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DEPARTMENT OF NATURAL RESOURCES

STEVENS T MASON BUILDING, PO BOX 30028, LANSING MI 48909-7528

ROLAND HARMES, Director

REPLY TO:  
SHIAWASSEE DISTRICT HEADQUARTERS  
10650 S BENNETT DR  
MORRICE MI 48857-9792

Shiawassee District Office  
10650 S. Bennett Dr., Morrice, MI 48857

July 18, 1995

Mr. William Schroeck  
DELPHI Energy & Engine Management Systems  
1300 N. Dort Highway  
Flint, MI 48556  
Mail Code: .485201210

Dear Mr. Schroeck:

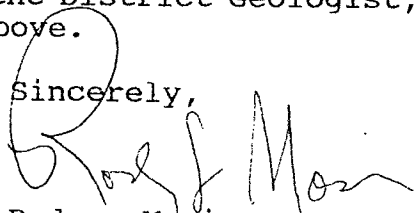
SUBJECT: Residential Cleanup Closure  
Underground Storage Tank Nos. 3, 4, 5, 6, & A  
DELPHI (formerly AC Rochester, Flint West)  
300 N. Chevrolet Ave., Flint, Genesee County

The Michigan Department of Natural Resources (MDNR) has reviewed your closure request for the above referenced site impacted due to release of No. 2 fuel oil from underground storage tanks. Based upon a review of the data presented, the MDNR approves and issues a "Residential Cleanup Closure" for the above location for No. 2 fuel oil.

The MDNR expresses no opinion as to other contaminants beyond those found and remediated as a part of the response activities associated with this release. We make no warranty as to the fitness of this site for any general or specific use and prospective purchasers or users are advised to use due diligence in acquiring or using this site.

Any questions can be directed to the District Geologist, Mr. Farsad Fotouhi, at the address listed above.

Sincerely,

  
Rodney Mosier  
Shiawassee District Supervisor  
Environmental Response Division

FF:RM:ck

# DELPHI

Energy & Engine  
Management Systems

memo

6/20/95

CERTIFIED MAIL

RETURN RECEIPT REQUESTED

Mr. Farsad Fotouhi  
MDNE-ERD  
10650 S. Bennett Ave.  
Morrice, MI 48857

Dear Farsad;

Per your telephone instructions, please find the enclosed Building 37 UST Closure Report, which was resubmitted in February, 1995 to Pam Howd of the MDNR-USTD. Pam's Audit Report (copy enclosed) inadvertently references this site as Building 5, UST 2, Fuel Oil to Heat Building. (Both Building 37 and Building 5 Closure Requests were resubmitted simultaneously). As mentioned in the enclosed letter addressed to Pam Howd, original closure request for Building 37 was submitted in 1992; however, DELPHI (formerly AC Rochester) did not receive final closure certification. Please review and provide same.

Sincerely,

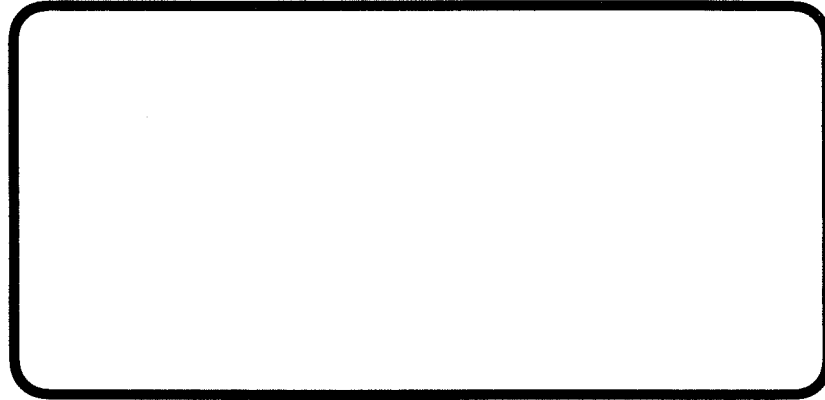


William Schroek  
DELPHI Energy & Engine Management Systems

RECEIVED

JAN 26 1996

BLASLAND, BOUCK & LEE  
BOCA RATON, FL



A CILCORP Company

Environmental  
Science &  
Engineering, Inc.

**ESE No. 590-0872**

**Type B Closure Report  
Building 37  
Underground Storage Tank  
Nos. 3,4,5,6 and A  
AC Rochester Flint West  
Flint, Michigan**

**Location:**

T. 7 N., R. 6 E.  
City of Flint  
Genesee County, Michigan

**Prepared for:**

Mr. Ron Neahusan  
AC Rochester Flint West  
300 N. Chevrolet Avenue  
Flint, Michigan 48555

**Prepared by:**

Environmental Science & Engineering, Inc.  
1099 West Grand River Avenue  
Williamston, Michigan 48895

April 8, 1992



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## 1.0 INTRODUCTION

Environmental Science & Engineering, Inc. (ESE), formerly Hunter/Keck, is submitting this document on behalf of AC Rochester to obtain closure for former underground storage tanks (UST) Nos. 3, 4, 5, 6 and A located near Building 37 within the AC Rochester Flint West Facility. This closure document was prepared consistent with the Type B criteria outlined in the Administrative Rules for the Michigan Environmental Response Act (1982 Public Act 307, as amended). Mr. Ben Hall of the Michigan Department of Natural Resources (MDNR) gave approval to proceed with a Type B closure application at this site during an August 23, 1991 telephone conference call with AC Rochester personnel.

UST removal, excavation sampling and characterization of this site were described in previous reports entitled, "Report of Phase I Underground Storage Tanks Compliance Program, AC Rochester Flint West . . ." (August 31, 1989) and "Detailed Site Evaluation, Building 37, Underground Storage Tanks Nos. 3, 4, 5, 6 and A . . ." (April 5, 1991).

## 2.0 SITE DESCRIPTION

AC Rochester Flint West is a 194-acre manufacturing complex located in Flint, Michigan (Figure 1). This complex is comprised of 31 buildings, having a total area of approximately 3,190,210 square feet and is bisected by the concrete-channelized Flint River (Figure 2). This facility produces metal and plastic automobile components for General Motors Corporation (GMC) and has been operating since the 1910s.

The subject site is located between the Primary Switch House (Building 37) and the Oil Pump House located just north of the Flint River on the west side of Chevrolet Avenue (Figure 3). The study area is the former location of USTs 3, 4, 5, 6 and A.

## 3.0 BACKGROUND

### 3.1 UST Removal

AC Rochester Flint West began a UST removal program in May 1989, in order to bring its facility into full compliance with UST regulations. The UST system, located east of Building 37, consisted of four 50,000-gallon steel USTs. Two of the tanks were installed in 1972 and two in 1974. The tanks stored No. 2 fuel oil used to fire the boilers of the facility powerhouse (Building 11) indicated on Figure 2. The oil pump house (Building 44) contained the pumps and the meters for these tanks.

Marine Pollution Control (MPC) was retained by AC Rochester Flint West to empty, clean and vapor purge all USTs prior to removal. All liquid wastes generated during tank cleaning were hauled to the facility's industrial wastewater treatment system.

During tank cleaning and site preparation, a 550-gallon fuel oil UST (A) was discovered south of the pump house. This tank was emptied and removed on May 22, 1989. The tank appeared to be in good condition and showed only minimal signs of superficial rust. Soils from the excavated area were screened with an organic vapor analyzer (OVA), none registered above 1 ppm. A total of three soil samples were collected from the excavation related to UST (A) at the locations indicated on Figure 3. Sample Nos. 1 and 2 were taken from the base of the excavation and Sample No. 3 was a composite of the four side walls.

The 50,000-gallon tanks were removed over a period of time from May 22 through June 2, 1989. The tanks were resting on a concrete foundation. The extent of the excavation was restricted to the east by the oil pump house, to the west by sheet piling along Building 37, to the north by the railroad track and to the south by a 46,000-volt underground electrical power line.

All four 50,000-gallon tanks were inspected and found to be in good condition with some superficial rust. The underlying soils above the concrete foundation appeared to be discolored and exhibited OVA readings of 20 to 50 ppm. These soils were excavated down to the concrete foundation and were transported to Venice Park

Development landfill for disposal. A total of approximately 380 cubic yards of soil were transported and disposed of at the landfill.

Seven soil samples and one water sample were collected from the excavation at the locations indicated on Figure 3. Samples 4, 6, 9, and 11 were collected at the corners of the concrete foundation. Sample 6 was a water sample collected from groundwater seeping into the northwest corner of the excavation. Samples 5, 7, 8, and 10 were grab soil samples collected from the middle of each wall. The sampling plan described above was discussed with and approved by Mr. Ben Hall of the MDNR.

Soil samples were submitted for analysis of purgeable aromatic hydrocarbons (benzene, toluene, ethylbenzene, and xylenes) and total petroleum hydrocarbons (TPH) using U.S. EPA Methods 8020 and 418.1, respectively. Soil sample analytical results are indicated in Figure 4 and included in Appendix A.

Purgeable aromatic hydrocarbons were only detected in soil Sample No. 9. This sample, obtained from the southeast corner of the excavation, contained xylenes at a concentration of 810  $\mu\text{g}/\text{kg}$ . It should be noted that the detection limit for Sample No. 7 was increased from the standard 10  $\mu\text{g}/\text{kg}$  to 100  $\mu\text{g}/\text{kg}$ , probably because of dilution performed in response to the elevated TPH concentrations at this location. As a result of this high detection limit, it is not possible to determine if concentrations between 10 and 100  $\mu\text{g}/\text{kg}$  were present in this sample.

TPH was detected in the southeastern portion of the excavation at concentrations of 240, 5100, 520, and 150  $\text{mg}/\text{kg}$  in samples 2, 7, 9 and 10, respectively.

No purgeable aromatic hydrocarbons were detected from the groundwater sample collected at Sample location No. 6. The results of this analysis are presented in Appendix B.

### 3.2 Site Evaluation

Five soil borings (SBs) were completed at the site on May 2 and May 3, 1990, with a drill rig utilizing 4¼-inch ID, continuous flight, hollow-stem augers. A monitoring well was installed in SB-37-4. Soil boring and monitoring well locations are shown in Figure 5.

Soil boring SB-37-5, initially planned for the east side of the Oil Pump House, was moved to the west side to avoid underground utility lines. Soil boring SB-37-2 was to be completed as a monitoring well. Auger refusal above saturation necessitated the drilling of an additional boring, north of SB-37-2, later completed as a monitoring well, designated MW-37-4. Total depths of the soil borings varied in accordance with the subsurface conditions and ranged from 13 to 22 feet. Stratigraphic descriptions and well construction details are shown on the soil boring/well logs presented in Appendix C.

