BASELINE ENVIRONMENTAL ASSESSMENT CONDUCTED PURSUANT TO SECTION 20126(1)(C) OF 1994 PA 451, AS AMENDED AND THE RULES PROMULGATED THEREUNDER AT FORMER INDUSTRIAL BROWNHOIST PROPERTY 112 NORTH WATER STREET BAY CITY, MICHIGAN

Prepared for

CITY OF BAY CITY
BAY CITY, MICHIGAN

MARCH 29, 2002
AKT PEERLESS PROJECT NO. 3522F

AKTPEERLESS
environmental services

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22725 Orchard Lake Road Farmington, MI 48336 248.615.1333 Fax 248.615.1334 www.aktpeerless.com
Saginaw, MI Farmington, MI Detroit, MI Jackson, MI

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BASELINE ENVIRONMENTAL ASSESSMENT CONDUCTED PURSUANT TO SECTION 20126(1)(C) OF 1994, PA 451, PART 201, AS AMENDED, AND THE RULES PROMULGATED THEREUNDER AT FORMER INDUSTRIAL BROWNHOIST PROPERTY 112 NORTH WATER STREET BAY CITY, MICHIGAN

AKT PEERLESS PROJECT NO. 3522F

1.0 IDENTIFICATION OF AUTHOR AND DATE OF BEA COMPLETION

AKT Peerless Environmental Services, (AKT Peerless) prepared this Baseline Environmental Assessment (BEA) on behalf of the City of Bay City for the former Industrial Brownhoist property located at 112 North Water Street, Bay City, Michigan. AKT Peerless' scope of work is based on Section 20126(1)(c) of Part 201 of the Natural Resources and Environmental Protection Act (NREPA), 1994 Public Act (PA) 451, as amended, and *Michigan Department of Environmental Quality (MDEQ) Instructions for Preparing and Disclosing Baseline Environmental Assessments and Section 7a Compliance* Analyses, effective March 11, 1999. This BEA was conducted by March 15, 2002 by Josh Bennett of AKT Peerless and completed on March 29, 2002.

2.0 INTRODUCTION

The City of Bay City retained AKT Peerless to complete a BEA for the property located at 112 North Water Street in Bay City, Michigan. The subject property consists of approximately 31 acres. See Figure 1 for a Topographic Site Location Map and Figure 2 for a Site Map of the subject property. See Attachment A for a Legal Description of the facility property.

The BEA was prepared to (1) provide an independent, professional evaluation and opinion regarding existing environmental conditions associated with the property, and (2) maintain a liability exemption for cleanup of existing contamination at the property under Section 20126(1)(c).

2.1 CATEGORY SELECTION

Stress-Con Industries, Inc. will continue to conduct industrial activities for up to one year. Bay Track Technologies will continue to store vehicles and miscellaneous supplies at the subject property for up to one year. Future plans for the use of the property by The City of Bay City include redevelopment for residential, recreational, or commercial use. Future use by Stress Con and The City of Bay City will not include storage, use, or handling of significant quantities of hazardous substances. According to MDEQ's Instructions for Preparing and Submitting Baseline Environmental Assessments, a Category N BEA is appropriate for the subject property. Therefore, AKT Peerless has prepared a Category N BEA.

2.2 SITE HISTORY

In the late 1800's, a saddle and leather equipment manufacturer occupied the subject property. By the early 1900's, the Industrial Works Company took over occupancy of the subject property. The Industrial Works Company manufactured cranes and other related equipment. Historical maps also indicate the presence of a manufactured gas operation on the subject property at this time. A tar well, gas holder, and an above ground oil tank were all operated by the manufactured gas operation. The tar well was located in the eastern portion of the subject property. The Industrial Works Company became Industrial Brownhoist in the mid 1920's. Crane manufacturing activities continued on the subject property until 1983, when operations moved to North Carolina.

Sections of the subject property have been leased to numerous other companies over the last 30 years. These companies include the Pennsylvania Coal and Coke Corporation, American Steel &

Pump Corporation, the American Hoist and Derrick Company, Bay Track Incorporated, and Stress-Con.

The Woodmen of the World Life Insurance owned the subject property from 1965 to 1995. From 1995 to December 28, 2000, IB Industrial Park, Inc. owned the subject property. From December 28, 2000, to January 31, 2002, Port Fisher LLC owned the subject property.

2.3 SUMMARY OF PREVIOUS ENVIRONMENTAL WORK

There have been several environmental investigations performed on the subject property since 1989. The entire property is zoned Industrial. The following sections summarize previous environmental work performed at the subject property. See Figure 2 for a Site Map of the subject property.

2.3.1 Summary of 1989 through 1995 Environmental Investigations

An environmental investigation was performed in 1989 by Midwest Water Resource, Inc. (MWR). This investigation included site reconnaissance, aerial photograph review, the collection of soil and groundwater samples, a soil gas survey, an asbestos survey, and an inventory of polychlorinated biphenyl (PCB) containing transformers.

The MWR subsurface investigation consisted of a total of 16 soil borings and the installation of seven monitoring wells. Soil and groundwater samples were analyzed for metals and volatile organic compounds (VOCs). Analytical results indicated that lead was present in soil at one location above Part 201 Residential Criteria.

The soil gas survey indicated high concentrations of VOCs in soil gas vapors in the areas northeast and southwest of Building 41. The survey of PCB containing transformers resulted in the identification of 31 PCB containing transformers located throughout the subject property. As a result of MWR's investigation, all PCB-containing transformers, along with contaminated soils, were removed from seven areas around the subject property.

Arthur D. Little (ADL) conducted a preliminary environmental assessment at the subject property in January 1992. This assessment included a records review, interviews, and a site visit. This assessment concluded that 25 areas of environmental concern needed further investigation. These areas of concern addressed soil and groundwater contamination, possible underground storage tanks (USTs) situated within the subject property, PCB-containing materials, asbestos, and potential off-site liability issues.

Phase I and Phase II investigations were conducted from 1992 to 1995 by Roy F. Weston (WESTON) in regards to the 25 areas of environmental concern established in the preliminary environmental assessment conducted by ADL. Phase I work included a geophysical survey to identify potential USTs and radiation survey, as well as, the installation of 50 soil borings throughout the subject property to depths ranging from 6 to 60 feet below ground surface (bgs). A total of 119 soil samples were analyzed for VOCs, polynuclear aromatic hydrocarbons (PNAs), PCBs, semi-volatile organic compounds (SVOCs), Michigan Metals (arsenic, barium, cadmium, chromium, copper, lead, mercury, selenium, silver, and zinc), and cyanide. Investigation activities also included the installation of 14 temporary monitoring wells. Phase II work conducted in 1995 included the additional installation of 12 soil borings. Nine of these borings were converted into monitoring wells.

In 1993, WESTON conducted a gamma radiation survey during soil sampling activities. The suspected source of contamination was radioactive sands associated with the foundry sand used as fill material at the property. Gamma radiation was evaluated at each sample location using a MicroRoentgen meter held at waist level. If elevated levels were detected during the walkover survey, shallow soil samples were collected and analyzed for gamma radiation. The levels of gamma radiation detected at the property were determined by U.S. EPA to be within the acceptable range and do not appear to pose an unacceptable exposure risk to persons onsite.

In 1993, ETG Environmental conducted a subsurface investigation in two areas (the southeast and northeast corners of Building 42) where USTs were suspected to be present. Approximately 153 cubic yards of material were removed from the area near the northeast corner of Building 42 while trying to locate a suspected heating oil UST. Approximately 168 cubic yards of material were removed from the area near the southeast corner of Building 42 while trying to locate a suspected gasoline UST. No UST was discovered in either location. ETG also worked with WESTON during its Phase II investigation in 1995. ETG installed 14 soil borings along with 19 shallow and four deep monitoring wells. Soil and groundwater samples were analyzed for VOCs, PNAs, and Michigan Metals. During ETG's investigation, free product was identified in a monitoring well located near the northwest corner of Building 42. Oil droplets were also identified in a monitoring well located just inside Building 42, as well as in a monitoring well located just northeast of the Boom Shop. In November 1995, ETG installed 3 monitoring wells downgradient and sidegradient of the coal tar pit, which is located beneath the northeast portion of Building 41. In regards to the area where free product was identified near the northwest corner of Building 42, material was excavated, and a collection system was installed.

Results from both the WESTON and ETG investigations indicated PNA, BTEX, and heavy metal contamination throughout the subject property. Many of these contaminants are above Part 201 Generic Residential Cleanup Criteria. See Figure 3 for a site map with soil boring locations. See Tables 1 and 2 for a summary of the soil and groundwater analytical results from the investigations conducted from 1989 through 1995. See Attachment B for a copy of WESTON's BEA, which was conducted for I.B. Industrial Park, Inc. and dated December 1995. WESTON's BEA contains the following Attachments

- Legal Description of Industrial Brownhoist Property
- MWR-Environmental Investigation of the Amdura Site and Addendum
- ETG-Field Report for the Transformer Removal and the PCB Remediation at the Bay City Industrial Complex Supplement 1
- ADL-Preliminary Environmental Assessment
- WESTON- Site Summary Report Center for Ecological Research and Training
- WESTON- 1995 Analytical Data
- WESTON- Geological Boring Logs

- ETG- Powerhouse Building PCB Sample results
- ETG- Analytical Results of 1995 Soil, Groundwater and Product Samples and Geological Borings
- ETG- Project Summary, Boring Logs, and Analytical Results

2.3.2 Summary of Horizon Environmental Corporation's Environmental Investigation

On January 25, 2001, Horizon conducted a site evaluation of the subject property to investigate management of hazardous substances. Since the completion of subsurface investigations by both WESTON and ETG in 1995, Stress Con Industries and Bay Track Technologies had been the only companies operating on the subject property, although Bay Track Technologies' only operation on the subject property was the storage of equipment in Building 42.. Therefore, the purpose of Horizon's investigation was to document the use of hazardous substances on the subject property and to delineate any potential areas where Stress Con Industries operations could have potentially have caused releases to the surrounding environment. This investigation consisted of an inspection for indications of release of hazardous substances or potential sources of contamination.

Based on observations and RECs identified in Horizon's initial subject property inspection, a limited subsurface investigation was performed at the subject property on February 1, 2001. This subsurface investigation consisted of collecting 11 soil samples from areas identified by Horizon. Soil samples were analyzed for BTEX compounds, trimethylbenzenes, methyl tertbutyl ether (MTBE), 1,2-dibromomethane, 1,2-dichloroethane, PNAs, cadmium, chromium, and lead.

The laboratory analytical results indicated the following:

- Benzo(a)pyrene was detected in soil samples SS-5 at a concentration slightly exceeding its Residential Direct Human Contact Soil Criteria.
- Lead was detected in soil sample SS-7 at a concentration exceeding its Generic Residential and Industrial Direct Human Contact Soil Criteria.
- Phenanthrene was detected in soil sample SS-8 at a concentration exceeding generic GSI Protection Soil Criteria.
- Benzo(a)pyrene was detected in soil sample SS-9 at a concentration exceeding its Generic Residential Direct Human Contact Soil Criteria.

- Phenanthrene was detected in soil sample SS-11 at a concentration exceeding its Generic Soil Volatilization to Ambient Air Criteria.

See Figure 3 for a site map with soil boring locations. See Table 3 for a summary of the soil analytical results from Horizon's investigation. See Attachment C for a copy of Horizon's BEA dated March 2001 in connection with the transfer of title to Port Fisher LLC.

2.3.3 AKT Peerless' Historical Site Review

Federal and State Databases

AKT Peerless retained Environmental Data Resources, Inc. (EDR), to compile federal and state environmental database information. The purpose of obtaining this data was to evaluate potential environmental risks associated with the subject property, adjoining sites, and nearby sites located within specified search parameters. See Attachment D for the EDR report.

Typically, sites at a distance greater than a 1/2-mile radius represent only a remote chance of affecting the subject property. However, the maximum search distance extends to a 1-mile radius for some databases in accordance with ASTM Approximate Minimum Search Distances.

The subject property, referred to as the "Former Industrial Brownhoist Site, 206 South Water Street, Bay City, Michigan," was listed on the following databases:

1. Baseline Environmental Assessment (BEA). This database includes sites at which a BEA has been submitted to the MDEQ to qualify for exemption from liability under Part 201. According to the EDR report, a BEA was for the "Former Industrial Brownhoist Property, 206 S. Water Street". The BEA was received by the DEQ on April 3, 2001 and was submitted by Port Fisher LLC as a Category "S". A BEA was also submitted for the "Industrial Brownhoist" property located at 112 N. Water Street by David E. Ives/I.B. Industrial Park, Inc. This BEA was received by the DEQ on December 6, 1995 and was submitted as a Category "N".
2. State Hazardous Waste Site (Part 201) List. This database includes sites at which environmental contamination has resulted from the release of a hazardous substance or the potential release of a discarded hazardous substance. According to the EDR report, the subject property was impacted with benzene, chlorobenzene, metals, PERC, and xylenes. The source listed for this contamination was hoist manufacturing.

3. RCRIS-Small Quantity Generator (SQG). This database includes facilities that generate (or have generated) between 100 and 1,000 kilograms of hazardous waste per calendar month. According to the EDR report, a Compliance Evaluation Inspection was conducted at the site in September 1992. Two reported compliance/violation record pertaining to the subject property was found during the EDR database research.
4. Leaking Underground Storage Tank Site (LUST). This database includes sites at which a release from an underground storage tank has been reported. According to the EDR Report, the status of this site is listed as "open."

Fire Insurance Maps

AKT Peerless retained EDR to search for historical *Sanborn Fire Insurance Maps*. Fire insurance maps were found for the years 1895, 1912, 1950, and 1967. Information obtained from the reviewed fire insurance maps is summarized in the following tables:

Dates	Observations (Subject Property)
1895	The subject property is occupied by "DOX Evermedly" which appears to be an industrial facility. Several rail lines are depicted traversing the subject property.
1912	The subject property is occupied by "Industrial Works" which includes an iron foundry, three purifying tanks, a "pattern shop" with what appear to be a gasoline tank, "machine and river shop", "machine shops", "erecting room", "boiler shop", "block smiths", and a "Bay City Gas Co. brick gasometer". The Sanborn Map also depicts a pond on the eastern boundary of the property. Several rail lines are depicted traversing the subject property.
1950	The subject property is occupied by "Industrial Brownhoist Corp." which includes a "steel foundry", two gasoline tanks, "machine shop", "pattern shop", "structural shop", "carpenter shop", and "industrial pattern shop". Several rail lines are depicted traversing the subject property.
1967	Depicts the same features as 1950 except the subject property is now occupied by "American Hoist Corp.".

2.3.4 AKT Peerless' Environmental Investigation

On February 15, 2002, AKT Peerless conducted a site visit. The purpose of this site visit was to evaluate potential sources of contamination associated with the current and historical use of the property.

Based on AKT Peerless' initial survey of the subject property, a limited subsurface investigation was performed on March 4, 2002. The subsurface investigation consisted of 17 soil borings to a maximum depth of 8 feet bgs. A total of 17 soil samples were collected and analyzed for mineral spirits and mineral oils. Laboratory analysis of the soil samples indicated mineral spirits above laboratory detection limits in soil samples B-4 (1-3), B-10 (1-3), B-12(1-3), and B-16 (1-3). Analytical results also indicated mineral oils above laboratory detection limits in soil samples B-1 (1-3), B-4 (1-3), B-8 (1-3), B-9 (1-3), B-10 (1-3), B-11 (1-3), B-12 (1-3) and B-14 (1-3) through B-17 (1-3). See Table 4 for a summary of soil analytical results from AKT Peerless' investigation. See Figure 3 for site map with soil boring locations.

3.0 PROPERTY DESCRIPTION AND INTENDED HAZARDOUS SUBSTANCE USE

The purpose of this section is to describe (1) the property, (2) intended land use and future site activities, and (3) proposed use of hazardous substances.

3.1 PROPERTY DESCRIPTION

The subject property consists of approximately 31 acres, and is located at 112 North Water Street in Bangor Township, Bay County, Bay City, Michigan. The subject property is located within Sections 21 and 28 of Township 14 North, Range 5 East on the *Bay City Quadrangle Map*. (Parcel Identification Numbers 09-13-28-101-005, 09-13-28-151-001, and 09-13-28-152-001. See Appendix A for a Legal Description of the subject property. See Figure 1 for Topographic Site Location Map.

The subject property is fenced along the northern, eastern, and southern boundaries. Access to the subject property can be gained through entrances located along the northern and southern fence lines. City power and sewer utilities service the subject property, and the main waterline runs north-south along the west side of Building 41. The sewer system parallels the city waterline. A bulkhead was installed on an old city storm sewer system that runs east-west across the subject property beneath Building 42. This storm sewer system, which historically emptied into the Saginaw River, has now been redirected via the bulkhead to the City of Bay City Wastewater Treatment Plant.

See Figure 1 for a Topographic Site Location Map. See Figure 2 for a Site Map of the subject property. The Legal Description of the subject property is contained in Attachment A.

3.2 INTENDED LAND USE

The current tenants, Stress Con Industries, Inc. and Bay Track Technologies will continue to operate at the property for up to one year. Stress Con Industries manufactures pre-stressed, pre-cast concrete beams for bridges and other large structures. Bay Track Technologies stores vehicles as well as miscellaneous supplies used for railroad track maintenance. Future developments of the subject property by the City of Bay City include residential and/or recreational use. Specific plans have not been developed at this time.

3.3 INTENDED HAZARDOUS SUBSTANCE USE

Future use of the subject property will include industrial and residential/recreational use. Stress Con Industries and Bay Track Technologies will continue their operations on the subject property for an undetermined period of time, but no longer than one year. Future use of the subject property by Stress Con Industries and Bay Track Technologies and the City of Bay City will not include storage, use, or handling of significant quantities of hazardous substances. Therefore, there will be no intended significant hazardous substance use at the subject property. Stress Con Industries will continue to use portable heaters and generators operating on petroleum. Stress Con Industries will

also continue its use of heavy machinery (i.e. front loaders) requiring fuel that is delivered on a daily basis by an offsite supplier.

4.0 KNOWN CONTAMINATION

The following subsections present (1) known contamination at the property, (2) criteria for the defining the property as a facility, and (3) identification of the general locations of contamination.

Since the late 1980's, there have been numerous subsurface investigations performed at the subject property. Laboratory analysis has been performed on soil samples for the following contaminants: VOCs, PNAs, PCBs, Michigan metals, and cyanide. Based on the analytical results of the soil samples, the following compounds were detected at concentrations above MDEQ Generic Residential Cleanup Criteria.

Hazardous Substance	CAS #	Maximum Concentration (ppb)
Arsenic	7440382	52,000
Barium	7440393	890,000
Cadmium	7440439	18,000
Chromium	18540229	75,000
Copper	7440508	22,300,000
Lead	7439921	4,800,000
Mercury	7439976	43,000
Nickel	7440020	135,000
Selenium	7782492	3,100
Silver	7440224	1,600
Zinc	7440666	4,400,000
Cyanide	57125	6,200
Mineral spirits	8052-41-3	28,000
Mineral oil	64742-52-5	160,000

Hazardous Substance	CAS #	Maximum Concentration (ppb)
Benzene	71432	14,000
Ethylbenzene	100414	4,100
Methylene Chloride	75092	290
Xylene	1330207	11,000
Benzo(a)pyrene	50328	10,000
Dibenzo(a,h)anthracene	53703	3,800
Fluoranthene	206440	34,000
Naphthalene	91203	29,000
Phenanthrene	85018	24,000

Therefore, the property meets the definition of a "facility," as defined in Part 201 of NREPA, Act 451 of 1994, as amended. See Figure 4 for a site map with soil results above MDEQ Cleanup Criteria. See Tables 1 through 4 for a summary of the soil and groundwater analytical results for the investigations conducted at the property. See Section 2.3 for a description of all subsurface investigation activities completed on the subject property.

Analytical analysis has also been performed on groundwater samples for the following contaminants: VOCs, PNAs, PCBs, Michigan metals, and cyanide. Based on compiled analytical results f the groundwater samples the following compounds were detected at concentrations above MDEQ Generic Residential Cleanup Criteria.

Hazardous Substance	CAS #	Maximum Concentration (ppb)
Cadmium	7440439	6,200
Chromium	18540229	420
Lead	7439921	440
Silver	7440224	460
Cyanide	57125	900
Benzene	71432	2,800

Hazardous Substance	CAS #	Maximum Concentration (ppb)
1,2 Dichloroethane	107062	42
Ethylbenzene	100414	89
Arocolor 1248	13363636	2
Benzo(a)anthracene	56553	31
Benzo(b)fluoranthene	205992	18
Benzo(k)fluoranthene	207089	26
Benzo(a)pyrene	50328	72
Phenanthrene	85018	61

Therefore, the property meets the definition of a "facility," as defined in Part 201 of NREPA, Act 451 of 1994, as amended. See Figure 5 for a site map with groundwater results above MDEQ Cleanup Criteria. See Table 2 for a summary of the groundwater analytical results for the investigations conducted at the property. See Section 2.3 for a description of all subsurface investigation activities completed on the subject property.

4.1 HAZARDOUS SUBSTANCES AT THE FACILITY

Based on the analytical results of the subsurface investigation conducted at the property, the following hazardous substances were detected above the laboratory method detection limits in soil and groundwater samples collected from the property.

Hazardous Substance	CAS #	Hazardous Substance	CAS #
Arsenic	7440382	Anthracene	120127
Barium	7440393	Chrysene	218019
Cadmium	7440439	Pyrene	129000
Chromium	18540229	Benzo(a)anthracene	56553
Copper	7440508	Fluoranthene	206440
Lead	7439921	Benzo(b)fluoranthene	205992
Selenium	7782492	Benzo(k)fluoranthene	207089
Silver	7440224	Benzo(a)pyrene	50328
Zinc	7440666	Indeno(1,2,3-cd)pyrene	193395
Cyanide	57125	Dibenzo(a,h)anthracene	53703
Chloroethane	75003	Benzo(g,h,i)perylene	191242
1,1-Dichloroethane	75343	Acenapthene	208968
Benzene	71432	Acetone	67641
Ethylbenzene	100414	Arochlor 1248	1336363
Xylenes	1330207	Arochlor 1260	1336363
Toluene	108883	Acenapthylene	208968
Methylene Chloride	75092	1,1-Dichloroethane	75343
Mineral spirits	8052-41-3	Mineral oil	64742-52-5
Napththalene	91203	1,1,1-Trichlroethane	71556
Phenanthrene	85018	Dibenzofuran	132649
2-Methylnaphthalene	91576	Bis(2-ethylhexyl)phthalate	117817

See Tables 1 through 4 for a summary analytical results from investigation conducted at the property. See Section 2.3 for a description of subsurface investigation activities completed on the subject property.

4.2 IDENTIFICATION OF THE GENERAL LOCATIONS OF CONTAMINATION

The following subsections present (1) property features, (2) subsurface conditions, and (3) the media affected at the property.

4.2.1 Property Features (Buildings and Existing Underground Utilities)

The subject property consists of approximately 31 acres, and is located at 112 North Water Street in Bangor Township, Bay City, Bay County, Michigan. The subject property is located within Sections 21 and 28 of Township 14 North, Range 5 East on the *Bay City Quadrangle Map*. The subject property is zoned Industrial.

There are currently five buildings on the property (1) storage building, (2) boom shop, (3) sandblasting shop, (4) Building 41, and (5) Building 42. The subject property is fenced along the northern, eastern, and southern boundaries. Access to the subject property can be gained through entrances located along the northern and southern fence lines. City power and sewer utilities service the subject property, and the main waterline runs north-south along the west side of Building 41. The sewer system parallels the city waterline. A bulkhead was installed on an old city storm sewer system that runs east-west across the subject property beneath Building 42. This storm sewer system, which historically emptied into the Saginaw River, has now been redirected via the bulkhead to the City of Bay City Wastewater Treatment Plant.

4.2.2 Subsurface Soil Conditions

According to the Michigan Geological Survey Division's publication, *Quaternary Geology of Southern Michigan*, soils in this area are described as pale brown to pale reddish brown quartz sand and igneous and metamorphic gravel. These soils may include intercalated lacustrine clays. These soils occur as former beaches and near-offshore littoral deposits of glacial Great Lakes. The thickness of the soil ranges from 1 to 30 meters.

According to the United States Department of Agriculture, *Soil Survey of Bay County, Michigan,* the soils in the area are classified as the Tappan-Belleville association. These soils are described as "*nearly level, poorly drained soils that formed in loamy and sandy material on till plains modified by lake waters.*"

Based on subsurface investigation work completed by Weston, subsurface conditions consist mainly of three different stratigraphic units. Fill material overlies an alluviall/lacustrine unit, which in turn overlies a glacial till unit. Both the alluvial and the fill material seems to thicken westward towards the Saginaw River, while pinching out towards the eastern portion of the subject property. Fill material is detected at maximum depths of approximately 14 feet bgs near the river, and approximately 8 feet bgs towards the eastern portion of the subject property. The glacial till unit is found at shallower depths in the eastern portion of the subject property, and in some locations, underlies the fill material directly.

The fill material consists of silty sand to sand, ranging in colors from dark olive gray to black. Organic, as well as inorganic debris is present in the fill material. Debris includes cinders, brick, wood, glass, and foundry sand.

Alluvial material consists of interbedded lenses of sand, silty sand, and clay. This alluvial unit ranges in color from gray to brown. Organic debris, including pieces of wood and shell, are detected within this alluvial unit. Sand lenses located within this alluvial unit range in thickness from .25 inches to 1 to 2 feet. The alluvial organic clay unit is detected at depths of approximately 24 feet bgs, and pinches out in the eastern portion of the subject property. A stiff clay till unit is found at maximum depths reaching 60 feet bgs. This clay unit is mottled and has trace sand and gravel. The color of this unit ranges from grayish brown to dark gray. This clay unit seems to be ubiquitous throughout the subject property.

AKT Peerless' limited subsurface investigation included 17 soil borings to a maximum depth of 4 feet bgs. Foundry sand, consisting of inorganic debris and silty to fine sand, was found in each of the soil borings. These sands varied from black to brown in color. A layer of gravel of unknown thickness covers a majority of the subject property.

The subsurface soils at the property are consistent with the description of sand and gravelly glacial till reported in the *Quaternary Geology of Southern Michigan*. See Attachment E for AKT

Peerless' soil boring logs. Soil boring logs for previous investigations are included in the attachments of Attachment B and C.

4.2.3 Groundwater

Based on the topographic contours, the regional surface water discharge appears to be to the west, toward the Saginaw River. Typically, the water table aquifer flows toward a major drainage feature or in the same direction as the drainage basin. Therefore, it is likely that groundwater in the area of the property flows to the west.

Based on a review of MWR's boring logs, groundwater has been observed on the subject property at depths ranging from 9 feet bgs to 14 feet bgs.

4.2.4 Media Affected at the Property

Based on the analytical results, the media affected at the property is limited to surface and shallow subsurface soil and groundwater.

4.3 KNOWN ABANDONED CONTAINERS OF HAZARDOUS SUBSTANCES

A geophysical investigation conducted by WESTON in 1992 at the subject property indicated the possible presence of USTs near the southeast and northeast corners of Building 42. However, excavation of both areas yielded no UST.

During AKT Peerless' site walk, several abandoned containers were identified in the portion of the building leased by Bay Tracks. These containers appeared to contain used motor oils and were in mostly good condition. See Attachment F for the completed Abandoned Containers form (EQP 4476).

5.0 LIKELIHOOD OF OTHER CONTAMINATION

Numerous environmental investigations have been conducted at the subject property since the late 1980's. Identified recognized environmental concerns associated with the subject property have been identified within these past environmental investigations. Previous subsurface investigations, along with AKT Peerless' recent subsurface investigation, have been conducted to address the recognized environmental concerns.

6.0 CONCLUSIONS

AKT Peerless was retained to prepare a Category N BEA for the property located at 112 North Water Road in Bay City, Michigan. The purpose of the BEA is to: (a) provide an independent, professional evaluation, and opinion regarding existing environmental conditions associated with the property; and (b) maintain a liability exemption for cleanup of existing contamination.

The analytical results of prior subsurface investigations indicate concentrations of arsenic, barium, cadmium, chromium, copper lead, mercury, selenium, silver, cyanide, benzene, ethylbenzene, methylene chloride, xylene, acenapthylene, benzo(a)pyrene, dibenzo(a,h)anthracene, fluoranthene, naphthalene, phenanthrene, and pyrene are present in the soil at the subject property above MDEQ Residential Cleanup Criteria. Analytical results of prior subsurface investigations indicate concentrations of cadmium, chromium, lead, silver, cyanide, benzene, 1,2 dichloroethane, ethylbenzene, arochlor 1248, benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, benzo(a)pyrene, and phenanthrene are present in the groundwater at the subject property above MDEQ Residential Cleanup Criteria. Based on this information, the subject property is defined as a "facility" in accordance with Part 201 of the NREPA, 1994 Public Act 451, as amended.

Based on the results of AKT Peerless' subsurface investigation, this BEA is sufficient to provide a basis to distinguish potential future hazardous substance releases from contamination already existing on the property because there will be no significant hazardous substance use at the subject property.

7.0 REFERENCES

The following list includes sources that were used to complete this BEA but were not provided in the appendices.

- Part 201 of the Natural Resources and Environmental Protection Act, Public Act 451 of 1994, as amended
- MDEQ Environmental Response Division Operational Memorandum #18: Part 201 Generic Cleanup Criteria Tables, June 7, 2000.
- MDEQ Instructions for Preparing and Disclosing Baseline Environmental Assessments and Section 7a Compliance Analyses, dated March 11, 1999.

8.0 SIGNATURE PAGE

AKT Peerless Environmental Services prepared this BEA on behalf of the City of Bay City for 112 North Water Road in Bay City, Michigan. AKT Peerless' scope of work is based on Section 20126(1)(c) of Part 201 of the NREPA, 1994 PA 451, as amended, and MDEQ Instructions for Preparing and Disclosing Baseline Environmental Assessments and Section 7a Compliance Analyses, dated March 11, 1999.

AKT PEERLESS ENVIRONMENTAL SERVICES

Josh Bennett
Geologist
AKT Peerless Environmental Services

Scott G. Klipa, P.E.
Senior Environmental Engineer
AKT Peerless Environmental Services

March 29, 2002

FIGURES

BAY CITY QUADRANGLE

MICHIGAN – BAY COUNTY

7.5 MINUTE SERIES (TOPOGRAPHIC)

1 ½ 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 .5 0 1 KILOMETER

CONTOUR INTERVAL 10 FEET
DATUM IS MEAN SEA LEVEL

MICHIGAN QUADRANGLE LOCATION

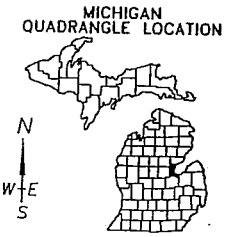


IMAGE TAKEN FROM 1975 U.S.G.S. TOPOGRAPHIC MAP
PHOTOREVISED 1976

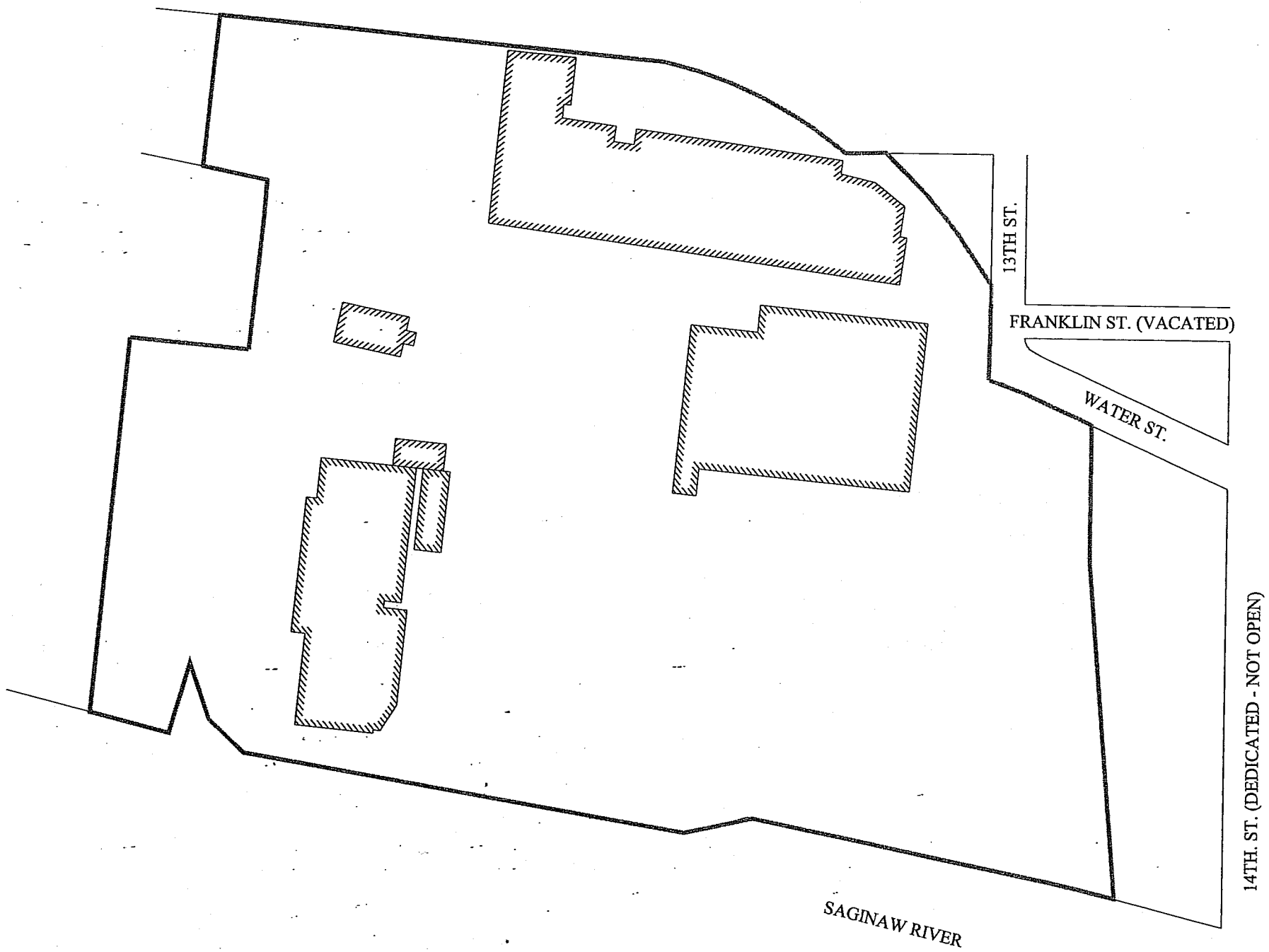
AKTPEERLESS environmental services

24073 Research Drive, Farmington Hills, MI 48335
phone: (248) 615-1333 fax: (248) 615-1334

TOPOGRAPHIC SITE LOCATION MAP
IB PROPERTY
BAY CITY, MICHIGAN
PROJECT NUMBER : 3522F
TSLM

DRAWN BY: JB
DATE: 3-15-02

FIGURE 1



N W E S

LEGEND

= PROPERTY LINE

AKTPEERLESS
environmental services
24073 Research Drive, Farmington Hills, MI 48335
phone: (248) 615-1333 fax: (248) 615-1334

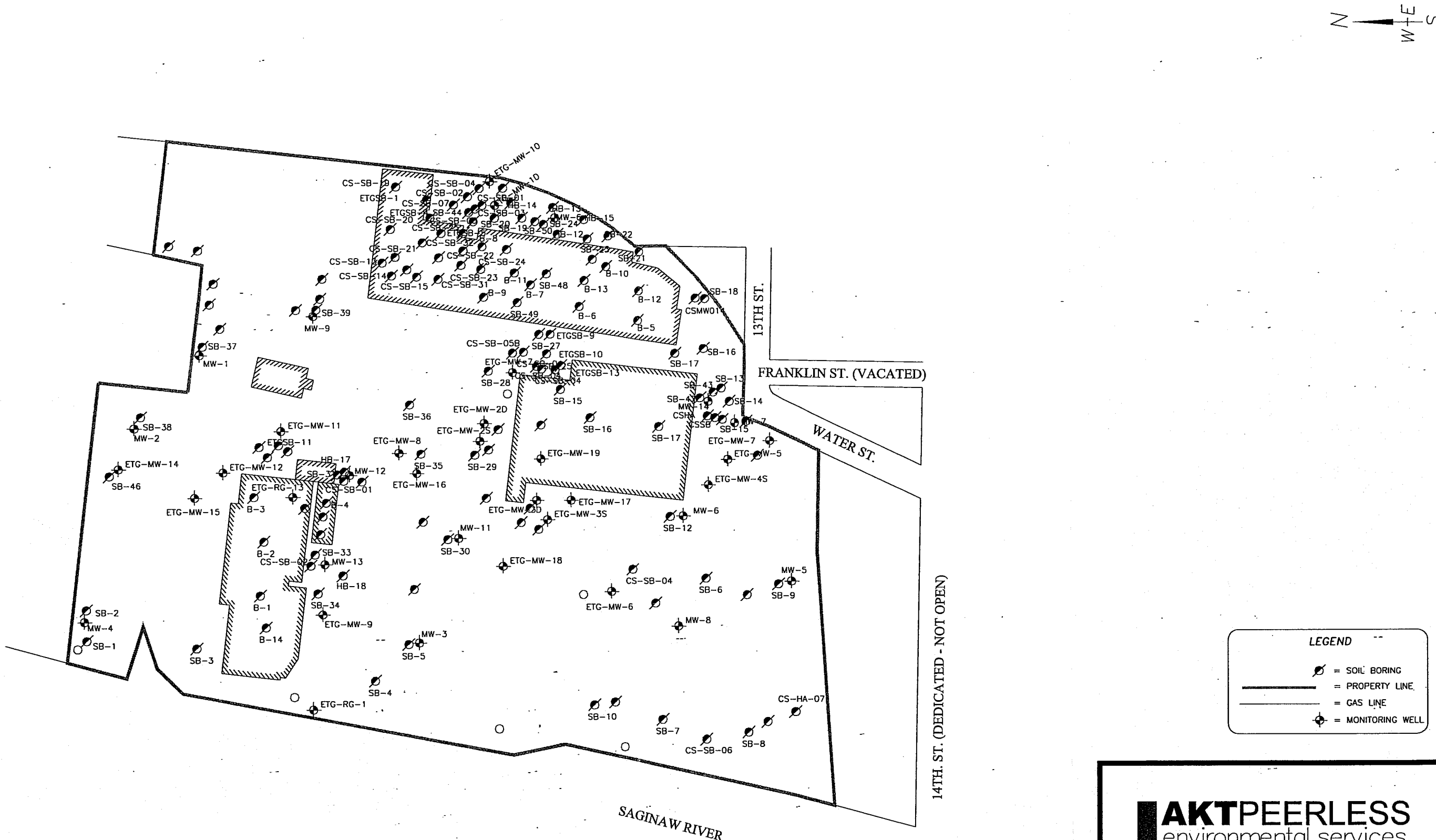
SITE MAP
IB PROPERTY
BAY CITY, MICHIGAN

PROJECT NUMBER : 3522F
DRAWING NUMBER : PM1

DRAWN BY: OGO
DATE: 03-15-02

0 0 0
SCALE: 1"= 200'±

FIGURE 2



AKTPEERLESS
environmental services
24073 Research Drive, Farmington Hills, MI 48335
phone: (248) 615-1333 fax: (248) 615-1334

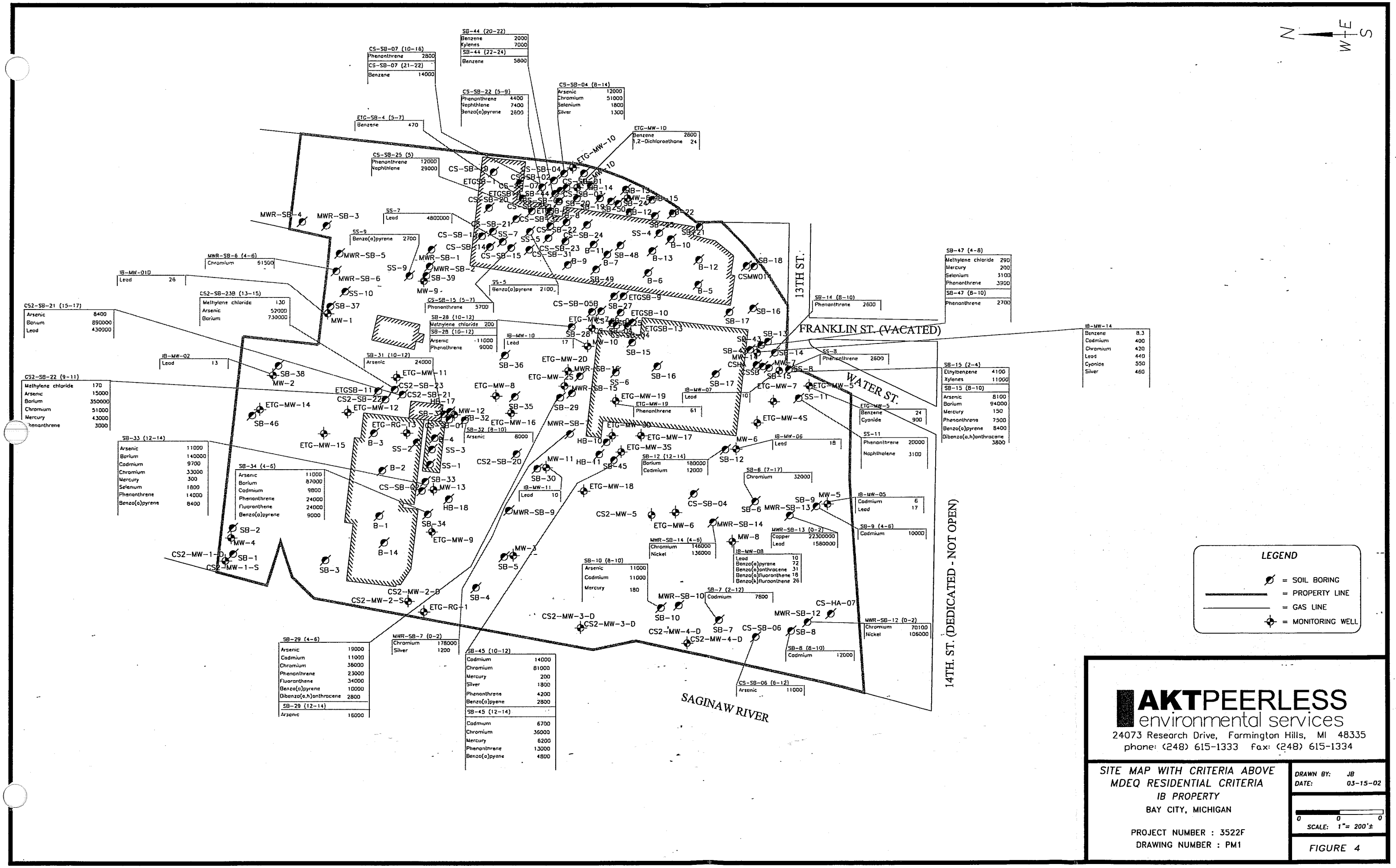
SITE MAP WITH SOIL BORING AND MONITORING WELL LOCATIONS
BAY CITY CERT SITE
BAY CITY, MICHIGAN

PROJECT NUMBER : 3522F
DRAWING NUMBER : PM1

DRAWN BY: JB
DATE: 03-15-02

SCALE: 1"= 200'±

FIGURE 3



AKTPEERLESS environmental services
24073 Research Drive, Farmington Hills, MI 48335
phone: (248) 615-1333 fax: (248) 615-1334

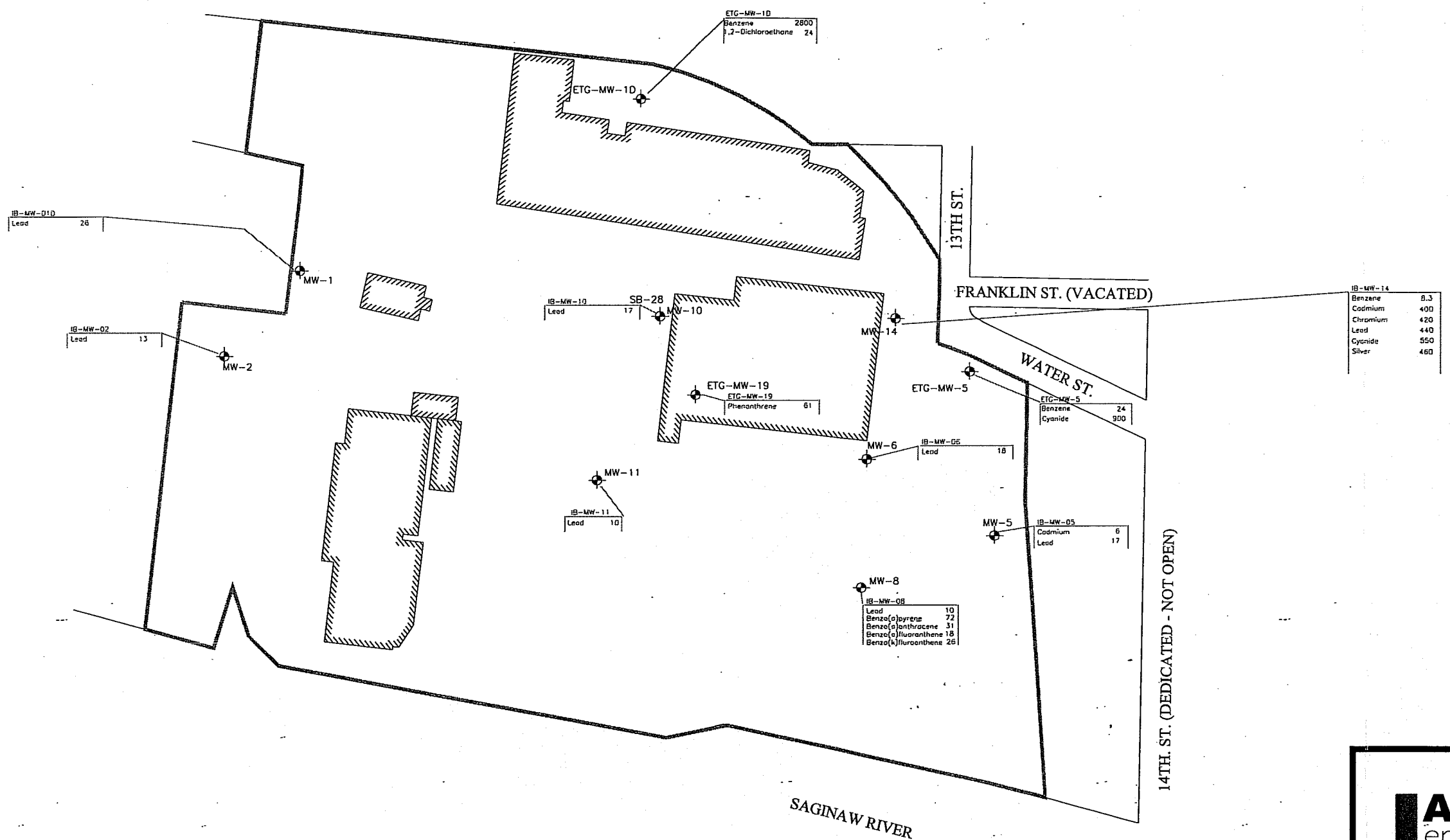
SITE MAP WITH CRITERIA ABOVE MDEQ RESIDENTIAL CRITERIA
IB PROPERTY
BAY CITY, MICHIGAN

PROJECT NUMBER : 3522F
DRAWING NUMBER : PM1

DRAWN BY: JB
DATE: 03-15-02

0 0 0
SCALE: 1"= 200'±

FIGURE 4



LEGEND

= PROPERTY LINE

= MONITORING WELL

AKTPEERLESS environmental services
24073 Research Drive, Farmington Hills, MI 48335
phone: (248) 615-1333 fax: (248) 615-1334

SITE MAP WITH GROUNDWATER RESULTS ABOVE MDEQ CRITERIA

IB PROPERTY
BAY CITY, MICHIGAN
PROJECT NUMBER : 3522F
DRAWING NUMBER : PM1

DRAWN BY: JB
DATE: 03-15-02

0 0 0
SCALE: 1"= 200'±

FIGURE 5

TABLES

Table 1
Summary of Soil Analytical Results '89-'95 1
IB Property, Bay City, Mi
AKT Peerless Project Number 3522F-2-20

Sample Identification and Date		IB-HA-06 (1.5-3.5)	IB-HA-07 (1.5-4.5)	IB-HA-08 (1.5-3)	IB-HA-09 (1.5-4.5)	IB-HA-10 (1.5-4.5)	IB-HA-11 (1.5-2)	IB-HA-12 (1.5-4.5)	IB-HA-13 (1.5-4.5)	IB-HA-14 (1.5-4.5)	IB-HA-15 (1.5-4.5)	IB-HA-16 (1.5-3.5)	IB-HA-17 (1.5-2)	IS-BS-01 (6-8)	IS-BS-01 (8-10)	IS-BS-02 (8-10)	MDEQ Generic Residential Drinking Water Protection Criteria α	MDEQ Generic Residential Groundwater Surface Water Interface Protection Criteria	MDEQ Generic Residential Soil Direct Contact Criteria α	MDEQ Generic Residential Soil Volatilization to Ambient Air Inhalation Criteria α	MDEQ Generic Residential Soil Volatilization to Indoor Air Inhalation Criteria α
Gasoline Parameters (µg/kg)	**CAS#**																				
Benzene	71432	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	100	4,000	180,000	13,000	1,600
Ethylbenzene	100414	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	1,500	360	140,000	9,500,000	140,000
Methylene chloride	75092	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	100	19,000	1,300,000	210,000	45,000
Xylenes	1330207	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	5,600	700	150,000	46,000,000	150,000
Other VOCs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Michigan Metals (µg/kg)	**CAS#**																				
Arsenic	7440382	ND	ND	**9,600**	ND	ND	ND	ND	ND	ND	ND	**9,200**	**34,000**	ND	ND	ND	23,000	70,000	**7,600**	NLV	NLV
Barium	7440393	ND	ND	ND	ND	**180,000**	**96,000**	ND	ND	ND	**78,000**	ND	ND	ND	ND	ND	1,300,000	**1,900**	37,000,000	NLV	NLV
Cadmium	7440439	2700	**8000**	**14000**	5200	**13,000**	**18,000**	3600	3500	3300	5300	**8200**	**11000**	2700	3400	4000	**6,000**	G	550,000	NLV	NLV
Chromium (total)	18540229	ND	ND	ND	ND	**37,000**	**49,000**	ND	ND	ND	ND	24,000	**75,000**	ND	ND	ND	**30,000**	G	2,500,000	NLV	NLV
Copper	7440508	ND	70000	70,000	ND	380,000	270,000	ND	ND	ND	180,000	82,000	170,000	ND	ND	ND	5,800,000	G	20,000,000	NLV	NLV
Lead	7439921	33000	66000	130,000	ND	82,000	150,000	ND	ND	ND	96,000	70,000	290,000	ND	ND	ND	700,000	G	400,000	NLV	NLV
Nickel	7440020	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	100,000	G	40,000,000	NLV	NLV
Mercury (inorganic)	7439976	ND	ND	ND	ND	180	ND	ND	ND	ND	ND	1,600	ND	ND	ND	ND	1,700	100	160,000	NLV	NLV
Selenium	7782492	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4,000	400	2,600,000	NLV	NLV
Silver	7440224	ND	ND	ND	ND	ND	ND	1500	ND	ND	ND	ND	ND	ND	ND	ND	4,500	500	2,500,000	NLV	NLV
Zinc	7440666	ND	86000	99,000	ND	91,000	160,000	ND	ND	ND	150,000	200,000	**4,400,000**	ND	ND	ND	**2,400,000**	G	170,000,000	NLV	NLV
PAHs and PCBs (µg/kg)	**CAS#**																				
Phenanthrene	85018	**3,300**	1500	1700	1000	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	**4,900**	56,000	**2,300**	1,600,000	9,300	1,800,000
Acenaphthylene	208968	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	900	5,900	ID	1,600,000	2,200,000	1,600,000
Naphthalene	91203	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	35,000	870	16,000,000	300,000	250,000
Fluoranthene	206440	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	730,000	5,500	46,000,000	740,000,000	1,000,000,000
Pyrene	206440	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	480,000	ID	29,000,000	650,000,000	1,000,000,000
Benzo(a)pyrene	50328	**2300**	ND	ND	ND	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	**2,600**	NLL	NLL	**2,000**	1,500,000	NLV
Dibenzo(a,h)anthracene	53703	ND	ND	ND	ND	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	NLL	NLL	2,000	NLV	NLV
Other PNAs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note:

(µg/kg) - Micrograms per kilogram
"<" - Less than the laboratory method detection limit
NA - Not analyzed
ND - Not detected above laboratory method detection limits
NLV - Not likely to volatilize
ID - Inadequate data to develop criteria
IP - Development in process
NLL - Not likely to leach
NA - Not available
α – MDEQ Operational Memorandum #18: Part 201Generic Cleanup Criteria and Screening Levels, June 7, 2000
β – MDEQ Operational Memorandum #4: Part 213 Tier I Risk-Based Screening Levels (RBSLs), June 2000
bold - concentration exceeds MDEQ Criteria

Table 1
Summary of Soil Analytical Results '89-'95 2
IB Property, Bay City, Mi
AKT Peerless Project Number 3522F-2-20

Sample Identification and Date		IB-SB-06 (7-17)	IB-SB-07 (2-12)	IB-SB-08 (8-10)	IB-SB-09 (4-6)	IB-SB-10 (8-10)	IB-SB-11 (4-6)	IB-SB-11 (12-14)	IB-SB-12 (12-14)	IB-SB-13 (4-6)	IB-SB-13 (12-14)	IB-SB-14 (8-10)	IB-SB-15 (2-4)	IB-SB-15 (8-10)	IB-SB-16 (2-4)	IB-SB-16 (4-6)	MDEQ Generic Residential Drinking Water Protection Criteria α	MDEQ Generic Residential Groundwater Surface Water Interface Protection Criteria	MDEQ Generic Residential Soil Direct Contact Criteria α	MDEQ Generic Residential Soil Volatilization to Ambient Air Inhalation Criteria α	MDEQ Generic Residential Soil Volatilization to Indoor Air Inhalation Criteria α
Gasoline Parameters (µg/kg)	**CAS#**																				
Benzene	71432	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100	4,000	180,000	13,000	1,600
Ethylbenzene	100414	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	**4100**	ND	ND	ND	**1,500**	**360**	140,000	9,500,000	140,000
Methylene chloride	75092	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100	19,000	1,300,000	210,000	45,000
Xylenes	1330207	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	**11000**	ND	ND	ND	**5,600**	**700**	150,000	46,000,000	150,000
Other VOCs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Michigan Metals (µg/kg)	**CAS#**																				
Arsenic	7440382	ND	ND	ND	ND	**11,000**	**9,500**	ND	9700	ND	ND	ND	ND	**8,100**	ND	ND	23,000	70,000	**7,600**	NLV	NLV
Barium	7440393	ND	ND	ND	ND	ND	ND	ND	**180000**	ND	ND	ND	ND	**94,000**	ND	ND	1,300,000	**1,900**	37,000,000	NLV	NLV
Cadmium	7440439	16000	**7800**	**12000**	**10000**	**11,000**	**13,000**	ND	**12000**	4000	4800	5200	2900	3200	3600	3500	**6,000**	G	550,000	NLV	NLV
Chromium (total)	18540229	**32,000**	22,000	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**30,000**	G	2,500,000	NLV	NLV
Copper	7440508	94000	110000	150,000	320,000	110,000	170,000	ND	120000	ND	ND	ND	ND	ND	ND	ND	5,800,000	G	20,000,000	NLV	NLV
Lead	7439921	45000	150000	30,000	81,000	25,000	57,000	80000	100000	ND	ND	ND	ND	140,000	ND	ND	700,000	G	400,000	NLV	NLV
Nickel	7440020	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	100,000	G	40,000,000	NLV	NLV
Mercury (inorganic)	7439976	ND	ND	ND	ND	**180**	ND	ND	310	ND	ND	ND	ND	**150**	ND	ND	1,700	**100**	160,000	NLV	NLV
Selenium	7782492	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4,000	400	2,600,000	NLV	NLV
Silver	7440224	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4,500	500	2,500,000	NLV	NLV
Zinc	7440666	ND	ND	55,000	83,000	ND	56,000	ND	120000	ND	ND	ND	ND	260,000	ND	ND	2,400,000	G	170,000,000	NLV	NLV
[illegible]As and PCBs (µg/kg)	**CAS#**																				
Phenanthrene	85018	600	ND	ND	ND	600	ND	ND	ND	ND	ND	**2,600**	ND	**7,500**	ND	ND	56,000	**2,300**	1,600,000	9,300	1,800,000
Acenaphthylene	208968	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,200	ND	ND	5,900	ID	1,600,000	2,200,000	1,600,000
Naphthalene	91203	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	35,000	870	16,000,000	300,000	250,000
Fluoranthene	206440	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	730,000	5,500	46,000,000	740,000,000	1,000,000,000
Pyrene	206440	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	13,000	ND	ND	480,000	ID	29,000,000	650,000,000	1,000,000,000
Benzo(a)pyrene	50328	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**8,400**	ND	ND	NLL	NLL	**2,000**	1,500,000	NLV
Dibenzo(a,h)anthracene	53703	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**3,800**	ND	ND	NLL	NLL	**2,000**	NLV	NLV
Other PNAs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note:

(µg/kg) - Micrograms per kilogram

"<" - Less than the laboratory method detection limit

NA - Not analyzed

ND - Not detected above laboratory method detection limits

NLV - Not likely to volatilize

ID - Inadequate data to develop criteria

IP - Development in process

NLL - Not likely to leach

NA - Not available

α – MDEQ Operational Memorandum #18: Part 201Generic Cleanup Criteria and Screening Levels, June 7, 2000

β – MDEQ Operational Memorandum #4: Part 213 Tier I Risk-Based Screening Levels (RBSLs), June 2000

bold - concentration exceeds MDEQ Criteria

Table 1
Summary of Soil Analytical Results '89-'95 3
IB Property, Bay City, Mi
AKT Peerless Project Number 3522F-2-20

Sample Identification and Date		IB-SB-17 (4-6)	IB-SB-18 (2-4)	IB-SB-19 (2-4)	IB-SB-19 (6-8)	IB-SB-20 (0-6)	IB-SB-21 (0-2)	IB-SB-21 (2-4)	IB-SB-22 (4-6)	IB-SB-23 (4-6)	IB-SB-24 (4-6)	IB-SB-25 (6-8)	IB-SB-25 (10-12)	IB-SB-25 (12-14)	IB-SB-26 (8-10)	IB-SB-27 (2-4)	MDEQ Generic Residential Drinking Water Protection Criteria α	MDEQ Generic Residential Groundwater Surface Water Interface Protection Criteria	MDEQ Generic Residential Soil Direct Contact Criteria α	MDEQ Generic Residential Soil Volatilization to Ambient Air Inhalation Criteria α	MDEQ Generic Residential Soil Volatilization to Indoor Air Inhalation Criteria α
Gasoline Parameters (µg/kg)	**CAS#**																				
Benzene	71432	NA	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	100	4,000	180,000	13,000	1,600
Ethylbenzene	100414	NA	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	1,500	360	140,000	9,500,000	140,000
Methylene chloride	75092	NA	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	100	19,000	1,300,000	210,000	45,000
Xylenes	1330207	NA	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	5,600	700	150,000	46,000,000	150,000
Other VOCs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Michigan Metals (µg/kg)	**CAS#**																				
Arsenic	7440382	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	23,000	70,000	7,600	NLV	NLV
Barium	7440393	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	1,300,000	1,900	37,000,000	NLV	NLV
Cadmium	7440439	4000	3200	3300	3800	2,900	3,200	2900	2600	2500	2400	NA	3000	3500	3400	1400	6,000	G	550,000	NLV	NLV
Chromium (total)	18540229	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	30,000	G	2,500,000	NLV	NLV
Copper	7440508	ND	ND	ND	ND	N	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	5,800,000	G	20,000,000	NLV	NLV
Lead	7439921	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	25,000	700,000	G	400,000	NLV	NLV
Nickel	7440020	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	100,000	G	40,000,000	NLV	NLV
Mercury (inorganic)	7439976	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	1,700	100	160,000	NLV	NLV
Selenium	7782492	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	4,000	400	2,600,000	NLV	NLV
Silver	7440224	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	4,500	500	2,500,000	NLV	NLV
Zinc	7440666	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	ND	260,000	ND	ND	2,400,000	G	170,000,000	NLV	NLV
PAHs and PCBs (µg/kg)	**CAS#**																				
Phenanthrene	85018	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,800	ND	ND	ND	ND	56,000	2,300	1,600,000	9,300	1,800,000
Acenaphthylene	208968	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	800	ND	ND	ND	ND	5,900	ID	1,600,000	2,200,000	1,600,000
Naphthalene	91203	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	35,000	870	16,000,000	300,000	250,000
Fluoranthene	206440	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	730,000	5,500	46,000,000	740,000,000	1,000,000,000
Pyrene	206440	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	480,000	ID	29,000,000	650,000,000	1,000,000,000
Benzo(a)pyrene	50328	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,800	ND	ND	ND	ND	NLL	NLL	2,000	1,500,000	NLV
Dibenzo(a,h)anthracene	53703	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NLL	NLL	2,000	NLV	NLV
Other PNAs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note:

(µg/kg) - Micrograms per kilogram
"<" - Less than the laboratory method detection limit
NA - Not analyzed
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ID - Inadequate data to develop criteria
IP - Development in process
NLL - Not likely to leach
NA - Not available
α – MDEQ Operational Memorandum #18: Part 201Generic Cleanup Criteria and Screening Levels, June 7, 2000
β – MDEQ Operational Memorandum #4: Part 213 Tier I Risk-Based Screening Levels (RBSLs), June 2000
bold - concentration exceeds MDEQ Criteria

Table 1
Summary of Soil Analytical Results '89-'95 4
IB Property, Bay City, Mi
AKT Peerless Project Number 3522F-2-20

Sample Identification and Date		IB-SB-27 (4-6)	IB-SB-28 (10-12)	IB-SB-28 (12-14)	IB-SB-28 (14-16)	IB-SB-29 (4-6)	IB-SB-29 (12-14)	IB-SB-30 (12-14)	IB-SB-31 (10-12)	IB-SB-32 (8-10)	IB-SB-33 (6-8)	IB-SB-33 (12-14)	IB-SB-34 (4-6)	IB-SB-35 (6-8)	IB-SB-36 (10-12)	IB-SB-38 (2-8)	MDEQ Generic Residential Drinking Water Protection Criteria α	MDEQ Generic Residential Groundwater Surface Water Interface Protection Criteria	MDEQ Generic Residential Soil Direct Contact Criteria α	MDEQ Generic Residential Soil Volatilization to Ambient Air Inhalation Criteria α	MDEQ Generic Residential Soil Volatilization to Indoor Air Inhalation Criteria α
Gasoline Parameters (µg/kg)	**CAS#**																				
Benzene	71432	ND	ND	NA	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	NA	100	4,000	180,000	13,000	1,600
Ethylbenzene	100414	ND	ND	NA	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	NA	1,500	360	140,000	9,500,000	140,000
Methylene chloride	75092	ND	**200**	NA	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	NA	**100**	19,000	1,300,000	210,000	45,000
Xylenes	1330207	ND	ND	NA	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	NA	5,600	700	150,000	46,000,000	150,000
Other VOCs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Michigan Metals (µg/kg)	**CAS#**																				
Arsenic	7440382	ND	NA	**11,000**	ND	**19,000**	**16,000**	ND	**24000**	**8,000**	ND	**11,000**	**11,000**	ND	ND	NA	23,000	70,000	**7,600**	NLV	NLV
Barium	7440393	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	**140,000**	**87,000**	ND	ND	NA	1,300,000	1,900	37,000,000	NLV	NLV
Cadmium	7440439	3000	NA	1400	1600	**11,000**	5,300	1400	1700	1800	2600	**9700**	**9800**	2000	4900	NA	6,000	G	550,000	NLV	NLV
Chromium (total)	18540229	ND	NA	ND	ND	**36,000**	ND	ND	ND	ND	ND	**33,000**	ND	ND	ND	NA	30,000	G	2,500,000	NLV	NLV
Copper	7440508	ND	NA	ND	ND	65,000	45,000	ND	ND	ND	ND	93,000	110,000	ND	74,000	NA	5,800,000	G	20,000,000	NLV	NLV
Lead	7439921	ND	NA	39,000	ND	31,000	29,000	ND	ND	ND	ND	180,000	110,000	ND	42,000	NA	700,000	G	400,000	NLV	NLV
Nickel	7440020	NA	NA	NA	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	100,000	G	40,000,000	NLV	NLV
Mercury (inorganic)	7439976	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	**300**	ND	ND	300	NA	1,700	**100**	160,000	NLV	NLV
Selenium	7782492	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	**1,800**	ND	ND	ND	NA	4,000	**400**	2,600,000	NLV	NLV
Silver	7440224	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	4,500	500	2,500,000	NLV	NLV
Zinc	7440666	ND	NA	64,000	ND	95,000	53,000	ND	ND	ND	130,000	1,900,000	150,000	ND	120,000	NA	2,400,000	G	170,000,000	NLV	NLV
NAs and PCBs (µg/kg)	**CAS#**																				
Phenanthrene	85018	ND	NA	**9000**	ND	**23,000**	800	ND	ND	ND	ND	**14,000**	**24,000**	ND	ND	800	56,000	**2,300**	1,600,000	9,300	1,800,000
Acenaphthylene	208968	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	800	ND	ND	ND	ND	5,900	ID	1,600,000	2,200,000	1,600,000
Naphthalene	91203	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	35,000	870	16,000,000	300,000	250,000
Fluoranthene	206440	ND	NA	ND	ND	**34,000**	ND	ND	ND	ND	ND	ND	**24,000**	ND	ND	ND	730,000	**5,500**	46,000,000	740,000,000	1,000,000,000
Pyrene	206440	ND	NA	ND	ND	26,000	ND	ND	ND	ND	ND	17,000	20,000	ND	ND	ND	480,000	ID	29,000,000	650,000,000	1,000,000,000
Benzo(a)pyrene	50328	ND	NA	ND	ND	**10,000**	ND	ND	ND	ND	ND	**8,400**	**9,000**	ND	ND	ND	NLL	NLL	**2,000**	1,500,000	NLV
Dibenzo(a,h)anthracene	53703	ND	NA	ND	ND	**2,800**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NLL	NLL	**2,000**	NLV	NLV
Other PNAs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note:

(µg/kg) - Micrograms per kilogram
"<" - Less than the laboratory method detection limit
NA - Not analyzed
ND - Not detected above laboratory method detection limits
NLV - Not likely to volatilize
ID - Inadequate data to develop criteria
IP - Development in process
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α – MDEQ Operational Memorandum #18: Part 201Generic Cleanup Criteria and Screening Levels, June 7, 2000
β – MDEQ Operational Memorandum #4: Part 213 Tier I Risk-Based Screening Levels (RBSLs), June 2000
bold - concentration exceeds MDEQ Criteria

Table 1
Summary of Soil Analytical Results '89-'95 5
IB Property, Bay City, Mi
AKT Peerless Project Number 3522F-2-20

Sample Identification and Date		IB-SB-43 (4-6)	IB-SB-44 (20-22)	IB-SB-44 (22-24)	IB-SB-45 (10-12)	IB-SB-45 (12-14)	IB-SB-46 (4-6)	IB-SB-46 (8-10)	IB-SB-47 (4-8)	IB-SB-47 (8-10)	IB-SB-48 (0-1)	CS-SB-04 (8-14)	CS-SB-06 (6-12)	CS-SB-07 (10-16)	CS-SB-07 (21-22)	CS-SB-13 (3-7)	MDEQ Generic Residential Drinking Water Protection Criteria α	MDEQ Generic Residential Groundwater Surface Water Interface Protection Criteria	MDEQ Generic Residential Soil Direct Contact Criteria α	MDEQ Generic Residential Soil Volatilization to Ambient Air Inhalation Criteria α	MDEQ Generic Residential Soil Volatilization to Indoor Air Inhalation Criteria α
Gasoline Parameters (µg/kg)	**CAS#**																				
Benzene	71432	ND	**2000**	**5,800**	ND	NA	ND	ND	ND	ND	NA	ND	ND	NA	**14000**	ND	**100**	**4,000**	180,000	**13,000**	**1,600**
Ethylbenzene	100414	ND	ND	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	NA	ND	ND	1,500	360	140,000	9,500,000	140,000
Methylene chloride	75092	ND	ND	ND	ND	NA	ND	ND	**290**	ND	NA	**110**	ND	NA	ND	ND	**100**	19,000	1,300,000	210,000	45,000
Xylenes	1330207	ND	**7000**	ND	ND	NA	ND	ND	ND	ND	NA	ND	ND	NA	ND	ND	**5,600**	**700**	150,000	46,000,000	150,000
Other VOCs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Michigan Metals (µg/kg)	**CAS#**																				
Arsenic	7440382	ND	NA	ND	ND	ND	NA	NA	ND	ND	NA	**12,000**	**11,000**	NA	NA	NA	23,000	70,000	**7,600**	NLV	NLV
Barium	7440393	ND	NA	ND	ND	ND	NA	NA	190	ND	NA	ND	ND	NA	NA	NA	1,300,000	1,900	37,000,000	NLV	NLV
Cadmium	7440439	2900	NA	3300	**14000**	**6,700**	NA	NA	3900	ND	NA	ND	ND	NA	NA	NA	**6,000**	G	550,000	NLV	NLV
Chromium (total)	18540229	ND	NA	ND	**81,000**	**36,000**	NA	NA	ND	ND	NA	**51,000**	ND	NA	NA	NA	**30,000**	G	2,500,000	NLV	NLV
Copper	7440508	ND	NA	ND	170,000	1,800,000	NA	NA	720000	ND	NA	140,000	140,000	NA	NA	NA	5,800,000	G	20,000,000	NLV	NLV
Lead	7439921	88000	NA	ND	85,000	230	NA	NA	230000	ND	NA	65,000	89,000	NA	NA	NA	700,000	G	400,000	NLV	NLV
Nickel	7440020	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	100,000	G	40,000,000	NLV	NLV
Mercury (inorganic)	7439976	ND	NA	ND	**200**	**6,200**	NA	NA	**200**	ND	NA	ND	ND	NA	NA	NA	**1,700**	**100**	160,000	NLV	NLV
Selenium	7782492	ND	NA	ND	ND	ND	NA	NA	**3100**	ND	NA	**1,800**	ND	NA	NA	NA	4,000	**400**	2,600,000	NLV	NLV
Silver	7440224	ND	NA	ND	**1,800**	ND	NA	NA	ND	ND	NA	**1,300**	ND	NA	NA	NA	4,500	**500**	2,500,000	NLV	NLV
Zinc	7440666	ND	NA	ND	ND	57,000	NA	NA	140000	ND	NA	140,000	54,000	NA	NA	NA	2,400,000	G	170,000,000	NLV	NLV
NAs and PCBs (µg/kg)	**CAS#**																				
Phenanthrene	85018	1,000	NA	ND	**4200**	**13,000**	1,000	600	**3,900**	**2,700**	1,800	ND	ND	**2,800**	ND	ND	56,000	**2,300**	1,600,000	**9,300**	1,800,000
Acenaphthylene	208968	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5,900	ID	1,600,000	2,200,000	1,600,000
Naphthalene	91203	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	35,000	870	16,000,000	300,000	250,000
Fluoranthene	206440	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	730,000	5,500	46,000,000	740,000,000	1,000,000,000
Pyrene	206440	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	480,000	ID	29,000,000	650,000,000	1,000,000,000
Benzo(a)pyrene	50328	ND	NA	ND	**2800**	**4,800**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NLL	NLL	**2,000**	1,500,000	NLV
Dibenzo(a,h)anthracene	53703	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NLL	NLL	2,000	NLV	NLV
Other PNAs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note:

(µg/kg) - Micrograms per kilogram
"<" - Less than the laboratory method detection limit
NA - Not analyzed
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α – MDEQ Operational Memorandum #18: Part 201Generic Cleanup Criteria and Screening Levels, June 7, 2000
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bold - concentration exceeds MDEQ Criteria

Table 1
Summary of Soil Analytical Results '89-'95 6
IB Property, Bay City, Mi
AKT Peerless Project Number 3522F-2-20

Sample Identification and Date		CS-SB-14 (5-7)	CS-SB-15 (5-7)	CS-SB-22 (5-9)	CS-SB-22 (9-11)	CS-SB-25 (5)	CS2-SB-18B (25-27)	CS2-SB-19D (17-19)	CS2-SB-19D (27-29)	CS2-SB-20 (25-27)	CS2-SB-21 (15-17)	CS2-SB-22 (9-11)	CS2-SB-23B (13-15)	CS2-SB-25 (27-29)	CS2-SB-26 (9-11)	CS2-SB-27 (27-29)	MDEQ Generic Residential Drinking Water Protection Criteria α	MDEQ Generic Residential Groundwater Surface Water Interface Protection Criteria	MDEQ Generic Residential Soil Direct Contact Criteria α	MDEQ Generic Residential Soil Volatilization to Ambient Air Inhalation Criteria α	MDEQ Generic Residential Soil Volatilization to Indoor Air Inhalation Criteria α
Gasoline Parameters (µg/kg)	**CAS#**																				
Benzene	71432	ND	ND	ND	110	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100	4,000	180,000	13,000	1,600
Ethylbenzene	100414	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,500	360	140,000	9,500,000	140,000
Methylene chloride	75092	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**170**	**130**	ND	ND	120	**100**	19,000	1,300,000	210,000	45,000
Xylenes	1330207	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5,600	700	150,000	46,000,000	150,000
Other VOCs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Michigan Metals (µg/kg)	**CAS#**																				
Arsenic	7440382	NA	NA	NA	NA	NA	5,100	**11000**	6000	7,100	**8,400**	**15,000**	**52,000**	**7,500**	ND	ND	**23,000**	70,000	**7,600**	NLV	NLV
Barium	7440393	NA	NA	NA	NA	NA	ND	**76000**	ND	ND	**890,000**	**350,000**	**730,000**	ND	ND	ND	1,300,000	**1,900**	37,000,000	NLV	NLV
Cadmium	7440439	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6,000	G	550,000	NLV	NLV
Chromium (total)	18540229	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	**51,000**	ND	ND	24,000	ND	**30,000**	G	2,500,000	NLV	NLV
Copper	7440508	NA	NA	NA	NA	NA	ND	50000	ND	ND	110,000	280,000	ND	ND	550,000	ND	5,800,000	G	20,000,000	NLV	NLV
Lead	7439921	NA	NA	NA	NA	NA	NA	51000	ND	ND	**430,000**	200,000	ND	ND	130,000	ND	700,000	G	**400,000**	NLV	NLV
Nickel	7440020	NA	NA	NA	NA	NA	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	100,000	G	40,000,000	NLV	NLV
Mercury (inorganic)	7439976	NA	NA	NA	NA	NA	ND	**400**	ND	ND	ND	**43,000**	ND	**200**	**12,000**	**43,000**	**1,700**	**100**	160,000	NLV	NLV
Selenium	7782492	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4,000	400	2,600,000	NLV	NLV
Silver	7440224	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4,500	500	2,500,000	NLV	NLV
Zinc	7440666	NA	NA	NA	NA	NA	ND	120000	ND	ND	180,000	97,000	630,000	ND	51,000	ND	2,400,000	G	170,000,000	NLV	NLV
NAs and PCBs (µg/kg)	**CAS#**																				
Phenanthrene	85018	1,100	**5700**	**4400**	ND	**12,000**	ND	730	1,200	ND	2,300	**3,000**	ND	ND	ND	ND	56,000	**2,300**	1,600,000	**9,300**	1,800,000
Acenaphthylene	208968	ND	800	ND	ND	1,100	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5,900	ID	1,600,000	2,200,000	1,600,000
Naphthalene	91203	ND	ND	**7400**	ND	**29,000**	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	35,000	**870**	16,000,000	300,000	250,000
Fluoranthene	206440	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	730,000	5,500	46,000,000	740,000,000	1,000,000,000
Pyrene	206440	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	480,000	ID	29,000,000	650,000,000	1,000,000,000
Benzo(a)pyrene	50328	ND	1700	**2600**	ND	1,800	ND	ND	ND	ND	1,600	ND	ND	ND	ND	ND	NLL	NLL	**2,000**	1,500,000	NLV
Dibenzo(a,h)anthracene	53703	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NLL	NLL	2,000	NLV	NLV
Other PNAs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note:

(µg/kg) - Micrograms per kilogram
"<" - Less than the laboratory method detection limit
NA - Not analyzed
ND - Not detected above laboratory method detection limits
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α – MDEQ Operational Memorandum #18: Part 201Generic Cleanup Criteria and Screening Levels, June 7, 2000
β – MDEQ Operational Memorandum #4: Part 213 Tier I Risk-Based Screening Levels (RBSLs), June 2000
bold - concentration exceeds MDEQ Criteria

Table 1
Summary of Soil Analytical Results '89-'95 7
IB Property, Bay City, Mi
AKT Peerless Project Number 3522F-2-20

Sample Identification and Date		MWR-SB-1 (3-5)	MWR-SB-2 (0-2)	MWR-SB-2 (4-6)	MWR-SB-3 (0-2)	MWR-SB-3 (4-6)	MWR-SB-4 (0-2)	MWR-SB-4 (4-6)	MWR-SB-5 (0-2)	MWR-SB-5 (4-6)	MWR-SB-6 (4-6)	MWR-SB-7 (0-2)	MWR-SB-7 (4-6)	MWR-SB-8 (0-2)	MWR-SB-8 (4-6)	MWR-SB-9 (0-2)	MDEQ Generic Residential Drinking Water Protection Criteria α	MDEQ Generic Residential Groundwater Surface Water Interface Protection Criteria	MDEQ Generic Residential Soil Direct Contact Criteria α	MDEQ Generic Residential Soil Volatilization to Ambient Air Inhalation Criteria α	MDEQ Generic Residential Soil Volatilization to Indoor Air Inhalation Criteria α
Gasoline Parameters (µg/kg)	**CAS#**																				
Benzene	71432	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100	4,000	180,000	13,000	1,600
Ethylbenzene	100414	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,500	360	140,000	9,500,000	140,000
Methylene chloride	75092	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100	19,000	1,300,000	210,000	45,000
Xylenes	1330207	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	5,600	700	150,000	46,000,000	150,000
Other VOCs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Michigan Metals (µg/kg)	**CAS#**																				
Arsenic	7440382	ND	700	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	23,000	70,000	7,600	NLV	NLV
Barium	7440393	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	1,300,000	1,900	37,000,000	NLV	NLV
Cadmium	7440439	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6,000	G	550,000	NLV	NLV
Chromium (total)	18540229	ND	ND	ND	ND	ND	ND	ND	ND	ND	**61,500**	**178,000**	23,500	**39,400**	ND	ND	**30,000**	G	2,500,000	NLV	NLV
Copper	7440508	ND	49600	145,000	39,700	40,600	42,800	ND	80000	ND	39,800	438,000	930,000	109,000	32,400	55,400	5,800,000	G	20,000,000	NLV	NLV
Lead	7439921	56200	60600	35,500	58,400	54,100	53,200	ND	80500	38,900	27,000	110,000	368,000	38,300	ND	ND	700,000	G	400,000	NLV	NLV
Nickel	7440020	ND	ND	ND	ND	ND	ND	ND	ND	ND	27,500	126,000	56,500	24,600	ND	NA	100,000	G	40,000,000	NLV	NLV
Mercury (inorganic)	7439976	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1,700	100	160,000	NLV	NLV
Selenium	7782492	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4,000	400	2,600,000	NLV	NLV
Silver	7440224	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	**1,200**	ND	ND	ND	ND	4,500	**500**	2,500,000	NLV	NLV
Zinc	7440666	54700	74400	57,000	89,000	90,700	88,600	53000	79200	145,000	109,000	219,000	482,000	76,200	ND	ND	2,400,000	G	170,000,000	NLV	NLV
NAs and PCBs (µg/kg)	**CAS#**																				
Phenanthrene	85018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	56,000	2,300	1,600,000	9,300	1,800,000
Acenaphthylene	208968	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5,900	ID	1,600,000	2,200,000	1,600,000
Naphthalene	91203	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	35,000	870	16,000,000	300,000	250,000
Fluoranthene	206440	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	730,000	5,500	46,000,000	740,000,000	1,000,000,000
Pyrene	206440	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	480,000	ID	29,000,000	650,000,000	1,000,000,000
Benzo(a)pyrene	50328	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NLL	NLL	2,000	1,500,000	NLV
Dibenzo(a,h)anthracene	53703	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NLL	NLL	2,000	NLV	NLV
Other PNAs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note:

(µg/kg) - Micrograms per kilogram
"<" - Less than the laboratory method detection limit
NA - Not analyzed
ND - Not detected above laboratory method detection limits
NLV - Not likely to volatilize
ID - Inadequate data to develop criteria
IP - Development in process
NLL - Not likely to leach
NA - Not available
α – MDEQ Operational Memorandum #18: Part 201Generic Cleanup Criteria and Screening Levels, June 7, 2000
β – MDEQ Operational Memorandum #4: Part 213 Tier I Risk-Based Screening Levels (RBSLs), June 2000
bold - concentration exceeds MDEQ Criteria

Table 1
Summary of Soil Analytical Results '89-'95 8
IB Property, Bay City, Mi
AKT Peerless Project Number 3522F-2-20

Sample Identification and Date		MWR-SB-9 (4-6)	MWR-SB-10 (4-6)	MWR-SB-12 (0-2)	MWR-SB-12 (4-6)	MWR-SB-13 (0-2)	MWR-SB-13 (4-6)	MWR-SB-14 (4-6)	MWR-SB-15 (0-2)	MWR-SB-15 (4-6)	MWR-SB-16 (0-2)	Subsurface IS	Subsurface IN	ETG-SB-4 (5-7)	MDEQ Generic Residential Drinking Water Protection Criteria α	MDEQ Generic Residential Groundwater Surface Water Interface Protection Criteria	MDEQ Generic Residential Soil Direct Contact Criteria α	MDEQ Generic Residential Soil Volatilization to Ambient Air Inhalation Criteria α	MDEQ Generic Residential Soil Volatilization to Indoor Air Inhalation Criteria α
Gasoline Parameters (µg/kg)	**CAS#**																		
Benzene	71432	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	**470**	**100**	4,000	180,000	13,000	1,600
Ethylbenzene	100414	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	1,500	360	140,000	9,500,000	140,000
Methylene chloride	75092	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	100	19,000	1,300,000	210,000	45,000
Xylenes	1330207	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	ND	5,600	700	150,000	46,000,000	150,000
Other VOCs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Michigan Metals (µg/kg)	**CAS#**																		
Arsenic	7440382	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	23,000	70,000	7,600	NLV	NLV
Barium	7440393	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,300,000	1,900	37,000,000	NLV	NLV
Cadmium	7440439	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	6,000	G	550,000	NLV	NLV
Chromium (total)	18540229	ND	ND	**70100**	ND	ND	ND	**146,000**	24,200	ND	ND	ND	**41,700**	NA	**30,000**	G	2,500,000	NLV	NLV
Copper	7440508	166000	62200	176,000	37,700	**22,300,000**	102,000	226000	ND	46,900	314,000	ND	78,200	NA	**5,800,000**	G	**20,000,000**	NLV	NLV
Lead	7439921	38100	38800	30,600	ND	**1,580,000**	ND	29000	57000	22,800	61,000	39,200	270,000	NA	**700,000**	G	**400,000**	NLV	NLV
Nickel	7440020	31600	ND	**106,000**	ND	26,300	62,900	**136000**	ND	20,400	ND	ND	ND	NA	**100,000**	G	40,000,000	NLV	NLV
Mercury (inorganic)	7439976	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	1,700	100	160,000	NLV	NLV
Selenium	7782492	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	4,000	400	2,600,000	NLV	NLV
Silver	7440224	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	4,500	500	2,500,000	NLV	NLV
Zinc	7440666	58500	ND	ND	ND	ND	ND	52700	336000	ND	ND	221,000	696,000	NA	2,400,000	G	170,000,000	NLV	NLV
PNAs and PCBs (µg/kg)	**CAS#**																		
Phenanthrene	85018	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	56,000	2,300	1,600,000	9,300	1,800,000
Acenaphthylene	208968	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	5,900	ID	1,600,000	2,200,000	1,600,000
Naphthalene	91203	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	35,000	870	16,000,000	300,000	250,000
Fluoranthene	206440	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	730,000	5,500	46,000,000	740,000,000	1,000,000,000
Pyrene	206440	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	480,000	ID	29,000,000	650,000,000	1,000,000,000
Benzo(a)pyrene	50328	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NLL	NLL	2,000	1,500,000	NLV
Dibenzo(a,h)anthracene	53703	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	ND	NLL	NLL	2,000	NLV	NLV
Other PNAs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note:

(µg/kg) - Micrograms per kilogram
"<" - Less than the laboratory method detection limit
NA - Not analyzed
ND - Not detected above laboratory method detection limits
NLV - Not likely to volatilize
ID - Inadequate data to develop criteria
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β – MDEQ Operational Memorandum #4: Part 213 Tier I Risk-Based Screening Levels (RBSLs), June 2000
bold - concentration exceeds MDEQ Criteria

Table 2
Summary of Groundwater Analytical Results
IB Property, Bay City, Mi
AKT Peerless Project Number 3522F-2-20

Sample Identification and Date		IB-MW-01D	IB-MW-02	IB-MW-05	IB-MW-06	IB-MW-07	IB-MW-08	IB-MW-10	IB-MW-11	IB-MW-14	ETG-MW-1D	ETG-MW-2S	ETG-MW-5	ETG-MW-18	ETG-MW-19	MDEQ Generic Residential Drinking Water Protection Criteria α	MDEQ Generic Residential Groundwater Volatilization to Indoor Air Inhalation Criteria	Groundwater Contact Criteria
Gasoline Parameters (µg/kg)	**CAS#**																	
Benzene	71432	ND	ND	ND	ND	ND	ND	ND	ND	**8.3**	**2800**	ND	**24**	ND	ND	**5**	5,600	11,000
1,2-Dichloroethane	107062	ND	ND	ND	ND	ND	ND	ND	ND	ND	**24**	ND	ND	ND	ND	**5**	9,600	19,000
Other VOCs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Michigan Metals (µg/kg)	**CAS#**																	
Cadmium	7440439	ND	ND	**6**	ND	ND	ND	ND	ND	**400**	ND	ND	ND	ND	ND	**5**	NLV	190,000
Chromium (total)	18540229	ND	ND	ND	ND	ND	ND	ND	ND	**420**	ND	ND	ND	ND	ND	**100**	NLV	460,000
Lead	7439921	**26**	**13**	**17**	**18**	**10**	**10**	**17**	**10**	**440**	ND	ND	ND	ND	ND	**4**	NLV	ID
Cyanide	57125	ND	ND	ND	ND	ND	BD	ND	ND	**550**	**670**	ND	**900**	ND	ND	**200**	NLV	57,000
Silver	7440224	ND	ND	ND	ND	ND	ND	ND	ND	**460**	ND	ND	ND	ND	ND	**34**	NLV	1,500,000
PNAs and PCBs (µg/kg)	**CAS#**																	
Phenanthrene	85018	ND	ND	ND	ND	ND	**36**	ND	ND	ND	ND	42	ND	29	**61**	**52**	1,000	1,000
Benzo(a)pyrene	50328	ND	ND	ND	ND	ND	**72**	ND	ND	ND	ND	ND	ND	ND	ND	**5**	NLV	5
Benzo(a)anthracene	56553	ND	ND	ND	ND	ND	**31**	ND	ND	ND	ND	ND	ND	ND	ND	**2**	NLV	9
Benzo(b)fluoranthene	205992	ND	ND	ND	ND	ND	**18**	ND	ND	ND	ND	ND	ND	ND	ND	**2**	NLV	2
Benzo(k)fluoranthene	207089	ND	ND	ND	ND	ND	**26**	ND	ND	ND	ND	ND	ND	ND	ND	**5**	NLV	5
Other PNAs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note:

(µg/kg) - Micrograms per kilogram
"<" - Less than the laboratory method detection limit
NA - Not analyzed
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NLV - Not likely to volatilize
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β – MDEQ Operational Memorandum #4: Part 213 Tier I Risk-Based Screening Levels (RBSLs), June 2000
bold - concentration exceeds MDEQ Criteria

Table 3
Summary of Soil Boring Sample Analytical Results HORIZON
Industrial Brownhoist Property
Bay City, MI
AKT Peerless Project Number 3522S

Sample Identification and Date		SS-1 Horizon Bio-Chem 2/1/01	SS-2 Horizon Bio-Chem 2/1/01	SS-3 Horizon Bio-Chem 2/1/01	SS-4 Horizon Bio-Chem 2/1/01	SS-5 Horizon Bio-Chem 2/1/01	SS-6 Horizon BioChem 2/1/01	SS-7 Horizon Bio-Chem 2/1/01	SS-8 Horizon Bio-Chem 2/1/01	SS-9 Horizon Bio-Chem 2/1/01	SS-10 Horizon Bio-Chem 2/1/01	SS-11 Horizon Bio-Chem 2/1/01	MDEQ Generic Residential Drinking Water Protection Criteria α	MDEQ Generic Residential Soil Direct Contact Criteria α	MDEQ Generic Industrial Soil Direct Contact Value	MDEQ Generic Groundwater Surface Water Interface Protection Criteria	MDEQ Generic Industrial Finite VSIC for 2M Source Thickness Criteria
Gasoline Parameters (µg/kg)	**CAS#**																
Benzene	71432	<50	<50	<50	<50	<50	<50	<50	95	<50	<50	<50	100	180,000	400,000	4,000	230,000
Toluene	108883	<50	<50	<50	<50	<50	<50	<50	150	<50	<50	<50	16,000	250,000	250,000	2,800	36,000,000
Ethylbenzene	100414	<50	<50	<50	<50	<50	<50	<50	100	<50	<50	<50	1,500	140,000	140,000	360	30,000,000
Xylenes	1330207	<50	<50	<50	<50	<50	<50	<50	420	<50	<50	<50	5,600	150,000	150,000	700	130,000,000
Methyl-tert-butyl ether (MTBE)	1634044	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	<250	800	1,800,000	5,900,000	15,000	89,000,000
1,2-Dichloroethane	107062	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	100	91,000	640,000	7,200	74,000
Ethylene dibromide	106934	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	10	92	660	20	9,800
2-Methylnaphthalene	91576	<250	<250	<250	<250	<250	<250	<250	7,300	<250	<250	2,800	57,000	8,100,000	40,000,000	ID	ID
1,2,4-Trimethylbenzene	95636	<50	<50	<50	<50	<50	<50	<50	1,100	<50	<50	500	2,100	110,000	110,000	ID	600,000,000
1,3,5-Trimethylbenzene	108678	<50	<50	<50	<50	<50	<50	<50	340	<50	<50	150	1,800	94,000	94,000	ID	460,000,000
Other VOCs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Michigan Metals (µg/kg)	**CAS#**																
Cadmium	7440439	<50	<50	370	66	140	560	370	-	-	380	-	6,000	550,000	4,100,000	{G,X}	NLV
Chromium (total)	18540229	3,500	2,200	9,300	9,900	10,000	13,000	11,000	-	-	11,000	-	30,000	2,500,000	17,000,000	3,300	NLV
Lead	7439921	1,500	1,500	94,000	12,000	340,000	140,000	**4,800,000**	-	-	87,000	-	**700,000**	**400,000**	**900,000**	{G,M,X}	NLV
PNAs and PCBs (µg/kg)	**CAS#**																
Phenanthrene	85018	<330	<330	<330	<330	1,200	2,100	670	**7,300**	1,300	1,400	**20,000**	56,000	1,600,000	8,000,000	**2,300**	37,000
Acenaphthene	83329	<330	<330	<330	<330	<950	<330	<330	860	<330	<330	2,800	300,000	41,000,000	200,000,000	4,400	97,000,000
Acenaphthylene	208968	<330	<330	<330	<330	1200	<330	<330	<330	1,100	<330	<2,400	5,900	1,600,000	8,000,000	ID	2,700,000
Anthracene	120127	<330	<330	<330	<330	<950	410	<330	670	650	<330	<2,400	41,000	230,000,000	1,000,000,000	ID	1,600,000,000
Fluoranthene	206440	<330	<330	920	<330	1,800	2,400	750	900	2,900	1,800	<2,400	730,000	46,000,000	180,000,000	5,500	880,000,000
Fluorene	86737	<330	<330	<330	<330	<950	<330	<330	1000	<330	<330	4,500	390,000	27,000,000	130,000,000	5,300	180,000,000
Pyrene	206440	<330	<330	1,000	<330	1,800	2,100	630	1,700	3,000	1,600	3,300	480,000	29,000,000	110,000,000	ID	770,000,000
Benzo(a)anthracene	56553	<330	<330	660	<330	<950	2,000	470	770	3,400	1,500	<2,400	NLL	20,000	100,000	NLL	NLV
Chrysene	218019	<330	<330	900	<330	1,100	1,600	<330	660	2,400	1,000	<2,400	NLL	2,000,000	10,000,000	NLL	ID
Benzo(b)fluoranthene	205992	<330	<330	840	<330	2,200	1,700	<330	930	3,600	1,100	<2,400	NLL	20,000	100,000	NLL	NLV
Benzo(k)fluoranthene	207089	<330	<330	980	<330	1,400	2,100	390	1,100	4,000	4,000	<2,400	NLL	200,000	1,000,000	NLL	NLV
Benzo(g,h,i)perylene	191242	<330	<330	<330	<330	3,200	1,100	<330	430	950	390	<2,400	NLL	2,500,000	9,100,000	NLL	NLV
Benzo(a)pyrene	50328	<330	<330	850	<330	**2,100**	1,500	<330	610	**2,700**	1,100	<2,400	NLL	2,000	10,000	NLL	NLV
Dibenzo(a,h)anthracene	53703	<330	<330	<330	<330	<950	<330	<330	<330	330	<330	<2,400	NLL	2,000	10,000	NLL	NLV
Indeno(1,2,3-cd)pyrene	193395	<330	<330	<330	<330	<950	1,100	<330	470	1,200	440	<2,400	NLL	20,000	100,000	NLL	NLV
Naphthalene	91203	<330	<330	<330	<330	<950	<330	<330	<330	<330	<330	**3,100**	35,000	16,000,000	80,000,000	**870**	350,000
Other PNAs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Note:

(µg/kg) - Micrograms per kilogram
"<" - Less than the laboratory method detection limit
NA - Not analyzed
ND - Not detected above laboratory method detection limits
NLV - Not likely to volatilize
ID - Inadequate data to develop criteria
IP - Development in process
NLL - Not likely to leach
NA - Not available
α – MDEQ Operational Memorandum #18: Part 201Generic Cleanup Criteria and Screening Levels, June 7, 2000
β – MDEQ Operational Memorandum #4: Part 213 Tier I Risk-Based Screening Levels (RBSLs), June 2000
bold - concentration exceeds MDEQ Criteria

Summary of Soil Analytical Results AKT Peerless
IB Property
Bay City, Mi
AKT Peerless Project Number 3522F-2-20

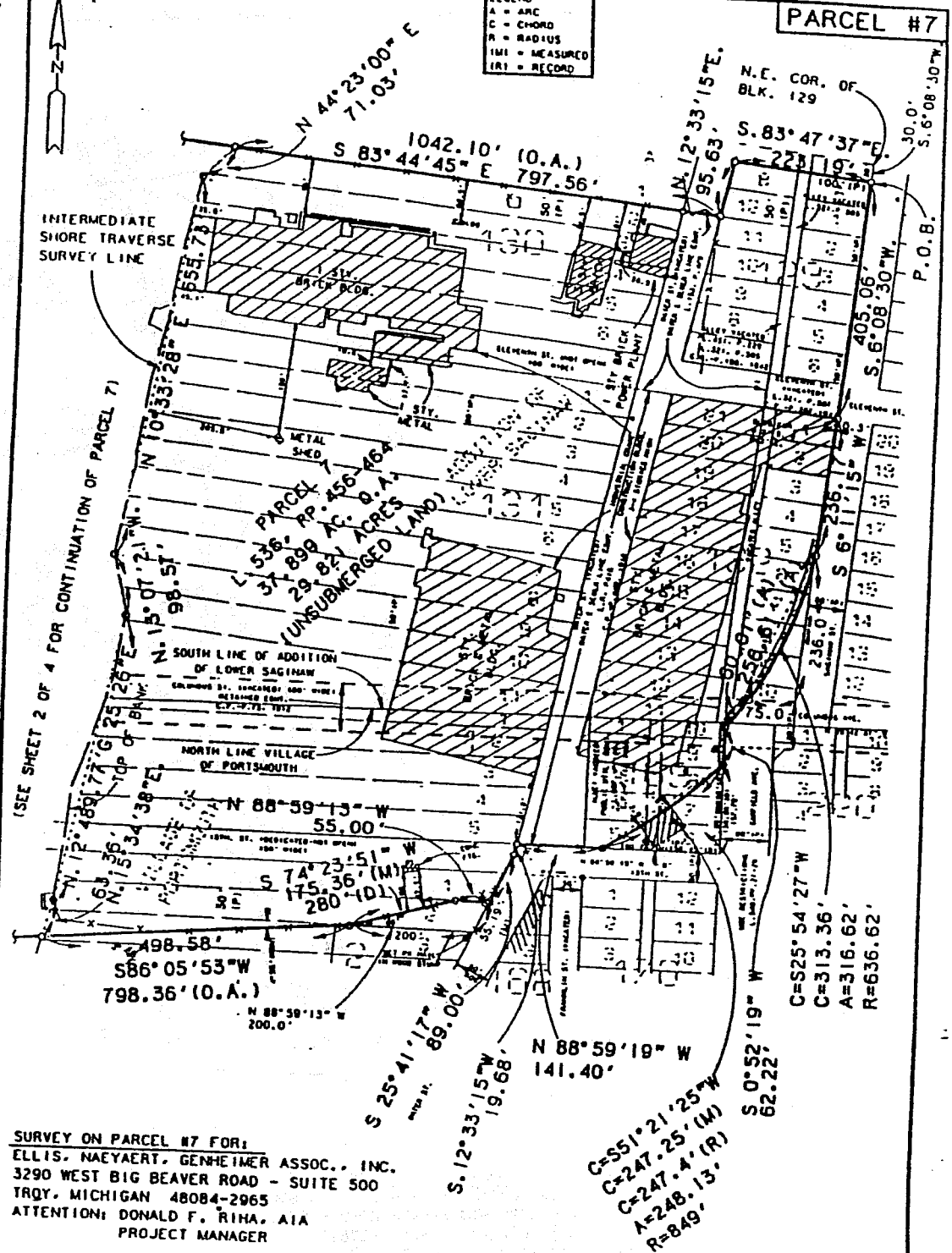
Sample Identification and Date		B-1 (1-3) 3-4-02	B-2 (1-3) 3-4-02	B-3 (1-3) 3-4-02	B-4 (1-3) 3-4-02	B-5 (1-3) 3-4-02	B-6 (1-3) 3-4-02	B-7 (1-3) 3-4-02	B-8 (1-3) 3-4-02	B-9 (1-3) 3-4-02	B-10 (1-3) 3-4-02	B-11 (1-3) 3-4-02	B-12 (1-3) 3-4-02	B-13 (1-3) 3-4-02	B-14 (1-3) 3-4-02	B-15 (1-3) 3-4-02	B-16 (1-3) 3-4-02	B-17 (1-3) 3-4-02
Analyzed Parameters (µg/kg	**CAS#**																	
Mineral Spirits	8052-41-3	< 4,000	< 4,000	< 4,000	20,000	< 4,000	< 4,000	< 4,000	< 4,000	< 4,000	7,900	< 4,000	4,400	< 4,000	< 4,000	< 4,000	28,000	< 4,000
Mineral Oils	64742-52-5	10,000	< 10,000	< 10,000	79,000	< 10,000	< 10,000	< 10,000	<10,000	11,000	65,000E	100,000	160,000	< 10,000	<10,000	67,000	<10,000	<10,000

Note:

(µg/kg) - Micrograms per kilogram
"<" - Less than the laboratory method detection limit
NA - Not analyzed
ND - Not detected above laboratory method detection limits
NLV - Not likely to volatilize
ID - Inadequate data to develop criteria
E - Estimated value
NLL - Not likely to leach
NA - Not available
α – MDEQ Operational Memorandum #18: Part 201 Generic Cleanup Criteria and Screening Levels, June 7, 2000
β – MDEQ Operational Memorandum #4: Part 213 Tier I Risk-Based Screening Levels (RBSLs), June 2000
bold - concentration exceeds MDEQ Criteria

Appendix A
Legal Descriptions of Subject Property

PARCEL #7



SURVEY ON PARCEL #7 FOR:
ELLIS, NAEYAERT, GENHEIMER ASSOC., INC.
3290 WEST BIG BEAVER ROAD - SUITE 500
TROY, MICHIGAN 48084-2965
ATTENTION: DONALD F. RIHA, AIA
PROJECT MANAGER

REV. TO SHOW DIM. FROM TIE PT. TO EDGE OF ICE 4-15-92 DPW
REV. TO SHOW PARCEL ON TWO DRAWINGS 5-28-92 RTP

REQUESTED BY:
ENVIRONMENTAL PROTECTION AGENCY
FACILITIES MANAGEMENT AND SERVICES DIVISION
REAL ESTATE AND SPACE MANAGEMENT BRANCH
401 M STREET SOUTHWEST (PM-215)
WASHINGTON, D.C. 20460
ATTENTION: BUCKY GREEN

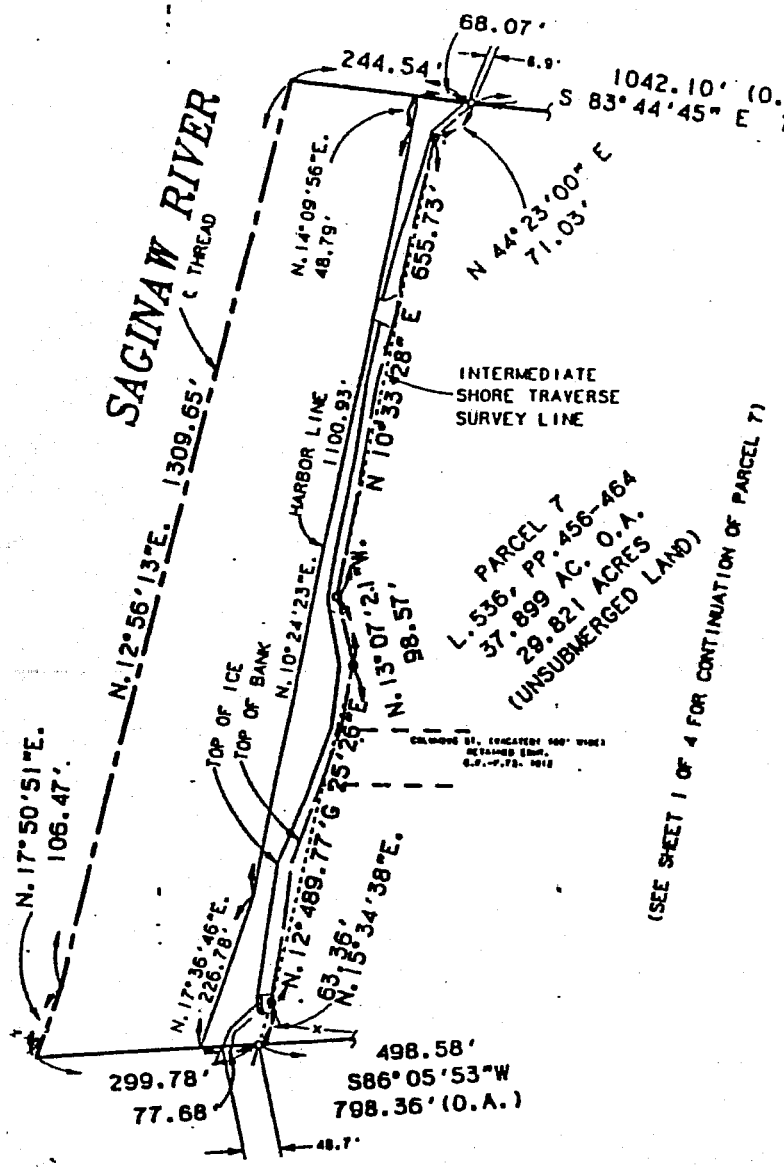
PROPERTY OWNER:
WOODMEN OF THE WORLD LIFE INSURANCE SOCIETY
1700 FORNAM STREET
OMAHA, NEBRASKA 68102

ATTENTION: MR. CURTIS L. OWEN

Wade-Trim/Edmands
P.O. Box 580
Bay City, Michigan 48707
1501 West Thomas
Tele. (517) 686-3100
Telecopier (517) 686-4329

Scale 1" = 200'	Date 2-92
Job # ETS225801 -	Surveyed PMC
Book # IN Page #FILE	Checked LDM
Drawn RTP	Sheet 1 of 4

PARCEL #7



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3290 WEST BIG BEAVER ROAD - SUITE 500
TROY, MICHIGAN 48084-2965
ATTENTION: DONALD F. RIHA, AIA
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FACILITIES MANAGEMENT AND SERVICES DIVISION
REAL ESTATE AND SPACE MANAGEMENT BRANCH
401 M STREET SOUTHWEST (PM-215)
WASHINGTON, D.C. 20460
ATTENTION: BUCKY GREEN

PROPERTY OWNER:
WOODMEN OF THE WORLD LIFE INSURANCE SOCIETY
1700 FORNAM STREET
OMAHA, NEBRASKA 68102

ATTENTION: MR. CURTIS L. OWEN

Wade-Trim/Edmands
P.O. Box 580 1501 West Thomas
Bay City, Michigan 48707 Tele. (517) 686-3100
Telecopier (517) 686-4329

Scale 1" = 200'	Date 2-92
Job # ETS225801 -	Surveyed PMC
Book # IN Page #FILE	Checked LDM
Drawn RTP	Sheet 2 of 4

SURVEY ON PARCEL #7 FOR:

Ellis, Naeyaert, Genheimer Assoc., Inc.
3290 West Big Beaver Road - Suite 500
Troy, Michigan 48084-2965

Attention: Donald F. Riha, AIA, Project Manager

REQUESTED BY:

PROPERTY OWNER:

Woodmen of the World Life Insurance Society
1700 Fornam Street
Omaha, Nebraska 68102

Attention: Mr. Curtis L. Owen

TITLE DESCRIPTION: Parcel #7

Situated in the City of Bay City.
Commencing 30 feet South on the Northeast corner of Block 129, Addition of Lower Saginaw; thence South along Saginaw Street to a point 236 feet North of the Northwest corner of Saginaw and 12th Streets; thence Southwesterly on 9° curve to the right 256.02 feet to a point 75 feet Westerly on North line of 12th Street from the West line of Saginaw Street; thence continuing along said curve to intersection with West line of Garfield Street; thence South to a point 27.5 feet South of the Northeast corner Lot 9, Block 169, Village of Portsmouth; thence Southwesterly on a curve to right of radius 849 feet to a point of 29 feet East of the Southwest corner of Block 169; thence West on North line of 13th Street to Westerly line of Water Street; thence Southerly along Water Street to Southeast corner Lot 1, Block 2, Village of Portsmouth; thence West 55 feet; thence Southwesterly 280 feet to a point 200 feet West of the Southeast corner Lot 2; thence Southwesterly 465 feet to a point; 90 feet Southerly along the East River Bank from the South line, Lot 1, Block 2; thence Northerly along River Bank to South line of lot 1, Block 130, Addition to Lower Saginaw; thence East to the Southwest corner of Lot 12, Block 129; thence Northerly to a point 30 feet South of Northwest corner Lot 129; thence East to the Point of Beginning, as per Plat thereof recorded in Liber 1 of Plats, Page 8 of Bay County Records.

P-Plat O-Set Iron	M-Measured ●-Found Iron	D-Description ⊕-P.K. Nail	R-Record ⊙-Monument	C.M.-City Map x--x--x Existing Fence

This survey was made from the legal description of the parcel furnished to us. Both map and description should be compared with the Abstract or Title or Title Policy for any exceptions, easements or differences in description.

I hereby certify that this survey and descriptions shown hereon complies with the requirements of Public Act 132 of 1970 as amended. That the ratio of closure on the boundary of said survey exceeds 1' in 5000' and is within the acceptable limits of the surveying profession. There are encroachments on said survey.

Lloyd D. McGinnis

Lloyd D. McGinnis, R.L.S. #18999

Wade-Trim/Edmands
P.O. Box 580
Bay City, Michigan 48707
1501 West Thomas
Tele. (517) 686-3100
Telecopier (517) 686-4129

Scale NA		Date 2-92	
Job # ETS 2258.01		Surveyed PHC	
Book # W	Page # FL6	Checked LDH	
Drawn DPW		Sheet 3	of 4

SURVEY ON PARCEL #7 FOR:

Ellis, Naeyaert, Genheimer Assoc., Inc.
3290 West Big Beaver Road - Suite 500
Troy, Michigan 48084-2965

Attention: Donald F. Riha, AIA
Project Manager

SURVEY DESCRIPTION: Parcel #7

A parcel being part of Block 129, 130, 131, and 132, Addition of Lower Saginaw and part of Blocks 1, 2, and Block 169, Village of Portsmouth and vacated Water Street, City of Bay City, Michigan, described as follows:

Commencing at the Northeast corner of Block 129, Addition of Lower Saginaw as per Plat thereof recorded in Liber 1 of Plats, Page 8 of Bay County Records, being also the Southeast corner of Block 112, Lower Saginaw, as per Plat thereof recorded in Liber 1 of Plats, Page 4 of Bay County Records; thence South 6°08'30" West 30.0 feet along the East line of said Block 129 to the Point of Beginning; thence South 6°08'30" West 405.06 feet along the West Right of Way line of Saginaw Street to the Northeast corner of Block 132, Addition of Lower Saginaw; thence South 6°11'15" West 236.17 feet along the West Right of Way line of Saginaw Street to the point of a 9° curve to the right having a radius of 636.62 and a chord bearing and distance of South 25°54'27" West 313.36 feet, said point of curve being 236.0 feet at North 6°11'15" East of the intersection of the North Line of 12th Street and the West line of Saginaw Street; thence Southerly and Southwesterly 316.62 feet along the arc of said curve through a point on the North line of Columbus Street 75 feet North 89°42'57" West of the West line of Saginaw Street, to the West Right of Way line of Garfield Street; thence South 0°52'19" West 62.22 feet along the West Right of Way line of Garfield Street and the East line of Block 169, Village of Portsmouth as per Plat thereof recorded in Liber 1 of Plats Page 38 of Bay County Records to a point 157.79 feet North 0°52'19" East of the Southeast corner of said Block 169; thence Southwesterly 248.13 feet along the arc of a curve to the right having a radius of 849.0 feet and a chord bearing and distance of South 51°21'25" West 247.25 feet to the South line of said Block 169 and the North Right of line of 13th Street; thence North 88°59'19" West 141.40 feet along the North Right of Way line of 13th to the Westerly Right of Way line of Water Street and the Southeast corner of Block 1, Village of Portsmouth; thence South 12°33'15" West 19.68 feet along the West Right of Way line of Water Street; thence South 25°41'17" West 89.00 feet to the Southeast corner of Lot 1, Block 2, Village of Portsmouth; thence North 88°59'13" West 55.0 feet along the South line of said Lot 1; thence South 74°23'51" West 175.36 feet to a point on the South line of Lot 2, Block 2, said point being 200 feet at North 88°59'07" West of Southeast corner of said Lot 2; thence South 86°05'53" West 798.36 feet to the centerline thread of the Saginaw River; thence North 17°50'51" East 106.47 feet along the centerline thread of the Saginaw River; thence North 12°56'13" East 1309.65 feet along the centerline thread of the Saginaw River; thence South 83°44'45" East 1042.10 feet along the North line of Lot 2, (if extended Westerly) to the Southwest corner of Lot 12, Block 129, Addition of Lower Saginaw; thence North 12°33'15" East 95.63 feet along the Westerly line of said Block 129; thence South 83°47'37" East 223.19 feet to the Point of Beginning. Subject to Right of Way, easements and restrictions, if any, of record. Containing 37.899 acres of land (29.821 acres as unsubmerged land) more or less.

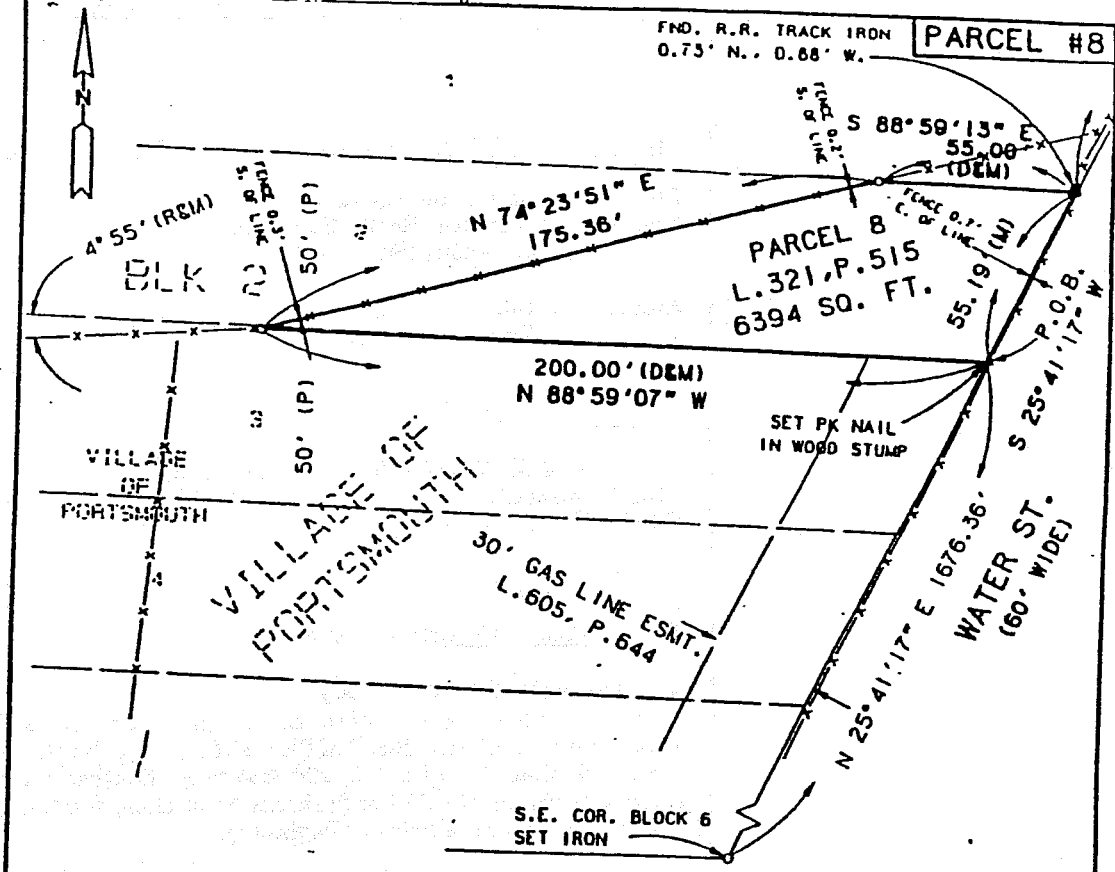
BEARING NOTE: Bearings are referenced to the Corps of Engineers Datum referencing Monuments - Sta. 29 and Bay City Department of Public Works on the Saginaw River being North 6°41'06" East on Transverse Mercator Projection, East Zone (2101) 1927 North American Datum.
Distance Note - All distances are horizontal distance (No Grid Factor).

REVISED TO SHOW DIM. FROM TIE PT. TO EDGE OF ICE 4-15-92- DPW.

Wade-Trim/Edmands
P.O. Box 580
Bay City, Michigan 48707
1501 West Thomas
Tele. (517) 686-3100
Telecopier (517) 686-4329

Scale N/A	Date 2-92
Job # ETS 2258.01	Surveyed PHC
Book # 111 Page # File	Checked LDM
Drawn DPW	Sheet 4 of 4

MAY 16 CITY OF BAY CITY



REV. TO ADD DIMS. TO FENCE 5-28-92 RTP

SURVEY ON PARCEL #8 FOR:
ELLIS, NAEYAERT, GENHEIMER ASSOC., INC.
3290 WEST BIG BEAVER ROAD - SUITE 500
TROY, MICHIGAN 48084-2965
ATTENTION: DONALD F. RIHA, AIA
PROJECT MANAGER

REQUESTED BY:
ENVIRONMENTAL PROTECTION AGENCY
FACILITIES MANAGEMENT AND SERVICES DIVISION
REAL ESTATE AND SPACE MANAGEMENT BRANCH
401 M STREET SOUTHWEST (PM-215)
WASHINGTON, D.C. 20460
ATTENTION: BUCKY GREEN

PROPERTY OWNER:
WOODMEN OF THE WORLD LIFE INSURANCE SOCIETY
1700 FORNUM STREET
OMAHA, NEBRASKA 68102

ATTENTION: CURTIS L. OWEN

BEARING NOTE: Bearings are referenced to the Corps of Engineers Datum Referencing Monuments - Sta. 29 and Bay City Department of Public Works on the Saginaw River being North 6°41'06" East on Transverse Mercator Projection, East Zone (2101) 1927 North American Datum.
Distance Note-All distances are horizontal distance (No Grid Factor).

Wade-Trim/Edmonds
P.O. Box 580
Bay City, Michigan 48707
1501 West Thomas
Tele. (517) 686-3100
Telecopier (517) 686-4329

Scale 1" = 40'	Date 2-92
Job # ETS2258.01	Surveyed CWM
Book # 161 Page # 37	Checked LDM
Drawn RTP	Sheet 1 of 1

SURVEY ON PARCEL #8 FOR: REQUESTED BY:

Ellis, Naeyaert, Genheimer Assoc., Inc.
3290 West Big Beaver Road - Suite 500
Troy, Michigan 48084-2965

Attention: Donald F. Riha, AIA
Project Manager

PROPERTY OWNER:

Woodmen of the World Life Insurance Society
1700 Fornum Street
Omaha Nebraska 68102

Attention: Curtis L. Owen

TITLE DESCRIPTION: Parcel #8

Situated in the City of Bay City.
Commencing 200 feet West of the Southeast corner of Lot 2, Block 2, Village of Portsmouth, as per plat recorded in Liber 1 of Plats at Page 40 of Bay County Records; thence East along the South line of said Lot 2, 200 feet to its Southeast corner; thence Northerly to the Northeast corner of said Lot 2; thence West along the North line of Lot 2, 55 feet; thence Southwesterly to the Point of Beginning.

SURVEY DESCRIPTION: Parcel #8

A parcel of land being part of Lot 2, Block 2, Village of Portsmouth, City of Bay City, Michigan described as follows:

Commencing at the Southeast corner of Block 6, Village of Portsmouth as per plat thereof recorded in Liber 1 of Plats, Page 38 of Bay County Records; thence North 25°41'17" East 1676.36 feet along the Westerly Right of Way line of Water Street to the Southeast corner of Lot 2, Block 2, of said plat and being the Point of Beginning; thence North 88°59'07" West 200.0 feet along the South line of said Lot 2; thence North 74°23'51" East 175.36 feet to a point on the North line of Lot 2, said point being 55 feet North 88°59'13" West of the Northeast corner of said Lot 2; thence South 88°59'13" East 55.0 feet along the North line of said Lot 2 to the Northeast corner thereof; thence South 25°41'17" West 55.19 feet along the Westerly Right of Way line of Water Street to the Point of Beginning. Subject to Rights of Way, easements and restrictions, if any, of record. Containing 6,394 square feet of land, more or less.

