DOL-29

INITIAL ASSESSMENT REPORT
NAO FLINT OPERATIONS
Flint, Michigan

Tank #081/31T-92, 132/1, & 133/31
Facility ID No. 0-002763

Global Environmental Engineering Inc.

Global Project Number F174
June 9, 1997

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 (Tank 059/86)	FACILITY ID NUMBER: 0-002763
ADDRESS: 902 East Hamilton Avenue, Flint, Michigan 48420 COUNTY: Genesee	MERA SITE ID NUMBER:
DATE(S) RELEASE DISCOVERED:	CONFIRMED RELEASE NUMBER(S):
O/O NAME: General Motors Corporation	MUSTFA CLAIM NUMBER:
O/O ADDRESS: 902 East Hamilton Avenue, Flint, MI 48550	
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: > 1/2 mile b. Municipal well: >1/2 mile c. Surface water/wetland: Flint River > 1000 feet East

6. Since last report: a. cubic yards of soil remediated: 0 b. gallons of groundwater remediated: 0

7. Totals to date: a. cubic yards of soil remediated: Unknown b. gallons of groundwater remediated: Unknown

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 9, 1997 (date submitted-Required).

June 9, 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, Ste. B, Flint, Michigan 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: 12 / / 86 _____ AM / PM

B. Date and Time Release Reported: NA / / _____ 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):* A pumphouse was formerly located at the southwest corner of the excavation. Based on observations made during the excavation of the area, a release may have emanated from the pumphouse.

D. Briefly describe how the release was discovered: The USTs were removed during the month of December, 1986. A release was noted at the time of UST removal. Mr. Ben Hall from the then Michigan Department of Natural Resources was on-site during UST removal and excavation activities.

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])
081/31T	unleaded gasoline	Same		Yes/Dec. 1986	Yes/Dec. 1986
082/31T	unleaded gasoline	Same		Yes/Dec. 1986	Yes/Dec. 1986
083/31T	antifreeze	Same		Yes/Dec. 1986	Yes/Dec. 1986
084/31T	antifreeze	Same		Yes/Dec. 1986	Yes/Dec. 1986
085/31T	BOPS (solvent)	Same		Yes/Dec. 1986	Yes/Dec. 1986
086/31T	unleaded gasoline	Same		Yes/Dec. 1986	Yes/Dec. 1986
087/31T	power steering fluid	Same		Yes/Dec. 1986	Yes/Dec. 1986
088/31T	93 PS Thinner	Same		Yes/Dec. 1986	Yes/Dec. 1986
089/31T	55 PS Thinner	Same		Yes/Dec. 1986	Yes/Dec. 1986
090/31T	105 PS Thinner	Same		Yes/Dec. 1986	Yes/Dec. 1986
091/31T	93 PS Thinner	Same		Yes/Dec. 1986	Yes/Dec. 1986
132/31	diesel fuel	Same		Yes/Dec. 1986	Yes/Dec. 1986
133/31	diesel fuel	Same		Yes/Dec. 1986	Yes/Dec. 1986

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 identified.

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/12-86	The USTs were emptied and 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/12-86	Records indicate that soil was excavated to the clay boundaries that confined that tank farm. An unknown quantity of soil was taken to Grand Blanc Landfill for disposal.
To abate an immediate threat to public health, safety, or welfare, or the environment [324.21307(2)(e)]	No.	No immediate threats to public health, safety, or the environment were identified.

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: In December of 1986, the fourteen USTs associated with the Hamilton Avenue (formerly Building 31) Tank Farm were removed by The Christman Company. An EDI Engineering, Inc. memorandum dated 12/15/86 noted that native clay confines the tank farm. The correspondence indicated that the soils within the clay boundary were to be removed and disposed of at Grand Blanc Landfill. The volume of soil removed is unknown.

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:

Currently data indicates that the area of soil impact remains on-site. If at a later date data indicates otherwise, off-site access will be obtained.

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

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*): NA - At this time, off-site impact has not been noted as a result of this release.

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): Impacted soil has been noted at depths ranging from 7 to 19 feet below grade.

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
NA		

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

File information indicates that groundwater collection sumps were installed prior to backfilling the excavation. The sumps were located in depressions dug into the clay bottom. Trenching was also installed at the base of the excavation to direct water toward the two sumps. Further details regarding sump construction were not available at the time this report was generated.

Groundwater monitoring wells have not been installed at the former Tank Farm 31. Soil borings drilled in and adjacent to the former excavation identified several saturated sand and gravel lenses at depths varying from 12 to 18 feet below grade. The groundwater flow direction is assumed to be east toward the Flint River.

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.

Hydrogeologic Characteristics (*if appropriate and where available*): See above.

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

Groundwater Flow Rate and Direction: See above.

K. Predominant soil type in water-bearing stratum (*e.g., sand, silt*): Sand
L. Effective porosity of water-bearing stratum: _____ $cm^{3\ void}/cm^{3\ soil}$
M. Hydraulic conductivity (☐ measured ☐ estimated): _____ cm/sec
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

2.3 GROUNDWATER CONDITIONS AND CHARACTERISTICS (Continued)

P. Identify hydrogeologic conditions that could influence flow direction *(describe here or attach description as Attachment No. 15):* See above.

Q. Is there any indication of a vertical flow gradient? ☐ Yes ☑ No

R. If "Yes", describe: _____

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: According to internal GM file documentation, the two sumps were scheduled to be pumped once per week beginning on 1/27/87. The routine pumping was to continue until such time as the sumps exhibited concentrations of specified parameters below background levels. The two sumps are currently non-detect for all parameters. It is unknown how many gallons were removed/remediated.

V. Total volume of groundwater remediated to date: Unknown 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: Water samples collected from the two sumps currently exhibit non-detectable levels of each constituent tested. Six of the eleven soil borings yielded enough water to collect samples. Of these, two groundwater samples exhibited elevated levels of BTEX above the Tier I Residential Health-Based RBSLs. The area of greatest impact was noted in the area of SB-8. It is assumed that groundwater flow is east toward Flint River. Based on the location of SB-8, and the expected groundwater flow direction, it is unlikely that impacted groundwater has migrated off-site in concentrations above the applicable Tier I criteria. If, after further investigation, it is determined that off-site impact is likely, steps will be taken to secure access to off-site properties.

2.3 GROUNDWATER CONDITIONS AND CHARACTERISTICS (Continued)

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

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):* _____

_____

_____

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.)*

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: Depth-coded cross sections have been included as Attachment 21.

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

* File documentation indicates that the two sumps were sampled on a periodic basis; however, at the time this report was prepared, only a limited number of sampling results was available for review. The most recent sampling event indicates contaminant levels within the sumps are non-detect.

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*):_____

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*):

2.4 CONDITIONS AND CHARACTERISTICS IN OTHER ENVIRONMENTAL MEDIA (Continued)

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.)*

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
Impacted soil is beneath asphalt/concrete paving and is greater than 3 feet below ground surface.	Statutory reporting requirements will be met.
Groundwater samples indicate impact below the Tier I Health-Based Drinking Water RBSLs.	Statutory reporting requirements will be met.

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 potential 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: The area is currently paved and used as an overflow parking lot. If the paving and subsurface soils remain undisturbed, exposure is not expected. If the subsurface soils are disturbed, or utility maintenance occurs, exposure to impacted soils or groundwater may occur.

E. List the most plausible potential sensitive habitat exposure pathway(s) for the site: The Flint River is located greater than 1000 feet from the impacted area. Groundwater impacted above the Tier I Groundwater Surface Water Interface RBSL is not expected.

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)

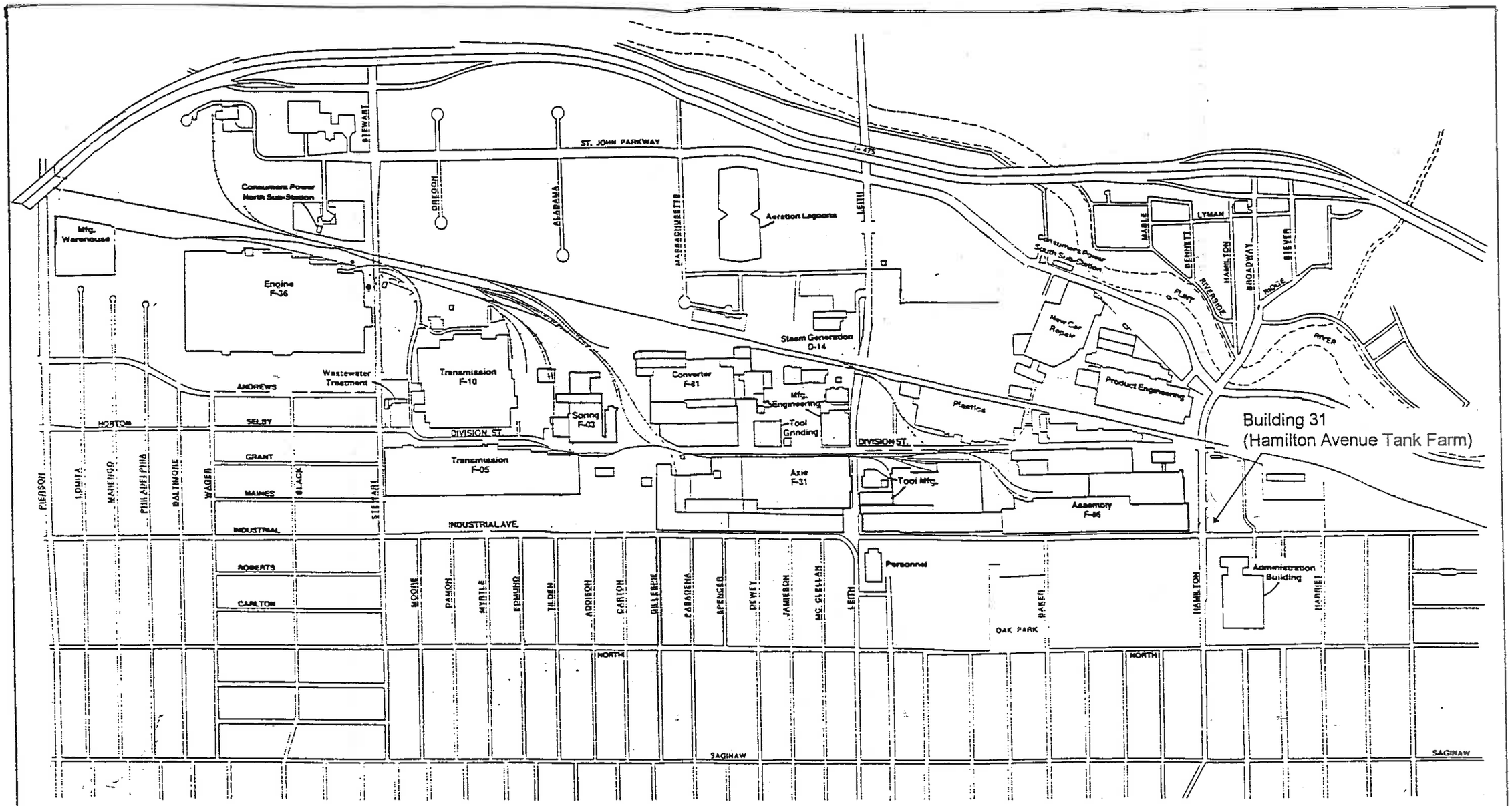
B. Provide justification for the option chosen *(attach additional sheets, if needed):* Some of the applicable RBSLs have been exceeded in the soil and groundwater. Global recommends the installation of a minimum of three groundwater monitoring wells to verify the groundwater flow direction, the severity of groundwater impact, and the hydraulic conductivity in the area of the former tank farm. Once this information has been obtained, the site will be re-evaluated for final corrective action or closure under a Tier II analysis.

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

Adapted from

EDI Engineering & Science

0 400 800 1200
Scale in Feet

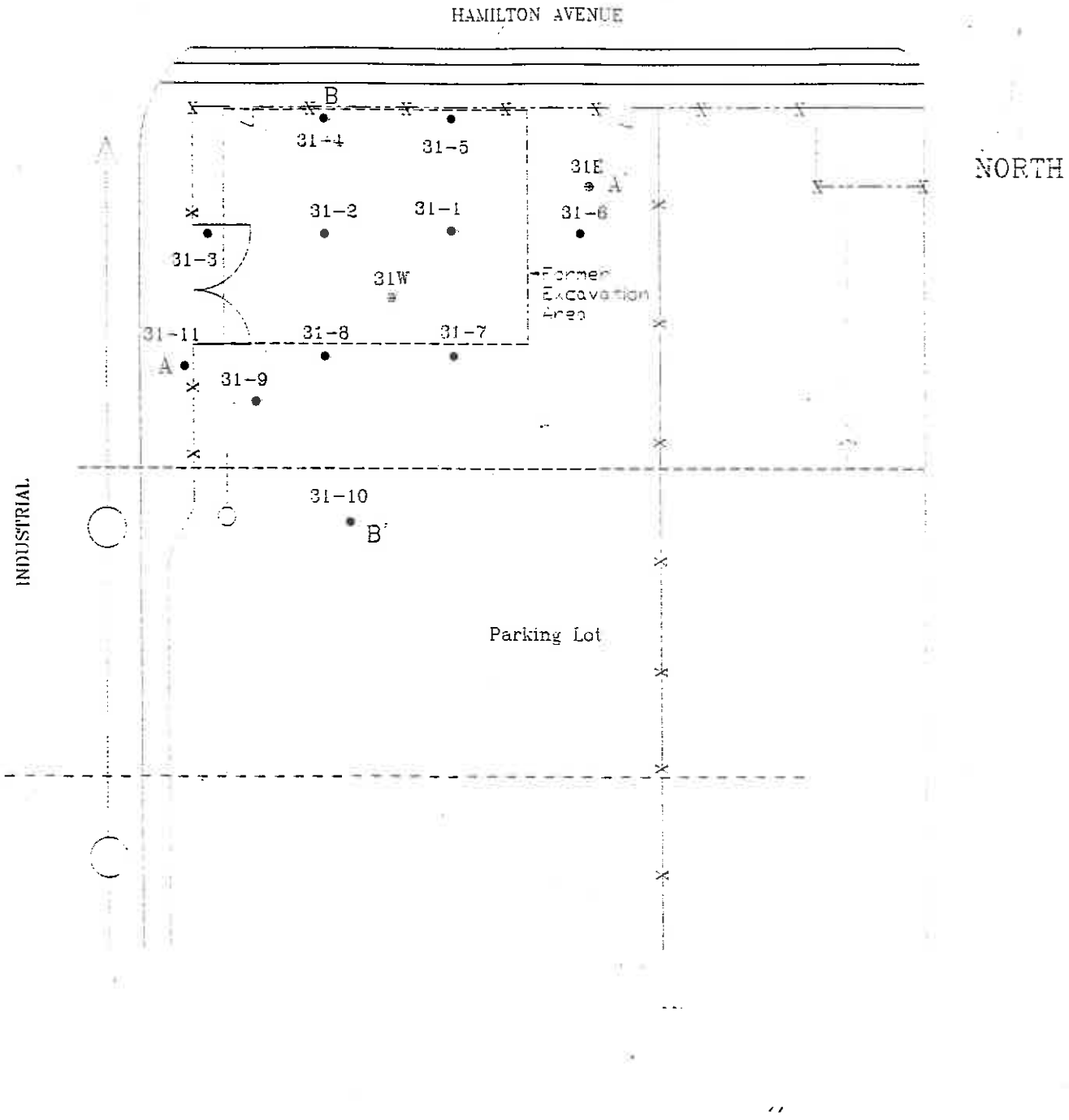
BOC FLINT OPERATIONS (BUICK SITE)

Area Map/Site Boundaries
Attachment 3

June, 1989

21080

ATTACHMENT 4



LEGEND:

- ● Geoprobe Sample Locations
- ---- Fire Protection Line
- ..... Storm Sewer Line
- - - 4" Process Waste
- —x— Fence

GM-CLCD NORTH

TITLE: SAMPLE LOCATIONS
BUILDING 31
TANKS 081-31T - 091-31T

DATE: 8/13/96

SCALE: 1"=40'

Global Environmental Engineering Inc.

APPROVED BY: A.L.K.

PREPARED BY: C.G.S.

