediment at sheen locations
Install slope movement markers at slope stability area of concern
Conduct Ecological and Human Health Risk-based Screening for Soils Clean-up
Ensure restrictive covenants are in place
Supplement the monitoring plan
Evaluate MPCA SRVs and EPA PRGs as to status as TBCs
Test exposed spoils
Verify location and existence of unknown features

Five-Year Review Summary Form, cont'd.

Issues For SLRIDT:

Trespassing and minimal site access control
Visible tar and tar-contaminated soil
Active erosion
Lack of monitoring well maintenance
Incomplete or missing Restrictive Covenants/Institutional Controls
Lack of ground water monitoring plan
Significant disparity between SRVs/PRGs and ROD cleanup goals

Recommendations and Follow-up Actions For SLRIDT:

Develop a site security control plan
Remove visible tar
Periodic monitoring of new exposures to tar
Repair erosion
Remove fill from around monitoring wells or retrofit wells to current site conditions
Annual inspections/institutional controls to protect wells
Ensure restrictive covenants are in place
Ground water monitoring
Evaluate MPCA SRVs and EPA PRGs as to status as TBCs
Update risk assessment for the site

The issues and recommendations that must be addressed are detailed in Chapter VIII of each volume of this report.

Protectiveness Statement(s):

A comprehensive site-wide protectiveness statement cannot be made at this time pending implementation of the recommendations contained within this five-year report. In addition, remedies have not been selected and/or constructed for OU-N and R at USS and the Sediment OU at SLRIDT. The comprehensive site-wide protectiveness statement will be reevaluated in two years.

Other Comments:
None.

INTRODUCTION

The purpose of this five-year review is to determine whether the remedy at the St. Louis River Superfund Site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in Five-Year Review reports. In addition, the Five-Year Review report identifies issues found during the review and recommendations to address them.

The St. Louis River Superfund Site is divided into two different sites: the St. Louis River/Interlake/Duluth Tar Site (SLRIDT) and the US Steel Site (USS). In 1983, the U.S. Environmental Protection Agency (USEPA) consolidated the SLRIDT and the USS sites and added them to the National List of Priorities (NPL), the federal Superfund list, as one site: the St. Louis River Superfund Site with a Hazard Raking Score (HRS) of 32. In 1984, the Minnesota Pollution Control Agency (MPCA) added the Site to the state's Permanents List of Priorities (PLP). Although the two sites are listed as one on the NPL, they are listed separately on the state's PLP and are being investigated and cleaned up separately. This is because a distance of four river miles separates them and there are different Responsible Parties (RPs) for each. U.S. Steel is conducting the cleanup at the USS Site while Interlake Corporation (Interlake), Allied Signal Inc. (Allied), Domtar Inc. (Domtar), and Beazer East Inc. (Beazer) are conducting the clean up at the SLRIDT Site. Therefore, in this five-year review both the SLRIDT site and the USS site will be discussed; however, they will be divided into two different volumes.

The SLRIDT Site has been split into three Operable Units (OU): the Tar Seeps Operable Unit (TSOU, USEPA OU01); the Soil Operable Unit (SOU, USEPA OU03); and the Sediment Operable Unit (SedOU, USEPA OU04). For the USS Site (USEPA OU02), MPCA has designated the site into eighteen Operable Units (OUA through OUR). This review addresses remedial actions associated with USEPA OU01, USEPA OU02, and USEPA OU03. Remedial action has not been started at USEPA OU04. The status of the remedy selection is presented for this OU. This report will utilize the MPCA designation to distinguish between operable units.

The USACE, as delegated by the USEPA, is preparing this five-year review pursuant to CERCLA §121 and the National Contingency Plan (NCP). CERCLA §121 states:

> *If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action to assure that human health and the environment are being protected by the remedial action being implemented. In addition, if upon such review it is the judgment of the President that action is appropriate at such site in accordance with section [104] or [106], the President shall take or require such action. The President shall report to the Congress a list of facilities for which such review is required, the results of all such reviews, and any actions taken as a result of such reviews.*

The agency interpreted this requirement further in the NCP; 40 CFR §300.430(f)(4)(ii) states:

If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

U. S. Army Corps of Engineers (USACE), in coordination with MPCA and USEPA Region 5, have conducted a five-year review of the remedial actions implemented at SLRIDT and USS both located in Duluth, MN. This review was conducted from April, 2003 through September, 2003. This report documents the results of the review and the inspection conducted by the USACE staff. The USEPA delegated and funded the work through an Interagency Agreement with USACE.

This is the first five-year review for the SLRIDT and USS sites. The triggering action for both sites in this review is the initiation of the first remedial action that left contaminants on site, in both cases this would be September of 1992. The five-year review is required because hazardous substances, pollutants, or contaminants remain at both sites above levels that allow for unlimited use and unrestricted exposure.

VOLUME II

St. Louis River/Interlake/Duluth Tar Site
Tar Seep OU – EPA OU 01
Soil OU – EPA OU 03

Five-Year Review
First Review

September 2003

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ATTACHMENTS

I. SITE CHRONOLOGY

Table 1: Site Chronology

Event	Date
Site Discovery when PAH contamination was detected in Stryker Embayment sediments and later surface water by MPCA.	1979
Local resident reported oil rising to the surface of Stryker Embayment.	1981
Preliminary Assessment by USEPA	1983
Site Inspection USEPA	1983
Listing on USEPA National Priorities List in combination with US Steel Site	1983
Listing on MPCA Permanent List or Priorities	1984
Remedial Investigation Completed	1990
ROD selecting Tar Seep OU (TSOU) remedy and deferring remediation of all other contamination to the Soil OU ROD is signed on October 19th.	1990
RFRA issued to three PRPs for implementation of the TSOU remedy and investigation and remediation of the Soil OU (SOU).	1991
MPCA approves RD/RAP with modifications	1992
TSOU ESD to address changes in RCRA regulations was signed.	1993
TSOU remedial action completed.	1994
On March 22 a RFRA issued to Interlake for the RI/FS and RD/RA of the SedOU.	1994
On June 20th EPA and MCPA enter into MPCA Enforcement Deferral Pilot Project.	1995
ROD selecting the remedy for soil and deferring the sediment and ground water remedy is signed.	1995
RFRA for issued to Allied, Beazer, and Domtar for the RI/RF and RD/RA of the SedOU on March 26th.	1996
Air Sparge Pilot Test for Area C-naphthalene deposit of Soil OU determined air sparging was not a viable option.	1996
Remedial Action for the SOU began	1996
SOU ESD is signed that modifies the area C-naphthalene deposit remedy from air sparging to leaving the contamination in place.	1997
SOU excavation portion of response action is completed.	1997
SOU bioventing remedial action at Maurices' parking lot is completed.	2001

II. BACKGROUND

PHYSICAL CHARACTERISTICS

General

The St. Louis River/ Interlake/ Duluth Tar Site (Site) is within the West Duluth neighborhood of the city of Duluth, on the north bank of the St. Louis River, approximately four river miles upstream of Lake Superior. The location of the Site is shown in Figure 1. The Site includes approximately 255 acres of land and river embayments, wetlands, and boat slips.

The land includes the 59th Avenue Peninsula (Hallett Peninsula), the 54th Avenue Peninsula, and is bounded on the north by the Burlington Northern right-of-way
The two peninsulas consist largely of fill material. The topography of the Site is uneven, and slopes slightly toward the St. Louis River. Portions of the Site are located within the 100-year floodplain. The Site is zoned for industrial land use.

Hallett Dock Company (Hallett) currently owns the majority of the Site and runs a bulk shipping business. Earth Burners Inc., purchased Duluth Auto, formerly an automobile salvage yard, and ran a contaminated soil thermal treatment operation. Kemp Fisheries, Moline Brothers (currently under the name of Cedar Bay Partners LLC.), and Maurices, Inc. own smaller parcels.

The aquatic portion of the Site includes Stryker Embayment (approximately 35 acres and defines the western boundary), Hallett Dock Boat Slip 6 (about 23 acres located in the middle of the Site), the 48 Inch Outfall Area, Keene Creek Bay/Hallett Dock Boat Slip 7 (about 27 acres and defines the eastern boundary), and St. Louis River to the south (Figure 2).

The St. Louis River and estuary is the largest tributary on the U.S. side of Lake Superior, the largest freshwater lake by area in the world, providing a wealth of natural resources. Resource management goals for the estuary are to protect, preserve, restore, and enhance natural resources, and to provide opportunities for public use for this and future generations. More specifically, natural resources managers have identified priority needs of conserving and enhancing near-shore shallow water fishery habitat, nesting and rearing habitat for shorebirds, and wetlands.

There are three geographically separated areas of concern in the river, within the Site. Stryker Embayment is a shallow water embayment with emergent wetlands at the north end. Boat Slip 6 is a shallow water and deep water environment. The 48 Inch Outfall Area and Keene Creek Bay/Boat Slip 7 are emergent wetlands and shallow water environments grading into deepwater environment. Both Slip 6 and Slip 7 are currently used for ship loading and unloading.

Site Geology

In general, the Site consists of two types of geologic areas. A portion of the Site consists of native (natural) materials which includes interbedded clay, silty clay, silty sand and sand. The area of native materials is located on the northern approximately one third of the Site north of the original St. Louis River shoreline. Areas A, B, E, and Maurices' parking lot are, for the most part, composed of native material. In general, the stratigraphy in these areas consists of an upper clay layer of varying thickness (average ten feet) that overlies a silty sand layer (approximately 15 feet thick) and a lower red clay layer that is over 150 feet thick. Both the upper and lower clay layers have a relatively low permeability, which tends to inhibit the migration of water and chemical compounds. The upper clay layer has been penetrated by building foundations and other structures, and contains fractures and silt stringers which can increase the permeability. The lower clay is a confining layer. Varying thicknesses of fill material have also been deposited upon areas of native materials north of the original shoreline. The other areas of the Site, including most of the 54th and 59th Avenue Peninsulas south of the original shoreline, consist primarily of industrial and other fill material. Slag from pig iron operations, dredge spoils, solid by-products, and wastes were used to fill. The historical progression of these filling activities is displayed in Figure 3. The current layout of the site is shown below in a June 27, 2003 photograph.

The most permeable materials present at the Site consist of the silty sand and sand layers found in the native materials. Some of the granular fill materials are also permeable. Ground water flows, under water table conditions, from the upland portions of the Site towards the embayments and the St. Louis River. Flow is generally to the south from the natural upland areas and from the center of the peninsulas radially outward where the ground water discharges to surface water of the St. Louis River. The depth to ground water varies at the Site as does the surface topography. In general, the depth to ground

water is greater in the northern portion of the Site (approximately 15 feet) and is closer to the surface in the lower areas which are near the St Louis River. Ground water occurs within the gabbroic bedrock at depths greater than 200 feet. The potentiometric surface of the bedrock ground water is estimated to be higher than the ground surface at the Site. The bedrock aquifer is isolated from the shallow unconfined ground water by the thick regional red clay present. In addition, an upward potentiometric gradient exists from the bedrock into the red clay interval.

LAND AND RESOURCE USE

The Site has been used for industrial purposes since the late 1800s. From the 1880s to the early 1960s the operations included coal tar refining, tar product manufacturing, coking and by-product recovery, iron making, and gas making.

1905 Photo of Interlake Iron looking north from river.

Iron manufacturing operations were conducted from the 1880s to the early 1960s. The Zenith Furnace Company built the first coke plant and a water gas manufacturing plant in approximately 1905. This coke plant operated until approximately 1929 when the Zenith facilities were dismantled and partially removed. The Interlake Iron Company was built about this time, including a second coke plant. The Interlake Iron Co. continued to operate the coke plant and the water gas manufacturing plant until 1961. During the years of operation, filling of the river was conducted to create the land on the 59th Avenue Peninsula. Fill was also used to form the 54th Avenue Peninsula. Discharges from the coking and pig iron operations evolved the outfall pond/ditch of the Keene Creek Bay to a southerly ditch and finally to a 48-inch pipe at the southern end of the 54th Avenue peninsula. The filling activities that have since been conducted on the 54th Avenue Peninsula have covered the former pond/ditch.

Between 1961 and 1966, the site was not in use. In 1966, Hallett purchased the former Interlake portion of the Site. Since that time, the Hallett property has been used primarily for bulk storage and handling of bentonite, coal, coke and other industrial materials. Hallett currently owns most of the Site and leases certain buildings and property on the

Site to others. In the late 1970s Hallett sold a portion of the northern most part of the Site to Maurices', Inc. and in 1999 sold a portion of the Site south of Fremont St. and west of 59th Avenue to Cedar Bay Partners, LLC.

1947 photo of Interlake Iron Co.

The Duluth Tar and Chemical Company, who used the by-products of the iron companies coking operations to manufacture products such as shingles and tarpaper, operated from approximately 1920 to 1927. The company was located on the eastern portion of the site along, what was, the 1905 shoreline. During the 1930s another company, American Tar and Chemical Company, began operating a plant immediately north of the Duluth Tar and Chemical Plant. An underground pipeline directly supplied the tar plant with dehydrated coal tar from the neighboring coke plant. This area later became an automobile salvage yard that operated from 1963 until approximately 1998, when Earth Burner Inc (EBI) purchased it. EBI operated a contaminated soil thermal treatment facility until approximately 2001, when it discontinued the soil treatment operations.

A horsemeat packing plant operated from 1929 through 1975 on the western edge of the site, south of the tar company operations. The buildings on the property were destroyed by fire on February 20, 1975 and the area remains vacant.

HISTORY OF CONTAMINATION

The coking and pig iron industrial operations produced waste products. These products include coke, pig iron, coal tar, slag, sodium nitrate, and coal gas. The tar waste products included coal tar, pitch, and oils. In 1979 the Minnesota Pollution Control Agency (MPCA) staff detected the presence of polycyclic aromatic hydrocarbons (PAHs) in samples collected from Stryker Embayment sediments. Subsequent analysis of embayment surface water samples, by MPCA staff in 1980, showed the presence of PAH compounds. In 1981 a local resident reported oil rising to the surface of Stryker Embayment, apparently from the slow release of oil from the sediments.

Based on the industrial operations and waste products, distinct areas of contamination were identified. These area designations, used throughout the Site documentation, are shown in Figure2.

- Areas A and E were the location of former tar distillation operations.
- Area B includes the waste liquor settling basin, naphthalene sump, discharge sewer line structures, and surrounding soil that is associated with the iron manufacturing and waste handling.
- Area C includes the ditches, pipes, lift station, and settling pond contaminated from Interlake's waste handling. These areas contain tarry wastes and naphthalene deposits.
- Area D includes soil impacted by tarry wastes from the water gas plant and coking ovens.
- Area F contains several areas of soil contamination as a result of discharges to a crescent shaped pond and disposal of contaminated dredge spoils located near the western edge of the 59th Avenue peninsula.
- Maurices' Parking Lot is the area of visually stained soil observed during the original remedial investigation. The source of this VOC and naphthalene contamination is unknown.

INITIAL RESPONSE PRE-RECORD OF DECISION

No clean-up activities were performed prior to issuing the first ROD (for the Tar Seep OU). As part of the initial investigations, the MPCA staff identified four Responsible Parties (RPs), three of which agreed to undertake remedial actions for various portions of the Site. These include the Interlake Corporation (Interlake), Allied Signal Inc. (Allied) and Domtar Inc. (Domtar). The fourth, Beazer East Inc. (Beazer), had not cooperated. The MPCA requested the RPs to conduct remedial actions in accordance with the following Request for Response Actions (RFRAs) for the TSOU and SOU.

The March 26, 1991, RFRA was issued to Interlake, Domtar and Allied for Remedial Design/Response Action (RD/RA) of the TSOU and the Remedial Investigation/Feasibility Study (RI/FS) and RD/RA of the SOU.

The May 25, 1993, RFRA was issued to Interlake for the RI/FS and RD/RA of additional areas of the SOU and to Beazer for the RI/FS and RD/RA of the TSOU and SOU.

The 1991 and 1993, RFRAs allocate responsibility to TSOU and SOU by area. Domtar and Beazer are responsible for Area E and tar seeps on the border of Areas A and E. Allied is responsible for Area A and tar seeps on the border of Areas A and E. Interlake is responsible for Areas and sub-Areas of B, C, D, F, and Maurices' Parking Lot and the 48-Inch Outfall.

BASIS FOR TAKING ACTION

The contaminated environmental media at the site includes soil, ground water, sediment and surface water.

- Polynuclear Aromatic Hydrocarbons (PAHs) were detected in surface and subsurface soils during investigation of the peninsulas and in sediments from the embayment, boat slip, and outfall areas.
- Waste discharged from the outfall spread and hardened resulting in a tar blanket extending across a considerable area into the open waters of the St. Louis River.
- Large tar seeps were present on the 59th Avenue Peninsula in Area A, Area B near the north end of the Hallett Boat Slip, and Northern Area D.
- Black contaminated native sand and clay were present north of the peninsulas (Maurices' parking lot).
- Elevated concentrations of inorganics were identified in ground water, sediment and soil samples collected at the Site.
- Ground water contamination appeared to be localized and correlated to the contamination seen in soils in the vicinity of the monitoring wells.
- Volatile organic contaminants were detected in ground water, in outfall sediments and in the boat slip sediments.
- Floating wastes were periodically present in the open waters as a hydrocarbon sheen or solid material composed of compounds associated with coal tar wastes.