P Plat	M-Measured	D-Description	R-Record	C.M.-City Map
O-Set Iron	●-Found Iron	⊖-P.K. Nail	⊙-Monument	x—x—x Existing Fence

This survey was made from the legal description of the parcel furnished to us. Both map and description should be compared with the Abstract or Title or Title Policy for any exceptions, easements or differences in description.

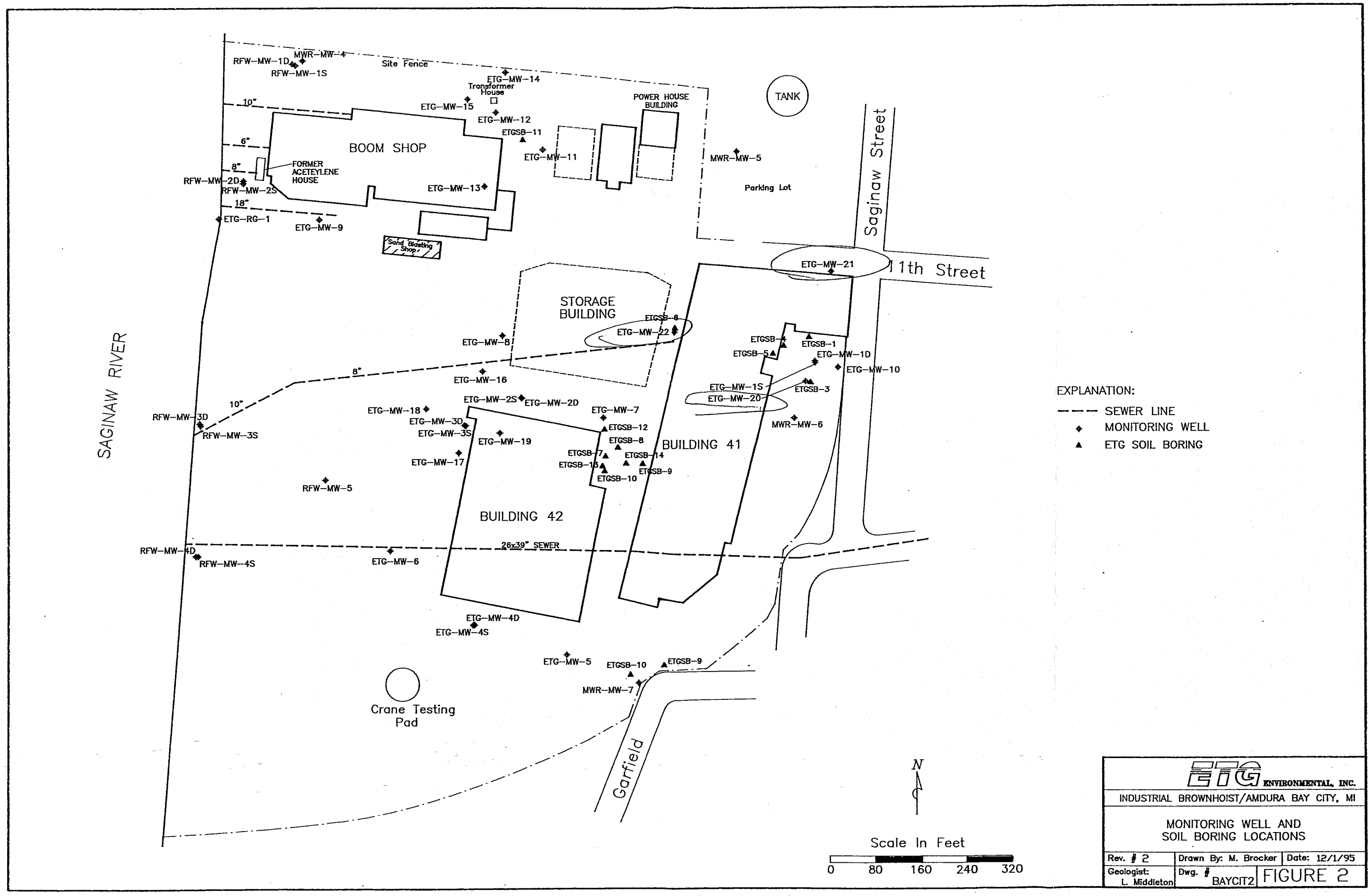
I hereby certify that this survey and descriptions shown hereon complies with the requirements of Public Act 132 of 1970 as amended. That the ratio of closure on the boundary of said survey exceeds 1' in 5000' and is within the acceptable limits of the surveying profession. There are encroachments on said survey.

Lloyd D. McGinnis

Lloyd D. McGinnis, R.L.S. #18999

Wade-Trim/Edmands
P.O. Box 560
Bay City, Michigan 48707
1501 West Thomas
Tele. (517) 686-3100
Telecopier (517) 686-4129

Scale NA	Date 2-92
Job # ETS 2253.01	Surveyed CWH
Book # 161 Page # 37	Checked LDM
Drawn CTP	Sheet 2 of 2

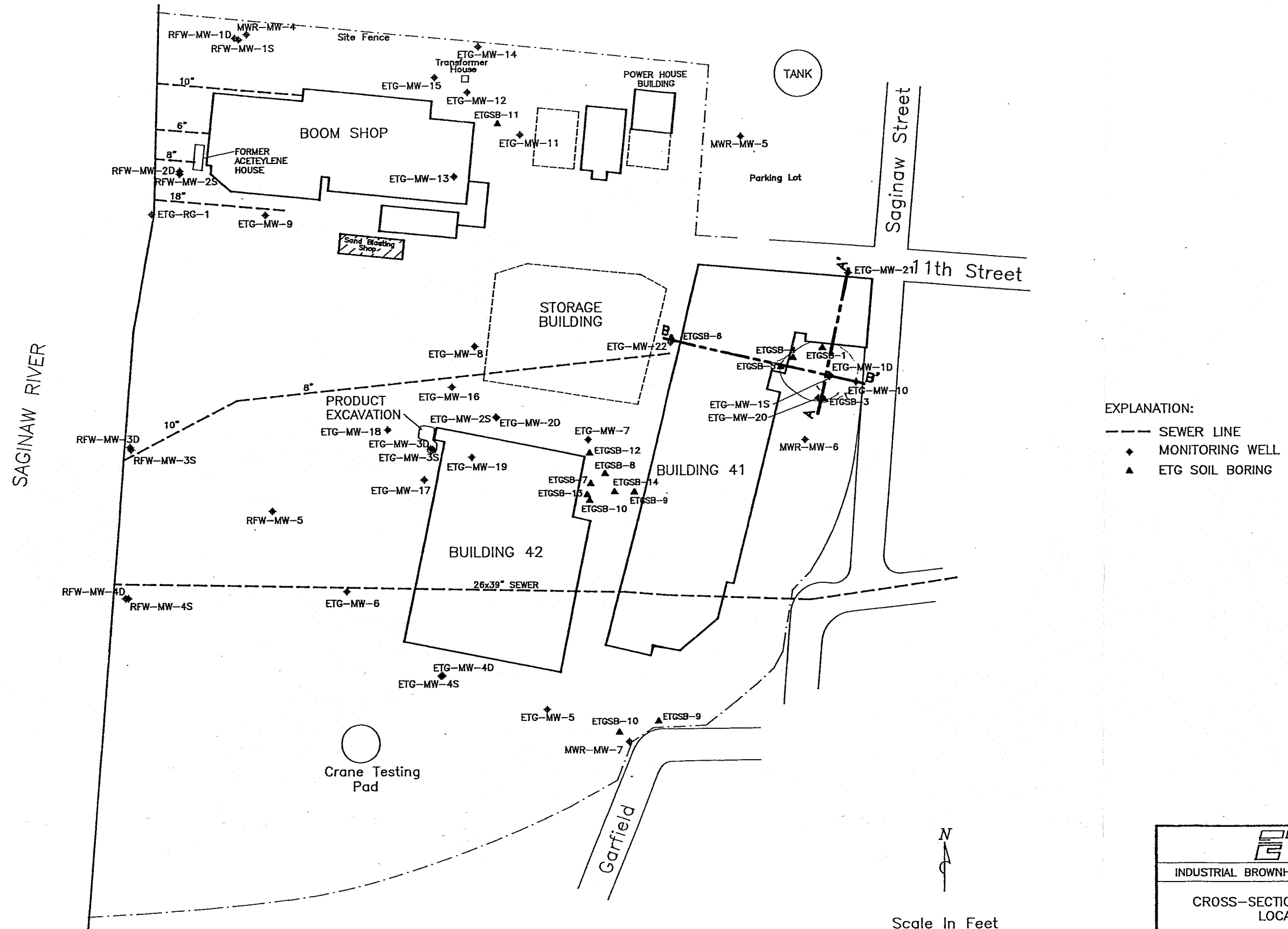


ETG ENVIRONMENTAL, INC.

INDUSTRIAL BROWNHOIST/AMDURA BAY CITY, MI

MONITORING WELL AND SOIL BORING LOCATIONS

Rev. # 2	Drawn By: M. Brocker	Date: 12/1/95
Geologist: L. Middleton	Dwg. # BAYCIT2	FIGURE 2

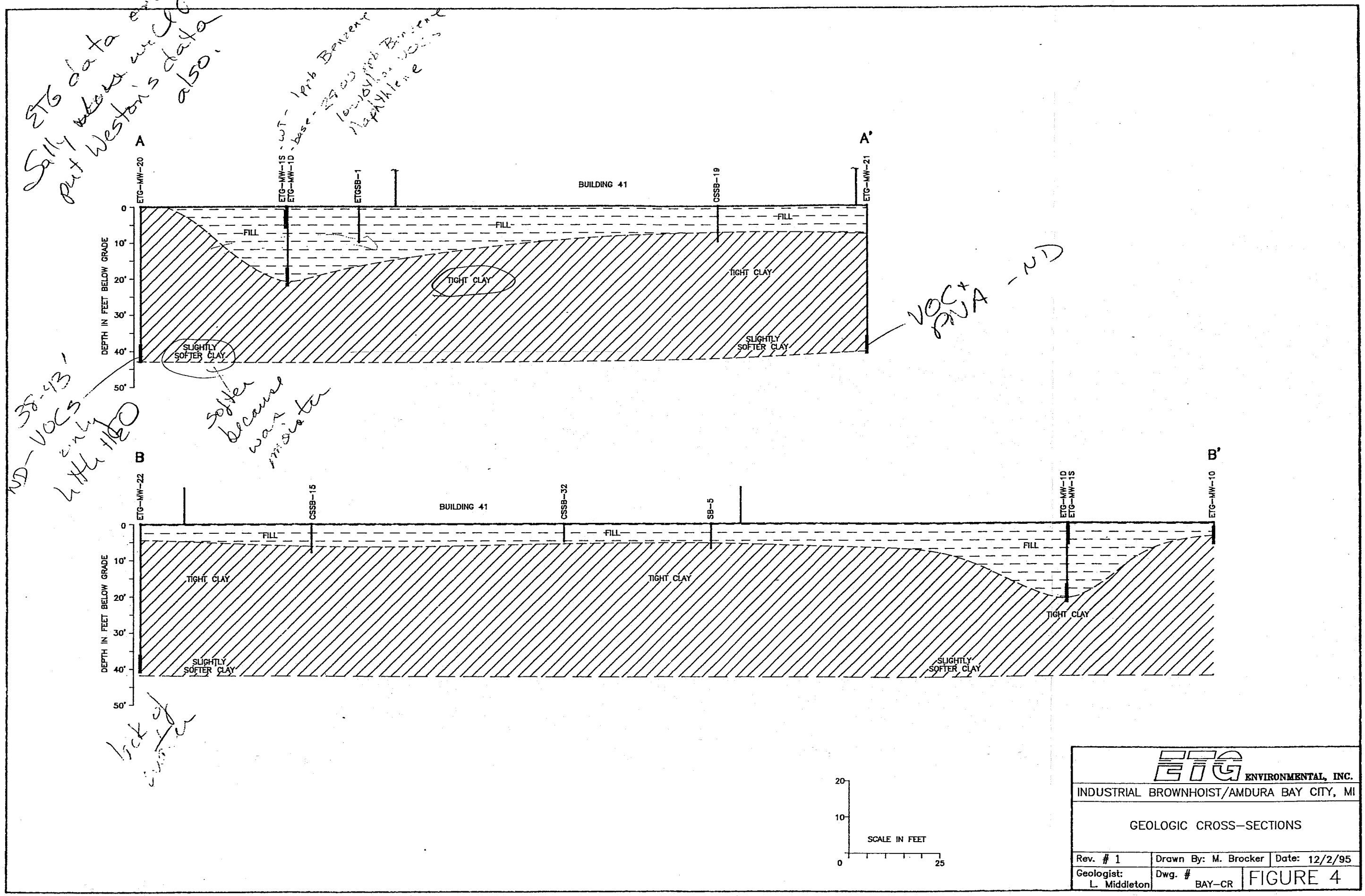


ETG ENVIRONMENTAL, INC.

INDUSTRIAL BROWNHOIST/AMDURA BAY CITY, MI

CROSS-SECTION AND EXCAVATION LOCATION MAP

Rev. # 2	Drawn By: M. Brocker	Date: 12/1/95
Geologist: L. Middleton	Dwg. # BAYCIT2	FIGURE 3



ETG data only
Sally ~~[illegible]~~ well
put Weston's data
also.

ETG-MW-1S - WT - 1ppb Benzene
ETG-MW-1D - base - 2900 ppb Benzene
low 10 ppb VOCs
Naphthlene

VOC + PNA - ND

38-43' - VOCs only
ND - little H2O

softer because was moister

lack of water

JAN 1 1 1996

MDNR - ERD
SAGINAW - BAY

DEQ

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
Russell J. Harding, Director

January 8, 1996

DETERMINATION ON BASELINE ENVIRONMENTAL ASSESSMENT PETITION INCLUDING COMPLIANCE WITH SECTION 20107a

Petitioner:

David E. Ives, President
I.B. Industrial Park, Inc.
P.O. Box 1067
Bay City, MI 48706

Petition #: P95-00013-BC

Determination:
BEA - Affirmed
20107a Obligations - Affirmed

The Michigan Department of Environmental Quality (MDEQ) has reviewed Petition P95-00013-BC, as revised by the submittals of December 12, 1995, for a determination on a Baseline Environmental Assessment (BEA). In conjunction with the BEA, you requested MDEQ's opinion of whether your Proposed Use Plan (PUP), if implemented as proposed, will be consistent with the due care obligations set forth at Section 20107a of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended, MCL 324.20107a The petition was submitted pursuant to Section 20129a of NREPA, MCL 324.20129a. Based on the petition, as well as other relevant information, and in reliance on that petition, the MDEQ has determined that the BEA is affirmed and the PUP is affirmed.

This determination affirms that the BEA is adequate for the purpose of obtaining an exemption from liability pursuant to Section 20126(1)(c). In making this determination, MDEQ is not making any findings concerning legal successorship, parent subsidiary relationships, or any findings concerning whether liability may exist under any provisions of Part 201 other than Section 20126(1)(c). This affirmative determination does not alter liability with regard to a subsequent release or threat of release or any exacerbation of existing conditions. The affirmative determination is only for the person and property identified in the petition. The use of the property and any response activity undertaken must be in accordance with the requirements of all applicable or relevant and appropriate state and federal laws and regulations. If the petitioner sells or transfers the property, the petitioner is required to disclose the BEA to a subsequent purchaser or transferee in order to be entitled to an exemption from liability.

This affirmative determination is based on the proposed property use and hazardous substance use identified in the BEA and PUP. The MDEQ will maintain an administrative record of each BEA and PUP. If at any time you provide the MDEQ with supplemental information related to your BEA or PUP, the MDEQ will retain such information with the administrative record. Such supplemental information will not be considered part of the BEA or PUP and acceptance of such information by the MDEQ should in no way be construed to mean the MDEQ will review or advise the petitioner regarding the adequacy of such information for any purpose.

The affirmative determination of the PUP is conditioned on the timely and satisfactory completion of the response activities described in the petition.

Notwithstanding this affirmative determination, the petitioner may have responsibility under other laws, including, but not limited to Part 111 (Hazardous Waste Management), Part 213 (Leaking Underground Storage Tanks), and Part 615 (Supervisor of Wells) of NREPA.

The BEA constitutes a response activity, consequently, this determination is subject to Section 20137(4) and (5) of NREPA.

Authorized signature:

Alan J. Howard, Chief
Environmental Response Division

1/8/96
Date

Attachment

cc: Susan Padley, Howard & Howard, The Pinehurst Office Center, Ste. 250, 1400 North Woodward Ave., Bloomfield Hills, MI 48304
Sally Bartz, Roy F. Weston, Inc., 2125 University Park Drive, Suite 270, Okemos, MI 48864
Fred Payne, ETG Environmental, Inc., 7707 Rickle Road, Lansing, MI 48917

DNR

FOR DNR USE ONLY
Petition # P95-00013-BC
Check # 014586
Amount $ 750.00
Payer Bay Aggregate Inc.
Index: 48021 PCA: 31400 OBJ: 9135

PETITION FOR
BASELINE ENVIRONMENTAL ASSESSMENT DETERMINATION
and Optional Determination of Compliance with Section 20107a

(Under the authority of Part 201, 1994 Act 451, as amended)

All the following questions must be answered. If any information is missing, the petition for Baseline Environmental Assessment (BEA) determination ("the petition") will be returned unreviewed.

Name and address of petitioner (individual or legal entity):
David E. Ives
President
I.B Industrial Park, Inc.
P.O. Box 1067
Bay City, MI 48706

Status relative to the property:

	Current	Prospective
Owner		X
Operator		
Lender		

Address/location of property where assessment was undertaken:
112 N. Water Street
Bay City, MI 48706

County: Bay

Contact person representing petitioner Sally Bartz Telephone: (517) 349-8255

If the address of the petitioner is different from address that should be used to correspond with the petitioner's contact person, please provide the contact person's address: Roy F. Weston, Inc.
2125 University Park Drive Suite 270
Okemos, Michigan 48864

For each of the following questions, check YES or NO.

1. **Is it known that the source of contamination at the site is solely from any of the following?**
   - **A leaking underground storage tank** YES___ NO X
   - **A licensed landfill or solid waste management facility** YES___ NO X
   - **A licensed hazardous waste treatment, storage, or disposal facility** YES___ NO X
   - **Oil and gas development related activities** YES___ NO X

   The source of the release that resulted in this property becoming a "facility" will determine which DNR Division will review your petition.

2. **Is the BEA determination based on a specific future property use?** YES X NO___
   A description of the proposed hazardous substance/land use may reduce the amount of site information required for an adequate BEA.

ELIGIBILITY FOR BASELINE ENVIRONMENTAL ASSESSMENT DETERMINATION

3. **Is the property for which the petition review is being requested a "facility" as defined by Section 20101?** YES X NO___
   If the answer to this question is no, the property is ineligible for consideration and your petition will not be processed.

4. **Did or will the petitioner purchase, occupy, or foreclose on this property on or after June 6, 1995, the effective date of amendments to Part 201?** YES X
   If the answer to this question is no, you may be ineligible for a BEA review and your petition may not be processed. However, you may otherwise have an exemption from liability under Part 201.

5. **Was the BEA completed prior to or within 45 days of the date of purchase, occupancy, or foreclosure of the property, whichever is earliest?** YES X NO___
If the answer to this question is no, pursuant to Section 20126(1)(c), the a BEA is invalid and will be returned to the petitioner.

6. **Is this BEA petition being submitted to the DNR within 6 months after the completion of the BEA?** YES X NO___
If the answer to this question is no, pursuant to Section 20129A(1), the petition for a BEA determination is invalid and will be returned to the petitioner.

DUE CARE

7. **Is the petitioner seeking a determination of compliance with Section 20107a obligations?** YES X NO___
This determination must be specifically requested in order for the DNR to provide its conclusions.

8. **If you answered yes to number 7 above, have you enclosed a description of the proposed hazardous substance/land use of the property?** YES X NO___
A proposed use plan MUST be included if a request for a review under Section 20107a is requested. A greater level of detail may be necessary for a use plan required for a Section 20107a determination than for a use description for a BEA determination.

9. **If you answered yes to number 7 above, have you enclosed a plan for response activities necessary to assure that the proposed use of the facility satisfies the requirements of Section 20107a?** YES X NO___
If you answered yes to number 7 above, and IF response activities are necessary, you MUST include a plan for necessary response activities to assure that the proposed use is in compliance with Section 20107a.

SUPPLEMENTAL MATERIALS

This petition must include the following documents prepared according to DNR procedures. If any of this information is missing, the petition will be returned to you unreviewed.

- **The BEA prepared according to DNR procedures.** X
- **The $750 petition fee.** X
- **The affidavit signed by the petitioner and prepared according to DNR procedures.** X
- **The affidavit signed by the environmental professional who prepared the BEA, and if applicable, the environmental professional who made the recommendations concerning Section 20107a obligations.** X
- **The proposed hazardous substance/land use of the property, if you answered yes to questions 7 or 2 above.** X

With my signature below, I certify that this petition including this form and all supplemental materials is complete and accurate to the best of my knowledge and belief. I understand that intentionally submitting false information in a petition or in a statement of contractor qualifications is a felony and may result of fines of up to $25,000 for each violation.

Signature of Petitioner or Authorized Representative [signature] Date 12/06/95

Name (typed or printed) Dave Ives

Title President

BEA Record Report

11-Jan-96 **BEA ID:** P95-00013-BC

Sub name: David E. Ives/I.B. Industrial Park, Inc.
Sub address1: P.O. Box 1067
Sub address2:
Sub city: Bay City
Sub state: MI
Sub zip: 48706-

Prop name: Industrial Brownhoist
Prop address1: 112 N. Water St.
Prop address2:
Prop city/twn: Bay City
Prop county: Bay #9

Current owner: No **Prospective owner:** Yes
Current operator: No **Prospective operator:** No
Current lender: No **Prospective lender:** No

Form type: Petition - PR4445
District: BC **Received:** 12/ 6/95

Con name: Sally Bartz/Roy F. Weston, Inc.
Con address1: 2125 University Park Drive, Suite 270
Con address2:
Con city: Okemos
Con state: MI
Con zip: 48864-
Con phone: (517) 349-8255

Due care: Yes **Returned_fee:** No **PRA:** Yes **Division:** ERD **Date assigned:** 12/6/95 **Due date:** 12/27/95

Staff: Yes
Staff assignee: Rhonda Klann
Contractor: No
Contractor assignee:
Contractor charges: $0

Site ID: 090045 **New site:** No
Other: **Other type:**
Property use: Aggregate storage/Lease space
BEA determination: Adequate
BEA determination sent: 1/8/96
BEA process days: 24
20107A obligation:
Oblig. determination sent: 1/8/96
20107A process days: 24
20107A(1) (a): Satisfied
20107A(1) (b): Satisfied
20107A(1) (c): Satisfied

BEA initial response: No
BEA initial response date:
BEA initial response days: 0
BEA second submittal:
BEA second response: No
BEA second response date:
BEA second response days: 0
BEA third submittal:

20107A initial response: No
20107A initial response date:
20107A initial response days: 0
20107A second submittal:
20107A second response: No
20107A second response date:
20107A second response days: 0
20107A third submittal:

Ineligible

Response action: Yes
Petition_not_fac: No
Submittal_not_fac: No
Not_after_6/5/95: No
Not_within_45: No
Not_in_six_months: No

Not Complete

BEA_report_missing: No
Fee_incorrect: No
Pet_aff_missing: No
Env_prof_aff_missing: No
Proposed_use_missing: No
Proposed_response_missing: No
Incorrect_form: No
Fee_with_submittal: No

FACSIMILE TRANSMITTAL
FAX 517-349-0798

WESTON
MANAGERS DESIGNERS CONSULTANTS
Roy F. Weston, Inc.
Suite 270
2125 University Park Drive
Okemos, Michigan 48864-3974
517-349-8255 • Fax 517-349-0798

TO: Rhonda Klann

Recipient's Telecopy Telephone # 517-684-9141
Recipient's Telephone # 517-684-9199

FROM: Tracy Sedgwick

517-349-8255
Originator's Telephone #

TOTAL PAGES: 2 (incl. cover sheet)

DATE: 1-3-96

W.O. #: 11238-001-001

COMMENTS:

Rhonda -

Attached are DRAFT results of the groundwater samples collected at 1B on 6 Dec. 1995. All samples were analyzed for VOCs, ~~SVOCs~~ PAHs + Michigan 10 metals. MW-4S+4D were also analyzed for cyanide. No VOCs or cyanide was detected. MW1S&D & MW4S+D are located adjacent to the river. MW-5S is located west of the free product area. A map of well locations should be available in the BEA appendices. If you have any questions please feel free to call - Thanks - Tracy

Providing quality environmental management and consulting engineering services for over 40 years in the areas of:

Analytical Testing/Characterization
Air Quality
Water Quality/Wastewater
Hazardous, Solid, Radioactive Waste
Health and Safety
Life Sciences
Strategic Environmental Management
Information Management
Construction/Remediation
Geosciences

55 Offices Worldwide

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DRAFT

Table A

Summary of Detected Parameters in Groundwater
Industrial Brownhoist
Bay City, Michigan

Sample Location / Analyte	CS2-MW-1S	CS2-MW-1D	CS2-MW-1D DUP	CS2-MW-2S	CS2-MW-2D	CS2-MW-3S	CS2-MW-3D	CS2-MW-4S	CS2-MW-4D	CS2-MW-5S*	MDEQ Residential Health-Based Drinking Water Value	MDEQ Residential GSI Value
PAHs ~~SVOCs~~ (ug/L)												
Acenaphthene	7	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (8)	1,300	3.8
Anthracene	6	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (8)	7,300	110,000
Fluoranthene	15	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (8)	880	370
Fluorene	13	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (8)	880	14,000
Naphthalene	9	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (8)	260	29
Phenanthrene	26	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (8)	26	NE
Pyrene	12	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (5)	ND (8)	550	11,000
Metals (mg/L)												
Barium	0.2	0.1	0.2	0.2	0.3	0.9	0.5	0.9	0.2	ND(0.1)	2	30,000
Zinc	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	ND (0.02)	0.05	0.03	ND (0.02)	ND (0.02)	ND (0.02)	2.4	0.081

Note:
ND - Analyte not detected above method detection limit.
(5)-Method detection limit.
* - Detection limits not met due to inefficient sample volume.
NE - MDEQ Generic Residential Cleanup Criteria not established.

DRAFT

OMI\PROJECTS\11238001.001\GWTAB

Industrial Brownhoist

Meeting: December 4, 1995

Participants: Sue Padley, Howard and Howard
Fred Payne and Lou Middleton, ETG
Sally Bartz, Weston
Dave Ives, Bay Aggregate
Tim Bertram and Rhonda Klann, MDEQ/ERD

Purpose: Bay Aggregate has a purchase agreement with Woodman of the World for the Industrial Brownhoist site. Bay Aggregate and Weston have been preparing a BEA and due care plan for the site. Woodman has been conducting response activities for due care. The meeting was held to update ERD on the status and to get comments from ERD.

They identified 2 areas that may need due care: the coal tar pit and the free product near Bldg 42.

Coal Tar pit:

ETG indicated that the contamination originating from the coal tar pit are not migrating horizontally or vertically through the basal clay unit at the site. this conclusion is base upon sampling data collected from monitor wells screened 40 feet into the clay in the down gradient and side gradient direction. 1 of the wells did not produce water. Volatiles were not detected in the wells that did produce water.

ETG indicated that there is not an inhalation hazard, therefore, the venting plan discussed previously would not be installed. The benzene level in the upper most portion of the saturated zone was 1 ug/l, which is not high enough to cause an inhalation problem. The water table is about 2 feet below ground level (bgl). The shallowest soil sample is about 10 - 12 feet bgl and was below the residential criteria for soil. Fred will put together the calculations used to make this determination. Sally and Lou will combine their data to tighten up the cross-section and show the double casing on the new wells.

Free Product Area:

They excavated approximately 12 - 13 feet bgl. The water table level was about 11 - 12 feet bgl. The upper 6 feet of soils were left on-site as clean fill. The soils below that were removed for disposal. They did not excavate to the clay. Water samples from MW-3D were below detection limits. MW-3D did not reach the clay either. They used visual observations to guide the excavation. Most of the stained soils were removed with the exception of some close to the building foundation. ETG indicated there was possibly free product still coming out from under the building. They installed a tile and sump system to collect groundwater/free product. On November 29th the sump was pumped. The water had an odor and slight sheen, but no free product. The drain tile is set at or just below the water table. They will pump it 1 more time. If they do not have free product then they will remove the sump. MW-3S and MW-3D were removed during excavation.

They looked at the area to the north that previous investigations indicated may have free product. They did not find free product.

MDEQ asked if Woodman had reviewed their liability for this site, because they were only doing due care activities. Sue Padley indicated they were not liable for the contamination and due care was their only responsibility. MDEQ specifically stated that, at this time, we were not concurring that Woodman did not have liability, because the MDEQ has not completed a liability review for this site. In order to facilitate the sale of the property, we would proceed with reviewing the due care activities undertaken by Woodman as part of the BEA to be submitted by Bay Aggregate.

Rhonda Klann

CONFIRMATION / REQUEST FOR DISCLOSURE OF DEQ RECORDS
Under The Freedom Of Information Act

(This information is required under Authority of Act 442, P. A. 1976 as amended in order to request public records information)

ALL INFORMATION MUST BE TYPED OR PRINTED EXCEPT FOR WRITTEN SIGNATURES

Company name or organization (If applicable): Braun Kendrick Finkbeiner P.L.C.	Business phone #: Area code 517 753-3461
Requester's name: Aileen M. Stuart, Legal Assistant	Daytime phone #: Area code ( ) -
Address (street and number): 812 Second National Bank Building	Home phone #: Area code ( ) -
City: Saginaw State: MI Zip code: 48607	Social Security or Federal ID no.: - -

I wish to ☐ examine ☐ receive a copy of the following materials:
(Provide detailed descriptions of materials being requested and specify number of copies needed of each) (Attach additional sheets if necessary)

Industrial Brownhoist Property in Bay City, MI

I hereby request a waiver or reduction in fees as provided in Section 4(1) of F.O.I.A. because:
☐ I am indigent or receive public assistance (Attach proof)
☐ I represent a public interest group (Attach statement fully explaining nature of organization)

I understand the DEQ may take 10 additional business days, if necessary, to fill my request due to the diverse locations or large volume of the material. I understand that if it is determined that some or all of the materials which I have requested to review or have copied may not be disclosed, I will receive a written denial including the reason for denial and explaining my right to appeal. I also understand that I may be charged with costs associated with this request.

Signature of Requester (If available) see attached Date 2-2-96

Please submit this completed confirmation / request to:
FREEDOM OF INFORMATION ACT OFFICER
MICHIGAN DEPARTMENT ENVIRONMENTAL QUALITY
PO BOX 30473
LANSING MI 48909
TELEPHONE NO.: (517) 375-7005
FAX NO.: (517) 335-4242

If you have any questions regarding this request, please contact:

Division/office name: DEQ/ERD	Unit: Saginaw Bay
DEQ employee name: Patricia A. Wilson *Patricia A. Wilson*	Telephone no.: Area code (517) 684-9141

Date this request was completed: 2-2-96

-THIS IS NOT A BILL-
You will be invoiced separately for any charges listed.

FOR DEPARTMENT OF ENVIRONMENTAL QUALITY USE ONLY
This section to be completed by the DEQ division/office employee fulfilling this request

Detail of Charges			INDEX
Labor	$	59.75	27440
Copying	$	37.40	PCA 26153
Mailing	$	2.93	AGENCY OBJECT 8857
TOTAL	$	100.08	PROJECT Phase

EQP 1046E (Rev 10/95)

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JAN 31 1996
SAGINAW - BAY

BRAUN KENDRICK FINKBEINER P.L.C.
LAWYERS

SECOND NATIONAL BANK BUILDING
SAGINAW, MICHIGAN 48607
TELEPHONE (517) 753-3461
TELECOPIERS (517) 753-3951
(517) 753-7221

201 PHOENIX BUILDING • P.O. BOX 2039
BAY CITY, MICHIGAN 48707
TELEPHONE (517) 895-8505
TELECOPIER (517) 895-8437

700 FIRST NATIONAL BUILDING
ANN ARBOR, MICHIGAN 48104
TELEPHONE (313) 995-4100
TELECOPIER (313) 995-4798

.. RICHARD KENDRICK*
JAMES V. FINKBEINER
RALPH J. ISACKSON
THOMAS M. MURPHY*
HUGO E. BRAUN, JR.
PATRICK D. NEERING*
GEORGE F. GRONEWOLD, JR.
MORTON E. WELDY*
C. PATRICK KALTENBACH
HAROLD J. BLANCHET, JR.
KENNETH W. KABLE
E. LOUIS OGNISANTI
FRANK M. QUINN
BRUCE L. DALRYMPLE
ROBERT A. KENDRICK
CHARLES A. GILFEATHER
THOMAS R. LUPLOW
JOHN A. DECKER
MICHAEL J. SAUER
TIMOTHY L. CURTISS

*OF COUNSEL

GREGORY E. METER
DANIEL S. OPPERMAN
SCOTT C. STRATTARD
GREGORY T. DEMERS
CRAIG W. HORN
FRANCIS J. KEATING
JEFFREY C. WILSON
BARRY M. LEVINE
BRIAN F. BAUER
JUDITH A. LINCOLN
IRENNA M. GARAPETIAN
BRIAN S. MAKARIC
GLENN L. FITKIN III
BRIAN S. FLEETHAM
JAMIE HECHT NISIDIS
MICHAEL E. WOOLEY
F. KAY COURTER
ELLEN E. CRANE

January 20, 1996

REPLY TO:

Saginaw

Ms. Rhonda Klann
Department of Environmental Quality
503 N. Euclid Avenue
Bay City, Michigan 48706

Re: Industrial Brownhoist (IB)
Bay City, Bay County, Michigan
Baseline Environmental Assessment

Dear Ms. Klann:

I am enclosing a Freedom of Information Request Form for the Baseline Environmental Assessment only of the Industrial Brownhoist property in Bay City, Michigan.

Please remit your statement for copying charges. However, if you estimate that the amount will exceed $25.00, please contact me before proceeding.

Thank you for your attention to this matter. If you should have any questions, please feel free to give me a call.

Very truly yours,

Aileen M. Stuart

AILEEN M. STUART
Legal Assistant

/ams
Enclosure

S120318.1

Michigan Department of Natural Resources
Office of Environmental Enforcement
FREEDOM OF INFORMATION Officer
P.O. Box 30028
Lansing, MI 48909
Telephone: (517) 373-3503

DNR

REQUEST FOR DISCLOSURE OF RECORDS

By Authority of the Michigan Freedom of Information Act 442, P.A. 1976 as amended.

JAN 31 ... MDNR - ERD SAGINAW BAY

NFORMATION MUST BE TYPED OR PRINTED EXCEPT FOR WRITTEN SIGNATURE.

STER'S NAME: AILEEN M. STUART, Legal Assistant			SOCIAL SECURITY OR FEDERAL I.D. NO.: 38-3204687
ADDRESS (STREET AND NUMBER): 812 SECOND NATIONAL BANK BUILDING			HOME PHONE: Area Code ( )
CITY: SAGINAW	STATE: MI	ZIP CODE: 48607	BUSINESS PHONE: Area Code (517) 753-3461
ORGANIZATION (if any): BRAUN KENDRICK FINKBEINER P.L.C.			

I wish to examine [ ] receive a copy [X] of the following materials:

(Provide detail descriptions of materials being requested and specify number of copies needed of each)

A COPY OF THE BASELINE ENVIRONMENTAL ASSESSMENT OF THE INDUSTRIAL BROWNHOIST PROPERTY IN BAY CITY, MICHIGAN.

y request a waiver or reduction in fees as provided in Section 4(1) of F.O.I.A. because:

- [ ] I am indigent or receiving public assistance (proof attached)
- [ ] I represent a public interest group (attach statement fully explaining nature of organization)

I understand the DNR may take 10 additional business days, if necessary, to fill my request, due to the diverse locations of large volumes of the materials.

I understand that if it is determined that some or all of the materials which I have requested to review or have copied may not be disclosed, I will receive a written denial including the reason for denial and explaining my right to appeal.

Signature of Requester: Aileen M. Stuart Date: 1-30-96

PLEASE MAKE CHECK OR MONEY ORDER IN THE AMOUNT OF $_____(see below for details), PAYABLE TO: STATE OF MICHIGAN and MAIL with CANARY COPY TO: MICHIGAN DEPARTMENT OF NATURAL RESOURCES
CASHIER'S OFFICE
P.O. BOX 30028
LANSING, MI 48909

DO NOT SEND CASH)

FOR DEPARTMENT OF NATURAL RESOURCES USE ONLY

THE DIVISION EMPLOYEE RECEIVING THE REQUEST SHOULD COMPLETE THIS SECTION

Details of Charges	DIVISION	UNIT	
Labor $ _____	ACCOUNT NUMBER	COST CENTER	OBJECT CODE 999
Copying $ _____	DNR EMPLOYEE'S SIGNATURE	DATE PROCESSED	
Mailing $ _____			
TO _____	DO NOT WRITE BELOW - FOR CASHIER'S USE ONLY		
Less Payment Received $ _____	DISTRIBUTION: WHITE-REQUESTER; CANARY-SUBMIT WITH REMITTANCE TO CASHIER'S OFFICE; PINK-CASHIER'S OFFICE; GOLDENROD-DIVISION		
BAL. DUE $ _____			

Bay Aggregate, Industrial Brownhoist

Meeting: July 31, 1995
Participants: Dave Ives, Bay Aggregate
Rhonda Klann, MDNR
Ed Kirkby, MDNR

Bay Aggregate is considering purchasing the Industrial Brownhoist facility. Dave wanted to discuss existing data on contamination at the IB site and liability issues.

Woodman of the World conducted additional investigation last winter. A report for that investigation has not been submitted to this office. EPA has also conducted additional investigation. A report for that investigation has not been submitted to this office. Tim Bertram, ERD geologist, gave Dave a brief overview of the site based on his discussions and site visit with Woodman's consultant. There may be free product and soils that exceed the direct contact criteria Without the reports, we are unable to evaluate whether sufficient information exists to prepare a closure report or for a baseline environmental assessment (BEA). I will contact Andy Avel, EPA, regarding the status of their report.

We discussed the purpose of a BEA. Bay Aggregate will continue to use the area along the Saginaw River as aggregate storage. The use for the property along Water Street is unknown. We went through the type of BEA needed, as outlined in the BEA guidance for known uses and unknown uses.

We discussed Bay Aggregate's liability is they purchase the property. A new purchaser can conduct an adequate BEA, depending on future use, which will give them liability protection under the statute. However, they have occupied the property for the past 5+ years under a lease agreement. I will ask how this impacts their ability to get liability protection as a new owner.

We discussed the need to use due care, as described in the law: prevent exacerbation; prevent unacceptable exposures to people on the site; and to prevent 3rd party actions.

Rhonda Klann

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DEC 0 6 1995

MDNR - ERD
SAGINAW - BAY

AGGREGATE, INC.

301 N. WATER ST. • P.O. BOX 1067
BAY CITY, MI 48706

SECOND NATIONAL BANK of BAY CITY
BAY CITY, MICHIGAN 48708

74-1306
724

No. 014586

DATE	CHECK NO.	AMOUNT
12/06/95	014586	$750.00

Y

REGISTERED 75 BOLS CTS
71174569

O THE
RDER OF

STATE OF MICHIGAN

BAY AGGREGATE, INC.

⑈014586⑈ ⑆072413065⑆ 0120170843⑈

BEA Record Report

08-Dec-95 **BEA ID:** P95-00013-BC

Sub name: David E. Ives/I.B. Industrial Park, Inc.
Sub address1: P.O. Box 1067
Sub address2:
Sub city: Bay City
Sub state: MI
Sub zip: 48706-

Prop name: Industrial Brownhoist
Prop address1: 112 N. Water St.
Prop address2:
Prop city/twn: Bay City
Prop county: Bay #9

Current owner: No **Prospective owner:** Yes
Current operator: No **Prospective operator:** No
Current lender: No **Prospective lender:** No

Con name: Sally Bartz/Roy F. Weston, Inc.
Con address1: 2125 University Park Drive, Suite 270
Con address2:
Con city: Okemos
Con state: MI
Con zip: 48864-
Con phone: (517) 349-8255

Form type: Petition - PR4445
District: BC **Received:** 12/ 6/95

Due care: Yes **Returned_fee:** No **PRA:** Yes **Division:** ERD **Date assigned:** 12/6/95 **Due date:** 12/27/95

Staff: Yes
Staff assignee: Rhonda Klann
Contractor: No
Contractor assignee:
Contractor charges: $0

Site ID: 090045 **New site:** No
Other: **Other type:**
Property use: Aggregate storage/Lease space
BEA determination:
BEA determination sent:
BEA process days: 0
20107A obligation:
Oblig. determination sent:
20107A process days:
20107A(1) (a):
20107A(1) (b):
20107A(1) (c):

BEA initial response: No
BEA initial response date:
BEA initial response days: 0
BEA second submittal:
BEA second response: No
BEA second response date:
BEA second response days: 0
BEA third submittal:

20107A initial response: No
20107A initial response date:
20107A initial response days: 0
20107A second submittal:
20107A second response: No
20107A second response date:
20107A second response days: 0
20107A third submittal:

Ineligible

Response action: Yes
Petition_not_fac: No
Submittal_not_fac: No
Not_after_6/5/95: No
Not_within_45: No
Not_in_six_months: No

Not Complete

BEA_report_missing: No
Fee_incorrect: No
Pet_aff_missing: No
Env_prof_aff_missing: No
Proposed_use_missing: No
Proposed_response_missing: No
Incorrect_form: No
Fee_with_submittal: No

To: IB Industrial Park, Inc. BEA file

From: Rhonda Klann, MDEQ

Date: January 2, 1996

On December 26, 1995, Weston submitted the following:

1. A corrected affidavit from the petitioner, Dave Ives. This petition indicates under statement 4 that he is a fully authorized representative rather than the petitioner.

2. A revised Table of Contents.

3. A revised Section 3 "Revised Conclusions", including the addition of Section 3.3 "Other Environmental Issues".

4. A revised Section 5 "Revised Proposed Use Plan".

The new pages were put into the BEA document and the replaced pages were taken out.

Rhonda Klann

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DEC 0 6 1995
MDNR - ERD
SAGINAW - BAY

BASELINE ENVIRONMENTAL ASSESSMENT
Conducted Pursuant to Section 20126(1)(c)
of 1994 PA 451, Part 201, as amended

and

PROPOSED USE PLAN/PROPOSED RESPONSE ACTIVITIES
Relative to Section 20129(a)
of 1994 PA 451, Part 201 as amended

Prepared for

I.B. Industrial Park, Inc.
Bay City, Michigan

Prepared by

ROY F. WESTON, INC.
2125 University Park Drive
Suite 270
Okemos, Michigan 48864

DECEMBER 1995

Work Order No. 11238-001-001

BASELINE ENVIRONMENTAL ASSESSMENT
Conducted Pursuant to Section 20126(1)(c)
of 1994 PA 451, Part 201, as amended

and

PROPOSED USE PLAN/PROPOSED RESPONSE ACTIVITIES
Relative to Section 20129(a)
of 1994 PA 451, Part 201 as amended

Prepared for

I.B. Industrial Park, Inc.
Bay City, Michigan

December 1995

FOR Tracy Sedgwick, P.G.
Project Geologist

Sally Bartz
Senior Project Manager

Timothy J. Ott
Project Director

Prepared by

ROY F. WESTON, INC.
2125 University Park Drive
Suite 270
Okemos, Michigan 48864

DNR

FOR DNR USE ONLY
Petition # P95-00013-BC
Check # 014586
Amount $ 750.00
Payer Bay Aggregate, Inc.
Index: 45021 PCA: 31400 OBJ: 9135

PETITION FOR
BASELINE ENVIRONMENTAL ASSESSMENT DETERMINATION
and Optional Determination of Compliance with Section 20107a

(Under the authority of Part 201, 1994 Act 451, as amended)

All the following questions must be answered. If any information is missing, the petition for Baseline Environmental Assessment (BEA) determination ("the petition") will be returned unreviewed.

Name and address of petitioner (individual or legal entity):
David E. Ives
President
I.B Industrial Park, Inc.
P.O. Box 1067
Bay City, MI 48706

Status relative to the property:

	Current	Prospective
Owner		X
Operator		
Lender		

Address/location of property where assessment was undertaken:
112 N. Water Street
Bay City, MI 48706

County: Bay

Contact person representing petitioner Sally Bartz Telephone: (517) 349-8255

If the address of the petitioner is different from address that should be used to correspond with the petitioner's contact person, please provide the contact person's address: Roy F. Weston, Inc.
2125 University Park Drive Suite 270
Okemos, Michigan 48864

. each of the following questions, check YES or NO.

1. **Is it known that the source of contamination at the site is solely from any of the following?**
   - **A leaking underground storage tank** YES___ NO X
   - **A licensed landfill or solid waste management facility** YES___ NO X
   - **A licensed hazardous waste treatment, storage, or disposal facility** YES___ NO X
   - **Oil and gas development related activities** YES___ NO X

   The source of the release that resulted in this property becoming a "facility" will determine which DNR Division will review your petition.

2. **Is the BEA determination based on a specific future property use?** YES X NO___
   A description of the proposed hazardous substance/land use may reduce the amount of site information required for an adequate BEA.

ELIGIBILITY FOR BASELINE ENVIRONMENTAL ASSESSMENT DETERMINATION

3. **Is the property for which the petition review is being requested a "facility" as defined by Section 20101?** YES X NO___
   If the answer to this question is no, the property is ineligible for consideration and your petition will not be processed.

4. **Did or will the petitioner purchase, occupy, or foreclose on this property on or after June 5, 1995, the effective date of amendments to Part 201?** YES X
   If the answer to this question is no, you may be ineligible for a BEA review and your petition may not be processed. However, you may otherwise have an exemption from liability under Part 201.

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A	Legal Description of Industrial Brownhoist Property
B	MWR, Inc. - Environmental Investigation of the Amdura Site and Addendum
C	ETG Environmental, Inc. - Field Report for the Transformer Removal and the PCB Remediation at the Bay City Industrial Complex Supplement 1
D	Arthur D. Little, Inc. - Preliminary Environmental Assessment
E	Roy F. Weston, Inc. - Site Summary Report Center for Ecological Research and Training
F	Roy F. Weston, Inc. - 1995 Analytical Data
G	Roy F. Weston, Inc. - Geological Boring Logs
H	ETG Environmental, Inc. - Power House Building PCB Sample Results
I	ETG Environmental, Inc. - Analytical Results of 1995 Soil, Groundwater and Product Samples and Geological Boring Logs
J	ETG Environmental, Inc. - Project Summary, Boring Logs and Analytical Results
K	ETG Environmental, Inc. - Gaseous-Phase Benzene Concentrations

SECTION 1
INTRODUCTION

Roy F. Weston, Inc. (WESTON®) was retained by I.B. Industrial Park, Inc. to perform a Baseline Environmental Assessment (BEA) on the former Industrial Brownhoist (IB) property. The property is currently owned by Woodmen of the World Life Insurance Society and is a facility based on the definition under Part 201 of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451, as amended, Section 20101(1)(l). This BEA is intended to satisfy the requirement for an exemption from liability under Section 20126(1)(c). A Petition for a BEA Determination has been filed in association with this BEA. An Optional Determination of Compliance with Section 20107(a) has also been filed in conjunction with this BEA.

The primary objective of the BEA is to reasonably define the existing conditions at the IB property at the time of the property transfer. This definition is required so that in the event of a subsequent release, after I.B. Industrial Park, Inc. has taken possession of the property, there is a means of distinguishing the new release from existing contamination. The operations on-site will include aggregate storage and heavy equipment operation to move the aggregate around, on, or off the site. All heavy equipment refueling, maintenance and storage will be performed at the adjacent Bay Aggregate, Inc. (Bay Aggregate) property and not on the IB property. There will be no expected use or storage of hazardous substances at the IB property in the future by I.B. Industrial Park, Inc., therefore, this BEA is based upon Category A of the Interim Minimum Technical Standards.

The remainder of Section 1 contains the site description, site history, and the intended land use. Section 2 of the BEA discusses the previous site investigations, analytical results of various media, and the likelihood of additional contamination. Section 3 of the BEA discusses conclusions, exacerbation, due care and reasonable precautions. Section 4 presents the Proposed Use Plan (PUP) and Section 5 presents the Proposed Response Activities (PRA). The references are presented in Section 6. The signed Affidavits are included in Section 7.

1.1 SITE DESCRIPTION

The IB property occupies approximately 31 acres and is located west of Water Street between 10th and 13th Streets in Bangor Township, Bay City, Bay County, Michigan (Figure 1-1). The site is located within Sections 21 and 28 of Township 14 North, Range 5 East (Bay City Quadrangle Map). A complete legal description of the site is provided in Attachment A.

Currently, there are several buildings on-site as depicted in Figure 1-2. The main buildings include Building 41, Building 42, Sandblasting Building, Boom Shop, and the Storage Building. The Power House is scheduled for demolition in December 1995. All of the main buildings will most likely remain on-site after the property transfer, however, Building 42 may be partially or totally removed because the roof may not be structurally sound. The buildings are primarily of brick construction and are built on concrete slabs. None of the buildings with the exception of the Power House, have basements. However, a majority of the buildings contain machine pits and subsurface utility tunnels which are large enough to walk through.

The property is fenced along the northern, southern, and eastern boundaries. Site access is restricted at all times and there is a manned guard shack north of Building 41 along Saginaw Street. Other vehicular access areas to the property include a gate along the northern fence line where Bay Aggregate personnel access the site and a gate along the southern fence line along South Water Street. At the present time, there are several large gravel piles occupying the western portion of the property extending from south of the Boom Shop to the south property line. A considerable layer of gravel covers this entire area. As depicted on Figure 1-2, there are railroad spurs located on the IB property near the southeast corner of Building 41 and in between Buildings 41 and 42. The northeast corner of the property east and south of Water Street is unfenced and vacant.

The site is served by city power and sewer utilities. There are several buried water and sewer lines which exist throughout the property. The main waterline enters and leaves the property along the eastern side of the site and traverses north-south along the west side of Building 41 in the old vacated Water Street right-of-way. The remaining buildings are served by waterlines

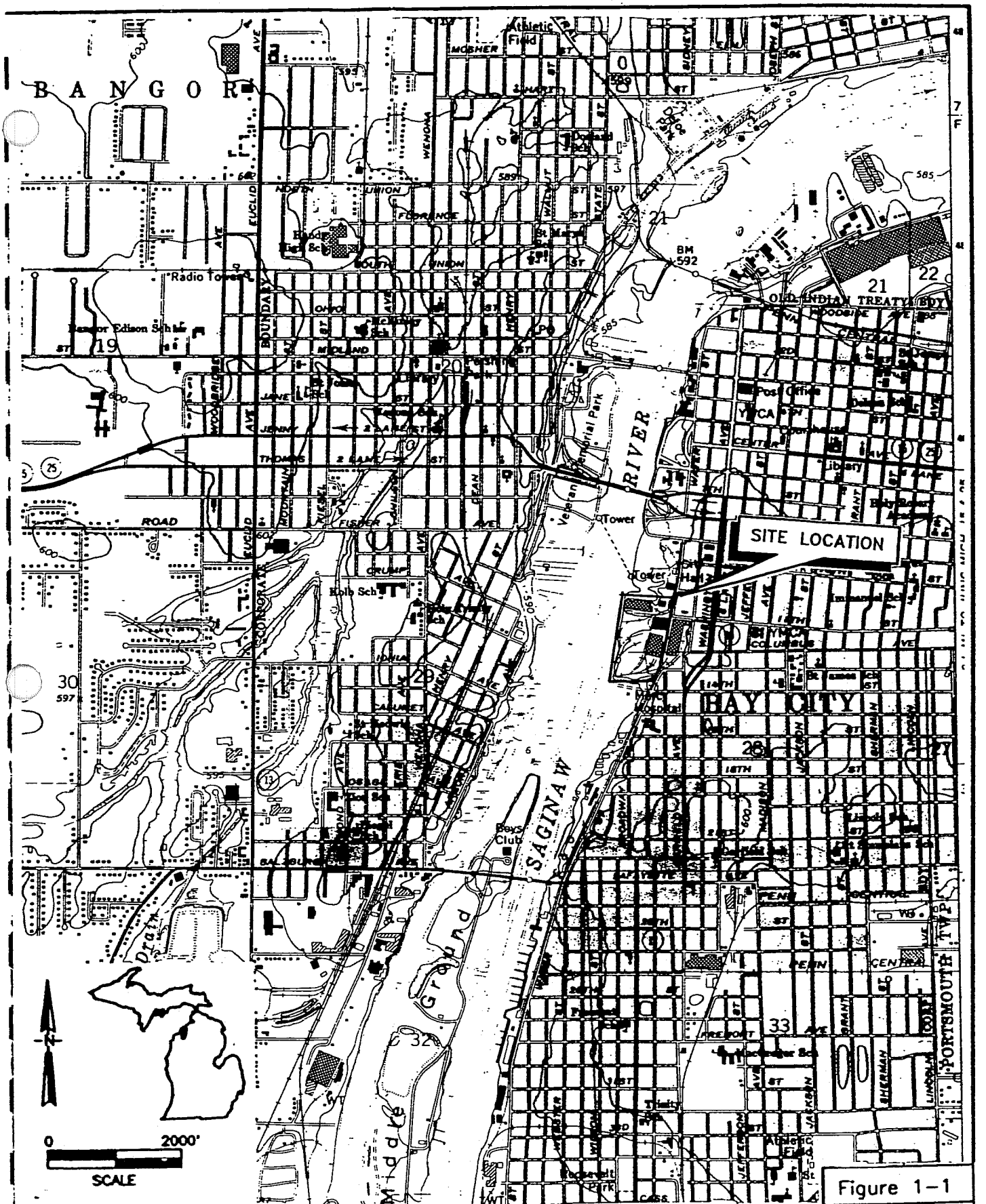


Figure 1-1

WESTON
MANAGERS DESIGNERS/CONSULTANTS

2125 University Park Dr.
Okemos, Michigan
48864

SITE LOCATION MAP

Industrial Brownhoist
Bay City, Michigan

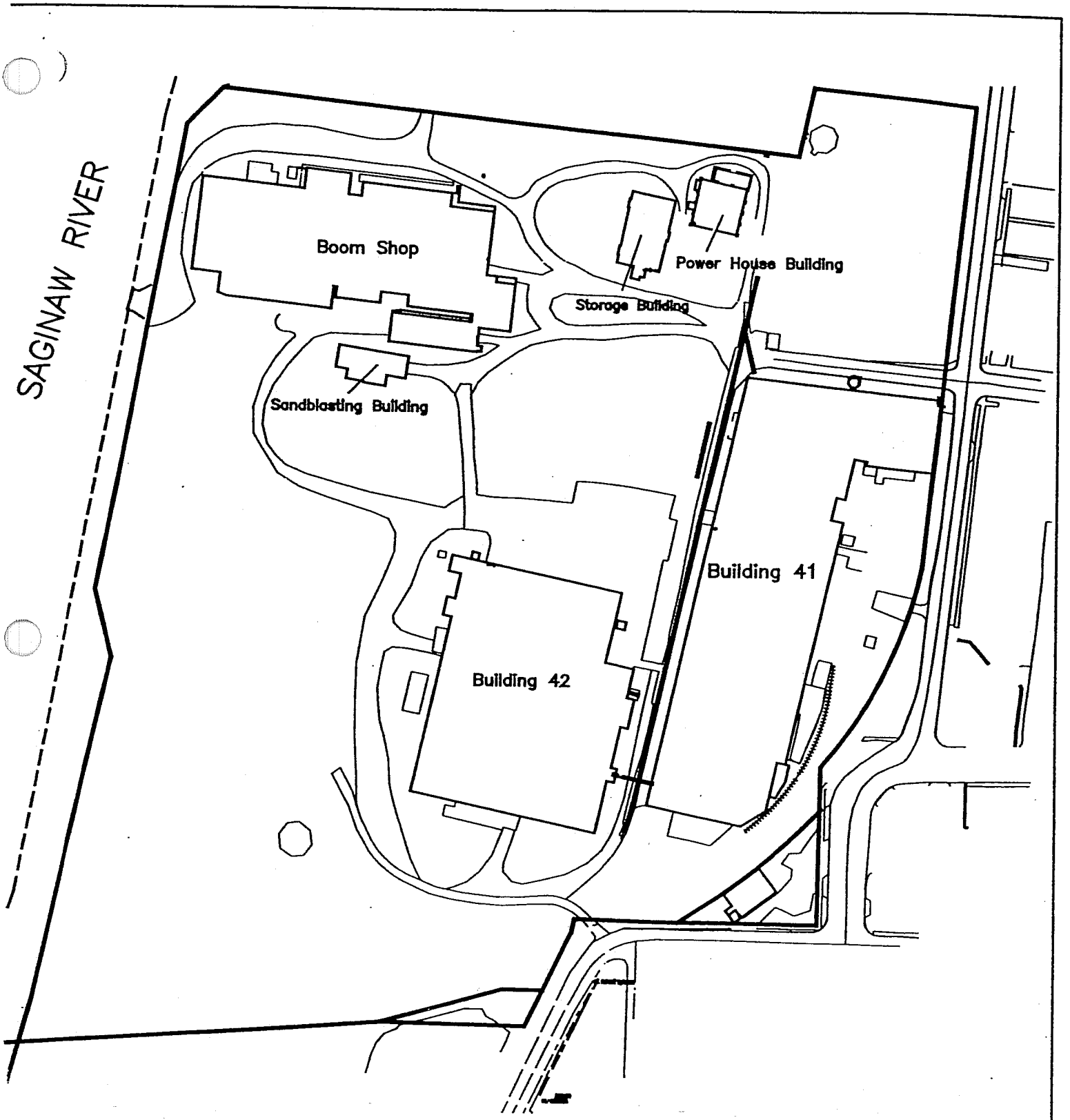


FIGURE 1-2

WESTON
MANAGERS DESIGNERS/CONSULTANTS

2125 University Park Dr.
Okemos, Michigan
48864

SITE MAP
Industrial Brownhoist
Bay City, Michigan

which are connected to the main line. For the most part, the sewer system parallels the water system. There is also a City of Bay City storm sewer which traverses east-west underneath Building 42 which formerly discharged to the Saginaw River. However, per city records, a bulkhead has been installed on this sewer line and the stormwater has been redirected to the City of Bay City Wastewater Treatment Plant.

1.2 SITE HISTORY

In the 1800s, the property housed a hardware store which manufactured saddles and leather equipment. In the early 1900s, the property became the Industrial Works where cranes and equipment were manufactured. The 1906 Raschers map identifies a small tar well (presumably associated with manufactured gas) under what is presently Building 41, near the northwest corner. The map also identified a large gas holder and an above ground oil tank in the same area. In the mid 1920s, other companies were absorbed into the Industrial Works, and the facility became Brownhoist, the name was later changed to Industrial Brownhoist. The property has been owned by Woodmen of the World Life Insurance Society since 1965.

The property has been leased to various entities over the past thirty years including but not limited to:

- Industrial Brownhoist
- Pennyslvania Coal & Coke Corporation
- American Steel & Pump Corporation
- American Hoist & Derrick Company

The foundry operations were shut down in the early 1960s. In 1983 the crane manufacturing activities were halted and plant operations were moved to North Carolina.

According to Arthur D. Little, Inc. (ADL) reports, a review of historical records, maps and photographs indicated that at least 50,000 gallons of petroleum product was stored above ground on the property in the past at more than six locations. Tanks located near the river were used

to fuel the forges throughout the site. Used foundry sand, which typically contains above-background levels of heavy metals, was reportedly disposed of on-site to fill low areas. This was a common practice throughout the industrialized sections along the Saginaw River. Disposal of solid waste at various locations on the IB property was also reported.

Much of the site (buildings and land) is currently leased to smaller companies. Operations on-site include railroad equipment repair and storage of railroad maintenance equipment (Bay Track Incorporated), concrete precasting (Stress-Con, Inc.) and aggregate storage (Bay Aggregate). Warehouse space is leased to various companies for storage of surplus goods, scrap machinery, cars and foundry patterns. These leasing activities are not likely to have had a significant impact on the environmental condition of the property.

During December 1995, the Power House Building and all polychlorinated biphenyl (PCB) transformers at the site are scheduled to be removed by ADAMO Demolition of Livonia, Michigan. Prior to the demolition, all asbestos associated with the Power House Building will be removed by National Abatement Corporation of Flint, Michigan. All asbestos is scheduled to be removed according to the current state and federal regulations. The Michigan Department of Environmental Quality (MDEQ) Air Quality Division and the Michigan Department of Public Health (MDPH) are to be notified of the asbestos removal prior to the building demolition.

1.3 INTENDED LAND USE

There will be no expected use or storage of hazardous substances at the IB property in the future by I.B. Industrial Park, Inc. The site will primarily be used for aggregate storage, however leasing of available building space will continue. I.B. Industrial Park, Inc. will oversee the new leases, and Bay Aggregate will continue to lease the western portion of the property. The Bay Aggregate operations on-site will include heavy equipment which will be used to move the large piles of aggregate stored on-site. Aggregate is transported to the site by great lakes vessels and deposited on the site by conveyor to form the aggregate piles. As needed, heavy equipment transfers the aggregate to transport trucks which enter and exit the site through the gate on the

north side of the IB property. No Bay Aggregate equipment maintenance, refueling or storage will be performed on the IB property.

The property currently has six buildings which are depicted on Figure 1-2 and include the following:

- Storage Building
- Boom Shop
- Sandblasting Building
- Building 41
- Building 42
- Power House (scheduled for December 1995 demolition)

There are two alternatives proposed for the intended use of these buildings. These alternatives are described in detail in Section 4 of this report.

Alternative 1 will include leaving all buildings in place. Regular maintenance will be performed in order to maintain building integrity. There is a possibility that some of the buildings may be leased to various companies whose operations are not known at this time. Any person or company leasing space from I.B. Industrial Park, Inc., at the IB property will be required to prepare and submit a BEA and a PUP/PRA prior to initiating any on-site activities.

Alternative 2 will include the destruction of selected buildings including but not limited to Building 42. The roof of Building 42 may not be structurally sound and therefore for health and safety purposes the building itself may be either partially or fully removed. Based on past environmental assessments, Building 42 contains approximately 200 feet of 4-inch corrugated paper straight pipe insulation which contains asbestos. All asbestos will be removed according to the current state and federal regulations. The MDEQ Air Quality Division and the MDPH will be notified of the asbestos removal prior to the building demolition. In addition, the building footings extend to 8 feet in some areas, making them unfeasible to remove. It is expected that all building footings and the foundations will remain in place and the area will be graded and covered with aggregate where necessary to level the area.

There is a possibility that some of the buildings may be leased to various companies whose operations are not known at this time. Any person or company leasing any space from I.B. Industrial Park, Inc. at the IB property will be required to prepare and submit a BEA and PUP/PRA prior to initiating any on-site activities.

SECTION 2
IDENTIFIED CONTAMINATION

Environmental assessments of the IB site have been performed by MWR, Inc. (MWR), ETG Environmental, Inc. (ETG), ADL, and WESTON. These assessments were performed from 1989 to 1995.

2.1 PREVIOUS SITE INVESTIGATIONS

This subsection presents investigation summaries from each environmental investigation performed at the IB property. The first environmental investigation at IB was performed by MWR in July through August 1989. Following the initial environmental investigation, MWR removed seven PCB transformers and performed PCB remediation at the property in August 1990. In January 1992, ADL prepared a Preliminary Environmental Assessment of the IB property. Based on recommendations presented in the ADL assessment, WESTON performed a site inspection and conducted a Phase I soil and groundwater investigation at the IB property in October through December 1992 and May and June 1993. In July 1993 ETG conducted an underground storage tank (UST) investigation at the site. A Phase II soil and groundwater investigation was completed by WESTON in February and March 1995. In conjunction with the WESTON Phase II investigation, ETG performed a soil and groundwater investigation at the IB property. ETG also collected PCB wipe samples from the Power House Building at that time. ETG performed limited additional site activities in November 1995 to address due care issues at the site. The remainder of this subsection summarizes the activities performed during these investigations.

2.1.1 MWR Investigations

In 1989, MWR performed an initial investigation of the property. The following tasks were completed as part of the investigation:

- Site reconnaissance
- Aerial photograph analysis

- Soil and groundwater investigation
- Soil gas survey
- Asbestos survey
- PCB transformer inventory and evaluation

Sixteen soil borings were advanced around the site at locations which were selected based on previous site activities that may have contributed to subsurface soil contamination. Soil samples were analyzed for select volatile organic compounds (VOCs) and metals. In addition to the soil boring advancement, seven monitoring wells were installed hydraulically upgradient and downgradient of the historical operations areas of the property. Groundwater samples were collected and analyzed for select VOCs and total metals.

The soil gas survey which consisted of 157 data points, was conducted in August 1989. Results of this survey indicated high concentrations of VOCs in soil gas vapors near the northeast and southwest corners of Building 41.

The PCB survey indicated the presence of 31 PCB oil containing transformers across the IB property. Soil samples were collected from the vicinity of the nine transformer pads located at the IB property.

MWR performed an inspection of all the site buildings to determine the presence, quantity and state of asbestos containing material (ACM). A total of 59 samples were collected from the buildings. Samples consisted of fire brick, straight pipe insulation, boiler gasket, tank insulation, wall plaster, roofing tar paper, roofing tar, floor tile, ceiling tile, baseboard molding, pipe joint insulation, transit board and ceiling plaster. Of the 59 samples collected, 37 samples contained at least one type of asbestos.

This investigation is summarized in the report entitled "Environmental Investigation of the Amdura Site" and subsequent addendum (Attachment B).

Following the initial investigation, PCB transformers and associated contaminated soils were removed from seven areas around the property. The report entitled "Field Report for the

Transformer Removal and PCB Remediation at the Bay City Industrial Complex Supplement 1" is provided in Attachment C.

2.1.2 ADL Assessment

In January 1992, ADL performed a Preliminary Environmental Assessment which consisted of record reviews, interviews and a site visit. ADL was contracted by Odell Associates in support of the United States Environmental Protection Agency's (U.S. EPA) potential purchase of the property for the development of the proposed Center for Ecological Research and Training (CERT). Old maps and interviews indicated that there may have been at least three abandoned USTs on the property. However, the Bay City Fire Chief and State Fire Marshall's Office provided no further information on the presence or location of these tanks.

As a result of the preliminary assessment, ADL identified 25 areas at the site which needed to be investigated further based upon the following issues:

- Potential Soil and Groundwater Contamination
- USTs
- PCBs
- Asbestos
- Off-site Liability.

The Preliminary Environmental Assessment report prepared by ADL is provided in Attachment D.

2.1.3 WESTON Investigations

WESTON performed a Phase I investigation at the IB property in October through December 1992 and May and June 1993 and a Phase II investigation in February and March 1995. These investigations were conducted as part of the proposed U.S. EPA CERT site. WESTON performed all of the work under contract to the U.S. EPA. The WESTON investigation was planned using the recommendations proposed by ADL.

WESTON activities included:

Geophysical Survey

The Phase I investigation included geophysical surveys to identify potential underground utilities and the accessibility of potential soil borings. These surveys indicated two potential USTs and that numerous underground utilities and foundations were present throughout the IB property.

Radiation Survey and Sampling

During May 1993, WESTON conducted gamma radiation surveys in conjunction with soil sampling activities. Gamma radiation walkover surveys of all sampling locations were performed using a MicroRoentgen meter held at waist level. In addition, shallow subsurface soil samples were collected and analyzed from locations that were identified as having elevated gamma radiation by the gamma radiation grid surveys. The suspected source of contamination was radioactive sands utilized in foundries and potentially present in foundry sand used for fill at the property.

Building Investigations

An investigation of the on-site buildings was conducted in 1992 to determine whether hazardous materials or waste existed within the buildings, or if the subsurface material beneath the buildings had been impacted by the migration of contaminants through cracks in the floors or along the foundations. Locations of potential hazardous materials, observable spillage or staining and areas of potential ACM were identified.

Power House Building

A significant amount of oil staining was observed throughout the power house. Oil-saturated wood flooring was observed on the first floor and oil-stained concrete walls were observed in the basement. PCB-labeled transformers were noted on the first floor of the building. Potential ACM was observed on the boiler and on pipe-wrap located in the basement. Additionally, potential ACM was observed on steam lines that entered the on-site tunnel system. Three drums of water treatment chemicals were also observed in the basement.

Storage Building

An abandoned laboratory on the second floor of the storage building was observed. All of the laboratory chemicals appeared to have been removed. No significant staining was observed. No visual evidence of spilled mercury was observed by WESTON.

Boom Shop

Oil-stained concrete was observed in the vacant compressor room of the boom shop.

Sandblasting Building

A 6- to 12-inch layer of sand blasting sand was observed throughout the building. No evidence of staining was observed.

Building 42

Isolated areas of oil-stained concrete were observed throughout the building. A pile of solidified metal debris was also observed immediately outside the northwest corner of the building. Potential asbestos-containing floor tile was noted on the second floor within the office area of the building. Two drums of hydraulic oil were observed inside the building. Three drums of unknown contents were observed outside the building to the west on a concrete pad.

Building 41

Significant oil-staining was observed in the northwest portion of the building beneath a bank of PCB-labeled transformers. Additionally, isolated areas of oil-stained concrete and wood block flooring were noted throughout the building. Potential ACM was observed on pipes that originated in the tunnel system. Staining of the floor within the former plating area was observed, but the concrete floor was noted to be in good condition. Approximately 500 to 700 bags of used insulating material were observed in the northeast portion of the building. The source of this material could not be determined. The majority of the former machine pits in this building appear to have been backfilled with concrete or sand.

PCB Sampling

A limited number of PCB samples were collected from areas within the Power House and Building 41 at the IB property in December 1992. The sampling was conducted to determine if PCB contamination was present in the significantly oil-stained areas of the IB property. A total of two samples (1 wipe and 1 oil) were collected from within the Power House. A total of six samples (three wipe, two oil and one solid) were collected in the northwest portion of Building 41 in the vicinity of the PCB labeled transformers.

Soil and Groundwater Assessment

The initial Phase I assessment began in November 1992. Fifty soil borings, ranging in depth from 6 to 60 feet below the ground surface (bgs) were advanced throughout the IB property. The soil boring locations were selected to identify the presence of soil contamination in the 25 areas of concern previously identified by ADL. A total of 109 soil samples were analyzed for selected parameters including VOCs, polynuclear aromatic hydrocarbons (PAHs), PCBs, semi-VOCs (SVOCs), Michigan 10 metals, and cyanide. Fourteen temporary monitoring wells were also installed in the overburden. A total of nineteen additional soil borings were completed at the IB property during the additional Phase I soil assessment. The soil samples were analyzed for selected parameters including VOCs, SVOCs, metals, PCBs, cyanide, toxicity characteristic leaching procedure (TCLP) metals, extraction procedure toxicity (EP TOX) metals and radiation. These borings were advanced during May and June 1993.

The Phase II assessment was performed in February 1995. A total of 12 soil borings were advanced and nine monitoring wells were installed. The soil samples were analyzed for selected parameters including VOCs, PAHs, metals, and PCBs. The monitoring wells are scheduled to be sampled during December 1995. The initial WESTON investigation results are summarized in the report entitled Site Summary Report Center for Ecological Research and Training, October 1993 (Attachment E). The 1995 investigation results are summarized in the analytical data presented in Attachment F. All WESTON geological boring logs are presented in Attachment G.

2.1.4 ETG Investigations

In July 1993 ETG conducted a UST investigation at the site. The investigation was designed to locate the 1,000 gallon UST near the southeast corner of Building 42 which had reportedly been used for gasoline storage and the 1,000 gallon UST located near the northeast corner of Building 42 which had been reportedly used for the storage of heating oil.

Approximately 153 cubic yards of material were removed while attempting to locate the heating oil UST and approximately 168 cubic yards of material were removed while attempting to locate the gasoline UST. Neither UST was confirmed at the identified locations. However, the results of the UST investigation did not confirm nor deny the existence of USTs at the site.

In December 1994, ETG conducted PCB wipe sampling in the Power House building. The report "Power House Building PCB Sample Results" (Attachment H) describes the sample activities and analytical results.

In conjunction with WESTON's Phase II investigation, ETG performed a Pre-Remedial Action Plan Assessment. This assessment included the installation of 14 soil borings and the installation of 19 shallow and 4 deep groundwater monitoring wells. The borings and wells were sampled and analyzed for VOCs, PAHs and metals. During this assessment, separate phase product (oil) was documented in monitoring well ETG-MW-3S located near the northwest corner of Building 42. In addition, small oil-like nodules were documented in ETG-MW-19 which is due east of MW-35 and is located inside Building 42. Another well, ETG-MW-12 which is located just northeast of the Boom Shop also contained small oil-like nodules. To date, a written report describing the field investigation and analytical results has not been submitted, however, the analytical results and geological boring logs are presented in Attachment I.

In order to satisfy due care issues at the site, ETG performed limited additional site activities. During the week of 6 November 1995, ETG installed three additional wells to assess the groundwater quality downgradient and sidegradient of the coal tar pit. In addition, the free product area around ETG-MW-3S was excavated and a collection system was installed. ETG

plans to periodically pump out the collection system and if no further oil is collected to remove the system prior to the property transfer. The Project Summary describing these field activities, boring logs and analytical results are presented in Attachment J.

2.2 ANALYTICAL RESULTS

The analytical results presented in this subsection are summarized from the WESTON and ETG information provided in the attachments. Figure 2-1 depicts the sample locations for samples with analytical results that exceed the MDEQ Generic Residential Cleanup Criteria. (MDEQ - Interim Environmental Response Division, Operation Memorandum #8, Revision 4, Generic Residential Cleanup Criteria - 5 June 1995).

2.2.1 Subsurface Soil Quality

Table 2-1 summarizes the soil samples analytical results which exceeded the MDEQ Generic Residential Cleanup Criteria. In addition, analytical results which exceed the MDEQ Generic Industrial Cleanup Criteria (MDEQ - Environmental Response Division Operational Memorandum #14, Revision 2, Remedial Action Plans Using Generic Industrial or Generic Commercial Cleanup Criteria and Other Requirements - 6 June 1995) are also presented on Table 2-1.

2.2.2 Subsurface Groundwater Quality

Table 2-2 summarizes the analytical results for groundwater which exceeded the MDEQ Generic Residential Cleanup Criteria. In addition, analytical results which exceeded the MDEQ Generic Industrial Cleanup Criteria are also presented on Table 2-2.

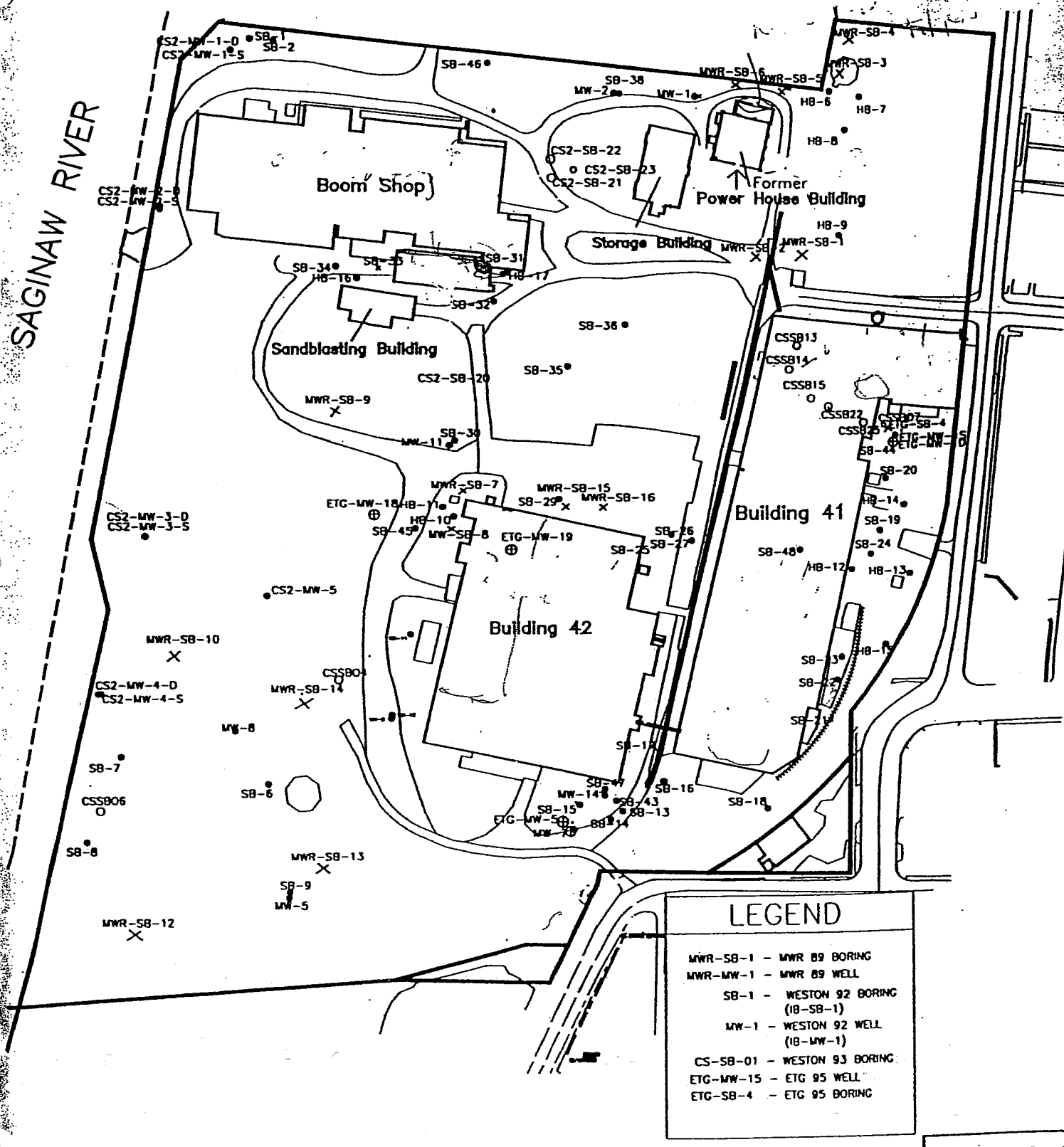


Figure 2-1

WESTON MANAGERS DESIGNERS/CONSULTANTS

2125 University Park Dr.
Okemos, Michigan
48864

SOIL AND GROUNDWATER SAMPLE LOCATIONS
WHERE ANALYTICAL RESULTS EXCEEDED GENERIC RESIDENTIAL CLEANUP CRI

Industrial Brownhoist
Bay City, Michigan

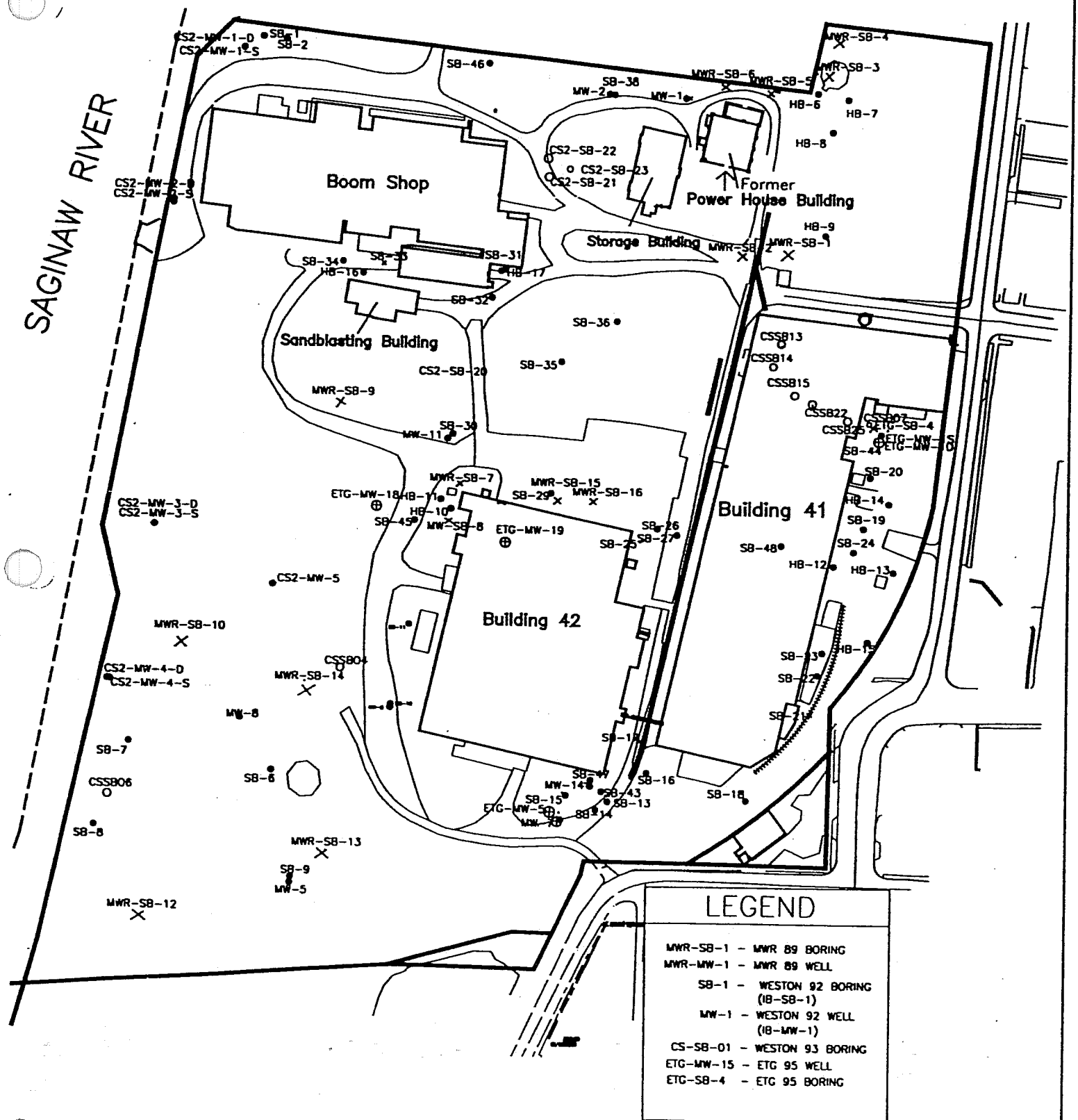


Figure 2-1

WESTON
MANAGERS DESIGNERS/CONSULTANTS

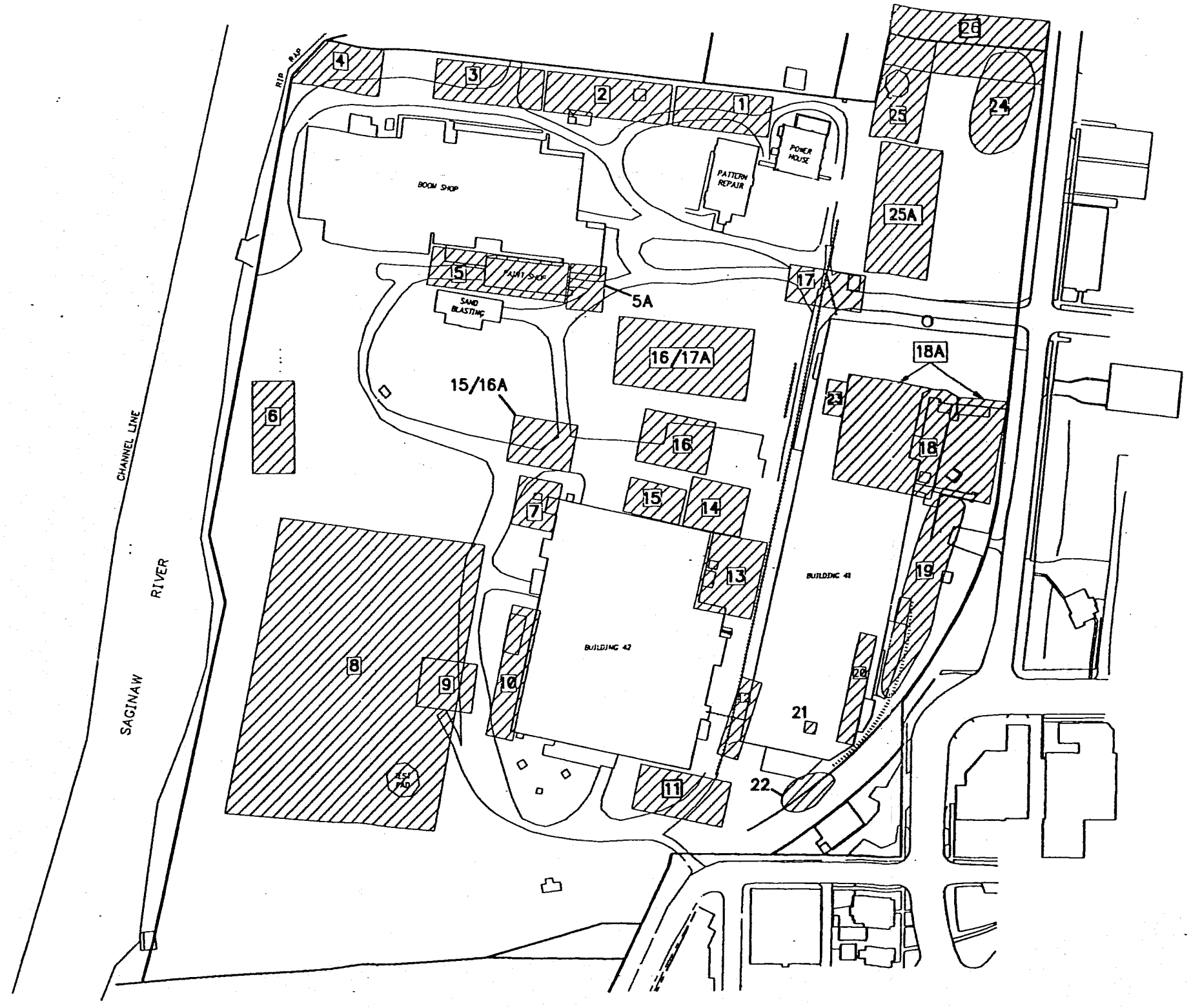
2125 University Park Dr.
Okemos, Michigan
48864

SOIL AND GROUNDWATER SAMPLE LOCATIONS
WHERE ANALYTICAL RESULTS EXCEEDED GENERIC RESIDENTIAL CLEANUP CRITERIA

Industrial Brownhoist
Bay City, Michigan

LEGEND

6 AREAS OF CONCERN



N

0 175'
SCALE

RWS-09/16/93-14:07-CAD\BAY\03493

FIGURE 2-2

ALTERNATIVE REMEDIAL CONTRACTING STRATEGY
U.S. EPA CONTRACT No. 68-W8-0089
WORK ASSIGNMENT No. 055-5AED
DOCUMENT CONTROL No. 4500-55-AHUE

SITE PLAN
INDUSTRIAL BROWNHOIST PROPERTY
BAY CITY CERT SITE
Bay City, Michigan

118

Table 2-1
Soil Sample Analytical Results
Above Residential or Industrial Cleanup Criteria
Industrial Brownhoist
Bay City, Michigan

Sample Location:	IB-HA-06	IB-HA-07	IB-HA-08	IB-HA-09	IB-HA-10	IB-HA-11	IB-HA-12	IB-HA-13	IB-HA-14	IB-HA-15	IB-HA-16	IB-HA-17	Generic Residential	Generic Industrial
Sample Depth(ft):	1.5-3.5	1.5-4.5	1.5-3	1.5-4.5	1.5-4.5	1.5-2	1.5-4.5	1.5-4.5	1.5-4.5	1.5-4.5	1.5-3.5	1.5-2	Criteria*	Criteria*
Parameter														
VOCs (ug/kg)														
Acetone	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	—	—	16,000	74,000,000
Benzene	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	—	—	100	850,000
Ethylbenzene	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	—	—	1,500	72,000,000
Methylene Chloride	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	—	—	100	3,300,000
Xylenes (total)	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	—	—	5,600	1,000,000,000
SVOCs (ug/kg)														
Acenaphthylene	—	—	—	—	NA	NA	—	—	—	—	—	—	520	16,000,000
Benzo(a)pyrene	2,300	—	—	—	NA	NA	—	—	—	—	—	—	1,400	21,000
Dibenzo(a,h)anthracene	—	—	—	—	NA	NA	—	—	—	—	—	—	1,400	21,000
Fluoranthene	—	—	—	—	NA	NA	—	—	—	—	—	—	18,000	540,000,000
Naphthalene	—	—	—	—	NA	NA	—	—	—	—	—	—	5,200	160,000,000
Phenanthrene	3,300	1,500	1,700	1,000	NA	NA	—	—	—	—	—	—	520	16,000,000
Pyrene	—	—	—	—	NA	NA	—	—	—	—	—	—	11,000	340,000,000
Inorganics (mg/kg)														
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.50	1,600
Arsenic	—	—	9.6	—	—	—	—	—	—	—	9.2J	34J	5.8**	83
Barium	—	—	—	—	180	96	—	—	—	78	—	—	75**	320,000
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.20	36
Cadmium	2.7J	8.0J	14J	6.2J	13J	18J	3.6J	3.5J	3.3J	5.3J	8.2J	11J	1.2**	2,300
Chromium	—	—	—	—	37J	49J	—	—	—	—	24J	76J	18**	22,000
Copper	—	70J	70J	—	360J	270J	—	—	—	180J	82	170	32**	170,000
Lead	33J	66J	130J	—	82J	150J	—	—	—	96J	70	290	21**	400
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20**	340,000
Mercury	—	—	—	—	0.18	—	—	—	—	—	1.6J	—	0.13**	1,400
Selenium	—	—	—	—	—	—	—	—	—	—	—	—	1	23,000
Silver	—	—	—	—	—	—	1.6J	—	—	—	—	—	1.0**	21,000
Zinc	—	86J	99J	—	91J	160J	—	—	—	150J	200J	4,400J	48	1,000,000
Cyanide	NA	NA	NA	NA	NA	NA	—	NA	NA	NA	NA	NA	4	99,000

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum #8 or #14, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

Table 2-1 (Continued)
Soil Sample Analytical Results
Above Residential or Industrial Cleanup Criteria
Industrial Brownhoist
Bay City, Michigan

Sample Location:	IB-SB-01	IB-SB-01	IB-SB-02	IB-SB-06	IB-SB-07	IB-SB-08	IB-SB-09	IB-SB-10	IB-SB-11	IB-SB-11	IB-SB-12	IB-SB-13	Generic Residential	Generic Industrial
Sample Depth(ft):	6-8	8-10	8-10	7-17	2-12	8-10	4-6	8-10	4-6	12-14	12-14	4-6	Criteria*	Criteria*
Parameter														
VOCs (ug/kg)														
Acetone	—	—	—	NA	NA	—	—	—	—	—	—	—	16,000	74,000,000
Benzene	—	—	—	NA	NA	—	—	—	—	—	—	—	100	850,000
Ethylbenzene	—	—	—	NA	NA	—	—	—	—	—	—	—	1,500	72,000,000
Methylene Chloride	—	—	—	NA	NA	—	—	—	—	—	—	—	100	3,300,000
Xylenes (total)	—	—	—	NA	NA	—	—	—	—	—	—	—	5,600	1,000,000,000
SVOCs (ug/kg)														
Acenaphthylene	—	—	900	—	—	—	—	—	—	—	—	—	520	16,000,000
Benzo(a)pyrene	—	—	2,600	—	—	—	—	—	—	—	—	—	1,400	21,000
Dibenzo(a,h)anthracene	—	—	—	—	—	—	—	—	—	—	—	—	1,400	21,000
Fluoranthene	—	—	—	—	—	—	—	—	—	—	—	—	16,000	540,000,000
Naphthalene	—	—	—	—	—	—	—	—	—	—	—	—	5,200	160,000,000
Phenanthrene	—	—	4,900	600	—	—	—	600	—	—	—	—	520	16,000,000
Pyrene	—	—	—	—	—	—	—	—	—	—	—	—	11,000	340,000,000
Inorganics (mg/kg)														
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.60	1,600
Arsenic	—	—	—	—	—	—	—	11	8.8	—	9.7	—	6.8**	83
Barium	—	—	—	—	—	—	—	—	—	—	180	—	75**	320,000
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.20	36
Cadmium	2.7	3.4	4.0	16	7.8J	12J	10J	11J	13J	—	12J	4.0J	1.2**	2,300
Chromium	—	—	—	32	22J	—	—	—	—	—	—	—	18**	22,000
Copper	—	—	—	94	110J	150J	320J	110J	170J	—	120J	—	32**	170,000
Lead	—	—	—	45	150J	30J	81J	25J	67J	80J	100J	—	21**	400
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20**	340,000
Mercury	—	—	—	—	—	—	—	—	—	—	0.31	—	0.13**	1,400
Selenium	—	—	—	—	—	—	—	—	—	—	—	—	1	23,000
Silver	—	—	—	—	—	—	—	—	—	—	—	—	1.0**	21,000
Zinc	—	—	—	—	—	56J	83J	—	56J	—	120J	—	46	1,000,000
Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	99,000

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum 65 or #14, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

Table 2-1 (Continued)
Soil Sample Analytical Results
Above Residential or Industrial Cleanup Criteria
Industrial Brownhoist
Bay City, Michigan

Sample Location:	IB-SB-13	IB-SB-14	IB-SB-15	IB-SB-15	IB-SB-16	IB-SB-16	IB-SB-17	IB-SB-18	IB-SB-19	IB-SB-19	IB-SB-20	IB-SB-21	IB-SB-21	IB-SB-22	IB-SB-23	Generic Residential	Generic Industrial
Sample Depth(ft):	12-14	8-10	2-4	8-10	2-4	4-6	4-6	2-4	2-4	6-8	0-6	0-2	2-4	4-6	4-6	Criteria*	Criteria*
Parameter																	
VOCs (ug/kg)																	
Acetone	—	—	—	—	—	—	NA	—	—	—	NA	—	—	—	—	16,000	74,000,000
Benzene	—	—	—	—	—	—	NA	—	—	—	NA	—	—	—	—	100	850,000
Ethylbenzene	—	—	4,100	—	—	—	NA	—	—	—	NA	—	—	—	—	1,500	72,000,000
Methylene Chloride	—	—	—	—	—	—	NA	—	—	—	NA	—	—	—	—	100	3,300,000
Xylenes (total)	—	—	11,000	—	—	—	NA	—	—	—	NA	—	—	—	—	5,600	1,000,000,000
SVOCs (ug/kg)																	
Acenaphthylene	—	—	—	1,200	—	—	—	—	—	—	—	—	—	—	—	820	16,000,000
Benzo(a)pyrene	—	—	—	6,400	—	—	—	—	—	—	—	—	—	—	—	1,400	21,000
Dibenzo(a,h)anthracene	—	—	—	3,800	—	—	—	—	—	—	—	—	—	—	—	1,400	21,000
Fluoranthene	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	16,000	540,000,000
Naphthalene	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	5,200	160,000,000
Phenanthrene	—	2,600	—	7,600	—	—	—	—	—	—	—	—	—	—	—	820	16,000,000
Pyrene	—	—	—	13,000	—	—	—	—	—	—	—	—	—	—	—	11,000	340,000,000
Inorganics (mg/kg)																	
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.50	1,600
Arsenic	—	—	—	8.1	—	—	—	—	—	—	—	—	—	—	—	6.8**	83
Barium	—	—	—	94	—	—	—	—	—	—	—	—	—	—	—	75**	320,000
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.20	35
Cadmium	4.8J	6.2J	2.8J	3.2J	3.6J	3.5J	4.0J	3.2J	3.3J	3.8J	2.6J	3.2J	2.6J	2.6J	2.5J	1.2**	2,300
Chromium	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	18**	22,000
Copper	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	32**	170,000
Lead	—	—	—	140J	—	—	—	—	—	—	—	—	—	—	—	21**	400
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20**	340,000
Mercury	—	—	—	0.15	—	—	—	—	—	—	—	—	—	—	—	0.13**	1,400
Selenium	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1	23,000
Silver	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	1.0**	21,000
Zinc	—	—	—	260J	—	—	—	—	—	—	—	—	—	—	—	48	1,000,000
Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—	—	—	—	4	99,000

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum #8 or #14, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

Table 2-1 (Continued)
Soil Sample Analytical Results
Above Residential or Industrial Cleanup Criteria
Industrial Brownhoist
Bay City, Michigan

Sample Location:	IB-SB-24	IB-SB-25	IB-SB-25	IB-SB-25	IB-SB-26	IB-SB-27	IB-SB-27	IB-SB-28	IB-SB-28	IB-SB-28	IB-SB-29	IB-SB-29	Generic Residential	Generic Industrial
Sample Depth(ft):	4-6	6-8	10-12	12-14	8-10	2-4	4-6	10-12	12-14	14-16	4-6	12-14	Criteria*	Criteria*
Parameter														
VOCs (ug/kg)														
Acetone	—	—	—	—	NA	—	—	—	NA	—	—	NA	16,000	74,000,000
Benzene	—	—	—	—	NA	—	—	—	NA	—	—	NA	100	850,000
Ethylbenzene	—	—	—	—	NA	—	—	—	NA	—	—	NA	1,600	72,000,000
Methylene Chloride	—	—	—	—	NA	—	—	200	NA	—	—	NA	100	3,300,000
Xylenes (total)	—	—	—	—	NA	—	—	—	NA	—	—	NA	5,600	1,000,000,000
SVOCs (ug/kg)														
Acenaphthylene	—	800	—	—	—	—	—	NA	—	—	—	—	620	16,000,000
Benzo(a)pyrene	—	1,600	—	—	—	—	—	NA	—	—	10,000	—	1,400	21,000
Dibenzo(a,h)anthracene	—	—	—	—	—	—	—	NA	—	—	2,800	—	1,400	21,000
Fluoranthene	—	—	—	—	—	—	—	NA	—	—	34,000	—	16,000	540,000,000
Naphthalene	—	—	—	—	—	—	—	NA	—	—	—	—	5,200	160,000,000
Phenanthrene	—	1,600	—	—	—	—	—	NA	9,000	—	23,000	800	620	16,000,000
Pyrene	—	—	—	—	—	—	—	NA	—	—	28,000	—	11,000	340,000,000
Inorganics (mg/kg)														
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.60	1,600
Arsenic	—	NA	—	—	—	—	—	NA	11J	—	19	15	5.8**	83
Barium	—	NA	—	—	—	—	—	NA	—	—	—	—	75**	320,000
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.20	36
Cadmium	2.4J	NA	3.0J	3.5J	3.4J	1.4J	3.0J	NA	1.4	1.6J	11	6.3	1.2**	2,300
Chromium	—	NA	—	—	—	—	—	NA	—	—	36	—	18**	22,000
Copper	—	NA	—	—	—	—	—	NA	—	—	65	45	32**	170,000
Lead	—	NA	—	—	—	25	—	NA	30	—	31	29	21**	400
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20**	340,000
Mercury	—	NA	—	—	—	—	—	NA	—	—	—	—	0.13**	1,400
Selenium	—	NA	—	—	—	—	—	NA	—	—	—	—	1	23,000
Silver	—	NA	—	—	—	—	—	NA	—	—	—	—	1.0**	21,000
Zinc	—	NA	—	—	—	—	—	NA	64J	—	66	53	48	1,000,000
Cyanide	—	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	99,000

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum #6 or #14, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

Table 2-1 (Continued)
Soil Sample Analytical Results
Above Residential or Industrial Cleanup Criteria
Industrial Brownhoist
Bay City, Michigan

Sample Location:	IB-SB-30	IB-SB-31	IB-SB-32	IB-SB-33	IB-SB-33	IB-SB-34	IB-SB-35	IB-SB-36	IB-SB-38	IB-SB-43	Generic Residential	Generic Industrial
Sample Depth(ft):	12-14	10-12	8-10	6-8	12-14	4-6	6-8	10-12	2-8	4-6	Criteria*	Criteria*
Parameter												
VOCs (ug/kg)												
Acetone	—	—	—	—	—	—	—	—	NA	—	16,000	74,000,000
Benzene	—	—	—	—	—	—	—	—	NA	—	100	850,000
Ethylbenzene	—	—	—	—	—	—	—	—	NA	—	1,500	72,000,000
Methylene Chloride	—	—	—	—	—	—	—	—	NA	—	100	3,300,000
Xylenes (total)	—	—	—	—	—	—	—	—	NA	—	5,600	1,000,000,000
SVOCs (ug/kg)												
Acenaphthylene	—	—	—	—	800	—	—	—	—	—	620	16,000,000
Benzo(a)pyrene	—	—	—	—	8,400	9,000	—	—	—	—	1,400	21,000
Dibenzo(a,h)anthracene	—	—	—	—	—	—	—	—	—	—	1,400	21,000
Fluoranthene	—	—	—	—	—	24,000	—	—	—	—	18,000	540,000,000
Naphthalene	—	—	—	—	—	—	—	—	—	—	5,200	160,000,000
Phenanthrene	—	—	—	—	14,000	24,000	—	—	800	1,000	620	16,000,000
Pyrene	—	—	—	—	17,000	20,000	—	—	—	—	11,000	340,000,000
Inorganics (mg/kg)												
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.50	1,600
Arsenic	—	24	8.0	—	11	11	—	—	NA	—	6.8**	83
Barium	—	—	—	—	140	87	—	—	NA	—	75**	320,000
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.20	36
Cadmium	1.4	1.7	1.6	2.6	8.7	9.8	2.0	4.9	NA	2.9	1.2**	2,300
Chromium	—	—	—	—	33	—	—	—	NA	—	18**	22,000
Copper	—	—	—	—	93	110	—	74	NA	—	32**	170,000
Lead	—	—	—	—	180	110	—	42	NA	88	21**	400
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20**	340,000
Mercury	—	—	—	—	0.3	—	—	0.3	NA	—	0.13**	1,400
Selenium	—	—	—	—	1.8	—	—	—	NA	—	1	23,000
Silver	—	—	—	—	—	—	—	—	NA	—	1.0**	21,000
Zinc	—	—	—	130	1900	150	—	120	NA	—	48	1,000,000
Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	99,000

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum #8 or #14, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

Table 2-1 (Continued)
Soil Sample Analytical Results
Above Residential or Industrial Cleanup Criteria
Industrial Brownhoist
Bay City, Michigan

Sample Location:	IB-SB-44	IB-SB-44	IB-SB-45	IB-SB-45	IB-SB-46	IB-SB-46	IB-SB-47	IB-SB-47	IB-SB-48	CS-SB-04	CS-SB-06	CS-SB-07	CS-SB-07	CS-SB-13	Generic Residential	Generic Industrial
Sample Depth(ft):	20-22	22-24	10-12	12-14	4-6	8-10	4-6	8-10	0-1	8-14	6-12	10-16	21-22	3-7	Criteria*	Criteria*
Parameter																
VOCs (ug/kg)																
Acetone	—	—	—	NA	—	—	—	—	NA	—	—	NA	—	—	15,000	74,000,000
Benzene	2,000	6,600	—	NA	—	—	—	—	NA	—	—	NA	14,000	—	100	850,000
Ethylbenzene	—	—	—	NA	—	—	—	—	NA	—	—	NA	—	—	1,600	72,000,000
Methylene Chloride	—	—	—	NA	—	—	290	—	NA	110	—	NA	—	—	100	3,300,000
Xylenes (total)	7,000	—	—	NA	—	—	—	—	NA	—	—	NA	—	—	5,600	1,000,000,000
SVOCs (ug/kg)																
Acenaphthylene	NA	—	—	—	—	—	—	—	—	—	—	—	—	—	820	16,000,000
Benzo(a)pyrene	NA	—	2,600	4,800	—	—	—	—	—	—	—	—	—	—	1,400	21,000
Dibenzo(a,h)anthracene	NA	—	—	—	—	—	—	—	—	—	—	—	—	—	1,400	21,000
Fluoranthene	NA	—	—	—	—	—	—	—	—	—	—	—	—	—	16,000	640,000,000
Naphthalene	NA	—	—	—	—	—	—	—	—	—	—	—	—	—	5,200	160,000,000
Phenanthrene	NA	—	4,200	13,000	1,000	600	3,900	2,700	1,800	—	—	2,800	—	—	820	16,000,000
Pyrene	NA	—	—	—	—	—	—	—	—	—	—	—	—	—	11,000	340,000,000
Inorganics (mg/kg)																
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.60	1,600
Arsenic	NA	—	—	—	NA	NA	—	—	NA	12	11	NA	NA	NA	8.8**	83
Barium	NA	—	—	—	NA	NA	160	—	NA	—	—	NA	NA	NA	75**	320,000
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.20	36
Cadmium	NA	3.3	14	6.7	NA	NA	3.9	—	NA	—	—	NA	NA	NA	1.2**	2,300
Chromium	NA	—	61	—	NA	NA	—	—	NA	61	—	NA	NA	NA	18**	22,000
Copper	NA	—	170	1,800	NA	NA	720	—	NA	140	140	NA	NA	NA	32**	170,000
Lead	NA	—	85	230	NA	NA	230	—	NA	65	69	NA	NA	NA	21**	400
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20**	340,000
Mercury	NA	—	0.2	6.2	NA	NA	0.2	—	NA	—	—	NA	NA	NA	0.13**	1,400
Selenium	NA	—	—	—	NA	NA	3.1J	—	NA	—	—	NA	NA	NA	1	23,000
Silver	NA	—	1.6	—	NA	NA	—	—	NA	1.3	—	NA	NA	NA	1.0**	21,000
Zinc	NA	—	—	57	NA	NA	140	—	NA	140	54	NA	NA	NA	48	1,000,000
Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	—	4	99,000

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum 69 or 914, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

Table 2-1 (Continued)
Soil Sample Analytical Results
Above Residential or Industrial Cleanup Criteria
Industrial Brownfield
Bay City, Michigan

Sample Location:	CS-SB-14	CS-SB-15	CS-SB-22	CS-SB-22	CS-SB-25	CS2-SB-18B	CS2-SB-19D	CS2-SB-19D	CS2-SB-20	CS2-SB-21	CS2-SB-22	Generic Residential	Generic Industrial
Sample Depth(ft):	5-7	5-7	5-9	9-11	5	25-27	17-19	27-29	25-27	15-17	9-11	Criteria*	Criteria*
Parameter													
VOCs (ug/kg)													
Acetone	—	—	—	—	—	—	—	—	—	—	—	15,000	74,000,000
Benzene	—	—	—	110	—	—	—	—	—	—	—	100	850,000
Ethylbenzene	—	—	—	—	—	—	—	—	—	—	—	1,500	72,000,000
Methylene Chloride	—	—	—	—	—	—	—	—	—	—	170	100	3,300,000
Xylenes (total)	—	—	—	—	—	—	—	—	—	—	—	5,600	1,000,000,000
SVOCs (ug/kg)													
Acenaphthylene	—	800	—	—	1,100	—	—	—	—	—	—	520	16,000,000
Benzo(a)pyrene	—	1,700	2,600	—	1,600	—	—	—	—	1,600	—	1,400	21,000
Dibenzo(a,h)anthracene	—	—	—	—	—	—	—	—	—	—	—	1,400	21,000
Fluoranthene	—	—	—	—	—	—	—	—	—	—	—	18,000	540,000,000
Naphthalene	—	—	7,400	—	29,000	—	—	—	—	—	—	5,200	160,000,000
Phenanthrene	1,100	5,700	4,400	—	12,000	—	730	1,200	—	2,300	3,000	520	16,000,000
Pyrene	—	—	—	—	—	—	—	—	—	—	—	11,000	340,000,000
Inorganics (mg/kg)													
Antimony	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.50	1,600
Arsenic	NA	NA	NA	NA	NA	6.1	11	6.0	7.1	8.4	15J	5.8**	83
Barium	NA	NA	NA	NA	NA	—	76	—	—	890	350	75**	320,000
Beryllium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	0.20	35
Cadmium	NA	NA	NA	NA	NA	—	—	—	—	—	—	1.2**	2,300
Chromium	NA	NA	NA	NA	NA	—	—	—	—	—	—	18**	22,000
Copper	NA	NA	NA	NA	NA	—	50	—	—	110	280	32**	170,000
Lead	NA	NA	NA	NA	NA	—	61	—	—	430	200	21**	400
Nickel	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	20**	340,000
Mercury	NA	NA	NA	NA	NA	—	0.4	—	—	—	43	0.13**	1,400
Selenium	NA	NA	NA	NA	NA	—	—	—	—	—	—	1	23,000
Silver	NA	NA	NA	NA	NA	—	—	—	—	—	—	1.0**	21,000
Zinc	NA	NA	NA	NA	NA	—	120	—	—	180	97	46	1,000,000
Cyanide	—	NA	6.2	—	—	NA	NA	NA	NA	NA	NA	4	99,000

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum 68 or 914, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

Table 2-1 (Continued)
Soil Sample Analytical Results
Above Residential or Industrial Cleanup Criteria
Industrial Brownhoist
Bay City, Michigan

Sample Location:	CS2-SB-23B	CS2-SB-25	CS2-SB-26	CS2-SB-27	MWR-SB-1	MWR-SB-2	MWR-SB-2	MWR-SB-3	MWR-SB-3	MWR-SB-4	MWR-SB-4	MWR-SB-5	Generic Residential	Generic Industrial
Sample Depth(ft):	13-15	27-29	9-11	27-29	3-5	0-2	4-6	0-2	4-6	0-2	4-6	0-2	Criteria*	Criteria*
Parameter														
VOCs (ug/kg)														
Acetone	—	—	—	—	NA	NA	NA	NA	NA	NA	NA	NA	15,000	74,000,000
Benzene	—	—	—	—	—	—	—	—	—	—	—	—	100	850,000
Ethylbenzene	—	—	—	—	—	—	—	—	—	—	—	—	1,500	72,000,000
Methylene Chloride	130	—	—	120	—	—	—	—	—	—	—	—	100	3,300,000
Xylenes (total)	—	—	—	—	—	—	—	—	—	—	—	—	5,600	1,000,000,000
SVOCs (ug/kg)														
Acenaphthylene	—	—	—	—	NA	NA	NA	NA	NA	NA	NA	NA	820	16,000,000
Benzo(a)pyrene	—	—	—	—	NA	NA	NA	NA	NA	NA	NA	NA	1,400	21,000
Dibenzo(a,h)anthracene	—	—	—	—	NA	NA	NA	NA	NA	NA	NA	NA	1,400	21,000
Fluoranthene	—	—	—	—	NA	NA	NA	NA	NA	NA	NA	NA	18,000	540,000,000
Naphthalene	—	—	—	—	NA	NA	NA	NA	NA	NA	NA	NA	5,200	160,000,000
Phenanthrene	—	—	—	—	NA	NA	NA	NA	NA	NA	NA	NA	820	16,000,000
Pyrene	—	—	—	—	NA	NA	NA	NA	NA	NA	NA	NA	11,000	340,000,000
Inorganics (mg/kg)														
Antimony	NA	NA	NA	NA	—	0.7	—	—	—	—	—	—	0.60	1,600
Arsenic	82J	7.6J	—	—	—	—	—	—	—	—	—	—	5.8**	83
Barium	730	—	—	—	NA	NA	NA	NA	NA	NA	NA	NA	75**	320,000
Beryllium	NA	NA	NA	NA	—	0.4	—	—	0.5	0.4	—	—	0.20	35
Cadmium	—	—	—	—	—	—	—	—	—	—	—	—	1.2**	2,300
Chromium	—	—	24	—	—	—	—	—	—	—	—	—	18**	22,000
Copper	—	—	550	—	—	49.6	145	39.7	40.6	42.8	—	50.0	32**	170,000
Lead	—	—	130	—	56.2	60.6	36.5	56.4	54.1	83.2	—	60.5	21**	400
Nickel	NA	NA	NA	NA	—	—	—	—	—	—	—	—	20**	340,000
Mercury	—	0.2	12	9.3	—	—	—	—	—	—	—	—	0.13**	1,400
Selenium	—	—	—	—	—	—	—	—	—	—	—	—	1	23,000
Silver	—	—	—	—	—	—	—	—	—	—	—	—	1.0**	21,000
Zinc	630	—	51	—	54.7	74.4	57.0	85.0	90.7	86.6	83.0	79.2	46	1,000,000
Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	99,000

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum #8 or #14, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

Table 2-1 (Continued)
Soil Sample Analytical Results
Above Residential or Industrial Cleanup Criteria.
Industrial Brownhoist
Bay City, Michigan

Sample Location:	MWR-SB-5	MWR-SB-6	MWR-SB-7	MWR-SB-7	MWR-SB-8	MWR-SB-8	MWR-SB-9	MWR-SB-9	MWR-SB-10	MWR-SB-12	MWR-SB-12	Generic Residential	Generic Industrial
Sample Depth(ft):	4-6	4-6	0-2	4-6	0-2	4-6	0-2	4-6	4-6	0-2	4-6	Criteria*	Criteria*
Parameter													
VOCs (ug/kg)													
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	16,000	74,000,000
Benzene	—	—	—	—	—	—	—	—	—	—	—	100	860,000
Ethylbenzene	—	—	—	—	—	—	—	—	—	—	—	1,500	72,000,000
Methylene Chloride	—	—	—	—	—	—	—	—	—	—	—	100	3,300,000
Xylenes (total)	—	—	—	—	—	—	—	—	—	—	—	5,600	1,000,000,000
SVOCs (ug/kg)													
Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	620	16,000,000
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,400	21,000
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	1,400	21,000
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	18,000	540,000,000
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	5,200	160,000,000
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	620	16,000,000
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	11,000	340,000,000
Inorganics (mg/kg)													
Antimony	—	—	1.3	4.2	—	—	—	—	0.7	1.6	—	0.60	1,600
Arsenic	—	—	—	—	—	—	—	—	—	—	—	5.8**	83
Barium	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	75**	320,000
Beryllium	0.7	1.0	—	0.4	0.7	—	—	1.5	—	—	—	0.20	35
Cadmium	—	—	—	—	—	—	—	—	—	—	—	1.2**	2,300
Chromium	—	61.5	178	23.5	39.4	—	—	32.1	—	70.1	—	18**	22,000
Copper	—	39.8	438	630	109	32.4	55.4	166	62.2	176	37.7	32**	170,000
Lead	38.9	27.0	110	368	35.3	—	—	38.1	38.8	30.6	—	21**	400
Nickel	—	27.5	126	56.5	24.6	—	—	31.6	—	106	—	20**	340,000
Mercury	—	—	—	—	—	—	—	—	—	—	—	0.13**	1,400
Selenium	—	—	—	—	—	—	—	—	—	—	—	1	23,000
Silver	—	—	1.2	—	—	—	—	—	—	—	—	1.0**	21,000
Zinc	145	109	218	462	76.2	—	—	58.6	—	—	—	48	1,000,000
Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	99,000

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum #9 or #14, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

Table 2-1 (Continued)
Soil Sample Analytical Results
Above Residential or Industrial Cleanup Criteria
Industrial Brownfield
Bay City, Michigan

Sample Location:	MWR-SB-13	MWR-SB-13	MWR-SB-14	MWR-SB-15	MWR-SB-15	MWR-SB-16	Subsurface IS	Subsurface IN	ETG-SB-4	Generic Residential	Generic Industrial
Sample Depth(ft):	0-2	4-6	4-6	0-2	4-6	0-2			6-7	Criteria*	Criteria*
Parameter											
VOCs (ug/kg)											
Acetone	NA	NA	NA	NA	NA	NA	NA	NA	—	15,000	74,000,000
Benzene	—	—	—	—	—	—	NA	NA	470	100	850,000
Ethylbenzene	—	—	—	—	—	—	NA	NA	—	1,500	72,000,000
Methylene Chloride	—	—	—	—	—	—	NA	NA	—	100	3,300,000
Xylenes (total)	—	—	—	—	—	—	NA	NA	—	8,900	1,000,000,000
SVOCs (ug/kg)											
Acenaphthylene	NA	NA	NA	NA	NA	NA	NA	NA	—	520	16,000,000
Benzo(a)pyrene	NA	NA	NA	NA	NA	NA	NA	NA	—	1,400	21,000
Dibenzo(a,h)anthracene	NA	NA	NA	NA	NA	NA	NA	NA	—	1,400	21,000
Fluoranthene	NA	NA	NA	NA	NA	NA	NA	NA	—	18,000	640,000,000
Naphthalene	NA	NA	NA	NA	NA	NA	NA	NA	—	5,200	160,000,000
Phenanthrene	NA	NA	NA	NA	NA	NA	NA	NA	—	520	16,000,000
Pyrene	NA	NA	NA	NA	NA	NA	NA	NA	—	11,000	340,000,000
Inorganics (mg/kg)											
Antimony	37.6	0.8	4.4	—	—	—	—	—	NA	0.50	1,600
Arsenic	—	—	—	—	—	—	—	—	NA	5.8**	83
Barium	NA	NA	NA	NA	NA	NA	NA	NA	NA	75**	320,000
Beryllium	0.8	—	—	—	—	—	—	—	NA	0.20	35
Cadmium	—	—	—	—	—	—	—	—	NA	1.2**	2,300
Chromium	—	—	146	24.2	—	—	—	41.7	NA	18**	22,000
Copper	22,300	102	226	—	46.9	314	—	78.2	NA	32**	170,000
Lead	1,560	—	29.0	57.0	22.8	61.0	39.2	270	NA	21**	400
Nickel	26.3	62.9	136	—	20.4	—	—	—	NA	20**	340,000
Mercury	—	—	—	—	—	—	—	—	NA	0.13**	1,400
Selenium	—	—	—	—	—	—	—	—	NA	1	23,000
Silver	—	—	—	—	—	—	—	—	NA	1.0**	21,000
Zinc	—	—	52.7	336	—	—	221	698	NA	46	1,000,000
Cyanide	NA	NA	NA	NA	NA	NA	NA	NA	NA	4	99,000

Notes:

— Indicates the parameter was not detected or detected below Generic Residential Cleanup Criteria.

NA - Not analyzed.

Shading indicates parameter was detected above Generic Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum 96 or 914, Generic Residential or Generic Industrial Cleanup Criteria for Groundwater and Soil.

** - Indicates Type A Soil Cleanup Criteria was used in place of Generic Residential Cleanup Criteria.

J - Estimated value.