Split-spoon samples of the sediments were collected from each soil boring at 5-foot intervals to saturation. Samples were described and scanned with a Photoionization Detector (PID) to determine the presence of volatile organic compounds (VOCs). A minimum of one soil sample from each boring was retained and submitted for laboratory confirmatory analysis. Split-spoon samplers were thoroughly cleaned using a non-phosphate wash and clean water rinse prior to each sampling event. The soil borings were grouted with granular bentonite to within 1 foot of grade and completed with a cement pad.

Monitoring well MW-37-4 was constructed of galvanized steel casing with a 5-foot, 0.007-inch slot, stainless-steel screen. The screen interval was selected so that a minimum of 2 feet of screen extended above the level of saturation encountered during drilling. The monitoring well is fitted with a 2-inch air-tight locking cap and protected by a flush-mounted well cover, cemented into place. Monitoring well MW-37-4 was bail-developed until relatively sediment-free water was obtained.

### 3.2.1 Soil Analytical Results

Soil samples were submitted for analysis of TPH (U.S. EPA Method 418.1) and purgeable aromatic hydrocarbons (U.S. EPA Method 8020). Laboratory analytical results are summarized in Table 1, illustrated in Figure 6, and presented in Appendix A.

VOCs were not detected in soil samples screened with a PID, except for the 9- to 11-foot sample collected from SB-37-2, and the 9- to 11-foot and 17.5- to 18-foot samples from MW-37-4. The PID readings for these samples were 5.6 ppm, 26 ppm, and 33 ppm, respectively. All PID readings are indicated on the boring/well logs presented in Appendix C. The split-spoon soil samples submitted for analysis were collected from 10-12 feet in SB-37-1, 8.5-10.5 feet in SB-37-2, 17-19 feet in SB-37-3, 12-14 feet in SB-37-5, and the 9- to 11-foot level in the MW-37-4 boring. An additional grab sample from the auger cuttings was collected at the 17.5- to 18.5-foot level and submitted from MW-37-4.

TPH was detected in the soil samples from SB-37-1 and SB-37-2 at concentrations of 85 mg/kg and 200 mg/kg, respectively. The TPH concentrations in the soil samples from MW-37-4 were 1900 mg/kg at 9 to 11 feet and 880 mg/kg at 17.5 to 18 feet. TPH was not detected in any other soil sample submitted for analysis.

Purgeable aromatic hydrocarbons were only detected in soil samples collected from SB-37-5 and the MW-37-4 boring. The soil sample submitted for analysis from SB-37-5 contained toluene (12  $\mu\text{g}/\text{kg}$ ), ethylbenzene (26  $\mu\text{g}/\text{kg}$ ), and total xylenes (164  $\mu\text{g}/\text{kg}$ ). A soil sample collected at 9 - 11 feet bgl from MW-37-4 contained ethylbenzene and xylenes at a concentration of 37  $\mu\text{g}/\text{kg}$  and 72  $\mu\text{g}/\text{kg}$ , respectively. Analysis of a grab sample, MW-37-4 (17.5 to 18 feet), resulted in the detection of 30  $\mu\text{g}/\text{kg}$  of ethylbenzene and 56  $\mu\text{g}/\text{kg}$  total xylenes.

### 3.2.2 Water Analytical Results

A groundwater sample was collected from MW-37-4 on June 6, 1990; February 18, 1991; July 24, 1991; and September 10, 1991. Water samples collected during the 1990 sampling event were analyzed for purgeable aromatic hydrocarbons, and TPH by U.S. EPA Method 418.1. Samples collected in July and September 1991 were

analyzed for PNAs instead of TPH. Analytical results are summarized in Table 2 and presented in Appendix B.

The first water sample collected on June 6, 1990, from MW-37-4 contained 2.4  $\mu\text{g}/\text{l}$  of benzene. Subsequent sampling events conducted on February 18, July 24, and September 10, 1991, have not resulted in the detection of benzene or any other purgeable aromatic hydrocarbon. TPH and PNAs, also have not been identified in water samples collected from MW-37-4.

Mr. Ben Hall of the MDNR collected duplicate samples from MW-37-4 on September 10, 1991. This sample was submitted to the WW Engineering & Science, Inc, Environmental Laboratory Division for analysis of volatile organic compounds by the MDNR Scan 1 and Scan 2 methods. These analyses resulted in the detection of 1  $\mu\text{g}/\text{l}$  of toluene, but no other volatile organic compound.

## 4.0 GEOLOGY AND HYDROGEOLOGY

The subsurface soils encountered around the former UST system appear to primarily be fill material composed of sand and clay with occasional coal and wood debris. The fill material is frequently black and extends to a minimum depth of 19 feet in some areas. Auger refusal was encountered at a depth of 13 feet at SB-37-1 and SB-37-2 on what is assumed to be part of the concrete channel for the Flint River. Detailed soil descriptions are indicated in the boring logs presented in Appendix B.

Groundwater is present at a depth of approximately 17-18 feet at this site and is anticipated to be flowing south toward the Flint River. Water supply well logs from the AC Rochester facility indicate that bedrock is encountered at depths of approximately 30 to 50 feet bgl and consists of interbedded shales and sandstones of the Pennsylvanian age Saginaw Formation. The well log nearest to Building 37, shows 25 to 30 feet of hard pan underlain by 8 feet of sand and gravel overlying a white sandstone.

According to AC Rochester personnel, the water supply wells were drilled in the 1930s but have not been utilized since the entire facility was converted to the municipal water system in the 1960s. The log for the water well nearest to Building 37 is included as Appendix D. According to the Genesee County Health Department no domestic water supply wells are operating within the Flint City limits.

## 5.0 DISCUSSION

TPH was identified in soil samples from the base and sidewalls of the excavation and from soil borings in the southeastern portion of this site at concentrations ranging from 85 to 5100 mg/kg. Although TPH was detected in several soil samples, recent studies have indicated that the U.S. EPA Method 418.1 is inherently inaccurate and its usage to establish cleanup guidelines has been questioned. Also, apparently, the TPH in the soils are not available for release to the groundwater, based on the lack of TPH detections in a water sample collected from MW-37-4 on June 8, 1990. PNAs also were not detected in groundwater samples collected on July 24 and September 10, 1991.

Xylenes, ethylbenzene, and toluene were also detected in soil samples in the southeastern portion of the former UST area at concentrations of 56-810  $\mu\text{g}/\text{kg}$ , 26-37  $\mu\text{g}/\text{kg}$  and 12  $\mu\text{g}/\text{kg}$ , respectively. All of these compounds were present at concentrations significantly lower than the current MDNR established Type B action levels for xylenes (6,000  $\mu\text{g}/\text{kg}$ ), ethylbenzene (1,400  $\mu\text{g}/\text{kg}$ ), and toluene (16,000  $\mu\text{g}/\text{kg}$ ). Purgeable aromatic hydrocarbons have not been detected in groundwater samples collected from MW-37-4, located downgradient of the former UST area, with the exception of a benzene detection (2.4  $\mu\text{g}/\text{l}$ ), from the initial sampling event and toluene identified at a concentration of 1  $\mu\text{g}/\text{l}$  in September 1991. Subsequent analysis of groundwater samples collected on February 18, July 24, and September 10, 1991, have not identified benzene. The presence of low levels of benzene in the initial sample is questionable, considering the lack of detections in subsequent samples, the fact that benzene is not a common constituent of fuel oil and the lack of benzene detections in soil samples at this site. Toluene identified at the detection limit in the sample collected by the MDNR in September 1991 was not detected in a duplicate sample collected by ESE.

The local groundwater apparently has not been significantly impacted by fuel oil components according to data obtained during this investigation. Also, apparently the TPH and purgeable aromatic hydrocarbons are not mobilizing from the soils in significant concentrations into the local, shallow groundwater. The channelized nature of the Flint River and the concrete cover at this site act to isolate the native

and backfill soils from surface water runoff, the Flint River, and direct human contact. The chances of any significant impact to surface waters through runoff or infiltration into the Flint River are remote.

## 6.0 SUMMARY

ESE, on behalf of AC Rochester Flint West, is petitioning for a Type B closure for former UST Nos. 3, 4, 5, 6, and A located east of Building 37, for the following reasons:

- Purgeable aromatic hydrocarbons were not present at concentrations exceeding the current MDNR Type B cleanup levels in soil samples collected from the base and sidewalls of the excavation and from proximal soil borings.
- TPH was detected in soil samples from the southeastern portion of the site, but further excavation is not feasible due to the presence of a power line to the south and a building and bridge to the east.
- TPH and PNAs have not been detected in groundwater samples collected from monitoring well MW-37-4 located downgradient of the former USTs.
- Benzene was detected at a concentration of 2.4  $\mu\text{g}/\text{l}$  in an initial groundwater sample collected from MW-37-4, but has not been identified in subsequent samples. Toluene was present at a concentration of 1  $\mu\text{g}/\text{l}$  in a sample collected in September 1991, significantly below the current MDNR Type B clean-up level of 800  $\mu\text{g}/\text{l}$ .
- The concrete banks of the Flint River and the concrete surface cover at this site eliminate any direct contact of the soils with the river water, surface water runoff, or the public. The site is secured with a locking gate and perimeter fence. In addition, there is no significant plant or animal life within the industrial facility that might come in contact with the soils at this site.