The Human Health Risk Assessment, developed in 1993 by MPCA, identified the following Contaminants of Concern (COCs): the carcinogenic polycyclic aromatic hydrocarbons (PAHs); benz[a]anthracene, benzo[b]fluoranthene, benzo[k]fluoranthene, benzo[a]pyrene, chrysene, dibenzo[a,h]anthracene, and indeno[1,2,3]pyrene the noncarcinogenic PAHs; acenaphthene, anthracene, fluoranthene, fluorine, napththalene, pryrene, 2,4dimethylphenol, 2-methylphenol, 4-methylphenol, phenol, the VOCs; acetone, benzene, ethylbenzene, styrene, toluene, and xylenes, and the inorganics; cyanide and lead. Potential pathways for human exposure to site contaminants include inhalation, ingestion, and skin contact.

The Remedial Investigations indicated that PAHs were found in every sample taken at the Site (Retec 1993). Of the 278 samples collected and analyzed for Total cPAHs and EnSys field screening, 237 (85 percent), were higher that the MPCA preliminary cleanup goal of 0.8 parts per million Total cPAHs. Non-cPAH compounds were always detected in association with cPAHs. In all areas, if the preliminary cleanup goal was exceeded for any compound, it is also exceeded for Total cPAHs. VOCs were found only in association with high concentrations of PAHs.

Samples have been collected from areas of the site that have fill but no specific history of tar disposal or process operations. The fill consists of slag, silt with debris, general fill material, and maintenance debris from the current owner's operations. The cPAH concentrations of these samples ranging from detection levels to 86 parts per million are lower than areas impacted by tarry material. These concentrations may be representative of levels found throughout the industrial fill not directly associated with tar contamination.

III. REMEDIAL ACTIONS

TAR SEEPS OPERABLE UNIT (OU)

Remedial Action Objectives

The Remedial Action Objectives (RAOs), as summarized in the September 28, 1990 ROD (1990 ROD) for the TOU are:

1. Prevention of human exposure to tars via inhalation, ingestion, or direct contact routes.
2. Prevention of contaminant migration to surface water and ground water.
3. Prevention of wildlife exposure to tars.

Selected Remedy

The remedy selected to address the RAOs, as described in the 1990 ROD, was excavation of the four large tar seeps to be used as a recyclable/burnable fuel until no further tar contamination was visible. The location of the tar seeps that were to be addressed are shown on Figure 4 and described below.

- The central portion of the Hallett Peninsula immediately south of the Hallett Dock Company Office, within designated Area D;
- On the Hallett Peninsula near the northwest corner of the Hallett boat slip within designated Area B;
- On the Hallett Peninsula at the southeastern edge of Duluth Auto Wrecking, within the area designated Area A, and extending into the northern portion of A. Kemp Fisheries, within designated Area E;
- At the south end of the 54th Avenue Peninsula, at the 48-inch outfall pipe.

The excavated tar was to be transported and burned as a recyclable waste fuel (at least 10,000 BTUs per pound and containing less than 30% solids) at a coal-fired power plant, steel blast furnace, cement kiln, or similar facility. Any tar mixed with soil that was not a suitable fuel would be incinerated. It was estimated that 10% of the material could require the incineration contingency.

Remedy Implementation

The selected remedy was implemented by the responsible parties in September 1992 and completed in March 1994 (Service 1994).

- Approximately 192 tons of fuel-grade tar were removed from Areas B, D, and the 48-inch outfall pipe and burned by Missouri Fuel Recycler/Continental Cement Company of Hannibal, Missouri.
- Non-fuel grade material was separated into “clean fill” and “tar/soil mixtures”. “Clean fill” for the purpose of this remedy was any material containing less than 1% tar by microscopy.
- Tanks # 1 and #2 in Area D were excavated of tar and contaminated material, scraped clean, and then backfilled with clean material brought from off-site.
- The material within the concrete tank in Area B was excavated. The tank was then cleaned and backfilled with soil treated by an off-site rotary kiln.

- None of the material excavated from Areas A and E was of sufficient quality to be used as a recyclable/burnable fuel.
- A twenty cubic yard pile of clean fill (<1% tar as defined above) was placed on the ground beside the excavation in Area D. This pile remained at this location until the summer of 1993 when it was moved during the SOU investigation. Although Area D was excavated as part of the SOU remedy, specific documentation of the removal of this pile was not located.
- The tar/soil mixtures were placed in 14 roll-off boxes. Approximately 250 tons of non-fuel grade tar/soil mixture was left on site for treatment with the Soil OU.
- Microscopy of samples from the perimeter of the 48-inch outfall pipe excavation indicated less than 1% or no detected observable tar. The non-fuel grade tarry sediments/contaminated material remaining in the vicinity of the 48-inch outfall pipe were left to be addressed as part of the Sediment Operable Unit.

System Operations/O&M

The remedy consisted of excavation and removal with off-site incineration and there is no operation or maintenance component to the remedy. The remedy has been completed as specified by the ROD.

SOIL OPERABLE UNIT (SOU)

Remedial Action Objectives (RAO)

The RAOs, as summarized in the September 27, 1995 ROD for the SOU, are to prevent current or future exposure to the contaminated soils and reduce the contaminant migration to ground water. To achieve this objective, the ROD established soil clean-up levels based on contaminant leachability to ground water and direct exposure to contaminant residue in the soil. These clean-up levels are presented in Table 2 below.

Selected Remedy

The ROD specified the following remedial actions for the SOU:

1. Excavation of tarry soils and tar impacted soils to a maximum depth of 12 feet below the ground surface or to the water table to satisfy the soil clean-up levels established in the ROD (Table 2). The excavated material will be treated by on-site thermal treatment of the tarry soils in combination with off-site landfill disposal that includes the tar-impacted soils excavated during the TSOU remediation. As an added precaution, any area where contamination is left in place below ground water and the water table is less than 8 feet below ground surface, clean fill will be added to a depth of 8 feet above the water table.
2. Structure decontamination. Structures above the water table that will be decontaminated by scraping contaminated material from the surface include but are not limited to: piping, sumps, tanks, footings, building foundations, settling basins, and lift stations.
3. Air Sparging for Area C naphthalene to remediate the entire thickness to the soil clean-up levels presented in Table 1 of the ROD (Table 2 below).

4. Bioventing for Maurices Parking Lot to achieve the soil clean-up levels in Table 2.
5. Ground water monitoring. Two rounds of monitoring will be performed prior to implementation of the soil remedy to establish a baseline to evaluate the remedy performance. The monitoring network existing at the time of the ROD and the ten new wells proposed as part of the SedOU work will be monitored in accordance with an MPCA staff approved plan on a quarterly basis.
6. Institutional Controls.
    - Zoning designation. This Site will be used for industrial development only.
    - Excavation will not occur below twelve feet or ground water which ever is most shallow. In addition, any soil removed below a depth of 3.5 feet must be placed back below 3.5 feet or disposed of in accordance with a MPCA staff approved plan.
    - Wells will not be constructed within the uppermost aquifer at the Site.

Table 2
Soil Clean-up Levels

Contaminant	Industrial Land Use [a]	Construction Worker Scenario[b]	Ground Water Protection Level
Semi-Volatile Organic Compounds (mg/kg)[c]			
Total cPAHs [d]	9 (73)	92 (270)	
Acenaphthene	7920	25030	
Anthracene	39600	125150	
Fluoranthene	5280	16690	
Fluorene	5280	16690	
Naphthalene	5280	1655	940
Pyrene	3960	12515	
2,4-Dimethylphenol [e]			
2-Methylphenol [e]			
4-Methylphenol [e]			
Phenol [e]			
Volatile Organic Compounds (mg/kg)			
Acetone [e]			
Benzene [e]			0.03
Ethylbenzene			0.06
Styrene			19
Toluene			566
Xylenes (total m,p, and o)			1103
Inorganics			
Cyanide [e]			
Lead [e]			

[a] Industrial Land Use values applied to the top 3.5 feet of soil.

[b] The Construction Worker Scenario values applied to the soil that was below 3.5 feet down to ground water or 12 feet below ground surface, whichever was shallower. The cleanup levels for the volatile contaminants were based on the protection of ground water. These values applied to the entire soil column.

[c] mg/kg = milligrams per kilogram

[d] Total carcinogenic polycyclic aromatic hydrocarbons (cPAHs) includes: Benz(a)anthracene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3,-cd)pyrene. The cleanup level outside of parentheses represented a 50th percentile and the value in parentheses represented a 95th percentile value. Both of these values were used to verify when remediation was complete.

[e] The MPCA Risk Assessment indicated that this contaminant did not pose a health risk at the soil concentration used in the baseline assessment. If during the course of remediation it was discovered that the soil concentrations used in the baseline assessment were not representative of the levels at the site, particularly if the levels discovered are significantly higher, a cleanup level may need to be derived.

Explanation of Significant Differences

In 1996 the Area C pilot study demonstrated that air sparging would not effectively remediate the Area C naphthalene deposit that is present below the water table. Based on this information the MPCA staff recommended that the contamination be left in place. This recommendation is consistent with the SOU ROD that allows contamination to remain in place below the water table. An Explanation of Significant Differences (ESD), dated February 10, 1997, documents this significant change from the September 1995 ROD. The ESD specified:

1. Additional ground water monitoring wells will be installed and ground water monitoring will be conducted to determine ground water and surface water impacts.
2. The contaminated area will be covered with a minimum of eight feet of clean soil above the water table to allow for future industrial development.
3. Institutional controls will be used to minimize risk to human health and the environment.

Remedy Implementation

Interlake, Domtar, and Allied excavated soil from their respective areas to meet the soil clean-up levels presented in the SOU ROD. Verification of soil excavation completeness was determined using an iterative sampling procedure from a Michigan Department of Natural Resources guidance document modified to reflect the two-layered Cleanup Levels and heterogeneous nature of the deposits. Samples were collected and analyzed from the bottom and sidewalls of the excavation. The data set for each excavation was compared to the ROD clean-up levels with final approval by the on-site MPCA inspector prior to backfilling. In Areas A and E it was also noted that the native red clay soil underlying the contaminated soil provided a visual reference to contrast the contaminated soil

Excavation of contaminated material could not be completed under existing operational structures with out damaging the structures. Therefore soil contamination above the subsurface clean-up levels remains under these structures. Contaminated material that exceeded the cleanup levels specified in the ROD, but which is either beneath the water table or deeper than 12 feet also remains in place at the Site. This information is provided in a Technical Memorandum on Residuum in Appendix A to the "Documentation of Operable Unit Completion, Soil Operable Unit, St. Louis River/Interlake/Duluth Tar Site, Duluth, MN, October 1997".

The remedial action also included the decontamination of structures that were uncovered during excavation. All structures encountered were scraped clean and when possible removed. The specifics for each area are presented below.

MPCA concurred with the remedy completions in the document, "Documentation of Operable Unit Completion, Soil Operable Unit, St. Louis River/Interlake/Duluth Tar Site, Duluth, MN, October 1997 and the addendum "Addendum to the Documentation of OU

Completion Report, Soil Operable Unit, St. Louis River/Interlake/Duluth Tar Site, Duluth, MN, December 2002.

Areas A and E

Domtar and Allied implemented the soil excavation for Areas A and E in August 1996 and completed it in January 1997. As shown in Figure 5 approximately 14,711 cubic yards of contaminated soil were excavated from a series of sixteen areas. The excavated soil was transported to the Minnesota Industrial Containment Facility in Rosemount, Minnesota for disposal.

The steel tank base from the former 860,000 gallon tank in the southeast corner of Area E and the steel in-ground vessel from the central portion of Area E were removed, scraped clean and transported to a scrap yard. The foundations and footings left in place were scraped clean. In general, piping was excavated for off-site disposal.

MPCA inspected the site on August 7, 1997 and noted three areas requiring additional work. A small gully that had formed near the toe of the re-vegetated bank of excavation area 16 was filled and stabilized. A sump in the northwest corner of the concrete pad in Area A was determined to be a safety hazard and was filled to grade with sand and gravel. A small amount, approximately one quart, of black tarry material was observed near this sump and was removed.

Areas, B, C, D, F and Maurices' Parking Lot

The Interlake Corporation implemented the selected remedies, summarized below, for Areas B, C, D, and F in May 1996 and for Maurices' Parking lot in September 1996. The soil excavation portion of the remedy was completed in August 1997 and the bioventing system remediation at Maurices' Parking Lot was completed in December 2001

Areas B, C, D, and F

Approximately 30,441 cubic yards of soil and debris were excavated and remediated from Areas B, C, D, and F.

Simultaneous to the soil remediation an Interim Response Action was implemented to remove and treat approximately 4,400 yards of contaminated sediments dredged from the north end of Slip 6. Figure 6 shows the location of the excavations and removals.

Buried drums discovered in Area C2, determined to be nonhazardous, were disposed off-site at Lake Area Landfill.

Maurices' Parking Lot

The one-half acre area of volatile organic compound soil contamination including benzene, toluene, ethylbenzene, xylene, and styrene was treated with a six-vent bioventing system. The system operated during the non-winter months until the blower failed in September 1997. The soil was sampled at this time to determine if clean-up levels had been met. The sampling demonstrated that the soil still exceeded the clean-up levels, so a new blower was installed and the system restarted in October 1997. The system continued to operate until December 2001. Soil samples collected in 2000 detected only one VOC, ethyl benzene at 1.6 mg/kg, at concentrations exceeding clean-up levels (0.06 mg/kg for ethyl benzene).

Ground water was sampled several times between August 2000 and June 2001 at two water table wells located down gradient from Maurices' Parking Lot to monitor water quality between the site and the river. None of the site contaminants have been detected in the ground water samples.

MPCA concurred that the remedial action was complete based on the decrease of all contaminants except ethyl benzene to below clean-up levels, that the low levels of contamination remaining are at depth, and ground water analysis shows no contamination was detected.

System Operations/O&M

The remedy consisted of a combination of excavation with on site thermal desorption/off-site disposal, bioventing of one area, and ground water monitoring. Currently, there are no active treatment systems or processes that require ongoing operation and maintenance at the site. However, contamination remains in place and ground water monitoring should continue to ensure the remedy is functioning as intended.

SEDIMENT OPERABLE UNIT

In accordance with the RFRAs, a Remedial Investigation (RI) and a Feasibility Study (FS) for the SedOU were completed. On November 19, 1998, the MPCA staff presented its proposed plan to the public for the cleanup of the SedOU. The plan recommended dredging the contaminated sediments and containing them in a confined disposal facility in Hallett Boat Slip 6. This remedial action was not accepted. The RPs proposed a new alternative to the MPCA, called the Wetland Cap (Cap). However, this alternative had not gone through the Superfund evaluation and public review process. Therefore, the MPCA, Companies, Trustees and interested parties have been working together to evaluate the data and to develop a remedial alternative option for the cleanup of contaminated sediments at the Site. Based on their work together the following schedule has been developed:

Date	**Document/Action**
October 1, 2003	Feasibility Study
November 1, 2003	Proposed Plan
	Public Comment Period
January 15, 2003	Record of Decision
April 1, 2004	Remedial Action Work Plan
May 1, 2004	Remedy Implementation

IV. PROGRESS SINCE LAST REVIEW

This is the first Five-Year Review for the site.

V. FIVE-YEAR REVIEW PROCESS

ADMINISTRATIVE COMPONENTS

The USEPA had the lead role in executing the five-year review. The USEPA contracted the Corps of Engineers – Omaha District to conduct the five-year review. Potentially interested parties including MPCA, USEPA management and staff counterparts as well as the RPs, the PRP consultants, and the current landowners were notified of the start of five-year review. The members of the review team included:

- USEPA RPM: Mr. Jon Peterson
- USACE PM: Teresa Reinig
- USACE Chemist: Janie Carrig (SLRIDT Lead)
- USACE Geotechnical Engineer: Don Moses
- USACE Industrial Hygienist/Risk Assessor: Kevin Siemann
- USACE Student: Kimberly Witt

Other site visit participants, reviewers, or technical support included:

- USACE Five-Year Review Coordinator: Greg Mellema
- MPCA SPM: Ms. Jane Mosel
- MPCA Hydrogeologist: Mr. Mike Bares
- MPCA Public Information officer: Ms Anne Moore
- MPCA Student: Crystal Gilbertson
- MPCA Student: Alex Hokenson
- Brenda Winkler: Former MPCA SPM for SLRIDT
- Consultant: Service Environmental Consulting - Mr. Michael Costello
- Consultant: ENSR - Peter Moore
- MPCA Human Health Risk Assessor: Laura Solem
- MDH Hydrogeologist: Virginia Yingling
- MDH Toxicologist: Carl Herbrandson PhD
- MPCA Ecological Risk Assessor: Mr. Steven Hennes

A review schedule, which addressed the following components of the five-year review, was developed for April through October 2003:

Community Involvement,
Document Review,
Data Review,
Interviews,
Site Inspection,
Five-Year Review Report Development and
Five-Year Review Report Reviews.

COMMUNITY NOTIFICATION AND INVOLVEMENT

MPCA issued a public notice announcing the start of a five-year review of the St. Louis River Superfund Site. The notice also announced an informational meeting for the public that was held on May 15, 2003. This notice and meeting minutes can be found in Attachment 1.

Surveys were provided to selected members of MPCA and the public; see Attachment 2 for email and survey results.

DOCUMENT REVIEW

Documents reviewed for this five-year review are referenced in Attachment 3.

