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MPCA, HAZARDOUS
WASTE DIVISION

UNDERGROUND STORAGE TANK
CLOSURE REPORT

FOR

GOODYEAR FACILITY
1735 VAN DYKE AVENUE
MAPLEWOOD, MINNESOTA
GME PROJECT NO. 4972
MARCH 27, 1995

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March 27, 1995



Mr. Bruce G. Odlaug
Maun & Simon, PLC

**MPCA, HAZARDOUS
WASTE DIVISION**

2900 Norwest Center
90 South Seventh Street
Minneapolis, Minnesota

55402-4133

GME Project No. 4972

RE: Underground Storage Tank (UST) Closure Report for the
Goodyear Facility at 1735 Van Dyke Avenue in Maplewood,
Minnesota (MPCA Leak No. 8146)

Dear Mr. Odlaug:

In accordance with your authorization, we have completed our services for this UST closure project. The purposes of this report are to evaluate the results of the field and laboratory work, and to recommend the appropriate subsequent actions.

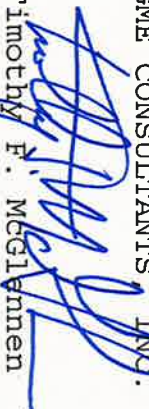
Based on the field and laboratory results from the tank monitoring and subsequent soil probe, our discussions with the MPCA Project Manager, and the MPCA Petroleum Tank Release Guidance Documents, it is our opinion that no additional work is required at the above referenced site. The action levels used by the MPCA to evaluate whether further environmental work is required are listed in the MPCA Guidance Document enclosed in the Appendix.

This report has been completed in general accordance with the MPCA Guidance Document entitled "Petroleum Tank Release Reports," dated April 18, 1993. Following your review of the report, we will submit a copy to Mr. Jim Joslyn, MPCA Project Manager.

We appreciate this opportunity to be of service to you. If you have questions, please contact us.

Sincerely,

GME CONSULTANTS, INC.


Timothy F. McGlennen
Environmental Biologist
Project Manager

cc: Mr. Neil Hartman - Goodyear Tire and Rubber Company

cc: Mr. C.L. Putzier - Department 824
Goodyear Tire and Rubber Company

TFM:sab/smc

cc: WILLIAM C. KWASNYSKY, PE
GREGORY R. REUTER, PE
MARK D. MILLSOP

THOMAS PAUL VENEMA, PE
WYATT A. GUTZKE, PE
SANDRA J. FORREST

WILLIAM E. BLOEMENDAL, PE
MERVYN MINDESS, PE
STEVEN J. RUESINK, PE

TABLE OF CONTENTS
UNDERGROUND STORAGE TANK
CLOSURE REPORT
FOR
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1735 VAN DYKE AVENUE
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GME PROJECT NO. 4972

<u>SECTION</u>	<u>PAGE</u>
I. BACKGROUND	1
A. Site	1
B. Tank Owner/Operator	1
C. Excavating Contractor	1
D. Consultant	1
E. Others On-Site During Site Work	1
II. DATES	2
A. Date Release Reported to MPCA	2
B. Dates Site Work Performed	2
III. RELEASE INFORMATION	2
A. Information on Tanks Removed	2
1. Tank 1	2
B. Information on Existing Tanks	2
C. Information on Dispenser Lines	2
D. Information on Surface Spills	2
IV. EXCAVATION	3
A. Dimensions of Excavation	3
B. Original Tank Backfill Material	3
C. Native Soil Types	3
D. Quantity of Contaminated Soil Removed	3
E. Evidence of Ground Water	3
F. Soil Borings	3
G. Evidence of Groundwater Contamination	4
H. Evidence of Bedrock	4
I. Other Unique Conditions	4

TABLE OF CONTENTS (CONTINUED)

UNDERGROUND STORAGE TANK
CLOSURE REPORT
FOR
GOODYEAR FACILITY
1735 VAN DYKE AVENUE
MAPLEWOOD, MINNESOTA
GME PROJECT NO. 4972

<u>Section</u>	<u>Page</u>
V. SAMPLING	5
A. Description of Field Monitoring Methods	5
B. Soil Vapor Headspace Analysis Results	5
C. Description of Soil Sampling and Handling Procedures	6
D. Soil Sample Analytical Results	6
VI. FIGURES (See Appendix)	7
VII. SUMMARY	7
VIII. SOIL TREATMENT INFORMATION	8
IX. CONSULTANT (OR OTHER) PREPARING THIS REPORT	8
APPENDIX	
A. Figures	
Figure 1 Regional Location Diagram	
Figure 2 Site Diagram	
Figure 3 Headspace and Laboratory Soil Sample Locations	
Figure 4 Approximate KVA Soil Probe Location	
B. Interpoll Laboratory Report - UST Excavation	
C. Interpoll Laboratory Report - KVA Probe	
D. KVA Soil Boring Log	
E. SA Monitoring Well Information	
F. MPCA Guidance Document	
G. GME General Qualifications	
H. Site Photographs	

EXCAVATION REPORT FOR PETROLEUM RELEASE SITES

Minnesota Pollution Control Agency
Tanks and Spills Section
March 27, 1995

Complete the information below and submit to the Minnesota Pollution Control Agency (MPCA) Tanks and Spills Section to document excavation and treatment of petroleum contaminated soil. Excavations must be done in accordance with "Excavation of Petroleum Contaminated Soil" (Guidance Document 6). Please attach any available preliminary site investigation reports to this excavation report.

Additional pages may be attached. Please type or print clearly.

I. BACKGROUND

A. Site: Goodyear Retail Facility (See Figures 1 & 2)
Street: 1735 Van Dyke Avenue
City, Zip:Maplewood, 55109
County: Ramsey
MPCA Site ID#: LEAK00008146
MPCA Project Manager: Mr. Jim Joslyn

B. Tank Owner/Operator: Mr. Bruce G. Odlaug
Mailing Address: Maun and Simon
Street/Box: 2900 Norwest Ctr, 90 S Seventh St.
City, Zip: Minneapolis, 55402-4133
Telephone: (612) 338-1113
Contact: Mr. Bruce Odlaug

C. Excavating Contractor: Minnesota Petroleum, Inc.
Contact: Mr. Mike D. Dehn
Telephone: (612) 571-8490
Tank Contractor Certification Number: 0604

D. Consultant: GME Consultants, Inc.
Contact: Mr. Timothy F. McGlennen
Street/Box: 14000 21st Avenue North
City, Zip: Plymouth, MN 55447
Telephone: 612-559-1859

E. Others on-site during site work (e.g., fire marshal, local officials, MPCA staff, etc.): City of Maplewood Fire Marshall.

Note: If person other than tank owner and/or operator is conducting the cleanup, provide name, address, and relationship to site on a separate attached sheet.

Excavation Report for Petroleum Release Sites
Page 2
March 27, 1995

II. DATES

- A. Date release reported to MPCA: January 10, 1995 (laboratory results received via fax on January 9, 1995)
- B. Dates site work performed:
- | Work Performed | Date |
|--|------------------|
| Tried to begin tank removal but contractor was not allowed site access | October 23, 1994 |
| Used oil tank removed | December 7, 1994 |
| Performed KVA Soil Probe | January 13, 1995 |

III. RELEASE INFORMATION

- A. Provide the following information for all removed tanks.
(SEE FIGURE 2 FOR TANK LOCATION)

Tank 1: Capacity 500 gallons Type Steel Age Unknown

Condition: We observed Tank No. 1 to be in generally fair condition, with some surficial corrosion.

Product history: Tank No. 1 is believed to have stored used oil only.

Approximate quantity of petroleum released, if known: It appears that a minor amount of petroleum has been released from this tank system.

Cause of release: Possible causes of release may include surface spillage, overfills, or leaky pipe fittings.

- B. Provide the following information for all existing tanks.

To the best of our knowledge, there are no additional USTs at the site. An above ground used oil tank will be installed inside of the building.

- C. If the release was associated with the lines or dispensers, briefly describe the problem: A dispenser was not associated with this UST.

- D. If the release was a surface spill, briefly describe the problem: We observed some minor staining on the bituminous pavement surrounding the fill pipe (See Photographs)

Excavation Report for Petroleum Release Sites

Page 3

March 27, 1995

IV. EXCAVATION

- A. **Dimensions of excavation:** The maximum dimensions of the excavation were 6 feet by 8 feet in plan, with a maximum depth of 7 feet. The excavation was located on the north side of the building near a tire storage area.
- B. **Original tank backfill material (sand, gravel, etc.):** The backfill around the UST generally consisted of brown silty sand.
- C. **Native soil type (clay, sand, etc.):** Based on our KVA soil probe, soils below the tank basin consist of brown silty sand with trace clay and gravel.
- D. **Quantity of contaminated soil removed (cubic yards):**

[NOTE: If more than 400 cubic yards removed, please attach copy of written approval from MPCA.]
Petroleum impacts were not encountered during the tank removal monitoring; therefore, no soils were excavated.
- E. **Was ground water encountered or was there evidence of a seasonally high ground water table? At what depth?** Groundwater was not encountered in the excavation. Based on our review of a monitoring well construction log and abandonment log for a nearby SuperAmerica Leak Site, groundwater is approximately 27 feet below grade. This SuperAmerica off-site monitoring well is located along the Goodyear property boundary about 125 feet northeast of the tank basin.
- F. **If a soil boring was necessary (as indicated in part VI of "Excavation of Petroleum Contaminated Soil" (Guidance Document 6) for sand and silty sand native soils) describe the soil analytical and soil vapor headspace results. Attach the boring logs and laboratory results to this report.** During the UST removal, we did not observe evidence of a petroleum release. However, 5.9 and 130 parts per million (ppm) diesel range organics (DRO) were detected in the two soil samples collected from below the tank. Because of these detections, we drilled one soil probe through the tank excavation using a KVA Electric Rotary Hammer with 1 inch sampling equipment.

We collected a soil sample from 12 to 13 feet below grade for headspace analysis using an HNTU PI-101 photoionization detector (PID). The headspace analysis did not indicate the presence of organic vapors in the collected sample. We then collected a soil sample from 13 to 14 feet below grade for laboratory analysis of DRO, and volatile organic compounds (VOCs) by Method 465D. We observed no petroleum odors or discolorations from the soil sample which consisted of brown silty sand with trace clay and gravel.

The KVA laboratory report indicates that DRO and VOCs were not detected in the soil sample. The report does indicate the detection of acetone, both in the sample and in the laboratory method blank at similar concentrations. A copy of the laboratory report and the KVA Soil Boring Log are attached in the Appendix.

- G. If ground water was encountered or if a soil boring was conducted, was there evidence of ground water contamination? Specify, e.g., free product (specify thickness), product sheen, ground water in contact with petroleum contaminated soil, water analytical results, etc. Groundwater was not encountered during our KVA Soil Probe work.

The nearby SA leak site monitoring well (MW-4) was installed on September 1, 1994 and removed on January 22, 1995. The monitoring well was sampled and analyzed for gasoline range organics (GRO) on September 24, 1994, and for GRO, benzene, toluene, ethylbenzene, and total xylenes (BTEX) on October 17, 1994. None of these parameters were detected in the groundwater samples.

We have included a copy of the monitoring well information supplied to us by you in the Appendix.

[NOTE: If free product was observed, contact MPCA staff immediately as outlined in "Petroleum Tank Release Reports" (Guidance Document 2.)

- H. Was bedrock encountered in the excavation? At what depth? Bedrock was not encountered.
- I. Were there other unique conditions associated with this site? If so, explain. None.

Excavation Report for Petroleum Release Sites

Page 5
March 27, 1995

V. SAMPLING

A. Briefly describe the field methods (including use of a photoionization detector) used to distinguish contaminated from uncontaminated soil: We observed the soils collected from and within the tank excavation basin for the presence of unusual discolorations and petroleum odors. Jar headspace analyses of soil samples collected from the base and sidewalls of the excavations were conducted in the field with an HNU PID which detects certain organic vapors in the ppm range.

B. List soil vapor headspace analysis results. Indicate sampling locations using sample codes (with sampling depths in parentheses), e.g. R-1 (2'), R-2 (10'), etc. "R" stands for "removed." Samples collected at different depths at the same location should be labeled R-1A (2'), R-1B (4'), R-1C (6'), etc. If the sample was collected from the sidewall or bottom after excavation was complete, label it S-1 (for sidewall) or B-1 (for bottom). Be sure the sample codes correspond with the site map required in par VI, below. (See Figure 3)

Sample Code	Soil Type	Reading ppm
Excavation No. 1		
R1A (1')	Sand	0
R1B (2')	Sand	0
B2 (7')	Sand	0
B3 (7')	Sand	0
S-4 (6')	Sand	0
S-5 (6')	Sand	0
S-6 (7')	Sand	0
S-7 (7')	Sand	0

C. Briefly describe the soil sampling and handling procedures used: We collected two excavation bottom samples on December 7, 1994. These two soil samples were analyzed for DRO, and VOCs by Method 465D. The soil sample collected during the KVA Probe Survey also was analyzed for DRO and VOCs.

All of the soil samples were collected in the appropriate jars as supplied by Interpoll. The sample containers were labeled, placed in a cooler with ice, and transported to Interpoll Laboratories, Inc. The Interpoll Laboratory reports and sample chain-of-custody forms are included in the Appendix.