**TABLE 1**

**SOIL QUALITY RESULTS**

**AC ROCHESTER FLINT WEST**  
**BUILDING 37**  
**FORMER UST NOS. 3, 4, 5, 6 AND A**

BTEX AND TPH						
Soil Boring/ Monitoring Well	Benzene ( $\mu\text{g}/\text{kg}$ )	Toluene ( $\mu\text{g}/\text{kg}$ )	Ethylbenzene ( $\mu\text{g}/\text{kg}$ )	Xylenes ( $\mu\text{g}/\text{kg}$ )	Total BTEX ( $\mu\text{g}/\text{kg}$ )	TPH ( $\text{mg}/\text{kg}$ )
SB-37-1 (10-12 ft)	ND	ND	ND	ND	ND	85
SB-37-2 (8.5-10.5 ft)	ND	ND	ND	ND	ND	200
SB-37-3 (17-19 ft)	ND	ND	ND	ND	ND	ND
MW-37-4 (9-11 ft)	ND	ND	37	72	109	1,900
MW-37-4 (17.5-18 ft)	ND	ND	30	56	86	880
SB-37-5 (12-14 ft)	ND	12	26	164	202	ND

ND = Not Detected  
 NA = Not Analyzed

Laboratory Utilized - SEG Laboratory, Lansing, Michigan  
 Detection Limits - BTEX = 10  $\mu\text{g}/\text{kg}$ , TPH = 10  $\text{mg}/\text{kg}$ , and PNA = 330  $\mu\text{g}/\text{kg}$

**TABLE 2**

**GROUNDWATER QUALITY RESULTS**

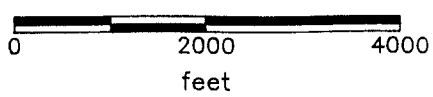
**AC ROCHESTER FLINT WEST**  
**BUILDING 37**  
**FORMER UST NOS. 3, 4, 5, 6, AND A**

ANALYTE	METHOD	MW-37-4			
		06/08/90	02/18/91	07/24/91	09/10/91
Benzene ( $\mu\text{g/l}$ )	U.S. EPA 602	2.4	ND	ND	ND
Toluene ( $\mu\text{g/l}$ )	U.S. EPA 602	ND	ND	ND	ND
Ethylbenzene ( $\mu\text{g/l}$ )	U.S. EPA 602	ND	ND	ND	ND
Xylenes ( $\mu\text{g/l}$ )	U.S. EPA 602	ND	ND	ND	ND
TPH (mg/l)	U.S. EPA 418.1	ND	NA	NA	NA
PNA ( $\mu\text{g/l}$ )	U.S. EPA 8270	NA	NA	ND	ND

**ND = Not Detected**  
**NA = Not Analyzed**

**Laboratory Utilized - SEG Laboratory, Lansing, Michigan**  
**Detection Limits - BTEX = 1  $\mu\text{g/l}$ , PNA = 10  $\mu\text{g/l}$ , TPH = 1 mg/l**

Figure 1

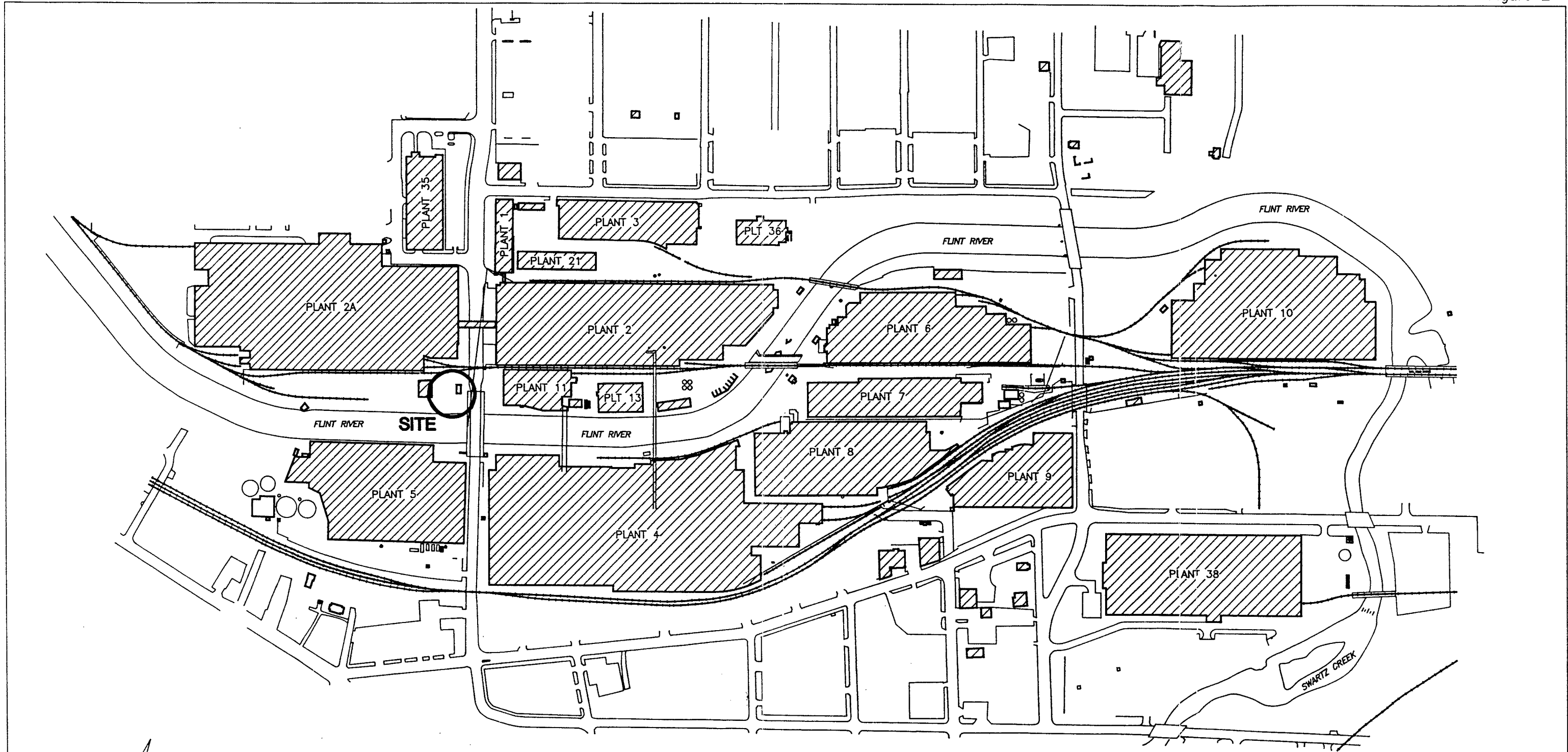


**Facility Location**  
**AC Rochester**  
**Flint West Facility**  
 T.7N, R.6E,  
 City of Flint  
 Genesee County, Michigan



Environmental  
 Science &  
 Engineering, Inc.

Project #590-0870  
 Adapted from USGS 7.5' topographic quadrangles: Flint North & Flint South, Michigan, 1975.



**Study Area Location**  
**Building #37**  
**AC Rochester-Flint West Facility**  
 City of Flint  
 Genesee County, Michigan

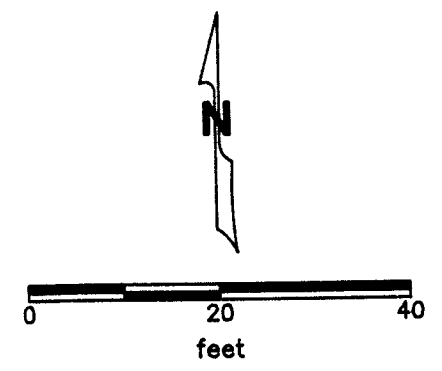
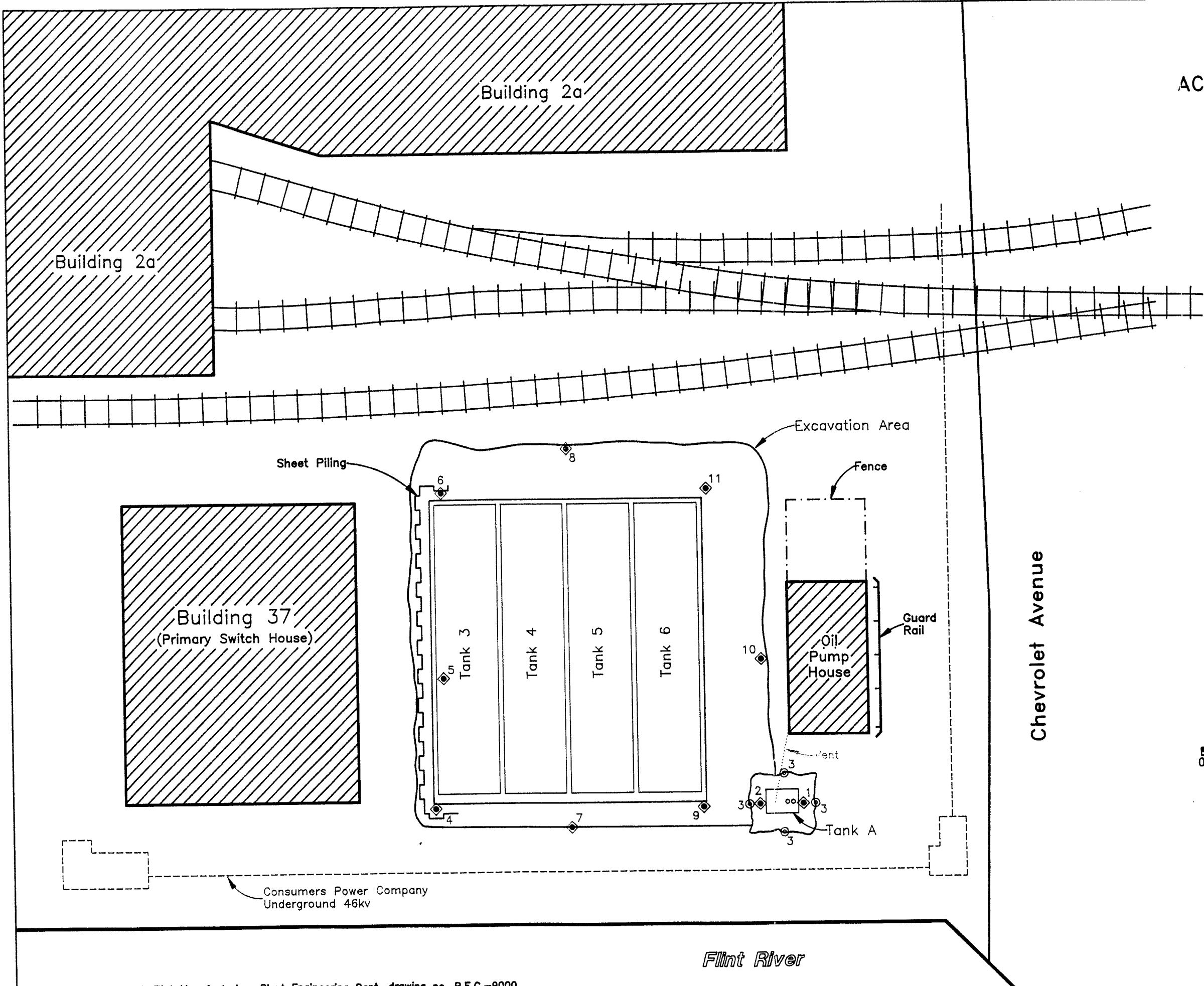
**ESE** Environmental Science & Engineering, Inc.  
 DVL 08/22/90 590-0872  
 Revised DVL 09/10/90 ocflint

VB 7023

# UST Excavation Sample Locations

AC Rochester/Flint West Facility  
Former USTs at Building 37  
T.7N., R.6E.,  
Genesee County,  
Flint, Michigan