DATA REVIEW

The summarized data and laboratory reports, as available, were reviewed from the *TSOU Final Remedial Action Report, Documentation of OU Completion*, Service, February 1994, the *Final Implementation and Completion Report Interlake Portion of the Soil OU Response Action*, Service, 1997 and the *Remedial Action Implementation Report Soil Operable Unit, Areas A and E*, ENSR, 1997.

Ground water data from the *Draft Data Gap Report, St. Louis River/Interlake/Duluth Tar Site,* Service, November 2002 was reviewed to establish approximate ground water contaminant concentrations. Refer to Attachment 3 for a complete list of all documents reviewed.

SITE INSPECTION

The site inspection for the SLRIDT site was performed on June 26, 2003. The purpose of the inspection was to visually assess the protectiveness of the Tar Seep OU and Soil OU remedial actions. It did not include an inspection of the Sediment OU from a remedial perspective because the remedy has not been selected or implemented. The inspection began with a short meeting on site to introduce all personnel and give an overview of the inspection process and goals. See attachment 4 for a complete list of attendees. The two environmental consultants who performed the remedial actions were present and were interviewed during the course of the on-site inspection. They are Michael Costello, with Service Engineering Group, who performed the remediation of Areas B, C, D, F and Maurices' Parking Lot for Interlake; and Peter Moore, with ENSR, who performed the remediation of Areas A and E for Domtar Inc. & Allied Signal Inc.

The details of the site inspection observations are presented below by area. There was no visual evidence of contamination with the exception of tar observed at the north end of Slip 6 and at the end of the 59th Avenue peninsula. Overall, the monitoring wells encountered were securely locked and the land use appeared to be maintained as industrial. There are no physical barriers, procedures, or controls in place to monitor site access. If trespassers are encountered they are asked to leave. Evidence of recreational trespassing was noted throughout the site, particularly near the water.

Area B

Area B, located on the north end of Slip 6, was inspected to verify the removal of visual tar from Tar Seep B and to assess the protectiveness of the Soil OU remedy. No tar or visual evidence of contamination was observed at the location designated as the Area B Tar Seep. However, hardened tar was observed near the water line at the northeast end of

Slip 6. The location of the tar appears to be just to the east of the Area B excavations, but directly adjacent to the Slip 6 sediment dredging area.
The location of former above ground tanks looking to the southwest in Area B is shown in the picture to the left. This location is also shown on Figure 7 as Area B AST.

This photo looking east shows the approximate location of a former Tar Seep in Area B. This location was marked by GPS and is shown on Figure 7 as Area B Tar Seep.

Several of the original buildings remain and are currently used by a paint shop. This photo is taken from the north of Area B looking to the southeast.

Hardened tar was observed at several locations along the water's edge on the north bank of Slip 6. These seeps appeared to be fairly fresh. The locations were marked by GPS and are shown on Figure 7.

Tar located at the water's edge at the north end of Slip 6. The locations are shown on Figure 7 as Tar at Slip 6.

Area C

The inspection began at the 48" outfall located on the southern end of the 54th Avenue peninsula. This is one of the Tar Seep OU locations where removal of visual tar had been completed. The cover and the west shoreline of the peninsula were also inspected. Due to accessibility issues, the eastern shoreline was inspected from the other side of Keene Creek Embayment on April 24, 2003.

The inspection showed no visual evidence of tar or the presence of sheens on the water's surface. No stressed vegetation was noted. A worn path connecting the river's edge and the wetland area was observed. This area is shown on Figure 7 as 48" outfall.

The original surface elevation that was present following the Soil OU remedial activities has been amended with several feet of additional fill placed by Hallett Dock. See Figure 7 for a cross section view of the original site elevation and this fill. The source of this loose fill is reportedly from city street projects.

A few areas of erosion were observed in the fill placed by Hallett post remedial action. These do not appear to be impacting the original remedy based on the elevation of the original cover as compared to the fill.

The erosion in this photo is the deepest observed at approximately 3 feet. The location was marked using GPS and is shown on

Figure 7.
Evidence of trespassing, like that shown here, was observed along the shoreline of the peninsula. Trash, debris, and small fire rings were common across the site.

Area D

Area D, located midway down the 59th Avenue peninsula, was inspected to verify that no visible tar remained at the site and to assess the protectiveness of the soil remedy. No evidence of tar or contamination was observed. Residual soil contamination above the clean-up levels is present under the old pump house and another building on the east side of the area. Excavation could not be completed without damage to the structures. The area is currently used for industrial purposes

Looking north to the former location of two tanks removed during the Tar Seep remedial action is viewed to the left. This area of excavation was approximated using GPS and is shown on Figure 7 as Area D-1.

This former location of two tanks removed during the Soil OU remedial action is the location originally identified as the Area D Tar Seep. The location was marked by GPS and is shown on Figure 7 as Area D-2.

Residual Contamination is present under this pump house in Area D.

AREA F

The inspection of Area F, which encompasses the southern half of the 59th Avenue peninsula, began on the west side of the peninsula, at the Area A boundary and followed the shoreline to the south and then east. The berm that follows the contour of the west side of the peninsula was then inspected, followed by the fill in the center of the peninsula. The Tar Seep OU ROD had not identified any locations within Area F that required removal so the inspection concentrated on the Soil OU only.

A few areas of oily material were observed along the west shoreline. Oil blooms were noted during the site inspection and it is speculated that the contaminated sediments present in Stryker Embayment may be the cause of the cause of the oil that gathers along the water's edge.

The berm located in the southwest portion of the 59th Avenue peninsula began as slag fill from industrial operations. In 1997, under a permit from the city, Hallet began construction of the existing visible barrier to the residences on the east side of Stryker Embayment. Dock scrapings consisting primarily of bentonite, with some coke and coal, were excavated from the 54th Avenue peninsula and placed in the center of the berm. The berm was completed with glacial lake clay and silt from off-site. See Figure 8 for a cross section view of the 59th Avenue peninsula. During the April 2003 site visit there were large amounts of soil and debris stockpiled in the area where the concrete recycler operates. The source of the material is unknown. In the June 2003 site inspection much of the soil and debris were gone and primarily concrete was observed.

Some erosion and small areas of hardened tar were observed at the south end of the 59th Avenue peninsula where the peninsula meets the St. Louis River. Two of the protective bollards for monitoring well MW-02 (identification based on maps reviewed subsequent to the site visit) were on the ground. Due to the proximity to a frequently used road, it is

likely these were hit by truck traffic. Also noted in Area F was the placement of new fill around monitoring well MW-28 to an elevation of approximately 2 feet above the original well completion pad. A distance of 3 to 4 feet in diameter surrounding the well has been left as clearance, however there is nothing to prevent sloughing and eventual burial of the well. The only other item of note is a circular area, roughly 60 feet in diameter, with berms about 8 feet high, that appears to be used for water retention.

Except for recreational trespassers (fire rings, debris), the land use for Area F appears to be entirely industrial.

Erosion was observed along the west shore of the 59th Avenue peninsula. The location was marked using GPS and is shown as Area F 1 on Figure 7

Erosion along the west shore of the 59th Avenue peninsula was observed. The location was marked using GPS and is shown as Area F 2 on Figure 7

An example of the oily material was observed along 59th Avenue peninsula west shoreline.

This is an example of the oil sheens observed on Stryker Embayment Surface.

This photo is the concrete recycling operation as seen on April 24, 2003 from top of berm looking east.

Photographed to the left is the concrete recycling operation as seen on June 25, 2003 from top of berm looking east.

Viewed here is erosion observed at the southern tip of the 59th Avenue peninsula.

This tar was observed in the same general location that the erosion was noted. The tar and erosion location are approximated on Figure 7 as Area F 3.

Looking northeast at a circular bermed area that is located at the southern end of the 59th Ave. peninsula.

MAURICES' PARKING LOT

The area known as Maurices' Parking lot continues to be used for industrial purposes. Nothing of significance was noted during the June 2003 visit. A shallow excavation, to a depth of two feet or less, was observed on July 25, 2003. This activity is not in conflict with land use required by the ROD.

To the left is the backside of Maurices' Parking lot, looking east.

AREAS A and E

The inspection of these areas began at the location of the tar seep identified in the Tar Seep OU ROD and progressed to the west, then north along the railroad tracks, east along former Fremont Street, and south along 59th Avenue. Access to the fenced area now owned by EBI Inc. was not permitted, so observations of that portion of the site were through the fence only.

During the investigations and remedial actions, no testing or excavation was performed under existing buildings. It is known that residual contamination remains under the foundation of one of the former Duluth Auto wrecking buildings because concentrations above clean-up levels were detected. However, excavation could not be completed with damage to the structure.

There was no evidence of trespassing during the site inspection and the two areas appear to be used for industrial purposes only.

The tar seep was originally located at the fence line, approximately where the ground is standing. This point was marked using GPS and is shown as Area A/E tar seep on Figure 7

This photo is the west side of Area E, looking east, northeast. A low point with poor drainage is noted in foreground.

Shown to the left is the north side of Area E looking to the southwest.

Represented by the arrow is the south side of former Duluth Auto Wrecking Inc. where residual contamination remains.

Looking west from the east side of Area E, this pile, excavated during gas line installation, reportedly contains coal tar.

INTERVIEWS

Interviews were conducted with several individuals during the course of the five-year review. Jane Mosel, MPCA Project Lead for the SLRIDT Site and Mike Bares, MPCA Hydrogeologist for the SLRIDT Site, were interviewed April 24 (Jane Mosel only) and June 25, 2003 for historical information and MPCA information. Michael Costello, Service Engineering Group (performed the remediation of Areas B, C, D, F and Maurices' Parking Lot for Interlake) was interviewed on June 25, 2003 and July 22, 2003 and Peter Moore, ENSR (performed the remediation of Areas A and E for Domtar Inc. & Allied Signal Inc) was interviewed on June 25, 2003 for remedial action details and site history. Mike McCoshen, Hallett Dock Corp., was interviewed on June 25, 2003 and July 28, 2003 about current site operations. Terry Anderson, owner of EBI, was interviewed on July 25, 2003. Mr. Anderson expressed concern about soil, reportedly contaminated, that was encountered on his property during a recent gas line installation. Brenda Winkler, the former MPCA Project Lead for SLRIDT was interviewed on 8 September 2003.

VI. TECHNICAL ASSESSMENT

QUESTION A: IS THE REMEDY FUNCTIONING AS INTENDED BY THE DECISION DOCUMENTS?

Tar Seeps Operable Unit

The review of documents, the personal interviews, and results of the site inspection indicate the remedy for the TSOU is complete and functioning as intended by the ROD. The ROD specified the excavation and off-site disposal, as a recyclable/burnable fuel, of tar from four specific source areas to reduce the immediate risk to humans and wildlife associated with exposure to the tar materials. These four specific source areas were identified as the primary process locations that generated large volumes of tar material. The remedy as specified in the ROD was completed in 1994.

No flowing tar, or tar that would be suitable as a recyclable/burnable fuel, was noted during the site inspection. Small localized pockets of hardened tar were observed on the embankment and at the water's edge on the north end of Slip 6 and also at the southern most point of the 59th Avenue peninsula along the St. Louis River. No odors or seeps were noted and no sheens associated with the tar that was in contact with the surface water were observed. The process by which these pockets of tar have been deposited is not clear, but may be due to the past filling operations that created the peninsulas.

To continue being protective, inspections and monitoring for the purpose of removing surface tar is recommended. Site characterization to search for potential pockets of subsurface tar within the site soils is not recommended at this time given the current land use, the presence of a tar layer underlying much of the site, and that known contamination remains within the site soils.

Soil OU

Soil Removal and Treatment

The remedial action components of the selected remedy were; excavation, treatment, and removal of contaminated soils and tar-impacted soils to clean-up levels, air sparging for the Area C naphthalene deposit, and bioventing for Maurices' Parking Lot. A pilot study later demonstrated that air sparging would not be effective. Therefore, the MPCA recommended, in an ESD to the Soil ROD, that the Area C pond naphthalene deposit be left in place and covered with a minimum of 8 feet of clean fill. See Figure 9 for a cross section view of the contamination left in place at the Area C pond.

Based on interviews with the remedial action contractors, the MPCA staff, and review of the available documentation, the excavation of soil as specified by the ROD has been completed. All known soil contamination above action levels, that was within 12 feet of the ground surface was removed or treated with the exception of the inaccessible soil underlying two existing buildings in Area D and the Duluth Auto Wrecking Garage in

Area E. This soil could not be removed without damage to the structures. If these structures were demolished, remediation of the soil to the clean-up levels stated in the ROD would be necessary. A current property owner expressed concern that contaminated soil was encountered during a gas line installation. This soil was reportedly excavated and stockpiled without an approved work plan. Without more information, this claim cannot be verified. However, with removal actions that were based on Site characterization data generated with a finite number of soil borings, it is possible that residual pockets of soil, contaminated above the ROD clean-up levels, could remain on the Site.

Some erosion was noted on the west side of the 54th Avenue Peninsula and the embankment of the west shore of the 59th Avenue peninsula in Area F. The areas noted are not within the 8 feet of clean cover on the 54th Avenue Peninsula or impacting the excavated locations within Area F. Although there is not a current impact to the protectiveness of the remedy due to erosion, repairs are needed to prevent further erosion within the 54th Avenue Peninsula and for esthetic purposes as well as reducing potential sediment into the bay at the 59th Avenue Peninsula location.

During the April 2003 site visit large quantities of soil and debris stockpiles were observed in Area F, at the concrete recycling location. During the June 2003 site inspection the quantities were less, but stockpiles of material other than concrete was still evident. Additional information suggests the recycler may be operating without the required permits and accepting waste other than concrete.

Groundwater Monitoring

The selection of a remedy for ground water has been deferred to the Sediment OU. In the interim, monitoring specifically to evaluate the effectiveness of the SOU remedy in reducing contaminant levels has not been performed. Review of the documentation and interviews with the remedial action contractors and the MPCA staff indicate that ground water monitoring was performed for approximately five quarters in conjunction with the 2000-2001 SedOU studies. Review of this data indicates that several rounds of PAH data were discarded because of sample filtering problems. This reduced the sample set from five to two, and in a few instances three rounds of data over the course of one year. Upon completion of the Sediment OU investigation, no additional ground water sampling has been performed. Existing results, shown in Figure 10 indicate that the average contaminant concentration for VOCs is generally less than 2 mg/L, total PAHs are less than 4 mg/L and mercury is less than 0.3 ug/L except for one location (MW26S) that averaged 1.96 ug/L. However, there is insufficient data over time to observe trends in contaminant levels. Additional monitoring of a subset of wells, representative of site ground water conditions, is necessary to evaluate the concentrations over time. This evaluation of contaminant migration from soil to ground water likely would be complicated by the presence of contaminated sediments and soils (at depths below those treated or excavated) and may not provide the data necessary to evaluate the leaching

potential of the residual soil contamination. However, there is currently insufficient data to make a decision on how to best proceed with the evaluation of a ground water remedy.

Institutional Controls

Review of the documentation indicates that the institutional controls specified by the ROD have not been completely implemented. Although the site is currently being used only for industrial purposes, some property owners do not have environmental restrictive covenants in place, or the declarations of restriction are incomplete. The status of the restrictive covenants is presented below.

Complete restrictive covenants are in place for:
Hallett Dock Company, Maurices Incorporated, and A. Kemp Fisheries Company.

The restrictive covenant does not specify that water wells will not be constructed within the uppermost aquifer at the Site for:
Cedar Bay Partners LLC..

No environmental restrictive covenants are on record for:
EBI, Inc.

The results of the on-site inspection indicate that although the site use is restricted to industrial land use only, evidence of recreational trespassing is present along the shores of both 54th Avenue and 59th Avenue peninsulas. There is no monitoring of access and no access controls are in place to prevent exposure to the site media. Debris, campsites, and fire rings are common. One contaminated sediment warning sign was present at the mouth of Stryker Embayment on the southwest shore of the 59th Avenue peninsula. There were no other posted warnings.

It was noted in Area F that soil has been placed around monitoring well MW-28 (well ID number has not been confirmed) to an elevation of approximately 2 feet above the original well completion pad. A distance of 3 to 4 feet in diameter surrounding the well has been left as clearance, however there is nothing to prevent sloughing, funneling of precipitation, or eventual burial of the well. This well should be rehabilitated and all other wells should be checked to ensure they comply with the Minnesota Department of Health Water Well Code.

QUESTION B: ARE THE EXPOSURE ASSUMPTIONS, TOXICITY DATA, CLEANUP LEVELS, AND REMEDIAL ACTION OBJECTIVES USED AT THE TIME OF THE REMEDY SELECTION STILL VALID?

The exposure pathways of greatest concern described in the 1995 ROD for the soil Polycyclic Aromatic Hydrocarbons (PAHs) are incidental ingestion of soil/dust, dermal contact with soil/dust, and inhalation of vapors or particulate. These exposure pathways

are still valid, although the risk has been reduced through removal or covering of the most contaminated soils. No additional pathways of concern were identified in the five year review process.