D. List below the soil sample analytical results from bottom and sidewall samples (i.e., soils left in place when excavation is complete). Code the samples with sampling depths in parentheses as follows: sidewall samples S-1 (8 feet), S-2 (4 feet), etc.; bottom samples B-1 (13 feet), B-2 (14 feet), etc. Be sure the sample codes correspond to the site map required in part VI. Do not include analyses from the stockpiled soils.
(See Figure 4)

Sample Code	DRO ppm	VOCs ppm
Excavation No. 1		
B-1W (7')	5.9	ND, except for 0.075 1,1,2-Trichlorotrifluoroethane
B-1E (7')	130	ND
KVA1 (13-14')	ND	ND

Definitions: ND=Not Detected DRO=Diesel Range Organics
VOCs=Volatile Organic Compounds by Method 465D

NOTE: COPIES OF LABORATORY REPORTS AND CHAIN OF CUSTODY FORMS MUST BE INCLUDED.

VI. FIGURES (See Appendix)

Attach the following figures to this report:

1. Site location map
2. Site map(s) drawn to scale illustrating the following:
 - a. Location (or former location) of all present and former tanks, lines, and dispensers;
 - b. Location of other structures (buildings, canopies, etc.);
 - c. adjacent city, township, or county roadways;
 - d. final extent of excavation; and
 - e. location of soil vapor analyses (e.g. SV-1), soil samples (e.g. SS-1), and soil borings (e.g. SB-1).
Also, attach all boring logs.
 - f. north arrow and map legend

VII. SUMMARY

Briefly summarize evidence indicating whether additional investigation is necessary at the site, as discussed in part VI of "Excavation of Petroleum Contaminated Soil" (Guidance Document 6.). If no further action is recommended, the MPCA staff will review this report following notification of soil treatment.

On December 7, 1994, we monitored the removal of one 500 gallon used oil UST by Minnesota Petroleum at the Goodyear Facility in Maplewood, Minnesota. We also collected soil samples for headspace and laboratory analyses.

During our monitoring, we did not observe evidence, such as elevated headspace readings, petroleum odors, or soil discoloration, to indicate that a release had occurred from the tank. However, the laboratory analysis results indicated that DRO was detected (5.9 and 130 ppm) in the collected soil samples.

On January 13, 1995, we drilled one KVA Soil Probe through the base of the tank basin to collect soil samples for headspace and laboratory analyses. We did not detect organic vapors in the headspace sample, and laboratory analysis did not detect DRO or VOC parameters. Based on a nearby groundwater monitoring well, the groundwater in the area is approximately 27 feet below grade. The area soils generally consist of silty sand.

The MPCA Guidance Document states that additional work is not required if organic vapor readings are below MPCA action levels during initial tank removal soil monitoring, the laboratory analyzed soil samples in sands are below 50 ppm total petroleum hydrocarbons (TPH) (there were no detections in the KVA soil samples), and groundwater is not in contact with impacted soils. Based on the site data meeting these criteria, it is our opinion that no additional testing is necessary at the former tank location and we recommend that the MPCA close the site after their review of this report.

VIII. SOIL TREATMENT INFORMATION

- A. Soil treatment method used (thermal, land application, other). If you choose "other", specify treatment method: Not applicable.
- B. Location of treatment site/facility: Not applicable.
- C. Date MPCA approved soil treatment (if thermal treatment was used after May 1, 1991, indicate date that the MPCA permitted thermal treatment facility agreed to accept soil): Not applicable.
- D. Identify the location of any stockpiled contaminated soil:

IX. CONSULTANT (OR OTHER) PREPARING THIS REPORT

Company Name: GME Consultants, Inc.
Street/Box: 14000 21st Avenue North
City/Zip: Plymouth, MN 55447
Telephone: 612-559-1859
Contacts: Mr. Timothy F. McGlennen
Environmental Biologist
Project Manager

Ms. Sandra J. Forrest
Senior Hydrogeologist
Regional Environmental Division Manager

Signature:  Date: 3/27/95

Signature:  Date: 3/27/95

Excavation Report for Petroleum Release Sites
Page 9
March 27, 1995

If additional investigation is not required at the site, please mail this form and all necessary attachments to:

Minnesota Pollution Control Agency
Attention: (Project Manager)
Hazardous Waste Division
Tanks and Spills Section
520 Lafayette Road
St. Paul, Minnesota 55155

If additional investigation is required at the site, include this form as a section in the Remedial Investigation/Corrective Action Design report. Excavation reports indicating a remedial investigation (RI) is necessary will not be reviewed by MPCA staff until the RI has been completed.

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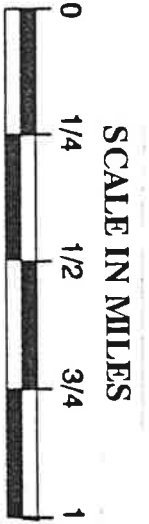
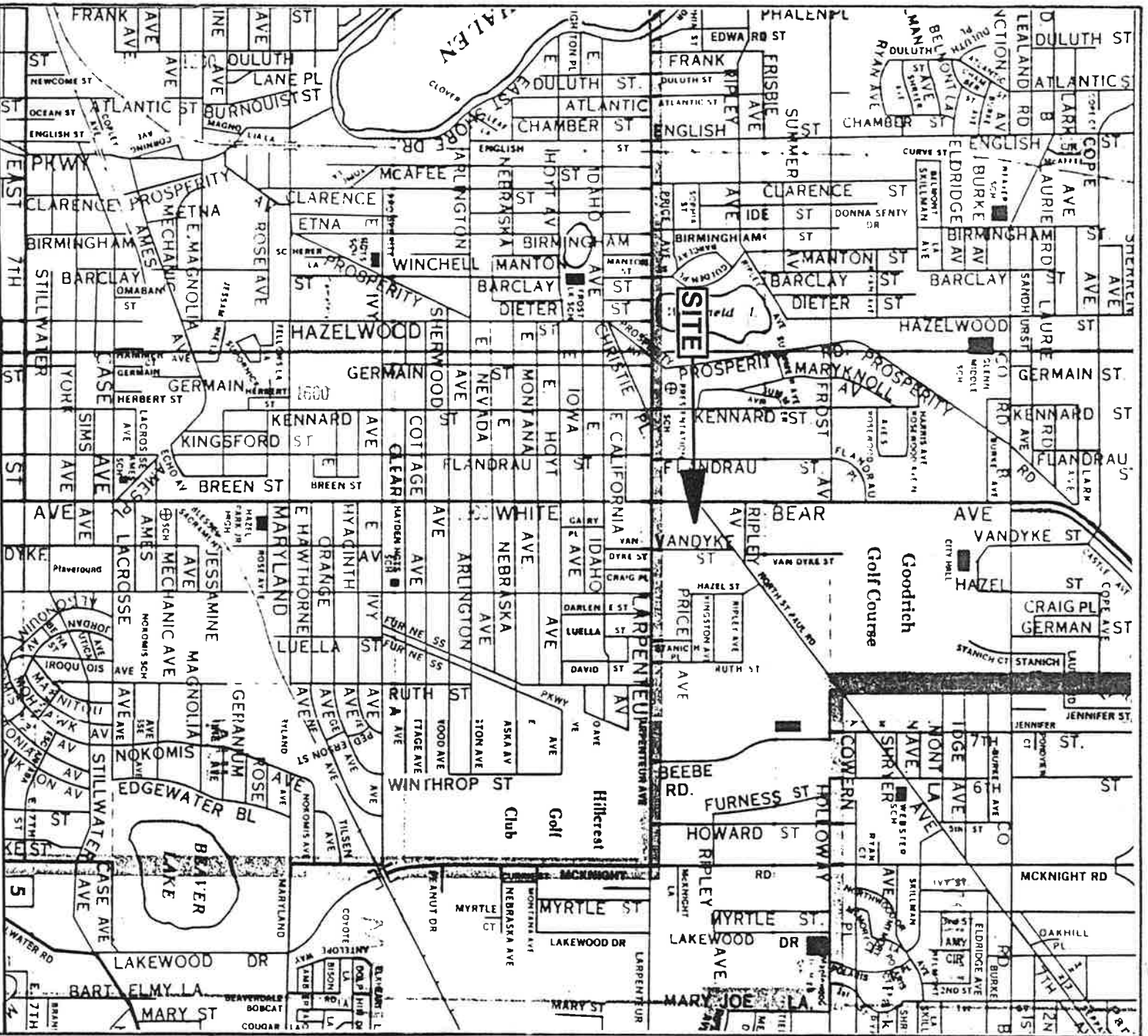
A. FIGURES

FIGURE 1 REGIONAL LOCATION DIAGRAM

FIGURE 2 SITE DIAGRAM

FIGURE 3 HEADSPACE AND LABORATORY SOIL SAMPLE LOCATIONS

FIGURE 4 APPROXIMATE KVA SOIL PROBE LOCATION



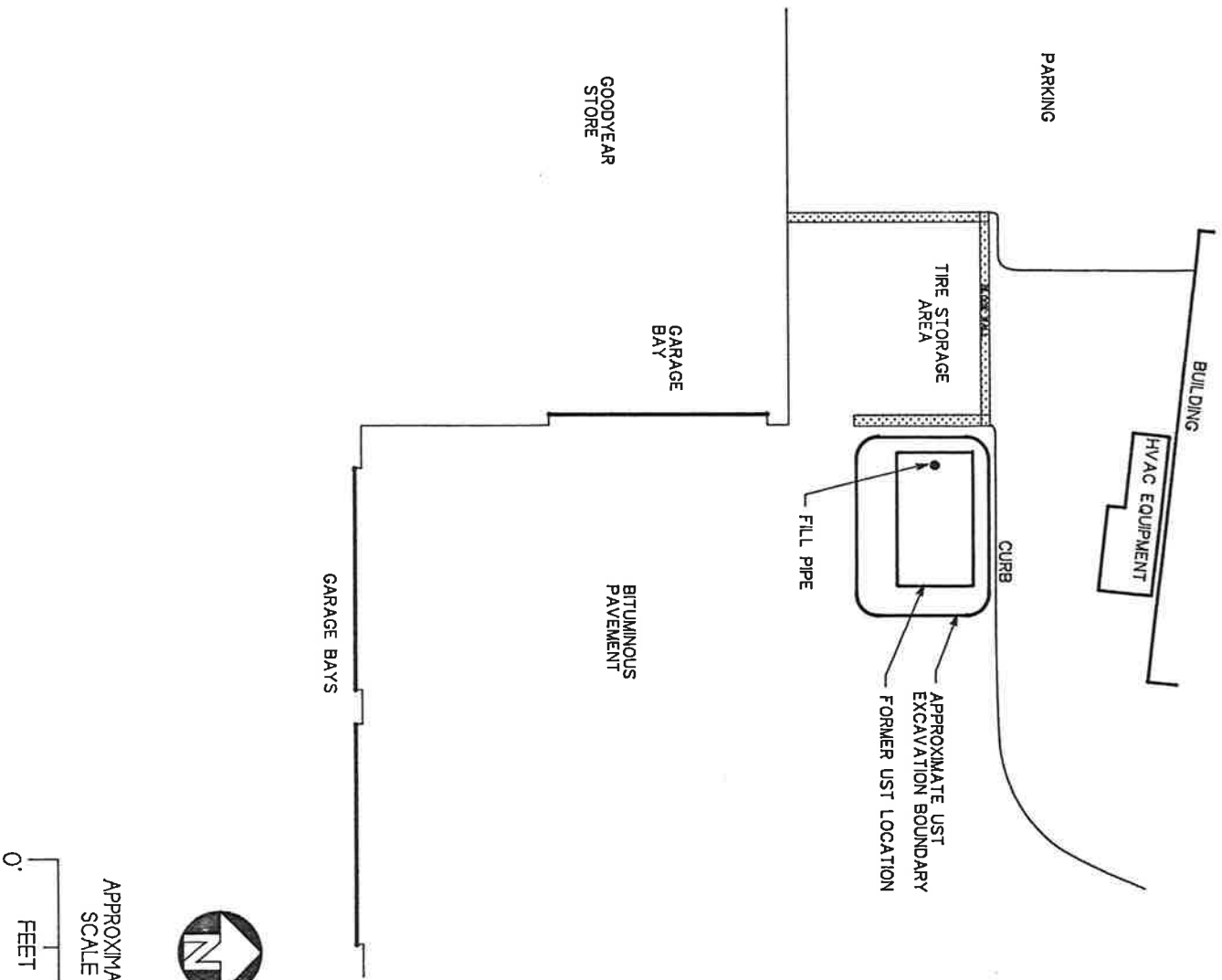
Copyright & Published By
HUDSON MAP CO.
 2510 NICOLLET AVENUE
 MINNEAPOLIS, MINNESOTA 55404

FIGURE 1: REGIONAL LOCATION DIAGRAM

GOODYEAR FACILITY
 MAPLEWOOD, MINNESOTA



GME CONSULTANTS, INC. 14000 21st Avenue North Minneapolis, MN 55447		TFM	SJF	3/95	4972