ATTACHMENT NUMBER: 4

PROJECT NUMBER: F174

ATTACHMENT 6

ATTACHMENT 6

SEE SOIL BORING LOGS
ATTACHMENT 12

ATTACHMENT 7

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	Bldg 31-1 (11-13')		Bldg 31-1 (15-17')		Bldg 31-1 (17-19')		Bldg 31-2 (13-15')		Bldg 31-2 (17-19')	
Sample Depth (feet BGS)	11-13		15-17		17-19		13-15		17-19	
Date Collected	07/30/96		07/30/96		07/30/96		07/30/96		07/30/96	
Date Extracted	08/03/96		08/03/96		08/03/96		08/03/96		08/03/96	
Date Analyzed	08/03/96		08/03/96		08/03/96		08/03/96		08/03/96	
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	10	ND	10	ND	10	ND	10	20	10
☐ Toluene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ Ethylbenzene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ Total Xylenes	ND	10	ND	10	ND	10	ND	10	ND	10
☐ MTBE										
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	Bldg 31-1 (11-13')		Bldg 31-1 (15-17')		Bldg 31-1 (17-19')		Bldg 31-2 (13-15')		Bldg 31-2 (17-19')	
Sample Depth (feet BGS)	11-13		15-17		17-19		13-15		17-19	
Date Collected	07/30/96		07/30/96		07/30/96		07/30/96		07/30/96	
Date Extracted	08/02/96		08/02/96		08/02/96		08/02/96		08/02/96	
Date Analyzed	08/07/96		08/07/96		08/07/96		08/07/96		08/07/96	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Acenaphthylene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Anthracene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(a)anthracene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(a)pyrene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(b)fluoranthene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(g,h,i)perylene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(k)fluoranthene	ND	300	ND	300	ND	300	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

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7 (Continued page 2 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	Bldg 31-1 (11-13')		Bldg 31-1 (15-17')		Bldg 31-1 (17-19')		Bldg 31-2 (13-15')		Bldg 31-2 (17-19')	
Sample Depth (feet BGS)	11-13		15-17		17-19		13-15		17-19	
Date Collected	07/30/96		07/30/96		07/30/96		07/30/96		07/30/96	
Date Extracted	08/02/96		08/02/96		08/02/96		08/02/96		08/02/96	
Date Analyzed	08/07/96		08/07/96		08/07/96		08/07/96		08/07/96	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Chrysene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Dibenzo(a,h)anthracene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Fluoranthene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Fluorene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Indeno(1,2,3- cd)pyrene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Naphthalene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Phenanthrene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Pyrene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ 2-Methylnaphthalene	ND	300	ND	300	ND	300	ND	300	ND	300
METALS										
Sample ID	Bldg 31-1 (11-13')		Bldg 31-1 (15-17')		Bldg 31-1 (17-19')		Bldg 31-2 (13-15')		Bldg 31-2 (17-19')	
Sample Depth (feet BGS)	11-13		15-17		17-19		13-15		17-19	
Date Collected	07/30/96		07/30/96		07/30/96		07/30/96		07/30/96	
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	2600	1000	3900	1000	4800	1000	3200	1000	4900	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

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7 (Continued page 3 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

PCBs										
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
☐ Aroclor 1016										
☐ Aroclor 1221										
☐ Aroclor 1232										
☐ Aroclor 1242										
☐ Aroclor 1248										
☐ Aroclor 1254										
☐ Aroclor 1280										
HALOGENATED HYDROCARBONS										
Sample ID	Bldg 31-1 (11-13')		Bldg 31-1 (15-17')		Bldg 31-1 (17-19')		Bldg 31-2 (13-15')		Bldg 31-2 (17-19')	
Sample Depth (feet BGS)	11-13		15-17		17-19		13-15		17-19	
Date Collected	07/30/96		07/30/96		07/30/96		07/30/96		07/30/96	
Date Extracted	08/03/96		08/03/96		08/03/96		08/03/96		08/03/96	
Date Analyzed	08/03/96		08/03/96		08/03/96		08/03/96		08/03/96	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Carbon Tetrachloride	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1-Dichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,2-Dichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1-Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10

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

ATTACHMENT NO. 7 (Continued page 4 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

HALOGENATED HYDROCARBONS (Cont.)										
Sample ID	Bldg 31-1 (11-13')		Bldg 31-1 (15-17')		Bldg 31-1 (17-19')		Bldg 31-2 (13-15')		Bldg 31-2 (17-19')	
Sample Depth (feet BGS)	11-13		15-17		17-19		13-15		17-19	
Date Collected	07/30/96		07/30/96		07/30/96		07/30/96		07/30/96	
Date Extracted	08/03/96		08/03/96		08/03/96		08/03/96		08/03/96	
Date Analyzed	08/03/96		08/03/96		08/03/96		08/03/96		08/03/96	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ cis-1,2-Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ trans-1,2- Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ Tetrachloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1,2-Trichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
OTHER *(Specify)*										
Sample ID	Bldg 31-1 (11-13')		Bldg 31-1 (15-17')		Bldg 31-1 (17-19')		Bldg 31-2 (13-15')		Bldg 31-2 (17-19')	
Sample Depth (feet BGS)	11-13		15-17		17-19		13-15		17-19	
Date Collected	07/30/96		07/30/96		07/30/96		07/30/96		07/30/96	
Date Extracted	08/12/96		08/12/96		08/12/96		08/12/96		08/12/96	
Date Analyzed	08/12/96		08/12/96		08/12/96		08/12/96		08/12/96	
Analytical Method No.	GC/FID or 8015m		GC/FID or 8015m		GC/FID or 8015m		GC/FID or 8015m		GC/FID or 8015m	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Ethylene Glycol	ND	5000	ND	5000	ND	5000	ND	5000	ND	5000
☐ Propylene Glycol	ND	5000	ND	5000	ND	5000	ND	5000	ND	5000
☐										
☐										
☐										
☐										
☐										

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

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	Bldg 31-3 (7-9')		Bldg 31-3 (13-15')		Bldg 31-4 (11-15')		Bldg 31-4 (15-19')		Bldg 31-5 (11-13')	
Sample Depth (feet BGS)	7-9		13-15		11-15		15-19		17-19	
Date Collected	07/30/96		07/30/96		07/30/96		07/30/96		07/30/96	
Date Extracted	08/03/96		08/03/96		08/03/96		08/03/96		08/03/96	
Date Analyzed	08/03/96		08/03/96		08/03/96		08/03/96		08/03/96	
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	500	ND	10	ND	100	60	10	ND	100
☐ Toluene	9800	500	ND	10	ND	100	ND	10	ND	100
☐ Ethylbenzene	4600	500	ND	10	ND	100	ND	10	ND	100
☐ Total Xylenes	27,700	500	ND	10	100	100	ND	10	100	100
☐ MTBE										
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	Bldg 31-3 (7-9')		Bldg 31-3 (13-15')		Bldg 31-4 (11-15')		Bldg 31-4 (15-19')		Bldg 31-5 (11-13')	
Sample Depth (feet BGS)	7-9		13-15		11-15		15-19		17-19	
Date Collected	07/30/96		07/30/96		07/30/96		07/30/96		07/30/96	
Date Extracted	08/02/96		08/02/96		08/02/96		08/02/96		08/02/96	
Date Analyzed	08/07/96		08/07/96		08/07/96		08/07/96		08/07/96	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Acenaphthylene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Anthracene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(a)anthracene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(a)pyrene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(b)fluoranthene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(g,h,i)perylene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(k)fluoranthene	ND	300	ND	300	ND	300	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

ATTACHMENT NO. 7 (Continued page 2 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	Bldg 31-3 (7-9')		Bldg 31-3 (13-15')		Bldg 31-4 (11-15')		Bldg 31-4 (15-19')		Bldg 31-5 (11-13')	
Sample Depth (feet BGS)	7-9		13-15		11-15		15-19		17-19	
Date Collected	07/30/96		07/30/96		07/30/96		07/30/96		07/30/96	
Date Extracted	08/02/96		08/02/96		08/02/96		08/02/96		08/02/96	
Date Analyzed	08/07/96		08/07/96		08/07/96		08/07/96		08/07/96	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Chrysene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Dibenzo(a,h)anthracene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Fluoranthene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Fluorene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Indeno(1,2,3- cd)pyrene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Naphthalene	400	300	ND	300	ND	300	ND	300	ND	300
☐ 2-Methylnaphthalene	700	300	ND	300	ND	300	ND	300	ND	300
☐ Phenanthrene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Pyrene	ND	300	ND	300	ND	300	ND	300	ND	300
METALS										
Sample ID	Bldg 31-3 (7-9')		Bldg 31-3 (13-15')		Bldg 31-4 (11-15')		Bldg 31-4 (15-19')		Bldg 31-5 (11-13')	
Sample Depth (feet BGS)	7-9		13-15		11-15		15-19		17-19	
Date Collected	07/30/96		07/30/96		07/30/96		07/30/96		07/30/96	
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	4600	1000	8400	1000	5800	1000	5900	1000	3700	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

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7 (Continued page 3 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

PCBs										
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
☐ Aroclor 1016										
☐ Aroclor 1221										
☐ Aroclor 1232										
☐ Aroclor 1242										
☐ Aroclor 1248										
☐ Aroclor 1254										
☐ Aroclor 1280										
HALOGENATED HYDROCARBONS										
Sample ID	Bldg 31-3 (7-9')		Bldg 31-3 (13-15')		Bldg 31-4 (11-15')		Bldg 31-4 (15-19')		Bldg 31-5 (11-13')	
Sample Depth (feet BGS)	7-9		13-15		11-15		15-19		17-19	
Date Collected	07/30/96		07/30/96		07/30/96		07/30/96		07/30/96	
Date Extracted	08/03/96		08/03/96		08/03/96		08/03/96		08/03/96	
Date Analyzed	08/03/96		08/03/96		08/03/96		08/03/96		08/03/96	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Carbon Tetrachloride	ND	500	ND	10	ND	10	ND	10	ND	10
☐ 1,1-Dichloroethane	ND	500	ND	10	ND	10	ND	10	ND	10
☐ 1,2-Dichloroethane	ND	500	ND	10	ND	10	ND	10	ND	10
☐ 1,1-Dichloroethylene	ND	500	ND	10	ND	10	ND	10	ND	10

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

ATTACHMENT NO. 7 (Continued page 4 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

HALOGENATED HYDROCARBONS										
Sample ID	Bldg 31-3 (7-9')		Bldg 31-3 (13-15')		Bldg 31-4 (11-15')		Bldg 31-4 (15-19')		Bldg 31-5 (11-13')	
Sample Depth (feet BGS)	7-9		13-15		11-15		15-19		17-19	
Date Collected	07/30/96		07/30/96		07/30/96		07/30/96		07/30/96	
Date Extracted	08/03/96		08/03/96		08/03/96		08/03/96		08/03/96	
Date Analyzed	08/03/96		08/03/96		08/03/96		08/03/96		08/03/96	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ cis-1,2-Dichloroethylene	ND	500	ND	10	ND	10	ND	10	ND	10
☐ trans-1,2- Dichloroethylene	ND	500	ND	10	ND	10	ND	10	ND	10
☐ Tetrachloroethylene	ND	500	ND	10	ND	10	ND	10	ND	10
☐ 1,1,2-Trichloroethane	ND	500	ND	10	ND	10	ND	10	ND	10
OTHER *(Specify)*										
Sample ID	Bldg 31-3 (7-9')		Bldg 31-3 (13-15')		Bldg 31-4 (11-15')		Bldg 31-4 (15-19')		Bldg 31-5 (11-13')	
Sample Depth (feet BGS)	7-9		13-15		11-15		15-19		17-19	
Date Collected	07/30/96		07/30/96		07/30/96		07/30/96		07/30/96	
Date Extracted	08/12/96		08/12/96		08/12/96		08/12/96		08/12/96	
Date Analyzed	08/12/96		08/12/96		08/12/96		08/12/96		08/12/96	
Analytical Method No.	GC/FID or 8015m		GC/FID or 8015m		GC/FID or 8015m		GC/FID or 8015m		GC/FID or 8015m	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Ethylene Glycol	ND	5000	ND	5000	ND	5000	ND	5000	ND	5000
☐ Propylene Glycol	ND	5000	ND	5000	ND	5000	ND	5000	ND	5000
☐										
☐										
☐										
☐										
☐										
☐										
☐										

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

ATTACHMENT NO. 7
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	Bldg 31-5 (15-17')		Bldg 31-6 (13-14')		Bldg 31-6 (15-17')		Bldg 31-7 (15-17')		Bldg 31-7 (19-21')	
Sample Depth (feet BGS)	7-9		13-14		15-17		15-17		19-21	
Date Collected	07/30/96		07/31/96		07/31/96		07/31/96		07/31/96	
Date Extracted	08/03/96		08/06/96		08/06/96		08/06/96		08/06/96	
Date Analyzed	08/03/96		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	ND	10	ND	10	60	10	ND	10	ND	100
☐ Toluene	ND	10	ND	10	ND	10	ND	10	ND	100
☐ Ethylbenzene	ND	10	ND	10	ND	10	ND	10	ND	100
☐ Total Xylenes	ND	10	ND	10	ND	10	ND	10	ND	100
☐ MTBE										
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	Bldg 31-5 (15-17')		Bldg 31- 6 (13-14')		Bldg 31-6 (15-17')		Bldg 31-7 (15-17')		Bldg 31-7 (19-21')	
Sample Depth (feet BGS)	7-9		13-14		15-17		15-17		19-21	
Date Collected	07/30/96		07/31/96		07/31/96		07/31/96		07/31/96	
Date Extracted	08/02/96		08/06/96		08/06/96		08/06/96		08/06/96	
Date Analyzed	08/06/96		08/08/96		08/08/96		08/08/96		08/08/96	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Acenaphthylene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Anthracene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(a)anthracene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(a)pyrene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(b)fluoranthene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(g,h,i)perylene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(k)fluoranthene	ND	300	ND	300	ND	300	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

ATTACHMENT NO. 7 (Continued page 2 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	Bldg 31-5 (15-17')		Bldg 31-6 (13-14')		Bldg 31-6 (15-17')		Bldg 31-7 (15-17')		Bldg 31-7 (19-21')	
Sample Depth (feet BGS)	7-9		13-14		15-17		15-17		19-21	
Date Collected	07/30/96		07/31/96		07/31/96		07/31/96		07/31/96	
Date Extracted	08/02/96		08/06/96		08/06/96		08/06/96		08/06/96	
Date Analyzed	08/06/96		08/08/96		08/08/96		08/08/96		08/08/96	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Chrysene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Dibenzo(a,h)anthracene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Fluoranthene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Fluorene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Indeno(1,2,3- cd)pyrene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Naphthalene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ 2-Methylnaphthalene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Phenanthrene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Pyrene	ND	300	ND	300	ND	300	ND	330	ND	300
METALS										
Sample ID	Bldg 31-5 (15-17')		Bldg 31-6 (13-14')		Bldg 31-6 (15-17')		Bldg 31-7 (15-17')		Bldg 31-7 (19-21')	
Sample Depth (feet BGS)	7-9		13-14		15-17		15-17		19-21	
Date Collected	07/30/96		07/31/96		07/31/96		07/31/96		07/31/96	
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	7100	1000	1800	1000	5500	1000	5200	1000	3500	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

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7 (Continued page 3 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

PCBs										
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
☐ Aroclor 1016										
☐ Aroclor 1221										
☐ Aroclor 1232										
☐ Aroclor 1242										
☐ Aroclor 1248										
☐ Aroclor 1254										
☐ Aroclor 1280										
HALOGENATED HYDROCARBONS										
Sample ID	Bldg 31-5 (15-17')		Bldg 31-6 (13-14')		Bldg 31-6 (15-17')		Bldg 31-7 (15-17')		Bldg 31-7 (19-21')	
Sample Depth (feet BGS)	7-9		13-14		15-17		15-17		19-21	
Date Collected	07/30/96		07/31/96		07/31/96		07/31/96		07/31/96	
Date Extracted	08/03/96		08/06/96		08/06/96		08/06/96		08/06/96	
Date Analyzed	08/03/96		08/06/96		08/06/96		08/06/96		08/06/96	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Carbon Tetrachloride	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1-Dichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,2-Dichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1-Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10

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

ATTACHMENT NO. 7 (Continued page 4 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

HALOGENATED HYDROCARBONS										
Sample ID	Bldg 31-5 (15-17')		Bldg 31-6 (13-14')		Bldg 31-6 (15-17')		Bldg 31-7 (15-17')		Bldg 31-7 (19-21')	
Sample Depth (feet BGS)	7-9		13-14		15-17		15-17		19-21	
Date Collected	07/30/96		07/31/96		07/31/96		07/31/96		07/31/96	
Date Extracted	08/03/96		08/06/96		08/06/96		08/06/96		08/06/96	
Date Analyzed	08/03/96		08/06/96		08/06/96		08/06/96		08/06/96	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ cis-1,2-Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ trans-1,2- Dichloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ Tetrachloroethylene	ND	10	ND	10	ND	10	ND	10	ND	10
☐ 1,1,2-Trichloroethane	ND	10	ND	10	ND	10	ND	10	ND	10
OTHER *(Specify)*										
Sample ID	Bldg 31-5 (15-17')		Bldg 31-6 (13-14')		Bldg 31-6 (15-17')		Bldg 31-7 (15-17')		Bldg 31-7 (19-21')	
Sample Depth (feet BGS)	7-9		13-14		15-17		15-17		19-21	
Date Collected	07/30/96		07/31/96		07/31/96		07/31/96		07/31/96	
Date Extracted	08/12/96		08/12/96		08/12/96		08/12/96		08/12/96	
Date Analyzed	08/12/96		08/12/96		08/12/96		08/12/96		08/12/96	
Analytical Method No.	GC/FID or 8015m		GC/FID or 8015m		GC/FID or 8015m		GC/FID or 8015m		GC/FID or 8015m	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Ethylene Glycol	ND	5000	ND	5000	ND	5000	ND	5000	ND	5000
☐ Propylene Glycol	ND	5000	ND	5000	ND	5000	5000	5000	ND	5000
☐										
☐										
☐										
☐										
☐										
☐										
☐										

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

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	Bldg 31-8 (13-15)		Bldg 31-8 (17-19)		Bldg 31-9 (17-19')		Bldg 31-9 (19-21')		Bldg 31-10 (7-9')	
Sample Depth (feet BGS)	13-15		17-19		17-19		19-21		7-9	
Date Collected	07/31/96		07/31/96		11/12/96		11/12/96		11/12/96	
Date Extracted	08/06/96		08/06/96		11/19/96		11/19/96		11/19/96	
Date Analyzed	08/06/96		08/06/96		11/19/96		11/19/96		11/19/96	
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	ND	10	ND	10	ND	10	ND	10
☐ Toluene	34,000	100	20	10	ND	10	ND	10	ND	10
☐ Ethylbenzene	31,700	100	ND	10	ND	10	120	10	ND	10
☐ Total Xylenes	81,000	100	20	10	ND	10	ND	10	ND	10
☐ MTBE										
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	Bldg 31-8 (13-15)		Bldg 31-8 (17-19)		Bldg 31-9 (17-19')		Bldg 31-9 (19-21')		Bldg 31-10 (7-9')	
Sample Depth (feet BGS)	13-15		17-19		17-19		19-21		7-9	
Date Collected	07/31/96		07/31/96		11/12/96		11/12/96		11/12/96	
Date Extracted	08/06/96		08/06/96		11/19/96		11/19/96		11/19/96	
Date Analyzed	08/08/96		08/08/96		11/27/96		11/27/96		11/27/96	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Acenaphthylene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Anthracene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(a)anthracene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(a)pyrene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(b)fluoranthene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(g,h,i)perylene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Benzo(k)fluoranthene	ND	300	ND	300	ND	300	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

ATTACHMENT NO. 7 (Continued page 2 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	Bldg 31-8 (13-15)		Bldg 31-8 (17-19)		Bldg 31-9 (17-19')		Bldg 31-9 (19-21')		Bldg 31-10 (7-9')	
Sample Depth (feet BGS)	13-15		17-19		17-19		19-21		7-9	
Date Collected	07/31/96		07/31/96		11/12/96		11/12/96		11/12/96	
Date Extracted	08/06/96		08/06/96		11/19/96		11/19/96		11/19/96	
Date Analyzed	08/08/96		08/08/96		11/27/96		11/27/96		11/27/96	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Chrysene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Dibenzo(a,h)anthracene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Fluoranthene	400	300	ND	300	ND	300	ND	300	ND	300
☐ Fluorene	300	300	ND	300	ND	300	ND	300	ND	300
☐ Indeno(1,2,3- cd)pyrene	ND	300	ND	300	ND	300	ND	300	ND	300
☐ Naphthalene	3200	300	ND	300	ND	300	ND	300	ND	300
☐ 2-Methylnaphthalene	1500	300	ND	300	ND	300	ND	300	ND	300
☐ Phenanthrene	500	300	ND	300	ND	300	ND	300	ND	300
☐ Pyrene	ND	300	ND	300	ND	300	ND	300	ND	300
METALS										
Sample ID	Bldg 31-8 (13-15)		Bldg 31-8 (17-19)		Bldg 31-9 (17-19')		Bldg 31-9 (19-21')		Bldg 31-10 (7-9')	
Sample Depth (feet BGS)	13-15		17-19		17-19		19-21		7-9	
Date Collected	07/31/96		07/31/96		11/12/96		11/12/96		11/12/96	
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	1600	1000	4100	1000	1800	1000	3800	1000	4800	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