Human health based cleanup goals were calculated for the soil PAHs based on the multiple direct contact exposure pathways described above, although inhalation of vapors and particulate were not addressed in the 1993 Baseline Risk Assessment discussed below. Clean-up goals were also developed for the protection of ground water. The latter clean-up goals resulted in lower soil concentrations for VOCs than direct contact human health based goals. Ground water at the Site was not considered as potential drinking water, but was evaluated as a source of contamination for surface water. Although the 1995 ROD discussed this potential exposure pathway, ground water remediation was not required at the time. Remediation of the soils at the Site was expected to lead to an improvement in ground water quality. The ROD required monitoring to occur to determine the effects of soil remediation on improving Site ground water quality. As discussed previously, this monitoring has not been effectively conducted to date. If groundwater remediation were required in the future, it would be addressed under the SedOU ROD.

Subsequent to the signature of the 1995 ROD, the state of Minnesota established Soil Reference Values (SRVs) for residential, recreational and industrial land uses. Additionally, Soil Leaching Values (SLVs) were established to assist in the estimation of risk to groundwater from sources and contaminants of potential concern. These SRVs and SLVs are risk based guidance values used by the MPCA in their Superfund and Voluntary Investigation and Cleanup Program. Tier 2 SRVs and SLVs use contaminant and generic soil-specific properties to evaluate human health risk and risk to groundwater. Although Tier 2 SRVs and SLVs can be used as cleanup criteria, they primarily serve as a screening tool and are To Be Considered Criteria (TBCs) as defined in the National Contingency Plan (NCP). Table 3 showing Tier 2 Minnesota SRVs for the above land uses and Tier 1 SLVs for the Contaminants of Concern and the cleanup levels established in the ROD is included below.

Table 3

Contaminant	Clean-up Level (a)						
	Site Specific			Generic			
	Industrial Land Use (mg/kg[b])	Construction Worker Scenario (mg/kg)	Ground Water Protection Level (mg/kg)	MPCA Residential (Tier 2 SRV) (mg/kg)	MPCA Recreational (Tier 2 SRV) (mg/kg)	MPCA Industrial (Tier 2 SRV) (mg/kg)	MPCA (Tier 1 SLV) (mg/kg)
Semi-Volatile Organic Compounds							
Total cPAHs (c) (d)	9 (73)	92 (270)		2 B(a)P	2 B(a)P	4 B(a)P	1
Acenaphthene	7920	25030		1200	1860	5260	50
Anthracene	39600	125150		7880	10000	45400	942
Fluoranthene	5280	16690		1080	1290	6800	295
Fluorene	5280	16690		1140	1200	4120	47
Naphthalene	5280	1655	940	10	24	28	7.5

Pyrene	3960	12515		890	1060	5800	272
Volatile Organic Compounds (mg/kg)							
Benzene (c)			0.03	1.5	3	4	0.03
Ethylbenzene			0.06	200	200	200	4.7
Styrene			19	210	500	600	1.9
Toluene			566	107	260	305	6.4
Xylenes (total m,p, and o)			1103	110	248	248	45

(a) The Industrial Land Use values apply to the top 3.5 feet of soil. The Construction Worker Scenario values apply to soil below 3.5 feet to ground water of 12 feet, whichever is shallower. The cleanup levels for the volatile contaminants are based on the protection of ground water. These values apply to the entire soil column.
(b) mg/kg = milligrams per kilogram
(c) potential carcinogen
(d) Total carcinogenic polycyclic aromatic hydrocarbons (cPAHs) includes: Benzo(a)anthracene, Benzo(b)flouranthene, Benzo(k)flouranthene, Benzo(a)pyrene, Chrysene, Dibenzo(a,h)anthracene, and Indeno(1,2,3,-cd)pyrene. The cleanup level outside of parentheses represents a 50th percentile and the value in parentheses represents a 95yh percentile value. Both of these values will be used to verify when remediation is complete.

The U.S. EPA has recently developed guidance to assess the potential impact of vapor intrusion from contaminated soil and ground water on the indoor air quality of structures that are located over areas of contamination (Evaluating the Vapor Intrusion into Indoor Air, USEPA, Nov 2002). As contamination exists under structures on the site, but at unknown concentrations, sampling of soil vapor under the structures should be conducted and evaluated using the recent EPA guidance.

The Site is currently used for varied industrial operations. In May 1993, the Minnesota Pollution Control Agency developed the Human Health Baseline Risk Assessment for the Soil Operable Unit of the St. Louis River/Interlake/Duluth Tar Site. The Baseline Risk Assessment evaluated the current limited industrial land use, and limited (recreational) and unrestricted (residential) potential future land uses. The Baseline Risk Assessment did not address the inhalation of vapors or particulate. The estimated total excess cancer risk exceeded the acceptable target risk level (1E-5) in all areas of the Site for all the evaluated land use scenarios. The carcinogenic PAHs accounted for greater than 99% of the cancer risk. The carcinogenic PAHs were addressed in the 1995 ROD through surface/near surface and subsurface cleanup levels. Only one area of the Site (Area E) demonstrated a Hazard Index greater than 1 in the Baseline Risk assessment. The noncarcinogenic PAHs (acenapthene, anthracene, fluoranthene, fluorine, naphthalene, and pyrene) were overwhelmingly responsible for the unacceptably high noncarcinogenic risk. Napthalene alone contributed 82% of the total noncarcinogenic risk.

In conducting the 1993 Baseline Risk Assessment, the cancer slope factor for Benzo(a)pyrene was utilized as a surrogate slope factor for all carcinogenic PAHs. This methodology remains appropriate as queries on the EPA Integrated Risk Information System (IRIS) web site indicate that slope factors are still not available for the other carcinogenic PAHs (benzo(a)anthracene, benzo(b-k)fluoranthenes, chrysene, dibenz(a,h)anthracene, and indeo(1,2,3-cd)pyrene) addressed in the Baseline Risk Assessment. Draft guidance has been issued for assessing the dermal pathway since 1993 (Risk Assessment Guidance for Superfund Volume I: Human Health Evaluation Manual

(Part E, Supplemental Guidance for Dermal Risk Assessment), EPA, 2001). However, the changes do not affect the conclusions of the Baseline Risk Assessment. The absorption fraction used in the 1993 Baseline Risk Assessment for PAHs is consistent with updated guidance, and the skin adherence factor used in the 1993 calculations is actually more conservative than the current recommendation.

Only the oral reference dose (RfD oral) for naphthalene has changed since the 1993 risk estimation was conducted. The RfD oral for naphthalene became less conservative (4.00E-2 mg/kg-day in 1993 to 2.00E-2 mg/kg-day today). However, the MPCA Tier 2 SRV for naphthalene is orders of magnitude lower than the ROD cleanup goal. This is primarily due to the inclusion of the significant inhalation pathway for naphthalene in risk based numbers since the 1993 Baseline Risk Assessment was developed. The MPCA levels are also lower than EPA Region 9 Preliminary Remediation Goals (PRGs), which are conservative multi-pathway screenings levels and should be evaluated prior to the next five year review to determine their status as a TBC.

The 1993 Baseline Risk Assessment did not evaluate Areas C and F due to inadequate sampling data. During subsequent remediation, Area C was overlain with at least eight feet of clean fill, and Area F was excavated according to the same requirements for other areas of excavation on the site. Inhalation of vapors and particulate were not addressed as a pathway in the 1993 Baseline Risk Assessment. Vapor intrusion in buildings on-site has not been evaluated and could potentially pose a risk to workers in the buildings. Since the remediation was completed, additional compounds associated with coke production and iron and steel making have been documented which were not addressed in the initial assessment. Trespassing continues to occur on the site. Risks to trespassers were not adequately characterized in the 1993 Baseline Risk Assessment. For these reasons, additional sampling should be conducted and an updated risk assessment for the site should be completed.

Ecological risk discussion in the 1995 ROD focus on potential effects to the St. Louis River surface water and sediments. The Chemicals of Concern at the Site pose potential risks to aquatic life because of the known toxicity of PAHs and metals in sediments to aquatic organisms. There are indications that benthic invertebrate populations and diversity are low in areas of the highest sediment contamination at the Site. The sediments and subsequent remediation are to be addressed in the future under a separate ROD. Although new methods have been established for ecological risk assessment since the ROD was signed in 1995, the Site is used for industrial purposes only and there are no critical habitats for threatened and endangered species identified at the Site. Additionally, the Site soils are not currently managed for ecological purposes, nor are expected to be in the future.

No ARARs were identified in the ROD that require addressing in this report.

QUESTION C: HAS ANY OTHER INFORMATION COME TO LIGHT THAT COULD CALL INTO QUESTION THE PROTECTIVENESS OF THE REMEDY?

No new ecological risks have been identified and there are no impacts from natural disasters.

Reviewers of the this report provided additional information and documentation about industrial activities with the potential to create contamination that have been, or are currently, operating within the Site boundaries. Before ceasing operation in 2001 the contaminated soil thermal treatment facility was observed to expel smoke and soot to the extent that it would visibly coat the surface of Stryker Embayment and the residential properties on the west side of the embayment. Also in question is the type of material accepted for recycling by the concrete recycler and whether the recycler is permitted for this operation. Any activity that generates contamination that could subsequently be deposited on the site surface potentially changes the risk to individuals exposed to the surface soil.

TECHNICAL ASSESSMENT SUMMARY

The TSOU remedy as specified by the ROD is complete. The tar seeps identified by the ROD were location specific and have been removed. Periodic site inspections to identify and remove the pockets of surface tar observed during the site inspection are recommended to ensure future protectiveness of the remedy.

The site is currently used for industrial purposes. Provided that the land use remains industrial, the SOU remedy is preventing direct contact with contaminated soil above the industrial/construction worker/leachability clean-up levels established by the ROD. However, based on several factors, an updated risk assessment is needed to determine the long term protectiveness of the remedy. Since the remediation was completed, additional analytes associated with coke production and iron and steel making have been documented which were not sampled for, or addressed, in the initial assessment. Also noted was the lack of sampling data within Areas C and F to adequately characterize risk to the on site worker or to the trespasser. The inhalation pathway due to exposure to contaminated soil vapor within indoor air has been identified as a potential exposure that has not been addressed. Review of the cleanup goals, established in the ROD, indicates the goal for Naphthalene is approximately two orders of magnitude greater than MN Tier 2 Industrial SRVs and EPA Region 9 PRGs. They should be evaluated to determine their status as TBC Criteria.

The ground water sampling performed as part of the SedOU investigation indicates the presence of ground water contamination. However, there is insufficient ground water data over time to establish trends to determine if removal of the contaminated soils above clean-up levels has minimized the migration of contaminants to ground water as required by the SOU ROD. Deferment of this evaluation to the SedOU remedial action to coincide with the existing deferment of the ground water remediation to the SedOU could be done. However, monitoring must be performed in the interim to ensure the data

needed to make the evaluation is collected. Ground water is not used as a drinking water source, and the ground water migrates to surface water that is in contact with the contaminated sediment.

Several land use/restrictive covenant issues were identified. One property does not have a restrictive covenant in place, and another does not include a water well installation restriction. Based on site inspection observations, the State Water Well code is not being adhered to when fill is placed around monitoring wells. Also observed was evidence of recreational trespassing and industrial uses potentially not protective of the remedy. These observations demonstrate the need for stricter enforcement of institution controls including; no excavation without an MPCA approved work plan, tighter Site access control, and possible restriction on the types of industrial activities operating on Site.

VII. ISSUES

Table 4: Issues

Issue	Currently Affects Protectiveness (Y/N)	Affects Future Protectiveness (Y/N)
1. Minimal Site access control and evidence of recreational trespassing.	Y	Y
2. Industrial use potentially not protective of the remedy.	N	Y
3. Small amounts of tar present at the north end of Slip 6 and the south end of 59th Avenue. Contaminated soil was reportedly encountered by one of the property owners on site	N	Y
4. Erosion runnels are present in the fill on the 54th Avenue peninsula and some erosion of the embankment on the west shore of the 59th Avenue peninsula is present in Area F.	N	N
5. New fill has been placed around monitoring wells in Area F to an elevation of approximately 2 feet above the original well completion pad. This is in violation of the Minnesota Department of Health Water Well Code and may impact the well integrity.	N	Y
6. Restrictive covenants for some property owners are incomplete or missing.	N	Y
7. Neither monitoring, nor a monitoring plan, to evaluate migration of contamination from soil to ground water is in place.	N	Y
8. Inadequate assessment of risk due to exposure to soil vapor intruding to indoor air and insufficient sample data to characterize risk to the trespasser and onsite worker.	N	Y
9. MPCA Tier 2 SRV and the EPA PRG for Naphthalene should be evaluated to determine their status as TBCs.	N	Y

VIII. RECOMMENDATIONS

Table 5: Recommendations and follow-up actions

Recommendations and follow-up actions						
Issue	**Recommendations and Follow-up Action**	**Party Responsible**	**Oversight Agency**	**Milestone**	**Affects Protectiveness (Y/N)**	
					Current	**Future**
1) Minimal Site access control and evidence of recreational trespassing.	A site security control plan should be established. At a minimum some warning signs should be posted to inform site visitors and trespassers about the site hazards.	Responsible Party	MPCA	July 2004	Y	Y
2) Industrial use potentially not protective of the remedy.	Restriction on the types of industrial activities operating on Site should be considered.	Responsible Party	MPCA	July 2004	N	Y
3) Small amounts of tar are present at the north end of Slip 6 and the south end of 59th Avenue. Contaminated soil was reportedly encountered by one of the property owners on site.	Periodic removal of visible tar with continued monitoring until the Sediment OU remedy is selected to ensure the noted problems do not increase and that no unacceptable exposures are occurring..	Responsible Party	MPCA	Seasonally	N	Y
4) Erosion runnels are present in the fill on the 54th Avenue peninsula and some erosion of the embankment on the west shore of the 59th Avenue peninsula is present in Area F.	Repairs for esthetic purposes could include filling runnels with topsoil, cutting back the slopes to a reduced grade and revegetating. Hard armoring the slope with riprap or soft armoring with fabric and revegetation could also be considered.	Property Owner.	MPCA	As needed.	N	N
5) New fill has been placed around monitoring wells in Area F to an elevation of approximately 2 feet above the original well	Annual inspections and institutional control revisions are needed to ensure monitoring well construction/rehabilit	Responsible Party	MPCA	March 2004	N	Y

completion pad. This is in violation of the Minnesota Department of Health Water Well Code and may impact the well integrity.	ation/abandonment and placement of fill meet the state wellhead requirements.					
6) The restrictive covenants for some property owners are incomplete or missing.	Ensure restrictive covenants are in place for all property owners within the footprint of the SLRIDT Site.	Responsible Party	USEPA	July 2004 or immediately in the case of a property transfer.	N	Y
7) Neither monitoring, nor a monitoring plan, to evaluate migration of contamination from soil to ground water is in place	Recommend that a monitoring plan to evaluate soil impact to ground water be developed and implemented..	Responsible Party	MPCA	Concurrent with the Sediment OU Remedy Selection.	N	Y
8 Inadequate assessment of risk due to exposure to soil vapor intruding to indoor air and insufficient sample data to characterize risk to the trespasser and onsite worker	Complete an updated risk assessment.	Responsible Party	MPCA	July 2005	N	Y
9) MPCA Tier 2 SRV for naphthalene is significantly lower than the ROD cleanup goal.	Evaluate MPCA Tier 2 SRV and EPA Region 9 PRG for Napthalene to determine their status as TBCs.	MPCA	USEPA	July 2004	N	Y

IX. PROTECTIVENESS STATEMENTS

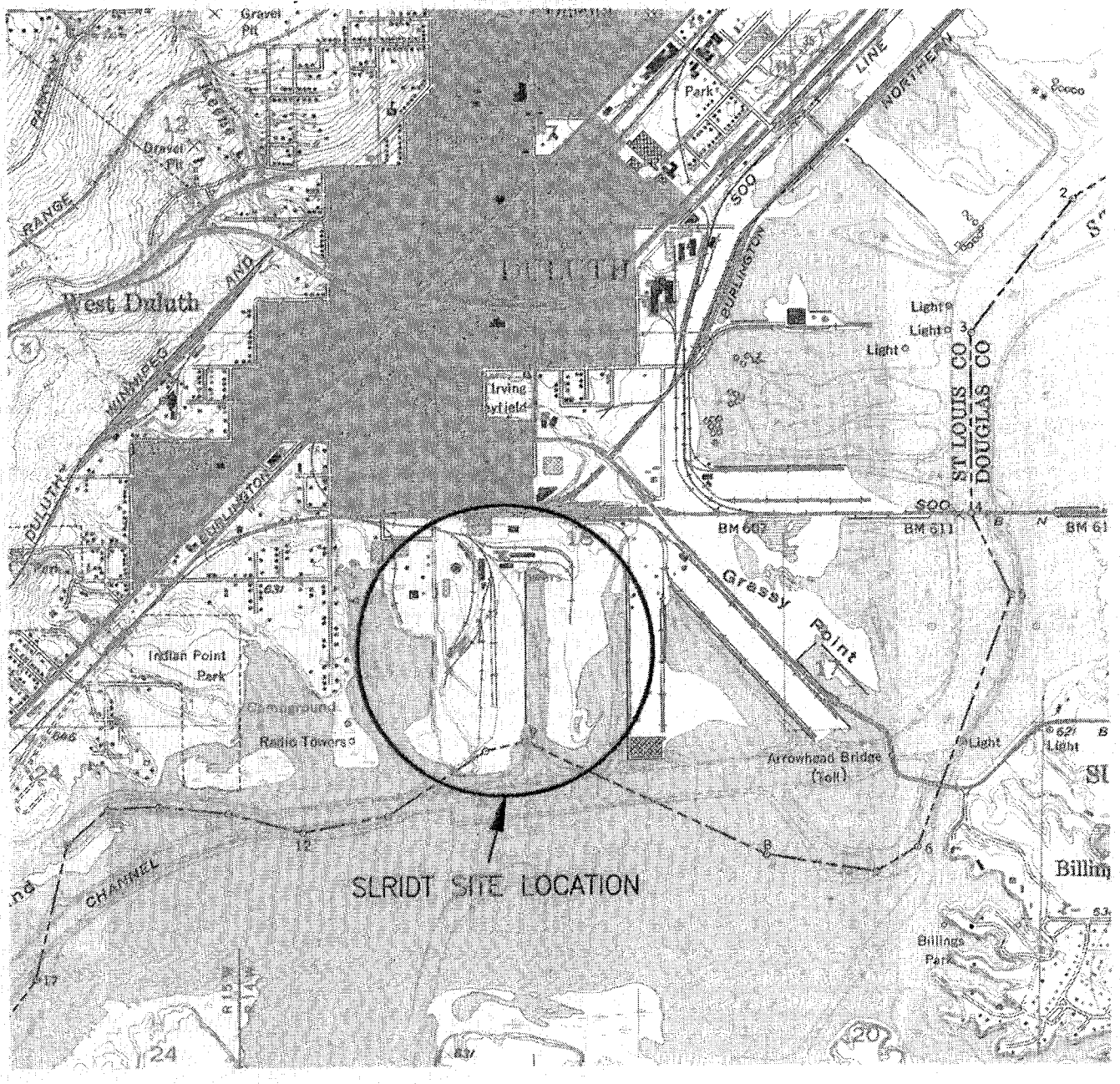
The TSOU remedial action is complete and is protective of human health and the environment as intended by the ROD.