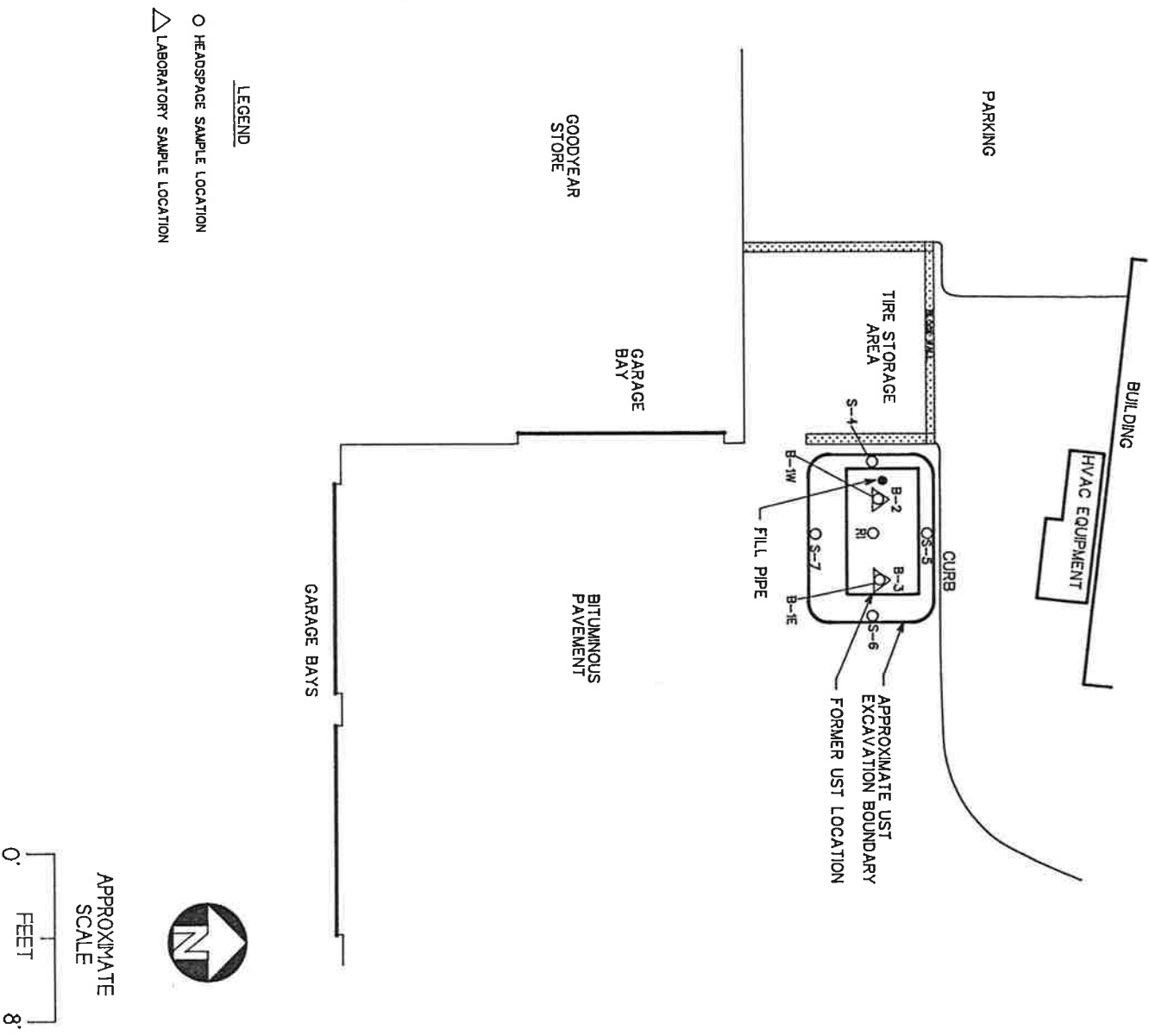


GME CONSULTANTS, INC.
 Geotechnical • Materials • Environmental
 14000 21st Avenue N.
 Minneapolis, Minnesota 55447
 (612) 559-1859



FIGURE 2: SITE DIAGRAM
 GOODYEAR FACILITY
 MAPLEWOOD, MINNESOTA

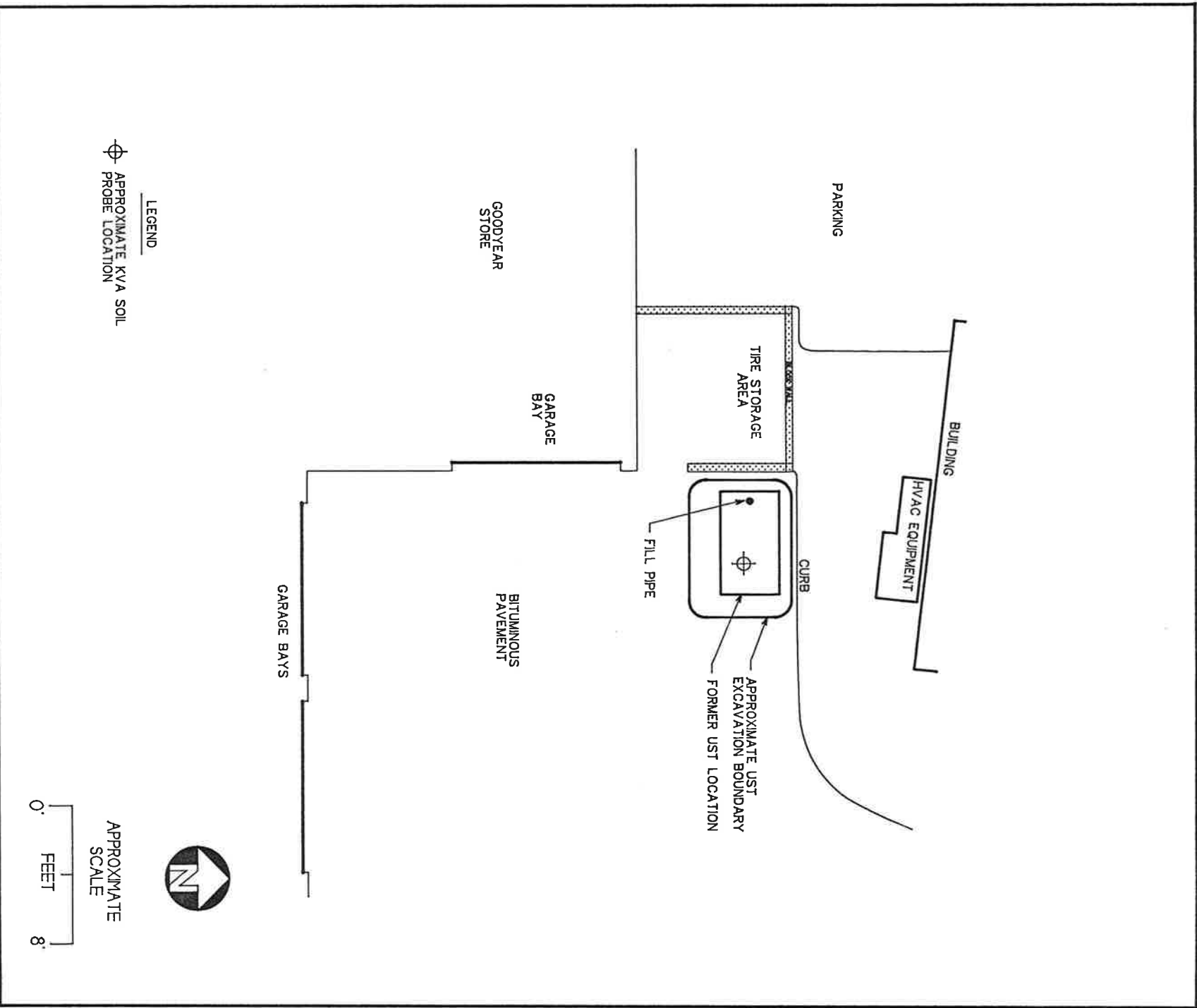
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 Minneapolis, Minnesota 55447
 (612) 559-1859



FIGURE 3: HEADSPACE & LABORATORY SOIL SAMPLE LOCATIONS			
GOODYEAR FACILITY MAPLEWOOD, MINNESOTA			
JLH	TFM	MARCH 95	GME Project No. 4972



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 (612) 559-1859



FIGURE 4: APPROXIMATE KVA SOIL PROBE LOCATION

GOODYEAR FACILITY
 MAPLEWOOD, MINNESOTA

JLH | TEM | MARCH 95 | GME Project No. 4972

B. INTERPOLL LABORATORY REPORT - UST EXCAVATION

Interpoll Laboratories, Inc.
4500 Ball Road N.E.
Circle Pines, Minnesota 55014-1819

TEL: (612) 786-6020
FAX: (612) 786-7854

**ANALYTICAL RESULTS
FOR GME CONSULTANTS, INC.
PROJECT: #4972**

Submitted to:

**GME Consultants, Inc.
14000 - 21st Avenue N
Plymouth, Minnesota 55447**

Attention: William Donahue

Approved By:


Wayne A. Olson, Manager
Organic Chemistry Group

Laboratory Report #4516
January 6, 1995

PROJECT SUMMARY

The following laboratory report contains the analytical results for two soil samples submitted to Interpoll Laboratories, Inc. (ILI) by GME Consultants, Inc. for GME's Project #4972. The samples were received on December 7, 1994 according to Interpoll Labs documented sample acceptance procedures. The samples were analyzed for the parameters requested on GME's Chain-of-Custody #010821.

<u>Sample Identification</u>	<u>ILI Sample #</u>
B-1 W	4516-01
B-1 E	4516-02

Results are reported on a dry weight basis.

Footnote:

^aAlthough quantified as diesel range organics as requested, the chromatographic pattern more closely resembles that of motor oil.

^bAlthough quantified as diesel range organics as requested, the chromatographic pattern more closely resembles that of motor oil with a minor amount of fuel oil.

^cSample extract was diluted as indicated to accommodate the analyte concentration. Reported value represents the concentration in the original undiluted sample, i.e., instrumental result was multiplied by the dilution factor prior to reporting. Achieved detection limit is given. The target detection limit applicable to the sample may be obtained by dividing the achieved detection limit by the dilution factor.

WAO/bj

BDL = below detection limit

Invoice Enclosed

Sample Identification: B-1 W
Sample Type: Soil
Laboratory Log Number: 4516-01

Interpoll Laboratories, Inc.
Laboratory Report #4516
GME Consultants, Inc.

Achieved Detection Limit (mg/Kg)	Analytical Result (mg/Kg)	Equivalent Method Blank
---	---------------------------------	-------------------------------

EPA Method 160.3:

Preparation Date: 12/12/94

Analysis Date: 12/12/94

Total solids, %

0.1

94.9

Wisconsin DNR Method DRO,

Preparation Date: 12/8/94

Analysis Date: 12/10/94

Diesel range organics

1.1

5.9 ^a

BDL

MDH Method 465-D:

Preparation Date: 12/13/94

Analysis Date: 12/15/94

Dichlorodifluoromethane	0.054	BDL	BDL
Chloromethane	0.064	BDL	BDL
Vinyl chloride	0.026	BDL	BDL
Bromomethane	0.036	BDL	BDL
Chloroethane	0.027	BDL	BDL
Dichlorofluoromethane	0.005	BDL	BDL
Trichlorofluoromethane	0.013	BDL	BDL
1,1-Dichloroethene	0.022	BDL	BDL
Allyl chloride	0.0093	BDL	BDL
Methylene chloride	0.47	BDL	BDL
trans-1,2-Dichloroethene	0.052	BDL	BDL
1,1-Dichloroethane	0.023	BDL	BDL
2,2-Dichloropropane	0.033	BDL	BDL
cis-1,2-Dichloroethene	0.026	BDL	BDL
Bromochloromethane	0.0093	BDL	BDL
Chloroform	0.013	BDL	BDL
1,1,2-Trichlorotrifluoroethane	0.025	0.075	BDL
1,1,1-Trichloroethane	0.016	BDL	BDL
Carbon tetrachloride	0.005	BDL	BDL
1,1-Dichloro-1-propene	0.005	BDL	BDL
1,2-Dichloroethane	0.012	BDL	BDL
Trichloroethene	0.012	BDL	BDL

Sample Identification: B-1 W
Sample Type: Soil
Laboratory Log Number: 4516-01

Interpoll Laboratories, Inc.
Laboratory Report #4516
GME Consultants, Inc.

