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You Are Receiving a Transmittal From

B.A. Liesch Associates, Inc. ■ 13400 15<sup>th</sup> Avenue North ■ Minneapolis, MN 55441  
Phone: (612) 559-1423 ■ Toll Free: (800) 338-7914 ■ Fax: (612) 559-2202

To: Ms. Laurie Kania  
VPIC Program  
Minnesota Pollution Control Agency  
520 Lafayette Road  
St. Paul, MN 55155

**RECEIVED**

FEB 26 1998

MPCA, HAZARDOUS  
WASTE DIVISION

Date: February 19, 1998

Re: 774 Selby Avenue  
Leak # 11005  
Remedial Investigation Report Form

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Transmitted:

As you requested:   
For your information:   
Other:  (For your review)

Comments: Ms. Kania: Enclosed please find one copy of the above-referenced report for you to review. Please contact me at (612) 559-1423 with any questions you may have regarding the site. Thank you.

Sincerely,

**B.A. LIESCH ASSOCIATES, INC.**

  
Thomas C. Johnson  
Environmental Scientist

enclosure  
CC: Tom Walker-Winthop&Weinstine

**LIMITED SITE INVESTIGATION  
774 SELBY AVENUE  
ST. PAUL, MINNESOTA 55104  
(MPCA LEAK # 11005)**

---

**PREPARED FOR:**

**WINTHROP & WEINSTINE  
3200 WORLD TRADE CENTER  
30 E. 7<sup>TH</sup> STREET  
ST. PAUL, MINNESOTA 55101**

**FEBRUARY 1998**

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**PREPARED BY:**



**B. A. LIESCH ASSOCIATES, INC. • 13400 15TH AVENUE NORTH • MINNEAPOLIS, MN**

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**Tanks and Emergency Response Section**  
**Minnesota Pollution Control Agency**

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**Remedial Investigation Report Form**

Fact Sheet #3.24

January 1997

FEB 26 1998

MPCA, HAZARDOUS  
WASTE DIVISION

This form must be completed for all sites in which a remedial investigation (RI) is conducted--this includes either a *Limited Site Investigation (LSI)* or a *full RI*. Completing this form will provide the MPCA with the minimum amount of information necessary for a *full RI*. Additional information should be included if deemed important for making a site cleanup decision. If the consultant has concluded that a *LSI* is applicable to this site, Section 6 and Section 7 may be deleted from this report.

Refer to Minnesota Pollution Control Agency (MPCA) fact sheet #3.1, "Leaking Underground Storage Tank Investigation and Cleanup Policy" for guidance for the overall objectives of an RI and other MPCA fact sheets regarding investigations.

When a tank has been excavated, refer to fact sheets #3.6, "Excavation of Petroleum Contaminated Soil" and #3.7, "Excavation Report Worksheet for Petroleum Release Sites" for reporting requirements.

If free product is discovered the initial reporting should be done in accordance with fact sheet #3.3 "Free Product: Evaluation and Recovery" and factsheet #3.4, "Free Product Recovery Report Worksheet."

Leak Number: LEAK000011005

Date: 2/13/98

Responsible Party: Estate of Dennis R. Scanlon, Jr. R.P. phone #: 290-8410 Tom Walker (rep. Attorney)

Facility Name: 774 Selby Avenue

Facility Address: 774 Selby Avenue City: St. Paul

County: Ramsey Zip Code: 55104

Location of site: LAT: 44.946 LONG: 93.132 Circle one: UTM/State

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**Section 1: Emergency and High Priority Sites**

- 1. Is an existing drinking water well impacted? YES  NO
- 2. Are there existing vapor impacts? YES  NO
- 3. Is there an existing surface water impact as indicated by 1) a product sheen on the surface water or 2) a product sheen or volatile organic compounds in the part per million (ppm) range in ground water in a well located close to the surface water. YES  NO
- 4. Has the release occurred in the last 30 days? YES  NO
- 5. Has free product been detected at the site? YES  NO
- 6. Is sand or gravel aquifer impacted which is tapped by water wells within or potentially within 500 feet from the edge of the plume or does impacted soil overlie a karsted limestone or fractured bedrock? If yes, explain: YES  NO

-----

If you answered YES to any of questions 1 through 6 above describe below the actions taken to date to reduce or eliminate the risk posed by the release.

-----

**Section 2: Site and Release Information**

2.1 Describe the land use and pertinent geographic features within 1,000 feet of the site.

-----

**Table 1.**

Provide the following for all tanks that have been at the site:

Tank #	UST or AST	Capacity	Contents	Age	Status*	Condition
1	UST	55 gal.	Used oil	Unk	Abandoned in place 11/17/97	Good, no holes, no rust
2	UST	55 gal.	Used oil	Unk	Abandoned in place 11/17/97	Good, no holes, no rust

\*Indicate: *removed (date), abandoned in place (date), or currently used*

Notes: -----

2.2 Describe the status of the other components of the tank system(s), (i.e., piping and dispensers) for those tanks listed above.

Piping consisted of 2 foot vertical fill pipe for each buried 55 gallon tank.

2.3 Identify and describe the source or suspected source(s) of the release.

Unknown, laboratory samples for UST abandonment may have been contaminated when holes were cut through the UST bottoms for soil sample collection.

2.4 What was the volume of the release? (if known): unknown gallons

2.5 When did the release occur? (if known): unknown

### Section 3: Excavated Soil Information

3.1 Was soil excavated for off-site treatment? Yes  No

If YES then complete the fact sheet #3.7 "Excavation Report Worksheet for Petroleum Release Sites" and include it as an appendix.

Date excavated: \_\_\_\_\_

Volume removed: \_\_\_\_\_ cubic yards

3.2 Indicate soil treatment type: NA \_\_\_\_\_ land treatment  
\_\_\_\_\_ thermal treatment  
\_\_\_\_\_ composting/biopiling  
\_\_\_\_\_ other (\_\_\_\_\_)

Name and location of treatment facility:

\_\_\_\_\_

### Section 4: Extent and Magnitude of Soil Contamination

4.1 Were soil borings conducted in or immediately adjacent to all likely source areas (e.g., underground storage tank basins, above ground storage tank areas, piping, dispensers, remote fill pipes, known spill areas)?  YES  NO

4.2 To adequately define the vertical extent of contamination soil borings should be completed at least five feet below the water table or ten feet below the deepest measurable (field screening and visual observation) contamination, whichever is deeper. Were all soil borings completed to the required depth?  YES  NO

Remedial Investigation Report Form

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4.3 To adequately evaluate site stratigraphy at least one boring should be completed 20 feet below the water table, unless a confining layer is present. Was this done?

YES **NO**

If you answered *NO* to any of the three previous questions, explain why the borings were not conducted in the required locations or to the required depths (see fact sheet #3.19, "Soil and Ground Water Investigations Performed During Remedial Investigations" regarding exceptions and MPCA approval for depth of drilling):

Regarding Item 4.3, soil boring GP-1 was completed at a depth of 50' below surface grade, which is approximately 40 feet below the deepest measured contamination and at the geoprobe rig's maximum drilling depth.

4.4 Indicate the drilling method:  hollow-stem auger  
 sonic drilling  
 push probes  
 other (Geoprobe)

*Note: contact MPCA staff hydro before use of flight augers)*

**Table 2.**

Complete the following table indicating bag headspace results (in ppm) for soil samples from soil borings.

ASTM soil classification	Depth (ft)	Soil Boring		
		GP-1	GP-2	GP-3
SM	0-4	ND	2.4	ND
SW	4-8	ND	ND	ND
SP	8-12	ND	2	ND
SW	12-16	ND	1.7	ND
SW	16-20	ND	ND	ND
SW	20-24	ND	4.2	ND
SW	28-30	ND	2.4	ND
SW	35-37	ND	4	31-33ND
SW	43-45	ND	--	--
SW	48-50	ND	--	--

*Notes: (type of PID/FID) Photoionization detector with a 10.6 eV lamp.*

**Table 3.**

Indicate the laboratory analytical results for soil samples in mg/kg.

Well/Boring, Depth(ft)	Date Analyzed	Benzene	Toluene	Ethylbenzene	Xylene	VOCs	DRO
GP-1 50'	2/5/98	<.020	<.020	<.020	<.020	<.020	<3
GP-2 35'	2/5/98	<.020	<.020	<.020	<.020	<.020	<3
GP-3 33'	2/5/98	<.020	<.020	<.020	<.020	<.020	<3

Notes: (use less than symbols to show detection limits) -----

**Table 4.**

Indicate other notable contaminants (either petroleum or non-petroleum derived) detected in soil samples. Indicate contaminant and list in reported units mg/kg.

Well/Boring, Depth (ft)	Date Analyzed						

Notes: None detected

4.5 If any non-petroleum compounds were detected list them below and identify possible sources of these compounds.

NA

4.6 Describe the vertical and horizontal extent and magnitude of soil contamination.

No petroleum impacts were detected in soil samples from soil borings completed outside the former excavation basin. Soil borings could not be completed near the UST basins due to limited access in the basement of the building. Hand auger borings were completed beneath each UST during abandonment activities. The vertical extent of the hand augers was limited to 1 foot below the UST bottoms because of auger refusal due to rock and cobble.

## **Section 5: Aquifer Characteristics/Ground Water Contamination Assessment**

5.1 Hydraulic conductivity is used to evaluate risk to present or potential ground water receptors. The level of potential risk determines the level of confidence required of the hydraulic conductivity values. Indicate average hydraulic conductivity and methods used for measurement and estimation.

### **Measurement**

Methods of measuring aquifer parameters are *aquifer* and *permeameter* tests. Aquifer tests such as pumping and slug tests are necessary to evaluate parameters of the actual undisturbed aquifer material. Pumping tests evaluate the largest volume of aquifer material, providing the best



January 1997

measurement of *in situ* aquifer parameters. Slug tests provide *in situ* parameters representing a smaller portion of the aquifer. Permeameter tests are laboratory methods used for the evaluation of discrete samples collected from the aquifer. Permeameter tests require an adequate number of representative field samples, and, inherent sampling and analysis technique limitations must be considered when evaluating results.

### Estimation

Methods of estimating hydraulic conductivity may involve grain size analysis or correlating a field description with a reference range of values. As with laboratory measurements, estimation methods require an adequate number of representative field samples. Use the most conservative value of a range when using estimates. If there is any question that sediments may be permeable enough to comprise a resource aquifer, confirm by conducting test(s).

*Provide hydraulic conductivity values that support the level of investigation based on risk and remediation potential. Be sure to have tests and estimations performed and analyzed by personnel trained and/or experienced in hydrogeologic investigations. Improperly performed or analyzed tests may be returned as incomplete. Attach all supporting information for the determination in the Methodologies appendix:*

1x10<sup>-3</sup> to 1x10<sup>-1</sup> cm/sec

Indicate the measurement or estimation used:

Pumping test analysis by \_\_\_\_\_ method(s).

Slug tests by \_\_\_\_\_ method(s).

Permeability tests by \_\_\_\_\_ method(s).

Grain-size distribution approximations by \_\_\_\_\_ method(s).

\*Reference from Fetter, C.W., 1988, Applied Hydrogeology, Merrill Publishing Company, page 80.

\*provide author(s), year published, title, publisher and page(s).

**5.2** Indicate the thickness of the aquifer. If the investigation does not provide enough information to determine the aquifer thickness, assume the aquifer is greater than 20 feet thick:

less than 10 feet

between 10 and 20 feet

20 feet or greater

**5.3** Describe in detail the geology underlying the site including confining layers, bedrock formations and the lateral extent of these formations:

Geologic materials encountered during completion of borings on-site consisted of approximately 4 feet of silty sand fill overlying well-graded medium and coarse sands. Review of the Minnesota Geological Survey's Ramsey County Geologic Atlas indicates Decorah Shale bedrock underlies the sandy outwash plain at a depth of approximately 50 feet. Depth to the water table aquifer is reported to be 50 to 70 feet at the site. General groundwater flow is to the southeast toward the Mississippi River. Groundwater was not encountered in any of the borings at the site.

The impacted aquifer or the aquifer that is likely to be impacted at the site is considered a resource aquifer if one of the following situations exist:

- The aquifer is a current water supply source.
- The water bearing unit has a hydraulic conductivity greater than  $1 \times 10^{-2}$  cm/sec and a minimum thickness of 10 feet.
- The water bearing unit has a hydraulic conductivity between  $1 \times 10^{-4}$  cm/sec and  $1 \times 10^{-2}$  cm/sec and a minimum thickness of 20 feet.
- The water bearing unit has a hydraulic conductivity less than  $1 \times 10^{-4}$  cm/sec and no other viable source of water supply is available. (*Bedrock may be considered a resource aquifer if it is the only water supply available.*)

5.4 Based on the aquifer characteristics and water supply availability, is the aquifer at the site a resource aquifer? (YES) NO

5.5 If other water supplies are available, explain.

-----

5.6 Are there any other reasons the impacted aquifer should not be considered a resource aquifer?

Residents of the area are served by the City of St. Paul municipal water supply system.

**Table 5.**

Indicate the water level measured in all of the soil borings.

	Soil Boring									
	1	2	3	4	5	6	7	8	9	10
<b>Water level depth, ft</b>										

Notes: Groundwater was not encountered in any of the soil borings.

5.7 Is contaminated soil in contact with ground water? YES (NO)

If YES or if ground water contamination appears likely then complete tables 6 and 7 below.

**Table 6.**

Indicate the laboratory analytical results for water samples collected from the borings, temporary wells or push probes.

Well/Boring Number	Date Analyzed	Depth	Benzene	Toluene	Ethylbenzene	Xylene	GRO	DRO

Notes: NA

**Table 7.**

Indicate other notable contaminants (either petroleum or non-petroleum derived) detected in water samples collected from the borings, temporary wells or push probes. Indicate contaminant and report in units of ug/l (ppb).

Well/Boring Number	Date Analyzed						

Notes: NA

**5.8** If any non-petroleum compounds were, detected list them below and indicate whether they exceed the Health Risk Limits (HRLs). Also, identify possible sources of these compounds.

NA

**5.9** If contaminated soil is not in contact with ground water, what is the distance separating the deepest contamination from the surface of the water table? Was this distance measured during site activities, referenced from geologic information, or estimated based on professional opinion during a site visit? >35-40 feet

The above distance was measured from the bottom of USTs which was estimated to be 10 feet below surface grade (bsg) to the terminus of the deepest geoprobe (GP-1) at 50 feet bsg. Groundwater was not encountered in GP-1.

**5.10** Describe observations of any evidence of a fluctuating water table and a seasonal high water table (e.g., mottling). Also, from other sources of information describe the range of natural water table fluctuations in the area.

No evidence of groundwater was encountered in any of the soil borings.