The SOU remedy is protective of human health and the environment in the short term because soil above the direct exposure clean-up levels identified in the ROD for industrial land use and construction worker's has been removed. However the remedy is not protective in the long term unless the issues identified are addressed. In order for the remedy to be protective in the long term, contaminant migration to ground water, additional assessment of risk and enforcement of institutional controls must be addressed.

X. NEXT REVIEW

The next review five-year review is scheduled for September 30, 2008.

RETEC



MAP SOURCE: USGS
WEST DULUTH QUADRANGLE
7.5 MINUTE SERIES

QUADRANGLE LOCATION

0 2000 40000
SCALE IN FEET

3-1293-000
1293SITE.DWG

SITE LOCATION MAP
SLRIDT SITE
DULUTH, MINNESOTA

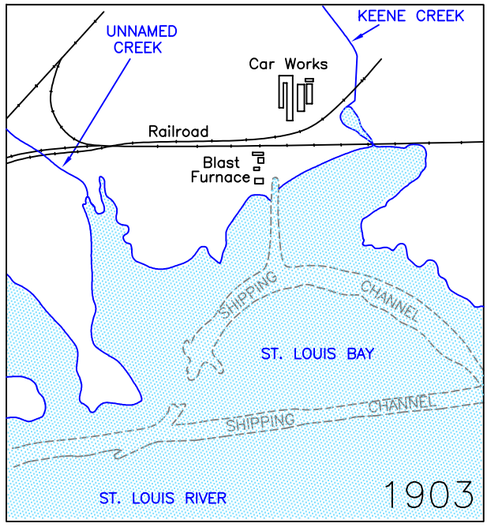
FIGURE
1

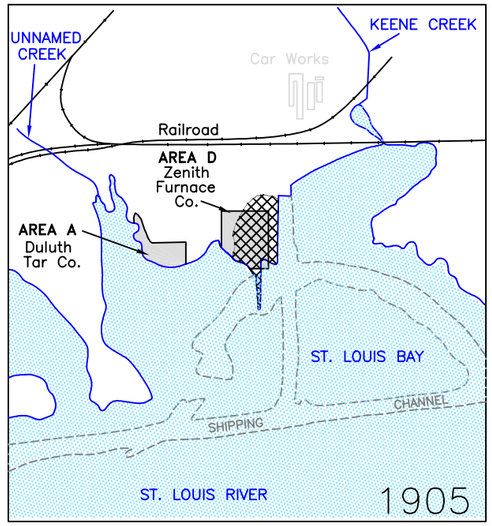
Figure 2

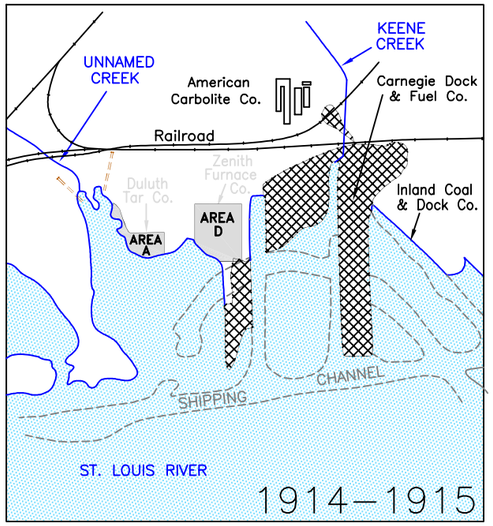
SLRIDT SITE
DULUTH, MINNESOTA
3-1293-202

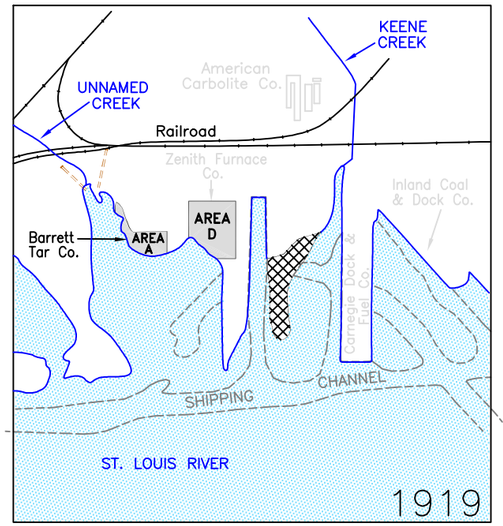
SLRIDT SITE MAP

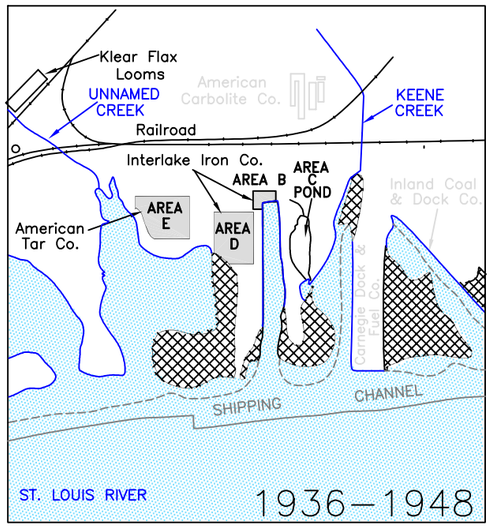
RETEC
FIGURE 2

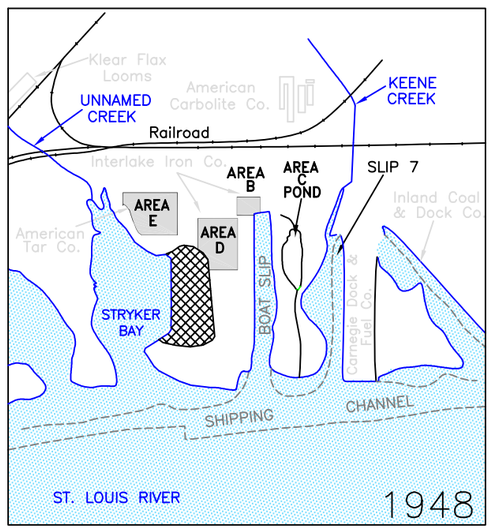


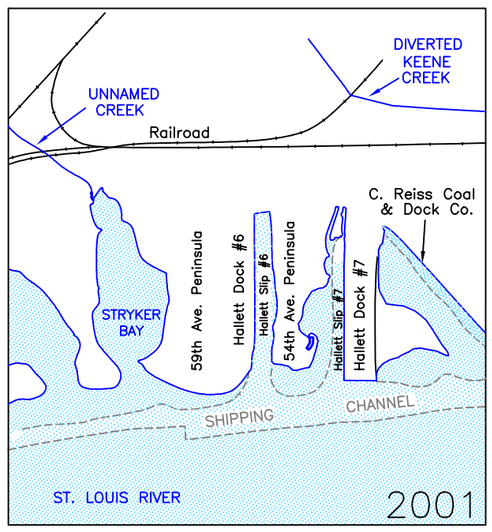












EXPLANATION

- SANITARY SEWER DISCHARGE LINES
- SHORELINE
- SHIPPING CHANNELS
- NEW LAND SINCE PREVIOUS MAP

REFERENCE:

US ARMY CORPS OF ENGINEERS
HARBOR MAPS 1903, 1905,
1914–15, 1919, 1936, 1948.
AERIAL PHOTO 1948.
TELECON WITH CITY OF DULUTH
SEWER DEPARTMENT.

REFERENCES IT CORP 'FIGURE 1–3 HISTORICAL DEVELOPMENT OF 59TH AND 54TH AVENUE PENINSULAS' FILE NAME RFI_2–1.

SERVICE ENGINEERING GROUP

FIGURE 3.
HISTORICAL DEVELOPMENT OF 59TH AND 54TH AVENUE PENINSULAS
SLRIDT SITE
DULUTH, MINNESOTA

FILE	DATE	REVISION DATE	DRAWN BY
99006/PHIII/HYA FIGBHIST	4/28/97	10/8/01	PJCADD/HH

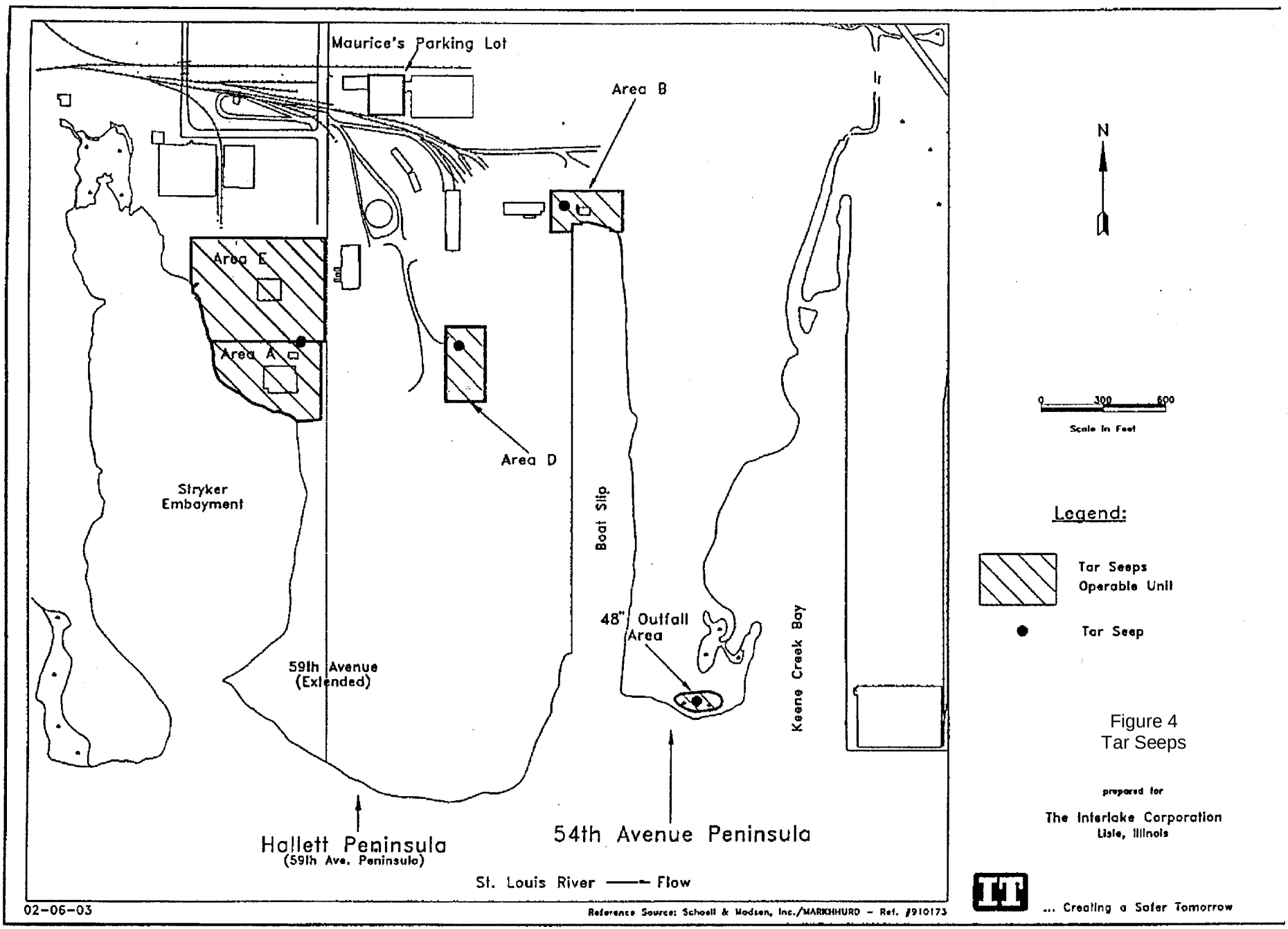


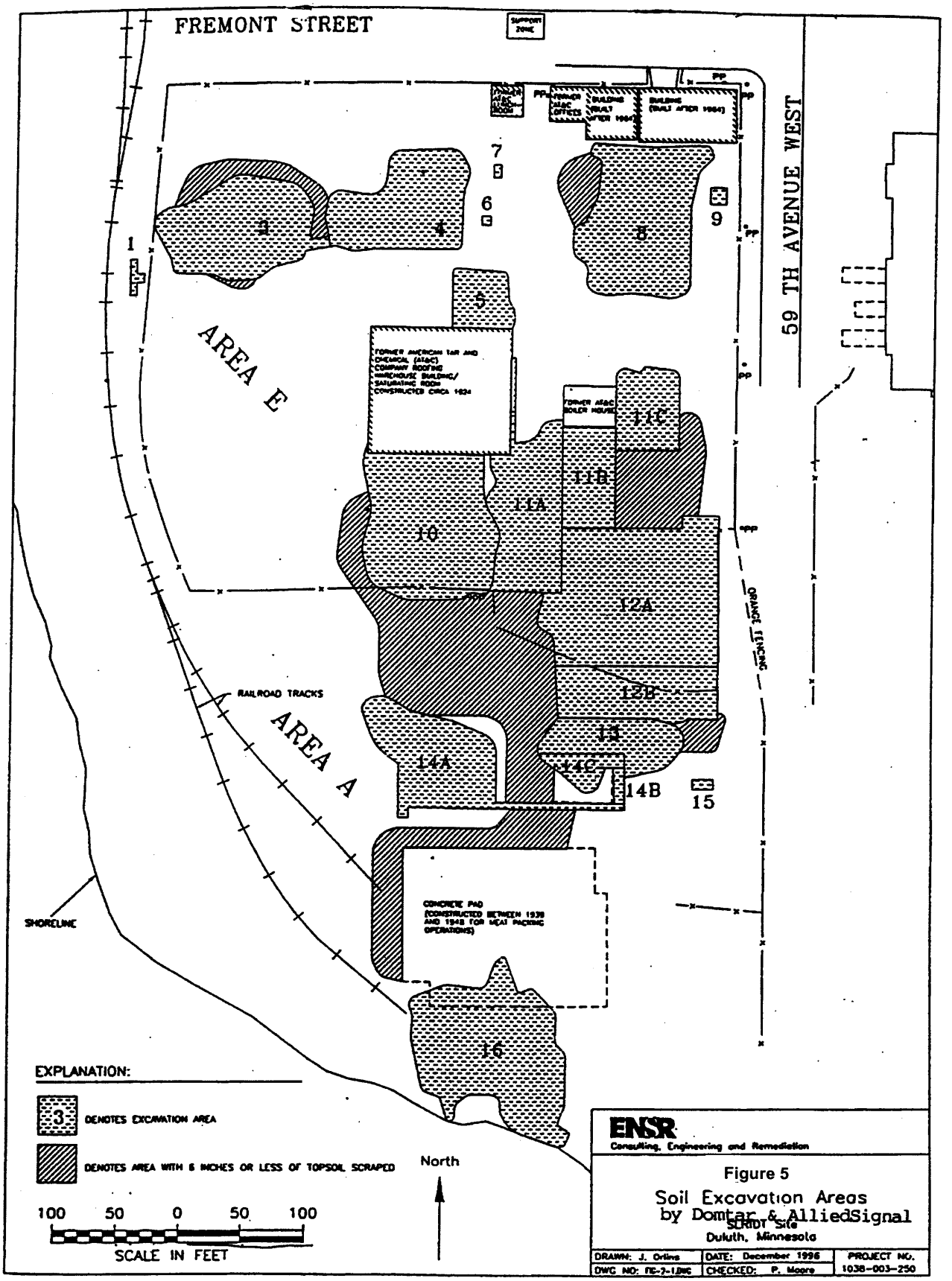
Figure 4
Tar Seeps

prepared for

The Interlake Corporation
Lisle, Illinois

... Creating a Safer Tomorrow

C:\a\302749\Fig1-2


FREMONT STREET
59 TH AVENUE WEST
AREA E
AREA A
RAILROAD TRACKS
SHORELINE
ORANGE FENCING
CONCRETE PAD (CONSTRUCTED BETWEEN 1939 AND 1948 FOR MEAT PACKING OPERATIONS)
1
2
3
4
5
6
7
8
9
10
11A
11B
11C
12A
12B
13
14A
14B
14C
15
16
EXPLANATION:
DENOTES EXCAVATION AREA
DENOTES AREA WITH 6 INCHES OR LESS OF TOPSOIL SCRAPED
100 50 0 50 100
SCALE IN FEET
North
ENSR
Consulting, Engineering and Remediation
Figure 5
Soil Excavation Areas
by Domtar & AlliedSignal
SCRDT Site
Duluth, Minnesota
DRAWN: J. Orlins
DATE: December 1996
PROJECT NO. 1036-003-250
DWG NO: FE-2-1.DWG
CHECKED: P. Moore