- ◆ Grab Sample Location
- ⊙ Composite Grab Sample of Excavation Side Walls

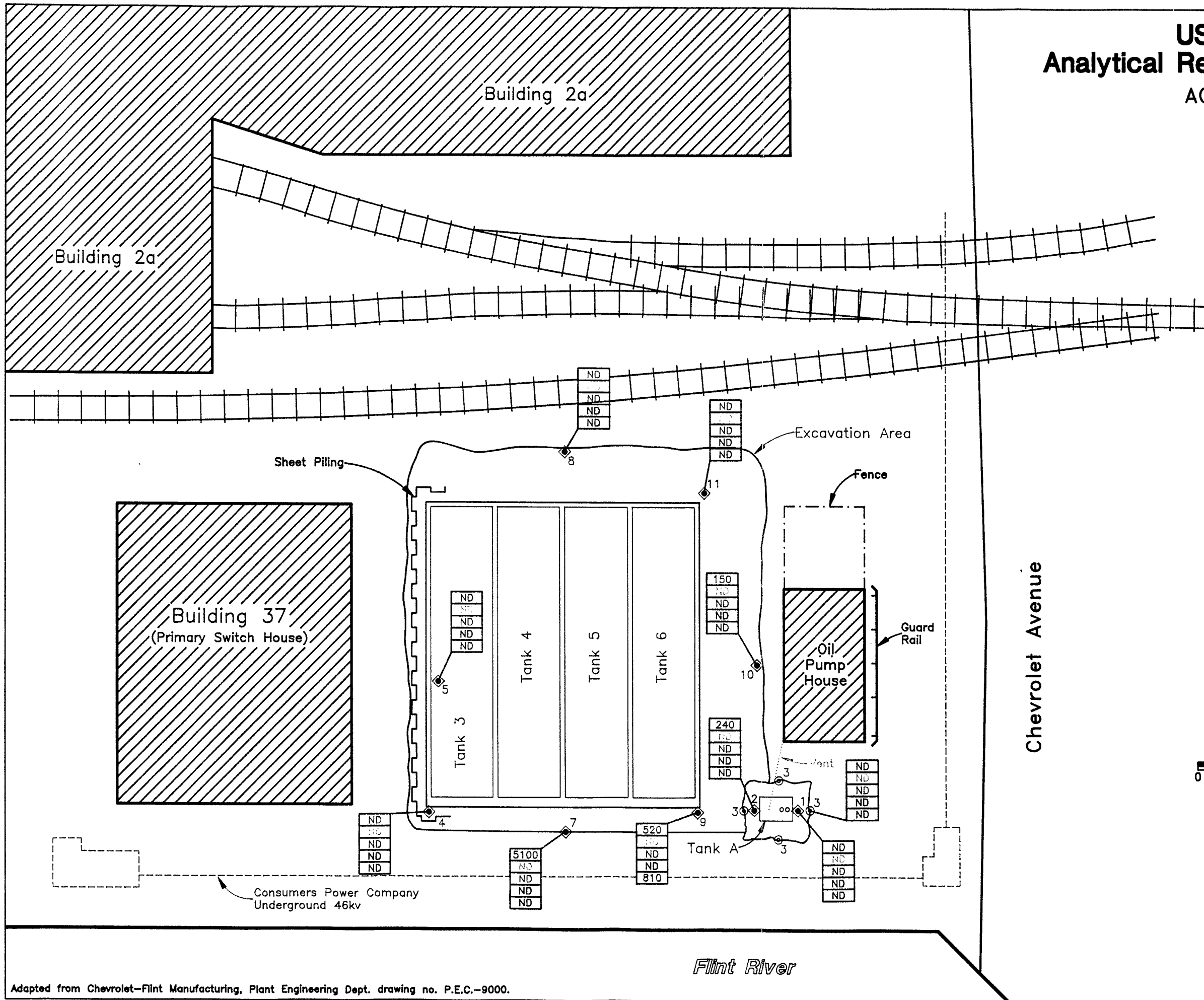


Adapted from Chevrolet-Flint Manufacturing, Plant Engineering Dept. drawing no. P.E.C.-9000.

# UST Excavation Soil Sample Analytical Results - May & June, 1989

AC Rochester/Flint West Facility  
Former USTs at Building 37

T.7N., R.6E.,  
Genesee County,  
Flint, Michigan



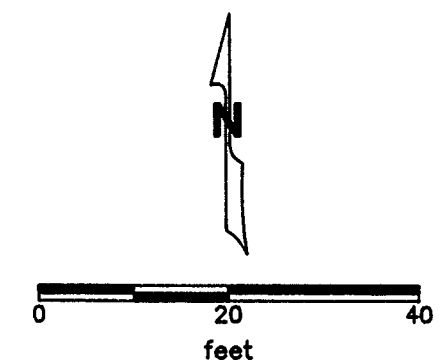
- ◆ Grab Sample Location
- ⊙ Composite Grab Sample of Excavation Side Walls

**Soil Sample Analytical Results:**

ND	Total Petroleum Hydrocarbons (mg/kg)
ND	Benzene (µg/kg)
ND	Toluene (µg/kg)
ND	Ethylbenzene (µg/kg)
ND	Total Xylenes (µg/kg)

ND Not Detected

NOTE: Samples taken on 5/22, 5/24 & 6/2, 1989.

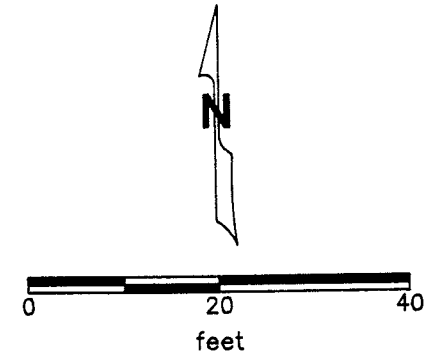
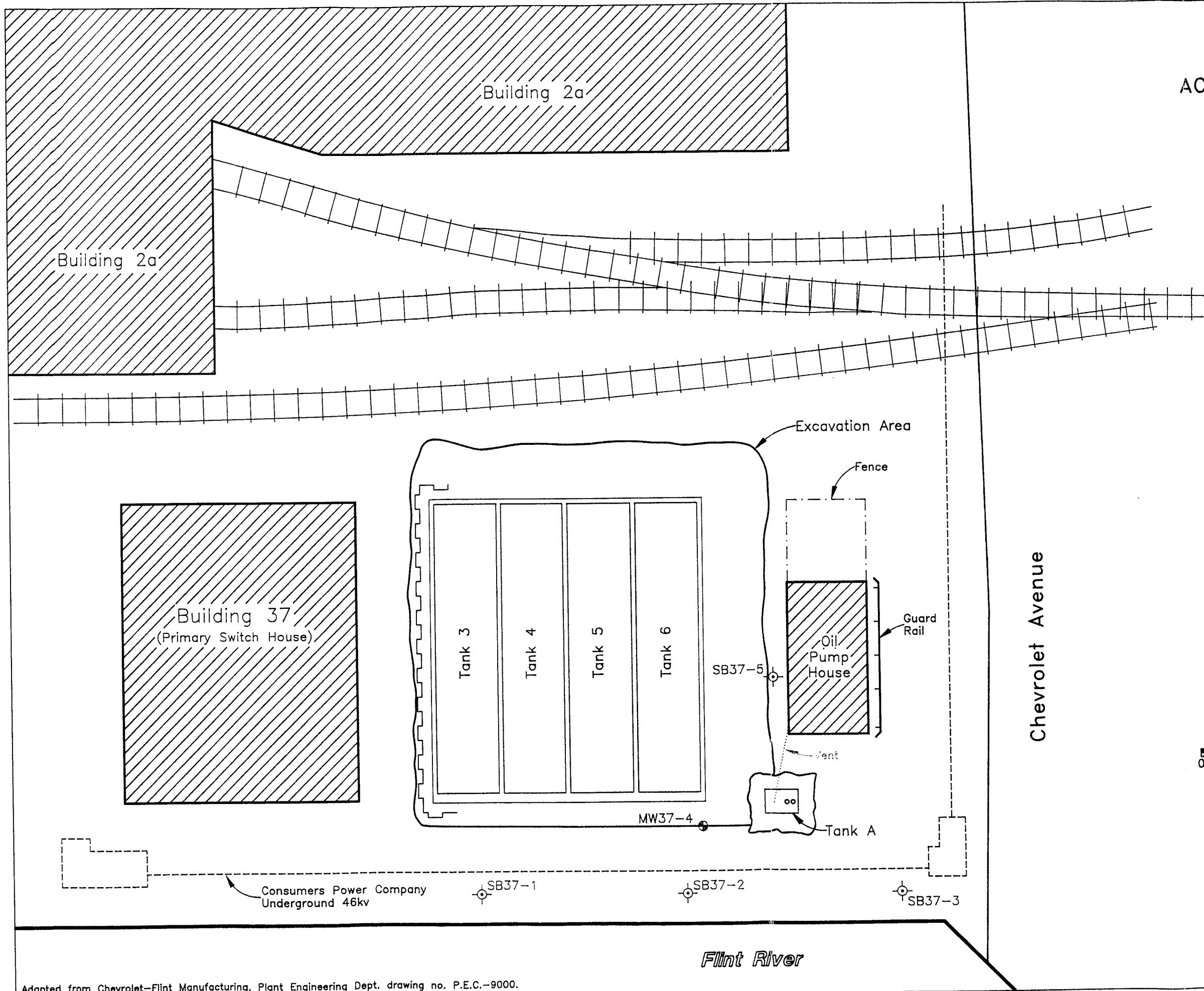


Adapted from Chevrolet-Flint Manufacturing, Plant Engineering Dept. drawing no. P.E.C.-9000.