PCBs										
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
☐ Aroclor 1016										
☐ Aroclor 1221										
☐ Aroclor 1232										
☐ Aroclor 1242										
☐ Aroclor 1248										
☐ Aroclor 1254										
☐ Aroclor 1280										
HALOGENATED HYDROCARBONS										
Sample ID	Bldg 31-8 (13-15)		Bldg 31-8 (17-19)		Bldg 31-9 (17-19')		Bldg 31-9 (19-21')		Bldg 31-10 (7-9')	
Sample Depth (feet BGS)	13-15		17-19		17-19		19-21		7-9	
Date Collected	07/31/96		07/31/96		11/12/96		11/12/96		11/12/96	
Date Extracted	08/06/96		08/06/96		11/19/96		11/19/96		11/19/96	
Date Analyzed	08/06/96		08/06/96		11/19/96		11/19/96		11/19/96	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Benzyl Chloride	2300	100	ND	10	ND	10	ND	10	ND	10
☐ Carbon Tetrachloride	ND	100	ND	10	ND	10	ND	10	ND	10
☐ 1,1-Dichloroethane	ND	100	ND	10	ND	10	ND	10	ND	10
☐ 1,2-Dichloroethane	ND	100	ND	10	ND	10	ND	10	ND	10
☐ 1,1-Dichloroethylene	ND	100	ND	10	ND	10	ND	10	ND	10

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

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7 (Continued page 4 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

HALOGENATED HYDROCARBONS										
Sample ID	Bldg 31-8 (13-15)		Bldg 31-8 (17-19)		Bldg 31-9 (17-19')		Bldg 31-9 (19-21')		Bldg 31-10 (7-9')	
Sample Depth (feet BGS)	13-15		17-19		17-19		19-21		7-9	
Date Collected	07/31/96		07/31/96		11/12/96		11/12/96		11/12/96	
Date Extracted	08/06/96		08/06/96		11/19/96		11/19/96		11/19/96	
Date Analyzed	08/06/96		08/06/96		11/19/96		11/19/96		11/19/96	
Analytical Method No.	8010		8010		8010		8010		8010	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ cis-1,2-Dichloroethylene	ND	100	ND	10	ND	10	ND	10	ND	10
☐ trans-1,2- Dichloroethylene	ND	100	ND	10	ND	10	ND	10	ND	10
☐ Tetrachloroethylene	ND	100	ND	10	ND	10	ND	10	ND	10
☐ 1,1,2-Trichloroethane	ND	100	ND	10	ND	10	ND	10	ND	10
OTHER *(Specify)*										
Sample ID	Bldg 31-8 (13-15)		Bldg 31-8 (17-19)		Bldg 31-9 (17-19')		Bldg 31-9 (19-21')		Bldg 31-10 (7-9')	
Sample Depth (feet BGS)	13-15		17-19		17-19		19-21		7-9	
Date Collected	07/31/96		07/31/96		11/12/96		11/12/96		11/12/96	
Date Extracted	08/12/96		08/12/96		12/09/96		12/09/96		12/09/96	
Date Analyzed	08/12/96		08/12/96		12/09/96		12/09/96		12/09/96	
Analytical Method No.	GC/FID or 8015m		GC/FID or 8015m		GC/FID or 8015m		GC/FID or 8015m		GC/FID or 8015m	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Ethylene Glycol	ND	5000	ND	5000	ND	5000	ND	5000	ND	5000
☐ Propylene Glycol	ND	5000	ND	5000	ND	5000	ND	5000	ND	5000
☐										
☐										
☐										
☐										
☐										

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

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7 (Continued page 4 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

Other: SEMI-VOLATILE ORGANICS										
Sample ID	Bldg 31-8 (13-15)		Bldg 31-8 (17-19)		Bldg 31-9 (17-19')		Bldg 31-9 (19-21')		Bldg 31-10 (7-9')	
Sample Depth (feet BGS)	13-15		17-19		17-19		19-21		7-9	
Date Collected	07/31/96		07/31/96		11/12/96		11/12/96		11/12/96	
Date Extracted	08/06/96		08/06/96		11/19/96		11/19/96		11/19/96	
Date Analyzed	08/08/96		08/08/96		11/27/96		11/27/96		11/27/96	
Analytical Method No.	8270		8270		8270		8270		8270	
Collection Method*	GP		GP		GP		GP		GP	
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ p,m-Cresol	1600	300	ND	10	ND	10	ND	10	ND	10
☐ o-Cresol	1000	300	ND	10	ND	10	ND	10	ND	10
☐ Di-n-butyl phthalate	900	300	ND	10	ND	10	ND	10	ND	10
☐ Di-n-octyl phthalate	400	300	ND	10	ND	10	ND	10	ND	10
OTHER *(Specify)*										
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
☐										
☐										
☐										
☐										
☐										
☐										
☐										

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

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	Bldg 31-10 (15-17)		Bldg 31-11 (14-16)		Bldg 31-11 (18-21')					
Sample Depth (feet BGS)	15-17		14-16		18-21					
Date Collected	11/13/96		11/13/96		11/13/96					
Date Extracted	11/19/96		11/19/96		11/19/96					
Date Analyzed	11/19/96		11/19/96		11/19/96					
Analytical Method No.	8020		8020		8020					
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	760	10	ND	10	ND	10				
☐ Ethylbenzene	30	10	ND	10	ND	10				
☐ Total Xylenes	130	10	ND	10	ND	10				
☐ MTBE										
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	Bldg 31-10 (15-17)		Bldg 31-11 (14-16)		Bldg 31-11 (18-21')					
Sample Depth (feet BGS)	15-17		14-16		18-21					
Date Collected	11/12/96		11/12/96		11/12/96					
Date Extracted	11/19/96		11/19/96		11/19/96					
Date Analyzed	11/27/96		11/27/96		11/27/96					
Analytical Method No.	8270		8270		8270					
Collection Method*	GP		GP		GP					
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene	ND	300	ND	300	ND	300				
☐ Acenaphthylene	ND	300	ND	300	ND	300				
☐ Anthracene	ND	300	ND	300	ND	300				
☐ Benzo(a)anthracene	ND	300	ND	300	ND	300				
☐ Benzo(a)pyrene	ND	300	ND	300	ND	300				
☐ Benzo(b)fluoranthene	ND	300	ND	300	ND	300				
☐ Benzo(g,h,i)perylene	ND	300	ND	300	ND	300				
☐ Benzo(k)fluoranthene	ND	300	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

ATTACHMENT NO. 7 (Continued page 2 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	Bldg 31-10 (15-17)		Bldg 31-11 (14-16)		Bldg 31-11 (18-21')					
Sample Depth (feet BGS)	15-17		14-16		18-21					
Date Collected	11/13/96		11/13/96		11/13/96					
Date Extracted	11/19/96		11/19/96		11/19/96					
Date Analyzed	11/27/96		11/27/96		11/27/96					
Analytical Method No.	8270		8270		8270					
Collection Method*	GP		GP		GP					
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Chrysene	ND	300	ND	300	ND	300				
☐ Dibenzo(a,h)anthracene	ND	300	ND	300	ND	300				
☐ Fluoranthene	ND	300	ND	300	ND	300				
☐ Fluorene	ND	300	ND	300	ND	300				
☐ Indeno(1,2,3- cd)pyrene	ND	300	ND	300	ND	300				
☐ Naphthalene	ND	300	ND	300	ND	300				
☐ 2-Methylnaphthalene	ND	300	ND	300	ND	300				
☐ Phenanthrene	ND	300	ND	300	ND	300				
☐ Pyrene	ND	300	ND	300	ND	300				
METALS										
Sample ID	Bldg 31-10 (15-17)		Bldg 31-11 (14-16)		Bldg 31-11 (18-21')					
Sample Depth (feet BGS)	15-17		14-16		18-21					
Date Collected	11/13/96		11/13/96		11/13/96					
Date Extracted	11/20/96		11/20/96		11/20/96					
Date Analyzed	11/20/96		11/20/96		11/20/96					
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	5800	1000	2300	1000	3600	1000				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

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7 (Continued page 3 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

PCBs										
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
☐ Aroclor 1016										
☐ Aroclor 1221										
☐ Aroclor 1232										
☐ Aroclor 1242										
☐ Aroclor 1248										
☐ Aroclor 1254										
☐ Aroclor 1280										
HALOGENATED HYDROCARBONS										
Sample ID	Bldg 31-10 (15-17)		Bldg 31-11 (14-16)		Bldg 31-11 (18-21')					
Sample Depth (feet BGS)	15-17		14-16		18-21					
Date Collected	11/13/96		11/13/96		11/13/96					
Date Extracted	11/19/96		11/19/96		11/19/96					
Date Analyzed	11/19/96		11/19/96		11/19/96					
Analytical Method No.	8010		8010		8010					
Collection Method*	GP		GP		GP					
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL				
☐ Benzyl Chloride	ND	10	ND	10	ND	10				
☐ Carbon Tetrachloride	ND	10	ND	10	ND	10				
☐ 1,1-Dichloroethane	ND	10	ND	10	ND	10				
☐ 1,2-Dichloroethane	ND	10	ND	10	ND	10				
☐ 1,1-Dichloroethylene	ND	10	ND	10	ND	10				

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

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7 (Continued page 4 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

HALOGENATED HYDROCARBONS										
Sample ID	Bldg 31-10 (15-17)		Bldg 31-11 (14-16)		Bldg 31-11 (18-21')					
Sample Depth (feet BGS)	15-17		14-16		18-21					
Date Collected	11/13/96		11/13/96		11/13/96					
Date Extracted	11/20/96		11/20/96		11/20/96					
Date Analyzed	11/20/96		11/20/96		11/20/96					
Analytical Method No.	8010		8010		8010					
Collection Method*	GP		GP		GP					
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ cis-1,2-Dichloroethylene	ND	100	ND	10	ND	10				
☐ trans-1,2- Dichloroethylene	ND	100	ND	10	ND	10				
☐ Tetrachloroethylene	ND	100	ND	10	ND	10				
☐ 1,1,2-Trichloroethane	ND	100	ND	10	ND	10				
OTHER *(Specify)*										
Sample ID	Bldg 31-10 (15-17)		Bldg 31-11 (14-16)		Bldg 31-11 (18-21')					
Sample Depth (feet BGS)	15-17		14-16		18-21					
Date Collected	11/12/96		11/12/96		11/12/96					
Date Extracted	12/09/96		12/09/96		12/09/96					
Date Analyzed	12/09/96		12/09/96		12/09/96					
Analytical Method No.	GC/FID or 8015m		GC/FID or 8015m		GC/FID or 8015m					
Collection Method*	GP		GP		GP					
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Ethylene Glycol	ND	5000	ND	5000	ND	5000				
☐ Propylene Glycol	ND	5000	ND	5000	ND	5000				
☐										
☐										
☐										
☐										
☐										

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

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 7 (Continued page 4 of 4)
LABORATORY RESULTS SOIL
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

Other: SEMI-VOLATILE ORGANICS										
Sample ID	Bldg 31-10 (15-17)		Bldg 31-11 (14-16)		Bldg 31-11 (18-21')					
Sample Depth (feet BGS)	15-17		14-16		18-21					
Date Collected	11/13/96		11/13/96		11/13/96					
Date Extracted	11/20/96		11/20/96		11/20/96					
Date Analyzed	11/20/96		11/20/96		11/20/96					
Analytical Method No.	8270		8270		8270					
Collection Method*	GP		GP		GP					
CONSTITUENT (ug/kg)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ p,m-Cresol	ND	10	ND	10	ND	10				
☐ o-Cresol	ND	10	ND	10	ND	10				
☐ Di-n-butyl phthalate	ND	10	ND	10	ND	10				
☐ Di-n-octyl phthalate	ND	10	ND	10	ND	10				
OTHER *(Specify)*										
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
☐										
☐										
☐										
☐										
☐										

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

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
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 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

☐ **Residential** ☐ **Commercial III** ☐ **Commercial IV** ☑ **Industrial**
Exposure Codes

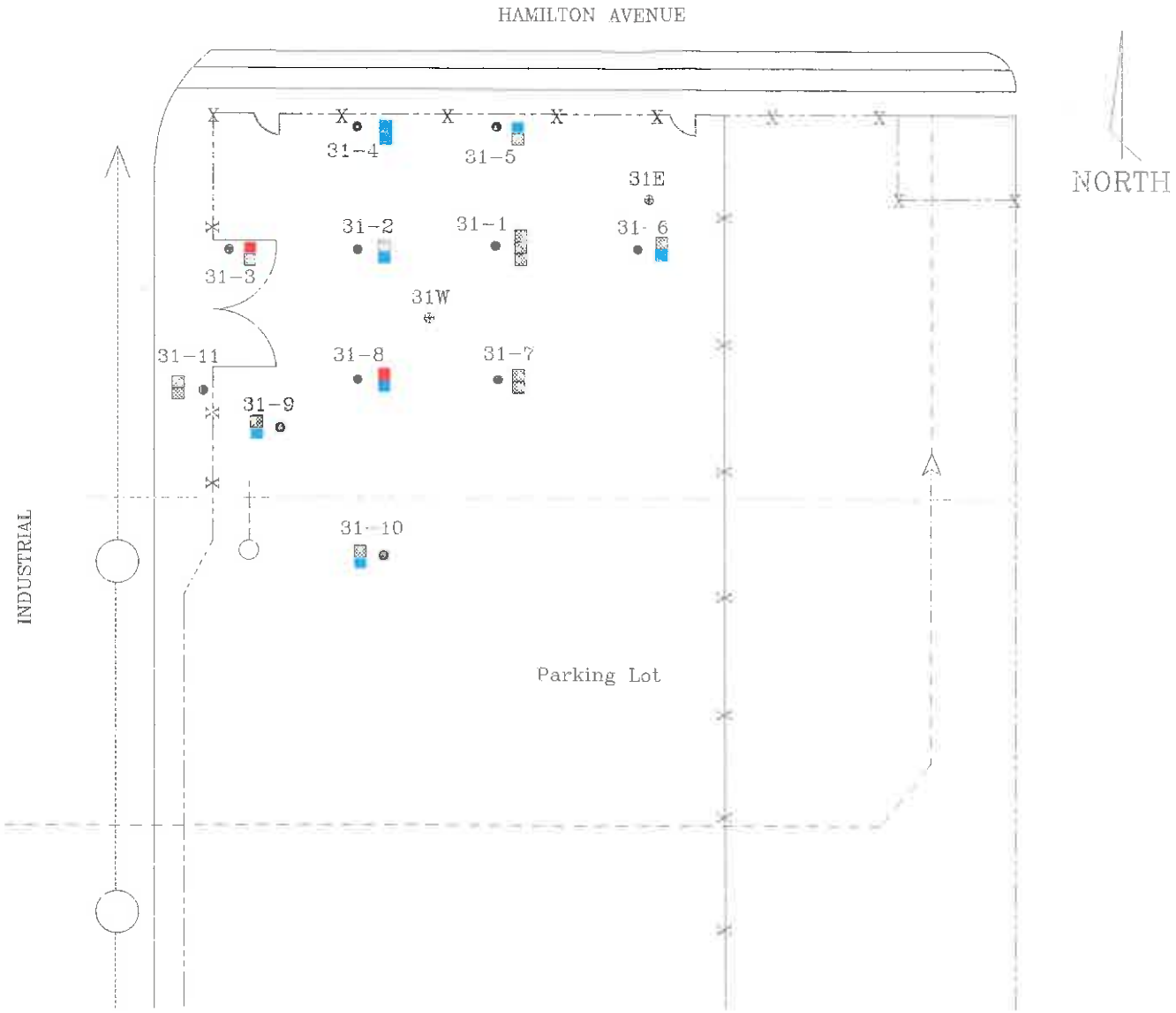
A. Direct Contact **B. Soil Leaching to Potable Groundwater**

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 (B)	Tier II/III SSTL	Tier I RBSL	Tier II/III SSTL
VOLATILES							
☐ Benzene	Bldg 31-4 (15-19')	07/30/96	60	100		No	
☐ Toluene	Bldg 31-8 (13-15')	07/31/96	34,000	16,000		Yes	
☐ Ethylbenzene	Bldg 31-8 (13-15')	07/31/96	31,700	1500		Yes	
☐ Total Xylenes	Bldg 31-8 (13-15')	07/31/96	81,000	5600		Yes	
☐ MTBE	NA						
POLYNUCLEAR AROMATICS							
☐ Acenaphthene			ND	300,000		No	
☐ Acenaphthylene			ND	520		No	
☐ Anthracene			ND	6,900,000		No	
☐ Benzo(a)anthracene			ND	E		No	
☐ Benzo(a)pyrene			ND	E		No	
☐ Benzo(b)fluoranthene			ND	E		No	
☐ Benzo(g,h,i)perylene			ND	E		No	
☐ Benzo(k)fluoranthene			ND	E		No	
☐ Chrysene			ND	E		No	
☐ Dibenzo-(a,h)anthracene			ND	E		No	
☐ Fluoranthene	Bldg 31-8 (13-15')	07/31/96	400	3,000,000		No	
☐ Fluorene	Bldg 31-8 (13-15')	07/31/96	300	390,000		No	
☐ Indeno(1,2,3- cd)pyrene			ND	E		No	
☐ Naphthalene	Bldg 31-8 (13-15')	07/31/96	3200	17,000		No	
☐ Phenanthrene	Bldg 31-8 (13-15')	07/31/96	500	12,000 M		No	
☐ Pyrene			ND	1,800,000		No	
☐ 2-Methylnaphthalene	Bldg 31-8 (13-15')	07/31/96	1500	5200		No	

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY - UNDERGROUND STORAGE TANK DIVISION
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 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

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 (B)	Tier II/III SSTL	Tier I RBSL	Tier II/III SSTL
METALS							
☐ Cadmium							
☐ Chromium III							
☐ Chromium VI							
☐ Total Lead	Bldg 31-3 (13-15')	07/30/96	8400	21,000		No	
PCBs							
☐ Aroclor 1016							
☐ Aroclor 1221							
☐ Aroclor 1232							
☐ Aroclor 1242							
☐ Aroclor 1248							
HALOGENATED HYDROCARBONS							
☐ Carbon Tetrachloride			ND	100		No	
☐ 1,1-Dichloroethane			ND	18,000		No	
☐ 1,2-Dichloroethane			ND	100		No	
☐ 1,1-Dichloroethylene			ND	140		No	
☐ cis-1,2-Dichloroethylene			ND	1400		No	
☐ trans-1,2-Dichloroethylene			ND	2000		No	
☐ Tetrachloroethylene			ND	100		No	
☐ 1,1,2-Trichloroethane			ND	100		No	
OTHER*							
☐ Benzyl Chloride	Bldg 31-8 (13-15')	07/31/96	2300	100		Yes	
☐ Ehtlyene Glycol			ND	300,000		No	
☐ Propylene Glycol	Bldg 31-7 (15-17')	07/31/96	5000	3,000,000		No	
☐ p,m-Cresol	Bldg 31-8 (13-15')	07/31/96	1600	Not Available		No	
☐ 0-Cresol	Bldg 31-8 (13-15')	07/31/96	1000	Not Available		No	
☐ Di-n-butyl phthalate	Bldg 31-8 (13-15')	07/31/96	900	960,000		No	
☐ Di-n-octyl phthalate	Bldg 31-8 (13-15')	07/31/96	400	100,000,000 M		No	