**5.11** In your judgment, is there a sufficient distance separating the petroleum contaminated soil (or an impacted non-resource aquifer) from the underlying resource aquifer to prevent petroleum contamination of the resource aquifer? Please explain in detail. In your explanation consider the data and information of this section as well as the nature of the petroleum release (i.e., volume, when it occurred, petroleum product).

**YES** NO

There appears to be sufficient distance (40 feet) separating petroleum impact from groundwater based on the elevations of the bottom of USTs and the analytical results of the soil samples collected from the terminus of GP-1. There is also a good possibility that soil samples collected during UST abandonment activities may have been contaminated from residual product remaining in the USTs after tank cleaning activities. As a result of these conclusions, sections 6.0 and 7.0 of this document are deemed not applicable.

### Additional Ground Water Investigation

Complete **Section 6 and Section 7** only if: 1) a resource aquifer has been impacted at or above Minnesota Department of Health HRLs, 2) a resource aquifer has been impacted below the HRLs, but the levels are likely to reach the HRLs, or 3) there is an insufficient distance separating the petroleum contaminated soil (or an impacted non-resource aquifer) from the underlying resource aquifer. Regardless of whether you are submitting a LSI or a full RI, all sections following Section 7 must be completed.

### Section 6. Extent and Magnitude of Ground Water Contamination

**Table 8.**

Monitoring well construction.

Well Number	Unique Well Number	Date Installed	Relative Surface Elevation	Riser Height Above Grade	Bottom of Well (Elevation)	Screen Interval (Elev. - Elev.)

Notes: (location and elevation of benchmark) .....

**Table 9.**

Water table summary.

Well Number	Date	Depth of Water from Top of Casing	Product Thickness	Depth of Water Below Grade	Relative Groundwater Elevation



MW-4								
------	--	--	--	--	--	--	--	--

Notes: (e.g., free product, dry well, units etc.) -----

**Table 11.**

Indicate other notable contaminants (either petroleum or non-petroleum derived) detected in water samples.

Well Number	Date Analyzed						

Notes: units -----

**6.2** If any non-petroleum compounds were detected list them below and indicate whether they exceed the HRLs. Also, identify possible sources of these compounds.

-----

**6.3** Is there a clean or nearly clean (below HRLs) downgradient monitoring well *YES NO* located along the longitudinal axis of the contaminant plume? (approximately 20 degrees plus or minus the axis)

**6.4** Is there a worst case well completed through the source area of the release? *YES NO*

If you have answered *NO* to any of the above three questions, please explain why a well was not completed in the required location.

-----

**6.5** Provide an estimate of the longitudinal length of the dissolved \_\_\_\_\_ feet contaminant plume:

**6.6** Describe the extent and magnitude of the ground water contamination:

-----

## Section 7: Evaluation of Natural Attenuation

**Table 12.**

Complete the bio-activity data in the table below. Data should be from two quarterly rounds of

sampling. Refer to the fact sheet #3.21, "Assessment of Natural Biodegradation at Petroleum Tank Release Sites," for acceptable methodologies and indicate the chosen method in the Methodologies appendix.

Monitoring Well	Temp. °C	pH	Dissolved oxygen (mg/l)	Nitrate (mg/l)	(Fe II) (mg/l)	(H <sub>2</sub> S, HS <sup>-</sup> ) (mg/l)
MW-1						
MW-2						
MW-3						
MW-4						

Notes: -----

7.1 Discuss the results of the bio-activity evaluation. Specifically, compare the concentrations of the inorganic parameters inside and outside the plume.

-----

7.2 In your judgment, is natural biodegradation occurring at this site? Please **YES** **NO**  
Explain.

-----

### Section 8: Well Receptor Information/Assessment

Include in the appendices of this report: 1) A list of addresses within 500 feet from the edge of the plume and confirmation of status of water supply from the city utility billing department; 2) well logs; and 3) map showing ½ mile radius, 500 foot radius, water supply wells, other potential petroleum sources, and addresses for properties within 500 feet.

**Table 13.**

Complete the following table for all water supply wells located within 500 feet of the edge of the plume and any municipal or industrial wells found within ½ mile.

Unique Well #	Ground Elevation	Total Depth (ft)	Base of Casing (ft)	Static Elevation	Aquifer	Use	Owner	Distance & Direction from site
200407	922	470	*	*	Jordan	*	Dale Theater	3/8 mile E

Notes: \* = information not available

8.1 Is municipal water available in the area?

**YES** **NO**

8.2 Were all property owners within 500 feet of the nearest edge of the contaminant plume successfully contacted to determine if water wells are present? If No, please explain.

YES  NO

A limited well receptor source was conducted because there is no evidence that any contaminant plume exists.

8.3 Discuss the results of the ground water receptor survey and any analytical results from sampling conducted at nearby water wells. Comment on the risks to water supply wells identified within 500 feet from the edge of the plume as well as the risk posed by or to any municipal or industrial wells found within 1/2 mile. Specifically indicate whether water supply wells identified utilize the impacted aquifer. (Note: an impacted aquifer separated from another aquifer by a clay lens is not considered a separate aquifer.)

The groundwater receptor survey indicates that there are no wells within 500 feet of the site and only one well within 1/2 mile radius that may be an industrial well (#200407). This well is set in the Jordan sandstone and is not utilized in the same aquifer.

8.4 Are there any plans for ground water development in the impacted aquifer within 1/2 mile of the site, or one mile down gradient of the site if the aquifer is fractured? Please give the name, title and telephone number of the person that was contacted for this information.

YES NO

NA, no evidence of impacted aquifer \_\_\_\_\_ Telephone \_\_\_\_\_

### Section 9: Surface Water Risk Assessment

9.1 Are there any surface waters or wetlands located within 1/4 mile of the site?

NO

If YES, indicate its name: \_\_\_\_\_

9.2 If surface water is present downgradient of the site, is there a clean down gradient soil boring or monitoring well located between the site and the surface water?

YES  
NO  
 N/A

If NO, we assume that contamination discharges to surface water. Therefore, complete the following information:

- Name of receiving water: \_\_\_\_\_
- Plume width, (W): \_\_\_\_\_ feet
- Plume thickness, (H): \_\_\_\_\_ feet
- Hydraulic conductivity, (K): \_\_\_\_\_ gal/day/ft<sup>2</sup>
- Horizontal gradient, (dh/dl): \_\_\_\_\_ (unitless)
- Discharge, (Q) = H\*W\*K\*(dh/dl)/1440 \_\_\_\_\_ gal/min



If *YES*, identify them and indicate the distance to these features and discuss the contamination risk potential.

-----

### Section 10: Vapor Risk Assessment/Survey

10.1 Is there a history of vapor impacts in the vicinity of the site ? YES  NO

If *YES*, describe: -----

10.2 Is there any indication that free product or highly contaminated ground water may be traveling offsite within the utility corridors? If *YES*, have they been investigated with borings or push probes? YES  NO

-----

10.3 Discuss the potential for vapor migration/accumulation near the site. In your discussion consider: Soil types, product type, presence and distribution of free product or high concentrations of dissolved product. Also, compare the depth of contamination with the location of underground utility lines, location and depth of storm and sanitary sewers and location of nearby basements.

No elevated soil vapor readings were encountered during UST abandonment and limited site investigation activities. Therefore, the potential for vapor migration/accumulation at the site is minimal, if not non-existent.

If the vapor risk assessment indicated a risk of vapor impacts to buildings or utilities, complete the following table with vapor monitoring data collected. Location numbers should be mapped on an accompanying figure of the surveyed area. NA

Table 14.

Location #	Date	PID reading (ppm)	Percent of the LEL

Notes: -----

10.4 Describe and interpret the results of the vapor survey.

NA

## Section 11: Discussion

11.1 Discuss the risks associated with the remaining soil contamination?

Risk associated with the remaining soil contamination appear minimal.

11.2 Discuss the risks associated with the impacted ground water?

Groundwater was not encountered in any of the soil borings. The deepest soil boring GP-1 was completed to 50 feet in depth.

11.3 Discuss other concerns not mentioned above:

NA

## Section 12: Conclusions and Recommendations

Recommendation for site:             site closure  
    additional vapor monitoring  
    additional ground water monitoring  
    active cleanup

The recommendation above should be based on fact sheet #3.1, "Leaking Underground Storage Tank Investigation and Cleanup Policy." Describe below how you applied the policy to support your recommendation.

The recommendation of site closure was based on apparent minimal risk associated with the assumed soil contamination. Soil impacts appear concentrated near the former USTs bottoms at approximately eight to ten feet in depth. The contaminant of concern is used oil, which suggests minimal potential for vapor accumulation/migration. There appears sufficient separation distance between assumed soil impacts and the water table, which may exist between 50 and 70 feet below grade. No wells, which draw water from the water table aquifer, were identified during the groundwater receptor survey. Soil samples collected during UST abandonment activities may have been contaminated by residual petroleum product left behind during UST clearing. No visual staining of soil headspace readings indicated a release.

If additional monitoring is recommended, indicate the proposed monitoring schedule and frequency:

If active cleanup is proposed, then MPCA staff will review this RI report at a higher than normal priority to determine if active cleanup is required. We will respond with either a request for proposal for additional monitoring or a Corrective Action Design report. Please indicate below what cleanup technology you are considering at this time.

-----  
**Section 13: Required Figures**

Indicate attached figures:

- *Figure 1, 1a:* Site location map (*approximate scale is not acceptable*) and a large scale site map show all potential receptors within 300 feet of the site. The large scale site map should show those properties with basements and wells.
- *Figure 2, 2a, 2b, etc.:* One or more site map showing: structures; all past and present petroleum storage tanks, piping, and dispensers; extent of soil excavation; boring and well locations (including any drinking water wells on site); horizontal extent of soil contamination; horizontal extent of ground water contamination; and location of end points for all geologic cross sections.
- *Figure 3, 3a:* Ground water gradient contour maps (for sites with monitoring wells).
- *Figure 4* Well receptor survey map showing 1/2 mile radius, 500 foot radius, water supply wells, other potential sources of contamination.
- *Figure 5:* Vapor survey map showing utilities and buildings with basements and monitoring locations (if a survey was required).
- *Figure 6:* Geologic cross sections.

**Section 14: Appendices**

Indicate attached appendices.


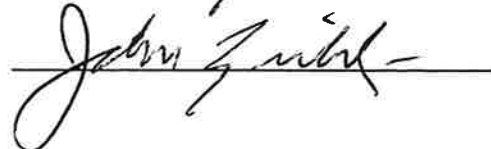
- *Appendix A* Excavation Report Worksheet for Petroleum Release Sites.
- *Appendix B* Laboratory Analytical Reports for Soil and Ground Water.
- *Appendix C* Methodologies and Procedures, Including Field Screening of Soil, Other Field Analyses, Soil Boring, Soil Sampling, Well Installation, and Water Sampling.
- *Appendix D* Geologic Logs for Each Well or Boring, Including Well As-Builts on Log.
- *Appendix E* Well Construction Diagrams and Copies of the Minnesota Department of Health Well Record.

----- *Appendix F* Copies of Water Supply Well Logs With Legible Unique Numbers.

----- *Appendix G* A List of Addresses Within 500 Feet From the Edge of the Plume and Confirmation of Status of Water Supply From the City Utility Billing department.

### Section 15: Consultant (or other) Information

**This report was prepared by me or under my supervision**

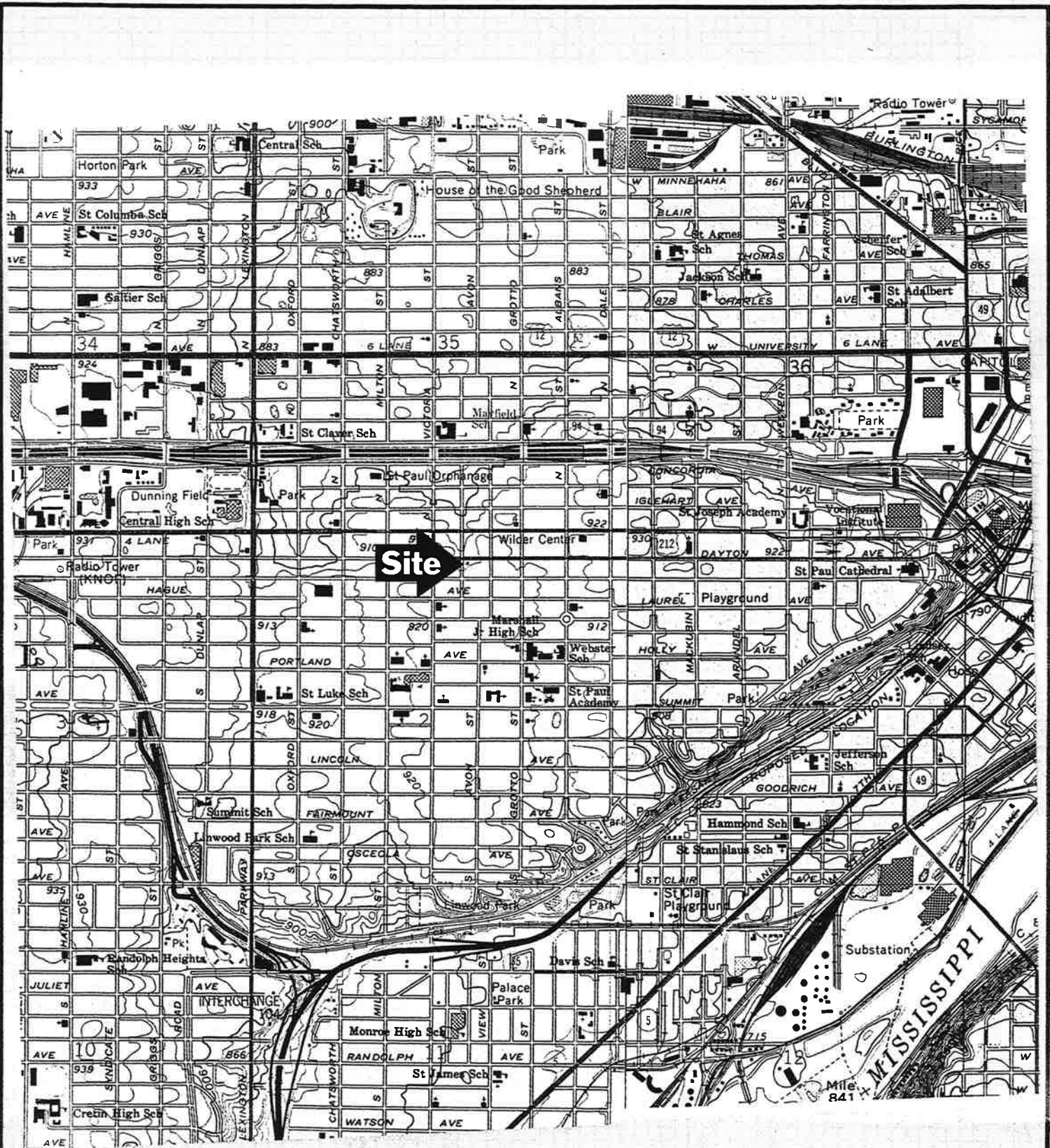
Name and Title:	Signature:	Date signed:
Tom Johnson, Environmental Scientist		<u>2/19/98</u>
John Lichter, P.E. Environmental Engineer		<u>2/17/98</u>