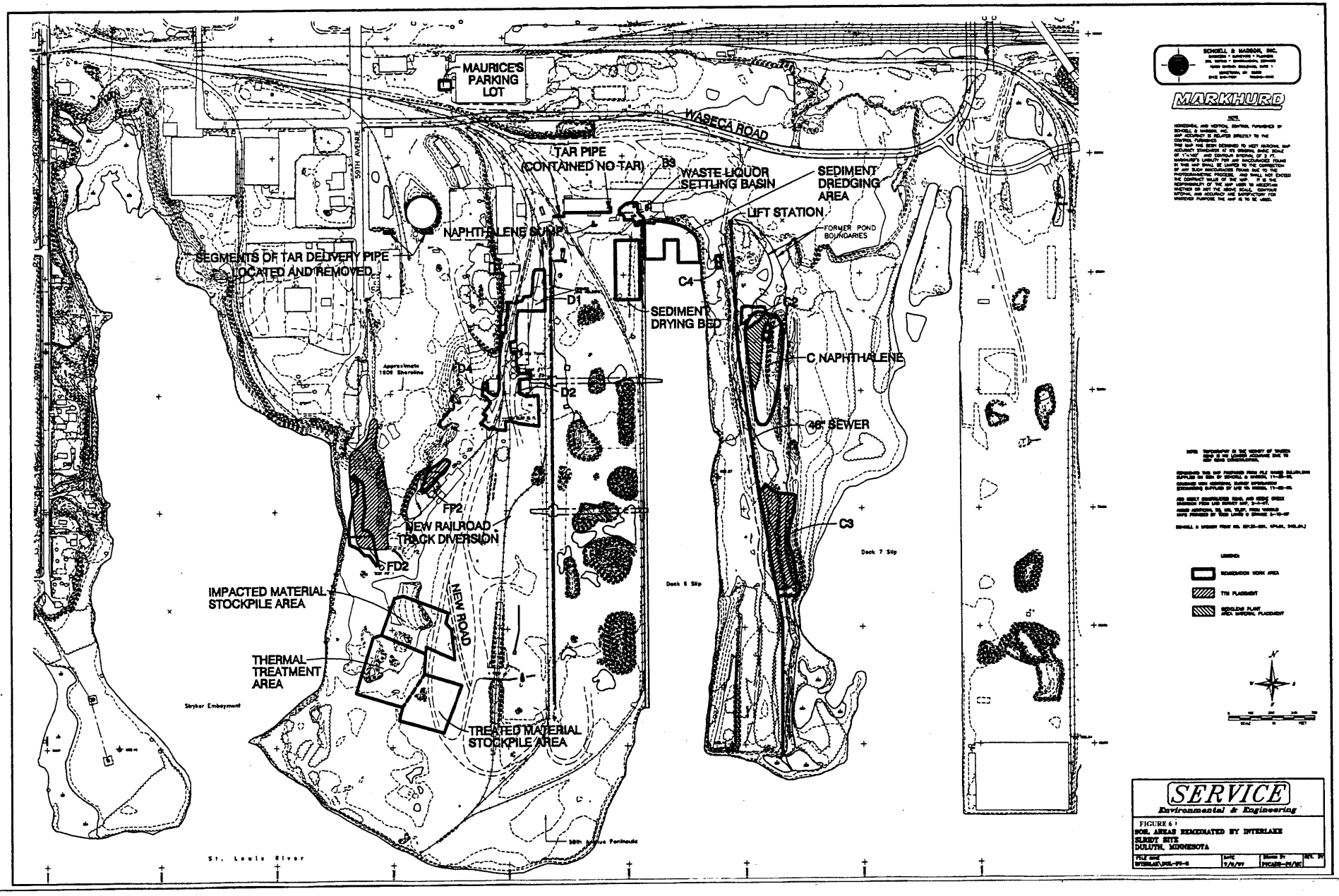
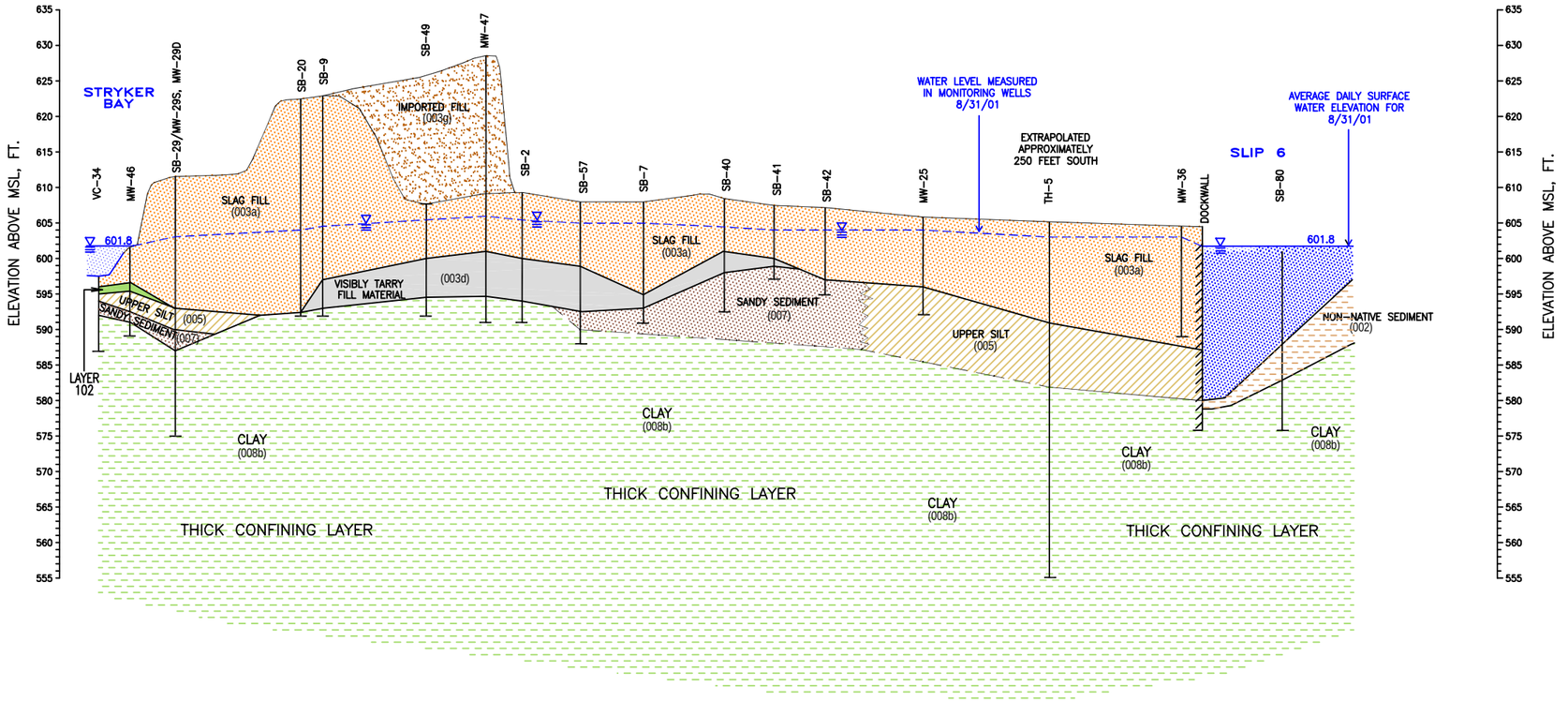
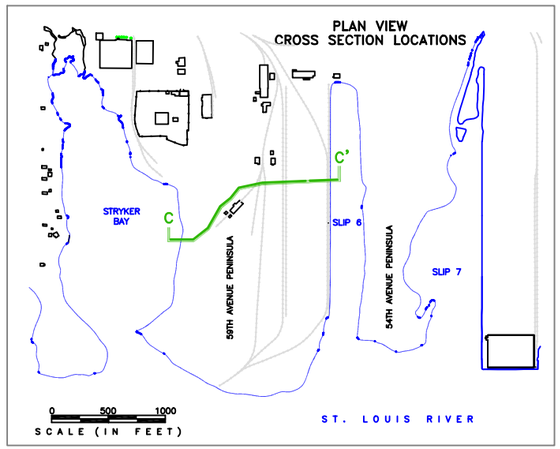

MAURICE'S PARKING LOT
WASECA ROAD
55TH AVENUE
TAR PIPE (CONTAINED NO TAR)
B3
WASTE LIQUOR SETTLING BASIN
SEDIMENT DREDGING AREA
LIFT STATION
FORMER POND BOUNDARIES
NAPHTHALENE SUMP
SEGMENTS OF TAR DELIVERY PIPE LOCATED AND REMOVED
C4
D1
SEDIMENT DRYING BED
C2
C NAPHTHALENE
D4
D2
36" SEWER
FP2
NEW RAILROAD TRACK DIVERSION
C3
FD2
IMPACTED MATERIAL STOCKPILE AREA
NEW ROAD
THERMAL TREATMENT AREA
TREATED MATERIAL STOCKPILE AREA
Stryker Embayment
St. Louis River
Dock 6 Slip
Dock 7 Slip
SCHOELL & MADSON, INC.
MARKHURD
SERVICE
Environmental & Engineering
FIGURE 6-1
SOIL AREAS REMEDIATED BY INTERLAKE
KREDT SITE
DULUTH, MINNESOTA

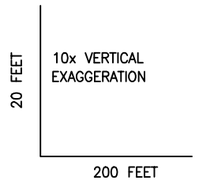
Figure 7
SLRIDT
Site Inspection
Features from
Chapter V
June 25, 2003

WEST
C

EAST
C'







LEGEND:

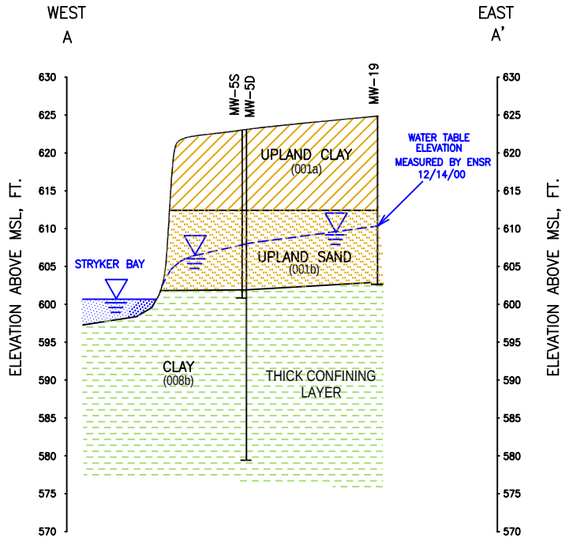
- INDUSTRIAL MATERIAL
- UPPER SILT
- PEAT
- SANDY SEDIMENT
- NON-NATIVE SEDIMENT
- THICK CONFINING LAYER: SILT, CLAY, LOWER SILT, IMPORTED FILL LAYER
- WATER
- VISIBLY TARRY FILL MATERIAL
- LAYER 102
- TOP OF WATER
- SB-2 MONITORING WELL LOCATION

FIGURE TITLE

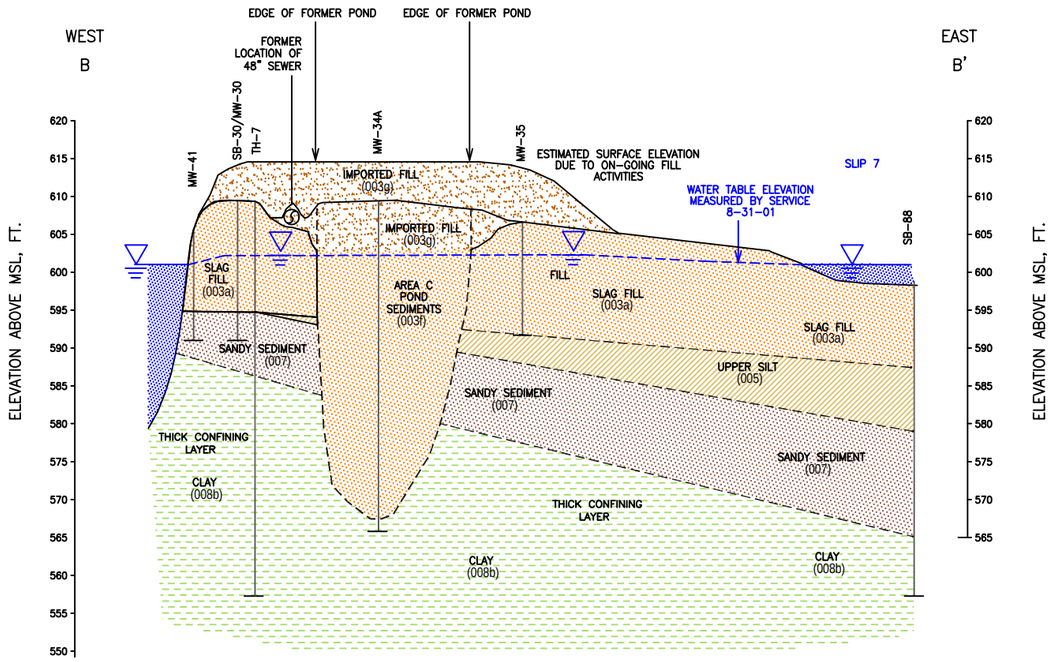
FIGURE 8
GEOLOGIC CROSS SECTION OF 59th AVENUE PENINSULA
SLRIDT SITE
DULUTH, MINNESOTA

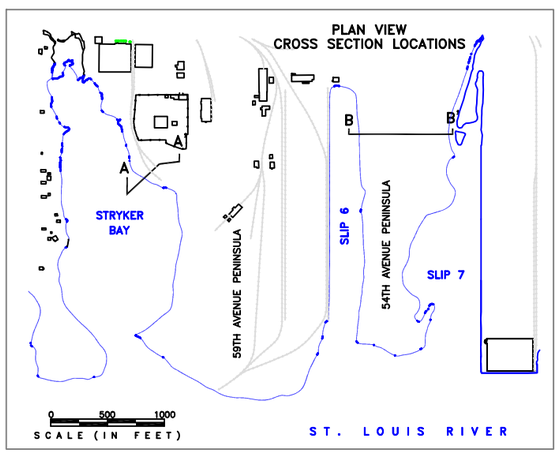
FILE NAME 99006/PHIII/HYDROA	DATE	REVISION DATE	DRAWN BY	REVIEWED BY
006xsC.DWG	7/24/01		LS	EPH

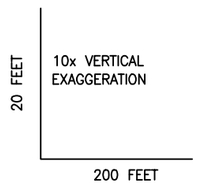
SERVICE ENGINEERING GROUP



CROSS SECTION C–C'
STRATIGRAPHY OF AREAS A & E SHOWING NATIVE SILTY SAND AQUIFER DAYLIGHTING ABOVE STRYKER BAY WATER LEVEL.