Table 2-2
Groundwater Sample Analytical Results
Above Residential or Industrial Cleanup Criteria
Industrial Brownhoist
Bay City, Michigan

Sample Location: Parameter	IB-MW-01D	IB-MW-02	IB-MW-05	IB-MW-06	IB-MW-07	IB-MW-08	IB-MW-10	IB-MW-11	IB-MW-14	ETG-MW-1D	ETG-MW-2S	ETG-MW-5	ETG-MW-18	ETG-MW-19	Residential Criteria*	Industrial Criteria**
VOCs (ug/L)																
Benzene	---	---	---	---	---	---	---	---	8.3	2,800	---	24	---	---	5	5
1,2-Dichloroethane	---	---	---	---	---	---	---	---	---	24	---	---	---	---	5	5
SVOCs (ug/L)																
Phenanthrene	---	---	---	---	---	36	---	---	---	---	42	---	29	61	26	75
Benzo(a)anthracene	---	---	---	---	---	31	---	---	---	---	---	---	---	---	5	5
Benzo(b)fluoranthene	---	---	---	---	---	18	---	---	---	---	---	---	---	---	5	5
Benzo(k)fluoranthene	---	---	---	---	---	26	---	---	---	---	---	---	---	---	12	48
Benzo(a)pyrene	---	---	---	---	---	72	---	---	---	---	---	---	---	---	5	5
Inorganics (mg/L)																
Cadmium	---	---	0.006	---	---	---	---	---	0.40	---	---	---	---	---	0.005	0.005
Chromium	---	---	---	---	---	---	---	---	0.42	---	---	---	---	---	0.1	0.1
Lead	0.026	0.013	0.017	0.018	0.010	0.010	0.017	0.010	0.44	---	---	---	---	---	0.004	0.004
Silver	---	---	---	---	---	---	---	---	0.46	---	---	---	---	---	0.034	0.098
Cyanide	---	---	---	---	0.48	---	---	---	0.55	0.67	---	0.90	---	---	0.2	0.2

Notes:

--- Indicates the parameter was non-detect or detected below Residential Cleanup Criteria

Shading indicates parameter was detected above Industrial Cleanup Criteria

* - Based upon Environmental Response Division Operational Memorandum #8 Generic Residential Cleanup Criteria For Groundwater And Soil (Revision 4 6/5/95)

** - Based upon Environmental Response Division Operational Memorandum #14 Generic Industrial and Commercial Cleanup Criteria for Groundwater and Soil (Revision 2 6/5/95)

There are nine wells currently at the site which have not been sampled. These wells were installed as part of the WESTON/U.S. EPA Phase II investigation. Those wells are scheduled to be sampled by the U.S. EPA in December 1995 prior to the property transfer. Following the sampling of these wells Table 2-2 will be updated and all analytical results will be forwarded to the MDEQ.

2.2.3 Overall Site Quality

There is widespread PAH and metals contamination across the IB property which is due to historic site operations and to the nature of the foundry sands which were used as site fill material. Figure 2-2 outlines potential areas of concern.

There are other environmental concerns at the IB property in addition to the soil and groundwater contamination which include the potential existence of USTs, ACM, PCBs, and soil gases.

- Although ETG searched for and never documented any USTs, the potential for USTs on the property still exists.
- There is still ACM present in most of the buildings on the IB property..
- There are still PCB transformers present on the IB property.
- The soil gas survey performed by ETG in 1989 revealed concentrations greater than 1,000 parts per million (ppm) VOCs near the northeast corner of Building 41 (in coal tar pit area) and near the southwest corner of Building 41 at the former location of an above ground storage tank. WESTON sampling indicated the presence of VOCs, SVOCs, and metals in the coal tar pit area.

2.3 LIKELIHOOD OF ADDITIONAL CONTAMINATION

The IB property has undergone four soil/groundwater investigations since 1989. A total of 81 soil borings have been advanced and 23 monitoring wells were installed by WESTON and a total of 33 soil borings were advanced and 33 monitoring wells were installed by ETG/MWR. All soil borings/monitoring wells were installed in areas which were expected to be impacted from site operations.

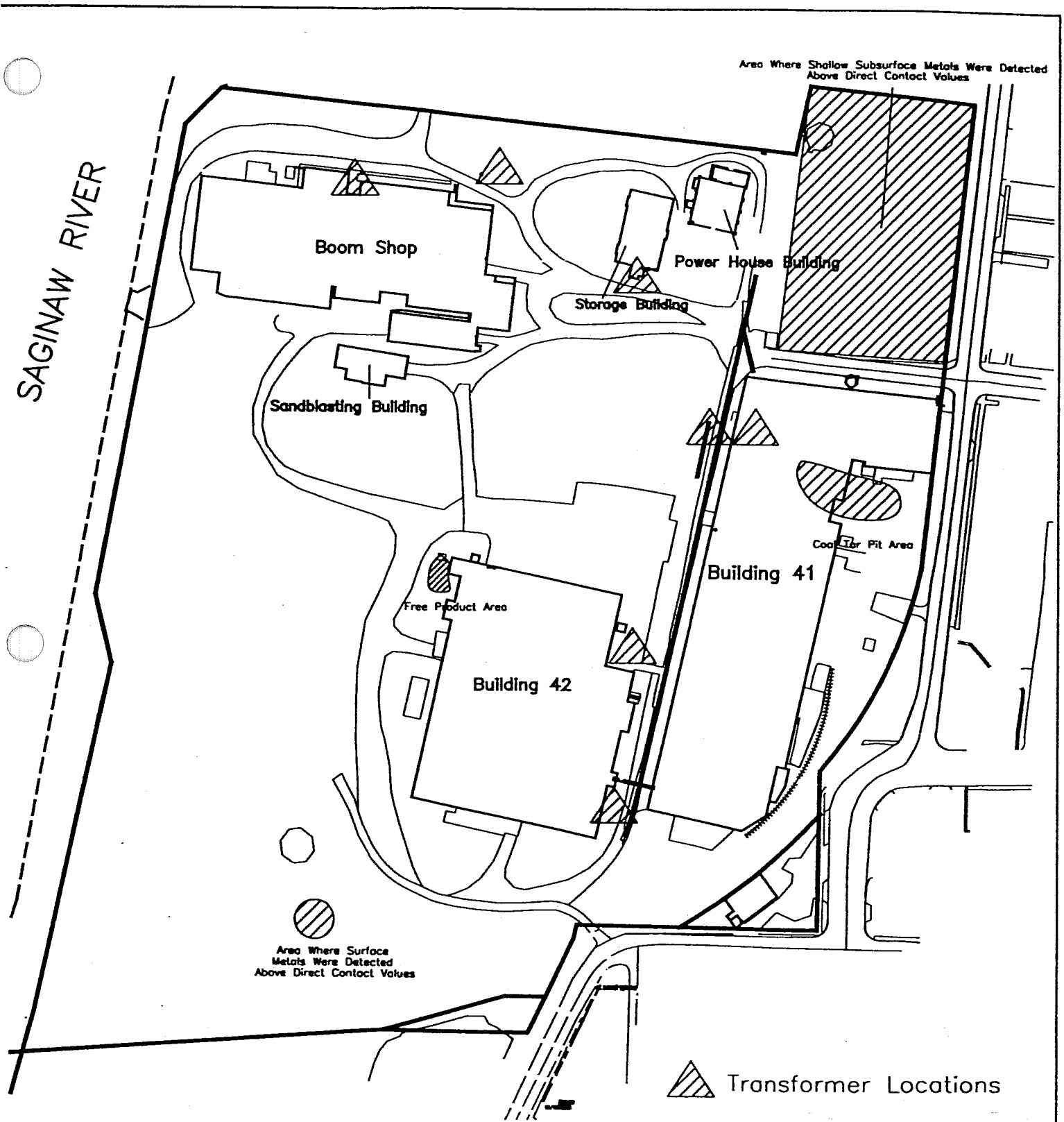


Figure 2-2

WESTON
MANAGERS DESIGNERS/CONSULTANTS

2125 University Park Dr.
Okemos, Michigan
48864

AREAS OF CONCERN

Industrial Brownhoist
Bay City, Michigan

WESTON advanced soil borings in an area just east of the Boom Shop and observed a black oily material. WESTON's scope of work did not include monitoring well installation at that area, however ETG did install a well in the vicinity of the area where the product was observed. No product was detected in the monitoring well, however, the potential for a limited amount of free product still exists in this area. Furthermore, ETG-MW-12, which is located north of the area where WESTON observed the free product, contained oil-like nodules.

A limited subsurface investigation was conducted under Building 41 as part of the coal tar pit characterization. The areas underneath the IB buildings have not been definitively characterized and could likely be additional areas of contamination.

The Power House and associated transformers are scheduled to be removed in December 1995. All remaining PCB transformers (10 PCB-containing and 2 PCB-contaminated) are scheduled for removal following the property transfer. There has been no sampling underneath the PCB transformers on the IB property and there is a potential for subsurface contamination beneath these transformers if they have leaked in the past. A total of 12 non-PCB-contaminated transformers will remain at the site following the property transfer.

REVISED SECTION 3
CONCLUSIONS

The four field investigations performed at the IB site have adequately characterized the site so that future releases can be distinguished from the current site conditions. The only possibility for future releases would be leakage from the heavy equipment where various fluids could be released if a hose or line would break or leak. Releases from heavy equipment could be characterized based on visual inspection and the composition of the material spilled. The extent of a future release could be readily determined because the type of fluid released from the equipment will be known. The following subsections describe measures to be taken to prevent exacerbation of existing contamination, issues related to due care, other environmental concerns, and reasonable precautions to be implemented.

3.1 EXACERBATION

The western portion of the site will be used by Bay Aggregate for aggregate storage. The remaining areas of the site may be leased to various other persons or businesses. The lessees will be required to submit their own BEA and PUP/PRA.

There will be no hazardous substances stored or handled at the property by I.B. Industrial Park, Inc. The only potentially hazardous substances present on the property as part of Bay Aggregate's operations will be the fluids present in the heavy equipment used to move the aggregate. A release of any hazardous substance from the equipment is expected to be minimal, and the fluid should be readily identifiable based on visual inspection.

There are currently five buildings on the IB site (as of 22 December 1995). The Power House was demolished in December 1995. The concrete foundation was removed and disposed of and the foundation excavation area was backfilled with clean fill. All of the other buildings are structurally sound except for the roof in Building 42. Some of these buildings are known to contain ACM, some of which is in poor condition. If the buildings are to be inhabited, asbestos

removal may be required, however, all asbestos removal will be completed in accordance with state and federal regulations and the state will be notified if a removal is initiated.

All existing utility tunnels and sewer lines will remain in place and will not be disturbed. If Building 42 is removed, the building foundation will remain in place and the area will be graded with clean aggregate so as not to exacerbate any contamination which may be present under the building.

The site is served by city water, power and sewer. There are no known septic tanks or tile fields located at the site. All site runoff, including roof drains, is routed to storm sewers and is discharged to the Bay City Wastewater Treatment Plant. At the present time, there are no waste flow pathways which would require a National Pollutant Discharge Elimination System (NPDES) permit. In addition, no hazardous substances are stored on-site.

3.2 DUE CARE

There are five areas of concern at the site which may cause unacceptable exposure to hazardous substances. These areas include the coal tar pit area, the free product area, and three potential surface soil contamination areas. Additional substances present on the IB site which may potentially pose unacceptable exposures include friable asbestos within the remaining site buildings, residual sand contained within the Sandblasting Building, and potential lead-based paint within the remaining site buildings.

The primary source of exposure from the coal tar pit is the concentration of VOCs and the primary source of exposure from the free product area is the oily product. Possible secondary sources of exposures exist from both areas via impacted subsurface soils and dissolved concentrations of contaminates in the groundwater plume. The transport mechanisms from the secondary sources are volatilization and atmospheric dispersion, leaching and groundwater transport. In addition, the free product area also has the potential for mobile free-liquid migration. The exposure pathways at the site include soil ingestion/adsorption and inhalation. Potential receptors are the industrial employees working at the site.

The coal tar pit may pose an inhalation hazard due to the high concentration of soil gases in that area. In addition, the area beneath the building foundation would pose a direct contact hazard if it were exposed during or following building demolition. To satisfy due care issues, an additional investigation was conducted in the coal tar pit area. Under ETG supervision, three additional monitoring wells were installed by T and T Drilling on 8 through 10 November 1995 around the coal tar pit area. Two wells were installed side gradient and one well was installed downgradient of the area. All wells were screened approximately 40 feet below ground surface within the clay till. Groundwater samples were collected from the two sidegradient wells, however, the downgradient well was dry so a sample was not collected. Both sidegradient wells, (ETG-MW-20 and ETG-MW-21) were analyzed for VOCs and ETG-MW-21 was also analyzed for PAHs. There was insufficient water in ETG-MW-20 to collect a PAH sample. Analytical results indicated that water present within the clay till has not been impacted by the coal tar pit and that migration away from the pit has not occurred. ETG has also calculated the gaseous-phase benzene concentration in the area of the coal tar pit and determined that additional activities in this area are unwarranted (Attachment K).

The free product area was to be excavated and all free product and associated contaminated soils removed to satisfy the due care issues of the area. Under ETG supervision, the free product area was excavated by Carlo Environmental Technologies, Inc. on 8 through 10 November 1995. Approximately 5,200 gallons of free product and water were removed from the excavation by Environmental Waste Control, Inc. However, the free product appeared to be leaching from the eastern edge of the building indicating the source was very close to or under Building 42. Because all of the free product and associated contaminated soil could not be completely removed, a subsurface collection system was installed. The west wall of the excavation was lined with plastic and corrugated pipe was installed in the bottom of the excavation. The pipe was placed approximately 6 inches below the standing water and product which had collected in the excavation. Three riser pipes were connected to the bottom pipe (one on each end and in the middle of the pipe). The bottom pipe was covered with approximately one foot of pea gravel and the remainder of the excavation was filled with sand. The collection system was pumped three times in December in order to remove free product which had collected in the system. During pumping on 18 December 1995, no free product was present.

If no free product was collected in the 20 December 1995 pumping of the system, it will be removed prior to the property transaction. If free product was recovered on 20 December 1995 then the pumping will continue until free product is not recovered from the system on two successive occasions.

Analytical results from surface soil samples indicate that one area in the southwest portion of the site and one area in the northeast portion of the site contained surface metals above industrial direct contact criteria. In addition, the northwest corner of Building 42 contained elevated levels (below industrial direct contact criteria) of metals near the surface. The southwest area has been covered with several inches of aggregate and the potential for exposure has been eliminated. The northeast corner of the site (outside the fence) will be covered with aggregate after the property transfer, to eliminate the potential for exposure in this area. The area northwest of Building 42 with elevated levels of metals in the subsurface is within the free product area and has been excavated. A collection system is currently installed in that area. Following removal of the collection system and after the property transfer, the area will be capped with aggregate. All three areas will be continually maintained by I.B. Industrial Park, Inc.

During the 1989 site investigation performed by MWR, Inc., an asbestos inspection was performed in all the buildings to determine the presence, quantity and state of all ACM. The results of the inspection are contained in Appendix B. Since that time, the Power House asbestos has been removed. However, based upon the MWR inspection, ACM is still present in the Boom Shop, Pattern Storage Building, Building 41 and Building 42. In addition, ACM is suspected to be present in utility tunnels under the site, however, no entry was made into the tunnels and no samples were collected. The tunnels will remain closed after the property transfer to eliminate potential exposure potentials. Following the property transfer, all friable asbestos in the site buildings which will be inhabited will be removed in accordance with existing state and federal regulations and a removal report will be submitted to the MDPH and MDEQ if required.

There have been no samples collected of the residual sand located within the Sandblasting Building. Therefore, it is not known if any metals above industrial direct contact criteria are

present in the sand. The potential for exposure via direct contact or inhalation exists. After the property transfer, all the sand will be removed, containerized and disposed of in accordance with existing state and federal regulations.

Because of the age of the buildings on-site the potential for lead-based paint exists within the remaining site buildings. If any paint within the buildings at the site begins chipping or peeling, the area will be evaluated to determine the exposure potential for on-site workers. If required the areas will be maintained and repaired in accordance with state and federal regulations to mitigate any exposure potential.

3.3 OTHER ENVIRONMENTAL ISSUES

Additional environmental issues which have been characterized but do not pose exposure concerns include radiation, the former Power House Building, remaining PCB transformers, machine pits in Building 41, and VOCs detected near the southwest corner of Building 41 during a soil gas survey.

During May 1993, WESTON conducted gamma radiation surveys in conjunction with soil sampling activities. Soil samples were collected and analyzed from locations which were identified as having elevated gamma radiation by the surveys. The suspected source of elevated gamma radiation was radioactive sands used in foundries and potentially present in foundry sand used for fill at the site. The levels of gamma radiation present at the site were determined to be within an acceptable range by the U.S. EPA and do not appear to pose an exposure to persons on-site.

To date, the Power House Building has been removed and the associated excavation has been backfilled. All that remains to be removed is a concrete slab located north of the former building. During building removal, one PCB-containing transformer was damaged and PCB-containing fluid was spilled on the concrete slab located north of the former building. According to ETG, all PCB-related contamination has been removed and the slab deemed clean. The remaining concrete slab is scheduled to be removed prior to the property transfer.

All transformers at the site are inspected on a quarterly basis. There have been no reported releases from any of the existing transformers on-site. In addition, stained areas which were identified near some of the transformers were sampled and there were no PCB detections in these samples (Appendix E). Therefore, there is no exposure potential resulting from the transformers. In addition, all of the PCB transformers will be removed in accordance with state and federal regulations after the property transfer.

All of the machine pits in Building 41 have been reportedly filled either with sand or concrete and therefore do not present an exposure concern.

During all intrusive activities on-site, VOC field screening was performed on all split-spoon samples, within the breathing zone and within the borehole. Results of field screening from soil borings IB-SB-16 and IB-SB-17 advanced near the southwest corner of Building 41 confirm that there is no inhalation exposure threat due to the presence of VOCs which were detected during the soil gas survey. During intrusive activities, there was no detection of VOCs within the breathing zone and sample screening indicated minimal levels of VOCs within the soil samples. In addition, the analytical results from IB-SB-16 and IB-SB-17 indicated no detectable VOCs in the 2-6 foot interval.

3.4 REASONABLE PRECAUTIONS

The following precautionary measures will be implemented in order to guard against the actions of third parties:

- The site is currently fenced and will remain fenced to restrict access to the property.
- Employees will be advised as to the nature and extent of contamination at the site.

SECTION 4
PROPOSED USE PLAN

There will be no expected use or storage of hazardous substances at the IB property in the future by I.B. Industrial Park, Inc. The site will primarily be used for aggregate storage, however leasing of available building space will continue. I.B. Industrial Park, Inc. will oversee the new leases, and Bay Aggregate will continue to lease the western portion of the property. The Bay Aggregate operations on-site will include heavy equipment which will be used to move the large piles of aggregate stored on-site. Aggregate is transported to the site by great lakes vessels and deposited on the site by conveyor to form the aggregate piles. As needed, heavy equipment transfers the aggregate to transport trucks which enter and exit the site through the gate on the north side of the IB property. No Bay Aggregate equipment maintenance, refueling or storage will be performed on the IB property.

The property currently has six buildings which are depicted on Figure 1-2 and include the following:

- Storage Building
- Boom Shop
- Sandblasting Building
- Building 41
- Building 42
- Power House Building (scheduled for December 1995 demolition)

There are two alternatives proposed for the intended use of these buildings. These alternatives are described in the remainder of this section.

4.1 ALTERNATIVE 1

Alternative 1 will include leaving all buildings in place. Regular maintenance will be performed in order to maintain building integrity. There is a possibility that some of the buildings may be leased to various companies whose operations are not known at this time. Any person or

company leasing any space from I.B. Industrial Park, Inc. at the IB property will be required to prepare and submit a BEA and a PUP/PRA prior to initiating any on-site activities.

4.2 ALTERNATIVE 2

Selected buildings including Building 42, may be demolished after the property transfer. The roof of Building 42 may not be structurally sound and therefore for health and safety purposes the building itself may be either partially or fully removed. Based on past environmental assessments, Building 42 contains approximately 200 feet of 4-inch corrugated paper straight pipe insulation which contains asbestos. All asbestos will be removed according to the current state and federal regulations. The MDEQ Air Quality Division and the MDPH will be notified of the asbestos removal prior to the building demolition. In addition, the building footings extend to 8 feet in some areas, making them unfeasible to remove. It is expected that all building footings and the foundations will remain in place and the area will be graded and covered with aggregate where necessary to level the area.

There is a possibility that some of the buildings may be leased to various companies whose operations are not known at this time. Any person or company leasing any space from I.B. Industrial Park, Inc. at the IB property will be required to prepare and submit a BEA and a PUP/PRA prior to initiating any on-site activities.

REVISED SECTION 5

PROPOSED RESPONSE ACTIVITIES

Most response activities at the site will have been performed prior to the property transfer. All transformers at the site associated with the Power House as well as the Power House itself are scheduled to be removed by 15 December 1995. This activity will prevent future site workers from coming in contact and therefore being exposed to PCBs at the site.

Furthermore, the free product area has been excavated and a temporary collection system has been installed. It is anticipated that the collection system will be pumped out and removed prior to the property transfer thereby eliminating the free product area as a due care issue. Wells were installed in the clay till unit down- and side-gradient of the former coal tar pit. Analytical results indicated that contaminants have not migrated away from the coal tar pit nor impacted the groundwater in this unit. ETG has also calculated the gaseous-phase benzene concentration in the area of the coal tar pit and determined that additional activities in this area are unwarranted (Attachment K).

Based upon analytical results collected from the northeast corner of the site which is not fenced, shallow subsurface soils contain metals above direct contact criteria. As a precautionary measure, following the property transfer and weather permitting, a gravel cap will be placed and maintained in this area to prevent any possible direct contact exposure. A small area in the southwestern area of the site contained surface soils with metals above direct contact values. The area was previously capped and will be maintained. The area northwest of the corner of Building 42 will be capped with aggregate following removal of the free product collection system and the property transfer.

After the property transfer has been completed, the following additional response activities will occur:

- All monitoring wells on the site will be removed and properly abandoned;
- All friable ACM from the inhabited on-site buildings will be removed;

- All PCB transformers will be removed; and

- Areas of peeling and chipping paint within the inhabited on-site buildings will be evaluated for potential lead-based paint exposure. Based on this evaluation, mitigative activities will be conducted in accordance with all applicable state and federal regulations.

SECTION 6

REFERENCES

Interim Instructions for Preparing and Submitting Baseline Environmental Assessments to the Department of Natural Resources and for Requesting Option Determinations - Michigan Department of Natural Resources - 15 June 1995.

SECTION 7

AFFIDAVITS

The following Affidavits have been prepared and are incorporated as part of this BEA and PUP/PRA:

- Affidavit of Environmental Professional in Support of a Petition for a Baseline Environmental Assessment Determination
- Affidavit in Support of a Petition for a Baseline Environmental Assessment Determination and Optional Determination of Compliance with Section 20107(a)
- Affidavit of Environmental Professional in Support of a Petition for a Determination of Compliance with Section 20107a

FOR DNR USE ONLY
Petition # P95-00013-BC

AFFIDAVIT OF ENVIRONMENTAL PROFESSIONAL IN SUPPORT OF A PETITION FOR A BASELINE ENVIRONMENTAL ASSESSMENT DETERMINATION

STATE OF MICHIGAN)
)
COUNTY OF Bay)

The purpose of this Affidavit is to set forth certain information and documentation to enable the Michigan Department of Natural Resources (hereinafter the "MDNR") to make the determinations for a petition for a Baseline Environmental Assessment Determination pursuant to Section 20129a of the Natural Resources and Environmental Protection Act (hereinafter the "NREPA"), 1994 PA 451, as amended, MCL 324.20129a. All terms found in this document which are defined in NREPA, Part 3 and Part 201, shall have the same meaning as in the statute.

The undersigned affiant, being first duly sworn, deposes and says as follows:

(1) **THIS AFFIDAVIT** is executed by the undersigned Sally Bartz, *[Identify as an individual or name and type of legal entity]* of Roy F. Weston, Inc. *[address of the individual or legal entity]* 2125 University Park Drive Suite 270 Okemos, MI 48864. Has been retained by [insert as appropriate: has been retained/is employed by] I.B. Industrial Park, Inc, who *[insert as appropriate:* has purchased/intends to purchase/occupies/intends to occupy/has foreclosed on/intends to foreclose on] a property located at 112 N. Water Street Bay City, Michigan (hereinafter the "Property").

(2) I have 11 years of professional experience in the investigation and remediation of sites of environmental contamination. A copy of my qualifications, including education and work experience, is attached *[or identify here]*.

(3) The Baseline Environmental Assessment (BEA) for the Property was *[insert as appropriate:* prepared/reviewed/overseen] by the affiant and completed on *[date]* 12/06/95. To the best of the knowledge and belief of the affiant, the BEA reasonably defines the existing conditions and circumstances at the facility so that in the event of a release subsequent to *[Petitioner]* I.B. Industrial Park, Inc.'s 's *[insert as appropriate:* purchase/occupancy/foreclosure] of the Property, there is a means of distinguishing the new release from existing contamination.

(4) The language in this Affidavit does not deviate from that in the model Affidavit, Form PR4439 (6/15/95).

I affirm that the information contained in the BEA prepared for this property is true and accurate to the best of my knowledge and belief and that all sample test results and other relevant site-related analytical data acquired, collected and analyzed to prepare the BEA are included or referenced in the BEA.

I certify that I am fully authorized by the Petitioner I represent to execute this Affidavit.

Sally Bartz
Signature of Environmental Professional

12/6/95
Date

Sally Bartz
Print or Type Legal Name

SUBSCRIBED AND SWORN to before me this 6th day of December, 1995, a Notary Public.

Barbara M Foust
Notary Public

My Commission Expires: 12-10-98

PROFESSIONAL PROFILE

SALLY A. BARTZ

Fields of Competence

Hazardous waste management; characterization of uncontrolled hazardous waste sites and leaking underground storage tank (UST) sites; field investigations, health assessment studies; real estate transfer environmental assessment; environmental compliance audits; health and safety at hazardous waste sites; hazardous waste and oil spill emergency response; hazardous material incident response assessments, sampling, cleanup design and implementation; cost monitoring and technical oversight of cleanup contractors; data validation and laboratory services procurement; project management; budget preparation, monitoring and control. Knowledge of environmental regulations including RCRA, CERCLA, SARA, OSHA, and CWA.

Experience Summary

- Over 11 years of experience in the environmental field including managing and participating in multi-disciplinary hazardous waste management projects.

- Supervised/managed a staff of engineers, geologists, chemists, and biologists in oil and hazardous material spill response, assessments, cleanup designs and implementation; environmental soil, sediment, surface water, groundwater, and air sample collection; and environmental data evaluation, validation and management.

- Provided support as an Environmental Chemist on the Technical Assistance Team (TAT) to the EPA in Region V. Included multimedia sampling, removal monitoring, cost estimate preparation, conducting site assessments for potential and known hazardous waste sites; conducting SPCC inspections; and reviewing technical work plans submitted to the EPA.

- Conducted Phase I environmental audits of commercial and industrial properties.

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B.S., Environmental Health — Purdue University (1984)
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EPA Hazardous Materials Incident Response Operations Course
EPA Hazardous Materials Treatment Technologies Course
EPA Photovac Training
American Chemical Society
Water Pollution Control Federation, Indiana Chapter
OSHA 1910.120 Training, Supervisor Training

PROFESSIONAL PROFILE

SALLY A. BARTZ
(continued)

Employment History

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1984 - Purdue University, West Lafayette, IN

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Environmental Project Management, Former Automotive Manufacturing Sites, Detroit, Michigan, Confidential Client, Senior Project Manager. Provided project management for the fast-track characterization and remediation of three former automotive manufacturing sites. Responsibilities included scheduling, coordinating, and organizing resources for the projects; developing technical work plans and associated budget, providing technical input to client and project staff; supervising staff assign to the project; budgeting, tracking, invoicing and controlling project costs; communicating technical information with the client and state regulatory agencies; identifying and implementing remedial activities for the sites and review and preparation of closure plans for the sites.

Environmental Project Management, Pointe Mouillee, Michigan, MDNR, Senior Project Manager. Responsibilities included development and implementation of technical work plans and associated budget for the soil and groundwater investigation and remediation of a lead contaminated shooting range; scheduling, coordinating two organizing resources for the project; providing technical input to project staff and MDNR; supervising staff members assigned to the project including risk assessment and feasibility study personnel; budgeting, tracking and collecting project tasks.

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PROFESSIONAL PROFILE

SALLY A. BARTZ
(continued)

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Environmental Project Management, Various Locations, EPA, Assistant TAT Leader. Responsibilities included scheduling, coordinating, organizing, and troubleshooting environmental projects; providing technical input to team members and EPA; supervising staff engineers, geologists, biologists and chemists; budgeting, tracking, and controlling project costs; writing and communicating technical information with EPA; documenting and tracking all associated paperwork; and reviewing all technical reports before submission to EPA.

Air Monitoring Programs, Various Locations. Designed and aided in implementation of air monitoring programs at hazardous waste removal sites to monitor off-site migration of contaminants and for personal protection.

PROFESSIONAL PROFILE

SALLY A. BARTZ
(continued)

Key Projects (continued)

Toxic Assessment, Major Development Project, California, Confidential Client, Senior Project Scientist. Conducted toxic assessment of a 75-acre former aircraft manufacturing facility prior to decontamination and demolition. The assessment consisted of identification and sampling of toxic contamination based on historic activities and current site conditions, as well as determination of compliance with applicable regulations. Activities included development and estimation of specifications for decontamination and/or remediation activities, data evaluation and management, and development of comprehensive toxic assessment report.

Environmental Liability/Compliance Assessments, Major Development Project, Confidential Client, Senior Project Scientist. Conducted environmental liability/compliance assessments of a 22-block area. The assessments consisted of identification of environmental liabilities based on historic activities, currents site conditions, and present operations. The environmental assessments were part of the overall assessments of the properties.

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Waste Sampling Activities, Region V TAT, Sample Management Coordinator. Responsibilities included overseeing and coordinating all staff sampling activities, developing and reviewing sample plans, contracting analytical services, data validation and quality assurance, developing laboratory audit program, and conducting on-site compatibility of waste.

First Responders Chemical/Hazardous Materials incident Course. Assisted in presentation of numerous First Responders Courses. Courses were presented in association with EPA to state and local agencies and organizations to provide basic training to personnel who would be the first to respond to a chemical or hazardous materials incident. Assisted in preparation of updated First Responders Manual.

PROFESSIONAL PROFILE

SALLY A. BARTZ
(continued)

Key Projects (continued)

Contamination Sampling, Carter Industrial Superfund Site, Sampling Coordinator. Responsibilities included assisting in designing and conducting PCB extent-of-contamination sampling at the Carter Industrial site, including the collection of approximately 2,000 samples of various media. Coordinated and oversaw the QA/QC program for the on-site mobile laboratory, conducted on-site dioxin sampling and coordinated sampling results with ongoing emergency removal action. Team members were mobilized and sampling was initiated within 48 hours of assignment. Sampling coordinator for Engineering Evaluation/Cost Analysis (EECA) activities.

CERCLA Fund Immediate Removal Actions, Various Locations. Aided in preparation, implementation, and evaluation of site-specific contracts for CERCLA funded immediate removal actions.

Field Analytical Methods Workgroup, Washington, DC, EPA. Participated in 1990 Workgroup designed to develop and compile standard operating procedures for field analytical methods currently in use throughout the country.

Publications

Matz, S.A. "Meyers Dump Case History: Innovative Utilization of Air Stripper-Activated Carbon Technologies." *Environmental Progress*, November 1989.

ORIGINAL

FOR DNR USE ONLY
Petition # _____

AFFIDAVIT IN SUPPORT OF A PETITION FOR A BASELINE ENVIRONMENTAL ASSESSMENT DETERMINATION AND OPTIONAL DETERMINATION OF COMPLIANCE WITH SECTION 20107a

STATE OF MICHIGAN)
)
COUNTY OF Bay)

The purpose of this Affidavit is to set forth certain information and documentation to enable the Michigan Department of Natural Resources (hereinafter the "MDNR") to make the determinations pursuant to Section 20129a of the Natural Resources and Environmental Protection Act (hereinafter the "NREPA"), 1994 PA 451, as amended, MCL 324.20129a. All terms found in this document which are defined in NREPA, Part 3 and Part 201, shall have the same meaning as in the statute.

The undersigned Petitioner, being first duly sworn, deposes and says as follows: *[All petitioners must complete the following items]:*

(1) **THIS AFFIDAVIT** is executed by the undersigned David Ives, *[Identify as individual or type and name of legal entity]* a President of I.B. Industrial Park, Inc. (hereinafter "The Petitioner") located at *[address of the Petitioner]* PO Box 1067 Bay City, Michigan 48706. The Petitioner *[insert as appropriate:* purchased/intends to purchase/occupies/intends to occupy/foreclosed on/intends to foreclose on] a property located at 112 N. Water Street Bay City, MI (hereinafter the "Property") and is petitioning the MDNR for a determination pursuant to Section 20129a of NREPA.

(2) The Property referred to in this petition is, or is believed to be, a "facility."

(3) The Petitioner *[insert as appropriate:* purchased/intends to purchase/occupied/intends to occupy/foreclosed on/intends to foreclose on] the Property on *[date (approximate date if transaction not completed)]* ~ 12/30/95.

(4) The language in this Affidavit does not deviate from that in the model Affidavit, Form PR4400 (6/15/95).

Section 20126(1)(a-b, d-f) of NREPA, MCL 324.20126(1)(a-b, d-f), or affiliated with persons who may be liable under Section 20126 of NREPA for environmental contamination existing at the facility on the date on which ownership or control of the Property was or will be transferred to the Petitioner.

(6) The Baseline Environmental Assessment (BEA) included in this petition was completed on *[date]* 12/06/95 The BEA, to the best of the Petitioner's knowledge and belief, reasonably defines the existing conditions and circumstances at the facility so that in the event of a release subsequent to the Petitioner's [*insert as appropriate:* purchase/occupancy/foreclosure] of the Property, there is a means of distinguishing any new release from existing contamination.

(7) The Petitioner agrees that the fee accompanying this petition will be deposited into the Environmental Response Fund, applies to this petition exclusively, and is not refundable, unless the Petition is found to be administratively incomplete and the Petition is not reviewed.

(8) The Petitioner agrees that any affirmative determination on the Petition by the MDNR is based on:

a. The Petitioner not being liable for contamination existing at the facility on the date in which ownership or control of the Property [*insert as appropriate:* is/was] transferred to the Petitioner.
b. The truthfulness and accuracy of the information submitted by the Petitioner.
c. The Petitioner disclosing the BEA results to a subsequent purchaser or transferee.
d. The proposed use of the Property set forth in the Petition.
e. The Petitioner completing in a timely and satisfactory manner any response activity described in this Petition.
f. The Petitioner having completed the BEA prior to or within 45 days after the earlier of the date of purchase, occupancy, or foreclosure.

(9) The proposed use of the Property is: [describe in detail, if known] Aggregate Storage.

(10) The Petitioner's proposed use plan for the facility will, to the best of the Petitioner's knowledge and belief, satisfy the requirements of Section 20107a.

[Include if a Plan for Response Activity is required:
(11) The Petitioner agrees to undertake in a timely and satisfactory manner the response activities necessary to comply with Section 20107a.]

I affirm that the above representations are true and are based upon my personal knowledge and belief after all reasonable inquiry.

I certify that *[choose appropriate response]*: I am the Petitioner (or) I am fully authorized by the Petitioner I represent to execute this Affidavit and to legally bind such person to the terms and conditions of this Affidavit.

I understand that penalties may be imposed pursuant to the provisions of Section 20139 of NREPA, MCL 324.20139, if any part of this petition is found to be false or fraudulent.

I acknowledge that this Affidavit has been provided pursuant to Section 20129a of NREPA.

Signature of Petitioner or Authorized Representative

12/26/95
Date

David E Ives
Print or Type Legal Name

SUBSCRIBED AND SWORN to before me this 26th day of December, 1995, a Notary Public.

JULIE A. KOZWIAK Notary Public

My Commission Expires: 5-19-99

FOR DNR USE ONLY
Petition # _____

AFFIDAVIT OF ENVIRONMENTAL PROFESSIONAL IN SUPPORT OF A PETITION FOR A DETERMINATION OF COMPLIANCE WITH SECTION 20107a

STATE OF MICHIGAN)
)
COUNTY OF Bay)

The purpose of this Affidavit is to set forth certain information and documentation to enable the Michigan Department of Natural Resources (hereinafter the "MDNR") to make determination of compliance with Section 20107a of the Natural Resources and Environmental Protection Act (hereinafter the "NREPA"), 1994 PA 451, as amended, MCL 324.20107a, in conjunction with a Baseline Environmental Assessment Determination pursuant to Section 20129a of NREPA, MCL 324.20129a. All terms found in this document which are defined in NREPA, Part 3 and Part 201, shall have the same meaning as in the statute.

The undersigned affiant, being first duly sworn, deposes and says as follows:

(1) **THIS AFFIDAVIT** is executed by the undersigned Sally Bartz, *[Identify as an individual or name and type of legal entity]* of Roy F. Weston, Inc. *[address of the individual or legal entity]* 2125 University Park Drive Suite 270 Okemos, Michigan 48864. Roy F. Weston, Inc. has been retained by I.B. Industrial Park, Inc. who *[insert as appropriate:* has purchased/intends to purchase/occupies/intends to occupy/has foreclosed on/intends to foreclose on] a property located at 112 N. Water Street Bay City, MI (hereinafter the "Property").

(2) I have 11 years of professional experience in the investigation and remediation of sites of environmental contamination. A copy of my qualifications, including education and work experience is attached *[or identify here]*.

(3) The Proposed Use Plan ("PUP") *[insert if appropriate:* and the Plan for Response Activity ("PRA")] for the Property was *[insert as appropriate:* prepared/reviewed/overseen] by the affiant and completed on *[date]* 12/06/95. The PUP *[insert if appropriate:* and PRA] for the facility will, when implemented to the best of the affiant's knowledge and belief, satisfy the requirements of Section 20107a of NREPA.

PROFESSIONAL PROFILE

SALLY A. BARTZ

Fields of Competence

Hazardous waste management; characterization of uncontrolled hazardous waste sites and leaking underground storage tank (UST) sites; field investigations, health assessment studies; real estate transfer environmental assessment; environmental compliance audits; health and safety at hazardous waste sites; hazardous waste and oil spill emergency response; hazardous material incident response assessments, sampling, cleanup design and implementation; cost monitoring and technical oversight of cleanup contractors; data validation and laboratory services procurement; project management; budget preparation, monitoring and control. Knowledge of environmental regulations including RCRA, CERCLA, SARA, OSHA, and CWA.

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PROFESSIONAL PROFILE

SALLY A. BARTZ
(continued)

Employment History

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PROFESSIONAL PROFILE

SALLY A. BARTZ
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PROFESSIONAL PROFILE

SALLY A. BARTZ
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PROFESSIONAL PROFILE

SALLY A. BARTZ
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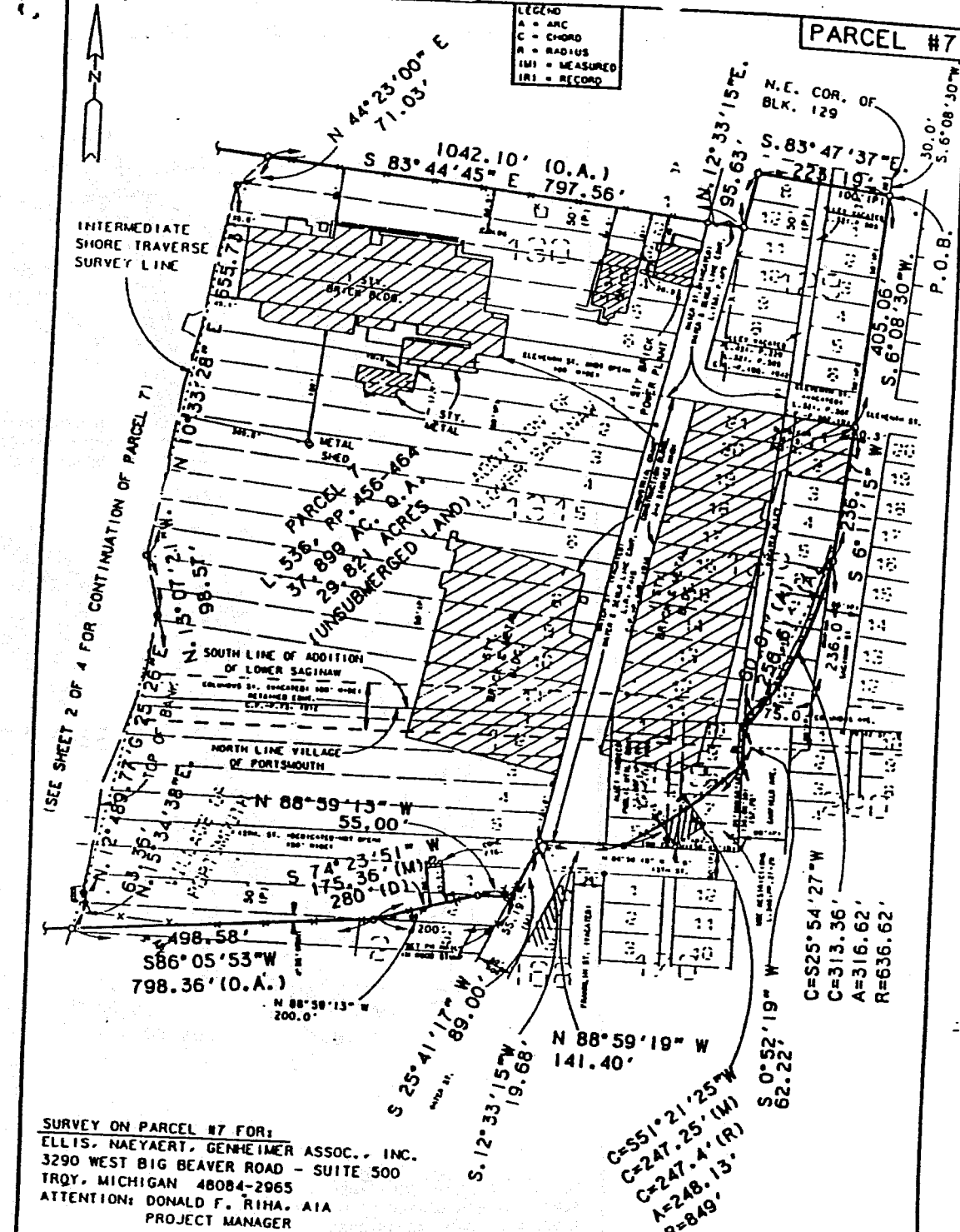
Publications

Matz, S.A. "Meyers Dump Case History: Innovative Utilization of Air Stripper-Activated Carbon Technologies." *Environmental Progress*, November 1989.

ATTACHMENT A

LEGAL DESCRIPTION OF INDUSTRIAL BROWNHOIST PROPERTY



SURVEY ON PARCEL #7 FOR:
ELLIS, NAEYAERT, GENHEIMER ASSOC., INC.
3290 WEST BIG BEAVER ROAD - SUITE 500
TROY, MICHIGAN 48084-2965
ATTENTION: DONALD F. RIHA, AIA
PROJECT MANAGER

REV. TO SHOW DIM. FROM TIE PT. TO EDGE OF ICE 4-13-92 DPW
REV. TO SHOW PARCEL ON TWO DRAWINGS 5-28-92 RTP

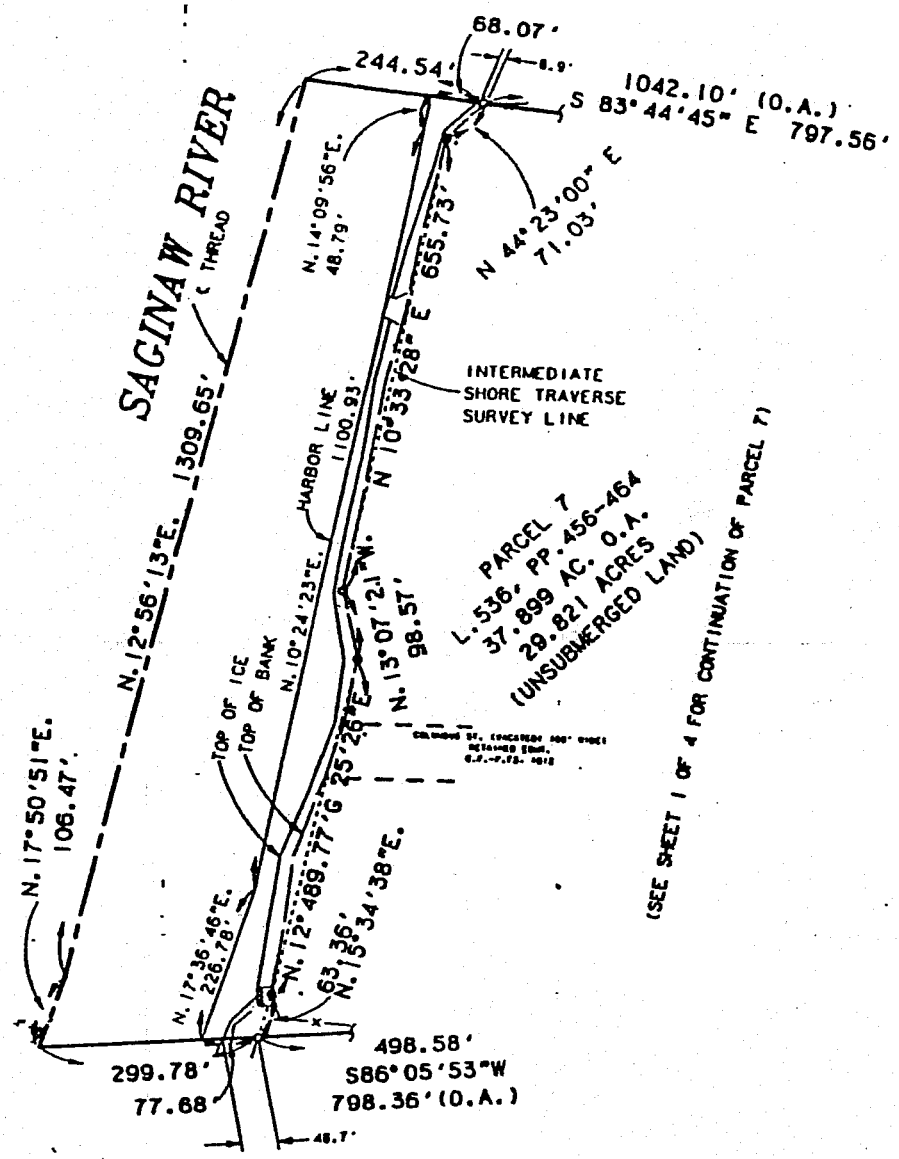
REQUESTED BY:
ENVIRONMENTAL PROTECTION AGENCY
FACILITIES MANAGEMENT AND SERVICES DIVISION
REAL ESTATE AND SPACE MANAGEMENT BRANCH
401 M STREET SOUTHWEST (PM-215)
WASHINGTON, D.C. 20460
ATTENTION: BUCKY GREEN

PROPERTY OWNER:
WOODMEN OF THE WORLD LIFE INSURANCE SOCIETY
1700 FORNAM STREET
OMAHA, NEBRASKA 68102
ATTENTION: MR. CURTIS L. OWEN

Wade-Trim/Edmands
P.O. Box 580
Bay City, Michigan 48707
1501 West Thomas
Tele. (517) 686-3100
Telecopier (517) 686-4328

Scale 1" = 200'	Date 2-92
Job # ETS225801 -	Surveyed PMC
Book # IN Page #FILE	Checked LDM
Drawn RTP	Sheet 1 of 4

PARCEL #7



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WASHINGTON, D.C. 20460
ATTENTION: BUCKY GREEN

PROPERTY OWNER:
WOODMEN OF THE WORLD LIFE INSURANCE SOCIETY
1700 FORNAM STREET
OMAHA, NEBRASKA 68102

ATTENTION: MR. CURTIS L. OWEN

Wade-Trim/Edmands
P.O. Box 580 — 1501 West Thomas
Bay City, Michigan 48707 — Tele. (517) 686-3100
Telecopier (517) 686-4329

Scale 1" = 200'	Date 2-92
Job # ETS225801 -	Surveyed PMC
Book # IN Page #FILE	Checked LDM
Drawn RTP	Sheet 2 of 4

PARCEL 7

SURVEY ON PARCEL #7 FOR:

Ellis, Naeyaert, Genheimer Assoc., Inc.
3290 West Big Beaver Road - Suite 500
Troy, Michigan 48084-2965

Attention: Donald F. Riha, AIA, Project Manager

REQUESTED BY:

PROPERTY OWNER:

Woodmen of the World Life Insurance Society
1700 Fornam Street
Omaha, Nebraska 68102

Attention: Mr. Curtis L. Owen

TITLE DESCRIPTION: Parcel #7

Situated in the City of Bay City.
Commencing 30 feet South on the Northeast corner of Block 129, Addition of Lower Saginaw; thence South along Saginaw Street to a point 236 feet North of the Northwest corner of Saginaw and 12th Streets; thence Southwesterly on 9° curve to the right 256.02 feet to a point 75 feet Westerly on North line of 12th Street from the West line of Saginaw Street; thence continuing along said curve to intersection with West line of Garfield Street; thence South to a point 27.5 feet South of the Northeast corner Lot 9, Block 169, Village of Portsmouth; thence Southwesterly on a curve to right of radius 849 feet to a point of 29 feet East of the Southwest corner of Block 169; thence West on North line of 13th Street to Westerly line of Water Street; thence Southerly along Water Street to Southeast corner Lot 1, Block 2, Village of Portsmouth; thence West 55 feet; thence Southwesterly 280 feet to a point 200 feet West of the Southeast corner Lot 2; thence Southwesterly 465 feet to a point; 90 feet Southerly along the East River Bank from the South line, Lot 1, Block 2; thence Northerly along River Bank to South line of lot 1, Block 130, Addition to Lower Saginaw; thence East to the Southwest corner of Lot 12, Block 129; thence Northerly to a point 30 feet South of Northwest corner Lot 129; thence East to the Point of Beginning, as per Plat thereof recorded in Liber 1 of Plats, Page 8 of Bay County Records.

P-Plat	M-Measured	D-Description	R-Record	C.M.-City Map
O-Set Iron	●-Found Iron	⊕-P.K. Nail	⊙-Monument	x--x--x Existing Fence

This survey was made from the legal description of the parcel furnished to us. Both map and description should be compared with the Abstract or Title or Title Policy for any exceptions, easements or differences in description.

I hereby certify that this survey and descriptions shown hereon complies with the requirements of Public Act 132 of 1970 as amended. That the ratio of closure on the boundary of said survey exceeds 1' in 5000' and is within the acceptable limits of the surveying profession. There are encroachments on said survey.

Lloyd D. McGinnis

Lloyd D. McGinnis, R.L.S. #18999

Wade-Trim/Edmands
P.O. Box 580
Bay City, Michigan 48707
1501 West Thomas
Tele. (517) 686-3100
Telecopier (517) 686-4129

Scale NA		Date 2-92	
Job # ETS 2258.01		Surveyed PHC	
Book # N	Page # FILE	Checked LDM	
Drawn DPW		Sheet 3 of 4	

SURVEY ON PARCEL #7 FOR:

Ellis, Naeyaert, Genheimer Assoc., Inc.
3290 West Big Beaver Road - Suite 500
Troy, Michigan 48084-2965

Attention: Donald F. Riha, AIA
Project Manager

SURVEY DESCRIPTION: Parcel #7

A parcel being part of Block 129, 130, 131, and 132, Addition of Lower Saginaw and part of Blocks 1, 2, and Block 169, Village of Portsmouth and vacated Water Street, City of Bay City, Michigan, described as follows:

Commencing at the Northeast corner of Block 129, Addition of Lower Saginaw as per Plat thereof recorded in Liber 1 of Plats, Page 8 of Bay County Records, being also the Southeast corner of Block 112, Lower Saginaw, as per Plat thereof recorded in Liber 1 of Plats, Page 4 of Bay County Records; thence South 6°08'30" West 30.0 feet along the East line of said Block 129 to the Point of Beginning; thence South 6°08'30" West 405.06 feet along the West Right of Way line of Saginaw Street to the Northeast corner of Block 132, Addition of Lower Saginaw; thence South 6°11'15" West 236.17 feet along the West Right of Way line of Saginaw Street to the point of a 9° curve to the right having a radius of 636.62 and a chord bearing and distance of South 25°54'27" West 313.36 feet, said point of curve being 236.0 feet at North 6°11'15" East of the intersection of the North Line of 12th Street and the West line of Saginaw Street; thence Southerly and Southwesterly 316.62 feet along the arc of said curve through a point on the North line of Columbus Street 75 feet North 89°42'57" West of the West line of Saginaw Street, to the West Right of Way line of Garfield Street; thence South 0°52'19" West 62.22 feet along the West Right of Way line of Garfield Street and the East line of Block 169, Village of Portsmouth as per Plat thereof recorded in Liber 1 of Plats Page 38 of Bay County Records to a point 157.79 feet North 0°52'19" East of the Southeast corner of said Block 169; thence Southwesterly 248.13 feet along the arc of a curve to the right having a radius of 849.0 feet and a chord bearing and distance of South 51°21'25" West 247.25 feet to the South line of said Block 169 and the North Right of line of 13th Street; thence North 88°59'19" West 141.40 feet along the North Right of Way line of 13th to the Westerly Right of Way line of Water Street and the Southeast corner of Block 1, Village of Portsmouth; thence South 12°33'15" West 19.68 feet along the West Right of Way line of Water Street; thence South 25°41'17" West 89.00 feet to the Southeast corner of Lot 1, Block 2, Village of Portsmouth; thence North 88°59'13" West 55.0 feet along the South line of said Lot 1; thence South 74°23'51" West 175.36 feet to a point on the South line of Lot 2, Block 2, said point being 200 feet at North 88°59'07" West of Southeast corner of said Lot 2; thence South 86°05'53" West 798.36 feet to the centerline thread of the Saginaw River; thence North 17°50'51" East 106.47 feet along the centerline thread of the Saginaw River; thence North 12°56'13" East 1309.65 feet along the centerline thread of the Saginaw River, thence South 83°44'45" East 1042.10 feet along the North line of Lot 2, (if extended Westerly) to the Southwest corner of Lot 12, Block 129, Addition of Lower Saginaw; thence North 12°33'15" East 95.63 feet along the Westerly line of said Block 129; thence South 83°47'37" East 223.19 feet to the Point of Beginning. Subject to Right of Way, easements and restrictions, if any, of record. Containing 37.899 acres of land (29.821 acres as unsubmerged land) more or less.

BEARING NOTE: Bearings are referenced to the Corps of Engineers Datum referencing Monuments - Sta. 29 and Bay City Department of Public Works on the Saginaw River being North 6°41'06" East on Transverse Mercator Projection, East Zone (2101) 1927 North American Datum.

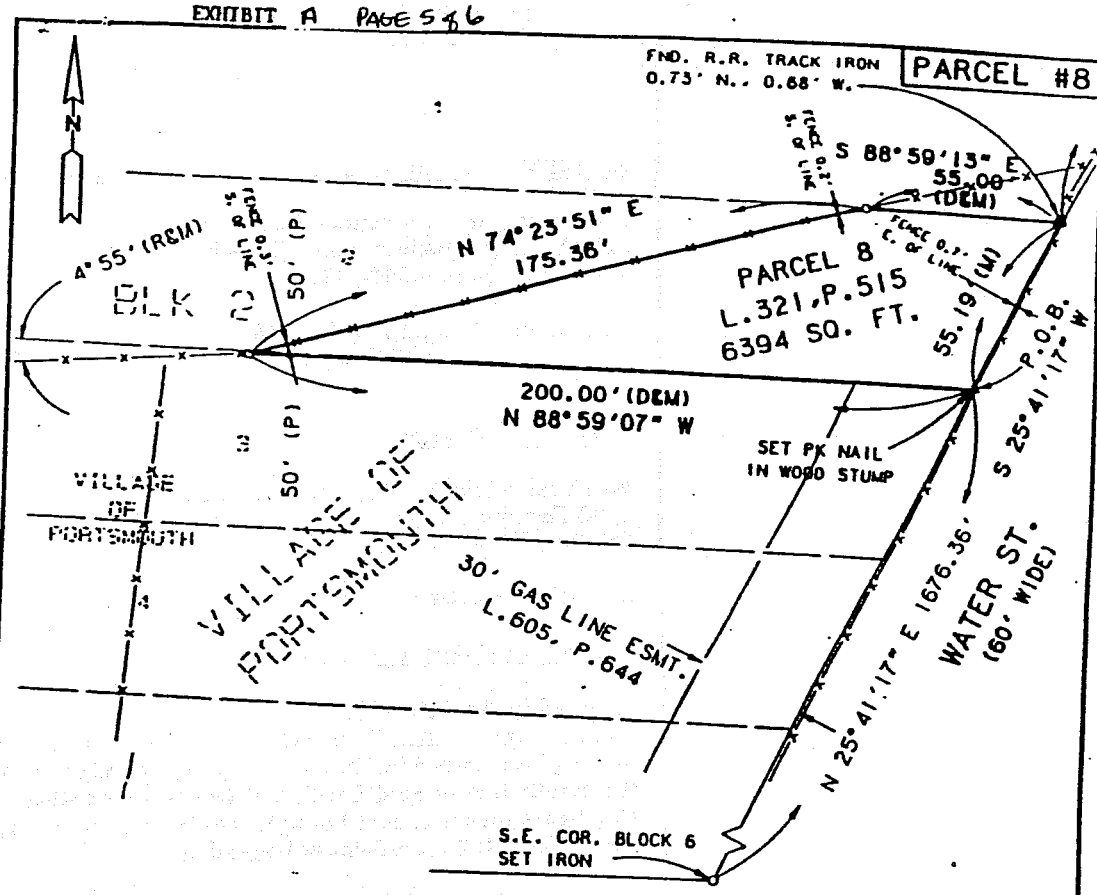
Distance Note - All distances are horizontal distance (No Grid Factor).

REVISED TO SHOW DIM. FROM TIE PT. TO EDGE OF ICE 4-15-92 - DPW.

Wade-Trim/Edmands
P.O. Box 580
Bay City, Michigan 48707
1501 West Thomas
Tele. (517) 686-3100
Telecopier (517) 686-4329

Scale NA		Date 2-92	
Job # ETS 2258.01		Surveyed PHC	
Book # 1W	Page # FILE	Checked LDH	
Drawn DPW		Sheet 4	of 4

EXHIBIT A PAGE 5 & 6



REV. TO ADD DIMS. TO FENCE 5-28-92 RTP

SURVEY ON PARCEL #8 FOR:
ELLIS, NAEYAERT, GENHEIMER ASSOC., INC.
3290 WEST BIG BEAVER ROAD - SUITE 500
TROY, MICHIGAN 48084-2965
ATTENTION: DONALD F. RIHA, AIA
PROJECT MANAGER

REQUESTED BY:
ENVIRONMENTAL PROTECTION AGENCY
FACILITIES MANAGEMENT AND SERVICES DIVISION
REAL ESTATE AND SPACE MANAGEMENT BRANCH
401 M STREET SOUTHWEST (PM-215)
WASHINGTON, D.C. 20460
ATTENTION: BUCKY GREEN

PROPERTY OWNER:
WOODMEN OF THE WORLD LIFE INSURANCE SOCIETY
1700 FORNUM STREET
OMAHA, NEBRASKA 68102

ATTENTION: CURTIS L. OWEN

BEARING NOTE: Bearings are referenced to the Corps of Engineers Datum Referencing Monuments - Sta. 29 and Bay City Department of Public Works on the Saginaw River being North 6°41'06" East on Transverse Mercator Projection, East Zone (2101) 1927 North American Datum.
Distance Note-All distances are horizontal distance (No Grid Factor).

Wade-Trim/Edmands
P.O. Box 580
Bay City, Michigan 48707
1501 West Thomas
Tele. (517) 686-3100
Telecopier (517) 686-4329

Scale 1" = 40'	Date 2-92
Job # ETS2258.01	Surveyed CWM
Book # 161 Page # 37	Checked LDM
Drawn RTP	Sheet 1 of 2

PARCEL #8

SURVEY ON PARCEL #8 FOR:

Ellis, Naeyaert, Genheimer Assoc., Inc.
3290 West Big Beaver Road - Suite 500
Troy, Michigan 48084-2965

Attention: Donald F. Riha, AIA
Project Manager

REQUESTED BY:

PROPERTY OWNER:

Woodmen of the World Life Insurance Society
1700 Fornum Street
Omaha Nebraska 68102

Attention: Curtis L. Owen

TITLE DESCRIPTION: Parcel #8

Situated in the City of Bay City.
Commencing 200 feet West of the Southeast corner of Lot 2, Block 2, Village of Portsmouth, as per plat recorded in Liber 1 of Plats at Page 40 of Bay County Records; thence East along the South line of said Lot 2, 200 feet to its Southeast corner; thence Northerly to the Northeast corner of said Lot 2; thence West along the North line of Lot 2, 55 feet; thence Southwesterly to the Point of Beginning.

SURVEY DESCRIPTION: Parcel #8

A parcel of land being part of Lot 2, Block 2, Village of Portsmouth, City of Bay City, Michigan described as follows:

Commencing at the Southeast corner of Block 6, Village of Portsmouth as per plat thereof recorded in Liber 1 of Plats, Page 38 of Bay County Records; thence North 25°41'17" East 1676.36 feet along the Westerly Right of Way line of Water Street to the Southeast corner of Lot 2, Block 2, of said plat and being the Point of Beginning; thence North 88°59'07" West 200.0 feet along the South line of said Lot 2; thence North 74°23'51" East 175.36 feet to a point on the North line of Lot 2, said point being 55 feet North 88°59'13" West of the Northeast corner of said Lot 2; thence South 88°59'13" East 55.0 feet along the North line of said Lot 2 to the Northeast corner thereof; thence South 25°41'17" West 55.19 feet along the Westerly Right of Way line of Water Street to the Point of Beginning. Subject to Rights of Way, easements and restrictions, if any, of record. Containing 6,394 square feet of land, more or less.

P Plat	M-Measured	D-Description	R-Record	C.M.-City Map
O-Set Iron	●-Found Iron	⊖-P.K. Nail	⊙-Monument	x--x--x Existing Fence

This survey was made from the legal description of the parcel furnished to us. Both map and description should be compared with the Abstract or Title or Title Policy for any exceptions, easements or differences in description.

I hereby certify that this survey and descriptions shown hereon complies with the requirements of Public Act 132 of 1970 as amended. That the ratio of closure on the boundary of said survey exceeds 1' in 5000' and is within the acceptable limits of the surveying profession. There are encroachments on said survey.

Lloyd D. McGinnis

Lloyd D. McGinnis, R.L.S. #18999

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P.O. Box 580
Bay City, Michigan 48707
1501 West Thomas
Tele. (517) 686-3100
Telecopier (517) 686-4329

Scale NA		Date 2-92	
Job # ETS 2253.01		Surveyed CNH	
Book # 161	Page # 37	Checked LDM	
Drawn RTP		Sheet 2 of 2	

ENVIRONMENTAL INVESTIGATION
of the
AMDURA SITE
BAY CITY, MICHIGAN

prepared for

HOWARD & HOWARD ATTORNEYS
LANSING, MICHIGAN

by

MWR, INCORPORATED
CHARLOTTE, MICHIGAN

SEPTEMBER 1989

INTRODUCTION

MWR, Inc. (MWRI) was retained by Howard & Howard Attorneys (H & H) to conduct an environmental investigation of the 40 acre Amdura (American Hoist) facility in Bay City, Michigan (Figure 1). Amdura has occupied the site for the past 35 years operating an industrial complex manufacturing large cranes and hoists. Past land-uses on the site indicate the possibility of environmental liabilities. It was the intent of the investigation to document and quantify any existing environmental problems that may have been created by Amdura's manufacturing processes since the early 1950's. To accomplish this end MWRI proposed a program to explore all aspects of the Amdura site and included the following Tasks:

1. Site reconnaissance, to visually inspect the facility to document any areas which may require further investigations. Two site reconnaissance trips were conducted, July 7, 1989, and July 28, 1989,

2. Analysis of historic aerial photography of the site to document past land-use practices. Various formatted photography was secured from several State and Federal Agencies from 1938, 1950, 1955, 1963, 1977, and 1987,

3. Soil and ground water investigation, to establish the integrity of the of the soils and groundwater by analyzing for solvents, aromatics, polychlorinated biphenyls (PCB's) and heavy metals,

4. Soil gas survey, to rapidly and accurately survey suspected locations at around the site for the presence of volatile organic compounds in the vadose zone soils, and

5. Asbestos survey, to estimate the type and quantity of asbestos containing materials in the buildings and tunnels on the site.

The results of the above five tasks are summarized in the following report on the environmental conditions of the Amdura site. The report contains a brief history of the site as gleaned from supplied documents and interviews with the site manager. Discussions of the aerial photography are restricted to the prints in MWRI's possession at the time of report compilation. See the section on aerial photography for further explanations on prints reviewed. The balance of the report contains the methods, results, and discussions for the groundwater, soils, and asbestos investigations.

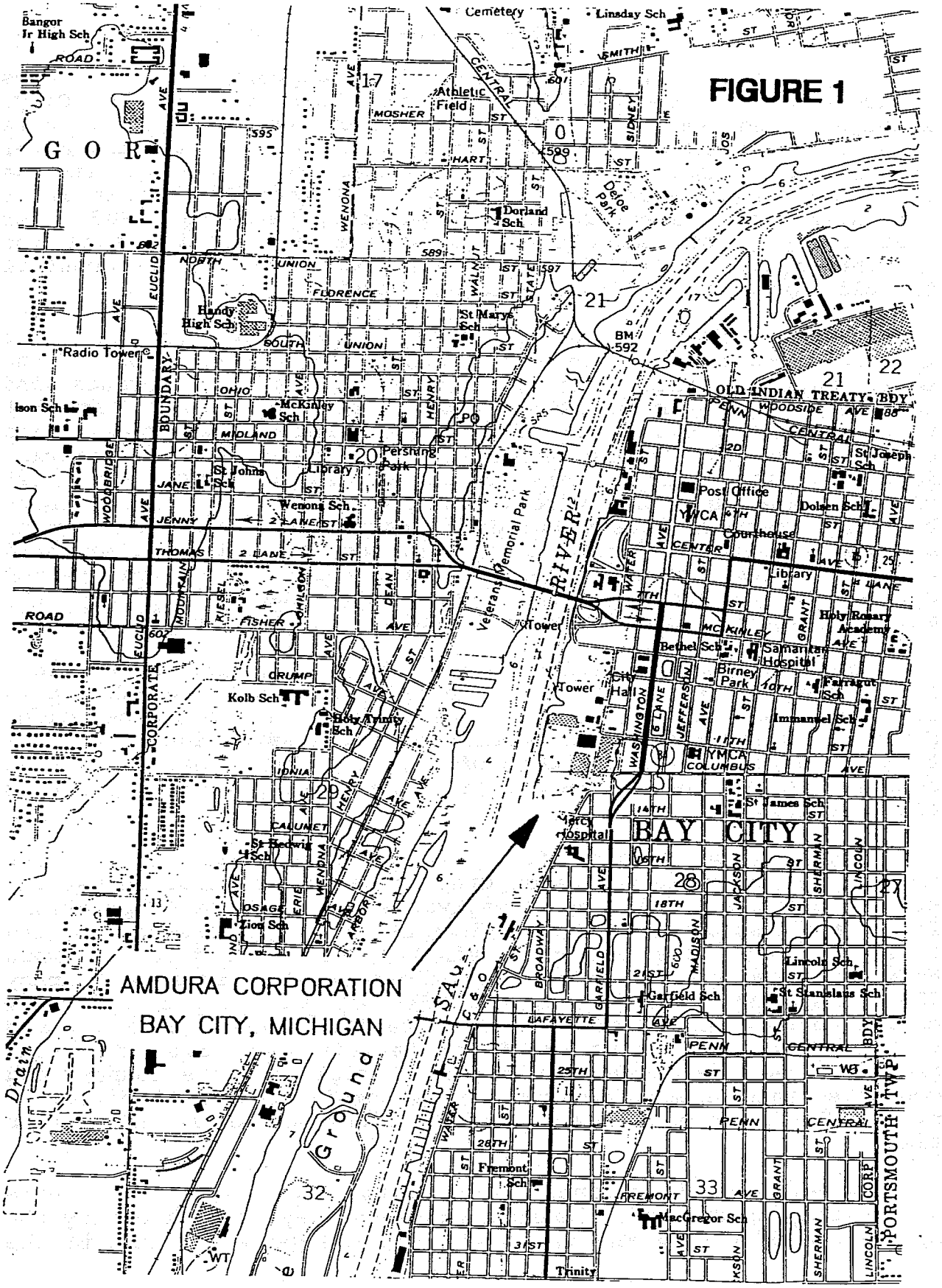


FIGURE 1
AMDURA CORPORATION
BAY CITY, MICHIGAN
BAY CITY
Bangor Jr High Sch
Cemetery
Linsday Sch
Athletic Field
Dorland Sch
Defoe Park
Bandy High Sch
St Marys Sch
Radio Tower
McKinley Sch
Pershing Park
St Johns Sch
Library
Wenona Sch
Veterans Memorial Park
Tower
Kolb Sch
Holy Trinity Sch
St Hedwig Sch
Lion Sch
Post Office
YWCA
Courthouse
Dolsen Sch
St Joseph Sch
Holy Rosary Academy
Samaritan Hospital
Bethel Sch
Birney Park
City Hall
Fairgrounds Sch
Immanuel Sch
YMCA
St James Sch
Mercy Hospital
Lincoln Sch
Garfield Sch
St Stanislaus Sch
Fremont Sch
MacGregor Sch
Trinity
OLD INDIAN TREATY BDY
PORTSMOUTH TWP
Ground Drain

SITE HISTORY

The Amdura site presently occupies approximately 40 acres adjacent to the Saginaw River as it flows through Bay City, Michigan immediately south of the central business district (Figure 1). The site has been occupied continuously since shortly after the Civil War. The first permanent business to occupy the site was a hardware store sometime in the mid- to late 1800's. It later specialized in the manufacture of saddles, harnesses, and other leather equipment used in the horse trades. Portions of the present day storage building (western sector) are the remanent of the old hardware facility and harness shop.

Subsequently a group of local businessmen pooled their resources and formed a company known as Industrial Works in the early part of this century. They manufactured cranes and associated equipment until sometime in the mid 1920's. At that time Industrial Works absorbed several smaller businesses and became Brown Hoist still associated with the crane manufacturing industry. It is during this period, the early 1920's, that most of the major buildings were erected on the site. The foundry building, pattern repair building, powerhouse, and portions of building 41 were all erected in this period immediately after World War I. Several other smaller buildings built during this period such as the bicycle storage, pattern shop, water purifying plant, and the carpenter shop have been razed.

The site was electrified and heated by steam driven generators in the powerhouse (the boilers are still present although not in service). Coal was used to fire the boilers for steam generation. Water was delivered to the powerhouse via a water-intake channel that ran across the north edge of the property. The channel has been filled and the intake crib for the water purifying plant is all that remains.

Brown Hoist changed its name to Industrial Brown Hoist Corporation sometime in the ensuing 30 years. In 1953 Industrial Brown Hoist was bought by Pennsylvania Coal & coke Corporation. It was again sold in 1957 to American Steel & Pump Corporation, and again to Samuel Cohen in 1959. Finally, in 1960 Industrial Brown Hoist Corporation was sold to American Hoist & Derrick Company (American Hoist). At that time the Foundry was operated by a firm called Detroit Grey Iron. In the late 1960's American Hoist had to resort to a lockout to force Detroit Grey Iron from the property. At that time American Hoist took over the foundry and converted into an manufacturing and assembly area for their crane booms. There has been no foundry operations on the site since this time.

American Hoist remained active on the site through the 1960's and 1970's, operating 24 hours a day-seven days a week during the mid- to late 1970's and the North Sea oil boom. Early in the

1980's they started moving their operation to facilities in South Carolina, and finally closed their doors in 1983. Since that time there has been no crane manufacturing activities on the site, however, some large sections of booms remain and are shipped out as orders are filled. Additionally many of the patterns in the Pattern Storage and Repair Buildings are stilled housed on site and occasionally several are shipped to the South Carolina facility.

Presently, the portions of the site are sublet out to several small businesses. Building 42, the paint building, and the sand blasting building are leased to Promatec, Inc. Promatec is involved in duct work construction for the Midland Nuclear Plant conversion. There is a small fork truck repair company located in the south end of Building 42. The old foundry is being leased to GLIC Environmental also known as Main Environmental. GLIC is using the foundry for vehicle storage.

Although power to the site is supplied by the local utility company the power house is still in operation. Several generators are on line producing D.C. for use by the large overhead cranes in Buildings 41 and 42. Heating is accomplished by individual gas burners in various sections of each of the major buildings except the Pattern Storage and Pattern Repair Buildings. These buildings have never been heated.

The physical boundaries of the site remain today much the way they have for the last 70 years. The history of heavy industrial development throughout the Saginaw River Valley suggests that the site was filled along the river bank to create a more stable parcel for site development. This condition was common up and down the river valley as low ground was filled with foundry sands from the many foundries that were part of the automobile industry. While no information exist concerning the site modification activities over the past 120 years, by 1920 the site had been modified into its present configuration. The only major modification of the site was the filling of the water-intake channel along the north boundary of the property.

Other site modification activities were of a more temporary nature. When American Hoist took control of the company, they made a large excavation in the soils near the river. This was done as a way of testing the cranes as they were prepared for shipment. As a result of these test diggings this large hole became an on-site landfill for the solid wastes generated by the on-site manufacturing activities. However, physical no evidence of the pit exists today.

AERIAL PHOTOGRAPHY

A review of historic aerial photography of the site can yield past land use practices and may reveal areas of possible

environmental contamination. Aerial photography of the Amdura site was secured from the Michigan Dept. of Natural Resources, Land and Water Management Division. Flights available were flown in 1977 and 1987. Stereoscopic pairs with a scale of 1" = 200 feet of the site were reviewed.

Additional photography was available from the U.S. Dept. of Agriculture, Agriculture Stabilization and Conservation Service. Flights available from the ASCS were flown in 1950, 1955, 1963, 1969, 1977, and 1988. Prints from the first four flights were ordered in stereoscopic pairs at a scale of 1' = 400'. At the present time this order has been not been received. ASCS has indicated that it will require approximately three more weeks to research and complete the order.

Aerial photography was also reviewed at the Center For Remote Sensing, Michigan State University to secure additional flights. The Center is a repository for old ASCS photography and they had aerial coverage from 1938, 1950, 1955, 1963, 1969, and 1978. A check of the files revealed that there were no prints available for any of the flight years except 1978. However, the photomosaics were available for 1938, 1950, 1955, and 1963. These prints are very small scaled and serve as an index for the entire flight series. The appropriate mosaics from the four years were enlarged sufficiently to yield a photo with a scale of approximately 1" = 400'. This technique yielded photographs of poor quality. Although the site, major building, and other landmarks are discernable, the finer details are lost in the grain of the print.

As a result of the above activities aerial photography from 1938, 1950, 1955, 1963, 1977, and 1987 were analyzed for the appearance of any land-use activities that would suggest the presence environmental liabilities. As mentioned above the photography from the photomosaics yielded little information. The following observations were made from the photography.

1938:

- The physical size of the site is much as it is today
- Sites north and south of the Amdura site are undeveloped
- The Storage Building is in two independent sections, the center section has not been built
- There is no 120,000 gallon water storage tank at the northeast corner of the site
- There is no evidence of the water intake channel along the north boundary of the site (however, it is present on 1921 blueprints of the site)
- There is no evidence of any large pit in the vacant portion of the site (southwest corner)
- Building 41, west portion of Building 42, the Foundry, Pattern Repair building, the Pattern Shop, and the Power House are all visible

1950:

- o Sections of the Storage Building are joined into one building
- o The Foundry, Building 41, Building 42, the Pattern Repair building, the Pattern Shop, and the Powerhouse are all visible
- o The 120,000 gallon storage tank is not present
- o Water intake channel present
- o No evidence of any large pit

1955:

- o The Foundry, Building 41, Building 42, the Pattern Repair, Pattern Storage, Pattern Shop, and the Powerhouse are visible (expansion to Building 42 complete extending the size of the building to its present day dimensions)
- o Water intake channel visible
- o No 120,000 gallon water storage tank
- o No evidence of any large pit

1963:

- o All major buildings are visible
- o Sand Blasting and Paint Buildings are not visible (have yet to be erected
- o Water intake channel visible
- o 120,000 gallon water storage tank may be present
- o No evidence of any large pit

1977:

- o 120,000 gallon water storage tank present
- o All major buildings present (Paint Shop and Sandblasting Building visible next to old foundry)
- o Water intake channel filled
- o Vacant area covered with storage sheds and stacks of stock materials
- o Many railroad tracks crisscross the site
- o The soils around the foundry are dark (foundry sands)
- o No evidence of any large pit

1987

- o Asphalt plant in the center of the vacant area
- o Several large piles of aggregate near the asphalt plant
- o Remnants of the railroad tracks on portions of the site
- o No evidence of any large pit

Review of the available aerial photography indicate no major areas of possible environmental contamination on the Amdura site. The general appearance of the site was one of orderliness. There was no indication of any plant operations that would suggest anything less than industry standards.

MWRI will submit an Addendum to this report as soon the additional air photography from the ASCS arrives and has been analyzed. This photography will be on a scale sufficient to better

interpret the site activities during the periods the flights were flown.

SOIL QUALITY

The investigation of the site soils was undertaken as a result of the foot survey. Sampling areas were selected based of visual observations.

Boring Locations

Sixteen locations were selected (Figure 2) around the site for soil borings (SB) and sample collecting. SB-1 and SB-2 are located near the former site of an underground storage tank (UST). These samples may have contained volatile organic compounds (VOC's) specifically the purgeable aromatic compounds common in vehicle fuels. SB-3 and SB-4 are located west of a steel water tank whose product storage history was unknown and which may have once contained petroleum or other hydrocarbon products. SB-5 and SB-6 are located in the spent solvent storage area where the presence of chlorinated VOC's was suspected. SB-7 and SB-8 are located northwest of Building 42 in the waste loading zone. SB-9 through SB-14 are in the fill area underlain by some ten feet of foundry sands and are thought to contain heavy metals. SB-15 and SB-16 are near the baghouse north of Building 42. These soils were potentially contaminated with heavy metals. Analysis was also completed on soil samples retrieved from the monitor well boreholes, discussed in the Groundwater Quality Section, along the north side of Building 41 (MW-7 and MW-8, Figure 2).

Two soil samples were collect at locations SS-1 and SS-2 (Figure 2) along the south perimeter of the site. The foot survey revealed large amount of solid wastes disposed in this area. These wastes contained welding rods along with cinders and other rubble.

Drilling and Sampling Methods

Two split-spoon samples were taken from each soil boring location using the ASTMD-1586 method. Split-spoons are a soil sampling device consisting of a long barrel and a valve on the end which opens to allow soil to enter but not to leave. The spoons are hammered into the ground with the drilling rig and 140 lb weight. When they are recovered from the ground the valve is unscrewed from the end and the spoon is split down the middle to expose the collected material.

Boring logs were kept for each hole. The logs record changes in soil-type, depth of the boring, split-spooned intervals, number of blows per split-spoon sample, and other boring data. Soil boring logs are found in Appendix A. The first split spoon sample

was from the surface to a depth of two feet. After the first spoon was driven and retrieved, drilling continued to a depth of four feet using four and a half inch solid stem augers. The second split spoon was taken from four to six feet. In SB-7 use of the solid stem augers was abandoned when borehole cave-in persisted. The switch to four and half inch o.d. hollow stem augers allowed a spoon to be driven inside the augers with out disturbing the boring walls, allowing recovery of a representative sample.

To prevent cross-contamination between boring locations, augers, split-spoons and other tooling were decontaminated with a steam cleaner using high pressure hot water and detergent. This method will volatilize any VOC's and remove any soils which may contain heavy metals.

Three samples were taken from each split spoon. Different analytical procedures were preformed on each. The first sample was collected in a 40 ml glass vial, the cap was fitted with an inert septum. These were analyzed for purgeable halocarbons and purgeable aeromatics, using EPA methods 601 and 602 respectively. The second sample was collected in a 500 ml plastic jar. These were analyzed for the presence of total heavy metals, using EPA method 200.7 for the 13 priority pollutant metals. The samples collected were stored on ice until delivery to MWRI's contract laboratory, Fire and Environmental Consulting Laboratories, Inc. of East Lansing, Michigan. The third sample was placed in an air-tight plastic dish. These containers were half filled with the retrieved soils. Any VOC's within the soils would volatilize into the head space of the container. At the end of the day, the head space air in these containers was analyzed for VOC's by using an HNu Model 101 Photo Ionizing Detector (PID). The PID's probe is placed in the container for about 30 seconds. The meter records total VOC's in parts per million (ppm). These data are placed in Appendix B.

Samples from locations SS-1 and SS-2 were collected at the ground surface. After the top six inches of soil were removed the sample was collected and placed in a 500 ml plastic container. As a result of the presence of welding rod wastes in this location of the site, these two samples were analyzed for total heavy metals only. These samples were also placed on ice and delivered to the contract laboratory.

Analytical Results and Discussion

Thirty-one samples were collect and analyzed from the sixteen soil boring locations. Only one sample was collected at SB-1 due to the proximity of the ground water. A total of four samples were collected for analysis from MW-1, MW-2, SS-1, and SS-2. The analytical results from the 601 and 602 scans for all soil samples are tabulated in Table 1. The total heavy metal analytical results from all the sampling locations are tabulated in Table 2.

Purgeable Halocarbons

1,1,1-trichloroethane (TCA) was found in the soils at the location of the underground storage tank, SB-1 and SB-2 at both depths; down-gradient of the water storage tank, SB-3 and SB-4 at both depths; in the vicinity of the solvent storage area, SB-5 and SB-6 at both depths; and at SB-7 near the waste loading area of Building 42 at both depths (Table 1). 1,1,2,2-tetrachlorethane was found at SB-8 in the surface sample and at SB-14 also in the surface sample. Bromoform was also found at SB-8 at the surface.

TCA and tetrachloroethane are common industrial chlorinated solvents used primarily in the degreasing of metal. Along with tetrachlorethene these compounds account for more than ninety percent of the solvent/degreasing market. The presence of these two compounds at the Amdura site is no surprise and was expected. Bromoform is used in the separation of mixtures of different minerals. Its presence on the site can be tied directly to the foundry operations.

The concentrations of the compounds are low and range from 30 parts per billion (ppb) form bromoform at SB-14 to 270 ppb at SB-5 (surface). Although these concentrations are low they will require remediation by the Michigan Dept. of Natural Resources. The extent of the remediation will be based on the extent of the contamination. However, the MDNR will probably require a closure standard of nondetect or below detection limit (BDL) for these compounds. The physical properties of these compounds, ie. their vapor pressure at soil temperatures, lend themselves well for recovery by vapor extraction. Additional sampling will be required in the areas of the underground storage tank, water storage tank, spent solvent storage area, and the northwest corner of building 42 to document the extent of the contaminated area. These data should be collected and reviewed in conjunction with the results from the soil gas survey discussed below.

Most chlorinated compounds cannot be landfilled depending on their use, status when released, source, generator, and unless the contaminated soils are below the toxic compound leachate potential (TCLP), a level set by the US EPA in response to the Resource Conservation and Recovery Act (RCRA). The TCLP's for TCA is 0.41 mg/l (or a concentration not to exceed 8.2 mg/l for a soil concentration). Bromoform and tetrachloroethane at this time have no established TCLP's and are not on the landfill band list. Therefore, contaminated soils at any concentrations can be deposited at landfills.

If remediation is required at the Amdura site two options exist for treatment: vapor extraction and landfilling. The technology best suited for the site will depend on the extent of the contamination and regulatory requirements.

Purgeable Aromatics

No aromatic compounds were detected at any of the sampling locations (Table 2). These data are consistent with the past site activities in the area of vehicle fuels. The only known underground storage tank was located between SB-1 and SB-2 (Figure 2). It has, since American Hoist closed in 1983, been excavated. The only other vehicle fuel storage tank was a small above ground tank at the southwest corner of Building 41.

Heavy Metals

Thirty-five samples were collected and analyzed for total heavy metal concentrations of the 13 priority pollutant metals. Table 2 tabulates the results of the analyses. Nine metals were found in varying concentrations at various locations throughout the site. Of these nine metals, five were present in all or nearly all of the soil samples: chromium, copper, lead, nickel, and zinc. Concentrations ranged from 0.4 mg/kg to 223,000 mg/kg.

The metals appear to ubiquitous throughout the site soils. This condition is a result of the presence of foundry sands throughout the site. Foundry sands generally have concentrations of heavy metals as a result of the mold forming process. No apparent pattern emerges from these data for all the metals. An area near the northwest corner of Building 42 (Figure 2 waste loading area) and the area around SB-13 have the higher concentrations for the five metals mentioned above.

The site will be managed for remediation based on the potential danger of the metal to the environment. The US EPA has set standard tests for measuring the toxicity of a compound based on its leachability. The EP Toxicity test for metals gives the concentration of the leachable metal in mg/l that can then be compared to a concentration value which has been deemed safe. An EP Tox leachate analysis was conducted on the samples containing the highest concentrations of chromium, copper, lead, nickel, and zinc. Table 3 gives the results for the analysis.

Of the five metals chromium and lead had no measurable concentrations in the leachate. Action levels for these two metals are 5.0 mg/l set by the US EPA and the State under Act 64. These two metals are the two which will be of greatest concern to the MDNR. The other metals, copper, nickel, and zinc have no action levels and are not regulated, except nickel in the plating industry. Any heavy metals remediation that will require landfilling will have to take place before May 1990 to avoid undergoing some form of pre-treatment as the 3rd, 3rd regulations go into effect.

Further heavy metals analysis may be required by the regulators to document the extent and severity of the contamination. The results of the EP Tox tests suggests that an involved remediation will not be required. A practical solution

may be to cap the site with an impervious layer of soils.

GROUND WATER QUALITY

Monitor Well Locations

Seven monitor wells (MW) were installed, located in Figure 2, on the property to document the quality of the ground water as it entered the site (hydraulically up-gradient) and as it exited (hydraulically down-gradient). Monitor wells MW-1, MW-2 and MW-3 were installed up-gradient of the site along Saginaw Street, and monitor wells MW-4, MW-5, MW-6, and MW-7 were installed along the Saginaw River (Figure 2). The samples recovered from these seven monitor wells were analyzed for purgeable halocarbons and purgeable aromatics using EPA scans 601 and 602 and total heavy metals (for the 13 priority pollutant metals), using EPA scan 200.7.

Installation Methods

Monitor wells MW-1, MW-2, MW-3 and MW-4 were drilled to an average depth of eleven feet, monitor well MW-5 to a depth of 13 feet, and monitor wells MW-6 and MW-7 to a depth of twenty feet. The varying depths of the monitor wells along Saginaw Street is in part due to the lack of a discrete saturated zone within the dry compact clays encountered there. Although no predominantly sandy strata were encountered the wells produced water, mostly likely via fractures in the clay.

Four and a half inch hollow-stem augers were used to drill and install the monitor wells. During the drilling phase split spoon samples were taken at various depths in order to identify a water producing formation. Once found, drilling continued approximately three to four feet into the saturated zone. The hollow stem augers were left in the hole during well installation to prevent borehole collapse. Before completing a well, the static water level was determined by lowering a fiberglass tape down the augers and recording both hole depth and amount of standing water in the hole.

The wells casings consisted of a three-foot section of stainless steel screen. The slot opening was 0.007". Coupled to the screen was a Schedule 80 PVC riser pipe whose length was equal to the total depth of the well. This insured that the casing rose three feet above the ground surface.

The assembled casing was lowered down the borehole inside the hollow stem augers. The well borehole annulus around the screen was backfilled with quartz sand, in order to minimize fine-grained particles from entering the well screen. The sand pack was added until it was about two feet above the top of the screen. Once the well is sand-packed and the augers are pulled out of the hole, about one foot of dry bentonite clay pellets were added down the

hole. On top of the dry bentonite, the annulus is grouted with a bentonite slurry to within two feet from grade. The remaining annulus is grouted with ready-mix concrete, into which a locking steel well-head cover was set.

Monitor Well Development

A well that has been properly developed is free from the finer grained materials present the few inches surrounding the well screen. Development serves two purposes. The most important is to remove fine-grained particles on which organic compounds and dissolved metals can be adsorbed, which can result in inaccurate analytical results. Secondly, in the lab, the liquid being injected into a gas chromatograph must be free of suspended particles.

A manually-operated positive displacement pump was used on MW's 1, 2, 3 and 4. These wells are located next to the Saginaw River and produce large quantities of water. The water is pumped continuously to the surface. As water is removed from the annulus the flow of groundwater into the well pulls the finer particles along. This process is continued until no turbidity is observed in a sample. These wells pumped from fifteen to thirty gallons before developing completely.

The method used in developing low volume monitor wells is bailing. This was done to MW's 5, 6 and 7, which were not capable of sustaining sufficient flow for the pump. The bailer used is a 1.7-inch OD by three-feet PVC tube with a ball and seat in the bottom. As it is lowered into the water the ball rises and the tube fills with water the ball sinks back into the seat trapping water. The bailer is lifted and emptied intermittently, once enough water has accumulated in the screen to be removed. This process is continued until extracted water is non-turbid. About ten gallons of water were removed from each well before developing completely.

Sampling Monitor Wells

Samples were taken immediately following the development of the monitor wells. The samples were to be tested for total heavy metals, EPA method 200.7, and volatile organic compounds, EPA methods 601 and 602.

Analytical Results and Discussions

Seven ground water samples were collected and analyzed from the seven monitor wells as shown in Figure 2. The analytical results for the purgeable halocarbons and purgeable aromatics are shown in Table 4. The analytical results for the total heavy metals are tabulated in Table 5.

Purgeable Halocarbons and Purgeable Aromatics

Only chloromethane the least toxic of all chlorinated hydrocarbons was found at 0.02 ppm in MW-3. Chloromethane in used as a solvent, refrigerant and in the manufacture of tetraethyl lead (a gasoline additive). Additional investigation in the vicinity of MW-3 should be completed to document the extent of the chloromethane plume. Results should be reviewed along with the results of the soil gas survey discussed below. Remediation of ground water contamination associated with chlorinated hydrocarbons would require a recovery well(s) and the treating the water through liquid phase carbon to remove the compounds. At 0.02 ppm of chloromethane the pump and treat process would be rapid and efficient.

Heavy Metals

Zinc and nickel were found in all the up-gradient well in concentrations in the ppb range. Up-gradient monitor wells monitor ground water **before** it enters the site. Zinc was also found in all the down-gradient wells along the Saginaw River. Nickel was also found MW-1 at the southwest corner of the site. These compounds appear to be common in the ground water of the region and at these concentrations will represent background levels.

Mandatory remediation of the ground water for metals has several option. The most common (acceptable to the regulatory agencies) treatment technologies for heavy metals in ground water involves pumping and treating. The most common of these methods is the pumping ground water from a recovery well and adjusting the water to a high pH to precipitate out the metals. Other options include specially designed resin beds and biofilters.

WATER INTAKE CRIB

Crib Location

The old water intake crib is located to the north of the site (Figure 2). The crib has about ten feet of standing water in it. One sample was taken and analyzed using EPA method 601, 602 and 200.7. The pit was sampled using a Kemmerer style sampling bottle. This sampling device allows a sample to be collected at a discrete depth without atmospheric interference. The sampling port on the bottom was open and poured directly into a 40 ml vial with zero head space. This was to insure that any volatiles in the water do not escape.

Results and Discussion

The crib is all that is left of the water intake system used to supply water to the now razed water treatment facility for steam generation. Water now present in the crib was thought to be a mixture of precipitation and ground water. The water was

characterized by high clarity, no color, and profuse growths of algae.

Analysis of the sample shows no purgeable halocarbons or aromatic compounds or heavy metals are in the waters contained in the crib. These data are tabulated in Tables 6 and 7 and also in Appendix E. These data compared to the data from the ground water investigation (Tables 4 and 5) indicates that communication between the ground water and the ponded water in the crib is minimal to non-existent. All the ground water samples contained concentrations of zinc and three out of the seven wells had concentrations of nickel.

SOIL GAS SURVEY METHOD AND TECHNIQUES

Introduction

A soil gas survey was performed on the American Hoist site in Bay City Michigan during the period from August 9 through 18, 1989. The objective of the survey was to screen subsurface soils at the site for presence of volatile-phase organic chemicals associated with known activities at the site. The survey technology is particularly sensistive to solvents and thinners used for parts degreasing and painting operations, both of which were conducted at the Amdura site. These organic chemicals are highly mobile in soils and groundwater, and are subject to regulatory control by the State of Michigan and by the U.S.E.P.A.

Solvents and thinners are broadly classed as volatile organic compounds, or VOC's. VOC material spilled into soils creates a wetted soil volume at the spill point, and a portion evaporates to create a much larger soil volume impacted by vapors. Conventional soil assessment programs are based on collection of small-volume soil samples which are transported to a laboratory for analysis of liquid-phase VOC's. Conventional analysis is not sensitive to soil vapors. Lack of sensitivity increases the likelihood that VOC's will be present but overlooked. Soil gas surveys increase the likelihood of detecting VOC's spilled into soils.

Methods

The survey technique used at the Amdura site collected samples of air from the soil pore space through a stainless steel probe driven into the ground. Soil gas vapors were drawn through the probe, directly into a Foxboro 128 Organic Vapor Analyzer (OVA) equipped with a flame ionization detector (FID). The detector was calibrated daily against a 95 ppm methane standard, and zeroed against atmospheric air. The daily drift of the instrument was very small, less than 5% over the sampling interval. This detector system is sensitive to regulated VOC's as well as naturally occuring compounds such as methane. This field survey method may

TABLE 6. ANALYTICAL RESULTS FOR PURGEABLE HALOCARBONS & PURGEABLE AROMATICS FROM THE SURFACE WATERS (WATER TREATMENT CRIB)

PURGEABLE HALOCARBONS	Mg/L
Chloroethane	-
Trichlorofluoromethane	-
1,1-Dichloroethene	-
Methylene chloride	-
trans-1,2-Dichlorethene	-
1.1-Dichloroethane	-
Chloroform	-
1,1,1-Trichloroethane	-
Carbon tetrachloride	-
1.2-Dichloroethane	-
Trichloroethene	-
1,2-Dichloropropane	-
Bromodichloromethane	-
2-Chloroethylvinyle ether	-
cis-1,3-Dichloropropene	-
trans-1,3-Dichloropropene	-
1,12-Trichloroethane	-
Tetrachloroethene	-
Dibromochloromethane	-
Chlorobenzene	-
Bromoform	-
1,12,2-Tetrachlorethane	-
(m)-1,3-Dichlorobenzene	-
(p)-1,4-Dichlorobenzene	-
(o)-1,2-Dichlorobenzene	-
PURGEABLE AROMATICS	
Benzene	-
Toluene	-
Ethyl Benzene	-
p,m-Xylene	-
o-Xylene	-

TABLE 7. ANALYTICAL RESULTS FOR HEAVY METALS FROM THE SURFACE WATER (WATER TREATMENT CRIB)

	Mg/L
Antimony	-
Arsenic	-
Beryllium	-
Cadmium	-
Chromium	-
Copper	-
Lead	-
Mercury	-
Nickel	-
Selenium	-
Silver	-
Thallium	-
Zinc	-

TABLE 3. EP TOXICITY FOR FIVE SELECTED HEAVY METALS FOUND IN THE SOIL SAMPLES

SAMPLE LOCATION	SB-7 SS-12	SB-7 SS-13	SB-13 SB-24	SB-14 SS-27
CHRONIUM	<0.02 mg/l			
COPPER			5.64 mg/l	
LEAD			<0.04 mg/l	
NICKEL				0.10 mg/l
ZINC		2.12 mg/l		

TABLE 1. PURGEABLE HALOCARBON AND PURGEABLE AROMATIC RESULTS FROM THE SOIL SAMPLES. CONCENTRATIONS REPORTED IN mg/kg.

	SB-1 3-5	SB-2 0-2	SB-2 4-6	SB-3 SS-4	SB-3 SS-5	SB-4 SS-6	SB-4 SS-7	SB-5 SS-8	SB-5 SS-9	SB-6 SS-10	SB-6 SS-11	SB-7 SS-12	SB-7 SS-13	SB-8 SS-14	SB-8 SS-15	SB-9 SS-16
PURGEABLE HALOCARBONS																
Chloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichlorethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.1-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	-	-	-	0.14	0.21	0.21	0.20	0.27	0.18	0.13	0.15	0.09	0.11	-	-	-
1.2-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethylvinyle ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,12-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachlorethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(m)-1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	0.03	-	-
(p)-1,4-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	0.08	-	-
(o)-1,2-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PURGEABLE AROMATICS																
Benzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
p,m-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 1. CONT.

	SB-9 SS-17	SB-10 SS-18	SB-10 SS-19	SB-11 SS-20	SB-11 SS-21	SB-12 SS-22	SB-12 SS-23	SB-13 SS-24	SB-13 SS-25	SB-14 SS-26	SB-14 SS-27	SB-15 SS-28	SB-15 SS-29	BS-16 SS-30	SB-16 SS-31	MW-6	MW-
PURGEABLE HALOCARBONS																	
Chloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Methylene chloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,2-Dichlorethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.1-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chloroform	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Carbon tetrachloride	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1.2-Dichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromodichloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
2-Chloroethylvinyle ether	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,12-Trichloroethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Dibromochloromethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bromoform	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,1,2,2-Tetrachlorethane	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(m)-1,3-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	0.04	-	-	-	-	-	-
(p)-1,4-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
(o)-1,2-Dichlorobenzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
PURGEABLE AROMATICS																	
Benzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o,m-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
o-Xylene	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

TABLE 2. HEAVY METALS ANALYTICAL RESULTS FROM THE SOIL SAMPLES. CONCENTRATIONS REPORTED IN Mg/L

	SB-1 3-5	SB-2 0-2	SB-2 4-6	SB-3 SS-4	SB-3 SS-5	SB-4 SS-6	SB-4 SS-7	SB-5 SS-8	SB-5 SS-9	SB-6 SS-10	SB-6 SS-11	SB-7 SS-12	SB-7 SS-13	SB-8 SS-14	SB-8 SS-15	SB-9 SS-16	SB-9 SS-17
PRIORITY POLLUTANT METALS																	
Antimony	-	0.7	-	-	-	-	-	-	-	-	-	1.3	4.2	-	-	-	-
Arsenic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium	-	0.4	-	-	0.5	0.4	-	-	0.7	-	1	-	0.4	0.7	-	-	1.5
Cadmium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chromium	7.1	3.3	5.9	6.3	7.6	9	1.2	5	7.4	13.4	61.5	178	23.5	39.4	5.9	10.7	32.1
Copper	23.8	49.6	145	39.7	40.6	42.8	6.6	50	28.6	28.3	39.8	438	930	109	32.4	55.4	166
Lead	56.2	60.6	35.5	58.4	54.1	53.2	15.2	50.5	38.9	10.9	27	110	388	35.3	7.8	19.5	38.1
Mercury	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	5.3	4	10.6	6.1	8	8.2	2.4	6.6	12.1	15.4	27.5	126	58.5	24.6	7	15.1	31.6
Selenium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-	-	-	0.3	1.2	-	-	-	-	-
Thallium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	54.7	74.4	57	85	90.7	86.5	63	79.2	145	46	109	219	462	76.2	25	36.9	58.5

TABLE 2. CONT.

	SB-10 SS-18	SB-10 SS-19	SB-11 SB-20	SB-11 SS-21	SB-12 SS-22	SB-12 SS-23	SB-13 SS-24	SB-13 SS-25	SB-14 SS-26	SB-14 SS-27	SB-15 SS-28	SB-15 SS-29	BS-16 SS-30	SB-16 SS-31	MW-6	MW-7	1S	2
PRIORITY POLLUTANT METALS																		
Antimony	-	0.7	-	-	1.6	-	37.5	0.8	-	4.4	-	-	-	-	-	-	-	-
Arsenic	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	0.8	-	-	-	-	-	-	-	-	-	-	-
Chromium	4.9	4.9	2	2.8	70.1	5.2	13.6	10	2.5	146	24.2	12.9	9.8	9.8	5.5	8.2	7.3	41
Copper	17.2	62.2	12.4	13.4	176	37.7	22300	102	11.3	226	30	46.9	314	25	5.5	4.8	22.1	78
Lead	14.3	38.8	4.7	7.1	30.6	13.4	1580	14.6	6.46	29	57	22.8	61	14	-	-	39.2	2
Mercury	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Nickel	3	4.4	1	2.8	106	8.5	26.3	62.9	11.9	135	18.5	20.4	6	11.1	4.2	4.1	6.4	
Selenium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Thallium	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zinc	18	45.9	11.1	12.1	12.1	27.7	15.5	20.6	10	52.7	336	25.8	30	21	15	17.6	221	6

TABLE 4 PURGEABLE HALOCARBON AND PURGEABLE AROMATIC ANALYTICAL RESULTS FROM THE GROUNDWATER IN MONTIOR

CONCENTRATIONS IN mg/l

PURGEABLE HALOCARBONS	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Chloroethane	-	-	0.02	-	-	-	-
Trichlorofluoromethane	-	-	-	-	-	-	-
1,1-Dichloroethene	-	-	-	-	-	-	-
Methylene chloride	-	-	-	-	-	-	-
trans-1,2-Dichlorethene	-	-	-	-	-	-	-
1.1-Dichloroethane	-	-	-	-	-	-	-
Chloroform	-	-	-	-	-	-	-
1,1,1-Trichloroethane	-	-	-	-	-	-	-
Carbon tetrachloride	-	-	-	-	-	-	-
1.2-Dichloroethane	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-
1,2-Dichloropropane	-	-	-	-	-	-	-
Bromodichloromethane	-	-	-	-	-	-	-
2-Chloroethylvinyle ether	-	-	-	-	-	-	-
cis-1,3-Dichloropropene	-	-	-	-	-	-	-
trans-1,3-Dichloropropene	-	-	-	-	-	-	-
1,12-Trichloroethane	-	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-	-	-
Dibromochloromethane	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-
Bromoform	-	-	-	-	-	-	-
1,12,2-Tetrachlorethane	-	-	-	-	-	-	-
(m)-1,3-Dichlorobenzene	-	-	-	-	-	-	-
(p)-1,4-Dichlorobenzene	-	-	-	-	-	-	-
(o)-1,2-Dichlorobenzene	-	-	-	-	-	-	-
PURGEABLE AROMATICS							
Benzene	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-
Ethyl Benzene	-	-	-	-	-	-	-
p,m-Xylene	-	-	-	-	-	-	-
o-Xylene	-	-	-	-	-	-	-

TABLE 5. HEAVY METAL ANALYTICAL RESULTS FROM THE GROUNDWATER

CONCENTRATIONS REPORTED IN Mg/L

	MW-1	MW-2	MW-3	MW-4	MW-5	MW-6	MW-7
Antimony	-	-	-	-	-	-	-
Arsenic	-	-	-	-	-	-	-
Beryllium	-	-	-	-	-	-	-
Cadmium	-	-	-	-	-	-	-
Chromium	-	-	-	-	-	-	-
Copper	-	-	-	-	-	-	-
Lead	-	-	-	-	-	-	-
Mercury	-	-	-	-	-	-	-
Nickel	0.04	-	-	-	0.06	0.02	0.07
Selenium	-	-	-	-	-	-	-
Silver	-	-	-	-	-	-	-
Thallium	-	-	-	-	-	-	-
Zinc	0.06	0.06	0.04	0.02	0.08	0.05	0.03

indicate the potential existence of spilled materials, but does not identify compounds present.

The driven probe is the main method recommended by the American Petroleum Institute (API) for soil surveys and is the most commonly used technique used by most investigators. Dilution of the soil gas sample with air is one of the main problems with the method. Sustained readings of 5 seconds or more were taken as valid. Flame-outs and rapid needle deflections occurred where the soil was not sufficiently gas permeable. In these cases another nearby area was probed. Readings tended to tail of quickly due to a combination of the shallow soil depth (3 ft), minor leakage around the annulus which eventually dilutes the soil gas with clean air, and the lack of power of the OVA to draw soil gases through the denser or wetter soils.

A total of 157 data points were taken in and around all buildings, old foundations, railroad tracks and other areas on the 40 acre site. These locations are given in Figure 3. VOC contaminant vapors can follow both man made disturbances such as trench backfills, and natural zones of high permeability such as sand strata or fracture zones in dry clays. Additional sampling was performed in areas found to be contaminated in an effort to locatalize potential sources.

Results and Discussion

Raw Data and Contour Map

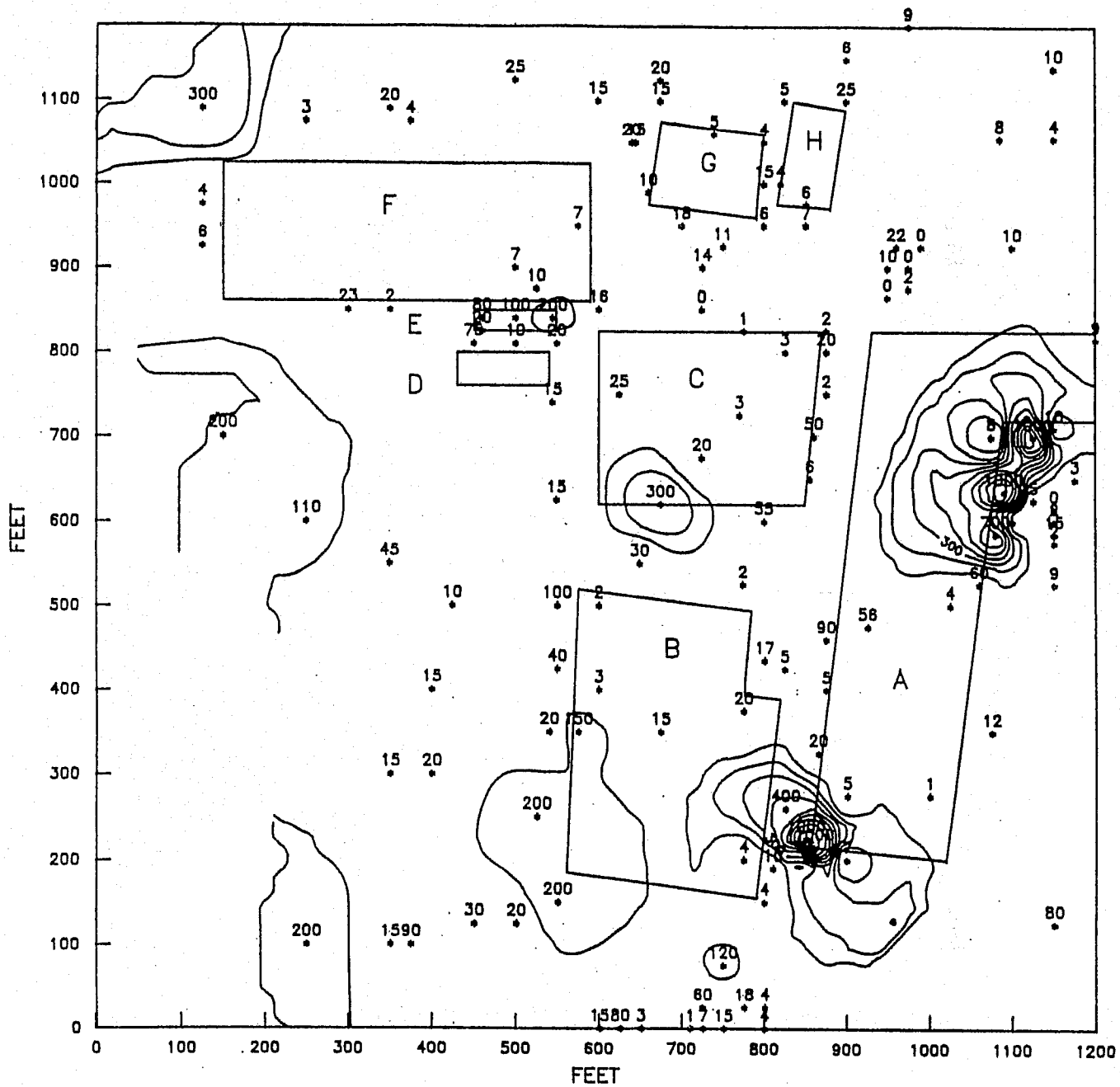
The raw data is presented in Appendix G. Coordinates listed in the X and Y columns are feet from the southwest corner as plotted from a site blueprint dated 1966. The paint shop and sand blasting buildings were not on the older blueprints and were added by MWRI to the contour map. Soil descriptions and stroke data reflect permeability at the point they were recorded.

Comments recorded in the raw data section sometimes indicated oily appearances or odors where readings were not very high. This indicates poor permeability or low volatility characteristic of heavy oils.

The contour map given in Figure 3 is an X-Y-Z computer generated representation of zones of contamination (Z) based on X-Y (feet) coordinates. It was prepared by MWR technicians using contouring software which projects average values of contamination at points not measured. Much as a topographical map of elevation is prepared from a limited number of measurements, this map was prepared from the raw data table. This version produced the picture which analysts from the site thought best represented the findings. There are limitations to any projections beyond the points where the actual data was collected, however the overall picture is

TABLE 3

SOIL GAS SURVEY CONTOUR MAP
Amdura Inc.
Bay City, Michigan



A – BUILDING 41
B – BUILDING 42
C – MAINTENANCE BLD
D – SANDBLASTING BLD
E – PAINT BLD
F – OLD FOUNDRY
G – PATTERN BLDS
H – POWER HOUSE

CONTOUR INTERVAL = 100ppm

useful in visualizing the data.

Interpretation of the data and maps is necessary to decide which areas may require different analytical techniques but the trends are clear.

East of Building 41

Figure 3 indicates three regions of heavy contamination focused in relatively tight patterns east of building 41. It appears that surface fuel oil or hydraulic oil spills were mostly immobilized due to the high clay content at this site. Obvious oil or fuel spills did not penetrate to nearby monitor wells.The clay is heavy in this area under much rust and foundry waste. An oily area directly beneath the old yard crane behind building 41 was presumed to be part of a leak from the crane. Most of the oil appears to be contained in a small cemented area with soil. Another oily area is under fresh gravel in the yard.

A reading of more than 1000 ppm was collected in an area where no odor or oiliness was detected east of building 41. The cattail area may have given a high reading due to anaerobic swamp gas generation.

A low reading was detected in an area of strong odor, nearest the east edge of the site. This may represent a heavy oil contamination associated with a heavy yard crane at this location. Further studies to understand the composition of the VOCs at these two areas are needed to determine the extent of contamination and identity of the contaminants.

Southwest of Building 41

This area is contaminated where an above-ground fuel tank had been located. Oil stains appear on the pavement and in between railroad tracks in the low area between buildings 41 and 42. The direction of spread is more northerly into the low soil and not to south as the contour map indicates. The small circle in front of the large door at the south is a reading of 7 ppm through 2 ft of cement. The southern wing of the contour at the southwest corner is probably an artifact of the mapping process as is the wing of that same contour extending into the building 42 area. The spread of that plume is definitely to the north between the low lying tracks. A reading taken in the center of the contaminated zone @ 7 ft was still 800 ppm. This area appeared to be the most concentrated and widespread on the site.

Building 42

The west side of building 42 has enough high readings around the outside to indicate spillage along the wall. One high reading in building 42 was taken under stained cement near a machine which

appears to have leaked for quite a while. The area outside the wall by the machine is stained and adjacent to pads which may have held leaking drums. Leakage through 2 ft of cement in the buildings was found to be generally much smaller than the outside contamination. All other internal readings of the building subfloor and perimeter were among the lowest data collected on site. Building 42 contained rail tracks and very heavy cranes. Many places in the building had cement over 2 ft thick. A leaking sewer line running through the middle east to west had recently been shut off. Toilet odors were detected after drilling through the cement in that area and may have contributed to readings on the OVA.

West Side Yard

The large open space on the map was laced with foundry refuse and casting sands. Readings in these areas and near sand piles were fairly low @ 10-45 ppm. This material is not particularly high in volatile organics and washes well in the weather because it is so porous. These readings may represent runoff from other areas since the elevation is low here.

Northwest Corner

In the northwest corner of the site one high reading was obtained near the river by the dock. It was taken in the middle of a spot where grass does not grow, indicating that something may have been poured there. Other readings around the old foundry are relatively low.

Water Intake Crib and North Side

Two readings were taken near the ivy covered pump pit just west of the pattern storage buildings. They are 20 ppm and 5 ppm. The whole north side of the site was elevated less than the adjacent cement or gravel plant and some white runoff (presumably dust) had entered the Amdura site. Since the readings on the north side were so low it does not appear that any VOCs entered the site from the adjacent property.

Parking Lot and Yard

The parking lot in the northwest and area around the water tower yielded low readings although VOCs were detectable. At the site of the removed underground gas tank readings were low in the area where soil had been replaced. Only directly north, about 20 ft where soil had not been replaced, was a significant reading obtained, (22 ppm). The yard between the maintenance buildings and the pattern buildings showed all low readings.

Maintenance Building

Along the south wall of the maintenance building one significant reading of 300 ppm was taken. This value, like the one

in the extreme northwest, was a single reading that did not have any nearby comparable reading. Old signs in the vicinity warning of fire hazards indicate that VOCs might have once been present in or outside of this building. Unfortunately, no readings could be taken in the building near the wall so it may be only a very localized spill that was detected. The soil directly beneath the maintenance building was very wet. Further study by soil boring or headspace analysis may reveal additional contamination at the south edge of the maintenance building.

Building 41

Building 41 appears to be the most contaminated in and around the large southern section. Much of the floor was badly stained and oily but readings were hard to get because of the wetness under the cement and heavy clay content. The two highest values obtained from under the floor were 56-60 ppm and other readings were low. The planned 10 readings inside the building could not be taken because of excessive soil moisture.

Power House and Pattern Buildings

No readings could be obtained from the basements of the power plant or the eastern pattern building because of standing water or muck directly under the foundation. Many readings were taken around the perimeters and low values were obtained. The western pattern building has a narrow crawl space under its floor which prevented sampling directly under it. We were informed that the pattern buildings were constructed to warehouse wooden patterns and there was no evidence of any solvent or chemical activity in them.

Old Foundry

Only 3 of the 10 projected data points could be collected from inside the old foundry building. All readings were under 10 ppm. An oily side building was found on the north edge of the building along with an oily concrete pad on the exterior. The floor was too thick to drill through and the outer pad too oily to stand on and drill through. Data from the edge of the soil adjacent to the building at the oily spots did not yield significant readings so it is likely that the soil in the area was not contaminated with VOCs.

Paint Shop

A small paint drum storage room attached to the southeast corner of the old foundry was tested at the low spot in the floor giving a reading of 16 ppm. The paint shop itself showed contamination focused in the northeast of the building and to the south outside between it and the sandblasting building. Some clay was found so that only 4 instead of 6 readings could be completed.

Old Foundation and South Side

South of building 42 is the foundation of a small building not found on the 1922 or 1966 blueprints. It is closest to a paint shop

in the 1922 blueprint. The soil there was contaminated up to 120 ppm in the vicinity of the railroad tracks. It is believed that the foundation is the focal point of the contamination. The southern end of the site was laced with railroad tracks which served the buildings. Readings as high as 200 ppm were obtained from low areas near or in between the tracks. Since there are no buildings in the area and the high readings are on or very near the track the high readings in this area may be due to leakage from the trains.

Conclusions

Data from the soil gas survey indicate several areas of concentration indicating the need for some form of treatment for volatile organics. The contour map and raw data listed here show the areas of concern around the site. As can be seen in the data, there are areas where the soil appears contaminated but readings were not possible due to the wetness or high clay content in the sample. These areas may be reexamined by another technique such as soil borings, headspace analysis, or simple extractions.

Data inside the buildings under the cement was difficult to obtain but extra investigation at the outside perimeters was conducted. The soil gas survey findings indicate that the paint shop, building 41, and the west side of building 42 show contamination which may extend under the floors of these buildings.

The areas around building 41 obviously contaminated with fuels or oils appear localized enough for simple removal while the paint shed, the yard near the river, and the old foundation at the south of the site may be amenable to some other technology for remediation.

POLYCHLORINATED BIPHENYLS (PCB's)

Polychlorinated Biphenyls (PCB's) were widely used chemicals in industry due to their heat absorbing and flame retardant properties. They represent a class of chlorinated hydrocarbons all with the same or very similar ability to absorb heat. PCB's were used in everything from carbonless paper to insulating liquids. Their wide use in the industrial world has led PCB's to be one of the mostly widely distributed environmental pollutants. As a result it has become one of the most investigated and regulated substances in the industrial/commercial sector.

The Toxic Substances Control Act (TSCA) of 1976 (Public Law 94-469) required the Environmental Protection Agency to draft regulations on the control, marking, and disposal of PCB's. The Act banned the use of PCB's in any application but totally enclosed systems by October 1977, and banned the manufacture of the compounds by October 1978. PCB's have been the major components of most

nonflammable synthetic chlorinated hydrocarbon insulating liquids since 1932. Most of the PCB's manufactured in the United States since 1971 have been used in the electrical component industry with 70% in electrical capacitors and 30% used in transformers. PCB's manufactured under the trade name of Aroclor 1242 was the chief transformer oil used in this country until 1971. Since then Aroclor 1016 has been used for this purpose. Transformers containing PCB's are generally used near buildings where fire hazards existed from non-PCB oil transformers.

The July 7, 1989, site visit of the AMDURA facility indicated the presence of 31 oil containing transformers at various locations (nine different transformer stations or pads) around the site (Figure 4). All transformers were labeled as to the presence of PCB oil and at what concentration in accordance with TSCA. The inspections were conducted by Transformer service, Inc. out of Concord, New Hampshire. Table 9 gives the number of Transformers at each pad. The pad number corresponds to those in Figure 4. Visual inspection of the transformers revealed several areas where PCB oil may have escaped into the immediate environment. There was evidence of stained soils around some of the transformer pads, oil stained concrete beneath other transformers, and the presence of "oil-sorb" around one of the transformers labeled as containing PCB oils (Pad 6).

It appeared that all transformers were still in service at the time of the site visit with the exception of one transformer at Pad 6 which was jumpered. Visual observations indicated the probable release of PCB's into the environment either recently or sometime in the past. A sampling plan was drafted to investigate the presence of PCB's in the soils or concrete pads in the immediate vicinity of the nine pads.

Methods

PCB oils are very immiscible in water and therefore, will not migrate with percolating rain water from their point of release. Their movement in the soils, if any, would be as a liquid (PCB's have a very low vapor pressure at ambient soil temperatures) in response to the total area saturated as influenced by the soil characteristics and gravity. Any PCB's reaching the groundwater would not mix with the aquifer, but would remain at the soil water interface and spread laterally as the loadings increased.