# Soil Boring and Monitoring Well Locations

AC Rochester/Flint West Facility  
Former USTs at Building 37  
T.7N., R.6E.,  
Genesee County,  
Flint, Michigan

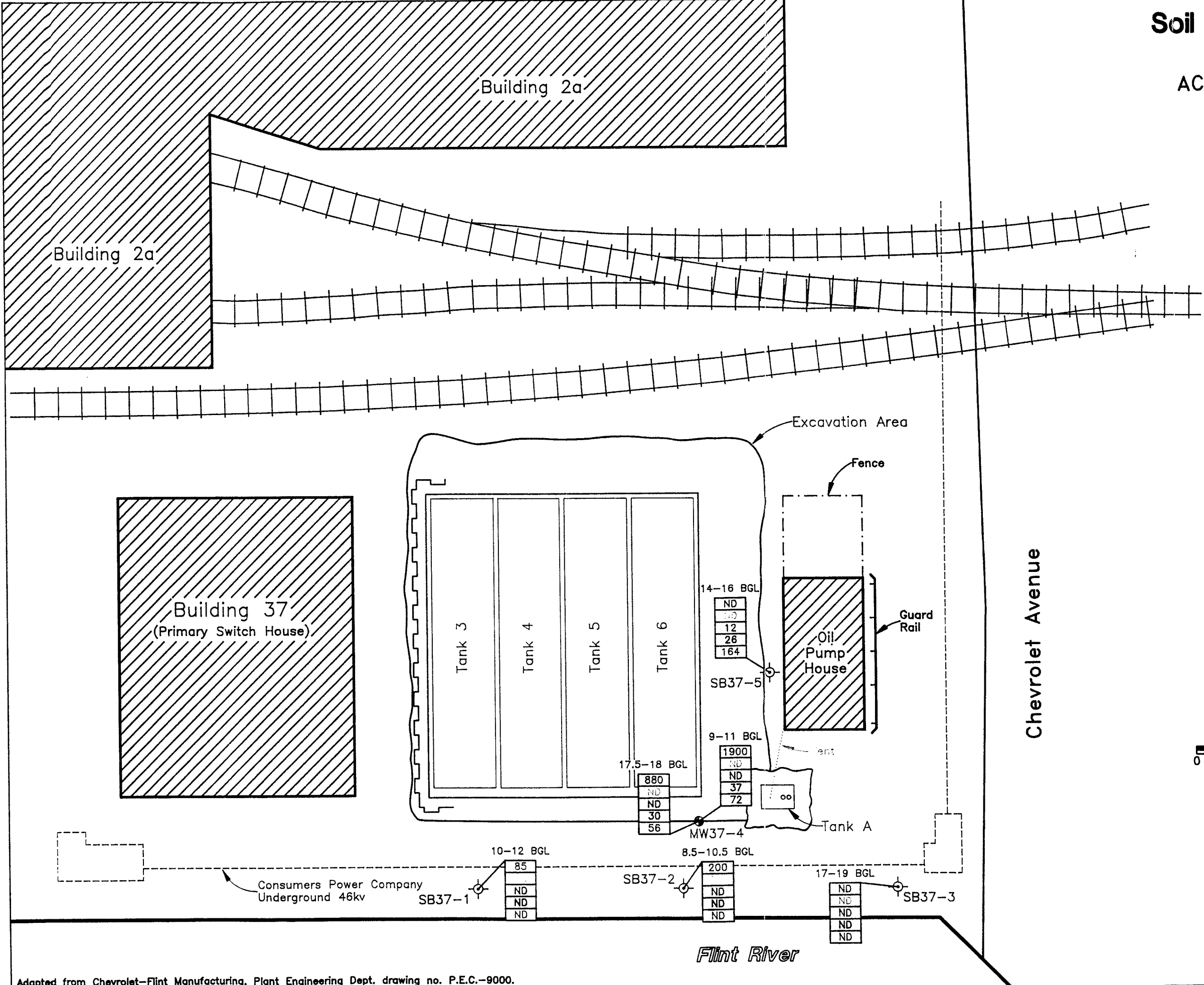
- Monitoring Well Location
- ⊕ Soil Boring Location



Adapted from Chevrolet-Flint Manufacturing, Plant Engineering Dept. drawing no. P.E.C.-9000.

# Soil Sample Analytical Results May 2 & 3, 1990

AC Rochester/Flint West Facility  
Former USTs at Building 37  
T.7N., R.6E.,  
Genesee County,  
Flint, Michigan



- ⊕ Monitoring Well Location
- ⊙ Soil Boring Location

Soil Sample Analytical Results:

BGL Depth Below Ground Level (feet)

ND	Total Petroleum Hydrocarbons (mg/kg)
ND	Benzene (μg/kg)
ND	Toluene (μg/kg)
ND	Ethylbenzene (μg/kg)
ND	Total Xylenes (μg/kg)

ND Not Detected

Adapted from Chevrolet-Flint Manufacturing, Plant Engineering Dept. drawing no. P.E.C.-9000.

GENERAL

SOIL ANALYSIS RESULTS

# SEG LABORATORIES, INC.

Hunter/Keck Inc.  
 1099 West Grand River  
 Williamston, MI 48895  
 Mr. Michael T. Hebert

LOCATION: Pit 37, East of Bldg 37  
 UST 1d, Bldg 37 No. UST3, UST4, UST5, UST6, USTA

Location	Lab No	Time Sampled	Date Sampled	Date Received
1	5262		5/22/89	5/22/89
2	5263		5/22/89	5/22/89
3	5264		5/22/89	5/22/89
4	5426		5/22/89	5/25/89

TEST	UNITS	LAB NO. 5262	LAB NO. 5263	LAB NO. 5264	LAB NO. 5426
Petroleum Hydrocarbons	ug/kg	<50	240	<50	<50
Total Solids	%	94	94	94	94
BTEX Compounds					
Benzene	ug/kg	<10	<10	<10	<10
Toluene	ug/kg	<10	<10	<10	<10
Ethylbenzene	ug/kg	<10	<10	<10	<10
p-Xylene	ug/kg	<10	<10	<10	<10
m-Xylene	ug/kg	<10	<10	<10	<10
o-Xylene	ug/kg	<10	<10	<10	<10

LOCATION: Plt 37, East of Bldg 37

UST Id, Bldg 37 No. UST3, UST4, UST5, UST6, USTA

Location	Lab No	Time Sampled	Date Sampled	Date Received
5	5425		5/24/89	5/25/89
7	5543		5/22/89	5/22/89
8	5544			

TEST	UNITS	LAB NO. 5425	LAB NO. 5543	LAB NO. 5544
Petroleum Hydrocarbons	ug/kg	<50	5100	<50
Total Solids	%	87	85	90
BTEX Compounds				
Benzene	ug/kg	<10	<100	<10
Toluene	ug/kg	<10	<100	<10
Ethylbenzene	ug/kg	<10	<100	<10
p-Xylene	ug/kg	<10	<100	<10
m-Xylene	ug/kg	<10	<100	<10
o-Xylene	ug/kg	<10	<100	<10

LOCATION: Plt 37, East of Bldg 37

UST Id, Bldg 37 No. UST3, UST4, UST5, UST6, UST7

Location	Lab No	Time Sampled	Date Sampled	Date Received
9	5648		6/02/89	6/05/89
10	5649		6/02/89	6/05/89
11	5650		6/02/89	6/05/89
Infill Sand	5651		6/02/89	6/05/89

TEST	UNITS	LAB NO. 5648	LAB NO. 5649	LAB NO. 5650	LAB NO. 5651
Petroleum Hydrocarbons	ug/kg	520	150	<50	<50
Total Solids	z	88	92	85	96
BTEX Compounds					
Benzene	ug/kg	<10	<10	<10	<10
Toluene	ug/kg	<10	<10	<10	<10
Ethylbenzene	ug/kg	<10	<10	<10	<10
p-Xylene	ug/kg	810	<10	<10	<10
m-Xylene	ug/kg	<10	<10	<10	<10
o-Xylene	ug/kg	<10	<10	<10	<10



SEG LABORATORIES, INC.

ESE  
 4000 TOWN CENTER, Ste. 606  
 SOUTHFIELD, MI 48075  
 ATTN: MR. GUS GEORGE

Location	Lab No	Time Sampled	Date Sampled	Date Received
SB 37-1 SSS-2 10-12' AC FLINT WEST	15104		05/02/90	05/07/90
SB 37-2 SSS-2 8.5-10.5' AC FLINT WEST	15106		05/02/90	05/07/90
SB 37-3 SSS-4 17-19' AC FLINT WEST	15110		05/02/90	05/07/90
SB 37-4 SSS-2 9-11' AC FLINT WEST	15112		05/02/90	05/07/90

ANALYTICAL REPORT  
 DATE REPORTED 05/25/90

TEST	UNITS	LAB NO. 15104	LAB NO. 15106	LAB NO. 15110	LAB NO. 15112
Petroleum Hydrocarbons	ug/kg	85	200	<10	1,900
PURGEABLE AROMATICS		EPA 8020	EPA 8020	EPA 8020	EPA 8020
Benzene	ug/kg	<10	<10	<10	<10
Toluene	ug/kg	<10	<10	<10	<10
Ethylbenzene	ug/kg	<10	<10	<10	37
Chlorobenzene	ug/kg	<10	<10	<10	<10
1,3-Dichlorobenzene	ug/kg	<10	<10	<10	<10
1,4-Dichlorobenzene	ug/kg	<10	<10	<10	<10
1,2-Dichlorobenzene	ug/kg	<10	<10	<10	<10
p-Xylene	ug/kg	<10	<10	<10	<10
m-Xylene	ug/kg	<10	<10	<10	36
o-Xylene	ug/kg	<10	<10	<10	36

Location	Lab No	Time Sampled	Date Sampled	Date Received
SB 37-4 GRAB 17.5-18' AC FLINT WEST	15114		05/02/90	05/07/90
SB 37-5 SSS-3 14-16' AC FLINT WEST	15118		05/03/90	05/07/90

ANALYTICAL REPORT  
DATE REPORTED 05/25/90

TEST	UNITS	LAB NO. 15114	LAB NO. 15118
Petroleum Hydrocarbons	ug/kg	880	<10
PURGEABLE AROMATICS		EPA 8020	EPA 8020
Benzene	ug/kg	<10	<10
Toluene	ug/kg	<10	12
Ethylbenzene	ug/kg	30	26
Chlorobenzene	ug/kg	<10	<10
1,3-Dichlorobenzene	ug/kg	<10	<10
1,4-Dichlorobenzene	ug/kg	<10	<10
1,2-Dichlorobenzene	ug/kg	<10	<10
p-Xylene	ug/kg	28	60
m-Xylene	ug/kg	28	60
o-Xylene	ug/kg	<10	44

PROJECT MANAGER Lois O'Vacko

100-1000-15

100-1000-15

# SEG

SEG LABORATORIES, INC.

ESE  
 4000 TOWN CENTER, Ste. 606  
 SOUTHFIELD, MI 48075  
 ATTN: MR. GUS GEORGE

Location	Lab No	Time Sampled	Date Sampled	Date Received
37-4 590-0872 AC ROCHESTER	16361		06/08/90	06/11/90

ANALYTICAL REPORT  
 DATE REPORTED 07/09/90

TEST	UNITS	LAB NO. 16361
Petroleum Hydrocarbons	ug/L	<1.0
BTEX COMPOUNDS		
		EPA 602
Benzene	ug/L	2.4
Toluene	ug/L	<1.0
Ethylbenzene	ug/L	<1.0
p-Xylene	ug/L	<1.0
m-Xylene	ug/L	<1.0
o-Xylene	ug/L	<1.0

PROJECT MANAGER *Levi O. Vachon*

LOCATION: Plt 37, East of Bldg 37  
UST Id, Bldg 37 No. UST3, UST4, UST5, UST6, USTA

Location	Lab No	Time Sampled	Date Sampled	Date Received
6	5424		5/24/89	5/25/89

TEST	UNITS	LAB NO. 5424
------	-------	--------------

BTEX Compounds

Benzene	ug/L	<1.0
Toluene	ug/L	<1.0
Ethylbenzene	ug/L	<1.0
p-Xylene	ug/L	<1.0
m-Xylene	ug/L	<1.0
o-Xylene	ug/L	<1.0

PROJECT MANAGER   
LORI A. VACHON



SEG LABORATORIES, INC.