- Not Analyzed
- Not Detected
- Elevated levels below Tier I Industrial Soil Leaching to Groundwater RBSLs
- Elevated levels above Tier I Industrial Soil Leaching to Groundwater RBSLs

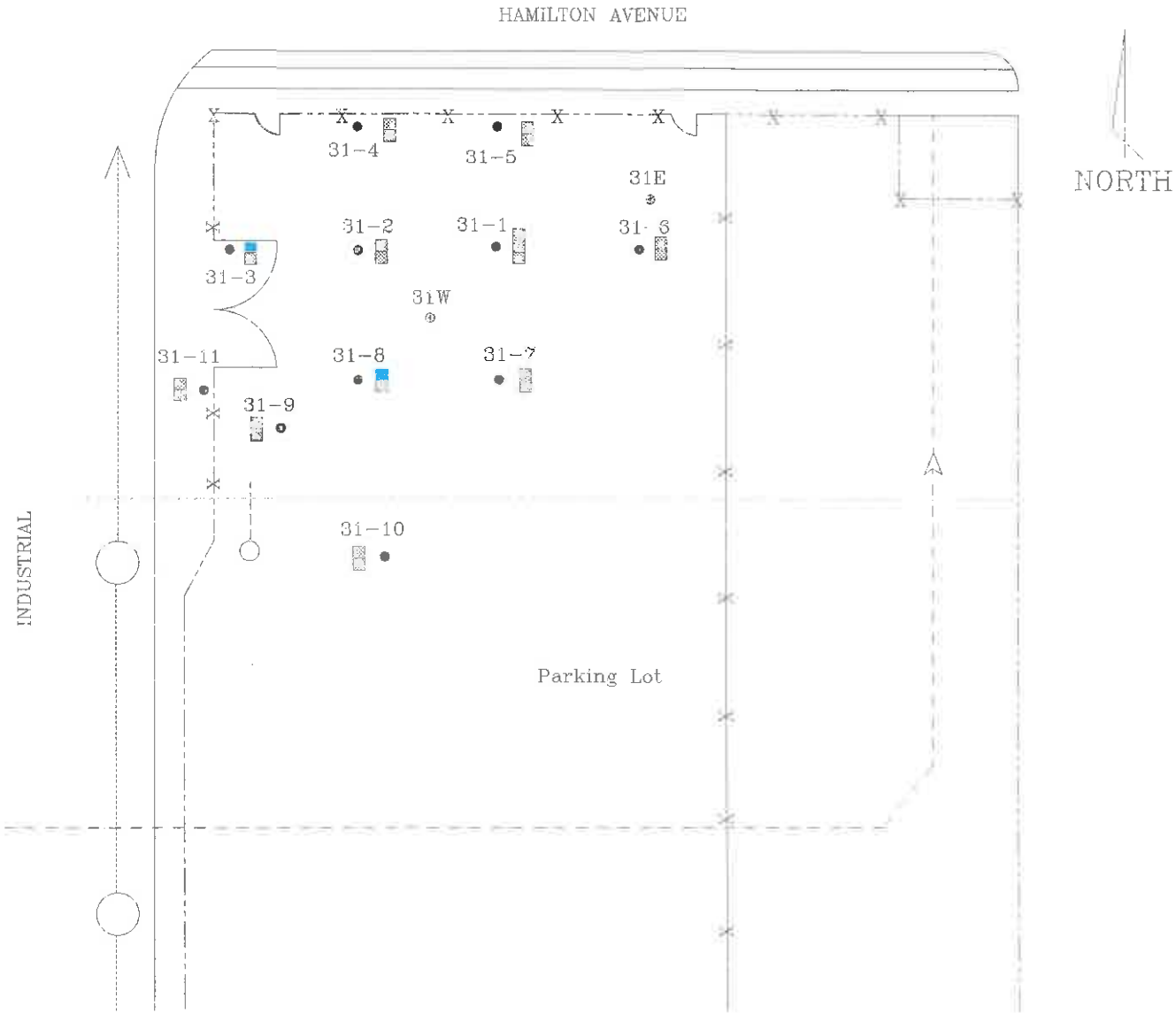
LEGEND:

- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- 4" Process Waste
- Fence

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: BTEX
BUILDING 31
TANKS 081/31T - 091/31T

DATE: 8/13/96	SCALE: 1"=40'
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER. 9A
	PROJECT NUMBER: F174



- ☐ Not Analyzed
- ▨ Not Detected
- ■ Elevated levels below Tier I Industrial Soil Leaching to Groundwater RBSLs
- ■ Elevated levels above Tier I Industrial Soil Leaching to Groundwater RBSLs

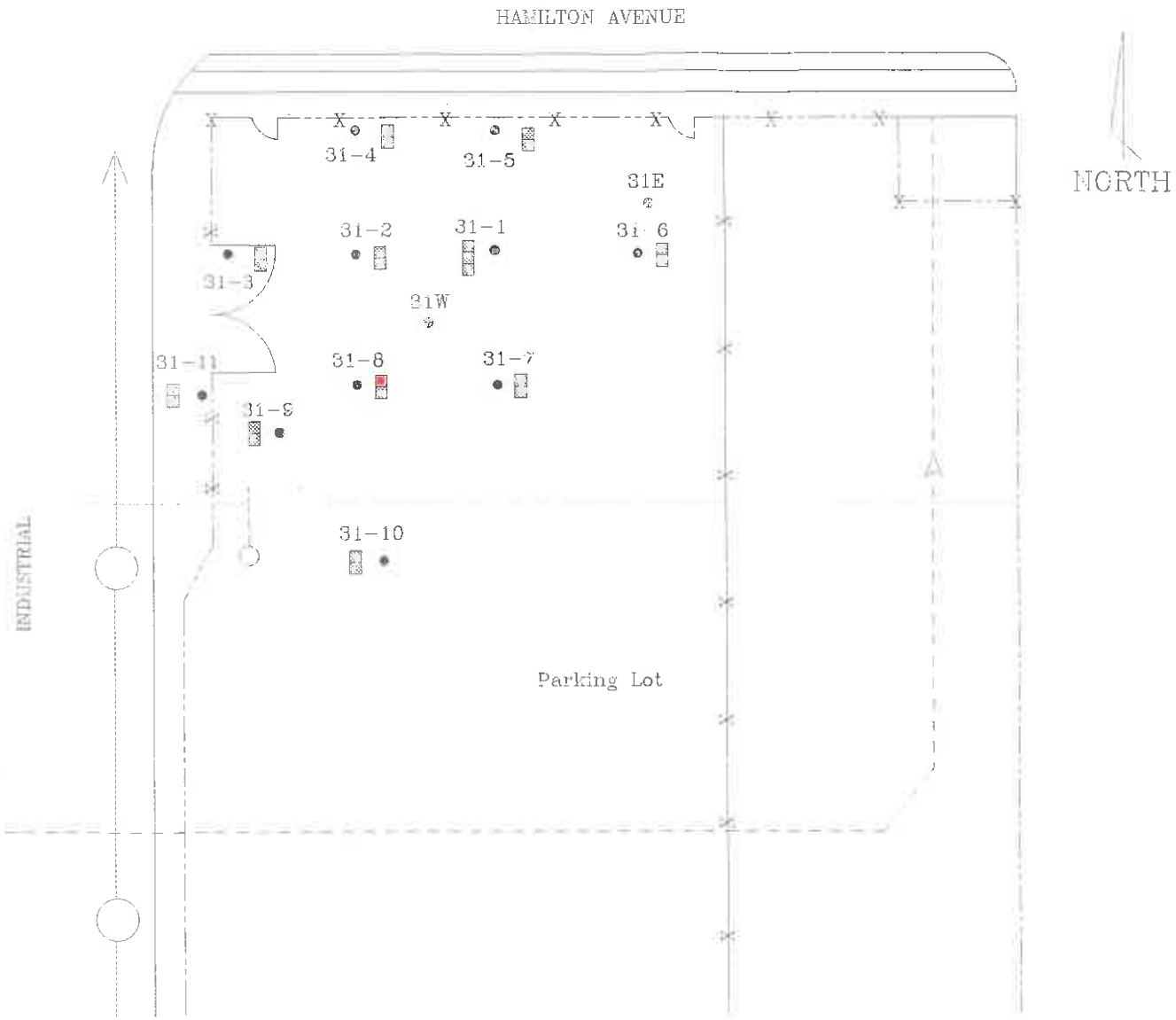
LEGEND:

- ● Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- 4" Process Waste
- —x— Fence

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: PNAHs
BUILDING 31
TANKS 081/31T - 091/31T

DATE: 8/13/96	SCALE: 1"=40'
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 9B
	PROJECT NUMBER: F174



□ Not Analyzed

▨ Not Detected

■ Elevated levels below Tier I Industrial Soil Leaching to Groundwater RBSLs

■ Elevated levels above Tier I Industrial Soil Leaching to Groundwater RBSLs

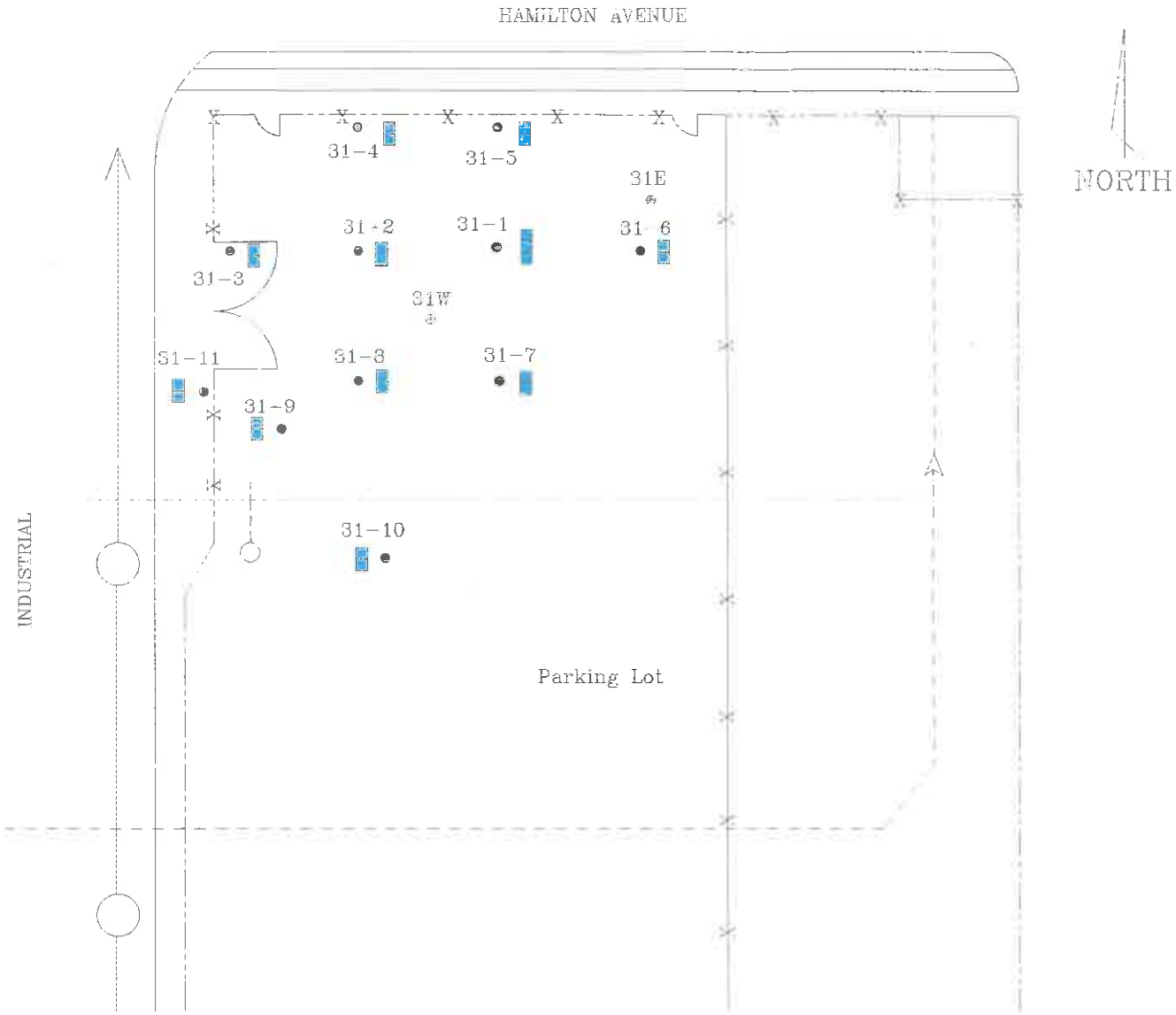
LEGEND:

- ● Geoprobe Sample Locations
- ----- Fire Protection Line
- ——— Storm Sewer Line
- - - - 4" Process Waste
- —x— Fence

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: HALOGENATED HYDROCARBONS, BUILDING 31 TANKS 081/31T - 091/31T

DATE: 8/13/96	SCALE: 1"=40'
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 9C
	PROJECT NUMBER: F174



- Not Analyzed
- Not Detected
- Elevated levels below Tier I Industrial Soil Leaching to Groundwater RBSLs
- Elevated levels above Tier I Industrial Soil Leaching to Groundwater RBSLs

LEGEND:

- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- 4" Process Waste
- Fence

GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: LEAD
BUILDING 31
TANKS 081/31T - 091/31T

DATE: 8/13/96

SCALE: 1"=40'

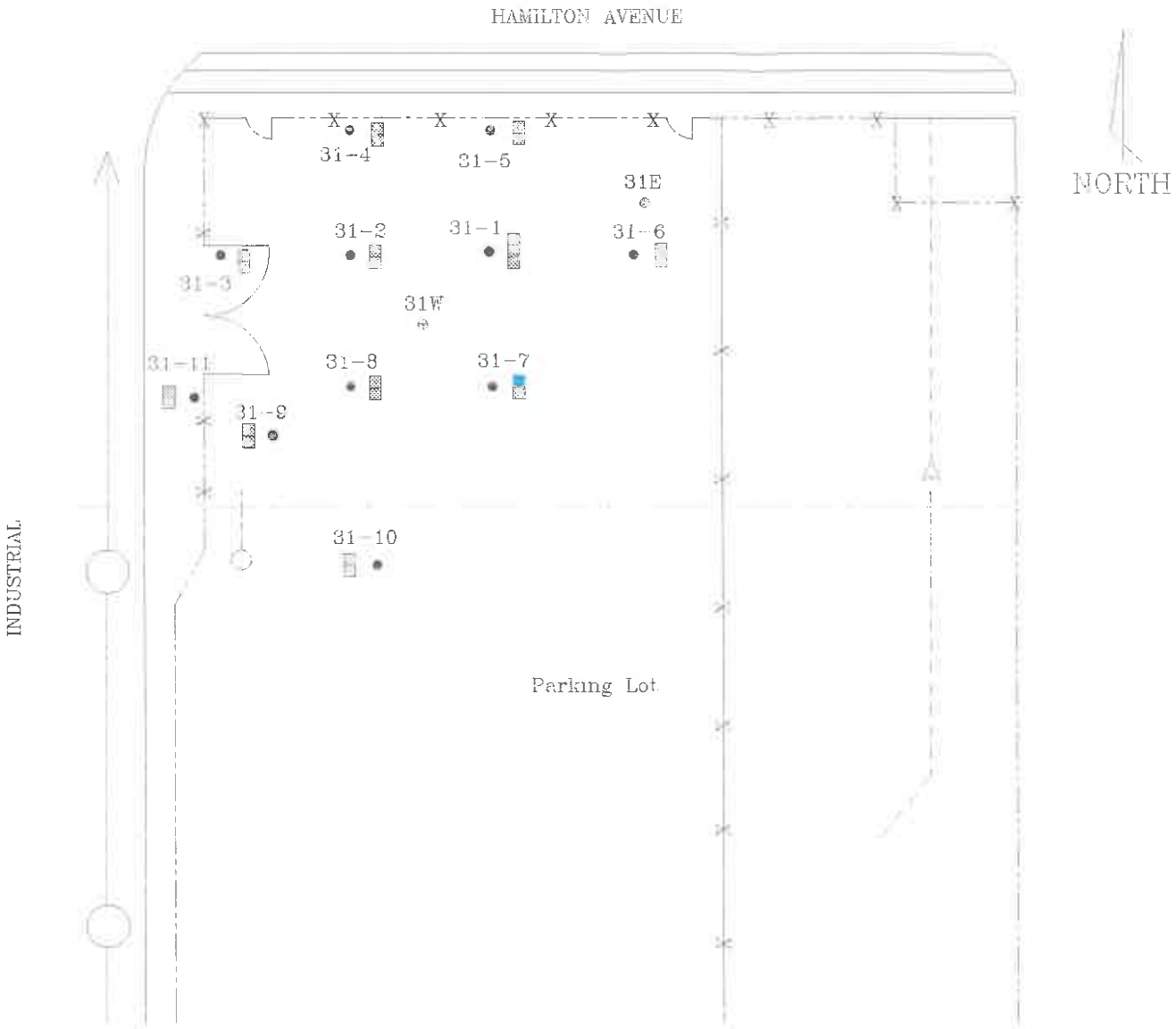
Global Environmental Engineering Inc.

APPROVED BY: A.L.K.

PREPARED BY: C.G.S.

