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INITIAL ASSESSMENT REPORT
NAO FLINT OPERATIONS
Flint, Michigan

Tank #67/02-70/02
Facility ID No. 0-002763

Global Environmental Engineering Inc.

Global Project Number F174
June 12, 1997

Global Environmental Engineering Inc.

June 12, 1997

Ms. Pamela Howd
Department of Environmental Quality
Shiawassee District Office
10650 Bennett Drive
Morrice, MI 48857-9792

RE: INITIAL ASSESSMENT REPORTS
- Building 40
- Building 02
General Motors Corporation
NAO Flint Operations (GM-CLCD North)
Flint, Michigan
Facility ID Number 0-002763

Dear Ms. Howd:

Enclosed please find Initial Assessment Reports for the underground storage tanks associated with the Building 40 and Building 02.

If you have any questions, please feel free to contact me at (810) 238-9190.

Sincerely,

GLOBAL ENVIRONMENTAL ENGINEERING INC.

Amanda L. Kurzman
Hydrogeologist

Enc.

5467 Hill 23 Dr. Suite B • Flint, MI 48507 • Bus: (810) 238-9190 • Fax: (810) 238-9195 • 1-800-423-2043

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION

DEQ

LEAKING UNDERGROUND STORAGE TANK
INITIAL ASSESSMENT REPORT

INSTRUCTIONS: COMPLETION OF THIS REPORT WITH ALL APPLICABLE INFORMATION IS MANDATORY. Complete this form with all applicable information. The Certified Underground Storage Tank Professional (CP) MUST sign below. Failure to submit a report within the stated time period may result in Administrative Penalties as provided for in Part 213, Section 21321 of Act 451, P.A. 1994 as amended.

FACILITY NAME: NAO Flint Operations (Tanks 66/02 - 70/02)	FACILITY ID NUMBER: 0-002763
ADDRESS: 902 East Hamilton Avenue, Flint, MI 48420 COUNTY: Genesee	MERA SITE ID NUMBER:
DATE(S) RELEASE DISCOVERED: September 5, 1985	CONFIRMED RELEASE NUMBER(S):
O/O NAME: General Motors Corporation	MUSTFA CLAIM NUMBER:
O/O ADDRESS: 902 East Hamilton Avenue, Flint, MI 48420	
CONTACT PERSON: Mr. Dan Harrett	PHONE NUMBER: (810) 236-3436

ANSWER ALL QUESTIONS. (DO NOT LEAVE BLANKS):

1. Has the UST been emptied? _X_ Yes ___ No (If no, explain why):

2. Free product present: a. Currently? ___ YES _X_ NO If YES, total gallons recovered since last report:

   b. Previously? ___ YES _X_ NO If YES, total gallons recovered to date:

3. Have vapors been identified in any confined spaces (basement, sewers)? ___ YES _X_ NO

4. State the number of homes where drinking water is or was affected as a result of a release from this facility: None

5. Estimated distance and direction from point of release to nearest:

   a. Private well: over one-half mile b. Municipal well: over one-half mile c. Surface water/wetland: >1000 ft. East

6. Since last report: a. cubic yards of soil remediated: none b. gallons of groundwater remediated: none

7. Totals to date: a. cubic yards of soil remediated: unknown b. gallons of groundwater remediated: none

8. Michigan RBCA Site Classification (1-4): 4

CERTIFICATION OF REPORT COMPLETION

I, the undersigned CP, hereby attest to the best of my knowledge and belief that the statements in this document and all attachments are true, accurate and complete. I certify that it was submitted to the USTD on June 12, 1997.
(date submitted-Required)

June 12, 1997	Amanda L. Kurzman
CP Original Signature - Required / Date	PRINT QC Project Manager's Name
Christopher J. Griffin, P.E.	Global Environmental Engineering Inc.
PRINT CP's Name	CONSULTANT
5467 Hill 23 Drive, Suite B, Flint, MI 48507	(810) 238-9190 (810) 238-9195
ADDRESS	PHONE NO. FAX NO.

PLEASE RETURN THIS COMPLETED REPORT AND ASSOCIATED ATTACHMENTS TO THE APPROPRIATE USTD DISTRICT OFFICE, LISTED ON THE BACK OF THIS PAGE.

UNDERGROUND STORAGE TANK DIVISION OFFICES AND LOCATIONS

Determine in which county the UST release occurred. Return all completed forms and associated reports to the USTD office listed next to that county in the following table. Addresses for the USTD offices are listed below.

COUNTY	USTD OFFICE	COUNTY	USTD OFFICE	COUNTY	USTD OFFICE	COUNTY	USTD OFFICE
Alcona	Grayling	Dickinson	Marquette	Lake	Grayling	Oceana	Grand Rapids
Alger	Marquette	Eaton	Shiawassee	Lapeer	Shiawassee	Ogemaw	Grayling
Allegan	Plainwell	Emmet	Grayling	Leelanau	Grayling	Ontonagon	Marquette
Alpena	Grayling	Genesee	Shiawassee	Lenawee	Jackson	Osceola	Grayling
Antrim	Grayling	Gladwin	Grayling	Livingston	Shiawassee	Oscoda	Grayling
Arenac	Grayling	Gogebic	Marquette	Luce	Marquette	Otsego	Grayling
Baraga	Marquette	Grand Traverse	Grayling	Mackinac	Marquette	Ottawa	Grand Rapids
Barry	Plainwell	Gratiot	Shiawassee	Macomb	SE Michigan	Presque Isle	Grayling
Bay	Saginaw-Bay	Hillsdale	Jackson	Manistee	Grayling	Roscommon	Grayling
Benzie	Grayling	Houghton	Marquette	Marquette	Marquette	Saginaw	Saginaw-Bay
Berrien	Plainwell	Huron	Saginaw-Bay	Mason	Grayling	Sanilac	Saginaw-Bay
Branch	Jackson	Ingham	Shiawassee	Mecosta	Grand Rapids	Schoolcraft	Marquette
Calhoun	Jackson	Ionia	Grand Rapids	Menominee	Marquette	Shiawassee	Shiawassee
Cass	Plainwell	Iosco	Grayling	Midland	Saginaw-Bay	St Clair	SE Michigan
Charlevoix	Grayling	Iron	Marquette	Missaukee	Grayling	St Joseph	Plainwell
Cheboygan	Grayling	Isabella	Saginaw-Bay	Monroe	SE Michigan	Tuscola	Saginaw-Bay
Chippewa	Marquette	Jackson	Jackson	Montcalm	Grand Rapids	Van Buren	Plainwell
Clare	Grayling	Kalamazoo	Plainwell	Montmorency	Grayling	Washtenaw	Jackson
Clinton	Shiawassee	Kalkaska	Grayling	Muskegon	Grand Rapids	Wayne	SE Michigan
Crawford	Grayling	Kent	Grand Rapids	Newaygo	Grand Rapids	Wexford	Grayling
Delta	Marquette	Keweenaw	Marquette	Oakland	SE Michigan		

CADILLAC OFFICE ROUTE #1 8015 MACKINAW TRAIL CADILLAC MI 49601 616-775-9727 (PHONE) 616-775-9671 (FAX)	**JACKSON OFFICE** 301 E LOUIS GLICK HIGHWAY JACKSON MI 49201 517-780-7900 (PHONE) 517-780-7855 (FAX)	**SAGINAW BAY OFFICE** 503 N EUCLID AVE SUITE 9 BAY CITY MI 48706 517-684-9141 (PHONE) 517-684-9799 (FAX)
GAYLORD OFFICE P0 BOX 667 GAYLORD MI 49735 517-732-3541 (PHONE) 517-732-0794 (FAX)	**MARQUETTE OFFICE** 1990 US 41 SOUTH MARQUETTE MI 49855 906-228-6561 (PHONE) 906-228-5245 (FAX)	**SHIAWASSEE OFFICE** 10650 BENNETT DR MORRICE MI 48857-9792 517-625-4600 (PHONE) 517-625-5000 (FAX)
GRAND RAPIDS OFFICE 350 OTTAWA ST NW GRAND RAPIDS MI 49503 616-456-5071 (PHONE) 616-456-1239 (FAX)	**PLAINWELL OFFICE** 1342 SR-89 SUITE B PLAINWELL MI 49080-1915 616-692-2120 (PHONE) 616-692-3050 (FAX)	**SE MICHIGAN OFFICE** 38980 SEVEN MILE RD LIVONIA MI 48152 313-953-0241 (PHONE) 313-953-0243 (FAX)
GRAYLING OFFICE 1955 NORTH I-75 BL GRAYLING MI 49738 517-348-6371 (PHONE) 517-348-8825 (FAX)		

TABLE OF CONTENTS

LIST OF ATTACHMENTS

(Include as Required and Check Box if Attached)

Attachments 1, 2, 3, 4, 5, 9, 10 11, 12, 13, 14, 15, 16, 20, 21, 22, 23, 27, 28, and 29 are to be submitted if applicable.

Attachments 6, 7, 8, 17, 18, 19, 24, 25, and 26 are found in the back of this document and should be completed and submitted when necessary.

ATTACHMENT NUMBER	DESCRIPTION
1. ☐	Site Map Showing Extent of Remaining Free Product
2. ☐	Free Product Recovery System Schematic
3. ☒	Area Map Showing Site Boundaries in Relation to Nearby Area
4. ☒	Site Map Highlighting Principal Physical Features and Sampling Locations
5. ☐	Schedule for Delineation of Off-Site Soil Impacts
6. ☒	Field Screening Results Table for Soils (See Soil Boring Logs - Attachment 12)
7. ☒	Laboratory Results Table for Soils
8. ☒	Tier I RBSL / Tier II SSTL Comparison Table for Soils
9. ☒	Site Map Showing Soil Sampling Locations, Maximum Contaminant Concentrations, and Sampling Depths
10. ☐	Site Map(s) Showing Vertical and Horizontal Distribution of Contaminants in Soil
11. ☒	Cross Sections Showing the Vertical and Horizontal Distribution of Soil Contaminants
12. ☒	Soil Boring Logs
13. ☒	Well Construction Diagrams
14. ☒	Groundwater Flow Map Showing Water Level Measurement Locations
15. ☐	Description of Hydrogeologic Factors That Could Influence Groundwater Flow
16. ☐	Schedule for Delineation of Off-Site Groundwater Impacts
17. ☐	Field Screening Results Table for Groundwater
18. ☒	Laboratory Results Table for Groundwater (Including Time Series Presentation)
19. ☒	Tier I RBSL / Tier II SSTL Comparison Table for Groundwater
20. ☒	Site Map Showing Groundwater Sampling Locations and Maximum Contaminant Concentrations
21. ☒	Cross Sections Showing the Vertical and Horizontal Distribution of Groundwater Contaminants
22. ☐	Presentation of Time Series Groundwater Results
23. ☐	Schedule for Delineation of Off-Site Impacts in Other Media
24. ☐	Field Screening Results Tables for Other Media
25. ☐	Laboratory Results Tables for Other Media
26. ☐	Tier I RBSL / Tier II SSTL Comparison Tables for Other Media
27. ☐	Site Map Showing Sampling Locations and Maximum Contaminant Concentrations for Other Media
28. ☐	Calculations Supporting the Tier II SSTLs and Evaluation
29. ☒	Work Plan for Further Site Characterization and Assessment Activity

1.0 IMMEDIATE RESPONSE TO SPILLS AND RELEASES

1.1 REPORTING AND RESPONSE TO RELEASES

A. Date and Time Release Discovered: 9 / 5 / 1985 UNK AM / PM

B. Date and Time Release Reported: 9 / 5 / 1985 UNK AM / PM

C. From what portion of the underground storage tank system did the release occur or is the release believed to have likely occurred?

- ☐ Piping
- ☑ Underground storage tank
- ☐ Overfill of underground storage tank (delivery of fuel from supplier)
- ☐ Other *(Specify):* _____

D. Briefly describe how the release was discovered: Removal activities of the UST system occurred between 8-19-85 and 11-1-85. During the UST system removal, visual observations and PID readings indicated the presence of gasoline in the soils adjacent to the USTs.

E. Has there been tank tightness testing performed in response to this release? (*If data is not available, answer "No".*) ☐ Yes ☑ No

If "Yes", complete questions F, G and H; otherwise skip to question I.

F. Date of the testing: ____/____/____

G. Method of testing: _____

H. Results of the testing: _____

I. List the underground storage tanks at this facility and identify the tank(s) associated with this release by placing an "X" in the "LUST" column. (*Complete the last two columns for the LUST entries only*):

1.1 REPORTING AND RESPONSE TO RELEASES (Continued)

TANK ID NUMBER	CONTENTS (Regulated Substances) - Specify grade if gasoline -		LUST?	HAS THE TANK BEEN EMPTIED?	HAS THE TANK BEEN REMOVED?
(As Registered)	At Time of Release	Previous Contents	(Yes or No)	(Yes/Date or No [See J below])	(Yes/Date or No [See J below])
Tank # 66 / 02	Unlead Gas		Yes	Yes/8-85	Yes/8-85
* Tank # 67 / 02	Unlead Gas		Yes	Yes/8-85	Yes/8-85
* Tank # 68 / 02	Unlead Gas		Yes	Yes/8-85	Yes/8-85
* Tank # 69 / 02	Leaded Gas		Yes	Yes/8-85	Yes/8-85
* Tank # 70 / 02	Leaded Gas		Yes	Yes/8-85	Yes/8-85

* UST Not Registered

J. If "No" was specified in either of the last two columns for any leaking underground storage tank, provide an explanation below:_____

K. What initial response actions were performed at this site?

PURPOSE OF INITIAL RESPONSE ACTIONS	WERE ACTIONS TAKEN? (Yes/Date or No)	IF "Yes", DESCRIBE THE ACTIONS TAKEN AND THEIR RESULTS. IF "No", INDICATE WHY NOT.
To identify and mitigate fire, explosion and vapor hazards (e.g., relating to free product, vapors in nearby buildings) [324.21307(2)(a)] [324.21307(2)(c)(iii)]	No	No fire, explosion, or vapor hazards were noted.
To prevent further release and migration into the soil or groundwater, including removing product from the UST [324.21307(2)(b)] [324.21307(2)(c)(i) and (ii)]	Yes, 8/85	The USTs were emptied and the system removed.
To excavate and contain, treat, or dispose of visibly contaminated soil above the water table that are likely to cause a fire hazard or spread and increase the cost of corrective action [324.21307(2)(d)]	Yes, 8/85 through 11/85	Visibly contaminated soil was excavated and properly disposed.

REPORTING AND RESPONSE TO RELEASES (Continued)

PURPOSE OF INITIAL RESPONSE ACTIONS	WERE ACTIONS TAKEN? (Yes/Date or No)	IF "Yes", DESCRIBE THE ACTIONS TAKEN AND THEIR RESULTS. IF "No", INDICATE WHY NOT.
To abate an immediate threat to public health, safety, or welfare, or the environment [324.21307(2)(e)]	No	No immediate threat was posed.

L. Has free product ever been discovered as a result of the release? ☐ Yes ☑ No

NOTE: If "No", skip to Section 2.0; if "Yes", complete questions "M" through "S":

M. Date and Time Free Product Was Discovered: _____/_____/_____ _____ AM / PM
N. Date and Time Free Product Fax Transmittal Sheet Submitted: _____/_____/_____ _____ AM / PM
O. Has there ever been free product in the on-site or off-site soils? ☐ Yes ☐ No
P. Is there currently free product in the on-site or off-site soils? ☐ Yes ☐ No
Q. Is there currently free product in or around buried underground utilities? ☐ Yes ☐ No
R. Has there ever been free product on/in the groundwater? ☐ Yes ☐ No
S. Is there currently free product on/in the groundwater? ☐ Yes ☐ No

1.2 REPORTING AND RESPONSE TO RELEASES INVOLVING FREE PRODUCT

A. What initial response actions were performed at this site to address the presence of free product?

PURPOSE OF INITIAL RESPONSE ACTIONS	WERE ACTIONS TAKEN? (Yes/Date or No)	IF "Yes", DESCRIBE THE ACTIONS TAKEN AND THEIR RESULTS. IF "No", INDICATE WHY NOT.
To identify the presence of free product [324.21307(2)(c)]		
To recover free product in a manner that minimizes the spread of contamination into previously uncontaminated zones [324.21307(2)(c)(i)]		
To utilize recovery and disposal techniques appropriate to site conditions [324.21307(2)(c)(i)]		

1.2 REPORTING AND RESPONSE TO RELEASES INVOLVING FREE PRODUCT (Continued)

PURPOSE OF INITIAL RESPONSE ACTIONS	WERE ACTIONS TAKEN? (Yes/Date or No)	IF "Yes", DESCRIBE THE ACTIONS TAKEN AND THEIR RESULTS. IF "No", INDICATE WHY NOT.
To properly treat recovery by-products as required by law (identify the type of treatment applied and the expected effluent quality) [324.21307(2)(c)(i)]		
To properly discharge recovery by-products as required by law (identify the location of all on-site and off-site discharge points and all steps taken to obtain necessary permit) [324.21307(2)(c)(iv)		
To properly dispose of recovery by-products as required by law [324.21307(2)(c)(i)]		
To handle any flammable products in a safe and competent manner to prevent fires and explosions [324.21307(2)(c)(iii)]		

B. Complete the following table relating to free product recovery:

LOCATION OF OBSERVED FREE PRODUCT (Specify ID No.)	THICKNESS OF FREE PRODUCT OBSERVED (nearest 1/8")	TYPE OF FREE PRODUCT OBSERVED	LNAPL OR DNAPL*?	QUANTITY OF FREE PRODUCT RECOVERED (gallons)
IN WELLS				
IN BOREHOLES				
IN EXCAVATIONS				
OTHER LOCATIONS (Specify)				
TOTAL FREE PRODUCT RECOVERED TO DATE				

*LNAPL = Light Non-Aqueous Phase Liquid; DNAPL = Dense Non-Aqueous Phase Liquid

1.2 REPORTING AND RESPONSE TO RELEASES INVOLVING FREE PRODUCT (Continued)

C. Has the extent of any remaining free product been defined? ☐ Yes ☐ No

D. If "Yes", include the extent of the remaining free product on the site map included as Attachment 1.

E. Describe the free product recovery system that was or is being used ☐ or is proposed ☐ *(Include a schematic as Attachment 2 if appropriate)*: _____

_____

_____

F. If "proposed", what is the planned installation date? ____/____/____

G. Has the recovered free product been properly disposed? ☐ Yes ☐ No

H. If "No", provide an explanation: _____

_____

_____

I. Provide the name of the person or persons responsible for implementing the free product removal measures:

Company Name _____
Company Address _____
_____
_____
Company Telephone No. ___(_____)_____
Contact Person _____
Contact Telephone No. ___(_____)_____

2.0 SITE CHARACTERIZATION INFORMATION

2.1 SITE AND AREA MAPS

A. Attach an area map (Attachment 3) and a site map (Attachment No. 4), drawn to scale, which include the following if applicable. *(If it is not possible to include all required information on one map, additional maps may be used. Use of multiple maps should be minimized.)*

- Site boundaries in relation to the surrounding area and the nearest major roads (area map)
- Location of each underground storage tank and associated piping in the leaking underground storage tank system (*prior to excavation if tanks have been removed*)
- Location of the release and the component of the underground storage tank system from which the release occurred
- Location of any other existing and former underground storage tanks at the site
- Approximate location of fill ports, dispensers, and other pertinent system component
- Location of nearby buildings, roadways, paved areas, or other structures
- Location of nearby surface waters or wetlands
- Location and possible depth of nearby underground sewers and utility lines
- Location of all wells on-site and off-site within 100 feet of the property line
- Soil, groundwater, surface water, sediment or air sample locations, as applicable

2.2 SOIL CONDITIONS AND CHARACTERISTICS

A. Is soil contamination present? ☑ Yes ☐ No

If "Yes", complete this Section; if "No", skip to Section 2.3.