Sampling took place in the immediate vicinity of all nine transformer pads. Two locations on the perimeter of the pads where were selected for the sample collection site. One additional sample was collected at Pads 1, 4, and 9. These additional samples were composite collections of oil soaked soils, concrete chips, paint chips, and small bits of woody material retrieved from areas on the pads or transformers that suggested PCB contamination. Only one sample was collected at Pad 2, located on the old generator

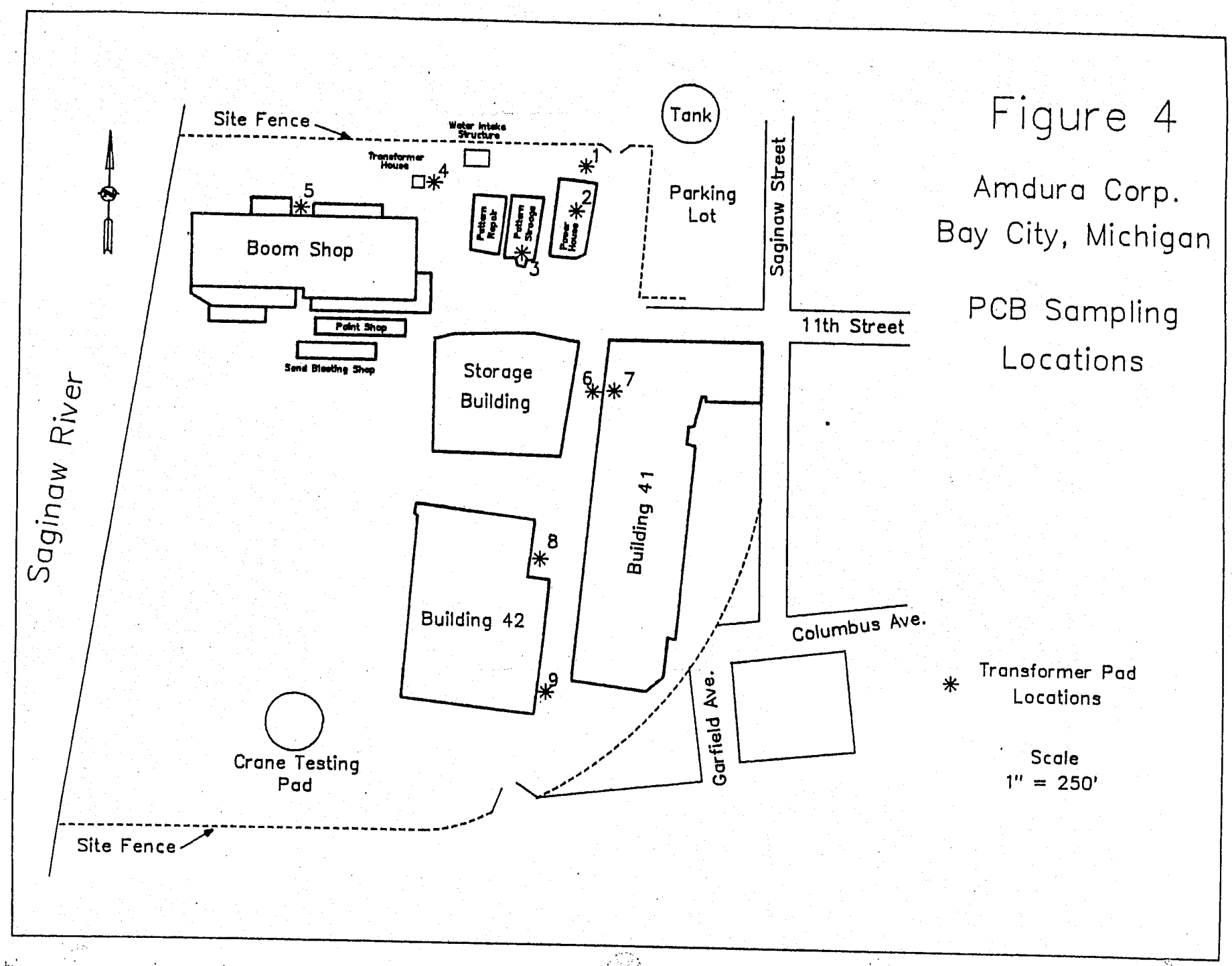


Figure 4

Amdura Corp.
Bay City, Michigan

PCB Sampling Locations

TABLE 8.

Transformer Location by Pad

and

PCB Sampling Intensity

Pad Number	Number of Transformers	Samples Collected
1	9	3
2	1	1
3	1	2
4	3	3
5	2	2
6	4	2
7	4	2
8	5	2
9	2	3

deck inside the powerhouse (Figure 4). One small transformer was located at this particular location, and the wood flooring was scraped and splintered to collect the sample. The exact location and composition of all collected samples are tabulated in Appendix H.

Soil samples were collected using a stainless spade. The spade was pushed into the soils to a depth of six inches. At that point it was withdrawn and the exposed core was sampled approximately in the middle. Enough material was removed to fill a 40 ml vial. The sample vials were labeled with an identifier and placed on ice. Concrete samples were collected by pulverizing the top layer of exposed concrete with a pin hammer and collecting the resultant concrete powder in the sample vial. Other matrix sampled for the composite samples were collected by chipping or splintering with a knife blade and collecting the sample in the vial. All sampling equipment was decontaminated between samples using a detergent wash and rinse with distilled water.

Samples were delivered to the contract laboratory, Fire and Environmental Consulting Laboratories, Inc. of East Lansing, Michigan. PCB analysis was preformed according to EPA method 608. The samples were run through a methylene chloride extraction to mobilize any PCB's. The extraction was analyzed using a gas chromatograph looking for evidence of the PCB isomers: 1016, 1221, 1223, 1242, 1248, 1254, and 1260.

Results and Discussion

Twenty samples were collected from the nine transformer locations as shown in Figure 4. None of the samples analyzed had concentrations of PCB's above the detection limit of 1.0 mg/kg (Table 9). Appendix I tabulates the data from each sample.

The data indicates that no PCB's have been released into the soils in the immediate vicinity of the nine transformer pads. It is suspected that the oil in the transformers has been changed since the testing and label placement took place. Any PCB release would have to have been reported to the MDNR and a work plan drafted for its immediate remediation.

ASBESTOS

Introduction

An inspection of all of the buildings on the site was conducted to determine the presence and quantity of asbestos containing material. The age and use of the buildings suggested that asbestos was commonly used through out the structures and probably was in a poor state of repair. The following section of

TABLE 9. PCB Analytical Results from the immediate vicinity of the nine transformer pads.

	Mg/L
PAD-1-1	-
PAD-1-2	-
PAD-1-3	-
PAD-2-1	-
PAD-3-1	-
PAD-3-2	-
PAD-4-1	-
PAD-4-2	-
PAD-4-3	-
PAD-5-1	-
PAD-5-2	-
PAD-6-1	-
PAD-6-2	-
PAD-7-1	-
PAD-7-2	-
PAD-8-1	-
PAD-8-2	-
PAD-9-1	-
PAD-9-2	-
PAD-9-3	-

this report pertains to the asbestos inspection and its results.

Asbestos is found in many different types of building materials. These may include, but are not limited to, the following: domestic water pipe insulation, heating water pipe insulation, tank insulation, suspended ceiling tile, floor tile, roof tar and paper, baseboard molding, boiler gasket, and fire brick.

Although asbestos has many characteristics that make it useful in building materials, recent cases of asbestos linked diseases, such as; lung cancer, asbestosis (scarring of the lungs) and mesothelioma (cancer of the lung lining), have produced strict regulations in regards to this material. In 1972, the Occupational Safety and Health Administration (OSHA) limited asbestos exposure for abatement and construction workers. The Environmental Protection Agency (EPA) prohibited spraying of asbestos materials for insulation, fire protection and soundproofing. In 1986, regulations pertaining to asbestos became even stricter. One of these regulations, passed by Congress - AHERA (Asbestos Hazard Emergency Response Act), mandated nationwide asbestos inspections and control of these materials in schools. And, finally, another Congressional bill is being discussed at the current time to expand AHERA to the commercial sector.

Methods

An asbestos inspection is performed using the following techniques:

1) Initial Walkthrough. During the walkthrough of the building, the inspector notes suspect asbestos-containing building materials. He/she also draws a floor plan of the building for designating sample locations, presence and quantity of suspect materials.

2) Sample Acquisition. A trained professional with necessary equipment and proper respiratory protection samples any suspect asbestos-containing materials present in the building. The location, condition, description and approximate quantity of each sample is noted on the map and/or field sheet (data sheets that contain key information). All equipment used is properly decontaminated between each sample. The samples are placed into air-tight containers, labeled and prepared for shipment to an accredited laboratory.

3) Sample Analysis. An EPA-accredited laboratory is contracted to perform the analysis of all samples taken to determine the presence of fibrous asbestos. A complete report is provided from the laboratory.

4) Written Report. A comprehensive report is written based on data obtained from the field and from the laboratory

analysis. This report contains laboratory and field data, diagrams, discussion and recommendations, and a conclusion.

The following information will be necessary to understand the contents of this report:

1) ACM - Asbestos-Containing Material
2) Decontamination - Cleaning of contaminated areas. Includes such activities as; wet-wiping and HEPA (High Efficiency Particulate Air) vacuuming.
3) Encapsulation - The use of an agent to seal the surface (bridging encapsulant) or penetrate and seal the bulk (penetrating encapsulant) of ACM
4) Fibrous - Composed almost entirely of fibers with an aspect ratio of at least 3 to 1 and at least 5 microns long
5) Friable - Material that can be crumbled or reduced to powder by hand pressure
6) Mag - A white, fibrous asbestos insulation usually applied on heating water or steam piping systems

In addition to the above terms, the following abbreviations may be used in the field data:

1) FB - fire brick
2) SP - straight pipe insulation
3) BG - boiler gasket
4) TI - tank insulation
5) WP - wall plaster
6) RP - roof paper
7) RA - roof tar
8) FT - floor tile
9) SCT - suspended ceiling tile
10) GCT - glued-on ceiling tile
11) CPL - ceiling plaster
12) PJ - pipe joint insulation

The inspection was conducted building by building and the reults are reported for each building in the following format:

I. Discussion

II. Recommendations and Conclusions

III. Diagrams

IV. Laboratory Report (provided by the accredited laboratory found in Appendix J)

Power House

Discussion

The Power House is divided into three levels: basement, main level and the boiler room (see Figure 5). Samples of various types of fire brick, boiler gasket, pipe insulation, tank insulation and light heat shield were taken in this area. All samples tested positive for fibrous asbestos except for the fire brick (samples 1, 2 and 4). The following materials contain fibrous asbestos.

1) Mag Pipe Insulation. Debris from an insulated heating water system straight pipe had fallen to the ground (sample 3). This material and the piping that it fell from is in poor condition. Also, an additional one foot section of asbestos-containing material (ACM) from this pipe is located in a deteriorated state north of boiler #3. Located in the south portion of the basement is additional pipe insulation that has become slightly deteriorated (sample 9). Situated in the main level is a 10" vertical insulated pipe (sample 6). The condition of the insulation varies from fair to poor at the exposed ends.

2) Corrugated Paper Insulation. Two samples of domestic water pipe insulation were taken in the basement (samples 8 and 10). Most of this material has sustained water damage and is either lying on the floor or is in the process of falling off of the pipe.

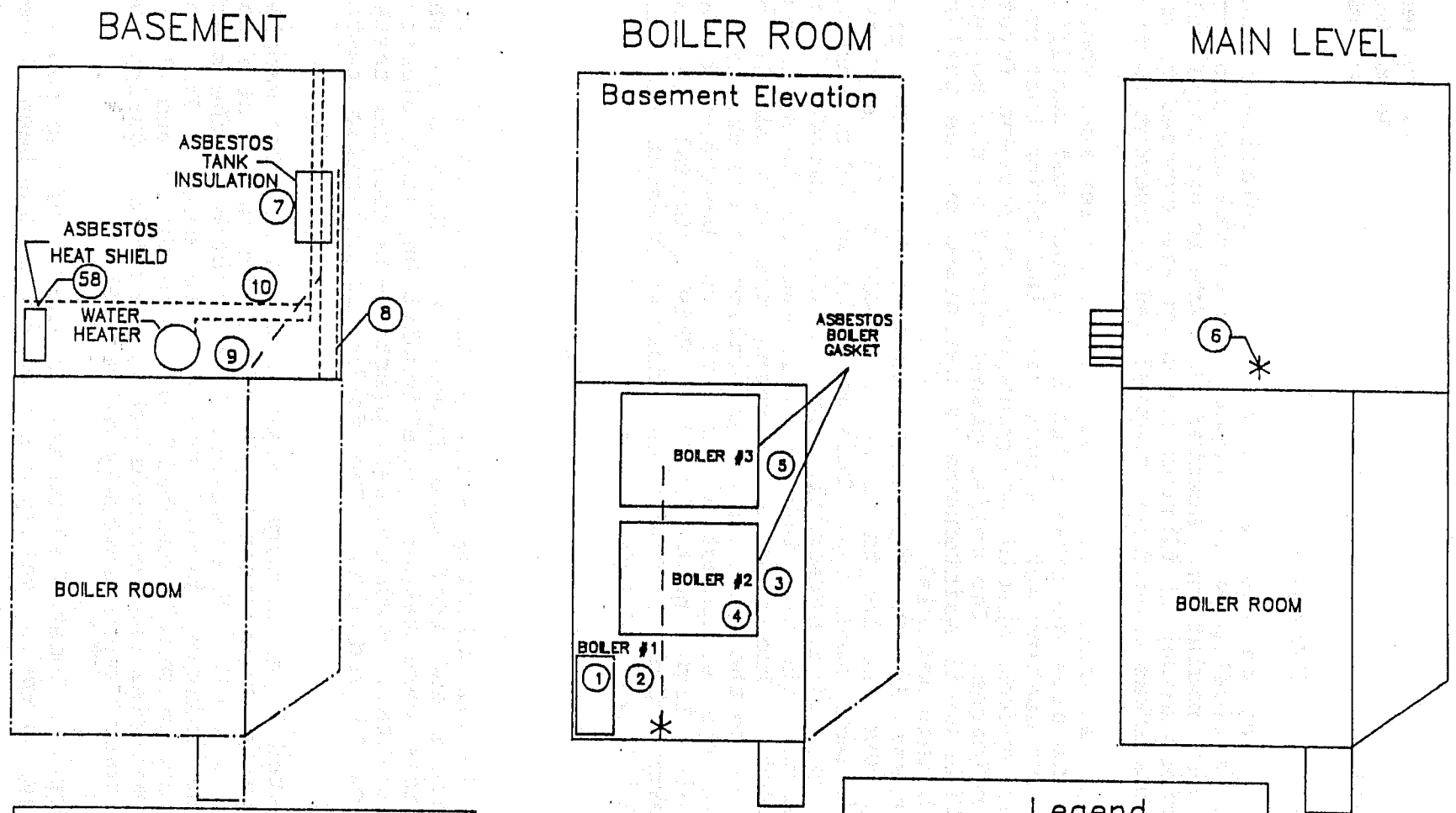
3) Tank Insulation. Located in north quadrant of the basement is a water tank wrapped with asbestos-containing material (sample 7). During installation of this wrap, this material was cut into one by two foot sections, placed on the tank and wrapped with wire. This ACM is in poor condition and easily susceptible to continued fiber releases.

4) Boiler Gasket. The boiler gasket is located on the east end of boilers #2 and #3 (sample 5). This material is in good to fair condition and is not easily accessible to disturbance.

5) Light Heat Shield. This material is located in the southwest portion of the basement (sample 58). It is non-friable and in fair condition.

<u>Approximate Quantity of Asbestos-Containing Materials</u>:

10" Mag Straight Pipe Insulation	175 feet
8" Mag Straight Pipe Insulation	25 feet
2" Mag Straight Pipe Insulation	50 feet
8" Corrugated Straight Pipe Insulation	50 feet
6" Corrugated Straight Pipe Insulation	50 feet
2" Corrugated Straight Pipe Insulation	200 feet



Legend

- Corrugated Paper Straight Pipe Insulation
- Mag Straight Pipe Insulation
- * Vertical Pipe
- O Sample Location

FIGURE 5
POWER HOUSE
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, Mi

PWRHOUS2.DRW

Tank Insulation	100 sq. feet
Boiler Gasket	10 sq. feet
Light Heat Shield	8 sq. feet

Recommendations and Conclusions

The ACM present on the main level is in relatively good condition. The vertical pipe is wrapped with canvas and protects the majority of the insulation. However, the ACM is not completely wrapped and various areas of fibrous asbestos are exposed to the atmosphere. These areas should be encapsulated to prevent further deterioration.

The loose/fallen insulation present in the boiler room should be removed and the area decontaminated by trained and qualified personnel. The 10" heating water system pipe insulation that runs over the boiler system should be rewrapped to prevent future asbestos fiber releases. The boiler gasket placed on the boilers requires no action until maintenance is performed on the boilers that may disturb this material.

Numerous areas in the basement contain ACM. The pipe insulation that runs the length of the basement on the east and south sides is in poor condition. This material should be removed by trained and qualified personnel. During this removal, it is also recommended that the tank insulation located in the northeast corner be removed. The area surrounding the tank should be decontaminated due to the previous deterioration of the substance. Also located in the southwest corner of the basement is an asbestos-containing light heat shield. This material is non-friable. However, due to the water damage present on this material, removal is recommended.

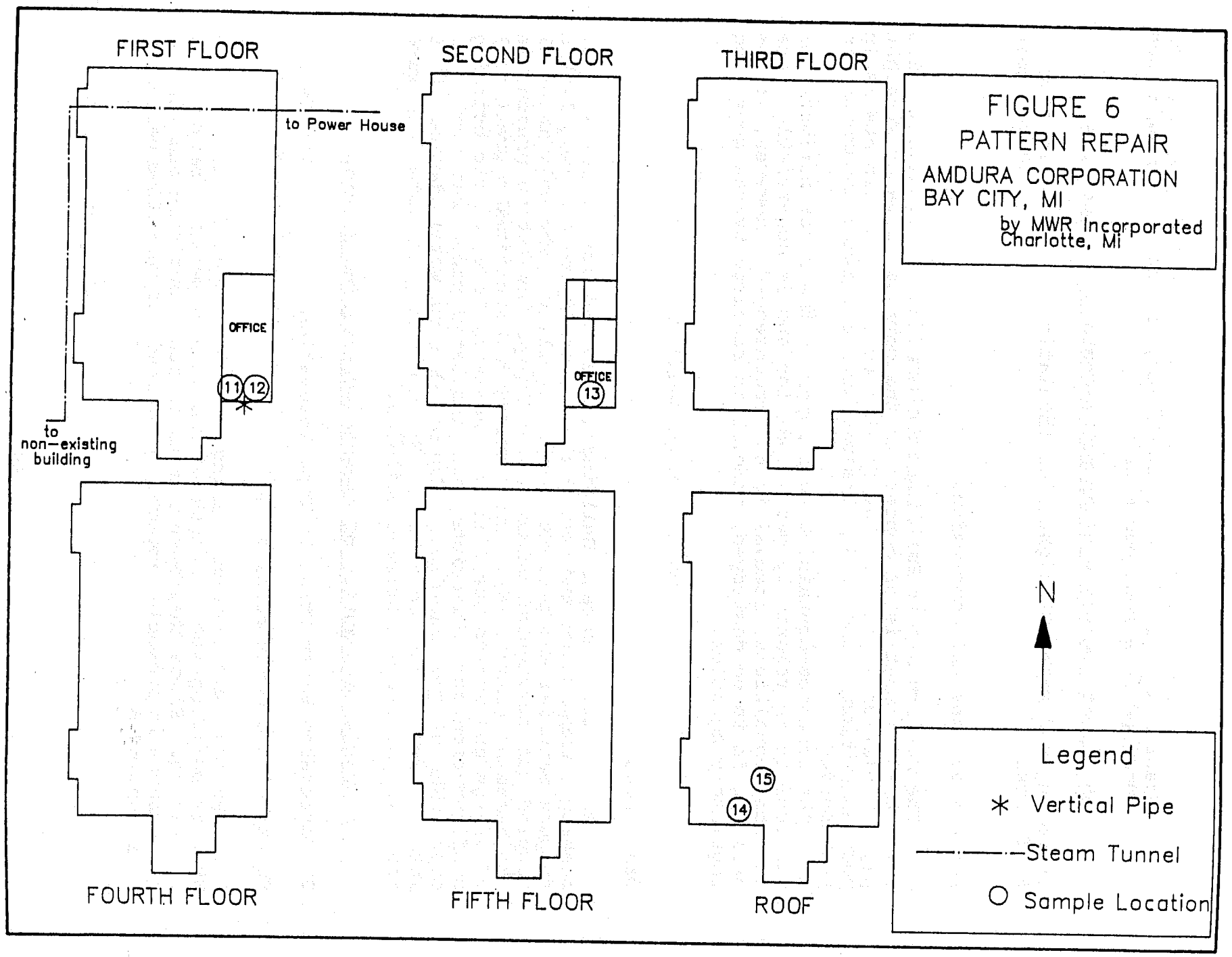
Pattern Repair Building

Discussion

The Pattern Repair Building is divided into six levels: first through fifth floor and roof (see Figure 6). Samples of the following materials were taken: pipe insulation, wall plaster, roof paper and roof tar. Both the wall plaster and roof tar tested negative (samples 13 and 15). The following materials tested positive:

1) Corrugated Paper Straight Pipe Insulation. Two samples of this material were taken in the office on the first floor (samples 11 and 12). This material is located on the south side of the building behind the utility sink. It runs vertically approximately one-half foot onto the second floor. Since this material has received extensive contact during the years, its condition is severely deteriorated.

2) Roof Paper. Located along the perimeter of the roof, a tar paper edging approximately six inches wide has been placed


FIRST FLOOR
to Power House
OFFICE
11
12
to non-existing building
SECOND FLOOR
OFFICE
13
THIRD FLOOR
FIGURE 6
PATTERN REPAIR
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, MI
N
FOURTH FLOOR
FIFTH FLOOR
15
14
ROOF
Legend
* Vertical Pipe
Steam Tunnel
Sample Location

PAT-REP.DRW

(sample 14). Although this material tested positive for asbestos and is in fair condition, it is non-friable and contained in a resinous matrix.

Approximate Quantity of Asbestos-Containing Materials:

3" Corrugated Paper Straight Pipe Insulation	15 feet
Roof Paper	100 sq. feet

Recommendations and Conclusions

The Pattern Repair Building requires little remediation. The only material that is of concern is the corrugated paper straight pipe insulation located on the first floor. Since this ACM is in poor condition, removal by trained and qualified personnel is recommended.

The asbestos-containing roof paper on the outer perimeter of the roof is in relatively good condition and is non-friable. Due to these conditions, removal is not recommended. However, if the building is to be destroyed, removal is required by the governing regulatory agencies.

Pattern Storage Building

Discussion

The Pattern Storage Building is divided into three levels: basement, first floor and second floor (see Figure 7). Very little suspect material was present in this facility. The only material sampled was corrugated paper straight pipe insulation present in the basement (sample 16). The basement had sustained a great deal of damage and access was limited. However, based on the building configuration and blueprints, the insulated pipes run along the east side of the building. Again, due to water damage, this material is in poor condition. No other suspect materials were found in the Pattern Storage building.

Approximate Quantity of Asbestos-Containing Materials:

3" Corrugated Paper Straight Pipe Insulation	100 feet

Recommendations and conclusions

The only asbestos-containing material found in the Pattern Storage building was a length of corrugated paper straight pipe insulation. Since this material is in poor condition and further disturbance is probable, removal by trained and qualified personnel is recommended.

ATTACHMENT B

MWR, INC. - ENVIRONMENTAL INVESTIGATION OF THE AMDURA SITE AND ADDENDUM

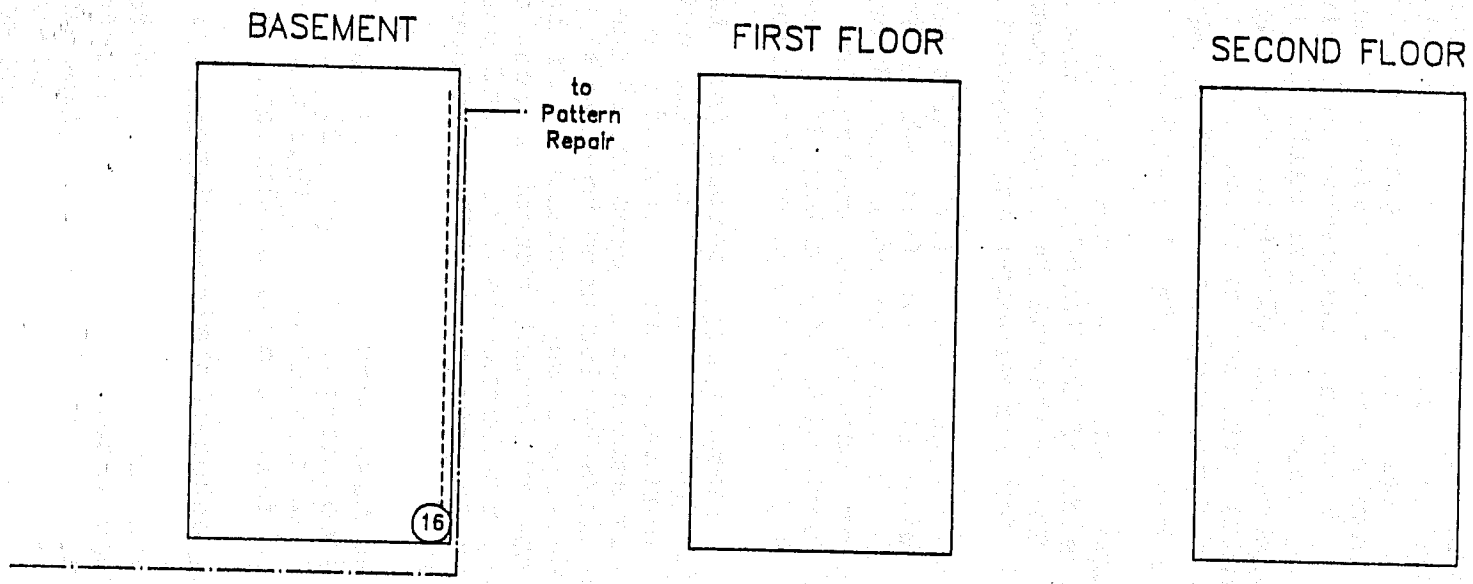


FIGURE 7
PATTERN STORAGE
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, Mi

N

Legend

Corrugated Paper Straight Pipe Insulation

Steam Tunnel

Sample Location

PATTERN.DRW

Foundry

Discussion

The Foundry consists of the main level with an air handler unit on the second level in the southeast area (see Figure 8). Many suspect materials were found in this facility. The following materials were sampled: wool felt straight pipe insulation, corrugated paper straight pipe insulation, floor tile with mastic - black, maroon, peach, beige, and brown, suspended and glued-on ceiling tile, baseboard molding, roof paper and ceiling plaster. Of these materials, the suspended and glued-on ceiling tile (samples 25 and 26, respectively), the brown floor tile (sample 24), the roof paper (sample 29) and the ceiling plaster (sample 28) tested negative. The following materials tested positive:

1) Wool Felt Straight Pipe Insulation. One length of this ACM is present on the east side of the foundry over the garage door (samples 17 and 18). This material is in poor condition caused by a high potential for air erosion and contact.

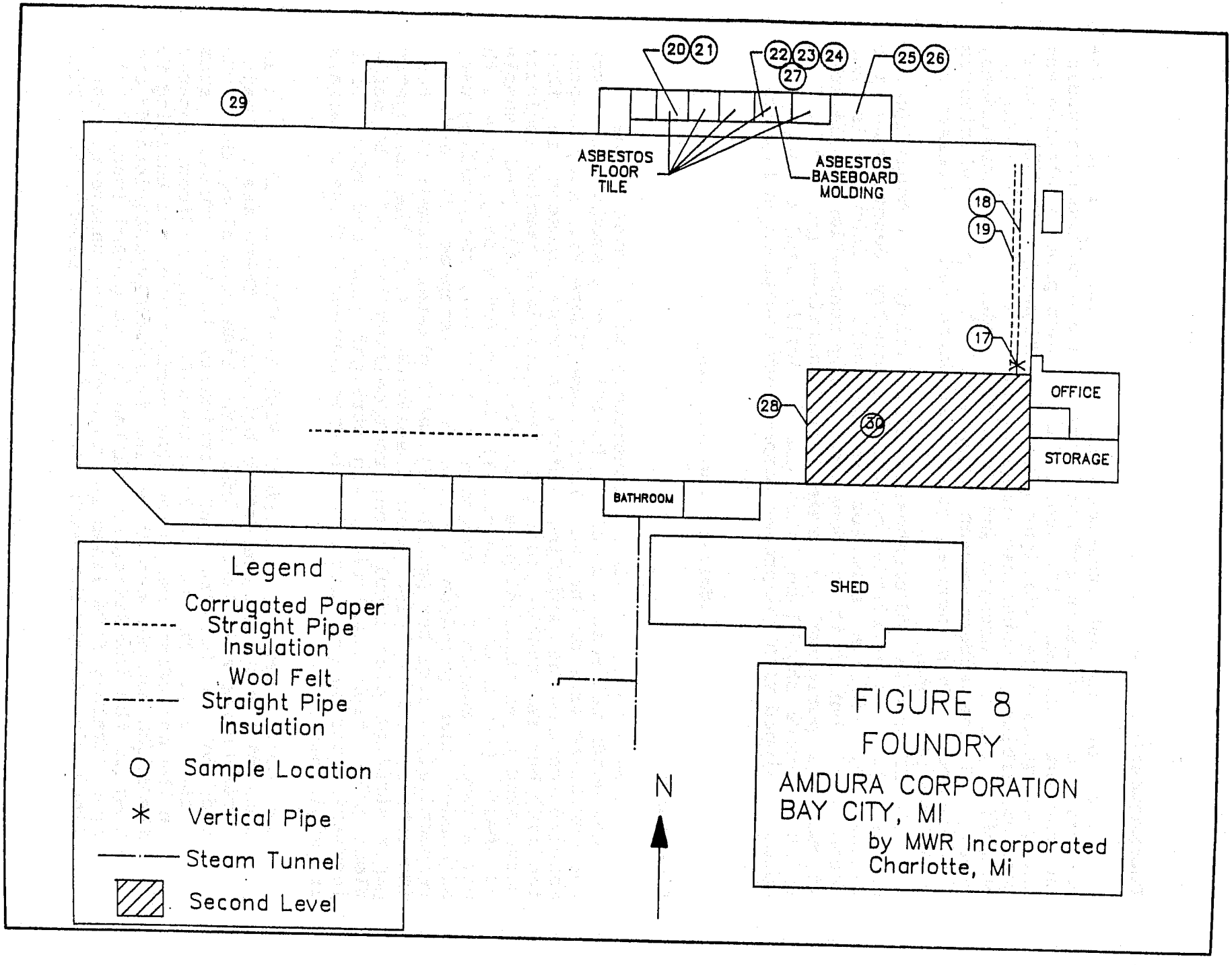
2) Corrugated Paper Straight Pipe Insulation. This material was found in conjunction with the wool felt straight pipe insulation (sample 19). It is also in poor condition. In addition, there is another section of corrugated paper insulation present in the south side of the building near the roof. This material varies from fair to poor condition.

3) Floor Tile. The black (sample 20), maroon (sample 21), peach (sample 22) and beige (sample 23) floor tile existing in the offices in the northeast area contain a small percentage of asbestos. This asbestos is present in the floor tile itself and not the mastic/adhesive used to glue the floor tile down. (NOTE: Some materials may contain 1% or less of asbestos. According to the strictest asbestos regulations (AHERA 40 CFR 763) thus far, a material is considered positive if it contains greater than 1% asbestos.) These floor tiles are non-friable and in fair condition.

4) Baseboard Molding. The baseboard molding present in the offices is also asbestos-containing (sample 27). It is located along the perimeter of the offices. This material is compact, non-friable and in fair to good condition.

<u>Approximate Quantity of Asbestos-Containing Materials</u>:

2" Wool Felt Straight Pipe Insulation	30 feet
3" Corrugated Paper Straight Pipe Insulation	100 feet
Black Floor Tile	1000 sq. feet
Peach Floor Tile	400 sq. feet
Maroon Floor Tile	200 sq. feet
Beige Floor Tile	400 sq. feet


20
21
22
23
24
27
25
26
29
ASBESTOS FLOOR TILE
ASBESTOS BASEBOARD MOLDING
18
19
17
28
30
OFFICE
STORAGE
BATHROOM
SHED
Legend
Corrugated Paper Straight Pipe Insulation
Wool Felt Straight Pipe Insulation
Sample Location
Vertical Pipe
Steam Tunnel
Second Level
N
FIGURE 8
FOUNDRY
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, Mi

FOUNDRY.DRW

Baseboard Molding 10 feet

Recommendations and conclusions

Most of the asbestos-containing materials present in the Foundry are non-friable and pose little hazard to the surrounding environment. However, the wool felt straight pipe insulation and the corrugated paper straight pipe insulation are friable and in poor condition. Continued deterioration is likely due to the potential for air erosion and contact. Under these conditions, removal of the asbestos-containing straight pipe insulation is recommended. This removal should be performed by trained and qualified personnel.

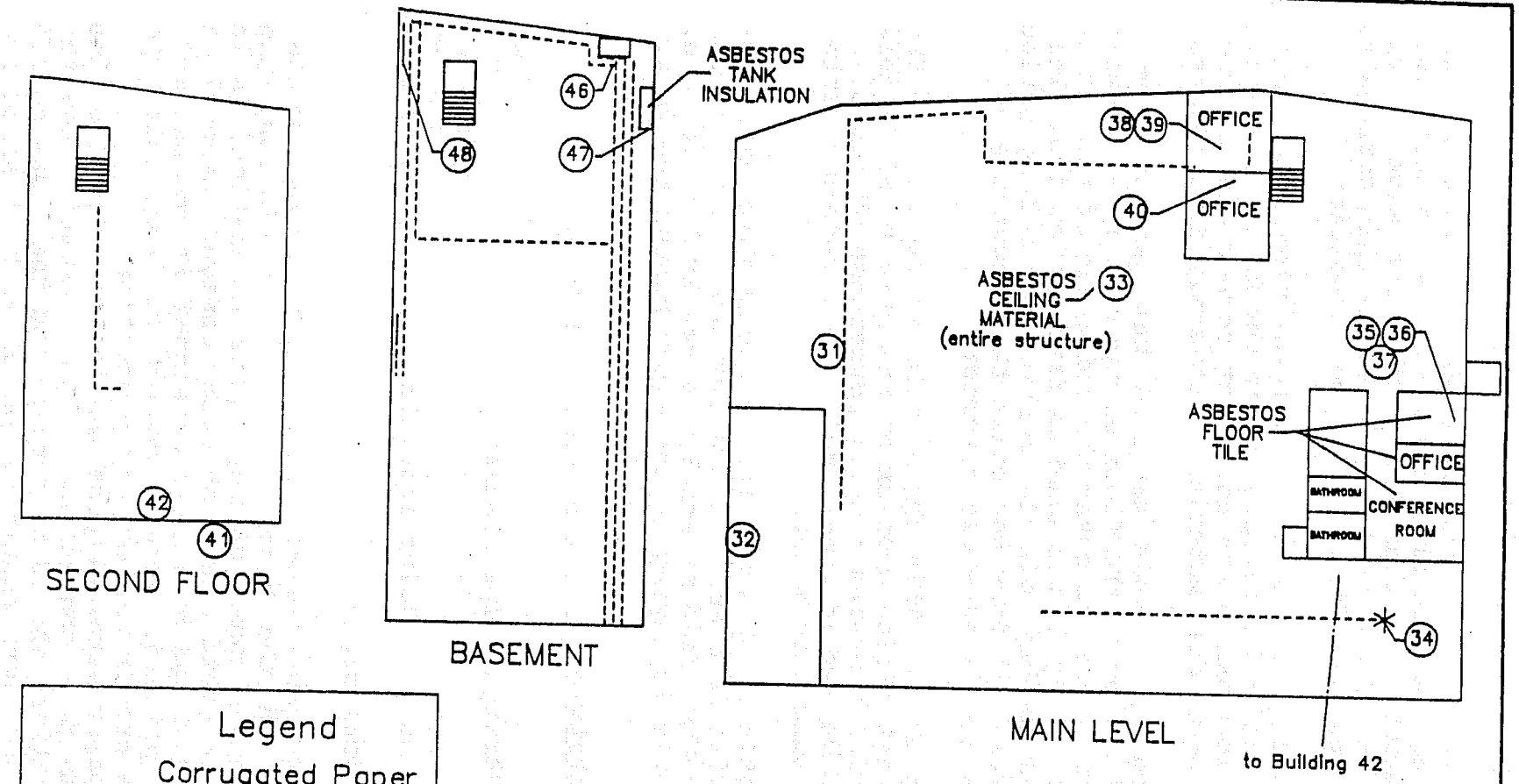
The floor tile and baseboard molding are in fair condition and non-friable. Non-friable conditions usually denote that the release of fibrous asbestos is minimal. Removal is not recommended, but if it is necessary during renovation/demolition, it must be performed by trained and qualified personnel. In addition, care should be taken not to drill, sand or scrape it unless equipped with the proper respiratory equipment and necessary tools.

Maintenance Building

Discussion

The Maintenance Building consists a main level, a basement located under the east side of the building and a second floor over the northeast area of the main level (see Figure 9). Many suspect asbestos-containing building materials were present in this facility but few tested positive. The materials sampled include: corrugated paper straight pipe insulation, floor tile (red - sample 32, beige (12" x 12") - sample 35, beige (9" x 9"), beige with white spots - sample 39, and green - sample 40), roof/ceiling tar, suspended and glued-on ceiling tile (samples 37 and 38, respectively), roof tar (sample 41), wall plaster (sample 42), tank insulation, and mag pipe joint insulation. Only the corrugated paper straight pipe insulation, roof/ceiling tar, 9" x 9" beige floor tile, tank insulation, mag straight pipe and pipe joint insulation tested positive for asbestos content. These materials are explained below:

1) Corrugated Paper Straight Pipe Insulation. This ACM is located throughout the entire building. There are two major lines on the main level. The first line runs along the south side of the building and vertically to the tunnel system (sample 34). The second line runs from the offices, located in the northeast area, along the perimeter of the building to the southwest corner. This line is severely deteriorated and most of the insulation has fallen to the ground (sample 31). Approximately five lines run throughout the basement. Three lines run along the east side of the basement, one line



Legend

- Corrugated Paper Straight Pipe Insulation
- Mag Straight Pipe Insulation
- Sample Location
- Vertical Pipe
- Steam Tunnel

N

FIGURE 9
MAINTENANCE
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, Mi

MAINTNCE.DRW

travels the north side to the west side (sample 46) and another runs along the west side cutting across to east side. Another horizontal line runs along the west side of the building on the second floor. The majority of this corrugated paper straight pipe insulation is in poor condition.

2) Mag Straight Pipe and Pipe Joint Insulation. Two small sections of mag insulation are present in the basement (sample 48). These are located in the northwest corner and the west central area. Again, this material is severely deteriorated.

3) Roof/Ceiling Tar. This material was sampled from a section that had fallen to the floor on the main level (sample 33). This material seems to cover the underside of the wooden structure. Most likely it was used as fire protection. This material has been falling off the ceiling for a long period of time. Therefore, it does not exist throughout the entire structure. This ACM is severely deteriorated.

4) Beige Floor Tile. This floor tile is located in the offices of the east office complex on the main level (sample 36). This material contains a small percentage of asbestos, is in fair condition and is non-friable. Care should be taken not to drill or sand this material.

5) Tank Insulation. A small tank covered with asbestos-containing material is present in the northeast corner of the basement (sample 47). This material is severely deteriorated. In addition, debris is laying on the floor around the tank.

Approximate Quantity of Asbestos-Containing Material:

Roof/Ceiling Tar	25,000 sq. feet
4" Corrugated Paper Straight Pipe Insulation	750 feet
Beige Floor Tile	100 sq. feet
Tank Insulation	100 sq. feet
8" Mag Straight Pipe and Pipe Joint Insulation	20 feet

Recommendations and Conclusions

The Maintenance Building contains five different types of ACM. The material located in the basement: tank insulation, mag insulation, and corrugated paper straight pipe insulation, is in a severely deteriorated state caused by water damage. Removal of this material by trained and qualified personnel is recommended. Until this is accomplished, access should be restricted to personnel wearing the proper respiratory protection.

The corrugated paper straight pipe insulation present on the main level is also in poor condition. This material and the debris under the pipe lines should be removed and the areas should be decontaminated. This work should be performed by trained and

qualified personnel. The beige floor tile one the main floor is posing little hazard to the environment. No response action is necessary. The roof/ceiling tar present on the wooden structure is non-friable but in poor condition. Removal is not recommended but as the material falls to the floor (usually after it rains), it should be removed and the area be decontaminated immediately.

The corrugated paper straight pipe insulation present on the second floor is in fair condition. Repair and/or encapsulation is recommended for the damaged areas to prevent further fiber release.

Building 41 and 41A

Discussion

Nine samples of suspect asbestos-containing building materials were taken in Building 41 and 41A (see Figures 10 and 11). These include: corrugated paper straight pipe insulation, suspended ceiling tile (sample 44), beige floor tile, wool felt straight pipe insulation, transite ceiling board, roof paper (sample 51), brown floor tile (sample 52), red floor tile, black floor tile (sample 54), green floor tile, and white roof tar. The corrugated paper straight pipe insulation, beige floor tile, wool felt straight pipe insulation, transite ceiling board, red floor tile, green floor tile and white roof tar tested positive. These materials are explained below:

1) Corrugated Paper Straight Pipe Insulation. This ACM is basically in two different locations on the first floor. Two lines run along the northern portion of the building (sample 43). One line runs in the central area from east to west. These materials vary from poor to fair condition. Usually, the material which is in fair condition is closest to ground level and has deteriorated by contact. The material located over the office complex on the north side is in fair condition. In addition, two lengths of insulated pipe have fallen and are lying west of the bathroom on the south end. This material is severely deteriorated.

2) Wool Felt Straight Pipe Insulation. This material is located in both bathrooms on the first floor (sample 49) and has been repainted several times. Most of the material is in fair condition but several of the ends are exposed and have the potential for fiber release.

3) Floor Tile. The beige floor tile located in the offices in the northwest area on the first floor (sample 45), the red floor tile located in the north central bathroom on the first floor (sample 53), and the green floor tile located on the third floor (sample 56) tested positive for asbestos. This material is non-friable and in fair condition.

4) Transite Ceiling Board. This transite board is located

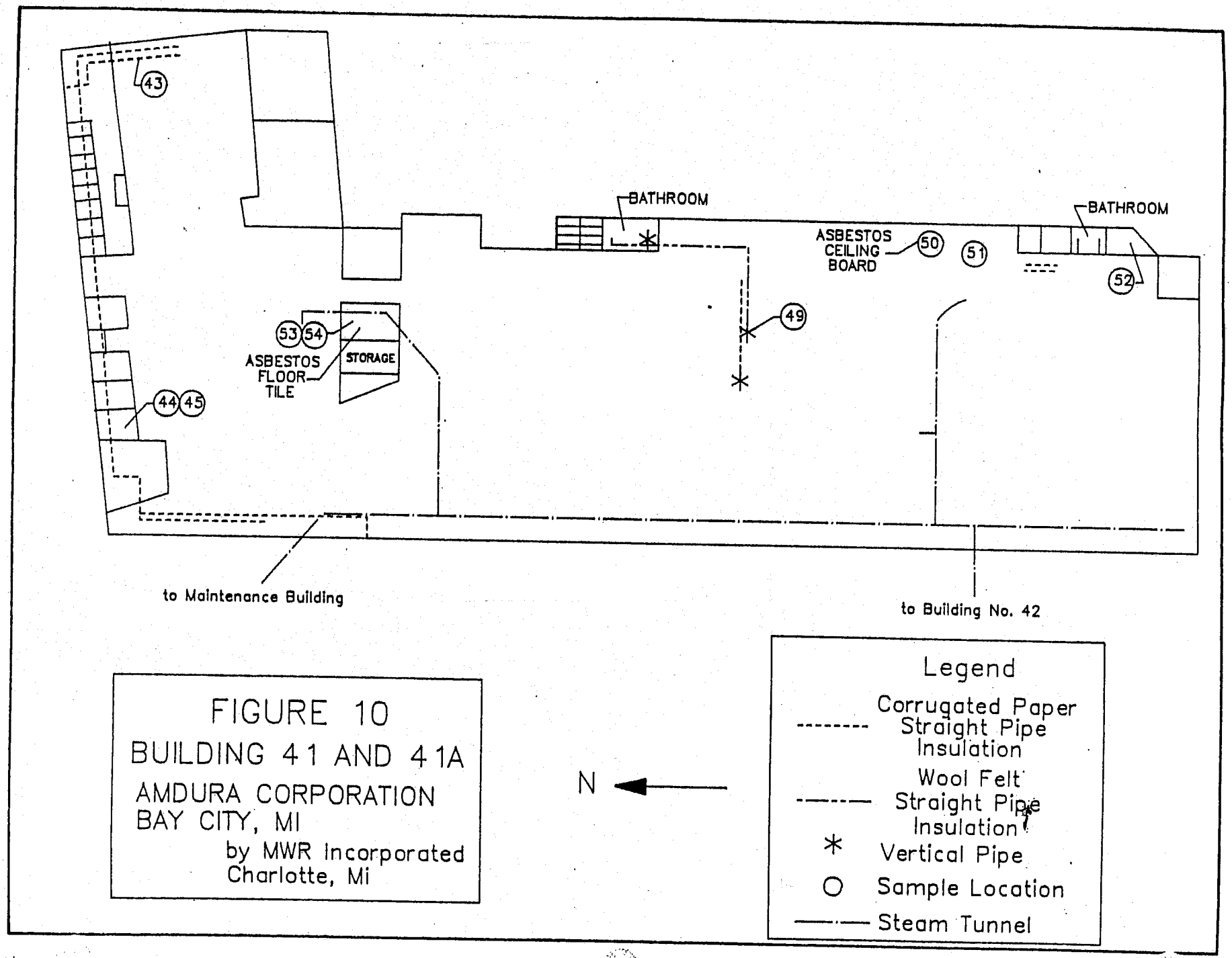


FIGURE 10
BUILDING 41 AND 41A
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, Mi

BLD 1.DRW

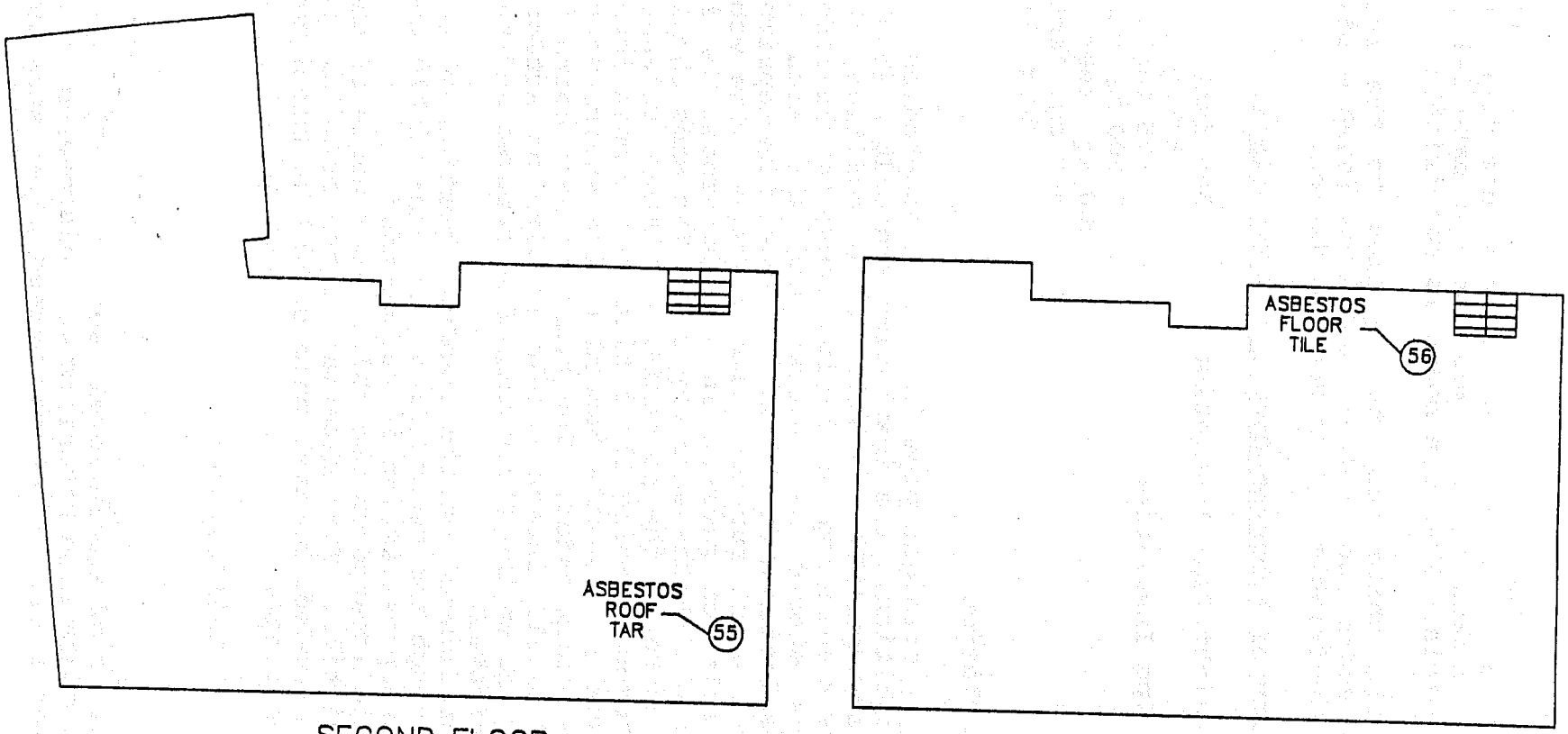


FIGURE 11
BUILDING 41 AND 41A
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, Mi

N

Legend

O Sample Location

BLDG41-2.DRW

in the new addition on the east side of the building on the first floor (sample 50). Some of the material has fallen to the floor and has broken apart. Most of the material is intact and inaccessible. Transite board is non-friable.

5) Roof Tar. The white roof tar applied to the roof approximately six years ago contains asbestos (sample 55). This material is non-friable and in good condition.

Approximate Quantity of Asbestos-Containing Materials:

4" Corrugated Paper Straight Pipe Insulation	500 feet
Beige Floor Tile	500 sq. feet
4" Wool Felt Straight Pipe Insulation	75 feet
Transite Ceiling Board	2,300 sq. feet
Red Floor Tile	200 sq. feet
White Roof Tar	7,500 sq. feet
Green Floor Tile	75 sq. feet

Recommendations and Conclusion

The corrugated paper straight pipe insulation located on the main level varies in condition. The insulation accessible should be removed by trained and qualified personnel. In addition, the two lengths of asbestos-containing insulation lying on the floor west of the bathrooms should be removed and the area be decontaminated. The insulation over the offices should be repaired and/or encapsulated to prevent further fiber release. The wool felt straight pipe insulation present in the bathrooms is in relatively good condition with the ends exposed. The ends should be re-encapsulated to decrease the potential for fiber release. The two types of asbestos-containing floor tile on the main level are in fair condition and pose little hazard to the environment. No response actions are recommended. The transite wall board is non-friable. This ACM still intact should require no action. However, the transite lying on the floor should be removed and the area should be decontaminated.

The white roof tar located on the southern portion of the building (accessible through the second floor) is non-friable and in good condition. No response action is recommended.

The green floor tile located on the third floor north of the stairway is in fair condition. This material is non-friable. No response action is recommended, however care should be taken not to drill or sand this material.

Building 42

Discussion

This building consists of a main level (see Figure 12). Very little suspect asbestos-containing materials were discovered. The only sample taken was of a section of corrugated paper straight

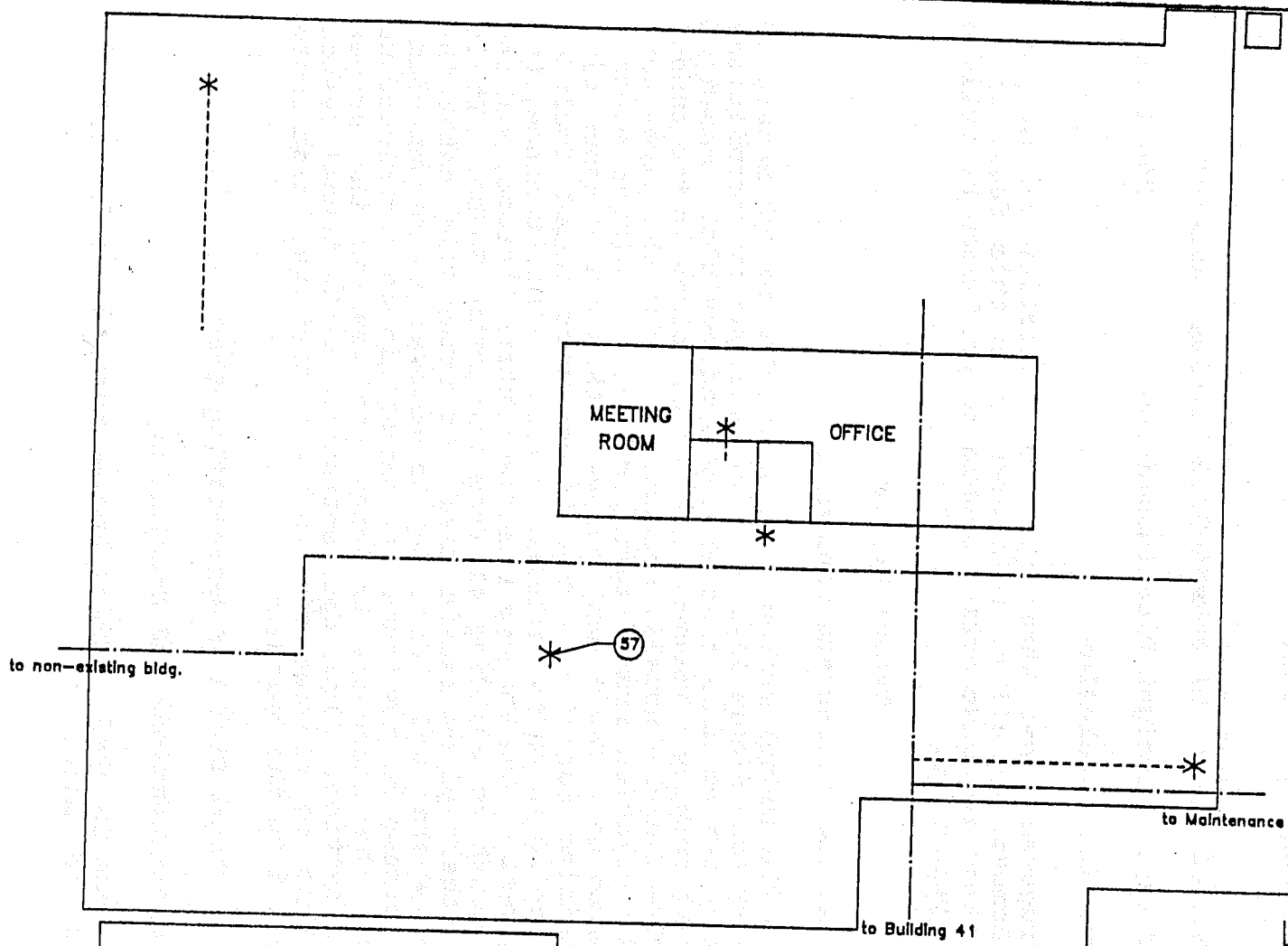


FIGURE 12
BUILDING NO. 42
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, Mi

Legend
Corrugated Paper
Straight Pipe Insulation
Steam Tunnel
Vertical Pipe
Sample Location

BLDG42.DRW

pipe insulation (sample 57). This sample tested positive.

This material is present in approximately five different locations throughout the facility. A horizontal line runs into the tunnel system in the northeast section of the building. Another horizontal line runs near the south portion of the building from east to west. Three vertical lines are located in the central portion of the building near the offices. The majority of this material is in poor condition.

Approximate Quantity of Asbestos-Containing Materials:

4" Corrugated Paper Straight Pipe Insulation	200 feet

Recommendations and Conclusion

The corrugated paper straight pipe insulation is in poor condition. Removal of all of this present in this facility is recommended. This response action should be performed by trained and qualified personneL.

Tunnel System

Discussion, Recommendations and Conclusion

Access to the tunnel system was limited due to the hazard of attempting entry (see Figure 13). However, various recommendations and conclusions can be made from what was accessible. Based on discussions with company personnel, most of the pipes in the tunnel system are uninsulated - usually necessary to keep the pipes warm to prevent the solution from freezing during the winter months. There do seem to be a few lines, however, that are wrapped with asbestos-containing material. The three areas noted include: three lines running south to Building 42 from the Maintenance, two lines running west to the Foundry from the Pattern Storage, and one line running south to Building 41 from the Power House. It is unlikely that these pipes remain insulated after they enter the complex tunnel system and therefore, no removal is recommended. Nevertheless, access to the tunnel system should be restricted to personnel with the necessary training and wearing the proper respiratory protection. Also, open entrances to the tunnel system should be capped to prevent air movement that may distribute asbestos fibers into the buildings.

Paint Shed and Sandblasting Shed

Discussion, Recommendations and Conclusion

The two sheds located south of the Foundry contain no suspect asbestos-containing materials.

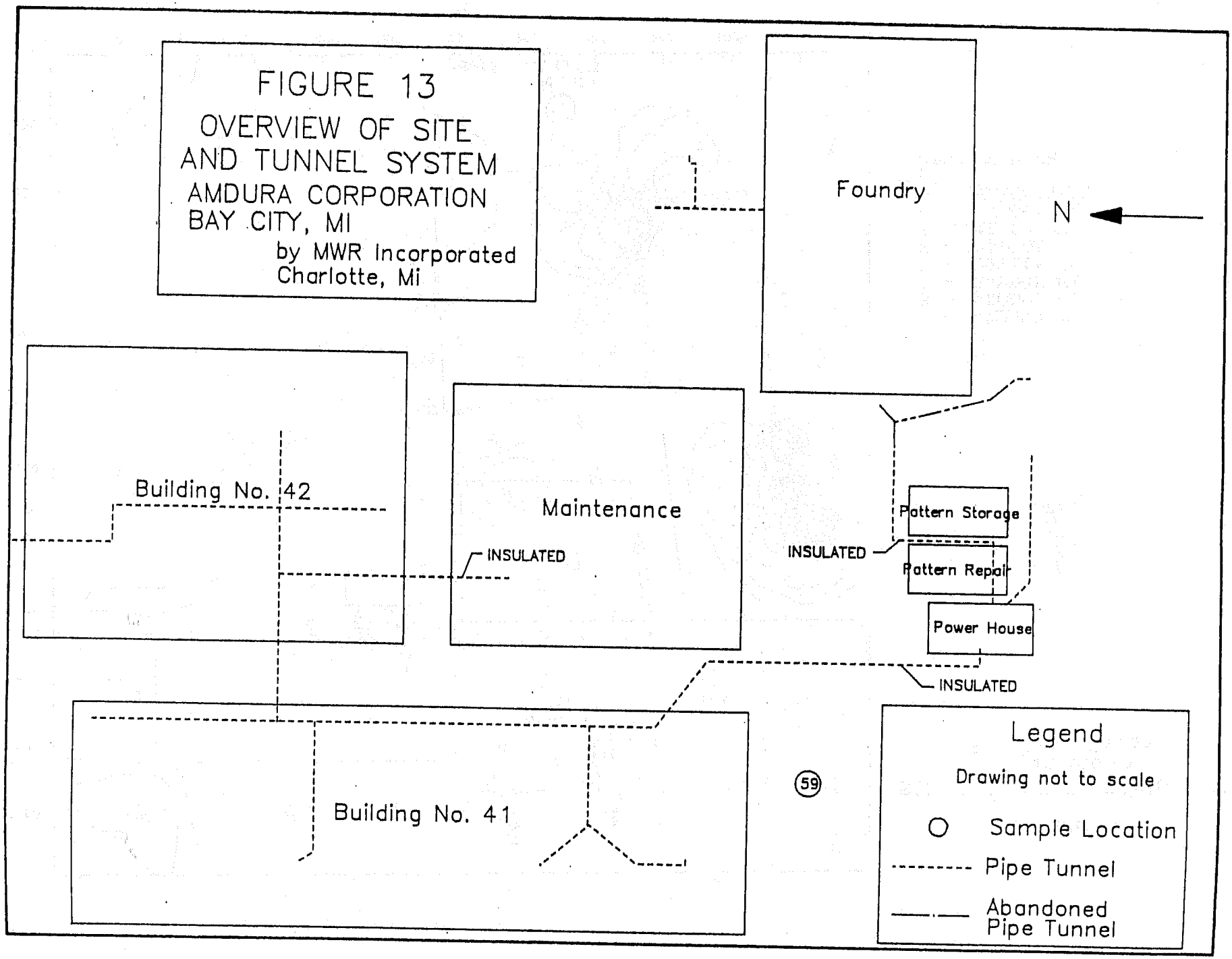
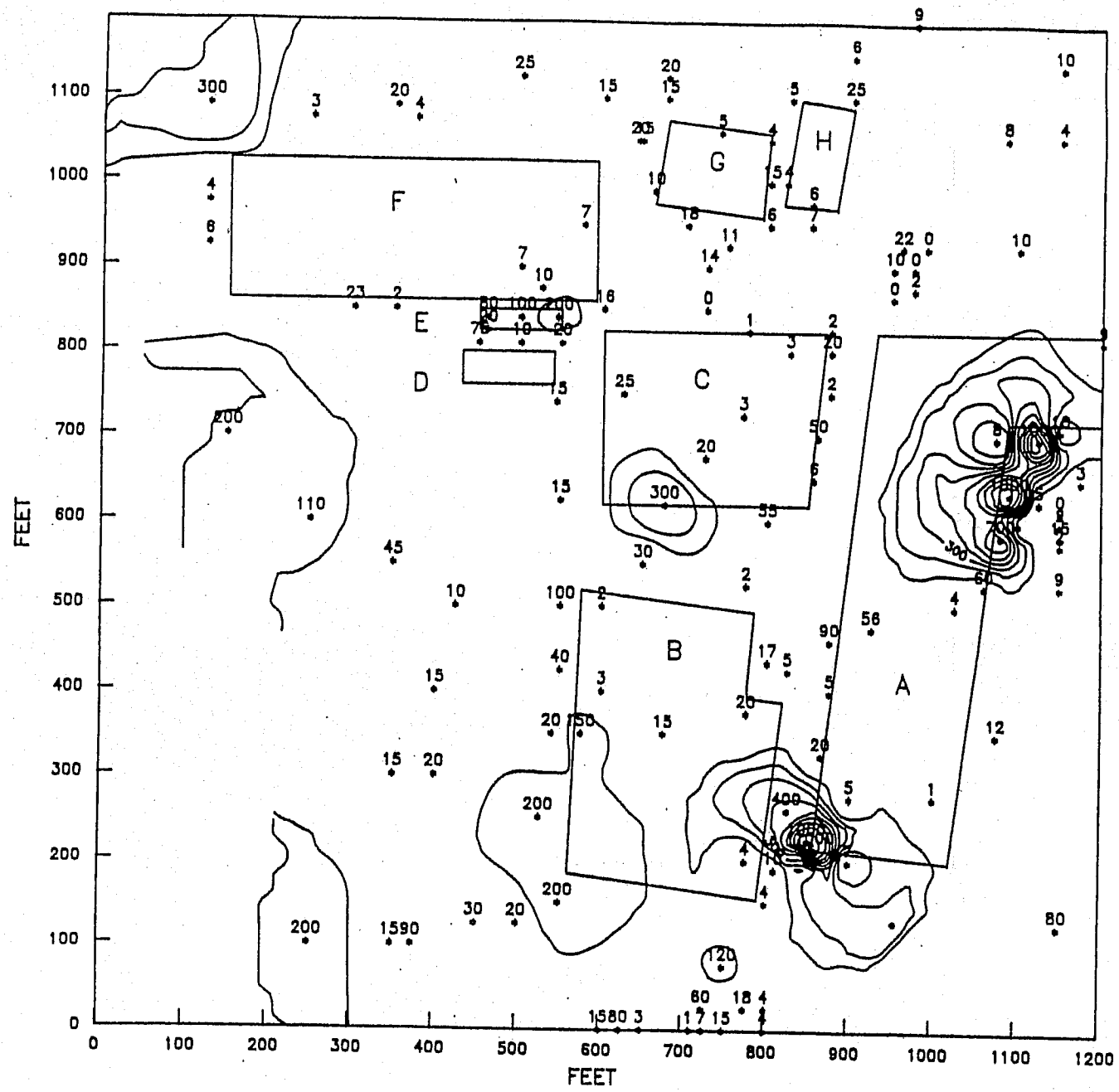


FIGURE 13
OVERVIEW OF SITE
AND TUNNEL SYSTEM
AMDURA CORPORATION
BAY CITY, MI
by MWR Incorporated
Charlotte, Mi
Foundry
N
Building No. 42
Maintenance
INSULATED
Pattern Storage
INSULATED
Pattern Repair
Power House
INSULATED
Building No. 41
59
Legend
Drawing not to scale
Sample Location
Pipe Tunnel
Abandoned
Pipe Tunnel

TUNNEL.DRW

TABLE 3

SOIL GAS SURVEY CONTOUR MAP
Amdura Inc.
Bay City, Michigan

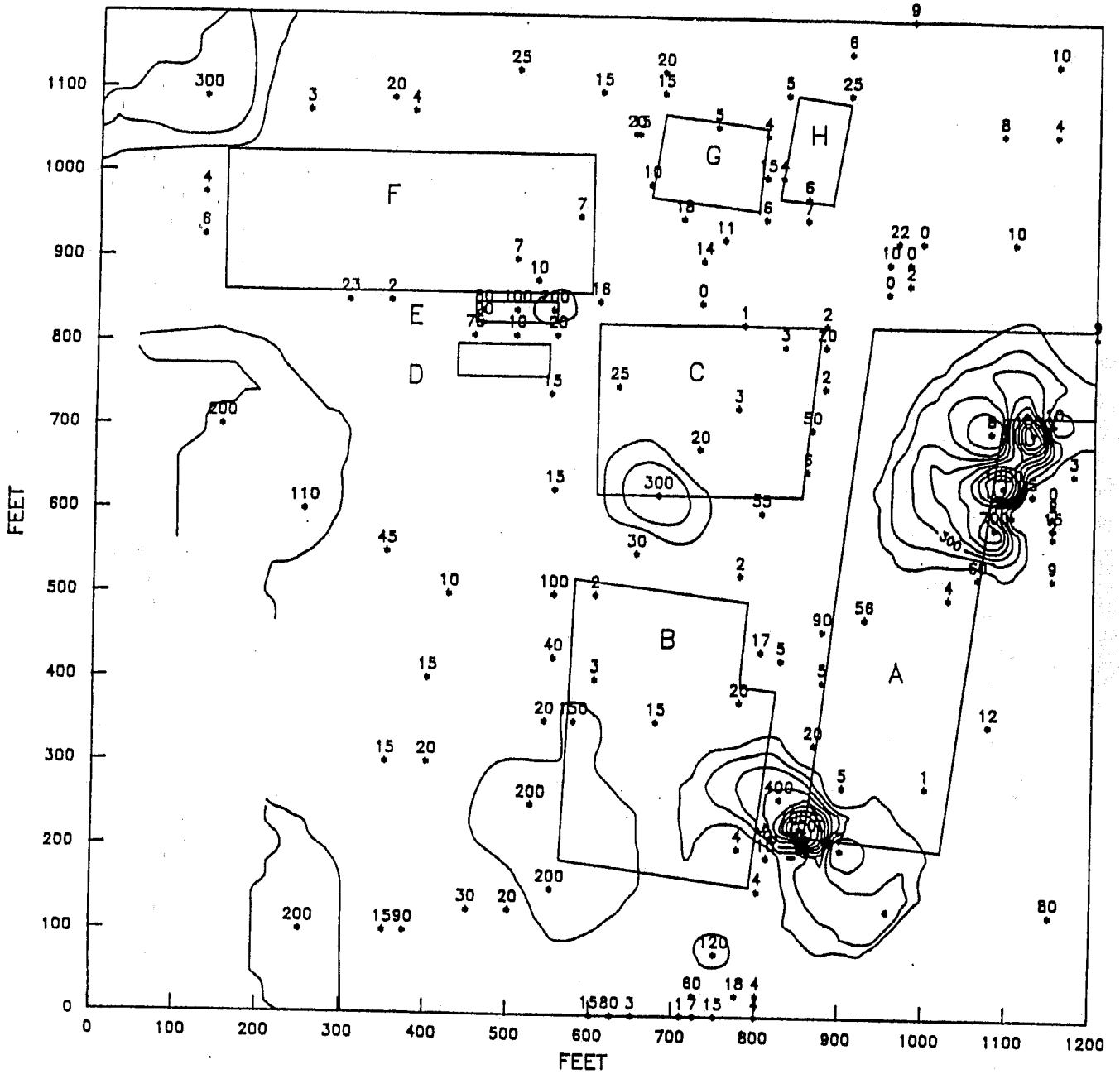


A – BUILDING 41
B – BUILDING 42
C – MAINTENANCE BLD
D – SANDBLASTING BLD
E – PAINT BLD
F – OLD FOUNDRY
G – PATTERN BLDS
H – POWER HOUSE

CONTOUR INTERVAL = 100ppm

TABLE 3

SOIL GAS SURVEY CONTOUR MAP
Amdura Inc.
Bay City, Michigan



A – BUILDING 41
B – BUILDING 42
C – MAINTENANCE BLD
D – SANDBLASTING BLD
E – PAINT BLD
F – OLD FOUNDRY
G – PATTERN BLDS
H – POWER HOUSE

CONTOUR INTERVAL = 100ppm

ENVIRONMENTAL INVESTIGATION
of the
AMDURA SITE
BAY CITY, MICHIGAN

APPENDICES A THROUGH G

APPENDIX A

MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

Soil Boring/Well Log

Project	Location	Boring No.
Howard and Howard	Amdura, Bay City, Mi	SB-1

Date Drilled	Sheet	Drilling Method	Geologist
7-31	1 of 16	Hex-core	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
7.5 ft	4 in		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
						1, 2			Dk. Brown, fine to medium grained sand, moist, slight organic odor.	
SS-1	6/24	1	1	1		3, 4			Dk. Brown, fine to medium grained sand moist, with 1 cm zones of yellow sand.	
						5, 6			Dk. brown, fine to medium grained sand moist.	
						7, 8, 9, 10, 11			Olive green, fine grained, sand. Strong organic odor.	

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

MIDWEST WATER RESOURCE, INC.

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CHARLOTTE, MI 48813
(517) 543-8155

Soil Boring/Well Log

Project	Location	Boring No.
Howard and Howard	Amdura, Bay City,	SB-2

Date Drilled	Sheet	Drilling Method	Geologist
7-31-89	2 of 16	Hex-core	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6ft.	4 in		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
ss-2	12/24	10	9	6		1			Dk. Fill material Dk. Brown, fine-med. grained sand, with pebbles, moist.	
						2				
						3			Lt. brown, med. sand, few pebbles, moist.	
						4			Dk. brown, med. grained sand, moist.	
ss-3	6/12	6	12	16		5			Grey, fine grained,sand. moist	
						6			Grey clay, with some sand and silt, dry, very hard.	
						7				
						8				
						9				
						10				
						11				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

MIDWEST WATER RESOURCE, INC.

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(517) 543-8155

Soil Boring/Well Log

Project	Location	Boring No.
Howard and Howard	Amdura-Bay City	SB-3

Date Drilled	Sheet	Drilling Method	Geologist
7-31-89	3 of 16	Hex-core	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6ft.	4 in		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS-4	18/24	6	5	6		1			Dark Brown, fine-med. grained sand, no odor, with large angular pebbles, dry.	
						2				
						3				
						4				
SS-5	12/24	5	5	2		5				
						6				
						7				
						8				
						9				
						10				
						11				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

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Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	SB-4

Date Drilled	Sheet	Drilling Method	Geologist
7/31/89	4 of 16	Hex-core	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6 ft.	4 in		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS-6	12/24	13	13	12		1			Black, fine-medium grained sand with coarser brick material, dark slag, moist.	
						2				
						3			Dark black, fine-med. grained sand with pebbles, moist.	
						4				
SS-7	18/24	3	2	4		5			Black, fine-grained sand with no odor, Grey, fine-grained sand with no odor, Reddish-brown, fine-grained sand with no odor.	
						6			Grey, very fine-grained sand, with no odor.	
						7				
						8				
						9				
						10				
						11				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

MIDWEST WATER RESOURCE, INC.

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CHARLOTTE, MI 48813
(517) 543-8155

Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City	SB-5

Date Drilled	Sheet	Drilling Method	Geologist
7-31-89	5 of 16	Hex-core	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6 ft.	4 in		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS-8	12/24	10	10	11		1			Dark (Black,Brown) sand, fine-med. grain with angular pebbles, moist.	
						2, 3			Lt. brown clay, with sand & silt, moist.	
SS-9	6/24	7	7	4		4, 5				
						6, 7, 8, 9, 10, 11				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City	SB-6

Date Drilled	Sheet	Drilling Method	Geologist
7-31-89	6 of 16	Hex-core	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6 ft.	4 in		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS10	12/12	10	4	3		1			Black Sand with slag.	
						2, 3				
SS11	6/12	5	8	5		4, 5			Brown sand, fine-med. grained with coarser pebbles, dry.	
						6, 7, 8, 9, 10, 11				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	SB-7

Date Drilled	Sheet	Drilling Method	Geologist
8-1-89	7 of 16	Hex-Core	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6 ft.	4 in.		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS-12	12/24	8	7	5		1			Dark Reddish-brown, medium grained sand with larger angular pebbles, also slag pebbles, no odor, unconsolidated, moist.	
						2, 3			Dark Brown sand, fine-med. grained, no odor, with larger pebbles, moist.	
SS-13	6/24	3	2	3		4, 5			Grey sand, fine-grained, no odor, wet.	
						6, 7, 8, 9, 10, 11				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	SB-8

Date Drilled	Sheet	Drilling Method	Geologist
8-1-89	8 of 16	Hex-Core	T. Ramos

Surface Elevation | Top of Casing | Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6 ft.	4 in.		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS14	12/24	9	12	7		1			Same Dark Sand with slag pebbles.	
						2, 3			Black, fine-med. grained sand, with rounded pebbles, no odor, moist.	
SS15	12/24	4	3	3		4, 5			Same, increases in moisture.	
						6, 7, 8, 9, 10, 11				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	SB-9

Date Drilled	Sheet	Drilling Method	Geologist
8-1-89	9 of 16	Hex-Core	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6 ft.	4 in.		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS16	18/24	15	11	12		1			Parking lot, black sand, 6" grey sand, Zone reddish-brown.	
						2				
						3			Black, fine-med. grained, sand, no odor, moist.	
SS17	18/24	5	3	5		4				
						5				
						6				
						7				
						8				
						9				
						10				
						11				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

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Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	SB-10

Date Drilled	Sheet	Drilling Method	Geologist
8-1-89	10 of 16	Hex-Core	T. Ramos

Surface Elevation | Top of Casing | Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6 Ft.	4 in.		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS18	18/24	9	16	16		1			Black, fine-med. grained, sand, no odor, moist.	
		9	6	7		2, 3				
SS19	18/24					4, 5				
						6, 7, 8, 9, 10, 11				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

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Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	SB-11

Date Drilled	Sheet	Drilling Method	Geologist
8-1-89	11 of 16	Hex-Core	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6 Ft.	4 in.		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS20	18/24	8	10	7		1			Black, fine-med. grained, sand, no odor, moist.	
						2				
						3				
						4				
SS21		1	1	2		5			Black, fine-med. grained, sand, no odor, moist, with cinders.	
						6				
						7				
						8				
						9				
						10				
						11				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

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Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	SB-12

Date Drilled	Sheet	Drilling Method	Geologist
8-1-89	12 of 16	Hex-Core	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6 ft.	4 in.		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS22	18/24	6	6	6		1			Black, fine-med. grained, sand, no odor, moist, with cinders.	
						2, 3			Black, fine-med. grained, sand, no odor, moist.	
SS23	18/24	2	2	2		4, 5				
						6, 7, 8, 9, 10, 11			Grey, fine-grained, sand, wet, no odor.	

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

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Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	SB-13

Date Drilled	Sheet	Drilling Method	Geologist
8-1-89	13 of 16	Hex-Core	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6 ft.	4 in.		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS24	20/24	6	8	10		1			Black Sand, with Cinders, Brick material.	
						2				
						3			Black, fine-med. grained, sand, no odor, moist.	
						4				
SS25	18/24	4	3	4		5				
						6				
						7				
						8				
						9				
						10				
						11				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

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Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	SB-14

Date Drilled	Sheet 14 of 16	Drilling Method	Geologist
8-1-89		Hex-Core	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6 Ft.	4 in.		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS26	18/24	20	18	23		1			All Crushed stone, 6" yellow-brown sand, fine-grained, wet.	
						2				
						3			Yellow-brown sand, clay sand, black sand.	
						4				
SS27	18/24	27	42	25		5			Same, with white & green slag.	
						6				
						7				
						8				
						9				
						10				
						11				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

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Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	SB-15

Date Drilled	Sheet	Drilling Method	Geologist
8-9-89	15 of 16	Hex-Core	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6 Ft.	4 In.		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS28	18/24	4	4	5		1			Brownish, yellow sand, fine-med. grained, no odor, dry.	
						2			Dark brown sand, fine-med. grained, no odor, dry.	
						3				
						4				
SS29	18/24	4	7	13		5			Same as above, with cinders.	
						6				
						7				
						8				
						9				
						10				
						11				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

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Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	SB-16

Date Drilled	Sheet 16 of 16	Drilling Method	Geologist
8-1-89		Hex-Core	T. Ramos

Surface Elevation | Top of Casing | Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6 Ft.	4 in.		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS30	18/24	9	9	9		1			Black, fine-med. grained, sand, no odor, moist.	
						2, 3				
SS31	18/24	13	8	3		4, 5				
						6, 7, 8, 9, 10, 11			Black, fine-med. grained, sand, no odor, moist, with cinders.	

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

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Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	MW-1

Date Drilled	Sheet	Drilling Method	Geologist
8-3-89	1 of 7	Hollow Stem	D. Regalbuto

Surface Elevation | Top of Casing | Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
15'	8"	2" Sch 80 PVC	2" 304-SS 7-Slot

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
						5			Sand, black with silt, abundant cinder, slag cobbles & gravel, metal fragments.	
						10			/1" resembles pulverized brick.	
SS-1	24/24	2	1	2					Sand, fine-med. grained, gray, trace of clay. Silt in clay.	
									Sand, fine to very fine grained, gray, trace of silt.	
									Silt, clay-based on rig rate.	
						15			Sand, med. grained, very coarse, gray, saturated.	
SS-2		3	4	7					Silt, black organic, peat-like, damp.	
									Silt, dark brown, trace of sand, damp.	
						20			Set well at 15'.	

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

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Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	MW-2

Date Drilled	Sheet	Drilling Method	Geologist
8-3-89	2 of 7	Hollow Stem	D. Regalbuto

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
15'	8"	2" Sch 80 PVC	2" 304-SS 7-Slot

Soil Sample No.	Penetration & Recovery (inches)	Split Spoon Blow Counts 6" Intervals -- 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks
						5			Sand, Black with silt, gravel & cobbles (i.e. slag, metal, bricks)
						10			
SS-1	24/10	8	5	3					Wood, saturated, yellow to gray, fresh.
SS-2	24/16	3	5	4		15			Sand, gray, fine to coarse in beds 2-6", trace of clay, saturated, shell fragments (bivalves).
									TD @ 15'.
						20			
						25			
						30			

SS = Split Spoon
ST = Shelby Tube

Screened Interval
Bentonite and Sand Slurry
Bentonite Slurry w/ Tremie Hose
Cement Slurry w/ Tremie Hose
Sand Screen Pack
X Native Material Back-fill
Static Water Level
Shale Packer

dry granular bentonine.

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Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	MW-3

Date Drilled	Sheet	Drilling Method	Geologist
8-4-89	3 of 7	Hollow Stem	D. Regalbuto

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
13 Ft.	8 In.	2" Sch 80 PVC	2" 304-SS 7-Slot

Soil Sample No.	Penetration & Recovery (inches)	Split Spoon Blow Counts 6" Intervals -- 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks
									Foundry sand & slag, brick.
						5			Sand, tan to light gray with silt, trace of clay
								BEN.	
									Sand, dark gray to green in silt, clay, shell fragments.
						10			
SS-1	24/6	17	50+	7					Wood, SS-1 had hydrocarbon sheer, slag, odor in wood (creosote?).
SS-2	24/2	9	8	50+		15			Wood, yellow, tough, unweathered appearance.
									TD @ 13'. Spooned to 15'.
						20			
						25			
						30			

SS = Split Spoon
ST = Shelby Tube

Screened Interval
Bentonite and Sand Slurry
Bentonite Slurry w/ Tremie Hose
Cement Slurry w/ Tremie Hose
Sand Screen Pack
~~Filter Material~~ ~~Backfill~~ BENTONITE
Static Water Level
Shale Packer

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Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	MW-4

Date Drilled	Sheet	Drilling Method	Geologist
8-7-89	4 of 7	Hollow Stem	T. Ramos

Surface Elevation | Top of Casing | Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
10.5'	8"	2" Sch 80 PVC	2" 304-SS 7-Slot

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
						1, 2			Dark Brown sand, fine-med. grained, no odor, dry.	
						3, 4			Gray clay with silt, no odor, moist.	
						5, 6, 7		BENT.	Gray, sandy clay, no odor, moist.	
	18/24	5	7	9		8	▽		Dark gray silt and sand, fine-med. grained, no odor, very moist.	
						9, 10, 11			T.D. @ 10.5'	

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

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Soil Boring/Well Log

Project	Location	Boring No.
Howard and Howard	Amdura, Bay City, MI	MW-5

Date Drilled	Sheet	Drilling Method	Geologist
8-7-89	5 of 7	Hollow Stem	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
13 ft.	8 in.	2" Sch 80 pvc	2" 304-ss 7-slot

Soil Sample No.	Penetration & Recovery (inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
									Dark Black, fine-med. grained sand, no odor, moist.	
									Dark brown, fine to med. grained sand, no odor, wet.	
									Grey, fine grained sand, no odor, wet.	
						5			Brown sandy clay, moist no odor.	
									Brown clay with some silt and sand (10-20%), very dry, very hard, no odor.	
	18/24	15	15	20						
	18/24	10	9	13		10				
									light brown, sandy, silty zone, very wet.	
									T.D. @ 13'.	
						15				
						20				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

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Soil Boring/Well Log

Howard & Howard	Amdura, Bay City, MI	Boring No. MW-6

Date Drilled	Sheet	Drilling Method	Geologist
8-9-89	6 of 7	Hollow Stem	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
22'	4"	2" Sch 80 PVC	2" 304-SS 7-Slot

Soil Sample No.	Penetration & Recovery (inches)	Split Spoon Blow Counts 6" Intervals -- 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks
									Fill material.
						5			Brown clay with silt, no odor, dry.
						10			
						15			Blue clay, very little silt, hard, dry.
						20			
	18/24	18	20	21					T.D. @ 22'.
						25			
						30			

SS = Split Spoon
ST = Shelby Tube

Screened Interval
Bentonite and Sand Slurry
Bentonite Slurry w/ Tremie Hose
Cement Slurry w/ Tremie Hose
Sand Screen Pack
~~Native Material~~ ~~Back-fill~~ BENTONITE
Static Water Level
Shale Packer

MIDWEST WATER RESOURCE, INC.

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Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	MW-7

Date Drilled	Sheet	Drilling Method	Geologist
8-9-89	7 of 7	Hollow Stem	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
22'	4"	2" Sch 80 PVC	2" 304-SS 7-Slot

Soil Sample No.	Penetration & Recovery (inches)	Split Spoon Blow Counts 6" Intervals -- 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks
						5			Dark Brown Sand, fine-med. grained, no odor, dry.
									Gray sand, fine grained, very wet.
									Dark brown sand, fine-med. grained, no odor, dry.
	18/24	13	15	24		10			Brown clay, very hard & dry, little to no silt.
	18/24	23	30	35					
	18/24	25	21	31					
	18/24	11	15	30		15			Blue clay, very little silt, hard, dry.
	18/24	12	16	23					
	18/24	10	12	17		20			
	18/24	8	11	12					T.D. @ 22'
						25			
						30			

SS = Split Spoon

ST = Shelby Tube

Screened Interval

Bentonite and Sand Slurry

Bentonite Slurry w/ Tremie Hose

Cement Slurry w/ Tremie Hose

Sand Screen Pack

~~Native Material~~ ~~Back-fill~~ BENTONITE

Static Water Level

Shale Packer

APPENDIX B

HEAD-SPACE ANALYSIS OF SAMPLE BORINGS AT AMDURA

Soil Boring	Soil Sample No.	HNU-101 Reading
SB-1	SS-1	45
SB-2	SS-2	1
	SS-3	1
SB-3	SS-4	NDT
	SS-5	NDT
SB-4	SS-6	NDT
	SS-7	NDT
SB-5	SS-8	NDT
	SS-9	NDT
SB-6	SS-10	NDT
	SS-11	NDT
SB-7	SS-12	NDT
	SS-13	NDT
SB-8	SS-14	NDT
	SS-15	NDT
SB-9	SS-16	NDT
	SS-17	NDT
SB-10	SS-18	NDT
	SS-19	NDT
SB-11	SS-20	NDT
	SS-21	NDT
SB-12	SS-22	NDT
	SS-23	NDT
SB-13	SS-24	NDT
	SS-25	NDT
SB-14	SS-26	NDT
	SS-27	NDT
SB-15	SS-28	NDT
	SS-29	NDT
SB-16	SS-30	NDT
	SS-31	NDT

i. HNU readings are in parts per million (ppm).
ii. Non-dectectable

APPENDIX C

Fire & Environmental Consulting Laboratories, Inc

One East Complex 1451 East Lansing Dr., Suite 222 East Lansing, MI 48823 (517) 332-0167

RECEIVED
SEP 1 1989
MIDWEST WATER RESOURCE INCORPORATED

August 29, 1989
(Revised Report Replaces Report of August 24, 1989)

Midwest Water Resource
615 W. Shepard St.
P.O. Box 10
Charlotte, MI 48813

Attention: Mr. Joel Schaeffer

Analytical Laboratory Report

FECL #: 02894-89-E1-27

Samples analyzed by: M. Murshak, P. Roettger
Analyses requested by: Joel Schaeffer
PO#: Verbal

Samples collected by :
T. Ramos
Date/time samples submitted:
08-03-89 12:15 p.m.

Submitting company: Midwest Water Resource
615 W. Shepard, P.O. Box 10
Charlotte, MI 48813

Project description: Amdura Howard & Howard

Samples collected:

FECL #: 02894-89-E1
Tag: SB-1 3.5
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E2
Tag: SB-2 0.2
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E3
Tag: SB-2 4.6
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E4
Tag: SB-3 SS4
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E5
Tag: Sb-3 SS-5
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E6
Tag: SB-4 SS-6
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E7
Tag: SB-4 SS-7
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E8
Tag: SB-5 SS-8
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E9
Tag: SB-5 SS-9
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E10
Tag: SB-6 SS-10
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E11
Tag: SB-6 SS-11
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E12
Tag: SB-7 SS-12
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E13
Tag: SB-7 SS-13
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E14
Tag: SB-8 SS-14
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

FECL #: 02894-89-E15
Tag: SB-8 SS-15
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

FECL #: 02894-89-E16
Tag: SB-9 SS-16
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

FECL #: 02894-89-E17
Tag: SB-9 SS-17
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

FECL #: 02894-89-E18
Tag: SB-10 SS-18
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

FECL #: 02894-89-E19
Tag: SB-10 SS-19
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

FECL #: 02894-89-E20
Tag: SB-11 SS-20
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

FECL #: 02894-89-E21
Tag: SB-11 SS-21
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

FECL #: 02894-89-E22
Tag: SB-12 SS-22
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

FECL #: 02894-89-E23
Tag: SB-12 SS-23
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

FECL #: 02894-89-E24
Tag: SB-13 SS-24
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

FECL #: 02894-89-E25
Tag: SB-13 SS-25
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

FECL #: 02894-89-E26
Tag: SB-14 SS-26
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

FECL #: 02894-89-E27
Tag: SB-14 SS-27
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

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FECL #:	02894-89-E1		02894-89-E2		02894-89-E3	
Tag:	SB-1 3-5		SB-2 0-2		SB-2 4-6	
Purgeable Halocarbons						
Chloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichlorofluoromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Methylene chloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,2-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chloroform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,1-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Carbon tetrachloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloropropane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromodichloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
2-Chloroethylvinyl ether	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
cis-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Tetrachloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Dibromochloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromoform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2,2-Tetrachloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(m)-1,3-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(p)-1,4-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(o)-1,2-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Purgeable Aromatics						
Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Toluene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Ethyl Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
p,m-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
o-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg

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FECL #:	02894-89-E1		02894-89-E2		02894-89-E3	
Tag:	SB-1 3-5		SB-2 0-2		SB-2 4-6	
Priority Pollutant Metals						
Antimony	<0.5	mg/kg	0.7	mg/kg	<0.5	mg/kg
Arsenic	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Beryllium	<0.3	mg/kg	0.4	mg/kg	<0.3	mg/kg
Cadmium	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Chromium	7.1	mg/kg	3.3	mg/kg	5.9	mg/kg
Copper	23.8	mg/kg	49.6	mg/kg	145	mg/kg
Lead	56.2	mg/kg	60.6	mg/kg	35.5	mg/kg
Mercury	<0.10	mg/kg	<0.10	mg/kg	<0.10	mg/kg
Nickel	5.3	mg/kg	4.0	mg/kg	10.6	mg/kg
Selenium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Silver	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Thallium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Zinc	54.7	mg/kg	74.4	mg/kg	57.0	mg/kg
Solids						
Total Solids	94.0	%	94.1	%	86.7	%

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FECL #:	02894-89-E4		02894-89-E5		02894-89-E6	
Tag:	SB-3 SS-4		SB-3 SS-5		SB-4 SS-6	
Purgeable Halocarbons						
Chloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichlorofluoromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Methylene chloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,2-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chloroform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,1-Trichloroethane	0.14	mg/kg	0.21	mg/kg	0.21	mg/kg
Carbon tetrachloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloropropane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromodichloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
2-Chloroethylvinyl ether	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
cis-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Tetrachloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Dibromochloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromoform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2,2-Tetrachloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(m)-1,3-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(p)-1,4-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(o)-1,2-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Purgeable Aromatics						
Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Toluene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Ethyl Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
p,m-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
o-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg

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FECL #:	02894-89-E4		02894-89-E5		02894-89-E6	
Tag:	SB-3 SS-4		SB-3 SS-5		SB-4 SS-6	
Priority Pollutant Metals						
Antimony	<0.5	mg/kg	<0.5	mg/kg	<0.5	mg/kg
Arsenic	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Beryllium	<0.3	mg/kg	0.5	mg/kg	0.4	mg/kg
Cadmium	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Chromium	6.3	mg/kg	7.6	mg/kg	9.0	mg/kg
Copper	39.7	mg/kg	40.6	mg/kg	42.8	mg/kg
Lead	58.4	mg/kg	54.1	mg/kg	53.2	mg/kg
Mercury	<0.10	mg/kg	<0.10	mg/kg	<0.10	mg/kg
Nickel	6.1	mg/kg	8.0	mg/kg	8.2	mg/kg
Selenium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Silver	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Thallium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Zinc	85.0	mg/kg	90.7	mg/kg	86.5	mg/kg
Solids						
Total Solids	86.0	%	95.0	%	92.2	%

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FECL #:	02894-89-E7		02894-89-E8		02894-89-E9	
Tag:	SB-4 SS-7		SB-5 SS-8		SB-5 SS-9	
Purgeable Halocarbons						
Chloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichlorofluoromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Methylene chloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,2-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chloroform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,1-Trichloroethane	0.20	mg/kg	0.27	mg/kg	0.18	mg/kg
Carbon tetrachloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloropropane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromodichloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
2-Chloroethylvinyl ether	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
cis-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Tetrachloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Dibromochloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromoform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2,2-Tetrachloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(m)-1,3-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(p)-1,4-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(o)-1,2-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Purgeable Aromatics						
Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Toluene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Ethyl Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
p,m-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
o-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg

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FECL #:	02894-89-E7		02894-89-E8		02894-89-E9	
Tag:	SB-4 SS-7		SB-5 SS-8		SB-5 SS-9	
Priority Pollutant Metals						
Antimony	<0.5	mg/kg	<0.5	mg/kg	<0.5	mg/kg
Arsenic	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Beryllium	<0.3	mg/kg	<0.3	mg/kg	0.7	mg/kg
Cadmium	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Chromium	1.2	mg/kg	5.0	mg/kg	7.4	mg/kg
Copper	6.6	mg/kg	50.0	mg/kg	28.6	mg/kg
Lead	15.2	mg/kg	50.5	mg/kg	38.9	mg/kg
Mercury	<0.10	mg/kg	<0.10	mg/kg	<0.10	mg/kg
Nickel	2.4	mg/kg	6.6	mg/kg	12.1	mg/kg
Selenium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Silver	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Thallium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Zinc	63.0	mg/kg	79.2	mg/kg	145	mg/kg
Solids						
Total Solids	57.5	%	91.0	%	85.0	%

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FECL #:	02894-89-E10		02894-89-E11		02894-89-E12	
Tag:	SB-6 SS-10		SB-6 SS-11		SB-7 SS-12	
Purgeable Halocarbons						
Chloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichlorofluoromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Methylene chloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,2-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chloroform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,1-Trichloroethane	0.13	mg/kg	0.15	mg/kg	0.09	mg/kg
Carbon tetrachloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloropropane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromodichloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
2-Chloroethylvinyl ether	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
cis-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Tetrachloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Dibromochloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromoform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2,2-Tetrachloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(m)-1,3-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(p)-1,4-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(o)-1,2-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Purgeable Aromatics						
Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Toluene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Ethyl Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
p,m-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
o-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg

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FECL #:	02894-89-E10		02894-89-E11		02894-89-E12	
Tag:	SB-6 SS-10		SB-6 SS-11		SB-7 SS-12	
Priority Pollutant Metals						
Antimony	<0.5	mg/kg	<0.5	mg/kg	1.3	mg/kg
Arsenic	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Beryllium	<0.3	mg/kg	1.0	mg/kg	<0.3	mg/kg
Cadmium	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Chromium	13.4	mg/kg	61.5	mg/kg	178	mg/kg
Copper	28.3	mg/kg	39.8	mg/kg	438	mg/kg
Lead	10.9	mg/kg	27.0	mg/kg	110	mg/kg
Mercury	<0.10	mg/kg	<0.10	mg/kg	<0.10	mg/kg
Nickel	15.4	mg/kg	27.5	mg/kg	126	mg/kg
Selenium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Silver	<0.3	mg/kg	0.3	mg/kg	1.2	mg/kg
Thallium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Zinc	46.0	mg/kg	109	mg/kg	219	mg/kg
Solids						
Total Solids	96.0	%	93.0	%	96.2	%

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FECL #:	02894-89-E13		02894-89-E14		02894-89-E15	
Tag:	SB-7 SS-13		SB-8 SS-14		SB-8 SS-15	
Purgeable Halocarbons						
Chloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichlorofluoromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Methylene chloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,2-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chloroform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,1-Trichloroethane	0.11	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Carbon tetrachloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloropropane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromodichloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
2-Chloroethylvinyl ether	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
cis-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Tetrachloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Dibromochloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromoform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2,2-Tetrachloroethane	<0.01	mg/kg	0.03	mg/kg	<0.01	mg/kg
(m)-1,3-Dichlorobenzene	<0.01	mg/kg	0.08	mg/kg	<0.01	mg/kg
(p)-1,4-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(o)-1,2-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Purgeable Aromatics						
Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Toluene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Ethyl Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
p,m-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
o-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg

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FECL #:	02894-89-E13		02894-89-E14		02894-89-E15	
Tag:	SB-7 SS-13		SB-8 SS-14		SB-8 SS-15	
Priority Pollutant Metals						
Antimony	4.2	mg/kg	<0.5	mg/kg	<0.5	mg/kg
Arsenic	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Beryllium	0.4	mg/kg	0.7	mg/kg	<0.3	mg/kg
Cadmium	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Chromium	23.5	mg/kg	39.4	mg/kg	5.9	mg/kg
Copper	930	mg/kg	109	mg/kg	32.4	mg/kg
Lead	388	mg/kg	35.3	mg/kg	7.8	mg/kg
Mercury	<0.10	mg/kg	<0.10	mg/kg	<0.10	mg/kg
Nickel	58.5	mg/kg	24.6	mg/kg	7.0	mg/kg
Selenium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Silver	<1.0	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Thallium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Zinc	462	mg/kg	76.2	mg/kg	25.0	mg/kg
Solids						
Total Solids	90.0	%	96.0	%	94.0	%

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FECL #:	02894-89-E16		02894-89-E17		02894-89-E18	
Tag:	SB-9 SS-16		SB-9 SS-17		SB-10 SS-18	
Purgeable Halocarbons						
Chloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichlorofluoromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Methylene chloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,2-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chloroform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,1-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Carbon tetrachloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloropropane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromodichloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
2-Chloroethylvinyl ether	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
cis-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Tetrachloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Dibromochloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromoform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2,2-Tetrachloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(m)-1,3-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(p)-1,4-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(o)-1,2-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Purgeable Aromatics						
Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Toluene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Ethyl Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
p,m-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
o-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg

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FECL #:	02894-89-E16		02894-89-E17		02894-89-E18	
Tag:	SB-9 SS-16		SB-9 SS-17		SB-10 SS-18	
Priority Pollutant Metals						
Antimony	<0.5	mg/kg	<0.5	mg/kg	<0.5	mg/kg
Arsenic	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Beryllium	<0.3	mg/kg	1.5	mg/kg	<1.0	mg/kg
Cadmium	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Chromium	10.7	mg/kg	32.1	mg/kg	4.9	mg/kg
Copper	55.4	mg/kg	166	mg/kg	17.2	mg/kg
Lead	19.5	mg/kg	38.1	mg/kg	14.3	mg/kg
Mercury	<0.10	mg/kg	<0.10	mg/kg	<0.10	mg/kg
Nickel	15.1	mg/kg	31.6	mg/kg	3.0	mg/kg
Selenium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Silver	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Thallium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Zinc	36.9	mg/kg	58.5	mg/kg	18.0	mg/kg
Solids						
Total Solids	89.2	%	93.3	%	95.0	%

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FECL #:	02894-89-E19		02894-89-E20		02894-89-E21	
Tag:	SB-10 SS-19		SB-11 SS-20		SB-11 SS-21	
Purgeable Halocarbons						
Chloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichlorofluoromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Methylene chloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,2-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chloroform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,1-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Carbon tetrachloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloropropane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromodichloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
2-Chloroethylvinyl ether	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
cis-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Tetrachloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Dibromochloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromoform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2,2-Tetrachloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(m)-1,3-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(p)-1,4-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(o)-1,2-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Purgeable Aromatics						
Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Toluene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Ethyl Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
p,m-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
o-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg

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FECL #:	02894-89-E19		02894-89-E20		02894-89-E21	
Tag:	SB-10 SS-19		SB-11 SS-20		SB-11 SS-21	
Priority Pollutant Metals						
Antimony	0.7	mg/kg	<0.5	mg/kg	<0.5	mg/kg
Arsenic	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Beryllium	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Cadmium	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Chromium	4.9	mg/kg	2.0	mg/kg	2.8	mg/kg
Copper	62.2	mg/kg	12.4	mg/kg	13.4	mg/kg
Lead	38.8	mg/kg	4.7	mg/kg	7.1	mg/kg
Mercury	<0.10	mg/kg	<0.10	mg/kg	<0.10	mg/kg
Nickel	4.4	mg/kg	1.0	mg/kg	2.8	mg/kg
Selenium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Silver	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Thallium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Zinc	45.9	mg/kg	11.1	mg/kg	12.1	mg/kg
Solids						
Total Solids	89.7	%	92.5	%	95.5	%

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FECL #:	02894-89-E22		02894-89-E23		02894-89-E24	
Tag:	SB-12 SS-22		SB-12 SS-23		SB-13 SS-24	
Purgeable Halocarbons						
Chloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichlorofluoromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Methylene chloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,2-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chloroform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,1-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Carbon tetrachloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloropropane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromodichloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
2-Chloroethylvinyl ether	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
cis-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Tetrachloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Dibromochloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromoform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2,2-Tetrachloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(m)-1,3-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(p)-1,4-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(o)-1,2-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Purgeable Aromatics						
Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Toluene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Ethyl Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
p,m-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
o-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg

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Tag:	SB-12 SS-22		SB-12 SS-23		SB-13 SS-24	
Priority Pollutant Metals						
Antimony	1.6	mg/kg	<0.5	mg/kg	37.5	mg/kg
Arsenic	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Beryllium	<0.3	mg/kg	<0.3	mg/kg	0.8	mg/kg
Cadmium	<0.3	mg/kg	<0.3	mg/kg	0.8	mg/kg
Chromium	70.1	mg/kg	5.2	mg/kg	13.6	mg/kg
Copper	176	mg/kg	37.7	mg/kg	22,300	mg/kg
Lead	30.6	mg/kg	13.4	mg/kg	1,580	mg/kg
Mercury	<0.10	mg/kg	<0.10	mg/kg	<0.10	mg/kg
Nickel	106	mg/kg	8.5	mg/kg	26.3	mg/kg
Selenium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Silver	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Thallium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Zinc	12.1	mg/kg	27.7	mg/kg	15.5	mg/kg
Solids						
Total Solids	95.6	%	92.1	%	93.8	%

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FECL #:	02894-89-E25		02894-89-E26		02894-89-E27	
Tag:	SB-13 SS-25		SB-14 SS-26		SB-14 SS-27	
Purgeable Halocarbons						
Chloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichlorofluoromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Methylene chloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,2-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chloroform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,1-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Carbon tetrachloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloropropane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromodichloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
2-Chloroethylvinyl ether	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
cis-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,3-Dichloropropen	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Tetrachloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Dibromochloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromoform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2,2-Tetrachloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(m)-1,3-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	0.04	mg/kg
(p)-1,4-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(o)-1,2-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Purgeable Aromatics						
Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Toluene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Ethyl Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
p,m-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
o-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg

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FECL #:	02894-89-E25		02894-89-E26		02894-89-E27	
Tag:	SB-13 SS-25		SB-14 SS-26		SB-14 SS-27	
Priority Pollutant Metals						
Antimony	0.8	mg/kg	<0.5	mg/kg	4.4	mg/kg
Arsenic	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Beryllium	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Cadmium	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Chromium	10.0	mg/kg	2.5	mg/kg	146	mg/kg
Copper	102	mg/kg	11.3	mg/kg	226	mg/kg
Lead	14.6	mg/kg	6.4	mg/kg	29.0	mg/kg
Mercury	<0.10	mg/kg	<0.10	mg/kg	<0.10	mg/kg
Nickel	62.9	mg/kg	11.9	mg/kg	135	mg/kg
Selenium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Silver	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Thallium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Zinc	20.6	mg/kg	10.0	mg/kg	52.7	mg/kg
Solids						
Total Solids	90.8	%	90.5	%	95.8	%

Violetta F. Murshak
Laboratory Manager

VFM/ab

Fire & Environmental
Consulting Laboratories, Inc.

One East Complex 1451 East Lansing Dr., Suite 222 East Lansing, MI 48823 (517) 332-0167

September 5, 1989
(Revised Report replaces report of August 25, 1989)

Midwest Water Resource
615 W. Shepard St.
P.O. Box 10
Charlotte, MI 48813

Attention: Mr. Joel Schaeffer

Analytical Laboratory Report

FECL #: 02924-89-E1,3,5
02925-89-E1-6
Samples analyzed by: V. Murshak
Analyses requested by: Joel Schaeffer
PO#: Verbal

Samples collected by :
Unknown
Date/time samples submitted:
08-10-89 2:00 p.m.

Submitting company: Midwest Water Resource
615 W. Shepard, P.O. Box 10
Charlotte, MI 48813

Project description: Amdura Howard & Howard

Samples collected:

FECL #: 02924-89-E1
Tag: MW-6 8-10
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

FECL #: 02924-89-E5
Tag: Pit
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-10-89

FECL #: 02924-89-E3
Tag: MW-7 7.5-9.5
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

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FECL #: 02925-89-E1
Tag: SB-15 SS-28
Container: Glass Vial/Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

FECL #: 02925-89-E2
Tag: SB-15 SS-29
Container: Glass Vial/Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

FECL #: 02925-89-E3
Tag: SB-16 SS-30
Container: Glass Vial/Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

FECL #: 02925-89-E4
Tag: SB-16 SS-31
Container: Glass Vial/Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

FECL #: 02925-89-E5
Tag: Subsurface 1S
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

FECL #: 02925-89-E6
Tag: Subsurface 2N
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

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FECL #:	02924-89-E1		02924-89-E3	
Tag:	MW-6 8-10		MW-7 7.5-9.5	
Purgeable Halocarbons				
Chloroethane	<0.01	mg/kg	<0.01	mg/kg
Trichlorofluoromethane	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg
Methylene chloride	<0.01	mg/kg	<0.01	mg/kg
trans-1,2-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg
Chloroform	<0.01	mg/kg	<0.01	mg/kg
1,1,1-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg
Carbon tetrachloride	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg
Trichloroethene	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloropropane	<0.01	mg/kg	<0.01	mg/kg
Bromodichloromethane	<0.01	mg/kg	<0.01	mg/kg
2-Chloroethylvinyl ether	<0.01	mg/kg	<0.01	mg/kg
cis-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg
trans-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg
1,1,2-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg
Tetrachloroethene	<0.01	mg/kg	<0.01	mg/kg
Dibromochloromethane	<0.01	mg/kg	<0.01	mg/kg
Chlorobenzene	<0.01	mg/kg	<0.01	mg/kg
Bromoform	<0.01	mg/kg	<0.01	mg/kg
1,1,2,2-Tetrachloroethane	<0.01	mg/kg	<0.01	mg/kg
(m)-1,3-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg
(p)-1,4-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg
(o)-1,2-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg
Purgeable Aromatics				
Benzene	<0.01	mg/kg	<0.01	mg/kg
Toluene	<0.01	mg/kg	<0.01	mg/kg
Ethyl Benzene	<0.01	mg/kg	<0.01	mg/kg
p,m-Xylene	<0.01	mg/kg	<0.01	mg/kg
o-Xylene	<0.01	mg/kg	<0.01	mg/kg

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FECL #:	02924-89-E1		02924-89-E3	
Tag:	MW-6 8-10		MW-7 7.5-9.5	
Metals				
Antimony	<0.8	mg/kg	<0.8	mg/kg
Arsenic	<1.3	mg/kg	<1.3	mg/kg
Beryllium	<0.3	mg/kg	<0.3	mg/kg
Cadmium	<0.3	mg/kg	<0.3	mg/kg
Chromium	5.5	mg/kg	8.2	mg/kg
Copper	5.5	mg/kg	4.8	mg/kg
Lead	<1.0	mg/kg	<1.0	mg/kg
Mercury	<0.05	mg/kg	<0.05	mg/kg
Nickel	4.2	mg/kg	4.1	mg/kg
Selenium	<1.3	mg/kg	<1.3	mg/kg
Silver	<0.3	mg/kg	<0.3	mg/kg
Thallium	<1.0	mg/kg	<1.0	mg/kg
Zinc	15.0	mg/kg	17.6	mg/kg

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FECL #:	2947-89-E5		2947-89-E6	
Tag:	MW-5		MW-6	
Purgeable Halocarbons				
Chloroethane	<0.01	mg/l	<0.01	mg/l
Trichlorofluoromethane	<0.01	mg/l	<0.01	mg/l
1,1-Dichloroethene	<0.01	mg/l	<0.01	mg/l
Methylene chloride	<0.01	mg/l	<0.01	mg/l
trans-1,2-Dichloroethene	<0.01	mg/l	<0.01	mg/l
1.1-Dichloroethane	<0.01	mg/l	<0.01	mg/l
Chloroform	<0.01	mg/l	<0.01	mg/l
1,1,1-Trichloroethane	<0.01	mg/l	<0.01	mg/l
Carbon tetrachloride	<0.01	mg/l	<0.01	mg/l
1,2-Dichloroethane	<0.01	mg/l	<0.01	mg/l
Trichloroethene	<0.01	mg/l	<0.01	mg/l
1,2-Dichloropropane	<0.01	mg/l	<0.01	mg/l
Bromodichloromethane	<0.01	mg/l	<0.01	mg/l
2-Chloroethylvinyl ether	<0.01	mg/l	<0.01	mg/l
cis-1,3-Dichloropropene	<0.01	mg/l	<0.01	mg/l
trans-1,3-Dichloropropene	<0.01	mg/l	<0.01	mg/l
1,1,2-Trichloroethane	<0.01	mg/l	<0.01	mg/l
Tetrachloroethene	<0.01	mg/l	<0.01	mg/l
Dibromochloromethane	<0.01	mg/l	<0.01	mg/l
Chlorobenzene	<0.01	mg/l	<0.01	mg/l
Bromoform	<0.01	mg/l	<0.01	mg/l
1,1,2,2-Tetrachloroethane	<0.01	mg/l	<0.01	mg/l
(m)-1,3-Dichlorobenzene	<0.01	mg/l	<0.01	mg/l
(p)-1,4-Dichlorobenzene	<0.01	mg/l	<0.01	mg/l
(o)-1,2-Dichlorobenzene	<0.01	mg/l	<0.01	mg/l
Purgeable Aromatics				
Benzene	<0.01	mg/l	<0.01	mg/l
Toluene	<0.01	mg/l	<0.01	mg/l
Ethyl Benzene	<0.01	mg/l	<0.01	mg/l
p,m-Xylene	<0.01	mg/l	<0.01	mg/l
o-Xylene	<0.01	mg/l	<0.01	mg/l

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FECL #:	02924-89-E5		02925-89-E1	
Tag:	Pit		SB-15 SS-28	
Metals				
Antimony	<0.03	mg/l	<0.5	mg/kg
Arsenic	<0.05	mg/l	<1.0	mg/kg
Beryllium	<0.01	mg/l	<0.3	mg/kg
Cadmium	<0.01	mg/l	<0.3	mg/kg
Chromium	<0.02	mg/l	24.2	mg/kg
Copper	<0.02	mg/l	30.0	mg/kg
Lead	<0.04	mg/l	57.0	mg/kg
Mercury	<0.005	mg/l	<0.02	mg/kg
Nickel	<0.02	mg/l	18.5	mg/kg
Selenium	<0.05	mg/l	<1.0	mg/kg
Silver	<0.01	mg/l	<0.3	mg/kg
Thallium	<0.04	mg/l	<0.5	mg/kg
Zinc	<0.02	mg/l	336	mg/kg

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FECL #:	02925-89-E2		02925-89-E3		02925-89-E4	
Tag:	SB-15 SS-29		SB-16 SS-30		SB-16 SS-31	
Purgeable Halocarbons						
Chloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichlorofluoromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Methylene chloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,2-Dichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chloroform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,1-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Carbon tetrachloride	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Trichloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,2-Dichloropropane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromodichloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
2-Chloroethylvinyl ether	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
cis-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
trans-1,3-Dichloropropene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2-Trichloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Tetrachloroethene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Dibromochloromethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Chlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Bromoform	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
1,1,2,2-Tetrachloroethane	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(m)-1,3-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(p)-1,4-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
(o)-1,2-Dichlorobenzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Purgeable Aromatics						
Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Toluene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
Ethyl Benzene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
p,m-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg
o-Xylene	<0.01	mg/kg	<0.01	mg/kg	<0.01	mg/kg

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FECL #:	02925-89-E2		02925-89-E3		02925-89-E4	
Tag:	SB-15 SS-29		SB-16 SS-30		SB-16 SS-31	
Metals						
Antimony	<0.5	mg/kg	<0.5	mg/kg	<0.5	mg/kg
Arsenic	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Beryllium	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Cadmium	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Chromium	12.9	mg/kg	9.8	mg/kg	9.8	mg/kg
Copper	46.9	mg/kg	314	mg/kg	25.0	mg/kg
Lead	22.8	mg/kg	61.0	mg/kg	14.0	mg/kg
Mercury	<0.02	mg/kg	<0.02	mg/kg	<0.02	mg/kg
Nickel	20.4	mg/kg	6.0	mg/kg	11.1	mg/kg
Selenium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Silver	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Thallium	<0.5	mg/kg	<0.5	mg/kg	<0.5	mg/kg
Zinc	25.8	mg/kg	30.0	mg/kg	21.0	mg/kg

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FECL #:	02925-89-E5		02925-89-E6	
Tag:	Subsurface 1S		Subsurface 2N	
Metals				
Antimony	<0.5	mg/kg	<0.5	mg/kg
Arsenic	<1.0	mg/kg	<1.0	mg/kg
Beryllium	<0.3	mg/kg	<0.3	mg/kg
Cadmium	<0.3	mg/kg	<0.3	mg/kg
Chromium	7.3	mg/kg	41.7	mg/kg
Copper	22.1	mg/kg	78.2	mg/kg
Lead	39.2	mg/kg	270	mg/kg
Mercury	<0.02	mg/kg	<0.02	mg/kg
Nickel	6.4	mg/kg	18.0	mg/kg
Selenium	<1.0	mg/kg	<1.0	mg/kg
Silver	<0.3	mg/kg	<0.3	mg/kg
Thallium	<1.0	mg/kg	<1.0	mg/kg
Zinc	221	mg/kg	698	mg/kg

V. F. Murshak

Violetta F. Murshak
Laboratory Manager

VFM/ab

APPENDIX D

Fire & Environmental Consulting Laboratories, Inc.

One East Complex 1451 East Lansing Dr., Suite 222 East Lansing, MI 48823 (517) 332-0167

August 22, 1989

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Midwest Water Resource
615 W. Shepard St.
P.O. Box 10
Charlotte, MI 48813

Attention: Mr. Joel Schaeffer

Analytical Laboratory Report

FECL #: 2947-89-E1-7

Samples analyzed by:
Analyses requested by: Joel Schaeffer
PO#: Verbal

Samples collected by :
Tom Ramos
Date/time samples submitted:
08-15-89 2:30 p.m.

Submitting company: Midwest Water Resource
615 W. Shepard, P.O. Box 10
Charlotte, MI 48813

Project description: Howard & Howard

Samples collected:

FECL #: 2947-89-E1
Tag: MW-1
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

FECL #: 2947-89-E2
Tag: MW-2
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

FECL #: 2947-89-E3
Tag: MW-3
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08/14/89

FECL #: 2947-89-E4
Tag: MW-4
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08/14/89

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FECL #: 2947-89-E5
Tag: MW-5
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

FECL #: 2947-89-E6
Tag: MW-6
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

FECL #: 2947-89-E7
Tag: MW-7
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

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FECL #:	2947-89-E1		2947-89-E2	
Tag:	MW-1		MW-2	
Purgeable Halocarbons				
Chloroethane	<0.01	mg/l	<0.01	mg/l
Trichlorofluoromethane	<0.01	mg/l	<0.01	mg/l
1,1-Dichloroethene	<0.01	mg/l	<0.01	mg/l
Methylene chloride	<0.01	mg/l	<0.01	mg/l
trans-1,2-Dichloroethene	<0.01	mg/l	<0.01	mg/l
1.1-Dichloroethane	<0.01	mg/l	<0.01	mg/l
Chloroform	<0.01	mg/l	<0.01	mg/l
1,1,1-Trichloroethane	<0.01	mg/l	<0.01	mg/l
Carbon tetrachloride	<0.01	mg/l	<0.01	mg/l
1,2-Dichloroethane	<0.01	mg/l	<0.01	mg/l
Trichloroethene	<0.01	mg/l	<0.01	mg/l
1,2-Dichloropropane	<0.01	mg/l	<0.01	mg/l
Bromodichloromethane	<0.01	mg/l	<0.01	mg/l
2-Chloroethylvinyl ether	<0.01	mg/l	<0.01	mg/l
cis-1,3-Dichloropropene	<0.01	mg/l	<0.01	mg/l
trans-1,3-Dichloropropene	<0.01	mg/l	<0.01	mg/l
1,1,2-Trichloroethane	<0.01	mg/l	<0.01	mg/l
Tetrachloroethene	<0.01	mg/l	<0.01	mg/l
Dibromochloromethane	<0.01	mg/l	<0.01	mg/l
Chlorobenzene	<0.01	mg/l	<0.01	mg/l
Bromoform	<0.01	mg/l	<0.01	mg/l
1,1,2,2-Tetrachloroethane	<0.01	mg/l	<0.01	mg/l
(m)-1,3-Dichlorobenzene	<0.01	mg/l	<0.01	mg/l
(p)-1,4-Dichlorobenzene	<0.01	mg/l	<0.01	mg/l
(o)-1,2-Dichlorobenzene	<0.01	mg/l	<0.01	mg/l
Purgeable Aromatics				
Benzene	<0.01	mg/l	<0.01	mg/l
Toluene	<0.01	mg/l	<0.01	mg/l
Ethyl Benzene	<0.01	mg/l	<0.01	mg/l
p,m-Xylene	<0.01	mg/l	<0.01	mg/l
o-Xylene	<0.01	mg/l	<0.01	mg/l

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FECL #:	2947-89-E3		2947-89-E4	
Tag:	MW-3		MW-4	
Purgeable Halocarbons				
Chloroethane	0.02	mg/l	<0.01	mg/l
Trichlorofluoromethane	<0.01	mg/l	<0.01	mg/l
1,1-Dichloroethene	<0.01	mg/l	<0.01	mg/l
Methylene chloride	<0.01	mg/l	<0.01	mg/l
trans-1,2-Dichloroethene	<0.01	mg/l	<0.01	mg/l
1.1-Dichloroethane	<0.01	mg/l	<0.01	mg/l
Chloroform	<0.01	mg/l	<0.01	mg/l
1,1,1-Trichloroethane	<0.01	mg/l	<0.01	mg/l
Carbon tetrachloride	<0.01	mg/l	<0.01	mg/l
1,2-Dichloroethane	<0.01	mg/l	<0.01	mg/l
Trichloroethene	<0.01	mg/l	<0.01	mg/l
1,2-Dichloropropane	<0.01	mg/l	<0.01	mg/l
Bromodichloromethane	<0.01	mg/l	<0.01	mg/l
2-Chloroethylvinyl ether	<0.01	mg/l	<0.01	mg/l
cis-1,3-Dichloropropene	<0.01	mg/l	<0.01	mg/l
trans-1,3-Dichloropropene	<0.01	mg/l	<0.01	mg/l
1,1,2-Trichloroethane	<0.01	mg/l	<0.01	mg/l
Tetrachloroethene	<0.01	mg/l	<0.01	mg/l
Dibromochloromethane	<0.01	mg/l	<0.01	mg/l
Chlorobenzene	<0.01	mg/l	<0.01	mg/l
Bromoform	<0.01	mg/l	<0.01	mg/l
1,1,2,2-Tetrachloroethane	<0.01	mg/l	<0.01	mg/l
(m)-1,3-Dichlorobenzene	<0.01	mg/l	<0.01	mg/l
(p)-1,4-Dichlorobenzene	<0.01	mg/l	<0.01	mg/l
(o)-1,2-Dichlorobenzene	<0.01	mg/l	<0.01	mg/l
Purgeable Aromatics				
Benzene	<0.01	mg/l	<0.01	mg/l
Toluene	<0.01	mg/l	<0.01	mg/l
Ethyl Benzene	<0.01	mg/l	<0.01	mg/l
p,m-Xylene	<0.01	mg/l	<0.01	mg/l
o-Xylene	<0.01	mg/l	<0.01	mg/l

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FECL #:	2947-89-E5		2947-89-E6	
Tag:	MW-5		MW-6	
Purgeable Halocarbons				
Chloroethane	<0.01	mg/l	<0.01	mg/l
Trichlorofluoromethane	<0.01	mg/l	<0.01	mg/l
1,1-Dichloroethene	<0.01	mg/l	<0.01	mg/l
Methylene chloride	<0.01	mg/l	<0.01	mg/l
trans-1,2-Dichloroethene	<0.01	mg/l	<0.01	mg/l
1.1-Dichloroethane	<0.01	mg/l	<0.01	mg/l
Chloroform	<0.01	mg/l	<0.01	mg/l
1,1,1-Trichloroethane	<0.01	mg/l	<0.01	mg/l
Carbon tetrachloride	<0.01	mg/l	<0.01	mg/l
1,2-Dichloroethane	<0.01	mg/l	<0.01	mg/l
Trichloroethene	<0.01	mg/l	<0.01	mg/l
1,2-Dichloropropane	<0.01	mg/l	<0.01	mg/l
Bromodichloromethane	<0.01	mg/l	<0.01	mg/l
2-Chloroethylvinyl ether	<0.01	mg/l	<0.01	mg/l
cis-1,3-Dichloropropene	<0.01	mg/l	<0.01	mg/l
trans-1,3-Dichloropropene	<0.01	mg/l	<0.01	mg/l
1,1,2-Trichloroethane	<0.01	mg/l	<0.01	mg/l
Tetrachloroethene	<0.01	mg/l	<0.01	mg/l
Dibromochloromethane	<0.01	mg/l	<0.01	mg/l
Chlorobenzene	<0.01	mg/l	<0.01	mg/l
Bromoform	<0.01	mg/l	<0.01	mg/l
1,1,2,2-Tetrachloroethane	<0.01	mg/l	<0.01	mg/l
(m)-1,3-Dichlorobenzene	<0.01	mg/l	<0.01	mg/l
(p)-1,4-Dichlorobenzene	<0.01	mg/l	<0.01	mg/l
(o)-1,2-Dichlorobenzene	<0.01	mg/l	<0.01	mg/l
Purgeable Aromatics				
Benzene	<0.01	mg/l	<0.01	mg/l
Toluene	<0.01	mg/l	<0.01	mg/l
Ethyl Benzene	<0.01	mg/l	<0.01	mg/l
p,m-Xylene	<0.01	mg/l	<0.01	mg/l
o-Xylene	<0.01	mg/l	<0.01	mg/l

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Tag:	MW-7

Purgeable Halocarbons

Chloroethane	<0.01	mg/l
Trichlorofluoromethane	<0.01	mg/l
1,1-Dichloroethene	<0.01	mg/l
Methylene chloride	<0.01	mg/l
trans-1,2-Dichloroethene	<0.01	mg/l
1.1-Dichloroethane	<0.01	mg/l
Chloroform	<0.01	mg/l
1,1,1-Trichloroethane	<0.01	mg/l
Carbon tetrachloride	<0.01	mg/l
1,2-Dichloroethane	<0.01	mg/l
Trichloroethene	<0.01	mg/l
1,2-Dichloropropane	<0.01	mg/l
Bromodichloromethane	<0.01	mg/l
2-Chloroethylvinyl ether	<0.01	mg/l
cis-1,3-Dichloropropene	<0.01	mg/l
trans-1,3-Dichloropropene	<0.01	mg/l
1,1,2-Trichloroethane	<0.01	mg/l
Tetrachloroethene	<0.01	mg/l
Dibromochloromethane	<0.01	mg/l
Chlorobenzene	<0.01	mg/l
Bromoform	<0.01	mg/l
1,1,2,2-Tetrachloroethane	<0.01	mg/l
(m)-1,3-Dichlorobenzene	<0.01	mg/l
(p)-1,4-Dichlorobenzene	<0.01	mg/l
(o)-1,2-Dichlorobenzene	<0.01	mg/l

Purgeable Aromatics

Benzene	<0.01	mg/l
Toluene	<0.01	mg/l
Ethyl Benzene	<0.01	mg/l
p,m-Xylene	<0.01	mg/l
o-Xylene	<0.01	mg/l

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V. F. Murshak

Violetta F. Murshak
Laboratory Manager

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Fire & Environmental Consulting Laboratories, Inc.