Company and mailing address: B.A. Liesch Associates, Inc.  
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 HYDROLOGISTS, GEOLOGISTS, ENVIRONMENTAL SCIENTISTS

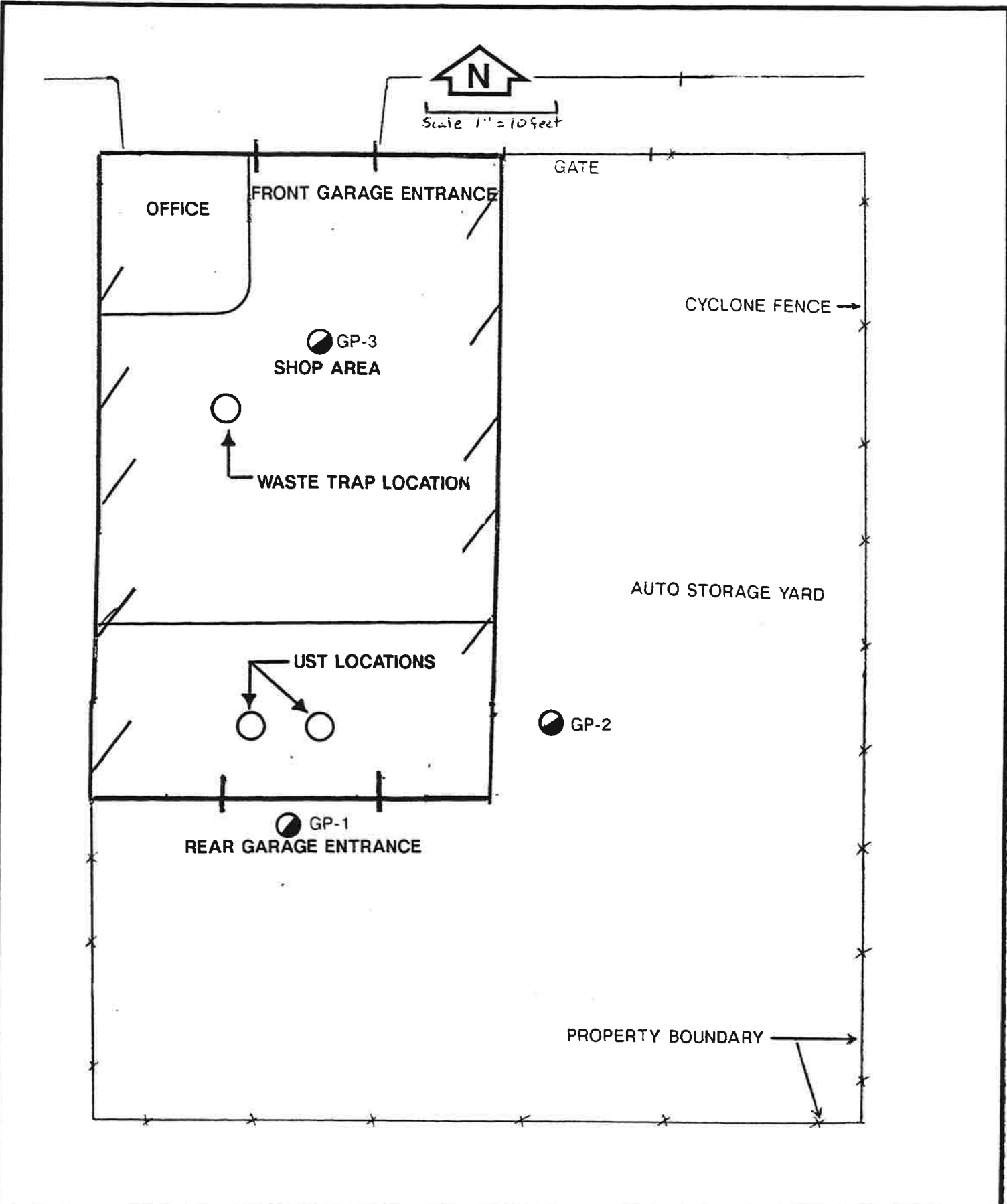
13400 15th Ave No, Minneapolis, MN. 55441 (612) 559-1423  
 Minneapolis, MN Madison, WI

774 SELBY AVENUE

FEB 98

SITE LOCATION MAP

FIG 1



**B. A. LIESCH ASSOCIATES, INC.**  
HYDROLOGISTS, GEOLOGISTS, ENVIRONMENTAL SCIENTISTS

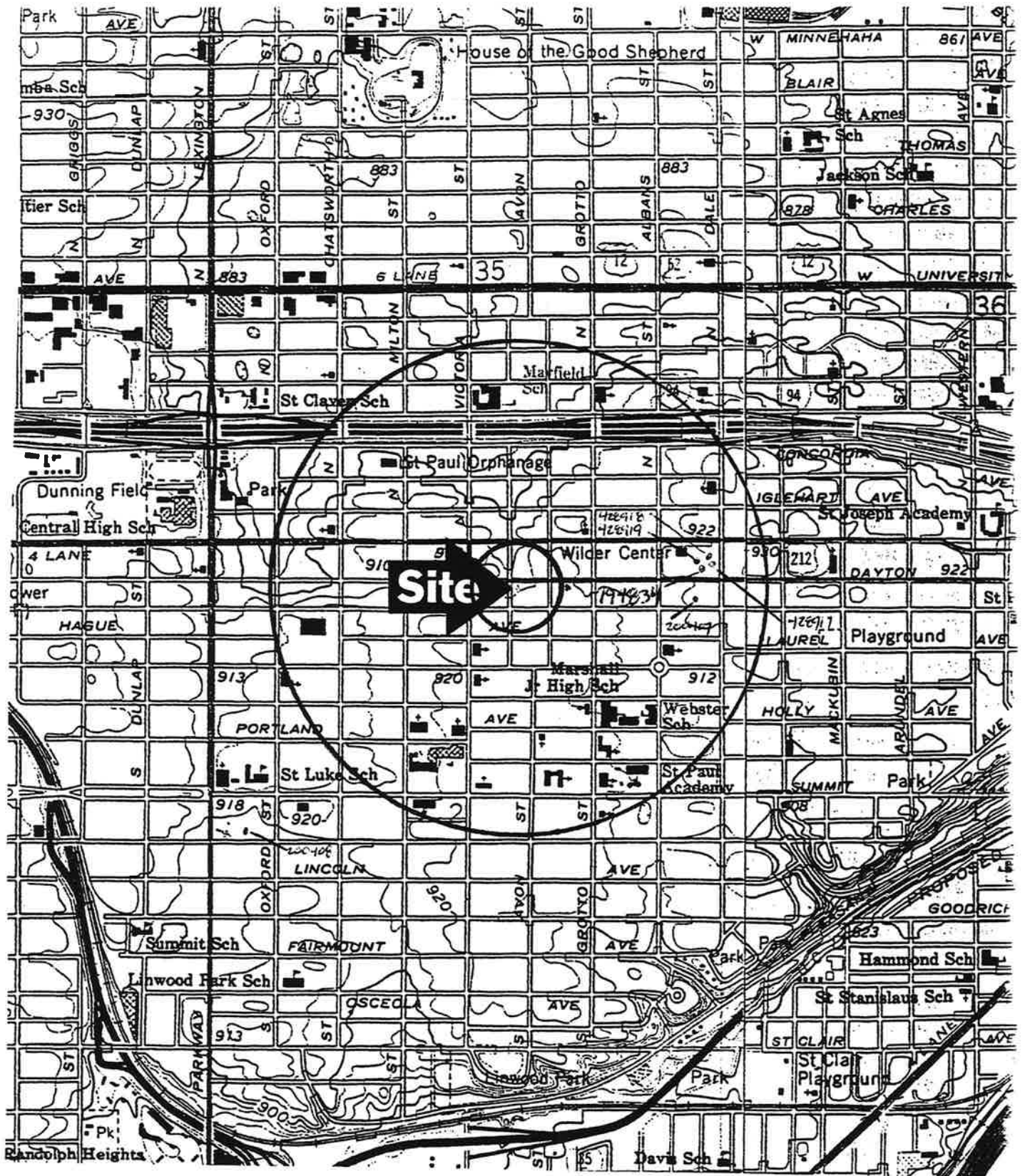
13400 15th Ave No, Minneapolis, MN. 55441 (612) 559-1423  
Minneapolis, MN Madison, WI

774 SELBY AVENUE

FEB 98

GEOPROBE LOCATION MAP

FIG. 2



SCALE 1 : 24000

**LIESCH** B. A. LIESCH ASSOCIATES, INC.  
 HYDROLOGISTS, GEOLOGISTS, ENVIRONMENTAL SCIENTISTS

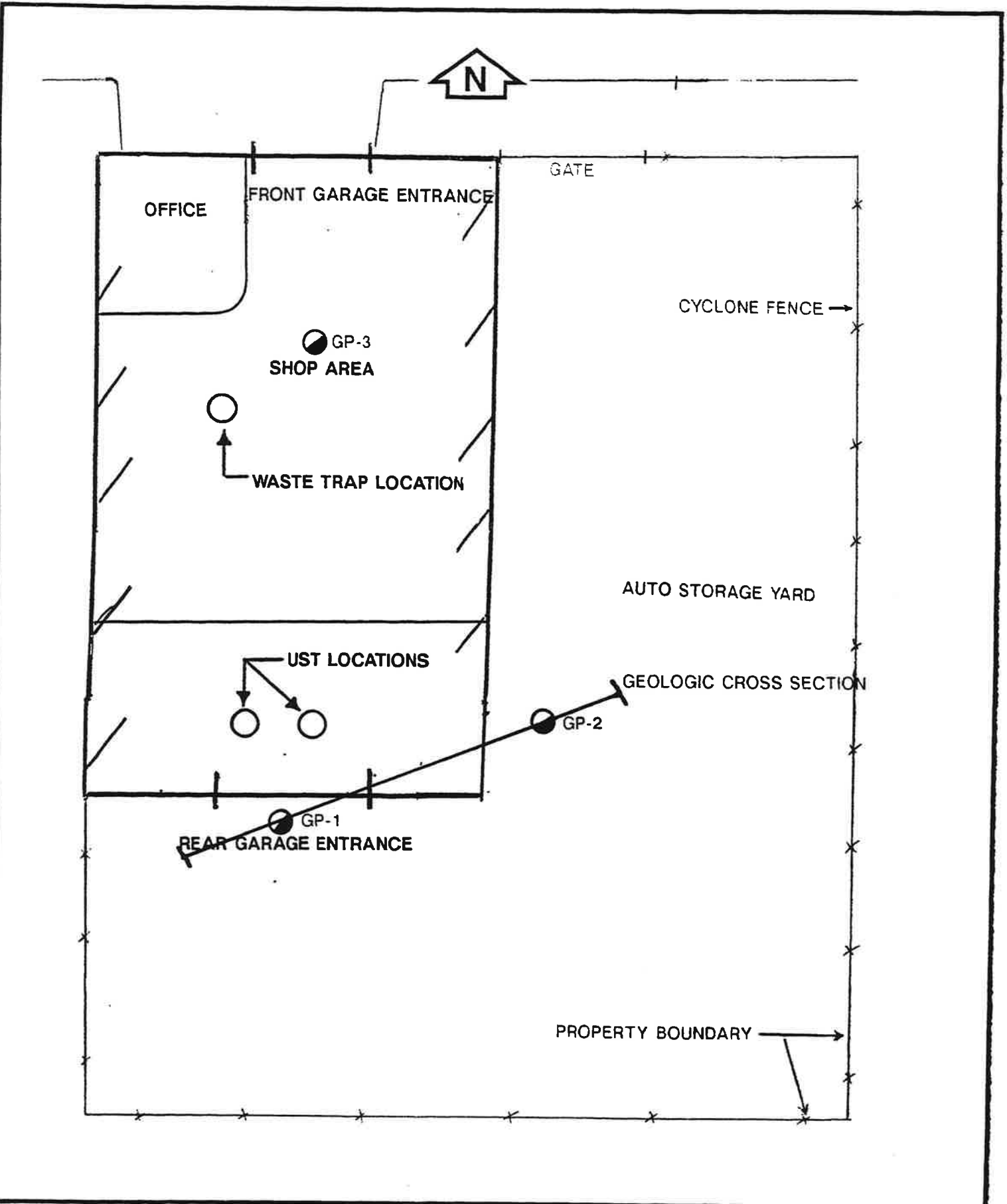
13400 15th Ave No, Minneapolis, MN. 55441 (612) 559-1423  
 Minneapolis, MN Madison WI

774 SELBY AVENUE

FEB 98

GROUNDWATER WELL RECEPTOR SURVEY  
 500 FT AND 1/2 MILE RADIUS

FIG 3



**B. A. LIESCH ASSOCIATES, INC.**  
HYDROLOGISTS, GEOLOGISTS, ENVIRONMENTAL SCIENTISTS

13400 15th Ave No, Minneapolis, MN. 55441 (612) 559-1423  
Minneapolis, MN Madison, WI