B. Total volume of soil remediated or disposed to date: unknown yds^3

C. Describe any soil remediation or disposal activities performed to date: The UST system was removed during field activities that took place between 8/19/85 and 11/1/85. Visibly contaminated soils were excavated and properly disposed. The amount of soil excavated is not known. Compacted sand was used to fill the area and the excavation area was covered with a concrete slab.

D. Describe steps that have been taken, or will be taken, to secure access to off-site properties, including easements and right-of-ways, to complete the delineation of the extent of the off-site impact of the release to soil:

STEPS TAKEN OR PLANNED TO SECURE ACCESS TO OFF-SITE PROPERTIES	OFF-SITE PROPERTY OWNER'S NAME	OFF-SITE PROPERTY OWNER'S ADDRESS
None required		

2.2 SOIL CONDITIONS AND CHARACTERISTICS (Continued)

E. Provide the schedule for completing the delineation of the extent of the off-site impact of the release to soil (*indicate here or include as Attachment No. 5*): None required.

F. Attach Field Screening Results (Attachment No. 6) and Laboratory Results (Attachment No. 7) tables showing the results of all soil sampling performed to date for the listed parameters. *(NOTE: The USTD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information.)*

G. Provide in the Comparison Table for Soils (Attachment No. 8) the maximum contaminant concentrations detected to date in all soils for each listed parameter. *(NOTE: Enter "ND" with the appropriate method detection limit when the parameter was not detected, and enter "NA" when the chemical was not analyzed. In areas where remediation has occurred, do not include sample results for areas where the soil has been subsequently removed or the characteristics of the soil left in place have been altered due to the remediation.)*

H. Show the maximum concentrations, sample depths, and estimated horizontal extent of contamination in relation to the soil sampling locations on the site map included as Attachment No. 9.

I. Describe the estimated vertical extent and distribution of the soil contaminants using depth-coded site maps (Attachment No. 10), cross sections (Attachment No. 11), and/or boring logs (Attachment No. 12): Soil contamination has been identified in soil borings ranging from four to twenty-one feet below ground surface. Soil contamination has been identified in soil borings ranging from four to twenty-one feet below ground surface.

J. If there is known soil contamination not related to the release, complete the following:

ON-SITE CONTAMINANTS NOT RELATED TO THE RELEASE	SOURCE OF THIS CONTAMINATION (If Known)	LOCATION OF THIS CONTAMINATION

2.3 GROUNDWATER CONDITIONS AND CHARACTERISTICS

A. Has groundwater been encountered at the site? ☑ Yes ☐ No

B. If "No", provide the total depth investigated and the date of investigation:
Depth of Investigation: _____ ft BGS
Date of Investigation: ____/____/____

If "No", skip to Section 2.4; if "Yes", continue with Section 2.3.

C. Is the groundwater potable? ☐ Yes ☑ No
D. Is the groundwater currently a source of drinking water? ☐ Yes ☑ No
E. Is groundwater being used for a purpose other than potable drinking use? ☐ Yes ☑ No
F. Is more than one groundwater unit present beneath the site? ☐ Yes ☐ No ☑ Unknown

Hydrogeologic Characteristics (*if appropriate and where available*):

G. Average depth to groundwater (as measured in site well(s)): 8.17 ft BGS
H. Depth to bottom of water-bearing layer: _____ ft BGS
I. Depth to a potable groundwater unit: >250 ft BGS *
J. Attach copies of boring logs (Attachment No. 12) and well construction diagrams (Attachment No. 13) for all monitoring wells.

* Most of the potable water wells within Genesee County are located beneath the glacial drift in the Saginaw Formation. The depth to the Saginaw Formation varies throughout the county, but is located roughly 300 feet below ground surface.

Groundwater Flow Rate and Direction:

K. Predominant soil type in water-bearing stratum (*e.g., sand, silt*): Silts / Clays
L. Effective porosity of water-bearing stratum: .35 $cm^{3\ void}/cm^{3\ soil}$
M. Hydraulic conductivity (☐ measured ☑ estimated): 3×10^{-2} ft / day
N. Lateral hydraulic flow gradient (attach a site map with groundwater flow direction and elevation data as Attachment No. 14 - USGS datum preferred): _____ ft/ft to _____(direction)
O. Effective groundwater flow rate: _____ ft/yr

P. Identify hydrogeologic conditions that could influence flow direction *(describe here or attach description as Attachment No. 15):* Groundwater flow is assumed to be east, toward the Flint River. Additional factors influencing groundwater flow direction have not been identified.

Q. Is there any indication of a vertical flow gradient? ☐ Yes ☑ No
R. If "Yes", describe: _____

2.3 GROUNDWATER CONDITIONS AND CHARACTERISTICS (Continued)

S. Has the groundwater quality been affected by the release? ☑ Yes ☐ No

If "No", skip to Section 2.4; if "Yes", continue with Section 2.3.

T. Has the groundwater quality in more than one groundwater unit been affected by the release? ☐ Yes ☑ No

U. Describe any groundwater remediation activities performed to date: None to date.

V. Total volume of groundwater remediated to date: 0 gallons

W. Does the known plume currently extend off-site? ☐ Yes ☒ No ☐ Unknown

X. Describe steps that have been taken, or will be taken, to secure access to off-site properties, including easements and right-of-ways, for the purpose of completing the delineation of the extent of the release to groundwater:

STEPS TAKEN OR PLANNED TO SECURE ACCESS TO OFF-SITE PROPERTIES	OFF-SITE PROPERTY OWNER'S NAME	OFF-SITE PROPERTY OWNER'S ADDRESS
None planned. Due to the size of the subject property, it is not believed that the plume extends off-site.		

Y. Provide the schedule for completing the delineation of the extent of the off-site impact of the release to groundwater *(indicate here or include as Attachment No. 16):* No planned off-site activity.

Z. Attach Field Screening Results (Attachment No. 17) and Laboratory Results (Attachment No. 18) tables showing the results of all groundwater sampling performed to date for the listed parameters. *(NOTE: The USTD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information.)*

2.3 GROUNDWATER CONDITIONS AND CHARACTERISTICS

AA. Provide in the Comparison Table for Groundwater (Attachment No. 19) the maximum contaminant concentrations detected to date in the on-site or off-site groundwater for each listed parameter. *(NOTE: Enter "ND" with the appropriate method detection limit when the parameter was not detected, and enter "NA" when the chemical was not analyzed.)*

BB. Show the maximum concentrations and the estimated aerial horizontal extent of the contaminated plume in relation to the groundwater sampling locations on the site map and include as Attachment No. 20.

CC. Describe the estimated vertical extent and distribution of the groundwater contaminants using depth-coded cross sections (Attachment No. 21) that show screened intervals of the monitoring wells. Cross sections locations should be included on the site map: Beneath paved areas, groundwater was encountered at approximately 17 feet below ground surface.

DD. Were multiple groundwater sampling events conducted at the site? ☐ Yes ☑ No

EE. If "Yes", include a chronological summary of the results for each sampling location using the data tables provided in Attachment No. 18 and include as Attachment No. 22.

2.4 CONDITIONS AND CHARACTERISTICS IN OTHER ENVIRONMENTAL MEDIA

A. Is contamination present in any environmental media other than soil or groundwater?
☐ Yes ☑ No

NOTE: If "Yes", complete this Section; if "No", skip to Section 3.0.

B. What other environmental media were investigated as part of this corrective action? (*Check all that apply*):

- ☐ Air
- ☐ Surface Water
- ☐ Sediments
- ☐ Biota
- ☐ Other (*Specify*):_____

NOTE: For each environmental media checked, answer questions "C" through "K".

C. Total volume of each of the other specified media remediated or disposed to date (*Specify units*):_____

2.4 CONDITIONS AND CHARACTERISTICS IN OTHER ENVIRONMENTAL MEDIA (Continued)

D. Describe any remediation, treatment or disposal activities performed to date relative to each of the other specified media:_____

_____

_____

_____

_____

_____

_____

E. Describe steps that have been taken, or will be taken, to secure access to off-site properties, including easements and right-of-ways, to complete the delineation of the extent of the off-site impact of the release to the other specified environmental media:

STEPS TAKEN OR PLANNED TO SECURE ACCESS TO OFF-SITE PROPERTIES	OFF-SITE PROPERTY OWNER'S NAME	OFF-SITE PROPERTY OWNER'S ADDRESS

F. Provide the schedule for completing the delineation of the extent of the off-site impact of the release to the other specified environmental media (*indicate here or include as AttachmentNo.23*):

_____

_____

_____

G. Attach Field Screening Results (Attachment No. 24) and Laboratory Results (Attachment No. 25) tables showing the results of all sampling performed to date for the listed parameters in the other specified environmental media. *(NOTE: The USTD may request copies of the laboratory data sheets, chain-of-custody forms, and all available QA/QC information.*

H. Provide in the Comparison Table for Other Environmental Media (Attachment No. 26) the maximum contaminant concentrations detected to date in each other specified environmental media for each listed parameter. *(NOTE: Enter "ND" with the appropriate method detection limit when the parameter was not detected, and enter "NA" when the chemical was not analyzed. In areas where remediation has occurred, do not include sample results for areas where the material has been subsequently removed or the characteristics of the material left in place have been altered due to the remediation.)*

2.4 CONDITIONS AND CHARACTERISTICS IN OTHER ENVIRONMENTAL MEDIA (Continued)

I. Show the maximum concentrations, sample depths, and estimated extent of contamination in the other specified environmental media *(as appropriate)* in relation to the sampling locations on the site map included as Attachment No. 27.

J. Describe the extent and distribution of the contaminants in the other specified media:_____

_____

_____

_____

_____

K. If there is known contamination in the other specified media not related to the release, complete the following:

ON-SITE CONTAMINANTS NOT RELATED TO THE RELEASE	SOURCE OF THIS CONTAMINATION (If Known)	LOCATION OF THIS CONTAMINATION

3.0 SITE CLASSIFICATION

A. Indicate the current Site Classification Level *(See Attachment No. 10 of the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks"):*

- ☐ Class 1: Immediate threat to human health, safety, or sensitive environmental receptors
- ☐ Class 2: Short-term threat to human health, safety, or sensitive environmental receptors
- ☐ Class 3: Long-term threat to human health, safety, or sensitive environmental receptors
- ☑ Class 4: No demonstrable long-term threat to human health, safety, or sensitive environmental receptors

NOTE: Regardless of the classification level, all reports must be submitted within the legislative time frame unless an alternate schedule is approved in writing by the USTD.

3.0 SITE CLASSIFICATION (Continued)

B. If "Class 1" is checked above, complete the following table using the instructions contained in the heading as it applies to each of the conditions or scenarios described:

CHECK BOX IF CONDITION IS CURRENTLY PRESENT	DATE OF CLASSIFICATION
IDENTIFY THE EVIDENCE USED TO CONFIRM THAT THE CONDITION IS OR IS NOT PRESENT AND, IF PRESENT, DESCRIBE ALL ACTIONS THAT ARE CURRENTLY BEING PERFORMED TO MITIGATE THE CONDITION	
☐ Explosive levels or concentrations of vapors that could cause acute health effects are present in a residence or facility	____/____/____
☐ Explosive levels of vapors are present in subsurface utility system(s), but no building or residences are impacted	____/____/____
☐ Free product is present	____/____/____
☐ An active public or private water supply well, public water supply line, or public surface water intake is impacted or immediately threatened	____/____/____
☐ Ambient vapor/particulate concentrations exceed concentrations of concern from an acute exposure, or safety viewpoint	____/____/____
☐ Sensitive habitat or sensitive resources (sport fish, economically important species, threatened and endangered species, surface water, wetlands, etc.) are impacted and affected	____/____/____

3.0 SITE CLASSIFICATION (Continued)

C. If "Class 2", "Class 3", or "Class 4" is checked above, complete the following table with respect to the current site classification level using the criteria and prescribed scenarios presented in Attachment No. 10 of the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks":

IDENTIFY THE CURRENT CONDITION(S) THAT LED TO THE CLASSIFICATION	IDENTIFY THE PRESCRIBED INITIAL RESPONSE ACTION AND THE DATE THE ACTION WAS IMPLEMENTED
Non-potable aquifer with no existing local use has been impacted.	Follow statutory reporting requirements.
Impacted soils are more than 3 feet below ground surface and greater than 50 feet above nearest aquifer.	Follow statutory reporting requirements.

4.0 RESULTS OF THE TIER I OR TIER II EVALUATION

4.1 EXPOSURE PATHWAY CHARACTERIZATION

A. Check all that apply to this site:

Potential Source(s)

- ☒ Impacted Soils
- ☒ Dissolved Groundwater Plume
- ☐ Free Phase Liquid Plume
- ☐ Impacted Sediments or Surface Water
- ☐ Other *(Specify)*: _____

Potential Transport Mechanism(s)

- ☐ Wind Erosion and Atmospheric Dispersion
- ☐ Volatilization and Atmospheric Dispersion
- ☐ Volatilization and Enclosed-Space Accumulation
- ☒ Leaching and Groundwater Transport
- ☐ Mobile Free-Liquid Migration
- ☐ Stormwater/Surface Water Transport
- ☐ Utility Corridors
- ☐ Other *(Specify)*: _____

Potential Exposure Routes(s)

- ☐ Soil Ingestion
- ☐ Direct Contact of Soil with Skin
- ☐ Inhalation of Airborne Particulates
- ☐ Inhalation of Volatiles
- ☐ Potable Water Use
- ☐ Use of Non-Potable Water
- ☐ Other *(Specify):* _____

Potential Receptor(s)

- ☐ Resident
- ☐ Commercial Worker III*
- ☐ Commercial Worker IV*
- ☒ Industrial Worker
- ☐ Construction Worker
- ☐ Sensitive Habitat
- ☐ Structures
- ☐ Utilities
- ☐ Surface Waters
- ☐ Water Supply Wells
- ☐ Other *(Specify)*: _____

* As defined in Attachment No. 11 to the "Guidance Document for Risk-Based Corrective Action at Leaking Underground Storage Tanks"

NOTE: A pathway must include three necessary elements:

1) a source (e.g., contamination);

2) a mechanism by which the contamination can become available to result in exposures at the source or via migration to other locations (e.g., free product and contaminated groundwater movement along a buried utility corridor); and

3) an individual who may come into contact, ingest, or inhale the contamination at the point of exposure (e.g., a utility maintenance worker digging to repair the line).

Examples of a complete pathway include:

1. *inhalation of impacted soils by an on-site construction worker*
2. *impacted soils leaching into potable ground water and being used by a nearby resident for drinking and bathing*
3. *inhalation of vapors resulting from the migration of free product by a neighboring industrial worker*
4. *impacted groundwater discharging to wetlands*

B. List the most plausible potential residential exposure pathway(s) for the site: No plausible residential exposure pathways have been identified.

4.1 EXPOSURE PATHWAY CHARACTERIZATION (Continued)

C. List the most plausible potential commercial exposure pathway(s) for the site: No plausible commercial exposure pathways have been identified.

D. List the most plausible potential industrial exposure pathway(s) for the site: If the pavement and soils at the site remain undisturbed, exposure is not expected. If the pavement and soils are disturbed, inhalation of vapors and airborne particulates may occur.

E. List the most plausible potential sensitive habitat exposure pathway(s) for the site: No plausible sensitive habitat exposure pathways have been identified.

4.2 OPTIONAL TIER II EVALUATION

A. Has a site-specific Tier II evaluation been conducted for this Initial Assessment Report?

☐ Yes ☒ No

B. If "Yes", identify and justify where alternate assumptions or site-specific information was used in place of the default assumptions as defined in Attachment No. 11 of "Guidance Document For Risk-Based Corrective Action At Leaking Underground Storage Tanks":

ASSUMPTION	DEFAULT USTD TIER I SELECTION	ALTERNATE SELECTION	JUSTIFICATION OR BASIS FOR SUBSTITUTION *(Attach sheets if needed)*

C. Include the calculations supporting the development of Tier II SSTLs as Attachment No. 28.

4.3 IDENTIFICATION OF TIER I RISK-BASED SCREENING LEVELS OR TIER II SITE-SPECIFIC TARGET LEVELS AND COMPARISON TO SITE DATA

A. For each contaminated medium, complete a Tier I RBSL / Tier II SSTL Comparison Table (Attachment No. 8 for soil, Attachment No. 19 for groundwater or Attachment No. 26 for other media, as appropriate) by:
Checking the box associated with the applicable land use scenario;
- Checking the boxes associated with the contaminants currently present at the site;
- Entering the current maximum detected on-site or off-site concentration for each selected contaminant, along with the corresponding sample identification number and date of sampling;
- Entering the lowest applicable RBSL value for soil or groundwater from the Tier I Look-Up Tables (*refer to Attachment No. 11 of the "Guidance Document For Risk-Based Corrective Action At Leaking Underground Storage Tanks"*) for the specific exposure routes present and environmental medium being considered or a corresponding optional Tier II SSTL. [*NOTE: Include the exposure route code that identifies the basis for each applicable criterion noted. For example, 12 ug/kg (A) for a cleanup goal based on the direct contact with soil exposure route, and 12 ug/kg (B) for a cleanup goal based on the soil leaching to groundwater exposure route*];
- Comparing the contaminant-specific maximum concentration to the corresponding RBSL or SSTL criterion; and Identifying and recording whether or not there is an exceedence of the RBSL or the SSTL.