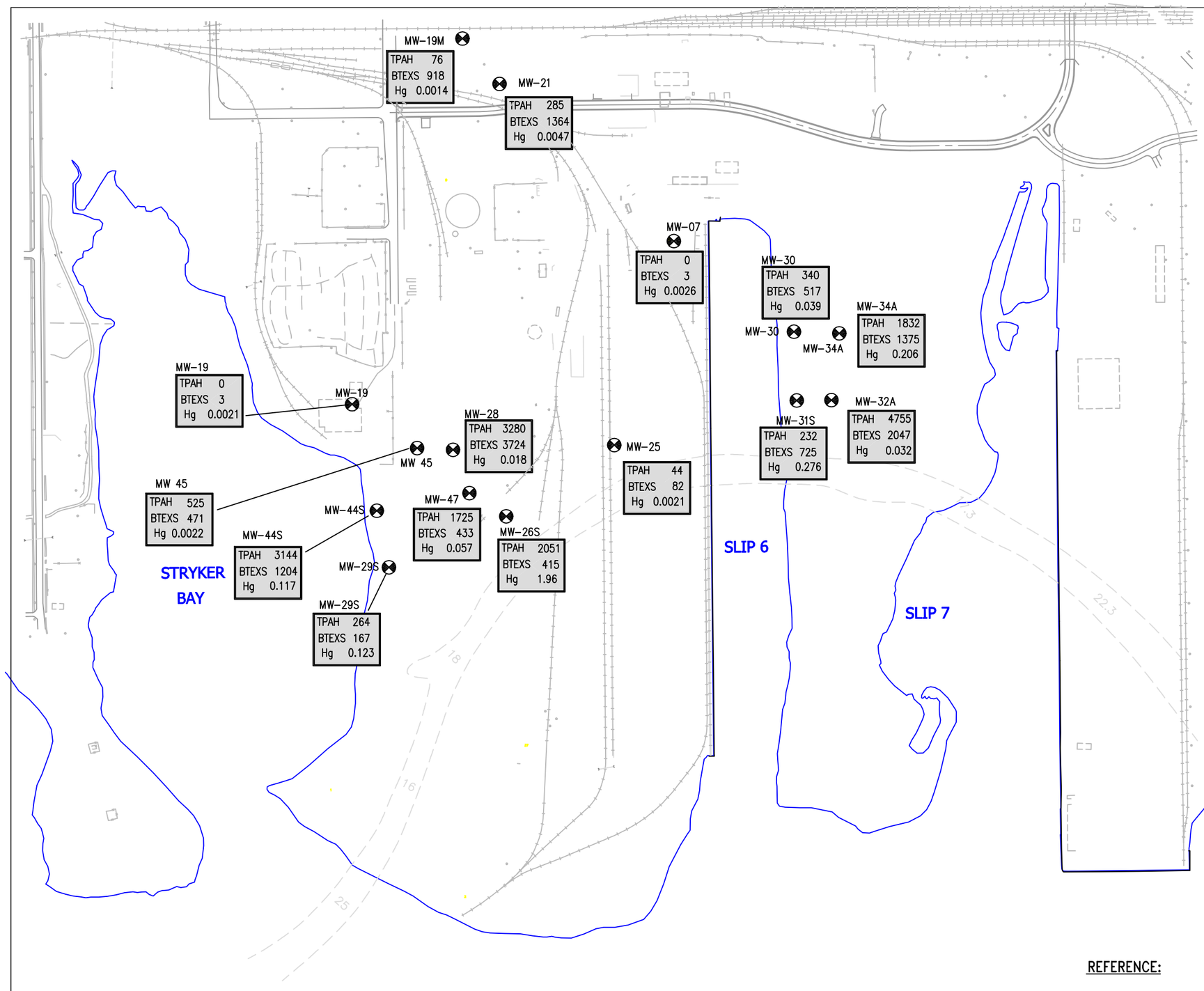


LEGEND:

- INDUSTRIAL MATERIAL
- UPPER SILT
- PEAT
- SANDY SEDIMENT
- NON–NATIVE SEDIMENT
- THICK CONFINING LAYER: SILT, CLAY, LOWER SILT, UPLAND SAND, UPLAND CLAY
- IMPORTED FILL
- WATER
- TOP OF WATER
- MW–5 | MONITORING WELL LOCATION

FIGURE TITLE: FIGURE 9 GEOLOGIC CROSS SECTIONS OF AREAS A & E AND 54th AVENUE PENINSULA SLRIDT SITE DULUTH, MINNESOTA				
FILE NAME: 99006/PHIII/HYDROA 006xsAB.dwg	DATE 10/10/01	REVISION DATE	DRAWN BY LS	REVIEWED BY EPH

SERVICE ENGINEERING GROUP



0 100 200 400
SCALE IN FEET

LEGEND:

22.3 BURIED FORMER SHIPPING CHANNEL WITH FORMER DEPTH INDICATED

MW 45
TPAH — TOTAL PAHs
BTEXS — TOTAL BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND STYRENE
Hg — MERCURY

REPORTED VALUES ARE AVERAGE OF ALL SAMPLING EVENTS, EXCEPT ROUND 1 FOR Hg AND ROUNDS 1 AND 2 FOR TOTAL PAHs.

REPORTED VALUES IN ug/L.

REFERENCE:

SCHOELL & MADSON, INC. / MARKHURD BASE MAP.

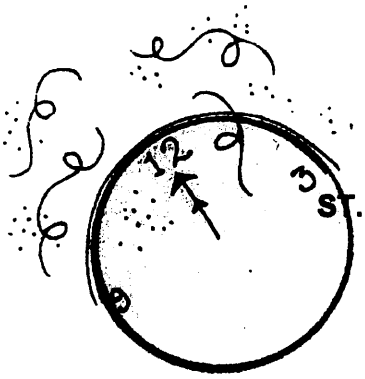
MAP SHOWING PROPOSED CHANGES IN HARBOR LINES IN ST. LOUIS BAY..., WAR DEPARTMENT DEC. 5, 1894.

SERVICE ENGINEERING GROUP

FIGURE 10
AVERAGE ANALYTICAL MEASUREMENT IN CHARACTERIZATION WELLS
SLRIDT SITE
DULUTH, MINNESOTA

F/N 99006/PHIII/	DATE	DRAWN BY	REVIEWED BY
HYDR/NON.DWG	10/9/02	LS	EPH

Attachment 1



U.S. EPA AND MPCA

TO REVIEW

ST. LOUIS RIVER SUPERFUND SITE
DULUTH, MN

U.S. Environmental Protection Agency Region 5, and Minnesota Pollution Control Agency are starting a five-year review of the St. Louis River Superfund Site, Duluth, MN.

EPA and MPCA will hold an informational meeting at the beginning of the review process for interested members of the public to comment on the USS and Interlake facilities of the St. Louis River Superfund Site.

The informational meeting will be
6:30 to 8:30 pm, Thursday, May 15
Morgan Park Good Fellowship Community Center
1302 88th Avenue West
Duluth, MN

The objective of this five-year review is to confirm whether or not the remedies were constructed in accordance with the requirements of the record of decision and if they continue to be protective of human health and the environment.

- A Record of Decision (ROD) for the U.S. Steel Duluth Works portion of the site was signed Feb. 22, 1989, that addressed 16 operable units at the USS facility. Contaminated soil was either removed to a landfill or contained in place and monitored at the facility.

- A second ROD was signed on Sept. 28, 1990, that called for tar seeps at the Interlake portion of the site to be excavated and removed to an off-site landfill.

- A ROD was signed on Sept. 26, 1995, calling for contaminated soils at the Interlake facility to be excavated and removed.

All site documents are retained at the Duluth Public Library, West Duluth Branch, 5830 Grand Ave, Duluth, MN.

For further Information, special needs or accommodations, please contact:

Anne Moore, Public Information Officer II
Minnesota Pollution Control Agency
525 Lake Ave, Suite 400,
Duluth, MN 55802-2300
(218) 723-2356
or toll free
voice and TTY (800) 657-3864
fax: (218) 723-4727

Attachment 1

U.S. Environmental Protection Agency
St. Louis River Superfund Site
Five-Year Review Informational Meeting
Goodfellowship Club, Morgan Park
May 15, 2003

Attendees
Residents and interested others: Ron Benson, Marsha Patelke, John Smith, Angela Smith, Steven Chepelnik, Dr. Joe Balach, Tim Leland, Nancy Leland, Nancy Thompson, Jackie Morris-Rep. Oberstar's office, Dean Stockwell, Annette Trowbridge-USFWS, Marilyn Danks-MN DNR / Natural Resource Damage Assessment Trustees, Allan Beaulier, Bill Majewski, Kyle Maunu, Herb Widell, Guy Partch, Hans Wronka, J. Howard McCormick, Bill McGiffert, Debbie Isabell, Craig Lincoln, Dan Simonson, Marlene Simonson
Participating governmental agencies: Jon Peterson- USEPA; Cheryl Allen- USEPA, Greg Mellema-US Army Corps of Engineers, Teresa Reinig-US Army Corps of Engineers, Chet Wilander-MPCA Citizens' Board, Sid Mason-MPCA Citizens' Board, Dr. Daniel Foley-MPCA Citizen's Board, Susan Johnson-MPCA, Jane Mosel-MPCA, Mike Bares-MPCA, Anne Moore-MPCA

Introductions
Anne Moore-MPCA welcomed the group and asked them to introduce themselves. She introduced Cheryl Allen-USEPA, who facilitated the meeting. Jon Peterson-USEPA briefly explained that the combined US Steel / St. Louis River / Interlake / Duluth Tar Superfund site (St Louis River) was due for a five-year protectiveness review of its completed operable units' remedies.

US Steel Site Overview
Susan Johnson-MPCA explained the USEPA-labeled St Louis River Site is considered two sites by the MPCA. Each has a project manager, hydrologist, its own Responsible Party(ies) and is in a different phase of the Superfund process.

Johnson described US Steel's use of the 644 acres over its 64-year history. The site was added to the Superfund list in 1983. She noted two of the site's 16 land-based operable units, J and P, triggered this review. OUJ still contains about 20,000 yards coal tar stabilized with cement and isolated within a clay lined containment disposal area. The Wire Mill Pond, OUP, was a direct discharge outlet from the Wire Mill and site sewers. The remediated pond still contains an allowable amount of coal tar, heavy metals and mercury buried under a synthetic liner, backfilled and planted as a wetland.

Johnson explained ground water samples are taken twice annually at eight locations on land and five from surface water resources to monitor these two units. The site is now considered cleaned up to industrial-based standards as specified by the 1989 Record of Decision.

St Louis River / Interlake / Duluth Tar Overview

Jane Mosel-MPCA discussed the site's many uses over the past 100 years: iron and coking plants; water and gas plant; a horse rendering plant; and, tar and chemical plants. By products of the last-named company types were identified as responsible for the resulting contamination. The MPCA became involved in the late 1970s and placed the site on the Superfund list in 1983; responsible companies (Interlake Corporation (now XIK), AlliedSignal (now Honeywell), Domtar and Beazer East) were identified in 1991 and 1993. Contaminants of concern found at the site included tar, PAHs, VOCs, cyanide, naphthalene and heavy metals. Two land-based operable units containing tar seeps and tar-impacted soil were excavated and removed for offsite incineration in 1994 and 1997. The remaining surface is now considered "clean" to industrial-based standards.

Five-Year Review Process
Greg Mellema-US Army Corps of Engineers explained USEPA requires five-year reviews on remediated Superfund sites with remaining contamination above unrestricted use to verify the protectiveness and effectiveness of the selected remedy(ies). The US Army Corps of Engineers was hired by USEPA to help conduct this site's review.

Specifically, public input is important because they are more familiar with the site and are likely to notice any changes: vegetation discoloration, odors, broken fences protecting the public from certain areas, unusual activities at the site, and/or new uses at the site.

In addition to taking comments at the informational meeting and conducting a site visit, Corps and USEPA staff review the related MPCA and USEPA files, visit with community officials, arrange for new samples, if required, to be taken from the remediated operable units, and publishes its findings. Mellema requested meeting attendees to fill out a survey about the site and return them by June 20.

Site Redevelopment
Jon Peterson-USEPA described his meeting with City of Duluth Planning Director, Mike Conlan, and his interest in a new pilot project Jon and other USEPA managers are developing. It would offer short-term technical and marketing assistance to four USEPA Region V Superfund sites which are prime for redevelopment. He felt the St. Louis River site would be a strong candidate for inclusion; he will know more in June.

Q&A
Q: If the Record of Decision (ROD) cleans up property to a 'lack of hazard' condition for uses fitting that description, how can you increase the use / get beyond that level of cleanup?
A: The Five-Year plan offers reuse options and recommendations. Further cleanup that would be required if rezoned to a more restrictive level would be the responsibility of the developer.

Q: Who pays for the redevelopment pilot project?
A: Tools are available for redeveloping brownfields and contaminated sites from grants and city, state and federal levels.

Q: What's the cleanup level for US Steel? Could it be upgraded for a golf course?
A: It's zoned industrial, and would be cleaned up to that use standard (which is recreational).

Q: What about the material that went to Missouri from the SLRIDT site? How was it transported?
A: It had hazardous waste status and was sent via covered trucks to a licensed facility to be burned. The closest facility to Minnesota was in Missouri.

Q: What was being burned at the end of Hallett's docks?
A: Soil / dirt was burned on site in a thermal desorber at low temperatures. The ROD was changed to accommodate the 'not quite clean' dirt. It was then buried in two places (south end of 59th Avenue West and the 54th peninsula) on site with eight foot covers.

Q: Why does Hallett have a 30-foot berm?
A: It isolates industrial from residential areas. The 1988 Neighborhood plan recommended we provide something aesthetic to block the (industrial) view.

Q: Do the underground springs pose any connection to the area's risk from land-based remedies?
A: Land-based contamination can move and this will be addressed in the water portion of this review process. Land with a cap or cover over contamination does change the configuration of a site and we're not sure if it / they affect ground water.

Q: What will the ROD syllabus data say when it is finished?
A: The USS land is for sale; the city is very interested in a portion of it (it also has a brownfield grant which could be used for redevelopment). It could be a couple of years before the land is actually redeveloped.

Q: The sludge was capped at the Wire Mill Pond. Is it similar to Stryker Bay? And have you checked the mercury? You can't hide the problem.
A: Sampling mercury, as related to the land-based remedies we are discussing today, is one of the parameters analyzed when surface water samples are taken. These samples are taken on an annual basis. Several sampling locations are near the Wire Mill pond. Mercury levels have been reduced dramatically since the remedy was implemented; levels are within performance standards.

Q: What about OUP?
A: We can't do any sampling because the Five-Year review will be finished by September. The Five-Year review will determine whether there is a need to sample; if yes, the Five Year review will be amended to add sampling results.

Q: Can you check to see if the mercury moves through the cap?
A: Please put your suggestions in the survey.

Q: From Gary Glass's aerials photos we saw the Wire Mill pond was two times larger before the cleanup than the size it is now; the dredged material went into the pond. What is this dredged material? Is OUQ dredge spoils for the pond?
A: The 1989 ROD specified "no action" for this operable unit. OUJ and OUP triggered the Five-Year review but all units will be reviewed.

Q: What are we doing here tonight? The (USS) site boundaries should be secure; should any observation be from outside the boundary?
A: If the ROD says so, yes. We'll accept all written comments – please put them in the survey.

Q: Can we have a meeting on site?
A: If you're interested, let us try and set one up. Put that into your survey comments.

Q: There has been controlled access in the past and photos were prohibited.
A: Both sites are private property and visitors need permission from the landowners to enter.

Q: The signs warning of wading in the water have fallen down into the water.
A: (Hallett response) Only authorized people are allowed to enter our property.
(USEPA response) Put your request in writing in the survey.

Q: If you open up the site, can you also go in other people's houses? Can you clean up the property to what land use we want?
A: Both sites will be cleaned up to industrial standards because the land is zoned industrial.

Q: Who tests (samples) and determines what to do?
A; The Responsible Party(ies) hire consultants who test samples against a standard list of parameters for metals, PAHs, low-level mercury, zinc, and cadmium. They also do ground water monitoring and send the samples to a Minnesota Department of Health-certified lab. The MPCA reviews the lab's report.

Q: Why didn't the MPCA do the Five-Year review?
A: The MPCA didn't have time to do it at the same time as doing work on the contaminated sediments. The MPCA manager wants the staff to move forward on the sediment units and not look back on the past.

Q: When will the sediments be completed?
A: At Stryker Bay, the sediments are being assessed with the Responsible Parties and a remedy should be selected by Spring 2004.

Email

Attachment 2

All:

A Five-Year Review is being conducted for the completed portions of St. Louis River Superfund Site, located in Duluth, MN., by the Corps of Engineers for EPA Region 5. It should be noted that this review is not for the sediments units at either the US Steel Site, or the St. Louis River/ Interlake/ Duluth Tar Site. Because of your current or past involvement with the site, your input is valuable to the completion of the review.

It would be greatly appreciated if you could complete the survey which is attached below. Not all questions may apply to your particular involvement, or current understanding of the site. If this is the case, a "no comment" response for those questions is completely understood. If there are others in your office who may be able to provide comments, feel free to forward the survey to those individuals as well.

Completed forms can be returned either by e-mail to me, at gregory.j.mellema@usace.army.mil or sent directly to me at the address given below. If possible, we would like to have the surveys returned by June 20, 2003.

If you have any questions, contact me anytime.

Thanks,

Greg Mellema, P.E.
US Army Corps of Engineers
CENWO-HX-G
12565 W. Center Road
Omaha, NE 68144
402-697-2658
gregory.j.mellema@usace.army.mil

Attachment 2

St. Louis River Superfund Site Five-Year Review
Comment and Information Survey

Name: John Betcher	**Organization:** MPCA
Telephone No: 651-296-7821 **Fax No:** **E-Mail Address:** john.betcher@pca.state.mn.us	**Street Address:** 520 Lafayette Road North **City:** St. Paul **State, Zip:** MN 55155-4194

Comments for the:
(please check the name of the site for which these comments apply. Use a separate form for each site.)

____ US Steel Site **___X_ St. Louis River / Interlake / Duluth Tar Site**

1. What is your overall impression of the cleaned-up portions of this Superfund Site? (general sentiment)

The cleanup was carried out according to risk criteria to be protective for an industrial risk scenario. The cleanup was done based on the best historical information available at the time and the data collected during the RI and the excavation phase of remedy implementation. Citizen input was solicited during the development of cleanup plans and during remedy implementation.

2. Are you aware of any community concerns regarding the site administration related to completed clean-up activities? If so, please give details.

No

3. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give dates, details, and outcome(s) if known.

No

4. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

It should be kept in mind that the site cleanup was based on an industrial land use scenario. If an alternative land use is proposed additional cleanup may be required to bring the site to acceptable risk criteria for alternative land uses.