One East Complex 1451 East Lansing Dr., Suite 222 East Lansing, MI 48823 (517) 332-0167

September 5, 1989
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Midwest Water Resource
615 W. Shepard St.
P.O. Box 10
Charlotte, MI 48813

Attention: Mr. Joel Schaeffer

Analytical Laboratory Report

FECL #: 2947-89-E1-7

Samples analyzed by: P. Roettger
Analyses requested by: Joel Schaeffer
PO#: Verbal

Samples collected by :
Tom Ramos
Date/time samples submitted:
08-15-89 2:30 p.m.

Submitting company: Midwest Water Resource
615 W. Shepard, P.O. Box 10
Charlotte, MI 48813

Project description: Howard & Howard

Samples collected:

FECL #: 2947-89-E1
Tag: MW-1
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

FECL #: 2947-89-E2
Tag: MW-2
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

FECL #: 2947-89-E3
Tag: MW-3
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08/14/89

FECL #: 2947-89-E4
Tag: MW-4
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08/14/89

FECL #: 2947-89-E5
Tag: MW-5
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

FECL #: 2947-89-E6
Tag: MW-6
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

FECL #: 2947-89-E7
Tag: MW-7
Container: Glass Vial
Sample Type: Liquid
Preservation: None
Sampling date/time: 08-14-89

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FECL #:	2947-89-E1		2947-89-E2	
Tag:	MW-1		MW-2	
Priority Pollutant Metals				
Antimony	<0.05	mg/l	<0.05	mg/l
Arsenic	<0.05	mg/l	<0.05	mg/l
Beryllium	<0.01	mg/l	<0.01	mg/l
Cadmium	<0.01	mg/l	<0.01	mg/l
Chromium	<0.02	mg/l	<0.02	mg/l
Copper	<0.02	mg/l	<0.02	mg/l
Lead	<0.04	mg/l	<0.04	mg/l
Mercury	<0.005	mg/l	<0.005	mg/l
Nickel	0.04	mg/l	<0.02	mg/l
Selenium	<0.05	mg/l	<0.05	mg/l
Silver	<0.01	mg/l	<0.01	mg/l
Thallium	<0.05	mg/l	<0.05	mg/l
Zinc	0.06	mg/l	0.06	mg/l

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FECL #:	2947-89-E3		2947-89-E4	
Tag:	MW-3		MW-4	

Priority Pollutant Metals

Antimony	<0.05	mg/l	<0.05	mg/l
Arsenic	<0.05	mg/l	<0.05	mg/l
Beryllium	<0.01	mg/l	<0.01	mg/l
Cadmium	<0.01	mg/l	<0.01	mg/l
Chromium	<0.02	mg/l	<0.02	mg/l
Copper	<0.02	mg/l	<0.02	mg/l
Lead	<0.04	mg/l	<0.04	mg/l
Mercury	<0.005	mg/l	<0.005	mg/l
Nickel	<0.02	mg/l	<0.02	mg/l
Selenium	<0.05	mg/l	<0.05	mg/l
Silver	<0.01	mg/l	<0.01	mg/l
Thallium	<0.05	mg/l	<0.05	mg/l
Zinc	0.04	mg/l	0.02	mg/l

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FECL #:	2947-89-E5		2947-89-E6	
Tag:	MW-5		MW-6	
Priority Pollutant Metals				
Antimony	<0.05	mg/l	<0.05	mg/l
Arsenic	<0.05	mg/l	<0.05	mg/l
Beryllium	<0.01	mg/l	<0.01	mg/l
Cadmium	<0.01	mg/l	<0.01	mg/l
Chromium	<0.02	mg/l	<0.02	mg/l
Copper	<0.02	mg/l	<0.02	mg/l
Lead	<0.04	mg/l	<0.04	mg/l
Mercury	<0.005	mg/l	<0.005	mg/l
Nickel	0.06	mg/l	0.02	mg/l
Selenium	<0.05	mg/l	<0.05	mg/l
Silver	<0.01	mg/l	<0.01	mg/l
Thallium	<0.05	mg/l	<0.05	mg/l
Zinc	0.08	mg/l	0.05	mg/l

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FECL #:	**2947-89-E7**
Tag:	MW-7

Priority Pollutant Metals

Antimony	<0.05	mg/l
Arsenic	<0.05	mg/l
Beryllium	<0.01	mg/l
Cadmium	<0.01	mg/l
Chromium	<0.02	mg/l
Copper	<0.02	mg/l
Lead	<0.04	mg/l
Mercury	<0.005	mg/l
Nickel	0.07	mg/l
Selenium	<0.05	mg/l
Silver	<0.01	mg/l
Thallium	<0.05	mg/l
Zinc	0.03	mg/l

V. F. Murshak

Violetta F. Murshak
Laboratory Manager

VFM/ab

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FECL #:	02925-89-K2		02925-89-K3		02925-89-K4	
Tag:	SB-15 SS-29		SB-16 SS-30		SB-16 SS-31	
Metals						
Antimony	<0.5	mg/kg	<0.5	mg/kg	<0.5	mg/kg
Arsenic	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Beryllium	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Cadmium	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Chromium	12.9	mg/kg	9.8	mg/kg	9.8	mg/kg
Copper	46.9	mg/kg	314	mg/kg	25.0	mg/kg
Lead	22.8	mg/kg	61.0	mg/kg	14.0	mg/kg
Mercury	<0.02	mg/kg	<0.02	mg/kg	<0.02	mg/kg
Nickel	20.4	mg/kg	6.0	mg/kg	11.1	mg/kg
Selenium	<1.0	mg/kg	<1.0	mg/kg	<1.0	mg/kg
Silver	<0.3	mg/kg	<0.3	mg/kg	<0.3	mg/kg
Thallium	<0.5	mg/kg	<0.5	mg/kg	<0.5	mg/kg
Zinc	25.8	mg/kg	30.0	mg/kg	21.0	mg/kg

APPENDIX E

FECL #: 02925-89-E1
Tag: SB-15 SS-28
Container: Glass Vial/Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

FECL #: 02925-89-E2
Tag: SB-15 SS-29
Container: Glass Vial/Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

FECL #: 02925-89-E3
Tag: SB-16 SS-30
Container: Glass Vial/Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

FECL #: 02925-89-E4
Tag: SB-16 SS-31
Container: Glass Vial/Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

FECL #: 02925-89-E5
Tag: Subsurface 1S
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

FECL #: 02925-89-E6
Tag: Subsurface 2N
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-10-89

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FECL #:	02924-89-E5		02925-89-E1	
Tag:	Pit		SB-15 SS-28	
Purgeable Halocarbons				
Chloroethane	<0.01	mg/l	<0.01	mg/kg
Trichlorofluoromethane	<0.01	mg/l	<0.01	mg/kg
1,1-Dichloroethene	<0.01	mg/l	<0.01	mg/kg
Methylene chloride	<0.01	mg/l	<0.01	mg/kg
trans-1,2-Dichloroethene	<0.01	mg/l	<0.01	mg/kg
1,1-Dichloroethane	<0.01	mg/l	<0.01	mg/kg
Chloroform	<0.01	mg/l	<0.01	mg/kg
1,1,1-Trichloroethane	<0.01	mg/l	<0.01	mg/kg
Carbon tetrachloride	<0.01	mg/l	<0.01	mg/kg
1,2-Dichloroethane	<0.01	mg/l	<0.01	mg/kg
Trichloroethene	<0.01	mg/l	<0.01	mg/kg
1,2-Dichloropropane	<0.01	mg/l	<0.01	mg/kg
Bromodichloromethane	<0.01	mg/l	<0.01	mg/kg
2-Chloroethylvinyl ether	<0.01	mg/l	<0.01	mg/kg
cis-1,3-Dichloropropene	<0.01	mg/l	<0.01	mg/kg
trans-1,3-Dichloropropene	<0.01	mg/l	<0.01	mg/kg
1,1,2-Trichloroethane	<0.01	mg/l	<0.01	mg/kg
Tetrachloroethene	<0.01	mg/l	<0.01	mg/kg
Dibromochloromethane	<0.01	mg/l	<0.01	mg/kg
Chlorobenzene	<0.01	mg/l	<0.01	mg/kg
Bromoform	<0.01	mg/l	<0.01	mg/kg
1,1,2,2-Tetrachloroethane	<0.01	mg/l	<0.01	mg/kg
(m)-1,3-Dichlorobenzene	<0.01	mg/l	<0.01	mg/kg
(p)-1,4-Dichlorobenzene	<0.01	mg/l	<0.01	mg/kg
(o)-1,2-Dichlorobenzene	<0.01	mg/l	<0.01	mg/kg
Purgeable Aromatics				
Benzene	<0.01	mg/l	<0.01	mg/kg
Toluene	<0.01	mg/l	<0.01	mg/kg
Ethyl Benzene	<0.01	mg/l	<0.01	mg/kg
p,m-Xylene	<0.01	mg/l	<0.01	mg/kg
o-Xylene	<0.01	mg/l	<0.01	mg/kg

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FECL #:	02924-89-E5		02925-89-E1	
Tag:	Pit		SB-15 SS-28	
Metals				
Antimony	<0.03	mg/l	<0.5	mg/kg
Arsenic	<0.05	mg/l	<1.0	mg/kg
Beryllium	<0.01	mg/l	<0.3	mg/kg
Cadmium	<0.01	mg/l	<0.3	mg/kg
Chromium	<0.02	mg/l	24.2	mg/kg
Copper	<0.02	mg/l	30.0	mg/kg
Lead	<0.04	mg/l	57.0	mg/kg
Mercury	<0.005	mg/l	<0.02	mg/kg
Nickel	<0.02	mg/l	18.5	mg/kg
Selenium	<0.05	mg/l	<1.0	mg/kg
Silver	<0.01	mg/l	<0.3	mg/kg
Thallium	<0.04	mg/l	<0.5	mg/kg
Zinc	<0.02	mg/l	336	mg/kg

APPENDIX F

Fire & Environmental Consulting Laboratories, Inc

One East Complex 1451 East Lansing Dr., Suite 222 East Lansing, MI 48823 (517) 332-0167

September 5, 1989

Midwest Water Resource
615 W. Shepard St.
P.O. Box 10
Charlotte, MI 48813

Attention: Mr. Joel Schaeffer

Analytical Laboratory Report

FECL #: 02894-89-E12, 13, 24, 27

Samples analyzed by: P. Roettger
Analyses requested by: Joel Schaeffer
PO#: Verbal

Samples collected by :
T. Ramos
Date/time samples submitted:
08-03-89 12:15 p.m.

Submitting company: Midwest Water Resource
615 W. Shepard, P.O. Box 10
Charlotte, MI 48813

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Project description: Amdura Howard & Howard

Samples collected:

FECL #: 02894-89-E12
Tag: SB-7 SS-12
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E13
Tag: SB-7 SS-13
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 07-31-89

FECL #: 02894-89-E24
Tag: SB-13 SS-24
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

FECL #: 02894-89-E27
Tag: SB-14 SS-27
Container: Plastic
Sample Type: Soil
Preservation: None
Sampling date/time: 08-01-89

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FECL #:	2894-89-E12	2894-89-E13	2894-89-E24	2894-89-E27
Tag:	SB-7 SS-12	SB-7 SS-13	SB-13 SS-24	SB-14 SS-27
EP Toxicity				
% Solids	100 %	100 %	100 %	100 %
Sample Weight	50 g	50 g	50 g	50 g
Final Extract Volume	1000 ml	1000 ml	1000 ml	1000 ml
Final Extract pH	5.10	5.07	4.95	5.06
Chromium	<0.02 mg/l	———	———	———
Copper	———	———	5.64 mg/l	———
Lead	———	———	<0.04 mg/l	———
Nickel	———	———	———	0.10 mg/l
Zinc	———	2.12 mg/l	———	———

V. F. Murshak

Violetta F. Murshak
Laboratory Manager

VFM/ab

APPENDIX G

SOIL GAS SURVEY SAMPLING LOCATIONS AND FIELD OBSERVATIONS

Date	(X)	(Y)	(PPM)	Sample Depth	Soil Types	No. of Strokes	Comments
10-Aug-89	250	865	0	3.0	BLACK SAND	17	UST AREA, FILL CLEAN
10-Aug-89	250	900	10	3.0	BLACK SAND	12	UST PERIMETER, LOW PPM HITS
10-Aug-89	225	900	0	3.0	BLACK SAND	20	UST PERIMETER, LOW PPM HITS
10-Aug-89	225	875	2	3.0	BLACK SAND	15	UST PERIMETER, LOW PPM HITS
10-Aug-89	210	925	0	3.0	BLACK SAND	7	UST PERIMETER, LOW PPM HITS
10-Aug-89	100	925	10	3.0	BLACK SAND	19	BY DUMPSTER NEAR FENCE
10-Aug-89	115	1055	8	3.0	BLACK SAND	14	
10-Aug-89	240	925	22	3.0	MOIST BLACK SAND	19	BY DUMPSTER WITH NO BOTTOM
10-Aug-89	50	1055	4	3.0	MOIST SANDY BLK CLAY	24	
10-Aug-89	50	1140	10	3.0	FINE BRN SAND	8	
10-Aug-89	225	1190	9	3.0	VERY DRY	10	
10-Aug-89	0	815	9	3.0	VERY DRY	13	NEAR WHT DOOR 2' F/ WALL
10-Aug-89							NO READING
10-Aug-89	400	435	17	3.0	LIGHT SAND	7	NEAR WINDOWS AND RAILINGS
10-Aug-89	325	460	90	3.0	WET BLK SAND	8	NEAR FUEL TANK SIGN
10-Aug-89	350	225	1000	3.0	GRY CHLKY WET SAND		STRONG FUEL ODOR
10-Aug-89							
11-Aug-89	375	260	400	1.0	MUCKY	6	BETWEEN RAILROAD TRACKS STRONG ODOR
11-Aug-89	390	190	10	3.0	DRY SOIL	14	10' SOUTH OF FENCE
11-Aug-89	300	200	7	3.0	MOIST	16	15' EAST OF GARAGE TYPE DOOR
11-Aug-89	350	200	25	3.0	FINE MOIST SAND	60	
11-Aug-89	340	215	1000	2.0		15	OILY SMELL AT CORNER OF BUILDING
11-Aug-89							
11-Aug-89	125	350	12	3.0		23	NEAR 3RD CRANE SUPPORT 20' F/ BUILDING
11-Aug-89				3.0	WET MUCK SAND	14	CORD 125X525, OIL SMELL, TOO WET
11-Aug-89	120	585	700	1.0	WET MUCKY SAND	5	
11-Aug-89	140	525	60	2.0	WET MUCKY SAND	12	OILY BLK DIRT STRONG SMELL
11-Aug-89	50	525	9	3.0	LIGHT DRY SOIL	10	NEAR 3RD CRANE SUPPORT
11-Aug-89	50	575	2	3.0	DK STAIN LT SOIL	9	NEAR 2ND CRANE SUPPORT
11-Aug-89	50	585	15	2.0		8	10' WEST OF 1ST CRANE SUPPORT
11-Aug-89	50	600	2	3.0	DRY POWDERY	15	
11-Aug-89	50	615	0	3.0	MOIST LT SOIL	10	RUSTY SOIL APPEARANCE
11-Aug-89	100	600	4	1.0	DK, DRY	4	
11-Aug-89	25	650	3	3.0		14	
11-Aug-89	75	625	5	3.0	DRY, POWDERY	11	NEAR FOUNDATION
11-Aug-89							BLK, DENSE SOIL, NR
11-Aug-89	110	635	1000	1.0	OILY	2	UNDER CRANE

SOIL GAS SURVEY SAMPLING LOCATIONS AND FIELD OBSERVATIONS

Date	(X)	(Y)	(PPM)	Sample Depth	Soil Types	No. of Strokes	Comments
11-Aug-89	75	700	1000	3.0	SWAMPY	15	CATTAIL PATCH, NO ODOR
11-Aug-89	50	710	10	3.0	GRY, WHT CLAY	14	
15-Aug-89	400	25	4	3.0	BRN, DRY	15	HIT BURIED WOOD
15-Aug-89	425	25	18	2.0	BLK SOIL	20	
15-Aug-89	400	150	4	3.0	DRY BLK SOIL	19	
15-Aug-89	600	0	15	2.0		15	HIT FOUNDATION?
15-Aug-89	475	25	60	2.0		15	
15-Aug-89	50	125	80	2.0	BLK PARTICLES	20	HARD STRATA AT 2' IN AREA
15-Aug-89	650	150	200	3.0	BLK PARTICLES	30	BETWEEN 3 PYLONS
15-Aug-89	700	125	20	3.0	BLK PARTICLES	15	LOW SPOT
15-Aug-89	400	0	4	2.0	BLK PARTICLES	8	HIT FOUNDATION
15-Aug-89	450	0	15	3.0	BLK PARTICLES	9	
15-Aug-89	475	0	7	3.0	BLK PARTICLES	13	SANDY
15-Aug-89	550	0	3	4.0	SANDY	18	
15-Aug-89	490	0	1	3.0	SANDY	8	
15-Aug-89	575	0	80	3.0	DRY BRN	16	
15-Aug-89	450	75	120	2.0		15	
15-Aug-89	750	125	30	2.0		12	LOW, CEMENT
15-Aug-89	850	100	15	3.0		35	LOW AREA
15-Aug-89	950	100	200	3.0		40	
15-Aug-89	825	100	90	2.0	RUSTY APPR	35	VERY HARD CASTING SAND PILE
15-Aug-89	850	300	15	2.0		20	VERY HARD
15-Aug-89	800	300	20	2.0	SANDY	10	
15-Aug-89	800	400	15	2.0		20	VERY HARD
15-Aug-89	950	600	110	3.0	ROCKY, RUSTY	30	
15-Aug-89	1050	700	200	2.0		30	MIDDLE OF TRACKS
15-Aug-89	850	550	45	3.0	DRY HARD	30	SE OF PUMP SATION
15-Aug-89	775	500	10	3.0		35	NEXT TO MOTOR
15-Aug-89	650	625	15	3.0	DK SAND	30	
15-Aug-89	550	550	30	3.0		47	PARKING AREA, HARD PAD UNDERNEATH
15-Aug-89	650	500	100	2.0		38	
15-Aug-89	650	425	40	3.0		22	NEAR DRUM PAD
15-Aug-89	660	350	20	2.0	HARD GRAVEL	40	DRUM PAD FRONT
15-Aug-89	675	250	200	2.0		23	
15-Aug-89	650	810	20	3.0		22	PAINT SHOP WALL., RESIDUE ON PROBE
15-Aug-89	700	810	10	3.0	POWDERY SOIL	15	PAINT SHOP, SOFT

SOIL GAS SURVEY SAMPLING LOCATIONS AND FIELD OBSERVATIONS

Date	(X)	(Y)	(PPM)	Sample Depth	Soil Types	No. of Strokes	Comments
15-Aug-89	750	810	75	3.0		33	
15-Aug-89	850	850	2	3.0	WET SANDY SOIL	18	
17-Aug-89	900	850	23	3.0	SANDY	29	
17-Aug-89	1075	975	4	3.0	SANDY	16	
17-Aug-89	1075	1090	300	3.0	CLAY AND SAND	20	DENSE WHT DEAD BETWEEN MONITOR WELL AND RIVER
17-Aug-89	950	1075	3	3.0	ASHY CLAY	14	NEAR FOUNDATION, FULL OF TAR
17-Aug-89	825	1075	4	3.0	DRY	14	
17-Aug-89	850	1090	20	2.0		45	
17-Aug-89	700	1125	25	3.0		17	NEXT TO GATE OF CEMENT PLACE
17-Aug-89	600	1100	15	3.0	WET SAND	16	
17-Aug-89	525	1125	20	1.0		22	HIT WOOD, PUMP PIT
17-Aug-89	525	1100	15	2		14	PUMP PIT
17-Aug-89					ASH TYPE		NR
17-Aug-89	540	990	10	2.0	BLK, BRN SOIL	8	
17-Aug-89	560	1050	20	1.0	BRN SOIL	23	
17-Aug-89	555	1050	15	3.0		43	TOILET ODOR
17-Aug-89	460	1060	5	4.0	LOOSE SOIL	8	
17-Aug-89	400	1050	4	3.0	RUSTY, DRY SOIL	8	
17-Aug-89	400	1000	15	4.0	DRY SOIL	30	
17-Aug-89	400	950	6	3.0	DRY, SANDY	9	
17-Aug-89	380	1000	4	4.0		21	
17-Aug-89	375	1100	5	4.0		20	
17-Aug-89	300	1100	25	3.0		25	
17-Aug-89	300	1150	6	3.0	DK SANDY SOIL	11	
17-Aug-89	350	975	6	3.0		30	
17-Aug-89	350	950	7	3.0	ASHY CLAY	40	
17-Aug-89	450	925	11	3.0	RUSTY SOIL	13	
17-Aug-89	475	900	14	3.0	DRY SOIL	24	
17-Aug-89	500	950	18	3.0		23	
17-Aug-89	600	850	16	2.0	RUSTY CLAY	20	
17-Aug-89	625	950	7	2.0		25	
17-Aug-89	475	850	0	3.0		9	
17-Aug-89	325	825	2	3.0	BLK SOIL	15	
17-Aug-89	325	800	20	3.0		14	
17-Aug-89	325	750	2	3.0	DK SOIL	8	
17-Aug-89	340	700	50	3.0	DK SANDY SOIL	30	

SOIL GAS SURVEY SAMPLING LOCATIONS AND FIELD OBSERVATIONS

Date	(X)	(Y)	(PPM)	Sample Depth	Soil Types	No. of Strokes	Comments
17-Aug-89	345	650	6	3.0	BRN SOIL	20	
17-Aug-89	400	600	55	3.0		10	PARKING LOT
17-Aug-89	525	620	300	2.0	SANDY SOIL	23	PARKING LOT
17-Aug-89	425	525	2	4.0	SANDY SOIL	10	
18-Aug-89	600	500	2	4.0	SANDY SOIL	10	
18-Aug-89	600	400	3	3.0	DK SAND	15	
18-Aug-89	625	350	150	3.0	LOOSE DRY SOIL	10	STAINED CEMENT
18-Aug-89							CEMENT OVER 2' DEEP
18-Aug-89	525	350	15	3.0	SANDY	3	NEAR SEWER LINE
18-Aug-89	375	425	5	3.0		8	
18-Aug-89	425	375	20	2.0		15	
18-Aug-89	425	200	4	3.0	VERY LOOSE SOIL	4	
19-Aug-89							VERY WET NEAR MACHINERY
19-Aug-89	125	700	8	3.0	DAMP DK SAND	7	
19-Aug-89	175	500	4	3.0	BRN DRY SOIL	4	
19-Aug-89	275	475	56	3.0	BRN DRY SOIL	4	
19-Aug-89	300	275	5	3.0	SANDY CLAY	12	
19-Aug-89							NR
19-Aug-89	375	800	3	2.0		3	
19-Aug-89	425	825	1	4.0	DIRTY SAND	3	
19-Aug-89							TOO WET FOR READING
19-Aug-89	430	725	3	2.0	RUSTY SAND	3	
19-Aug-89							TOO WET FOR READING
19-Aug-89	575	750	25	3.0	BLK SAND	12	
19-Aug-89							TOO WET FOR READING
19-Aug-89							TOO WET FOR READING
19-Aug-89	475	675	20	2.0		10	
19-Aug-89							TOO WET
19-Aug-89							TOO WET
19-Aug-89	200	275	1	2.0	BRN SAND	10	
19-Aug-89							TOO WET
19-Aug-89	335	325	20	4.0		4	
19-Aug-89	325	400	5	3.0		3	
19-Aug-89					WET GRY CLAY		OIL SMELL
19-Aug-89	675	875	10	3.0	WET GRY CLAY	3	
19-Aug-89	655	840	200	3.0	SANDY CLAY	10	

SOIL [illegible] SURVEY SAMPLING LOCATIONS AND FIELD OBSERVATIONS

Date	(X)	(Y)	(PPM)	Sample Depth	Soil Types	No. of Strokes	Comments
19-Aug-89	700	840	100	2.0	BRN SAND	18	
19-Aug-89	740	840	80	3.0	BRN SAND	15	
19-Aug-89	655	825	20	2.0	BRN SAND	15	
19-Aug-89							
19-Aug-89							WET SAND
19-Aug-89	700	900	7	3.0	GRITTY CLAY	15	HOLE BLOCKED
19-Aug-89							
19-Aug-89	1075	925	6	4.0	SANDY SOIL		NR
19-Aug-89					DEEP CEMENT		
19-Aug-89	655	740	15	2.0	WET CLAY	8	OILY ROOM DRUM STORAGE, SAND BLASTING BUILDING

APPENDIX H

PCB Sampling locations

Date Collected	Sample Id.	Location
8/02/89	Pad-1-1	West side of pad, outside of the concrete containment berm
8/02/89	Pad-1-2	North side of pad at low spot of concrete containment berm
8/02/89	Pad-1-3	Composit scrapings and pulverized concrete from around the PCB labeled transformers (4)
8/02/89	Pad-2-1	Scraping and shavings from flooring immediately underneath the transformer
8/02/89	Pad-3-1	Immediately below transformer to the left
8/02/89	Pad-3-2	Immediately below transformer to the right
8/02/89	Pad-4-1	Immediately east of pad
8/02/89	Pad-4-2	Immediately north of pad
8/02/89	Pad-4-3	Scrapings of oil soaked oil from under the drain cock of Transformer 11
8/02/89	Pad-5-1	Immediately north of pad outside fence
8/02/89	Pad-5-2	Immediately east of pad ouside fence
8/02/89	Pad-6-1	South of leaking transformer
8/02/89	Pad-6-2	North of leaking transformer
8/02/89	Pad-7-1	Scrapings and pulverized concrete from underneath the north end of the transformer bank
8/02/89	Pad-7-2	Scrapings and pulverized concrete from underneath the south end of the transformer bank
8/02/89	Pad-8-1	Immediately west of pad outside concrete containment berm

Pad-8-2	Immediately east of pad outside concrete containment berm
Pad-9-1	Immediately south of pad outside concrete containment berm
Pad-9-2	Immediately east of pad outside concrete containment berm
Pad-9-3	Scrapings of oil soaked soils, pulverized concrete, and lose paint from around base of several of the transformers

FECL #: 02892-89-E7
Tag: Pad-6-1
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

FECL #: 02892-89-E8
Tag: Pad-6-2
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

FECL #: 02892-89-E9
Tag: Pad-7-1
Container: Glass Vial
Sample Type: Scraping
Preservation: None
Sampling date/time: 08-02-89

FECL #: 02892-89-E10
Tag: Pad-7-2
Container: Glass Vial
Sample Type: Scraping
Preservation: None
Sampling date/time: 08-02-89

FECL #: 02892-89-E11
Tag: Pad-8-1
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

FECL #: 02892-89-E12
Tag: Pad-8-2
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

FECL #: 02892-89-E13
Tag: Pad-9-1
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

FECL #: 02892-89-E14
Tag: Pad-9-2
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

FECL #: 02892-89-E15
Tag: Pad-9-3
Container: Glass Vial
Sample Type: Scraping
Preservation: None
Sampling date/time: 08-02-89

FECL #: 02892-89-E16
Tag: Pad-4-1
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

FECL #: 02892-89-E17
Tag: Pad-4-2
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

FECL #: 02892-89-E18
Tag: Pad-4-3
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

**CONFIDENTIAL & PRIVILEGED
ATTORNEY/CLIENT MATTER**

Analytical Laboratory Report
Midwest Water Resource
FECL #: 2892-89-E1-20
August 14, 1989
Page Three

FECL #: 02892-89-E19
Tag: Pad-5-1
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

FECL #: 02892-89-E20
Tag: Pad-5-2
Container: Glass Vial
Sample Type: Soil
Preservation: None
Sampling date/time: 08-02-89

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FECL #: 02892-89-E1
Tag: Pad-3-1

PCB <1.0 mg/kg

FECL #: 02892-89-E2
Tag: Pad-3-2

PCB <1.0 mg/kg

FECL #: 02892-89-E3
Tag: Pad-1-1

PCB <1.0 mg/kg

FECL #: 02892-89-E4
Tag: Pad-1-2

PCB <1.0 mg/kg

FECL #: 02892-89-E5
Tag: Pad-1-3

PCB <1.0 mg/kg

FECL #: 02892-89-E6
Tag: Pad-2-1

PCB <1.0 mg/kg

FECL #: 02892-89-E7
Tag: Pad-6-1

PCB <1.0 mg/kg

CONFIDENTIAL & PRIVILEGED
ATTORNEY/CLIENT MATTER

FECL #: 02892-89-E8
Tag: Pad-6-2

PCB	<1.0	mg/kg

FECL #: 02892-89-E9
Tag: Pad-7-1

PCB	<1.0	mg/kg

FECL #: 02892-89-E10
Tag: Pad-7-2

PCB	<1.0	mg/kg

FECL #: 02892-89-E11
Tag: Pad-8-1

PCB	<1.0	mg/kg

FECL #: 02892-89-E12
Tag: Pad-8-2

PCB	<1.0	mg/kg

FECL #: 02892-89-E13
Tag: Pad-9-1

PCB	<1.0	mg/kg

FECL #: 02892-89-E14
Tag: Pad-9-2

PCB	<1.0	mg/kg

CONFIDENTIAL & PRIVILEGED
ATTORNEY/CLIENT MATTER

FECL #: 02892-89-E15
Tag: Pad-9-3

PCB <1.0 mg/kg

FECL #: 02892-89-E16
Tag: Pad-4-1

PCB <1.0 mg/kg

FECL #: 02892-89-E17
Tag: Pad-4-2

PCB <1.0 mg/kg

FECL #: 02892-89-E18
Tag: Pad-4-3

PCB <1.0 mg/kg

FECL #: 02892-89-E19
Tag: Pad-5-1

PCB <1.0 mg/kg

FECL #: 02892-89-E20
Tag: Pad-5-2

PCB <1.0 mg/kg

CONFIDENTIAL & PRIVILEGED
ATTORNEY/CLIENT MATTER

V. F. Murshak

Violetta F. Murshak
Laboratory Manager

VFM/ab

CONFIDENTIAL & PRIVILEGED
ATTORNEY/CLIENT MATTER

APPENDIX J

Midwest Water Resources, Inc.
615 West Shepherd
Charlotte, Michigan 48813

SAMPLE ANALYSIS FOR THE PRESENCE OF FIBROUS ASBESTOS

RECEIVED
AUG 28 1989
MIDWEST WATER RESOURCE
INCORPORATED

By

TESTING ENGINEERS & CONSULTANTS, INC.
3985 Varsity Drive
P.O. Box 2179
Ann Arbor, Michigan 48108

DATE: 21 August 1989

Testing Engineers & Consultants, Inc.

P.O. Box 2179 • 3700 Carpenter Rd. • Ann Arbor, Michigan 48106

313-971-0030 or Dial 313-T-E-S-T-I-N-G

John Banicki, P.E
Kenneth Cummins, L.S., P.E
Gerald M. Belian, P.E
Elihu Geer, PhD, P.E
(1902-1985
Michael Davinich, P.E

T.E.C. Report Number: 18296-1
Date Issued: 21 August 1989

Midwest Water Resources, Inc.
615 West Shepherd
Charlotte, Michigan 48813

Attention: Ms. Dawn Brennan

Re: Analysis of Submitted Bulk Samples for Presence of Fibrous Asbestos

Dear Ms. Brennan:

Herein presented are the analytical results of the tests performed to determine the presence of fibrous asbestos in the submitted samples. The method of analysis used was the EPA's "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" using polarized light microscopy. The lower limit of detection of asbestos is 1% of the sample. Testing Engineers and Consultants, Inc. is accredited by the Environmental Protection Agency (Laboratory Number 5312) and the National Voluntary Laboratory Accreditation Program (Laboratory Number 1489) to perform these analyses.

The tests results are as follows:

DATE AND LABORATORY SAMPLE #	SAMPLE LOCATION	TYPE	ASBESTOS PRESENT	APPROXIMATE PERCENT COMPOSITION
8-4-89 A-6804 AM-1	Lower Level, Boiler Room; Inside Boiler #1	Fire Brick	No	LAYER 1: (75%) 100% NFP * LAYER 2: (25%) 5% COTTON 95% NFP
8-4-89 A-6805 AM-2	Lower Level, Boiler Room; Outside Boiler #1	Fire Brick/ Debris	No	75% NFP 20% FIBERGLASS/ MINERAL WOOL 5% CELLULOSE

*Non-Fibrous Particulates

.....continued

50 years
AMERICAN COUNCIL OF INDEPENDENT LABORATORIES
PASSING THE TEST OF TIME

All services undertaken subject to the following general policy. Reports are submitted for exclusive use of the clients to whom they are addressed. Their significance is subject to the adequacy and representative character of the samples and to the comprehensiveness of the tests, examinations and surveys made. No quotations from reports or use of TEC'S name is permitted except as expressly authorized by TEC in writing.

CONSULTING ENGINEERS & FULL-SERVICE PROFESSIONAL TESTING AND INSPECTION

OFFICES IN ANN ARBOR, DETROIT, FLINT, LANSING AND TROY

MEMBER

DATE AND LABORATORY SAMPLE #	SAMPLE LOCATION	TYPE	ASBESTOS PRESENT	APPROXIMATE PERCENT COMPOSITION
8-4-89 A-6806 AM-3	Lower Level, Boiler Room; Debris North of Boiler #2	Straight Pipe Insulation	Yes	25% CHRYSOTILE ASBESTOS 20% NFP/PERLITE 55% NFP
8-4-89 A-6807 AM-4	Lower Level, Boiler Room; Inside North Door of Boiler #2	Fire Brick/ Debris	No	LAYER 1: (20%) 100% NFP B LAYER 2: (80%) 3% CELLULOSE 97% NFP
8-4-89 A-6808 AM-5	Lower Level, Boiler Room; North Side of Boiler #3	Boiler Gasket	Yes	40% CHRYSOTILE ASBESTOS 10% CELLULOSE 50% NFP
8-4-89 A-6809 AM-6	Powerhouse, Main Level; 10" Vertical Steam Pipe	Straight Pipe Insulation	Yes	LAYER 1: (10%) 100% COTTON LAYER 2: (20%) 30% CHRYSOTILE ASBESTOS 5% CELLULOSE 65% NFP LAYER 3: (70%) 40% CHRYSOTILE ASBESTOS 5% COTTON 55% NFP
8-4-89 A-6810 AM-7	Powerhouse, Basement; North Side of Tank	Tank Insulation	Yes	10% CHRYSOTILE ASBESTOS 10% CROCIDOLITE ASBESTOS 10% AMOSITE ASBESTOS 70% NFP
8-4-89 A-6811 AM-8	Powerhouse, Basement; 6" Horizontal Domestic Water Pipe	Straight Pipe Insulation	Yes	50% CHRYSOTILE ASBESTOS 50% NFP

DATE AND LABORATORY SAMPLE #	SAMPLE LOCATION	TYPE	ASBESTOS PRESENT	APPROXIMATE PERCENT COMPOSITION
8-4-89 A-6812 AM-9	Powerhouse, Basement; 2" Vertical Domestic Water Pipe	Straight Pipe Insulation	Yes	2% CHRYSOTILE ASBESTOS 15% GLASS SCRIM 83% NFP/PERLITE
8-4-89 A-6813 AM-10	Powerhouse, Basement; South Side Floor	Straight Pipe Insulation	Yes	55% CHRYSOTILE ASBESTOS 45% NFP
8-4-89 A-6814 AM-11	1st Floor, Pattern Repair Office; 3" Vertical Heating Water Return, South Side	Straight Pipe Insulation	Yes	55% CHRYSOTILE ASBESTOS 45% NFP
8-4-89 A-6815 AM-12	1st Floor, Pattern Repair Office; 3" Vertical Heating Water Supply	Straight Pipe Insulation	Yes	LAYER 1: (10%) 90% COTTON 10% NFP LAYER 2: (20%) 30% CHRYSOTILE ASBESTOS 70% NFP LAYER 3: (70%) 50% CHRYSOTILE ASBESTOS 50% NFP
8-4-89 A-6816 AM-13	2nd Floor, Pattern Repair; South Side Office	Wall Plaster	No	LAYER 1: (50%) 5% CELLULOSE 95% NFP LAYER 2: (50%) 25% CELLULOSE 75% NFP
8-4-89 A-6817 AM-14	Roof Pattern Repair; Outside Stairway Door	Roofing Tar Paper	Yes	35% CHRYSOTILE ASBESTOS 15% CELLULOSE 50% NFP

DATE AND LABORATORY SAMPLE #	SAMPLE LOCATION	TYPE	ASBESTOS PRESENT	APPROXIMATE PERCENT COMPOSITION
8-4-89 A-6818 AM-15	Roof, Pattern Repair; Outside Stairway Door	Roofing Tar/ Asphalt	No	Layer 1: (40%) 100% NFP LAYER 2: (60%) 15% CELLULOSE 85% NFP
8-4-89 A-6819 AM-16	Basement, Pattern Storage; 3" Horizontal Pipe	Straight Pipe Insulation	Yes	Layer 1:(10%): 1% CHRYSOTILE ASBESTOS 9% NFP 90% COTTON Layer 2: (90%) 20% CHRYSOTILE ASBESTOS 50% CELLULOSE 30% NFP
8-4-89 A-6820 AM-17	Foundry, Main Level; 2" Vertical Pipe, South of Door	Straight Pipe Insulation	Yes	LAYER 1: (10%) 30% CHRYSOTILE ASBESTOS 5% ANIMAL HAIR 5% CELLULOSE 60% NFP LAYER 2: (90%) 10% CHRYSOTILE ASBESTOS 90% CELLULOSE
8-4-89 A-6821 AM-18	Foundry, Main Level; 2" Horizontal Pipe, North of Door	Straight Pipe Insulation	Yes	LAYER 1: (10%) 20% CHRYSOTILE ASBESTOS 10% CELLULOSE 70% NFP LAYER 2: (90%) 5% CHRYSOTILE ASBESTOS 95% CELLULOSE
8-4-89 A-6822 AM-19	Foundry, Main Level; 3" Horizontal Pipe	Straight Pipe Insulation	Yes	70% CHRYSOTILE ASBESTOS 5% CELLULOSE 25% NFP

DATE AND LABORATORY SAMPLE #	SAMPLE LOCATION	TYPE	ASBESTOS PRESENT	APPROXIMATE PERCENT COMPOSITION
8-4-89 A-6823 AM-20	Foundry, Main Level; Office, Southeast Corner	Floor Tile	Yes	LAYER 1: (98%) 5% CHRYSOTILE ASBESTOS 95% NFP LAYER 2: (2%) 10% CELLULOSE 90% NFP
8-4-89 A-6824 AM-21	Foundry, Main Level; Office A, Southeast Corner	Floor Tile	Yes	LAYER 1: (95%) 5% CHRYSOTILE ASBESTOS 95% NFP LAYER 2: (5%) 100% NFP
8-4-89 A-6825 AM-22	Foundry, Main Level; Office B, Southwest Corner	Floor Tile	Yes	LAYER 1: (95%) 7% CHRYSOTILE ASBESTOS 93% NFP LAYER 2: (5%) <1% CHRYSOTILE ASBESTOS >99% NFP
8-4-89 A-6826 AM-23	Foundry, Main Level; Office B, Southwest Corner	Floor Tile	Yes	LAYER 1: (95%) 5% CHRYSOTILE ASBESTOS 95% NFP LAYER 2: (5%) <1% CHRYSOTILE ASBESTOS >99% NFP
8-4-89 A-6827 AM-24	Foundry, Main Level; Office B, Southwest Corner	Floor Tile	No	LAYER 1: (85%) 15% CELLULOSE 85% NFP LAYER 2: (15%) 100% CELLULOSE
8-4-89 A-6828 AM-25	Foundry, Main Level; Conference Room, Central	Suspended Ceiling Tile	No	35% CELLULOSE 35% FIBERGLASS/ MINERAL WOOL 30% NFP

DATE AND LABORATORY SAMPLE #	SAMPLE LOCATION	TYPE	ASBESTOS PRESENT	APPROXIMATE PERCENT COMPOSITION
8-4-89 A-6829 AM-26	Foundry, Main Level; Conference Room, Central	Glued-On Ceiling Tile	No	100% CELLULOSE
8-4-89 A-6830 AM-27	Foundry, Main Level; Office B, Southwest Corner	Baseboard Molding	Yes	4% CHRYSOTILE ASBESTOS 96% NFP
8-4-89 A-6831 AM-28	Foundry, Main Level; Office B, South Side	Ceiling Plaster	No	15% CELLULOSE 85% NFP
8-4-89 A-6832 AM-29	Foundry, Main Level; Non-existing Northwest Structure	Roofing Paper	No	LAYER 1: (50%) 45% CELLULOSE 55% NFP LAYER 2: (50%) 50% CELLULOSE 50% NFP
8-4-89 A6833 AM-30	Foundry, Main Level; 2nd Floor Platform, North of Air Handler	Debris	No	25% FIBERGLASS/ MINERAL WOOL 75% NFP
8-4-89 A6834 AM-31	Maintenance Building, Main Level; 4" Horizontal Pipe Debris Northside	Straight Pipe Insulation Debris	Yes	50% CHRYSOTILE ASBESTOS 50% NFP
8-4-89 A6835 AM-32	Maintenance Building, Main Level; West Section, Central	Floor Tile	Yes	LAYER 1: (95%) 100% NFP LAYER 2: (5%) 25% CELLULOSE 75% NFP
8-4-89 A6836 AM-33	Maintenance Building, Main Level; Northside, Central	Roofing Tar/Asphalt	Yes	25% CHRYSOTILE ASBESTOS 75% NFP

DATE AND LABORATORY SAMPLE #	SAMPLE LOCATION	TYPE	ASBESTOS PRESENT	APPROXIMATE PERCENT COMPOSITION
8-4-89 A6837 AM-34	Maintenance Building, Main Level; 4" Vertical Pipe, South-west Corner	Straight Pipe Insulation	Yes	50% CHRYSOITLE ASBESTOS 50% NFP
8-4-89 A6838 AM-35	Maintenance Building, Main Level, Office South-east Corner	Floor Tile	Yes	LAYER 1: (95%) <1% CHRYSOTILE ASBESTOS >99% NFP LAYER 2: (5%) 20% CELLULOSE 80% NFP
8-4-89 A6839 AM-36	Maintenance Building, Main Level; Office, South-east Corner	Floor Tile	Yes	LAYER 1: (95%) 3% CHRYSOTILE ASBESTOS 97% NFP LAYER 2: (5%) 20% CELLULOSE <1% CHRYSOTILE ASBESTOS >79% NFP
8-4-89 A6840 AM-37	Maintenance Building, Main Level; North Side, Central	Glued-On Ceiling Tile	No	100% CELLULOSE
8-4-89 A6841 AM-38	Maintenance Building, Main Level; Office B, East Wall	Suspended Ceiling Tile	No	45% FIBERGLASS/ MINERAL WOOL 55% CELLULOSE
8-4-89 A6842 AM-39	Maintenance Building, Main Level; Office B East Wall	Floor Tile	No	100% NFP
8-4-89 A6843 AM-40	Maintenance Building, Main Level; Office C, Central	Floor Tile	No	LAYER 1: (95%) 100% NFP LAYER 2: (5%) 100% NFP

DATE AND LABORATORY SAMPLE #	SAMPLE LOCATION	TYPE	ASBESTOS PRESENT	APPROXIMATE PERCENT COMPOSITION
8-4-89 A6844 AM-41	Maintenance Building, 2nd Floor; Outside South Door	Roofing Tar/Asphalt	No	LAYER 1: (95%) 25% CELLULOSE 75% NFP LAYER 2: (35%) 10% GLASS SCRIM 30% CELLULOSE 60% NFP LAYER 3: (30%) 20% CELLULOSE 80% NFP
8-4-89 A6945 AM-42	Maintenance Building, 2nd Floor; East Wall	Wall Plaster	No	5% SYNTHETIC FIBERS 95% NFP
8-4-89 A6946 AM-43	Building 41, Northwest Corner, 4" Horizontal Pipe	Straight Pipe Insulation	Yes	55% CHRYSOTILE ASBESTOS 45% NFP
8-4-89 A6947 AM-44	Building 41, Northwest Corner Office, Southeast Corner	Suspended Ceiling Tile	No	45% FIBERGLASS/ MINERAL WOOL 40% CELLULOSE 15% NFP
8-4-89 A6948 AM-45	Building 41, Northwest Corner Office, Southeast Corner	Floor Tile	Yes	LAYER 1: (95%) 2% CHRYSOTILE ASBESTOS 98% NFP LAYER 2: (5%) 15% CELLULOSE 85% NFP
8-4-89 A6949 AM-46	Maintenance Basement, 3" Horizontal Pipe	Straight Pipe Insulation	Yes	65% CHRYSOTILE ASBESTOS 35% NFP
8-4-89 A6850 AM-47	Maintenance Basement, East Expansion Tank	Tank Insulation	Yes	50% CHRYSOTILE ASBESTOS 50% NFP

DATE AND LABORATORY SAMPLE #	SAMPLE LOCATION	TYPE	ASBESTOS PRESENT	APPROXIMATE PERCENT COMPOSITION
8-4-89 A6851 AM-48	Maintenance Basement, 8" Vertical Pipe, Northwest Corner	Pipe Joint Insulation	Yes	LAYER 1: (10%) 100% COTTON LAYER 2: (90%) 15% CHRYSOTILE ASBESTOS 5% COTTON 80% NFP
8-4-89 A6852 AM-49	Building 41, 4" Vertical Domestic Water Pipe, East Side, Central	Straight Pipe Insulation	Yes	LAYER 1: (10%) 40% CHRYSOTILE ASBESTOS 30% CELLULOSE 30% NFP LAYER 2: (90%) 10% CHRYSOTILE ASBESTOS 80% COTTON 10% NFP
8-4-89 A6853 AM-50	Building 41, Southeast Corner of New Section	Ceiling Board	Yes	30% CHRYSOTILE ASBESTOS 70% NFP
8-4-89 A6854 AM-51	Building 41, Southeast Corner of New Section	Roofing Tar Paper	No	LAYER 1: (70%) 40% CELLULOSE 60% NFP LAYER 2: (30%) 100% NFP
8-4-89 A6855 AM-52	Building 41, Southeast Corner Office, Central	Floor Tile	No	LAYER 1: (95%) 10% CELLULOSE 90% NFP LAYER 2: (5%) 5% CELLULOSE 95% NFP
8-4-89 A6856 AM-53	Building 41, West Bathroom, Central	Floor Tile	Yes	LAYER 1: (95%) 2% CHRYSOTILE ASBESTOS 98% NFP LAYER 2: (5%) 100% NFP
8-4-89 A6857 AM-54	Building 41, West Bathroom, Central	Floor Tile	No	15% CELLULOSE 85% NFP

DATE AND LABORATORY SAMPLE #	SAMPLE LOCATION	TYPE	ASBESTOS PRESENT	APPROXIMATE PERCENT COMPOSITION
8-4-89 A6858 AM-55	Building 41, Outside East Second Floor Window	Roofing Tar/Asphalt	Yes	LAYER 1: (50%) 100% NFP LAYER 2: (50%) 4% CHRYSOTILE ASBESTOS 96% NFP
8-4-89 A6859 AM-56	Building 41, 3rd Floor, North of Stairs	Floor Tile	Yes	LAYER 1: (95%) 2% CHRYSOTILE ASBESTOS 98% NFP LAYER 2: (5%) 10% CELLULOSE 90% NFP
8-4-89 A6860 AM-57	Building 42, 4" Vertical Pipe, East Side Central	Straight Pipe Insulation	Yes	LAYER 1: (10%) 30% CHRYSOTILE ASBESTOS 60% COTTON 10% NFP LAYER 2: (90%) 15% AMOSITE ASBESTOS 10% CHRYSOTILE ASBESTOS 75% NFP
8-4-89 A6861 AM-58	Powerhouse Basement, Above Light	Transite Board	Yes	80% CHRYSOTILE ASBESTOS 20% NFP
8-4-89 A6862 AM-59	Outside Building 41, Field	Roofing Tar Paper	No	50% CELLULOSE 50% NFP

We are pleased to have been of service to you. If you have any questions or require further information, please contact this office at your earliest convenience.

Respectfully Submitted:

TESTING ENGINEERS & CONSULTANTS, INC.

Jessica A. Kastler

Jessica A. Kastler
Asbestos Laboratory Supervisor

Peter L. Schappach

Peter L. Schappach
Interim Supervisor, Asbestos Services

PLS/amf

ADDENDUM
to
ENVIRONMENTAL INVESTIGATION
of the
AMDURA SITE
BAY CITY, MICHIGAN

for
Howard & Howard Attorneys
Lansing, Michigan

by
MWR, Incorporated
Charlotte, Michigan

October 8, 1990

This addendum is attached to the report entitled "Environmental Investigation of the Amdura Site, Bay City, Michigan". It is in response to points 1, 2, 3, 7, 15, and 20 contained in a letter dated August 2, 1990, to Frederick C. Payne, Ph.D. of MWR, Inc., a copy of which is attached to this document. The propose of this addendum is to provide additional information which became available since the issuance of the original report (September, 1989), and to clarify points raised during review. Also attached to this document under a separate cover are copies of all aerial photography of the Bay City site reviewed during the compilation of the "AERIAL PHOTOGRAPHY" section of the original report.

For the areas addressed in this document, the text has been reprinted from the original report, and modifications are included as underlined bold print.

MWR
P.O. Box 10, Charlotte, Michigan 48813 • Ph: (517)543-8155 • FAX (517) 543-4483

Point 1. **AERIAL PHOTOGRAPHY**

A review of historic aerial photography of the site can yield past land use practices and may reveal areas of possible environmental contamination. Aerial photography of the Amdura site was secured from the Michigan Dept. of Natural Resources, Land and Water Management Division. Flights available were flown in 1977 and 1987. Stereoscopic pairs with a scale of 1" = 200 feet of the site were reviewed.

Additional photography was available from the U.S. Dept. of Agriculture, Agriculture Stabilization and Conservation Service. Flights available from the ASCS were flown in 1950, 1955, 1963, 1969, 1977, and 1988. Prints from the first four flights were ordered in stereoscopic pairs at a scale of 1' = 400'. At the present time this order has been not been received. ASCS has indicated that it will require approximately three more weeks to research and complete the order.

Aerial photography was also reviewed at the Center For Remote Sensing, Michigan State University to secure additional flights. The Center is a repository for old ASCS photography and they had aerial coverage from 1938, 1950, 1955, 1963, 1969, and 1978. A check of the files revealed that there were no prints available for any of the flight years except 1978. However, the photomosaics were available for 1938, 1950, 1955, and 1963. These prints are very small scaled and serve as an index for the entire flight series. The appropriate mosaics from the four years were enlarged sufficiently to yield a photo with a scale of approximately 1" = 400'. This technique yielded photographs of poor quality. Although the site, major building, and other landmarks are discernable, the finer details are lost in the grain of the print.

As a result of the above activities aerial photography from 1938, 1950, 1955, 1963, 1977, and 1987 were analyzed to determine the historical land-use activities. As mentioned above the photography from the photomosaics yielded little information. The following observations were made from the photography.

1938:

- The physical size of the site is much as it is today
- Sites north and south of the Amdura site are undeveloped
- The Storage Building is in two independent sections, the center section has not been built
- There is no 120,000 gallon water storage tank at the northeast corner of the site
- There is no evidence of the water intake channel along the north boundary of the site (however, it is present on 1921 blueprints of the site)
- There is no evidence of any large pit in the vacant portion of the site (southwest corner)
- Building 41, west portion of Building 42, the Foundry, Pattern Repair building, the Pattern Shop, and the Power House are all visible

1950:

- Sections of the Storage Building are joined into one building
- The Foundry, Building 41, Building 42, the Pattern Repair building, the Pattern Shop, and the Powerhouse are all visible
- The 120,000 gallon storage tank is not present
- Water intake channel present
- No evidence of any large pit

1955:

- The Foundry, Building 41, Building 42, the Pattern Repair, Pattern Storage, Pattern Shop, and the Powerhouse are visible (expansion to Building 42 complete extending the size of the building to its present day dimensions)
- Water intake channel visible
- No 120,000 gallon water storage tank
- No evidence of any large pit

1963:

- All major buildings are visible
- Sand Blasting and Paint Buildings are not visible (have yet to be erected
- Water intake channel visible
- 120,000 gallon water storage tank may be present
- No evidence of any large pit

1977:

- 120,000 gallon water storage tank present
- All major buildings present (Paint Shop and Sandblasting Building visible next to old foundry)
- Water intake channel filled
- Vacant area covered with storage sheds and stacks of stock materials
- Many railroad tracks crisscross the site
- The soils around the foundry are dark (foundry sands)
- No evidence of any large pit

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1987

- o Asphalt plant in the center of the vacant area
- o Several large piles of aggregate near the asphalt plant
- o Remnants of the railroad tracks on portions of the site
- o No evidence of any large pit

Review of the available aerial photography indicate no major areas of possible environmental contamination on the Amdura site. The general appearance of the site was one of orderliness. There was no indication of any plant operations that would suggest anything less than industry standards.

MWRI will submit an Addendum to this report as soon the additional air photography from the ASCS arrives and has been analyzed. This photography will be on a scale sufficient to better interpret the site activities during the periods the flights were flown.

ADDENDUM

Photographs from the Agricultural Stabilization and Conservation Service for the 1950, 1055, 1963, and 1969 flights were reviewed. These photographs have a scale of approximately 1"=400'. The following conditions were observed:

1950:

- Intake channel and intake structure present, this channel provided make-up water for the steam boilers in the Power House
- Building present in the area of the spent solvent storage area
- Carpenter shop attached to the south side of the Pattern Storage Building
- No paint shop present south of the Boom Shop
- No sand blasting building south of the Boom Shop
- Small building along the west side of Building 42
- Small building along the Saginaw River
- West yard vacant (to the west of Building 42 to the river
- Several large cranes present around the site
- Railroad cars present on site along with several storage containers
- No large pit present in the southwest portion of the site

1955:

- Same buildings in the same arrangement as in the 1950 photograph
- Several cranes on site
- Several railroad cars on site
- Very little outside storage
- No large pit present in the southwest portion of the site

1963:

- Large 120,000 gal water tank present at the northeast corner of the site
- Very little outside storage
- Site looks much as in the 1955 photo
- No large pit present in the southwest portion of the site

1969:

- Intake channel partially filled
- Building in the spent solvent area behind the Power House now gone
- The carpenter shop south of the pattern storage building now gone
- Building along the Saginaw River and west of Building 42 now gone
- A lot of outside storage around Building 42 and 9 in the west storage yard
- Sandblasting Building present south of the Boom Shop
- Storage east of Building 41
- No large pit present in the southwest portion of the site

The following table indexes the aerial photography supplied to the MDNR under a separate cover

Year Flown	App. Scale	Frame Number	Repository Agency
1950	1"≈400'	BDC-2G-104	ASCS[1]
1955	1"≈400'	BDC-1P-101	ASCS
1963	1"≈400'	BDC-2DD-19	ASCS
1969	1"≈400'	BDC-1KK-40	ASCS
1977	1"≈200'	MDNR 3-88-53	MDNR[2]
1987	1"≈200'	MDNR341-86A-165	MDNR
1938	1"≈400'	Mosaic	CRS-MSU[3]
1950	1"≈400'	Mosaic	CRS-MSU
1955	1"≈400'	Mosaic	CRS-MSU
1963	1"≈400'	Mosaic	CRS-MSU

[1] U.W. Dept. of Agriculture, Agricultural Stabilization and Conservation Service

[2] Michigan Dept. of Natural Resources

[3] Center for Remote Sensing-Michigan State University

Point 2

SOIL QUALITY

Page 8, paragraph one should read:

1,1,1-trichloroethane (TCA) was found down-gradient of the water storage tank, SB-3 and SB-4 at both depths; in the vicinity of the spent solvent storage area, SB-5 and SB-6 at both depths; and at SB-7 near the waste loading area of Building 42 at both depths (Table 1 and Figure 2). 1,1,2,2-tetrachlorethane was found at SB-8 in the surface sample and at SB-14 also in the surface sample. Bromoform was also found at SB-8 at the surface.

Point 3 **SOIL QUALITY**

Page 7, last paragraph should read:

Thirty-one samples were collecteded and analyzed from the sixteen soil boring locations. Only one sample was collected at SB-1 due to the proximity of the ground water. **Drilling went to the 6.5 foot depth which was into the saturated zone. No sample was collected at that depth as a result physical characteristics of the soils. SB-2 was placed immediately west of SB-1 (hydraulically down-gradient) and sampled at both shallow and deep depths. The resulting analyses showed no VOC's present in any of the samples collected around the site of the removed UST.** A total of four samples were collected for analysis from MW-1, MW-2, SS-1, and SS-2. The analytical results from the 601 and 602 scans for all soil samples are tabulated in Table 1. The total heavy metal analytical results from all the sampling locations are tabulated in Table 2.

Point 7 **GROUND WATER QUALITY**

Page 10, first full paragraph should read:

Seven monitor wells (MW) were installed, located in Figure 2, on the property to document the quality of the ground water as it entered the site (hydraulically up-gradient) and as it exited (hydraulically down-gradient). Monitor wells **MW-5, MW-6, and MW-7** were installed up-gradient of the site along Saginaw Street, and monitor wells **MW-1, MW-2, MW-3 and MW-4** were installed along the Saginaw River (Figure 2). The samples recovered from these seven monitor wells were analyzed for purgeable halocarbons and purgeable aromatics using EPA scans 601 and 602 and total heavy metals (for the 13 priority pollutant metals), using EPA scan 200.7.

Point 15 **POLYCHLORINATED BIPHENYLS (PCB'S)**

On August 2, 1989, employees from MWR, Inc. and ACES, Inc. conducted an inspection of nine transformer locations at the Bay City Industrial Complex (formerly the AMDURA facility). Each location had at least one oil-filled transformer.

The purpose of the site visit was to collect samples from the immediate environment to ascertain the release of PCB containing oils. Each transformer was labeled with a label indicating the PCB content of the core oil. Twenty samples were collected and analyzed using EPA Method 608. The samples were run through a methylene chloride extraction to mobilize any PCB's. The extraction was analyzed using a gas chromatography looking for the presence of the PCB isomers: 1016, 1221, 1223, 1242, 1248, 1254, and 1260. All sample were reported with below detectable limits of PCB's. The detection limit was 1 mg/kg.

The exact sampling locations of the PCB samples were given in Appendix H of the report to which this addendum is attached to. To clarify the data requested in point 15 of the above referenced letter, Appendix H of the original report is included in its entirety along with Figure 4 from the same report.

If the information contained in the following table does not answer the MDNR's request for the exact sampling locations, then MWR recommends a site visit with a representative of the MDNR for more explicit documentation.

PCB Sampling locations

Date Collected	Sample Id.	Location
8/02/89	Pad-1-1	West side of pad, outside of the concrete containment berm
8/02/89	Pad-1-2	North side of pad at low spot of concrete containment berm
8/02/89	Pad-1-3	Composite scrapings and pulverized concrete from around the PCB labeled transformers (4)
8/02/89	Pad-2-1	Scraping and shavings from flooring immediately underneath the transformer
8/02/89	Pad-3-1	Immediately below transformer to the left
8/02/89	Pad-3-2	Immediately below transformer to the right
8/02/89	Pad-4-1	Immediately east of pad
8/02/89	Pad-4-2	Immediately north of pad
8/02/89	Pad-4-3	Scrapings of oil soaked oil from under the drain cock of Transformer 11
8/02/89	Pad-5-1	Immediately north of pad outside fence
8/02/89	Pad-5-2	Immediately east of pad outside fence
8/02/89	Pad-6-1	South of leaking transformer
8/02/89	Pad-6-2	North of leaking transformer

8/02/89	Pad-7-1	Scrapings and pulverized concrete from underneath the north end of the transformer bank
8/02/89	Pad-7-2	Scrapings and pulverized concrete from underneath the south end of the transformer bank
8/02/89	Pad-8-1	Immediately west of pad outside concrete containment berm
8/02/89	Pad-8-2	Immediately east of pad outside concrete containment berm
8/02/89	Pad-9-1	Immediately south of pad outside concrete containment berm
8/02/89	Pad-9-2	Immediately east of pad outside concrete containment berm
8/02/89	Pad-9-3	Scrapings of oil soaked soils, pulverized concrete, and lose paint from around base of several of the transformers

Point 20 **SITE BASE MAP**

A site base map has been drafted showing sampling locations for monitoring wells, soil borings, PCB samples, and building locations. The maps in the report were drafted to highlight the results of specific tasks completed at the site. The full-scale site base map is incorporated in a letter dated October 18, 1990 from Fred Payne to Rhonda Klann.

ATTACHMENT C

ETG ENVIRONMENTAL, INC. - FIELD REPORT FOR THE TRANSFORMER REMOVAL AND THE PCB REMEDIATION AT THE BAY CITY INDUSTRIAL COMPLEX SUPPLEMENT 1

FIELD REPORT
for the
TRANSFORMER REMOVAL AND PCB REMEDIATION
at the
BAY CITY INDUSTRIAL COMPLEX
BAY CITY, MICHIGAN
Supplement 1

for

Woodman of the World
Life Insurance Society

by

MWR, Inc.
Charlotte

November 26, 1990

Background:

This report supplements a report entitled "FIELD REPORT for the TRANSFORMER REMOVAL AND PCB REMEDIATION at the BAY CITY INDUSTRIAL COMPLEX, BAY CITY, MICHIGAN, which was issued September 28, 1990. The original report documented activities in the removal of polychlorinated biphenyls (PCB) containing electrical equipment and the subsequent remediation of seven location at the Bay City site on August 13 and 14, 1990. These activities and the resultant report were in response to cited discrepancies contained in a "Notice of Inspection" issued at the completion of an on-site inspection conducted by members of the staff of the Michigan Dept. of Natural Resources (MDNR) on February 14, 1990, to ensure compliance with the Toxic Substance Control Act (TSCA). The reader is requested to review the above mentioned report for a detailed discussion of the tasks and results of the initial on-site activities which were in response to the "Notice of Inspection".

After the removal of the scheduled oil-filled electrical equipment in mid-August, seven locations (Figure 1) were remediated in accordance with the requirements put forth in 40 CFR 761. Subsequent confirmatory sampling indicated that PCB concentrations remained above 10 $\mu g/100\ cm^2$ action level at five of the seven locations. At this point the decision was made to reenter the locations with elevated PCB concentrations and further remediate these area until subsequent confirmatory sampling indicated concentrations below 10 $\mu g/100\ cm^2$.

Table 1 indicates that further activities were needed at locations 1, 2, 3, 5, and 7, however, the data also indicates that the soils under the concrete pads at locations 1 had 3 had PCB concentrations below detection. As a result remediation activities were scheduled to remove concrete at the above five locations.

Field Activities:

The additional PCB site remediation was completed on November 15 and 16, 1990. As all the visually stained concrete was removed during the August period, the five locations were further subjected to concrete removal with either jack-hammers or shot scarification.

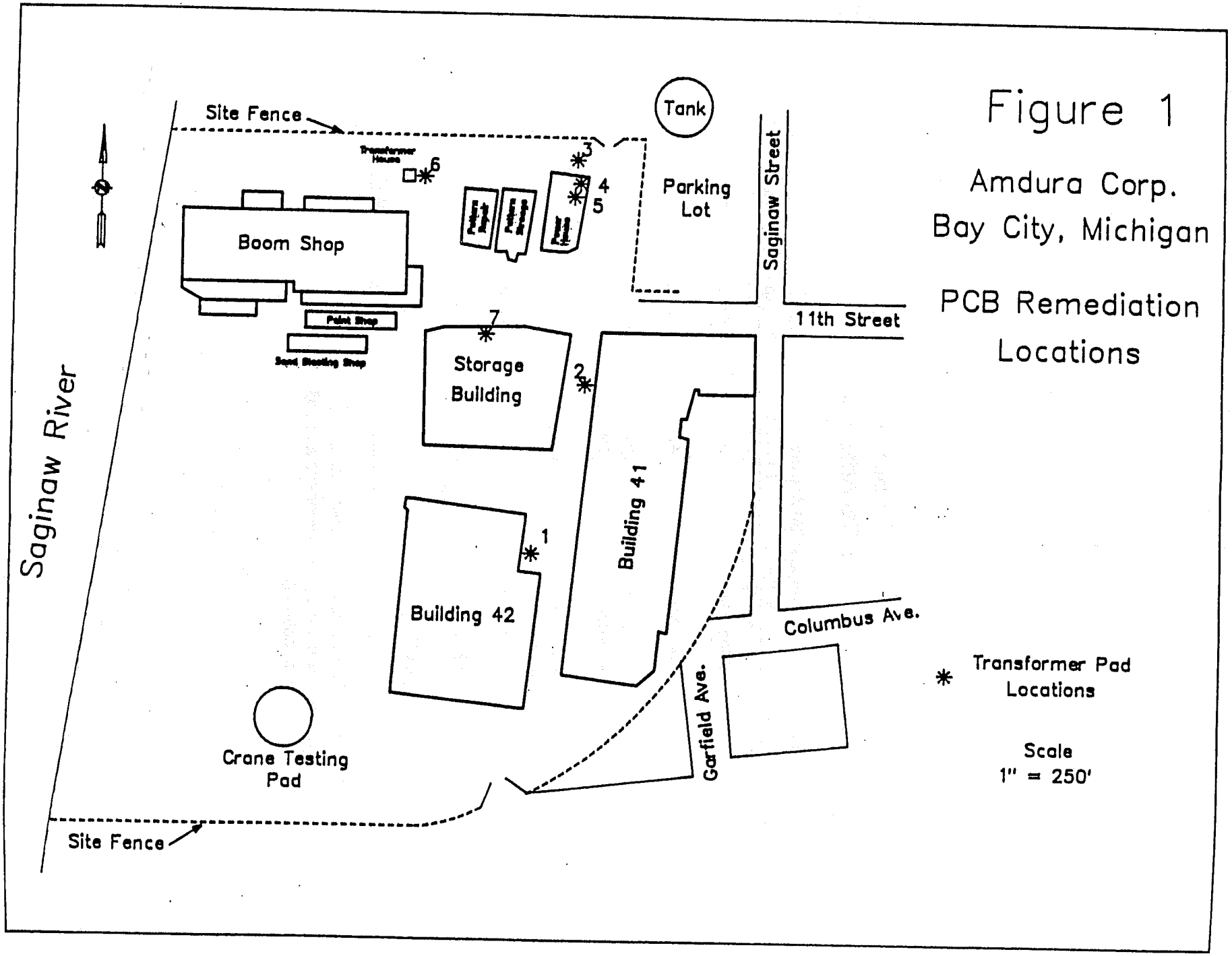

Figure 1

Amdura Corp.
Bay City, Michigan

PCB Remediation Locations

TABLE 1
PCB Analyses

Map Location (Figure 1)	August '90 Activity Sample Id.	Results*	November '90 Activity Sample Id.	Results*
1	Composite #24	BDL	–	–
	Wipe #24	39	24–2	BDL
2	Wipe Sample #15	48	15–2	BDL
3	#1 Composite	BDL	–	–
	#1 Wipe	68	1–2	BDL
4	#5 Inside	BDL	–	–
5	#10 Basement	39	10–2	BDL
6	#36 soil	BDL	–	–
7	#14F	38	14F–2	BDL
	#14W	48	14W–2	BDL

* Concentrations in ug/100 cm2 for wipe samples
Concentrations in mg/kg for composite and soil samples
BDL = below detection limit

The services of Westinghouse Electric Corporation were again secured to preform the remediation activities. Westinghouse's vendor contact was:

Mr. Bill Cusick
Westinghouse Electric Corporation
24700 Eleven Mile Rd.
Southfield, Michigan 48037

On-site activities were again completed by:

Westinghouse Environmental and Geotechnical services, Inc.
5000 Angola Road
Toledo, Ohio 43615

Site power was secured by:

Affleck Electric Co.
205 Third Street
Bay City, Michigan 48706

Work progressed at each location in generally the same sequence. The following is a synopsis of the tasks completed at each location and presented in chronological order of completion. The referenced pictures can be found in Attachment 3.

Location 3 (Picture 1)

Location 3 is located on the north side of the Power House (Figure 1). Originally Transformers 1 and 2 were removed from the substation and the greater portion of the concrete pad was also removed. The resultant confirmatory samples indicated PCB concentrations at 68 $\mu g/100\ cm^2$ from the surface of the remaining concrete and below detection level in the exposed soils (Table 1). The present activities removed the remaining concrete at the location of Transformers 1 and 2. These activities generated approximately two drums (55 gallon capacity, D.O.T. approved for hazardous waste containment) of hazardous wastes. A confirmatory composite soil sample was collected from the exposed soils (labeled "1-2") and submitted to Biological & Environmental Control Laboratories, Inc. of Toledo, Ohio, the contract laboratory, for analysis.

Picture 1 (Attachment 3) shows location 1 after the removal of the contaminated concrete.

Location 5 (Picture 2)

Location 5 is located in the basement of the Power House (Figure 1). Originally the oiled filled circuit breaker No. 10 was removed from the overhead. The concrete floor immediately below the breaker was scarified to remove the top layer of contaminated concrete. Confirmatory sampling of the remediated area indicated PCB concentrations of 39 $\mu g/100\ cm^2$ (Table 1). Secondary activities concentrated on shot scarification of the effected area. After the scarification the concrete was then triple washed with a mixture of kerosene, penetone, and water. These activities generated less than 1/4 of a drum of hazardous materials. A confirmatory wipe sample (labeled 10-2) was taken from the remediated area and submitted to the contract laboratory for analysis.

Picture 2 (Attachment 3) shows location 5 after shot scarification of the contaminated area.

Location 7 (Pictures 3 & 4)

Location 7 is located inside the Storage Building (Building 9) along the north wall (Figure 1). The original efforts removed the oil filled circuit breaker No. 14 from a short stub wall. The concrete floor was shot scarified and the brick wall behind the breaker was scarified with a hand held unit. The area was then triple washed. Two confirmatory samples were taken, one from the wall behind the breaker and one from the floor immediately below the breaker location. These data indicated that PCB's remained as the wall sample had concentrations of 48 $\mu g/100\ cm^2$ and the floor sample had concentrations of 38 $\mu g/100\ cm^2$ (Table 1). The present activities removed the brick from the contaminated portion of the stub wall and shot scarified the floor immediately below the breaker location. These activities generated about 1/2 drum of hazardous material. Confirmatory wipe samples (labeled; 14F-2 from the floor and 14W-2 from the wall) were taken from the remediated areas and submitted to the contract laboratory for analysis.

Pictures 3 and 4 (Attachment 3) show the floor and wall after the removal of the contaminated materials.

Location 2 (Picture 5)

Location 2 is located at the west end of Building 41A (Figure 1). Originally transformer 15 was removed from the substation, and the concrete pad in that location was shot scarified. Confirmatory sampling of the remediated area indicated PCB concentrations of 48 $\mu g/100\ cm^2$ (Table 1). Secondary activities concentrated on jack-hammering the remaining concrete in the effected area. The area was then triple washed. These activities generated about 1/2 of a drum of hazardous materials. A confirmatory sample wipe sample (labeled 15-2) was then taken from the remediated area and submitted to the contract laboratory for analysis.

Picture 5 (Attachment 5) shows the concrete pad at location 2 after the shot scarification.

Location 1 (Picture 6)

Location 1 is located at the northeast corner of Building 42 (Figure 1). The original efforts removed transformer 24 from the substation and removed a portion of the concrete pad and stained soil. The two confirmatory samples indicated that PCB's were present at 39 $\mu g/100\ cm^2$ on the surface of the concrete in the remediated area, and below detection limit in the adjoining soils. The present activities removed additional concrete in the effected area with a jack-hammer along with a portion of the exposed soils. These activities generated approximately two drums of hazardous material. A confirmatory soil sample (labeled 24-2) was taken from the remediated area and submitted to the contract laboratory for analysis.

The present remediation activities generated an additional five drums of hazardous materials. These wastes were properly labeled and placed into storage with the 14 drums generated during the August efforts. Tri-State Motor Transit Co. (U.S. E.P.A. ID No.: MOD-095038998) picked up all 19 drums for transit to the Aptus TDS facility (U.S. E.P.A. ID No.: KSD-980964993) in Coffeeville, Kansas on Saturday, November 17, 1990. A copy of the Uniform Hazardous Waste Manifest for these materials is attached to this report as Attachment 1. The top copy of the manifest was submitted

by mail to the Waste Management Division of the MDNR on November 29, 1990 within the mandated time frame.

Analytical Results

A total of six confirmatory samples were collected in accordance with the requirements stated in 40 CFR 761. Four were wipe samples and two were composite soil samples. The location and results of the analysis are tabulated in Table 1 and the laboratory reporting sheets are in Attachment 2. All samples had PCB concentrations below the detection limit set forth in the above mentioned regulations of 10 $\mu g/100\ cm^2$ for the wipe samples and 1 mg/kg for the soil samples. These data indicate that the five locations have been successfully remediated.

Summary:

The activities on November 15 and 16, 1990, successfully removed all remaining PCB contaminated concrete from five locations at the Bay City Industrial Complex. With the success of these remedial efforts, Woodman of the World Life Insurance Society has responded to and corrected all discrepancies listed in the "Notice of Inspection" issued in February of 1990.

ATTACHMENT 1

DNR
MICHIGAN DEPARTMENT OF NATURAL RESOURCES

DO NOT WRITE IN THIS SPACE
ATT. ☐ DIS. ☐ REJ. ☐ PR. ☐

Required under authority of Act 64 PA 1979, as amended and Act 136 PA 1969.

Failure to file is punishable under section 299.548 MCL or Section 10 of Act 136, PA 1969

Please print or type

Form Approved. OMB No. 2050-0039 Expires 9-30-

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. MID086744208 Manifest Document No. 266YA
2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
American Hoist
Bay City Industrial Complex
112 S. Water St.
Bay City, MI 48708

419-389-0150

4. Generator's Phone ( )

A. State Manifest Document Number: MI 1898119

B. State Generator's ID

5. Transporter 1 Company Name: Tri-State Motor Transit CO.
6. US EPA ID Number: MOD095038998

C. State Transporter's ID

D. Transporter's Phone: 417-624-3131

7. Transporter 2 Company Name
8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
Aptus
P.O. Box 1328/Hwy. 169 North
Coffeyville, KS 67337

10. US EPA ID Number: KSD980964993

G. State Facility's ID

H. Facility's Phone: 316-251-6380

GENERATOR

	11. US DOT Description (including Proper Shipping Name, Hazard Class, and ID NUMBER). HM		12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.	N/H
a.	RQ	HAZARDOUS SUBSTANCE, SOLID, N.O.S., ORM-E, NA 9188(POLYCHLORINATED BIPHENYLS)	001	DM	00227	K	026L	N
b.	RQ	HAZARDOUS SUBSTANCE, SOLID, N.O.S., ORM-E, NA 9188(POLYCHLORINATED BIPHENYLS)	016	DM	03636	K	026L	N
c.	RQ	HAZARDOUS SUBSTANCE, SOLID, N.O.S., ORM-E, NA 9188(POLYCHLORINATED BIPHENYLS)	002	DM	00454	K	026L	N
d.	~~RQ~~	~~HAZARDOUS SUBSTANCE, SOLID, N.O.S., ORM-E, NA 9188(POLYCHLORINATED BIPHENYLS)~~ SS		~~DM~~ SS		~~K~~ SS	~~026L~~	~~N~~

J. Additional Descriptions for Materials Listed Above
a. drums of debris (soil) Storage Dates 8-14-90
b. drums of debris (concrete) Storage Dates 8-14-90
c. drums of debris (wood/debris) Storage Dates 8-14-90
~~d. drum of debris (soil/debris) Storage Date~~ SS

K. Handling Codes for Wastes Listed Above
a/s /
b/s /
c/s /
~~d/s~~ SS

15. Special Handling Instructions and Additional Information
See Enclosed Contingency Plan Work Order #67814 1-800-292-2558

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR; if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Charles R. Hayward
Signature: Charles R. Hayward
Date: Month Day Year: 11 17 90

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: GARY D. GREGOR
Signature: Gary D. Gregor
Date: Month Day Year: 11 17 90

18. Transporter 2 Acknowledgement or Receipt of Materials
Printed/Typed Name: Charles Hay
Signature
Date: Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name
Signature
Date: Month Day Year

EPA Form 8700-22 (Rev. 9/88) To be mailed by Michigan DNR PR 5110

ATTACHMENT 2

estinghouse Environmental &
eotechnical Services, Inc.
000 Angola Road
oledo, OH 43615

TTN: Craig Hassan

biological & environmental control laboratories, inc.
615 front street
toledo, ohio 43605
(419) 693-5307

1632 enterprise parkway
twinsburg, ohio 44087
(216) 425-8200

ample
escription: American Hoist - Project # 121 - Station # 1-2 - under transformer # 1-2 - 11/16/90 @ 0930

esults:

Analyte	Method	Result
PCBs	SW-846, 8080	less than 1 mg/Kg

Surrogate Recovery: Decachlorobiphenyl 70%

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NOV 30 1990
MIDWEST WATER RESOURCE
INCORPORATED

RECEIVED
NOV 1990

estinghouse Environmental &
eotechnical Services, Inc.
00 Angola Road
ledo, OH 43615

N: Craig Hassan

biological & environmental control laboratories, inc.
615 front street
toledo, ohio 43605
(419) 693-5307
1632 enterprise parkway
twinsburg, ohio 44087
(216) 425-8200

lab no. 90113449
p.o. no. 23650

mple
scription: American Hoist - Project # 121 - Station # 10-2 - basement floor - 11/16/90 @ 11:00

esults:

Analyte	Method	Result
PCBs - wipe sample	SW-846, 8080	less than 1 ug/wipe

Surrogate Recovery: Decachlorobiphenyl 52%

NOV 1990
RECEIVED

pleted: /90 tech: KRM/JH/JP approved by:

Westinghouse Environmental &
Geotechnical Services, Inc.
5000 Angola Road
Toledo, OH 43615

ATTN: Craig Hassan

biological & environmental control laboratories, inc.
615 front street
toledo, ohio 43605
(419) 693-5307
1632 enterprise parkway
twinsburg, ohio 44087
(216) 425-8200

lab no. 90113450
job no. 23650

ample
escription: American Hoist - Project # 121 - Station # 14W-2 - wall wipe 14 - 11/16/90 @ 11:30

esults:

Analyte	Method	Result
PCBs - wipe sample	SW-846, 8080	less than 1 ug/wipe

Surrogate Recovery: Decachlorobiphenyl 51%

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ompleted: 20/90 tech: RM/JH/JP approved by:

Westinghouse Environmental &
Geotechnical Services, Inc.
000 Angola Road
T... o, OH 43615

TTN: Craig Hassan

biological & environmental control laboratories, inc.
615 front street
toledo, ohio 43605
(419) 693-5307

1632 enterprise parkway
twinsburg, ohio 44087
(216) 425-8200

lab no. 90T13451
p.o. no. 23650

ample
description: American Hoist - Project # 121 - Station # 14F-2 - floor wipe 14 - 11/16/90 @ 12:00

esults:

Analyte	Method	Result
PCBs - wipe sample	SW-846, 8080	less than 1 ug/wipe

Surrogate Recovery: Decachlorobiphenyl 62%

NOV 1990
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completed: 1/20/90 | tech: ERM/JH/JP | approved by:

estinghouse Environmental &
eotechnical Services, Inc.
00 Angola Road
oledo, OH 43615

TN: Craig Hassan

biological & environmental control laboratories, inc.
615 front street
toledo, ohio 43605
(419) 693-5307

1632 enterprise parkway
twinsburg, ohio 44087
(216) 425-8200

date 90-11-28
page 2650

mple
scription: American Hoist - Project # 121 - Station # 15-2 - under transformer # 15 - 11/16/90 @ 10:30

sults:

Analyte	Method	Result
PCBs - wipe sample	SW-846, 8080	less than 1 ug/wipe

Surrogate Recovery: Decachlorobiphenyl 56%

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estinghouse Environmental &
eotechnical Services, Inc.
)00 Angola Road
)ledo, OH 43615

: Craig Hassan

biological & environmental control laboratories, inc.
615 front street
toledo, ohio 43605
(419) 693-5307

1632 enterprise parkway
twinsburg, ohio 44087
(216) 425-8200

lab no. 90[illegible]
p.o. no. 23650

mple
scription: American Hoist - Project # 121 - Station # 24-2 - under transformer # 24 - 11/16/90 @ 10:00

esults:

Analyte	Method	Result
PCBs	SW-846, 8080	less than mg/Kg

Surrogate Recovery: Decachlorobiphenyl 83%

NOV 1990
RECEIVED

pleted: [illegible]/90
ech: ERM/UH/BHS
approved by:

ATTACHMENT 3

ATTACHMENT D

ARTHUR D. LITTLE, INC. - PRELIMINARY ENVIRONMENTAL ASSESSMENT

Arthur D Little

Preliminary Environmental Assessment, for EPA Bay City, MI CERT Project

Draft Report

Submitted to
Odell Associates

January 27, 1992

Arthur D. Little, Inc.
Acorn Park
Cambridge, Massachusetts
02140

ADL Reference 40291

5.0 Site Specific Setting and History

The Industrial Brownhoist (IB) property, which occupies 31 acres, is located on the Saginaw River and to the west of Saginaw Street, between 11th and 13th Streets, (number 7, Figure B-2). The vacant lot immediately north of the guard house is also part of the property. The IB site is a former foundry and manufacturing facility for large cranes and hoists. Crane manufacturing activities ceased in 1983 when the plant operations were moved to North Carolina. The foundry operations were shut down in the early 1960's. Much of the site (buildings and land) is currently leased to smaller companies. Operations presently on site include metal fabrication and sheetwork (KAI), rebar form fabrication and storage (Whaley Steel), and aggregate storage (Janet Sand and Gravel). Warehouse space is leased to various companies for storage of surplus goods, scrap machinery, cars, and foundry patterns. Present activities on the site are not likely to have significant impact on the environmental condition of the property.

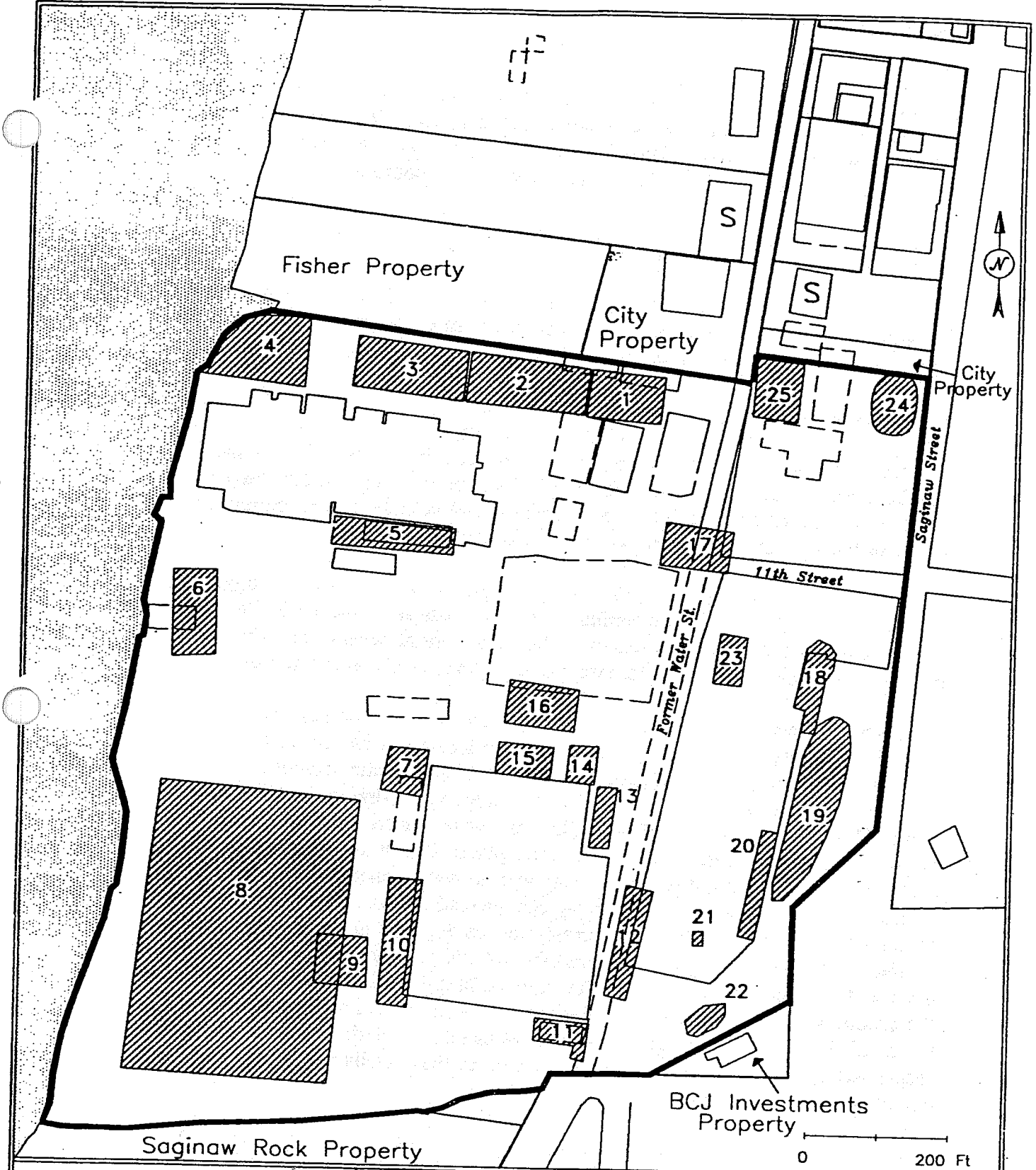
A limited site assessment was performed in 1989 by MWR, Inc. and included a soil and ground water investigation, as well as sampling of transformers and suspected asbestos containing materials. Figure F-1 shows twenty-five locations that Arthur D. Little feels warrants additional attention.

Former operations at the IB property such as foundry operations, metal painting, plating, cleaning, machining, hydraulic testing, and equipment maintenance, included the use of hazardous materials and petroleum products. Hazardous waste management practices are poorly documented; however, the facility applied for a RCRA generator permit in 1980. At least two areas were known to have been used as hazardous waste accumulation areas. Both were located outside and did not appear to be paved or bermed. A Michigan Department of Natural Resources (MDNR) Waste Management inspection in early 1989, after the plant had closed, revealed several violations of waste storage and characterization including leaking drums and potentially contaminated soil.

A 350 by 350 foot section of the property adjacent to the river was leased to Saginaw Asphalt for use as an asphalt plant in the middle to late 1980s.

Review of historical records, maps, and photographs indicate that at least 50,000 gallons of petroleum product was stored above ground at more than six locations in the past. Tanks located near the river were used to fuel the forges throughout the site. One tank, built between 1955 and 1963 and located at the north end of the former Mac Kinnon site, was used to store unknown materials.

The 1906 Raschers map identifies a small tar well (presumably associated with manufactured gas) under what is presently building 41, near the northwest corner.



PREPARED FOR: Odell Associates				
DATE: Jan. 1992	SCALE: As shown	DWG. NO.: 40291-010	Contaminant source S Electrical Substation Location of structures now removed Property boundary	TITLE: Industrial Brownhoist Property: Potential Contaminant Source Areas

Arthur D Little

The map also identifies a large gas holder and an above ground oil tank in the same area.

Used foundry sand, which typically contains above-background levels of heavy metals, was reportedly disposed of on site to fill low areas. This was a common practice throughout the industrialized sections along the Saginaw River. Disposal of solid waste at various locations on the property is also reported.

6.0 Observations and Operations

Painting was done at several locations on the property. Evidence of paint disposal on the ground is recorded. Paint odors were observed in the vicinity of the present paint shop at the time of the site visit, although no painting was being performed.

A soil gas survey was performed as part of the limited assessment in 1989. Soil gas surveys are a rapid, cost effective method to identify potential locations of volatile organic contamination in shallow soil over large areas by extracting a sample of pore gas from the soil and analyzing it for volatile organic compounds. The survey revealed several areas of high concentrations of total volatile organic compounds. Many of these areas are located near suspected contaminant sources.

Former site operations identified in maps, photographs, and documents suggest that a significant potential for soil contamination exists. Data from the 1989 site assessment concludes that soil contamination is present at several locations, based on chemical analysis of soil samples, visual observations, and soil gas surveys.

A network of seven ground water monitoring wells was installed as part of the limited site assessment in 1989. The wells were located in two linear trends, one at the east end of the property upgradient of the potential on-site sources of contamination and one at the west end of the property (hydraulically downgradient), within 50 feet of the Saginaw River. No wells were placed in the suspected waste disposal or storage areas. Well screens were placed below the water table in fill or shallow fine sands but not within the clay and no wells penetrated the confined aquifer below the clay. In fact, the clay encountered is probably not the local aquiclude reported by MDNR to be present at the depth of about 60 feet. Water samples from these wells were analyzed for volatile organics and priority pollutant metals. No organic contaminants were detected at a detection level of 10 ug/L, with the exception of chloroethane at 20 ug/L in well MW-3. All wells contained low levels of zinc (0.02 - 0.08 mg/L), and four wells contained similar levels of nickel. Inspection by Arthur D. Little indicate that two of these wells are not in operating condition.

Old maps and interviews with site personnel indicate that there may be at least three abandoned underground storage tanks on the site. Information from the Bay City Fire Chief and State Fire Marshall's Office provided no further information on the presence or location of these tanks. The 1989 report indicated that an underground tank had been removed from the northeast corner of the property in 1983 or 1984; however, no details on the removal or soil conditions were provided.

Numerous transformer stations are located at the IB site due to the heavy reliance on electric cranes to lift and move large equipment. As part of the 1989 assessment, a PCB sampling program was initiated. Samples were collected from the concrete and the soil near the transformer pads. No PCBs were detected in soil above detection limits of 1 mg/kg. As a result of the PCB sampling, several transformers and associated materials (concrete and wood) were removed.

An asbestos assessment and sampling program was performed as a part of the 1989 assessment. Review of the assessment indicates that asbestos is present in many forms in several buildings. Our visual observations confirmed the presence of the asbestos containing materials.

Three properties adjacent to the IB site, at the intersection of Columbus and 14th Streets, contained gasoline service stations prior to and subsequent to 1952, based on Sanborn maps and city directories. One of the service stations was located at the present Easy Handling property, adjacent to the southeast corner of the site.

7.0 Issues

7.1 Waste Storage and Characterization

Present waste storage and characterization activities are minimal and do not appear to pose a liability. Former waste storage and handling issues are of concern and are discussed under Potential Soil and Ground Water Contamination.

7.2 Potential Soil and Ground Water Contamination

Issue: The historic use of the property includes many operations and processes which have significant potential for contamination of soil and ground water. These include foundry operations, metal working, vehicle maintenance, fuel distribution, asphalt processing, painting, and power generation and distribution. Preliminary investigation of the soil and ground water quality revealed several locations where release of oil or hazardous materials is confirmed or suspected. Through our research and review of previous investigations, we have identified additional areas that may have been impacted. The MDNR has placed the property on the state 307 list and requested that additional investigations be performed to identify the nature and extent of the known contamination and to assess additional areas which may be contaminated.

Actions: We recommend that soil and ground water investigations be performed to verify the nature and extent of contamination in several areas of known contamination (how deep is the contamination at the former above ground tank locations?) and to determine if contaminants are present in areas where no investigations have been performed (the vehicle maintenance pit in building 42, the plating and hydraulic shops, etc.). The information provided by this sampling effort will provide guidance to the extent of future actions required to adequately remediate the site.

Associated costs: There is a high likelihood that the preliminary sampling program will be necessary. It is also highly likely that additional investigations will be necessary to characterize the site for future remedial actions (risk assessment,

feasibility studies). There is a moderate to high likelihood that some soil remediation will be necessary. There is a low to moderate likelihood that ground water remediation will be necessary. The following costs are based on our professional judgement and experience with large complex sites such as the Industrial Brownhoist. Information obtained from file reviews revealed an estimate for site remediation exclusive of ground water remediation.

Preliminary sampling

Additional investigations

Soil remediation (2000 yds RCRA)(A)

Ground water remediation

7.3 Underground Storage Tanks

Issue: Based on interviews with former site personnel, engineering drawings, and reviews of regulatory files, we believe that there may be at least three inactive underground storage tanks on the property. Michigan laws regulating the use of underground storage tanks require that tanks not in service for 12 months be closed.

Actions: We recommend that the suspected tank locations be investigated to determine if the tanks are still in place and to identify the condition of the soil and the ground water. If tanks are identified they will need to be closed (removed). If soil and groundwater contamination is identified, additional actions will be required under Michigan laws to assess and remediate the contamination.

Associated costs: There is a high likelihood that investigation will be necessary to verify the presence of the tanks. There is a moderate likelihood that three tanks are present and will have to be removed. The expected cost for tank removals is approximately There is a low likelihood that additional action will be required to further assess and remediate the tank areas.

Tank verification/Preliminary assessment

Tank removals (3 at $20,000 each)

Further assessment and remediation

7.4 PCBs

Issue: Nine transformer locations were identified at the Industrial Brownhoist property during previous investigations by Woodmen of the World. Each location was tested and remediated where necessary. Based on the results of the investigation and remediation, there appears to be little liability associated with the transformers. There are, however, other areas on the property which may constitute liability for PCB contamination. These areas include: stressed vegetation (PCB contaminates oils were often used for weed and dust control), former waste storage areas, filled areas, former hydraulic test area, leaking underground drains, and used oil disposal areas.

Actions: We recommend that these areas be sampled to determine if PCBs are present above state action level of 1 mg/kg.

Associated costs: There is a high likelihood that preliminary soil sampling will be required. There is a low likelihood that remedial actions for PCB contaminated material will be required. The cost for preliminary soil sampling is included under Potential Soil and Ground Water Contamination.

PCB sampling program

Remedial actions (disposal of 10 tons of PCB material)

7.5 Asbestos

Issue: Numerous areas of asbestos containing materials were identified during a previous survey by Woodmen of the World. Regulations require that asbestos containing materials be properly handled and disposed of during building demolition.

Actions: Prior to demolition we recommend that asbestos containing material be removed and disposed of in accordance with prevailing regulations.

Associated costs: There is a high likelihood that the asbestos containing material will have to be removed before building demolition. We have estimated the asbestos removal costs based on the survey performed for Woodmen of the World.

Asbestos removal (A)

7.6 Pollution Control Systems

At the time of the site visit there were no pollution control systems in use. Therefore, there is a low likelihood of liabilities associated with this issue. Issues associated with former pollution control systems (baghouse, drains) are discussed under Potential Soil and Ground Water Contamination.

7.7 Off Site Liability

Issue: Review of maps and plans indicate that there may be as many as five tile drains which discharge to the Saginaw River. The status of the drains are unknown. No discharge permits are recorded at the MDNR.

Actions: We recommend that if the five drains can be located they be dye tested to determine if they are actively discharging to the river. If they are discharging, we recommend that they be sampled and plugged.

Associated cost: There is a high likelihood that the drains will require dye testing and a moderate probability that they are still active.

ATTACHMENT E

ROY F. WESTON, INC. - PROPERTY OWNER COPY - INDUSTRIAL BROWNHOIST - SITE SUMMARY REPORT CENTER FOR ECOLOGICAL RESEARCH AND TRAINING

PROPERTY OWNER COPY - INDUSTRIAL BROWNHOIST SITE SUMMARY REPORT CENTER FOR ECOLOGICAL RESEARCH AND TRAINING BAY CITY, MICHIGAN

October 1993

This document was prepared in accordance with U.S. EPA Contract No. 68-W8-0089, WESTON Region V Alternative Remedial Contract Strategy (ARCS).

Work Assignment No.: 55-5AED Document Control No.: 4500-55-AHXB

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

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SECTION 1

INTRODUCTION

The U.S. Environmental Protection Agency (U.S. EPA) has been authorized by Congress to purchase property for the construction of a Center for Ecological Research and Training (CERT) in Bay City, Bay County, Michigan. Prior to acquiring the property an environmental assessment of the approximate 90 acres (25 parcels) is required. Roy F. Weston, Inc. (WESTON®) was authorized under the U.S. EPA Region V Alternative Remedial Contract Strategy (ARCS) contract to perform a preliminary site characterization of one, 31-acre parcel known as the Industrial Brownhoist (IB) property. Following completion of the preliminary site characterization, WESTON was requested to perform additional site characterization activities at 11 other parcels and to conduct Phase I assessments of six previously unaddressed parcels.

The CERT site contains properties that are currently listed on the Michigan Act 307 List (the State's Superfund equivalent), and as such, all CERT activities were conducted in accordance with Michigan Department of Natural Resources (MDNR) requirements.

The project objectives were as follows:

- Determine whether site activities (past and current) have impacted the soil and groundwater at the CERT site.
- Determine the preliminary extent of contamination in the soil and groundwater by conducting field sampling at the IB property.
- Provide additional limited characterization of the overall CERT site.
- Provide a site summary report and associated cost estimate for remediation of potential liabilities associated with the CERT site.

WESTON submitted a Work Plan, Sampling and Analysis Plan (SAP) Modifications, Quality Assurance Project Plan (QAPP) Modifications and a Health and Safety Plan (HASP) to the U.S. EPA in October 1992. Following approval of these plans, WESTON initiated field activities at the IB site in October 1992 and completed the activities in December 1992. The Work Plan, SAP, QAPP, and HASP were modified in April 1993 to include the additional CERT site characterization activities and submitted to the U.S. EPA. Following U.S. EPA approval, WESTON initiated a second field effort in May 1993 and completed the activities in August 1993.

Section 2 of this report provides information regarding the CERT site location and history. Section 3 presents site geology and hydrogeology. Sections 4 and 5 describe the field activities and analytical results of the investigation.

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SECTION 2

SITE LOCATION AND HISTORY

2.1 SITE LOCATION

The CERT site is located west of Saginaw Street, between 18th and 9th Streets in Bay City, Bay County, Michigan (Figure 2-1). The site is bordered to the north by the Consumers Power property, to the west by the Saginaw River, to the south by the Bay City Department of Public Works, and to the east by Saginaw Street. Current activities at the CERT site include: asphalt manufacturing (Midland Contracting); aggregate storage and transfer (Fisher Brothers, IB, Saginaw Rock, Midland Contracting); and various small companies that own or lease buildings and land.

2.2 PROJECT DESCRIPTION

The Saginaw River valley has a long history of industrial activity dating back to the early to middle 1800s. Early industries on the Saginaw River included lumber, fishing and trapping. The area of investigation was originally occupied by a number of sawmills and storage yards. In the 1800s, numerous industrial operations were present, including the Industrial Works (later IB), several small foundries, a manufactured gas plant, and a grain mill. These operations were dependent on the river for the transportation of raw and finished products, as well as for a source of process water.

As the lumber industry slowed down, the log booms and boat slips were filled to create room for growing industrial operations. Early maps of the area show that the edge of the river was approximately 100 feet from Water Street. By 1950, the distance between the river and Water Street was over 700 feet and no boat slips or log booms were present. The fill material used to create the new land was a mixture of dredged material from the channel, waste from industrial operations (sawdust, wood, and foundry sand), and material brought in from local sources (demolition debris, foundry sands, and domestic trash). Evidence of these materials was identified in soil borings and excavations near the river.

The current environmental condition of the Saginaw River Valley in Bay City is a result of its long history. The MDNR has identified numerous properties along the Saginaw River in Bay City as known or suspected hazardous material release sites. These sites include gas stations, foundries, landfills, tank farms, large manufacturing facilities, and utilities. They contain a wide variety of environmental pollutants including polychlorinated biphenyls (PCBs), metals, volatile organic compounds (VOCs), and petroleum compounds that have been released to the soil, groundwater and surface water. State regulations require notification of releases and also require that investigations and cleanups be performed. The Saginaw River has been designated as an area of concern by the MDNR because of poor water quality and sediment contamination. Primary contaminants include PCBs, metals, and phenols. A remedial action plan has been developed for the river.

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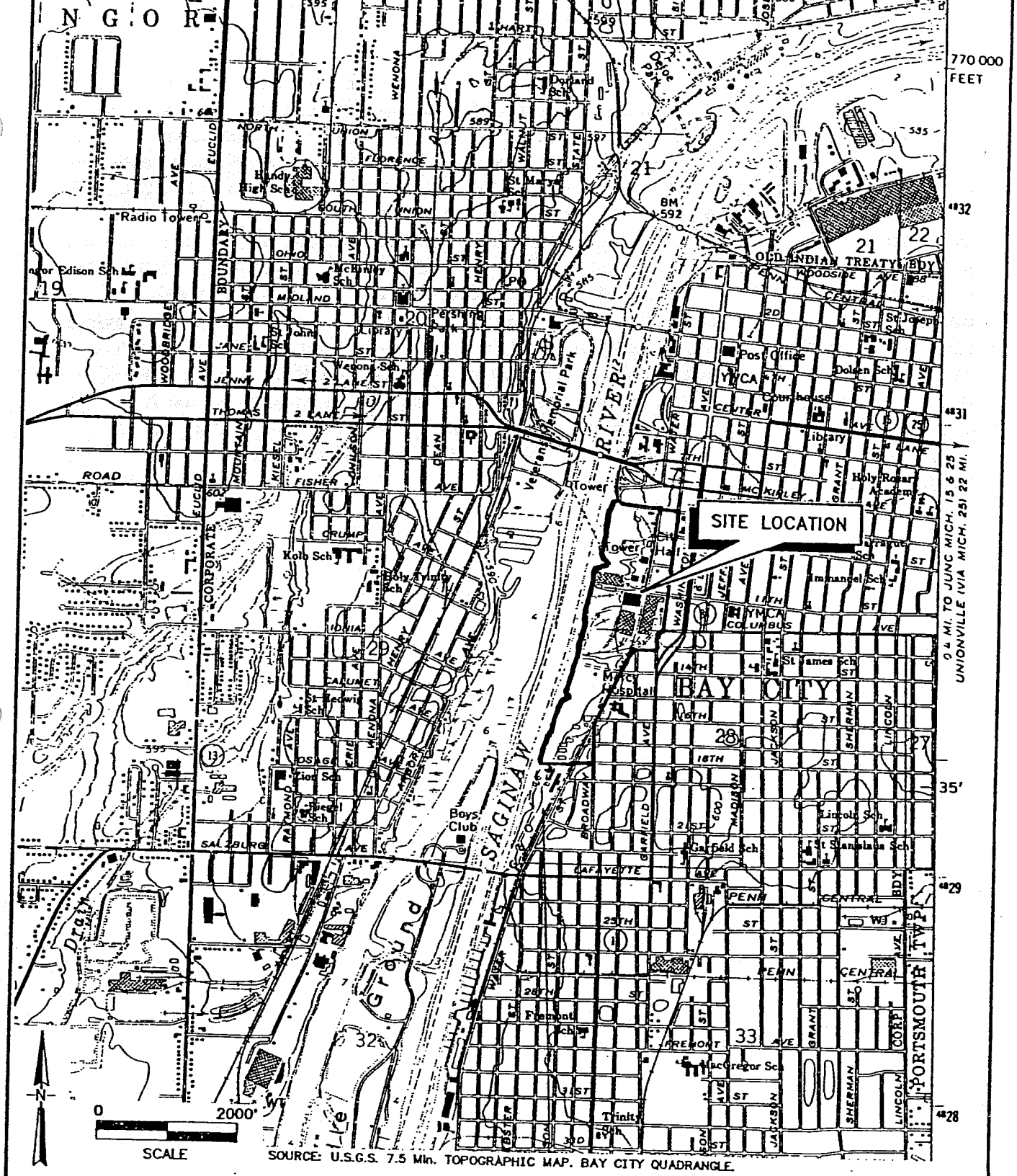

SOURCE: U.S.G.S. 7.5 Min. TOPOGRAPHIC MAP. BAY CITY QUADRANGLE.

FIGURE 2-1

ALTERNATIVE REMEDIAL CONTRACTING STRATEGY U.S. EPA CONTRACT No. 68-W8-0089 WORK ASSIGNMENT No. 55-5AED DOCUMENT CONTROL No. 4500-55-AHUE	AREA LOCATION MAP BAY CITY CERT SITE Bay City, Michigan

Results from audits conducted by Arthur D. Little, Inc. (ADL) between December 1991, and May 1992 indicated the potential for soil and groundwater contamination at many of the properties. Substantial information on the presence or absence of contamination in the soil and groundwater of the CERT site was provided through investigative activities conducted by WESTON during November and December 1992, at the twenty five potential source areas (Figure 2-2) on the IB property and by ADL at the other properties. The U.S. EPA determined that the CERT site would be considered as one large parcel for the purpose of environmental assessment activities. Following this approach, WESTON provided a review of the ADL reports and the IB report and identified data gaps for the overall CERT site. The U.S. EPA provided WESTON with a Scope of Work to conduct additional investigative activities to address only a portion of the identified data gaps. These additional activities were not intended to fill all of the data gaps identified by WESTON. It is also important to note that this investigation is not intended to encompass the full scope of a remedial investigation, but the validity and quality of the data collected during this phase should be such that it will be acceptable by state and federal agencies in support of additional investigations.

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SECTION 3

GEOLOGY & HYDROGEOLOGY

3.1 REGIONAL GEOLOGY

The Bay City area lies within the Great Central Lowland Physiographic Province. The landscape of this province was dominated by the effects of Pleistocene glacial processes when the Lake Huron Lobe of the Wisconsin Ice sheet retreated from the area during the Wisconsin stage between 15,000 and 12,000 years ago. The dominant unconsolidated sediments in Bay County were deposited as glacial till, lacustrine material, and alluvium. Some of this material has been reworked by the subsequent action of water and wind. The glacial till is calcareous and is friable or firm in consistence. The lacustrine material was deposited in still or ponded glacial melt water and consists of fine grain materials such as fine sand and silt. The alluvium material was recently deposited by the flood water of streams and rivers, and varies in texture depending on the stream characteristics. Giacial deposits in the area range from 50 to 100 feet in thickness.

Native modern soils in the area belong to the Tappan-Belleville association, characterized by nearly level, poorly drained soils that formed in loamy and sandy material on till plains modified by lake water (Soil Survey of Bay County, Michigan, USDA, 1980).

The bedrock underlying the region is composed of Pennsylvanian age shale and sandstone of the Saginaw Formation. Also present within this formation are coal beds and the Verne Limestone.

3.2 SITE GEOLOGY

The local geology for the CERT site is based on field observations made by WESTON during the installation of soil borings and monitoring wells. Soil was continuously sampled using 2-foot long split-spoon samplers. The soil was classified according to the Unified Soil Classification System (USCS) and logged by WESTON. The soil boring logs are presented in Appendix A.

Three basic stratigraphic units were identified during the subsurface soils investigation: fill material, alluvial deposits, and glacial till. Generally, the fill material thickens closer to the river; the alluvial material (river sediments) also thickens toward the river and seems to pinch out on the eastern side of the site. The glacial till is present at greater depths toward the river where it underlies the alluvium, but on the eastern side of the site, the till is found at shallower depths and often underlies the fill material directly.

The fill varies from silty sand to sand. Its color ranges from dark olive gray to black to brown. Although the fill is primarily granular, it can contain cinders, brick, wood or glass, along with foundry sand. Organic odors were noted in the fill at the IB, Fisher Brothers, Cnudde, and Midland Contracting properties. The fill material sampled in soil borings CS-

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SB-33 and CS-SB-36 at Fisher Brothers was extremely organic and contained abundant debris material. Petroleum odors were noted in the fill at the IB, Midland Contracting, and Fisher Brothers properties. Creosote-like odors were noted at the IB property, and ammonia-like odors were observed at the Switching Station property. In boreholes drilled near the river the fill generally extends to 12 to 14 feet below the ground surface. On the eastern side of the site the fill is up to 8 feet thick.

The alluvium consists of mixed or interbedded sand, silty sand, and clay, with finer grained units becoming more prevalent at depth. All of these units contain organic material. Pieces of wood and shells are often mixed into the alluvium. Sand units vary from gray to brown with well sorted subangular grains. Bedding thickness varies significantly from less than .25 inches to 1 to 2 feet. The organic clay is generally soft and very dark gray. Near the river the clay unit is approximately 24 feet below the ground surface and tends to pinch out eastward. The sand and silt units also pinch out away from the river.

The lowermost clay till is firm to stiff with some angular gravel and sand. The clay till is mottled and has a massive structure. Its color varies from grayish brown to dark gray. Site drilling activities characterized the lithology to a maximum depth of 60 feet. No other stratigraphic units were identified.

Industrial Brownhoist Site Geology

The three stratigraphic units described above are also present at the IB property. The texture and thickness of the fill varies greatly at IB. Near the river the fill extends to 14 feet bgs. On the eastern side of the site the thickness of the fill decreases. In soil boring CS-SB-03, 10 feet of fill overlies the clay till unit. Inside Building 41 (Area 18A) the fill thickness ranges from 0 to 8 feet thick. The fill in Building 41 directly overlies the till except in soil boring CS-SB-13 where 6 feet of alluvial deposits were found. In soil borings CS-SB-04 and CS-SB-06 alluvial deposits were observed. In these boreholes, sand and silty sand extended to approximately 25 feet below the ground surface and overlie a soft highly organic clay.

3.3 SITE HYDROGEOLOGY

The site is located within the Saginaw River drainage basin. The groundwater monitoring wells installed at IB in November of 1992 indicated that groundwater flow within the unconsolidated soils at the site was toward the west and the Saginaw River. As shown in Figure 3-1, the potentiometric surface measured on 30 November through 1 December 1992 (Table 3-1) was between 580 and 585 feet above mean sea level (MSL), with a horizontal gradient of approximately 0.01 feet/foot toward west. Data collected from monitoring well MW-4 was not used due to the apparent anomalous value of 575.43 feet. The river stage elevation for 1 December 1992 was approximately 578.5 feet. This value was estimated based on river stage measurements of 579.12 feet at the upstream Saginaw gauge and 578.37 feet at the downstream Essexville gauge. The potentiometric surfaces within the heterogeneous fill material tended to be irregularly shaped due to variations in flow caused

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TABLE 3-1
WELL CONSTRUCTION SUMMARY
CERT SITE, BAY CITY, MICHIGAN

WELL	DATE INSTALLED	TOP OF CASING ELEVATION	GROUND ELEVATION	TOP OF SCREEN ELEVATION	BOTTOM OF SCREEN ELEVATION	SCREEN INTERVAL (FEET BELOW GRADE)	DEPTH TO WATER (11/30 – 12/1/92)	WATER ELEVATION (11/30 – 12/1/92)
IB-MW-01	11-18-92	590.163	590.8	581.2	576.2	9-14	7.00	583.16
IB-MW-02	11-18-92	588.553	588.9	581.6	576.6	7-12	5.39	583.16
IB-MW-03	11-18-92	587.060	587.6	578.1	573.1	9-14	6.33	580.73
IB-MW-04	11-18-92	586.175	586.5	577.2	572.2	9-14	10.75	575.43
IB-MW-05	11-18-92	591.973	592.4	581.0	576.0	11-16	5.19	586.78
IB-MW-06	11-19-92	591.306	598.8	582.3	577.3	9-14	10.00	581.31
IB-MW-07	11-19-92	592.704	593.2	585.7	580.7	7-12	9.47	583.23
IB-MW-08	11-19-92	589.183	589.6	581.2	576.2	8-13	8.30	580.88
IB-MW-09	11-19-92	593.360	593.9	586.4	581.4	7-12	6.60	586.76
IB-MW-10	11-19-92	592.549	593.2	584.5	579.5	8-13	6.80	585.75
IB-MW-11	11-19-92	589.668	590.0	576.7	571.7	13-18	8.53	581.14
IB-MW-12	11-20-92	589.356	589.7	578.4	573.4	11-16	7.25	582.11
IB-MW-13	11-20-92	588.851	589.3	577.8	572.8	11-16	7.20	581.65
IB-MW-14	11-20-92	592.615	593.1	587.6	582.6	5-10	8.13	584.49
							(6/8/93)	
CS-MW-01	05-22-93	593.497	593.76	590.9	585.9	2.5-7.5	4.76	588.74
CS-MW-02	06-03-93	586.570	595.24	581.6	576.6	5-10	4.97	581.60
CS-MW-03	06-03-93	587.463	587.75	582.5	577.5	5-10	4.79	582.67

Work Assignment No.: 55-5AED
OMI\4500T12.WK3

Document Control No.: 4500-55-AHXB

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LEGEND

MW-14 586.78 — MONITORING WELL LOCATION W/FEET ABOVE MSL (Mean Sea Level)

581 — POTENTIOMETRIC SURFACE

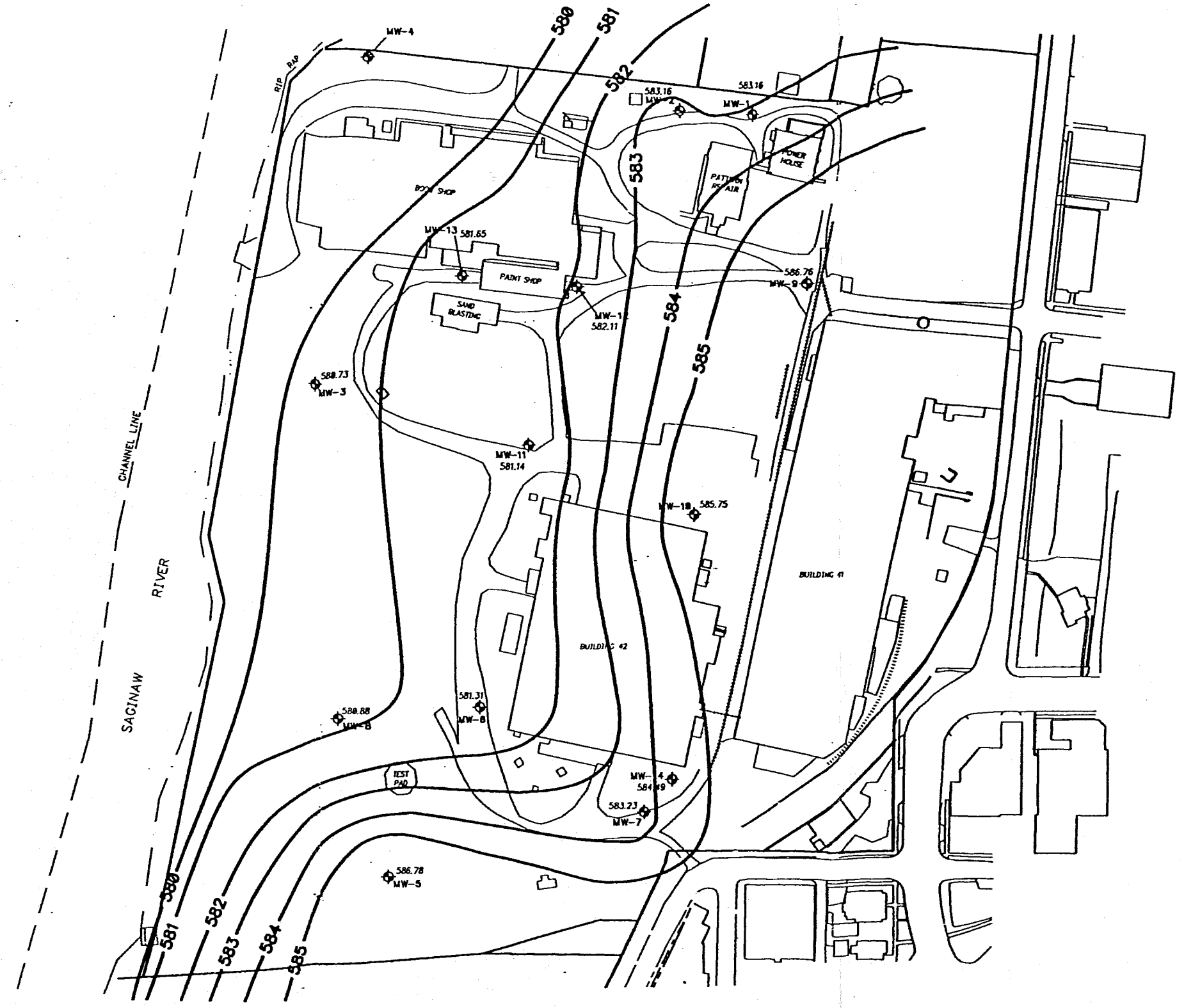

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FIGURE 3-1

ALTERNATIVE REMEDIAL CONTRACTING STRATEGY
U.S. EPA CONTRACT No 68-W8-0089
WORK ASSIGNMENT No. 055-5AED
DOCUMENT CONTROL No. 4500-55-AHUE

POTENTIOMETRIC SURFACE CONTOUR MAP
30 NOV - 1 DEC 92
BAY CITY CERT SITE
Bay City, Michigan

MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	SB-10

Date Drilled	Sheet	Drilling Method	Geologist
8-1-89	10 of 16	Hex-Core	T. Ramos

Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6 Ft.	4 in.		