B. Tier I RBSL / Tier II SSTL Comparison Tables are attached for the following: *(Check all that apply)*

	ENVIRONMENTAL MEDIUM		
LAND USE	**SOIL**	**GROUNDWATER**	**OTHER** *(Specify)*
Residential	☐	☐	
Commercial III	☐	☐	
Commercial IV	☐	☐	
Industrial	☒	☒	

4.4 PROPOSED FOLLOW-UP ACTIVITIES

A. Based on the results of the Tier I or optional Tier II evaluation, indicate the follow-up activities proposed for the site:

☐ Site conditions do not exceed Tier I RBSLs or Tier II SSTLs	Proceed with site closure
☒ Site conditions exceed some or all Tier I RBSLs or Tier II SSTLs	Propose interim corrective action and subsequent reevaluation of the site **(Complete Section 5.0)**
☐ Site conditions exceed some or all Tier I RBSLs or Tier II SSTLs	Propose final corrective action to achieve Tier I RBSLs or Tier II SSTLs **(Complete Section 5.0)**
☐ Site conditions exceed some or all Tier I RBSLs or Tier II SSTLs	Perform further site-specific Tier II or Tier III evaluation to establish alternative SSTLs that meet the target risk goals **(Complete Section 5.0)**

4.4 PROPOSED FOLLOW-UP ACTIVITIES (Continued)

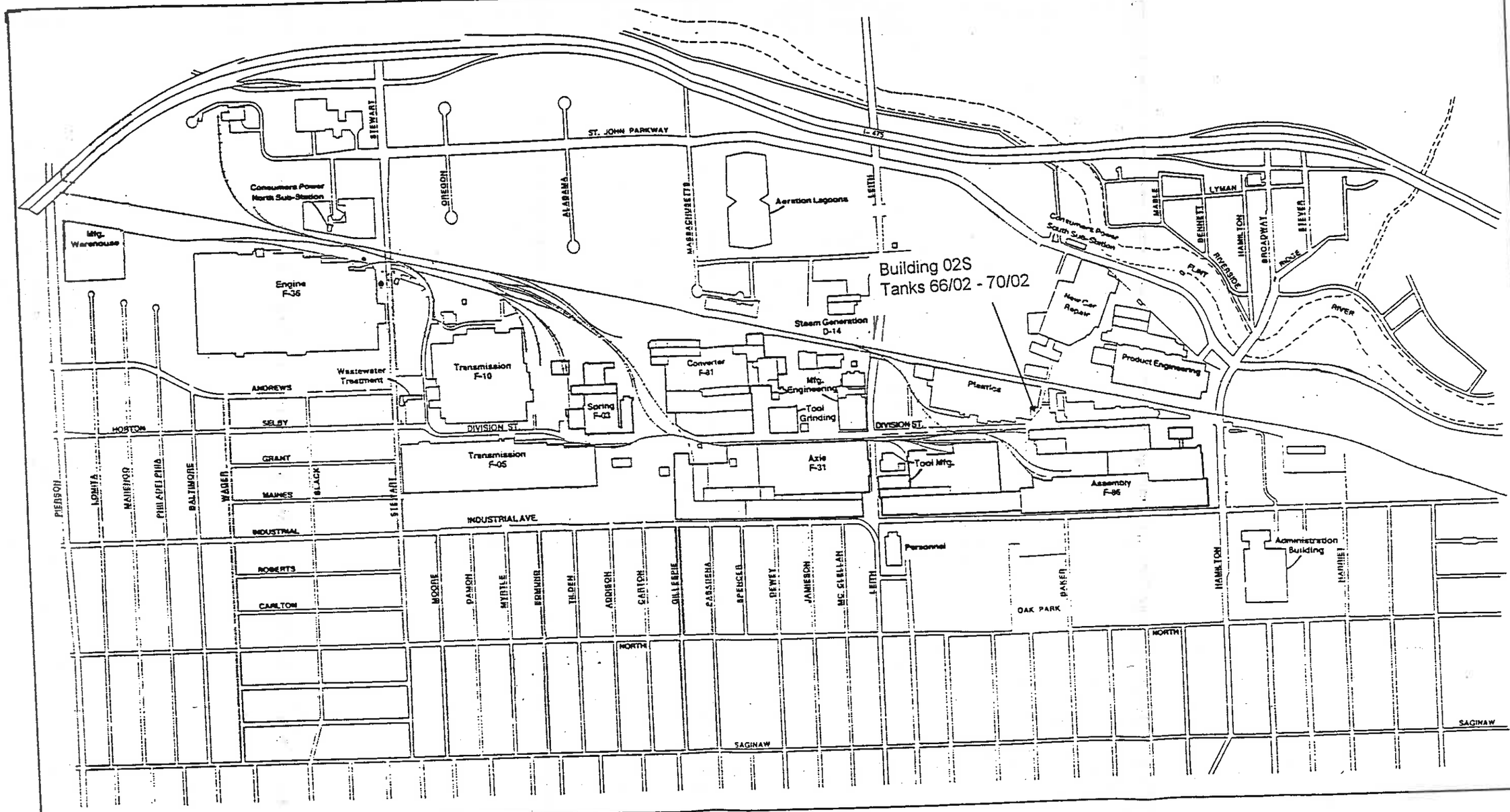
B. Provide justification for the option chosen *(attach additional sheets, if needed):* Some of the applicable RBSLs have been exceeded in soil and groundwater. Additional site characteriztion and assessment activity is necessary to fully evaluate the site. (See Work Plan) Please note, however, access in this area is limited due to the presence of utilities and above and below ground structures.

5.0 WORK PLAN FOR FURTHER SITE CHARACTERIZATION AND ASSESSMENT ACTIVITY

If an interim or final corrective action or a further Tier II evaluation is proposed, additional on-site or off-site characterization work may be required to obtain the information needed to establish alternate protective clean-up levels or to select and implement a cost-effective corrective action program. In these cases, a Work Plan must be developed to describe the proposed additional site characterization activities.

A. Provide a brief Work Plan and implementation schedule (Attachment No. 29) that describes the proposed site characterization activities to be performed to determine the horizontal and vertical extent of contamination, and establish the site conditions needed to prepare a Corrective Action Plan.

ATTACHMENT 3



LEGEND

F-36	Factory Number
D-14	Division Number
□	Hazardous Waste Storage Area
38	Building Number
—	Property Line
■	Gate House
●	Pedestrian Entrance
-x-x-	Fence

0 400 800 1200
Scale in Feet

Adapted from
EDI Engineering & Science

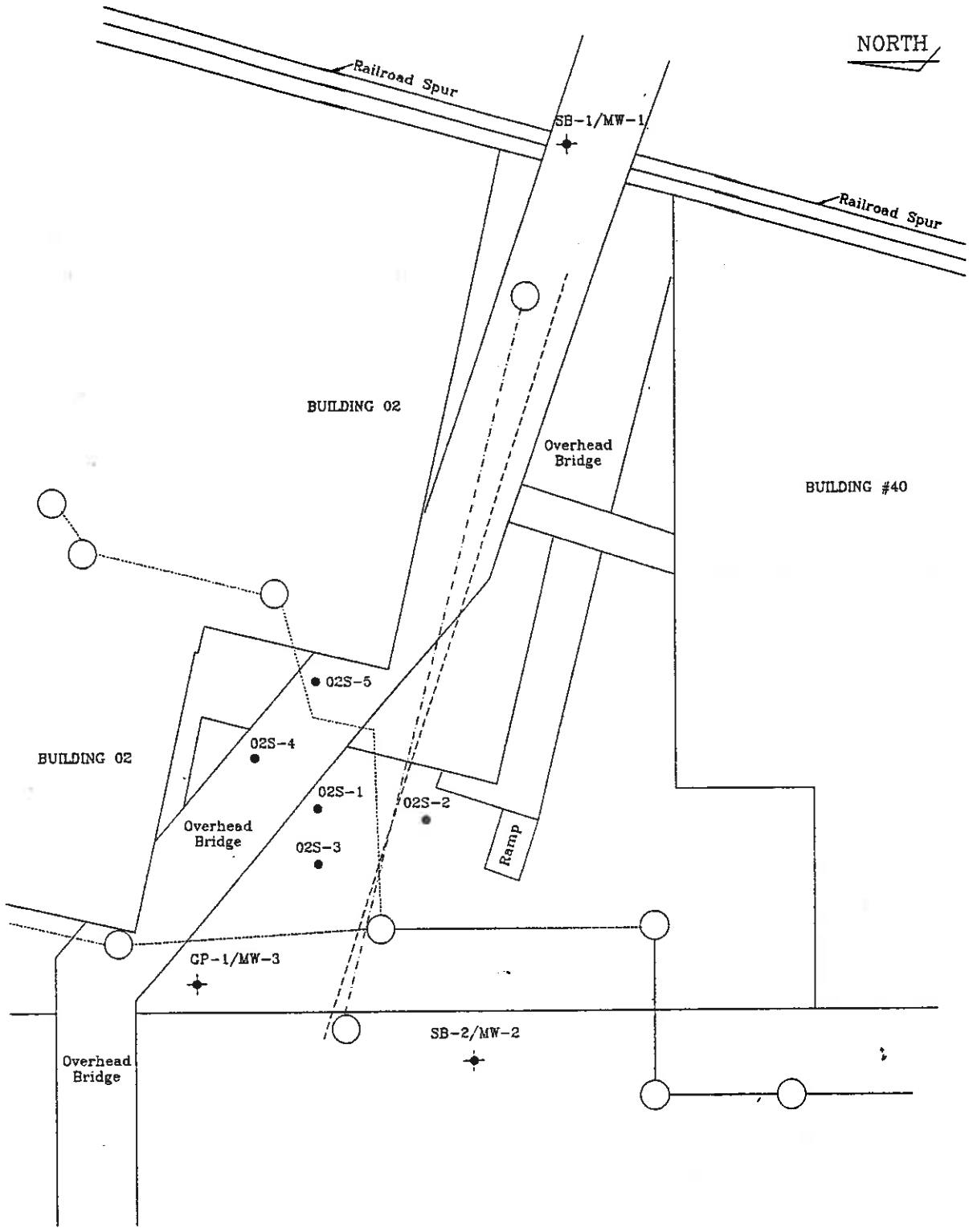
BOC FLINT OPERATIONS (BUICK SITE)

Area Map/Site Boundaries
Attachment 3

June, 1989

21080

ATTACHMENT 4



LEGEND:

- ● Geoprobe Sample Locations
- ● Monitoring Well Locations
- ---- Fire Protection Line
- ..... Sanitary Line
- -·-·- Storm Sewer Line

GM CLCD NORTH

TITLE: SAMPLE LOCATIONS BUILDING 02 SOUTH TANKS 67/02 - 70/02	
SCALE: 1"=50'	DATE: 8/13/96
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER:
	PROJECT NUMBER: F174

ATTACHMENT 6

ATTACHMENT 6

SEE SOIL BORING LOGS
ATTACHMENT 12

ATTACHMENT 7

INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7
LABORATORY RESULTS SOIL
FACILITY: NAME NAO OPERATIONS (TANKS 66/02 - 70/02)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	Bldg 02S-1 (13-15')		Bldg 02S-1 (19-21')		Bldg 02S-2 (5-6')		Bldg 02S-3 (6-8')		Bldg 02S-4 (10-12')	
Sample Depth (feet BGS)	13-15		19-21		5-6		6-8		10-12	
Date Collected	07/29/96		07/29/96		07/29/96		07/29/96		07/29/96	
Date Extracted	08/06/96		08/06/96		08/06/96		08/06/96		08/06/96	
Date Analyzed	08/06/96		08/06/96		08/06/96		08/06/96		08/06/96	
Analytical Method No.	8020		8020		8020		8020		8020	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Benzene	900	100	10	10	ND	10	2,600	500	17,500	500
☐ Toluene	7,200	100	90	10	ND	10	1,700	500	95,900	500
☐ Ethylbenzene	5,800	100	40	10	ND	10	44,200	500	135,000	500
☐ Total Xylenes	24,500	100	310	10	ND	10	75,800	500	410,000	500
☐ MTBE	ND	100	ND	10	ND	10	ND	500	ND	500
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method*										
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene										
☐ Acenaphthylene										
☐ Anthracene										
☐ Benzo(a)anthracene										
☐ Benzo(a)pyrene										
☐ Benzo(b)fluoranthene										
☐ Benzo(g,h,i)perylene										
☐ Benzo(k)fluoranthene										

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____

INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7 (Continued page 2 of 2)
LABORATORY RESULTS SOIL
FACILITY: NAME NAO OPERATIONS (BLDG 02S/TANKS 66/02 - 70/02)
FACILITY NUMBER: 0-002763

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method*										
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Chrysene										
☐ Dibenzo(a,h)anthracene										
☐ Fluoranthene										
☐ Fluorene										
☐ Indeno(1,2,3- cd)pyrene										
☐ Naphthalene										
☐ Phenanthrene										
☐ Pyrene										
☐ 2-Methylnaphthalene										
METALS										
Sample ID	Bldg 02S-1 (13-15')		Bldg 02S-1 (19-21')		Bldg 02S-2 (5-6')		Bldg 02S-3 (6-8')		Bldg 02S-4 (10-12')	
Sample Depth (feet BGS)	13-15		19-21		5-6		6-8		10-12	
Date Collected	07/29/96		07/29/96		07/29/96		07/29/96		07/29/96	
Date Extracted	08/08/96		08/08/96		08/08/96		08/08/96		08/08/96	
Date Analyzed	08/08/96		08/08/96		08/08/96		08/08/96		08/08/96	
Analytical Method No.	6020		6020		6020		6020		6020	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Cadmium										
☐ Total Chromium										
☐ Total Lead	10,200	1000	5,500	1000	954,000	1000	69,400	1000	30,600	1000

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____

INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 02S/TANKS 66/02 - 70/02)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	Bldg 02S-5 (15-17')		Bldg 02S-5 (19-21')		SB1/MW1		SB1/MW1		SB2/MW2	
Sample Depth (feet BGS)	15-17		19-21		4-6		10-12		8-10	
Date Collected	07/29/96		07/29/96		11/08/96		11/08/96		11/08/96	
Date Extracted	08/06/96		08/06/96		11/16/96		11/16/96		11/16/96	
Date Analyzed	08/06/96		08/06/96		11/16/96		11/16/96		11/16/96	
Analytical Method No.	8020		8020		8020		8020		8020	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Benzene	ND	100	21,300	500	ND	10	ND	10	ND	10
☐ Toluene	ND	100	66,200	500	ND	10	ND	10	ND	10
☐ Ethylbenzene	13,900	100	46,900	500	ND	10	ND	10	ND	10
☐ Total Xylenes	30,800	100	180,700	500	ND	10	ND	10	ND	10
☐ MTBE	ND	100	ND	500	NA	NA	NA	NA	NA	10
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID					SB1/MW1		SB1/MW1			
Sample Depth (feet BGS)					4-6		10-12			
Date Collected					11/08/96		11/08/96			
Date Extracted					11/16/96		11/16/96			
Date Analyzed					11/16/96		11/16/96			
Analytical Method No.					8270		8270			
Collection Method*					GP		GP			
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene					ND	300	ND	300		
☐ Acenaphthylene					ND	300	ND	300		
☐ Anthracene					ND	300	ND	300		
☐ Benzo(a)anthracene					ND	300	ND	300		
☐ Benzo(a)pyrene					ND	300	ND	300		
☐ Benzo(b)fluoranthene					ND	300	ND	300		
☐ Benzo(g,h,i)perylene					ND	300	ND	300		
☐ Benzo(k)fluoranthene					ND	300	ND	300		

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____

INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7 (Continued page 2 of 2)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 02S/TANKS 66/02 - 70/02)
FACILITY NUMBER: 0-002763

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID					SB1/MW1		SB1/MW1			
Sample Depth (feet BGS)					4-6		10-12			
Date Collected					11/08/96		11/08/96			
Date Extracted					11/16/96		11/16/96			
Date Analyzed					11/16/96		11/16/96			
Analytical Method No.					8270		8270			
Collection Method*					GP		GP			
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Chrysene					ND	300	ND	300		
☐ Dibenzo(a,h)anthracene					ND	300	ND	300		
☐ Fluoranthene					ND	300	ND	300		
☐ Fluorene					ND	300	ND	300		
☐ Indeno(1,2.3- cd)pyrene					ND	300	ND	300		
☐ Naphthalene					ND	300	ND	300		
☐ 2-Methylnaphthalene					ND	300	ND	300		
☐ Phenanthrene					ND	300	ND	300		
☐ Pyrene					ND	300	ND	300		
METALS										
Sample ID	Bldg 02S-5 (15-17')		Bldg 02S-5 (19-21')		SB1/MW1		SB1/MW1		SB2/MW2	
Sample Depth (feet BGS)	15-17		19-21		4-6		10-12		8-10	
Date Collected	07/29/96		07/29/96		11/08/96		11/08/96		11/08/96	
Date Extracted	08/08/96		08/08/96		11/20/96		11/20/96		11/20/96	
Date Analyzed	08/08/96		08/08/96		11/20/96		11/20/96		11/20/96	
Analytical Method No.	6020		6020		6020		6020		6020	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Cadmium										
☐ Total Chromium										
☐ Total Lead	14,100	1000	5,800	1000	8300	1000	5000	1000	5300	1000

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
*If Other (OT), Specify here:*_____
MDL= Method Detection Limit

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____

INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 02S/TANKS 66/02 - 70/02)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	SB2/MW2		GP1/MW3		GP1/MW3					
Sample Depth (feet BGS)	14-16		17-19		19-21					
Date Collected	11/08/96		12/10/96		12/10/96					
Date Extracted	11/20/96		12/17/96		12/17/96					
Date Analyzed	11/20/96		12/17/96		12/17/96					
Analytical Method No.	8020		8260		8260					
Collection Method*	GP		GP		GP					
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Benzene	ND	10	ND	10	ND	10				
☐ Toluene	ND	10	ND	10	ND	10				
☐ Ethylbenzene	ND	10	ND	10	ND	10				
☐ Total Xylenes	ND	10	ND	10	ND	10				
☐ MTBE	NA	NA	NA	NA	NA	NA				
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method*										
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene										
☐ Acenaphthylene										
☐ Anthracene										
☐ Benzo(a)anthracene										
☐ Benzo(a)pyrene										
☐ Benzo(b)fluoranthene										
☐ Benzo(g,h,i)perylene										
☐ Benzo(k)fluoranthene										

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
If Other (OT), Specify here: _____
MDL= Method Detection Limit

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table: _____

INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7 (Continued page 2 of 2)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 02S/TANKS 66/02 - 70/02)
FACILITY NUMBER: 0-002763

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Analytical Method No.										
Collection Method*										
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Chrysene										
☐ Dibenzo(a,h)anthracene										
☐ Fluoranthene										
☐ Fluorene										
☐ Indeno(1,2,3- cd)pyrene										
☐ Naphthalene										
☐ Phenanthrene										
☐ Pyrene										
☐ 2-Methylnaphthalene										
METALS										
Sample ID	SB2/MW2		GP1/MW3		GP1/MW3					
Sample Depth (feet BGS)	14-16		17-19		19-21					
Date Collected	11/08/96		12/10/96		12/10/96					
Date Extracted	11/20/96		12/13/96		12/13/96					
Date Analyzed	11/20/96		12/13/96		12/13/96					
Analytical Method No.	6020		6020		6020					
Collection Method*	GP		GP		GP					
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Cadmium										
☐ Total Chromium										
☐ Total Lead	6100	1000	3400	1000	2100	1000				