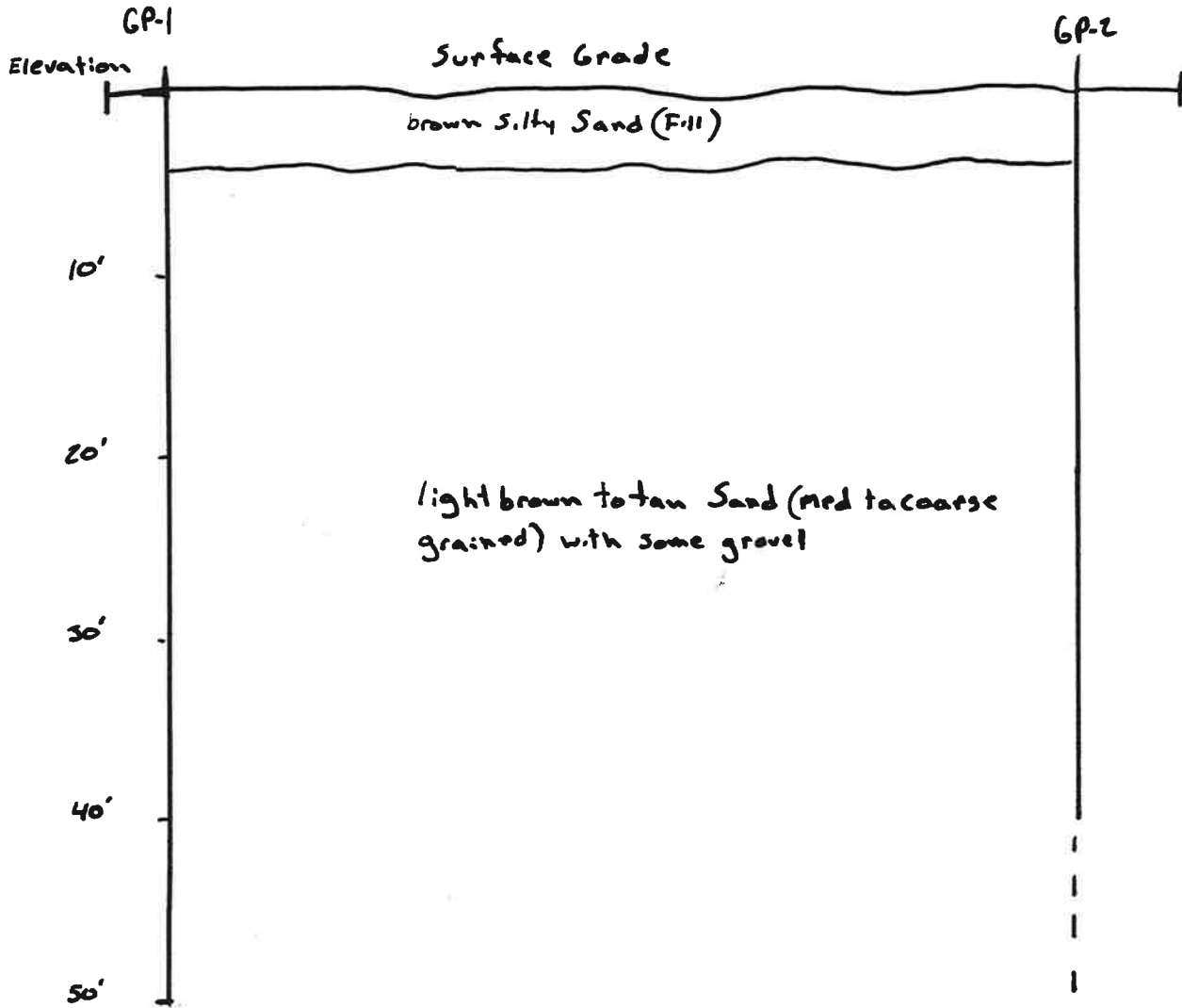
774 SELBY AVENUE

FEB 98

GEOLOGIC CROSS SECTION LOCATION

FIG. 4





B. A. LIESCH ASSOCIATES, INC.  
HYDROLOGISTS, GEOLOGISTS, ENVIRONMENTAL SCIENTISTS

13400 15th Ave No, Minneapolis, MN. 55441 (612) 559-1423  
Minneapolis, MN Madison, WI

774 SELBY AVENUE

FEB 98

GEOLOGIC CROSS SECTION

FIG 5

Not Applicable

visu  
② M R

Northwest Technical Services

pm

**CHAIN-OF-CUSTODY RECORD**

Client Name: 774 Selby Avenue		Laboratory Project No.:		Analyst(s) of Containers:		
Report To: B.A. Liesch Associates 13400 15th Av N. Plymouth, MN 55441		Turnaround Time: <input type="checkbox"/> Normal <input checked="" type="checkbox"/> Rush		DRO 2025R VOCs 2020R PERRM w/hold 2025R PCB's 202.5R 1.50Z. PLASTIC CONTAINERS FR. MAINTURE		
Att: Tom Johnson / John Richter		Date Needed: AS soon as possible		P R E A D F I L D S F I L D S		
Sampled By: Tom C. Johnson		Condition Received: <input checked="" type="checkbox"/> Received on ice				
Project No.: 65464		774 SELBY AVE.				
Item No.	Field ID No.	Sample Description	Collection		Sample Matrix	Lab ID No.
			Date	Time		
1	GP-1	48-50	NTS 606# 891	2-3-98	Soil	
2	GP-2	33-35	892	↓	↓	NO
3	GP-3	31-33	893	↓	↓	4.0
4						NO
5						
6						
7						
8						
9						
10						
11						
12						
13						
Transfer No.	Item No.	Relinquished By	Accepted By	Date	Time	Comments
1		Tom C. Johnson	Y. Ziegler (NTS)	2-4-98	0930	hold metals & PCB's pending DRO
2						VOC Results
3						
4						

Read on Dec 73

**Northeast Technical Services, Inc.**

315 Chestnut Street, P.O. BOX 1142, VIRGINIA, MINNESOTA 55792, (218) 741-4290

**Analytical Report**

NTS Lab Number:	98-891	Date Collected:	02/03/98
Sample Description:	GP-1 (48-50')	Date Received:	02/04/98
	B.A. Liesch Associates	Date VOC Analyzed:	02/05/98
		Date DRO Extracted:	02/04/98
	NTS Project #: 4469.11	Date DRO Analyzed:	02/06/98
	Matrix: Soil	Date Reported:	02/09/98

Parameter	Units	DF	Result	RL	MDL
Allyl Chloride	ug/Kg	1.0	< 20	50	20
Bromobenzene	ug/Kg	1.0	< 20	50	20
Bromochloromethane	ug/Kg	1.0	< 20	50	20
Bromodichloromethane	ug/Kg	1.0	< 20	60	20
Bromoform	ug/Kg	1.0	< 20	50	20
Bromomethane	ug/Kg	1.0	< 20	70	20
Carbon Tetrachloride	ug/Kg	1.0	< 20	60	20
Chlorobenzene	ug/Kg	1.0	< 20	50	20
Chloroethane	ug/Kg	1.0	< 20	60	20
Chloroform	ug/Kg	1.0	< 20	60	20
Chloromethane	ug/Kg	1.0	< 50	150	50
2-Chlorotoluene	ug/Kg	1.0	< 20	50	20
4-Chlorotoluene	ug/Kg	1.0	< 20	70	20
Dibromochloromethane	ug/Kg	1.0	< 20	60	20
1,2-Dibromo-3-chloropropane	ug/Kg	1.0	< 25	100	25
1,2-Dibromoethane	ug/Kg	1.0	< 30	110	30
Dibromomethane	ug/Kg	1.0	< 20	70	20
1,2-Dichlorobenzene	ug/Kg	1.0	< 20	50	20
1,3-Dichlorobenzene	ug/Kg	1.0	< 20	50	20
1,4-Dichlorobenzene	ug/Kg	1.0	< 20	70	20
Dichlorodifluoromethane	ug/Kg	1.0	< 20	60	20
1,1-Dichloroethane	ug/Kg	1.0	< 20	60	20
1,2-Dichloroethane	ug/Kg	1.0	< 20	50	20
1,1-Dichloroethylene	ug/Kg	1.0	< 20	50	20
Cis-1,2-Dichloroethylene	ug/Kg	1.0	< 20	70	20
Trans-1,2-Dichloroethylene	ug/Kg	1.0	< 20	70	20
Dichlorofluoromethane	ug/Kg	1.0	< 20	50	20
1,2-Dichloropropane	ug/Kg	1.0	< 20	60	20
1,3-Dichloropropane	ug/Kg	1.0	< 20	50	20
2,2-Dichloropropane	ug/Kg	1.0	< 20	50	20

**Northeast Technical Services, Inc.**

315 Chestnut Street, P.O. BOX 1142, VIRGINIA, MINNESOTA 55792, (218) 741-4290

**Analytical Report**

NTS Lab Number:	98-891	Date Collected:	02/03/98
Sample Description:	GP-1 (48-50')	Date Received:	02/04/98
	B.A. Liesch Associates	Date VOC Analyzed:	02/05/98
		Date DRO Extracted:	02/04/98
NTS Project #:	4469.11	Date DRO Analyzed:	02/06/98
Matrix:	Soil	Date Reported:	02/09/98

Parameter	Units	DF	Result	RL	MDL
1,1-Dichloropropene	ug/Kg	1.0	< 20	60	20
Cis-1,3-Dichloropropene	ug/Kg	1.0	< 20	60	20
Trans-1,3-Dichloropropene	ug/Kg	1.0	< 20	50	20
Hexachlorobutadiene	ug/Kg	1.0	< 25	80	25
Methylene Chloride	ug/Kg	1.0	< 20	50	20
1,1,1,2-Tetrachloroethane	ug/Kg	1.0	< 25	90	25
1,1,2,2-Tetrachloroethane	ug/Kg	1.0	< 20	50	20
1,1,2,2-Tetrachloroethylene	ug/Kg	1.0	< 25	80	25
1,2,3-Trichlorobenzene	ug/Kg	1.0	< 20	70	20
1,2,4-Trichlorobenzene	ug/Kg	1.0	< 20	50	20
1,1,1-Trichloroethane	ug/Kg	1.0	< 20	50	20
1,1,2-Trichloroethane	ug/Kg	1.0	< 20	60	20
1,1,2-Trichloroethylene	ug/Kg	1.0	< 20	50	20
Trichlorofluoromethane	ug/Kg	1.0	< 20	50	20
1,2,3-Trichloropropane	ug/Kg	1.0	< 20	60	20
1,1,2-Trichlorotrifluoroethane	ug/Kg	1.0	< 20	60	20
Vinyl Chloride	ug/Kg	1.0	< 20	50	20
Acetone	ug/Kg	1.0	< 60	1000	60
Benzene	ug/Kg	1.0	< 20	50	20
n-Butylbenzene	ug/Kg	1.0	< 20	50	20
sec-Butylbenzene	ug/Kg	1.0	< 20	50	20
tert-Butylbenzene	ug/Kg	1.0	< 20	50	20
Isopropylbenzene (Cumene)	ug/Kg	1.0	< 30	110	30
Ethyl Benzene	ug/Kg	1.0	< 20	50	20
Ethyl Ether	ug/Kg	1.0	< 20	50	20
p-Isopropyltoluene	ug/Kg	1.0	< 20	50	20
Methyl Ethyl Ketone	ug/Kg	1.0	< 100	300	100
Methyl Isobutyl Ketone	ug/Kg	1.0	< 50	200	50
Methyl tert-butyl ether	ug/Kg	1.0	< 20	60	20
n-Propylbenzene	ug/Kg	1.0	< 20	50	20

**Northeast Technical Services, Inc.**

315 Chestnut Street, P.O. BOX 1142, VIRGINIA, MINNESOTA 55792, (218) 741-4290

**Analytical Report**

NTS Lab Number:	98-891	Date Collected:	02/03/98
Sample Description:	GP-1 (48-50')	Date Received:	02/04/98
	B.A. Liesch Associates	Date VOC Analyzed:	02/05/98
		Date DRO Extracted:	02/04/98
	NTS Project #: 4469.11	Date DRO Analyzed:	02/06/98
	Matrix: Soil	Date Reported:	02/09/98

Parameter	Units	DF	Result	RL	MDL
Naphthalene	ug/Kg	1.0	< 25	100	25
Styrene	ug/Kg	1.0	< 20	50	20
Tetrahydrofuran	ug/Kg	1.0	< 25	100	25
Toluene	ug/Kg	1.0	< 20	50	20
1,2,4-Trimethylbenzene	ug/Kg	1.0	< 20	50	20
1,3,5-Trimethylbenzene	ug/Kg	1.0	< 20	50	20
m-Xylene & p-Xylene	ug/Kg	1.0	< 25	90	25
o-Xylene	ug/Kg	1.0	< 20	50	20
Fluorobenzene (Surrogate Recovery)	%		84		
2-Bromo-1-Chloropropane (Surrogate Recovery)	%		84		
Diethyl Range Organics (DRO)	mg/Kg	1.0	< 3.0	10	3.0
Moisture	%		3.0		

VOCs analyzed in accordance to Minnesota Department of Health Method 466A (modified EPA 8021).

GRO/DRO analyzed according to Wisconsin DNR GRO and DRO Methods.

MDL = Method Detection Limit

RL = Reporting Limit (Practical quantitation limit)

JR = Value reported is above the MDL but below the RL

DF = Dilution Factor

Report approved by:



Analytical Chemist

Northeast Technical Services, Inc., makes no warranty except that the analysis has been made upon the samples received in accordance with generally accepted testing laboratory principles and practices. The results of the analysis may not be characteristic of the whole from which the sample was taken. This warranty is in lieu of all other warranties, either expressed or implied.