	Achieved Detection Limit (mg/Kg)	Analytical Result (mg/Kg)	Equivalent Method Blank
MDDH Method 465-D (continued):			
1,2-Dichloropropane	0.012	BDL	BDL
2,3-Dichloro-1-propene	0.020	BDL	BDL
Dibromomethane	0.030	BDL	BDL
Bromodichloromethane	0.011	BDL	BDL
trans-1,3-Dichloropropene	0.011	BDL	BDL
cis-1,3-Dichloropropene	0.017	BDL	BDL
2-Chloroethylvinyl ether	0.017	BDL	BDL
1,1,2-Trichloroethane	0.012	BDL	BDL
Tetrachloroethene	0.011	BDL	BDL
1,3-Dichloropropane	0.0093	BDL	BDL
Dibromochloromethane	0.026	BDL	BDL
1,2-Dibromoethane	0.036	BDL	BDL
Chlorobenzene	0.048	BDL	BDL
1,1,1,2-Tetrachloroethane	0.030	BDL	BDL
Bromoform	0.012	BDL	BDL
Bromobenzene	0.0079	BDL	BDL
1,2,3-Trichloropropane	0.011	BDL	BDL
1,1,2,2-Tetrachloroethane	0.0079	BDL	BDL
2-Chlorotoluene	0.019	BDL	BDL
4-Chlorotoluene	0.027	BDL	BDL
1,3-Dichlorobenzene	0.0066	BDL	BDL
1,4-Dichlorobenzene	0.015	BDL	BDL
1,2-Dichlorobenzene	0.020	BDL	BDL
1,2-Dibromo-3-chloropropane	0.021	BDL	BDL
1,2,4-Trichlorobenzene	0.0093	BDL	BDL
Hexachlorobutadiene	0.015	BDL	BDL
1,2,3-Trichlorobenzene	0.021	BDL	BDL
Ethyl ether	0.076	BDL	BDL
Acetone	0.48	BDL	BDL
Tetrahydrofuran	0.96	BDL	BDL
Methyl ethyl ketone	0.37	BDL	BDL
Methyl tertiary butyl ether	0.057	BDL	BDL
Benzene	0.065	BDL	BDL
Methyl isobutyl ketone	0.16	BDL	BDL
Toluene	0.041	BDL	BDL
Ethylbenzene	0.044	BDL	BDL

Sample Identification: B-1 W
Sample Type: Soil
Laboratory Log Number: 4516-01

Interpoll Laboratories, Inc.
Laboratory Report #4516
GME Consultants, Inc.

	Achieved Detection Limit (mg/Kg)	Analytical Result (mg/Kg)	Equivalent Method Blank
MDDH Method 465-D (continued):			
m/p-Xylene	0.040	BDL	BDL
o-Xylene	0.072	BDL	BDL
Styrene	0.036	BDL	BDL
Isopropylbenzene	0.061	BDL	BDL
n-Propylbenzene	0.032	BDL	BDL
1,3,5-Trimethylbenzene	0.031	BDL	BDL
tert-Butylbenzene	0.051	BDL	BDL
1,2,4-Trimethylbenzene	0.022	BDL	BDL
sec-Butylbenzene	0.057	BDL	BDL
p-Isopropyltoluene	0.044	BDL	BDL
n-Butylbenzene	0.051	BDL	BDL
Naphthalene	0.038	BDL	BDL

Sample Identification: B-1 E
Sample Type: Soil
Laboratory Log Number: 4516-02

Interpoll Laboratories, Inc.
Laboratory Report #4516
GMIE Consultants, Inc.

Achieved Detection Limit (mg/Kg)	Analytical Result (mg/Kg)	Equivalent Method Blank
---	---------------------------------	-------------------------------

EPA Method 160.3:

Preparation Date: 12/12/94

Analysis Date: 12/12/94

Total solids, %

0.1

94.8

Wisconsin DNR Method DRO,

Preparation Date: 12/8/94

Analysis Date: 12/10/94

Diesel range organics

5.3

130 b

BDL

Dilution Factor

5 c

5 c

MDH Method 465-D:

Preparation Date: 12/13/94

Analysis Date: 12/15/94

Dichlorodifluoromethane	0.054	BDL	BDL
Chloromethane	0.064	BDL	BDL
Vinyl chloride	0.026	BDL	BDL
Bromomethane	0.036	BDL	BDL
Chloroethane	0.027	BDL	BDL
Dichlorofluoromethane	0.005	BDL	BDL
Trichlorofluoromethane	0.013	BDL	BDL
1,1-Dichloroethene	0.022	BDL	BDL
Allyl chloride	0.0093	BDL	BDL
Methylene chloride	0.47	BDL	BDL
trans-1,2-Dichloroethene	0.052	BDL	BDL
1,1-Dichloroethane	0.023	BDL	BDL
2,2-Dichloropropane	0.033	BDL	BDL
cis-1,2-Dichloroethene	0.026	BDL	BDL
Bromochloromethane	0.0093	BDL	BDL
Chloroform	0.013	BDL	BDL
1,1,2-Trichlorotrifluoroethane	0.025	BDL	BDL
1,1,1-Trichloroethane	0.016	BDL	BDL
Carbon tetrachloride	0.005	BDL	BDL
1,1-Dichloro-1-propene	0.005	BDL	BDL
1,2-Dichloroethane	0.012	BDL	BDL
Trichloroethene	0.012	BDL	BDL

Sample Identification: B-1 E
 Sample Type: Soil
 Laboratory Log Number: 4516-02

Interpoll Laboratories, Inc.
 Laboratory Report #4516
 GME Consultants, Inc.

	Achieved	Analytical	Equivalent
	Detection Limit (mg/Kg)	Result (mg/Kg)	Method Blank
MDDH Method 465-D (continued):			
1,2-Dichloropropane	0.012	BDL	BDL
2,3-Dichloro-1-propene	0.020	BDL	BDL
Dibromomethane	0.030	BDL	BDL
Bromodichloromethane	0.011	BDL	BDL
trans-1,3-Dichloropropene	0.011	BDL	BDL
cis-1,3-Dichloropropene	0.017	BDL	BDL
2-Chloroethy/vinyl ether	0.017	BDL	BDL
1,1,2-Trichloroethane	0.012	BDL	BDL
Tetrachloroethene	0.011	BDL	BDL
1,3-Dichloropropane	0.0093	BDL	BDL
Dibromochloromethane	0.026	BDL	BDL
1,2-Dibromoethane	0.036	BDL	BDL
Chlorobenzene	0.049	BDL	BDL
1,1,1,2-Tetrachloroethane	0.030	BDL	BDL
Bromoform	0.012	BDL	BDL
Bromobenzene	0.0079	BDL	BDL
1,2,3-Trichloropropane	0.011	BDL	BDL
1,1,2,2-Tetrachloroethane	0.0079	BDL	BDL
2-Chlorotoluene	0.019	BDL	BDL
4-Chlorotoluene	0.027	BDL	BDL
1,3-Dichlorobenzene	0.0066	BDL	BDL
1,4-Dichlorobenzene	0.015	BDL	BDL
1,2-Dichlorobenzene	0.020	BDL	BDL
1,2-Dibromo-3-chloropropane	0.021	BDL	BDL
1,2,4-Trichlorobenzene	0.0093	BDL	BDL
Hexachlorobutadiene	0.015	BDL	BDL
1,2,3-Trichlorobenzene	0.021	BDL	BDL
Ethyl ether	0.076	BDL	BDL
Acetone	0.49	BDL	BDL
Tetrahydrofuran	0.96	BDL	BDL
Methyl ethyl ketone	0.37	BDL	BDL
Methyl tertiary butyl ether	0.057	BDL	BDL
Benzene	0.065	BDL	BDL
Methyl isobutyl ketone	0.16	BDL	BDL
Toluene	0.041	BDL	BDL
Ethylbenzene	0.044	BDL	BDL

Sample Identification: B-1 E
Sample Type: Soil
Laboratory Log Number: 4516-02

Interpoll Laboratories, Inc.
Laboratory Report #4516
GME Consultants, Inc.

	Achieved Detection Limit (mg/Kg)	Analytical Result (mg/Kg)	Equivalent Method Blank
MDDH Method 465-D (continued):			
m/p-Xylene	0.040	BDL	BDL
o-Xylene	0.072	BDL	BDL
Styrene	0.036	BDL	BDL
Isopropylbenzene	0.061	BDL	BDL
n-Propylbenzene	0.032	BDL	BDL
1,3,5-Trimethylbenzene	0.031	BDL	BDL
tert-Butylbenzene	0.051	BDL	BDL
1,2,4-Trimethylbenzene	0.022	BDL	BDL
sec-Butylbenzene	0.057	BDL	BDL
p-Isopropyltoluene	0.044	BDL	BDL
n-Butylbenzene	0.051	BDL	BDL
Naphthalene	0.038	BDL	BDL



010821

INTERPOLL LABORATORIES, INC.
4500 BALL ROAD N.E.
CIRCLE PINES, MINNESOTA 55014-18
TEL: 612/786-6020
FAX: 612/786-7854

**CHAIN-OF-CUSTODY RECORD
Analytical Request**

Client GME
Address Plymouth
Phone 553-1259

Route Report To: William L Donahue
Bill To: GME
P.O. _____
Project Name/No. 4972 maplewood

SPECIAL HANDLING REQUEST
 RUSH _____
 OTHER _____
 QUOTE NO. _____

Sampled By (Print) <u>William L Donahue</u>					Number of Containers of Each					Total No. Cont.	PID/FID		Analytical Request	COMMENTS
Sampler Signature <u>William Donahue</u> Date <u>12/7/94</u>					Preservatives						Ambient	Sample		
Item No.	Sample Description	Date/Time	Matrix	Interpoll Log No.	None	HNO ₃	H ₂ SO ₄	NaOH	VOC					
1	B-1 W	12/7 Am	Soil	11516-01	4						4			X X X
2	B-1 E	12/7 Am	Soil	02	4						4			X X X

Additional Comments:

Item No.	Relinquished by/Affiliation	Accepted by/Affiliation	Date	Time
1-2	<u>William Donahue / GME</u>	<u>Bob Sang, Interpoll</u>	<u>12/7/94</u>	<u>1230</u>

Laboratory Comments Only:

C. INTERPOLL LABORATORY REPORT - KVA PROBE

Interpoll Laboratories, Inc.
4500 Ball Road N.E.
Circle Pines, Minnesota 55014-1819

TEL: (612) 786-6020
FAX: (612) 786-7854


**ANALYTICAL RESULTS
FOR GME CONSULTANTS, INC.
PROJECT: GOODYEAR STORE**

Submitted to:

**GME Consultants, Inc.
14000 - 21st Avenue N
Plymouth, Minnesota 55447**

Attention: Tim McGlennen

Approved By:


Wayne A. Olson, Manager
Organic Chemistry Group

Laboratory Report #4713
January 31, 1995

PROJECT SUMMARY

The following laboratory report contains the analytical results for one soil sample submitted to Interpoll Laboratories, Inc. (ILI) by GME Consultants, Inc. for GME's Goodyear Store Project. The sample was received on January 13, 1995 according to Interpoll Labs documented sample acceptance procedures. The sample was analyzed for the parameters requested on GME's Chain-of-Custody #010814.

<u>Sample Identification</u>	<u>ILI Sample #</u>
KVA1	4713-01

Results are reported on a dry weight basis.

WAO/bj
BDL = below detection limit
Invoice Enclosed

Sample Identification: KVA1
 Sample Type: Soil
 Laboratory Log Number: 4713-01

Interpoll Laboratories, Inc.
 Laboratory Report #4713
 GME Consultants, Inc.

	Achieved	Analytical	Equivalent
	Detection Limit (mg/Kg)	Result (mg/Kg)	Method Blank
MDDH Method 465-D (continued):			
Dibromomethane	0.031	BDL	BDL
Bromodichloromethane	0.011	BDL	BDL
trans-1,3-Dichloropropene	0.011	BDL	BDL
cis-1,3-Dichloropropene	0.018	BDL	BDL
2-Chloroethylvinyl ether	0.018	BDL	BDL
1,1,2-Trichloroethane	0.012	BDL	BDL
Tetrachloroethene	0.011	BDL	BDL
1,3-Dichloropropane	0.0096	BDL	BDL
Dibromochloromethane	0.027	BDL	BDL
1,2-Dibromoethane	0.037	BDL	BDL
Chlorobenzene	0.050	BDL	BDL
1,1,1,2-Tetrachloroethane	0.031	BDL	BDL
Bromoform	0.012	BDL	BDL
Bromobenzene	0.0082	BDL	BDL
1,2,3-Trichloropropane	0.011	BDL	BDL
1,1,2,2-Tetrachloroethane	0.0082	BDL	BDL
2-Chlorotoluene	0.020	BDL	BDL
4-Chlorotoluene	0.028	BDL	BDL
1,3-Dichlorobenzene	0.0069	BDL	BDL
1,4-Dichlorobenzene	0.015	BDL	BDL
1,2-Dichlorobenzene	0.021	BDL	BDL
1,2-Dibromo-3-chloropropane	0.022	BDL	BDL
1,2,4-Trichlorobenzene	0.0096	BDL	BDL
Hexachlorobutadiene	0.015	BDL	BDL
1,2,3-Trichlorobenzene	0.022	BDL	BDL
Ethyl ether	0.079	BDL	BDL
Acetone	0.50	0.65	0.67
Tetrahydrofuran	1.0	BDL	BDL
Methyl ethyl ketone	0.38	BDL	BDL
Methyl tertiary butyl ether	0.059	BDL	BDL
Benzene	0.068	BDL	BDL
Methyl isobutyl ketone	0.16	BDL	BDL
Toluene	0.043	BDL	BDL
Ethylbenzene	0.046	BDL	BDL
m/p-Xylene	0.042	BDL	BDL
o-Xylene	0.074	BDL	BDL

Sample Identification: KVA1
Sample Type: Soil
Laboratory Log Number: 4713-01

Interpoll Laboratories, Inc.
Laboratory Report #4713
GM/E Consultants, Inc.