BGS=Below Ground Surface
*Collection Method Codes (list all that apply); Grab Sample (GS), Split Spoon(SS), Hand Auger(HA), Geoprobe(GP), Continuous Corer (CC), Soil Gas (SG), Cone Penetrometer (CP), Hydropunch(HP)
If Other (OT), Specify here: _____
MDL= Method Detection Limit

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table: _____

INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 8
TIER I RBSL/TIER II OR TIER III SSTL COMPARISON TABLE FOR SOILS
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 02S/TANKS 66/02 - 70/02
FACILITY ID NUMBER 0-002763
DUPLICATE TABLE AS NEEDED

☐ Residential ☐ Commercial III ☐ Commercial IV ☒ Industrial

Exposure Codes

A. Direct Contact **B. Soil Leaching to Potable Groundwater**

Contaminant	Sample ID with Maximum Detected Concentration	Corresponding Sample Date	Maximum Detected Concentration (ug/kg)	Applicable Criterion with Exposure Codes (ug/kg)		Criterion Exceeded? (Yes or No)	
				Tier I RBSL	Tier II/III SSTL	Tier I RBSL	Tier II/III SSTL
VOLATILES							
☐ Benzene	BLDG 02S-5 (19-21)	07/29/96	21,300	100		Yes	
☐ Toluene	BLDG 02S-4 (10-12)	07/29/96	95,900	16,000		Yes	
☐ Ethylbenzene	BLDG 02S-4 (10-12)	07/29/96	135,000	1,500		Yes	
☐ Total Xylenes	BLDG 02S-4 (10-12)	07/29/96	410,000	5,600		Yes	
☐ MTBE	NA						
POLYNUCLEAR AROMATICS (PNAs)							
☐ Acenaphthene	ND						
☐ Acenaphthylene	ND						
☐ Anthracene	ND						
☐ Benzo(a)anthracene	ND						
☐ Benzo(a)pyrene	ND						
☐ Benzo(b)fluoranthene	ND						
☐ Benzo(g,h,i)perylene	ND						
☐ Benzo(k)fluoranthene	ND						
☐ Chrysene	ND						
☐ Dibenzo-(a,h)anthracene	ND						
☐ Fluoranthene	ND						
☐ Fluorene	ND						
☐ Indeno(1,2,3- cd)pyrene	ND						
☐ Naphthalene	ND						
☐ Phenanthrene	ND						
☐ Pyrene	ND						

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:

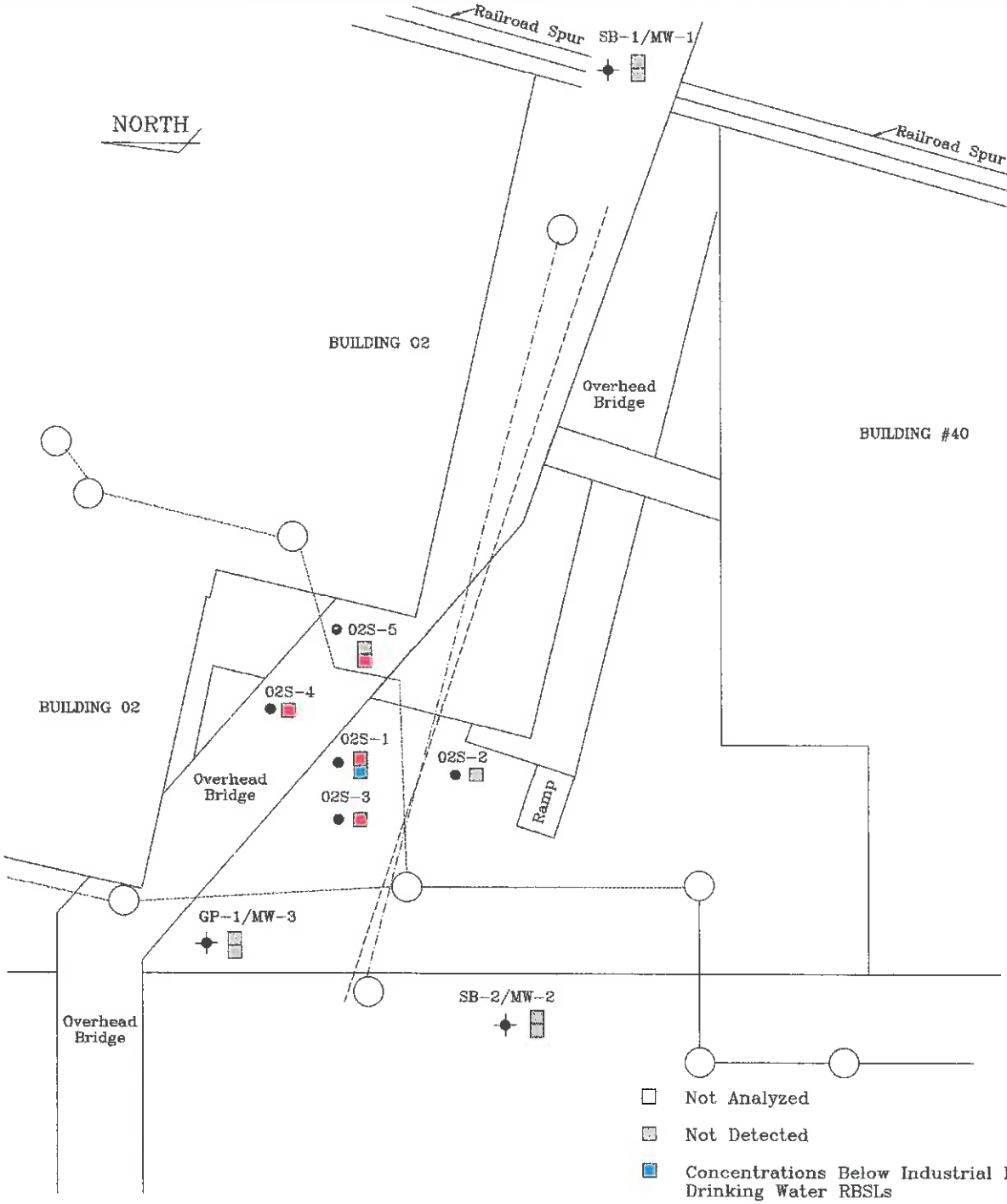
INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 8 (CONTINUED PAGE 2 OF 2)
TIER I RBSL/TIER II OR TIER III SSTL COMPARISON TABLE FOR SOILS
FACILITY NAME NAO FLINT OPERATIONS (BLDG 02S/TANKS 66/02 - 70/02)
FACILITY ID NUMBER 0-002763
DUPLICATE TABLE AS NEEDED

Contaminant	Sample ID with Maximum Detected Concentration	Corresponding Sample Date	Maximum Detected Concentration (ug/kg)	Applicable Criterion with Exposure Codes (ug/kg)		Criterion Exceeded? (Yes or No)	
				Tier I RBSL	Tier II/III SSTL	Tier I RBSL	Tier II/III SSTL
METALS							
☐ Cadmium							
☐ Chromium III							
☐ Chromium VI							
☐ Total Lead	BLDG 02S-2 (5-6)	7/29/96	954,000	21000		Yes	
PCBs							
☐ Aroclor 1016							
☐ Aroclor 1221							
☐ Aroclor 1232							
☐ Aroclor 1242							
☐ Aroclor 1248							
☐ Aroclor 1254							
☐ Aroclor 1280							
HALOGENATED HYDROCARBONS							
☐ Carbon Tetrachloride							
☐ 1,1-Dichloroethane							
☐ 1,2-Dichloroethane							
☐ 1,1-Dichloroethylene							
☐ cis-1,2-Dichloroethylene							
☐ trans-1,2-Dichloroethylene							
☐ Tetrachloroethylene							
☐ 1,1,2-Trichloroethane							
OTHER*							
☐							
☐							

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:

ATTACHMENT 9



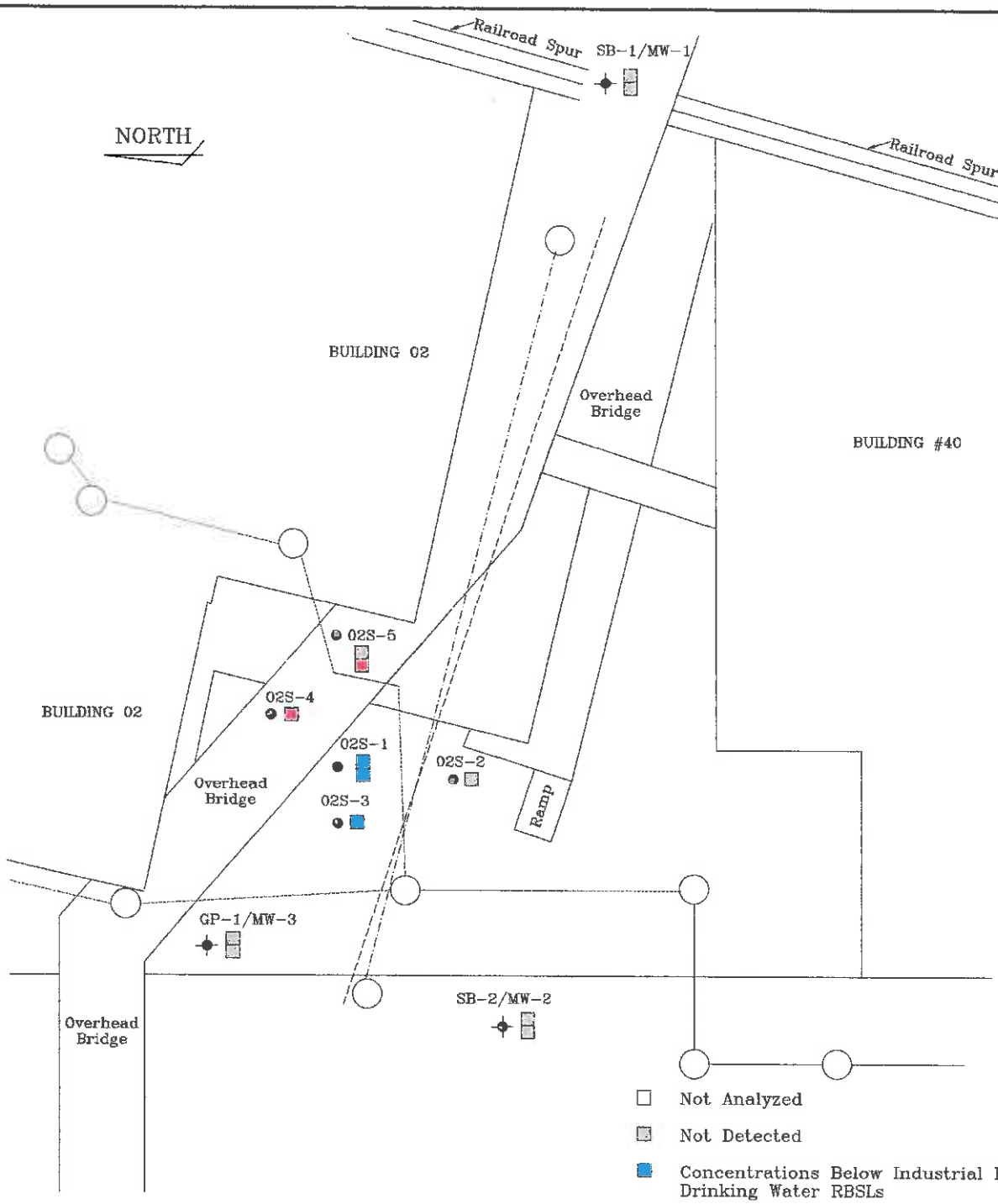
LEGEND:

- Geoprobe Sample Locations
- Monitoring Well Locations
- Fire Protection Line
- Sanitary Line
- Storm Sewer Line

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: BENZENE
BUILDING 02 SOUTH
TANKS 67/02 - 70/02

SCALE: 1"=50'	DATE: 8/13/96
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 9a
	PROJECT NUMBER: F174

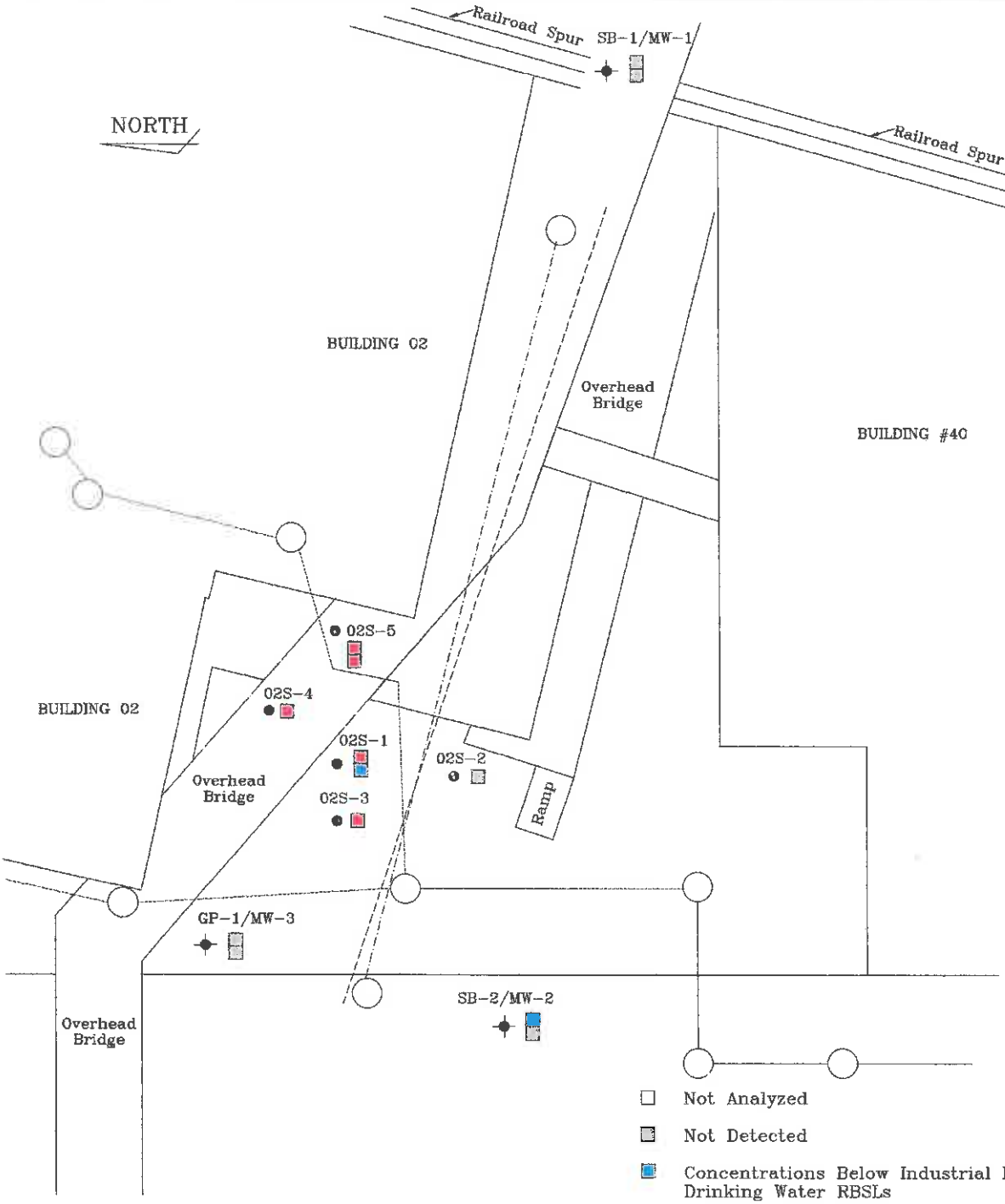


LEGEND:

- Geoprobe Sample Locations
- Monitoring Well Locations
- Fire Protection Line
- Sanitary Line
- Storm Sewer Line

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: TOLUENE BUILDING 02 SOUTH TANKS 67/02 - 70/02	
SCALE: 1"=50'	DATE: 8/13/96
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER:9b
	PROJECT NUMBER: F174



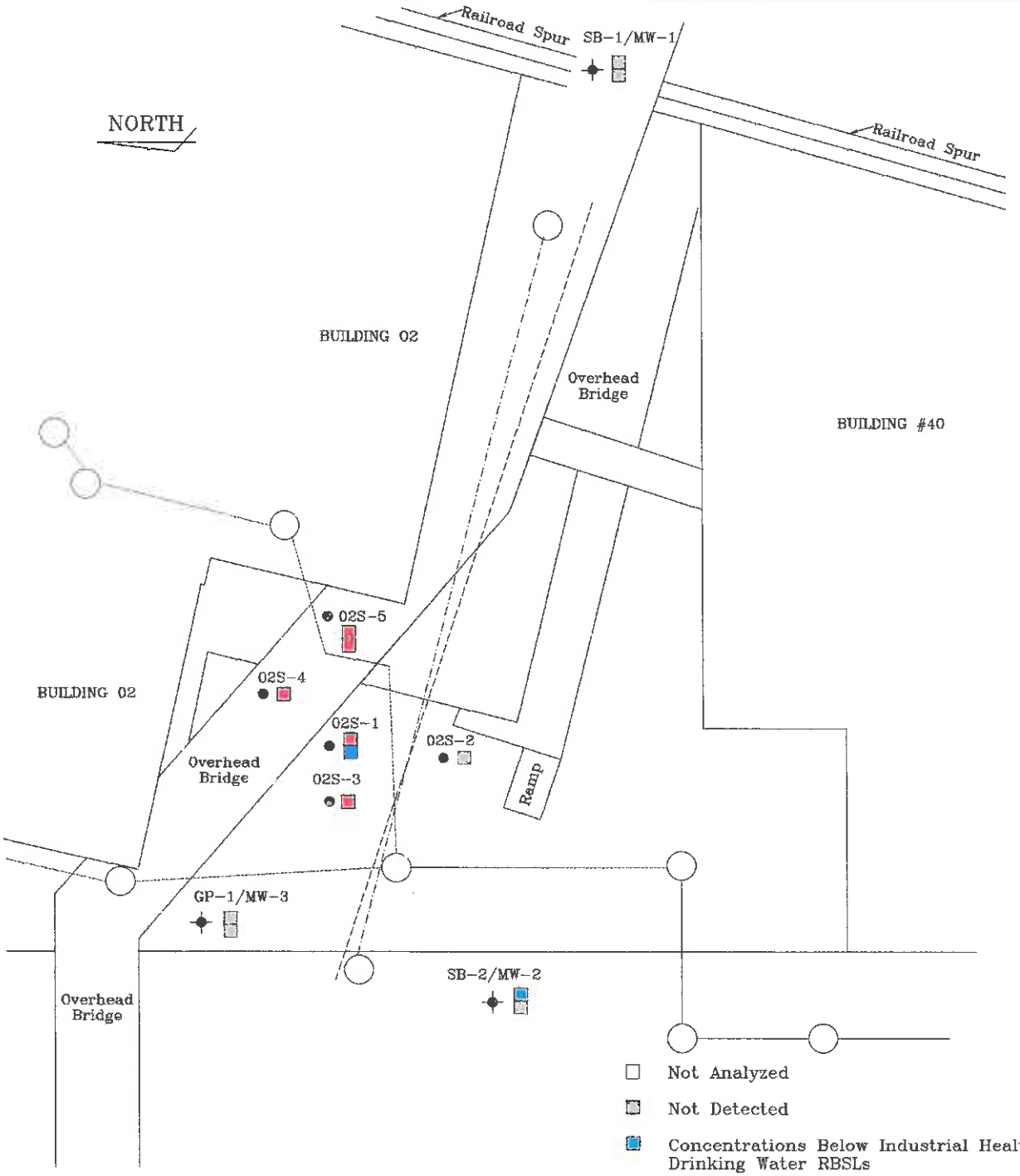
LEGEND:

- Geoprobe Sample Locations
- Monitoring Well Locations
- Fire Protection Line
- Sanitary Line
- Storm Sewer Line

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: ETHYLBENZENE
BUILDING 02 SOUTH
TANKS 67/02 - 70/02

SCALE: 1"=50'	DATE: 8/13/96
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 9c
	PROJECT NUMBER: F174



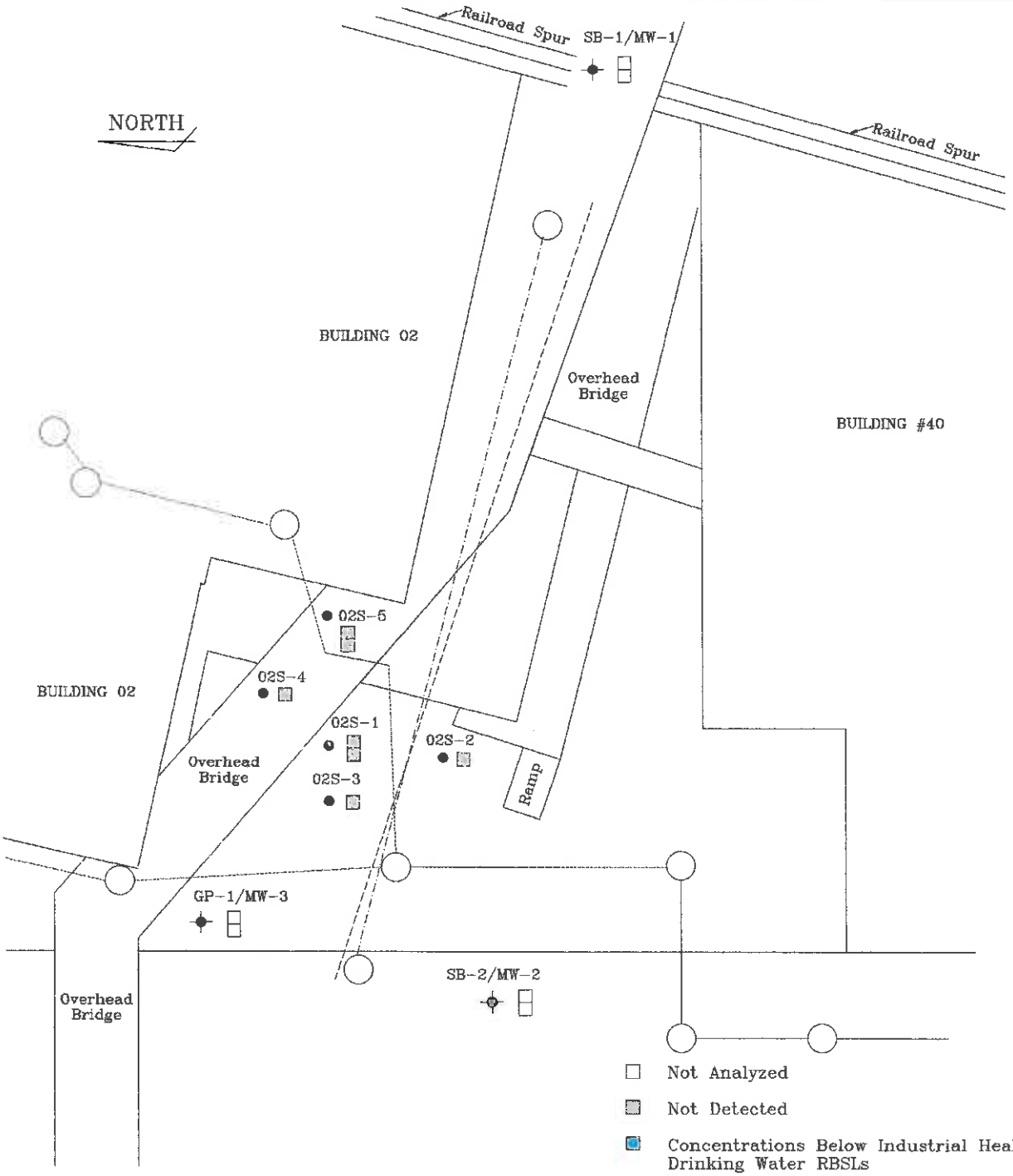
LEGEND:

- Geoprobe Sample Locations
- Monitoring Well Locations
- Fire Protection Line
- Sanitary Line
- Storm Sewer Line

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: TOTAL XYLENES
BUILDING 02 SOUTH
TANKS 67/02 - 70/02

SCALE: 1"=50'	DATE: 8/13/96
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER:9d
	PROJECT NUMBER: F174



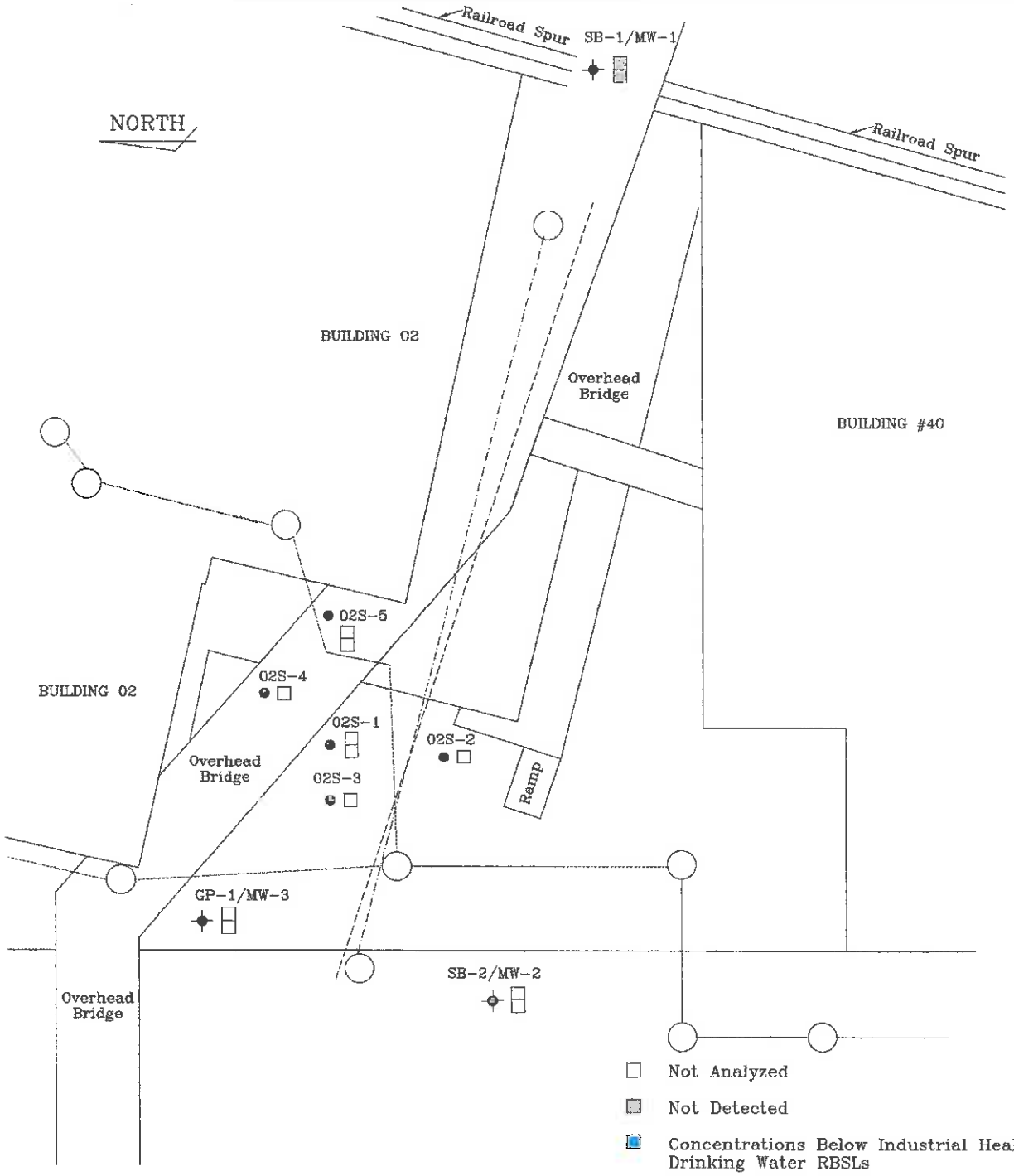
LEGEND:

- Geoprobe Sample Locations
- Monitoring Well Locations
- Fire Protection Line
- Sanitary Line
- Storm Sewer Line

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: MTBE
BUILDING 02 SOUTH
TANKS 67/02 - 70/02

SCALE: 1"=50'	DATE: 8/13/96
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 9e
	PROJECT NUMBER: F174



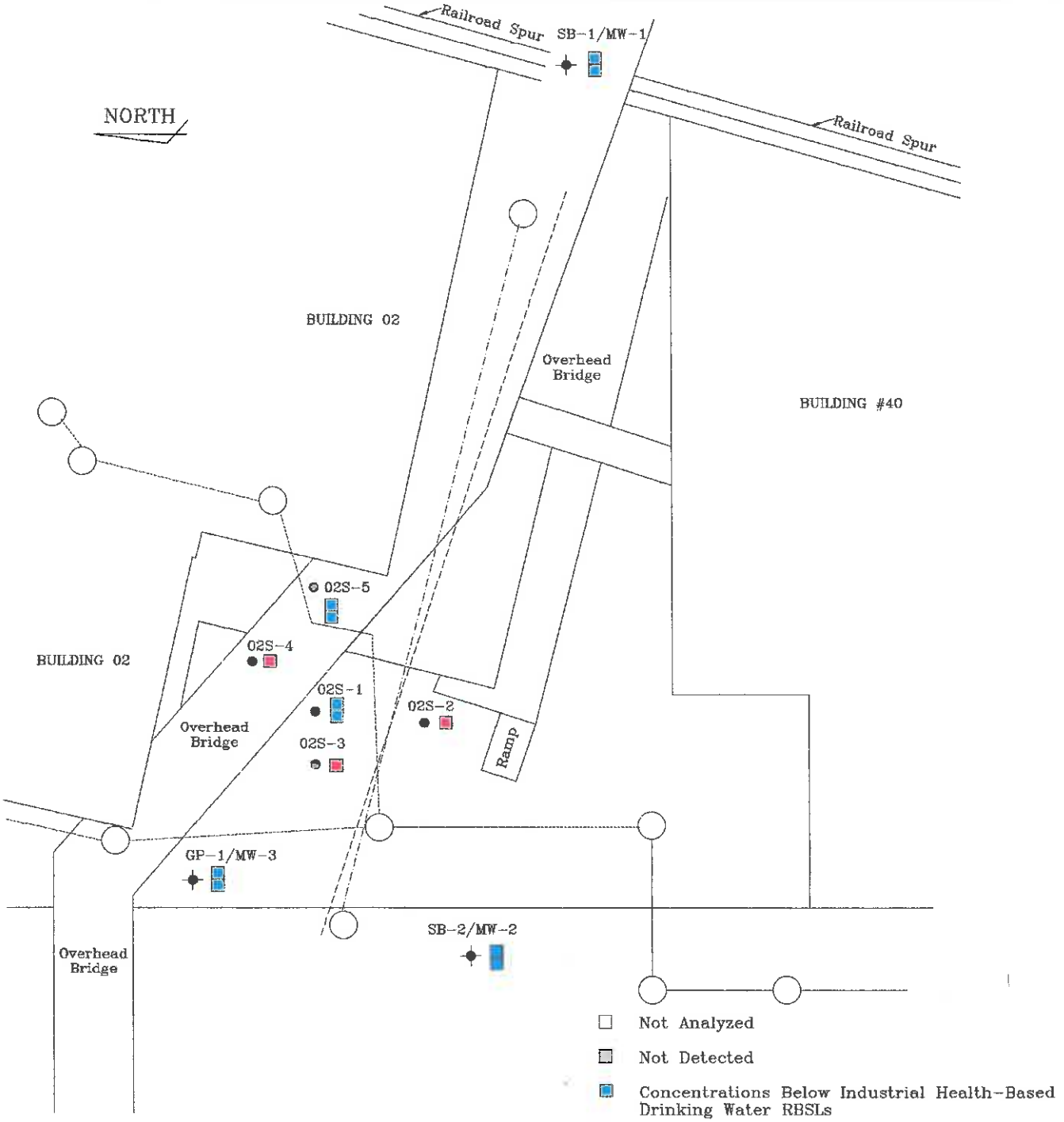
LEGEND:

- Geoprobe Sample Locations
- Monitoring Well Locations
- Fire Protection Line
- Sanitary Line
- Storm Sewer Line

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: PNAHS
BUILDING 02 SOUTH
TANKS 67/02 - 70/02

SCALE: 1"=50'	DATE: 8/13/96
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 9f
	PROJECT NUMBER: F174



LEGEND:

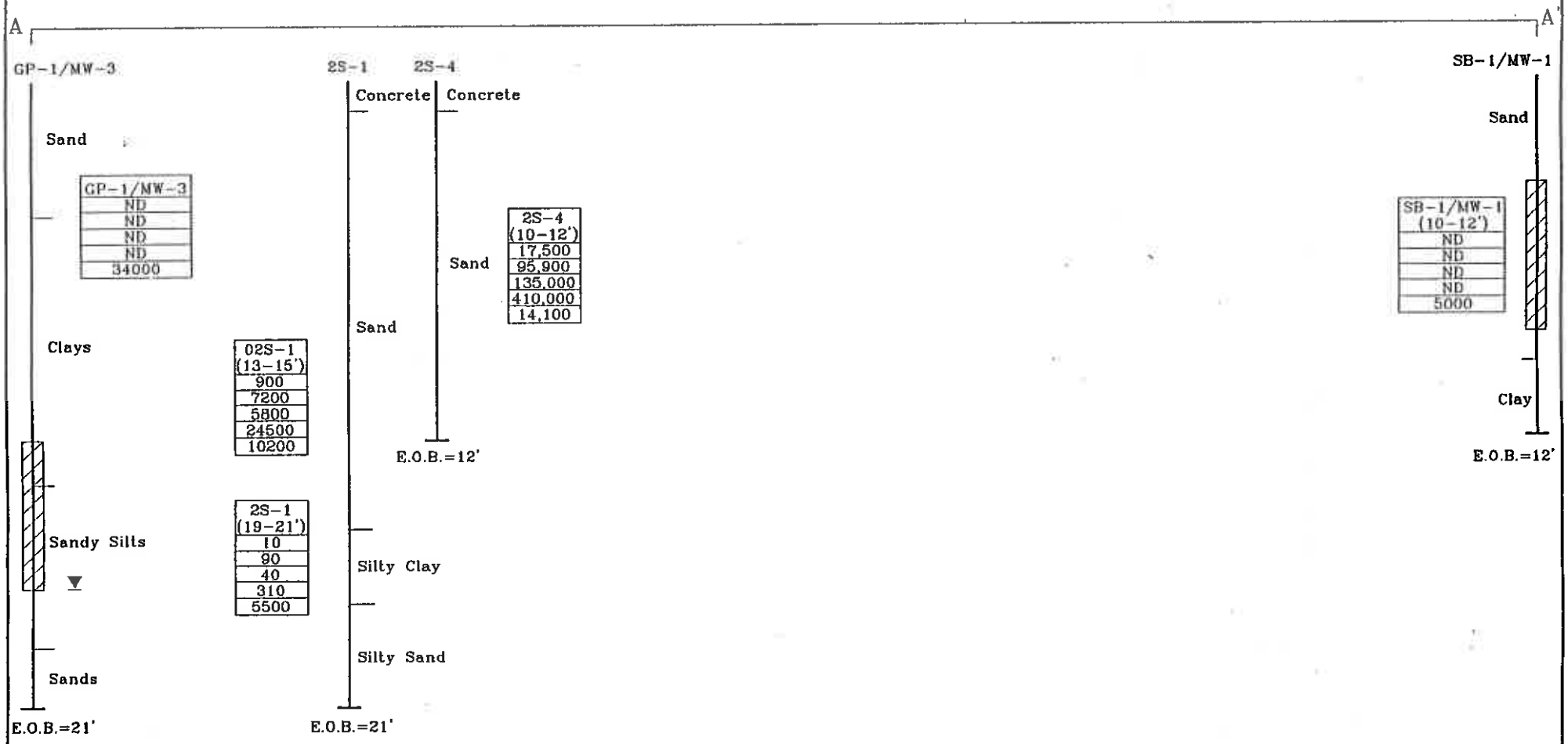
- Geoprobe Sample Locations
- Monitoring Well Locations
- Fire Protection Line
- Sanitary Line
- Storm Sewer Line

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: TOTAL LEAD
BUILDING 02 SOUTH
TANKS 67/02 - 70/02

SCALE: 1"=50'	DATE: 8/13/96
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 9g
	PROJECT NUMBER: F174

ATTACHMENT 11



X-1"=30'
Y-1"=5'

Sample ID
Benzene
Toluene
Ethlybenzene
Xylene
Lead

ND-Not Detected
NA-Not Analyzed
▼-Static Water Elevation
E.O.B.-End of Boring
All results reported in ug/kg

Global Environmental Engineering Inc.