**Northeast Technical Services, Inc.**

315 Chestnut Street, P.O. BOX 1142, VIRGINIA, MINNESOTA 55792, (218) 741-4290

**Analytical Report**

NTS Lab Number:	<b>98-892</b>	Date Collected:	<b>02/03/98</b>
Sample Description:	<b>GP-2 (33-35')</b>	Date Received:	<b>02/04/98</b>
	<b>B.A. Liesch Associates</b>	Date VOC Analyzed:	<b>02/05/98</b>
		Date DRO Extracted:	<b>02/04/98</b>
	<b>NTS Project #: 4469.11</b>	Date DRO Analyzed:	<b>02/06/98</b>
	<b>Matrix: Soil</b>	Date Reported:	<b>02/09/98</b>

Parameter	Units	DF	Result	RL	MDL
Allyl Chloride	ug/Kg	1.0	< 20	50	20
Bromobenzene	ug/Kg	1.0	< 20	50	20
Bromochloromethane	ug/Kg	1.0	< 20	50	20
Bromodichloromethane	ug/Kg	1.0	< 20	60	20
Bromoform	ug/Kg	1.0	< 20	50	20
Bromomethane	ug/Kg	1.0	< 20	70	20
Carbon Tetrachloride	ug/Kg	1.0	< 20	60	20
Chlorobenzene	ug/Kg	1.0	< 20	50	20
Chloroethane	ug/Kg	1.0	< 20	60	20
Chloroform	ug/Kg	1.0	< 20	60	20
Chloromethane	ug/Kg	1.0	< 50	150	50
2-Chlorotoluene	ug/Kg	1.0	< 20	50	20
4-Chlorotoluene	ug/Kg	1.0	< 20	70	20
Dibromochloromethane	ug/Kg	1.0	< 20	60	20
1,2-Dibromo-3-chloropropane	ug/Kg	1.0	< 25	100	25
1,2-Dibromoethane	ug/Kg	1.0	< 30	110	30
Dibromomethane	ug/Kg	1.0	< 20	70	20
1,2-Dichlorobenzene	ug/Kg	1.0	< 20	50	20
1,3-Dichlorobenzene	ug/Kg	1.0	< 20	50	20
1,4-Dichlorobenzene	ug/Kg	1.0	< 20	70	20
Dichlorodifluoromethane	ug/Kg	1.0	< 20	60	20
1,1-Dichloroethane	ug/Kg	1.0	< 20	60	20
1,2-Dichloroethane	ug/Kg	1.0	< 20	50	20
1,1-Dichloroethylene	ug/Kg	1.0	< 20	50	20
Cis-1,2-Dichloroethylene	ug/Kg	1.0	< 20	70	20
Trans-1,2-Dichloroethylene	ug/Kg	1.0	< 20	70	20
Dichlorofluoromethane	ug/Kg	1.0	< 20	50	20
1,2-Dichloropropane	ug/Kg	1.0	< 20	60	20
1,3-Dichloropropane	ug/Kg	1.0	< 20	50	20
2,2-Dichloropropane	ug/Kg	1.0	< 20	50	20

**Northeast Technical Services, Inc.**

315 Chestnut Street, P.O. BOX 1142, VIRGINIA, MINNESOTA 55792, (218) 741-4290

**Analytical Report**

NTS Lab Number:	98-892	Date Collected:	02/03/98
Sample Description:	GP-2 (33-35')	Date Received:	02/04/98
	B.A. Liesch Associates	Date VOC Analyzed:	02/05/98
		Date DRO Extracted:	02/04/98
	NTS Project #: 4469.11	Date DRO Analyzed:	02/06/98
	Matrix: Soil	Date Reported:	02/09/98

Parameter	Units	DF	Result	RL	MDL
1,1-Dichloropropene	ug/Kg	1.0	< 20	60	20
Cis-1,3-Dichloropropene	ug/Kg	1.0	< 20	60	20
Trans-1,3-Dichloropropene	ug/Kg	1.0	< 20	50	20
Hexachlorobutadiene	ug/Kg	1.0	< 25	80	25
Methylene Chloride	ug/Kg	1.0	< 20	50	20
1,1,1,2-Tetrachloroethane	ug/Kg	1.0	< 25	90	25
1,1,1,2-Tetrachloroethane	ug/Kg	1.0	< 20	50	20
1,1,2,2-Tetrachloroethylene	ug/Kg	1.0	< 25	80	25
1,2,3-Trichlorobenzene	ug/Kg	1.0	< 20	70	20
1,2,4-Trichlorobenzene	ug/Kg	1.0	< 20	50	20
1,1,1-Trichloroethane	ug/Kg	1.0	< 20	50	20
1,1,2-Trichloroethane	ug/Kg	1.0	< 20	60	20
1,1,2-Trichloroethylene	ug/Kg	1.0	< 20	50	20
Trichlorofluoromethane	ug/Kg	1.0	< 20	50	20
1,2,3-Trichloropropane	ug/Kg	1.0	< 20	60	20
1,1,2-Trichlorotrifluoroethane	ug/Kg	1.0	< 20	60	20
Vinyl Chloride	ug/Kg	1.0	< 20	50	20
Acetone	ug/Kg	1.0	< 60	1000	60
Benzene	ug/Kg	1.0	< 20	50	20
n-Butylbenzene	ug/Kg	1.0	< 20	50	20
sec-Butylbenzene	ug/Kg	1.0	< 20	50	20
tert-Butylbenzene	ug/Kg	1.0	< 20	50	20
Isopropylbenzene (Cumene)	ug/Kg	1.0	< 30	110	30
Ethyl Benzene	ug/Kg	1.0	< 20	50	20
Ethyl Ether	ug/Kg	1.0	< 20	50	20
p-Isopropyltoluene	ug/Kg	1.0	< 20	50	20
Methyl Ethyl Ketone	ug/Kg	1.0	< 100	300	100
Methyl Isobutyl Ketone	ug/Kg	1.0	< 50	200	50
Methyl tert-butyl ether	ug/Kg	1.0	< 20	60	20
n-Propylbenzene	ug/Kg	1.0	< 20	50	20



**Northeast Technical Services, Inc.**

315 Chestnut Street, P.O. BOX 1142, VIRGINIA, MINNESOTA 55792, (218) 741-4290

**Analytical Report**

NTS Lab Number:	98-892	Date Collected:	02/03/98
Sample Description:	GP-2 (33-35')	Date Received:	02/04/98
	B.A. Liesch Associates	Date VOC Analyzed:	02/05/98
		Date DRO Extracted:	02/04/98
	NTS Project #: 4469.11	Date DRO Analyzed:	02/06/98
	Matrix: Soil	Date Reported:	02/09/98

Parameter	Units	DF	Result	RL	MDL
Naphthalene	ug/Kg	1.0	< 25	100	25
Styrene	ug/Kg	1.0	< 20	50	20
Tetrahydrofuran	ug/Kg	1.0	< 25	100	25
Toluene	ug/Kg	1.0	< 20	50	20
1,2,4-Trimethylbenzene	ug/Kg	1.0	< 20	50	20
1,3,5-Trimethylbenzene	ug/Kg	1.0	< 20	50	20
m-Xylene & p-Xylene	ug/Kg	1.0	< 25	90	25
o-Xylene	ug/Kg	1.0	< 20	50	20
Fluorobenzene (Surrogate Recovery)	%		85		
2-Bromo-1-Chloropropane (Surrogate Recovery)	%		80		
Diesel Range Organics (DRO)	mg/Kg	1.0	< 3.0	10	3.0
Moisture	%		0.6		

VOCs analyzed in accordance to Minnesota Department of Health Method 466A (modified EPA 8021).

GRO/DRO analyzed according to Wisconsin DNR GRO and DRO Methods.

MDL = Method Detection Limit

RL = Reporting Limit (Practical quantitation limit)

JR = Value reported is above the MDL but below the RL

DF = Dilution Factor

Report approved by:



Analytical Chemist

Northeast Technical Services, Inc., makes no warranty except that the analysis has been made upon the samples received in accordance with generally accepted testing laboratory principles and practices. The results of the analysis may not be characteristic of the whole from which the sample was taken. This warranty is in lieu of all other warranties, either expressed or implied.

***Northeast Technical Services, Inc.***

315 Chestnut Street, P.O. BOX 1142, VIRGINIA, MINNESOTA 55792, (218) 741-4290

**Analytical Report**

NTS Lab Number:	<b>98-893</b>	Date Collected:	02/03/98
Sample Description:	<b>GP-3 (31-33')</b>	Date Received:	02/04/98
	<b>B.A. Liesch Associates</b>	Date VOC Analyzed:	02/05/98
		Date DRO Extracted:	02/04/98
	<b>NTS Project #: 4469.11</b>	Date DRO Analyzed:	02/06/98
	<b>Matrix: Soil</b>	Date Reported:	02/09/98

Parameter	Units	DF	Result	RL	MDL
Allyl Chloride	ug/Kg	1.0	< 20	50	20
Bromobenzene	ug/Kg	1.0	< 20	50	20
Bromochloromethane	ug/Kg	1.0	< 20	50	20
Bromodichloromethane	ug/Kg	1.0	< 20	60	20
Bromoform	ug/Kg	1.0	< 20	50	20
Bromomethane	ug/Kg	1.0	< 20	70	20
Carbon Tetrachloride	ug/Kg	1.0	< 20	60	20
Chlorobenzene	ug/Kg	1.0	< 20	50	20
Chloroethane	ug/Kg	1.0	< 20	60	20
Chloroform	ug/Kg	1.0	< 20	60	20
Chloromethane	ug/Kg	1.0	< 50	150	50
2-Chlorotoluene	ug/Kg	1.0	< 20	50	20
4-Chlorotoluene	ug/Kg	1.0	< 20	70	20
Dibromochloromethane	ug/Kg	1.0	< 20	60	20
1,2-Dibromo-3-chloropropane	ug/Kg	1.0	< 25	100	25
1,2-Dibromoethane	ug/Kg	1.0	< 30	110	30
Dibromomethane	ug/Kg	1.0	< 20	70	20
1,2-Dichlorobenzene	ug/Kg	1.0	< 20	50	20
1,3-Dichlorobenzene	ug/Kg	1.0	< 20	50	20
1,4-Dichlorobenzene	ug/Kg	1.0	< 20	70	20
Dichlorodifluoromethane	ug/Kg	1.0	< 20	60	20
1,1-Dichloroethane	ug/Kg	1.0	< 20	60	20
1,2-Dichloroethane	ug/Kg	1.0	< 20	50	20
1,1-Dichloroethylene	ug/Kg	1.0	< 20	50	20
Cis-1,2-Dichloroethylene	ug/Kg	1.0	< 20	70	20
Trans-1,2-Dichloroethylene	ug/Kg	1.0	< 20	70	20
Dichlorofluoromethane	ug/Kg	1.0	< 20	50	20
1,2-Dichloropropane	ug/Kg	1.0	< 20	60	20
1,3-Dichloropropane	ug/Kg	1.0	< 20	50	20
2,2-Dichloropropane	ug/Kg	1.0	< 20	50	20

**Northeast Technical Services, Inc.**

315 Chestnut Street, P.O. BOX 1142, VIRGINIA, MINNESOTA 55792, (218) 741-4290

**Analytical Report**

NTS Lab Number:	98-893	Date Collected:	02/03/98
Sample Description:	GP-3 (31-33')	Date Received:	02/04/98
	B.A. Liesch Associates	Date VOC Analyzed:	02/05/98
		Date DRO Extracted:	02/04/98
	NTS Project #: 4469.11	Date DRO Analyzed:	02/06/98
	Matrix: Soil	Date Reported:	02/09/98

Parameter	Units	DF	Result	RL	MDL
1,1-Dichloropropene	ug/Kg	1.0	< 20	60	20
Cis-1,3-Dichloropropene	ug/Kg	1.0	< 20	60	20
Trans-1,3-Dichloropropene	ug/Kg	1.0	< 20	50	20
Hexachlorobutadiene	ug/Kg	1.0	< 25	80	25
Methylene Chloride	ug/Kg	1.0	< 20	50	20
1,1,1,2-Tetrachloroethane	ug/Kg	1.0	< 25	90	25
1,1,2,2-Tetrachloroethane	ug/Kg	1.0	< 20	50	20
1,1,2,2-Tetrachloroethylene	ug/Kg	1.0	< 25	80	25
1,2,3-Trichlorobenzene	ug/Kg	1.0	< 20	70	20
1,2,4-Trichlorobenzene	ug/Kg	1.0	< 20	50	20
1,1,1-Trichloroethane	ug/Kg	1.0	< 20	50	20
1,1,2-Trichloroethane	ug/Kg	1.0	< 20	60	20
1,1,2-Trichloroethylene	ug/Kg	1.0	< 20	50	20
Trichlorofluoromethane	ug/Kg	1.0	< 20	50	20
1,2,3-Trichloropropane	ug/Kg	1.0	< 20	60	20
1,1,2-Trichlorotrifluoroethane	ug/Kg	1.0	< 20	60	20
Vinyl Chloride	ug/Kg	1.0	< 20	50	20
Acetone	ug/Kg	1.0	< 60	1000	60
Benzene	ug/Kg	1.0	< 20	50	20
n-Butylbenzene	ug/Kg	1.0	< 20	50	20
sec-Butylbenzene	ug/Kg	1.0	< 20	50	20
tert-Butylbenzene	ug/Kg	1.0	< 20	50	20
Isopropylbenzene (Cumene)	ug/Kg	1.0	< 30	110	30
Ethyl Benzene	ug/Kg	1.0	< 20	50	20
Ethyl Ether	ug/Kg	1.0	< 20	50	20
p-Isopropyltoluene	ug/Kg	1.0	< 20	50	20
Methyl Ethyl Ketone	ug/Kg	1.0	< 100	300	100
Methyl Isobutyl Ketone	ug/Kg	1.0	< 50	200	50
Methyl tert-butyl ether	ug/Kg	1.0	< 20	60	20
n-Propylbenzene	ug/Kg	1.0	< 20	50	20

**Northeast Technical Services, Inc.**

315 Chestnut Street, P.O. BOX 1142, VIRGINIA, MINNESOTA 55792, (218) 741-4290

**Analytical Report**

NTS Lab Number:	98-893	Date Collected:	02/03/98
Sample Description:	GP-3 (31-33')	Date Received:	02/04/98
	B.A. Liesch Associates	Date VOC Analyzed:	02/05/98
		Date DRO Extracted:	02/04/98
	NTS Project #: 4469.11	Date DRO Analyzed:	02/06/98
	Matrix: Soil	Date Reported:	02/09/98

Parameter	Units	DF	Result	RL	MDL
Naphthalene	ug/Kg	1.0	< 25	100	25
Styrene	ug/Kg	1.0	< 20	50	20
Tetrahydrofuran	ug/Kg	1.0	< 25	100	25
Toluene	ug/Kg	1.0	< 20	50	20
1,2,4-Trimethylbenzene	ug/Kg	1.0	< 20	50	20
1,3,5-Trimethylbenzene	ug/Kg	1.0	< 20	50	20
m-Xylene & p-Xylene	ug/Kg	1.0	< 25	90	25
o-Xylene	ug/Kg	1.0	< 20	50	20
Fluorobenzene (Surrogate Recovery)	%		86		
2-Bromo-1-Chloropropane (Surrogate Recovery)	%		86		
Diesel Range Organics (DRO)	mg/Kg	1.0	< 3.0	10	3.0
Moisture	%		2.8		

VOCs analyzed in accordance to Minnesota Department of Health Method 466A (modified EPA 8021).  
GRO/DRO analyzed according to Wisconsin DNR GRO and DRO Methods.

MDL = Method Detection Limit

RL = Reporting Limit (Practical quantitation limit)

IR = Value reported is above the MDL but below the RL

DF = Dilution Factor

Report approved by:



Analytical Chemist

Northeast Technical Services, Inc., makes no warranty except that the analysis has been made upon the samples received in accordance with generally accepted testing laboratory principles and practices. The results of the analysis may not be characteristic of the whole from which the sample was taken. This warranty is in lieu of all other warranties, either expressed or implied.

## APPENDIX C METHODOLOGIES AND PROCEDURES

- Soil Field Screening:

Soil samples collected during soil boring completion were screened for the presence of organic vapors using the method described in Part I of MPCA fact sheet #3.22 "Soil Sample Collection and Analysis Procedures".

A photoionization detector (PID) equipped with a 10.6 electron volt (e.V.) lamp was used to screen soil samples for the presence of organic vapors. The PID was calibrated prior to analyses on each day of field screening. A quart-size polyethylene freezer bag was filled approximately ½ full of the sample to be analyzed. Soil clumps were broken and the bag was shaken for approximately 15 seconds. After allowing the headspace to develop a minimum of 10 minutes, each field screening sample was analyzed using the PID.