(Form continued on next page)

St. Louis River Superfund Site Five-Year Review

Comment and Information Survey - Con't

Name: John Betcher

5. Are you aware of any issues that may require changes to the completed remedial actions or the decision documents?

Some residential land uses have been investigated for the site that might require additional remedial actions to bring the site to an acceptable level of risk. I am not aware how realistic it might be that these proposals will become reality. Any future development would most likely be done under MPCA oversight in the Voluntary Investigation & Cleanup program.

6. Have any problems or difficulties been encountered regarding institutional controls or deed restrictions?

Not aware of any

7. Do you feel the completed remedies are functioning as expected? Why or why not?

I expect that they are as long as the institutional controls are being follwed.

8. Are you aware of any issues, which may call into question the site's short-term or long-term protectiveness?

No

9. Are you aware if there are any trends that indicate contaminant levels are increasing or decreasing?

No

(Form continued on next page)

St. Louis River Superfund Site Five-Year Review

Comment and Information Survey - Con't

Name: John Betcher

10. Is there a continuous O&M presence? Please describe staff and frequency of site inspections and activities.

Don't know

11. Have there been any significant changes in O&M requirements, maintenance schedules, or sampling routines? If so, do they affect the protectiveness or effectiveness of the remedy?

Don't know

12. Have there been unexpected O&M difficulties or costs at the site? If so, please give details.

Don't know

13. Do you have any other comments, concerns or recommendations regarding the project?

No

St. Louis River Superfund Site Five-Year Review
Comment and Information Survey

Name: Anne Moore	**Organization: MPCA**
Telephone No: (218) 723-2356 **Fax No: (218) 723-4727** **E-Mail Address: anne.moore@pca.state.mn.us**	**Street Address: 525 Lake Avenue South, Suite 400** **City: Duluth** **State, Zip: MN 55802**

Comments for the:
(please check the name of the site for which these comments apply. Use a separate form for each site.)

____ US Steel Site **___x_ St. Louis River / Interlake / Duluth Tar Site**

1. What is your overall impression of the cleaned-up portions of this Superfund Site? (general sentiment)

The site looks appropriate for its many current uses.

2. Are you aware of any community concerns regarding the site administration related to completed clean-up activities? If so, please give details.

No.

3. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give dates, details, and outcome(s) if known.

No.

4. Do you have any comments, suggestions, or recommendations regarding the site's management or operation?

I think the team is doing the best they can.

(Form continued on next page)

St. Louis River Superfund Site Five-Year Review

Comment and Information Survey - Con't

Name: Anne Moore

5. Are you aware of any issues that may require changes to the completed remedial actions or the decision documents?

No; it's my understanding that all monitoring results have been in the acceptable ranges.

6. Have any problems or difficulties been encountered regarding institutional controls or deed restrictions?

Not that I'm aware of.

7. Do you feel the completed remedies are functioning as expected? Why or why not?

Yes.

8. Are you aware of any issues, which may call into question the site's short-term or long-term protectiveness?

No.

9. Are you aware if there are any trends that indicate contaminant levels are increasing or decreasing?

No.

(Form continued on next page)

St. Louis River Superfund Site Five-Year Review

Comment and Information Survey - Con't

Name: Anne Moore

10. Is there a continuous O&M presence? Please describe staff and frequency of site inspections and activities.

Yes. Site team visit Stryker Bay several times per year for reasons unrelated to the cleaned up soil operable units.

11. Have there been any significant changes in O&M requirements, maintenance schedules, or sampling routines? If so, do they affect the protectiveness or effectiveness of the remedy?

Not that I'm aware of.

12. Have there been unexpected O&M difficulties or costs at the site? If so, please give details.

13. Do you have any other comments, concerns or recommendations regarding the project?

I hope the Five-Year review report will help the community better understand the remedies in place and what they can expect from them in the future.

St. Louis River Superfund Site Five-Year Review
Public Comment and Survey Form

[redacted]

Name: [redacted]	**Organization:** IRVING COMM CLUB
Telephone No:	**Street Address:** [redacted]
Fax No:	**City:** DULUTH
E-Mail Address:	**State, Zip:** MINN 55807

Questions and Comments for the:
(please check the name of the site for which these comments apply. Use a separate form for each site.)

____ US Steel Site ___✓ St. Louis River / Interlake / Duluth Tar Site

1. What is your overall impression of the cleaned-up portions of this Superfund Site? (general sentiment)

AS FAR AS I KNOW IT HAS BEEN CLEANED UP TO INDUSTRIAL STANDARDS.

2. What effects have completed site clean-up operations had on the surrounding community?

NONE - CERTAINLY NO CLEANER AIR.

3. Are you aware of any community concerns regarding the site administration related to completed clean-up activities? If so, please give details.

1- SINCE THE CLEAN UP. THE MPCA HAS PERMITED EARTH BURNERS TO POLLUTE & TO HAVE A BURN THAT WAS INCOMPLETE - I WONDER WHERE THIS SO CALLED CLEAN SOIL WAS DUMPED?

2. WOOD WASTE ENERGY WAS PERMITTED TO GRIND CREOSOTE TIES, RESULTING IN AIR POLLUTION. MY HOUSE HAS TO BE POWER WASHED AND I LIVE SEVERAL BLOCKS AWAY. MY HOUSE WAS NEWLY SIDED AND IN THE LAST TWO YRS. MY PORCHES ARE FILTHY.

IN MY OPINION, THESE DIRTY BULK INDUSTRIES SHOULD NOT BE PERMITTED

(Form continued on next page)

St. Louis River Superfund Site Five-Year Review

Public Comment and Survey Form - Con't

Questions and Comments:

Name: [redacted]

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give dates, details, and outcome(s) if known.

NO

5. Do you feel well informed about the site's completed clean-up activities and progress? Also, what is your preferred method of communication (web-page updates, public notices, public meetings, etc.)?

BY PUBLIC MEETINGS

6. Do you have any other comments, suggestions, or recommendations regarding the site's management or operation?

THIS AREA WOULD BE BETTER SUITED FOR HOUSING & MARINA ACTIVITIES

Comments should be mailed or faxed to:
Mr. Greg Mellema, U.S. Army Corps of Engineers,
12565 W. Center Road, Omaha, NE 68144
fax: 402-697-2613
Comments must be received no later than June 20, 2003.

St. Louis River Superfund Site Five-Year Review
Public Comment and Survey Form

Name: [redacted]	**Organization:** Irving Community Club
Telephone No: [redacted]	**Street Address:** [redacted]
Fax No: No	**City:** Duluth
E-Mail Address: No	**State, Zip:** MN 55807

Questions and Comments for the:
(please check the name of the site for which these comments apply. Use a separate form for each site.)

____ **US Steel Site** ___✓___ **St. Louis River / Interlake / Duluth Tar Site**

1. What is your overall impression of the cleaned-up portions of this Superfund Site? (general sentiment)

No Comment

2. What effects have completed site clean-up operations had on the surrounding community?

No Comment

3. Are you aware of any community concerns regarding the site administration related to completed clean-up activities? If so, please give details.

No Comment

(Form continued on next page)

St. Louis River Superfund Site Five-Year Review

Public Comment and Survey Form - Con't

Questions and Comments:

Name:

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give dates, details, and outcome(s) if known.

No Comment

5. Do you feel well informed about the site's completed clean-up activities and progress? Also, what is your preferred method of communication (web-page updates, public notices, public meetings, etc.)?

I prefer public meetings in West Duluth.

6. Do you have any other comments, suggestions, or recommendations regarding the site's management or operation?

No Comment

I am unable to attend most of the meetings concerning St. Louis River problems but thank you for giving me the opportunity to voice my opinion.

Comments should be mailed or faxed to:
Mr. Greg Mellema, U.S. Army Corps of Engineers,
12565 W. Center Road, Omaha, NE 68144
fax: 402-697-2613
Comments must be received no later than June 20, 2003.

Attachment 2

St. Louis River Superfund Site Five-Year Review
Public Comment and Survey Form

Name: [redacted]	**Organization:** Farm Leasing Earth Burners Inc
Telephone No: 218- [redacted]	**Street Address:** 5910 Fremont Street
Fax No: 218- [redacted]	**City:** Duluth
E-Mail Address: earthburn@cpinternet.com	**State, Zip:** Mn 55807

Questions and Comments:

1. What is your overall impression of the project? (general sentiment)

2. What effects have site operations had on the surrounding community?

3. Are you aware of any community concerns regarding the site or its operation and administration? If so, please give details.

(Form continued on next page)

Comments should be mailed or faxed to:
Mr. Greg Mellema, U.S. Army Corps of Engineers,
12565 W. Center Road, Omaha, NE 68144
fax: 402-697-2613
Comments must be received no later than June 20, 2003.

St. Louis River Superfund Site Five-Year Review

Public Comment and Survey Form - Con't

Questions and Comments:

4. Are you aware of any events, incidents, or activities at the site such as vandalism, trespassing, or emergency responses from local authorities? If so, please give details. yes. A monitoring well was placed on our property without authorization from the owners. It was brought up to both the Engineer & the MPCA & it was asked to have the proper paper work completed or remove the well. They both just laughed. today, an illegal well still remains on our property.

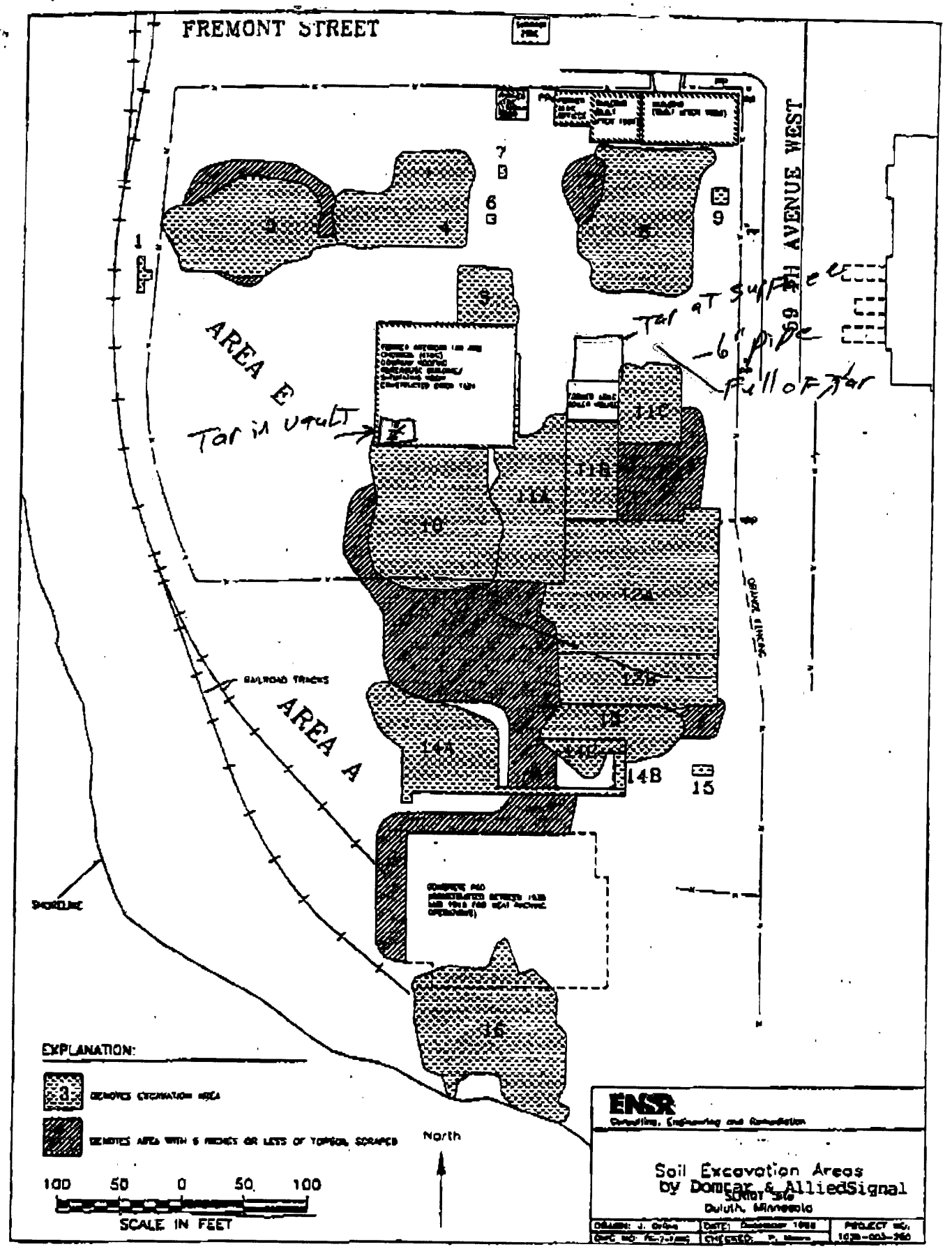
5. Do you feel well informed about the site's activities and progress?

6. Do you have any other comments, suggestions, or recommendations regarding the site's management or operation?
the R.O.D. on this site is not complete as the ROD was intended. this has been brought up with the Engineer, Dom Tar & the MPCA. they all just laughed.

1. Tar remains on site to this day well above the ROD Limitation
2. This remaining tar has been corrisponded to all parties involved with no response.
3. Restrictive Convenance on the Title of my property has not been filed according to the ROD.

all & all, the ROD is not complete on this property. the world needs to know if they won't complete the ROD, they sure won't conduct the next portion in the bay right or complete it either.

Attachment 2



Attachment 3

St. Louis River/Interlake/Duluth Tar Documents Reviewed

January 1990	Final Report Remedial Action Vol. 1
January 1990	Final Report Remedial Investigation Vol. 2
July 1990	Final Report Feasibility Study
October 1990	ROD for the Tar Seeps
May 1992	Draft-Supplemental Remedial Investigation Report
July 1992	Final Field Design Investigation Report
October 1992	Draft-Baseline Risk Assessment Human Health Evaluation
May 1993	Site Response Section and RFRA
September 1993	Explanation of Significant Differences (Tar Seeps OU)
December 1993	Additional Supplemental Remedial Investigation
December 1993	Alternatives Screening Report Soil OU
December 1993	Final Remedial Investigation Report for the Soil OU
January 1994	Draft-Alternatives Array Document for Areas A & E
February 1994	Final Remedial Action Report for the Tar Seeps
March 1995	Draft-Feasibility Study
September 1995	ROD for the Soil OU
December 1995	Remedial Design/Remedial Action Plan for Areas A and E
December 1995	Remedial Design/Response Action Plan for the Soil OU
September 1996	Explanation of Significant Differences (Soil OU)
December 1996	Air Sparge Plot Test Report
August 1997	Implementation and Completion Report Interlake Portion of the Soil OU

August 1997	Remedial Action Implementation Report Soil OU Areas A & E
October 1997	Technical Memorandum on Remedial Action Implementation Report (Soil OU)
November 1997	Technical Memorandum on Remedial Action Implementation Report (Soil OU)
November 1998	Proposed Plane for the Sediment OU
August 1999	Environmental Restrictive Covenant Declaration of Restrictions and Covenants
October 1999	ROD, Decision Summary for the Sediment OU
December 1999	Declaration of Restrictions and Covenants (Cedar Bay Partners)
December 1999	ROD for the Sediment OU
October 26, 2000	Memo from Carl Herbrandson, PhD Toxicologist, Minnesota Department of Health, about Earth Burner Emissions.
January 2001	Declaration of Restrictions and Covenants (Maurices, Incorporated)
March 2001	Declaration of Restrictions and Covenants and Affidavit Concerning Real Property Contaminated with Hazardous Substances (Kemp Fisheries Company)
June 2002	Maurices' Parking Lot Draft Completion and Closure Request (Soil OU)
November 2002	Draft-Date Gap Report
December 2002	Addendum to the Documentation of OU Completion Report (SoilOU)
	Miscellaneous Letters, Memos, Articles, and Contracts

Five-Year Review
For
US Steel Site and St. Louis River/ Interlake/ Duluth Tar Site
Task: Site Inspection

Date	Name (Please Print)	Signature	Organization	Phone Number
6-26-03	T Reinig		USACE	402 221 7661
	K Witt		USACE	712-322-1587
	J Carrig		USACE	402-221-7154
	G. McKenna		USACE	402-697-2658
	K. Siemann		USACE	402-221-7682
	Jon Peterson		USEPA	312-353-1264
	Mike Costello		SERVICE ENG	651/644 6698
	Vilma Rivera	Vilma Rivera Cancio	USEPA	312-886-7795
	Ginger Jager		US EPA	312 886 0767
	Steven Thrall		US EPA	312 886 0767
	Jeff Myers		USEPA	312 353 1021
	Michael Hancox		E²	434-975-6700
	Jen Trompeter		E²	434 979 6700
	Mike McCashen		Hallett Dock	218 628-2281
	Crystal Gilbertson		MPCA	218-529-6255
	Jane Mosel		MPCA	218-529-6250
	Petra Moore		ENSR	952-924-0617

Five-Year Review
~~For~~
US Steel Site and St. Louis River/ Interlake/ Duluth Tar Site
Task: Site Inspection

Date	Name (Please Print)	Signature	Organization	Phone Number
6-25-03	Mike Bares	Michael Bares	MPCA	651-297-8599
6-25-03	Crystal Gilbertson	Crystal Gilbertson	MPCA	218-529-6255
6-25-03	Laura Solem	[illegible]	MPCA	218-529-6254