SEG LABORATORIES, INC.  
1120 MAY STREET  
LANSING, MI 48906  
PHONE - 517-374-6800

ENVIRONMENTAL SCIENCE & ENG.  
1099 WEST GRAND RIVER AVENUE  
WILLIAMSTON, MICHIGAN 48895  
Attn: MR. JAMES GUENTERT

PROJECT NUMBER

Location	Lab No	Time Sampled	Date Sampled	Date Received
MW-P37-4 AC ROCH WEST BLDG 37 590-0872	23915	0	02/18/91	02/19/91

ANALYTICAL REPORT  
DATE REPORTED 02/21/91

TEST	UNITS	LAB NO. 23915
PURGEABLE AROMATICS		EPA 602
Benzene	ug/L	<1.0
Toluene	ug/L	<1.0
Ethylbenzene	ug/L	<1.0
Chlorobenzene	ug/L	<1.0
1,3-Dichlorobenzene	ug/L	<1.0
1,4-Dichlorobenzene	ug/L	<1.0
1,2-Dichlorobenzene	ug/L	<1.0
p-Xylene	ug/L	<1.0
m-Xylene	ug/L	<1.0
o-Xylene	ug/L	<1.0

PROJECT MANAGER *Jacqueline A. Smith*

# SEG

SEG LABORATORIES, INC.

MR. JAMES GUENTERT  
 ENVIRONMENTAL SCIENCE & E  
 1099 WEST GRAND RIVER  
 WILLIAMSTON, MICHIGAN 48895

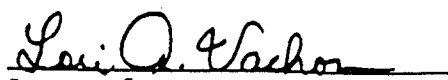
Lab Number: SE00442-1  
 Page 1  
 PROJECT: 590-0872  
 Report Date: 02 AUG 91

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED DATE/TIME		RECEIVED
MW-P37-4 AC ROCH WEST PLT 37	Aqueous	24 JUL 91/12:00		25 JUL 91
CONSTITUENT	RESULT	*D.L.	UNITS	METHOD
<b>BTEX COMPOUNDS</b>				
Benzene	<1.0	1.0	ug/L	EPA 602
Toluene	<1.0	1.0	ug/L	EPA 602
Ethylbenzene	<1.0	1.0	ug/L	EPA 602
p-Xylene	<1.0	1.0	ug/L	EPA 602
m-Xylene	<1.0	1.0	ug/L	EPA 602
o-Xylene	<1.0	1.0	ug/L	EPA 602

\* Detection Limit

SEG Laboratories, Inc.

  
 Approved

MR. JAMES GUENTERT  
 ENVIRONMENTAL SCIENCE & E  
 1099 WEST GRAND RIVER  
 WILLIAMSTON, MICHIGAN 48895

Lab Number: SE00442-1  
 Page 2  
 PROJECT: 590-0872  
 Report Date: 02 AUG 91

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED DATE/TIME		RECEIVED
MW-P37-4 AC ROCH WEST PLT 37	Aqueous	24 JUL 91/12:00		25 JUL 91
CONSTITUENT	RESULT	*D.L.	UNITS	METHOD
<b>PNA COMPOUNDS</b>				
Naphthalene	<10	10	ug/L	EPA 8270
Acenaphthylene	<10	10	ug/L	EPA 8270
Acenaphthene	<10	10	ug/L	EPA 8270
Fluorene	<10	10	ug/L	EPA 8270
Phenanthrene	<10	10	ug/L	EPA 8270
Anthracene	<10	10	ug/L	EPA 8270
Fluoranthene	<10	10	ug/L	EPA 8270
Pyrene	<10	10	ug/L	EPA 8270
Benzo(a)anthracene	<10	10	ug/L	EPA 8270
Chrysene	<10	10	ug/L	EPA 8270
Benzo(b)fluoranthene	<10	10	ug/L	EPA 8270
Benzo(k)fluoranthene	<10	10	ug/L	EPA 8270
Benzo(a)pyrene	<10	10	ug/L	EPA 8270
Indeno(1,2,3-cd)pyrene	<10	10	ug/L	EPA 8270
Dibenzo(a,h)anthracene	<10	10	ug/L	EPA 8270
Benzo(ghi)perylene	<10	10	ug/L	EPA 8270

\* Detection Limit

SEG Laboratories, Inc.

  
 Approved

MR. JAMES GUENTERT  
 ENVIRONMENTAL SCIENCE & E  
 1099 WEST GRAND RIVER  
 WILLIAMSTON, MICHIGAN 48895

Lab Number: SE00442-2  
 Page 3  
 PROJECT: 590-0872  
 Report Date: 02 AUG 91

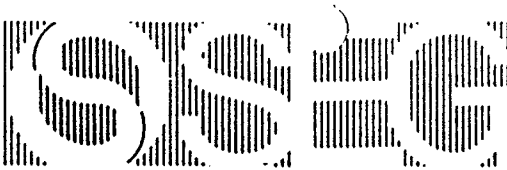
REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED DATE/TIME		RECEIVED
BAILER BLANK AC ROCH WEST PLT 37	Aqueous	24 JUL 91/11:55		25 JUL 91
CONSTITUENT	RESULT	*D.L.	UNITS	METHOD
<b>BTEX COMPOUNDS</b>				
Benzene	<1.0	1.0	ug/L	EPA 602
Toluene	<1.0	1.0	ug/L	EPA 602
Ethylbenzene	<1.0	1.0	ug/L	EPA 602
p-Xylene	<1.0	1.0	ug/L	EPA 602
m-Xylene	<1.0	1.0	ug/L	EPA 602
o-Xylene	<1.0	1.0	ug/L	EPA 602

\* Detection Limit

SEG Laboratories, Inc.

Lois A. Vachon  
 Approved



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MR. JAMES GUENTERT  
ENVIRONMENTAL SCIENCE & ENG.  
1099 WEST GRAND RIVER AVENUE  
WILLIAMSTON, MICHIGAN 48895

Lab Number: SE00846-1  
Page 1  
PROJECT: 590-0872  
Report Date: 24 SEP 91

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED DATE/TIME		RECEIVED
MW P-37-4 AC ROCHESTER	Aqueous	10 SEP 91/12:00		16 SEP 91
CONSTITUENT	RESULT	*D.L.	UNITS	METHOD
<b>BTEX COMPOUNDS</b>				
Benzene	<1.0	1.0	ug/L	EPA 602
Toluene	<1.0	1.0	ug/L	EPA 602
Ethylbenzene	<1.0	1.0	ug/L	EPA 602
p-Xylene	<1.0	1.0	ug/L	EPA 602
m-Xylene	<1.0	1.0	ug/L	EPA 602
o-Xylene	<1.0	1.0	ug/L	EPA 602

\* Detection Limit

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MR. JAMES GUENTERT  
 ENVIRONMENTAL SCIENCE & ENG.  
 1099 WEST GRAND RIVER AVENUE  
 WILLIAMSTON, MICHIGAN 48895

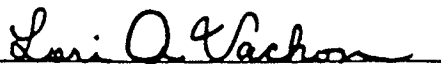
Lab Number: SE00846-1  
 Page 2  
 PROJECT: 590-0872  
 Report Date: 24 SEP 91

REPORT OF ANALYTICAL RESULTS

SAMPLE DESCRIPTION	MATRIX	SAMPLED DATE/TIME		RECEIVED
MW P-37-4 AC ROCHESTER	Aqueous	10 SEP 91/12:00		16 SEP 91
CONSTITUENT	RESULT	*D.L.	UNITS	METHOD
<b>PNA COMPOUNDS</b>				
Naphthalene	<5.0	5.0	ug/L	EPA 8270
Acenaphthylene	<5.0	5.0	ug/L	EPA 8270
Acenaphthene	<5.0	5.0	ug/L	EPA 8270
Fluorene	<5.0	5.0	ug/L	EPA 8270
Phenanthrene	<5.0	5.0	ug/L	EPA 8270
Anthracene	<5.0	5.0	ug/L	EPA 8270
Fluoranthene	<5.0	5.0	ug/L	EPA 8270
Pyrene	<5.0	5.0	ug/L	EPA 8270
Benzo(a)anthracene	<5.0	5.0	ug/L	EPA 8270
Chrysene	<5.0	5.0	ug/L	EPA 8270
Benzo(b)fluoranthene	<5.0	5.0	ug/L	EPA 8270
Benzo(k)fluoranthene	<5.0	5.0	ug/L	EPA 8270
Benzo(a)pyrene	<5.0	5.0	ug/L	EPA 8270
Indeno(1,2,3-cd)pyrene	<5.0	5.0	ug/L	EPA 8270
Dibenzo(a,h)anthracene	<5.0	5.0	ug/L	EPA 8270
Benzo(ghi)perylene	<5.0	5.0	ug/L	EPA 8270

\* Detection Limit

SEG Laboratories, Inc.

  
 Approved

WW Engineering & Science, Inc.  
Environmental Laboratory Division

VOLATILE ORGANICS  
MDNR SCAN-1

MDNR-Lansing District  
Proj: MDNR Case #720  
AC Rochester - West  
Subm: September Sampling  
Sample: 37

Submittal Number 461- 1  
Date Sampled: 09/09/91 Time: 12:15  
Date Received: 09/11/91 Time: 15:54  
Analysis Date: 09/14/91  
Sample No: 1902

Parameter	Result ug/l	Parameter	Result ug/l
Bromodichloromethane	<1.0	trans-1,2-Dichloroethene	<1.0
Bromoform	<1.0	1,2-Dichloropropane	<1.0
Bromomethane	<1.0	cis-1,3-Dichloropropene	<1.0
Carbon Tetrachloride	<1.0	trans-1,3-Dichloropropene	<1.0
Chlorobenzene	<1.0	Methylene Chloride	<1.0
Chloroethane	<1.0	1,1,2,2-Tetrachloroethane	<1.0
Chloroform	<1.0	Tetrachloroethene	<1.0
Dibromochloromethane	<1.0	1,1,1-Trichloroethane	<1.0
1,1-Dichloroethane	<1.0	1,1,2-Trichloroethane	<1.0
1,2-Dichloroethane	<1.0	Trichloroethylene	<1.0
1,1-Dichloroethylene	<1.0	Trichlorofluoromethane	<1.0
cis-1,2-Dichloroethene	<1.0	Vinyl Chloride	<1.0