Northwest to Southeast Cross Sectional
Diagram A - A'
GM-CLCD North Building 40
Flint, Michigan

Date: 2/28/97
Prepared By: C.G.S.
Attachment Number:
Project Number: F174

ATTACHMENT 12

Global Environmental Engineering, Inc.
352 South Saginaw St., Suite 600
Flint, Michigan 48502
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	Bldg 2S-1	Project:	GM CLCD North UST Closure
Date:	7/29/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	8:20	Depth Drilled:	21'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	2'	Coring Device:	2"
Fluid Used:	None		
Driller:	Ken		
Helper:	N/A		
Weight/Drop:	N/A		

Boring Methods

	Hollow Stem Auger
	Hand Auger
X	Geoprobe

Groundwater Information

GW Encountered at 14'

Monitor Wells Installed — Yes / No

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	PID	GC
				Concrete			
		1		Stone			
	GP-1		SP	Sand	Brown, Moist, Fine/Medium		
		2					
		3				ND	
		4					
		5				ND	
	GP-2						
		6					
		7				2.0	
		8					
						2.0	
	GP-3	9					
		10					
						3.0	
		11					
		12					
						3.5	
		13					
	GP-4						
		14					
					Gray, Wet		
	[X]	15			Medium/Coarse	>1000	
			CL	Silty Clay	Moist, No Fractures		
		16					
		17				220	
	GP-5				Fine/Medium		
		18	SM	Silty Sand	Wet "		
		19				380	
	GP-6						
		20					
	[X]	21				>1000	
			E.O.B.	End of Boring 21'			
		22					
		23					
		24					
		25					

SS-Split Spoon
NR-No Recovery
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample
PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
AL-Acetate Liner
FS-Field Screening Container

Global Environmental Engineering, Inc.
352 South Saginaw St., Suite 600
Flint, Michigan 48502
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	Bldg 25-2	Project:	GM CLCD North UST Closure
Date:	7/29/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	9:45	Depth Drilled:	6'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	2'	Coring Device:	2"
Fluid Used:	None		
Driller:	Ken		
Helper:	N/A		
Weight/Drop:	N/A		

Boring Methods

	Hollow Stem Auger
	Hand Auger
X	Geoprobe

Groundwater Information

GW Encountered at	
Monitor Wells Installed	
Yes	No

Penetration Tons/Sq ft	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	PID	GC
				Concrete			
		1		Stone			
	GP-1		CL	Clay	Brown/Black, Moist, No Fractures		
		2					
		3				ND	
		4					
		5				1.0	
	GP-2				Black		
	[X]	6				25.0	
			E.O.B.	End of Boring 6'			
		7					
		8					
		9					
		10					
		11					
		12					
		13					
		14					
		15					
		16					
		17					
		18					
		19					
		20					
		21					
		22					
		23					
		24					
		25					

SS-Split Spoon
NR-No Recovery
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample
PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
AL-Acetate Liner
FS-Field Screening Container

Global Environmental Engineering, Inc.
352 South Saginaw St., Suite 600
Flint, Michigan 48502
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	Bldg 2S-3	Project:	GM CLCD North UST Closure
Date:	7/29/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	9:45	Depth Drilled:	8'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	2"	Coring Device:	2"

Boring Methods		Groundwater Information			
	Hollow Stem Auger	GW Encountered at		Driller:	Ken
	Hand Auger	Monitor Wells Installed		Helper:	N/A
X	Geoprobe	Yes	No	Weight/Drop:	N/A

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	FID	GC
				Concrete			
		1		Stone			
	GP-1		CL	Sandy Clay	Brown, Moist, No Fractures, <25% Recovery, Wood Chips		
		2					
		3				ND	
		4					
					Black		
		5				ND	
	GP-2				Brown		
		6					
		7			Black, Trace of Gravel	>1000	
	[X]	8				>1000	
			E.O.B.	End of Boring 8'			
		9					
		10					
		11					
		12					
		13					
		14					
		15					
		16					
		17					
		18					
		19					
		20					
		21					
		22					
		23					
		24					
		25					

SS-Split Spoon
NR-No Recovery
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample
PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
AL-Acetate Liner
FS-Field Screening Container

Global Environmental Engineering, Inc.
352 South Saginaw St., Suite 600
Flint, Michigan 48502
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	Bldg 2S-4	Project:	GM CLCD North UST Closure
Date:	7/29/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	12:30	Depth Drilled:	12'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	2'	Coring Device:	2"

Boring Methods		Groundwater Information			
	Hollow Stem Auger	GW Encountered at		Driller:	Ken
	Hand Auger	Monitor Wells Installed		Helper:	N/A
X	Geoprobe	Yes	No	Weight/Drop:	N/A

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	FID	GC
				Concrete			
		1		Stone			
	GP-1		SP	Sand	Brown, Moist, Fine/Medium		
		2					
		3				7.0	
		4					
		5				22.0	
	GP-2						
		6					
		7			Gray	760	
		8					
		9			Black	>1000	
	GP-3						
		10					
		11					
	[X]	12				>1000	
				E.O.B.	End of Boring 12'(Concrete)		
		13					
		14					
		15					
		16					
		17					
		18					
		19					
		20					
		21					
		22					
		23					
		24					
		25					

SS-Split Spoon
NR-No Recovery
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample
PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
AL-Acetate Liner
FS-Field Screening Container

Global Environmental Engineering, Inc.
352 South Saginaw St., Suite 600
Flint, Michigan 48502
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	Bldg 2S-5	Project:	GM CLCD North UST Closure
Date:	7/29/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	13:15	Depth Drilled:	21'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	2'	Coring Device:	2"
Fluid Used:	None		
Driller:	Ken		
Helper:	N/A		
Weight/Drop:	N/A		

Boring Methods

	Hollow Stem Auger
	Hand Auger
X	Geoprobe

Groundwater Information

GW Encountered at	19'	
Monitor Wells Installed		
Yes	No	

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	FID	GC
				Concrete			
		1		Stone			
	GP-1		SP	Sand	Brown, Moist, Fine/Medium		
		2					
		3	CL	Sandy Clay	Brown/Black, No Fractures	ND	
		4					
						1.0	
		5					
	GP-2		CL	Clay	Brown/Gray, Fractures		
		6					
						1.5	
		7					
		8					
						2.0	
		9					
	GP-3						
		10					
						2.0	
		11					
		12					
						220	
		13					
	GP-4						
		14					
						680	
		15					
		16					
					2" Sand Lens		
		17			2" Sand Lens	>1000	
	GP-5		SP	Sand	Brown		
		18					
						>1000	
		19					
	GP-6				Wet		
		20			Gray		
		21					
			E.O.B.	End of Boring 21'		>1000	
		22					
		23					
		24					
		25					

SS-Split Spoon
NR-No Recovery
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample
PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
AL-Acetate Liner
FS-Field Screening Container

Global Environmental Engineering, Inc.
5467 Hill 23 Dr., Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	SB1/MW1	**Project:**	GMCLCD N.
Date:	11/8/96	**Project #:**	F174
Drilling Contractor:	GEEI	**Location:**	Building 40/02 South
Prepared By:	JCW	**Twp/Sec.:**	
Time Started:	12:45	**Depth Drilled:**	12'
Time Completed:		**Hole Diameter:**	4.5"
Length Coring Device:	5'	**Coring Device:**	8.25"

Boring Methods		**Groundwater Information**			
X	**Hollow Stem Auger**	**GW Encountered at**		**Fluid Used:**	None
	Hand Auger	**Monitor Wells Installed**		**Driller:**	Elroy
	Geoprobe	**Yes X**	**No**	**Helper:**	NA
				Weight/Drop:	140#/30"

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	OVA	GC
		1.					
		2.					
	SS		SP	Sand	Brown, Moist, Fine/Medium		
	SS	3.					
	SS						
	SS	4.				ND	
	SS						
	SS	5.			Wet		
	SS						
	SS	6.				520	
	SS						
	SS	7.					
	SS						
	SS	8.				12.0	
	SS						
	SS	9.					
	SS						
	SS	10.	CL	Clay	No Fractures, Trace of Gravel	4.0	
	SS						
	SS	11.					
	SS						
	SS	12.				4.0	
			E.O.B.	End of Boring 12'			
		13.					
		14.					
		15.					
		16.					
		17.					
		18.					
		19.					
		20.					
		21.					
		22.					
		23.					

SS-Split Spoon
NR-No Recovery
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample
PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
AL-Acetate Liner
FS-Field Screening Container

Global Environmental Engineering, Inc.
5467 Hill 23 Dr., Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	SB2/MW2	**Project:**	GMCLCD N.
Date:	11/8/96	**Project #:**	F174
Drilling Contractor:	GEEI	**Location:**	Building 40/02 South
Prepared By:	JCW	**Twp/Sec.:**	
Time Started:	14:50	**Depth Drilled:**	16'
Time Completed:		**Hole Diameter:**	4.5"
Length Coring Device:	5'	**Coring Device:**	8.25"

Boring Methods		**Groundwater Information**		**Fluid Used:**	None
X	**Hollow Stem Auger**	**GW Encountered at**		**Driller:**	Elroy
	Hand Auger	**Monitor Wells Installed**		**Helper:**	NA
	Geoprobe	**Yes** X	**No**	**Weight/Drop:**	140#/30"

Penetration Tons/Sq ft.	Sample Type	Depth (ft)	USCS Code	SOIL DESCRIPTION	REMARKS	OVA	GC
		1					
		2					
	SS		CL	Sandy Clay	Brown, Moist, No Fractures		
	SS	3					
	SS						
	SS	4				ND	
	SS			Clay	Brown/Gray, Fractures		
	SS	5			Wet		
	SS						
	SS	6				8.0	
	SS			Sandy Clay			
	SS	7					
	SS						
	SS	8				>1000	
	SS						
	SS	9					
	SS						
	SS-[X]	10		Clay	Some Silt	>1000	
	SS						
	SS	11					
	SS						
	SS	12			Gray, No Fractures	NA	
	SS						
	SS	13					
	SS						
	SS	14				NA	
	SS						
	SS	15					
	SS						
	SS-[x]	16				NA	
			E.O.B.	End of Boring 16'			
		17					
		18					
		19					
		20					
		21					
		22					
		23					

SS-Split Spoon
NR-No Recovery
HA-Hand Auger Sample
[X]-Laboratory/Jar Sample
PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)
AL-Acetate Liner
FS-Field Screening Container

Global Environmental Engineering, Inc.
352 South Saginaw St., Suite 600
Flint, Michigan 48502
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	2S/GP1/MW3	**Project:**	GM-Tanks
Date:	12/10/96	**Project #:**	F174
Drilling Contractor:	YECI	**Location:**	Building 02 South
Prepared By:	JCW	**Twp/Sec.:**	
Time Started:	14:15	**Depth Drilled:**	21'
Time Completed:		**Hole Diameter:**	2"
Length Coring Device:	5'	**Coring Device:**	2"

Boring Methods		**Groundwater Information**		**Fluid Used:**	None
	Hollow Stem Auger	GW Encountered at		**Driller:**	Scott
	Hand Auger	Monitor Wells Installed		**Helper:**	NA
X	Geoprobe	Yes X	No	**Weight/Drop:**	NA

Penetration Tons/Sq.ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	OVA	GC
				Concrete			
		1					
	GP-1		SP	Sand	Black, Moist, Fine/Medium		
		2			Brown		
		3					
						1.0	
		4					
		5	CL	Sandy Clay	Brown/Gray, Moist		
	GP-2					1.5	
		6		Clay			
		7					
						1.5	
		8					
		9		Sandy Clay	Brown		
	GP-3				Moist, 2" Sand Lens	1.5	
		10					
		11					
					Moist, 3" Silt Lens	2.0	
		12					
				Silty Clay			
		13					
	GP-4					1.5	
		14	ML	Sandy Silt	Brown/Gray, Wet,,, 4" Silty Sand Lens		
		15			Gray	3.0	
					G Gray, Moist		
		16					
						56.0	
	GP-5	17		Silt	Wet		
		18					
		19				62.0	
	GP-6		SP	Sand	Brown, Moist		
		20					
					Black		
		21				680.0	
			E.O.B.	End of Boring 21'			
		22					
		23					

SS-Split Spoon
NR-No Recovery

HA-Hand Auger Sample
[X]-Laboratory/Jar Sample

PID-Photoionization Detector (ppm)
GC-Gas Chromatograph (ppb)

AL-Acetate Liner
FS-Field Screening Container

ATTACHMENT 13

Global Environmental Engineering Inc.
5467 Hill 23 Drive, Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Monitoring Well:	MW-1	Project Name:	GM-CLCD N.
Date:	11/8/96	Project No.:	F174
Contractor:	GEEI	Location:	Building 40/02 South
Prepared By:	JCW	Twp/Range/Sec.:	
Time Started:	12:45	Depth Drilled:	12'
Time Completed:		Hole Diamater:	8.25"
Coring Device:	5'	Inner Diamater:	4.50"
		Drilling Fluid:	None
		Driller:	Elroy
		Helper:	NA

Boring Methods		Water Level Data	
X	Hollow Stem Auger	Date	SWL Elevation
	Hand Auger		
	Geoprobe		

WELL SPECIFICATIONS

Well Casing Cover:

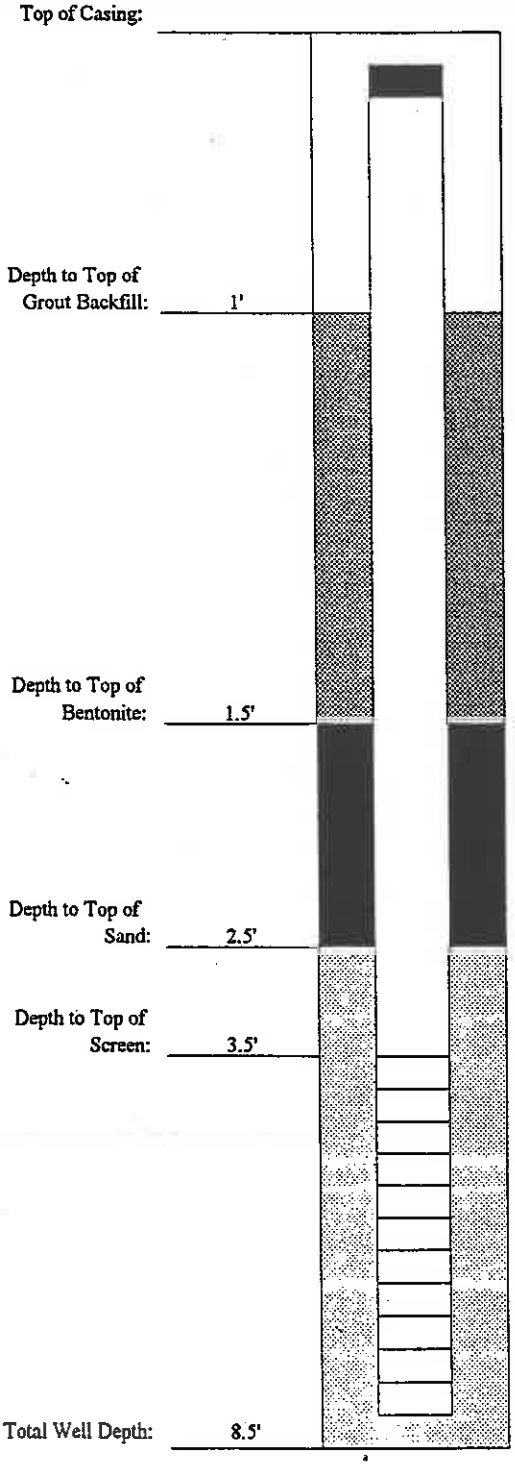
Material:	Steel
Diamater:	12"
Length:	12"
Lock:	No

Well Casing:

Diamater:	2"
Length:	3.5'
Material:	PVC
Cap:	Expandable
Locking:	Dolphin

Well Screen

Diamater:	2"
Length:	5'
Slotsize:	.01"
Material:	PVC
Well Screen Interval:	3.5'-8.5'
Filter Pack:	Sand



SOIL PROFILE

0'-9.5' - Sand

9.5'-12' - Clay

Groundwater Encountered at 5'

End of Boring 12'

Global Environmental Engineering Inc.
5467 Hill 23 Drive, Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Monitoring Well:	MW-2	Project Name:	GM-CLCD N.
Date:	11/8/96	Project No.:	F174
Contractor:	GEEI	Location:	Building 40/02 South
Prepared By:	JCW	Twp/Range/Sec.:	
Time Started:	14:50	Depth Drilled:	16'
Time Completed:		Hole Diamater:	8.25"
Coring Device:	5'	Inner Diamater:	4.50"
		Drilling Fluid:	None
		Driller:	Elroy
		Helper:	NA

Boring Methods

X	Hollow Stem Auger
	Hand Auger
	Geoprobe

Water Level Data

Date	SWL Elevation

WELL SPECIFICATIONS

Well Casing Cover:

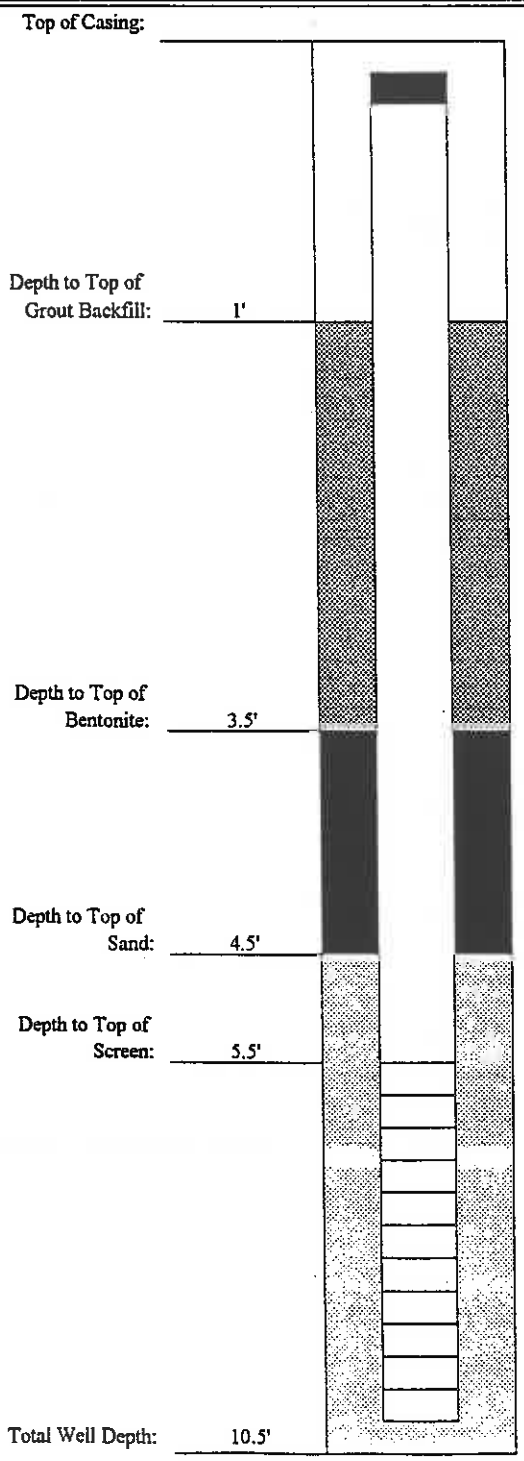
Material:	Steel
Diamater:	12"
Length:	12"
Lock:	No