Soil Sample No.	Penetration & Recovery (inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS18	18/24	9	16	16		1			Black, fine-med. grained, sand, no odor, moist.	
		9	6	7		2, 3				
SS19	18/24					4, 5				
						6, 7, 8, 9, 10, 11				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval

by spacial differences in porosity and permeability. Such irregularities are depicted in Figure 3-1.

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SECTION 4

FIELD INVESTIGATION

WESTON initiated the field investigation at the IB site in October 1992. Field activities were completed in December 1992. Also in December 1992, additional PCB sampling activities were conducted. Following additional authorization from the U.S. EPA, WESTON conducted additional field activities for the CERT project area between May 1993 and September 1993. These additional field activities included: a geophysical survey, a radiation survey and sampling, a soil quality assessment, a groundwater quality assessment, and Phase I assessments at six previously unaddressed parcels.

All of the samples initially collected at IB, except those collected for radiation, toxicity characteristic leaching procedure (TCLP) metals and extraction procedure (EP) toxicity metals analyses, were analyzed by Clayton Environmental Laboratory (Clayton) Novi, Michigan. The TCLP metals and EP Toxicity metals were analyzed by Snell Environmental (Snell) Lansing, Michigan. The radiation samples were analyzed by Core Laboratories (Core) Casper, Wyoming. Table 4-1 lists the samples collected at IB in November of 1992. Tables 4-2 and 4-3 show the samples that were collected during the most recent field effort and the analysis performed on those samples.

The following subsections summarize the investigative activities and provide details of the field investigation.

4.1 HEALTH AND SAFETY

Prior to the initiation of field activities, a detailed site specific HASP was prepared to meet the requirements set forth by the Occupational Safety and Health Administration (OSHA) in 29 CFR (1910.120) for work conducted at hazardous waste sites. A copy of the HASP was presented to all personnel working on the site. All site personnel read and signed the HASP acknowledging their understanding and willingness to follow all procedures outlined in the HASP. The HASP was implemented at the site by the WESTON Site Health and Safety Coordinator (SHSC). Prior to initiating field work the SHSC directed a safety meeting with all on-site personnel, including subcontractor personnel, which addressed the potential safety hazards that may be encountered during the day's activities.

WESTON personnel monitored the breathing zone for VOCs, explosive atmospheres and oxygen content during drilling and sampling activities using a flame-ionization detector (FID) or photo-ionization detector (PID) for VOCs, and a combustible gas indicator (CGI) for flammability and oxygen content. WESTON also monitored with a radiation meter before, during, and after completion of site activities in each area. All monitoring data were recorded on individual boring log forms and in the field logbook.

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Table 4-1
Summary of Samples Collected and Analysis Performed[1]
November 1992
Industrial Brownhoist, Bay City, Michigan

Area of Concern	Sample No.	Matrix	Depth (ft) Below Ground Surface	Analysis Performed					
				VOC	SVOC	PAH	Metal	PCB	Cyanide
Area No. 1	IBSB3701	Soil	6-10	X	X			X	
	IBMW01	Water		X	X		X	X	X
Area No. 2	IBSB3801	Soil	4-6	X					
	IBSB3802	Soil	2-8 (composite)		X			X	
	IBSB4601	Soil	8-10	X	X			X	
	IBSB4602	Soil	4-6	X	X			X	
	IBMW02	Water		X	X		X	X	X
Area No. 3	No soil borings or monitoring wells were installed in this area. No samples were collected in this area.								
Area No. 4	IBSB0101	Soil	6-8	X	X		X	X	
	IBSB0102	Soil	8-10	X	X		X	X	
	IBSB0201	Soil	8-10	X	X		X		
	IBSB0301	Soil	6-8	X	X				
	IBSB0302	Soil	8-10	X	X				
	IBMW04	Water		X	X		X	X	X
Area No. 5	IBSB3301	Soil	6-8	X	X		X		
	IBSB3302	Soil	12-14	X	X		X		
	IBSB3401	Soil	4-6	X	X		X		
	IBMW13	Water		X	X		X	X	X

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Table 4-1
Summary of Samples Collected and Analysis Performed[1]
November 1992
Industrial Brownhoist, Bay City, Michigan

Area of Concern	Sample No.	Matrix	Depth (ft) Below Ground Surface	Analysis Performed					
				VOC	SVOC	PAH	Metal	PCB	Cyanide
Area No. 5 (continued)	IBHA1601	Soil	3-3.5	X					
	IBHA1602	Soil	1.5-2/3-3.5 (composite)		X		X	X	
Area No. 5A	IBSB3101	Soil	10-12	X	X		X		
	IBSB3201	Soil	4-6	X	X		X		
	IBSB3202	Soil	8-10	X	X		X		
	IBHA1701	Soil	1.5-2	X					
	IBHA1702	Soil	1.5-2		X		X	X	
	IBMW12	Water		X	X		X	X	X
Area No. 6	IBSB0401	Soil	16-18	X		X		X	
	IBSB0402	Soil	29-31	X		X		X	
	IBSB0501	Soil	10-12	X					
	IBSB0502	Soil	6-14			X		X	
	IBMW03	Water		X	X		X	X	X

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Table 4-1
Summary of Samples Collected and Analysis Performed[1]
November 1992
Industrial Brownhoist, Bay City, Michigan

Area of Concern	Sample No.	Matrix	Depth (ft) Below Ground Surface	Analysis Performed					
				VOC	SVOC	PAH	Metal	PCB	Cyanide
Area No. 7	IBSB4501	Soil	10-12	X		X	X	X	
	IBSB4502	Soil	12-14			X	X	X	
	IBSB4503	Soil	14-16	X					
	IBHA1001	Soil	3-3.5	X					
	IBHA1002	Soil	1.5-2/3-3.5 4-4.5 (composite)				X	X	
	IBHA1101	Soil	1.5-2	X					
	IBHA1102	Soil	1.5-2				X	X	
Area No. 8/9	IBSB0601	Soil	15-17	X					
	IBSB0602	Soil	7-17 (composite)		X		X	X	
	IBSB0701	Soil	8-10	X					
	IBSB0702	Soil	2-12 (composite)		X		X	X	
	IBSB0801	Soil	8-10	X	X		X	X	
	IBSB0802	Soil	10-12	X					
	IBSB0901	Soil	4-6	X	X		X	X	
	IBSB1001	Soil	8-10	X	X		X	X	
	IBMW05	Water		X	X		X	X	X
	IBMW08	Water		X	X		X	X	X

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Table 4-1
Summary of Samples Collected and Analysis Performed[1]
November 1992
Industrial Brownhoist, Bay City, Michigan

Area of Concern	Sample No.	Matrix	Depth (ft) Below Ground Surface	Analysis Performed					
				VOC	SVOC	PAH	Metal	PCB	Cyanide
Area No. 10	IBSB1101	Soil	4-6	X		X	X		
	IBSB1102	Soil	12-14	X		X	X		
	IBSB1201	Soil	12-14	X		X	X		
	IBMW06	Water		X	X		X	X	X
Area No. 11	IBSB1301	Soil	4-6	X		X	X		
	IBSB1302	Soil	12-14	X		X	X		
	IBSB1401	Soil	8-10	X		X	X		
	IBSB1501	Soil	2-4	X		X	X		
	IBSB1502	Soil	8-10	X		X	X		
	IBSB4301	Soil	4-6	X		X	X		
	IBSB4701	Soil	4-6	X		X	X		
	IBSB4702	Soil	8-10	X		X	X		
	IBMW07	Water		X	X		X	X	X
	IBMW14	Water		X	X		X	X	X
Area No. 12	IBSB1601	Soil	2-4	X		X	X		
	IBSB1602	Soil	4-6	X		X	X		
	IBSB1701	Soil	2-4	X					
	IBSB1702	Soil	4-6			X	X	X	

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Summary of Samples Collected and Analysis Performed[1]
November 1992
Industrial Brownhoist, Bay City, Michigan

Area of Concern	Sample No.	Matrix	Depth (ft) Below Ground Surface	Analysis Performed					
				VOC	SVOC	PAH	Metal	PCB	Cyanide
Area No. 13	IBSB2501	Soil	6-8	X		X	X	X	
	IBSB2502	Soil	10-12	X		X	X	X	
	IBSB2503	Soil	12-14	X		X	X	X	
	IBSB2601	Soil	6-8	X					
	IBSB2602	Soil	8-10			X	X	X	
	IBSB2701	Soil	2-4	X		X	X	X	
	IBSB2702	Soil	4-6	X		X	X	X	
	IBMW10	Water		X	X		X	X	X
Area No. 14	IBSB2801	Soil	10-12	X					
	IBSB2802	Soil	12-14			X	X	X	
	IBSB2803	Soil	14-16	X		X	X	X	
Area No. 15	IBSB2901	Soil	4-6	X		X	X	X	
	IBSB2902	Soil	12-14			X	X	X	
	IBSB2903	Soil	14-16	X					
Area No. 15/16A	IBSB3001	Soil	2-4	X					
	IBSB3002	Soil	12-14	X		X	X	X	
	IBMW11	Water		X	X		X	X	X
Area No. 16	No soil borings or monitoring wells were installed in this area. No samples were collected in this area.								

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Table 4-1
Summary of Samples Collected and Analysis Performed[1]
November 1992
Industrial Brownhoist, Bay City, Michigan

Area of Concern	Sample No.	Matrix	Depth (ft) Below Ground Surface	Analysis Performed					
				VOC	SVOC	PAH	Metal	PCB	Cyanide
Area No. 16/17A	IBSB3501	Soil	6-8	X		X	X	X	
	IBSB3601	Soil	10-12	X		X	X	X	
Area No. 17	IBSB3901	Soil	6-8	X		X	X		
	IBMW09	Water		X	X		X	X	X
Area No. 18	IBSB4401	Soil	10-12	X					
	IBSB4402	Soil	20-22	X					
	IBSB4403	Soil	12-14	X		X			
	IBSB4404	Soil	22-24	X		X	X	X	
Area No. 19	IBSB1901	Soil	2-4	X		X	X	X	
	IBSB1902	Soil	6-8	X		X	X	X	
	IBSB2001	Soil	0-2	X[2]					
	IBSB2002	Soil	0-6 (composite)			X	X	X	
	IBSB2301	Soil	4-6	X	X		X		X
	IBSB2401	Soil	4-6	X	X		X		X
	IBHA1201	Soil	4-4.5	X					
	IBHA1202	Soil	1.5-2/3-3.5/ 4-4.5 (composite)			X	X	X	X
	IBHA1301	Soil	1.5-2	X					

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Summary of Samples Collected and Analysis Performed[1]
November 1992
Industrial Brownhoist, Bay City, Michigan

Area of Concern	Sample No.	Matrix	Depth (ft) Below Ground Surface	Analysis Performed					
				VOC	SVOC	PAH	Metal	PCB	Cyanide
Area No. 19 (continued)	IBHA1302	Soil	1.5-2/3-3.5/ 4-4.5 (composite)			X	X	X	
	IBHA1401	Soil	3-3.5	X					
	IBHA1402	Soil	1.5-2/3-3.5 4-4.5 (composite)			X	X	X	
	IBHA1501	Soil	2.5-3	X					
	IBHA1502	Soil	1.5-2/2.5-3/3-3.5/ 4-4.5 (composite)			X	X	X	
Area No. 20	IBSB2101	Soil	0-2	X	X		X		X
	IBSB2102	Soil	2-4	X	X		X		X
	IBSB2201	Soil	4-6	X	X		X		X
	IBCC01	Concrete	Surface						X
	IBCC02	Concrete	Surface						X
	IBCC03	Concrete	Surface						X
Area No. 21	No soil borings or monitoring wells were installed in this area. No samples were collected in this area.								
Area No. 22	IBSB1801	Soil	2-4	X		X	X		
Area No. 23	IBSB4801	Soil	0-1 (surface)			X		X	
	IBSB4802	Soil	2-4	X		X		X	
	IBSB4901	Soil	0-2	X	X			X	
	IBSB4902	Soil	6-8	X	X			X	

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le 4-1
Summary of Samples Collected and Analysis Performed[1]
November 1992
Industrial Brownhoist, Bay City, Michigan

Area of Concern	Sample No.	Matrix	Depth (ft) Below Ground Surface	Analysis Performed					
				VOC	SVOC	PAH	Metal	PCB	Cyanide
Area No. 24	No soil borings or monitoring wells were installed in this area. No samples were collected in this area.								
Area No. 25	IBHA0601	Soil	1.5-2	X					
	IBHA0602	Soil	1.5-2/3-3.5 (composite)		X		X	X	
	IBHA0701	Soil	1.5-2	X					
	IBHA0702	Soil	1.5-2/3-3.5/ 4-4.5 (composite)		X		X	X	
	IBHA0801	Soil	2.5-3	X					
	IBHA0802	Soil	1.5-2/2.5-3 (composite)		X		X	X	
Area No. 25A	IBSB4001	Soil	4-6	X		X			
	IBSB4101	Soil	6-8	X		X			
	IBSB4201	Soil	6-8	X		X			
	IBHA0901	Soil	3-3.5	X					
	IBHA0902	Soil	1.5-2/3-3.5 4-4.5 (composite)		X		X	X	

[1] Does not include samples collected for QA/QC.
[2] Sample lost prior to analysis.

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Table 4-2
Summary of Samples Collected and Analysis Performed
May – June 1993
Industrial Brownhoist
Bay City, Michigan

Area of Concern	Sample #	Matrix	Depth below ground surface (ft)	Ananlysis							
				VOC	SVOC	PAH	Metals	PCB	Cyanide	TCLP/EP Tox.	Radiation
5A	CS-SB-01	Soil	2-10							X	
5	CS-SB-02	Soil	10-16							X	
8	CS-SB-04	Soil	8-14	X	X		X	X			
	CS-SB-06	Soil	6-12	X	X		X	X			
	CS-SB-06 R	Soil	25-29	X	X			X			
	CS-HA-07	Soil	.5-1.5								X
11	CS-SB-05	Soil	8-14							X	
	CS-HA-06	Soil	.5-1.5								X
14	CS-SB-03	Soil	10-14							X	
18	CS-SB-07	Soil	21-22	X		X					
18A	CS-SB-13	Soil	3-7	X	X				X		
	CS-SB-14	Soil	1.5	X	X				X		
	CS-SB-15	Soil	5-7	X	X						
	CS-SB-22	Soil	5-9	X	X			X	X		
		Soil	9-11	X	X			X	X		
	CS-SB-25	Soil	5	X	X			X	X		
25/25A	CS-HA-12	Soil	1.5							X	
	CS-HA-08	Soil	.5-1.5								X
	CS-HA-09	Soil	0.5-1					X			
	CS-HA-10	Soil	0.5-1					X			

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4.2 DECONTAMINATION

The hollow-stem augers, split spoon samplers, and all other drilling equipment and associated tools were steam cleaned between use at each borehole and monitoring well location to prevent cross-contamination. All steam cleaning was performed on wood sawhorses within the dedicated decontamination area at the IB site. The rinsate was collected, drummed and labeled. The split spoon samplers were decontaminated between samples by washing with an alconox mixture and a scrub brush to remove any solids, and rinsing with potable water. An equipment blank was collected by allowing high grade laboratory distilled water to run through a decontaminated split spoon sampler and collecting the water in a sample vial. The equipment blank was analyzed for VOCs. The decontamination water generated during the field activities will require future disposal.

4.3 GEOPHYSICAL SURVEYS

4.3.1 Industrial Brownhoist

WESTON conducted geophysical surveys of the IB property on 26 October through 6 November 1992. An electromagnetic terrain conductivity meter (EM31), a proton precession magnetometer and ground penetrating radar (GPR) were used during the geophysical surveys. The information collected during the geophysical investigation was utilized to identify potential underground utilities and the accessibility of potential soil boring locations.

Results of the geophysical surveys indicated that numerous underground utilities and foundations were present throughout the site, which restricted the placement of soil borings. Additionally, the surveys identified two potential underground storage tanks (USTs) at the IB site in Areas 11 and 13.

WESTON conducted additional geophysical surveys of the southwest portion of the IB property on 17 May 1993 through 21 May 1993. This area was formerly a swampy, low-lying area that had reportedly been used for the on-site disposal of unknown waste material. During the survey, WESTON utilized an EM31 and a proton procession magnetometer. The survey information identified the presence of buried ferromagnetic material and a buried trench. The survey information was also used to establish soil boring locations.

WESTON was scheduled to conduct additional geophysical survey activities in the southwest portion of the IB site. However, these additional survey activities were subsequently canceled by the U.S. EPA Work Assignment Manager (WAM) for the project when the aggregate piles present at the site could not be moved in a cost effective manner by the owner.

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4.4 RADIATION SURVEY AND SAMPLING

WESTON conducted gamma radiation surveys in conjunction with soil sampling activities at the IB site on 17 May 1993 through 20 May 1993. Gamma radiation walkover surveys of all sampling locations were performed using a Ludlum Model 19 Micro-Roentgen Meter held at waist level. Shallow subsurface soil samples were collected from locations that were identified as having elevated gamma radiation levels by gamma radiation grid surveys. Specific sampling locations were confirmed during current field activities using the Micro-Roentgen Meter. The suspected source of the contamination was radioactive sands utilized in foundries and potentially present in foundry sand used for fill at the site. Shallow subsurface soil samples were collected from .5 to 1.5 feet at three locations found to have elevated gamma radiation levels using a decontaminated bucket auger.

SAMPLE ID NUMBER	GAMMA RADIATION READING
HA-CS-06	11 microroentgen per hour (μR/hr)
HA-CS-07	24 μR/hr
HA-CS-08	22 μR/hr

These samples were analyzed for isotopic radium, thorium, uranium, natural uranium, gross gamma, gross beta and gross alpha. The samples collected are summarized in Table 4-2.

4.5 BUILDING INVESTIGATIONS - INDUSTRIAL BROWNHOIST

Investigation of the IB on-site buildings was conducted to determine whether hazardous materials or waste existed within the buildings, or if the subsurface material beneath the buildings had been impacted by the migration of contaminants through cracks in the floors or along the foundations. Locations of potential hazardous materials, observable spillage or staining and areas of potential asbestos-containing material (ACM) were identified. The investigation also attempted to identify all related drains and sumps however dye tests were not used to trace the drains and sumps. Dye tests were not determined to be necessary for this investigation by the U.S. EPA. A summary of the observations made in each IB building is provided below.

4.5.1 Powerhouse

A significant amount of oil staining was observed throughout the powerhouse. Oil-saturated wood flooring was observed on the first floor and oil-stained concrete walls were observed in the basement. PCB-labeled transformers were noted on the first floor of the building. Potential ACM was observed on the boiler and on pipe-wrap located in the basement. Additionally, potential ACM was observed on steam lines that entered the on-site tunnel system. Three drums of water treatment chemicals were also observed in the basement.

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4.5.2 Storage Building

An abandoned laboratory on the second floor of the storage building was observed. All of the laboratory chemicals appeared to have been removed. No significant staining was observed. No visual evidence of spilled mercury was observed by WESTON.

4.5.3 Boom Shop

Oil-stained concrete was observed in the vacant compressor room of the boom shop.

4.5.4 Sand-Blasting Building

A 6 to 12-inch layer of sand blasting sand was observed throughout the building. No evidence of staining was observed.

4.5.5 Building 42

Isolated areas of oil-stained concrete were observed throughout the building. A pile of solidified metal debris was also observed immediately outside the northwest corner of the building. Potential asbestos-containing floor tile was noted on the second floor within the office area of the building. Two drums of hydraulic oil were observed inside the building. Three drums of unknown contents were observed outside the building on a concrete pad to the west.

4.5.6 Building 41

Significant oil-staining was observed in the northwest portion of the building beneath a bank of PCB-labeled transformers. Additionally, isolated areas of oil-stained concrete and wood block flooring were noted throughout the building. Potential ACM was observed on pipes that originated in the tunnel system. Staining of the floor within the former plating area was observed, but the concrete floor was noted to be in good condition. Approximately 500 to 700 bags of used insulating material was observed in the northeast portion of the building. The source of this material could not be determined. The majority of the former machine pits in this building appear to have been backfilled with concrete or sand.

4.6 SOIL ASSESSMENT

During the soil assessment activities, samples were collected using a truck-mounted drill rig (CME-75) or a skid rig (Dietrich 50) with a 4¼-inch inside diameter (ID) hollow stem auger (HSA). Soil samples were collected at each boring location in accordance with ASTM D-1586, using 2-inch diameter, 2-foot long stainless steel split-spoon samplers. All of the drilling activities were performed by Burlington Environmental under subcontract to WESTON. A WESTON geologist/scientist collected and classified each of the soil borings according to the unified soil classification system (USCS). All of the samples were screened on-site with a FID or PID to aid in selecting samples for analysis.

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Because of accessibility problems for the truck-mounted drill rig at some locations, soil samples were collected using a stainless steel bucket hand auger. The bucket hand auger was decontaminated using the same methods described for the split-spoon samplers. All of the soil cuttings generated during the drilling activities were containerized and stored on-site. Boreholes were backfilled using cement/bentonite grout and/or hydrated bentonite chips.

4.6.1 Industrial Brownhoist

4.6.1.1 Initial Characterization

Surface and subsurface soil sampling activities were initiated on 2 November 1992. Fifty (50) soil borings, ranging in depths from 6 to 60 feet below the ground surface, were installed throughout the IB site. The soil boring locations were selected to identify the presence of soil contamination in the 25 areas of concern previously identified by ADL. A total of 12 soil samples were collected from locations that were inaccessible to the drill rig because of overhead electrical lines, elevated radiation readings, or results of the geophysical survey using a stainless steel bucket hand auger at depths 2 to 4-feet below the ground surface. The locations for soil borings, monitoring wells, and hand auger borings are presented on Figure 4-1.

During soil boring installation, split-spoon samples were collected from 2 feet below the ground surface to the water table or until a clay layer was encountered. Samples were selected for analysis based on elevated VOC field screening results, and differences in the physical nature of the soil or other visual observations determined in the field. The selected samples were appropriately packaged and sent to Clayton for analysis. A total of 109 soil samples were analyzed for selected parameters including VOCs, polynuclear aromatic hydrocarbons (PAHs), PCBs, semi-volatile organic compounds (SVOCs), metals (Michigan 10 List) and cyanide. An overview of the samples collected and the analyses performed is shown in Table 4-1. Analytical results are presented in Section 5.

Concrete chip samples were collected from three locations in the vicinity of the former plating area inside building 41 to determine if the concrete had been impacted from former plating operations.

Selected Locations for Soil Borings

Fifty soil boring sample locations were selected based upon the areas of concern identified in a Preliminary Environmental Assessment Report prepared by ADL (Figure 2-2), as well as the results of the geophysical survey, radiation survey readings, overhead electrical lines and other site conditions. The potential contaminant source areas, the corresponding samples collected from each area and a brief description of field observations are summarized below.

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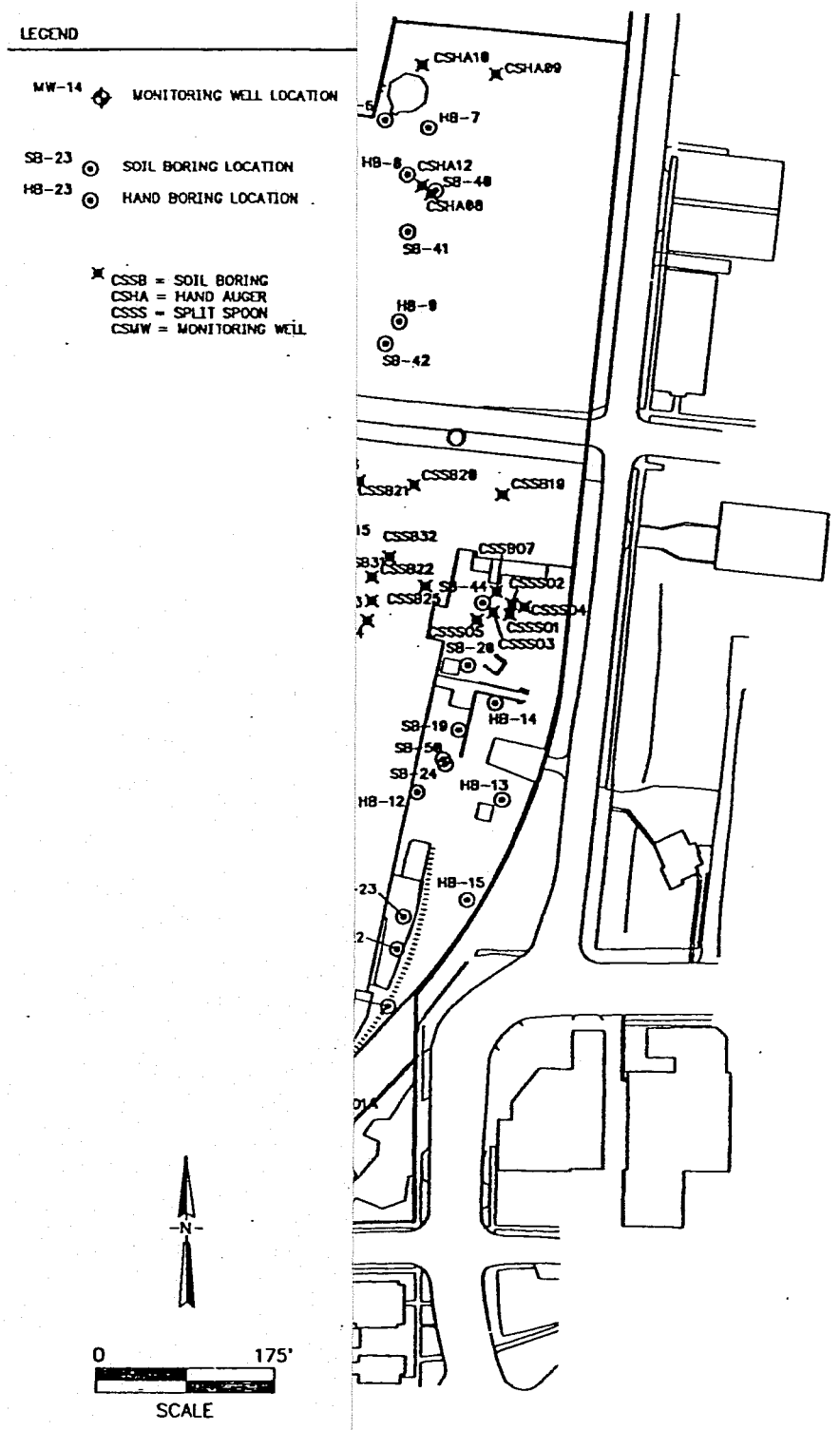

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FIGURE 4-1

SOIL BORING, HAND BORING AND MONITORING WELL LOCATION MAP

BAY CITY CERT SITE
Bay City, Michigan

Area 1

One soil boring (IBSB37) was installed in this area based on limited accessibility and the results of the geophysical survey. The soils consisted of mostly fill material to a depth of at least 10 feet below grade. The fill material consisted of black soil with metal slag and pieces of wood. The texture of the fill material consisted of gravel and sand-sized material in the first 6 feet and sand and silt sized material toward the bottom of the boring. The fill varied in color from black to brown (approximately 12 feet below grade). Small amounts of a yellow silty material were also encountered at approximately 9.5 feet below grade.

Area 2

Two soil borings were installed in this location; one at the west end of the area of concern (IBSB46) and one at the east end (IBSB38). The overburden in Area 2 was characterized as fill material to a depth of 8 feet below grade. The fill consisted primarily of a brown to black slag-like material. Sand, gravel, and small amounts of silt were also observed. The fill was loosely compacted throughout and became saturated at approximately 7 feet below grade.

Area 3

No soil borings could be installed in this area because of the presence of large piles of aggregate which covered the entire area of concern.

Area 4

Three soil borings were advanced in this location (IBSB01, IBSB02, IBSB03). Soils consisted of mostly fill material with pieces of brick observed in the spoon samples. Elevated FID readings (600-1,000 units) were observed at all of the borehole openings in this area at 6-10 feet below the ground surface. On the south side of the area near the Boom Shop building, the overburden consisted of a moderate brown to brownish gray sand with traces of silt, clay, gravel, and organic material. The sand unit was observed to be saturated at 8 feet below grade and continued to a depth of 9 feet below grade. On the north side of the area, sand and gravel were encountered to a depth of 4 feet below grade. The unit varied in color from shades of gray to brown and black. Underlying the sand and gravel was a clay layer with some silt, a little sand, and a trace amount of gravel. The clay varied in color from olive gray to dark gray and was wet to saturated.

Area 5/5A

Two soil borings (IBSB33 and IBSB34) and one hand auger boring (IBHA16) were advanced in Area 5 and two soil borings (IBSB31, IBSB32) and one hand auger boring (IBHA17) were advanced in Area 5A. In both areas the fill material extended to a depth of at least 14 feet below grade. The fill consisted primarily of a dark brown fine sand and gravel with traces of silt. Pieces of brick, slag-like material, and a yellow powder substance

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were also observed. A greenish gray silty fine sand with some organic material and traces of clay was observed at approximately 8.5 feet below grade. Pieces of wood and a slight unidentifiable odor were encountered at 13 feet below grade.

Area 6

Two soil borings (IBSB04 and IBSB05) were advanced in this area. This area was characterized by a sand unit that extended to a depth of at least 27 feet below grade. The sand was fine-grained with varying amounts of gravel and silt and trace amounts of organic material (shell fragments, wood pieces). The sand unit was generally brownish gray in color and became saturated at 10-12 feet below the ground surface. A finer sandy silt layer was observed beneath the sand layer and contained traces of clay and organic matter. Elevated FID readings of greater than 1,000 units above background were observed at approximately 8 feet below the ground surface (water table), and FID readings of 100-700 units above background were recorded from the sample collected from 6 to 14-feet below the ground surface. Wood pieces were observed in split spoon samples from 2 to 24-feet below the ground surface. An oily sheen was observed on the water recovered in the split spoon sample from 10 to 12 feet and 12 to 14 feet below the ground surface.

Area 7

One soil boring (IBSB45) and two hand auger borings (IBHA10 and IBHA11) were advanced in this area. Elevated radiation readings were observed closer to the building and because of safety concerns limited available sample locations. This area was characterized by at least 16 feet of fill material consisting of gravel, sand, silt, broken pieces of brick and some slag-like material. An unidentifiable odor was documented at 2 to 4-feet and 10 to 16 feet below the ground surface. The overburden was wet at 11 feet below the ground surface and saturated at 13.5 feet.

Area 8

Four soil borings were advanced in this area (IBSB07, IBSB08, IBSB09 and IBSB10). The area was characterized by fill material to a depth of at least 12 feet below the ground surface. The fill material consisted of brick, ash, slag and wood. The fill varied in color from dusty brown to brownish black to grayish black. The fill material was wet at approximately 6 feet below the ground surface and saturated at 8 feet. Readings of 120-650 units above background were observed on the FID while screening samples from 8-10 feet below the ground surface (at water table). The borehole was screened at 12 feet below the ground surface with the CGI/oxygen meter. 20 % of the Lower Explosive Limit (LEL) and 13% oxygen were recorded, which may indicate the presence of methane in the subsurface.

Area 9

One soil boring was advanced in this area (IBSB06). The fill material extended to a depth of 23 feet below the ground surface and consisted primarily of silt, sand, and gravel-sized

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material and pieces of wood. The fill ranged in color from gray to black. The fill became saturated at 11 feet below the ground surface. A wet grayish brown clay layer was encountered beneath the fill. The clay layer contained traces of silt, sand, and organic material. FID readings were observed from 72 to greater than 1,000 units above background during soil boring installation.

Area 10

Two soil borings (IBSB11 and IBSB12) were advanced in this area. The area was characterized by fill material to a depth of at least 14 feet below the ground surface. Slag-like material and pieces of brick were encountered throughout the depth of the fill. Brownish black and brownish gray silt sand, and gravel were also encountered. The presence of organic material caused variations in the fill color from dark gray to grayish black. Elevated FID readings (greater than 1,000 units above background) were observed while screening samples from 12-14 feet below the ground surface, which may indicate the presence of methane.

Area 11

Five soil borings (IBSB13, IBSB14, IBSB15, IBSB43 and IBSB47) were advanced in this area based on the results of the geophysical survey, which indicated the presence of a potential UST. Soil borings were advanced on four sides of the potential UST to determine the extent of contamination resulting from any potential leaks that may have occurred. The fill material in Area 11 varied in depth from 4-14 feet below the ground surface. A clay layer was observed directly below the fill. The fill consisted of organic material, slag-like material, pieces of wood, pieces of black coal-like material, broken pieces of glass, varying amounts of silt, sand and gravel. The clay varied in color from yellowish brown to brown to brownish gray and was firm, becoming stiff with depth. Soil screening results indicated 50-100 units above background on the FID from 6-10 feet below the ground surface. While advancing the soil boring at the west end of the potential UST (IBSB15), a strong diesel odor was observed when drilling from 2-4 feet below the ground surface. FID readings of 60 units above background were recorded at the top of the borehole. A strong sulfur odor was detected when grouting the borehole. Radiation readings of 14 μR/hr were observed in the area near the building.

Area 12

Two soil borings (IBSB16 and IBSB17) were advanced in this area. The auger was advanced through the concrete roadway before samples were collected. Fill material was observed to a depth of 2-4 feet below ground surface, consisting primarily of gravel-sized material with some fine sand and silt. A slight amount of organic material was observed at the 2-4 foot sampling interval. The material was generally dry to damp and ranged in color from a brownish or dusty orange to a brownish or medium light gray. Underlying the fill material was a dense clay layer. The color of the clay layer ranged from yellow-brown to brownish gray. The clay was primarily dry to moist, but a saturated lens was encountered

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at 6-6.5 feet below the ground surface. FID readings of up to 50 units above background were observed while screening the interval from 2-4 feet below the ground surface.

Area 13

Three soil borings (IBSB25, IBSB26 and IBSB27) were advanced in this area based on the results of the geophysical survey, which indicated the presence of a potential UST. Soil borings were advanced on three sides of the potential UST location to determine the extent of contamination resulting from potential leaks that may have occurred. No soil borings were advanced on the southeast corner (upgradient) side of the tank because of insufficient clearance between the overhead power lines and the derrick of the drill rig. The area was characterized by 4-10 feet of fill material underlain by a dense clay unit. The fill material consisted of gravel and sand sized material as well as up to 4 feet of decaying material. Pieces of brick and slag-like material were also encountered within the fill layer. The material varied in color from brownish gray to grayish black. The underlying clay unit contained traces of gravel, sand, and silt, and ranged in color from dark yellow-brown to brownish gray. A strong diesel odor was observed in the split-spoon sample collected from 8-10 feet below the ground surface. A visible sheen was observed on the clay material inside the split-spoon sample collected from 12-14 feet below the ground surface.

Area 14

One soil boring (IBSB28) was advanced in this area. The soil boring was characterized by fill material to about 14.5 feet below the ground surface. A clay layer was observed directly beneath the fill. The fill consisted primarily of gravel with some sand and silt. Slag-like material and a layer of organic material was observed at 8 and 12 feet below the ground surface. A silt lens (2.5 inches) was observed at 10 feet below the ground surface. The fill was wet and became saturated at 10 feet below the ground surface. The light brown-gray clay layer had a trace of organic material and silt. A strong diesel odor was detected and a sheen was observed at 8-10 feet below the ground surface. FID readings of greater than 1,000 units above background were observed directly above the borehole when drilling from 10-12 feet below the ground surface. Elevated FID readings, greater than 10 units, were observed in the breathing zone when pulling the augers from the borehole.

Area 15

One soil boring (IBSB29) was advanced in this location to delineate the extent of contamination from the potential UST in Area 13. Approximately 12-14 feet of clay underlain by a sand layer was observed. The clay layer had occasional lenses of organic material and had small amounts of sand and silt and trace amounts of gravel. The clay ranged in color from tan to dark gray. The organic layers were dark gray, gray brown, and black. The underlying sand layer contained a small amount of silt and clay and was wet. Elevated PID and FID readings were observed from 2 to 16 feet below the ground surface. No visible or olfactory indications of contamination were noted throughout the boring.

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Area 15/16A

One soil boring (IBSB30) was advanced in this location to delineate the extent of contamination from the potential UST in Area 13. Fill material was observed to a depth of approximately 7 feet below ground surface. The fill consisted of brick pieces and metallic slag-like material and was underlain by a clay layer. The clay was firm and moist just beneath the fill and contained small amounts of silt, sand, and gravel. Elevated FID and PID readings were observed at 12-14 feet below the ground surface.

Area 16/17A

Two soil borings (IBSB35 and IBSB36) were advanced in this area. Fill material was observed to a depth of approximately 7 feet below the ground surface. This fill consisted of brick pieces and metallic slag-like material. The fill was underlain by a clay layer. The clay was firm and moist just beneath the fill and contained small amounts of silt, sand, and gravel.

Area 17

One soil boring (IBSB39) was advanced in this area. Fill material was encountered to a depth of approximately 3.5 feet below the ground surface. The material was damp and consisted of a firm silty clay with some fine sand. Underlying the fill material was a fine red-brown sand with a little silt. The sand was moist becoming saturated at 6 feet below the ground surface.

Area 18

One soil boring (IBSB44) was advanced in this area. The area is low-lying with respect to the rest of the site and was very swamp-like and not readily accessible with the drill rig. The area was characterized by dense, tall vegetation and standing, shallow water. Fill material was observed to a depth of approximately 22 feet. The fill was comprised of pieces of black slag-like material, pieces of wood, pieces of brick and broken rock. An oily sheen was encountered at 3 to 6 feet below the ground surface. A strong solvent-like odor was observed at approximately 5.5 feet and tapered off to a slight odor at 20 feet below the ground surface. Underlying the fill material was a dense dry clay layer with some silt, fine to medium sand and fine gravel. The stiff clay was uniformly gray in color and high in plasticity.

Area 19

Five soil borings (IBSB19, IBSB20, IBSB23, IBSB24 and IBSB50) and four hand auger borings (IBHA12, IBHA13, IBHA14 and IBHA15) were advanced in this area. The area was characterized by a dense dry stiff clay to at least 60 feet below the ground surface. The clay contained small amounts of silt and fine sand and traces of fine gravel. At 15 feet

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below the ground surface the clay became softer and moist and changed color from a brown/yellow-brown to a uniform grayish brown at 15 feet below the ground surface.

Area 20

Since this area of concern was located inside the building and not readily accessible for sampling, the two soil borings (IBSB21 and IBSB22) were advanced immediately outside the building through the asphalt pad. The area was characterized by a dense dry stiff clay. The clay contained small amounts of silt and fine sand and traces of fine gravel.

Area 21

The area of concern was located inside the building and was inaccessible, therefore no soil borings were advanced in this location.

Area 22

Overhead power lines restricted access and only one soil boring (IBSB18) was advanced in Area 22. A light brown sand with a little gravel and a trace of silt was observed in this area to a depth of approximately 2.5 feet below the ground surface. A dense clay with some silt and a trace of sand and gravel was observed underlying the sand layer. The clay ranged in color from moderately yellow brown to light brown. The material was saturated from the ground surface (sand unit) and became progressively drier with depth.

Area 23

Two soil borings (IBSB48 and IBSB49) were advanced inside the building to determine if any contamination had migrated beneath the cement slab or through cracks in the floor. Approximately 3 feet of fill material was encountered which included the 5 inches of concrete floor. The fill material was a dry sand and gravel, light brown in color. Immediately below the fill layer was a dense, stiff clay layer. The clay was also dry and contained small amounts of fine to coarse sand, fine to coarse gravel, and silt.

Area 24

Results of the geophysical surveys indicated that this area was inaccessible for soil boring installation because of the potential presence of underground utilities.

Area 25

One soil boring (IBSB40) and three hand auger borings (IBHA06, IBHA07 and IBHA08) were advanced in this area. The area was characterized by a dense, dry clay layer overlain by a loose, damp sand layer. The brown clay was stiff and contained small amounts of silt, sand and gravel. A gray brown silt seam was observed between the sand and clay layers.

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Area 25A

Two soil borings (IBSB41 and IBSB42) and one hand auger boring (IBHA09) were advanced in this area. The area was characterized by a dense, dry clay layer overlain by a loose, damp sand layer. The brown clay was stiff and contained small amounts of silt, sand and gravel. A gray brown silt seam was observed between the sand and clay layers.

4.6.1.2 Additional Characterization

A total of nineteen additional soil borings were completed at the IB property in May and June 1993, and 20 soil samples were collected for analysis. The samples and the requested analysis is summarized in Table 4-2. Borings were installed in Areas 5, 5A, 8, 11, 14, 18, and 25A and in Building 41 (Area 18A).

Area 8

Two borings were located in the southwestern portion of the property in Area 8 to define the subsurface materials. Both of these borings extended through the fill material to a highly organic sandy clay which was encountered at a depth of approximately 25 feet below the ground surface. Two samples were collected from each soil boring. One from an interval of fill with elevated FID and/or PID readings, and one from the clay layer. Select samples were analyzed for VOCs, semi-volatiles, PCBs, and metals analysis. Strong organic odors and elevated PID readings were noted in soil boring CS-SB-04. Elevated FID readings were observed in soil boring CS-SB-06.

Area 18

One soil boring, CS-SB-07, was located in Area 18 on the eastern side of the property to define the extent of contamination in the subsurface. Two samples were collected from this boring, one from the fill and one from the clay till, for VOC and PAH analysis. An oily sheen, solvent odor, and elevated FID and PID readings were observed at soil boring CS-SB-07. The area appears to be a former pit that was dug out of the native clay and then filled in. Five split-spoon samples were taken in this area to determine the extent of the fill. The fill appears to extend out from soil boring CS-SB-07 for 30 feet.

Areas 5, 5A, 11, 14

One soil sample was collected from soil borings in each of the following areas, 5, 5A, 11, and 14, where elevated concentrations of metals had previously been detected. These samples were analyzed for TCLP and EP toxicity metals. Soil was composited from the intervals where previous sampling showed the metals concentrations to be the highest. Elevated FID readings were observed in soil borings CS-SB-02, CS-SB-03, and CS-SB-05. Soil boring CS-SB-01 had slightly elevated PID readings. Soil from soil boring CS-SB-02 also had a noticeable petroleum odor. One TCLP and EP toxicity metal sample was also

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collected using a bucket auger from a depth of 1.5 feet below the ground surface from Area 25A.

Building 41 (Area 18A)

Twelve soil borings were installed in Building 41 using the truck-mounted rig or the skid rig. These borings were placed in areas where former aboveground storage tanks or a possible coal gasification plant may have been located. Samples were collected from six of these borings. The samples were collected when elevated PID/FID readings were recorded or when any unusual subsurface material was encountered. Seven of the borings had elevated PID and/or FID readings. Organic odors were observed in soil boring CS-SB-14. Petroleum odors were encountered in soil borings CS-SB-15, CS-SB-21, and CS-SB-23. A tar-like product was observed in soil borings CS-SB-15 and CS-SB-23. Soil from soil boring CS-SB-25 had a naphthalene smell, and soil from soil boring CS-SB-22 had a creosote odor. A sample was also collected from native clay material which appeared to be uncontaminated.

4.7 GROUNDWATER ASSESSMENT

4.7.1 Industrial Brownhoist

4.7.1.1 Monitoring Well Installation

Fourteen temporary overburden monitoring wells were installed on the IB site as depicted in Figure 4-1. Drilling and well installation activities were performed by Burlington Environmental under the direct supervision of WESTON. Well locations were selected based on observations documented during soil boring installation. Locations were selected to address potentially impacted areas and areas potentially downgradient from impacted areas. Well screens were placed 1 foot above the water table and 4 feet into the water table. All wells were constructed of 2-inch polyvinyl chloride (PVC) well screen and PVC riser pipe with flush threads. The use of PVC was authorized by the U.S. EPA and MDNR since the wells were temporary and were removed following completion of the initial investigation in December 1992. The screen length was 5 feet with a .007-inch slot opening. The annular space surrounding the well screen was filled with filter sand to an elevation approximately 2 feet above the top of the screen. A minimum of 1 foot bentonite seal was placed above the sand. Auger flight cuttings were used to backfill the remainder of the annular space to the ground surface. A flush mount protective steel casing with a bolted cap was installed at the surface. In addition a cement grout collar was poured and formed around the steel casing. After the bentonite grout had been allowed to harden for a minimum of 24 hours, the wells were developed using a surge block technique, and pumped until the water began to run clear. Well construction diagrams are presented in Appendix B.

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4.7.1.2 Monitoring Well Locations

The locations selected for placement of the monitoring wells and observations made during well development and sampling activities are summarized below.

Area 1

One monitoring well was installed in this area (IBMW01) to access groundwater downgradient from the reported former outside storage area. Recovery of the well was sufficient during both the development and sampling events.

Area 2

One monitoring well was installed in this area (IBMW02) to assess groundwater downgradient from the reported former outside storage area and to assess water quality at the site boundary. A strong sewage-like odor was noted while developing and sampling the well.

Area 4

One monitoring well was installed in this area (IBMW04) to assess downgradient site water quality. No noticeable characteristics were observed when developing or sampling the well.

Area 5/5A

One well (IBMW12) was installed in Area 5A and one well (IBMW13) was installed downgradient of Area 5A. Slow recovery was noted while developing IBMW12. The water was observed to be dark brown with a strong sewage-like odor during sampling. Recovery was sufficient during both developing and sampling IBMW13 and no color or odors were observed when sampling this well.

Area 6

One well (IBMW03) was installed in this area because a sheen was observed during soil boring installation. Although the well was very close to the river, slow recovery was noted during development and sampling of the well.

Area 8

One well (IBMW08) was installed in this area, downgradient of the old crane pad. No notable observations were made while developing or sampling the well.

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Area 9

One well (IBMW05) was installed in this area, upgradient of site activities. Slow recovery was noted while developing and sampling the well.

Area 10

One well (IBMW06) was installed in this area to determine water quality near Building 42. Slow recovery was noted during sampling and development. The water was observed to be dark black and silty.

Area 11

Two wells were installed in this area. One well (IBMW07) was installed upgradient of the potential UST and Building 42 and one well (IBMW14) was installed between the potential UST and Building 42. Very slow recovery was noted while developing IBMW07 and a slight sewage-like odor was also noted while sampling the well. A strong sewage odor was detected when sampling IBMW14 and the well had very slow recovery.

Area 14

One well (IBMW10) was installed in this area to determine groundwater quality downgradient of the potential UST in Area 13.

Area 15/16A

One well (IBMW11) was installed in this area to characterize the water quality downgradient of the potential USTs and Building 42.

Area 17

One monitoring well (IBMW09) was installed in this area. The well was pumped dry during development and again during sampling operations. Sampling took place over a two day period to allow the well to recharge with sufficient water to collect samples.

Monitoring Well Sampling

Well sampling was initiated on 30 November 1992. The following procedures were used to collect the samples:

- A depth to water level measurement relative to the top of the inner casing was obtained with an electronic water level indicator and recorded on the well sampling form.

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- Based on the water level and depth of the well, the volume of standing water in the well was calculated.

- The well was purged of three times the volume of standing water using a disposable PVC bailer.

- Following initial well purging, measurements of pH, specific conductance, and temperature were made using field instruments and recorded on the well sampling form. Pre-measurement calibration of the instruments were performed prior to field screening.

- Purging continued until measurements for all three parameters stabilized (± 0.25 units for pH, $\pm 10\%$ for specific conductance, and $\pm 1.0°C$ for temperature) for three consecutive readings or until five well volumes were removed. If the well was purged dry, it was allowed to recharge for 15 minutes before it was bailed dry again and then samples were collected.

- The samples were collected with the disposable bailer and poured directly into the sample containers supplied by the laboratory. Samples collected for metals analyses were filtered through a .45μ disposable filter. Appropriate preservatives were added and the samples were stored on ice. Each well sample was analyzed for VOCs, SVOCs, PCBs, dissolved metals and cyanide.

Two types of quality control (QC) samples, duplicate samples and field blank samples, were also collected and submitted for analysis. A duplicate sample was analyzed to obtain information on the precision of laboratory analysis; and a field blank sample was analyzed to obtain information on the effectiveness of the sample equipment decontamination. The duplicate groundwater sample was collected from IBMW01 and was collected concurrently with the respective investigative sample. The field blank sample was collected by pouring distilled laboratory grade water through a disposable bailer directly into a sample container.

All groundwater samples were kept in coolers from the time of collection until delivery to the laboratory. A completed chain-of-custody form was placed inside each of the coolers, which were then sealed with strapping tape and custody seals. Laboratory personnel picked up the samples from the IB site and hand delivered the samples to the laboratory. The analytical results of the monitoring well samples are presented in Section 5. The purge and development water was collected, containerized, labeled, and stored on site.

In accordance with the requirements established for the site, all of the WESTON installed wells (casings and screens) were removed after completion of the first round of groundwater sampling activities. The well holes were grouted to the surface with bentonite holeplug on 1 and 2 December 1992.

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4.7.2.1 Monitoring Well Locations

Industrial Brownhoist

One monitoring well was scheduled to be installed southeast of Building 41 at the IB site. However, only dry clay till was encountered in the borehole to a depth of 18 below the ground surface. This soil boring was identified as CS-MW-01A because a shallow aquifer was not found and the well was not installed.

4.8 PCB SAMPLING

A limited number of PCB samples were collected from areas within the Powerhouse and Building 41 at the IB site on 21 December 1992. The sampling was conducted to determine if PCB contamination was present in the significantly oil-stained areas of the IB site. A total of six samples (three wipe, two oil and one solid) were collected within the Powerhouse. A total of two samples (one wipe and one solid) were collected in the northwest portion of Building 41 in the vicinity of the PCB-labeled transformers. All of the samples were delivered to Clayton for PCB analysis. The analytical results are summarized in Section 5.

4.9 SITE SURVEY

WESTON subcontracted Wade-Trim/Edmands (Wade-Trim) of Bay City, Michigan to perform a site survey of the CERT site. The horizontal location and vertical elevations were determined for all the soil boring locations, the groundwater wells, and the hand auger boring locations. Wade-Trim referenced all elevations to two on-site USGS (National Geodetic Vertical Datum) benchmarks. The ground elevation and the elevation of the top of the riser pipe were determined at each well location.

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SECTION 5

ANALYTICAL RESULTS

All of the samples collected at the CERT site with the exception of the radiation, EP Toxicity and TCLP samples, were analyzed by Clayton. The TCLP and EP Toxicity metals samples were analyzed by Snell. The radiation samples were analyzed by Core. Tables 4-1, 4-2 and 4-3 summarized the number of samples collected and the associates analysis. Following receipt of the analytical results, the data were validated and tabulated. A summary of the QA/QC can be found in Appendix D.

5.1 INDUSTRIAL BROWNHOIST

A summary of the parameters detected in the soil borings collected in each area at the IB site is presented in Tables 5-1 through 5-19A. When an analyte was not detected in a sample the symbol "ND" was used on the table followed by the detection limit in parentheses. A summary of the analytical results from the TCLP and EP toxicity samples from the IB site is presented in Table 5-20. A summary of the analytical results from the radiation samples from the IB site is presented in Table 5-21. A summary of the analytical results of the additional PCB sampling at the IB site is presented in Table 5-22.

A summary of the detected parameters from the groundwater samples is presented in Table 5-34.

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TABLE 5-1
Areas 1 and 2
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	AREA 1 Sample (Depth) IBSB37-01 (6'-10')	AREA 2 Sample (Depth) IBSB36-01 (4'-6')	IBSB36-02 (2'-8') Comp	IBSB46-01 (6'-10')	IBSB46-02 (4'-6')
INORGANICS (mg/kg)					
Arsenic	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA
Chromium	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA
Lead	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA
Selenium	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA
Cyanide (total)	NA	NA	NA	NA	NA
ORGANICS (ug/kg)					
Volatile Organic Compounds					
Acetone	500	300	NA	ND (100)	ND (100)
Benzene	ND (10)	ND (10)	NA	ND (10)	ND (10)
2-Butanone	ND (100)	ND (100)	NA	ND (100)	ND (100)
1,1-Dichloroethane	ND (10)	ND (10)	NA	ND (10)	ND (10)
1,2-Dichloroethene (total)	ND (10)	ND (10)	NA	ND (10)	ND (10)
Ethylbenzene	ND (10)	ND (10)	NA	ND (10)	ND (10)
Methylene Chloride	40	30	NA	10	20
Styrene	ND (10)	ND (10)	NA	ND (10)	ND (10)
Toluene	ND (10)	ND (10)	NA	ND (10)	ND (10)
1,1,1-Trichloroethane	ND (10)	ND (10)	NA	ND (10)	ND (10)
Trichloroethene	ND (10)	ND (10)	NA	ND (10)	ND (10)
Xylene (total)	ND (30)	ND (30)	NA	ND (30)	ND (30)
Polychlorinated Biphenyl (PCB)					
Aroclor-1242	ND (40)	NA	ND (40)	ND (500)	ND (40)
Aroclor-1248	ND (40)	NA	ND (40)	730	150
Aroclor-1260	ND (40)	NA	ND (40)	ND (500)	180
Base Neutral Compounds					
Acenaphthene	ND (200)	NA	ND (200)	ND (200)	ND (200)
Acenaphthylene	ND (200)	NA	ND (200)	ND (200)	ND (200)
Anthracene	ND (200)	NA	ND (200)	ND (200)	ND (200)
Benzo(a)anthracene	200	NA	400	600	300
Benzo(b)fluoranthene	ND (200)	NA	500	700	200
Benzo(k)fluoranthene	ND (200)	NA	200	400	300
Benzo(a)pyrene	ND (200)	NA	400	500	ND (200)
Benzo(g,h,i)perylene	ND (200)	NA	ND (200)	ND (200)	ND (200)
Bis(2-ethylhexyl)phthalate	ND (200)	NA	ND (200)	ND (200)	ND (200)
Chrysene	200	NA	400	600	300
Dibenzo(a,h)anthracene	ND (200)	NA	ND (200)	ND (200)	ND (200)
Dibenzofuran	ND (200)	NA	ND (200)	ND (200)	ND (200)
Fluoranthene	400	NA	700	1200	600
Fluorene	ND (200)	NA	ND (200)	ND (200)	300
Ideno(1,2,3-cd)pyrene	ND (200)	NA	ND (200)	ND (200)	ND (200)
2-Methylnaphthalene	ND (200)	NA	300	ND (200)	ND (200)
Naphthalene	ND (200)	NA	ND (200)	ND (200)	ND (200)
Phenanthrene	ND (200)	NA	600	600	1000
Pyrene	400	NA	700	1800	600

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.

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TABLE 5-2
Area 4
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth) IBSB01-01 (6'-8')	IBSB01-02 (8'-10')	IBSB02-01 (8'-10')	IBSB03-01 (6'-8')	IBSB03-02 (8'-10')
INORGANIC (mg/kg)					
Arsenic	2.1	3.1	4.4	NA	NA
Barium	30	32	40	NA	NA
Cadmium	2.7	3.4	4.0	NA	NA
Chromium	10	12	14	NA	NA
Copper	18	11	23	NA	NA
Lead	18	13	17	NA	NA
Mercury	ND (0.1)	ND (0.1)	ND (0.1)	NA	NA
Selenium	ND (0.1)	0.1	0.1	NA	NA
Silver	ND (0.2)	0.4	0.3	NA	NA
Zinc	26	18	26	NA	NA
Cyanide (total)	NA	NA	NA	NA	NA
ORGANIC (ug/kg)					
Volatile Organic Compounds					
Acetone	100	ND (100)	ND (200)	ND (100)	ND (100)
Benzene	ND (10)	ND (10)	ND (20)	ND (10)	ND (10)
2-Butanone	ND (100)	ND (100)	ND (200)	ND (100)	ND (100)
1,1-Dichloroethane	ND (10)	ND (10)	ND (20)	10	ND (10)
1,2-Dichloroethene (total)	ND (10)	ND (10)	ND (20)	ND (10)	ND (10)
Ethylbenzene	ND (10)	ND (10)	ND (20)	ND (10)	ND (10)
Methylene Chloride	20	10	ND (20)	ND (10)	ND (10)
Styrene	ND (10)	ND (10)	ND (20)	ND (10)	ND (10)
Toluene	ND (10)	ND (10)	ND (20)	ND (10)	ND (10)
1,1,1-Trichloroethane	ND (10)	ND (10)	ND (20)	120	10
Trichloroethene	ND (10)	ND (10)	ND (20)	ND (10)	ND (10)
Xylene (total)	ND (30)	ND (30)	ND (50)	ND (30)	ND (30)
Polychlorinated Biphenyl (PCB)					
Aroclor-1242	ND (40)	ND (40)	NA	NA	NA
Aroclor-1248	ND (40)	ND (40)	NA	NA	NA
Aroclor-1260	ND (40)	ND (40)	NA	NA	NA
Base Neutral Compounds					
Acenaphthene	ND (200)	ND (200)	400	ND (200)	ND (200)
Acenaphthylene	ND (200)	ND (200)	900	ND (200)	ND (200)
Anthracene	ND (200)	ND (200)	1500	ND (200)	ND (200)
Benzo(a)anthracene	ND (200)	ND (200)	3900	ND (200)	ND (200)
Benzo(b)fluoranthene	ND (200)	ND (200)	3100	ND (200)	ND (200)
Benzo(k)fluoranthene	ND (200)	ND (200)	1900	ND (200)	ND (200)
Benzo(a)pyrene	ND (200)	ND (200)	2600	ND (200)	ND (200)
Benzo(g,h,i)perylene	ND (200)	ND (200)	800	ND (200)	ND (200)
Bis(2-ethylhexyl)phthalate	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)
Chrysene	ND (200)	ND (200)	3200	ND (200)	ND (200)
Dibenzo(a,h)anthracene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)
Dibenzofuran	ND (200)	ND (200)	800	ND (200)	ND (200)
Fluoranthene	ND (200)	ND (200)	5700	ND (200)	ND (200)
Fluorene	ND (200)	ND (200)	800	ND (200)	ND (200)
Ideno(1,2,3-cd)pyrene	ND (200)	ND (200)	1600	ND (200)	ND (200)
2-Methylnaphthalene	ND (200)	ND (200)	300	ND (200)	ND (200)
Naphthalene	ND (200)	ND (200)	1000	ND (200)	ND (200)
Phenanthrene	ND (200)	ND (200)	4900	ND (200)	ND (200)
Pyrene	ND (200)	ND (200)	4900	ND (200)	ND (200)

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.

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TABLE 5-3
Area 5
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth)				
	IBSB33-01 (6'-8')	IBSB33-02 (12'-14')	IBSB34-01 (4'-6')	IBHA16-01 (3'-3.5')	IBHA16-02 (1.5'-3.5')
INORGANIC (mg/kg)					
Arsenic	3.6	11	11	NA	9.2 J
Barium	19	140	87	NA	30 J
Cadmium	2.6	9.7	9.6	NA	8.2 J
Chromium	6	33	15	NA	24 J
Copper	9	93	110	NA	82
Lead	14	160	110	NA	70
Mercury	ND (0.1)	0.3	0.1	NA	1.6 J
Selenium	0.3	1.6	0.5	NA	ND (0.1) J
Silver	ND (0.5) J	ND (0.5) J	ND (0.5) J	NA	0.3
Zinc	130	1900	150	NA	200 J
Cyanide (total)	NA	NA	NA	NA	NA
ORGANIC (ug/kg)					
Volatile Organic Compounds					
Acetone	300	12000	ND (100)	ND (100)	NA
Benzene	ND (10)	ND (50)	ND (10)	ND (10)	NA
2-Butanone	ND (100)	ND (500)	ND (100)	ND (100)	NA
1,1-Dichloroethane	30	ND (50)	ND (10)	ND (10)	NA
1,2-Dichloroethene (total)	ND (10)	ND (50)	ND (10)	ND (10)	NA
Ethylbenzene	ND (10)	ND (50)	ND (10)	ND (10)	NA
Methylene Chloride	20	70	ND (10)	10	NA
Styrene	ND (10)	ND (50)	ND (10)	ND (10)	NA
Toluene	ND (10)	ND (50)	20	ND (10)	NA
1,1,1-Trichloroethane	130	ND (50)	ND (10)	ND (10)	NA
Trichloroethene	ND (10)	ND (50)	ND (10)	ND (10)	NA
Xylene (total)	ND (30)	ND (100)	ND (30)	ND (30)	NA
Polychlorinated Biphenyl (PCB)					
Aroclor-1242	NA	NA	NA	NA	ND (40)
Aroclor-1248	NA	NA	NA	NA	ND (40)
Aroclor-1260	NA	NA	NA	NA	ND (40)
Base Neutral Compounds					
Acenaphthene	ND (200)	1300	ND (2000)	NA	ND (200)
Acenaphthylene	ND (200)	800	ND (2000)	NA	ND (200)
Anthracene	ND (200)	3200	3000	NA	ND (200)
Benzo(a)anthracene	200	11000	9000	NA	ND (200)
Benzo(b)fluoranthene	ND (200)	13000	6000	NA	300
Benzo(k)fluoranthene	ND (200)	7600	6000	NA	ND (200)
Benzo(a)pyrene	ND (200)	8400	9000	NA	ND (200)
Benzo(g,h,i)perylene	ND (200)	ND (600)	4000	NA	ND (200)
Bis(2-ethylhexyl)phthalate	ND (200)	ND (600)	ND (2000)	NA	ND (200)
Chrysene	200	11000	11000	NA	ND (200)
Dibenzo(a,h)anthracene	ND (200)	ND (600)	ND (2000)	NA	ND (200)
Dibenzofuran	ND (200)	1400	ND (2000)	NA	ND (200)
Fluoranthene	500	18000	24000	NA	ND (200)
Fluorene	ND (200)	2100	2000	NA	ND (200)
Ideno(1,2,3-cd)pyrene	ND (200)	ND (600)	ND (2000)	NA	ND (200)
2-Methylnaphthalene	ND (200)	900	ND (2000)	NA	ND (200)
Naphthalene	ND (200)	1300	ND (2000)	NA	ND (200)
Phenanthrene	400	14000	24000	NA	ND (200)
Pyrene	500	17000	20000	NA	ND (200)

Notes
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.

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TABLE 5-4
Area 5A
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth)					
	IBSB31-01 (10'-12')	IBSB31-01D (10'-12')	IBSB32-01 (4'-6')	IBSB32-02 (8'-10')	IBHA17-01 (1.5'-2')	IBHA17-02 (1.5'-2')
INORGANIC (mg/kg)						
Arsenic	24	3.0	1.7	8.0	NA	34 J
Barium	20	16	4	8	NA	71 J
Cadmium	1.7	1.5	0.62	1.8	NA	11 J
Chromium	5	5	3	4	NA	75 J
Copper	6	5	3	4	NA	170
Lead	6	3.5	2	4	NA	290
Mercury	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	NA	0.1 J
Selenium	0.1	0.2	ND (0.1)	0.2	NA	0.3 J
Silver	ND (0.5) J	ND (0.5) J	ND (0.5) J	ND (0.5) J	NA	0.5
Zinc	26	20	32	22	NA	4400 J
Cyanide (total)	NA	NA	NA	NA	NA	NA
ORGANIC (ug/kg)						
Volatile Organic Compounds						
Acetone	1800	NA	1000	400	200	NA
Benzene	ND (10)	NA	ND (10)	ND (10)	ND (10)	NA
2-Butanone	ND (100)	NA	ND (100)	ND (100)	ND (100)	NA
1,1-Dichloroethane	ND (10)	NA	ND (10)	ND (10)	ND (10)	NA
1,2-Dichloroethene (total)	ND (10)	NA	ND (10)	10	ND (10)	NA
Ethylbenzene	ND (10)	NA	ND (10)	ND (10)	ND (10)	NA
Methylene Chloride	10	NA	ND (10)	10	30	NA
Styrene	ND (10)	NA	ND (10)	ND (10)	ND (10)	NA
Toluene	ND (10)	NA	ND (10)	ND (10)	ND (10)	NA
1,1,1-Trichloroethane	ND (10)	NA	ND (10)	ND (10)	10	NA
Trichloroethene	ND (10)	NA	ND (10)	ND (10)	ND (10)	NA
Xylene (total)	ND (30)	NA	ND (30)	ND (30)	ND (30)	NA
Polychlorinated Biphenyl (PCB)						
Aroclor-1242	NA	NA	NA	NA	NA	ND (40)
Aroclor-1248	NA	NA	NA	NA	NA	ND (40)
Aroclor-1260	NA	NA	NA	NA	NA	300
Base Neutral Compounds						
Acenaphthene	ND (200)	ND (200)	ND (200)	ND (200)	NA	ND (200)
Acenaphthylene	ND (200)	ND (200)	ND (200)	ND (200)	NA	ND (200)
Anthracene	ND (200)	ND (200)	ND (200)	ND (200)	NA	ND (200)
Benzo(a)anthracene	ND (200)	ND (200)	ND (200)	200	NA	ND (200)
Benzo(b)fluoranthene	ND (200)	ND (200)	ND (200)	ND (200)	NA	400
Benzo(k)fluoranthene	ND (200)	ND (200)	ND (200)	ND (200)	NA	ND (200)
Benzo(a)pyrene	ND (200)	ND (200)	ND (200)	ND (200)	NA	ND (200)
Benzo(g,h,i)perylene	ND (200)	ND (200)	ND (200)	ND (200)	NA	ND (200)
Bis(2-ethylhexyl)phthalate	ND (200)	ND (200)	ND (200)	300	NA	ND (200)
Chrysene	ND (200)	ND (200)	ND (200)	ND (200)	NA	300
Dibenzo(a,h)anthracene	ND (200)	ND (200)	ND (200)	ND (200)	NA	ND (200)
Dibenzofuran	ND (200)	ND (200)	ND (200)	ND (200)	NA	ND (200)
Fluoranthene	ND (200)	ND (200)	ND (200)	300	NA	200
Fluorene	ND (200)	ND (200)	ND (200)	ND (200)	NA	ND (200)
Ideno(1,2,3-cd)pyrene	ND (200)	ND (200)	ND (200)	ND (200)	NA	ND (200)
2-Methylnaphthalene	ND (200)	ND (200)	ND (200)	ND (200)	NA	ND (200)
Naphthalene	ND (200)	ND (200)	ND (200)	ND (200)	NA	ND (200)
Phenanthrene	ND (200)	ND (200)	ND (200)	ND (200)	NA	300
Pyrene	ND (200)	ND (200)	ND (200)	300	NA	300

Notes:
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TABLE 5-5
Area 6
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth) IBSB04-01 (16'-18')	IBSB04-02 (29'-31')	IBSB05-01 (10'-12')	IBSB05-02 (6'-14')
INORGANIC (mg/kg)				
Arsenic	NA	NA	NA	NA
Barium	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA
Chromium	NA	NA	NA	NA
Copper	NA	NA	NA	NA
Lead	NA	NA	NA	NA
Mercury	NA	NA	NA	NA
Selenium	NA	NA	NA	NA
Silver	NA	NA	NA	NA
Zinc	NA	NA	NA	NA
Cyanide (total)	NA	NA	NA	NA
ORGANIC (ug/kg)				
Volatile Organic Compounds				
Acetone	ND (100)	ND (100)	ND (100)	NA
Benzene	ND (10)	ND (10)	ND (10)	NA
2-Butanone	ND (100)	ND (100)	ND (100)	NA
1,1-Dichloroethane	ND (10)	ND (10)	ND (10)	NA
1,2-Dichloroethene (total)	ND (10)	ND (10)	ND (10)	NA
Ethylbenzene	ND (10)	ND (10)	ND (10)	NA
Methylene Chloride	ND (10)	ND (10)	10	NA
Styrene	ND (10)	ND (10)	ND (10)	NA
Toluene	ND (10)	ND (10)	ND (10)	NA
1,1,1-Trichloroethane	ND (10)	ND (10)	ND (10)	NA
Trichloroethene	ND (10)	ND (10)	ND (10)	NA
Xylene (total)	ND (30)	ND (30)	ND (30)	NA
Polychlorinated Biphenyl (PCB)				
Aroclor-1242	ND (50)	ND (50)	NA	ND (40)
Aroclor-1248	ND (50)	ND (50)	NA	ND (40)
Aroclor-1260	ND (50)	ND (50)	NA	ND (40)
Base Neutral Compounds				
Acenaphthene	ND (200)	ND (200)	NA	ND (200)
Acenaphthylene	ND (200)	ND (200)	NA	ND (200)
Anthracene	ND (200)	ND (200)	NA	ND (200)
Benzo(a)anthracene	ND (200)	ND (200)	NA	ND (200)
Benzo(b)fluoranthene	ND (200)	ND (200)	NA	ND (200)
Benzo(k)fluoranthene	ND (200)	ND (200)	NA	ND (200)
Benzo(a)pyrene	ND (200)	ND (200)	NA	ND (200)
Benzo(g,h,i)perylene	ND (200)	ND (200)	NA	ND (200)
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA
Chrysene	ND (200)	ND (200)	NA	ND (200)
Dibenzo(a,h)anthracene	ND (200)	ND (200)	NA	ND (200)
Dibenzofuran	NA	NA	NA	NA
Fluoranthene	ND (200)	ND (200)	NA	ND (200)
Fluorene	ND (200)	ND (200)	NA	ND (200)
Ideno(1,2,3-cd)pyrene	ND (200)	ND (200)	NA	ND (200)
2-Methylnaphthalene	NA	NA	NA	NA
Naphthalene	ND (200)	ND (200)	NA	ND (200)
Phenanthrene	ND (200)	ND (200)	NA	ND (200)
Pyrene	ND (200)	ND (200)	NA	ND (200)

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
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TABLE 5-6
Area 7
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth) IBSB45-01 (10'-12')	IBSB45-02 (12'-14')	IBSB45-03 (14'-16')	IBHA10-01 (3'-3.5')	IBHA10-02 (1.5'-3.5')	IBHA11-01 (1.5'-2')	IBHA11-02 (1.5'-2')
INORGANIC (mg/kg)							
Arsenic	3.3	3.2	NA	NA	3.8	NA	3.5
Barium	34	34	NA	NA	180	NA	96
Cadmium	14	8.7	NA	NA	13 J	NA	18 J
Chromium	61	15	NA	NA	37 J	NA	49 J
Copper	170	1600	NA	NA	380 J	NA	270 J
Lead	85	230	NA	NA	82 J	NA	150 J
Mercury	0.2	6.2	NA	NA	0.18	NA	0.13
Selenium	ND (0.1) J	0.1 J	NA	NA	0.4 J	NA	0.3 J
Silver	1.6	1	NA	NA	ND (0.5) J	NA	ND (0.5) J
Zinc	32	57	NA	NA	91 J	NA	160 J
Cyanide (total)	NA	NA	NA	NA	NA	NA	NA
ORGANIC (ug/kg)							
Volatile Organic Compounds							
Acetone	100	NA	ND (600)	ND (100)	NA	ND (100)	NA
Benzene	ND (10)	NA	ND (60)	ND (10)	NA	ND (10)	NA
2-Butanone	ND (100)	NA	ND (600)	ND (100)	NA	ND (100)	NA
1,1-Dichloroethane	ND (10)	NA	ND (60)	ND (10)	NA	ND (10)	NA
1,2-Dichloroethene (total)	ND (10)	NA	ND (60)	ND (10)	NA	ND (10)	NA
Ethylbenzene	ND (10)	NA	ND (60)	ND (10)	NA	ND (10)	NA
Methylene Chloride	10	NA	ND (60)	ND (10)	NA	20	NA
Styrene	ND (10)	NA	ND (60)	ND (10)	NA	ND (10)	NA
Toluene	ND (10)	NA	ND (60)	ND (10)	NA	ND (10)	NA
1,1,1-Trichloroethane	ND (10)	NA	ND (60)	ND (10)	NA	ND (10)	NA
Trichloroethene	ND (10)	NA	ND (60)	ND (10)	NA	ND (10)	NA
Xylene (total)	ND (30)	NA	ND (200)	ND (30)	NA	ND (30)	NA
Polychlorinated Biphenyl (PCB)							
Aroclor-1242	ND (40)	ND (40)	NA	NA	ND (40)	NA	ND (40)
Aroclor-1248	ND (40)	ND (40)	NA	NA	ND (40)	NA	ND (40)
Aroclor-1260	ND (40)	ND (40)	NA	NA	ND (40)	NA	200
Base Neutral Compounds							
Acenaphthene	ND (200)	ND (600)	NA	NA	NA	NA	NA
Acenaphthylene	ND (200)	ND (600)	NA	NA	NA	NA	NA
Anthracene	1000	2200	NA	NA	NA	NA	NA
Benzo(a)anthracene	2700	4100	NA	NA	NA	NA	NA
Benzo(b)fluoranthene	3500	3600	NA	NA	NA	NA	NA
Benzo(k)fluoranthene	1500	4800	NA	NA	NA	NA	NA
Benzo(a)pyrene	2800	4800	NA	NA	NA	NA	NA
Benzo(g,h,i)perylene	2300	2800	NA	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	NA
Chrysene	2400	4300	NA	NA	NA	NA	NA
Dibenzo(a,h)anthracene	ND (200)	ND (600)	NA	NA	NA	NA	NA
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	5500	8200	NA	NA	NA	NA	NA
Fluorene	1200	3000	NA	NA	NA	NA	NA
Ideno(1,2,3-cd)pyrene	2500	3400	NA	NA	NA	NA	NA
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA
Naphthalene	200	1300	NA	NA	NA	NA	NA
Phenanthrene	4200	13000	NA	NA	NA	NA	NA
Pyrene	3700	6900	NA	NA	NA	NA	NA

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TABLE 5-7
Area 8/9
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth)							
	IBSB06-01 (15'-17')	IBSB06-02 (7'-17')	IBSB07-01 (8'-10')	IBSB07-02 (2'-12')	IBSB08-01 (2'-3')	IBSB08-02 (10'-12')	IBSB09-01 (4'-6')	IBSB10-01 (8'-10')
INORGANIC (mg/kg)								
Arsenic	NA	3.7	NA	2.0	4.1	NA	4.4	11
Barium	NA	49	NA	34	34	NA	38	22
Cadmium	NA	16	NA	7.8 J	12 J	NA	10 J	11 J
Chromium	NA	32	NA	22 J	16 J	NA	14 J	8.9 J
Copper	NA	94	NA	110 J	150 J	NA	320 J	110 J
Lead	NA	45	NA	150 J	30 J	NA	61 J	25 J
Mercury	NA	ND (0.1)	NA	0.09	ND (0.05)	NA	0.09	ND (0.05)
Selenium	NA	0.1	NA	0.2 J	0.3 J	NA	0.2 J	0.4 J
Silver	NA	0.4	NA	ND (0.5) J	ND (0.5) J	NA	ND (0.5) J	ND (0.5) J
Zinc	NA	46	NA	45 J	55 J	NA	83 J	33 J
Cyanide (total)	NA	NA	NA	NA	NA	NA	NA	NA
ORGANIC (ug/kg)								
Volatile Organic Compounds								
Acetone	ND (100)	NA	ND (100) J	NA	200	ND (100)	700	1100
Benzene	ND (10)	NA	ND (10) J	NA	ND (10)	ND (10)	ND (10)	ND (60)
2-Butanone	ND (100)	NA	ND (100) J	NA	ND (100)	ND (100)	ND (100)	ND (600)
1,1-Dichloroethane	ND (10)	NA	ND (10) J	NA	ND (10)	ND (10)	ND (10)	ND (60)
1,2-Dichloroethene (total)	ND (10)	NA	ND (10) J	NA	ND (10)	ND (10)	ND (10)	ND (60)
Ethylbenzene	ND (10)	NA	ND (10) J	NA	ND (10)	ND (10)	ND (10)	ND (60)
Methylene Chloride	ND (10)	NA	10 J	NA	30	10	30	80
Styrene	ND (10)	NA	ND (10) J	NA	ND (10)	ND (10)	ND (10)	ND (60)
Toluene	ND (10)	NA	30 J	NA	ND (10)	ND (10)	ND (10)	ND (60)
1,1,1-Trichloroethane	ND (10)	NA	ND (10) J	NA	ND (10)	ND (10)	ND (10)	ND (60)
Trichloroethene	ND (10)	NA	ND (10) J	NA	ND (10)	ND (10)	ND (10)	ND (60)
Xylene (total)	ND (30)	NA	ND (30) J	NA	ND (30)	ND (30)	ND (30)	ND (200)
Polychlorinated Biphenyl (PCB)								
Aroclor-1242	NA	ND (40)	NA	ND (40)	ND (40)	NA	ND (40)	ND (40)
Aroclor-1248	NA	ND (40)	NA	ND (40)	ND (40)	NA	ND (40)	ND (40)
Aroclor-1260	NA	ND (40)	NA	ND (40)	ND (40)	NA	ND (40)	ND (40)
Base Neutral Compounds								
Acenaphthene	NA	ND (200)	NA	ND (200)	ND (200)	NA	ND (200)	ND (200)
Acenaphthylene	NA	ND (200)	NA	ND (200)	ND (200)	NA	ND (200)	ND (200)
Anthracene	NA	ND (200)	NA	ND (200)	ND (200)	NA	ND (200)	ND (200)
Benzo(a)anthracene	NA	300	NA	300	ND (200)	NA	400	300
Benzo(b)fluoranthene	NA	600	NA	700	300	NA	500	300
Benzo(k)fluoranthene	NA	ND (200)	NA	300	ND (200)	NA	400	ND (200)
Benzo(a)pyrene	NA	200	NA	300	ND (200)	NA	400	ND (200)
Benzo(g,h,i)perylene	NA	ND (200)	NA	ND (200)	ND (200)	NA	ND (200)	ND (200)
Bis(2-ethylhexyl)phthalate	NA	ND (200)	NA	ND (200)	ND (200)	NA	ND (200)	ND (200)
Chrysene	NA	400	NA	500	200	NA	500	500
Dibenzo(a,h)anthracene	NA	ND (200)	NA	ND (200)	ND (200)	NA	ND (200)	ND (200)
Dibenzofuran	NA	ND (200)	NA	ND (200)	ND (200)	NA	ND (200)	ND (200)
Fluoranthene	NA	700	NA	400	ND (200)	NA	600	400
Fluorene	NA	ND (200)	NA	ND (200)	ND (200)	NA	ND (200)	ND (200)
Ideno(1,2,3-cd)pyrene	NA	ND (200)	NA	300	ND (200)	NA	300	ND (200)
2-Methylnaphthalene	NA	ND (200)	NA	ND (200)	ND (200)	NA	ND (200)	ND (200)
Naphthalene	NA	ND (200)	NA	ND (200)	ND (200)	NA	ND (200)	ND (200)
Phenanthrene	NA	600	NA	ND (200)	300	NA	300	600
Pyrene	NA	600	NA	300	ND (200)	NA	500	300

Notes
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Area 8
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth) CS-SB-04 (8-14)	CS-SB-06 (6-12)	CS-SB-06 Dp (6-12)	CS-SB-06R (25-29)
INORGANIC (mg/kg)				
Arsenic	12	11	NA	NA
Barium	36	49	NA	NA
Cadmium	ND (0.05)	ND (0.05)	NA	NA
Chromium	51	15	NA	NA
Copper	140	140	NA	NA
Lead	65	69	NA	NA
Mercury	0.1	ND (0.1)	NA	NA
Selenium	ND (0.5)	ND (0.5)	NA	NA
Silver	1.3	ND (0.5)	NA	NA
Zinc	140	54	NA	NA
Cyanide (total)	NA	NA	NA	NA
ORGANIC (ug/kg)				
Volatile Organic Compounds				
Acetone	200	ND (100)	NA	ND (100)
Benzene	ND (10)	ND (10)	NA	ND (10)
2-Butanone	100	ND (100)	NA	ND (100)
1,1-Dichloroethane	ND (10)	ND (10)	NA	ND (10)
1,2-Dichloroethene (total)	ND (10)	ND (10)	NA	ND (10)
Ethylbenzene	ND (10)	ND (10)	NA	ND (10)
Methylene Chloride	110	40	NA	10
Styrene	ND (10)	ND (10)	NA	ND (10)
Toluene	ND (10)	ND (10)	NA	ND (10)
1,1,1-Trichloroethane	ND (10)	ND (10)	NA	ND (10)
Trichloroethene	ND (10)	ND (10)	NA	ND (10)
Xylene (total)	ND (30)	ND (30)	NA	ND (30)
Polychlorinated Biphenyl (PCB)				
Aroclor-1242	ND (400) J	ND (4,000) J	ND (400) J	ND (200)
Aroclor-1248	ND (400) J	ND (4,000) J	ND (400) J	ND (200)
Aroclor-1260	ND (400) J	ND (4,000) J	ND (400) J	ND (200)
Base Neutral Compounds				
Acenaphthene	ND (200)	ND (200)	NA	ND (200)
Acenaphthylene	ND (200)	ND (200)	NA	ND (200)
Anthracene	ND (200)	ND (200)	NA	ND (200)
Benzo(a)anthracene	500	ND (200)	NA	ND (200)
Benzo(b)fluoranthene	700	200	NA	ND (200)
Benzo(k)fluoranthene	200	ND (200)	NA	ND (200)
Benzo(a)pyrene	400	ND (200)	NA	ND (200)
Benzo(g,h,i)perylene	400	ND (200)	NA	ND (200)
Bis(2-ethylhexyl)phthalate	ND (500)	ND (200)	NA	400
Chrysene	500	ND (200)	NA	ND (200)
Dibenzo(a,h)anthracene	ND (200)	ND (200)	NA	ND (200)
Dibenzofuran	NA	NA	NA	NA
Fluoranthene	800	ND (200)	NA	ND (200)
Fluorene	ND (200)	ND (200)	NA	ND (200)
Ideno(1,2,3-cd)pyrene	300	ND (200)	NA	ND (200)
2-Methylnaphthalene	NA	NA	NA	NA
Naphthalene	ND (200)	ND (200)	NA	ND (200)
Phenanthrene	500	300	NA	ND (200)
Pyrene	600	ND (200)	NA	ND (200)

Notes:
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NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because surrogate recovery outside control limits.

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TABLE 5-8
Area 10
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth) IBSB11-01 (4'-6')	IBSB11-02 (12'-14')	IBSB12-01 (12'-14')
INORGANIC (mg/kg)			
Arsenic	9.5	1.4	9.7
Barium	64	20	180
Cadmium	13 J	1.0 J	12 J
Chromium	18 J	3.7 J	14 J
Copper	170 J	5.7 J	120 J
Lead	57 J	80 J	100 J
Mercury	ND (0.05)	ND (0.05)	0.31
Selenium	0.3 J	0.1 J	0.2 J
Silver	ND (0.5) J	ND (0.5) J	0.7 J
Zinc	56 J	27 J	120 J
Cyanide (total)	NA	NA	NA
ORGANIC (ug/kg)			
Volatile Organic Compounds			
Acetone	ND (100)	ND (100)	200
Benzene	ND (10)	ND (10)	ND (10)
2-Butanone	ND (100)	ND (100)	ND (100)
1,1-Dichloroethane	ND (10)	ND (10)	ND (10)
1,2-Dichloroethene (total)	ND (10)	ND (10)	ND (10)
Ethylbenzene	ND (10)	ND (10)	ND (10)
Methylene Chloride	ND (10)	10	10
Styrene	ND (10)	ND (10)	ND (10)
Toluene	ND (10)	ND (10)	ND (10)
1,1,1-Trichloroethane	ND (10)	ND (10)	ND (10)
Trichloroethene	ND (10)	ND (10)	ND (10)
Xylene (total)	ND (30)	ND (30)	ND (30)
Polychlorinated Biphenyl (PCB)			
Aroclor-1242	NA	NA	NA
Aroclor-1248	NA	NA	NA
Aroclor-1260	NA	NA	NA
Base Neutral Compounds			
Acenaphthene	ND (200)	ND (200)	ND (200)
Acenaphthylene	ND (200)	ND (200)	ND (200)
Anthracene	ND (200)	ND (200)	200
Benzo(a)anthracene	ND (200)	ND (200)	200
Benzo(b)fluoranthene	ND (200)	ND (200)	ND (200)
Benzo(k)fluoranthene	ND (200)	ND (200)	ND (200)
Benzo(a)pyrene	ND (200)	ND (200)	ND (200)
Benzo(g,h,i)perylene	ND (200)	ND (200)	ND (200)
Bis(2-ethylhexyl)phthalate	NA	NA	NA
Chrysene	200	ND (200)	200
Dibenzo(a,h)anthracene	ND (200)	ND (200)	ND (200)
Dibenzofuran	NA	NA	NA
Fluoranthene	300	ND (200)	400
Fluorene	ND (200)	ND (200)	ND (200)
Ideno(1,2,3-cd)pyrene	ND (200)	ND (200)	ND (200)
2-Methylnaphthalene	NA	NA	NA
Naphthalene	ND (200)	ND (200)	ND (200)
Phenanthrene	300	ND (200)	400
Pyrene	300	ND (200)	400

Notes:
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TABLE 5-9
Area 11
Summary of Detected Parameters in Soil Samples
Industrial Brownfield, Bay City, Michigan

Parameter	Sample (Depth)							
	IBSB13-01 (4'-6')	IBSB13-02 (12'-14')	IBSB14-01 (8'-10')	IBSB15-01 (2'-4')	IBSB15-02 (8'-10')	IBSB43-01 (4'-6')	IBSB47-01 (4'-6')	IBSB47-02 (8'-10')
INORGANIC (mg/kg)								
Arsenic	2.2	1.6	1.6	1.5	6.1	0.1	2.5	0.5
Barium	26	39	39	32	94	34	190	27
Cadmium	4.0 J	4.6 J	5.2 J	2.9 J	3.2 J	2.9	3.9	1.2
Chromium	14 J	16 J	18 J	9.6 J	7.9 J	9	8	4
Copper	13 J	16 J	22 J	16 J	18 J	13	720	15
Lead	4.6 J	4.9 J	18 J	16 J	140 J	66	230	20
Mercury	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.05)	0.15	ND (0.1)	ND (0.1)	ND (0.1)
Selenium	ND (0.1) J	ND (0.1) J	ND (0.1) J	ND (0.1) J	0.1 J	0.2 J	3.1 J	0.2 J
Silver	ND (0.5) J	ND (0.5) J	ND (0.5) J	ND (0.5) J	ND (0.5) J	ND (0.5)	1	ND (0.5)
Zinc	22 J	30 J	39 J	25 J	260 J	41	140	26
Cyanide (total)	NA	NA	NA	NA	NA	NA	NA	NA
ORGANIC (ug/kg)								
Volatile Organic Compounds								
Acetone	ND (100) J	ND (100)	200	ND (100)	ND (100)	400	ND (400)	ND (200)
Benzene	ND (10) J	ND (10)	30	ND (10)	ND (10)	ND (10)	ND (40)	ND (20)
2-Butanone	ND (100) J	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)	ND (400)	ND (200)
1,1-Dichloroethane	ND (10) J	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	300	ND (20)
1,2-Dichloroethene (total)	ND (10) J	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (40)	ND (20)
Ethylbenzene	ND (10) J	ND (10)	ND (10)	4100	10	ND (10)	ND (40)	ND (20)
Methylene Chloride	ND (10) J	20	ND (10)	10	ND (10)	10	290	40
Styrene	ND (10) J	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (40)	ND (20)
Toluene	ND (10) J	ND (10)	20	ND (10)	40	ND (10)	ND (40)	ND (20)
1,1,1-Trichloroethane	ND (10) J	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (40)	130
Trichloroethene	ND (10) J	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)	ND (40)	ND (20)
Xylene (total)	ND (30) J	ND (30)	100	11000	40	ND (30)	ND (100)	ND (50)
Polychlorinated Biphenyl (PCB)								
Aroclor-1242	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1248	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1260	NA	NA	NA	NA	NA	NA	NA	NA
Base Neutral Compounds								
Acenaphthene	ND (200)	ND (200)	ND (200)	ND (200)	600	ND (200)	ND (300)	ND (200)
Acenaphthylene	ND (200)	ND (200)	ND (200)	ND (200)	1200	ND (200)	ND (300)	ND (200)
Anthracene	ND (200)	ND (200)	700	ND (200)	2600	200	1100	600
Benzo(a)anthracene	ND (200)	ND (200)	1200	ND (200)	6600	1200	1900	1900
Benzo(b)fluoranthene	ND (200)	ND (200)	1600	ND (200)	11000	1200	1200	1300
Benzo(k)fluoranthene	ND (200)	ND (200)	600	ND (200)	4700	700	900	1000
Benzo(a)pyrene	ND (200)	ND (200)	1000	ND (200)	6400	800	900	800
Benzo(g,h,i)perylene	ND (200)	ND (200)	400	ND (200)	3600	900	ND (300)	ND (200)
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	ND (200)	ND (200)	1200	ND (200)	6500	1200	1600	1600
Dibenzo(a,h)anthracene	ND (200)	ND (200)	500	ND (200)	3600	ND (200)	ND (300)	ND (200)
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ND (200)	ND (200)	3600	ND (200)	15000	2600	4100	3600
Fluorene	ND (200)	ND (200)	300	ND (200)	1100	ND (200)	600	300
Ideno(1,2,3-cd)pyrene	ND (200)	ND (200)	1100	ND (200)	8100	900	700	600
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ND (200)	ND (200)	400	200	500	ND (200)	ND (300)	ND (200)
Phenanthrene	ND (200)	ND (200)	2500	ND (200)	7500	1000	3600	2700
Pyrene	ND (200)	ND (200)	2600	ND (200)	13000	2000	2700	2100

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.

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TABLE 5-10
Area 12
Summary of Detected Parameters in Soil Samples
Industrial Brownfield, Bay City, Michigan

Parameter	Sample (Depth)					
	IBS816-01 (2'-4')	IBS816-02 (4'-6')	IBS817-01 (2'-4')	IBS817-01D (2'-4')	IBS817-02 (4'-6')	IBS817-02D (4'-6')
INORGANIC (mg/kg)						
Arsenic	2.8	2.9	NA	NA	1.4	1.3
Barium	20	25	NA	NA	33	32
Cadmium	3.6 J	3.5 J	NA	NA	4.0 J	3.3 J
Chromium	12 J	12 J	NA	NA	14 J	14 J
Copper	11 J	11 J	NA	NA	13 J	10 J
Lead	4.6 J	4.1 J	NA	NA	4.0 J	3.7 J
Mercury	ND (0.05)	ND (0.05)	NA	NA	ND (0.05)	ND (0.05)
Selenium	ND (0.1) J	ND (0.1) J	NA	NA	ND (0.1) J	ND (0.1) J
Silver	ND (0.5) J	ND (0.5) J	NA	NA	ND (0.5) J	0.4 J
Zinc	20 J	20 J	NA	NA	21 J	21 J
Cyanide (total)	NA	NA	NA	NA	NA	NA
ORGANIC (ug/kg)						
Volatile Organic Compounds						
Acetone	ND (100)	ND (100)	ND (100)	ND (100)	NA	NA
Benzene	ND (10)	ND (10)	ND (10)	ND (10)	NA	NA
2-Butanone	ND (100)	ND (100)	ND (100)	ND (100)	NA	NA
1,1-Dichloroethane	ND (10)	ND (10)	ND (10)	ND (10)	NA	NA
1,2-Dichloroethene (total)	ND (10)	ND (10)	ND (10)	ND (10)	NA	NA
Ethylbenzene	ND (10)	ND (10)	ND (10)	ND (10)	NA	NA
Methylene Chloride	ND (10)	ND (10)	20	ND (10)	NA	NA
Styrene	ND (10)	ND (10)	ND (10)	ND (10)	NA	NA
Toluene	ND (10)	ND (10)	ND (10)	ND (10)	NA	NA
1,1,1-Trichloroethane	ND (10)	ND (10)	ND (10)	ND (10)	NA	NA
Trichloroethene	ND (10)	ND (10)	ND (10)	ND (10)	NA	NA
Xylene (total)	ND (30)	ND (30)	ND (30)	ND (30)	NA	NA
Polychlorinated Biphenyl (PCB)						
Aroclor-1242	NA	NA	NA	NA	ND (40)	ND (40)
Aroclor-1248	NA	NA	NA	NA	ND (40)	ND (40)
Aroclor-1260	NA	NA	NA	NA	ND (40)	ND (40)
Base Neutral Compounds						
Acenaphthene	ND (200)	ND (200)	NA	NA	ND (200)	ND (200)
Acenaphthylene	ND (200)	ND (200)	NA	NA	ND (200)	ND (200)
Anthracene	ND (200)	ND (200)	NA	NA	ND (200)	ND (200)
Benzo(a)anthracene	ND (200)	ND (200)	NA	NA	ND (200)	ND (200)
Benzo(b)fluoranthene	ND (200)	ND (200)	NA	NA	ND (200)	ND (200)
Benzo(k)fluoranthene	ND (200)	ND (200)	NA	NA	ND (200)	ND (200)
Benzo(a)pyrene	ND (200)	ND (200)	NA	NA	ND (200)	ND (200)
Benzo(g,h,i)perylene	ND (200)	ND (200)	NA	NA	ND (200)	ND (200)
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA
Chrysene	ND (200)	ND (200)	NA	NA	ND (200)	ND (200)
Dibenzo(a,h)anthracene	ND (200)	ND (200)	NA	NA	ND (200)	ND (200)
Dibenzofuran	NA	NA	NA	NA	NA	NA
Fluoranthene	ND (200)	ND (200)	NA	NA	ND (200)	ND (200)
Fluorene	ND (200)	ND (200)	NA	NA	ND (200)	ND (200)
Ideno(1,2,3-cd)pyrene	ND (200)	ND (200)	NA	NA	ND (200)	ND (200)
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA
Naphthalene	ND (200)	ND (200)	NA	NA	ND (200)	ND (200)
Phenanthrene	ND (200)	ND (200)	NA	NA	ND (200)	ND (200)
Pyrene	ND (200)	ND (200)	NA	NA	ND (200)	ND (200)

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.

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TABLE 5-11
Area 13
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth) IBS825-01 (6'-8')	IBS825-02 (10'-12')	IBS825-03 (12'-14')	IBS826-01 (6'-8')	IBS826-02 (8'-10')	IBS827-01 (2'-4')	IBS827-02 (4'-6')
INORGANIC (mg/kg)							
Arsenic	NA	3.5 J	3.9 J	NA	2.1 J	1.6 J	1.0 J
Barium	NA	46 J	37 J	NA	31 J	27 J	33 J
Cadmium	NA	3.0 J	3.5 J	NA	3.4 J	1.4 J	3.0 J
Chromium	NA	11 J	15 J	NA	13 J	5.3 J	11 J
Copper	NA	13	16	NA	15	16	11
Lead	NA	7.6	7.1	NA	6.1	25	4.4
Mercury	NA	ND (0.1) J	ND (0.1) J	NA	ND (0.1) J	ND (0.1) J	ND (0.1) J
Selenium	NA	0.2 J	0.1 J	NA	ND (0.1) J	0.1 J	0.2 J
Silver	NA	0.3	0.4	NA	0.4	ND (0.2)	0.3
Zinc	NA	25 J	26 J	NA	25 J	26 J	16 J
Cyanide (total)	NA	NA	NA	NA	NA	NA	NA
ORGANIC (ug/kg)							
Volatile Organic Compounds							
Acetone	ND (100) J	ND (100)	ND (100)	ND (100)	NA	ND (100)	ND (100)
Benzene	ND (10) J	ND (10)	20	ND (10)	NA	ND (10)	ND (10)
2-Butanone	ND (100)	ND (100)	ND (100)	ND (100)	NA	ND (100)	ND (100)
1,1-Dichloroethane	ND (10) J	ND (10)	ND (10)	ND (10)	NA	ND (10)	ND (10)
1,2-Dichloroethene (total)	ND (10) J	ND (10)	ND (10)	ND (10)	NA	ND (10)	ND (10)
Ethylbenzene	ND (10) J	ND (10)	ND (10)	ND (10)	NA	ND (10)	ND (10)
Methylene Chloride	70 J	ND (10)	10	20	NA	20	10
Styrene	ND (10) J	ND (10)	ND (10)	ND (10)	NA	ND (10)	ND (10)
Toluene	ND (10) J	ND (10)	10	ND (10)	NA	ND (10)	ND (10)
1,1,1-Trichloroethane	40 J	ND (10)	ND (10)	ND (10)	NA	ND (10)	ND (10)
Trichloroethene	ND (10) J	ND (10)	ND (10)	ND (10)	NA	ND (10)	ND (10)
Xylene (total)	ND (30) J	ND (30)	120	ND (30)	NA	ND (30)	ND (30)
Polychlorinated Biphenyl (PCB)							
Aroclor-1242	NA	ND (50)	ND (40)	NA	ND (40)	ND (40)	ND (40)
Aroclor-1248	NA	ND (50)	ND (40)	NA	ND (40)	ND (40)	ND (40)
Aroclor-1260	NA	ND (50)	ND (40)	NA	ND (40)	ND (40)	ND (40)
Base Neutral Compounds							
Acenaphthene	ND (300)	ND (200)	ND (200)	NA	ND (200)	ND (200)	ND (200)
Acenaphthylene	600	ND (200)	ND (200)	NA	ND (200)	ND (200)	ND (200)
Anthracene	400	ND (200)	ND (200)	NA	ND (200)	ND (200)	ND (200)
Benzo(a)anthracene	2100	ND (200)	ND (200)	NA	ND (200)	ND (200)	ND (200)
Benzo(b)fluoranthene	1800	ND (200)	ND (200)	NA	ND (200)	ND (200)	ND (200)
Benzo(k)fluoranthene	800	ND (200)	ND (200)	NA	ND (200)	ND (200)	ND (200)
Benzo(a)pyrene	1600	ND (200)	ND (200)	NA	ND (200)	ND (200)	ND (200)
Benzo(g,h,i)perylene	700	ND (200)	ND (200)	NA	ND (200)	ND (200)	ND (200)
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	NA
Chrysene	1900	ND (200)	ND (200)	NA	ND (200)	ND (200)	ND (200)
Dibenzo(a,h)anthracene	ND (300)	ND (200)	ND (200)	NA	ND (200)	ND (200)	ND (200)
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	2900	ND (200)	ND (200)	NA	ND (200)	ND (200)	ND (200)
Fluorene	ND (300)	ND (200)	ND (200)	NA	ND (200)	ND (200)	ND (200)
Ideno(1,2,3-cd)pyrene	1100	ND (200)	ND (200)	NA	ND (200)	ND (200)	ND (200)
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ND (300)	ND (200)	ND (200)	NA	ND (200)	ND (200)	ND (200)
Phenanthrene	1600	ND (200)	ND (200)	NA	ND (200)	ND (200)	ND (200)
Pyrene	2000	ND (200)	ND (200)	NA	ND (200)	ND (200)	ND (200)

Notes:
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TABLE 5-12
Areas 14 and 15
Summary of Detected Parameters in Soil Samples
Industrial Brownfield, Bay City, Michigan

Parameter	AREA 14 Sample (Depth) IBS826-01 (10'-12')	IBS826-01D (10'-12')	IBS826-02 (12'-14')	IBS826-03 (14'-16')	IBS826-03D (14'-16')	AREA 15 Sample (Depth) IBS829-01 (4'-6')	IBS829-02 (12'-14')	IBS829-03 (14'-16')
INORGANIC (mg/kg)								
Arsenic	NA	NA	11 J	1.3 J	NA	19	15	NA
Barium	NA	NA	54 J	19 J	NA	73	29	NA
Cadmium	NA	NA	1.4 J	1.6 J	NA	11	5.3	NA
Chromium	NA	NA	ND (0.6) J	6.1 J	NA	36	13	NA
Copper	NA	NA	30	7.1	NA	65	45	NA
Lead	NA	NA	39	3.4	NA	31	29	NA
Mercury	NA	NA	ND (0.1) J	ND (0.1) J	NA	ND (0.1)	ND (0.1)	NA
Selenium	NA	NA	0.3 J	0.1 J	NA	0.8	0.8	NA
Silver	NA	NA	ND (0.2)	ND (0.2)	NA	0.7 J	ND (0.5) J	NA
Zinc	NA	NA	64 J	13 J	NA	66	53	NA
Cyanide (total)	NA	NA	NA	NA	NA	NA	NA	NA
ORGANIC (ug/kg)								
Volatile Organic Compounds								
Acetone	ND (1000)	ND (3000)	NA	ND (100)	ND (100)	ND (100)	NA	ND (300)
Benzene	ND (100)	ND (300)	NA	ND (10)	ND (10)	ND (10)	NA	ND (30)
2-Butanone	ND (1000)	ND (3000)	NA	ND (100)	ND (100)	ND (100)	NA	ND (300)
1,1-Dichloroethane	ND (100)	ND (300)	NA	ND (10)	ND (10)	ND (10)	NA	ND (30)
1,2-Dichloroethene (total)	ND (100)	ND (300)	NA	ND (10)	ND (10)	ND (10)	NA	ND (30)
Ethylbenzene	ND (100)	ND (300)	NA	ND (10)	ND (10)	ND (10)	NA	ND (30)
Methylene Chloride	200	ND (300)	NA	10	20	20	NA	ND (30)
Styrene	ND (100)	ND (300)	NA	ND (10)	ND (10)	ND (10)	NA	ND (30)
Toluene	ND (100)	ND (300)	NA	ND (10)	ND (10)	ND (10)	NA	ND (30)
1,1,1-Trichloroethane	ND (100)	ND (300)	NA	ND (10)	ND (10)	ND (10)	NA	ND (30)
Trichloroethene	ND (100)	ND (300)	NA	ND (10)	ND (10)	ND (10)	NA	ND (30)
Xylene (total)	ND (400)	ND (800)	NA	ND (30)	ND (30)	ND (30)	NA	ND (100)
Polychlorinated Biphenyl (PCB)								
Aroclor-1242	NA	NA	ND (100)	ND (40)	NA	ND (40)	ND (80)	NA
Aroclor-1248	NA	NA	ND (100)	ND (40)	NA	ND (40)	ND (80)	NA
Aroclor-1260	NA	NA	ND (100)	ND (40)	NA	130	110	NA
Base Neutral Compounds								
Acenaphthene	NA	NA	ND (600)	ND (200)	NA	3000	ND (200)	NA
Acenaphthylene	NA	NA	ND (600)	ND (200)	NA	ND (200)	ND (200)	NA
Anthracene	NA	NA	ND (600)	ND (200)	NA	5600	400	NA
Benzo(a)anthracene	NA	NA	ND (600)	ND (200)	NA	12000	400	NA
Benzo(b)fluoranthene	NA	NA	ND (600)	ND (200)	NA	8500	300	NA
Benzo(k)fluoranthene	NA	NA	ND (600)	ND (200)	NA	10000	300	NA
Benzo(a)pyrene	NA	NA	ND (600)	ND (200)	NA	10000	300	NA
Benzo(g,h,i)perylene	NA	NA	ND (600)	ND (200)	NA	4700	200	NA
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	NA	NA
Chrysene	NA	NA	ND (600)	ND (200)	NA	12000	600	NA
Dibenzo(a,h)anthracene	NA	NA	ND (600)	ND (200)	NA	2600	ND (200)	NA
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	NA	NA	ND (600)	ND (200)	NA	34000	900	NA
Fluorene	NA	NA	1600	ND (200)	NA	2500	1000	NA
Ideno(1,2,3-cd)pyrene	NA	NA	ND (600)	ND (200)	NA	5300	ND (200)	NA
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA	NA
Naphthalene	NA	NA	ND (600)	ND (200)	NA	200	ND (200)	NA
Phenanthrene	NA	NA	9000	ND (200)	NA	23000	600	NA
Pyrene	NA	NA	ND (600)	ND (200)	NA	26000	900	NA

Notes
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NA - Not analyzed.
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J - Estimated value because spike recovery outside control limits.

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TABLE 5-13
Areas 15/16A, 16/17A and 17
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	AREA 15/16A Sample (Depth) IBSB30-01 (2'-4')	AREA 15/16A Sample (Depth) IBSB30-02 (12'-14')	AREA 16/17A Sample (Depth) IBSB35-01 (4'-6')	AREA 16/17A Sample (Depth) IBSB36-01 (10'-12')	AREA 17 Sample (Depth) IBSB39-01 (6'-8')
INORGANIC (mg/kg)					
Arsenic	NA	1.9	2.2	2.5	0.5
Barium	NA	17	25	51	6
Cadmium	NA	1.4	2.0	4.9	ND (0.05)
Chromium	NA	4	9	8	2
Copper	NA	6	11	74	2
Lead	NA	6	6	42	ND (1)
Mercury	NA	ND (0.1)	ND (0.1)	0.3	ND (0.1)
Selenium	NA	0.1	ND (0.1)	0.2 J	ND (0.1) J
Silver	NA	ND (0.5) J	ND (0.5) J	ND (0.5)	ND (0.5)
Zinc	NA	24	17	120	5
Cyanide (total)	NA	NA	NA	NA	NA
ORGANIC (ug/kg)					
Volatile Organic Compounds					
Acetone	ND (100)	ND (100)	ND (100)	400	500
Benzene	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
2-Butanone	ND (100)	ND (100)	ND (100)	ND (100)	ND (100)
1,1-Dichloroethane	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,2-Dichloroethene (total)	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Ethylbenzene	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Methylene Chloride	ND (10)	ND (10)	ND (10)	10	20
Styrene	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Toluene	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
1,1,1-Trichloroethane	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Trichloroethene	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Xylene (total)	ND (30)	ND (30)	ND (30)	ND (30)	ND (30)
Polychlorinated Biphenyl (PCB)					
Aroclor-1242	NA	ND (50)	ND (40)	ND (40)	NA
Aroclor-1248	NA	ND (50)	ND (40)	ND (40)	NA
Aroclor-1260	NA	ND (50)	ND (40)	ND (40)	NA
Base Neutral Compounds					
Acenaphthene	NA	ND (200)	ND (200)	ND (200)	ND (200)
Acenaphthylene	NA	ND (200)	ND (200)	ND (200)	ND (200)
Anthracene	NA	ND (200)	ND (200)	ND (200)	ND (200)
Benzo(a)anthracene	NA	ND (200)	ND (200)	ND (200)	ND (200)
Benzo(b)fluoranthene	NA	ND (200)	ND (200)	ND (200)	ND (200)
Benzo(k)fluoranthene	NA	ND (200)	ND (200)	ND (200)	ND (200)
Benzo(a)pyrene	NA	ND (200)	ND (200)	ND (200)	ND (200)
Benzo(g,h,i)perylene	NA	ND (200)	ND (200)	ND (200)	ND (200)
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	NA
Chrysene	NA	ND (200)	ND (200)	ND (200)	ND (200)
Dibenzo(a,h)anthracene	NA	ND (200)	ND (200)	ND (200)	ND (200)
Dibenzofuran	NA	NA	NA	NA	NA
Fluoranthene	NA	ND (200)	ND (200)	ND (200)	ND (200)
Fluorene	NA	ND (200)	ND (200)	ND (200)	ND (200)
Ideno(1,2,3-cd)pyrene	NA	ND (200)	ND (200)	ND (200)	ND (200)
2-Methylnaphthalene	NA	NA	NA	NA	NA
Naphthalene	NA	ND (200)	ND (200)	ND (200)	ND (200)
Phenanthrene	NA	ND (200)	ND (200)	ND (200)	ND (200)
Pyrene	NA	ND (200)	ND (200)	ND (200)	ND (200)

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.

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TABLE 5-14
Area 16
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth) IBS844-01 (10'-12')	IBS844-02 (20'-22')	IBS844-03 (12'-14')	IBS844-04 (22'-24')
INORGANIC (mg/kg)				
Arsenic	NA	NA	NA	4.0
Barium	NA	NA	NA	37
Cadmium	NA	NA	NA	3.3
Chromium	NA	NA	NA	13
Copper	NA	NA	NA	15
Lead	NA	NA	NA	8
Mercury	NA	NA	NA	ND (0.1)
Selenium	NA	NA	NA	0.1 J
Silver	NA	NA	NA	0.7
Zinc	NA	NA	NA	24
Cyanide (total)	NA	NA	NA	NA
ORGANIC (ug/kg)				
Volatile Organic Compounds				
Acetone	ND (100)	ND (20000)	ND (100)	ND (100)
Benzene	40	2000	100	5600
2-Butanone	ND (100)	ND (20000)	ND (100)	ND (100)
1,1-Dichloroethane	ND (10)	ND (2000)	ND (10)	ND (10)
1,2-Dichloroethene (total)	ND (10)	ND (2000)	ND (10)	ND (10)
Ethylbenzene	20	ND (2000)	20	ND (10)
Methylene Chloride	ND (10)	ND (2000)	ND (10)	ND (10)
Styrene	ND (10)	ND (2000)	ND (10)	ND (10)
Toluene	ND (10)	2000	ND (10)	20
1,1,1-Trichloroethane	ND (10)	ND (2000)	ND (10)	ND (10)
Trichloroethene	ND (10)	ND (2000)	ND (10)	ND (10)
Xylene (total)	60	7000	60	ND (30)
Polychlorinated Biphenyl (PCB)				
Aroclor-1242	NA	NA	NA	ND (40)
Aroclor-1248	NA	NA	NA	ND (40)
Aroclor-1260	NA	NA	NA	ND (40)
Base Neutral Compounds				
Acenaphthene	NA	NA	ND (200)	ND (200)
Acenaphthylene	NA	NA	ND (200)	ND (200)
Anthracene	NA	NA	ND (200)	ND (200)
Benzo(a)anthracene	NA	NA	ND (200)	ND (200)
Benzo(b)fluoranthene	NA	NA	ND (200)	ND (200)
Benzo(k)fluoranthene	NA	NA	ND (200)	ND (200)
Benzo(a)pyrene	NA	NA	ND (200)	ND (200)
Benzo(g,h,i)perylene	NA	NA	ND (200)	ND (200)
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA
Chrysene	NA	NA	ND (200)	ND (200)
Dibenzo(a,h)anthracene	NA	NA	ND (200)	ND (200)
Dibenzofuran	NA	NA	NA	NA
Fluoranthene	NA	NA	300	ND (200)
Fluorene	NA	NA	ND (200)	ND (200)
Ideno(1,2,3-cd)pyrene	NA	NA	ND (200)	ND (200)
2-Methylnaphthalene	NA	NA	NA	NA
Naphthalene	NA	NA	1300	600
Phenanthrene	NA	NA	200	ND (200)
Pyrene	NA	NA	200	ND (200)

Notes:
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Area 18
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth) CS-SB-07 (21-22)
INORGANICS (mg/kg)	
Arsenic	NA
Barium	NA
Cadmium	NA
Chromium	NA
Copper	NA
Lead	NA
Mercury	NA
Selenium	NA
Silver	NA
Zinc	NA
Cyanide (total)	NA
ORGANICS (ug/kg)	
Volatile Organic Compounds	
Acetone	ND (100)
Benzene	14,000
2-Butanone	ND (100)
1,1-Dichloroethane	ND (10)
1,2-Dichloroethene (total)	ND (10)
Ethylbenzene	50
Methylene Chloride	30
Styrene	10
Toluene	4,300
1,1,1-Trichloroethane	ND (10)
Trichloroethene	ND (10)
Xylene (total)	170
Polychlorinated Biphenyl (PCB)	
Aroclor-1242	NA
Aroclor-1248	NA
Aroclor-1260	NA
Base Neutral Compounds	
Acenaphthene	ND (200)
Acenaphthylene	ND (200)
Anthracene	ND (200)
Benzo(a)anthracene	ND (200)
Benzo(b)fluoranthene	ND (200)
Benzo(k)fluoranthene	ND (200)
Benzo(a)pyrene	ND (200)
Benzo(g,h,i)perylene	ND (200)
Bis(2-ethylhexyl)phthalate	NA
Chrysene	ND (200)
Dibenzo(a,h)anthracene	ND (200)
Dibenzofuran	NA
Fluoranthene	ND (200)
Fluorene	ND (200)
Ideno(1,2,3-cd)pyrene	ND (200)
2-Methylnaphthalene	NA
Naphthalene	ND (200)
Phenanthrene	ND (200)
Pyrene	ND (200)

Notes:
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NA - Not analyzed.
( ) - Method detection limit.

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TABLE 5-14B
Area 18A
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth) CS-SB-13 (3-7)	CS-SB-14 (5)	CS-SB-15 (5-7)	CS-SB-22 (5-9)	CS-SB-22 (9-11)	CS-SB-25 (5)
INORGANICS (mg/kg)						
Arsenic	NA	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA	NA
Chromium	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA	NA
Selenium	NA	NA	NA	NA	NA	NA
Silver	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA
Cyanide (total)	ND (0.2)	0.2	NA	6.2	ND (0.2)	ND (0.2)
ORGANICS (ug/kg)						
Volatile Organic Compounds						
Acetone	ND (100)	ND (200)	ND (100)	ND (100)	ND (100)	ND (100)
Benzene	ND (10)	ND (20)	ND (10)	ND (10)	110	ND (10)
2-Butanone	ND (100)	ND (200)	ND (100)	ND (100)	ND (100)	ND (100)
1,1-Dichloroethane	ND (10)	ND (20)	ND (10)	ND (10)	ND (10)	ND (10)
1,2-Dichloroethene (total)	ND (10)	ND (20)	ND (10)	ND (10)	ND (10)	ND (10)
Ethylbenzene	ND (10)	ND (20)	ND (10)	190	30	ND (10)
Methylene Chloride	10	40	ND (10)	20	10	ND (10)
Styrene	ND (10)	ND (20)	ND (10)	ND (10)	ND (10)	10
Toluene	ND (10)	ND (20)	ND (10)	10	ND (10)	ND (10)
1,1,1-Trichloroethane	ND (10)	ND (20)	ND (10)	ND (10)	ND (10)	ND (10)
Trichloroethene	ND (10)	ND (20)	ND (10)	ND (10)	ND (10)	ND (10)
Xylene (total)	ND (30)	ND (50)	ND (30)	240	130	90
Polychlorinated Biphenyl (PCB)						
Aroclor-1242	NA	NA	NA	ND (200)	ND (40)	ND (40)
Aroclor-1248	NA	NA	NA	ND (200)	ND (40)	ND (40)
Aroclor-1260	NA	NA	NA	ND (200)	ND (40)	ND (40)
Base Neutral Compounds						
Acenaphthene	ND (200)	ND (300)	1,900	1,200	ND (200)	700
Acenaphthylene	ND (200)	ND (300)	800	400	ND (200)	1,100
Anthracene	ND (200)	ND (300)	2,800	1,700	ND (200)	2,900
Benzo(a)anthracene	ND (200)	900	2,100	2,800	ND (200)	2,200
Benzo(b)fluoranthene	ND (200)	1,200	2,000	2,100	ND (200)	1,300
Benzo(k)fluoranthene	ND (200)	ND (300)	900	2,600	ND (200)	1,700
Benzo(a)pyrene	ND (200)	700	1,700	2,600	ND (200)	1,800
Benzo(g,h,i)perylene	ND (200)	900	700	1,300	ND (200)	600
Bis(2-ethylhexyl)phthalate	ND (200)	ND (300)	400	ND (200)	200	ND (200)
Chrysene	ND (200)	1,000	1,600	2,200	ND (200)	1,900
Dibenzo(a,h)anthracene	ND (200)	300	ND (200)	800	ND (200)	400
Dibenzofuran	NA	NA	NA	NA	NA	NA
Fluoranthene	ND (200)	1,100	4,700	4,400	ND (200)	6,100
Fluorene	ND (200)	ND (300)	2,700	2,100	ND (200)	2,600
Ideno(1,2,3-cd)pyrene	ND (200)	800	700	1,700	ND (200)	900
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA
Naphthalene	ND (200)	700	1,000	7,400	2,300	29,000
Phenanthrene	ND (200)	1,100	5,700	4,400	ND (200)	12,000
Pyrene	ND (200)	800	4,900	4,700	ND (200)	4,300

Notes:
( ) = Method detection limit.
NA = Not analyzed.
ND = Not detected at method detection limit.

Work Assignment No.: 55-5AED
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TABLE 5-15
Area 19
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth)						
	IBSB19-01 (2'-4')	IBSB19-02 (6'-8')	IBSB20-02 (0'-6')	IBSB23-01 (4'-6')	IBSB24-01 (4'-6')	IBHA12-01 (4'-4.5')	IBHA12-01D (4'-4.5')
INORGANIC (mg/kg)							
Arsenic	0.7	2.6	1.3	2.1 J	4.1 J	NA	NA
Barium	30	40	26	26 J	30 J	NA	NA
Cadmium	3.3 J	3.6 J	2.9 J	2.5 J	2.4 J	NA	NA
Chromium	13 J	14 J	11 J	11 J	11 J	NA	NA
Copper	12 J	13 J	14 J	12	11	NA	NA
Lead	3.3 J	4.9 J	9.1 J	4.4	6.0	NA	NA
Mercury	ND (0.05)	ND (0.05)	ND (0.05)	ND (0.1) J	ND (0.1) J	NA	NA
Selenium	ND (0.1) J	ND (0.1) J	ND (0.1) J	0.4 J	0.2 J	NA	NA
Silver	ND (0.5) J	ND (0.5) J	0.6 J	0.3	0.4	NA	NA
Zinc	17 J	23 J	21 J	19 J	17 J	NA	NA
Cyanide (total)	NA	NA	NA	ND (0.1) J	ND (0.1) J	NA	NA
ORGANIC (ug/kg)							
Volatile Organic Compounds							
Acetone	ND (100)	200	NA	ND (100)	ND (100)	ND (100)	ND (100)
Benzene	ND (10)	ND (10)	NA	ND (10)	ND (10)	ND (10)	ND (10)
2-Butanone	ND (100)	ND (100)	NA	ND (100)	ND (100)	ND (100)	ND (100)
1,1-Dichloroethane	ND (10)	ND (10)	NA	ND (10)	ND (10)	ND (10)	ND (10)
1,2-Dichloroethene (total)	ND (10)	ND (10)	NA	ND (10)	ND (10)	ND (10)	ND (10)
Ethylbenzene	ND (10)	ND (10)	NA	ND (10)	ND (10)	ND (10)	ND (10)
Methylene Chloride	10	10	NA	20	ND (10)	10	20
Styrene	ND (10)	ND (10)	NA	ND (10)	ND (10)	ND (10)	ND (10)
Toluene	ND (10)	ND (10)	NA	ND (10)	ND (10)	ND (10)	ND (10)
1,1,1-Trichloroethane	ND (10)	ND (10)	NA	ND (10)	ND (10)	ND (10)	ND (10)
Trichloroethene	ND (10)	ND (10)	NA	ND (10)	ND (10)	ND (10)	ND (10)
Xylene (total)	ND (10)	ND (10)	NA	ND (30)	ND (30)	ND (30)	ND (30)
Polychlorinated Biphenyl (PCB)							
Aroclor-1242	ND (40)	ND (40)	ND (40)	NA	NA	NA	NA
Aroclor-1248	ND (40)	ND (40)	ND (40)	NA	NA	NA	NA
Aroclor-1260	ND (40)	ND (40)	ND (40)	NA	NA	NA	NA
Base Neutral Compounds							
Acenaphthene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	NA	NA
Acenaphthylene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	NA	NA
Anthracene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	NA	NA
Benzo(a)anthracene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	NA	NA
Benzo(b)fluoranthene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	NA	NA
Benzo(k)fluoranthene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	NA	NA
Benzo(a)pyrene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	NA	NA
Benzo(g,h,i)perylene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	NA	NA
Bis(2-ethylhexyl)phthalate	NA	NA	NA	ND (200)	ND (200)	NA	NA
Chrysene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	NA	NA
Dibenzo(a,h)anthracene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	NA	NA
Dibenzofuran	NA	NA	NA	ND (200)	ND (200)	NA	NA
Fluoranthene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	NA	NA
Fluorene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	NA	NA
Ideno(1,2,3-cd)pyrene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	NA	NA
2-Methylnaphthalene	NA	NA	NA	ND (200)	ND (200)	NA	NA
Naphthalene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	NA	NA
Phenanthrene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	NA	NA
Pyrene	ND (200)	ND (200)	ND (200)	ND (200)	ND (200)	NA	NA

Notes:
ND - Not detected at method detection limit.
NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.