- Soil sampling

Soil samples were collected for laboratory analyses in accordance with MPCA fact sheet 3.22 "Soil Sample Collection and Analysis Procedures". Dedicated, disposable polyethylene gloves were used to containerize each soil sample in laboratory-provided containers. Soil samples were placed in an ice-chilled cooler immediately following sample collection for transportation to the analytical laboratory. Samples were submitted to the laboratory within appropriate holding times.

- Soil boring completion

The Geoprobe™ drilling method was completed as follows: Soil samples were collected from each boring at continuous intervals to determine the presence or absence of contamination. A four-foot long, two-inch diameter Macro-Core sampler was driven to the desired sampling depth by a bobcat-mounted Geoprobe™ sampling unit. The sampling rod was advanced using the static weight of the vehicle and hydraulic-hammer percussion. While driving the Macro-Core sampler to the desired depth, a driven point and piston were prevented from sliding within the sampling tube by a stop-pin. The pin was removed upon reaching the desired sampling depth and the sampling device was advanced. The piston and driven point were forced up the sampling tube by the sample as the device was advanced. Sample cores were collected in two-inch diameter, four-foot length, removable, acetate liners. The device was removed from the borehole and the soil sample removed from the acetate liner. Following soil-sample removal, the drilling rod and Macro-Core sampling device were washed in soap solution and rinsed with potable water. Acetate liners were disposed after collection of each soil sample and a new liner was used for each successive sample.

B.A. Liesch Associates, Inc.

Project: W&W 774 SELBY AVE  
 Drilling Contractor: NTS  
 Logged By: TCJ  
 Date Start: 2/3/98  
 Date Finished: 2/3/98  
 E.O. B. (ft.): 50  
 Borehole Number: GP-1  
 Location: south of former tanks  
 Drilling Equipment: geoprobe  
 Driller: Tate  
 Surface Elevation: na

Depth (Ft.)	Description of Material	USCS	Other	Interval	ppm	No.	A	T	1	2	3	4	N
0-4'	brown silty Sand (med-grained) frost 0-2'			0-4'	ND	1							
4-8'	Brn Sand ( fine-med grained) moist			4-8'	ND	2							
8-12'	Brn Sand ( fine-med grained) w/ gravel. Dry			8-12'	ND	3							
12-16'	lt. brn to tan Sand (med-coarse grained)dry			12-16'	ND	4							
16-20'	tan Sand (med-coarse grained)dry			16-20'	ND	5							
20-24'	Brn silty Sand (med-coarse grained) dry			20-24'	ND	6							

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B.A. Liesch Associates, Inc.

Project: W&W 774 SELBY AVE  
 Drilling Contractor: NTS  
 Logged By: TCJ  
 Date Start: 2/3/98  
 Date Finished: 2/3/98  
 E.O. B. (ft.): 50  
 Borehole Number: GP-1  
 Location: south of former tanks  
 Drilling Equipment: geoprobe  
 Driller: Tate  
 Surface Elevation: na

Depth (Ft.)	Description of Material	USCS	Other	Interval	ppm	No.	A	T	1	2	3	4	N
-30	28-30' tan/gray Sand (med-coarse grained) moist			28-30'	ND	7							
-35	35-37' same as above			35-37'	ND	8							
-40	43-45' same as above			43-45'	ND	9							
-45	48-50' same as above			48-50'	ND	10							
-50	50' end of boring												

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Sample collected from 48-50' interval for analytical testing

B.A. Liesch Associates, Inc.

Project: W&W 774 SELBY AVE  
 Drilling Contractor: NTS  
 Logged By: TCJ  
 Date Start: 2/3/98  
 Date Finished: 2/3/98  
 E.O. B. (ft.): 35  
 Borehole Number: GP-2  
 Location: East of former tanks  
 Drilling Equipment: geoprobe  
 Driller: Tate  
 Surface Elevation: na

Depth (Fl.)	Description of Material	USCS	Other	Interval	ppm	No.	A	T	1	2	3	4	N
	0-4' lt brown silty Sand (med-grained) dry			0-4'	2.4	1							
-5	4-8' lt brn Sand ( fine-med grained) moist			4-8'	ND	2							
-10	8-12' lt brn Sand ( fine-med grained) w/ gravel. Dry			8-12'	2	3							
-15	12-16' lt.brn to tan Sand (med-coarse grained)dry			12-16'	1.7	4							
-20	16-20' tan coarse Sand w/ gravel dry			16-20'	ND	5							
-25	20-24' tan Sand (med-coarse grained) dry			20-24'	4.2	6							

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B.A. Liesch Associates, Inc.

Project: W&W 774 SELBY AVE  
 Drilling Contractor: NTS  
 Logged By: TCJ  
 Date Start: 2/3/98  
 Date Finished: 2/3/98  
 E.O. B. (ft.): 35  
 Borehole Number: GP-2  
 Location: East of former tanks  
 Drilling Equipment: geoprobe  
 Driller: Tate  
 Surface Elevation: na

Depth (Ft.)	Description of Material	USCS	Other	Interval	ppm	No.	A	T	1	2	3	4	N
-30	same as above			28-30'	2.4	7							
-35	33-35' same as above 35' end of boring			33-35	4	8							
-40													
-45													
-50													

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sample collected from 33-35' interval for analytical testing

B.A. Liesch Associates, Inc.

Project: W&W 774 SELBY AVE  
 Drilling Contractor: NTS  
 Logged By: TCJ  
 Date Start: 2/3/98  
 Date Finished: 2/3/98  
 E.O. B. (ft.): 33  
 Borehole Number: GP-3  
 Location: North of former tanks  
 Drilling Equipment: geoprobe  
 Driller: Tate  
 Surface Elevation: 5' lower than GP-1 and GP-2

Depth (Ft.)	Description of Material	USCS	Other	Interval	ppm	No.	A	T	1	2	3	4	N
	0-4' tan coarse Sand (fill)			0-4'	ND	1							
-5	4-8' tan coarse Sand w/ gravel dry			4-8'	ND	2							
-10	8-12' lt bm/tan coarse Sand w/ rock. Dry			8-12'	ND	3							
-15	14-16' Same as above			12-14'	ND	4							
-20	18-20' same as above			18-20'	ND	5							
-25	24-26' same as above			24-26'	ND	6							

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B.A. Liesch Associates, Inc.

Project:	W&W 774 SELBY AVE
Drilling Contractor:	NTS
Logged By:	TCJ
Date Start:	2/3/98
Date Finished:	2/3/98
E.O. B. (ft.):	33
Borehole Number:	GP-3
Location:	North of former tanks
Drilling Equipment:	geoprobe
Driller:	Tate
Surface Elevation:	na

Depth (Ft.)	Description of Material	USCS	Other	Interval	ppm	No.	A	T	1	2	3	4	N
-30	31-33' same as above 33' end of boring			31-33'	ND	7							
-35													
-40													
-45													
-50													

**N  
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sample collected from 31-33' interval for analytical testing

Not Applicable

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MINNESOTA COUNTY WELL INDEX/WELL LOG.

UN.NO./CO. : 200407/62 NAME : DALE THEATER

COUNTY : RAMSEY QUAD : ST PAUL WEST
T/R/SEC. : 28/23/ 2AAADCD ELEV : 922 FT. DEPTH D: 470 FT.
BDRK ELEV: 882 FT. BEDROCK: DECORAH
OPEN INT.: PLATTEVILLE-JORDAN
AQUIFER : MULTIPLE

WELL CONSTRUCTION.

SCREEN: DATA UNAVAILABLE.

PUMP : DATA UNAVAILABLE.

PUMPAGE TEST: DATA UNAVAILABLE.

DRILLER S/GEOLOGIC LOG

Table with columns: DEPTH INTERVAL, DRILLER S DESCRIPTION, COLOR, HARDNESS, and AGE. Rows include geological data such as GLACIAL DRIFT, STICKY SHALE, PLATTEVILLE LIMEROCK, GLENWOOD SHALE, WHITE ST PETER SANDROCK, ST PETER SANDROCK, SHAKOPEE DOLOMITE, and JORDAN SANDROCK.

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MINNESOTA COUNTY WELL INDEX/WELL LOG.

UN.NO./CO. : 194834/62 NAME : CITY OF ST. PAUL

COUNTY : RAMSEY QUAD : ST PAUL WEST
T/R/SEC. : 28/23/ 2AABADC ELEV : 917 FT. DEPTH D: 26 FT.
BDRK ELEV: FT. BEDROCK:
OPEN INT.: PLEISTOCENE DEPOSIT
AQUIFER : QUAT. WATER TABLE AQUIFER

WELL CONSTRUCTION.

Table with columns: DIAM(IN), FROM(FT), TO(FT), [GROUT-----] MATERIAL, AMNT, UNITS. Row: CASING 1 : 2 0 12

SCREEN.

PRESENT?: YES
MAKE : PVC TYPE: OTHER DIAM: 2 IN.
SCREEN : SLT/GZE LENGTH(FT) SETTING
SCREEN 1: 10 10 TOP: 12 FT. BOTTOM: 22 FT.

PUMP : DATA UNAVAILABLE.

PUMPAGE TEST: DATA UNAVAILABLE.

DRILLER S/GEOLOGIC LOG

Table with columns: DEPTH INTERVAL, DRILLER S DESCRIPTION, COLOR, HARDNESS, [EL.TOP ], [INTERPRETED LITHOLOGY ], [CODE] [STRATIGRAPHIC UNIT(S) ], [AGE]. Rows include descriptions like '8 FILL (SILTY SAND)', 'SILT', 'SAND, SILT'.

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MINNESOTA COUNTY WELL INDEX/WELL LOG.

UN.NO./CO. : 428917/62 NAME : ST. PAUL

COUNTY : RAMSEY QUAD : ST PAUL WEST
T/R/SEC. : 28/23/ 2AABDAA ELEV : 919 FT. DEPTH D: 25 FT.
BDRK ELEV: FT. BEDROCK:
OPEN INT.: PLEISTOCENE DEPOSIT
AQUIFER : QUAT. WATER TABLE AQUIFER

WELL CONSTRUCTION.

Table with columns: DIAM(IN), FROM(FT), TO(FT), [GROUT-----] MATERIAL, AMNT, UNITS. Row: CASING 1 : 2 0 15

SCREEN.

PRESENT?: YES
MAKE : TYPE: OTHER DIAM: IN.
SCREEN : SLT/GZE LENGTH(FT) SETTING
SCREEN 1: 10 10 TOP: 15 FT. BOTTOM: 25 FT.

PUMP : DATA UNAVAILABLE.

PUMPAGE TEST: DATA UNAVAILABLE.

DRILLER S/GEOLOGIC LOG

Table with columns: DEPTH INTERVAL, DRILLER S DESCRIPTION, COLOR, HARDNESS, [CODE][STRATIGRAPHIC UNIT(S)] [AGE]. Rows include descriptions like FILL: SILTY SAND/CLAY, CLAYEY SAND, SAND, CLAYEY SAND.

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MINNESOTA COUNTY WELL INDEX/WELL LOG.

UN.NO./CO. : 428918/62 NAME : ST. PAUL

COUNTY : RAMSEY QUAD : ST PAUL WEST
T/R/SEC. : 28/23/ 2AABADA ELEV : 919 FT. DEPTH D: 25 FT.
BDRK ELEV: FT. BEDROCK:
OPEN INT.: PLEISTOCENE DEPOSIT
AQUIFER : QUAT. WATER TABLE AQUIFER

WELL CONSTRUCTION.

Table with columns: DIAM(IN), FROM(FT), TO(FT), [GROUT-----] MATERIAL, AMNT, UNITS. Row: CASING 1 : 2 0 14

SCREEN.

PRESENT?: YES
MAKE : TYPE: OTHER DIAM: IN.
SCREEN : SLT/GZE LENGTH(FT) SETTING
SCREEN 1: 10 10 TOP: 14 FT. BOTTOM: 24 FT.

PUMP : DATA UNAVAILABLE.

PUMPAGE TEST: DATA UNAVAILABLE.

DRILLER S/GEOLOGIC LOG

Table with columns: DEPTH INTERVAL, DRILLER S DESCRIPTION, COLOR, HARDNESS. Rows include descriptions like FILL : SAND + SILT, SILT, SAND, SANDY LEAN CLAY, SAND, CLAY.

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MINNESOTA COUNTY WELL INDEX/WELL LOG.

UN.NO./CO. : 428919/62 NAME : ST. PAUL

COUNTY : RAMSEY QUAD : ST PAUL WEST
T/R/SEC. : 28/23/ 2AABACA ELEV : 917 FT. DEPTH D: 25 FT.
BDRK ELEV: FT. BEDROCK:
OPEN INT.: PLEISTOCENE DEPOSIT
AQUIFER : QUAT. WATER TABLE AQUIFER

WELL CONSTRUCTION.

Table with columns: DIAM(IN), FROM(FT), TO(FT), [GROUT-----] MATERIAL, AMNT, UNITS. Row: CASING 1 : 2 0 14

SCREEN.

PRESENT?: YES
MAKE : TYPE: OTHER DIAM: IN.
SCREEN : SLT/GZE LENGTH(FT) SETTING
SCREEN 1: 10 10 TOP: 14 FT. BOTTOM: 24 FT.

PUMP : DATA UNAVAILABLE.

PUMPAGE TEST: DATA UNAVAILABLE.

DRILLER S/GEOLOGIC LOG

Table with columns: DEPTH INTERVAL, DRILLER S DESCRIPTION, COLOR, HARDNESS, [EL.TOP ], [INTERPRETED LITHOLOGY ], [CODE], [STRATIGRAPHIC UNIT(S) ], [AGE]. Rows include descriptions like FILL:SAND + SILTY SAND, SAND, SILTY CLAY, etc.