Well Casing:

Diamater:	2"
Length:	5.5'
Material:	PVC
Cap:	Expandable
Locking:	Dolphin

Well Screen

Diamater:	2"
Length:	5'
Slotsize:	.01"
Material:	PVC
Well Screen Interval:	5.5'-10.5'
Filter Pack:	Sand



SOIL PROFILE

0'-4.5' - Sandy Clay

4.5'-6.5' - Clay

6.5'-10' Sandy Clay

Groundwater Encountered at 6.5'

End of Boring 16'

Global Environmental Engineering Inc.
5467 Hill 23 Drive, Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Monitoring Well:	MW-3	Project Name:	GM-CLCD N.
Date:	12/10/96	Project No.:	F174
Contractor:	YECI	Location:	Building 40/02 South
Prepared By:	JCW	Twp/Range/Sec.:	
Time Started:	14:15	Depth Drilled:	21'
Time Compieted:		Hole Diamater:	8.25"
Coring Device:	5'	Inner Diamater:	4.50"
		Drilling Fluid:	None
		Driller:	Scott
		Helper:	NA

Boring Methods

	Hollow Stem Auger
	Hand Auger
X	Geoprobe

Water Level Data

Date	SWL Elevation

WELL SPECIFICATIONS

Well Casing Cover:

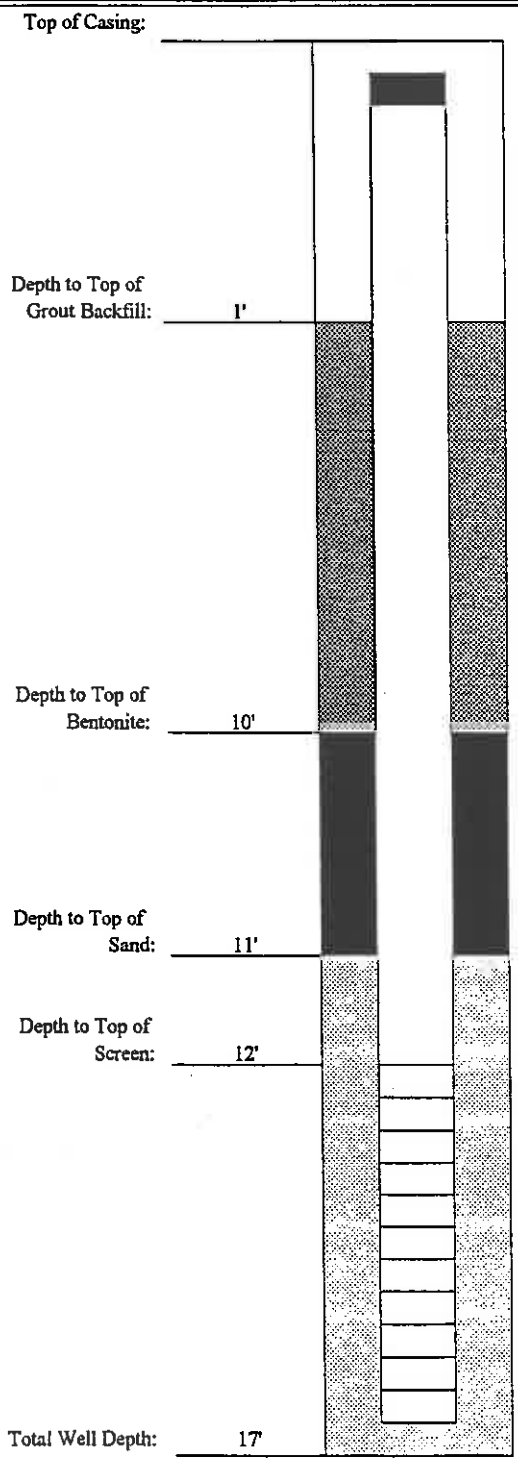
Material:	Steel
Diamater:	12"
Length:	12"
Lock:	No

Well Casing:

Diamater:	2"
Length:	12'
Material:	PVC
Cap:	Expandable
Locking:	Dolphin

Well Screen

Diamater:	2"
Length:	5'
Slotsize:	.01"
Material:	PVC
Well Screen Interval:	5'
Filter Pack:	Sand



SOIL PROFILE

0'-.5' - Concrete
.5'-4.5' - Sand
4.5'-6' - Clay
6'-9' - Sandy Clay
9'-12.5' - Silty Clay
12.5'-13.5' - Sandy Silt
13.5'-17' - Sandy Silt
17'-19' - Silt
19'-21' - Sand
End of Boring 21'

INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 19
LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 02S/TANKS 66/02 - 70/02)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	Bldg 02S-5		Bldg 02S/40 (MW1)		02S/40 (MW2)					
Sample Depth (feet BGS)	-									
Date Collected	07/29/96		01/02/97		01/02/97					
Date Extracted	08/05/96		01/02/97		01/02/97					
Date Analyzed	08/05/96		01/02/97		01/02/97					
Collection Method*	GP		Bailer		Bailer					
Analytical Method No.	8260		8260		8260					
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Benzene	10100	10	ND	1	20	1				
☐ Toluene	130	10	ND	1	ND	1				
☐ Ethylbenzene	200	10	ND	1	10	1				
☐ Total Xylenes	1040	10	ND	1	11	1				
☐ MTBE										
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID			Bldg 02S/40 (MW1)		02S/40 (MW2)					
Sample Depth (feet BGS)										
Date Collected			01/02/97		01/02/97					
Date Extracted			01/03/97		01/03/97					
Date Analyzed			01/06/97		01/06/97					
Collection Method*			Bailer		Bailer					
Analytical Method No.			8270		8270					
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene			ND	5	ND	5				
☐ Acenaphthylene			ND	5	ND	5				
☐ Anthracene			ND	5	ND	5				
☐ Benzo(a)anthracene			ND	5	ND	5				
☐ Benzo(a)pyrene			ND	5	ND	5				
☐ Benzo(b)fluoranthene			ND	5	ND	5				
☐ Benzo(g,h,i)perylene			ND	5	ND	5				
☐ Benzo(k)fluoranthene			ND	5	ND	5				
☐ Chrysene			ND	5	ND	5				
☐ Dibenzo(a,h)anthracene			ND	5	ND	5				

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table: _____
MDL = Method Detection Limit

INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 19(Continued Page 2 of 4)
LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 02S/TANKS 66/02 - 70/02)
FACILITY NUMBER: 0-002763

DUPLICATE TABLE AS NEEDED

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID			Bldg 02S/40 (MW1)		02S/40 (MW2)					
Sample Depth (feet BGS)										
Date Collected			01/02/97		01/02/97					
Date Extracted			01/03/97		01/03/97					
Date Analyzed			01/06/97		01/06/97					
Collection Method*			Bailer		Bailer					
Analytical Method No.			8270		8270					
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Fluoranthene			ND	5	ND	5				
☐ Fluorene			ND	5	ND	5				
☐ Indeno(1,2,3- cd)pyrene			ND	5	ND	5				
☐ Naphthalene			ND	5	ND	5				
☐ 2-Methylnaphthalene			ND	5	ND	5				
☐ Phenanthrene			ND	5	ND	5				
☐ Pyrene			ND	5	ND	5				
METALS - FILTERED										
Sample ID	Bldg 02S-5		Bldg 02S/40 (MW1)		02S/40 (MW2)					
Sample Depth (feet BGS)	-									
Date Collected	07/29/96		01/02/97		01/02/97					
Date Extracted	08/08/96		01/03/97		01/03/97					
Date Analyzed	08/08/96		01/06/97		01/06/97					
Collection Method*	GP		Bailer		Bailer					
Analytical Method No.	200.08		200.8		200.8					
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Cadmium										
☐ Total Chromium			20	10	ND	10				
☐ Total Lead	ND	3	32	3	ND	3				

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table: _____
MDL = Method Detection Limit

INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 19 (Continued Page 3 of 4)
LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO OPERATIONS (TANKS 66/02 -70/02)
FACILITY NUMBER: 0-002763

PCBs										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Collection Method*										
Analytical Method No.										
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Aroclor 1016										
☐ Aroclor 1221										
☐ Aroclor 1232										
☐ Aroclor 1242										
☐ Aroclor 1248										
☐ Aroclor 1254										
☐ Aroclor 1280										
HALOGENATED HYDROCARBONS										
Sample ID			Bldg 02S/40 (MW1)		02S/40 (MW2)					
Sample Depth (feet BGS)										
Date Collected			01/02/97		01/02/97					
Date Extracted			01/02/97		01/02/97					
Date Analyzed			01/02/97		01/02/97					
Collection Method*			Bailer		Bailer					
Analytical Method No.			601		601					
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Carbon Tetrachloride			ND	1	ND	1				
☐ 1,1-Dichloroethane			ND	1	ND	1				
☐ 1,2-Dichloroethane			ND	1	ND	1				
☐ 1,1-Dichloroethylene			ND	1	ND	1				
☐ cis-1,2-Dichloroethylene			ND	1	ND	1				
☐ trans-1,2- Dichloroethylene			ND	1	ND	1				

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____
MDL = Method Detection Limit

INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 19 (Continued Page 4 of 4)
LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO OPERATIONS (TANKS 66/02 - 70/02)
FACILITY NUMBER 0-002763

HALOGENATED HYDROCARBONS (Cont.)										
☐ Tetrachloroethylene			ND	1	ND	1				
☐ 1,1,2-Trichloroethane			ND	1	ND	1				
OTHER *(Specify)*										
Sample ID										
Sample Depth (feet BGS)										
Date Collected										
Date Extracted										
Date Analyzed										
Collection Method*										
Analytical Method No.										
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										

BGS = Below Ground Surface
* If Applicable
** Footnote and define all Collection Method Codes used in this table:_____
MDL = Method Detection Limit

ATTACHMENT 19

INITIAL ASSESSMENT REPORT (Continued)

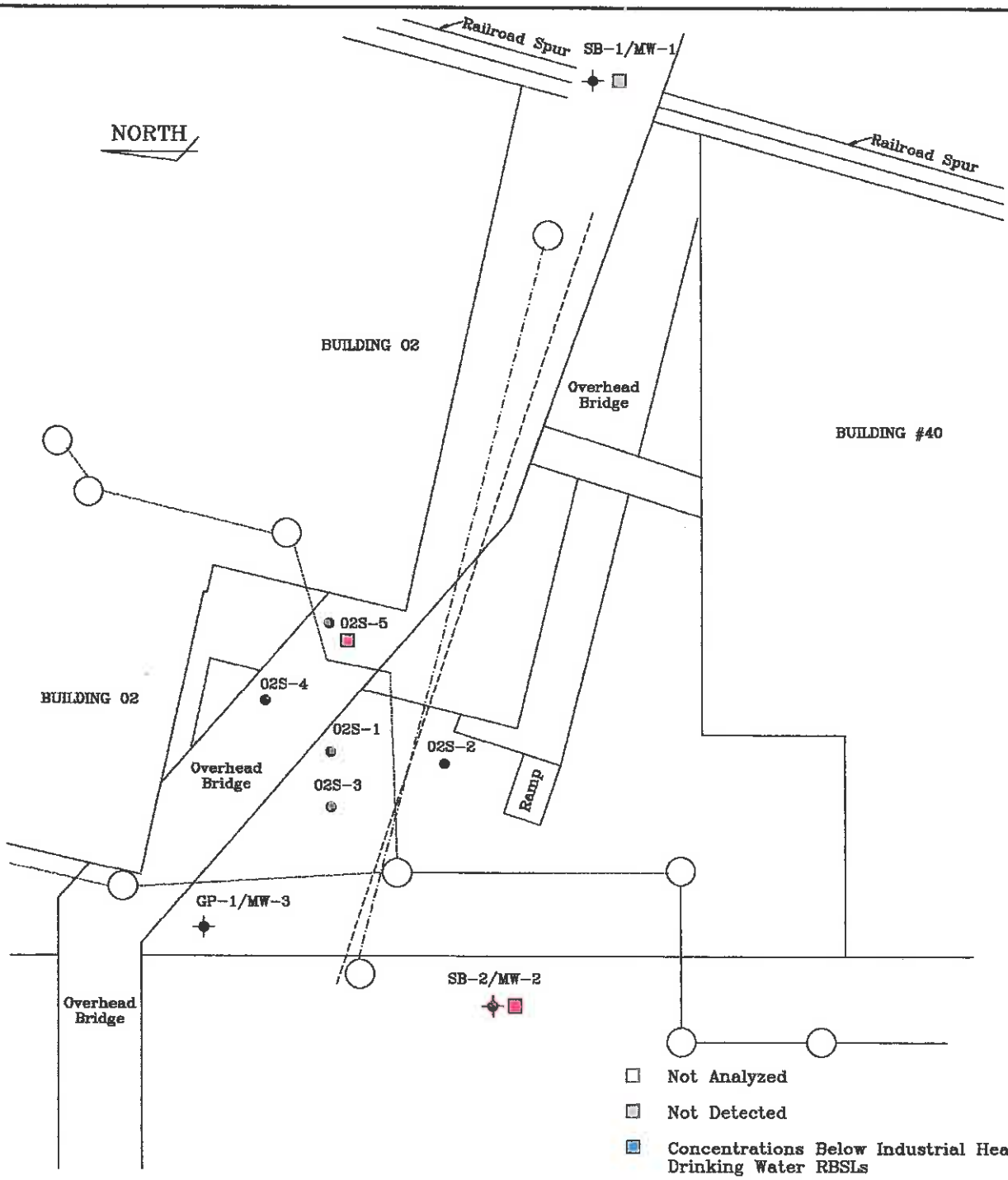
ATTACHMENT NO. 20
TIER I RBSL/TIER II OR TIER III SSTL
COMPARISON TABLE FOR GROUNDWATER
FACILITY NAME NAO FLINT OPERATIONS (TANKS 66/02 - 70/02)
FACILITY ID NUMBER 0-02763

☐ Residential ☐ Commercial ☑ Industrial

Exposure Codes
A. Potable B. Groundwater/Surface Water Interface

Contaminant	Sample ID with Maximum Detected Concentration	Corresponding Sample Date	Maximum Detected Concentration (ug/l)	Applicable Criterion with Exposure Code (ug/l)		Criterion Exceeded? (Yes or No)	
				Tier I RBSL	Tier II/III SSTL	Tier I RBSL	Tier II/III SSTL
VOLATILES							
☐ Benzene	Bldg 02S-5	7/29/96	10100	5		YES	
☐ Toluene	Bldg 02S-5	7/29/96	130	790		NO	
☐ Ethylbenzene	Bldg 02S-5	7/29/96	200	74		YES	
☐ Total Xylenes	Bldg 02S-5	7/29/96	1040	280		YES	
☐ MTBE							
POLYNUCLEAR AROMATICS (PNAs)							
☐ Acenaphthene	ND						
☐ Acenaphthylene	ND						
☐ Anthracene	ND						
☐ Benzo(a)anthracene	ND						
☐ Benzo(a)pyrene	ND						
☐ Benzo(b)fluoranthene	ND						
☐ Benzo(g,h,i)perylene	ND						
☐ Benzo(k)fluoranthene	ND						
☐ Chrysene	ND						
☐ Dibenzo-(a,h)anthracene	ND						
☐ Fluoranthene	ND						
☐ Fluorene	ND						
☐ Indeno(1,2,3-cd)pyrene	ND						
☐ Naphthalene	ND						
☐ Phenanthrene	ND						
☐ Pyrene	ND						

ATTACHMENT 20



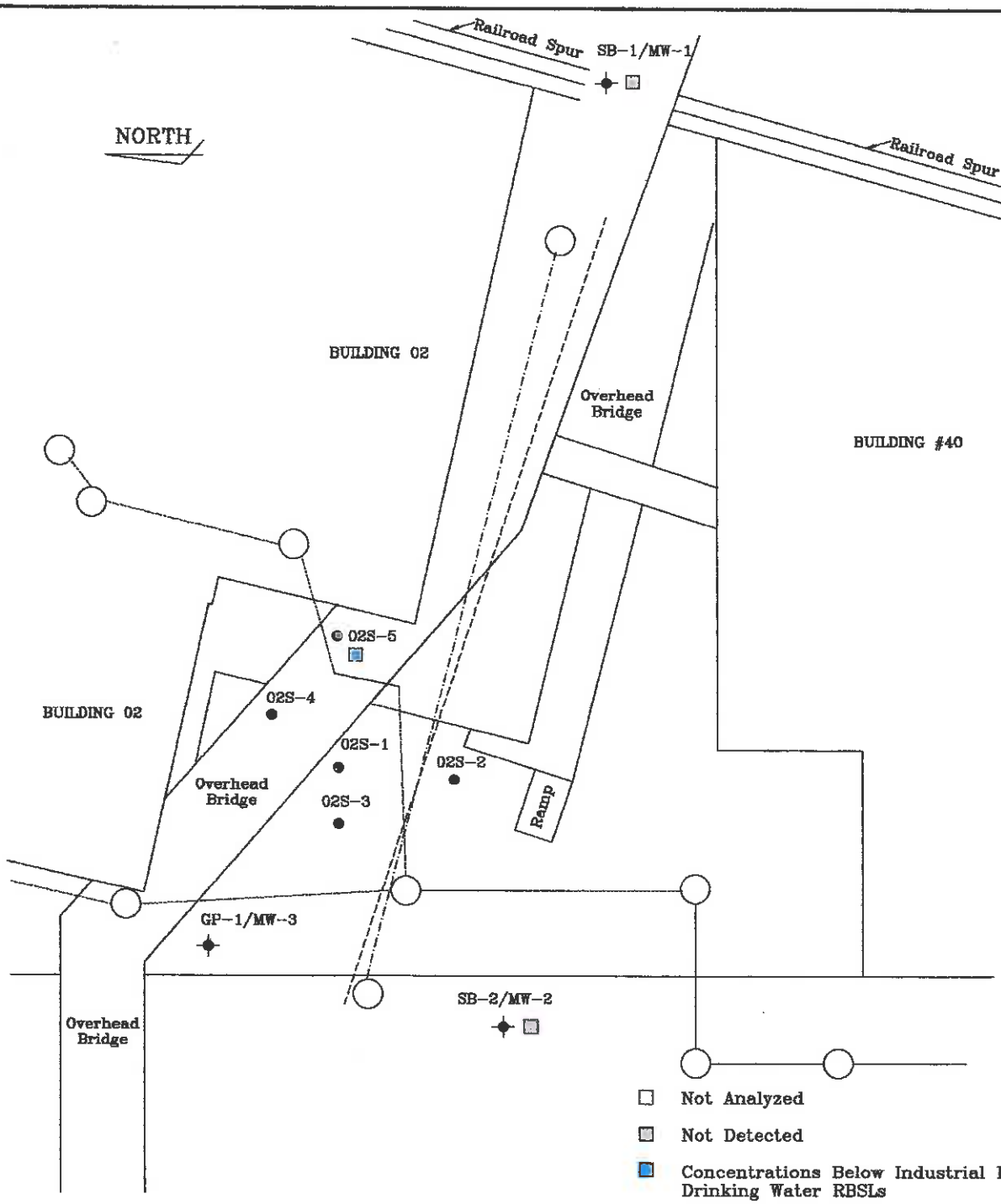
LEGEND:

- Geoprobe Sample Locations
- Monitoring Well Locations
- Fire Protection Line
- Sanitary Line
- Storm Sewer Line

GM-CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: BENZENE
BUILDING 02 SOUTH
TANKS 67/02 - 70/02

SCALE: 1"=50'	DATE: 8/13/96
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER:
	PROJECT NUMBER: F174



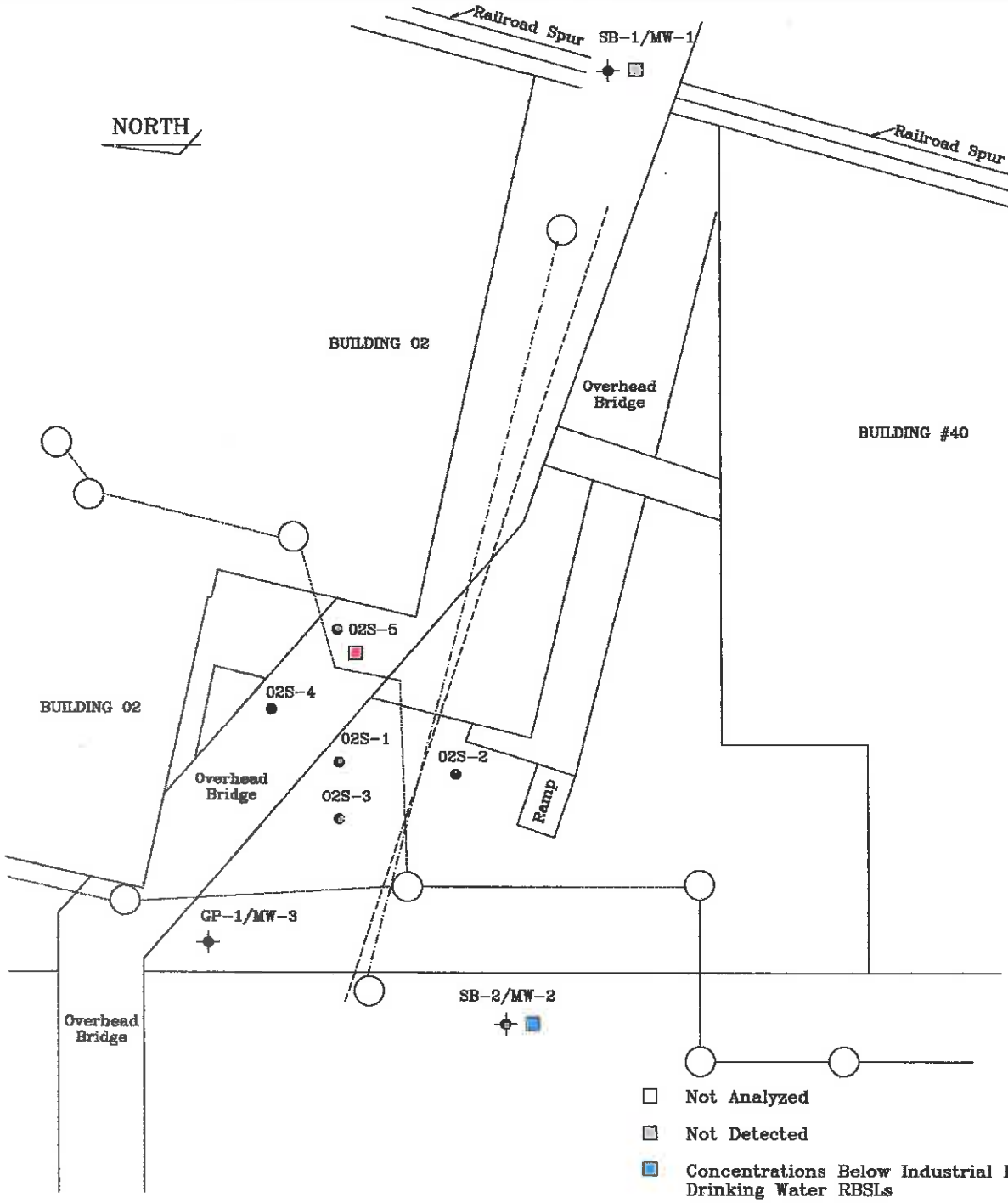
LEGEND:

- Geoprobe Sample Locations
- Monitoring Well Locations
- Fire Protection Line
- Sanitary Line
- Storm Sewer Line

GM-CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: TOLUENE
BUILDING 02 SOUTH
TANKS 67/02 - 70/02

SCALE: 1"=50'	DATE: 8/13/96
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER:
	PROJECT NUMBER: F174



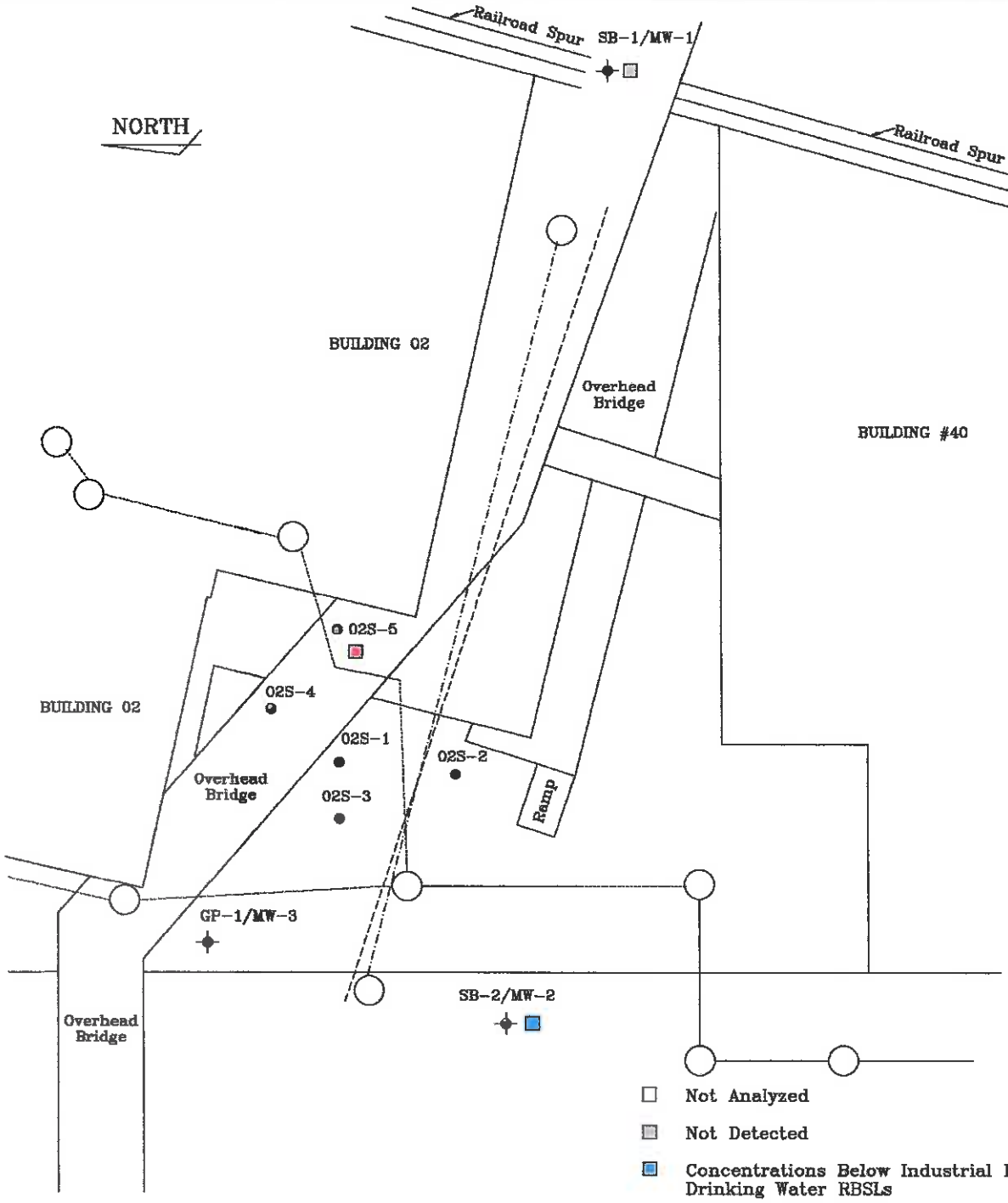
LEGEND:

- Geoprobe Sample Locations
- Monitoring Well Locations
- Fire Protection Line
- Sanitary Line
- Storm Sewer Line

GM-CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: ETHYLBENZENE
BUILDING 02 SOUTH
TANKS 67/02 - 70/02

SCALE: 1"=50'	DATE: 8/13/96
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER:
	PROJECT NUMBER: F174



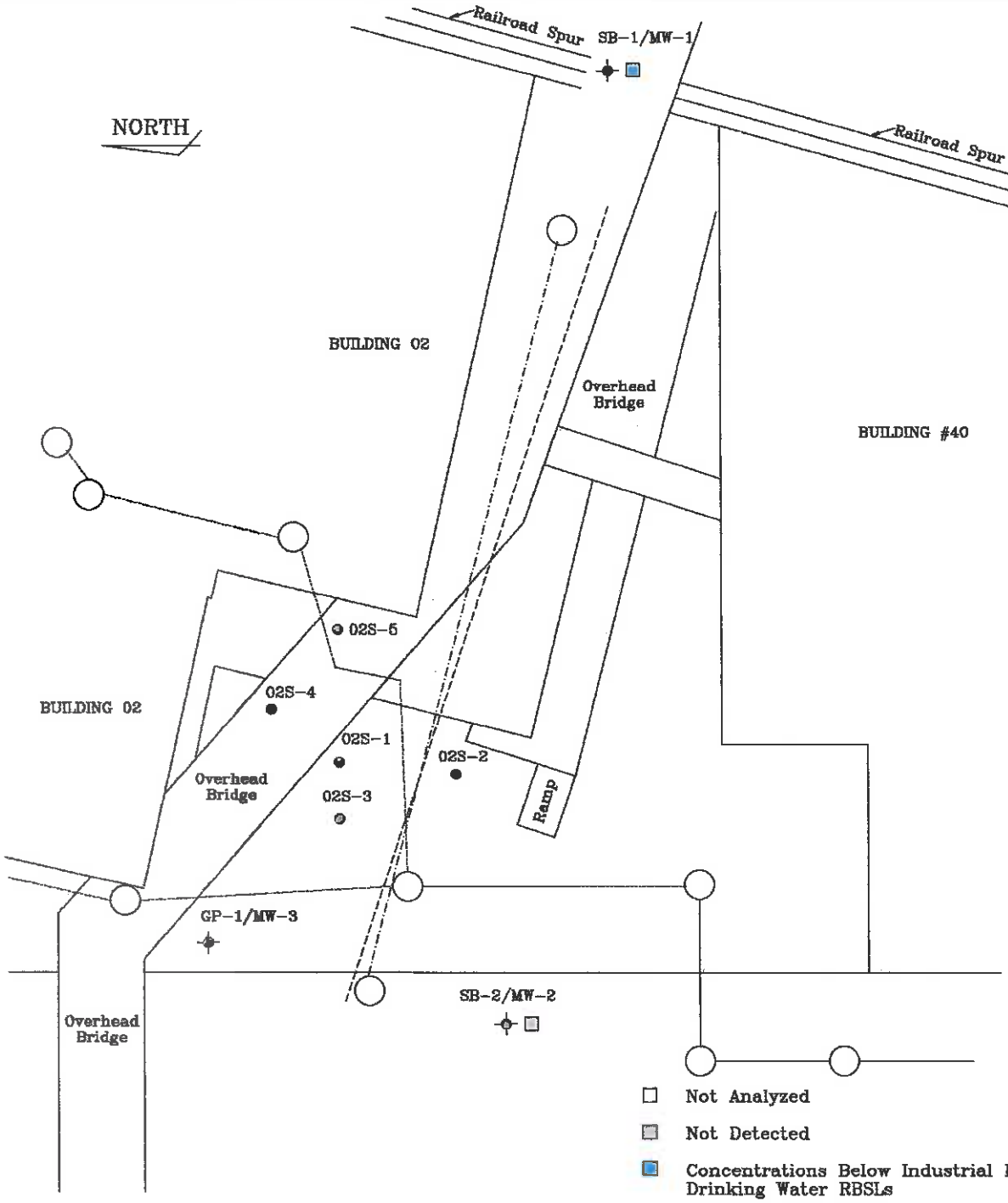
LEGEND:

- Geoprobe Sample Locations
- Monitoring Well Locations
- Fire Protection Line
- Sanitary Line
- Storm Sewer Line

GM-CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: XYLENES
BUILDING 02 SOUTH
TANKS 67/02 - 70/02

SCALE: 1"=50'	DATE: 8/13/96
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER:
	PROJECT NUMBER: F174



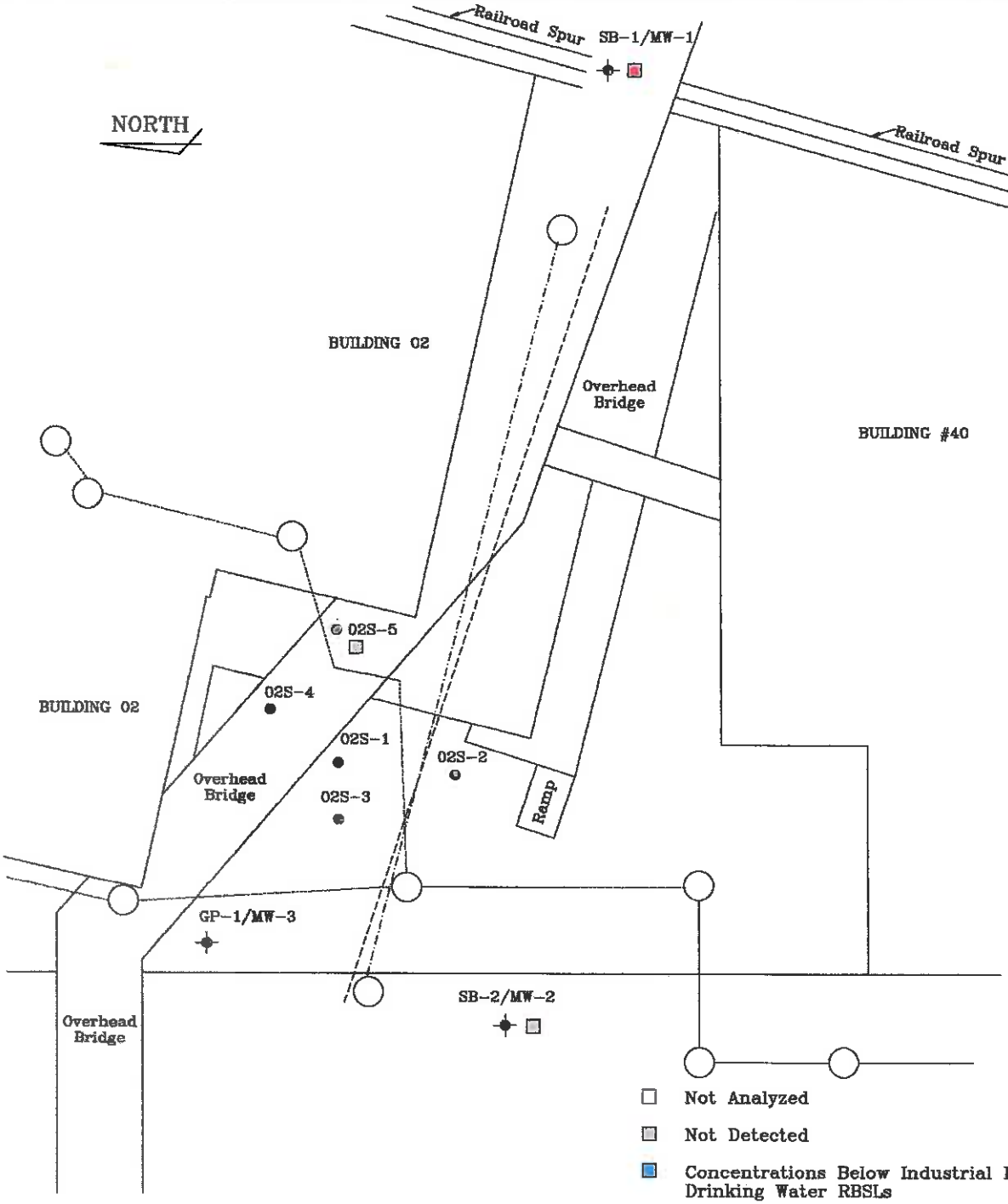
LEGEND:

- Geoprobe Sample Locations
- Monitoring Well Locations
- Fire Protection Line
- Sanitary Line
- Storm Sewer Line

GM-CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: CHROMIUM
BUILDING 02 SOUTH
TANKS 67/02 - 70/02

SCALE: 1"=50'	DATE: 8/13/96
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER:
	PROJECT NUMBER: F174



LEGEND:

- Geoprobe Sample Locations
- Monitoring Well Locations
- Fire Protection Line
- Sanitary Line
- Storm Sewer Line

GM-CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: LEAD
BUILDING 02 SOUTH
TANKS 67/02 - 70/02

SCALE: 1"=50'	DATE: 8/13/96
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER:
	PROJECT NUMBER: F174

ATTACHMENT 29

ATTACHMENT 29
NAO FLINT OPERATIONS
TANK # 66/02 - 70/02

WORK PLAN AND IMPLEMENTATION SCHEDULE

Hydrogeologic Study

Three additional groundwater monitoring wells will be installed to fully delineate the extent of groundwater impact. In addition, two soil samples will be collected from each boring. The wells will be developed, sampled, surveyed, and slug tested in accordance with applicable Michigan Department of Environmental Quality (MDEQ) standards to obtain information regarding the extent of impact, hydraulic gradient, hydraulic conductivity, and natural groundwater velocity. Based on UST contents and the past investigation, the samples collected for laboratory analysis will be analyzed for benzene, toluene, ethylbenzene, and xylenes (BTEX), polynuclear aromatic hydrocarbons (PNAs), halogenated hydrocarbons, lead and chromium.

The results of the hydrogeological study will be included in a site-wide Remedial Action Plan (RAP). The site-wide RAP is currently being coordinated by Mr. Bob Metcalf of General Motors Corporation (GM), and questions regarding the RAP and implementation schedule should be directed to GM.