	Achieved Detection Limit (mg/Kg)	Analytical Result (mg/Kg)	Equivalent Method Blank
MDDH Method 465-D (continued):			
Styrene	0.037	BDL	BDL
Isopropylbenzene	0.063	BDL	BDL
n-Propylbenzene	0.033	BDL	BDL
1,3,5-Trimethylbenzene	0.032	BDL	BDL
tert-Butylbenzene	0.053	BDL	BDL
1,2,4-Trimethylbenzene	0.023	BDL	BDL
sec-Butylbenzene	0.059	BDL	BDL
p-Isopropyltoluene	0.046	BDL	BDL
n-Butylbenzene	0.053	BDL	BDL
Naphthalene	0.039	BDL	BDL



010814

INTERPOLL LABORATORIES, INC.
4500 BALL ROAD N.E.
CIRCLE PINES, MINNESOTA 55014-1819
TEL: 612/786-6020
FAX: 612/786-7854

**CHAIN-OF-CUSTODY RECORD
Analytical Request**

Client Gme
Address 14000 21st Ave N
Mpls Mn
Phone 559-1859

Route Report To: Tim McGilver
Bill To: Gme
P.O. _____
Project Name/No. Good year Store

SPECIAL HANDLING REQUEST
 RUSH
 OTHER 5-day hold
 QUOTE NO. _____

Sampled By (Print) <u>Tom Zankar</u>		Date <u>11-13-95</u>		Number of Containers of Each					Total No. Cont.	PID/FID		Analytical Request	COMMENTS
Sampler Signature <u>[Signature]</u>		Preservatives					Ambient	Sample					
Item No.	Sample Description	Date/Time	Matrix	Interpoll Log No.	None	HNO ₃	H ₂ SO ₄	NaOH	VOC				
1	KVA10	12:00	Soil	4713-01	✓					4			
2													
3													

Additional Comments:
EXTRACT metals/PCBs Sample
But hold for ANALYSIS

Item No.	Relinquished by/Affiliation	Accepted by/Affiliation	Date	Time
1	<u>Tom Zankar / Gme</u>	<u>Karen Peterson</u>	<u>1/13</u>	<u>1:20</u>

Comments Only:
on work of with metals because of
1/13/95

Copy Yellow - Report Copy Pink - Client Copy

See Reverse Side For Instructions

E. SA MONITORING WELL INFORMATION

MAUN & SIMON, PLC

LAWRENCE J. HAYES*
JEROME B. SIMON
JOHN C. JOHANNESON
JAMES W. BREHL*
BRUCE G. ODLAUG
ALBERT A. WOODWARD
GARRETT E. MULROONEY*
WILLIAM J. HASSING*
JAMES A. GALLAGHER
CHARLES BANS
BARRY A. GERSICK
GEOFFREY P. JARPE*
RICHARD M. GAALSWYK
LARRY B. GUTHRIE
SETH M. COLTON
HAROLD LEVANDER, JR.

MINNEAPOLIS OFFICE
2900 NORWEST CENTER
90 SOUTH SEVENTH STREET
MINNEAPOLIS, MINNESOTA 55402-4133
TELEPHONE 612-338-1113
TELECOPIER 612-338-2271

SAINT PAUL OFFICE
2300 WORLD TRADE CENTER
30 EAST 7TH STREET
SAINT PAUL, MINNESOTA 55101-4904
TELEPHONE 612-229-2900
TELECOPIER 612-229-2800

J. PATRICK BRINKMAN*
RICHARD C. SALMEN
JOHN J. BOWDEN
PHILIP T. COLTON
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STEPHEN E. YOCH
JENNIFER A. TENENBAUM
JEANNE GLADER KILDOW
DANIEL S. SIMON

OF COUNSEL
JOSEPH M. NEMO, JR.

RETIRED
MERLYN C. GREEN
JOSEPH A. MAUN
1909-1991

*ALSO ADMITTED IN WISCONSIN

REPLY TO: **Minneapolis**

February 1, 1995

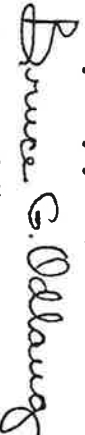
Timothy F. McGlennen
Environmental Biologist
Project Manager
GME Consultants, Inc.
14000 21st Avenue North
Minneapolis, MN 55447

Re: Goodyear Store
1735 Van Dyke Avenue, Maplewood, MN

Dear Tim:

Enclosed for your information is a copy of the Delta report on the monitoring well which was inadvertently placed on our property. I thought this might be of some help to you in connection with the clean-up of the release from the waste oil tank.

Delta advises that the well was abandoned on January 22, 1995.

Very truly yours,

Bruce G. Odlaug

BGO:jd
Enclosure

cc: Neil R. Hartman

2/01/95, BGO, 38406_1M



HORIZON
Laboratories, Inc.

5155 East River Road, Suite #416

Minneapolis, MN. 55421

Tel. (612) 572-0425

Fax (612) 572-0441

LABORATORY REPORT

Client: Delta Environmental Consultants, Inc
3900 Northwoods Drive, Suite 200
St. Paul, MN 55112
Attn: Jim DeLuca

Date Sampled: 10/17/94
Date Received: 10/18/94
Date Analyzed: 10/25/94
Physical State: Aqueous

Project: Super-America #4022
Maplewood, MN

Report Date: 10/27/94
Lab P.N.: 1000-212.4
Client P.N.: A093-376-1.0001

Quality Assurance / Quality Control Summary

Parameter (Method)	QC Type	Percent	Acceptable	Percent	Acceptable
		Recovery	Range	Reproducibility	Range
Benzene (MIDH 465D)	M	101	120 - 80	105	120 - 80
Toluene (MIDH 465D)	M	84	120 - 80	101	120 - 80
Ethylbenzene (MIDI 465D)	M	84	120 - 80	101	120 - 80
m,p-Xylenes (MIDH 465D)	M	85	120 - 80	100	120 - 80
o-Xylenes (MIDH 465D)	M	84	120 - 80	101	120 - 80
1,3,5-Trimethylbenzene (MDH 465D)	M	85	120 - 80	101	120 - 80
1,2,4-Trimethylbenzene (MIDH 465D)	M	85	120 - 80	101	120 - 80
GRO (Wis. DNR)	M	89	117 - 85	99	115 - 84

M = Matrix Spike / Matrix Spike Duplicate

L = Laboratory Control Sample

Reviewed

Approved

Compounds were identified by column retention time and quantified by peak area of known standards using a Hewlett Packard ChemStation Data System. The samples were received by HORIZON LABORATORIES, INC. and accompanied by the Chain-of-Custody record. The Laboratory Report is the sole property of the client to whom it is addressed. The Laboratory Results are only a part of the Laboratory Report.





HORIZON Laboratories, Inc.

5155 East River Road, Suite #416

Minneapolis, MN. 55421

Tel. (612) 572-0425

Fax (612) 572-0441

LABORATORY RESULTS

Client: Delta Environmental Consultants, Inc
3900 Northwoods Drive, Suite 200
St. Paul, MN 55112
Attn: Jim DeLuca

Date Sampled: 10/17/94
Date Analyzed: 10/25/94
Physical State: Aqueous

Project: SuperAmerica #4022
Maplewood, MN

Report Date: 10/27/94
Lab P.N.: 1000-212.4
Client P.N.: A093-376-1.0001

Sample ID.	Benzene µg/l EPA 8020	Toluene µg/l EPA 8020	Ethyl- benzene µg/l EPA 8020	Total, Xylenes µg/l EPA 8020	GRO µg/l Wis. DNR
M/W-4	<0.20	<0.50	<0.20	<0.80	<20
M/W-5	—	—	—	—	<20
Field Blank	<0.20	<0.50	<0.20	<0.80	<20
MDL, µg/l	0.20	0.50	0.20	0.80	20

---: See MDH 463D results

MDL, Method Detection Limit

(RQL: Gasoline Range Organics

All results are in µg/l which is equal to parts-per-billion (ppb).

The Laboratory Results are only a part of the Laboratory Report.



LABORATORY RESULTS

 Client: Delta Environmental Consultants, Inc
 3900 Northwoods Drive, Suite 200
 St. Paul, MN 55112
 Attn: Jim DeLuca

 Date Sampled: 10/17/94
 Date Analyzed: 10/25/94
 Physical State: Aqueous

 Project: SuperAmerica #4022
 Maplewood, MN

 Report Date: 10/25/94
 Lab P.N.: 1000-212.4
 Client P.N.: A093-376-1.0001

MDH 465D

<u>Sample I.D.</u>	<u>MW-S</u>	<u>MDL</u>
<u>Parameter</u>	<u>µg/l</u>	<u>µg/l</u>
Acetone	<30	30
Allyl Chloride	<0.8	0.8
Benzene	<0.2	0.2
Bromobenzene	<0.4	0.4
Bromochloromethane	<0.5	0.5
Bromodichloromethane	<0.6	0.6
Bromoform	<0.2	0.2
Bromomethane	<0.9	0.9
n-Butylbenzene	<0.2	0.2
sec-Butylbenzene	<0.2	0.2
tert-Butylbenzene	<0.2	0.2
Carbon Tetrachloride	<0.5	0.5
Chlorobenzene	<0.2	0.2
Chloroethane	<10	10
Chloroform	<0.5	0.5
Chloromethane	<10	10
2-Chlorotoluene	<0.3	0.3
4-Chlorotoluene	<0.7	0.7
Dibromochloromethane	<0.4	0.4
1,2-Dibromo-3-Chloropropane	<0.3	0.3
1,2-Dibromomethane	<0.6	0.6
Dibromomethane	<0.9	0.9
1,2-Dichlorobenzene	<0.4	0.4
1,3-Dichlorobenzene	<0.3	0.3
1,4-Dichlorobenzene	<0.5	0.5
Dichlorodifluoromethane	<6.0	6.0
1,1-Dichloroethane	<0.4	0.4
1,2-Dichloroethane	<1.1	1.1
1,1-Dichloroethane	<1.2	1.2
cis-1,2-Dichloroethane	<0.1	0.1
trans-1,2-Dichloroethane	<0.5	0.5
Dichlorodifluoromethane	<20	20
1,2-Dichloropropane	<0.5	0.5
1,3-Dichloropropane	<0.4	0.4

MDL: Method Detection Limit

All results are in µg/l which is equal to parts-per-billion (ppb)

The Laboratory Results are only a part of the Laboratory Report.



HORIZON
Laboratories, Inc.

5155 East River Road, Suite #416

Minneapolis, MN 55421

Tel: (612) 572-0425

Fax (612) 572-0441

LABORATORY RESULTS

Client: Delta Environmental Consultants, Inc
3900 Northwoods Drive, Suite 200
St. Paul, MN 55112
Attn: Jim DeLuca

Date Sampled: 10/17/94
Date Analyzed: 10/25/94
Physical State: Aqueous

Project: Super-America #4022
Maplewood, MN

Report Date: 10/25/94
Lab P.N.: 1000-212.4
Client P.N.: A093-376-1.0001

MDH 465D

Sample ID	MW-5	MDL
Parameter	$\mu\text{g/l}$	$\mu\text{g/l}$
*2,2-Dichloropropane	<0.7	0.7
1,1-Dichloropropane	<0.5	0.5
cis-1,3-Dichloropropene	<0.5	0.5
trans-1,3-Dichloropropene	<0.3	0.3
Ethyl Benzene	<0.2	0.2
Ethyl Ether	<5.0	5.0
Hexachlorobutadiene	<0.6	0.6
Isopropyl Benzene	<0.2	0.2
p-Isopropyltoluene	<0.2	0.2
Methyl Ethyl Ketone	<15	15
Methyl Isobutyl Ketone	<60	60
Methyl tert-Butyl Ether	<5.0	5.0
Methylene Chloride	<0.4	0.4
Naphthalene	<0.2	0.2
n-Propylbenzene	<0.2	0.2
o-Xylene	<0.3	0.3
Styrene	<0.5	0.5
1,1,1,2-Tetrachloroethane	<0.6	0.6
1,1,2,2-Tetrachloroethane	<0.4	0.4
Tetrachloroethene	34	0.5
Tetrahydrofuran	<15	15
Toluene	0.74	0.6
1,2,3-Trichlorobenzene	<1.0	1.0
1,2,4-Trichlorobenzene	<0.3	0.3
1,1,1-Trichloroethane	<1.0	1.0
1,1,2-Trichloroethane	<0.4	0.4
Trichloroethene	<0.6	0.6
Trichlorofluoromethane	<5.0	5.0
1,2,3-Trichloropropane	<0.4	0.4
1,1,2-Trichlorofluoroethane	<0.8	0.8
1,2,4-Trimethylbenzene	<0.4	0.4
*1,3,5-Trimethylbenzene	<0.2	0.2
Vinyl Chloride	<5.0	5.0
m,p-Xylenes	<0.5	0.5

*: cooling compounds

MDL: Method Detection Limit

All results are in $\mu\text{g/l}$ which is equal to parts-per-trillion (ppt)

The Laboratory Results are only a part of the Laboratory Report.

Printed on recycled paper.