Page 1 of 2

Work Assignment No.: 33-SAED
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TABLE 5-15 (Continued)
Area 19
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	SAMPLE (DEPTH)						
	IBHA12-02 (1.5'-4.5')	IBHA13-01 (1.5'-2')	IBHA13-02 (1.5'-4.5')	IBHA14-01 (3'-3.5')	IBHA14-02 (1.5'-4.5')	IBHA15-01 (2.5'-3')	IBHA15-02 (1.5'-4.5')
INORGANIC (mg/kg)							
Arsenic	2.3	NA	1.2	NA	1.3	NA	2.1
Barium	29	NA	31	NA	28	NA	78
Cadmium	3.6 J	NA	3.5 J	NA	3.3 J	NA	5.3 J
Chromium	13 J	NA	13 J	NA	12 J	NA	17 J
Copper	15 J	NA	13 J	NA	12 J	NA	180 J
Lead	4.8 J	NA	4.2 J	NA	4.0 J	NA	98 J
Mercury	ND (0.05)	NA	ND (0.05)	NA	ND (0.05)	NA	ND (0.05)
Selenium	0.1 J	NA	ND (0.1) J	NA	ND (0.1) J	NA	ND (0.1) J
Silver	1.5 J	NA	0.9 J	NA	0.6 J	NA	0.7 J
Zinc	21 J	NA	20 J	NA	18 J	NA	150 J
Cyanide (total)	ND (0.1)	NA	NA	NA	NA	NA	NA
ORGANIC (ug/kg)							
Volatile Organic Compounds							
Acetone	NA	ND (100)	NA	600	NA	ND (100)	NA
Benzene	NA	ND (10)	NA	ND (10)	NA	ND (10)	NA
2-Butanone	NA	ND (100)	NA	ND (100)	NA	ND (100)	NA
1,1-Dichloroethane	NA	ND (10)	NA	ND (10)	NA	ND (10)	NA
1,2-Dichloroethene (total)	NA	ND (10)	NA	ND (10)	NA	ND (10)	NA
Ethylbenzene	NA	ND (10)	NA	ND (10)	NA	ND (10)	NA
Methylene Chloride	NA	ND (10)	NA	ND (10)	NA	ND (10)	NA
Styrene	NA	ND (10)	NA	ND (10)	NA	ND (10)	NA
Toluene	NA	ND (10)	NA	ND (10)	NA	ND (10)	NA
1,1,1-Trichloroethane	NA	ND (10)	NA	ND (10)	NA	ND (10)	NA
Trichloroethene	NA	ND (10)	NA	ND (10)	NA	ND (10)	NA
Xylene (total)	NA	ND (30)	NA	ND (30)	NA	ND (30)	NA
Polychlorinated Biphenyl (PCB)							
Aroclor-1242	ND (40)	NA	ND (40)	NA	ND (40)	NA	ND (40)
Aroclor-1248	ND (40)	NA	ND (40)	NA	ND (40)	NA	ND (40)
Aroclor-1260	ND (40)	NA	ND (40)	NA	ND (40)	NA	80
Base Neutral Compounds							
Acenaphthene	ND (200)	NA	ND (200)	NA	ND (200)	NA	ND (200)
Acenaphthylene	ND (200)	NA	ND (200)	NA	ND (200)	NA	ND (200)
Anthracene	ND (200)	NA	ND (200)	NA	ND (200)	NA	ND (200)
Benzo(a)anthracene	ND (200)	NA	ND (200)	NA	ND (200)	NA	ND (200)
Benzo(b)fluoranthene	ND (200)	NA	ND (200)	NA	ND (200)	NA	ND (200)
Benzo(k)fluoranthene	ND (200)	NA	ND (200)	NA	ND (200)	NA	ND (200)
Benzo(a)pyrene	ND (200)	NA	ND (200)	NA	ND (200)	NA	ND (200)
Benzo(g,h,i)perylene	ND (200)	NA	ND (200)	NA	ND (200)	NA	ND (200)
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	NA	NA	NA
Chrysene	ND (200)	NA	ND (200)	NA	ND (200)	NA	ND (200)
Dibenzo(a,h)anthracene	ND (200)	NA	ND (200)	NA	ND (200)	NA	ND (200)
Dibenzofuran	NA	NA	NA	NA	NA	NA	NA
Fluoranthene	ND (200)	NA	ND (200)	NA	ND (200)	NA	ND (200)
Fluorene	ND (200)	NA	ND (200)	NA	ND (200)	NA	ND (200)
Ideno(1,2,3-cd)pyrene	ND (200)	NA	ND (200)	NA	ND (200)	NA	ND (200)
2-Methylnaphthalene	NA	NA	NA	NA	NA	NA	NA
Naphthalene	ND (200)	NA	ND (200)	NA	ND (200)	NA	ND (200)
Phenanthrene	ND (200)	NA	ND (200)	NA	ND (200)	NA	ND (200)
Pyrene	ND (200)	NA	ND (200)	NA	ND (200)	NA	ND (200)

Notes:
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NA - Not analyzed.
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TABLE 5-16
Area 20
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth)							
	IBS821-01 (0'-2')	IBS821-02 (2'-4')	IBS821-02D (2'-4')	IBS822-01 (4'-6')	IBCC01 (concrete chip)	IBCC02 (concrete chip)	IBCC02D (concrete chip)	IBCC03 (concrete chip)
INORGANIC (mg/kg)								
Arsenic	2.1 J	2.3 J	NA	3.1 J	NA	NA	NA	NA
Barium	33 J	29 J	NA	26 J	NA	NA	NA	NA
Cadmium	3.2 J	2.9 J	NA	2.6 J	NA	NA	NA	NA
Chromium	8.6 J	11 J	NA	11 J	NA	NA	NA	NA
Copper	15	12	NA	13	NA	NA	NA	NA
Lead	15	6.5	NA	6.3	NA	NA	NA	NA
Mercury	ND (0.1) J	ND (0.1) J	NA	ND (0.1) J	NA	NA	NA	NA
Selenium	0.3 J	0.1 J	NA	0.1 J	NA	NA	NA	NA
Silver	ND (0.2)	0.5	NA	0.4	NA	NA	NA	NA
Zinc	27 J	23 J	NA	21 J	NA	NA	NA	NA
Cyanide (total)	ND (0.1) J	ND (0.1) J	ND (0.1) J	ND (0.1) J	1.8 J	ND (0.1) J	0.1 J	0.5 J
ORGANIC (ug/kg)								
Volatile Organic Compounds								
Acetone	ND (100)	ND (100)	NA	ND (100)	NA	NA	NA	NA
Benzene	ND (10)	ND (10)	NA	ND (10)	NA	NA	NA	NA
2-Butanone	ND (100)	ND (100)	NA	ND (100)	NA	NA	NA	NA
1,1-Dichloroethane	ND (10)	ND (10)	NA	ND (10)	NA	NA	NA	NA
1,2-Dichloroethene (total)	ND (10)	ND (10)	NA	ND (10)	NA	NA	NA	NA
Ethylbenzene	ND (10)	ND (10)	NA	ND (10)	NA	NA	NA	NA
Methylene Chloride	10	10	NA	ND (10)	NA	NA	NA	NA
Styrene	ND (10)	ND (10)	NA	ND (10)	NA	NA	NA	NA
Toluene	ND (10)	ND (10)	NA	ND (10)	NA	NA	NA	NA
1,1,1-Trichloroethane	ND (10)	ND (10)	NA	ND (10)	NA	NA	NA	NA
Trichloroethene	ND (10)	ND (10)	NA	ND (10)	NA	NA	NA	NA
Xylene (total)	ND (30)	ND (30)	NA	ND (30)	NA	NA	NA	NA
Polychlorinated Biphenyl (PCB)								
Aroclor-1242	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1248	NA	NA	NA	NA	NA	NA	NA	NA
Aroclor-1260	NA	NA	NA	NA	NA	NA	NA	NA
Base Neutral Compounds								
Acenaphthene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Acenaphthylene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Anthracene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Benzo(a)anthracene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Benzo(b)fluoranthene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Benzo(k)fluoranthene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Benzo(a)pyrene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Benzo(g,h,i)perylene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Bis(2-ethylhexyl)phthalate	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Chrysene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Dibenzo(a,h)anthracene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Dibenzofuran	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Fluoranthene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Fluorene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Ideno(1,2,3-cd)pyrene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
2-Methylnaphthalene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Naphthalene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Phenanthrene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA
Pyrene	ND (200)	ND (200)	NA	ND (200)	NA	NA	NA	NA

Notes:
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NA - Not analyzed.
( ) - Method detection limit.
J - Estimated value because spike recovery outside control limits.

Work Assignment No.: 55-5AED
45005 STK.WKJ

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TABLE 5-17
Areas 22 and 23 (Inside Building)
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	AREA 22 Sample (Depth) IBSB18-01 (2'-4')	AREA 23 Sample (Depth) IBSB48-01 (0'-1')	IBSB48-02 (2'-4')	IBSB49-01 (0'-2')	IBSB49-02 (6'-8')	IBSB49-02D (6'-8')
INORGANIC (mg/kg)						
Arsenic	1.2	NA	NA	NA	NA	NA
Barium	31	NA	NA	NA	NA	NA
Cadmium	3.2 J	NA	NA	NA	NA	NA
Chromium	12 J	NA	NA	NA	NA	NA
Copper	11 J	NA	NA	NA	NA	NA
Lead	3.0 J	NA	NA	NA	NA	NA
Mercury	ND (0.05)	NA	NA	NA	NA	NA
Selenium	ND (0.1) J	NA	NA	NA	NA	NA
Silver	ND (0.5) J	NA	NA	NA	NA	NA
Zinc	16 J	NA	NA	NA	NA	NA
Cyanide (total)	NA	NA	NA	NA	NA	NA
ORGANIC (ug/kg)						
Volatile Organic Compounds						
Acetone	200	NA	ND (100)	ND (100)	ND (100)	ND (100)
Benzene	ND (10)	NA	ND (10)	ND (10)	ND (10)	ND (10)
2-Butanone	ND (100)	NA	ND (100)	ND (100)	ND (100)	ND (100)
1,1-Dichloroethane	ND (10)	NA	ND (10)	ND (10)	ND (10)	ND (10)
1,2-Dichloroethene (total)	ND (10)	NA	ND (10)	ND (10)	ND (10)	ND (10)
Ethylbenzene	ND (10)	NA	ND (10)	ND (10)	ND (10)	ND (10)
Methylene Chloride	ND (10)	NA	30	10	ND (10)	ND (10)
Styrene	ND (10)	NA	ND (10)	ND (10)	ND (10)	ND (10)
Toluene	ND (10)	NA	ND (10)	ND (10)	ND (10)	ND (10)
1,1,1-Trichloroethane	ND (10)	NA	30	ND (10)	ND (10)	ND (10)
Trichloroethene	ND (10)	NA	10	ND (10)	ND (10)	ND (10)
Xylene (total)	ND (30)	NA	ND (30)	ND (30)	ND (30)	ND (30)
Polychlorinated Biphenyl (PCB)						
Aroclor-1242	NA	ND (300)	ND (40)	ND (40)	ND (40)	NA
Aroclor-1248	NA	ND (300)	ND (40)	ND (40)	ND (40)	NA
Aroclor-1260	NA	ND (300)	ND (40)	ND (40)	ND (40)	NA
Base Neutral Compounds						
Acenaphthene	ND (200)	ND (300)	ND (200)	ND (200)	ND (200)	NA
Acenaphthylene	ND (200)	ND (300)	ND (200)	ND (200)	ND (200)	NA
Anthracene	ND (200)	ND (300)	ND (200)	ND (200)	ND (200)	NA
Benzo(a)anthracene	ND (200)	ND (300)	ND (200)	300	ND (200)	NA
Benzo(b)fluoranthene	ND (200)	ND (300)	ND (200)	600	ND (200)	NA
Benzo(k)fluoranthene	ND (200)	ND (300)	ND (200)	600	ND (200)	NA
Benzo(a)pyrene	ND (200)	ND (300)	ND (200)	600	ND (200)	NA
Benzo(g,h,i)perylene	ND (200)	ND (300)	ND (200)	ND (200)	ND (200)	NA
Bis(2-ethylhexyl)phthalate	NA	NA	NA	ND (200)	ND (200)	NA
Chrysene	ND (200)	300	ND (200)	300	ND (200)	NA
Dibenzo(a,h)anthracene	ND (200)	ND (300)	ND (200)	ND (200)	ND (200)	NA
Dibenzofuran	NA	NA	NA	ND (200)	ND (200)	NA
Fluoranthene	ND (200)	ND (300)	ND (200)	700	ND (200)	NA
Fluorene	ND (200)	ND (300)	ND (200)	ND (200)	ND (200)	NA
Ideno(1,2,3-cd)pyrene	ND (200)	ND (300)	ND (200)	ND (200)	ND (200)	NA
2-Methylnaphthalene	NA	NA	NA	ND (200)	ND (200)	NA
Naphthalene	ND (200)	ND (300)	ND (200)	ND (200)	ND (200)	NA
Phenanthrene	ND (200)	1600	ND (200)	300	ND (200)	NA
Pyrene	ND (200)	400	ND (200)	700	ND (200)	NA

Notes:
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NA - Not analyzed.
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TABLE 5-18
Area 25
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth) IBHA06-01 (1.5'-2')	IBHA06-02 (1.5'-4.5')	IBHA07-01 (1.5'-2')	IBHA07-02 (3'-3.5'/4'-4.5')	IBHA08-01 (2.5'-3')	IBHA08-02 (1.5'-2'/2.5'-3')
INORGANIC (mg/kg)						
Arsenic	NA	2.5	NA	1.9	NA	9.6
Barium	NA	30	NA	55	NA	65
Cadmium	NA	2.7 J	NA	6.0 J	NA	14 J
Chromium	NA	7.5 J	NA	13 J	NA	18 J
Copper	NA	26 J	NA	70 J	NA	70 J
Lead	NA	33 J	NA	66 J	NA	130 J
Mercury	NA	0.10	NA	0.13	NA	0.10
Selenium	NA	0.1 J	NA	0.1 J	NA	0.4 J
Silver	NA	ND (0.5) J	NA	ND (0.5) J	NA	ND (0.5) J
Zinc	NA	46 J	NA	66 J	NA	99 J
Cyanide (total)	NA	NA J	NA	NA	NA	NA
ORGANIC (ug/kg)						
Volatile Organic Compounds						
Acetone	300	NA	200	NA	ND (100)	NA
Benzene	ND (10)	NA	ND (10)	NA	ND (10)	NA
2-Butanone	ND (100)	NA	ND (100)	NA	ND (100)	NA
1,1-Dichloroethane	ND (10)	NA	ND (10)	NA	ND (10)	NA
1,2-Dichloroethene (total)	ND (10)	NA	ND (10)	NA	ND (10)	NA
Ethylbenzene	ND (10)	NA	ND (10)	NA	ND (10)	NA
Methylene Chloride	20	NA	10	NA	ND (10)	NA
Styrene	ND (10)	NA	ND (10)	NA	ND (10)	NA
Toluene	ND (10)	NA	ND (10)	NA	30	NA
1,1,1-Trichloroethane	ND (10)	NA	ND (10)	NA	ND (10)	NA
Trichloroethene	ND (10)	NA	ND (10)	NA	ND (10)	NA
Xylene (total)	ND (30)	NA	ND (30)	NA	ND (30)	NA
Polychlorinated Biphenyl (PCB)						
Aroclor-1242	NA	ND (40)	NA	ND (40)	NA	ND (40)
Aroclor-1248	NA	ND (40)	NA	ND (40)	NA	ND (40)
Aroclor-1260	NA	ND (40)	NA	ND (40)	NA	ND (40)
Base Neutral Compounds						
Acenaphthene	NA	300	NA	ND (200)	NA	ND (200)
Acenaphthylene	NA	ND (200)	NA	ND (200)	NA	200
Anthracene	NA	600	NA	300	NA	400
Benzo(a)anthracene	NA	3100	NA	1100	NA	1300
Benzo(b)fluoranthene	NA	3400	NA	900	NA	1000
Benzo(k)fluoranthene	NA	2100	NA	900	NA	1000
Benzo(a)pyrene	NA	2300	NA	800	NA	800
Benzo(g,h,i)perylene	NA	500	NA	300	NA	ND (200)
Bis(2-ethylhexyl)phthalate	NA	ND (200)	NA	ND (200)	NA	ND (200)
Chrysene	NA	3100	NA	1100	NA	1300
Dibenzo(a,h)anthracene	NA	900	NA	ND (200)	NA	ND (200)
Dibenzofuran	NA	200	NA	ND (200)	NA	ND (200)
Fluoranthene	NA	4700	NA	2100	NA	2300
Fluorene	NA	300	NA	ND (200)	NA	200
Ideno(1,2,3-cd)pyrene	NA	1600	NA	500	NA	400
2-Methylnaphthalene	NA	ND (200)	NA	ND (200)	NA	ND (200)
Naphthalene	NA	ND (200)	NA	ND (200)	NA	ND (200)
Phenanthrene	NA	3300	NA	1500	NA	1700
Pyrene	NA	3700	NA	1600	NA	1500

Notes:
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TABLE 5-19
Area 25A
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth) IBSB40-01 (4'-6')	IBSB41-01 (6'-8')	IBSB42-01 (6'-8')	IBHA09-01 (3'-3.5')	IBHA09-02 (1.5'-4.5')
INORGANIC (mg/kg)					
Arsenic	NA	NA	NA	NA	2.5
Barium	NA	NA	NA	NA	32
Cadmium	NA	NA	NA	NA	5.2 J
Chromium	NA	NA	NA	NA	9.9 J
Copper	NA	NA	NA	NA	17 J
Lead	NA	NA	NA	NA	18 J
Mercury	NA	NA	NA	NA	0.07
Selenium	NA	NA	NA	NA	0.1 J
Silver	NA	NA	NA	NA	ND (0.5) J
Zinc	NA	NA	NA	NA	37 J
Cyanide (total)	NA	NA	NA	NA	NA
ORGANIC (ug/kg)					
Volatile Organic Compounds					
Acetone	ND (100)	200	2300	ND (100)	NA
Benzene	ND (10)	ND (10)	ND (10)	ND (10)	NA
2-Butanone	ND (100)	ND (100)	ND (100)	ND (100)	NA
1,1-Dichloroethane	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,2-Dichloroethene (total)	ND (10)	ND (10)	ND (10)	ND (10)	NA
Ethylbenzene	ND (10)	ND (10)	ND (10)	ND (10)	NA
Methylene Chloride	ND (10)	ND (10)	ND (10)	ND (10)	NA
Styrene	ND (10)	ND (10)	ND (10)	ND (10)	NA
Toluene	ND (10)	ND (10)	ND (10)	ND (10)	NA
1,1,1-Trichloroethane	ND (10)	ND (10)	ND (10)	ND (10)	NA
Trichloroethene	ND (10)	ND (10)	ND (10)	ND (10)	NA
Xylene (total)	ND (30)	ND (30)	ND (30)	ND (30)	NA
Polychlorinated Biphenyl (PCB)					
Aroclor-1242	NA	NA	NA	NA	ND (40)
Aroclor-1248	NA	NA	NA	NA	ND (40)
Aroclor-1260	NA	NA	NA	NA	ND (40)
Base Neutral Compounds					
Acenaphthene	ND (200)	ND (200)	ND (200)	NA	ND (200)
Acenaphthylene	ND (200)	ND (200)	ND (200)	NA	ND (200)
Anthracene	ND (200)	ND (200)	ND (200)	NA	200
Benzo(a)anthracene	ND (200)	ND (200)	ND (200)	NA	600
Benzo(b)fluoranthene	ND (200)	ND (200)	ND (200)	NA	400
Benzo(k)fluoranthene	ND (200)	ND (200)	ND (200)	NA	600
Benzo(a)pyrene	ND (200)	ND (200)	ND (200)	NA	500
Benzo(g,h,i)perylene	ND (200)	ND (200)	ND (200)	NA	ND (200)
Bis(2-ethylhexyl)phthalate	NA	NA	NA	NA	ND (200)
Chrysene	ND (200)	ND (200)	ND (200)	NA	700
Dibenzo(a,h)anthracene	ND (200)	ND (200)	ND (200)	NA	ND (200)
Dibenzofuran	NA	NA	NA	NA	ND (200)
Fluoranthene	ND (200)	ND (200)	ND (200)	NA	1300
Fluorene	ND (200)	ND (200)	ND (200)	NA	ND (200)
Ideno(1,2,3-cd)pyrene	ND (200)	ND (200)	ND (200)	NA	300
2-Methylnaphthalene	NA	NA	NA	NA	300
Naphthalene	ND (200)	ND (200)	ND (200)	NA	ND (200)
Phenanthrene	ND (200)	ND (200)	ND (200)	NA	1000
Pyrene	ND (200)	ND (200)	ND (200)	NA	1100

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Area 25/25A
Summary of Detected Parameters in Soil Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth) CS-HA-09 (0.5-1)	CS-HA-10 (0.5-1)
INORGANICS (mg/kg)		
Arsenic	NA	NA
Barium	NA	NA
Cadmium	NA	NA
Chromium	NA	NA
Copper	NA	NA
Lead	NA	NA
Mercury	NA	NA
Selenium	NA	NA
Silver	NA	NA
Zinc	NA	NA
Cyanide (total)	NA	NA
ORGANICS (ug/kg)		
Acetone	NA	NA
Benzene	NA	NA
2-Butanone	NA	NA
1,1-Dichloroethane	NA	NA
1,2-Dichloroethene (total)	NA	NA
Ethylbenzene	NA	NA
Methylene Chloride	NA	NA
Styrene	NA	NA
Toluene	NA	NA
1,1,1-Trichloroethane	NA	NA
Trichloroethene	NA	NA
Xylene (total)	NA	NA
Polychlorinated Biphenyl (PCB)		
Aroclor-1242	ND (200)	ND (40)
Aroclor-1248	ND (200)	ND (40)
Aroclor-1260	ND (200)	ND (40)
Base Neutral Compounds		
Acenaphthene	NA	NA
Acenaphthylene	NA	NA
Anthracene	NA	NA
Benzo(a)anthracene	NA	NA
Benzo(b)fluoranthene	NA	NA
Benzo(k)fluoranthene	NA	NA
Benzo(a)pyrene	NA	NA
Benzo(g,h,i)perylene	NA	NA
Bis(2-ethylhexyl)phthalate	NA	NA
Chrysene	NA	NA
Dibenzo(a,h)anthracene	NA	NA
Dibenzofuran	NA	NA
Fluoranthene	NA	NA
Fluorene	NA	NA
Ideno(1,2,3-cd)pyrene	NA	NA
2-Methylnaphthalene	NA	NA
Naphthalene	NA	NA
Phenanthrene	NA	NA
Pyrene	NA	NA

Notes:
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NA - Not analyzed.
( ) - Method detection limit.

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TABLE 5-20
TCLP/EP Toxicity Analytical Results
Industrial Brownhoist, Bay City, Michigan

Parameter	Sample (Depth) CS-SB-01 (2-10')	CS-SB-02 (10-16')	CS-SB-03 (10-14')	CS-SB-05 (8-14')	CS-HA-12 (1.5-2')
TCLP (mg/L)					
Arsenic	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Barium	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Cadmium	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Chromium	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Copper	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Lead	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Mercury	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Selenium	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Silver	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Zinc	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)
EP Toxicity (mg/L)					
Arsenic	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Barium	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Cadmium	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Chromium	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Copper	ND (10)	ND (10)	ND (10)	ND (10)	ND (10)
Lead	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Mercury	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)	ND (0.020)
Selenium	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)	ND (0.10)
Silver	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)	ND (0.50)
Zinc	ND (50)	ND (50)	ND (50)	ND (50)	ND (50)

Notes:
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( ) - Method detection limit.

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TABLE 5-21
Summary of Detected Radiation Parameters – Industrial Brownhoist
CERT Site, Bay City, Michigan
(all results in pCi/g unless otherwise indicated)

Sample Location Sample Depth (Inches)	CSHA-06 6-18	CSHA-06 6-18	CSHA-06 6-18
Parameter			
Uranium Natural Total (UNAT)	0.002 mg/gm	0.014 mg/gm	0.003 mg/gm
Gross Alpha, Total	ND	1.9	46.6
Gross Alpha, Total, LLD	10.9	10.7	9.9
Gross Beta, Total	ND	14.1	21.8
Gross Beta, Total, LLD	8.4	8.5	8.3
Gross Gamma, Total (12.8-1947 KeV)	9.3	15.0	13.7
Radium 226, Total	2.3	9.2	2.2
Radium, 226, Total, LLD	0.5	0.5	0.5
Radium, 228, Total	1.5	6.2	3.6
Radium, 228, Total, LLD	2.8	2.8	2.8
Thorium, 230, Total	2.0	6.8	2.6
Thorium, 230, Total, LLD	0.2	0.1	0.1
Thorium, 232, Total	1.0	4.7	0.7
Thorium, 232, Total, LLD	0.2	0.1	0.1
Uranium, 234, Total	1.7	4.7	1.1
Uranium, 234, Total, LLD	0.1	0.2	0.1
Uranium, 235, Total	0.1	0.2	ND
Uranium, 235, Total, LLD	0.1	0.1	0.1
Uranium, 238, Total	1.4	4.5	1.2
Uranium, 238, Total, LLD	0.1	0.1	0.2
Thorium, 228, Total	0.9	4.8	0.3
Thorium, 228, Total, LLD	0.2	0.2	0.3

[1] – All samples were analyzed by Core Laboratories, Casper, Wyoming.
ND – Not detected.

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TABLE 5-22
SUMMARY OF DETECTED AROCLORS - PCB SAMPLING
INDUSTRIAL BROWNHOIST, BAY CITY, MICHIGAN
RESULTS IN MG/KG UNLESS OTHERWISE INDICATED

SAMPLE LOCATION	MATRIX	PCB AROCLOR-1248	AROCLOR-1254	AROCLOR-1260
IB-PH-PCB-1	OIL	ND (3)J	ND (3)J	ND (3)J
IB-PH-PCB-2	OIL	ND (3)J	ND (3)J	ND (3)J
IB-PH-PCB-3	SOLID	19 J	19 J	19 J
IB-PH-PCB-4	WIPE	6.4 ug/100 sq cm	ND (0.5ug/100 sq cm)	2.1 ug/100 sq cm
IB-PH-PCB-5	WIPE	2.0 ug/100 sq cm	ND (0.5ug/100 sq cm)	ND (0.5ug/100 sq cm)
IB-PH-PCB-6	WIPE	2.7 ug/100 sq cm	ND (0.5ug/100 sq cm)	ND (0.5ug/100 sq cm)
IB-42-PCB-7	SOLID	ND (10)J	ND (10)J	ND (10)J
IB-42-PCB-8	WIPE	ND (0.5ug/100 sq cm)	ND (0.5ug/100 sq cm)	ND (0.5ug/100 sq cm)

ND - Not detected at method detection limit.
( ) - Method detection limit.
PH - Powerhouse.
42 - Building 42.
J - Estimated value because surrogate recovery outside control limits.

This document was prepared by Roy F. Weston, Inc., expressly for U.S. EPA. It shall not be released or disclosed in whole or in part without the express, written permission of U.S. EPA.

TABLE 5-34
Summary of Detected Parameters in Groundwater Samples
Industrial Brownhoist, Bay City, Michigan

Parameter	MW-01	MW-01D	MW-02	MW-03	MW-04	MW-05	MW-06	MW-07	MW-08	MW-09	MW-10	MW-11	MW-12	MW-13	MW-14	FB-01
Metals (mg/L)																
Arsenic (0.001)	0.007	0.008	0.013	0.008	0.015	0.008	0.030	0.005	0.008	0.003	0.005	0.011	0.005	0.005	0.011	.001
Barium (0.2)	ND	0.2	ND	ND	ND	ND	0.2	ND	0.2	ND	ND	0.2	ND	ND	0.4	ND
Cadmium (0.0002)	ND	ND	ND	ND	ND	0.006	ND	ND	ND	ND	ND	ND	ND	ND	0.40	ND
Chromium (0.05)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.42	ND
Lead (0.003)	ND	0.026	0.013	ND	ND	0.017	0.018	0.010	0.010	ND	0.017	0.010	ND	ND	0.44	ND
Selenium (0.001)	ND	ND	0.004 J	ND	ND J	ND	ND	ND	ND	ND	ND	0.003	ND	ND	ND	ND
Silver (0.0005)	0.0006 J	0.003	ND J	ND J	ND J	ND	ND	ND	ND	ND J	ND	ND	ND J	ND J	0.46	ND J
Zinc (0.02)	ND	0.03	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.03	ND
Cyanide (mg/L) (0.01)	ND	ND	0.01	ND	0.01	ND	ND	0.48	0.02	ND	ND	0.03	ND	ND	0.55	ND
BNA (ug/L)																
Fluoranthene (5)	ND	ND	ND	ND	10	ND	ND	ND	62	ND	ND	ND	ND	ND	ND	ND
Naphthalene (5)	ND	ND	ND	ND	11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Phenanthrene (5)	ND	ND	ND	ND	13	ND	ND	ND	36	ND	21	ND	ND	ND	ND	ND
Pyrene (5)	ND	ND	ND	ND	10	ND	ND	ND	62	ND	ND	ND	ND	ND	ND	ND
Anthracene (5)	ND	ND	ND	ND	ND	ND	ND	ND	8	ND	ND	ND	ND	ND	ND	ND
Benzo(a)anthracene (5)	ND	ND	ND	ND	ND	ND	ND	ND	31	ND	ND	ND	ND	ND	ND	ND
Benzo(b)fluoranthene (5)	ND	ND	ND	ND	ND	ND	ND	ND	18	ND	ND	ND	ND	ND	ND	ND
Benzo(k)fluoranthene (5)	ND	ND	ND	ND	ND	ND	ND	ND	26	ND	ND	ND	ND	ND	ND	ND
Benzo(a)pyrene (5)	ND	ND	ND	ND	ND	ND	ND	ND	72	ND	ND	ND	ND	ND	ND	ND
Chrysene (5)	ND	ND	ND	ND	5	ND	ND	ND	37	ND	ND	ND	ND	ND	ND	ND
Bis(2-chloroisopropyl)ether (5)	ND	ND	ND	ND	ND	ND	ND	11	ND	ND	ND	ND	ND	ND	ND	ND
Acenaphthene (5)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	ND	ND	ND	ND
Fluorene (5)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	6	ND	ND	ND	ND	ND
PCB (ug/L) (0.1)	ND J	ND J	ND (1) J	ND	ND (1) J	ND J	ND J	ND (1) J	ND J	ND J	ND J	ND (1) J	ND J	ND J	ND J	ND J
VOA (ug/L)																
Methylene Chloride (2)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3.9
Dichlorodifluoromethane (1)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.7
1,1,1-Trichloroethane (0.5)	0.6	ND	ND	0.8	ND	ND	ND	4.0	ND	ND	ND	ND	ND	ND	3.7	ND
1,2-Dichlorobenzene (0.5)	ND	ND	ND	ND	ND	ND	ND	0.9	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane (0.5)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.8	ND	6.1	16	ND
1,2-Dichloroethane (0.3)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.5	ND
Ethylbenzene (0.3)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.7	ND
Benzene (0.4)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	8.3	ND
Xylene (meta/para) (0.4)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1	ND
Xylene (ortho) (0.4)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.7	ND
1,1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.7	ND	ND	ND

Notes:
( ) - Method detection limit
ND - Not detected at method detection limit
J - Estimated value because surrogate recovery or spike recovery outside control limits

Work Assignment No.: 55-5AED
GMI\B450OT19.WK3

Document Control No.: 4500-55-AHXB

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ATTACHMENT F

ROY F. WESTON, INC. - 1995 ANALYTICAL DATA

ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-25 (17-19')	Date Sampled:	02/28/95
Lab Number:	002b/F4040.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	EPA 3550	Date Analyzed:	03/17/95
Analytical Method:	EPA 8270	Moisture(%):	21
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korobka
6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00

Sample Identification:	CS2-SB-25 (27-29')	Date Sampled:	02/28/9_
Lab Number:	003c	Date Received:	03/06/95
Sample Type:	Solid	Moisture (%):	49
Analyst:	PLEASANTON		

Analyte	Concentration (mg/kg)	LOD (mg/kg)	Preparation Method and Date		Analytical Method and Date	
Arsenic	7.5 J	0.8	EPA 3050	03/08/95	EPA 7060	03/14/ 5
Barium	69	2	EPA 3050	03/08/95	EPA 6010A	03/08/95
Cadmium	<0.2	0.2	EPA 3050	03/08/95	EPA 7131	03/10/95
Chromium	14	2	EPA 3050	03/08/95	EPA 6010A	03/08/ 5
Copper	8	2	EPA 3050	03/08/95	EPA 6010A	03/08/95
Lead	8	2	EPA 3050	03/08/95	EPA 6010A	03/08/95
Mercury	0.2	0.2	EPA 7471	03/09/95	EPA 7471	03/10/ 5
Selenium	0.8	0.8	EPA 3050	03/08/95	EPA 7740	03/14/ 5
Silver	<1.0	1.0	EPA 3050	03/08/95	EPA 6010A	03/08/95
Zinc	45	2	EPA 3050	03/08/95	EPA 6010A	03/0 5

General Notes
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Krobbe 6/30/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

ENVIRONMENTAL CONSULTANTS

Sample Identification:	CS2-SB-25 (27-29')	Date Sampled:	02/28/95
Lab Number:	003a/A8742.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	--	Date Analyzed:	03/09/95
Analytical Method:	EPA 8260	Moisture(%):	26
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	<10	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	<10	10

L. Kroeker
6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-25 (27-29')	Date Sampled:	02/28/95
Lab Number:	003a/A8742.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	--	Date Analyzed:	03/09/95
Analytical Method:	EPA 8260	Moisture(%):	26
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korobka
6/30/95

ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-25 (27-29')	Date Sampled:	02/28/95
Lab Number:	003b/F4041.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	EPA 3550	Date Analyzed:	03/17/95
Analytical Method:	EPA 8270	Moisture(%):	29
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Kolodke 6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00

Sample Identification:	CS2-SB-27 (15-17')	Date Sampled:	03/01/95
Lab Number:	004c	Date Received:	03/06/95
Sample Type:	Solid	Moisture (%):	21
Analyst:	PLEASANTON		

Analyte	Concentration (mg/kg)	LOD (mg/kg)	Preparation Method and Date		Analytical Method and Date	
Arsenic	3.8 J	5	EPA 3050	03/08/95	EPA 7060	03/14/9
Barium	25	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Cadmium	0.4	0.1	EPA 3050	03/08/95	EPA 7131	03/10/95
Chromium	5	1	EPA 3050	03/08/95	EPA 6010A	03/08/9
Copper	4	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Lead	4	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Mercury	<0.1	0.1	EPA 7471	03/09/95	EPA 7471	03/10/9
Selenium	<0.5	0.5	EPA 3050	03/08/95	EPA 7740	03/14/9
Silver	<0.6	0.6	EPA 3050	03/08/95	EPA 6010A	03/08/95
Zinc	20	1	EPA 3050	03/08/95	EPA 6010A	03/0

General Notes
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korabka 6/30/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-27 (15-17')	Date Sampled:	03/01/95
Lab Number:	004a/A8763.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	26
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	20	10
4-Methyl-2-pentanone	<100	100
Styrene	10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	10	10

L. Korobka
6/30/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Clayton ENVIRONMENTAL CONSULTANTS

Sample Identification:	CS2-SB-27 (15-17')	Date Sampled:	03/01/95
Lab Number:	004a/A8763.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	26
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L Kolobka 6/30/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

ENVIRONMENTAL CONSULTANTS

Sample Identification:	CS2-SB-27 (15-17')	Date Sampled:	03/01/95
Lab Number:	004b/F4042.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	EPA 3550	Date Analyzed:	03/17/95
Analytical Method:	EPA 8270	Moisture(%):	31
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Kozabka
6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00

Sample Identification:	CS2-SB-27 (27-29')	Date Sampled:	03/01/9_
Lab Number:	005c	Date Received:	03/06/95
Sample Type:	Solid	Moisture (%):	25
Analyst:	PLEASANTON		

Analyte	Concentration (mg/kg)	LOD (mg/kg)	Preparation Method and Date		Analytical Method and Date	
Arsenic	5.3 J	0.5	EPA 3050	03/08/95	EPA 7060	03/14/ 5
Barium	39	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Cadmium	0.4	0.1	EPA 3050	03/08/95	EPA 7131	03/10/95
Chromium	8	1	EPA 3050	03/08/95	EPA 6010A	03/08/ 5
Copper	5	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Lead	4	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Mercury	9.3	0.1	EPA 7471	03/09/95	EPA 7471	03/10/ 5
Selenium	<0.5	0.5	EPA 3050	03/08/95	EPA 7740	03/14/_5
Silver	<0.7	0.7	EPA 3050	03/08/95	EPA 6010A	03/08/95
Zinc	28	1	EPA 3050	03/08/95	EPA 6010A	03/0_ 5

General Notes
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

J Kemble
6/30/95

for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-27 (27-29')	Date Sampled:	03/01/95
Lab Number:	005a/A8744.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	--	Date Analyzed:	03/09/95
Analytical Method:	EPA 8260	Moisture(%):	28
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	120	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	20	10

L. Corolla
6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-27 (27-29')	Date Sampled:	03/01/95
Lab Number:	005a/A8744.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	--	Date Analyzed:	03/09/95
Analytical Method:	EPA 8260	Moisture(%):	28
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

J. Korobka 6/30/95

ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-27 (27-29')	Date Sampled:	03/01/95
Lab Number:	005b/F4046.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	EPA 3550	Date Analyzed:	03/17/95
Analytical Method:	EPA 8270	Moisture(%):	28
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Y. Korobka
6/20/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00

Clayton ENVIRONMENTAL CONSULTANTS

Sample Identification:	CS2-SB-22 (9-11')	Date Sampled:	02/27/9_
Lab Number:	006c	Date Received:	03/06/95
Sample Type:	Solid	Moisture (%):	35
Analyst:	PLEASANTON		

Analyte	Concentration (mg/kg)	LOD (mg/kg)	Preparation Method and Date		Analytical Method and Date	
Arsenic	15 J	0.6	EPA 3050	03/08/95	EPA 7060	03/14/ 5
Barium	350	2	EPA 3050	03/08/95	EPA 6010A	03/08/95
Cadmium	0.6	0.2	EPA 3050	03/08/95	EPA 7131	03/10/95
Chromium	5	2	EPA 3050	03/08/95	EPA 6010A	03/08/ 5
Copper	280	2	EPA 3050	03/08/95	EPA 6010A	03/08/95
Lead	200	2	EPA 3050	03/08/95	EPA 6010A	03/08/95
Mercury	43	0.2	EPA 7471	03/09/95	EPA 7471	03/10/ 5
Selenium	<0.6	0.6	EPA 3050	03/08/95	EPA 7740	03/14/ 5
Silver	<0.8	0.8	EPA 3050	03/08/95	EPA 6010A	03/08/95
Zinc	97	2	EPA 3050	03/08/95	EPA 6010A	03/0 5

General Notes
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Krabbe 6/30/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

ENVIRONMENTAL CONSULTANTS

Sample Identification:	CS2-SB-22 (9-11')	Date Sampled:	02/27/95
Lab Number:	006a/A8745.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	--	Date Analyzed:	03/09/95
Analytical Method:	EPA 8260	Moisture(%):	24
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<700	700
Benzene	<70	70
Bromodichloromethane	<70	70
Bromoform	<70	70
Bromomethane	<70	70
2-Butanone	<700	700
Carbon disulfide	<700	700
Carbon tetrachloride	<70	70
Chlorobenzene	<70	70
Chloroethane	<70	70
Chloroform	<70	70
Chloromethane	<70	70
Dibromochloromethane	<70	70
1,2-Dichlorobenzene	<70	70
1,3-Dichlorobenzene	<70	70
1,4-Dichlorobenzene	<70	70
1,1-Dichloroethane	<70	70
1,2-Dichloroethane	<70	70
1,1-Dichloroethene	<70	70
cis-1,2-Dichloroethene	<70	70
trans-1,2-Dichloroethene	<70	70
1,2-Dichloropropane	<70	70
cis-1,3-Dichloropropene	<70	70
trans-1,3-Dichloropropene	<70	70
Ethylbenzene	<70	70
2-Hexanone	<700	700
Methylene chloride	170	70
4-Methyl-2-pentanone	<700	700
Styrene	<70	70
1,1,2,2-Tetrachloroethane	<70	70
Tetrachloroethene	<70	70
Toluene	<70	70

L. Korobka
6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-22 (9-11')	Date Sampled:	02/27/95
Lab Number:	006a/A8745.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	--	Date Analyzed:	03/09/95
Analytical Method:	EPA 8260	Moisture(%):	24
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<70	70
1,1,2-Trichloroethane	<70	70
Trichloroethene	<70	70
Vinyl acetate	<70	70
Vinyl chloride	<70	70
Xylenes [total]	<200	200

(a): MDNR limits could not be met due to matrix interference.

L. Kaelke 6/30/95

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-22 (9-11')	Date Sampled:	02/27/95
Lab Number:	006b/F4067.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	EPA 3550	Date Analyzed:	03/17/95
Analytical Method:	EPA 8270	Moisture(%):	36
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	2,300 J	1,300
Acenaphthylene	<1,300	1,300
Anthracene	1,700	1,300
Benzo[a]anthracene	1,500	1,300
Benzo[a]pyrene	<1,300	1,300
Benzo[b]fluoranthene	<1,300	1,300
Benzo[g,h,i]perylene	<1,300	1,300
Benzo[k]fluoranthene	<1,300	1,300
Chrysene	3,800	1,300
Dibenzo[a,h]anthracene	<1,300	1,300
Fluoranthene	2,000	1,300
Fluorene	3,300	1,300
Indeno[1,2,3-cd]pyrene	<1,300	1,300
Naphthalene	4,200	1,300
Phenanthrene	3,000	1,300
Pyrene	2,000	1,300

(a): MDNR limits could not be met due to matrix interference.

L. Krobbe 6/30/95

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00

Clayton ENVIRONMENTAL CONSULTANTS

Sample Identification:	CS2-SB-24 (9-11')	Date Sampled:	02/27/95
Lab Number:	007c	Date Received:	03/06/95
Sample Type:	Solid	Moisture (%):	11
Analyst:	PLEASANTON		

Analyte	Concentration (mg/kg)	LOD (mg/kg)	Preparation Method and Date		Analytical Method and Date	
Arsenic	<0.4 J	0.4	EPA 3050	03/08/95	EPA 7060	03/14/9
Barium	31	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Cadmium	<0.1	0.1	EPA 3050	03/08/95	EPA 7131	03/10/9
Chromium	15	1	EPA 3050	03/08/95	EPA 6010A	03/08/9
Copper	12	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Lead	<1	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Mercury	0.1	0.1	EPA 7471	03/09/95	EPA 7471	03/10/9
Selenium	<0.4	0.4	EPA 3050	03/08/95	EPA 7740	03/14/9
Silver	<0.6	0.6	EPA 3050	03/08/95	EPA 6010A	03/08/95
Zinc	29	1	EPA 3050	03/08/95	EPA 6010A	03/08

General Notes
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korobka 6/30/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

ENVIRONMENTAL CONSULTANTS

Sample Identification:	CS2-SB-24 (9-11')	Date Sampled:	02/27/95
Lab Number:	007a/A8760.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	11
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	90	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	<10	10

L Kadke 6/20/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-24 (9-11')	Date Sampled:	02/27/95
Lab Number:	007a/A8760.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	11
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korobka 6/30/95

ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-24 (9-11')	Date Sampled:	02/27/95
Lab Number:	007b/F4048.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	EPA 3550	Date Analyzed:	03/17/95
Analytical Method:	EPA 8270	Moisture(%):	11
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Krabbe 6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00

Sample Identification:	CS2-SB-23B (13-15)	Date Sampled:	02/27/95
Lab Number:	008c	Date Received:	03/06/95
Sample Type:	Solid	Moisture (%):	29
Analyst:	PLEASANTON		

Analyte	Concentration (mg/kg)	LOD (mg/kg)	Preparation Method and Date		Analytical Method and Date	
Arsenic	52 J	0.6	EPA 3050	03/08/95	EPA 7060	03/14/95
Barium	730	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Cadmium	<0.1	0.1	EPA 3050	03/08/95	EPA 7131	03/10/95
Chromium	<1	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Copper	3	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Lead	1	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Mercury	<0.1	0.1	EPA 7471	03/09/95	EPA 7471	03/10/95
Selenium	<0.6	0.6	EPA 3050	03/08/95	EPA 7740	03/14/95
Silver	<0.7	0.7	EPA 3050	03/08/95	EPA 6010A	03/08/95
Zinc	630	1	EPA 3050	03/08/95	EPA 6010A	03/08/95

General Notes
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

J. Kroeber
03/30/95

ENVIRONMENTAL CONSULTANTS

for

ROY F. WESTON, INC.

Clayton Project No. 24448.00

Client Reference: --

Sample Identification:	CS2-SB-23B (13-15')	Date Sampled:	02/27/95
Lab Number:	008a/A8761.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	22
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	130	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	<10	10

L. Korobka
6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-23B (13-15')	Date Sampled:	02/27/95
Lab Number:	008a/A8761.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	22
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L Kroeker 6/30/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

ENVIRONMENTAL CONSULTANTS

Sample Identification:	CS2-SB-23B (13-15')	Date Sampled:	02/27/95
Lab Number:	008b/F4049.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	EPA 3550	Date Analyzed:	03/17/95
Analytical Method:	EPA 8270	Moisture(%):	26
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Kowalke 6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-23B (11-13')	Date Sampled:	02/27/95
Lab Number:	009a/A8762.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	31
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	80	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	<10	10

R Korbee
6/30/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

ENVIRONMENTAL CONSULTANTS

Sample Identification:	CS2-SB-23B (11-13')	Date Sampled:	02/27/95
Lab Number:	009a/A8762.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	31
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
-: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korobka 6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

Sample Identification:	CS2-SB-18B (25-27')	Date Sampled:	02/22/95
Lab Number:	001a/C6937.D	Date Received:	02/24/95
Sample Type:	Soil	Date Prepared:	03/07/95
Preparation Method:	--	Date Analyzed:	03/07/95
Analytical Method:	EPA 8260	Moisture(%):	27
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	10	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	20 J	10

L. Korobka
6/30/95

ENVIRONMENTAL CONSULTANTS

for

ROY F. WESTON, INC.

Clayton Project No. 24206.00

Client Reference: --

Sample Identification:	CS2-SB-18B (25-27')	Date Sampled:	02/22/95
Lab Number:	001a/C6937.D	Date Received:	02/24/95
Sample Type:	Soil	Date Prepared:	03/07/95
Preparation Method:	--	Date Analyzed:	03/07/95
Analytical Method:	EPA 8260	Moisture(%):	27
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:

<: Less than the indicated limit of detection (LOD)

-: Information not available or not applicable

Results are reported on a dry-weight basis.

L. Robbins 6/30/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

ENVIRONMENTAL CONSULTANTS

Sample Identification:	CS2-SB-18B (25-27')	Date Sampled:	02/22/95
Lab Number:	001b/F4031.D	Date Received:	02/24/95
Sample Type:	Soil	Date Prepared:	03/06/95
Preparation Method:	EPA 3550	Date Analyzed:	03/17/95
Analytical Method:	EPA 8270	Moisture(%):	29
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L Korobka 6/30/95

Analytical Results
for
Roy F. Weston
Clayton Reference: 24206
Clayton Project No. 95023.21

Sample Identification: CS2-SB-18 (25-27)
Lab Number: 9502321-01
Sample Matrix/Media: SOIL

Date Sampled: 02/22/95
Date Received: 02/24/95

Analyte	Concentration	Method Detection Limit	Units	Date Prepared	Date Analyzed	Prep Method	Method Reference
Arsenic	6.1	0.6	mg/kg	03/08/95	03/09/95	EPA 7060	EPA 7060
Barium	32	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
Cadmium	<0.1	0.1	mg/kg	03/08/95	03/10/95	EPA 3050	EPA 7131
Chromium	7	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
Copper	6	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
Lead	4	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
Mercury	<0.1	0.1	mg/kg	03/07/95	03/07/95	EPA 7471	EPA 7471
Moisture	28	0.1	%	--	03/10/95	--	EPA 160.3
Selenium	<0.6	0.6	mg/kg	03/08/95	03/09/95	EPA 7740	EPA 7740
Silver	<0.7	0.7	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
[illegible]	28	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A

ND: Not detected at or above limit of detection
--: Information not available or not applicable

Results are reported on a dry-weight basis

X. Kraska
6/30/95

ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

Sample Identification:	CS2-SB-19D (17-19')	Date Sampled:	02/23/95
Lab Number:	002a/C6938.D	Date Received:	02/24/95
Sample Type:	Soil	Date Prepared:	03/07/95
Preparation Method:	--	Date Analyzed:	03/07/95
Analytical Method:	EPA 8260	Moisture(%):	25
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100 J	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	10	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	20	10

Y. Krabka
6/30/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

Sample Identification:	CS2-SB-19D (17-19')	Date Sampled:	02/23/95
Lab Number:	002a/C6938.D	Date Received:	02/24/95
Sample Type:	Soil	Date Prepared:	03/07/95
Preparation Method:	--	Date Analyzed:	03/07/95
Analytical Method:	EPA 8260	Moisture(%):	25
Analyst:	TF		

Analyte	Concentration (a) (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10 J	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

(a): Please note that the internal standard areas were outside the acceptance criteria. This does not effect the value reported.

General Notes:

<: Less than the indicated limit of detection (LOD)

--: Information not available or not applicable

Results are reported on a dry-weight basis.

H. Krobka 6/30/95

Clayton ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

Sample Identification:	CS2-SB-19D (17-19')	Date Sampled:	02/23/95
Lab Number:	002b/F4032.D	Date Received:	02/24/95
Sample Type:	Soil	Date Prepared:	03/06/95
Preparation Method:	EPA 3550	Date Analyzed:	03/17/95
Analytical Method:	EPA 8270	Moisture(%):	26
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	440	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	340	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	560	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	880	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	730	330
Pyrene	960	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korobka 6/30/95

Analytical Results
for
Roy F. Weston
Clayton Reference: 24206
Clayton Project No. 95023.21

Sample Identification: CS2-SB-19D (17-19)
Lab Number: 9502321-02
Sample Matrix/Media: SOIL

Date Sampled: 02/23/95
Date Received: 02/24/95

Analyte	Concentration	Method Detection Limit	Units	Date Prepared	Date Analyzed	Prep Method	Method Reference
rsenic	11	0.6	mg/kg	03/08/95	03/09/95	EPA 7060	EPA 7060
Barium	76	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
Cadmium	0.6	0.1	mg/kg	03/08/95	03/10/95	EPA 3050	EPA 7131
hromium	15	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
Copper	50	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
Lead	51	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
ercury	0.4	0.1	mg/kg	03/07/95	03/07/95	EPA 7471	EPA 7471
Moisture	32	0.1	%	--	03/10/95	--	EPA 160.3
Selenium	<0.6	0.6	mg/kg	03/08/95	03/09/95	EPA 7740	EPA 7740
Silver	<0.7	0.7	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
[illegible]	120	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A

D: Not detected at or above limit of detection
--: Information not available or not applicable

esults are reported on a dry-weight basis

L. Korobka
6/30/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

Clayton ENVIRONMENTAL CONSULTANTS

Sample Identification:	CS2-SB-20 (25-27')	Date Sampled:	02/24/95
Lab Number:	003a/C6944.D	Date Received:	02/24/95
Sample Type:	Soil	Date Prepared:	03/08/95
Preparation Method:	--	Date Analyzed:	03/08/95
Analytical Method:	EPA 8260	Moisture(%):	19
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	<10	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	20	10

L. Korobka
6/30/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

ENVIRONMENTAL CONSULTANTS

Sample Identification:	CS2-SB-20 (25-27')	Date Sampled:	02/24/95
Lab Number:	003a/C6944.D	Date Received:	02/24/95
Sample Type:	Soil	Date Prepared:	03/08/95
Preparation Method:	--	Date Analyzed:	03/08/95
Analytical Method:	EPA 8260	Moisture(%):	19
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Kaebler
6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

Sample Identification:	CS2-SB-20 (25-27')	Date Sampled:	02/24/95
Lab Number:	003b/F4016.D	Date Received:	02/24/95
Sample Type:	Soil	Date Prepared:	03/06/95
Preparation Method:	EPA 3550	Date Analyzed:	03/16/95
Analytical Method:	EPA 8270	Moisture(%):	21
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	430	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	400	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Koeller 6/30/95

Analytical Results
for
Roy F. Weston
Clayton Reference: 24206
Clayton Project No. 95023.21

ample Identification: CS2-SB-20 (25-27)
ab Number: 9502321-03 ?
ample Matrix/Media: SOIL

Date Sampled: 02/24/95
Date Received: 02/24/95

nalyte	Concentration	Method Detection Limit	Units	Date Prepared	Date Analyzed	Prep Method	Method Reference
rsenic	7.1	0.5	mg/kg	03/08/95	03/09/95	EPA 7060	EPA 7060
arium	16	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
admium	<0.1	0.1	mg/kg	03/08/95	03/10/95	EPA 3050	EPA 7131
hromium	4	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
opper	3	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
ead	1	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
ercury	<0.1	0.1	mg/kg	03/07/95	03/07/95	EPA 7471	EPA 7471
oisture	21	0.1	%	--	03/10/95	--	EPA 160.3
elenium	<0.5	0.5	mg/kg	03/08/95	03/09/95	EPA 7740	EPA 7740
[illegible]	<0.6	0.6	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
	15	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A

D: Not detected at or above limit of detection
-: Information not available or not applicable

R. Korabka 6/30/95

esults are reported on a dry-weight basis

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

Sample Identification:	CS2-SB-19D (27-29')	Date Sampled:	02/23/95
Lab Number:	004a/C6945.D	Date Received:	02/24/95
Sample Type:	Soil	Date Prepared:	03/08/95
Preparation Method:	--	Date Analyzed:	03/08/95
Analytical Method:	EPA 8260	Moisture(%):	23
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	<10	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	10	10

L. Krobke
6/30/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

ENVIRONMENTAL CONSULTANTS

Sample Identification:	CS2-SB-19D (27-29')	Date Sampled:	02/23/95
Lab Number:	004a/C6945.D	Date Received:	02/24/95
Sample Type:	Soil	Date Prepared:	03/08/95
Preparation Method:	--	Date Analyzed:	03/08/95
Analytical Method:	EPA 8260	Moisture(%):	23
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
-: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korobka
6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

Sample Identification:	CS2-SB-19D (27-29')	Date Sampled:	02/23/95
Lab Number:	004b/F4033.D	Date Received:	02/24/95
Sample Type:	Soil	Date Prepared:	03/06/95
Preparation Method:	EPA 3550	Date Analyzed:	03/17/95
Analytical Method:	EPA 8270	Moisture(%):	20
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	720	330
Benzo[a]pyrene	470	330
Benzo[b]fluoranthene	510	330
Benzo[g,h,i]perylene	420	330
Benzo[k]fluoranthene	550	330
Chrysene	740	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	1,500	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	380	330
Naphthalene	<330	330
Phenanthrene	1,200	330
Pyrene	1,500	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korobka
6/30/95

Analytical Results
for
Roy F. Weston
Clayton Reference: 24206
Clayton Project No. 95023.21

mple Identification: CS2-SB-19D (27-29)
b Number: 9502321-04 ?
mple Matrix/Media: SOIL

Date Sampled: 02/23/95
Date Received: 02/24/95

nalyte	Concentration	Method Detection Limit	Units	Date Prepared	Date Analyzed	Prep Method	Method Reference
senic	6.0	0.5	mg/kg	03/08/95	03/09/95	EPA 7060	EPA 7060
rium	17	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
dmium	0.1	0.1	mg/kg	03/08/95	03/10/95	EPA 3050	EPA 7131
romium	8	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
pper	27	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
ad	15	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
rcury	<0.1	0.1	mg/kg	03/07/95	03/07/95	EPA 7471	EPA 7471
isture	16	0.1	%	--	03/10/95	--	EPA 160.3
lenium	<0.5	0.5	mg/kg	03/08/95	03/09/95	EPA 7740	EPA 7740
l	<0.6	0.6	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
	33	1	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A

: Not detected at or above limit of detection
: Information not available or not applicable

L. Krebs 6/30/95

sults are reported on a dry-weight basis

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

Sample Identification:	CS2-SB-21 (15-17')	Date Sampled:	02/24/95
Lab Number:	005a/C6941.D	Date Received:	02/24/95
Sample Type:	Soil	Date Prepared:	03/08/95
Preparation Method:	--	Date Analyzed:	03/08/95
Analytical Method:	EPA 8260	Moisture(%):	21
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	10	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	10	10

L. Kowalke
6/30/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

ENVIRONMENTAL CONSULTANTS

Sample Identification:	CS2-SB-21 (15-17')	Date Sampled:	02/24/95
Lab Number:	005a/C6941.D	Date Received:	02/24/95
Sample Type:	Soil	Date Prepared:	03/08/95
Preparation Method:	--	Date Analyzed:	03/08/95
Analytical Method:	EPA 8260	Moisture(%):	21
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
-: Information not available or not applicable
Results are reported on a dry-weight basis.

L Krooke 6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24206.00
Client Reference: --

Sample Identification:	CS2-SB-21 (15-17')	Date Sampled:	02/24/95
Lab Number:	005b/F4034.D	Date Received:	02/24/95
Sample Type:	Soil	Date Prepared:	03/06/95
Preparation Method:	EPA 3550	Date Analyzed:	03/17/95
Analytical Method:	EPA 8270	Moisture(%):	25
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	1,000	330
Benzo[a]anthracene	2,900	330
Benzo[a]pyrene	1,600	330
Benzo[b]fluoranthene	1,500	330
Benzo[g,h,i]perylene	920	330
Benzo[k]fluoranthene	1,700	330
Chrysene	2,900	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	6,200	330
Fluorene	360	330
Indeno[1,2,3-cd]pyrene	930	330
Naphthalene	<330	330
Phenanthrene	2,300	330
Pyrene	5,300	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Y. Korobka
6/30/95

Analytical Results
for
Roy F. Weston
Clayton Reference: 24206
Clayton Project No. 95023.21

Sample Identification: CS2-SB-21 (15-17)
Lab Number: 9502321-05
Sample Matrix/Media: SOIL

Date Sampled: 02/24/95
Date Received: 02/24/95

Analyte	Concentration	Method Detection Limit	Units	Date Prepared	Date Analyzed	Prep Method	Method Reference
Arsenic	8.4	0.7	mg/kg	03/08/95	03/09/95	EPA 7060	EPA 7060
Barium	890	2	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
Cadmium	0.7	0.2	mg/kg	03/08/95	03/10/95	EPA 3050	EPA 7131
Chromium	16	2	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
Copper	110	2	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
Lead	430	2	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
Mercury	<0.2	0.2	mg/kg	03/07/95	03/07/95	EPA 7471	EPA 7471
Moisture	39	0.1	%	--	03/10/95	--	EPA 160.3
Selenium	<0.7	0.7	mg/kg	03/08/95	03/09/95	EPA 7740	EPA 7740
Silver	<0.8	0.8	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A
[illegible]	180	2	mg/kg	03/03/95	03/03/95	EPA 3050	EPA 6010A

ND: Not detected at or above limit of detection
--: Information not available or not applicable

Results are reported on a dry-weight basis

L. [illegible] 6/30/95

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Analytical Results
for
Roy F. Weston
Clayton Reference: 24206
Clayton Project No. 95023.21

ample Identification: CS2-SB-20 (23-27) ?
ab Number: 9502321-06
ample Matrix/Media: SOIL

Date Sampled: 02/24/95
Date Received: 02/24/95

nalyte	Concentration	Method Detection Limit	Units	Date Prepared	Date Analyzed	Prep Method	Method Reference
P TOX Arsenic	<0.3	0.3	mg/L	03/06/95	03/09/95	EP TOX	EPA 6010A
P TOX Barium	0.3	0.1	mg/L	03/06/95	03/09/95	EP TOX	EPA 6010A
P TOX Cadmium	<0.05	0.05	mg/L	03/06/95	03/09/95	EP TOX	EPA 6010A
P TOX Chromium	<0.1	0.1	mg/L	03/06/95	03/09/95	EP TOX	EPA 6010A
P TOX Lead	<0.1	0.1	mg/L	03/06/95	03/09/95	EP TOX	EPA 6010A
P TOX Mercury	<0.006	0.006	mg/L	03/06/95	03/09/95	EP TOX	EPA 7740
P TOX Selenium	<0.3	0.3	mg/L	03/06/95	03/09/95	EP TOX	EPA 6010A
P TOX Silver	<0.1	0.1	mg/L	03/06/95	03/09/95	EP TOX	EPA 6010A
oisture	24	0.1	%	--	03/10/95	--	EPA 16(

D: Not detected at or above limit of detection
: Information not available or not applicable

L. Kraake 6/30/95

Clayton
ENVIRONMENTAL
CONSULTANTS

Analytical Results
for
Roy F. Weston
Clayton Reference: 24206
Clayton Project No. 95023.21

mple Identification: CS2-SB-21 (11-17) ?
b Number: 9502321-07
ample Matrix/Media: SOIL

Date Sampled: 02/24/95
Date Received: 02/24/95

nalyte	Concentration	Method Detection Limit	Units	Date Prepared	Date Analyzed	Prep Method	Method Reference
TOX Arsenic	<0.3	0.3	mg/L	03/06/95	03/09/95	EP TOX	EPA 6010A
P TOX Barium	0.9	0.1	mg/L	03/06/95	03/09/95	EP TOX	EPA 6010A
TOX Cadmium	<0.05	0.05	mg/L	03/06/95	03/09/95	EP TOX	EPA 6010A
TOX Chromium	<0.1	0.1	mg/L	03/06/95	03/09/95	EP TOX	EPA 6010A
P TOX Lead	<0.1	0.1	mg/L	03/06/95	03/09/95	EP TOX	EPA 6010A
P TOX Mercury	<0.006	0.006	mg/L	03/06/95	03/09/95	EP TOX	EPA 7740
TOX Selenium	<0.3	0.3	mg/L	03/06/95	03/09/95	EP TOX	EPA 6010A
TOX Silver	<0.1	0.1	mg/L	03/06/95	03/09/95	EP TOX	EPA 6010A
oisture	25	0.1	%	--	03/10/95	--	EPA 160.3

`: Not detected at or above limit of detection
: Information not available or not applicable

L Korobka
6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 21935.00
Client Reference: 04500-055-100

CS2-SB-29

Sample Identification:	WDP-SB-39 (4.5-6.5')	Date Sampled:	12/03/94
Lab Number:	001d/A7104.D	Date Received:	12/05/94
Sample Type:	Soil	Date Prepared:	12/08/94
Preparation Method:	--	Date Analyzed:	12/08/94
Analytical Method:	EPA 8260	Moisture(%):	13
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	30	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	<10	10

L. Krobka
1/6/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 21935.00
Client Reference: 04500-055-100

CS2-SB-29

Sample Identification:	WDP-SB-39 (4.5-6.5')	Date Sampled:	12/03/94
Lab Number:	001d/A7104.D	Date Received:	12/05/94
Sample Type:	Soil	Date Prepared:	12/08/94
Preparation Method:	--	Date Analyzed:	12/08/94
Analytical Method:	EPA 8260	Moisture(%):	13
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korobka
1/6/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 21935.00
Client Reference: 04500-055-100

CS2-SB-25

Sample Identification:	WDP-SB-39 (4.5-6.5')	Date Sampled:	12/03/94
Lab Number:	001a/F2830.D	Date Received:	12/05/94
Sample Type:	Soil	Date Prepared:	12/08/94
Preparation Method:	EPA 3550	Date Analyzed:	12/10/94
Analytical Method:	EPA 8270	Moisture(%):	12
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Base Neutral Compounds		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	400	330
Benzo[b]fluoranthene	570	330
Benzo[g,h,i]perylene	450	330
Benzo[k]fluoranthene	460	330
bis(2-chloroethoxy)methane	<330	330
bis(2-chloroethyl)ether	<330	330
bis(2-chloroisopropyl)ether	<330	330
bis(2-ethylhexyl)phthalate	<330	330
4-Bromophenyl-phenylether	<330	330
Butylbenzylphthalate	<330	330
4-Chloroaniline	<1,300	1,300
2-Chloronaphthalene	<330	330
4-Chlorophenyl-phenylether	<330	330
Chrysene	340	330
Di-n-butylphthalate	<330	330
Di-n-octylphthalate	<330	330
Dibenzo[a,h]anthracene	<330	330
Dibenzofuran	<330	330
3,3'-Dichlorobenzidine	<2,000	2,000
Diethylphthalate	<330	330
Dimethylphthalate	<330	330
2,4-Dinitrotoluene	<330	330
2,6-Dinitrotoluene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Hexachlorobenzene	<330	330
Hexachlorobutadiene	<330	330
Hexachlorocyclopentadiene	<330	330
Hexachloroethane	<330	330
Indeno[1,2,3-cd]pyrene	400	330
Isophorone	<330	330
2-Methylnaphthalene	<330	330
N-Nitroso-di-n-propylamine	<330	330
N-Nitrosodimethylamine	<330	330

X Krooke
4/5/95

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 21935.00
Client Reference: 04500-055-100

CS2-SB-28

Sample Identification:	WDP-SB-39 (4.5-6.5')	Date Sampled:	12/03/94
Lab Number:	001a/F2830.D	Date Received:	12/05/94
Sample Type:	Soil	Date Prepared:	12/08/94
Preparation Method:	EPA 3550	Date Analyzed:	12/10/94
Analytical Method:	EPA 8270	Moisture(%):	12
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Base Neutral Compounds (continued)		
N-Nitrosodiphenylamine	<330	330
Naphthalene	<330	330
2-Nitroaniline	<1,700	1,700
3-Nitroaniline	<1,700	1,700
4-Nitroaniline	<1,700	1,700
Nitrobenzene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330
1,2,4-Trichlorobenzene	<330	330
Acid Compounds		
Benzoic Acid	<3,300	3,300
4-Chloro-3-methylphenol	<330	330
2-Chlorophenol	<330	330
2,4-Dichlorophenol	<330	330
2,4-Dimethylphenol	<330	330
4,6-Dinitro-2-methylphenol	<1,700	1,700
2,4-Dinitrophenol	<1,700	1,700
2-Methylphenol	<330	330
4-Methylphenol	<330	330
2-Nitrophenol	<330	330
4-Nitrophenol	<1,700	1,700
Pentachlorophenol	<1,700	1,700
Phenol	<330	330
2,4,5-Trichlorophenol	<2,000	2,000
2,4,6-Trichlorophenol	<330	330

X Krolika
1/9/95

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON
Clayton Project No. 21935.00
Client Reference: 04500-055-100

CS2-SB-28

Sample Identification:	WDP-SB-39 (4.5-6.5')	Date Sampled:	12/03/94
Lab Number:	001	Date Received:	12/05/94
Sample Type:	Soil	Date Prepared:	12/08/94
Preparation Method:	EPA 3050A	Moisture (%):	13
Analyst:	SC		

Analyte	Concentration (mg/kg)	LOD (mg/kg)	Analytical Method	Date Analyzed
Metals				
Arsenic	0.8 J	0.1	EPA 7060	12/12/94
Barium	11	1	EPA 6010A	12/12/94
Cadmium	0.37 J	0.06	EPA 7131	12/12/94
Chromium	10	2	EPA 6010A	12/12/94
Copper	31	1	EPA 6010A	12/12/94
Lead	9	1	EPA 6010A	12/12/94
Mercury	<0.1	0.1	EPA 7471	12/12/94
Selenium	<0.6 J	0.6	EPA 7740	12/12/94
Silver	<0.6 J	0.6	EPA 6010A	12/12/94
Zinc	20 J	1	EPA 6010A	12/12/94

L. Knobka
1/9/95

Sample Identification:	WDP-SB-39 (4.5-6.5')	Date Sampled:	12/03/94
Lab Number:	001	Date Received:	12/05/94
Sample Type:	Soil	Date Prepared:	--
Preparation Method:	--		
Analyst:	WM		

Analyte	Concentration (a) (mg/kg)	LOD (mg/kg)	Analytical Method	Date Analyzed
Cyanide	<0.3	0.3	EPA 335.2	12/07/94

Analytical Results
for
ROY F. WESTON
Clayton Project No. 21935.00
Client Reference: 04500-055-100

CS2-S3-29

Sample Identification:	WDP-SB-39 (4.5-6.5')	Date Sampled:	12/03/94
Lab Number:	001	Date Received:	12/05/94
Sample Type:	Soil	Date Extracted:	12/08/94
Preparation Method:	EPA 3550	Moisture (%):	12
Analyst:	CC		

Analyte	Concentration (µg/kg)	LOD (µg/kg)	Analytical Method	Date Analyzed
Polychlorinated Biphenyls				
Aroclor-1016	<330	330	EPA 8080	12/11/94
Aroclor-1221	<330	330	EPA 8080	12/11/94
Aroclor-1232	<330	330	EPA 8080	12/11/94
Aroclor-1242	<330	330	EPA 8080	12/11/94
Aroclor-1248	<330	330	EPA 8080	12/11/94
Aroclor-1254	<330	330	EPA 8080	12/11/94
Aroclor-1260	<330	330	EPA 8080	12/11/94

(a) Results are reported on an "as received" basis.

L. Kowalska
1/9/95

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Table 1 (continued)
Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24064.00

Sample Identification:	CS2-SB-01 (0-1')	Date Sampled:	02/13/95
Lab Number:	015a	Date Received:	02/21/95
Sample Type:	Solid	Moisture (%):	18
Analyst:	DB		

Analyte	Concentration (mg/kg)	LOD (mg/kg)	Preparation Method	and Date	Analytical Method	and Date
Aroclor-1016	<0.33 J	0.33	EPA 3550	03/01/95	EPA 8080	02/28/9
Aroclor-1221	<0.33	0.33	EPA 3550	03/01/95	EPA 8080	02/28/9
Aroclor-1232	<0.33	0.33	EPA 3550	03/01/95	EPA 8080	02/28/9
Aroclor-1242	<0.33	0.33	EPA 3550	03/01/95	EPA 8080	02/28/9
Aroclor-1248	<0.33	0.33	EPA 3550	03/01/95	EPA 8080	02/28/9
Aroclor-1254	<0.33	0.33	EPA 3550	03/01/95	EPA 8080	02/28/9
Aroclor-1260	<0.33	0.33	EPA 3550	03/01/95	EPA 8080	02/28/9

YKaabb 6/25/95

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ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00

Sample Identification:	CS2-SB-26 (9-11')	Date Sampled:	02/28/95
Lab Number:	001c	Date Received:	03/06/95
Sample Type:	Solid	Moisture (%):	25
Analyst:	PLEASANTON		

Analyte	Concentration (mg/kg)	LOD (mg/kg)	Preparation Method and Date		Analytical Method and Date	
Arsenic	5.1 J	0.5	EPA 3050	03/08/95	EPA 7060	03/14/9
Barium	51	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Cadmium	<0.1	0.1	EPA 3050	03/08/95	EPA 7131	03/10/95
Chromium	24	1	EPA 3050	03/08/95	EPA 6010A	03/08/9
Copper	550	1	EPA 3050	03/08/95	EPA 6010A	03/08/9
Lead	130	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Mercury	12	0.1	EPA 7471	03/09/95	EPA 7471	03/10/9
Selenium	<0.5	0.5	EPA 3050	03/08/95	EPA 7740	03/14/9
Silver	<0.7	0.7	EPA 3050	03/08/95	EPA 6010A	03/08/95
Zinc	51	1	EPA 3050	03/08/95	EPA 6010A	03/0

General Notes
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

J. Koralka 6/30/95

ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-26 (9-11')	Date Sampled:	02/28/95
Lab Number:	001a/A8740.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	--	Date Analyzed:	03/09/95
Analytical Method:	EPA 8260	Moisture(%):	23
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	<10	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	20	10

L. Kaska
6/30/95

ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-26 (9-11')	Date Sampled:	02/28/95
Lab Number:	001a/A8740.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	--	Date Analyzed:	03/09/95
Analytical Method:	EPA 8260	Moisture(%):	23
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Koebbe 6/30/95

ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-26 (9-11')	Date Sampled:	02/28/95
Lab Number:	001b/F4039.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	EPA 3550	Date Analyzed:	03/17/95
Analytical Method:	EPA 8270	Moisture(%):	27
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Korobka
6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00

Sample Identification:	CS2-SB-25 (17-19')	Date Sampled:	02/28/9
Lab Number:	002c	Date Received:	03/06/95
Sample Type:	Solid	Moisture (%):	23
Analyst:	PLEASANTON		

Analyte	Concentration (mg/kg)	LOD (mg/kg)	Preparation Method and Date		Analytical Method and Date	
Arsenic	1.4 J	0.5	EPA 3050	03/08/95	EPA 7060	03/14/ 5
Barium	5	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Cadmium	0.1	0.1	EPA 3050	03/08/95	EPA 7131	03/10/95
Chromium	3	1	EPA 3050	03/08/95	EPA 6010A	03/08/ 5
Copper	3	1	EPA 3050	03/08/95	EPA 6010A	03/08/ 5
Lead	5	1	EPA 3050	03/08/95	EPA 6010A	03/08/95
Mercury	<0.1	0.1	EPA 7471	03/09/95	EPA 7471	03/10/ 5
Selenium	<0.5	0.5	EPA 3050	03/08/95	EPA 7740	03/14/ 5
Silver	<0.6	0.6	EPA 3050	03/08/95	EPA 6010A	03/08/95
Zinc	19	1	EPA 3050	03/08/95	EPA 6010A	03/0

General Notes
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L Kordka 6/30/95

ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-25 (17-19')	Date Sampled:	02/28/95
Lab Number:	002a/A8741.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	--	Date Analyzed:	03/09/95
Analytical Method:	EPA 8260	Moisture(%):	20
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	<10	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	<10	10

L. Koehler
6/30/95

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ROY F. WESTON, INC.
Clayton Project No. 24448.00
Client Reference: --

Sample Identification:	CS2-SB-25 (17-19')	Date Sampled:	02/28/95
Lab Number:	002a/A8741.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	--	Date Analyzed:	03/09/95
Analytical Method:	EPA 8260	Moisture(%):	20
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

L. Kaabka 6/30/95

ATTACHMENT G

ROY F. WESTON, INC. - SAMPLING LOCATION MAPS AND GEOLOGICAL BORING LOGS

Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 10.00
SITE NAME	: PARCEL 7	LOGGER	: J. FORCE/WESTON
BORING ID	: CS-SB-20	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761979.2010 surveyed	DRILLING RIG	: CME-75
EASTING	: 440624.8680 surveyed	DATE STARTED	: 06/09/93
ELEVATION	: 597.021 surveyed	DATE COMPLETED	: 06/09/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Fill						CONCRETE.
596	1		83	Fill	VERY DARK BROWN	SFT	MST	10 6 6 0	PID 1.5 FID 2.0	SAND WITH SOME SLAG AT 1'. VERY DARK BROWN.
595	2		75	Fill	BROWN	SFT	WET	3 2 4 2	FID 0.5 PID 0.0	BROWN SILTY SAND. TRACE OF MEDIUM SIZED GRAVEL.
594	3									
593	4		87	Sandy lean clay, CL	GRAYISH BROWN	FRM	MST	1 2 4 6	PID 0.2 FID 0.0	MOTTLED GLACIAL TILL (CLAYEY) COLOR VARIES TO GRAY.
592	5									
591	6		75	Silt with sand, ML	BROWN	STF	DMP	5 21 40 36	FID 0.1 PID 0.0	CLAYEY TILL WITH LITTLE VERY COARSE TO MEDIUM SIZED SAND. TRACE OF VERY FINE GRAVEL.
590	7									
589	8		100	Not Classified - Incomplete Data	BROWN	STF	DRY	6 19 25 35	PID 0.0 FID 0.0	CLAYEY TILL WITH TRACE OF ANGULAR COARSE SAND DARK BROWN.
588	9									
587	10									
586	11									
585	12									
584	13									
583	14									
582	15									
581	16									
580	17									
579	18									
578	19									
577	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 9.00
SITE NAME	: PARCEL 7	LOGGER	: T. HARDING/WESTON
BORING ID	: CS-SB-21	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761982.5860 surveyed	DRILLING RIG	: CME-75
EASTING	: 440571.6010 surveyed	DATE STARTED	: 06/09/93
ELEVATION	: 596.958 surveyed	DATE COMPLETED	: 06/09/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				CONCRETE						CORED THROUGH APPROXIMATELY 9" OF CONCRETE.
595	1		37	Fill	VERY DARK GRAY	LSE	MST	2 2 3 3	FID 0.0 PID 0.0	CLEAN FILL SAND. VERY DARK GRAY.
594	2									
593	3		75	Fill	BLACK	LSE	MST	2 4 3 4 5	PID 0.0 FID 0.0	FOUNDRY SAND OVERLYING BROWN DREDGED SAND.
592	4									
591	5		75	Fill	VERY PALE BROWN	LSE	MST	3 4 3 7	FID 0.0 PID 0.0	SAND FILL, VERY PALE BROWN.
590	6			Clayey sand with gravel, SC	REDDISH BROWN	FRM	MST		FID 0.0 PID 0.0	TILL: MOTTLED - 90% REDDISH BROWN 10% GRAY.
589	7		100	Gravelly lean clay, CL	REDDISH BROWN	STF	MST	9 19 21 27	FID 0.0 PID 0.0	TILL - AS ABOVE. 90% REDDISH BROWN 10% GRAY.
588	8									
587	9									
586	10									
585	11									
584	12									
583	13									
582	14									
581	15									
580	16									
579	17									
578	18									
577	19									
576	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 17.00
SITE NAME	: PARCEL 7	LOGGER	: J. FORCE/WESTON
BORING ID	: CS-SB-22	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761889.6540 surveyed	DRILLING RIG	: CME-75
EASTING	: 440582.9130 surveyed	DATE STARTED	: 06/10/93
ELEVATION	: 593.345 surveyed	DATE COMPLETED	: 06/10/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				CONCRETE						CONCRETE.
592	1		50	Fill	DK REDDISH GRAY	SFT	WET	2 4 3 1	PID 1.0 FID 0.5	SAND - COARSE TO FINE GRAINED; SP: BRICK FRAGMENTS IN BOTTOM OF SPOON.
591	2									
590	3			No Sample Recovered				1 1 1 1		NO RECOVERY.
589	4									
588	5		25	Fill	DARK BROWN	LSE	WET		FID 1000.0 PID 4.0	STRONG PETROLEUM ODOR; SAND - COARSE TO MEDIUM GRAINED. DARK BROWN.
587	6									
586	7		50	Fill	BLACK	SFT	WET	1 1 41 10	FID 1000.0 PID 4.0	SAND - AS ABOVE; STRONG ODOR; BLACK.
585	8									
584	9		87	Not Classified - Incomplete Data	LT. BROWN. GRAY	STF	MST	3 3 13 28 32	FID 30.0 PID 1.0	CLAYEY TILL WITH TRACE OF ANGULAR FINE GRAVEL AND COARSE - MEDIUM GRAINED SAND.
583	10									
582	11		75	Not Classified - Incomplete Data	LT. BROWN. GRAY	STF	MST	14 18 28 32 34	FID 10.0 PID 3.0	CLAYEY TILL; AS ABOVE; LIGHT BROWNISH GRAY.
581	12									
580	13		100	Not Classified - Incomplete Data	GRAY	STF	MST	5 11 16 21	PID 1.5 FID 1.0	CLAYEY TILL. AS ABOVE. SLIGHT ODOR. GRAY;
579	14									
578	15		90	Lean clay with sand, CL	GRAY	STF	MST	4 9 14 20	PID 3.5 FID 3.0	GRAY CLAYEY TILL.
577	16									
576	17									
575	18									
574	19									
573	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 11.00
SITE NAME	: PARCEL 7	LOGGER	: T. HARDING/WESTON
BORING ID	: CS-SB-23	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761866.6260 surveyed	DRILLING RIG	: CME-75
EASTING	: 440582.4740 surveyed	DATE STARTED	: 06/10/93
ELEVATION	: 593.362 surveyed	DATE COMPLETED	: 06/10/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				CONCRETE						CORED THROUGH 9" OF CONCRETE. TWO FLOORS.
592	1		43	Fill	VERY DARK BROWN	LSE	MST	1 2 4 3	PID 2.0 PID 1.0	BROWN SANDY FILL.
591	2									
590	3		75	Fill	BLACK	LSE	MST	2 2 3 2	PID 700.0 PID 6.0	BLACK STAINED AFTER 4' - BROWN TO APPROXIMATELY 4'. STRONG GAS ODOR.
589	4									
588	5		75	Fill	BLACK	LSE	MST	1 2 1 1	PID 1000.0 PID 4.0	STRONG PETROLEUM ODOR.
587	6									
586	7		50	Fill	BLACK	SFT	MST	1 1 1 50	PID 1000.0 PID 18.0	STRONG ODOR - PRODUCT - TARLIKE.
585	8									
584	9		65	Gravelly lean clay, CL	PINKISH GRAY	STF	MST	18 21 61 32 41	PID 30.0 PID 10.0	3" SLOUGH OVER 2" BRICK GRAVEL LAYER WHICH SMELLS LIKE DEAD FISH - STIFF TILL. ODOR.
583	10									
582	11									
581	12									
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 5.00
SITE NAME	: PARCEL 7	LOGGER	: J. FORCE/WESTON
BORING ID	: CS-SB-24	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761847.5000 surveyed	DRILLING RIG	: CME-75
EASTING	: 440578.2580 surveyed	DATE STARTED	: 06/10/93
ELEVATION	: 593.421 surveyed	DATE COMPLETED	: 06/10/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				CONCRETE						CONCRETE (APPROXIMATELY 10").
592	1		50	Sandy lean clay, CL	YELLOWISH BROWN	SFT	MST	1 1 1 2	PID 2.0 FID 0.0	CLAYEY TILL WITH SOME SAND AND SILT; YELLOWISH BROWN.
591	2									
590	3		50	Sandy fat clay, CH	LT. YELLOW BRWN	SFT	WET	1 1 1 1	PID 0.0 FID 0.0	CLAYEY TILL WITH SOME SAND & SILT. SAND IS MED TO VERY COARSE GRAINED. LIGHT YELLOWISH BROWN.
589	4									
588	5									
587	6									
586	7									
585	8									
584	9									
583	10									
582	11									
581	12									
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 20.00
SITE NAME	: PARCEL 7	LOGGER	: T. HARDING/WESTON
BORING ID	: CS-SB-25	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761880.6490 surveyed	DRILLING RIG	: CME-75
EASTING	: 440634.9190 surveyed	DATE STARTED	: 06/10/93
ELEVATION	: 593.403 surveyed	DATE COMPLETED	: 06/10/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				CONCRETE						CONCRETE.
592	1			Lean clay with sand, CL	VY DK GRAY BRWN	SFT	DMP		FID 3.5 PID 0.0	BROWN SANDY CLAYEY TILL. AMMONIA/MOTHBALL ODOR. VERY DARK GRAYISH BROWN.
591	2									
590	3									
589	4									
588	5									
587	6									
586	7									
585	8									
584	9									
583	10									
582	11									
581	12									
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 5.00
SITE NAME	: PARCEL 7	LOGGER	: T. HARDING/WESTON
BORING ID	: CS-SB-31	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761894.2490 surveyed	DRILLING RIG	: CME-75
EASTING	: 440542.4780 surveyed	DATE STARTED	: 06/14/93
ELEVATION	: 593.439 surveyed	DATE COMPLETED	: 06/14/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				CONCRETE						CORED THROUGH 9.5" CONCRETE.
592	1		87	Gravelly lean clay, CL	DK YELLOW-BROWN	FRM	MST	4 3 3 6 14	FID 1.0 PID 0.0	1' OF MEDIUM SAND FILL ABOVE CLAY. GRAY (20%) VERY PALE BROWN (10%).
591	2									
590	3		75	Gravelly lean clay, CL	DK BROWN-YELLOW	STF	MST	6 8 13 21	FID 1.0 PID 0.0	CLAY MOTTLED BROWN (40%) DARK BROWNISH YELLOW (60%).
589	4									
588	5									
587	6									
586	7									
585	8									
584	9									
583	10									
582	11									
581	12									
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 5.00
SITE NAME	: PARCEL 7	LOGGER	: J. FORCE/WESTON
BORING ID	: CS-SB-32	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761908.8110 surveyed	DRILLING RIG	: CME-75
EASTING	: 440599.9560 surveyed	DATE STARTED	: 06/14/93
ELEVATION	: 593.404 surveyed	DATE COMPLETED	: 06/14/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				CONCRETE						CONCRETE.
592	1		75	Sandy fat clay, CH	VERY PALE BROWN	SFT	WET	1 2 3	FID 0.0 FID 0.0	CLAYEY TILL AND SAND. VERY PALE BROWN.
591	2									
590	3		100	Sandy lean clay, CL	PALE BROWN	STF	DMP	5 11 12 19	PID 0.0 FID 0.0	CLAYEY TILL W/ SOME SILT & SAND. LITTLE SUBANGUL CLASTS OF SHALE. MOTTLED PALE BROWN TO GRAY.
589	4									
588	5									
587	6									
586	7									
585	8									
584	9									
583	10									
582	11									
581	12									
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 31.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON INC.
BORING ID	: CS2-SB18	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/22/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/22/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						Drilled thru 1' of gravelly fill.
-1	1		25	Not Classified - Incomplete Data						
-2	2			No Sample Recovered				9 9 10 12	OVA 0.0	Black gravelly fill with slag, oxidation staining.
-3	3		50	Not Classified - Incomplete Data				9 7 7 9	OVA 2.5	Black gravelly fill as above with limestone gravel.
-4	4			No Sample Recovered						
-5	5		75	Not Classified - Incomplete Data				5 5 2 1	OVA 7.5 RAD 4.0	Black gravelly sand with slag. Oxidized.
-6	6									
-7	7			No Sample Recovered						
-8	8		35	Not Classified - Incomplete Data				2 5 4 3 4		Black slag fill wet in tip.
				No Sample Recovered						
-9	9		55	Not Classified - Incomplete Data				3 3 2 1	RAD 0.0 OVA 140.0	Dark gravelly fill with slag. Saturated. Dark black organic color. OVA: .5 in end of spoon.
-10	10			No Sample Recovered						
-11	11		35	Not Classified - Incomplete Data				2 5 4 3 2		Fill as above. Saturated.
-12	12			No Sample Recovered						
-13	13		35	Not Classified - Incomplete Data				4 4 5 4	OVA 200.0	Sheen on water off rod. OVA down hole: 1 unit. Fill as above, sheen.
-14	14			No Sample Recovered						
-15	15			Interval Not Sampled						
-16	16									
-17	17		50	Not Classified - Incomplete Data				2 5 2 1 1	OVA 200.0 RAD 3.0	Fill as above, sheen. OVA in tip: 2 units.
-18	18			No Sample Recovered						
-19	19		75	Not Classified - Incomplete Data				2 2 4 3 2		Fill as above. Coal slag.
-20	20			SAND and SILT, tr ORGANIC		LSE	SAT			Very silty sand, with shells. Silt increases with depth.

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 31.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON INC.
BORING ID	: CS2-SB18	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/22/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/22/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				SAND and SILT, tr ORGANIC		LSE	SAT			Very silty sand, with shells. Silt increases with depth.
				No Sample Recovered						
-21	21		75	SILT and SAND, tr CLAY		LSE	SAT	2 2 5 1	OVA 860.0 RAD 3.0	Silty sand as above, wood and shells, saturated. OVA in spoon: 50 units.
-22	22									
-23	23			No Sample Recovered						
			80	SILT, lt SAND, tr CLAY	LT OLIVE-GREY	SFT	WET	1 1 1 1	OVA 1000.0 RAD 3.0	Sandy silt grading into almost all silt. OVA in spoon: 40 units. Small rootlets.
-24	24									
-25	25			No Sample Recovered						
			70	SILT, tr CLAY, tr ORGANIC	DK OLIVE GREY	SFT	WET	1 0 1 0	OVA 1000.0 RAD 3.0	Silt, trace clay. Shells. More clay with depth. Greasy feel.
-26	26									
				No Sample Recovered						
-27	27		80	SILT, lt CLAY, tr ORGANIC, tr SAND	DK OLIVE GRAY	SFT	WET		OVA 800.0	First 1.0' pushed by weight of hammer. Silt as above. OVA in spoon: 30 units.
-28	28									
-29	29			No Sample Recovered						
			100	CLAY and SILT		FRM	WET		OVA 450.0 RAD 3.0	Weight of hammer pushed 2' interval. Clayey silt, clay increases with depth.
-30	30									
-31	31									
-32	32									
-33	33									
-34	34									
-35	35									
-36	36									
-37	37									
-38	38									
-39	39									
-40	40									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 31.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON INC.
BORING ID	: CS2-SB19	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/23/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/23/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						
-1	1		100	Not Classified - Incomplete Data				26 24 20 17	RAD 4.0 OVA 25.0	Gravelly silty clay. Brown. Brick fragments at 2.3'. Grey-blue sandy clay in tip.
-2	2									
-3	3		50	Not Classified - Incomplete Data				3 7 11 14	OVA 9.0 RAD 4.0	Concrete in tip. Brown to grey, silty gravelly clay with brick fragments.
-4	4			No Sample Recovered						
-5	5		65	Not Classified - Incomplete Data				3 3 4 14	RAD 4.0 OVA 10.0	Gravelly sandy clay. Dark grey to brown. Moist Mottled.
-6	6			No Sample Recovered						
-7	7		55	Not Classified - Incomplete Data				4 4 7 11	RAD 4.0 OVA 150.0	Medium sandy clay. Lower 2", wet clay, trace sand.
-8	8			No Sample Recovered						
-9	9		45	Not Classified - Incomplete Data				1 2 10 12	OVA 90.0 RAD 4.0	Saturated, silty clay. Brown-black sand in lower .4'. Water encountered @ 9'.
-10	10			No Sample Recovered						
-11	11		60	Not Classified - Incomplete Data				6 7 5 7	OVA 250.0 RAD 4.0	Sandy silt. Dark grey. Top 4" is clay and gravel grades to fine sand and towards bottom.
-12	12			No Sample Recovered						
-13	13		60	Not Classified - Incomplete Data				3 3 2 2 4	RAD 4.0 OVA 440.0	Medium sand and silt. Wood.
-14	14			No Sample Recovered						
-15	15		55	Not Classified - Incomplete Data				1 1 1 1	OVA 1000.0 RAD 4.0	Silty sand, wood and gravel. Black. Saturated. Strong petroleum odor.
-16	16			No Sample Recovered						
-17	17		75	Not Classified - Incomplete Data				2 2 2 1	RAD 4.0 OVA 1000.0	Silt with some clay black Bottom, sandy silt with slag, trace wood. Natural deposition possible.
-18	18			No Sample Recovered						
-19	19		60	SAND, tr SILT, tr ORGANIC	LT OLIVE-GREY	SFT	SAT	3 4 3 3	RAD 4.0 OVA 240.0	First .2' fill as above. Then sand with silt stringers. Trace shells. Slight odor.
-20	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 31.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON INC.
BORING ID	: CS2-SB19	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/23/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/23/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				SAND, tr SILT, tr ORGANIC	LT OLIVE-GREY	SFT	SAT		RAD 4.0 OVA 240.0	First .2' fill as above. Then sand with silt stringers. Trace shells. Slight odor.
-21	21			No Sample Recovered						
-22	22		55	SAND, tr SILT, tr GRAVEL, tr ORGANIC	LT OLIVE-GREY	LSE	SAT	6 4 6 3	OVA 600.0 RAD 4.0	Sand as above. Silt in tip. Trace shells and pebbles. Slight odor.
-23	23			No Sample Recovered						
-24	24		70	SILT and SAND	OLIVE-GREY	FRM	SAT	6 6 7 7 3	OVA 1000.0 RAD 4.0	Sandy silt. Fine sand layer at 23.8'. Nail, wood and porcelain. Possibly deposited naturally.
-25	25			No Sample Recovered						
-26	26		50	SAND, sm SILT, tr CLAY	OLIVE GREY	SFT	SAT	3 3 3 3 3	OVA 650.0 RAD 4.0	Silty sand grading into medium sand at bottom. Wood. More silt towards top.
-27	27			No Sample Recovered						
-28	28		80	SAND, lt SILT	OLIVE GREY	SFT	SAT	3 3 3 3	RAD 4.0 OVA 1000.0	Sand.
-29	29			CLAY, tr SILT, tr ORGANIC	OLIVE GREY	FRM	SAT	2		Clay with shells. Trace silt.
-30	30			No Sample Recovered						
			60	CLAY, tr SILT, tr ORGANIC	OLIVE GREY	FRM	SAT	2 3 3 2	RAD 4.0 OVA 850.0	Clay as above. Trace silt and shells.
-31	31									
-32	32									
-33	33									
-34	34									
-35	35									
-36	36									
-37	37									
-38	38									
-39	39									
-40	40									

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Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 31.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON
BORING ID	: CS2-SB20	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/24/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/24/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						
-1	1		85	Not Classified - Incomplete Data				4 4 26 28	OVA 0.5 RAD 4.0	Black gravelly fill sand. Limestone cobble and staining.
-2	2									
				No Sample Recovered						
-3	3			No Sample Recovered				7 8 11 13		
-4	4									
-5	5		25	Not Classified - Incomplete Data				14 3 3 1	OVA 2.0 RAD 4.0	Clayey black gravelly fill. Brick.
				No Sample Recovered						
-6	6									
-7	7		90	Not Classified - Incomplete Data				2 2 2 2	RAD 5.0 OVA 22.0	Black sand fill, wood and gravel as above to 8' then lt olive grey silty sand fill with slag moist
-8	8									
				No Sample Recovered						
-9	9		90	Not Classified - Incomplete Data				1 2 1 2	OVA 200.0 RAD 4.0	Clayey gravel fill. Sand @ top. Wood and organic Black to lt olive grey.
-10	10									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 31.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON
BORING ID	: CS2-SB20	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/24/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/24/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Not Classified - Incomplete Data					OVA 200.0 RAD 4.0	Clayey gravel fill. Sand @ top. Wood and organic. Black to lt olive grey.
-11	11		80	Not Classified - Incomplete Data Not Classified - Incomplete Data				1 2 4 13	RAD 4.5 OVA 220.0	Silty grey clay, wood in tip.
-12	12									
				No Sample Recovered						
-13	13			No Sample Recovered				3 2 1 2		
-14	14									
-15	15		75	Not Classified - Incomplete Data				4 3 3 4	RAD 5.0 OVA 800.0	Wood. Silty clay fill with wood chips. Saturated.
-16	16									
				No Sample Recovered						
-17	17		100	Not Classified - Incomplete Data				1 5 4 4	RAD 4.0 OVA 500.0	Silty grey clay to 17.9', then medium sand with shells and wood. May be natural. Saturated.
-18	18									
-19	19		75	Not Classified - Incomplete Data				2 5 3 1	OVA 980.0 RAD 4.0	Saturated. Medium sand with silt stingers. Shells and wood. Possibly natural.
-20	20									

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Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 31.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON
BORING ID	: CS2-SB20	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/24/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/24/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Not Classified - Incomplete Data					OVA 980.0 RAD 4.0	Saturated. Medium sand with silt stingers. Shells and wood. Possibly natural.
				No Sample Recovered						
-21	21		100	SILT, tr SAND, tr ORGANIC	GREY	SFT	SAT	1 1 2 5 3	RAD 5.0 OVA 600.0	Gray silt with fine sand trace shells and rootlets 21-21.5' as above.
-22	22									
-23	23		90	SILT and SAND, tr ORGANIC	OLIVE GREY	SFT	SAT	1 1 2 5 2	RAD 5.0 OVA 700.0	Sandy silt with trace shells.
-24	24									
				No Sample Recovered						
-25	25		100	SAND and SILT, tr ORGANIC		SFT	SAT	6 6 7 8	RAD 4.0 OVA 1000.0	SAilty sand with shells, more silt with depth.
-26	26									
-27	27		100	SAND and SILT	LT. OLIVE GREY	SFT	SAT	2 3 3 3 3	RAD 4.0 OVA 540.0	Sand as above.
-28	28			CLAY and SILT, tr ORGANIC	LT OLIVE GREY	FRM	SAT			Silty clay with shells.
-29	29		100	CLAY and SILT	LT OLIVE GREY	FRM	SAT	1 2 2 6 3	RAD 4.0 OVA 280.0	Clay as above. No shells.
30	30									

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Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 31.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON
BORING ID	: CS2-SB20	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/24/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/24/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				CLAY and SILT	LT OLIVE GREY	FRM	SAT		RAD 4.0 OVA 280.0	Clay as above. No shells.
-31	31									
-32	32									
-33	33									
-34	34									
-35	35									
-36	36									
-37	37									
-38	38									
-39	39									
-40	40									

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Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 17.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON INC.
BORING ID	: CS2-SB21	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/24/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/24/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						
-1	1		85	Not Classified - Incomplete Data				10 8 7 4	RAD 6.0 OVA 0.5	Black gravelly fill with slag and brick.
-2	2									
-3	3			No Sample Recovered						
			40	Not Classified - Incomplete Data				3 3 3 3	RAD 6.0 OVA 0.0	Fill as above.
-4	4			No Sample Recovered						
-5	5		75	Not Classified - Incomplete Data				2 2 2 2	RAD 6.0 OVA 2.0	Orange sand medium fine, black sand in tip.
-6	6									
-7	7			No Sample Recovered						
			65	Not Classified - Incomplete Data				1 4 10 4	RAD 6.0 OVA 10.0	Saturated at 7.4'. Silty gravel, orange with black stain, slag. Scrap metal came up in auger.
-8	8									
				No Sample Recovered						
-9	9		40	Not Classified - Incomplete Data				2 2 4 10 5	RAD 6.0 OVA 200.0	Wood and gravel, black, odor, oily film on wood and gravel.
-10	10			No Sample Recovered						
-11	11		70	Not Classified - Incomplete Data				12 14 14 17	RAD 6.0 OVA 800.0	Oily sheen and film on gravel to 11.6. Fill as above. Silt increases with depth.
-12	12									
-13	13			No Sample Recovered						
			30	Not Classified - Incomplete Data				5 6 4 8	RAD 6.0 OVA 500.0	Fill as above. Oily film.
-14	14			No Sample Recovered						
-15	15		75	Not Classified - Incomplete Data				5 5 2 5	RAD 6.0 OVA 1000.0	Fill as above with coal slag and oily film. Product.
-16	16									
-17	17			No Sample Recovered						
-18	18									
-19	19									
20	20									

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Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 11.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON INC
BORING ID	: CS2-SB22	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/27/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/27/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						
-1	1		70	Not Classified - Incomplete Data				5 5 6 8	RAD 6.0 OVA 650.0	Black fill sand, sand, coal, brick in tip.
-2	2									
-3	3			No Sample Recovered						
			45	Not Classified - Incomplete Data				3 3 3 3	RAD 6.0 OVA 200.0	Black fill sand, brick in tip as above.
-4	4			No Sample Recovered						
-5	5		50	Not Classified - Incomplete Data				7 7 6 4	RAD 6.0 OVA 280.0	Black fill as above.
-6	6			No Sample Recovered						
-7	7		80	Not Classified - Incomplete Data				3 3 5 1	RAD 6.0 OVA 150.0	Fill as above. Odor.
-8	8									
-9	9			No Sample Recovered						
			60	Not Classified - Incomplete Data				2 2 5 2	RAD 6.0 OVA 1000.0	Fill as above. Coal Slag. Black thick oily film (product).
-10	10									
-11	11			No Sample Recovered						
-12	12									
-13	13									
-14	14									
-15	15									
-16	16									
-17	17									
-18	18									
-19	19									
-20	20									

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Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 15.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON INC.
BORING ID	: CS2-SB23	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME 550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/27/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/27/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						
-1	1		85	Not Classified - Incomplete Data				4 13 10 8	RAD 6.0 OVA 2.0	Black gravelly fill, coal slag, trace clay. Medium round, clean sand in tip.
-2	2									
-3	3			No Sample Recovered						
			70	Not Classified - Incomplete Data				6 7 7 3	RAD 6.0 OVA 0.0	Clay silt with gravel, brown.
-4	4									
-5	5			No Sample Recovered						
			50	Not Classified - Incomplete Data				4 3 3 2	RAD 6.0 OVA 0.0	Clay as above to 5.4', then coal slag. Black.
-6	6			No Sample Recovered						
-7	7		40	Not Classified - Incomplete Data				2 1 1 1	RAD 6.0	Black coal slag as above, poor recovery.
-8	8			No Sample Recovered						
-9	9		30	Not Classified - Incomplete Data				1 1 1 1	RAD 6.0	Wood in tip. Coal slag as above. Slight organic odor.
-10	10			No Sample Recovered						
-11	11		30	Not Classified - Incomplete Data					RAD 6.0	Clayey silt. Odor and sheen.
-12	12			No Sample Recovered						
-13	13		75	Not Classified - Incomplete Data				1 2 3 3	RAD 6.0 OVA 280.0	Silty, fine sand fill. Grey.
-14	14									
-15	15			No Sample Recovered						
-16	16									
-17	17									
-18	18									
-19	19									
-20	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 21.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON INC.
BORING ID	: CS2-SB24	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/27/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/27/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
-21	21			CLAY, tr GRAVEL	BLUE GREY	STF	MST		OVA 2.0 RAD 4.0	Stiff blue grey clay with trace pebbles.
-22	22									
-23	23									
-24	24									
-25	25									
-26	26									
-27	27									
-28	28									
-29	29									
-30	30									
-31	31									
-32	32									
-33	33									
-34	34									
-35	35									
-36	36									
-37	37									
-38	38									
-39	39									
-40	40									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 21.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON INC.
BORING ID	: CS2-SB24	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME-550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/27/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/27/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						
-1	1		40	Not Classified - Incomplete Data				10 12 6 4	RAD 4.0 OVA 0.0	Black fill sand with grey limestone gravel and brick.
-2	2			No Sample Recovered						
-3	3		85	Not Classified - Incomplete Data				4 6 5 3	RAD 4.0 OVA 0.0	Dark grey to black, mottled clay fill. Sandy in top .2'.
-4	4									
-5	5			No Sample Recovered						
			70	Not Classified - Incomplete Data				2 4 7 12 7	RAD 4.0 OVA 0.0	Gravelly fill as above to 5.0', then peach colored brick.
-6	6									
				No Sample Recovered						
-7	7		70	Not Classified - Incomplete Data				4 6 7 5	OVA 0.0 RAD 4.0	Gravelly silty sand with brick moist to wet.
-8	8									
				No Sample Recovered						
-9	9		80	CLAY, sm SILT, tr GRAVEL	pinkish grey	STF	DRY	6 14 20 31	RAD 4.0 OVA 30.0	Wood with strong organic odor. Rest is hard silty clay with pebbles.
-10	10									
				No Sample Recovered						
-11	11		75	CLAY, sm SILT, tr GRAVEL	pinkish grey	STF	DRY	6 20 21 35	OVA 10.0 RAD 4.0	Clay as above.
-12	12									
				No Sample Recovered						
-13	13		100	CLAY, sm SILT, tr GRAVEL	PINKISH GREY	STF	DRY	6 18 20 26	RAD 4.0 OVA 6.0	Clay as above, fractures with iron staining.
-14	14									
-15	15		100	CLAY, sm SILT, tr GRAVEL	PINKISH GREY	STF	MST	6 18 21 33	RAD 4.0 OVA 14.0	Silty clay as above.
-16	16									
-17	17		100	CLAY, sm SILT, tr GRAVEL	pinkish grey	STF	DRY	8 17 21 24	RAD 4.0	Clay as above.
-18	18			CLAY, tr GRAVEL	BLUE GREY	STF	MST		RAD 4.0	Stiff blue clay. Pebbles.
-19	19		100	CLAY, tr GRAVEL	BLUE GREY	STF	MST	13 15 21 30	OVA 2.0 RAD 4.0	Stiff blue grey clay with trace pebbles.
20	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 31.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON
BORING ID	: CS2-SB25	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME 550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/27/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/27/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						
-1	1		95	Not Classified - Incomplete Data				15 28 38 28	OVA 2.0 RAD 3.0	Lt brown to tan. Gravelly clay and silt fill. Limestone gravel, brick, and black sand.
-2	2									
-3	3			No Sample Recovered						
			45	Not Classified - Incomplete Data				14 9 5 6	RAD 2.0 OVA 1.0	Lt. brown sand with gravel and black sand. Gravel in tip.
-4	4			No Sample Recovered						
-5	5		60	Not Classified - Incomplete Data				4 5 5 4	RAD 2.5 OVA 2.0	Black-rust, medium, sand fill.
-6	6									
				No Sample Recovered						
-7	7		35	Not Classified - Incomplete Data				3 4 4 3	RAD 2.0	Silty fill gravel with green slag. Oxidized. Groundwater encountered at 8.5-9.0'.
-8	8			No Sample Recovered						
-9	9		40	Not Classified - Incomplete Data				1 3 9 11	RAD 2.0 OVA 4.0	Silty sand gravel with slag and wood. Saturated.
-10	10			No Sample Recovered						
-11	11		50	Not Classified - Incomplete Data				1 2 5 3 4	RAD 2.0 OVA 1000.0	Wood in tip. Gravel fill, sheen.
-12	12			No Sample Recovered						
-13	13		40	Not Classified - Incomplete Data				2 2 2 2	RAD 2.0 OVA 200.0	Mostly wood fragments. Sheen. Gravelly fill as above. Saturated.
-14	14			No Sample Recovered						
-15	15		40	Not Classified - Incomplete Data				3 3 5 3 3	RAD 2.0	Gravelly fill with silt to 15.3', then soft silt with a trace fine sand. Possibly natural.
-16	16			No Sample Recovered						
-17	17		85	SAND, lt SILT, tr ORGANIC		SFT	SAT	2 1 2 3	RAD 2.5 OVA 1000.0	Silt in first .2' then medium to fine sand with shells.
-18	18									
				No Sample Recovered						
-19	19		100	SAND, lt SILT, tr CLAY, tr ORGANIC		SFT	SAT	2 5 4 3	RAD 2.5 OVA 1000.0	Medium fine sand as above Clayey silt and sand in tip.
-20	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 31.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON
BORING ID	: CS2-SB25	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME 550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/27/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/27/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
-21	21			SAND, lt SILT, tr CLAY, tr ORGANIC		SFT	SAT		RAD 2.5 OVA 1000.0	Medium fine sand as above Clayey silt and sand in tip.
-22	22		100	SAND, lt SILT, tr CLAY, tr ORGANIC	GREY-BLACK	SFT	SAT	2 2 2 2	RAD 2.5 OVA 1000.0	Sand as above, clayey silt and sand layers, trace wood (rootlets) with the silt.
-23	23									
-24	24		100	SAND, lt SILT, tr CLAY, tr ORGANIC	GREY-BLACK	SFT	SAT	1 1 1 2 2	RAD 2.5 OVA 1000.0	Silt and sand as above. Rootlets.
-25	25									
-26	26		75	SAND, lt SILT, tr ORGANIC	LT.GREY	LSE	WET	1 1 1 2	RAD 2.0 OVA 1000.0	Medium-fine sand with shells. Silt in last .2'.
-27	27			No Sample Recovered						
-28	28		100	SILT, sm SAND, lt CLAY	DK. GREY	SFT	WET		RAD 3.0 OVA 1000.0	Sandy silt grading into fine silt with greasy feel. Some clay.
-29	29									
-30	30		100	SILT, sm CLAY	DR. OLIVE GREY	SFT	WET		RAD 3.0 OVA 1000.0	Silt with clay as above.
-31	31									
-32	32									
-33	33									
-34	34									
-35	35									
-36	36									
-37	37									
-38	38									
-39	39									
-40	40									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 11.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON
BORING ID	: CS2-SB26	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME 550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/28/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/28/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				No Sample Recovered						Rebar and plate metal at .5'. Black fill sand with gravel, metal slag, and brick.
-1	1		60	Not Classified - Incomplete Data				50 6 6 13 5	RAD 2.0 OVA 0.0	Black fill sand with slag metal and brick.
-2	2			No Sample Recovered						
-3	3		75	Not Classified - Incomplete Data				1 1 1 2	RAD 3.0 OVA 0.0	Clayey sand with brick and wood. Red to black.
-4	4			No Sample Recovered						
-5	5		80	Not Classified - Incomplete Data				26 9 8 4	RAD 3.0	Spoon full of one solid piece of wood.
-6	6			No Sample Recovered						
-7	7		15	Not Classified - Incomplete Data				4 2 1 2	RAD 3.0	Silty sand and wood. Brown and black.
-8	8			No Sample Recovered						
-9	9		75	Not Classified - Incomplete Data				7 9 11 20	RAD 0.0 OVA 0.0	Silty medium sand with wood. Black to rust color.
-10	10									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 11.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON
BORING ID	: CS2-SB26	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME 550
EASTING	: 0.0000 estimated	DATE STARTED	: 02/28/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 02/28/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Not Classified - Incomplete Data					BA3 0.0 200 0.0	Silty medium sand with wood. Black to rust color.
				No Sample Recovered						
-11	11									
-12	12									
-13	13									
-14	14									
-15	15									
-16	16									
-17	17									
-18	18									
-19	19									
-20	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 29.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON
BORING ID	: CS2-SB27	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME 550
EASTING	: 0.0000 estimated	DATE STARTED	: 03/01/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 03/01/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						
-1	1		75	Not Classified - Incomplete Data				75 75 75 28 30	RAD 2.5 OVA 0.5	Silt sand and gravel, brick, black to grey.
-2	2									
-3	3			No Sample Recovered						
			80	Not Classified - Incomplete Data				9 13 17 12 15	RAD 2.5 OVA 0.0	Sand Black, Medium in top .5' then Medium brown sand. Clean.
-4	4									
-5	5			No Sample Recovered						
-6	6									
-7	7		90	No Sample Recovered						
			85	Not Classified - Incomplete Data				4 6 9 13 3 7 5		Water encountered at 8.7' Sandy silt with shells in top .5', grades to fine silt with shells and wood
-8	8									
-9	9			No Sample Recovered						
			55	Not Classified - Incomplete Data				2 4 4 4	RAD 3.0 OVA 30.0	Saturated. Sandy silt to 9.3', then black gravelly sand, coal slag and wood.
-10	10			No Sample Recovered						
-11	11		75	Not Classified - Incomplete Data				2 5 5 3 2	OVA 500.0 RAD 2.5	Saturated sand and silt. Petroleum odor, black. .2' of gravel at top.
-12	12									
-13	13		75	SILT and SAND, tr ORGANIC	olive grey	SFT	SAT		RAD 2.5 OVA 200.0	Fine sandy silt, with silty sand stringers. Shells.
-14	14									
				No Sample Recovered						
-15	15		100	SILT, sm SAND, tr ORGANIC	OLIVE GREY	SFT	SAT	2 4 4 3 5 3 4	RAD 2.5 OVA 1000.0	Sandy silt grading into fine silt, shells.
-16	16									
-17	17		90	SAND, tr SILT, tr ORGANIC	OLIVE GREY	LSE	SAT	3 3 3 3 4	RAD 2.5 OVA 1000.0	Loose medium sand, shells Saturated.
-18	18									
-19	19			No Sample Recovered						
			90	SAND, tr SILT, tr ORGANIC	OLIVE GREY	LSE	SAT		RAD 2.5 OVA 550.0	Sand as above. Some fine grained sand at tip.
-20	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA-CERT	TOTAL DEPTH	: 29.00
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/ROY F. WESTON
BORING ID	: CS2-SB27	DRILLING COMPANY	: RAU DRILLING
NORTHING	: 0.0000 estimated	DRILLING RIG	: CME 550
EASTING	: 0.0000 estimated	DATE STARTED	: 03/01/95
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 03/01/95

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				SAND, tr SILT, tr ORGANIC	OLIVE GREY	LSE	SAT		RAD 2.5 OVA 550.0	Sand as above. Some fine grained sand at tip.
-21	21			No Sample Recovered						
			100	SAND	OLIVE GREY	LSE	SAT	2 2 3 3	RAD 2.5 OVA 1000.0	Sand as above.
-22	22									
-23	23									
			65	SILT and SAND, tr ORGANIC	OLIVE GREY-BLK		SAT	2 2 2 2	RAD 3.0 OVA 300.0	Sandy silt with shells and rootlets. Interval was rotary drilled. With 20 gallons.
-24	24									
				No Sample Recovered						
-25	25		100	SILT, sm SAND	DARK GREY	SFT	WET		RAD 3.0 OVA 1000.0	Sandy silt grading to fine silt. OVA result likely skewed by rotary of 23-25'.
-26	26									
-27	27		100	SILT	DARK GREY	FRM	WET		RAD 3.0 OVA 250.0	Silt.
-28	28									
-29	29									
-30	30									
-31	31									
-32	32									
-33	33									
-34	34									
-35	35									
-36	36									
-37	37									
-38	38									
-39	39									
-40	40									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 30.50
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/WESTON
BORING ID	: CS2-SB28	DRILLING COMPANY	: SOMAT ENGINEERING
NORTHING	: 0.0000 estimated	DRILLING RIG	: B-57
EASTING	: 0.0000 estimated	DATE STARTED	: 12/03/94
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 12/03/94

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Fill						Drilled through .5' of gravel fill.
-1	1		70	Fill				8 11 16 52	OVA 45.0	Mixture of sand and gravel. Some silt and clay. Orange and black staining.
-2	2			No Sample Recovered						
-3	3		70	Fill				14 11 10 8		Lower .3 ft black silts and clay. Top portion gravely clay fill.
-4	4			SAND, lt SILT		LSE	DRY			Black staining. Green-turquois slag.
				No Sample Recovered						
-5	5		70	SAND, lt SILT	BLACK/DK GRAY	LSE	WET	8 8 6 7		Possibly originally foundry sand reworked by river with silt.
-6	6			No Sample Recovered						
-7	7		55	SAND, tr GRAVEL, tr SILT	BLACK	LSE	SAT	4 4 4 4		Lower 2" of interval wood chips/sawdust. Gravel composed of turquoise slag and limestone.
-8	8			No Sample Recovered						
-9	9			Interval Not Sampled						
-10	10									
-11	11									
-12	12		27	GRAVEL, sm SAND	BROWNISH GRAY	LSE	SAT	6 8 4 3		Sandy gravel trace silt.
				No Sample Recovered						
-13	13									
-14	14			Interval Not Sampled						
-15	15									
-16	16									
-17	17		75	SAND, sm CLAY, sm SILT	BLK TO BRN GRAY	SFT	SAT	3 3 2 3		Shells, wood debris. 0-2" consists of wood debris, fine sand and silt grding to silt and sand.
-18	18			No Sample Recovered						
				Interval Not Sampled						
-19	19									
-20	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 30.50
SITE NAME	: PARCEL 7	LOGGER	: JOEL ABENTH/WESTON
BORING ID	: CS2-SB28	DRILLING COMPANY	: SOMAT ENGINEERING
NORTHING	: 0.0000 estimated	DRILLING RIG	: B-57
EASTING	: 0.0000 estimated	DATE STARTED	: 12/03/94
ELEVATION	: 0.000 estimated	DATE COMPLETED	: 12/03/94

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						
-21	21									
-22	22		70	SILT and CLAY, tr ORGANIC	MED-LT GRAY	SFT	SAT	5 3 2 2		Clay silt grading into sand silt in bottom. 3". Wood and shell frag.
-23	23			SAND, sm SILT, tr ORGANIC	MED- LT GRAY	LSE	SAT	6		Wood and shell frag.
				No Sample Recovered						
-24	24			Interval Not Sampled						
-25	25									
-26	26									
-27	27		80	SILT, sm SAND	MED-LT GRAY	SFT	SAT	2 3 2 2 3		Sandy silt w/ wood and shell frag at bottom.
-28	28			CLAY, tr ORGANIC		SFT	SAT			Organic = shells.
				No Sample Recovered						
-29	29		100	CLAY	LT GRAY	FRM	SAT	2 2 1 3		Massive clay, greasy feel
-30	30									
-31	31									
-32	32									
-33	33									
-34	34									
-35	35									
-36	36									
-37	37									
-38	38									
-39	39									
-40	40									

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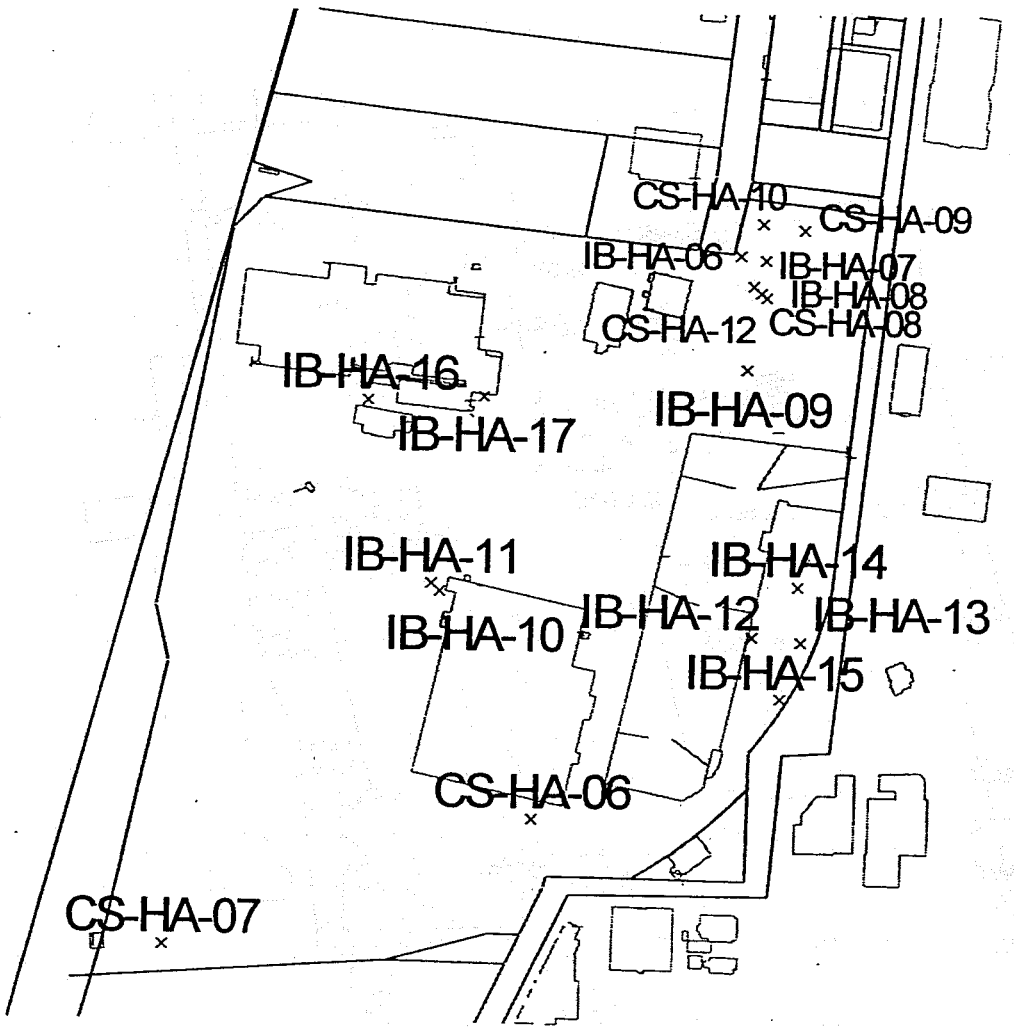
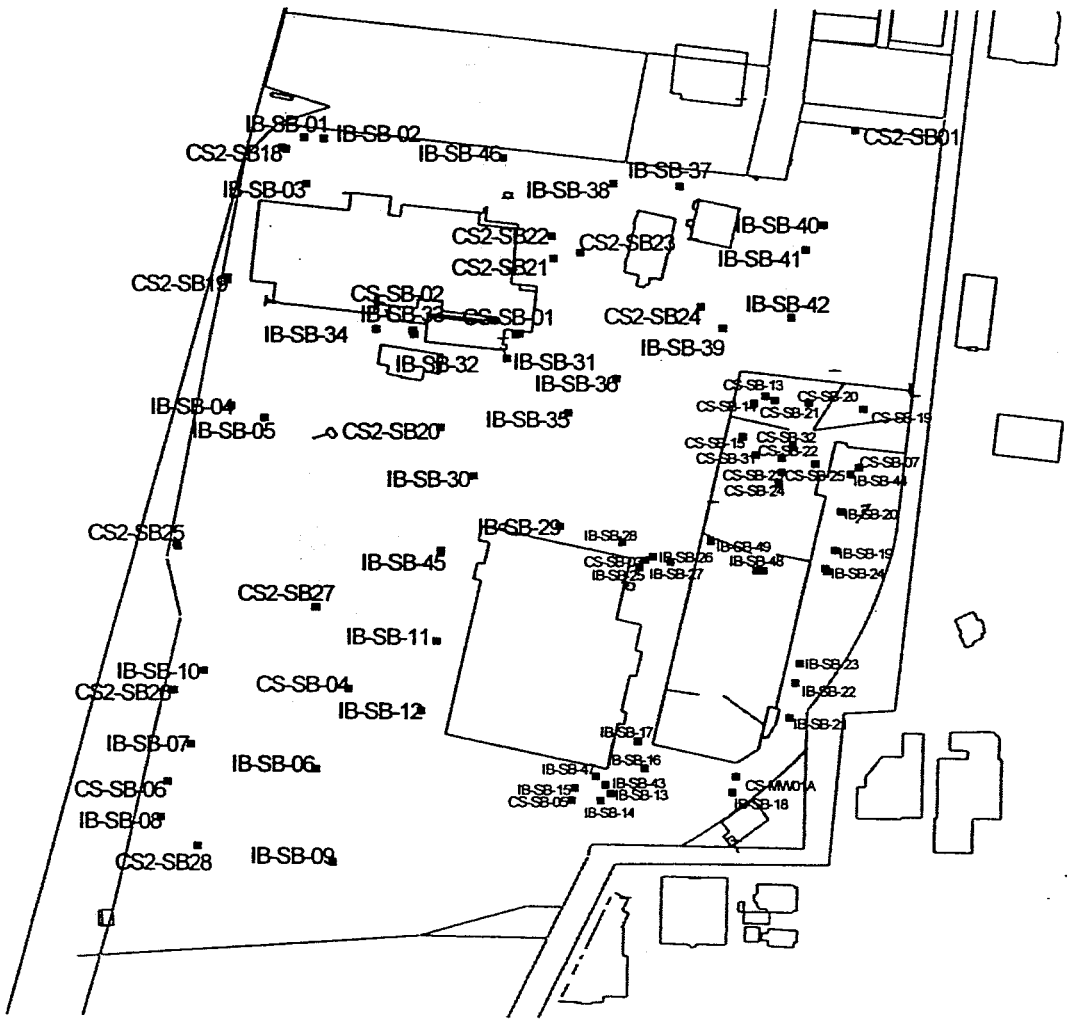
Industrial Brownhoist (Parcel 7)
Hand Auger Sampling Locations

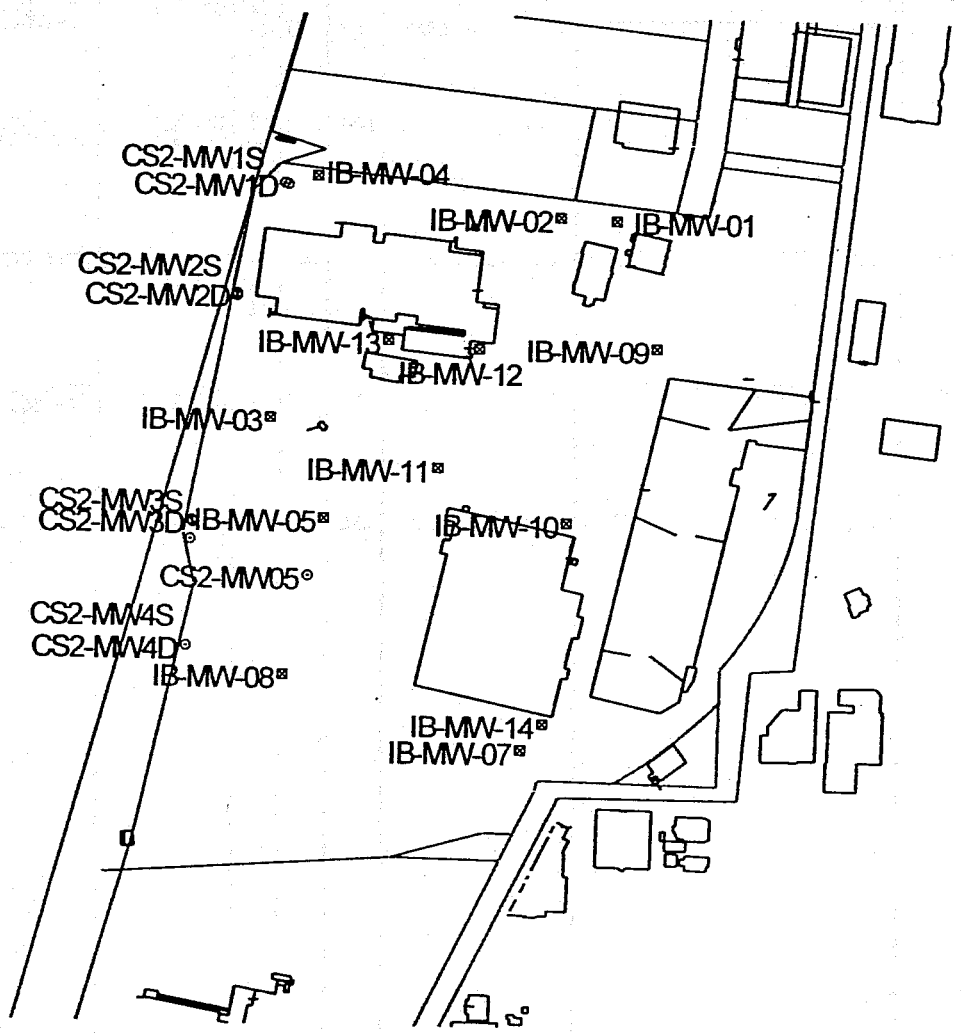


N

Industrial Brownhoist (Parcel 7)
Soil Boring Locations



Industrial Brownhoist WESTON Well Locations (Existing and Former)



N

Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 10.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-01	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762398.9140 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 439836.0620 surveyed	DATE STARTED	: 11/04/92
ELEVATION	: 586.589 surveyed	DATE COMPLETED	: 11/04/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			50	Fill	MODERATE BROWN	FRM	DRY	9 22	OVA 0.2 IR 5.0	SAMPLE BORING FOR VOL., MET, PCB, PAH-POSSIBLY SEMIVOL, 6-8'.
585	1			Fill	SHADES OF GRAY	FRM	DRY	21 14		
584	2		40	Fill	GRAY AND BLACK	FRM	DRY	5 10 14 12	OVA 3.0 IR 5.0	ALSO BRICK FRAGMENTS INCLUDED IN GRAVEL.
583	3									
582	4		45	Fill	BROWNISH GRAY	SFT	MST	5 4 5 16	OVA 1.1 IR 5.0	MOST LIKELY IS FILL.
581	5									
580	6		35	Fat clay with sand, CH	DARK GRAY	LSE	WET	1 1 1 4	OVA 35.0 IR 5.0	BH=5 OVA UNITS AT 8'. BZ=BKG.
579	7									
578	8		40	Fill	VARIOUS GRAYS	LSE	SAT		OVA 1000.0 IR 5.0	END OF BORING AT 10'.
577	9									
576	10									
575	11									
574	12									
573	13									
572	14									
571	15									
570	16									
569	17									
568	18									
567	19									
566	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 10.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-02	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762397.5830 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 439865.7950 surveyed	DATE STARTED	: 11/05/92
ELEVATION	: 586.364 surveyed	DATE COMPLETED	: 11/05/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled		NA				
585	1									
584	2		35	Fill	BROWNISH GRAY	SFT	DMP	5 6 4 4	OVA 25.0 IR 5.0	BRICK.
583	3									
582	4		25	Fill		LSE	DMP	3 3 3 3	OVA 40.0 IR 5.0	
581	5									
580	6		25	Fill	OLIVE GRAY	LSE	MST	1 1 1 1	OVA 8.0 IR 5.0	BOREHOLE OVA=500.
579	7									
578	8		55	Fill	OLIVE GRAY	LSE	WET	1 1 1 2	OVA 1000.0 IR 5.0	DROVE 2 SPOONS TO SPLIT SAMPLE WITH MWR. SECOND SPOON 1 1/2" B=0.3. END OF BORING AT 10'.
577	9									
576	10									
575	11									
574	12									
573	13									
572	14									
571	15									
570	16									
569	17									
568	18									
567	19									
566	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 10.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-03	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762325.5660 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 439839.6340 surveyed	DATE STARTED	: 11/05/92
ELEVATION	: 587.619 surveyed	DATE COMPLETED	: 11/05/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled		NA				
586	1									
585	2		55	Fill	MODERATE BROWN	SFT	DRY	4 6 8 7 7	OVA 1.0 IR 6.0	MINIRAM SET UP TO MONITOR DUST - AT 1.56 THOUGHOUT DRILLING.
584	3									
583	4		45	Fill	MODERATE BROWN	LSE	DRY	4 3 6 5	OVA 1.0 IR 6.0	SLIGHTLY GRAY AT TIP OF SPOON.
582	5									
581	6		65	Fill		NA		4 4 3 3	OVA 50.0 IR 6.0	FIRST 1/3 BLACK (AS PREVIOUS SPOON), SECOND 1/3 TAN, THIRD 1/3 GRAY AND SATORATED.
580	7									
579	8		55	Fill	BROWNISH GRAY	LSE	SAT	1 2 1 1	OVA 600.0 IR 6.0	
578	9									
577	10									
576	11									
575	12									
574	13									
573	14									
572	15									
571	16									
570	17									
569	18									
568	19									
567	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 31.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-04	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761971.3220 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 439723.4900 surveyed	DATE STARTED	: 11/05/92
ELEVATION	: 587.747 surveyed	DATE COMPLETED	: 11/05/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled		NA				
586	1									
585	2		75	Fill	BLACK-RED, ORNG	FRM	DRY	9 22 23 9	OVA 6.0 IR 60.0	IR CUTTINGS = BKG. BKG<5. MINIMUM READS 1.30. BRICK.
584	3									
583	4		50	Fill	MED BRN TO GRAY	NA		5 5 5 5	OVA 1.0 IR 4.0	
582	5									
581	6		75	Not Classified - Incomplete Data		NA		3 3 2 2 2	OVA 3.0 IR 4.0	GRAY - SHELLS - SAND. BLACK LAYERS OF ROCK.
580	7									
579	8			Fill	BROWNISH GRAY	SFT	DMP		OVA 1000.0 IR 4.0	
578	9									
577	10		60	Fill	BROWNISH GRAY	SFT	SAT	1 1 6 7	OVA 1000.0 IR 4.0	WOOD IN TIP. BH=600, BZ=0, CGI-OXYGEN + LEL NORMAL.
576	11									
575	12			Organic soil, OL/OH		NA	SAT		OVA 1000.0 IR 4.0	SHEEN ON WATER FROM SPOON BH=>1000, BZ=BKG.
574	13									
573	14		65	Not Classified - Incomplete Data	BROWN-GRAYISH	NA	SAT		OVA 0.0 IR 0.0	
572	15									
571	16			Not Classified - Incomplete Data		NA		6 7 2 50	OVA 0.0 IR 0.0	WOOD IN TIP. GRAY SATURATED SAND. SHELL FRAGMENTS AND WOOD FRAGMENTS.
570	17									
569	18									
568	19									
567	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 31.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-04	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761971.3220 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 439723.4900 surveyed	DATE STARTED	: 11/05/92
ELEVATION	: 587.747 surveyed	DATE COMPLETED	: 11/05/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
566	21			No Sample Recovered		NA		5 6 6 5	OVA 0.0 IR 0.0	SAND, WOOD, SATURATED.
565	22									
564	23		95	Fill	BROWNISH GRAY	LSE	SAT		OVA 1000.0 IR 5.0	
563	24									
562	25		90	Other	BROWNISH GRAY	LSE	SAT	1 1 1 2	OVA 1000.0 IR 5.0	LAST 3" MUCH SILTIER AND MORE FINER SAND.
561	26									
560	27		85	Other	BROWNISH GRAY	LSE	WET	5 1 2 4 3	OVA 1000.0 IR 5.0	
559	28									
558	29		65	Other		LSE	WET		OVA 0.0 IR 5.0	BH=200, BZ=0.
557	30									
556	31									
555	32									
554	33									
553	34									
552	35									
551	36									
550	37									
549	38									
548	39									
547	40									

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Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 14.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-05	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761952.1840 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 439776.4740 surveyed	DATE STARTED	: 11/06/92
ELEVATION	: 587.686 surveyed	DATE COMPLETED	: 11/06/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
586	1			Fill	BROWNISH GRAY	SFT	DRY		OVA 0.0 IR 5.0	OVA READINGS ON SAMPLE HEADSPACE FOR SS.
585	2									
584	3									
583	4									
582	5									
581	6		60	Fill	BROWNISH GRAY	SFT	DMP	3 4 5 9	OVA 100.0 IR 5.0	NO CATCHER IN SPLIT-SPOON SOME OXIDATION AT TOP OF SPOON.
580	7									
579	8		53	Fill		SFT	WET	6 3 50	OVA 550.0 IR 5.0	BH=100, BZ=BACKGROUND, WOOD IN TIP OF SPOON.
578	9			Fill		SFT	WET	0	OVA 550.0 IR 5.0	
577	10		45	Fill	BROWNISH GRAY	SFT	WET	6 3 6 50	OVA 550.0 IR 5.0	SHEEN ON OUTSIDE OF SPOON DROVE 2ND SPOON SAME INTERVAL, NO RECOVERY. BH=>1000, BZ=BKG.
576	11									
575	12		50	Fill	BROWNISH GRAY	SFT	SAT	12 14 12 8	OVA 700.0 IR 5.0	SATURATED LAST 6".
574	13									
573	14									
572	15									
571	16									
570	17									
569	18									
568	19									
567	20									

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Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 26.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-06	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761388.0760 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 439858.5480 surveyed	DATE STARTED	: 11/06/92
ELEVATION	: 591.680 surveyed	DATE COMPLETED	: 11/06/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
590	1		45	Fill	GRAY	LSE	DMP	10 10 26 15	OVA 0.4 IR 5.0	REFUSAL AT 2' DRILL TO 3' BEGIN COLLECTING SPOON.
589	2		50	Fill	GRAY	NA		9 50 0	OVA 0.4 IR 5.0	GRAY GRAVELY WITH SMALL BROWN SAND LAYER. REFUSAL - DRILL to 3'.
588	3		40	Other	BROWN BLACK	NA	DMP	9 2 30 5 50	OVA 14.0 IR 14.0	
587	4									
586	5		50	Poorly graded sand, SP	DARK BLACK	NA	DMP	33 54 0 0	OVA 72.0 IR 5.0	
585	6									
584	7		50	Not Classified - Incomplete Data	BLACK	NA		21 38 50 0	OVA 220.0 IR 5.0	OVA READING OF 30 UNITS AT SPLIT SPOON. DARK STAINED SOIL.
583	8									
582	9			Not Classified - Incomplete Data	BLACK	NA		50 0 0 0	OVA 10.0 IR 120.0	OVA 10 UNITS ABOVE BKG AT SPOON. VERY LITTLE RECOVERY - NO SAMPLE.
581	10									
580	11		50	Poorly graded sand, SP	RED/BROWN	NA	SAT	4 6 7 8	OVA 88.0 IR 0.0	
579	12									
578	13			Other	BLACK	NA	SAT	6 18 22 26 28	OVA 0.0 IR 0.0	DARK BLACK SOIL. NO READINGS ON HNU.
577	14									
576	15		30	Silty sand with gravel, SM		LSE	SAT	18 24 48 12	OVA 1000.0 IR 5.0	
575	16									
574	17									
573	18									
572	19									
571	20			No Sample Recovered		NA		7 12 11 13		LARGE PIECE OF WOOD IN SAMPLE - NO SOIL RECOVER. DRILLERS TRIED TWICE TO COLLECT SAMPLE, NO RECOV.