ATTACHMENT NUMBER: 9D

PROJECT NUMBER: F174



□ Not Analyzed

▨ Not Detected

■ Elevated levels below Tier I Industrial Soil Leaching to Groundwater RBSLs

■ Elevated levels above Tier I Industrial Soil Leaching to Groundwater RBSLs

LEGEND

- ● Geoprobe Sample Locations
- ---- Fire Protection Line
- ——— Storm Sewer Line
- — — — 4" Process Waste
- —*— Fence

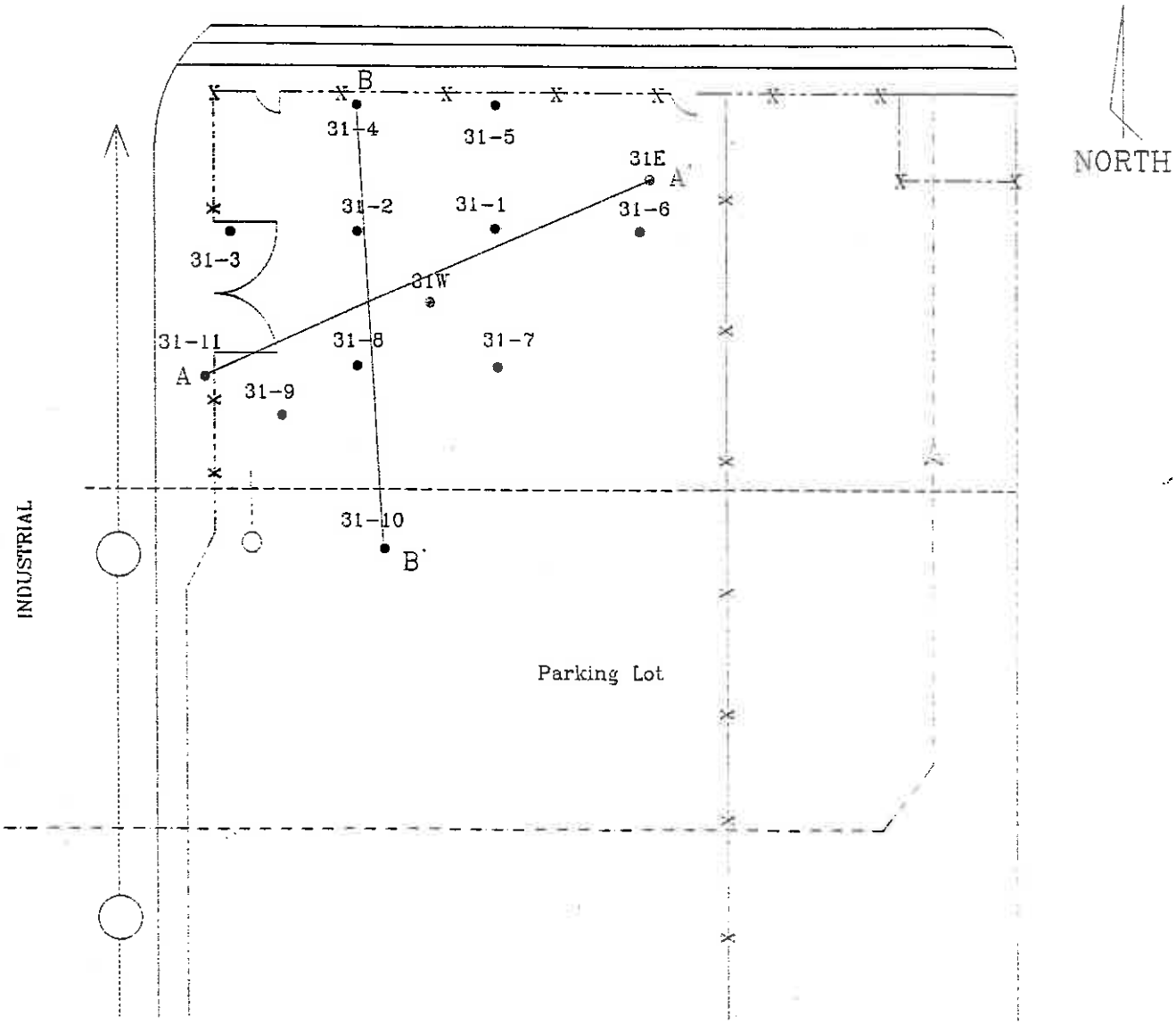
GM-CLCD NORTH

TITLE: SOIL CONCENTRATION MAP: GLYCOL BUILDING 31 TANKS 081/31T - 091/31T

DATE: 8/13/96	SCALE: 1"=40'
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 9E
	PROJECT NUMBER: F174

ATTACHMENT 10

-- SEE ATTACHMENT 9 --



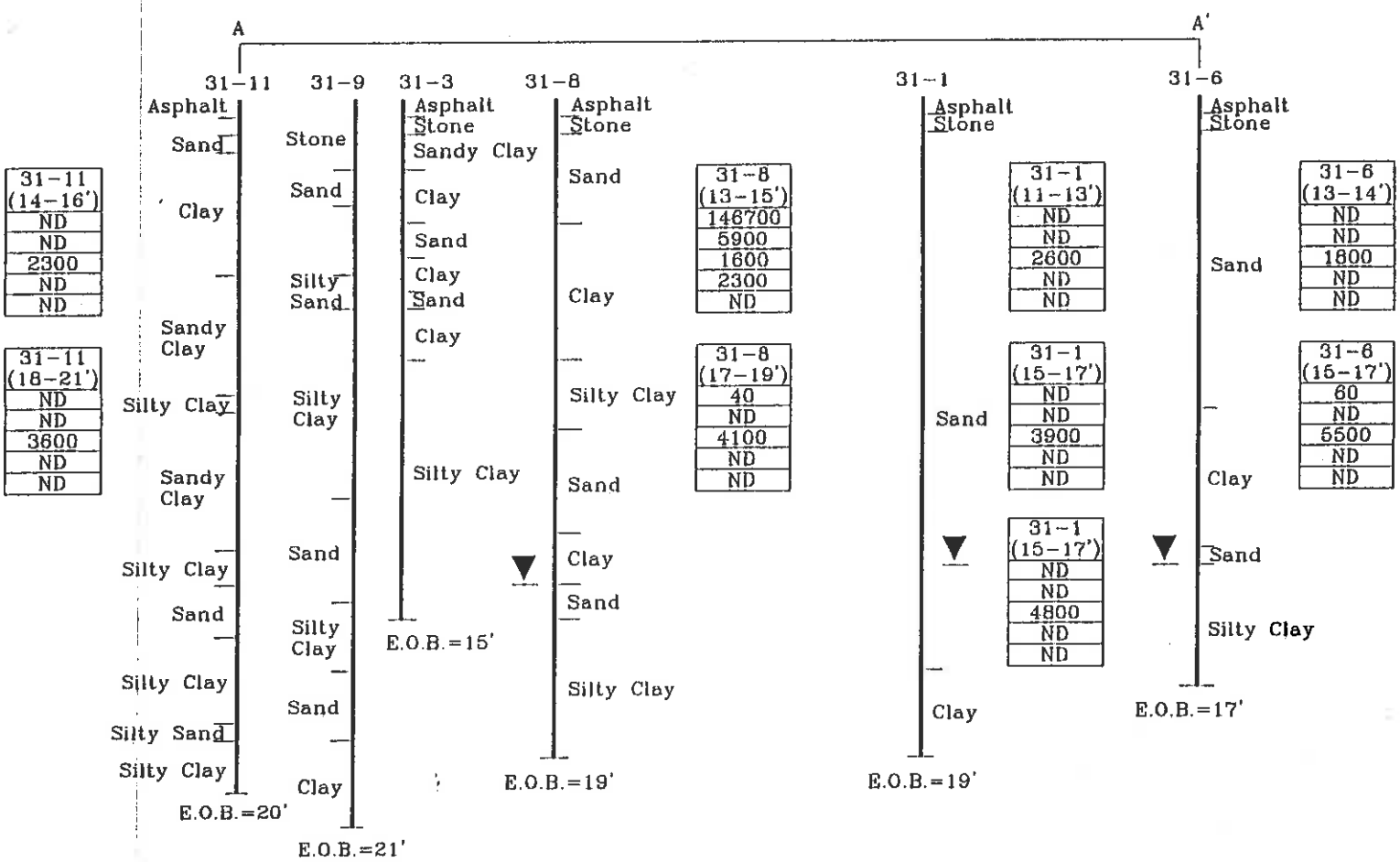
LEGEND:

- ● Geoprobe Sample Locations
- ---- Fire Protection Line
- ..... Storm Sewer Line
- - - - 4" Process Waste
- —*— Fence

GM-CLCD NORTH

TITLE: CROSS SECTION LOCATION DIAGRAM
BUILDING 31
TANKS 081/31T - 091/31T

DATE: 8/13/96	SCALE: 1"=40'
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 11a
	PROJECT NUMBER: F174



Global Environmental Engineering Inc.

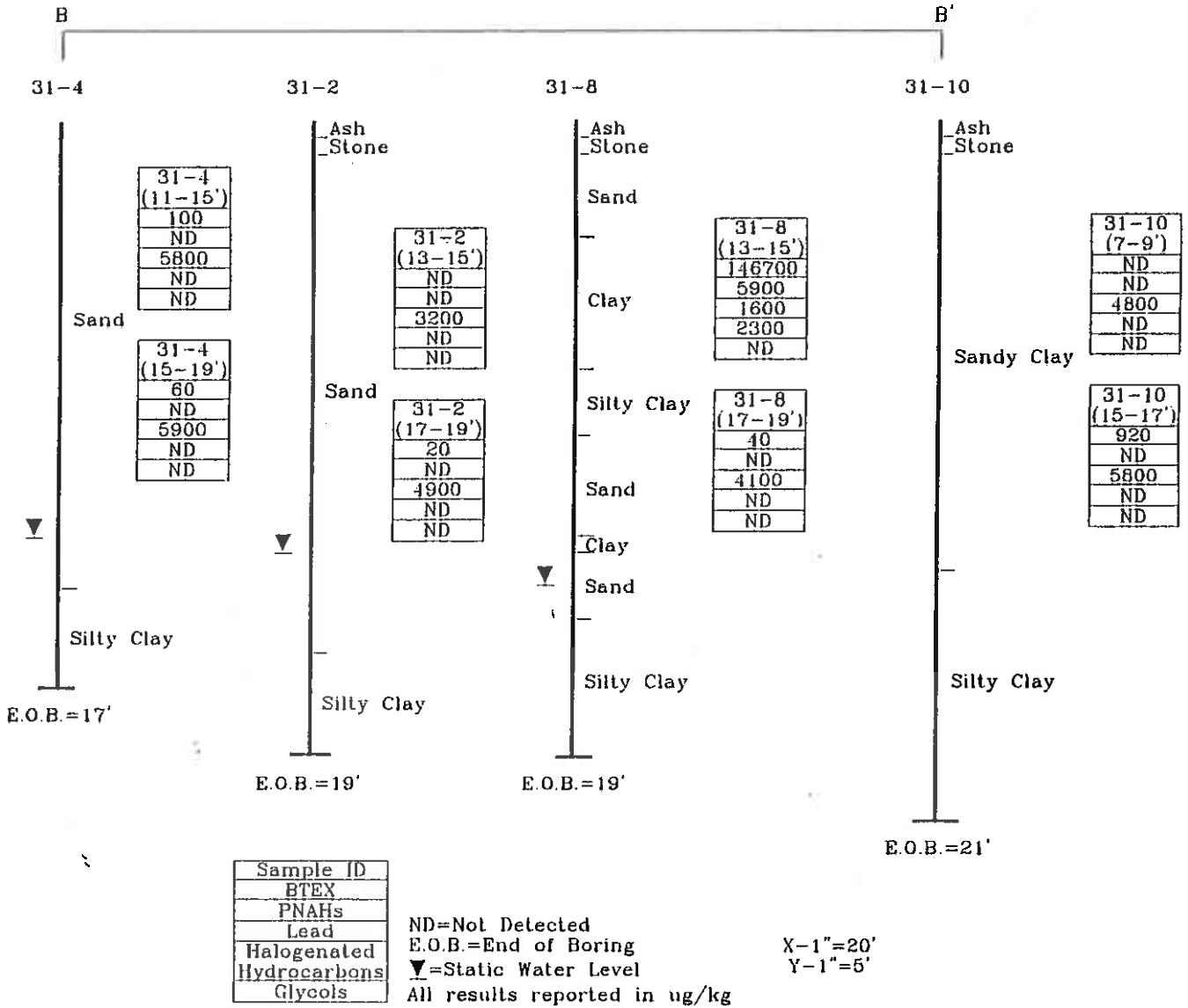
CROSS SECTIONAL DIAGRAM A' – A'
GM-CLCD NORTH – BUILDING 31
SOIL BORING ANALYTICAL

DATE: 4/12/95

PREPARED BY: C.G.S.

ATTACHMENT NUMBER: 11b

PROJECT NUMBER: F174



Global Environmental Engineering Inc.

CROSS SECTIONAL DIAGRAM B' - B'
GM-CLCD NORTH - BUILDING 31
SOIL BORING ANALYTICAL

DATE: 4/12/95

PREPARED BY: C.G.S.

ATTACHMENT NUMBER: 11c

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 31-1	Project:	GM CLCD North UST Closure
Date:	7/30/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	9:20	Depth Drilled:	19'
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	PID	GC
				Asphalt			
		1		Stone			
	GP-1		SP	Sand	Brown, Moist, Fine/Medium		
		2					
		3					
		4					
		5				ND	
	GP-2						
		6					
		7				ND	
		8					
		9				1.0	
	GP-3						
		10					
		11					
		12					
	[X]	13				56.0	
	GP-4				Wet, <25% Recovery	NA	
		14					
		15					
		16					
						+320.0	
		17	CL	Clay	Gray, Moist		
		18				88.0	
		19					
			E.O.B	End of Boring 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 31-2	Project:	GM CLCD North UST Closure
Date:	7/30/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	10:45	Depth Drilled:	19'
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	13'	
Monitor Wells Installed		
Yes		No

Penetration Tons/Sq ft	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	FID	GC
				Asphalt			
		1		Stone			
	GP-1		SP	Sand	Brown, Moist, Fine/Medium		
		2					
		3				ND	
		4					
		5				1.0	
	GP-2						
		6					
		7				125.0	
		8					
		9				380.0	
	GP-3						
		10					
		11				430.0	
		12					
		13			Wet	500	
	GP-4						
		14					
	[X]	15			Gray	<1000	
	GP-5						
		16					
			CL	Silty Clay	Moist, No Fractures		
		17				200	
	GP-6						
		18					
	[X]	19				61.0	
			E.O.B	End of Boring 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 31-3	Project:	GM CLCD North UST Closure
Date:	7/30/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	13:00	Depth Drilled:	15'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	2'	Coring Device:	2"

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

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	FID	GC
				Asphalt			
		1		Stone			
	GP-1			Sandy Clay	Brown, Moist, No Fractures		
		2					
			CL	Clay			
		3				ND	
		4	SP	Sand			
		5	CL	Clay		ND	
	GP-2						
		6	SP	Sand			
			CL	Clay	Brown/Gray		
		7				125	
				Silty Clay	Brown/Green		
		8			Green/Gray		
	[X]						
		9			3" Sandy Gravel Lens	680	
	GP-3				Gray		
		10					
		11				72.0	
	GP-4						
		12					
		13				13.0	
	GP-5						
		14					
	[X]	15				ND	
			E.O.B	End of Boring 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 31-4	Project:	GM CLCD North UST Closure
Date:	7/30/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	14:20	Depth Drilled:	17'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	2'	Coring Device:	2"
Groundwater Information		Fluid Used:	None
GW Encountered at	12'	Driller:	Ken
Monitor Wells Installed		Helper:	N/A
Yes	No	Weight/Drop:	N/A

Boring Methods

	Hollow Stem Auger
	Hand Auger
X	Geoprobe

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	FID	GC
		1					
	GP-1		SP	Sand	Brown, Moist, Fine/Medium		
		2					
		3				ND	
		4					
		5				ND	
	GP-2						
		6					
		7				ND	
		8					
		9				4.0	
	GP-3						
		10					
		11				560	
		12					
		13			Gray, Wet	>1000	
	GP-4						
		14					
			CL	Silty Clay	Moist, No Fractures		
		15				125.0	
		16					
	[X]	17				26.0	
			E.O.B	End of Boring 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 31-5	Project:	GM CLCD North UST Closure
Date:	7/30/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	15:20	Depth Drilled:	17'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	2'	Coring Device:	2"

Boring Methods		Groundwater Information			
	Hollow Stem Auger	GW Encountered at	11'	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
				Asphalt			
		1		Stone			
	GP-1		SP	Sand	Brown, Moist, Fine/Medium		
		2					
		3				ND	
		4					
		5				2.0	
	GP-2						
		6					
		7				12.0	
		8					
		9				24.0	
	GP-3						
		10					
		11			Wet	102	
		12					
					Gray		
	[X]	13				320.0	
	GP-4						
		14					
			CL	Silty Clay	Moist, No Fractures		
		15				320	
	GP-5						
		16					
	[X]	17				32.0	
			E.O.B	End of Boring 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 31-6	Project:	GM CLCD North UST Closure
Date:	7/31/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	8:30	Depth Drilled:	17'
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	13.5'	
Monitor Wells Installed		
Yes		No

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	FID	GC
				Asphalt			
		1		Stone			
	GP-1		SP	Sand	Brown, Moist, Fine/Medium		
		2					
		3				ND	
		4					
		5				2.5	
	GP-2						
		6					
		7				22.0	
					2" Black Lens		
		8					
					1" Black Lens		
		9				70.0	
	GP-3		CL	Clay	Brown/Gray, Fractures		
		10					
		11				10.0	
		12					
		13			Gray, No Fractures	4.0	
	GP-4		SP	Sand	Wet		
	[X]	14				>1000	
			CL	Silty Clay	Moist		
		15				125.0	
	GP-5						
		16					
	[X]	17				22.0	
			E.O.B	End of Boring 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 31-7	Project:	GM CLCD North UST Closure
Date:	7/31/96	Project #:	P174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	9:45	Depth Drilled:	21'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	2'	Coring Device:	2"

Boring Methods		Groundwater Information			
	Hollow Stem Auger	GW Encountered at	15'	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
				Asphalt			
		1		Stone			
	GP-1		SP	Sand	Brown, Moist, Fine/Medium		
		2	CL	Clay	Brown/Gray, Fractures		
		3				ND	
		4					
		5				5.0	
	GP-2						
		6					
		7				5.0	
		8					
				Silty Clay	Gray/Brown		
		9				4.0	
	GP-3				Gray		
		10					
		11				10.0	
		12					
					2" Brown Sand Lens	125.0	
		13					
	GP-4						
	[X]	14					
		15				240.0	
	GP-5		SM	Silty Sand	Gray, Wet		
		16	CL	Silty Clay	No Fractures		
	[X]	17				>1000	
		18	SM	Silty Sand	Fine/Medium		
		19				400.0	
					Wet		
		20					
	[X]	21	CL	Clay	Moist, No Fractures	>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 31-8	Project:	GM CLCD North UST Closure
Date:	7/31/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Hamilton & Industrial Ave.
Prepared By:	JCW	Twp/Sec.:	
Time Started:	11:45	Depth Drilled:	19'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	2'	Coring Device:	2"

Boring Methods		Groundwater Information			
	Hollow Stem Auger	GW Encountered at	11'	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	PID	GC
				Asphalt			
		1		Stone			
	GP-1		SP	Sand	Brown, Moist, Fine/Medium		
		2					
		3				ND	
		4	CL	Clay	Brown/Gray, Fractures		
		5				58.0	
	GP-2						
		6			Brown/Red		
		7				110	
				Silty Clay	Brown/Gray		
		8					
		9				200.0	
	GP-3						
		10	SP	Sand	Brown		
		11				120.0	
					Wet		
		12					
		13	CL	Clay	Brown/Gray, Moist, No Fractures	78.0	
	GP-4		SP	Sand	Gray		
		14			Wet		
	[X]	15				>1000	
	GP-5		CL	Silty Clay	Gray, Moist		
		16					
		17				300.0	
	GP-6						
		18					
					3" Silty Sand Lens, Wet		
	[X]	19				420.0	
			E.O.B	End of Boring 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.31-9	Project:	GMCLCD N. – UST Closures
Date:	11/12/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Building 31
Prepared By:	JCW	Twp/Sec.:	
Time Started:	13:00	Depth Drilled:	21'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	5'	Coring Device:	2"