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Not Applicable

**PHASE ONE AND PHASE TWO  
ENVIRONMENTAL SITE ASSESSMENT  
768-774 SELBY AVENUE  
ST. PAUL, MINNESOTA 55104**

---

**PREPARED FOR:**

**WINTHROP & WEINSTINE  
3200 WORLD TRADE CENTER  
30 E. 7<sup>TH</sup> STREET  
ST. PAUL, MINNESOTA 55101**

**DECEMBER 1997**

---

**PREPARED BY:**



**B. A. LIESCH ASSOCIATES, INC. • 13400 15TH AVENUE NORTH • MINNEAPOLIS, MN**

---

**MINNEAPOLIS, MN • PHOENIX, AZ • MADISON, WI**

**PHASE ONE AND PHASE TWO  
ENVIRONMENTAL SITE ASSESSMENT**

**768-774 SELBY AVENUE  
ST. PAUL, MINNESOTA 55104**

**PREPARED FOR:**

**WINTHROP & WEINSTINE  
3200 WORLD TRADE CENTER  
30 EAST 7<sup>TH</sup> STREET  
ST. PAUL, MINNESOTA 55101**

**PREPARED BY:**

**B.A. LIESCH ASSOCIATES, INC.**

**13400 15TH AVENUE NORTH**

**PLYMOUTH, MINNESOTA**

**(612) 559-1423**

**DECEMBER 9, 1997  
Project Number: 62269.00**

**This report was prepared by me  
or under my direct supervision.**

  
\_\_\_\_\_  
**John Lichter, P.E.  
Environmental Engineer**

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## APPENDICES

Appendix A	Figure 1 - Property Location Map
Appendix B	EDR Regulatory Review
Appendix C	Walk-Over Survey Form
Appendix D	Photographs
Appendix E	Text of Previous Site Assessment Report
Appendix F	Aerial Photographs
Appendix G	Sanborn Fire Insurance Maps
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## 1.0 INTRODUCTION

B.A. Liesch Associates, Inc. (Liesch) was retained by Winthrop & Weinstine on behalf of the estate of Dennis R. Scanlan, Jr. to conduct a Phase One and Phase Two Environmental Site Assessment (ESA) of 768-774 Selby Avenue, St. Paul, Ramsey County, Minnesota (the Property). The Property is currently occupied by an automotive repair business.

The Property is located just east of the intersection of Selby Avenue and Avon Street. The rectangular shaped Property contains two city lots. **Figure 1** in **Appendix A** illustrates the location of the Property.

The Property is comprised of a vehicle service building and adjacent empty lot. The vehicle service building is approximately 2,000 square feet in size and contains three service bays and an office area. The original building was constructed of concrete block with a brick veneer in the late 1920s. The total Property size approximates 10,200 square feet including the empty lot.

The Property is located in a developed commercial business area along Selby Avenue. Beyond the commercial businesses along Selby Avenue to the north and south are residential developments. The Property is bordered to the north by Selby Avenue, on the east by Beamer Enterprises, Inc., on the south by a residential development and on the west by a vacant commercial building. An enclosed walkway exists between the building on the Property and the building to the west.

## 2.0 SCOPE OF WORK

The following work items were completed for this Phase One and Phase Two ESA of the Property:

- Contacts with state, county, and municipal regulatory agencies to determine if any known environmental concerns have been reported on or adjacent to the Property;
- A walk-over survey of the Property to identify any readily apparent environmental concerns on or adjacent to the Property;
- A historical review of the Property, utilizing available aerial photographs, USGS topographic maps, Sanborn Fire Insurance Company Maps and city directories;
- A review of the Minnesota Geological Survey (MGS) well log files for the presence of wells on the Property;

- A visual assessment for suspect asbestos containing materials and potential PCB containing items;
- Removal and/or abandonment of an oil/water separator and waste oil underground storage tank.
- Preparation and submittal of a brief report summarizing the findings.

The following sections discuss the results of the investigation and summarize the information obtained for this Phase One ESA. This site assessment does not include a complete compliance analysis with local, state or federal environmental laws, rules or regulations.

### **3.0 PHYSICAL SETTING**

A site's ability to impact surrounding properties is largely dependent on the direction of groundwater flow from the site. To assess groundwater flow to the Property from sites of environmental concern in the area, Liesch reviewed the Ramsey County Geologic Atlas prepared by the MGS. The USGS 7.5 minute St. Paul West topographic quadrangle was also used to identify topographic features such as hills, streams, and lakes, which may influence site specific shallow groundwater flow direction.

#### **3.1 Topography**

The Property is characterized by relatively flat topography. The elevation of the Property is approximately 920 feet National Geodetic Vertical Datum (NGVD). Stormwater drainage is expected to flow into storm sewers located along Selby Avenue.

#### **3.2 Geology/Hydrogeology**

According to the MGS Ramsey County Geologic Atlas, surficial deposits in the vicinity of the Property consist of meltwater stream sand. The bedrock beneath the surficial deposits is the Platteville & Glenwood Formation. Depth to bedrock is approximately 250 feet below land surface.

Regional surficial groundwater flow direction is published to be in an east-southeasterly direction toward the Mississippi River. However, local groundwater flow direction is often influenced by topography and local drainage features such as lakes, streams and wetland areas and may vary from the regional groundwater flow direction.

## 4.0 REGULATORY AGENCY RESPONSES

### 4.1 EDR Response

Environmental Data Resources, Inc. (EDR) was requested to conduct a file evaluation of the Property address to determine if there were any identifiable environmental concerns on, or within an expanded one-mile radius of, the Property. The file evaluation consisted of examination of the following components:

A) Databases searched to 1 mile:

- EPA - National Priorities List (NPL);
- EPA - Resource Conservation and Recovery Information System (RCRIS) permitted treatment, storage, disposal (TSD) facilities;
- EPA - Corrective Action Report (CORRACTS);
- EPA - Superfund (CERCLA) consent decrees (CONSENT);
- MPCA - Generators Associated with Enforcement Logs (Minn. Enforcement);
- MPCA - Voluntary Investigation and Cleanup Program (VIC);
- MPCA - Spills log (Minn. Spills).
- NTIS - Record of Decision (ROD);
- MPCA - Open Dump Inventory (ODI);
- MPCA - State equivalent CERCLIS list, Permanent List of Priorities (SHWS/PLP);
- MPCA - Delisted State Hazardous Waste Sites (Del SHWS);
- Real Property Scan - Coal Gas Sites (Coal Gas);

B) Databases searched to 1/2 mile:

- EPA - Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS);
- MPCA - Landfill Cleanup Priority List (CLEANUP);
- MPCA - Solid Waste Landfills, Incinerators, Transfer Stations (SWF/LS);
- MPCA - Leaking Underground Storage Tanks (LUSTs);

C) Databases searched to 1/4 mile:

- EPA - RCRIS registered small-quantity generators of hazardous waste (Sm. Quan. Gen.);
- EPA - RCRA registered large-quantity generators of hazardous waste (Lg. Quan. Gen.);



- MPCA - Underground Storage Tanks (USTs).
- D) Databases searched for the Property:
  - EPA - RCRA Administrative Action Tracking System (RAATS);
  - USDOT - Hazardous Materials Information Reporting System (HMIRS);
  - EPA - PCB Activity Database System (PADS);
  - EPA - Emergency Response Notification System of spills (ERNS);
  - EPA - Facility Index System (FINDS);
  - EPA - Toxic Chemical Release Inventory System (TRIS);
  - EPA - Federal Superfund Liens (NPL Liens);
  - EPA - Toxic Substances Control Act (TSCA);
  - EPA - Delisted National List of Priorities (Delisted NPL);
  - EPA - Cerclis No Further Action Planned (Cerc NFRAP);
  - Nuclear Regulatory Commission - Material Licensing Tracking System (MLTS);
  - MPCA - Above Ground Storage Tanks (AST);
  - MPCA - Hazardous waste permit (HWS permit);

The EDR response letter, dated October 14, 1997, provides the results of the file search and is included in **Appendix B**. The Property was noted in the FINDS and RCRIS-SQG databases. Commercial Sweeping is listed as a small quantity hazardous waste generator. This listing is not considered in itself a recognized environmental condition on the Property (see Section 4.2 for additional information regarding this listing). The Property was identified in two of the databases searched by EDR. The following is a summary of EDR findings.

EDR identified the following sites within the ASTM 1527-97 search radius of the various listed databases:

### LUST

Leaking Underground Storage Tank Incident Reports contain an inventory of reported leaking underground storage tank incidents. A review of the LUST list dated April 1, 1997, as provided by VISTA, has revealed five LUST sites within approximately 1/2 mile of the Property.

Four of the five LUST sites have been granted file closure from the MPCA. Closed sites do not require any additional investigation and/or cleanup work at this time or in the foreseeable future. If any remaining contamination exists it does not appear to pose a threat to public health or the environment. Closed sites generally are not anticipated to represent a recognized environmental condition. The one remaining LUST sites is considered upgradient of the Property but is located approximately 1/4 mile from the Property. As such, this site is not anticipated to represent a

recognized environmental condition to the Property. The one remaining open leak site is listed as follows:

Selby Commons  
909 Selby Avenue  
LUST No. 5095  
Map ID No. 13  
Release Date: 10/31/91

According to a telephone conversation with Mr. Chris McLain of MPCA, he sent a letter to the responsible party in 1997 requesting the completion of soil and groundwater sampling at the site to determine the current extent of soil and groundwater contamination. Without additional investigation data it is not known if the petroleum release represents a risk to the Property. However, this site is located a significant distance from the Property.

#### UST

The underground storage tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act. A review of the UST list dated May 13, 1996, as provided by EDR, has revealed three UST sites within approximately ¼ mile of the Property. UST sites in a non-leaking state are not anticipated to represent a recognized environmental condition on the Property.

#### RCRIS

The Resource Conservation and Recovery Act database includes selected information on sites that generate, store, treat, or dispose of hazardous waste as defined by the Act. A review of the RCRIS list dated August 1996, as provided by VISTA, has revealed 3 RCRIS-SQG sites within approximately ¼ mile of the Property.

The hazardous waste lists are used by regulating agencies to aid in tracking the generation, transport and disposal of hazardous wastes. Inclusion on these lists does not imply the facility has environmental problems or that a release has occurred. The hazardous waste generation at these sites is not anticipated to represent a recognized environmental condition on the Property.

#### MN/LS/VIC

The MN/LS database is an indicator to other state agency databases, in this case MN VIC. This is the MPCA's voluntary investigation and cleanup program list. This list was last updated by EDR on May 27, 1997. One site, the Arnold Building, 375 Selby Avenue, lies about 7/8ths of a mile east

and downgradient from the Property. It is not anticipated to cause a recognized environmental condition on the Property.

#### MN Spills

Four sites are listed on this database (one site three times), which lists reported spills to MPCA or USEPA. This database was last updated by EDR on May 13, 1997. A review of the EDR report does not indicate that any releases have occurred on or adjacent to the Property. These sites are not anticipated to cause a recognized environmental condition on the Property.

### **4.2 Ramsey County Review**

Liesch contacted the Ramsey County Division of Environmental Health for information regarding hazardous waste generation at the Property since Commercial Sweeping was shown by EDR as a small quantity hazardous waste generator. According to Jeff Peterson with Ramsey County, Commercial Sweeping was last inspected in July of 1997. This site was found to be closed at that time. Annual reports were prepared and submitted to the County for calendar years 1994 and 1995. No report was submitted for a calendar year 1996. Used oil and filters were the wastes listed in these reports. The county has deactivated the file and will be doing a final inspection to verify that the site is closed from their standpoint. No other issues of environmental concern were noted.

### **4.3 City of St. Paul Review**

Liesch reviewed a previous site assessment report (see Section 6.6) indicated a recent check (April, 1997) with the City of St. Paul permit/inspection file for the Property indicated no information was present in city files.

## **5.0 WALK-OVER SURVEY**

On October 14, 1997, a walk-over survey of the Property was conducted by Liesch representative John Lichter. The purpose of the walk-over survey was to identify any readily apparent indications of potential environmental concern on, or immediately adjacent to, the Property. Mr. Lichter was accompanied by Mr. Tom Walker representing Winthrop and Weinstine on behalf of the current owner of the Property. The completed walk-over survey form for the Property is included in **Appendix C**. Selected photographs of the Property and an index of them are included in **Appendix D**. The following observations were made during the walk-over survey.

### General Notes

The Property consists of a former automotive service garage addressed as 774 Selby Avenue and an empty lot addressed as 768 Selby Avenue. Limited automotive work is conducted in the garage by the current tenant Gene Adrian. The tenant does not operate a "for hire" operation from this address. A snow plowing operation reportedly subleases a portion of the Property seasonally from the tenant. The owner of the Property is the estate of Dennis R. Scanlan, Jr..

The building consists of the main floor which has three service bays, an office and small basement. One service bay is partially elevated and is accessed from the rear of the building. The basement contains a gas boiler and hot water heater. The attic of the building is used for records and parts storage. Based on other records available to Liesch, the building appears to have been constructed in the late 1920s.

### Underground and Aboveground Storage Tanks

One known waste oil UST of unknown size exists on the Property within the building. One empty 265-gallon AST was observed on the Property outside the southeast corner of the building. The UST was partially full of waste oil at the time of the walk-over survey. It is scheduled for cleaning and abandonment in place by the current owner.

### Chemical Use and Storage Areas

Cylinders of oxygen and acetylene are located in the garage. Batteries, antifreeze, motor oil, lubricants and additional automotive chemicals exist for servicing vehicles. Gasoline, waste oil and a partially full 55-gallon drum was also stored outside the building along the southeast corner. Limited staining of concrete surfaces was observed inside the building during the walk-over.

### Floor Drains and Oil Water Separator

All floor drains in the garage area reportedly flow into an oil water separator located in the garage. The oil water separator is reportedly cleaned periodically by a contractor.

### Hydraulic Lifts

No hydraulic lifts were noted in the service bays. Several steel pipes were cut off flush with the concrete floor and were filled with concrete. It is possible they were associated with some type of mechanical lift system in the past.

### Suspect Asbestos Containing Materials

Liesch observed the following suspect asbestos-containing materials (ACMs) in the buildings: plaster, and roof materials.

When a structure is to be renovated, repaired or demolished, federal and state laws require the removal of all regulated ACM, which would be affected by the activities, prior to beginning work. The regulated ACM must be removed or repaired following all applicable ACM removal and disposal regulations. In addition, current OSHA regulations require that all ACM must be maintained in good condition.

#### Potential PCB-Containing Items

Pole mounted electrical transformers assumed to be the property of NSP were located on the rear of the Property. Fluorescent light fixtures were observed throughout the vehicle service building. The cooling oil inside ballasts of fluorescent light fixtures manufactured prior to 1979 commonly contains PCBs. Due to the building construction/remodeling dates, it is likely some of the ballasts contain PCBs.

#### Fluorescent Light Tubes

Fluorescent light tubes are located throughout the vehicle service building. Fluorescent light tubes contain mercury, lead and heavy metals which may be toxic in small amounts. Spent tubes must be managed as hazardous wastes and are banned from disposal in landfills.

#### Ozone Depleting Substances

Regulated ozone depleting substances are likely contained in the refrigeration unit in the building.

#### Dynamometer Pit

A dynamometer pit is present just inside the garage door fronting on Selby Avenue. The pit is covered with several steel plates and is no longer in service. The pit could not be well accessed at the time of the walk-over due to the weight and size of the steel plates.

#### Abandoned Pipe Risers

Two abandoned riser pipes were noted at the northwest corner of the Property. One extends several feet above the ground and appears to be a probable roof drain leader pipe. The second extends 4 to 6 inches above grade and may have been a former fuel oil tank fill pipe. Liesch found a similar size pipe stubbed off entering the north wall of the basement about four feet above the basement floor.