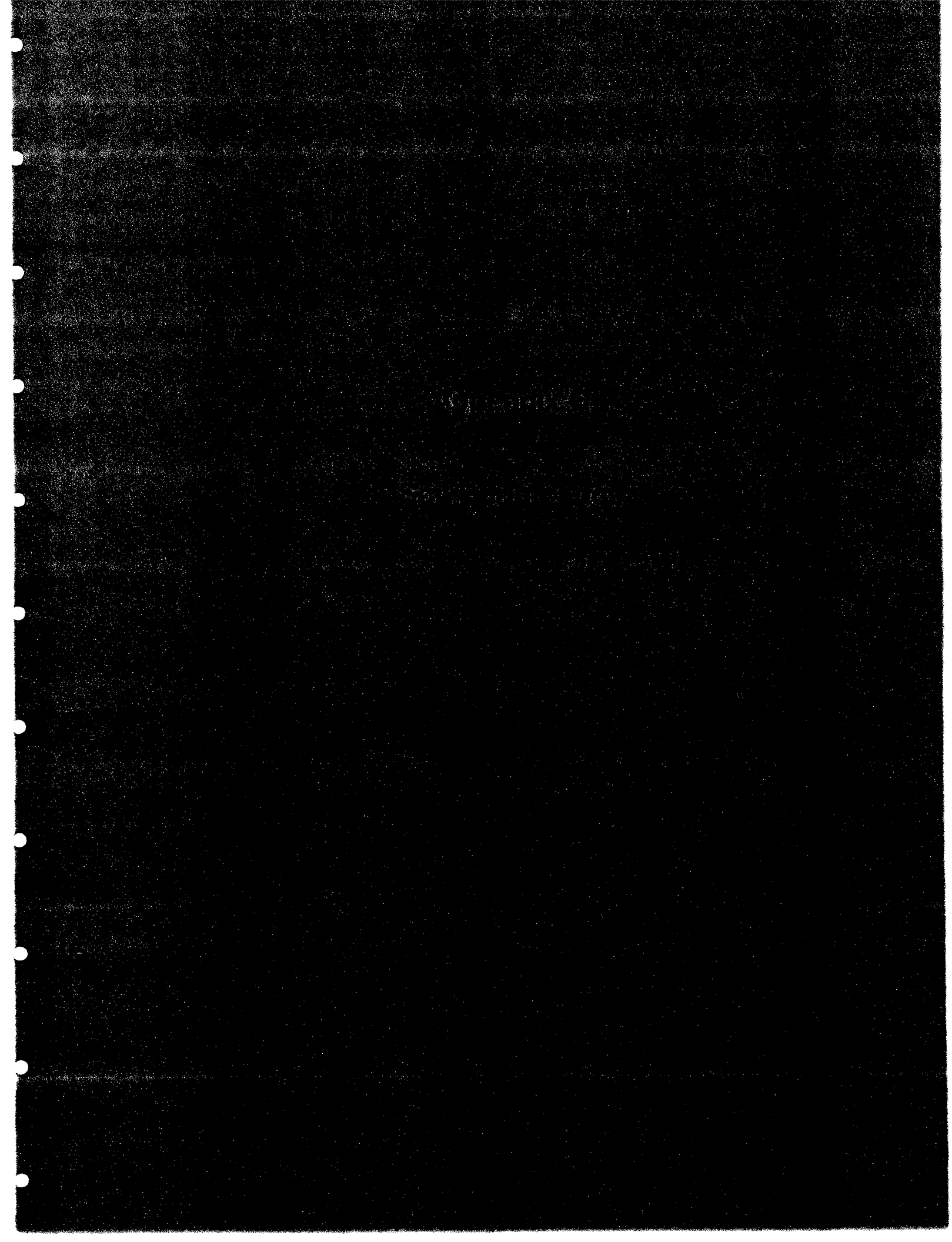
WW Engineering & Science, Inc.  
Environmental Laboratory Division

VOLATILE ORGANICS  
MDNR SCAN-2

MDNR-Lansing District  
Proj: MDNR Case #720  
AC Rochester - West  
Subm: September Sampling  
Sample: 37

Submittal Number 461- 1  
Date Sampled: 09/09/91 Time: 12:15  
Date Received: 09/11/91 Time: 15:54  
Analysis Date: 09/14/91  
Sample No: 1902

Parameter	Result ug/l	Parameter	Result ug/l
Benzene	<1.0	Toluene	1.0
Ethylbenzene	<1.0	Xylene, Total	<1.0



ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.  
BORING/WELL LOG DATA

PROJECT: AC Rochester Site Eval. Bldg.#37 NUMBER: 590-0872	DEPTH/ SAMPLE INTERVAL (FEET)	OTHER:	FORMATION DESCRIPTION												
LOCATION: Flint, Michigan															
BORING/WELL NO.: SB-37-1	0-0.3		ASPHALT												
DATE DRILLED: May 2, 1990	0.3-5		SAND AND GRAVEL; many cobbles, dark brown, difficult drilling becomes clay with sand and gravel at 4 feet.												
DRILLING METHOD: 4" Hollow-Stem Auger	5-7		CLAY; light brown with gravel.												
TOTAL DEPTH DRILLED: 13 feet	7-9		SAND AND GRAVEL; with clay and pieces of coal, black.												
CASING TYPE/DIA: N.A.	9-13		SAND; fine texture, grayish brown well sorted slightly moist, light brown and dark brown in 0.5-foot intervals beginning at 11 feet. Auger refusal at 13 feet.												
TOTAL CASING: N.A.			<u>SPLIT-SPOON SAMPLES</u>												
T.O.C. ELEVATION: N.A.			<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Sample Interval</u></th> <th style="text-align: center;"><u>Blow Counts</u></th> <th style="text-align: center;"><u>% Recovery</u></th> <th style="text-align: center;"><u>OM Reading</u></th> </tr> </thead> <tbody> <tr> <td>5-7</td> <td style="text-align: center;">7,8,14,16</td> <td style="text-align: center;">65</td> <td style="text-align: center;">0.0 ppm</td> </tr> <tr> <td>10-12</td> <td style="text-align: center;">3,3,4,6</td> <td style="text-align: center;">75</td> <td style="text-align: center;">0.0 ppm</td> </tr> </tbody> </table>	<u>Sample Interval</u>	<u>Blow Counts</u>	<u>% Recovery</u>	<u>OM Reading</u>	5-7	7,8,14,16	65	0.0 ppm	10-12	3,3,4,6	75	0.0 ppm
<u>Sample Interval</u>	<u>Blow Counts</u>	<u>% Recovery</u>	<u>OM Reading</u>												
5-7	7,8,14,16	65	0.0 ppm												
10-12	3,3,4,6	75	0.0 ppm												
GROUND ELEVATION: N.A.															
SCREEN TYPE/LENGTH: N.A.															
SCREENED INTERVAL: N.A.															
FILTER PACK TYPE: N.A.															
FILTER PACK INTERVAL: N.A.															
GROUT TYPE/QUANTITY: Bentonite hole plug/ 6 bags and cement pad															
GROUT INTERVAL(S): 13 feet to surface															
DEPTH TO SATURATION: ----															
STATIC WATER LEVEL (TOC): ---- DATE: ----															
WATER LEVEL ELEVATION: ----															
REMARKS: No water encountered. Auger refusal at 13 feet due to concrete abutment for Flint River.															
ALL DEPTHS FROM GROUND SURFACE UNLESS STATED OTHERWISE.															
LOGGED BY: Andrew H. Granskog															

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.  
BORING/WELL LOG DATA

PROJECT: AC Rochester Site Eval. Bldg.#37 NUMBER: 590-0872	DEPTH/ SAMPLE INTERVAL (FEET)	OTHER:	FORMATION DESCRIPTION												
LOCATION: Flint, Michigan															
BORING/WELL NO.: SB-37-2	0-0.3		ASPHALT												
DATE DRILLED: May 2, 1990	0.3-2 2-7		SAND AND GRAVEL; medium brown, trace clay, some cobbles.  SAND AND GRAVEL; black with trace clay, slightly moist, with pieces of coal.												
DRILLING METHOD: 4" Hollow-Stem Auger	7-9		CLAY; with sand and gravel, black to dark brown, difficult drilling, slightly moist.												
TOTAL DEPTH DRILLED: 13 feet	9-13		SAND; fine texture, some fine gravel pieces of coal, grayish black, odor slightly moist. Auger refusal at 13'.												
CASING TYPE/DIA: N.A.			<u>SPLIT-SPOON SAMPLES</u>												
TOTAL CASING: N.A.			<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Sample Interval</th> <th style="text-align: center;">Blow Counts</th> <th style="text-align: center;">% Recovery</th> <th style="text-align: center;">OVN Reading</th> </tr> </thead> <tbody> <tr> <td>4-6</td> <td style="text-align: center;">7,25,30,28</td> <td style="text-align: center;">60</td> <td style="text-align: center;">0.0 ppm</td> </tr> <tr> <td>9-11</td> <td style="text-align: center;">8,7,7,6</td> <td style="text-align: center;">60</td> <td style="text-align: center;">5.6 ppm</td> </tr> </tbody> </table>	Sample Interval	Blow Counts	% Recovery	OVN Reading	4-6	7,25,30,28	60	0.0 ppm	9-11	8,7,7,6	60	5.6 ppm
Sample Interval	Blow Counts	% Recovery	OVN Reading												
4-6	7,25,30,28	60	0.0 ppm												
9-11	8,7,7,6	60	5.6 ppm												
T.O.C. ELEVATION: N.A.															
GROUND ELEVATION: N.A.															
SCREEN TYPE/LENGTH: N.A.															
SCREENED INTERVAL: N.A.															
FILTER PACK TYPE: N.A.															
FILTER PACK INTERVAL: N.A.															
GROUT TYPE/QUANTITY: Bentonite hole plug/ 6 bags and cement pad															
GROUT INTERVAL(S): 13 feet to surface															
DEPTH TO SATURATION: ----															
STATIC WATER LEVEL (TOC): ---- DATE: ----															
WATER LEVEL ELEVATION: ----															
REMARKS: No water encountered. Auger refusal at 13 feet due to concrete abutment for Flint River.															
ALL DEPTHS FROM GROUND SURFACE UNLESS STATED OTHERWISE.															
LOGGED BY: Andrew H. Granskog															