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

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	OVA	GC
		1					
	GP-1			Stone			
		2	SP	Sand	Brown, Moist, Fine/Medium		
			CL	Sandy Clay	Brown/Gray, No Fractures		
		3				3.0	
		4					
		5		Clay	Fractues	2.0	
	GP-2		SM	Silty Sand	Brown, Wet, Fine		
		6					
			CL	Silty Clay	Brown/Red, Moist, No Fractures		
		7				3.0	
		8					
	[X]	9				2.0	
	GP-3				Gray, Trace of Gravel		
		10					
		11				5.0	
	GP-4						
		12	SP	Sand	Fine/Medium		
		13				400	
	GP-5						
		14					
		15	CL	Silty Clay	No Fractures	240	
	GP-6						
	[X]	16					
		17	SP	Sand	Gray, Moist	550	
	GP-7						
		18					
	[X]	19	CL	Clay		>1000	
	GP-8						
		20					
	[X]	21				520	
			E.O.B.	End of Boring 21'			
		22					
		23					
		24					
		25					

SS–Split Spoon | HA–Hand Auger Sample | PID–Photoionization Detector (ppm) | AL–Acetate Liner
NR–No Recovery | [X]–Laboratory/Jar Sample | GC–Gas Chromatograph (ppb) | 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:	Bldg.31-10	Project:	GMCLCD N. - UST Closures
Date:	11/13/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Building 31
Prepared By:	JCW	Twp/Sec.:	
Time Started:	10:45	Depth Drilled:	21'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	5'	Coring Device:	2"

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

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	OVA	GC
				Asphalt			
		1		Stone			
	GP-1		CL	Sandy Clay	Brown, Moist, No Fractures		
		2					
		3				ND	
		4					
					Brown/Gray, Moist, Fractures		
		5				ND	
	GP-2						
		6					
		7			3" Silty Sand Lense, Wet	4.0	
					1" Black Clay Lense		
		8					
	[X]	9				22.0	
	GP-3				No Recovery 9'-12.5'		
		10					
		11				NA	
		12					
		13				NA	
	GP-4			Silty Clay	Gray, Moist, No Fractures		
		14					
		15				8.0	
		16					
	[X]	17				66.0	
	GP-5				No Recovery 17'-21'		
		18					
		19					
		20					
		21					
			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.
5467 Hill 23 Dr., Suite B
Flint, Michigan 48507
Tel: (810) 238-9190
Fax: (810) 238-9195

Soil Boring:	Bldg.31-11	Project:	GMCLCD N. - UST Closures
Date:	11/13/96	Project #:	F174
Drilling Contractor:	YECI	Location:	Building 31
Prepared By:	JCW	Twp/Sec.:	
Time Started:	13:00	Depth Drilled:	20'
Time Completed:		Hole Diameter:	2"
Length Coring Device:	5'	Coring Device:	2"

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

Penetration Tons/Sq ft.	Sample Type	Depth (ft.)	USCS Code	SOIL DESCRIPTION	REMARKS	OVA	GC
				Asphalt			
		1		Stone			
	GP-1		SP	Sand	Brown, Moist, Fine/Medium		
		2	CL	Clay	Brown/Gray, Fractures	ND	
		3					
		4				ND	
		5		Sandy Clay	Brown/Red, Mottled		
	GP-2						
		6				2.0	
		7					
		8				3.0	
				Silty Clay	Gray		
	[X]	9		Sandy Clay	Brown		
	GP-3				Dry, Hard, Trace of Gravel		
		10				2.0	
	GP-4						
		11					
		12				4.0	
	GP-5						
		13					
				Silty Clay			
		14				42.0	
	GP-6		SP	Sand	Gray, Moist, Fine		
		15					
	[X]	16	CL	Silty Clay	No Fractures	620	
	GP-7						
		17					
		18				540	
	GP-8		SM	Silty Sand	Gray, Moist, Fine		
		19					
	[X]	20	CL	Silty Clay	Gray, Moist, Fine	880	
			E.O.B.	End of Boring 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

ATTACHMENT NO. 18
LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS
(BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	Bldg 31 - 1		Bldg 31 - 2		Bldg 31 - 4		Bldg 31 -5		Bldg 31 - 6	
Sample Depth (feet BGS)	-		-		-		-		-	
Date Collected	7/31/96		7/31/96		7/31/96		7/31/96		7/31/96	
Date Extracted	8/02/96		8/02/96		8/02/96		8/02/96		8/06/96	
Date Analyzed	8/02/96		8/02/96		8/02/96		8/02/96		8/06/96	
Collection Method*	GP		GP		GP		GP		GP	
Analytical Method No.	602		602		602		602		8260	
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Benzene	1	1	2	1	60	10	8	1	ND	1
☐ Toluene	3	1	5	1	ND	10	2	1	ND	1
☐ Ethylbenzene	3	1	8	1	20	10	2	1	ND	1
☐ Total Xylenes	15	1	29	1	110	10	11	1	ND	1
☐ MTBE										
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	Bldg 31 - 1		Bldg 31 - 2		Bldg 31 - 4		Bldg 31 -5		Bldg 31 - 6	
Sample Depth (feet BGS)	-		-		-		-		-	
Date Collected	7/31/96		7/31/96		7/31/96		7/31/96		7/31/96	
Date Extracted	8/01/96		8/01/96		8/01/96		8/01/96		8/01/96	
Date Analyzed	8/06/96		8/06/96		8/06/96		8/06/96		8/06/96	
Collection Method*	GP		GP		GP		GP		GP	
Analytical Method No.	8270		8270		8270		8270		8270	
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene	ND	10	ND	10	ND	10	ND	1	ND	1
☐ Acenaphthylene	ND	10	ND	10	ND	10	ND	1	ND	1
☐ Anthracene	ND	10	ND	10	ND	10	ND	1	ND	1
☐ Benzo(a)anthracene	ND	10	ND	10	ND	10	ND	1	ND	1
☐ Benzo(a)pyrene	ND	10	ND	10	ND	10	ND	1	ND	1
☐ Benzo(b)fluoranthene	ND	10	ND	10	ND	10	ND	1	ND	1
☐ Benzo(g,h,i)perylene	ND	10	ND	10	ND	10	ND	1	ND	1
☐ Benzo(k)fluoranthene	ND	10	ND	10	ND	10	ND	1	ND	1
☐ Chrysene	ND	10	ND	10	ND	10	ND	1	ND	1
☐ Dibenzo(a,h)anthracene	ND	10	ND	10	ND	10	ND	1	ND	1

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

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	Bldg 31 - 1		Bldg 31 - 2		Bldg 31 - 4		Bldg 31 -5		Bldg 31 - 6	
Sample Depth (feet BGS)	-		-		-		-		-	
Date Collected	7/31/96		7/31/96		7/31/96		7/31/96		7/31/96	
Date Extracted	8/01/96		8/01/96		8/02/96		8/02/96		8/06/96	
Date Analyzed	8/06/96		8/06/96		8/06/96		8/06/96		8/06/96	
Collection Method*	GP		GP		GP		GP		GP	
Analytical Method No.	8270		8270		8270		8270		8270	
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Fluoranthene	ND	10	ND	10	ND	10	ND	1	ND	1
☐ Fluorene	ND	10	ND	10	ND	10	ND	1	ND	1
☐ Indeno(1,2,3- cd)pyrene	ND	10	ND	10	ND	10	ND	1	ND	1
☐ Naphthalene	ND	10	ND	10	20	10	ND	1	ND	1
☐ 2-Methylnaphthalene	ND	10	ND	10	ND	10	ND	1	ND	1
☐ Phenanthrene	ND	10	ND	10	ND	10	ND	1	ND	1
☐ Pyrene	ND	10	ND	10	ND	10	ND	1	ND	1
METALS - FILTERED										
Sample ID	Bldg 31 - 1		Bldg 31 - 2		Bldg 31 - 4		Bldg 31 -5		Bldg 31 - 6	
Sample Depth (feet BGS)	-		-		-		-		-	
Date Collected	7/31/96		7/31/96		7/31/96		7/31/96		7/31/96	
Date Extracted	8/08/96		8/08/96		8/08/96		8/08/96		8/08/96	
Date Analyzed	8/08/96		8/08/96		8/08/96		8/08/96		8/08/96	
Collection Method*	GP		GP		GP		GP		GP	
Analytical Method No.	200.8		200.8		200.8		200.8		200.8	
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Cadmium										
☐ Total Chromium										
☐ Total Lead	ND	3	ND	3	ND	3	ND	3	ND	3

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

Glycols										
Sample ID	Bldg 31 - 1		Bldg 31 - 2		Bldg 31 - 4		Bldg 31 -5		Bldg 31 - 6	
Sample Depth (feet BGS)	-		-		-		-		-	
Date Collected	7/31/96		7/31/96		7/31/96		7/31/96		7/31/96	
Date Extracted	8/06/96		8/06/96		8/06/96		8/06/96		8/06/96	
Date Analyzed	8/09/96		8/09/96		8/09/96		8/09/96		8/09/96	
Collection Method*	GP		GP		GP		GP		GP	
Analytical Method No.	624/8260M		624/8260M		624/8260M		624/8260M		624/8260M	
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Ethylene Glycol	ND	500	ND	500	ND	500	ND	500	ND	500
☐ Propylene Glycol	ND	500	ND	500	ND	500	ND	500	ND	500
☐										
☐										
☐										
☐										
☐										
HALOGENATED HYDROCARBONS										
Sample ID	Bldg 31 - 1		Bldg 31 - 2		Bldg 31 - 4		Bldg 31 - 5		Bldg 31 - 6	
Sample Depth (feet BGS)	-		-		-		-		-	
Date Collected	7/30/96		7/30/96		7/30/96		7/30/96		7/30/96	
Date Extracted	8/02/96		8/02/96		8/02/96		8/02/96		8/10/96	
Date Analyzed	8/02/96		8/02/96		8/02/96		8/02/96		8/10/96	
Collection Method*	GP		GP		GP		GP		GP	
Analytical Method No.	601		601		601		601		601	
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Carbon Tetrachloride	ND	1	ND	10	ND	10	ND	10	ND	1
☐ 1,1-Dichloroethane	ND	1	ND	10	ND	10	ND	10	ND	1
☐ 1,2-Dichloroethane	ND	1	ND	10	ND	10	ND	10	ND	1
☐ 1,1-Dichloroethylene	ND	1	ND	10	ND	10	ND	10	ND	1
☐ cis-1,2-Dichloroethylene	ND	1	ND	10	ND	10	ND	10	ND	1
☐ trans-1,2- Dichloroethylene	ND	1	ND	10	ND	10	ND	10	ND	1

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

HALOGENATED HYDROCARBONS (Cont.)										
☐ Tetrachloroethylene	ND	1	ND	10	ND	10	ND	10	ND	1
☐ Trichloroethylene	ND	1	ND	10	ND	10	ND	10	ND	1
☐ 1,1,2-Trichloroethane	ND	1	ND	10	ND	10	ND	10	ND	1
☐ Vinyl Chloride	ND	1	ND	10	ND	10	ND	10	ND	1
OTHER *(Specify)*										
Sample ID	Bldg 31 - 1		Bldg 31 - 2		Bldg 31 - 4		Bldg 31 - 5		Bldg 31 - 6	
Sample Depth (feet BGS)	-		-		-		-		-	
Date Collected	7/30/96		7/30/96		7/30/96		7/30/96		7/30/96	
Date Extracted	8/0696		8/0696		8/0696		8/0696		8/066	
Date Analyzed	8/0696		8/0696		8/0696		8/0696		8/066	
Collection Method*	GP		GP		GP		GP		GP	
Analytical Method No.	8270		8270		8270		8270		8270	
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Di-n-butyl phthalate	ND	10	ND	10	10	10	ND	10	20	10
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										

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

ATTACHMENT NO. 18
LABORATORY RESULTS GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

VOLATILES										
Sample ID	Bldg 31-8		Bldg 31 - W		Bldg 31 - E		Bldg 31 - N			
Sample Depth (feet BGS)	-		-		-		-			
Date Collected	7/31/96		7/24/96		7/24/96		7/24/96			
Date Extracted	8/09/96		7/28/96		7/28/96		7/28/96			
Date Analyzed	8/09/96		7/28/96		7/28/96		7/28/96			
Collection Method*	GP		Bailer		Bailer		Bailer			
Analytical Method No.	8260		8020		8020		8020			
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Benzene	600	1	ND	1	ND	1	ND	1		
☐ Toluene	149,000	1	ND	1	ND	1	ND	1		
☐ Ethylbenzene	7400	1	ND	1	ND	1	ND	1		
☐ Total Xylenes	57,600	1	ND	1	ND	1	ND	1		
☐ MTBE										
POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	Bldg 31-8		Bldg 31 - W		Bldg 31 - E		Bldg 31 - N			
Sample Depth (feet BGS)	-		-		-		-			
Date Collected	7/31/96		7/24/96		7/24/96		7/24/96			
Date Extracted	8/06/96		7/26/96		7/26/96		7/26/96			
Date Analyzed	8/06/96		7/28/96		7/28/96		7/28/96			
Collection Method*	GP		Bailer		Bailer		Bailer			
Analytical Method No.	601		601		601		601			
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Acenaphthene	ND	10	ND	5	ND	5	ND	5		
☐ Acenaphthylene	ND	10	ND	5	ND	5	ND	5		
☐ Anthracene	ND	10	ND	5	ND	5	ND	5		
☐ Benzo(a)anthracene	ND	10	ND	5	ND	5	ND	5		
☐ Benzo(a)pyrene	ND	10	ND	5	ND	5	ND	5		
☐ Benzo(b)fluoranthene	ND	10	ND	5	ND	5	ND	5		
☐ Benzo(g,h,i)perylene	ND	10	ND	5	ND	5	ND	5		
☐ Benzo(k)fluoranthene	ND	10	ND	5	ND	5	ND	5		
☐ Chrysene	ND	10	ND	5	ND	5	ND	5		
☐ Dibenzo(a,h)anthracene	ND	10	ND	5	ND	5	ND	5		

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

POLYNUCLEAR AROMATICS (PNAs)										
Sample ID	Bldg 31-8		Bldg 31 - W		Bldg 31 - E		Bldg 31 - N			
Sample Depth (feet BGS)	-		-		-		-			
Date Collected	7/31/96		7/24/96		7/24/96		7/24/96			
Date Extracted	8/06/96		7/26/96		7/26/96		7/26/96			
Date Analyzed	8/09/96		7/2996		7/2996		7/29/96			
Collection Method*	GP		Bailer		Bailer		Bailer			
Analytical Method No.	8270		8270		8270		8270			
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Fluoranthene	ND	10	ND	5	ND	5	ND	5		
☐ Fluorene	ND	10	ND	5	ND	5	ND	5		
☐ Indeno(1,2,3- cd)pyrene	ND	10	ND	5	ND	5	ND	5		
☐ Naphthalene	50	10	ND	5	ND	5	ND	5		
☐ 2-Methylnaphthalene	ND	10	ND	5	ND	5	ND	5		
☐ Phenanthrene	ND	10	ND	5	ND	5	ND	5		
☐ Pyrene	ND	10	ND	5	ND	5	ND	5		
METALS - FILTERED										
Sample ID	Bldg 31-8		Bldg 31 - W		Bldg 31 - E		Bldg 31 - N			
Sample Depth (feet BGS)	-		-		-		-			
Date Collected	7/31/96		7/24/96		7/24/96		7/24/96			
Date Extracted	8/06/96		7/26/96		7/26/96		7/26/96			
Date Analyzed	8/09/96		7/28/96		7/28/96		7/28/96			
Collection Method*	GP		Bailer		Bailer		Bailer			
Analytical Method No.	200.8		200.8		200.8		200.8			
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Cadmium										
☐ Total Chromium										
☐ Total Lead	ND	3	ND	3	ND	3	ND	3		

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

Glycols										
Sample ID	31-8		Bldg 31 - W		Bldg 31 - E		Bldg 31 - N			
Sample Depth (feet BGS)	-		-		-		-			
Date Collected	07/31/96		7/24/96		7/24/96		7/24/96			
Date Extracted	08/06/96		7/26/96		7/26/96		7/26/96			
Date Analyzed	08/09/96		7/29/96		7/29/96		7/29/96			
Collection Method*	GP		Bailer		Bailer		Bailer			
Analytical Method No.	624/8260M		624/8260M		624/8260M		624/8260M			
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Ethylene Glycol	ND	500	ND	500	ND	500	ND	500		
☐ Propylene Glycol	ND	500	ND	500	ND	500	ND	500		
☐										
☐										
☐										
☐										
☐										
HALOGENATED HYDROCARBONS										
Sample ID	Bldg 31-8		Bldg 31 - W		Bldg 31 - E		Bldg 31 - N			
Sample Depth (feet BGS)	-		-		-		-			
Date Collected	7/31/96		7/24/96		7/24/96		7/24/96			
Date Extracted	8/06/96		7/26/96		7/26/96		7/26/96			
Date Analyzed	8/09/96		7/28/96		7/28/96		7/28/96			
Collection Method*	GP		Bailer		Bailer		Bailer			
Analytical Method No.	601		601		601		601			
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Carbon Tetrachloride	ND	10	ND	1	ND	1	ND	1		
☐ 1,1-Dichloroethane	ND	10	ND	1	ND	1	ND	1		
☐ 1,2-Dichloroethane	ND	10	ND	1	ND	1	ND	1		
☐ 1,1-Dichloroethylene	ND	10	ND	1	ND	1	ND	1		
☐ cis-1,2-Dichloroethylene	ND	10	ND	1	ND	1	ND	1		
☐ trans-1,2- Dichloroethylene	ND	10	ND	1	ND	1	ND	1		

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

HALOGENATED HYDROCARBONS (Cont.)										
☐ Tetrachloroethylene	ND	10	ND	1	ND	1	ND	1		
☐ Trichloroethylene	ND	10	ND	1	ND	1	ND	1		
☐ 1,1,2-Trichloroethane	ND	10	ND	1	ND	1	ND	1		
☐ Vinyl Chloride	ND	10	ND	1	ND	1	ND	1		
OTHER *(Specify)*										
Sample ID	Bldg 31- 8									
Sample Depth (feet BGS)	-									
Date Collected	7/31/96									
Date Extracted	8/06/96									
Date Analyzed	8/09/96									
Collection Method*	GP									
Analytical Method No.	601									
CONSTITUENT (ug/l)	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL	Conc	MDL
☐ Diethyl phthalate	30	10								
☐ 4,6-Dinitro-2-methylphenol	10	10								
☐ Di-n-butyl phthalate	ND	10								
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										
☐										

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

ATTACHMENT 19

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY-UNDERGROUND TANK DIVISION

INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 19
TIER I RBSL/TIER II OR TIER III SSTL
COMPARISON TABLE FOR GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