#### Debris

Several dump truck size loads of sand or possible street sweepings were noted on the Property on the southeast portion of the empty lot.

#### Used Tires

Several used automotive and truck tires are stored in the building on the Property.

### Lead Paint

Due to the age of the building construction, it is possible lead based paint exists on the Property. No testing of painted surfaces was completed, however, based on the commercial use of the structure it is not subject to the lead paint notification requirements.

### Inaccessible Areas

An enclosed walkway has been constructed on the Property between 774 Selby and the vacant building to the west. The access door to this walkway was welded shut.

### Adjacent Sites

Adjacent sites include a vacant commercial building to the west and residential structures to the south across the alley. East of the Property, a large commercial building, Beamer Enterprises, Inc. exists. Land use across Selby Avenue to the north is mixed commercial and residential.

## **6.0 HISTORICAL RESEARCH**

### **6.1 Aerial Photograph Review**

Aerial photographs were reviewed to identify past land uses and any readily apparent environmental concerns on or near the Property. Photographs from the years 1940 and 1990 were available from the University of Minnesota Wilson Library for review at the time this report was prepared. Copies of the photographs are included in **Appendix F**. Information discerned from the photographs is discussed below.

In general, the Property was located in a light commercial district along Selby Avenue. Due to the scale and clarity of the photographs, specific Property interpretations were not able to be made.

### **6.2 USGS Topographic Maps Review**

The 1993 photo-revised 1967 U.S. Geological Survey St. Paul West 7.5 Minute Quadrangle Map was available for review at the time this report was prepared. The Property and surrounding area was shown as developed, however no structures were depicted.

### **6.3 City Directory Review**

Liesch reviewed city directories available from EDR (see **Appendix H**). These directories list occupants of addresses from the 1900s through present and generally cover urban and suburban

areas. Available directories at approximate five year intervals were listed by EDR. Liesch reviewed this information for occupancy on the Property and adjacent sites along Selby Avenue. The following table is a summary of the reviewed information:

<b>City Directory Listings 768-774 Selby Avenue St. Paul, MN</b>	
<b>Year</b>	<b>Listing</b>
1934	768 Residence 770 W.C. Folbom Chiropractor 774 Berts Scott Auto Repair
1939	768 Residence 770 Residence 774 No listing
1944	768 Apartments 770 Vacant 774 Paul H. Carlson auto repair
1949	768 Apartments 770 Residence 774 LeRoy G. Benson auto repair
1954	768 Apartments 770 Residence 774 Roys Motor Service
1959	768 Apartments 770 Residence 774 Berg Auto Repair
1964	768 Apartments 770 No listing 774 Berg Auto Repair
1969	768 Apartments 770 No listing 774 Berg Auto Repair
1974, 1979, 1984	768 No listing 770 No listing 774 Berg Auto Repair
1989	768 No listing 770 No listing 774 Grand Auto Service (body repair)
1994	768 No listing 770 No listing 774 Vacant

The Property was identified as a vehicle service business from 1934 to 1994. The 768-770 portion of the Property appears to have been in residential use from 1934 to 1969. Adjacent property at 778 Selby was a grocer from 1934 to 1959 then was occupied by a plumbing and heating contractor until 1989.

## 6.4 Sanborn Fire Insurance Maps Review

Sanborn Fire Insurance Maps were prepared for the Twin Cities metropolitan area and various out-state communities for selected years starting in the late 1800s and into the 1960s. These atlases show addresses, structures, and improvements, such as utilities and storage tanks. Sanborn coverage of the Property and surrounding area exists for the following years: 1903, 1910, 1925, 1926, 1950, 1956 and 1969. See **Appendix G** for copies of the Sanborn maps.

The 1903 Sanborn maps showed dwellings at 768 and 770 Selby while 774 was undeveloped. In 1910, a store is shown at 778 Selby adjacent to the Property. The 1926 Sanborn map shows an ice station at 776 Selby with 774 still undeveloped. The 1926 Sanborn map showed the Property now developed with an auto repair business at 774 Selby. Land use at 770 Selby is shown as a photographer. In 1950, the connection between 778 and 774 Selby is shown to be present. No land use changes are shown in later map versions.

## 6.5 MGS Well Log Review

No registered wells were identified for the Property or adjacent sites.

## 6.6 Previous Environmental Site Assessment Work

A previous limited Environmental Site Assessment dated April 28, 1997 was conducted on the Property by Leggette, Brashears & Graham, Inc. (LBG) on behalf of Nations Bank. This work furnished by the owner, was purposely limited in extent and does not meet the requirements of ASTM practice E1527-97 for environmental site assessments. A copy of the text of the LBG report is included as **Appendix E** to this report. LBG noted the Property did not appear in any of the files they reviewed. No other conclusions regarding the Property were made.

## 7.0 PHASE TWO ENVIRONMENTAL ASSESSMENT WORK

### 7.1 Background

Based on observations by Liesch described in the previous sections of this report, Liesch was directed to coordinate the removal and/or abandonment of the waste oil UST and oil/water separator in the building on the Property. Prior to abandonment both the aboveground tank exterior to the building and the UST were registered with MPCA. **Appendix I** contains copies of the registration forms.



Grigg's Contracting was retained to be owner for the tank and oil/water separator abandonment work. Grigg's provided the required tank abandonment notification to MPCA and received authorization from the City of St. Paul to abandon the UST in place since it was located within the building. Upon abandonment it was discovered that two USTs side by side actually existed.

## **7.2 Abandonment Procedures**

On November 12, 1997, tank abandonment procedures commenced for the in-place abandonment of two underground storage tanks (USTs) and the flammable waste trap. The two USTs (Tank 01 and Tank 02) were located in the crawl space on the south end of the building, while the waste trap was located on the floor in the shop area. The USTs were used for the storage of automotive waste oil and the waste trap was used to separate oils and grit from the floor wash water before discharge to the sanitary sewer. Upon removal of concrete and overlying soils above the tanks it was discovered that the tanks were actually 55 gallon drums converted with a two inch steel riser pipe for the storage of waste oil. The oil/water separator was approximately 18 inches in diameter, 2 feet deep and constructed of concrete and steel. It appeared to be in good condition without any cracks or structural defects (see **Figure 2, Appendix A**).

During excavation to the top of the tanks soil stratigraphy consisted of brown silty sands with gravel and rock. There were no visual or olfactory signs of petroleum impacts to the soils within the excavation. Concrete was cut and removed above the locations of the two tanks. Overlying soils were then removed until the tops of the tanks were exposed. The tops of the tanks were then cut open and the remaining waste oil product was removed. The tanks and waste trap were then cleaned and inspected for their integrity. Upon inspection, the tanks and waste trap were found to be in good condition, with no evidence of pitting, holes or rust. Holes were then punched through the bottoms of the tanks where soil samples were collected and screened by headspace analysis (HSA) for the presence of volatile organic compounds (VOC's) using a Thermo Environmental organic vapor monitor (OVM) equipped with a 10.2 eV lamp which was calibrated on a daily basis. Results of the soil screening indicated VOC detections of 2 parts per million (ppm) and 7 ppm for Tank01 and Tank02, respectively.

## **7.3 Sample Collection**

After headspace screening soil samples additional samples were collected from beneath each tank and submitted for laboratory analysis for diesel range organics (DRO), VOC's, lead, chromium and polychlorinated biphenols (PCB's) as per Minnesota Pollution Control Agency (MPCA) guidelines for waste oil tanks. Soil samples were not collected from beneath the waste trap since no evidence of structural problems were apparent. The tanks and waste trap were then

filled with ½-inch pea rock and cemented over to floor grade. Waste trap ancillary piping was plugged then grouted with concrete to insure a permanent seal.

#### **7.4 Laboratory Results**

Laboratory results for the collected soil samples indicated no detection of VOC's and PCB's. Lead was detected at levels of 140 ppm and 45 ppm for Tank01 and Tank02, respectively. Chromium was detected at levels of 24 ppm and 16 ppm for Tank01 and Tank02, respectively. DRO was detected at levels 1,100 ppm for Tank01 and at 3700 ppm for Tank02. A copy of the laboratory report is presented in **Appendix J**. Based on these results (the DRO data) a release from the UST system is indicated. A notification of this apparent release was made by Liesch to the State Duty Officer after authorization was received from representatives of the Property owner. The apparent release was reported on December 2, 1997 which is the same day the laboratory results were provided to Liesch.

#### **8.0 CONCLUSIONS AND RECOMMENDATIONS**

Work performed for this Phase One ESA included review of state, county, and municipal information on the Property, a walk-over survey of the Property, review of historical data and preparation of a written report.

This Phase One ESA of 768-774 Selby Avenue, St. Paul, Ramsey County, Minnesota was conducted in general conformance with the scope and limitations of ASTM Standard Practice E 1527-97. Based on Liesch's assessment, there are no documented recognized environmental conditions on the Property except for the following:

- A release of petroleum product from the UST system on the Property is apparent based on laboratory analyses of soil samples collected beneath the USTs at the time of abandonment.

The following are items of environmental note with respect to the Property and may require additional assessment activities in the future.

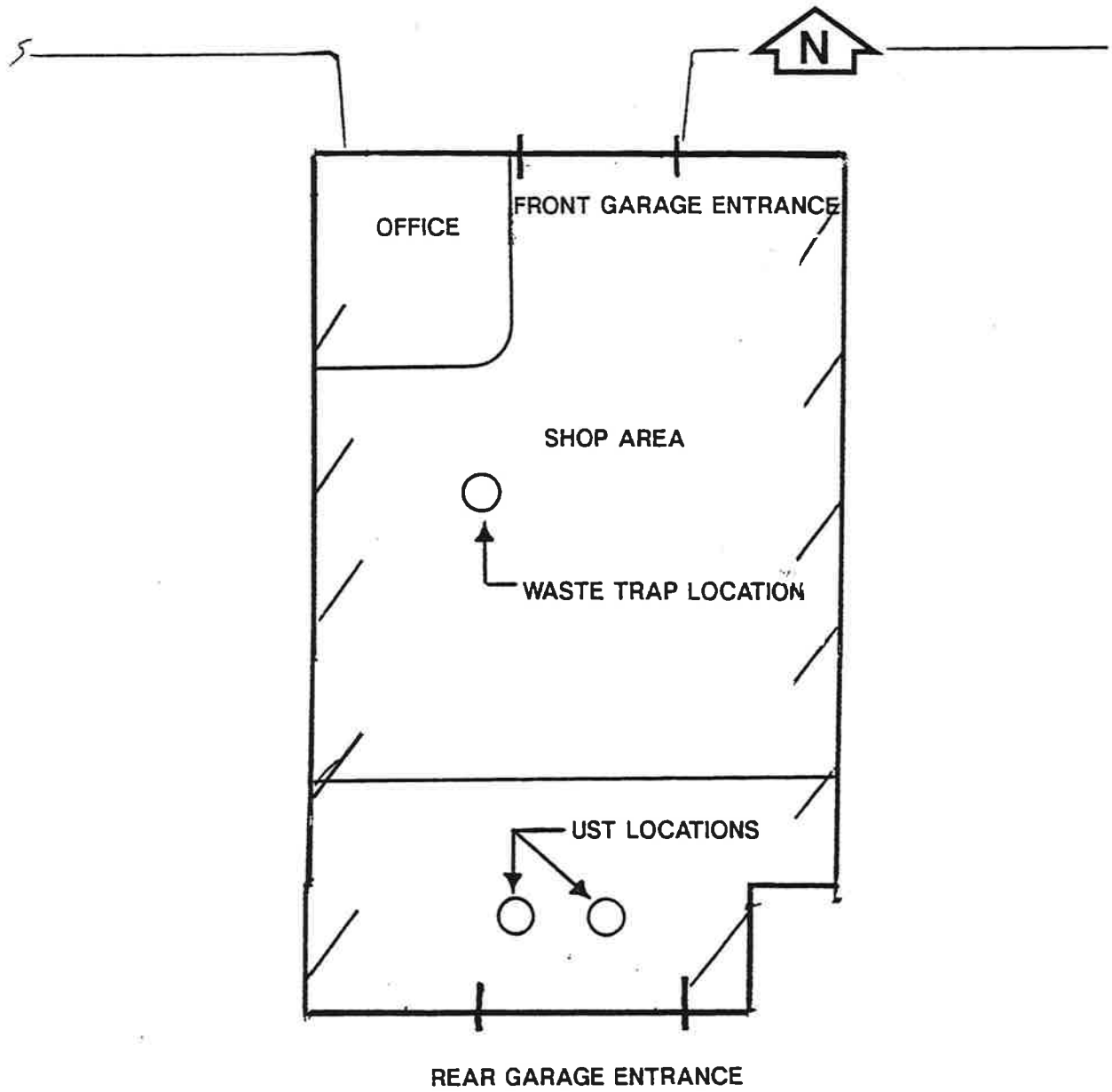
- A UST and AST were identified at the Property. The USTs have been abandoned while the AST remains on the Property. All tanks have been registered.
- A former tenant of the Property, Commercial Sweeping, is a small quantity hazardous waste generator. Piles of possible street sweeping materials remain on the Property.

- An oil water separator has been abandoned on the Property. Floor drains in the service bay formerly drained to this device.
- Liesch observed suspect asbestos-containing materials in the buildings on the Property. When a structure is to be renovated, repaired or demolished, federal and state laws require the removal of all regulated ACM, which would be affected by the activities, prior to beginning work. The regulated ACM must be removed or repaired following all applicable ACM removal and disposal regulations. In addition, current OSHA regulations require that all ACM must be maintained in good condition.
- Fluorescent lamps were noted in the Property building. The lamps contain small amounts of mercury, lead and sometimes cadmium, heavy metals which may be toxic in small amounts. Federal regulations prohibit the disposal of these lamps in landfills.
- Fluorescent light ballasts on the Property may be PCB containing. Any ballasts not stamped "no PCBs" should be considered to be PCB containing.
- Based on the age of the structure it is possible lead based paint exists on some painted surfaces.
- Two riser pipes exist on the northwest corner of the Property. Their former use has not been confirmed at this time.
- Hazardous materials exist on the Property in the form of gasoline, oil products, batteries, cleaning solvents and other vehicle maintenance products.
- Several used tires are stored in the building on the Property.

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SELBY AVENUE





*e data resources, inc.*

# The EDR-Radius Map™ Report

774 Selby Ave  
774 Selby Ave  
St. Paul, MN 55104

**Inquiry Number: 0204061.1r**

October 14, 1997

## ***The Source*** **For Environmental Risk Management Data**

3530 Post Road  
Southport, Connecticut 06490

### **Nationwide Customer Service**

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