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.  
BORING/WELL LOG DATA

PROJECT: AC Rochester Site Eval. Bldg.#37 NUMBER: 590-0872	DEPTH/ SAMPLE INTERVAL (FEET)	OTHER:	FORMATION DESCRIPTION																				
LOCATION: Flint, Michigan																							
BORING/WELL NO.: SB-37-3	0-0.8		CONCRETE																				
DATE DRILLED: May 2, 1990	0.8-3.5		SAND AND GRAVEL; medium, brown, slightly moist, trace clay.																				
DRILLING METHOD: 4" Hollow-Stem Auger	3.5-5.0		CLAY; with gravel, some sand, slightly moist, slight odor grayish black, silty clay at 4 feet.																				
TOTAL DEPTH DRILLED: 17 feet	5.0-8.0		SAND; medium texture, medium, brown, moist.																				
CASING TYPE/DIA: N.A.	8.0-13		CLAY; grayish brown, trace sand, hard silty clay at 12 feet, wood debris, pieces of coal, fine gravel and cobbles at 11 feet.																				
TOTAL CASING: N.A.	13-16		SAND; medium texture, well sorted, trace clay and fine gravels saturated at 16 feet.																				
T.O.C. ELEVATION: N.A.	16-19		CLAY; with sand, sand lenses 0.5 feet thick in this interval, saturated, wood debris, grayish brown.																				
GROUND ELEVATION: N.A.			<u>SPLIT-SPOON SAMPLES</u>																				
SCREEN TYPE/LENGTH: N.A.			<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Sample Interval</th> <th style="text-align: center;">Blow Counts</th> <th style="text-align: center;">% Recovery</th> <th style="text-align: right;">OVH Reading</th> </tr> </thead> <tbody> <tr> <td>4-6</td> <td style="text-align: center;">7,9,10,15</td> <td style="text-align: center;">90</td> <td style="text-align: right;">0.0 ppm</td> </tr> <tr> <td>9-11</td> <td style="text-align: center;">4,8,19,29</td> <td style="text-align: center;">90</td> <td style="text-align: right;">0.0 ppm</td> </tr> <tr> <td>14-16</td> <td style="text-align: center;">12,4,3,5</td> <td style="text-align: center;">50</td> <td style="text-align: right;">0.0 ppm</td> </tr> <tr> <td>17-19</td> <td style="text-align: center;">13,9,8,13</td> <td style="text-align: center;">85</td> <td style="text-align: right;">0.0 ppm</td> </tr> </tbody> </table>	Sample Interval	Blow Counts	% Recovery	OVH Reading	4-6	7,9,10,15	90	0.0 ppm	9-11	4,8,19,29	90	0.0 ppm	14-16	12,4,3,5	50	0.0 ppm	17-19	13,9,8,13	85	0.0 ppm
Sample Interval	Blow Counts	% Recovery	OVH Reading																				
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17-19	13,9,8,13	85	0.0 ppm																				
SCREENED INTERVAL: N.A.																							
FILTER PACK TYPE: N.A.																							
FILTER PACK INTERVAL: N.A.																							
GROUT TYPE/QUANTITY: Bentonite hole plug/ 6 bags and cement pad																							
GROUT INTERVAL(S): 17 feet to surface																							
DEPTH TO SATURATION: 16 feet																							
STATIC WATER LEVEL (TOC): ---- DATE: ----																							
WATER LEVEL ELEVATION: ----																							
REMARKS:																							
ALL DEPTHS FROM GROUND SURFACE UNLESS STATED OTHERWISE.																							
LOGGED BY: Andrew H. Granskog																							

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.  
BORING/WELL LOG DATA

PROJECT: AC Rochester Site Eval. Bldg.#37 NUMBER: 590-0872	DEPTH/ SAMPLE INTERVAL (FEET)	OTHER:	FORMATION DESCRIPTION																												
LOCATION: Flint, Michigan			Page 1 of 1																												
BORING/WELL NO.: MW-37-4	0-0.3		ASPHALT																												
DATE DRILLED: May 2, 1990	0.3-10.5		SAND; medium texture fill sand, medium, brown, well sorted.																												
DRILLING METHOD: 4" Hollow-Stem Auger	10.5-17.5		SILTY CLAY; moist, with fine sand at depth 14-16 feet, gray to grayish black.																												
TOTAL DEPTH DRILLED: 21 feet	17.5-18.5		SILTY CLAY; moist, soft, with fine sand, odor OVM Reading of grab sample of auger cuttings = 33 ppm.																												
CASING TYPE/DIA: Galvanized steel/2-inch	18.5-21		SAND; coarse texture, poorly sorted, gray saturated at 18 feet. Below 18 feet very fine, silty sand, gray saturated.																												
TOTAL CASING: 16 feet			<u>SPLIT-SPOON SAMPLES</u>																												
T.O.C. ELEVATION: 706.50			<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;"><u>Sample Interval</u></th> <th style="text-align: left;"><u>Blow Counts</u></th> <th style="text-align: left;"><u>% Recovery</u></th> <th style="text-align: left;"><u>OVM Reading</u></th> </tr> </thead> <tbody> <tr> <td>4-6</td> <td>4,4,3,3</td> <td>100</td> <td>0.0 ppm</td> </tr> <tr> <td>9-11</td> <td>3,3,2,3</td> <td>75</td> <td>26 ppm</td> </tr> <tr> <td>14-16</td> <td>2,3,2,3</td> <td>50</td> <td>0.0 ppm</td> </tr> <tr> <td>17.5-18</td> <td>grab sample</td> <td></td> <td></td> </tr> <tr> <td></td> <td>auger cuttings</td> <td>----</td> <td>33 ppm</td> </tr> <tr> <td>18-20</td> <td>1,8,6,7</td> <td>90</td> <td>0.0 ppm</td> </tr> </tbody> </table>	<u>Sample Interval</u>	<u>Blow Counts</u>	<u>% Recovery</u>	<u>OVM Reading</u>	4-6	4,4,3,3	100	0.0 ppm	9-11	3,3,2,3	75	26 ppm	14-16	2,3,2,3	50	0.0 ppm	17.5-18	grab sample				auger cuttings	----	33 ppm	18-20	1,8,6,7	90	0.0 ppm
<u>Sample Interval</u>	<u>Blow Counts</u>	<u>% Recovery</u>	<u>OVM Reading</u>																												
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17.5-18	grab sample																														
	auger cuttings	----	33 ppm																												
18-20	1,8,6,7	90	0.0 ppm																												
GROUND ELEVATION: ----																															
SCREEN TYPE/LENGTH: Stainless steel #7 slot/5-feet																															
SCREENED INTERVAL: 16-21 feet																															
FILTER PACK TYPE: Coarse silica sand/ 2 bags																															
FILTER PACK INTERVAL: 10-21 feet																															
GROUT TYPE/QUANTITY: Bentonite hole plug/ 6 bags and cement pad																															
GROUT INTERVAL(S): 10 feet to surface																															
DEPTH TO SATURATION: 18 feet																															
STATIC WATER LEVEL (TOC): ---- DATE: ----																															
WATER LEVEL ELEVATION: ----																															
REMARKS: Completed flush-mount at surface, bail developed.																															
ALL DEPTHS FROM GROUND SURFACE UNLESS STATED OTHERWISE.																															
LOGGED BY: Andrew H. Granskog																															

ENVIRONMENTAL SCIENCE AND ENGINEERING, INC.  
BORING/WELL LOG DATA

PROJECT: AC Rochester Site Eval. Bldg.#37 NUMBER: 590-0872	DEPTH/ SAMPLE INTERVAL (FEET)	OTHER:	FORMATION DESCRIPTION																
LOCATION: Flint, Michigan			Page 1 of 1																
BORING/WELL NO.: SB-37-5	0-0.4		ASPHALT																
DATE DRILLED: May 3, 1990	0.4-1		SAND AND GRAVEL; dark brown, medium texture sand, slightly moist.																
DRILLING METHOD: 4" Hollow-Stem Auger	1-8		SAND; fine-medium texture, slightly moist, light brown.																
TOTAL DEPTH DRILLED: 12 feet	8-10		SANDY CLAY; dark brown, slightly moist.																
CASING TYPE/DIA: N.A.	10-12		SAND; fine-medium texture, light brown, lense 0.1 feet thick is red slightly cemented, moist.																
TOTAL CASING: N.A.	12-12.5		SANDY CLAY; saturated at 12.5 feet.																
T.O.C. ELEVATION: N.A.			<u>SPLIT-SPOON SAMPLES</u>																
GROUND ELEVATION: N.A.			<table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: left;">Sample Interval</th> <th style="text-align: center;">Blow Counts</th> <th style="text-align: center;">% Recovery</th> <th style="text-align: center;">OM Reading</th> </tr> </thead> <tbody> <tr> <td>4-6</td> <td style="text-align: center;">2,2,2,3</td> <td style="text-align: center;">85</td> <td style="text-align: center;">0.0 ppm</td> </tr> <tr> <td>9-11</td> <td style="text-align: center;">12,18,21,16</td> <td style="text-align: center;">90</td> <td style="text-align: center;">0.0 ppm</td> </tr> <tr> <td>12-14</td> <td style="text-align: center;">12,9,8,9</td> <td style="text-align: center;">50</td> <td style="text-align: center;">0.0 ppm</td> </tr> </tbody> </table>	Sample Interval	Blow Counts	% Recovery	OM Reading	4-6	2,2,2,3	85	0.0 ppm	9-11	12,18,21,16	90	0.0 ppm	12-14	12,9,8,9	50	0.0 ppm
Sample Interval	Blow Counts	% Recovery	OM Reading																
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9-11	12,18,21,16	90	0.0 ppm																
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SCREEN TYPE/LENGTH: N.A.																			
SCREENED INTERVAL: N.A.																			
FILTER PACK TYPE: N.A.																			
FILTER PACK INTERVAL: N.A.																			
GROUT TYPE/QUANTITY: Bentonite hole plug/ 5 bags and cement pad																			
GROUT INTERVAL(S): 12 feet to surface																			
DEPTH TO SATURATION: 12.5 feet																			
STATIC WATER LEVEL (TOC): ---- DATE: ----																			
WATER LEVEL ELEVATION: ----																			
REMARKS:																			
ALL DEPTHS FROM GROUND SURFACE UNLESS STATED OTHERWISE.																			
LOGGED BY: Andrew H. Granskog																			

STATE OF CALIFORNIA

Water Control Act

copy

A. B. COGAN

Well Drilling

139 Tremont Street

Saginaw, Mich.

June 22 1938

Chevrolet - Flint  
Div. of General Motors Corp.  
Flint, Michigan

Log of 10" well drilled in pit at the West end of Plant # 4 (NEAR CHEV. AVE)

7' of pit

27'	Hard pan
8'	Sand and gravel
<u>35'</u>	
72'	White Sand Rock
<u>107'</u>	
21'	Gray Shale
<u>128'</u>	
40'	Black Shale
<u>168'</u>	
20'	Gray Shale
<u>188'</u>	
12'	White Sand Rock
<u>200'</u>	
7'	Light Shale
<u>207'</u>	Total depth of well from bottom of pit

42 feet 10" drive pipe from bottom of pit

Static water level from bottom of pit 22 feet.

A. B. Cogan /s/