Delta
Environmental
Consultants, Inc.
3900 Northwoods Dr., Suite 200
St. Paul, MN 55112

CHAIN-OF-CUSTODY RECORD

NOV 24 4 37 AM '99

DELTA PROJECT NO. HC93-316-1.0001 INVOICE CODE		PAGE 1 OF 1		ANALYSIS REQUESTED				LAB NAME HORIZON	
PROJECT MANAGER JIM DELUCA		TURN AROUND REQUESTED:						SAMPLE MATRIX: SOIL(S): AIR(A): BULK(B): AQUEOUS(Q): SLUDGE(L): OTHER(O)	
PROJECT NAME SUPR AMERICA #4022		<input type="checkbox"/> NORMAL		NUMBER OF CONTAINERS		LABORATORY PROJECT NO. 1000-212.4			
PROJECT LOCATION MAPLEWOOD, MN		<input type="checkbox"/> RUSH				ACCEPT (A) REJECT (R)		SAMPLE CONDITION AS RECEIVED: ON ICE	
SAMPLER'S SIGNATURE <i>Michael J. Anderson</i>		<input type="checkbox"/> OTHER		LABORATORY SAMPLE NUMBER				CHILLED <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
SAMPLE ID	SAMPLE LOCATION/DESCRIPTION	DATE/TIME SAMPLED						SEALED <input checked="" type="checkbox"/> YES <input type="checkbox"/> NO	
						SAMPLE CONDITION/COMMENTS			
MW-4		10-17/15:45		MW-465D	BTEX	GR0		11791	
MW-5		10-17/16:10						11792	
FIELD BLANK		10-17 15:45						11793	
GENERAL COMMENTS: RESULTS TO P.M. JIM DELUCA.									
1 RELINQUISHED BY (SIGNATURE) <i>Michael J. Anderson</i>			3 RELINQUISHED BY (SIGNATURE) <i>Jim Deluca</i>			5 RELINQUISHED BY (SIGNATURE)			
DATE 10-17-99			DATE			DATE			
TIME 16:00			TIME			TIME			
COMPANY F. W. Environmental			COMPANY			COMPANY			
2 RECEIVED BY (SIGNATURE) <i>Priscilla Norbe</i>			4 RECEIVED BY (SIGNATURE)			6 RECEIVED BY (SIGNATURE)			
DATE 10-18-99			DATE			DATE			
TIME 4:45			TIME			TIME			
COMPANY HORIZON			COMPANY			COMPANY			

LABORATORY REPORT

Client: Delta Environmental Consultants, Inc

3900 Northwoods Drive, Suite 200

St. Paul, MN 55112

Attn: Jim DeLuca

Date Sampled: 09/24/94

Date Received: 09/26/94

Date Analyzed: 09/29/94

Physical State: Aqueous

Project:

SuperAmerica #4022
Maplewood, MN

Report Date: 10/03/94

Lab P.N.: 1000-212.3

Client P.N.: A093-376-1.0001

Quality Assurance / Quality Control Summary

Parameter: (Method)	QC	Percent Recovery	Acceptable	Percent Reproducibility	Acceptable
	Type		Range		Range
MtBE (MDH 465D)	M	86	120 - 80	104	120 - 80
Benzene (MDH 465D)	M	96	120 - 80	102	120 - 80
Toluene (MDH 465D)	M	93	120 - 80	102	120 - 80
Ethylbenzene (MDH 465D)	M	93	120 - 80	102	120 - 80
m,p-Xylenes (MDH 465D)	M	93	120 - 80	101	120 - 80
o-Xylene (MDH 465D)	M	92	120 - 80	103	120 - 80
Dibromomethane (MDH 465D)	M	101	120 - 80	105	120 - 80
1,2-Dibromo-3-Chloropropane (MDH 465D)	M	111	120 - 80	104	120 - 80
GRO (Wis. DNR)	M	98	117 - 85	103	115 - 84

M = Matrix Spike / Matrix Spike Duplicate

L = Laboratory Control Sample

Reviewed



Approved



Compounds were identified by column retention time and quantified by peak area to those of known standards using a Hewlett Packard ChemStation data system. The samples were received by HORIZON LABORATORIES, INC. and accompanied by the Chain-of-Custody Record. The Laboratory Report is the sole property of the client to whom it is addressed. The Laboratory Results are only a part of the Laboratory Report.

LABORATORY RESULTS

Client: Delta Environmental Consultants, Inc
 3900 Northwoods Drive, Suite 200
 St. Paul, MN 55112
 Attn: Jim DeLuca

Date Sampled: 09/24/94
Date Analyzed: 09/29/94
Physical State: Aqueous

Project: SuperAmerica #4022
 Maplewood, MN

Report Date: 10/03/94
Lab P.N.: 1000-212.3
Client P.N.: A093-376-1.0001

Sample I.D.	Benzene	Toluene	Ethyl- benzene	Total, Xylenes	GRO
	µg/l EPA 8020	µg/l EPA 8020	µg/l EPA 8020	µg/l EPA 8020	µg/l Wis. DNR
MW-4	—	—	—	—	< 20
MW-5	—	—	—	—	< 20
MW-2	< 0.20	< 0.50	< 0.20	< 0.80	< 20
MW-3	< 0.20	< 0.50	< 0.20	< 0.80	< 20
MW-1	7,500	22,000	2,400	14,000	61,000
MDL, µg/l	0.20	0.50	0.20	0.80	20

—: See MDH 465D results.

MDL: Method Detection Limit for undiluted samples.

GRO: Gasoline Range Organics

All results are in µg/l which is equal to parts-per-billion (ppb).

The Laboratory Results are only a part of the Laboratory Report.



HORIZON

Laboratories, Inc.

5155 East River Road, Suite #416

Minneapolis, MN 55421

Tel. (612) 572-0425

Fax (612) 572-0441

LABORATORY RESULTS

Client: Delta Environmental Consultants, Inc
 3900 Northwoods Drive, Suite 200
 St. Paul, MN 55112
 Attn: Jim DeLuca

Date Sampled: 09/24/94
 Date Analyzed: 09/29/94
 Physical State: Aqueous

Project: SuperAmerica #4022
 Maplewood, MN

Report Date: 10/03/94
 Lab P.N.: 1000-212.3
 Client P.N.: A093-376-1.0001

MDH 465D

Sample ID	MW-4	MW-5	MDL
Parameter	µg/l	µg/l	µg/l
Acetone	<30	<30	30
Allyl Chloride	<0.8	<0.8	0.8
Benzene	<0.3	<0.3	0.3
Bromobenzene	<0.4	<0.4	0.4
Bromochloromethane	<0.5	<0.5	0.5
Bromodichloromethane	<0.6	<0.6	0.6
Bromoform	<0.2	<0.2	0.2
Bromomethane	<0.9	<0.9	0.9
n-Butylbenzene	<0.3	<0.3	0.3
sec-Butylbenzene	<0.2	<0.2	0.2
tert-Butylbenzene	<0.4	<0.4	0.4
Carbon Tetrachloride	<0.5	<0.5	0.5
Chlorobenzene	<0.2	<0.2	0.2
Chloroethane	<10	<10	10
Chloroform	<0.5	<0.5	0.5
Chloromethane	<10	<10	10
2-Chlorotoluene	<0.3	<0.3	0.3
4-Chlorotoluene	<0.7	<0.7	0.7
Dibromochloromethane	<0.4	<0.4	0.4
1,2-Dibromo-3-Chloropropane	<0.3	<0.3	0.3
1,2-Dibromoethane	<0.6	<0.6	0.6
Dibromomethane	<0.9	<0.9	0.9
1,2-Dichlorobenzene	<0.4	<0.4	0.4
1,3-Dichlorobenzene	<0.3	<0.3	0.3
1,4-Dichlorobenzene	<0.5	<0.5	0.5
Dichlorodifluoromethane	<6.0	<6.0	6.0
1,1-Dichloroethane	<0.4	<0.4	0.4
1,2-Dichloroethane	<1.1	<1.1	1.1
1,1-Dichloroethene	<1.2	<1.2	1.2
cis-1,2-Dichloroethene	<0.1	<0.1	0.1
trans-1,2-Dichloroethene	<0.5	<0.5	0.5
Dichlorofluoromethane	<20	<20	20
1,2-Dichloropropane	<0.5	<0.5	0.5
1,3-Dichloropropane	<0.4	<0.4	0.4

MDL: Method Detection Limit

All results are in µg/l which is equal to parts-per-billion (ppb)

The Laboratory Results are only a part of the Laboratory Report.



LABORATORY RESULTS

Client: Delta Environmental Consultants, Inc
3900 Northwoods Drive, Suite 200
St. Paul, MN 55112
Attn: Jim DeLuca

Date Sampled: 09/24/94
Date Analyzed: 09/29/94
Physical State: Aqueous

Project: SuperAmerica #4022
Maplewood, MN

Report Date: 10/03/94
Lab P.N.: 1000-212.3
Client P.N.: A093-376-1.0001

MDH 465D

Sample I.D.	MW-4	MW-5	MDL
Parameter	µg/l	µg/l	µg/l
*2,2-Dichloropropane	<0.7	<0.7	0.7
1,1-Dichloropropane	<0.5	<0.5	0.5
cis-1,3-Dichloropropane	<0.5	<0.5	0.5
trans-1,3-Dichloropropane	<0.3	<0.3	0.3
Ethyl Benzene	<0.2	<0.2	0.2
Ethyl Ether	<5.0	<5.0	5.0
Hexachlorobutadiene	<0.6	<0.6	0.6
Isopropyl Benzene	<0.2	<0.2	0.2
p-Isopropyltoluene	<0.2	<0.2	0.2
Methyl Ethyl Ketone	<15	<15	15
Methyl Isobutyl Ketone	<30	<30	30
Methyl tert-Butyl Ether	<5.0	<5.0	5.0
Methylene Chloride	<0.4	<0.4	0.4
Naphthalene	<0.5	<0.5	0.5
*n-Propylbenzene	<0.2	<0.2	0.2
o-Xylene	<0.2	<0.2	0.2
Styrene	<0.5	<0.5	0.5
1,1,1,2-Tetrachloroethane	<0.6	<0.6	0.6
1,1,2,2-Tetrachloroethane	<0.4	<0.4	0.4
Tetrachloroethene	<0.5	37	0.5
Tetrahydrofuran	<15	<15	15
Toluene	<0.6	<0.6	0.6
1,2,3-Trichlorobenzene	<1.0	<1.0	1.0
1,2,4-Trichlorobenzene	<0.3	<0.3	0.3
1,1,1-Trichloroethane	<1.0	<1.0	1.0
1,1,2-Trichloroethane	<0.4	<0.4	0.4
Trichloroethane	<0.6	<0.6	0.6
Trichlorofluoromethane	<5.0	<5.0	5.0
1,2,3-Trichloropropane	<0.4	<0.4	0.4
1,1,2-Trichlorofluoroethane	<0.8	<0.8	0.8
1,2,4-Trimethylbenzene	0.28	<0.2	0.2
*1,3,5-Trimethylbenzene	<0.2	<0.2	0.2
Vinyl Chloride	<5.0	<5.0	5.0
m,p-Xylenes	<0.5	<0.5	0.5

*: coeluting compounds

MDL: Method Detection Limit

All results are in µg/l which is equal to parts-per-billion (ppb).

The Laboratory Results are only a part of the Laboratory Report.

LABORATORY REPORT

Client: Delta Environmental Consultants, Inc
3900 Northwoods Drive, Suite 200
St. Paul, MN 55112
Attn: Jim DeLuca

Date Sampled: 09/01/94
Date Received: 09/01/94
Date Analyzed: 09/06/94
Physical State: Soil

Project: SuperAmerica #4022
Maplewood, MN

Report Date: 09/08/94
Lab P.N.: 1000-212.2
Client P.N.: A093-376

Quality Assurance / Quality Control Summary

Parameter (Method)	QC Type	Percent Recovery	Acceptable Range	Percent	Acceptable
				Reproducibility	Range
Benzene (EPA 8020)	M	104	127 - 76	101	127 - 76
Toluene (EPA 8020)	M	107	125 - 76	101	125 - 76
Ethylbenzene (EPA 8020)	M	110	125 - 76	100	125 - 76
m,p-Xylenes (EPA 8020)	M	115	125 - 76	102	125 - 76
o-Xylenes (EPA 8020)	M	110	125 - 76	101	125 - 76
GRO (Wis. DNR)	M	109	117 - 85	98	115 - 84

M = Matrix Spike / Matrix Spike Duplicate

L = Laboratory Control Sample

Reviewed 

Approved 

Compounds were identified by column retention time and quantified by peak area of known standards using a Hewlett Packard ChemStation Data System. The samples were received by HORIZON LABORATORIES, INC. and accompanied by the Chain-of-Custody record. The Laboratory Report is the sole property of the client to whom it is addressed. The Laboratory Results are only a part of the Laboratory Report.



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LABORATORY RESULTS

Client: Delta Environmental Consultants, Inc
3900 Northwoods Drive, Suite 200
St. Paul, MN 55112
Attn: Jim DeLuca

Date Sampled: 09/01/94
Date Analyzed: 09/06/94
Physical State: Soil

Project: SuperAmerica #4022
Maplewood, MN

Report Date: 09/08/94
Lab P.N.: 1000-212.2
Client P.N.: A093-376

<u>Sample ID.</u>	<u>Benzene</u> mg/kg	<u>Toluene</u> mg/kg	<u>Ethyl- benzene</u> mg/kg	<u>Total, Xylenes</u> mg/kg	<u>GRO</u> mg/kg	<u>% Moisture</u>
	<u>EPA 8020</u>	<u>EPA 8020</u>	<u>EPA 8020</u>	<u>EPA 8020</u>	<u>Wis. DNR</u>	
MW-4	<0.20	<0.50	<0.20	<0.80	<5.0	10
MW-5	<0.20	<0.50	<0.20	<0.80	<5.0	11
MDL, mg/kg	0.20	0.50	0.20	0.80	5.0	

MDL: Method Detection Limit

GRO: Gasoline Range Organics

All results are in mg/kg which is equal to parts-per-million (ppm) and are based on a "dry weight" basis.