☐ 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 (A)	Tier II/III SSTL	Tier I RBSL	Tier II/III SSTL
VOLATILES							
☐ Benzene	Bldg 31-8	07/31/96	600	5		Yes	
☐ Toluene	Bldg 31-8	07/31/96	149,000	790		Yes	
☐ Ethylbenzene	Bldg 31-8	07/31/96	7400	74		Yes	
☐ Total Xylenes	Bldg 31-8	07/31/96	57,600	280		Yes	
☐ MTBE							
POLYNUCLEAR AROMATICS (PNAs)							
☐ Acenaphthene			ND	3800		No	
☐ Acenaphthylene			ND	75		No	
☐ Anthracene			ND	21,000		No	
☐ Benzo(a)anthracene			ND	4.8		No	
☐ Benzo(a)pyrene			ND	.2		No	
☐ Benzo(b)fluoranthene			ND	4.8		No	
☐ Benzo(g,h,i)perylene			ND	75		No	
☐ Benzo(k)fluoranthene			ND	48		No	
☐ Chrysene			ND	480		No	
☐ Dibenzo-(a,h)anthracene			ND	.48		No	
☐ Fluoranthene			ND	2500		No	
☐ Fluorene			ND	2500		No	
☐ Indeno(1,2,3-cd)pyrene			ND	4.8		No	
☐ Naphthalene	Bldg 31-8	07/31/96	50	750		No	
☐ Phenanthrene			ND	75		No	
☐ Pyrene			ND	1600		No	
☐ 2-Methylnaphthalene			ND	750		No	

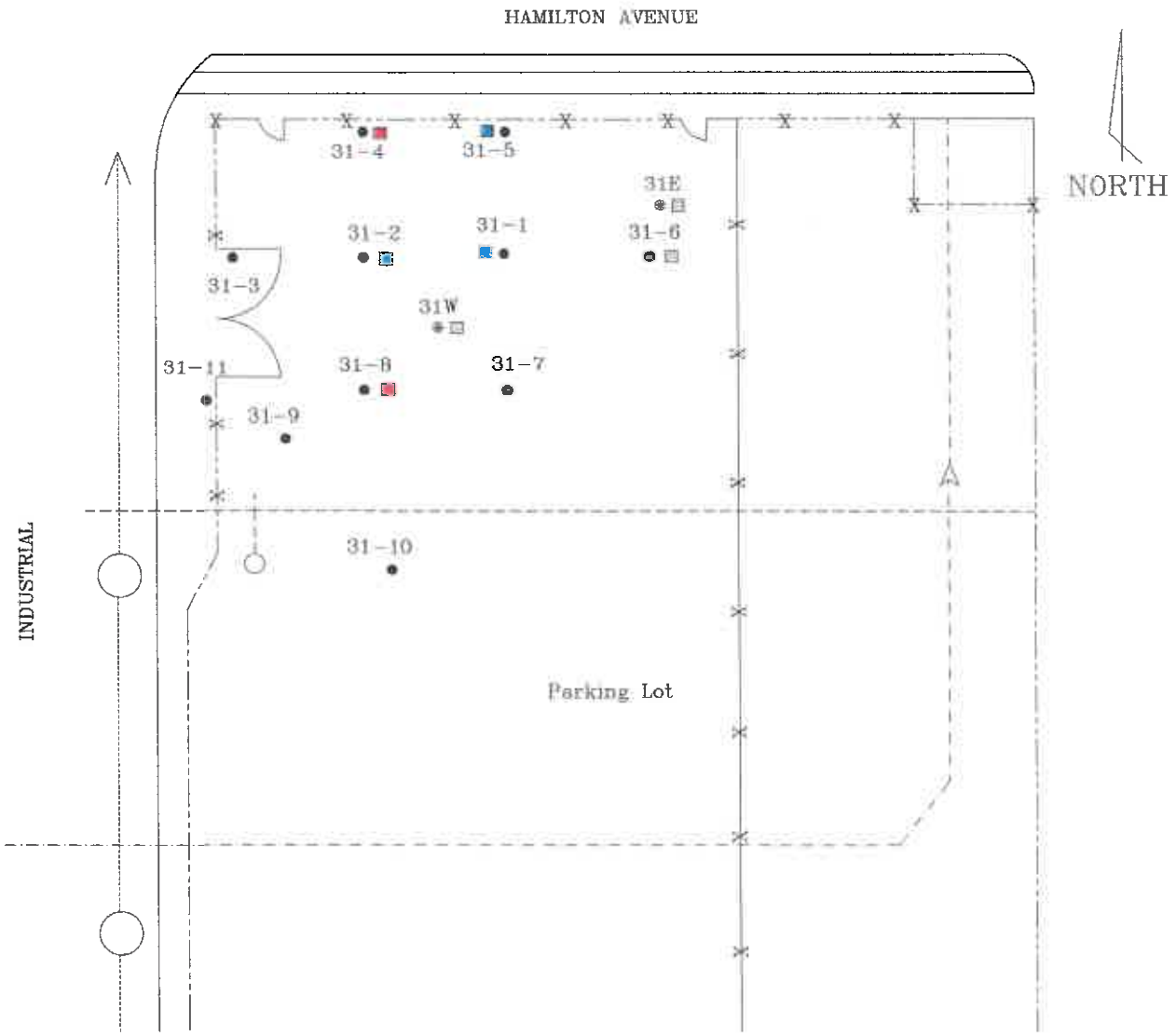
MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY-UNDERGROUND TANK DIVISION

INITIAL ASSESSMENT REPORT (Continued)

ATTACHMENT NO. 19
TIER I RBSL/TIER II OR TIER III SSTL
COMPARISON TABLE FOR GROUNDWATER
FACILITY NAME: NAO FLINT OPERATIONS (BLDG 31/TANKS 081/31T - 92 & 132/31 -133/31)
FACILITY NUMBER: 0-002763

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
METALS - FILTERED							
☐ Cadmium			NA				
☐ Chromium III			NA				
☐ Chromium VI			NA				
☐ Total Lead			ND	4 (B,L)		No	
PCBs - Not Analyzed							
HALOGENATED HYDROCARBONS							
☐ Carbon Tetrachloride			ND	5		No	
☐ 1,1-Dichloroethane			ND	2500		No	
☐ 1,2-Dichloroethane			ND	5		No	
☐ 1,1-Dichloroethylene			ND	7		No	
☐ cis-1,2-Dichloroethylene			ND	70		No	
☐ trans-1,2-Dichloroethylene			ND	100		No	
☐ Tetrachloroethylene			ND	5		No	
☐ 1,1,2-Trichloroethane			ND	5		No	
OTHER *							
☐ Ethlyene Glycol			ND	42,000		No	
☐ Propylene Glycol			ND	420,000		No	
☐ Di-n-butyl phthalate	Bldg 31-6		20	2500		No	
☐ Diethyl phthalate	Bldg 31-8		30	16,000		No	
☐ 4,6-Dinitro-2-methylphenol	Bldg 31-8		10	1000		No	

ATTACHMENT 20



□ Not Sampled

■ Not Detected

■ Elevated levels below Tier I Industrial Health-based Drinking Water to RBSLs

■ Elevated levels above Tier I Industrial Health-based Drinking Water to RBSLs

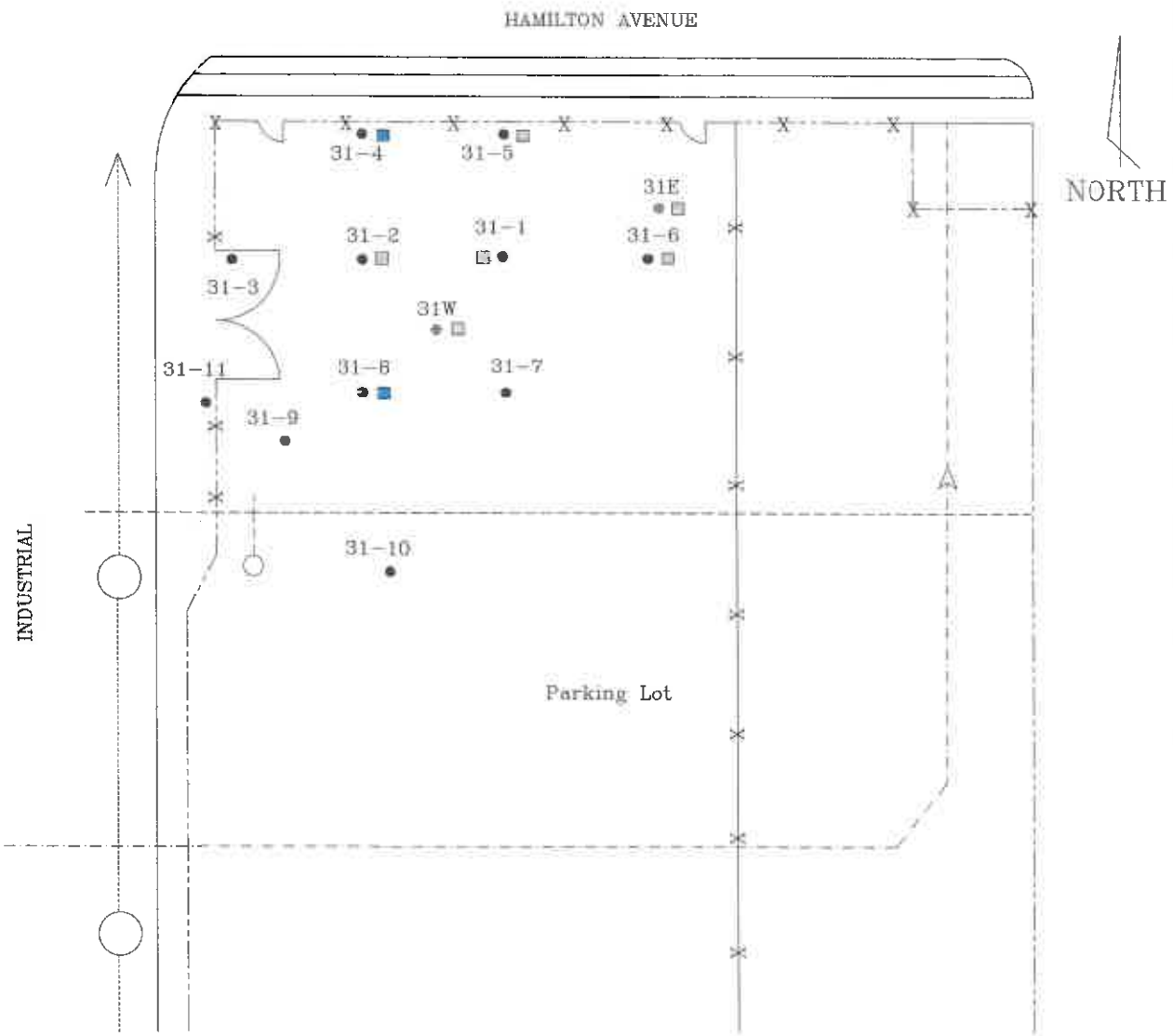
LEGEND:

- ● Geoprobe Sample Locations
- ----- Fire Protection Line
- ····· Storm Sewer Line
- — — 4" Process Waste
- —⊗— Fence

GM CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: BTEX
BUILDING 31
TANKS 081/31T - 091/31T

DATE: 8/13/96	SCALE: 1"=40'
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 20A
	PROJECT NUMBER: F174



- Not Sampled
- Not Detected
- Elevated levels below Tier I Industrial Health-based Drinking Water to RBSLs
- Elevated levels above Tier I Industrial Health-based Drinking Water to RBSLs

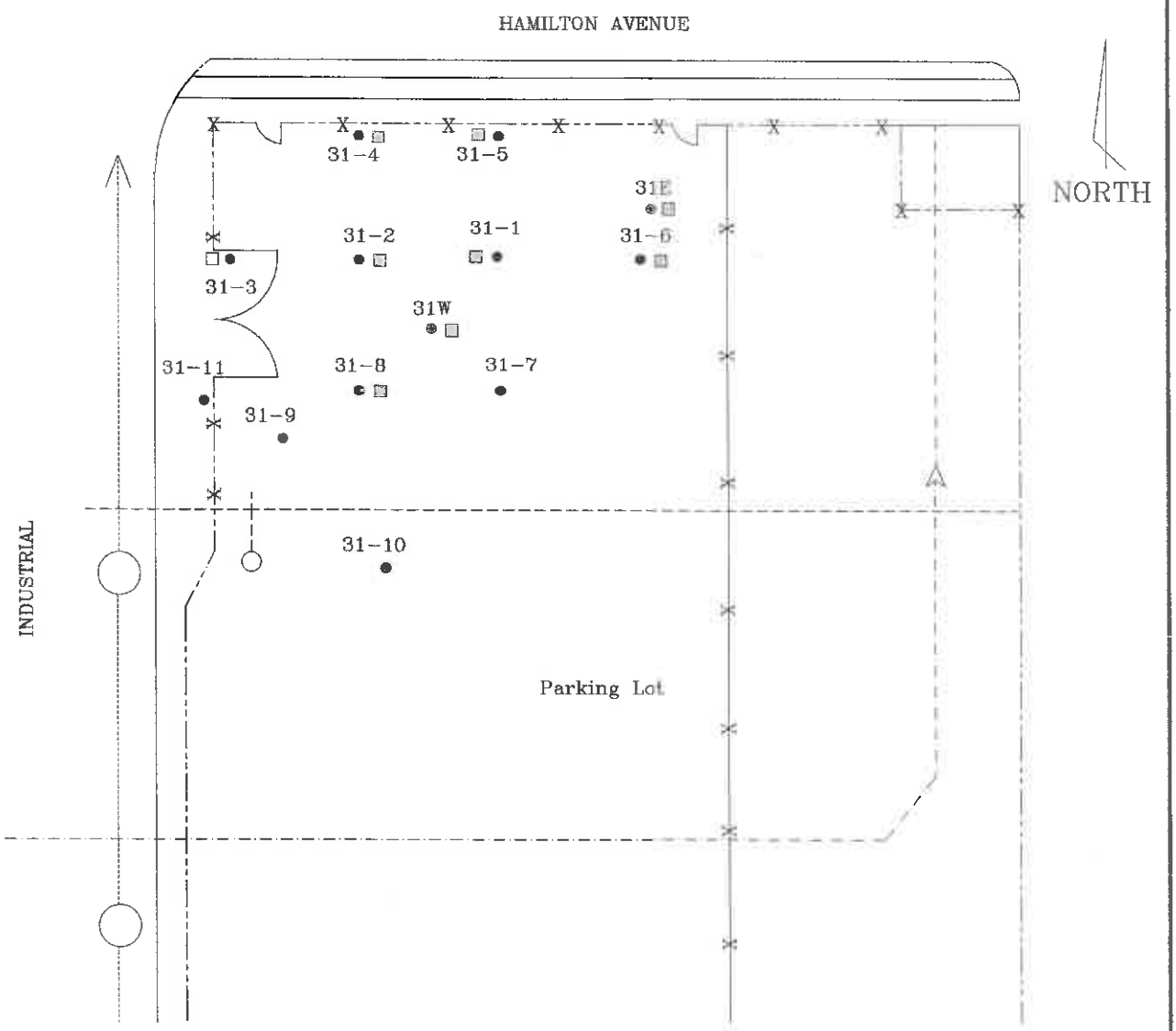
LEGEND:

- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- 4" Process Waste
- Fence

GM CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: PNAHs
BUILDING 31
TANKS 081/31T - 091/31T

DATE: 8/13/96	SCALE: 1"=40'
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER:20B
	PROJECT NUMBER: F174



□ Not Sampled

▨ Not Detected

▩ Elevated levels below Tier I Industrial Health-based Drinking Water to RBSLs

■ Elevated levels above Tier I Industrial Health-based Drinking Water to RBSLs

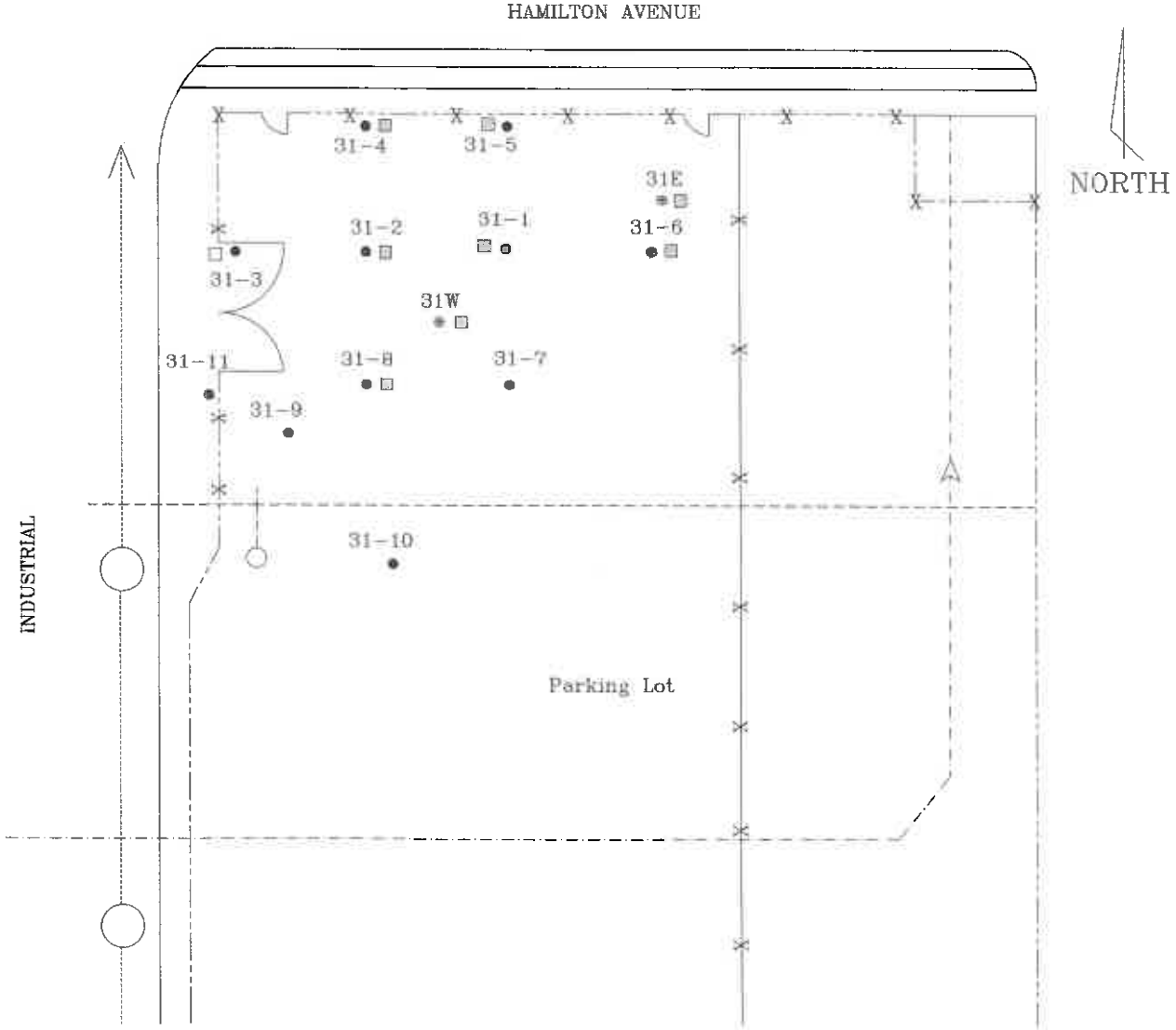
LEGEND:

- ● Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- 4" Process Waste
- Fence

GM CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: HALOGENATED HYDROCARBONS, BUILDING 31 TANKS 081/31T - 091/31T

DATE: 8/13/96	SCALE: 1"=40'
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 20C
	PROJECT NUMBER: F174



□ Not Sampled

▨ Not Detected

■ Elevated levels below Tier I Industrial Health-based Drinking Water to RBSLs

■ Elevated levels above Tier I Industrial Health-based Drinking Water to RBSLs

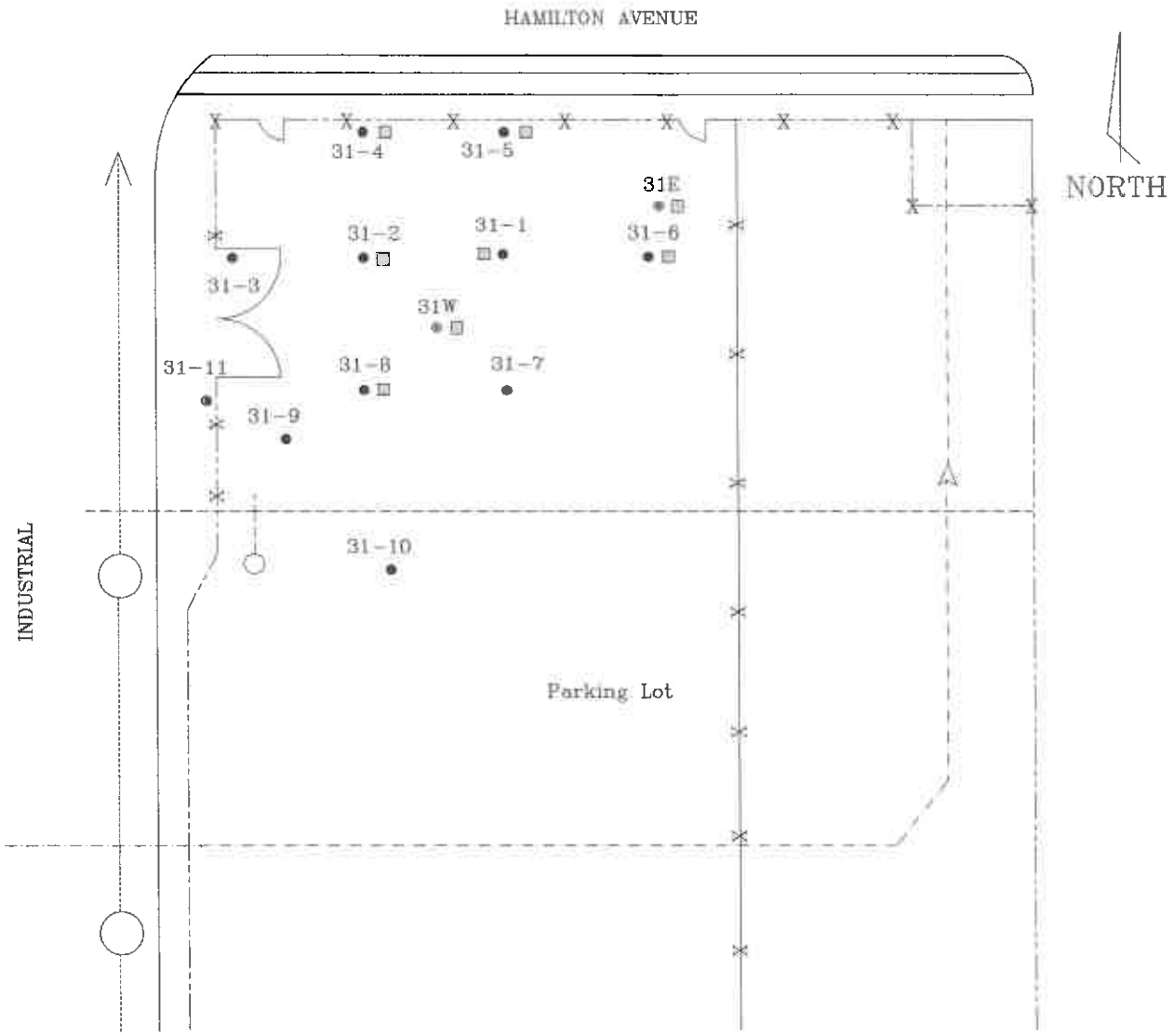
LEGEND:

- ● Geoprobe Sample Locations
- ---- Fire Protection Line
- ..... Storm Sewer Line
- - - - 4" Process Waste
- —x— Fence

GM CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: LEAD
BUILIDNG 31
TANKS 081/31T - 091/31T

DATE: 8/13/96	SCALE: 1"=40'
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 20D
	PROJECT NUMBER. F174



□ Not Sampled

▨ Not Detected

■ Elevated levels below Tier I Industrial Health-based Drinking Water to RBSLs

■ Elevated levels above Tier I Industrial Health-based Drinking Water to RBSLs

LEGEND:

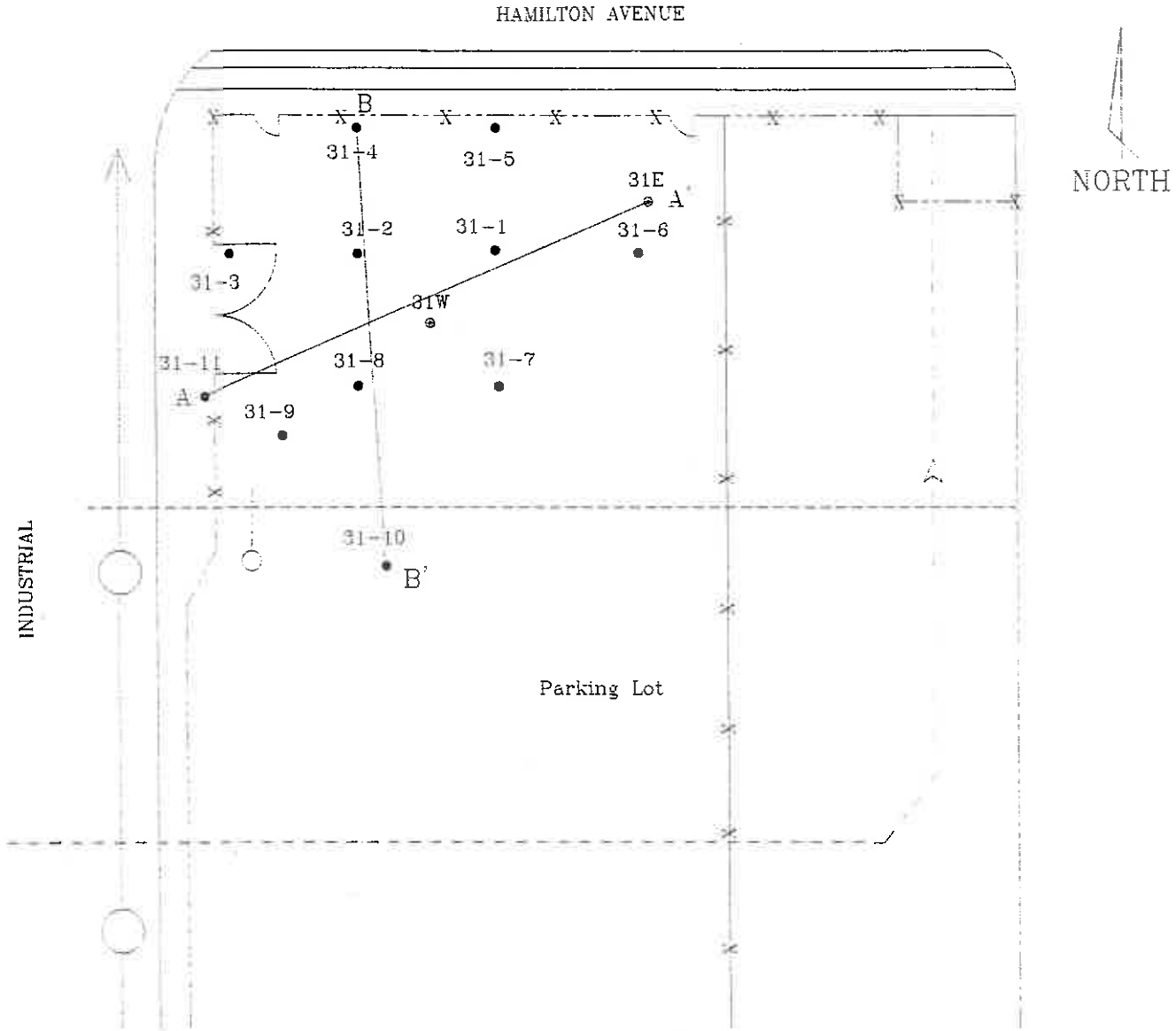
- ● Geoprobe Sample Locations
- ---- Fire Protection Line
- ..... Storm Sewer Line
- – – – 4" Process Waste
- —x— Fence

GM CLCD NORTH

TITLE: GROUNDWATER CONCENTRATION MAP: GLYCOL, BUILDING 31 TANKS 081/31T – 091/31T

DATE: 8/13/96	SCALE: 1"=40'
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER:20E
	PROJECT NUMBER: F174

ATTACHMENT 21

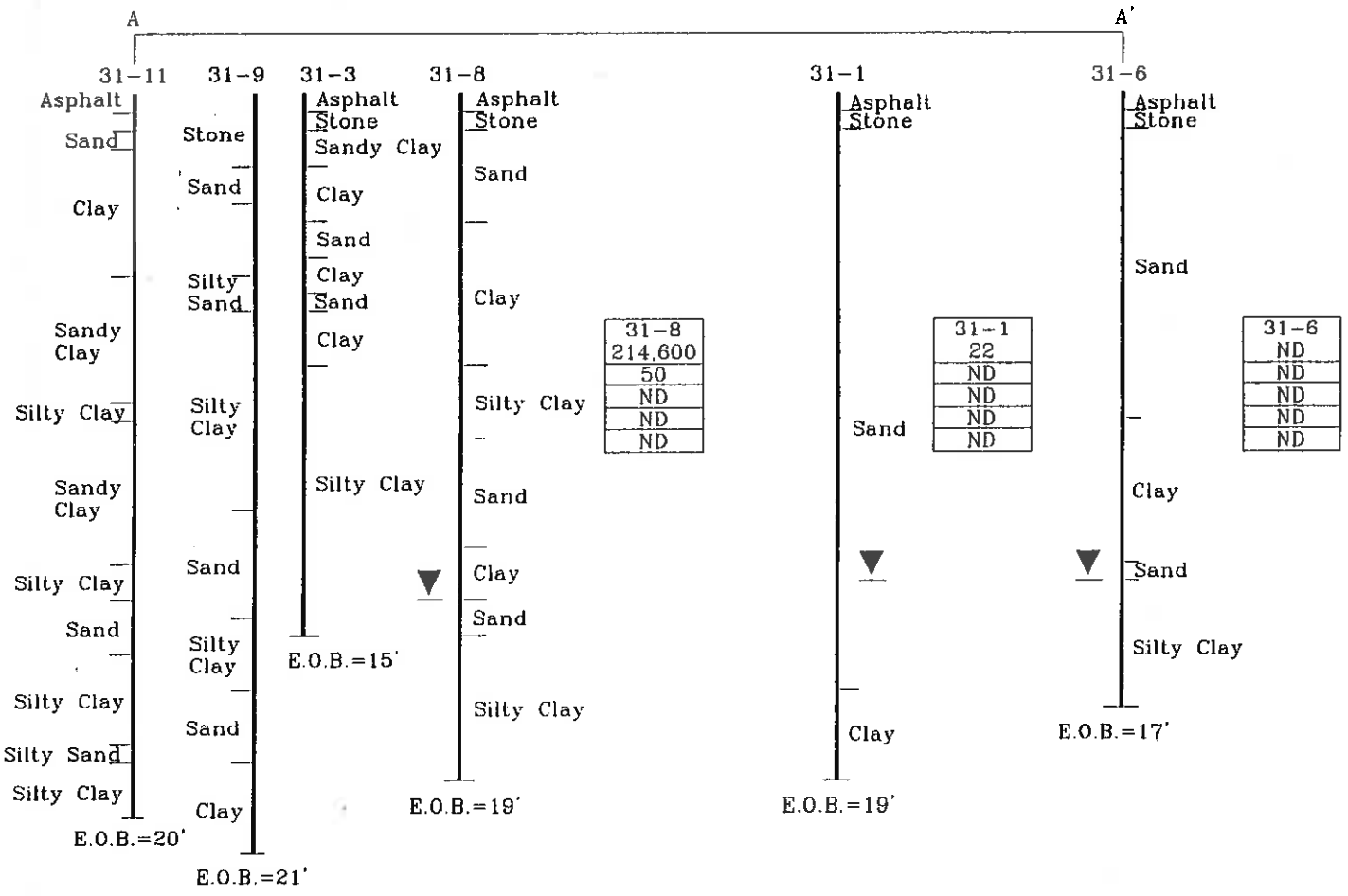


LEGEND:

- Geoprobe Sample Locations
- Fire Protection Line
- Storm Sewer Line
- 4" Process Waste
- Fence

GM-CLCD NORTH

TITLE: CROSS SECTION LOCATION DIAGRAM BUILDING 31 TANKS 081/31T -- 091/31T	
DATE: 8/13/96	SCALE: 1"=40'
Global Environmental Engineering Inc.	APPROVED BY: A.L.K.
	PREPARED BY: C.G.S.
	ATTACHMENT NUMBER: 21a
	PROJECT NUMBER: F174



Global Environmental Engineering Inc.

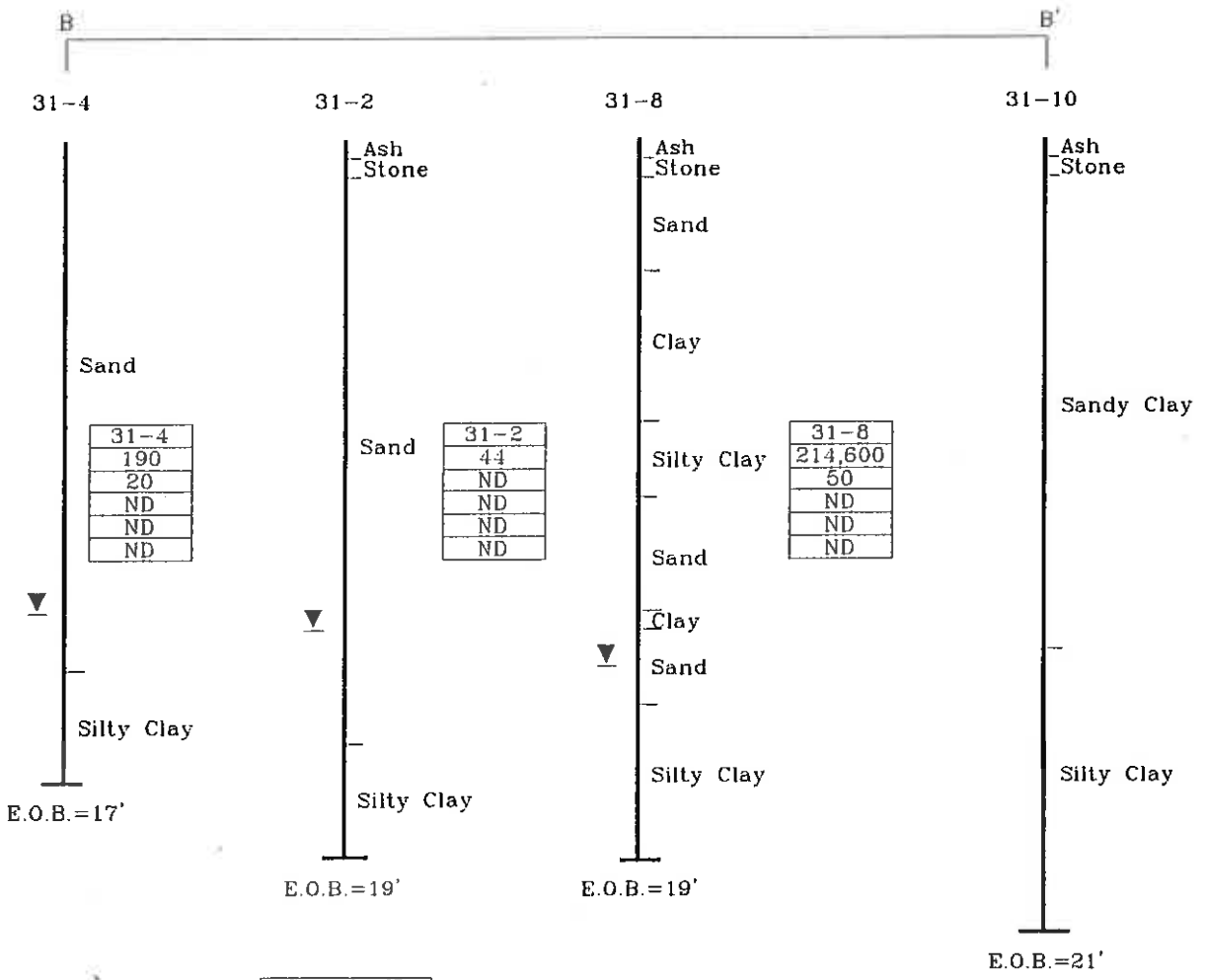
CROSS SECTIONAL DIAGRAM A – A'
GM-CLCD NORTH – BUILDING 31
GROUNDWATER ANALYTICAL

DATE: 4/12/95

PREPARED BY: C.G.S.

ATTACHMENT NUMBER: 21b

PROJECT NUMBER: F174



Global Environmental Engineering Inc.

CROSS SECTIONAL DIAGRAM B – B'
GM-CLCD NORTH – BUILDING 31
GROUNDWATER ANALYTICAL

DATE: 4/12/95

PREPARED BY: C.G.S.

ATTACHMENT NUMBER: 21c

PROJECT NUMBER: F174

ATTACHMENT 29

ATTACHMENT 29
NAO FLINT OPERATIONS
HAMILTON AVENUE TANK FARM (BUILDING 31)

WORK PLAN AND IMPLEMENTATION SCHEDULE

Hydrogeologic Study

Four groundwater monitoring wells will be installed, one in the area of greatest contamination, two downgradient, and one upgradient. Soil samples from the borings will be field-screened, and two samples from each boring will be submitted for laboratory analysis. 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. In addition, soil samples from the borings will be field-screened, and two samples from each boring will be submitted for laboratory analysis. 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, and lead.

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.