The Laboratory Results are only a part of the Laboratory Report.





Delta
Environmental
Consultants, Inc.

BORING/WELL LOCATION SKETCH MAP

Page 1 of 1

WELL CONSTRUCTION LOG

BORING/WELL NO. MW-4

LOCATION

PROJECT NO./NAME A093-376/SuperAmerica No. 4022
DRILLING CONTRACTOR/DRILLER WTD/Grag & Jim
GEOLOGIST/OFFICE A. Gowan/St. Paul

1750 White Bear Ave.
Maplewood, Minnesota

DRILLING EQUIPMENT/METHOD

APPROVED BY

Diadrich D-120/Hollow Stem Auger

SIZE/TYPE OF BIT
4.25" I.D. Auger

SAMPLING METHOD
SS 2" O.D.

START/FINISH DATE
9/1/94-9/1/94

WELL INSTALLED? YES NO

SCREEN:

TYPE

Sorted

MAT. Sch. 40 PVC

LENGTH

10' DIA. 2"

SLOT SIZE 0.010"

ELEVATION OF: GROUND SURFACE

TOP OF WELL CASING

TOP & BOTTOM SCREEN

GW SURFACE

DATE

(FT. ABOVE M.S.L.) 964.5

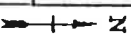
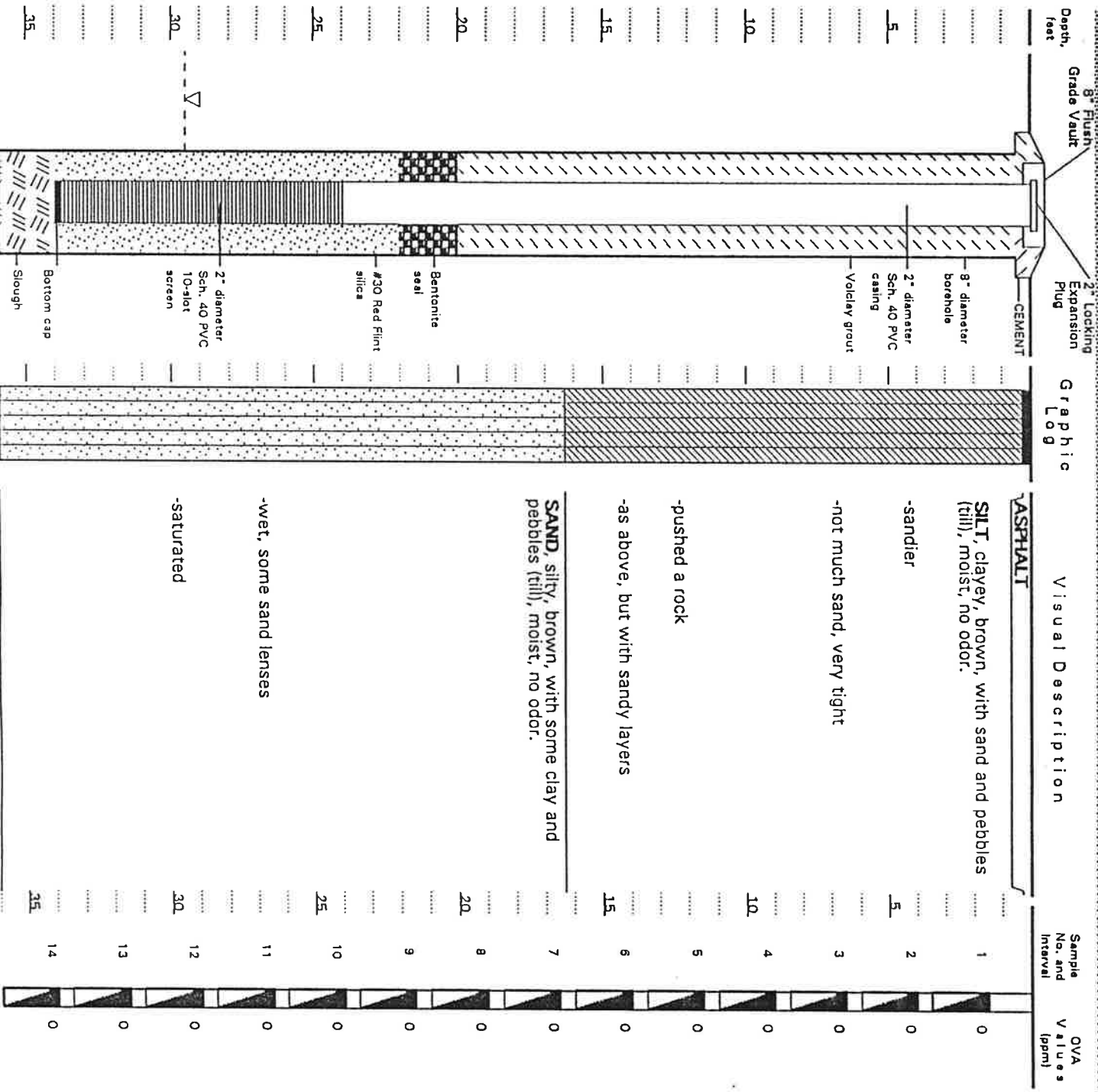
964.49

935.0

WELL CONSTRUCTION

LITHOLOGY

SAMPLING DATA



EXCAVATION OF PETROLEUM CONTAMINATED SOIL
Fact Sheet #13
Minnesota Pollution Control Agency
LUST Cleanup Program
March 1994

Excavation is an appropriate type of corrective action at some petroleum release sites. This is one of several types of corrective actions that may take place at a petroleum tank release site. The purpose of soil excavation is to remove contaminated soil that actually or potentially acts as a source of ground water contamination, or poses other environmental and/or health threats. Often, these site-specific conditions are determined by conducting a remedial investigation.

This document addresses the following topics: planning ahead; excavation; field screening during excavation; soil analytical sampling; storage and treatment of contaminated soil; additional investigation; remedial investigation; and excavation reporting.

The excavation report deadline is 10 months from the date of receipt of the standard letter. A shorter deadline may be established by the Minnesota Pollution Control Agency (MPCA) staff for high priority sites.

I. PLANNING AHEAD

Tank removals must be done by an MPCA-certified contractor. It is in your best interest to obtain at least two bids on the work before you hire a contractor so that, if contaminated soil is encountered, you will have met the Petro Board requirement for bidding. Bid forms and a list of certified contractors are available from the Department of Commerce (call 612/297-1119 or 612/297-4203).

Prior to excavation, soil borings may be useful for estimating the location, extent and magnitude of soil contamination. Pre-excavation soil borings can also determine whether soil remediation is necessary and if so, if excavation is a cost-effective cleanup measure, and whether to consider alternative methods.

Prior to tank removal, plan ahead for storage of contaminated soil during site work (section V), and treatment of contaminated soil (see fact sheets #33, "Thermal Treatment of Petroleum Contaminated Soil," and #34, "Land Treatment of Petroleum Contaminated Soil: Land Treatment Sites"). Remember that offsite storage of contaminated soil requires MPCA staff (and perhaps local) prior approval.

Arrange for an environmental field technician with a photoionization detector (PID), flame ionization detector (FID) or reasonable equivalent to screen soils and select samples for laboratory analysis during the excavation project (see fact sheet #15).

II. EXCAVATION

The following is a guide to be used during excavation. A flow chart is attached to help facilitate decision making in the field (Attachment A). Excavations should not endanger structures, including buildings, roads, utility lines, etc., and should be in compliance with OSHA standards.

Note: If there are vapor impacts, drinking water impacts, the release was a recent spill or there is a potential unstable condition, contact MPCA staff for site specific soil excavation criteria. (An unstable condition may be characterized as any situation where the consultant and/or tank removal contractor feels there is significant potential for the release to produce explosive or toxic vapors in structures or utilities, or impact a potable water supply. It is possible that removal of tanks and contaminated soil could increase the potential for vapor impacts. If you are in doubt, contact MPCA staff for guidance).

A. General excavation procedures. Begin the excavation as close as possible to the source. First remove the most heavily contaminated soil. This includes petroleum saturated soil, soil with obvious petroleum staining, and soil with strong odors. Many times this soil is adjacent to pump islands, distribution lines, or the underground storage tanks. Soil action levels are as follows:

TABLE 13.1

Fuel Type in Soil	Action Level
Gasoline and aviation gasoline	Field screening - 40 parts per million (ppm)
Diesel fuel, fuel oil, used or waste oils, jet fuel, kerosene	Any visual evidence of contamination, or field screening above 10 ppm.

Segregate excavated soil below the action levels from the more contaminated soil. Soils below the action levels may be used to backfill the excavation on this site only. Soil excavation is not necessary if contamination surrounding the tank system is below the action levels, however, soil samples must be collected (see Section IV, Soil Sampling, below, for soil sampling methodology; see also Section VI, Additional Investigation).

1. Excavation when new tanks are being installed. Remove contaminated soil above the action levels up to a volume that will accommodate the new tank installation. This volume can be calculated from Tables 13.2A and 13.2B. If excavation removes all contamination above the action levels, prepare an Excavation Report and submit to the MPCA project manager. If contamination remains after this excavation, proceed to item 2, below.

Excavation of Petroleum Contaminated Soil

Page 3

March 1994

TABLE 13.2A		TABLE 13.2B	
NEW TANK SIZE (gal)	FOR EACH TANK TO BE INSTALLED ADD (yds)	OLD TANK SIZE (gal)	FOR EACH TANK TO BE REMOVED SUBTRACT (yds)
550	30	550	3
1,000	40	1,000	5
2,000	70	2,000	10
3,000	90	3,000	15
4,000	110	4,000	20
5,000	130	5,000	25
6,000	140	6,000	30
8,000	170	8,000	40
10,000	210	10,000	50
12,000	240	12,000	60
15,000	260	15,000	75
20,000	320	20,000	100
25,000	400	25,000	125

Note: For new pipe trenching allow one-third (0.33) cubic yard for every one (1) linear foot of contaminated trench.

EXAMPLE: Two 10,000 gallon tanks are to be installed in the old tank basin, where one 4,000 gallon tank and one 6,000 gallon tank will be removed. $(210 + 210) - (20 + 30) = 370$
Up to 370 cubic yards of contaminated soil may be removed.

2. Additional excavation when new tanks are being installed. If test pits indicate the amount of contaminated soil remaining is less than 150 cubic yards, and ground water was not encountered, you may attempt to excavate contaminated soil above the action levels up to a total of an additional 150 cubic yards. If the excavation removed all contamination above the action levels, prepare an Excavation Report and submit to the MPCA project manager. If contamination remains above the action levels, an RI will be required (see Section VI). Contaminated soil should NOT be returned when new tanks will be installed in the same basin.

3. Excavation of soil on sites where new tank installation is not occurring. Initiate test pits in the area of maximum contamination. If test pits indicate that more than 150 cubic yards of contaminated soil remains, or contamination is below the reach of the backhoe, or contamination is in contact with ground water, a remedial investigation (RI) will be necessary (see Section VI, below). If the additional 150 cubic yard excavation removed all contamination above the action levels, prepare an Excavation Report and submit to the MPCA project manager.

4. Returning soil to excavation basin. When an RI will be required, the contaminated soil removed during digging of the test pits and the additional 150 cubic yards should be returned to the excavation basin. If excavated soil is considered to be petroleum saturated, contact MPCA staff prior to returning soil to the excavation.

5. All projects excavating more than 150 cubic yards must have WRITTEN MPCA approval, except where new tanks are installed (if new tanks are installed, follow Tables 13.2A and 13.2B). MPCA approval for additional excavation is site specific and depends on such factors as the anticipated benefit, expected volume of additional soil, and potential risk to ground water.

Excavation costs may not be fully reimbursable through the Petroleum Tank Release Compensation Board (Petro Board) if excavation exceeds 150 cubic yards without MPCA written approval (or limits in Tables 13.2A and 13.2B when new tanks are installed), or if excavation is carried out beyond the action levels.

If the excavation removed all contamination above the action levels, prepare an Excavation Report and submit to the MPCA project manager. If contamination remains above the action levels, an RI will be required (see Section VI).

6. Treatment of petroleum contaminated soil. When excavation alone was able to address petroleum contamination, or when soil is removed to accommodate new tank installation, the removed soil must be treated in accordance with an MPCA approved treatment method.

III. FIELD SCREENING DURING EXCAVATION

Conduct field screening in accordance with fact sheet #14, "Field Screening Procedures." Be sure the field instrument is properly calibrated.

During excavation, screen soils frequently enough to verify the need for soil removal (at least one soil vapor analysis for each 10 cubic yards of soil removed). Label these soil samples with the prefix "R", for "removed" (e.g., R-1, R-2, R-3, etc.). The field technician should carefully document successive soil vapor readings vertically below the source of release, indicating the depth and location of each sample.

After excavation is complete, screen soil samples from the bottom and sidewalls of the excavation to document remaining contamination. Soil analytical sampling is required at this stage (see items 6 and 7 in section IV, below).

IV. SOIL ANALYTICAL SAMPLING FOLLOWING EXCAVATION

When excavation is complete, collect soil samples for laboratory analysis to document contamination remaining in place and the contamination removed.

Analyze the samples for the parameters indicated in fact sheet #16, "Soil and Ground Water Analyses at Petroleum Release Sites." Collect soil samples as follows:

1. Minimize the possibility of cross-contamination by using dedicated sampling equipment for each sample collected. If dedicated sampling tools are not available, specify the cleaning procedures used. Wear clean, new, disposable sampling gloves at each new sampling point.
2. When sampling excavation sidewalls or floors, remove at least one foot of exposed soil prior to collecting the sample. This will ensure the collection of a fresh sample.
3. Collect soil samples in accordance with appropriate methodology. Soils previously used for soil screening or soil classification may not be used for analytical samples.
 - a. TPH/GRO and TPH/DRO samples--Collect total petroleum hydrocarbons (TPH) samples according to the Wisconsin Department of Natural Resources Modified Gas Range Organic (GRO) and Diesel Range Organic (DRO) method. Collect approximately 25 grams of soil in a tared 60 ml vial (a GRO sample vial must contain 25 ml methanol prior to sample collection). Wipe the jar threads and seal with the cap provided.
 - b. VOC or BETX samples--For volatile organic compounds (VOC) and benzene, ethylbenzene, toluene, and xylene (BETX) samples, completely fill each sample jar so that no headspace exists. Wipe the jar threads and seal using a cap with a Teflon septum. (If you are submitting samples for GRO analysis, collecting separate samples for BETX analysis may not be necessary.)
4. Label all jars, wrap in aluminum foil, and place in a covered cooler with ice for transport to the laboratory for analysis.
5. Samples not analyzed within the accepted holding time may be considered invalid. Costs related to their collection and analysis may not be considered eligible for reimbursement.
6. Bottom samples. Collect the following samples from the bottom of the excavation when all excavation is complete. Label these samples with the prefix "B", for "Bottom" (e.g., B-1, B-2, B-3, etc.):

TABLE 13.3

One tank	two samples; one from directly below each end of the tank
More than one tank <10,000 gallons	one sample directly below the center of each tank
More than one tank 10,000 gallons or larger	two samples from below each tank; one from directly below each end of the tank
Leaking lines	one sample from below each suspected point of release
Dispensers	one sample from below each dispenser which is removed
Any additional samples needed to adequately characterize the excavation.	

7. Sidewall samples. If contaminated soil above the action levels remains in the sidewalls of the excavation, collect samples to characterize the remaining contaminated soil. Label these samples with the prefix "S" for "sidewall" (e.g., S-1, S-2, S-3, etc.).
8. Ground water in excavation. If ground water occurs in the excavation, collect a water sample; also collect soil samples near the soil/ground water interface to help characterize potential impacts to ground water from remaining contaminated soil. Limit the analytical parameters for this type of ground water sample to benzene, ethyl benzene, toluene, xylene (BETX), and total petroleum hydrocarbons (GR0 and/or DR0).

Do not collect a water sample if free product or a product sheen is present.
9. Sampling the soil piles. Collect soil samples (grab samples) from representative portions of the excavated soil pile, using the method described in items 1-5 above. Label these samples with the prefix "P" for "pile" (e.g., P-1, P-2, etc.). Base the number of soil samples on Table 13.4:

TABLE 13.4

Cubic Yards of soil in pile	Number of Samples
less than 10	*
10-50	1
51-500	2
501-1,000	3
1,001-2,000	4
2,001-4,000	5
each additional 2,000	one additional sample

*If less than 10 cubic yards of soil is contaminated, soil samples will normally not be required if the soil will be land treated (unless the soil could potentially be considered a hazardous waste).

10. Analyze soil samples using U.S. Environmental Protection Agency approved methodologies in accordance with fact sheet #16, "Soil and Ground Water Analyses at Petroleum Release Sites."

V. STORAGE AND TREATMENT OF CONTAMINATED SOIL

Store excavated contaminated soils on an impermeable surface, covered with plastic. Anchor the plastic covering in place with clean soil or other suitable material. Off-site soil storage requires pre-approval by MPCA staff and local government officials. Storage at land treatment sites must be in accordance with Minn. Rules ch. 7037. Improper storage of contaminated soils may result in additional releases to the environment, and a corresponding reduction in your reimbursement.

Soil must be properly treated. Refer to fact sheets #33 ("Thermal Treatment of Petroleum Contaminated Soil") and #34 ("Land Treatment of Petroleum Contaminated Soil: Land Treatment Sites") for treatment and approval procedures. Fact sheets and application forms for soil treatment are available from the MPCA Tanks and Spills Section at 612/297-8565.

VI. ADDITIONAL INVESTIGATION

Additional investigation is required at sites with sandy or silty sand soil (ASTM/USC) and where the water table is within 25 feet of the ground surface. Advance a soil boring directly through the suspected source area (former UST basins, pump islands, and/or other source areas), in the following situations:

- Laboratory analytical results for soils from the suspected source area excavation base are 1-50 mg/kg TPH (GRO/DRO); or
- visual or other evidence of contamination remains in the suspected source area.

Analyze soil samples in accordance with Section IV. If the boring(s) encounters contaminated ground water, an RI is necessary.

VII. REMEDIAL INVESTIGATION

An RI is generally necessary at sites where contamination cannot be addressed by excavation alone, contaminated soil is in contact with ground water, or ground water is suspected to be impacted. An RI will be required if any of the following situations exist:

1. Soil contamination above the action levels (Table 13.1) remains and/or if laboratory analytical results from soil samples taken from the base or sidewalls, or soil returned to the excavation are greater than 50 ppm TPH in sands and gravels or greater than 100 ppm TPH in silts and clays (see Table 13.5).

TABLE 13.5

Soil Type	RI required if:
sand/gravel	a. soil above action level in Table 13.1 remains, or
	b. soil contamination greater than 50 mg/kg TPH (GRO/DRO) remains.
silt/clay	c. soil above action level in Table 13.1 remains; or
	d. soil contamination greater than 100 mg/kg TPH (GRO/DRO) remains.

2. Ground water is present in the excavation and has been in contact with either petroleum product or petroleum contaminated soil;
3. Contamination intercepts a seasonally high water table (indicated by mottling on the excavation sidewalls) or bedrock;
4. Other impacts are known or suspected (such as discharge of contaminated water to surface waters or utilities, vapor impacts to buildings or utilities, etc.).

MPCA staff may allow exceptions to these criteria on a site-specific basis.

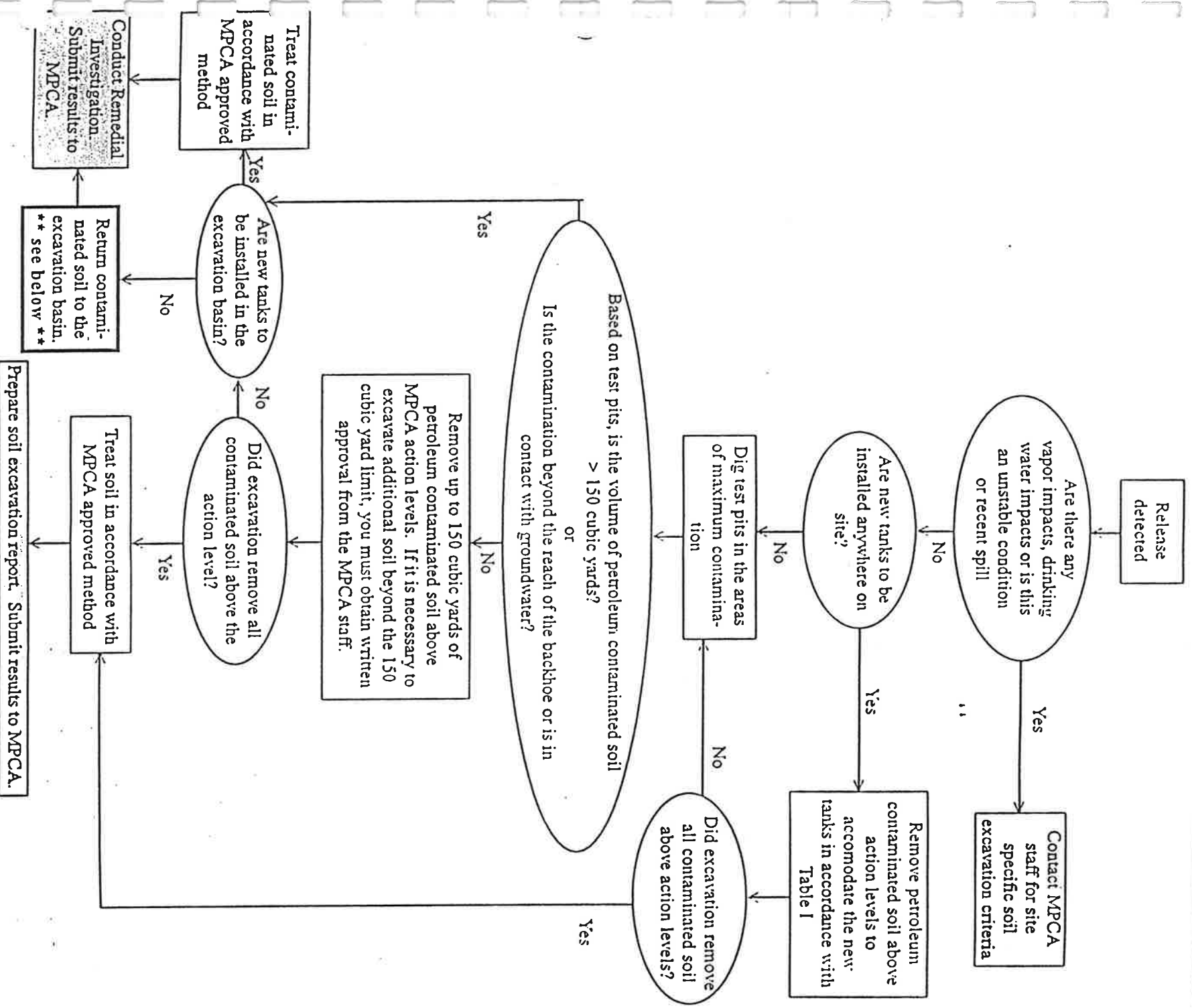
VIII. EXCAVATION REPORT SUBMITTAL

Complete the "Excavation Report Worksheet for Petroleum Release Sites" (fact sheet #4). If an RI is not required, submit the worksheet for MPCA review. Be sure to include all required data and figures. If an RI is required, include the worksheet as an appendix to the Remedial Investigation/Corrective Action Design (RI/CAD) Report. MPCA staff will not review excavation reports indicating an RI is necessary until the RI has been completed.

The excavation report deadline is 10 months from the date of receipt of the standard letter. A shorter deadline may be established by MPCA staff for high priority sites.

Upon request, this document and other MPCA documents can be made available in other formats, including Braille, large print and audio tape. TDD users, call the Minnesota State Relay Service, 612/297-5353 or Greater Minnesota TDD 1-800-627-3529.

Printed on recycled paper containing at least 10 percent from paper recycled by consumers.



** If you encounter soil that you consider petroleum saturated, call MPCA staff prior to returning soil to the excavation.

G. GME GENERAL QUALIFICATIONS

Mr. Bruce G. Odlaug

March 27, 1995

GME GENERAL QUALIFICATIONS

The environmental assessment and recommendations submitted in this report are based on data we obtained during this study. The scope of this report is limited to the specific project and location described herein. We cannot account for any environmental variations that may occur on portions of the site that were not explored. Conclusions concerning off-site characteristics or future degradation of soils, groundwater or surface water are estimated.

Samples were collected and analyzed under the conditions stated in this report. Analytical data have been reviewed and an interpretation made in the text of this report. We assume that all subcontract laboratory work has been completed correctly. Also, it must be noted that seasonal and annual fluctuations in hydrogeologic characteristics likely will occur.

Our description of this project represents our understanding of significant aspects relative to soil and groundwater conditions. Conclusions in this report represent our engineering judgement. This report has been prepared in accordance with the local standard of practice for our profession, using the normally available sources of information. No warranty, expressed or implied, is presented in this report with respect to the environmental conditions at this site.

GME CONSULTANTS, INC.
PHOTOGRAPHIC RECORD

CLIENT: MR. BRUCE ODILAUG

PROJECT NO.: 4972

LOCATION: GOODYEAR FACILITY - MAPLEWOOD, MINNESOTA



PHOTOGRAPH NO.: 1

DATE: 12/7/94

LENS: 38 mm

COMMENTS: UST

location prior to
excavation.



PHOTOGRAPH NO.: 2

DATE: 12/7/94

LENS: 38 mm

COMMENTS: Close-up
of fill pipe in
paved surface.

GME CONSULTANTS, INC.
PHOTOGRAPHIC RECORD

CLIENT: MR. BRUCE ODLAUG

PROJECT NO.: 4972

LOCATION: GOODYEAR FACILITY - MAPLEWOOD, MINNESOTA



PHOTOGRAPH NO.: 3

DATE: 12/7/94

LENS: 38 mm

COMMENTS: UST in
excavation.



PHOTOGRAPH NO.: 4

DATE: 12/7/94

LENS: 38 mm

COMMENTS: Excavation
after UST removal.