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Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 26.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-06	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761388.0760 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 439858.5480 surveyed	DATE STARTED	: 11/06/92
ELEVATION	: 591.680 surveyed	DATE COMPLETED	: 11/06/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
570	21			No Sample Recovered		NA				LARGE PIECE OF WOOD IN SAMPLE - NO SOIL RECOVER. DRILLERS TRIED TWICE TO COLLECT SAMPLE, NO RECOV.
569	22		100	No Sample Recovered	BROWNISH GRAY	LSE	SAT	2 3 4 5	OVA 74.0 IR 4.0	
568	23									
567	24			Fat clay, CH	GRAYISH BROWN	LSE	WET		OVA 74.0 IR 4.0	SAND UNDER CLAY - FINER.
			75	Clayey sand, SC	GRAYISH BROWN	LSE	WET	1 3 4 4	OVA 900.0 IR 5.0	BH=300, BZ=BACKGROUND.
566	25									
565	26									
564	27									
563	28									
562	29									
561	30									
560	31									
559	32									
558	33									
557	34									
556	35									
555	36									
554	37									
553	38									
552	39									
551	40									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 12.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-07	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761425.9910 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 439663.4750 surveyed	DATE STARTED	: 11/07/92
ELEVATION	: 588.027 surveyed	DATE COMPLETED	: 11/07/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled		NA				
587	1									
586	2		50	Fill	BROWNISH BLACK	SFT	DRY	8 8 9 6	OVA 0.2 IR 5.0	0-2' AUGERED, SAMPLING INTERVAL 1', GREEN PLASTIC, SLAG.
585	3									
584	4		55	Fill	DUSTY BROWN	SFT	DRY	4 5 5 6	OVA 0.2 IR 5.0	
583	5									
582	6		45	Fill	DUSTY BROWN	SFT	DMP	6 13 11 15	OVA 1.0 IR 5.0	BRICK, ASH.
581	7									
580	8		30	Well-graded sand with gravel, SW	GRAYISH BLACK	LSE	SAT	5 2 6 36	OVA 10.0 IR 6.0	
579	9									
578	10		20	Fill	DUSTY BROWN	SFT	SAT	7 5 10 8	OVA 120.0 IR 5.0	WOOD IN TIP. END OF BORING GROUT HOLE.
577	11									
576	12									
575	13									
574	14									
573	15									
572	16									
571	17									
570	18									
569	19									
568	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 12.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-08	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761310.0490 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 439617.1000 surveyed	DATE STARTED	: 11/07/92
ELEVATION	: 588.978 surveyed	DATE COMPLETED	: 11/07/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled		NA				
587	1									
586	2		45	Fill	DUSTY BROWN	SFT	DMP	7 6 4 2	OVA 0.2 IR 4.0	AUGERED 0-2', SAMPLE INTERVAL 1.
585	3									
584	4		12	Fill	MODERATE BROWN	LSE	DMP	1	OVA 0.2	ASH
				Fill		SFT	MST	2 5 2 5	OVA 0.0 IR 4.0	SLAG, GRAYS AND BLACK-N2.
583	5									
582	6		50	Well-graded gravel, GW	GRAYISH BLACK	LSE	WET	3 12 10 20	OVA 0.2 IR 4.0	SLAG, ASH.
581	7									
580	8		60	Fill		SFT	WET	8 11 10 12	OVA 6.0 IR 4.0	SLAG, ASH.
579	9									
578	10									
577	11									
576	12									
575	13									
574	14									
573	15									
572	16									
571	17									
570	18									
569	19									
568	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 14.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-09	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761240.0760 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 439886.3500 surveyed	DATE STARTED	: 11/07/92
ELEVATION	: 592.326 surveyed	DATE COMPLETED	: 11/07/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled		NA				
591	1									
590	2		25	Fill	DARK GRAY	FRM	DRY	14 23 37 27 27	OVA 3.0 IR 3.0	AUGERED 0-2', SAMPLE INTERVAL 1.
589	3									
588	4		65	Fill	BRN TO TAN, BLK	FRM	DRY	17 6 30 17	OVA 7.0 IR 4.0	METAL LIKE MATERIAL - SANDS AND GRAVEL. BH=2
587	5									
586	6		55	Fill	MUDDY BROWN	LSE	DMP	3 5 5 8	OVA 0.2 IR 4.0	BRICK, SLAG.
585	7									
584	8		60	Fill		FRM	DMP	7 10 10 15	OVA 18.0 IR 0.0	SLAG AND BRICK.
583	9									
582	10		60	Fill		LSE	MST	6 3 2 4	OVA 5.0 IR 4.0	BH=4, LAST 2' WET SLAG AND YELLOW BRICK.
581	11									
580	12		40	Other	MEDIUM BROWN	SFT	SAT	55 3 3 50	OVA 80.0 IR 4.0	WOOD IN TIP. BH=20% LEL 13% OXYGEN. LAST 3" BLACK WITH WOOD. END OF BORING AT 14'.
579	13									
578	14									
577	15									
576	16									
575	17									
574	18									
573	19									
572	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 10.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-10	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761544.2880 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 439683.3410 surveyed	DATE STARTED	: 11/08/92
ELEVATION	: 587.689 surveyed	DATE COMPLETED	: 11/08/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled		NA				
586	1									
585	2		45	Fill	GRAYISH BLACK	SFT	DRY	5 5 11 14	OVA 0.2 IR 5.0	0-2' AUGERED. SAMPLE INTERVAL 1.
584	3									
583	4		70	Fill	GRAYISH BROWN	SFT	DRY	8 10 11 9	OVA 0.4 IR 5.0	
582	5									
581	6		80	Fill	BROWNISH BLACK	SFT	DMP	6 10 8 10	OVA 6.0 IR 5.0	SLAG
580	7									
579	8		50	Fill		SFT	SAT	14 14 12 14	OVA 9.0 IR 5.0	SLAG, END OF BORING=10'.
578	9									
577	10									
576	11									
575	12									
574	13									
573	14									
572	15									
571	16									
570	17									
569	18									
568	19									
567	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 14.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-11	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761593.3650 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440045.3090 surveyed	DATE STARTED	: 11/08/92
ELEVATION	: 592.058 surveyed	DATE COMPLETED	: 11/08/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled		NA				
591	1									
590	2		50	Fill	MODERATE BROWN	SFT	DRY	9 12 10 9	OVA 5.0 IR 4.0	AUGERED 0-2'.
589	3									
588	4		55	Fill		LSE	DRY	4 3 3 3	OVA 6.0 IR 4.0	METAL SHAVINGS.
587	5									
586	6		60	Fill	MODERATE BROWN	SFT	MST	9 6 6 6	OVA 1.0 IR 4.0	SLAG, BRICK.
585	7									
584	8		60	Fill	GRAYISH BROWN	SFT	DMP	5 4 4 6	OVA 0.2 IR 4.0	SLAG, BRICK.
583	9									
582	10		50	Fill	GRAYISH BROWN	SFT	DMP	4 5 4 4	OVA 0.2 IR 4.0	SLAG, BRICK.
581	11									
580	12		70	Other	BROWN GRAY	LSE	SAT	1 3 2 1	OVA 4.0 IR 1000.0	END OF BORING=14'.
579	13									
578	14									
577	15									
576	16									
575	17									
574	18									
573	19									
572	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 14.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-12	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761481.8490 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440021.4460 surveyed	DATE STARTED	: 11/08/92
ELEVATION	: 591.598 surveyed	DATE COMPLETED	: 11/08/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
590	1		60	Fill	PALE BROWN	STF	DRY	40 32 32 30 18	OVA 0.2 IR 4.0	SLAG
589	2		25	Poorly graded sand with silt, SP-SM	BROWNISH BLACK	SFT	DRY	5 8 4 2	OVA 0.2 IR 4.0	
588	3									
587	4			No Sample Recovered		NA		1 0 0 0		
586	5									
585	6		15	Other	DARK GRAY	LSE	DRY	1 1 0 0	OVA 1.0 IR 4.0	
584	7									
583	8		25	Fill	DARK GRAY	NA	WET	2 1 2 3	OVA 1.0 IR 4.0	
582	9									
581	10		15	Organic soil with sand, OL/OH		NA	SAT	12 12 12 12	OVA 50.0 IR 4.0	
580	11									
579	12		85	Fill	GRAYISH BLACK	SFT	SAT	6 7 8 9	OVA 600.0 IR 4.0	SAMPLE WAS GRAYISH BLACK WITH WHITE SPECKS.
578	13									
577	14									
576	15									
575	16									
574	17									
573	18									
572	19									
571	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 14.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-13	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761350.1460 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440319.4490 surveyed	DATE STARTED	: 11/08/92
ELEVATION	: 594.391 surveyed	DATE COMPLETED	: 11/08/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled		NA				
593	1									
592	2		70	Fill	MODERATE BROWN	FRM	DRY	18 22 12 11	OVA 15.0 IR 4.0	SLAG, WOOD.
591	3									
590	4		55	Fill	BROWNISH GRAY	NA	DRY	8 11	OVA 30.0 IR 4.0	
				Fill	DK YELLOW BROWN	NA	DRY	12 16	OVA 30.0 IR 4.0	COLOR CHANGE TO DARK YELLOWISH BROWN.
589	5									
588	6		70	Lean clay, CL	YELLOWISH BROWN	FRM	DRY	8 12 17 16 24	OVA 0.2 IR 4.0	
587	7									
586	8		65	Lean clay with gravel, CL	PALE YEL-BROWN	NA	DRY	12 24 30 40	OVA 0.2 IR 4.0	
585	9									
584	10		50	Lean clay, CL	DK YELLOW BROWN	FRM	DMP	13 25 35 33 37	OVA 0.2 IR 4.0	WET AT 10'.
583	11									
582	12		85	Lean clay, CL	DK YELLOW BROWN	FRM	DMP	15 24 44 45	OVA 14.0 IR 4.0	END OF BORING AT 14'.
581	13									
580	14									
579	15									
578	16									
577	17									
576	18									
575	19									
574	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 10.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-14	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761338.7570 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440303.3910 surveyed	DATE STARTED	: 11/08/92
ELEVATION	: 594.005 surveyed	DATE COMPLETED	: 11/08/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled		NA				
593	1									
592	2		45	Fill	DK YELLOW BROWN	FRM	DRY	5 12 16 17 22	OVA 4.0 IR 4.0	BLACK SAND SILT,
591	3									
590	4			Fill	GRAYISH BROWN	NA		3 3 5 7 9	OVA 4.0 IR 4.0	
589	5									
588	6		40	Fill	BLACK TO GRAY	LSE	MST	3 3 3 4	OVA 50.0 IR 4.0	
587	7									
586	8									
585	9									
584	10									
583	11									
582	12									
581	13									
580	14									
579	15									
578	16									
577	17									
576	18									
575	19									
574	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 16.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-15	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761358.4680 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440262.6250 surveyed	DATE STARTED	: 11/09/92
ELEVATION	: 592.761 surveyed	DATE COMPLETED	: 11/09/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled		NA				
591	1									
590	2		15	Fill	MED. LT. GRAY	NA	DRY	5	OVA 10.0	AT 3' STRONG FUEL ODOR. AUGERED TO 2', 1/2" GRAVEL LAYER ABOVE.
				Fill	GRAYISH BROWN	SFT	DRY	11 10 9	OVA 8.0 IR 0.0	
589	3									
588	4									
				Fill	GRAYISH BROWN	SFT	DRY	4 4 4 5	OVA 2.0 IR 5.0	
587	5									
586	6		60	Fill	GRAYISH BROWN	LSE	DMP	2 2 2 8	OVA 6.0 IR 6.0	
585	7									
584	8		45	Fill	GRAY TO BROWN	LSE	SAT	5 3 4 4	OVA 10.0 IR 5.0	BRICK, SLAG, SAND MIXED WITH WOOD AND DEBRIS IS SATURATED.
583	9									
582	10		30	Fill	GRAYISH BROWN	LSE	SAT	3 5 5 3	OVA 0.0 IR 5.0	
581	11									
580	12		50	Fill	GRAYISH BROWN	NA	SAT	2 53 0 0	OVA 0.0 IR 4.0	WOOD IN TIP OF SPOON.
579	13									
578	14		65	Fill	GRAYISH BROWN	LSE	SAT	8 8	OVA 0.0 IR 0.0	
				Fat clay, CH	BROWNISH GRAY	FRM	WET	24 32	OVA 0.0 IR 6.0	SULFER ODOR WHILE GROUTING BOREHOLE.
577	15									
576	16									
575	17									
574	18									
573	19									
572	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 8.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-16	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761389.9430 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440372.7090 surveyed	DATE STARTED	: 11/09/92
ELEVATION	: 593.633 surveyed	DATE COMPLETED	: 11/09/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
592	1									
			100	Fill	GRAYISH ORANGE	NA		12	OVA 0.0	
				Other	MEDIUM LT. GRAY	NA		42	OVA 30.0	
591	2							14	IR 4.0	
			45	Fill		NA	DRY	9	OVA 40.0	
590	3							14	IR 2.0	
								18		
								21		
589	4									
			25	Lean clay with sand, CL		NA	DRY	11	OVA 16.0	
588	5							10	IR 4.0	
								12		
								11		
587	6									
			80	Lean clay with sand, CL	BROWNISH GRAY	NA	SAT	2	OVA 12.0	
								4	IR 4.0	
586	7			Lean clay, CL		NA	DMP	17	OVA 0.0	
								31	IR 0.0	
585	8									
584	9									
583	10									
582	11									
581	12									
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 8.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-17	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761433.4960 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440362.3120 surveyed	DATE STARTED	: 11/09/92
ELEVATION	: 593.684 surveyed	DATE COMPLETED	: 11/09/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled		NA				
592	1		73	Fill	LT BROWN ORANGE	FRM	DRY	42 44 17 11	OVA 30.0 IR 5.0	0-0.5' CONCRETE.
591	2			Clayey sand, SC	BROWNISH GRAY	SFT	DMP	6 8 7 12	OVA 50.0 IR 4.0	
590	3									
589	4			Fat clay, CH	LT BROWN GRAY	NA	MST	9 15 12 13	OVA 25.0 IR 4.0	
588	5									
587	6		65	Lean clay, CL	DK YELLOW BROWN	FRM	DMP	4 18 32 37	OVA 0.2 IR 4.0	
586	7									
585	8									
584	9									
583	10									
582	11									
581	12									
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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PROJECT	: EPA - CERT		TOTAL DEPTH	: 8.00
SITE NAME	: PARCEL 7		LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-18		DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761352.4990 surveyed		DRILLING RIG	: DIEDRICH D-50
EASTING	: 440509.1980 surveyed		DATE STARTED	: 11/09/92
ELEVATION	: 596.664 surveyed		DATE COMPLETED	: 11/09/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled		NA				
595	1									
594	2		65	Fill						
593	3			Fat clay, CH	PALE BROWN	SFT	SAT	7	OVA 2.0	AUGERED 0-2', SAMPLE INTERVAL 1.' uR=5
					MOD YEL-BROWN	NA	SAT	10 6 6	UR 5.0	
592	4		75	Fat clay, CH						
591	5				PALE BROWN	FRM	MST	4 18 15 22 24	OVA 0.2 UR 5.0	uR=5
590	6		80	Lean clay, CL						
589	7				PALE YEL-BROWN	FRM	DRY	4 13 18 50	OVA 0.2 UR 5.0	uR=5
588	8									
587	9									
586	10									
585	11									
584	12									
583	13									
582	14									
581	15									
580	16									
579	17									
578	18									
577	19									
576	20									

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Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 8.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-19	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761740.6320 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440666.4990 surveyed	DATE STARTED	: 11/09/92
ELEVATION	: 594.604 surveyed	DATE COMPLETED	: 11/09/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled		NA				
593	1									
592	2		65	Other	PALE YELLOW BRO	SFT	DRY	9 14 32 35 27	OVA 0.0 IR 5.0	
591	3									
590	4		75	Other	MOD YEL-BROWN	SFT	DRY	4 9 14 37	OVA 0.0 IR 5.0	
589	5									
588	6		90	Lean clay, CL	MOD YEL-BROWN	FRM	DRY	12 26 50 52 56	OVA 0.0 IR 0.0	
587	7									
586	8									
585	9									
584	10									
583	11									
582	12									
581	13									
580	14									
579	15									
578	16									
577	17									
576	18									
575	19									
574	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 6.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-20	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761804.4170 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440674.9720 surveyed	DATE STARTED	: 11/09/92
ELEVATION	: 593.296 surveyed	DATE COMPLETED	: 11/09/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			45	Lean clay, CL	MOD YEL-BROWN	SFT	DRY	22 10 10 15	OVA 1.5 IR 6.0	
592	1									
591	2		70	Lean clay, CL	MODERATE BROWN	FRM	DMP	8 12 22 27	OVA 2.0 IR 6.0	
590	3									
589	4		100	Lean clay, CL	MODERATE BROWN	FRM	MST		OVA 0.2 IR 6.0	
588	5									
587	6									
586	7									
585	8									
584	9									
583	10									
582	11									
581	12									
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 8.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-21	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761471.8920 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440596.5320 surveyed	DATE STARTED	: 11/10/92
ELEVATION	: 594.708 surveyed	DATE COMPLETED	: 11/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			50	Fill	DUSTY YEL-BROWN	LSE	DMP	1 2 3 1	OVA 0.5 IR 7.0	GRAVEL FILL.
593	1			Silt, ML	PALE YEL-BROWN	LSE	DMP		OVA 0.5 IR 7.0	
592	2		75	Lean clay, CL	PALE YEL-BROWN	FRM	DRY	2 6 7 18 25	OVA 0.2 IR 7.0	
591	3									
590	4		55	Lean clay, CL	PALE BROWN	FRM	DRY	18 30 40 50	OVA 0.2 IR 7.0	OXIDATION ON SILT SEAM.
589	5									
588	6		40	Lean clay, CL	MOD YEL-BROWN	FRM	DRY	8 38 46 50	OVA 0.2 IR 7.0	
587	7									
586	8									
585	9									
584	10									
583	11									
582	12									
581	13									
580	14									
579	15									
578	16									
577	17									
576	18									
575	19									
574	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 8.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-22	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761527.4660 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440605.7870 surveyed	DATE STARTED	: 11/10/92
ELEVATION	: 593.998 surveyed	DATE COMPLETED	: 11/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			60	Fill		SFT	DRY	18 6	OVA 1.0 IR 6.0	SUB-BASE TO ASPHALT.
592	1			Fill		NA	DRY	7 5	OVA 1.0 IR 6.0	
591	2		55	Fat clay with gravel, CH	DK YELLOW-BROWN	SFT	DMP	3 4 7 11	OVA 1.0 IR 6.0	
590	3									
589	4		85	Lean clay, CL	MOD YEL-BROWN	FRM	DRY	10 15 8 30	OVA 2.5 IR 6.0	OXIDATION ON SILTY SEAMS. DECAYING ROOTLETS.
588	5									
587	6		45	Lean clay, CL	PALE BROWN	STF	DRY	9 22 45 50	OVA 0.2 IR 7.0	
586	7									
585	8									
584	9									
583	10									
582	11									
581	12									
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 8.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-23	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761558.7560 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440612.2130 surveyed	DATE STARTED	: 11/10/92
ELEVATION	: 594.089 surveyed	DATE COMPLETED	: 11/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled		NA				
593	1									
592	2		45	Fat clay, CH	BROWNISH GRAY	LSE	SAT	4 4 4 4	OVA 0.2 IR 6.0	
591	3									
590	4		100	Silty sand, SM	OLIVE GRAY	NA	SAT	1 2 12 24	OVA 2.0 IR 6.0	
589	5			Lean clay, CL	MEDIUM GRAY	NA	DRY			
588	6		25	Lean clay, CL	PALE BROWN	FRM	DRY	12 24 44 50	OVA 0.0 IR 6.0	
587	7									
586	8									
585	9									
584	10									
583	11									
582	12									
581	13									
580	14									
579	15									
578	16									
577	17									
576	18									
575	19									
574	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 6.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-24	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761706.9630 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440653.5950 surveyed	DATE STARTED	: 11/10/92
ELEVATION	: 594.867 surveyed	DATE COMPLETED	: 11/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			60	Fill	GRAYISH BROWN	SFT	DRY	4 10 9 6	OVA 0.0 IR 5.0	
593	1									
592	2		65	Sandy silt, ML		LSE	WET	2 3 3 3	OVA 0.0 IR 5.0	
591	3									
590	4		85	Silty sand, SM	PALE BROWN	SFT	SAT	3 3	OVA 0.0 IR 5.0	
				Lean clay, CL	DK YELLOW-BROWN	SFT	DMP	13 15 22 24		
589	5									
588	6									
587	7									
586	8									
585	9									
584	10									
583	11									
582	12									
581	13									
580	14									
579	15									
578	16									
577	17									
576	18									
575	19									
574	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 14.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-25	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761712.8290 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440362.7400 surveyed	DATE STARTED	: 11/10/92
ELEVATION	: 593.390 surveyed	DATE COMPLETED	: 11/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
592	1		65	Fill	MODERATE BROWN	FRM	DRY	12 20 20 20	OVA 0.5 IR 5.0	ASPHALT ABOVE.
				Fill	BROWNISH BLACK	FRM	DRY	16	OVA 0.5 IR 5.0	SLAG.
591	2		55	Fill	BROWNISH BLACK	FRM	DRY	12 9 7 8	OVA 0.5 IR 6.0	SLAG.
590	3			Fill	MODERATE BROWN	SFT	DMP	10	OVA 0.5 IR 6.0	
589	4		25	Fill	GRAYISH BLACK			3 6 10 1	OVA 0.5 IR 6.0	BRICK AND SLAG - FILL.
588	5									
587	6		30	Fill	GRAYISH BLACK	LSE	MST	2 1 1 2	OVA 40.0 IR 6.0	
586	7									
585	8		25	Fill	SHADES OF BROWN	LSE	WET	1 1 2 3	OVA 0.0 IR 6.0	DECAYING WOOD. PETROLEUM ODOR FROM BOREHOLE.
584	9									
583	10		50	Lean clay, CL	BROWNISH GRAY	LSE	WET	1 1 3 5	OVA 180.0 IR 6.0	BH=200 OVA; CGI=BKG OXYGEN+LEL; BZ=BKG
582	11									
581	12		100	Lean clay, CL	BROWNISH GRAY	FRM	DRY	10 15 33 50	OVA 0.0 IR 0.0	BH=40 OVA; CUTTINGS OILY AS PULLED AUGERS.
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 10.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-26	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761729.6650 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440384.2580 surveyed	DATE STARTED	: 11/10/92
ELEVATION	: 593.486 surveyed	DATE COMPLETED	: 11/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
592	1		65	Fill	BROWN TO BLACK	FRM	DRY	8 20 14 20	OVA 0.0 IR 6.0	ASPHALT 0-0.3'; BRICK, SLAG.
591	2		45	Fill	BROWN TO BLACK	LSE	DMP	7 9 4 2	OVA 0.0 IR 6.0	SLAG, BRICK.
590	3									
589	4		10	Fill	BROWNISH BLACK	LSE	MST	2	OVA 0.0 IR 6.0	BH=1.
588	5									
587	6		50	Organic soil, OL/OH	BROWNISH BLACK	LSE	WET	5	OVA 2.0 IR 6.0	
586	7			Fat clay, CH	BROWNISH GRAY	LSE	SAT	4 6 7		
585	8		60	Lean clay, CL	PALE BROWN	FRM	DRY	8 22 32 50	OVA 2.0 IR 6.0	OXIDATION ON SILT.
584	9									
583	10									
582	11									
581	12									
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 8.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-27	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761721.0310 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440411.3100 surveyed	DATE STARTED	: 11/10/92
ELEVATION	: 593.301 surveyed	DATE COMPLETED	: 11/10/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
592	1		30	Fill	BROWNISH GRAY	FRM	MST	12 20 20 10	OVA 0.5 IR 5.0	ASPHALT 0-0.3'.
591	2		55	Silty sand, SM	BROWNISH BLACK	SFT	DMP	6 10 11 15	OVA 220.0 IR 5.0	
590	3									
589	4		85	Sandy lean clay, CL	GRAYISH BROWN	LSE	SAT	5 3 2 17	OVA 50.0 IR 5.0	
588	5									
				Lean clay, CL	DK YELLOW-BROWN	STF	DMP		OVA 0.0 IR 0.0	
587	6		40	Lean clay, CL	DK YELLOW-BROWN	FRM	DRY	8 19 12 35 22	OVA 0.0 IR 5.0	
586	7									
585	8									
584	9									
583	10									
582	11									
581	12									
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 16.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-28	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761752.4670 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440335.3470 surveyed	DATE STARTED	: 11/11/92
ELEVATION	: 593.124 surveyed	DATE COMPLETED	: 11/11/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			65	Fill	OLIVE GRAY	FRM	DRY	7 7	OVA 0.0 IR 5.0	
592	1			Fill	GRAYISH BLACK	FRM	DRY	18 17 7 8 7		SLAG, FOUNDARY WASTE.
591	2		100	Fill	GRAYISH BLACK			12 14 10 13	OVA 0.0 IR 5.0	SLAG, FOUNDARY WASTE.
590	3									
589	4		50	Fill	GRAYISH BROWN	NA	DMP	4 7	OVA 0.0 IR 5.0	
588	5			Well-graded gravel with silt, GW-GM	BROWNISH BLACK	LSE	DMP	3 2		SLAG.
587	6		30	Fill		LSE	MST	2 3 6 7	OVA 0.0 IR 4.0	BH=5; BZ=BKG (OVA).
586	7									
585	8		55	Fill	DUSTY BROWN	SFT	WET	2 8 7 6	OVA 300.0 IR 4.0	
584	9									
583	10		20	Sandy silt with gravel, ML		LSE	SAT	2 3 3 4	OVA 0.0 IR 0.0	BH=>1000 OVA; BZ=0 OVA.
582	11									
581	12		20	Fill		LSE	SAT		OVA 0.0 IR 4.0	
580	13									
579	14		45	Not Classified - Incomple Fill data			SAT SAT	4 4 6 3	OVA 70.0 IR 4.0	
578	15				LT BROWN-GRAY					REWORKED TILL BZ=10 WHEN PULLING AUGERS.
577	16									
576	17									
575	18									
574	19									
573	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 18.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-29	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761778.4240 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440237.3160 surveyed	DATE STARTED	: 11/16/92
ELEVATION	: 592.570 surveyed	DATE COMPLETED	: 11/16/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			37	Fill	GRAY-GREEN	LSE	DMP	11 9 9 12		
591	1									
590	2		65	Fill	TAN-BROWN	SFT	DMP	6 6 4 5		
589	3									
588	4		65	Elastic silt with sand, MH	TAN-GRAY	SFT	DMP	3 3 3 3		
587	5									
586	6		65	Silt with sand, ML	DK GRAY-BLACK	SFT	MST	3 3 3 2		
585	7									
584	8		62	Sandy lean clay, CL	BLACK-DK GRAY	FRM	DMP	2 2 5 3		
583	9									
582	10		50	Lean clay with sand, CL	BLACK-DK GRAY	FRM	DMP	2 5 5 4		
581	11									
580	12		15	Organic soil, OL/OH	GRAY-BROWN	LSE	MST	4 4 3 4		
579	13									
578	14		12	Silty sand, SM	GRAY-GREEN-TAN	SFT	WET	6 5 5 10		
577	15									
576	16			No Sample Recovered				5 7 8 8		WATER ENCOUNTERED AT 16'.
575	17									
574	18									
573	19									
572	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 16.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-30	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761859.2090 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440102.3350 surveyed	DATE STARTED	: 11/16/92
ELEVATION	: 590.056 surveyed	DATE COMPLETED	: 11/16/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
589	1			Not Classified - Incomplete Data		NA				AUGERED TO 2'.
588	2		75	Fill	DARK GRAY	NA	DMP	6 6 6 10 8		ALL FILL MATERIAL - BRICKS, GLASS.
587	3									
586	4			No Sample Recovered				5 15 13 14		NO RECOVERY-PUSHED BRICK.
585	5									
584	6			No Sample Recovered				15 15 5 8		NO RECOVERY-PUSHED BRICK.
583	7									
582	8			No Sample Recovered				2 3 4 3		NO RECOVERY-PUSHED BRICK.
581	9									
580	10		90	Fill	GRAY-GREEN	SFT	WET	2 5 5 4		FINE RIVER SEDIMENTS AFTER 3" OF BRICKS AT TOP OF INTERVAL.
579	11									
578	12		75	Silty sand, SM	GRAY-GREEN	SFT	WET	3 3 2 3 4		RIVER SEDIMENTS (WITH SHELL FRAGMENTS) AFTER 2" OF BRICKS AT TOPE OF INTERVAL.
577	13									
576	14		25	Fill	TAN	NA	SAT	4 3 3 2 4		ENTIRE 0.5' OF RETURN IS WOOD CHIPS/FRAGMENTS AT TOP OF SAT. ZONE.
575	15									
574	16									
573	17									
572	18									
571	19									
570	20									

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Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 14.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-31	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762085.4770 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440166.5110 surveyed	DATE STARTED	: 11/16/92
ELEVATION	: 589.694 surveyed	DATE COMPLETED	: 11/16/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Fill		NA				AUGERED 0-2' THRU FILL.
588	1									
587	2		40	Fill	GRAY-BLACK	LSE	DMP	2 2 2 2		
586	3									
585	4		75	Fill	TAN-BLACK	SFT	MST	2 2 1 2		
584	5									
583	6		75	Silty sand, SM	DARK GRAY	SFT	MST	3 3 5 3		
582	7									
581	8		60	Elastic silt, MH	DK GRAY-GREEN	FRM	WET	3 4 2 2		
580	9									
579	10		85	Lean clay, CL	DARK GRAY	STF	WET	2 2 1 10		
578	11									
577	12			No Sample Recovered				13 13 13 13		NO RECOVERY-ENCOUNTERED WATER.
576	13									
575	14									
574	15									
573	16									
572	17									
571	18									
570	19									
569	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 12.00
SITE NAME	: PARCEL 7	LOGGER	: A.C. STEELE/WESTON
BORING ID	: IB-SB-32	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762047.4900 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440153.2770 surveyed	DATE STARTED	: 11/16/92
ELEVATION	: 589.236 surveyed	DATE COMPLETED	: 11/16/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
588	1			Not Classified - Incomplete Data		NA				AUGERED TO 2'.
587	2									
586	3		65	Fill	TAN-GRAY	LSE	DMP	2 4 6 8		
585	4									
584	5		60	Well-graded sand, SW	TAN-GRAY	FRM	DMP	15 52 0 0		
583	6									
582	7		37	Silty sand, SM	TAN-ORANGE	FRM	MST	3 4 4 4		
581	8									
580	9		65	Poorly graded sand with silt, SP-SM	TAN-GRAY GREEN	SFT	WET	2 1 1 2		
579	10									
578	11		20	Poorly graded sand with silt, SP-SM	TAN-GRAY GREEN	FRM	SAT	1 0 0 0		WH=WGT. OF HAMMER. WATER ENCOUNTERED AT 10.2'.
577	12									
576	13									
575	14									
574	15									
573	16									
572	17									
571	18									
570	19									
569	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 14.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-33	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762092.2720 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440005.7720 surveyed	DATE STARTED	: 11/17/92
ELEVATION	: 589.087 surveyed	DATE COMPLETED	: 11/17/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
588	1									
587	2									
586	3		50	Fill	BLACK, DK BROWN	LSE	DRY	14		
				Not Classified - Incomple	LIGHT YELLOW	LSE	DRY	[illegible]		
585	4			Not Classified - Incomple	BLACK			[illegible]		
				Fill	RED & BLACK			16		
584	5									
583	6									
582	7									
581	8									
580	9									
579	10									
578	11									
577	12									
576	13									
575	14									
574	15									
573	16									
572	17									
571	18									
570	19									
569	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 10.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-34	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762094.5490 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 439949.4390 surveyed	DATE STARTED	: 11/17/92
ELEVATION	: 589.103 surveyed	DATE COMPLETED	: 11/17/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
588	1									
587	2									
586	3									
			60	Fill	VERY DK GRAY	FRM	DMP	24 36 50 42		
585	4									
			75	Fill	ORANGE	LSE	DMP	10 12 15 17 10		
584	5			Fill						PIECES OF BRICK. LENS OF LIGHT YELLOW MATERIAL AT 5.0'.
				Fill	LIGHT BROWN	SFT	DMP			BOTTOM 0.5" IS BRIGHT RUSTY COLOR.
583	6			Fill	BLACK & RUST	STF	DMP			BLAG LIKE MATERIAL.
582	7									
			25	Fill	BROWN	LSE	WET	5 4 3 16 9 10 7		
581	8			No Sample Recovered						SPOON IS WET. END OF BORING.
580	9									
579	10									
578	11									
577	12									
576	13									
575	14									
574	15									
573	16									
572	17									
571	18									
570	19									
569	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 8.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-35	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761960.4540 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440249.4080 surveyed	DATE STARTED	: 11/17/92
ELEVATION	: 591.590 surveyed	DATE COMPLETED	: 11/17/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
590	1									
589	2									
588	3									
587	4		30	Not Classified - Incomple	YELLOW	LSE	DMP	15		BRICK PIECES.
				Fill	ORANGE	LSE	DMP	12		BRICK FRAGMENTS.
				Fill	BLACK	LSE	DMP	8		SHINY, VITREOUS, METALLIC.
586	5									
585	6		35	Fat clay with sand, CH	LIGHT BROWN	FRM	DMP	3		
584	7		50	Fat clay with sand, CH	LIGHT BROWN	FRM	MST	2		END OF BORING.
583	8							2		
582	9									
581	10									
580	11									
579	12									
578	13									
577	14									
576	15									
575	16									
574	17									
573	18									
572	19									
571	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 12.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS
BORING ID	: IB-SB-36	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762016.5340 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440325.3360 surveyed	DATE STARTED	: 11/17/92
ELEVATION	: 592.399 surveyed	DATE COMPLETED	: 11/17/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
591	1									
590	2									
589	3		50	Fill	BLACK, BROWN	STF	DMP	4		FEW ORANGE LENSES THROUGHOUT. SLAG-LIKE, VITREOUS, SHINY.
588	4							11 11 10		
587	5		50	Silty sand, SM	BROWN	LSE	DMP	12		
586	6							10 10 6		
585	7		50	Silty sand, SM	BROWN	LSE	DMP	5		RIVER SEDIMENTS.
584	8							5 5 5		
583	9		50	Fill	LT & DK BROWN	LSE	MST	7		
582	10							7 17 8		
581	11		40	Fill	BROWN & DK BRN	SFT	SAT	7		
580	12			Fill		STF	SAT	50 0 0		WOOD. END OF BORING.
579	13									
578	14									
577	15									
576	16									
575	17									
574	18									
573	19									
572	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 10.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS
BORING ID	: IB-SB-37	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762322.4400 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440422.8310 surveyed	DATE STARTED	: 11/17/92
ELEVATION	: 590.842 surveyed	DATE COMPLETED	: 11/17/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
589	1									
588	2									
587	3		50	Fill		LSE	DRY	5 7 7		BLACK, SLAG-LIKE MATERIAL.
586	4		100	Fill	BLACK	LSE	DMP	6 5 5 5		
585	5									
584	6			No Sample Recovered				2 1 1		
583	7									
582	8									
581	9		50	Fill	DK BROWN, BLACK	LSE	WET	2 5		
580	10			Fill Fill	LIGHT YELLOW BROWN	LSE LSE	WET WET	20 50		WOOD IN TIP OF SPOON. END OF BORING.
579	11									
578	12									
577	13									
576	14									
575	15									
574	16									
573	17									
572	18									
571	19									
570	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 8.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-38	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762326.3820 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440318.3680 surveyed	DATE STARTED	: 11/17/92
ELEVATION	: 588.922 surveyed	DATE COMPLETED	: 11/17/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
587	1									
586	2									
585	3									
			50	Fill	BLACK, DK BROWN	LSE	DMP	9 12 16 20 21		VITREOUS, SHINY, SLAG-LIKE.
584	4									
583	5									
			30	Fill	BROWN	LSE	DMP	8		
582	6			Fill	BLACK	LSE	DMP	9 12 12		SLAG-LIKE, VITREOUS.
581	7									
			50	Fill	BLACK	LSE	SAT	6 3 3 2		SATURATED AT BOTTOM 4". END OF BORING.
580	8									
579	9									
578	10									
577	11									
576	12									
575	13									
574	14									
573	15									
572	16									
571	17									
570	18									
569	19									
568	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 8.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-39	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762096.6300 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440490.5650 surveyed	DATE STARTED	: 11/17/92
ELEVATION	: 593.933 surveyed	DATE COMPLETED	: 11/17/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
592	1									
591	2									
590	3		75	Fill	BROWN	FRM	DMP	3 4 4 4		
589	4			Well graded sand with silt, SW-SM	RED BROWN	LSE	MST			
			100	Well graded sand with silt, SW-SM	RED BROWN	LSE	MST	2 3 3 3		
588	5									
587	6									
586	7		65	Well graded sand with silt, SW-SM	BROWN	LSE	SAT	1 1 0 0		END OF BORING.
585	8									
584	9									
583	10									
582	11									
581	12									
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 8.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-40	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762261.9970 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440645.9650 surveyed	DATE STARTED	: 11/18/92
ELEVATION	: 596.504 surveyed	DATE COMPLETED	: 11/18/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
595	1									
594	2		100	Poorly graded sand with silt, SP-SM	BROWN	LSE	DMP	3 4 3 5 12		
593	3									
592	4			Silt with sand, ML	GRAY BROWN	LSE	DMP			
591	5		75	Fat clay with sand, CH	BROWN	STF	DRY	2 6 16 22		DENSE, DRY, SOME GRAY VARIATION.
590	6		100	Fat clay with sand, CH	BROWN	STF	DRY	6 16 35 50		CLAY AS ABOVE. END OF BORING.
589	7									
588	8									
587	9									
586	10									
585	11									
584	12									
583	13									
582	14									
581	15									
580	16									
579	17									
578	18									
577	19									
576	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 10.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-41	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762222.8470 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440618.9320 surveyed	DATE STARTED	: 11/18/92
ELEVATION	: 596.104 surveyed	DATE COMPLETED	: 11/18/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
595	1									
594	2		50	Poorly graded sand with silt, SP-SM	BROWN	LSE	WET	UNKNOWN		
593	3									
592	4		50	Fat clay with sand, CH	BROWN	FRM	DMP	UNKNOWN		VARYING COLORS - GRAY, BROWN, RUST.
591	5									
590	6									
589	7		50	Fat clay with sand, CH	BROWN	STF	DRY			DENSE, DRY.
588	8									
587	9		75	Sandy fat clay, CH	BROWN	STF	DRY	12		DENSE, HARD, LITTLE MORE SAND THAN ABOVE.
586	10			Fat clay with sand, CH	BROWN	STF	DRY			DENSE, HARD. END OF BORING.
585	11									
584	12									
583	13									
582	14									
581	15									
580	16									
579	17									
578	18									
577	19									
576	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 8.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-42	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762115.1660 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440597.1840 surveyed	DATE STARTED	: 11/18/92
ELEVATION	: 595.670 surveyed	DATE COMPLETED	: 11/18/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
594	1									
593	2									
592	3									
591	4		15	Fill	BLACK	LSE	WET	5		
			100	Fat clay with sand, CH	BROWN & GRAY	STF	DRY	8 8		DENSE, HARD; VARYING COLORS OF BROWN AND GRAY.
590	5							18 16		
								23 15		
589	6		100	Sandy lean clay with grav el CL	BROWN & BLACK	SFT	SAT	6		
				Fat clay with sand, CH		STF	DRY	16 24 36		DENSE, HARD. END OF BORING.
588	7									
587	8									
586	9									
585	10									
584	11									
583	12									
582	13									
581	14									
580	15									
579	16									
578	17									
577	18									
576	19									
575	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 12.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-43	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761363.9320 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440311.0870 surveyed	DATE STARTED	: 11/18/92
ELEVATION	: 593.368 surveyed	DATE COMPLETED	: 11/18/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
592	1									
591	2									
590	3		50	Fill		SFT	MST	2		YELLOW, BROWN; BROKEN
				Fill	BLACK	FRM	DRY	2 8 8		PIECES OF ROCK, PIECE OF GLASS; WOOD PIECES.
589	4									
588	5									
			40	Fill	DARK BROWN	LSE	DMP	3		
587	6			Fill	BROWN & BLACK			3 4 5		WOOD/PAPER.
586	7									
585	8		20	Silt with sand, ML	DARK GRAY	SFT	MST	1 2 4		
584	9		75	Fat clay with sand, CH	BROWN	STF	DRY	11 14 18 34 35		DENSE, HARD.
583	10		100	Fat clay with sand, CH	BROWN	STF	DRY	10 16 27 22		END OF BORING.
582	11									
581	12									
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 24.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-44	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761864.3010 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440689.3400 surveyed	DATE STARTED	: 11/18/92
ELEVATION	: 593.579 surveyed	DATE COMPLETED	: 11/18/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
592	1		75	Silty sand, SM	DARK BROWN	SFT	WET	4		TOPSOIL.
				Fill	LIGHT BROWN	LSE	WET	24		
				Fill	DARK GRAY	LSE	MST	23		
591	2			Not Classified - Incomplete Data	LIGHT GRAY			46		FRACTURED ROCK.
				Well-graded sand, SW	BROWN	LSE	DMP			
590	3		50	Fill	BLACK	LSE	SAT	3		PIECES OF SLAG-LIKE MATERIAL.
589	4							3		
								5		
								4		
588	5									
587	6		25	Fill	BLACK	LSE	SAT	3		STRONG ODOR.
								3		
								4		
								3		
586	7		50	Fill	BLACK	LSE	SAT	3		PIECES OF WOOD AND BRICK.
585	8							3		
								6		
								9		
584	9		50	Fill	BLACK	LSE	SAT	6		
583	10							4		
								4		
								3		
								2		
582	11									
581	12		20	Fill		LSE	SAT			WOOD PIECES; BROKEN ROCK, WOOD PIECES HAVE STRONG ODOR.
580	13		50	Fill	BLACK	LSE	SAT	12		STRONG ODOR.
								25		
								45		
								35		
579	14		100	Fill	DARK GRAY	LSE	SAT	50		
								12		
								35		
578	15							50		
								0		
577	16									
576	17		40	Fill	DARK GRAY	LSE	SAT	6		
575	18							8		
								4		
								3		
								2		
574	19									
573	20		35	Fill		NA	SAT	6		WOOD PIECES.
								10		
								11		
								7		

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 24.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-44	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761864.3010 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440689.3400 surveyed	DATE STARTED	: 11/18/92
ELEVATION	: 593.579 surveyed	DATE COMPLETED	: 11/18/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
			10	Well graded sand with silt, SW-SM	BROWN	LSE	SAT	50 0 0 0		ROCK ON TOP OF SAND.
572	21									
571	22									
570	23		75	Sandy fat clay, CH	GRAY	STF	DRY	14 17 34 28		DENSE CLAY. END OF BORING.
569	24									
568	25									
567	26									
566	27									
565	28									
564	29									
563	30									
562	31									
561	32									
560	33									
559	34									
558	35									
557	36									
556	37									
555	38									
554	39									
553	40									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 16.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-45	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761738.4330 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440051.5310 surveyed	DATE STARTED	: 11/19/92
ELEVATION	: 591.585 surveyed	DATE COMPLETED	: 11/19/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
590	1									
589	2									
588	3									
			40	Fill	DARK BROWN	LSE	DRY	5 16 7		BROKEN BRICK PIECES AT 3.5' TO 3.8'; SLIGHT ODOR.
587	4		10	Fill	DARK BROWN	LSE	DRY	8 9 6 3		FEW BROKEN BRICK PIECES; LITTLE BLACK CLAYEY MATERIAL, NO ODOR.
586	5									
585	6									
584	7									
			35	Fill	LT & DK BROWN	LSE	DRY	7 6		SOME SLAG-LIKE MATERIAL; BITS OF VITREOUS PIECES; TRACE BRICK PIECES.
583	8		100	Fill	BLACK	LSE	DRY	8 2 4 15		
582	9									
581	10									
580	11		50	Fill		NA	WET	2 10 15		SLAG-LIKE MATERIAL.
579	12			Fill	BLACK	LSE	WET	17		
578	13									
577	14		25	Fill	BLACK	LSE	SAT	3 3 4 2		STRONG ODOR.
576	15									
575	16		25	Fill	DARK GRAY	LSE	SAT	2 2 4 2		STRONG ODOR. END OF BORING.
574	17									
573	18									
572	19									
571	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 10.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-46	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762367.0440 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440145.7010 surveyed	DATE STARTED	: 11/19/92
ELEVATION	: 586.135 surveyed	DATE COMPLETED	: 11/19/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
585	1		50	Fill	DARK BROWN	LSE	DRY	3		5" CONCRETE ON TOP.
				Fill	BROWN	LSE	DRY	5		
584	2			Fill	YELLOW & BROWN	LSE	DRY	5		
				Fill	BROWN	SFT	DRY	24		PIECES OF BLACK CORAL-LIKE MATERIAL.
583	3			Fill	DARK BROWN	LSE	WET	3		
				Fill	DARK BROWN	FRM	DMP	10		
582	4			Fill	DARK GRAY	STF	DRY	15 / 20		HARD.
581	5		40	Fill	DARK GRAY	SFT	DMP	6		
580	6			No Sample Recovered				16 / 9 / 10		NO RECOVERY.
579	7							3 / 3 / 2		
578	8									
577	9		50	Fill	DARK GRAY	SFT	SAT	2		
576	10			Lean clay, CL	DARK GRAY	SFT	MST	1 / 1 / 1		END OF BORING.
575	11									
574	12									
573	13									
572	14									
571	15									
570	16									
569	17									
568	18									
567	19									
566	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 16.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-47	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761377.3520 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440295.7690 surveyed	DATE STARTED	: 11/19/92
ELEVATION	: 592.978 surveyed	DATE COMPLETED	: 11/19/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
591	1		50	Fill	DARK BROWN	LSE	DRY	4	OVA 1.5	5" CONCRETE ON TOP.
				Fill	BROWN	LSE	DRY	3	HNU 2.0	HNU=2
590	2			Fill	YELLOW & BROWN	LSE	DRY	2		
				Fill	BROWN	SFT	DRY	5		PIECES OF BLACK COAL-LIKE MATERIAL.
589	3									
588	4		40	Fill	BROWN	SFT	DRY	3 2 3 4	OVA 6.0 HNU 7.0	PIECES OF BLACK COAL-LIKE MATERIAL. HNU=7
587	5		50	Fill	GRAY	FRM	DRY	4 6 7 7	OVA 300.0 HNU 165.0	SLIGHT ODOR; 1" DARK RED WOOD AT BOTTOM. HNU=165
586	6									
585	7		50	Fill	BROWN	STF	DRY	2 4 3 4 5	OVA 14.0 HNU 300.0	ROTTING WOOD STRONG ODOR. HNU=300
584	8									
583	9									
582	10		35	Fill Fill	BLACK	STF LSE	DRY MST	3 3 5 4 8	OVA 65.0 HNU 30.0	ROTTING WOOD AS ABOVE. HNU=30
581	11		50	Fat clay with sand, CH	BROWN	STF	DRY	4 11 30 44	OVA 0.5 HNU 13.0	DENSE, HARD. HNU=13
580	12									
579	13		75	Fat clay with sand, CH	BROWN	STF	DRY	16 11 45 40	OVA 1.5 HNU 0.0	
578	14									
577	15		75	Fat clay with sand, CH	BROWN	STF	DRY	12 14 18 32	OVA 1.0 HNU 0.0	END OF BORING.
576	16									
575	17									
574	18									
573	19									
572	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 6.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-48	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761707.8620 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440554.5760 surveyed	DATE STARTED	: 11/20/92
ELEVATION	: 592.632 surveyed	DATE COMPLETED	: 11/20/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
591	1		75	Fill		LSE	DRY	6	OVA 1.0	5" CONCRETE ON TOP INSIDE BUILDING. HNU=1.5
				Fat clay with sand, CH	BROWN	STF	DRY	10 12 16	HNU 1.5	DENSE, HARD.
590	2									
589	3		65	Fat clay with sand, CH	BROWN	STF	DRY	10 14 17 20	OVA 1.0 HNU 15.0	DENSE, HARD AS ABOVE. HNU=15
588	4		100	Fat clay with sand, CH	BROWN	STF	DRY	12 24 33 40	OVA 1.0 HNU 12.0	DENSE, HARD AS ABOVE END OF BORING. HNU=12
587	5									
586	6									
585	7									
584	8									
583	9									
582	10									
581	11									
580	12									
579	13									
578	14									
577	15									
576	16									
575	17									
574	18									
573	19									
572	20									

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Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 12.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-49	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761754.3670 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440474.2400 surveyed	DATE STARTED	: 11/20/92
ELEVATION	: 593.483 surveyed	DATE COMPLETED	: 11/20/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
592	1		75	Fill	LIGHT BROWN	LSE	DRY	6 8	OVA 0.0 HNU 160.0	INSIDE BUILDING. HNU=160
				Fill	BROWN	FRM	DRY	3 5		
591	2			Fill	TAN	LSE	DRY			
590	3		50	Fill	TAN	LSE	DRY	6	OVA 0.0 HNU 5.0	HNU=5
589	4			Fat clay with sand, CH	BROWN	STF	DRY	7 9 13		DENSE, HARD.
588	5		50	Fat clay with sand, CH	BROWN	STF	DRY	7 11 15 19	OVA 0.0 HNU 70.0	HNU=70
587	6									
586	7		50	Fat clay with gravel, CH	BROWN	STF	DRY	15 25 42 56 50	OVA 0.0 HNU 120.0	DENSE, HARD. HNU=120
585	8									
584	9		50	Fat clay with sand, CH	BROWN	STF	DRY	20 41 50 0	OVA 0.0 HNU 1.5	DENSE, HARD. HNU=1.5
583	10									
582	11		50	Fat clay with sand, CH	BROWN	STF	DRY	15 21 40 50	OVA 0.2 HNU 4.0	END OF BORING. HNU=4
581	12									
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 60.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
BORING ID	: IB-SB-50	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761711.7770 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440651.4920 surveyed	DATE STARTED	: 11/20/92
ELEVATION	: 594.766 surveyed	DATE COMPLETED	: 11/20/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Interval Not Sampled						DRILLED TO 10' BEFORE BEGIN COLLECTING SPLIT SPOON SAMPLES
593	1									
592	2									
591	3									
590	4									
589	5									
588	6									
587	7									
586	8									
585	9									
584	10									
583	11		75	Fat clay with sand, CH	BROWN	STF	DRY	9 30 32 45		DENSE, HARD. DRILLED TO 10' BECAUSE LITHOLOGY KNOWN TO 10'.
582	12									
581	13									
580	14		75	Fat clay with sand, CH	GRAY	STF	DRY	10 10 22 28		DENSE, HARD.
579	15									
578	16									
577	17		75	Fat clay with sand, CH	GRAYISH BROWN	FRM	DMP	7 11 16 18		NOT AS HARD AS ABOVE.
576	18									
575	19		100	Fat clay with sand, CH	GRAYISH BROWN	FRM	DMP	11 15 18 18		
574	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 60.00
SITE NAME	: PARCEL 7	LOGGER	: DARLENE WILLIAMS/WESTON
G ID	: IB-SB-50	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
RTHING	: 761711.7770 surveyed	DRILLING RIG	: DIEDRICH D-50
EASTING	: 440651.4920 surveyed	DATE STARTED	: 11/20/92
ELEVATION	: 594.766 surveyed	DATE COMPLETED	: 11/20/92

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Fat clay with sand, CH	GRAYISH BROWN	FRM	DMP			
573	21									
572	22		100	Fat clay with sand, CH	GRAYISH BROWN	FRM	DMP	6 8 16 19		
571	23									
570	24									
569	25		100	Fat clay with sand, CH	GRAYISH BROWN	FRM	DMP	5 10 13 17		
568	26									
567	27									
	28									
565	29		75	Fat clay with sand, CH	GRAYISH BROWN	FRM	DMP	4 7 7 15		
564	30									
563	31		100	Fat clay with sand, CH	GRAYISH BROWN	FRM	DMP	8 12 18 22		
562	32									
561	33									
560	34		100	Fat clay with sand, CH	GRAYISH BROWN	FRM	DMP	6 9 12 12		
559	35									
558	36									
557	37		100	Fat clay with sand, CH	BROWNISH GRAY	FRM	DMP	4 6 7 10		
556	38									
55	39									
	40									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 18.00
SITE NAME	: PARCEL 7	LOGGER	: J. FORCE/WESTON
BORING ID	: CS-MW01A	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761377.9190 surveyed	DRILLING RIG	: CME-75
EASTING	: 440514.6370 surveyed	DATE STARTED	: 05/20/93
ELEVATION	: 597.125 surveyed	DATE COMPLETED	: 05/20/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
596	1		75	Fill	DARK REDDISH BR	SFT	DMP	3 3 5 7	FID 0.5 PID 0.0	COAL AND WOOD FRAGMENTS IN SAMPLE.
595	2		75	Silty sand, SM	BROWN	SFT	WET	6 5 3 6 6	FID 0.0 PID 0.0	SOME SHELL FRAGMENTS.
594	3									
593	4		85	Silt with sand, ML	PALE BROWN	FRM	MST	2 6 9 12	FID 0.0 PID 0.0	
592	5									
591	6		90	Silt with sand, ML	GRAYISH BROWN	STF	MST	6 8 13 17	FID 0.0 PID 0.0	
590	7									
589	8		50	Silt with sand, ML	YELLOWISH BROWN	FRM	MST	7 13 20 25	FID 0.0 PID 0.0	PEBBLE IN BOTTOM OF SPOON.
588	9									
587	10		95	Silt with sand, ML	BROWN	STF	DMP	18 16 31 44	FID 0.0 PID 0.0	
586	11									
585	12		90	Silt with sand, ML	GRAYISH BROWN	STF	MST	6 14 20 29	FID 0.0 PID 0.0	
584	13									
583	14		75	Silt with sand, ML	GRAYISH BROWN	STF	DMP	7 11 15 20	FID 0.0 PID 0.0	OXIDATION MARKS.
582	15									
581	16			Silt with sand, ML	GRAY	STF	DMP	5 10 14 18	FID 0.0 PID 0.0	WELL WAS NOT SET HERE BECAUSE THE BORING WAS ALL CLAY AND NO WATER WAS ENCOUNTERED.
580	17									
579	18									
578	19									
577	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 10.00
SITE NAME	: PARCEL 7	LOGGER	: TSH/WESTON
BORING ID	: CS-SB-01	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762087.3900 surveyed	DRILLING RIG	: CME-75
EASTING	: 440173.2970 surveyed	DATE STARTED	: 05/19/93
ELEVATION	: 589.669 surveyed	DATE COMPLETED	: 05/19/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
588	1			Fill	BLACK	LSE	DMP		FID 0.0 PID 0.0	BLACK FOUNDRY SAND.
587	2		50	Fill	BLACK	SFT	DMP	5 5 4 3	FID 2.0 PID 2.0	BLACK FOUNDRY SAND, SLAG, AND CINDERS.
586	3									
585	4		50	Fill	BLACK	FRM	WET	1 1 12 24	FID 3.0 PID 2.0	AS ABOVE WITH SOME WOOD FRAGMENTS.
584	5									
583	6		75	Fill	BLACK	FRM	WET	3 3 3 3 6	FID 90.0 PID 0.0	FOUNDRY SAND AND SLAG.
582	7									
581	8		90	Fill	GRAY	SFT	MST	1 2 3 2	FID 1000.0 PID 3.0	
580	9									
579	10									
578	11									
577	12									
576	13									
575	14									
574	15									
573	16									
572	17									
571	18									
570	19									
569	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 16.00
SITE NAME	: PARCEL 7	LOGGER	: J. FORCE/WESTON
BORING ID	: CS-SB-02	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 762086.1440 surveyed	DRILLING RIG	: CME-75
EASTING	: 440007.4530 surveyed	DATE STARTED	: 05/19/93
ELEVATION	: 588.819 surveyed	DATE COMPLETED	: 05/19/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Fill	BLACK	SFT	MST		FID 0.2 PID 0.0	SILTY SAND, MODERATELY WELL SORTED.
587	1									
586	2									
585	3									
584	4									
583	5									
582	6									
581	7									
580	8									
579	9									
578	10		75	Fill	DARK GRAYISH BR	SFT	MST	1 2 1 6	FID 1.5 PID 0.0	SOME WOOD FRAGMENTS.
577	11									
576	12		40	Fill	YELLOW	NA	MST	2 5 7 4 8	FID 300.0 PID 0.0	WOOD.
575	13									
574	14		12	Fill	YELLOW	FRM	SAT	6 4 3 3	NA 0.0 NA 0.0	WOOD (RAILROAD TIE?), SECONDARY COLOR-DARK YELLOWISH BROWN.
573	15									
572	16									
571	17									
570	18									
569	19									
568	20									

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Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 14.00
SITE NAME	: PARCEL 7	LOGGER	: TSH/WESTON
BORING ID	: CS-SB-03	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761724.0100 surveyed	DRILLING RIG	: CME-75
EASTING	: 440371.9690 surveyed	DATE STARTED	: 05/19/93
ELEVATION	: 593.132 surveyed	DATE COMPLETED	: 05/19/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				FILL	BLACK	LSE	DMP		FID 0.0 PID 0.0	BLACK FOUNDRY SAND AND SLAG.
592	1									
591	2									
590	3									
589	4									
588	5									
587	6									
586	7									
585	8									
584	9									
583	10		80	Sandy lean clay with gravel, CL	GRAY	FRM	MST	1 1 6 14	FID 1.5 PID 0.0	TILL.
582	11									
581	12		80	Lean clay with sand, CL	BROWN	STF	DMP	8 14 20 27	FID 0.0 PID 0.0	SANDY CLAY TILL.
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 28.00
SITE NAME	: PARCEL 7	LOGGER	: TSH
BORING ID	: CS-SB-04	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761516.0690 surveyed	DRILLING RIG	: CME-75
EASTING	: 439908.2700 surveyed	DATE STARTED	: 05/19/93
ELEVATION	: 590.379 surveyed	DATE COMPLETED	: 05/19/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
589	1		50	Fill	GRAY	LSE	DMP	15 12 30 36 24	FID 0.5 PID 0.0	GRAVEL FILL FROM UNDER PREVIOUS AGGREGATE PILE.
588	2		80	Fill	BLACK	LSE	DMP	3 8 7 7 14	FID 8.5 PID 0.0	BLACK FOUNDRY SAND AND SLAG.
587	3									
586	4		75	Fill	BLACK	LSE	DMP	7 10 13 10	PID 0.0 FID 0.0	FOUNDRY SAND.
585	5									
584	6		90	Fill	BLACK	LSE	WET	4 8 8 7 5	FID 1.0 PID 0.0	BLACK FOUNDRY SAND.
583	7									
582	8		50	Fill	BLACK	LSE	SAT	4 3 6 5	FID 6.0 PID 0.0	AS ABOVE, SATURATED AT 9.5 FEET BGS.
581	9									
580	10		50	Fill	BLACK	LSE	SAT	9 9 2 2 1	FID 600.0 PID 1.0	AS ABOVE.
579	11									
578	12		12	Fill	BLACK	LSE	SAT	2 6 13 10	FID 700.0 PID 0.0	AS ABOVE WITH A LITTLE SILT.
577	13									
576	14		10	Organic soil, OL/OH	BLACK	SFT	SAT	10 14 17 8	FID 260.0 PID 0.0	WOOD AND OTHER ORGANICS.
575	15									
574	16		50	Organic soil, OL/OH Organic soil, OL/OH	BLACK BLACK	SFT SFT	SAT SAT	3 2 2 3	FID 30.0 FID 900.0 PID 0.0	
573	17									
572	18		5	Poorly graded sand with silt, SP-SM	GRAY	LSE	SAT	8 8 11 8	PID 0.0 FID 0.0	NO MORE WOOD.
571	19									
570	20		5	Poorly graded sand with silt, SP-SM	BLACK	LSE	SAT	7 7 4 4	FID 150.0 PID 0.0	AS ABOVE - SLOUGH.

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Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 28.00
SITE NAME	: PARCEL 7	LOGGER	: TSH
BORING ID	: CS-SB-04	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761516.0690 surveyed	DRILLING RIG	: CME-75
EASTING	: 439908.2700 surveyed	DATE STARTED	: 05/19/93
ELEVATION	: 590.379 surveyed	DATE COMPLETED	: 05/19/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
569	21			Poorly graded sand with silt, SP-SM	BLACK	LSE	SAT		FID 150.0 PID 0.0	AS ABOVE - SLOUGH.
568	22		5	Poorly graded sand, SP	GRAY	LSE	SAT	3 2 2 3	FID 100.0 PID 0.0	AS ABOVE.
567	23									
566	24		100	Lean clay with sand, CL	VERY DARK GRAY	SFT	WET	1 1 1 1	FID 300.0 PID 0.0	AS ABOVE TO 25' CLAY 25-26'.
565	25									
564	26		100	Sandy lean clay, CL	VERY DARK GRAY	SFT	SAT	2 2 2 2	FID 100.0 PID 0.0	CLAM SHELLS - HIGHLY ORGANIC.
563	27									
562	28									
561	29									
560	30									
559	31									
558	32									
557	33									
556	34									
555	35									
554	36									
553	37									
552	38									
551	39									
550	40									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 14.00
SITE NAME	: PARCEL 7	LOGGER	: TSH/WESTON
BORING ID	: CS-SB-05	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761339.0660 surveyed	DRILLING RIG	: CME-75
EASTING	: 440257.7610 surveyed	DATE STARTED	: 05/20/93
ELEVATION	: 593.069 surveyed	DATE COMPLETED	: 05/20/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Fill	BLACK	LSE	DMP		FID 0.5 PID 0.0	FOUNDRY SAND AND SLAG.
592	1									
591	2									
590	3									
589	4									
588	5									
587	6									
586	7									
585	8		75	Fill	BLACK	LSE	MST	3 4 4 5	PID 0.0 FID 3.0	WOOD AND SLAG NEAR BOTTOM OF SPOON.
584	9									
583	10		50	Fill	DSKY RED-RED BK	LSE	MST	2 2 3 3	FID 4.0 PID 1.0	WOOD.
582	11									
581	12		75	Fill	BLACK	NA	MST	2 2 3 3	FID 300.0 PID 0.0	AS ABOVE, WOOD.
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT :	EPA - CERT	TOTAL DEPTH :	26.00
SITE NAME :	PARCEL 7	LOGGER :	J. FORCE/WESTON
BORING ID :	CS-SB-06	DRILLING COMPANY :	BURLINGTON ENVIRONMENTAL
NORTHING :	761366.4280 surveyed	DRILLING RIG :	CME-75
EASTING :	439627.6070 surveyed	DATE STARTED :	05/20/93
ELEVATION :	588.370 surveyed	DATE COMPLETED :	05/20/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
587	1		40	Fill	DARK REDDISH BR	SFT	DMP	13 12 10 0	FID 2.5 PID 0.0	POORLY SORTED SILTY SAND WITH SOME GRAVEL.
586	2		50	Fill	DARK REDDISH BR	SFT	DMP	4 7 7 6	FID 1.0 PID 0.0	
585	3									
584	4		75	Fill	DARK REDDISH BR	SFT	DMP	6 7 9 14	FID 0.0 PID 0.0	
583	5									
582	6		50	Fill	DARK REDDISH BR	LSE	SAT	6 7 5 7	FID 3.0 PID 0.0	WEATHERED BRICK, FOUNDRY SAND AND SLAG.
581	7									
580	8		50	Fill	DARK REDDISH BR	LSE	WET	2 5 6 6	FID 3.0 PID 0.0	
579	9									
578	10		40	Fill	BLACK	LSE	WET	3 2 4 3 4	FID 1000.0 PID 0.0	FOUNDRY SAND AS ABOVE.
577	11									
576	12		25	Fill	DARK REDDISH BR	SFT	WET	2 3 4 4	FID 0.0 PID 0.0	AS ABOVE.
575	13									
574	14		25	Poorly graded sand, SP	GRAYISH BROWN	SFT	SAT	6 7 6 5	FID 1000.0 PID 0.0	RIVER DEPOSITED FINE SAND.
573	15									
572	16		50	Poorly graded sand, SP	GRAY	LSE	SAT	1 1 1 2	FID 500.0 PID 0.0	RIVER SAND WITH FEW SHELL FRAGMENTS.
571	17									
570	18		25	Poorly graded sand, SP	GRAY	LSE	SAT	1 1 3 2	FID 1000.0 PID 0.0	SPOON FILLED WITH SLOUGH, MANY SHELL FRAGMENTS.
569	19									
568	20		75	Clayey sand, SC	GRAY	SFT	SAT	1 1 1 2	FID 100.0 PID 0.0	

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Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 26.00
SITE NAME	: PARCEL 7	LOGGER	: J. FORCE/WESTON
BORING ID	: CS-SB-06	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761366.4280 surveyed	DRILLING RIG	: CME-75
EASTING	: 439627.6070 surveyed	DATE STARTED	: 05/20/93
ELEVATION	: 588.370 surveyed	DATE COMPLETED	: 05/20/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Clayey sand, SC	GRAY	SFT	SAT		FID 100.0 PID 0.0	
567	21									
566	22		25	Clayey sand, SC	GRAY	SFT	SAT		FID 150.0 PID 0.0	AS ABOVE, VOC GRAB SAMPLE HERE.
565	23									
564	24		75	Silt with sand, ML	GRAY	FRM	MST	8-5-3		
563	25									
562	26									
561	27									
560	28									
559	29									
558	30									
557	31									
556	32									
555	33									
554	34									
553	35									
552	36									
551	37									
550	38									
549	39									
548	40									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 22.00
SITE NAME	: PARCEL 7	LOGGER	: TSH/WESTON
BORING ID	: CS-SB-07	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761875.2220 surveyed	DRILLING RIG	: CME-75
EASTING	: 440702.6820 surveyed	DATE STARTED	: 05/21/93
ELEVATION	: 595.774 surveyed	DATE COMPLETED	: 05/21/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
594	1		87	Fill	BLACK	LSE	MST	1 3 5 8	PID 4.0 FID 3.0	BRICK, SAND AND SLAG.
593	2		50	Fill	BLACK	SFT	SAT	3 3 8 9	FID 110.0 PID 0.0	
592	3									
591	4		50	Fill	BLACK	LSE	SAT	3 3 2 2	FID 1000.0 PID 0.0	AS ABOVE, SATURATED BLACK FOUNDRY SAND AND SLAG.
590	5									
589	6		37	Fill	BLACK	LSE	SAT	2 3 2 3	PID 2.0 FID 1000.0	FOUNDRY SAND AND WOOD.
588	7									
587	8		50	Fill	BLACK	LSE	SAT	7 9 5 4	FID 1000.0 PID 0.0	FOUNDRY SAND AND SLAG.
586	9									
585	10		25	Fill	BLACK	LSE	SAT	2 3 3 2	FID 1000.0 PID 0.0	FOUNDRY SAND, SLAG AND WOOD.
584	11									
583	12		25	Fill	BLACK	LSE	SAT	3 2 2 1	FID 550.0 PID 5.0	VOC GRAB SAMPLE HERE.
582	13									
581	14		50	Fill	BLACK	SFT	SAT	1 2 2 2	FID 400.0 PID 1.0	
580	15									
579	16		12	Fill	LT REDDISH BROW	LSE	SAT	1 3 5 5	FID 200.0 PID 3.0	ROCKY LAYER.
578	17									
577	18		12	Fill	REDDISH YELLOW	LSE	SAT	5 4 2 1	FID 0.0 PID 0.0	GRAVEL IN BOTTOM OF SPOON.
576	19									
575	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 22.00
SITE NAME	: PARCEL 7	LOGGER	: TSH/WESTON
BORING ID	: CS-SB-07	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761875.2220 surveyed	DRILLING RIG	: CME-75
EASTING	: 440702.6820 surveyed	DATE STARTED	: 05/21/93
ELEVATION	: 595.774 surveyed	DATE COMPLETED	: 05/21/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
574	21		75	Gravelly fat clay, CH	BROWN	STF	MST	4 6 8 13	FID 30.0 PID 3.0	TILL.
573	22									
572	23									
571	24									
570	25									
569	26									
568	27									
567	28									
566	29									
565	30									
564	31									
563	32									
562	33									
561	34									
560	35									
559	36									
558	37									
557	38									
556	39									
555	40									

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PROJECT	: EPA - CERT	TOTAL DEPTH	: 15.00
SITE NAME	: PARCEL 7	LOGGER	: J. FORCE/WESTON
BORING ID	: CS-SB-13	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761988.9840 surveyed	DRILLING RIG	: CME-75
EASTING	: 440557.5270 surveyed	DATE STARTED	: 06/02/93
ELEVATION	: 593.202 surveyed	DATE COMPLETED	: 06/02/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Fill						8" OF CONCRETE.
592	1			No Sample Recovered				6 11 14 12		NO RECOVERY.
591	2									
590	3									
589	4		50	Elastic silt with sand, MH	BROWN	SFT	MST	6 8 15 23	PID 0.0 FID 0.0	BROWN SANDY SILT.
588	5		100	Sandy silt, ML	YELLOWISH BROWN	FRM	MST	5 11 15 24	FID 0.0 PID 0.0	YELLOWISH BROWN SANDY SILT.
587	6									
586	7		100	Silt with sand, ML	YELLOWISH BROWN	STF	DMP	8 26 30 36 44	PID 0.0	AS ABOVE.
585	8									
584	9									
583	10		75	Silt with sand, ML	WEAK RED	STF	DMP	13 26 30 32 40	FID 0.0 PID 0.0	GRAYISH BROWN SANDY SILT AND CLAY. OXIDATION MARKS.
582	11		100	Silt with sand, ML	WEAK RED	STF	DMP	8 15 24 53 27	FID 0.0 PID 0.0	GRAYISH BROWN. AS ABOVE.
581	12									
580	13		100	Silt with sand, ML	GRAY	STF	DMP	8 16 20 21	PID 0.0	
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 9.00
SITE NAME	: PARCEL 7	LOGGER	: T. HARDING/WESTON
BORING ID	: CS-SB-14	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761977.4120 surveyed	DRILLING RIG	: CME-75
EASTING	: 440539.4840 surveyed	DATE STARTED	: 06/02/93
ELEVATION	: 593.332 surveyed	DATE COMPLETED	: 06/02/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Fill						CONCRETE
592	1		50	Fill	BLACK	LSE	SAT	6 14	PID 0.0	FOUNDRY SAND FILL.
591	2			Poorly graded sand, SP	GRAY	LSE	SAT	16 14	PID 0.0	WELL SORTED GRAY SAND, VERY PALE BROWN TO GRAY.
590	3		87	Lean clay with gravel, CL	YEL. BROWN-GRAY	STF	DMP	7 10 12 26	PID 0.0	TILL - MOTTLED GRAY - 10% GRAVEL IS FINE TO MEDIUM - NO ODOR.
589	4									
588	5		50	Gravelly lean clay, CL	YELLOWISH BROWN	STF	DMP	11 14 36 75	PID 0.0	CLAY - TILL SOME OXIDAT. STAIN. GRAY MOTL. AROUND FRACTURES, SOME ROOTLETS - MASSIVE STRUCTURE.
587	6									
586	7		75	Gravelly lean clay, CL	YELLOWISH BROWN	STF	DMP	11 22 35 75 68	PID 0.0	CLAY - AS ABOVE.
585	8									
584	9									
583	10									
582	11									
581	12									
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 11.00
SITE NAME	: PARCEL 7	LOGGER	: J. FORCE/WESTON
BORING ID	: CS-SB-15	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761923.8340 surveyed	DRILLING RIG	: CME-75
EASTING	: 440522.7660 surveyed	DATE STARTED	: 06/02/93
ELEVATION	: 593.380 surveyed	DATE COMPLETED	: 06/02/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				Fill						CONCRETE.
592	1									
591	2									
590	3		100	Silt with sand, ML	LT. BROWN. GRAY	FRM	DMP	6 9 13 20	PID 0.0	LIGHT BROWNISH GRAY SANDY SILT WITH OXIDATION MARKS.
589	4									
588	5		100	Silt with sand, ML	LT. BROWN. GRAY	FRM	DMP	9 18 35 36	PID 0.0	PRODUCT (OIL/TAR ?) IN ROOTLETS. PETROLEUM ODOR IN SAMPLE. LIGHT BROWNISH GRAY.
587	6									
586	7		100	Silt with sand, ML	LT. BROWN. GRAY	FRM	DMP	6 18 24 30	PID 0.0	ODOR PRESENT IN FIRST FOOT OF SAMPLE OXIDATION MARKS. LIGHT BROWNISH GRAY.
585	8									
584	9		100	Silt with sand, ML	LT BROWN-GRAY	STF	DMP	8 11 30 31	PID 0.0	NO ODOR. LIGHT BROWNISH GRAY.
583	10									
582	11									
581	12									
580	13									
579	14									
578	15									
577	16									
576	17									
575	18									
574	19									
573	20									

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Borehole Log

Roy F. WESTON, Inc.

PROJECT	: EPA - CERT	TOTAL DEPTH	: 10.00
SITE NAME	: PARCEL 7	LOGGER	: T. HARDING/WESTON
BORING ID	: CS-SB-19	DRILLING COMPANY	: BURLINGTON ENVIRONMENTAL
NORTHING	: 761969.1910 surveyed	DRILLING RIG	: CME-75
EASTING	: 440708.8580 surveyed	DATE STARTED	: 06/09/93
ELEVATION	: 597.139 surveyed	DATE COMPLETED	: 06/09/93

ELEVATION	DEPTH	MATERIAL	% RECOVERY	CLASSIFICATION	COLOR	STRENGTH	MOISTURE	BLOW COUNT	FIELD INSTRUMENT READING	COMMENTS
				CONCRETE						CORED THROUGH 6" OF CONCRETE.
596	1		66		BROWN	LSE	WET	5 5 7 8	FID 0.0 PID 0.0	SATURATED FROM CORING WATER - CLEAN SAND.
595	2		50	Fill	BROWN	LSE	WET	4 5 4 2	FID 0.5 PID 0.0	CLEAN SAND - PROBABLY FILL FROM DREDGED SAND.
594	3									
593	4		75	Fill	BROWN	SFT	SAT	1 2 2 4	FID 0.0 PID 0.0	
592	5									
591	6		75	Gravelly lean clay, CL	BROWN - GRAY	FRM	MST	4 7 12 20	PID 0.2 FID 0.0	FILL TO 7' MOTTLED TILL.
590	7									
589	8		100	Gravelly lean clay, CL	BROWN	STF	MST	9 16 26 29	FID 0.0 PID 0.0	AS ABOVE.
588	9									
587	10									
586	11									
585	12									
584	13									
583	14									
582	15									
581	16									
580	17									
579	18									
578	19									
577	20									

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ATTACHMENT H

ETG ENVIRONMENTAL, INC. - POWER HOUSE BUILDING PCB SAMPLE RESULTS

REPORT

POWER HOUSE BUILDING PCB SAMPLE RESULTS©

BAY CITY INDUSTRIAL COMPLEX (IV03000083)
a.k.a. INDUSTRIAL BROWNHOIST-AMDURA
BAY CITY, MICHIGAN

SUBMITTED TO:

WOODMAN OF THE WORLD INSURANCE SOCIETY
1700 FARNAM STREET
OMAHA, NEBRASKA 68102

SUBMITTED BY:

ETG ENVIRONMENTAL, INC.
MWR DIVISION
7707 RICKLE ROAD
LANSING, MICHIGAN 48917
(517) 322-9311

FEBRUARY 6, 1995

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6.0 CONCLUSIONS 5

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APPENDICES

WESTON ANALYTICAL RESULTS . . . . . Appendix A

POWER HOUSE BUILDING PCB SAMPLE RESULTS
INDUSTRIAL BROWNHOIST-AMDURA SITE, BAY CITY, MICHIGAN

1.0 INTRODUCTION

ETG Environmental, Inc., MWR Division (ETG), was retained by Woodman of the World Insurance Society to provide environmental consulting services for the Bay City Industrial Complex (a.k.a. Industrial Brownhoist or Amdura) site located in Bay City, Michigan. This report presents results PCB wipe sampling conducted in the Amdura site Power House Building during December of 1994. The sampling was conducted to allow costs for demolition of the Power House Building to be more accurately estimated. The location of the Amdura site is identified on Figure 1, with the Power House Building location depicted on Figure 2.

2.0 SITE WALK AND SCOPE-OF WORK

An ETG Hydrogeologist met on-site with representatives from the Amdura facility and Bierlein Demolition Contractors (Bierlein) on December 5, 1994. The meeting/site walk was held to identify areas inside the Power House Building which could potentially be contaminated with polychlorinated biphenyls (PCBs).

The upper level floor is constructed of wood and the basement floor is constructed of concrete. Both concrete and wood are classified as nonimpervious solid surfaces in the current Code of Federal Regulations (40 CFR § 761). According to the U.S. Environmental Protection Agency (EPA), analytical results for PCB wipe samples collected from nonimpervious solid surfaces may be used to characterize the materials for appropriate disposal as debris resulting from building demolition. Specifically, (solid surface) construction debris is not considered PCB contaminated unless wipe sample results indicate that the PCB concentrations are greater than 100 $\mu g/100\ cm^2$.

Sampling was conducted to characterize the building's construction materials for appropriate disposal pending possible future demolition of the Power House Building. Sample locations were selected during the site walk based on their proximity to PCB switches and transformers and/or the presence of a thin layer of oil on the building floor. A total of 14 sample locations were identified at the site, nine on the basement floor and five on the basement floor.

3.0 SAMPLE COLLECTION AND ANALYSIS

On December 8, 1994, an ETG Hydrogeologist was on-site to collect 14 PCB wipe samples from within the Power House Building. Nine wipe samples (labeled A-1, A-2, A-3, A-4, A-5, A-6, A-7, A-8, and A-9) were collected from the floor of the upper level of the building (Figure 3) and five wipe samples (labeled B-1, B-2, B-3, B-4, and B-5) were collected from the basement floor (Figure 4).

A template was constructed for each sampling location by cutting a square, 10 cm by 10 cm hole in a sheet of cardboard. The 100 cm^2 hole in the cardboard template served as the sampling area for each wipe sample. Sample kits consisting of (41 mm diameter) hexane-saturated gauze sample pads sealed in glass jars were supplied to ETG by a contract laboratory (Clayton Environmental Consultants). Additional hexane was also supplied by the laboratory to ensure that the pads would be fully saturated prior to sample collection.

Each wipe sample was collected by placing a new cardboard template over the area to be sampled, opening the sampling jar, re-saturating the gauze pad with hexane, thoroughly wiping the entire area within the sample template with the pad, and quickly placing the pad back into the glass jar which was then tightly sealed. In addition, new latex sample gloves were worn during the collection of each sample.

The samples were then packed in a cooler, stored at 0°C, and transported under chain-of-custody to Clayton Environmental Consultants for chemical analysis. Each sample was analyzed for the presence of PCBs utilizing NIOSH Method 5503. Analytical results for the samples are presented below, with analytical report forms included as Appendix A of this document.

AMDURA POWERHOUSE SAMPLING
DECEMBER 8, 1994 PCB WIPE SAMPLE RESULTS

	PCB COMPOUND						
Sample#	Aroclor -1016	Aroclor -1221	Aroclor -1232	Aroclor -1242	Aroclor -1248	Aroclor -1254	Aroclor -1260
A-1	<0.5	<0.5	<0.5	1.4	<0.5	<0.5	3.7
A-2	<0.5	<0.5	<0.5	2.3	<0.5	<0.5	19.0
A-3	<0.5	<0.5	<0.5	1.1	<0.5	<0.5	1.9
A-4	<0.5	<0.5	<0.5	1.6	<0.5	<0.5	2.0
A-5	<0.5	<0.5	<0.5	0.8	<0.5	<0.5	<0.5
A-6	<0.5	<0.5	<0.5	1.5	<0.5	<0.5	1.1
A-7	<0.5	<0.5	<0.5	0.9	<0.5	<0.5	1.0
A-8	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
A-9	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
B-1	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.6
B-2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
B-3	<0.5	<0.5	<0.5	11.0	<0.5	<0.5	2.8
B-4	<0.5	<0.5	<0.5	3.1	<0.5	<0.5	0.8
B-5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Note: <0.5 denotes detection limit of test. Results presented in $\mu g/100\ cm^2$.

4.0 DATA INTERPRETATION

Wipe sample results are reported by the laboratory in milligrams per area sampled. Data in the above table represents the analytical data converted into micrograms (μg), per 100 cm^2 (the area sampled). Current regulations (40 CFR Subpart G, § 761.125) state that low-contact, indoor, nonimpervious solid surfaces may be cleaned either to 10 $\mu g/100\ cm^2$, or to 100 $\mu g/100\ cm^2$ and encapsulated.

Analytical results for all of the collected samples are less than 100 $\mu g/100\ cm^2$. However, the PCB compound aroclor-1260 was detected in sample A-2 (19 $\mu g/100\ cm^2$) and the PCB compound aroclor-1242 was detected in sample B-3 (11 $\mu g/100\ cm^2$). According to current regulations, in order to leave the floor of the Power House Building in-place, areas where PCB wipe samples A-2 and B-3 were collected would either require cleaning to reduce concentrations to below 10 $\mu g/100\ cm^2$, or these areas would require encapsulation. Alternatively, the Power House Building could be demolished with the concrete and wood floor materials transported off-site for disposal. Since analytical results for all of the collected samples are less than 100 $\mu g/100\ cm^2$, the floor materials would not be classified for disposal as PCB-contaminated construction debris.

5.0 PROPOSED REGULATORY CHANGES

As stated above, current regulations dictate that portions of the concrete and wood floor of the Power House Building be cleaned or encapsulated to remain in place. In addition, the building could be demolished for off-site disposal, with the concrete and wood floor materials not classified as PCB contaminated.

Proposed revisions to existing PCB regulations were published in the December 6, 1994 Federal Register (Vol. 59, No. 233, 62797). The most significant proposed regulatory change pertinent to this site is that concrete will not be considered a non-porous surface. Concrete containing PCBs (such as at sampling location B-3) would have to be removed rather than just wiped off. While concrete removal is currently an option, removal would be required under the proposed regulatory change.

6.0 CONCLUSIONS

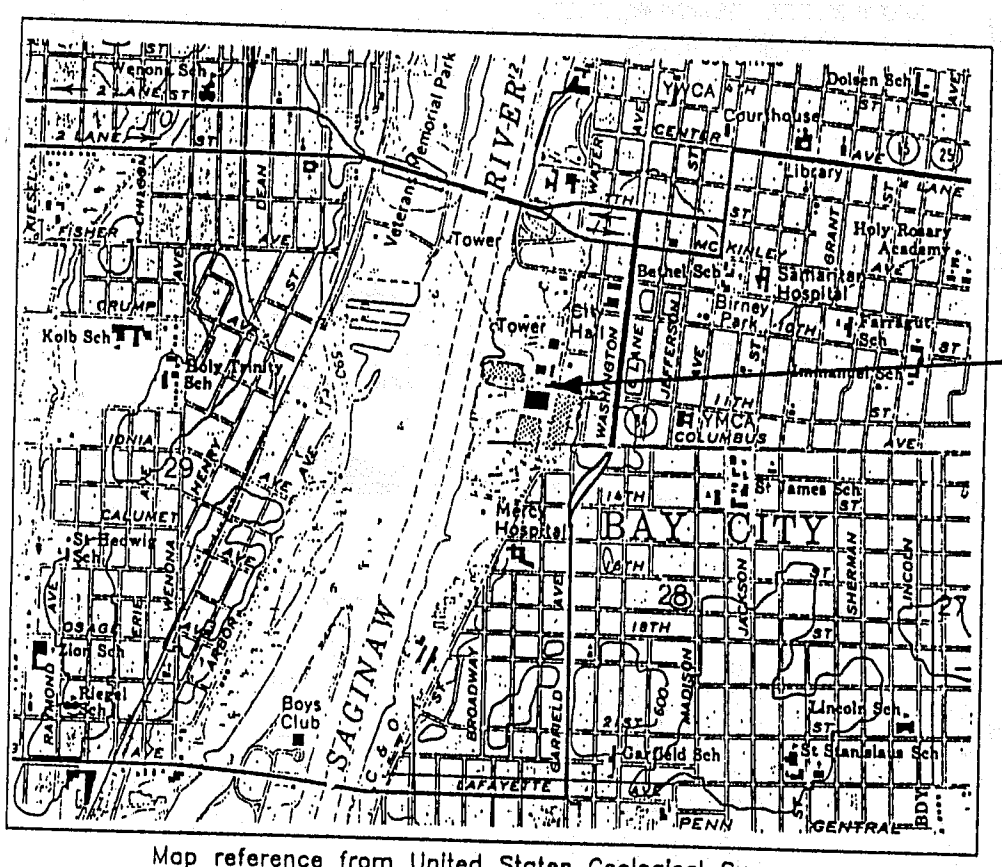
Wipe sampling of the Power House Building revealed low levels of PCB compounds. Two samples (sample A-2 and B-3) contained concentrations which would require action unless building demolition is completed. Current federal regulations concerning PCBs allow for the floor of the Power House building to be cleaned or encapsulated and remain in-place. Proposed regulations, if adopted, will require that the concrete floor of the Power House Building be removed for off-site disposal. Cleaning or encapsulating the floor of the Power House Building therefore could only be considered a short-term solution to addressing the PCBs detected at sampling locations A-2 and B-3.

The estimated cost for demolition and disposal of the Power House Building should remain nearly the same as previously proposed by ETG. However, the estimated cost previously reported does not include costs associated with re-routing electrical, water, or natural gas service to the Amdura facility which are all currently routed through the Power House Building. ETG can present estimated costs to complete these services if needed. In addition, ETG is awaiting a revised cost estimate from Bierlein so that the building demolition budget (less utility re-routing) can be finalized.

Submitted By:

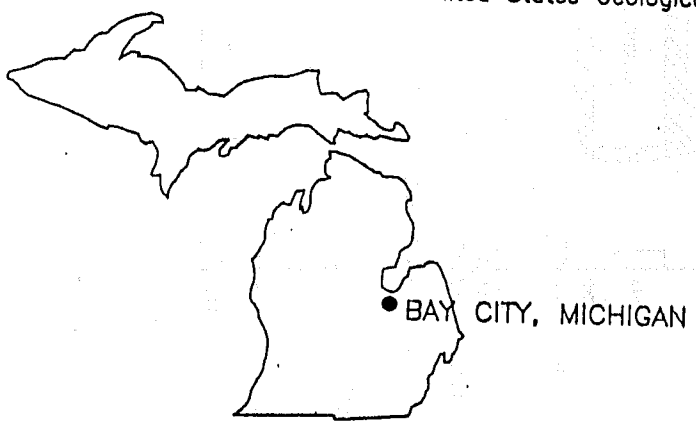
Lou Middleton, P.G.
Senior Project Hydrogeologist

FIGURES



SITE:
AMDURA
BAY CITY, MICHIGAN

Map reference from United States Geological Survey



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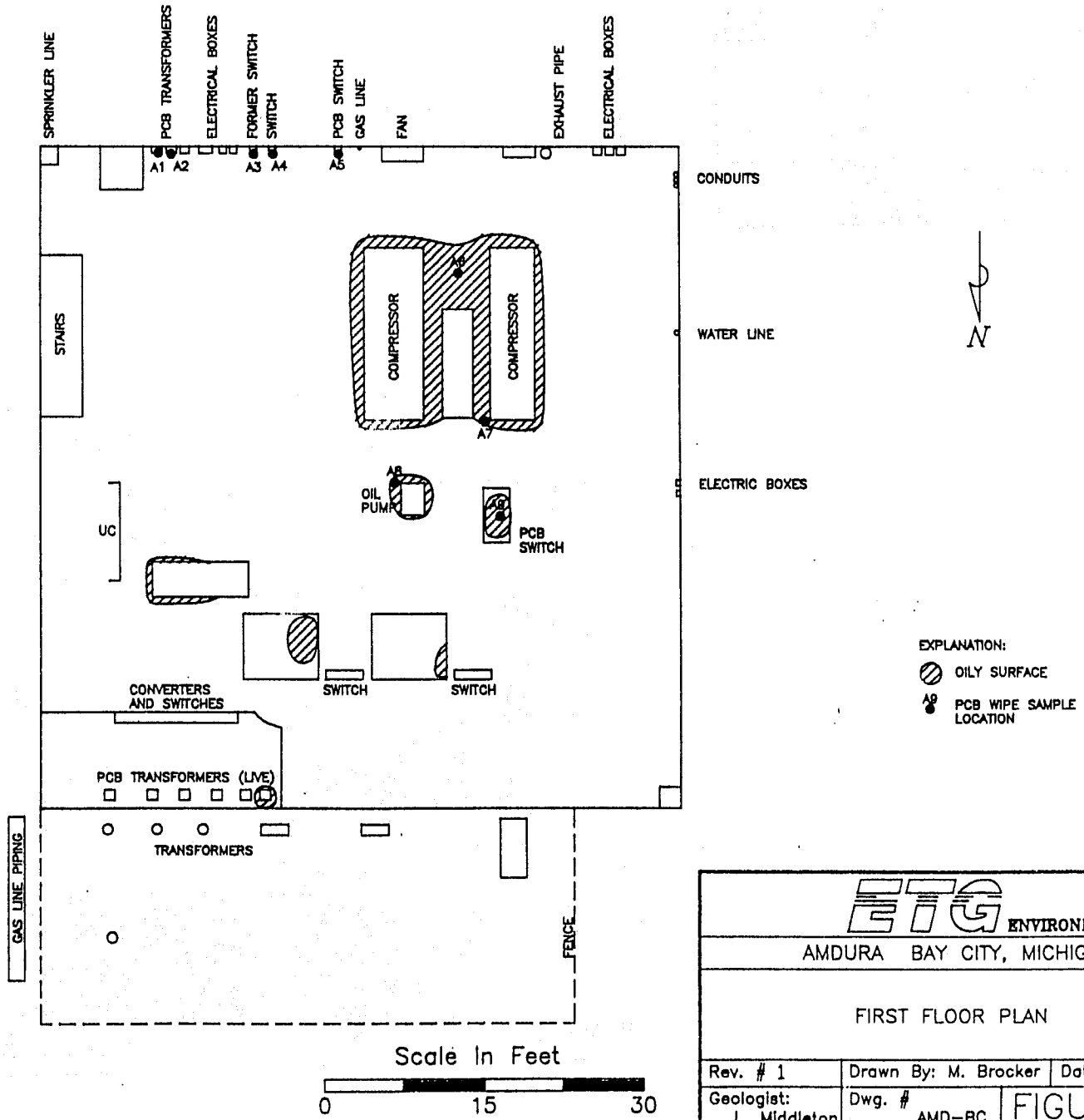
ETG ENVIRONMENTAL, INC.

AMDURA BAY CITY, MICHIGAN

SITE LOCATION MAP

Rev. # 1	Drawn By: M. Brocker	Date: 1/20/93
Geologist:	Dwg. # SITELOC	FIGURE 1

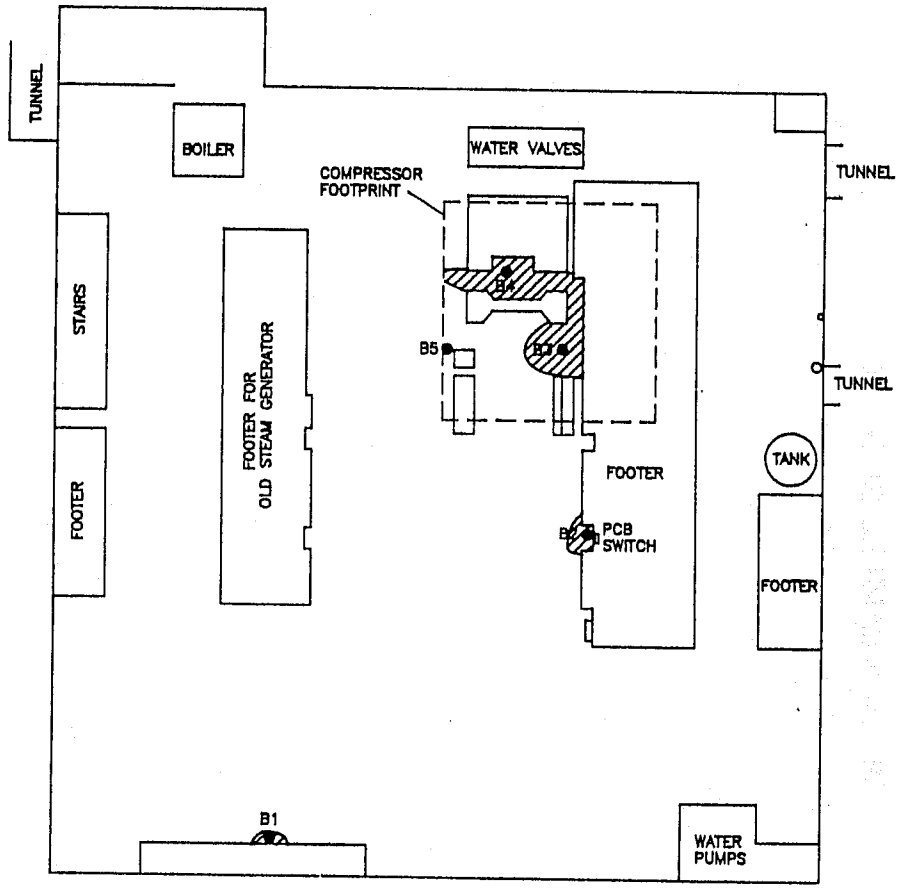


ETG ENVIRONMENTAL, INC.

AMDURA BAY CITY, MICHIGAN

FIRST FLOOR PLAN

Rev. # 1	Drawn By: M. Brocker	Date: 12/20/94
Geologist: L. Middleton	Dwg. # AMD-BC	FIGURE 1



N

EXPLANATION:

OILY SURFACE

B1 PCB WIPE SAMPLE LOCATION

Scale In Feet

0 15 30

ETG ENVIRONMENTAL, INC.

AMDURA BAY CITY, MICHIGAN

BASEMENT LAYOUT

Rev. # 1	Drawn By: M. Brocker	Date: 12/20/94
Geologist: L. Middleton	Dwg. # AMD-BC	FIGURE 1

APPENDIX A

PCB WIPE SAMPLE RESULTS

Midwestern Operations

22345 Roethel Drive
P.O. Box 8022
Novi, MI 48375
(810) 344-1770
Fax (810) 344-2654

Clayton
ENVIRONMENTAL
CONSULTANTS

RECEIVED
DEC 21 1994
ETG Environmental Inc.

December 19, 1994

Mr. Lou Middleton
ETG ENVIRONMENTAL, INC.
7707 Rickle Road
Lansing, MI 48917

Clayton Project No. 22080.00
Purchase Order No. 1113
Client Reference: 199 BAY CITY

Dear Mr. Middleton:

Attached is our analytical laboratory report for the samples received on December 9, 1994. Also enclosed is a copy of the Chain-of-Custody record acknowledging receipt of these samples.

Please note that any unused portion of the samples will be discarded after January 18, 1995, unless you have requested otherwise.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (810) 344-2650.

Sincerely,

for

Robert Lieckfield, Jr., CIH
Director, Laboratory Services
Detroit Regional Office

RL/pl

Attachments

Table 1
Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 22080.00
Client Reference#: 199 BAY CITY

Sample Identification: A-1
Lab Number: 001a
Sample Type: Wipe
Analyst: CC

Date Sampled: 12/08/94
Date Received: 12/09/94

Analyte Name	Analytical Results (mg)	LOD (mg)	Method Reference	Date Analyz
Aroclor-1016	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1221	<0.0005	0.0005	NIOSH 5503	12/14/
Aroclor-1232	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1242	0.0014	0.0005	NIOSH 5503	12/14/94
Aroclor-1248	<0.0005	0.0005	NIOSH 5503	12/14/
Aroclor-1254	<0.0005	0.0005	NIOSH 5503	12/14/
Aroclor-1260	0.0037	0.0005	NIOSH 5503	12/14/94

Clayton
ENVIRONMENTAL CONSULTANTS

Table 1 (continued)
Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 22080.00
Client Reference#: 199 BAY CITY

Sample Identification: A-2
Lab Number: 002a
Sample Type: Wipe
Analyst: CC

Date Sampled: 12/08/94
Date Received: 12/09/94

Analyte Name	Analytical Results (mg)	LOD (mg)	Method Reference	Date Analyzed
Aroclor-1016	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1221	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1232	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1242	0.0023	0.0005	NIOSH 5503	12/14/94
Aroclor-1248	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1254	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1260	0.019	0.0005	NIOSH 5503	12/14/94

Table 1 (continued)
Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 22080.00
Client Reference#: 199 BAY CITY

Sample Identification: A-3
Lab Number: 003a
Sample Type: Wipe
Analyst: CC

Date Sampled: 12/08/94
Date Received: 12/09/94

Analyte Name	Analytical Results (mg)	LOD (mg)	Method Reference	Date Analyzed
Aroclor-1016	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1221	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1232	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1242	0.0011	0.0005	NIOSH 5503	12/14/94
Aroclor-1248	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1254	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1260	0.0019	0.0005	NIOSH 5503	12/14/94

Table 1 (continued)
Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 22080.00
Client Reference#: 199 BAY CITY

Clayton ENVIRONMENTAL CONSULTANTS

Sample Identification: A-4
Lab Number: 004a
Sample Type: Wipe
Analyst: CC

Date Sampled: 12/08/94
Date Received: 12/09/94

Analyte Name	Analytical Results (mg)	LOD (mg)	Method Reference	Date Analyzed
Aroclor-1016	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1221	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1232	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1242	0.0016	0.0005	NIOSH 5503	12/14/94
Aroclor-1248	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1254	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1260	0.0020	0.0005	NIOSH 5503	12/14/94

Table 1 (continued)
Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 22080.00
Client Reference#: 199 BAY CITY

Sample Identification: A-5
Lab Number: 005a
Sample Type: Wipe
Analyst: CC

Date Sampled: 12/08/94
Date Received: 12/09/94

Analyte Name	Analytical Results (mg)	LOD (mg)	Method Reference	Date Analyz
Aroclor-1016	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1221	<0.0005	0.0005	NIOSH 5503	12/14/9
Aroclor-1232	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1242	0.0008	0.0005	NIOSH 5503	12/14/94
Aroclor-1248	<0.0005	0.0005	NIOSH 5503	12/14/9
Aroclor-1254	<0.0005	0.0005	NIOSH 5503	12/14/9
Aroclor-1260	<0.0005	0.0005	NIOSH 5503	12/14/94

Table 1 (continued)
Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 22080.00
Client Reference#: 199 BAY CITY

Clayton ENVIRONMENTAL CONSULTANTS

Sample Identification: A-6
Lab Number: 006a
Sample Type: Wipe
Analyst: CC

Date Sampled: 12/08/94
Date Received: 12/09/94

Analyte Name	Analytical Results (mg)	LOD (mg)	Method Reference	Date Analyze
Aroclor-1016	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1221	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1232	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1242	0.0015	0.0005	NIOSH 5503	12/14/94
Aroclor-1248	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1254	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1260	0.0011	0.0005	NIOSH 5503	12/14/94

Table 1 (continued)
Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 22080.00
Client Reference#: 199 BAY CITY

Sample Identification: A-7
Lab Number: 007a
Sample Type: Wipe
Analyst: CC

Date Sampled: 12/08/94
Date Received: 12/09/94

Analyte Name	Analytical Results (mg)	LOD (mg)	Method Reference	Date Analyz i
Aroclor-1016	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1221	<0.0005	0.0005	NIOSH 5503	12/14/ 1
Aroclor-1232	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1242	0.0009	0.0005	NIOSH 5503	12/14/94
Aroclor-1248	<0.0005	0.0005	NIOSH 5503	12/14/ 1
Aroclor-1254	<0.0005	0.0005	NIOSH 5503	12/14/ 1
Aroclor-1260	0.0010	0.0005	NIOSH 5503	12/14/94

Table 1 (continued)
Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 22080.00
Client Reference#: 199 BAY CITY

Clayton ENVIRONMENTAL CONSULTANTS

Sample Identification: A-8
Lab Number: 008a
Sample Type: Wipe
Analyst: CC

Date Sampled: 12/08/94
Date Received: 12/09/94

Analyte Name	Analytical Results (mg)	LOD (mg)	Method Reference	Date Analyzed
Aroclor-1016	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1221	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1232	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1242	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1248	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1254	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1260	0.0006	0.0005	NIOSH 5503	12/14/94

Table 1 (continued)
Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 22080.00
Client Reference#: 199 BAY CITY

Sample Identification: A-9
Lab Number: 009a
Sample Type: Wipe
Analyst: CC

Date Sampled: 12/08/94
Date Received: 12/09/94

Analyte Name	Analytical Results (mg)	LOD (mg)	Method Reference	Date Analyz d
Aroclor-1016	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1221	<0.0005	0.0005	NIOSH 5503	12/14/ 4
Aroclor-1232	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1242	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1248	<0.0005	0.0005	NIOSH 5503	12/14/ 4
Aroclor-1254	<0.0005	0.0005	NIOSH 5503	12/14/ 4
Aroclor-1260	<0.0005	0.0005	NIOSH 5503	12/14/94

Table 1 (continued)
Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 22080.00
Client Reference#: 199 BAY CITY

Clayton
ENVIRONMENTAL CONSULTANTS

Sample Identification: B-1
Lab Number: 010a
Sample Type: Wipe
Analyst: CC

Date Sampled: 12/08/94
Date Received: 12/09/94

Analyte Name	Analytical Results (mg)	LOD (mg)	Method Reference	Date Analyzed
Aroclor-1016	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1221	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1232	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1242	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1248	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1254	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1260	0.0006	0.0005	NIOSH 5503	12/14/94

Table 1 (continued)
Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 22080.00
Client Reference#: 199 BAY CITY

Sample Identification: B-2
Lab Number: 011a
Sample Type: Wipe
Analyst: CC

Date Sampled: 12/08/94
Date Received: 12/09/94

Analyte Name	Analytical Results (mg)	LOD (mg)	Method Reference	Date Analyz
Aroclor-1016	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1221	<0.0005	0.0005	NIOSH 5503	12/14/
Aroclor-1232	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1242	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1248	<0.0005	0.0005	NIOSH 5503	12/14/
Aroclor-1254	<0.0005	0.0005	NIOSH 5503	12/14/
Aroclor-1260	<0.0005	0.0005	NIOSH 5503	12/14/94

Table 1 (continued)
Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 22080.00
Client Reference#: 199 BAY CITY

Sample Identification: B-3
Lab Number: 012a
Sample Type: Wipe
Analyst: CC

Date Sampled: 12/08/94
Date Received: 12/09/94

Analyte Name	Analytical Results (mg)	LOD (mg)	Method Reference	Date Analyzed
Aroclor-1016	<0.0005	0.0005	NIOSH 5503	12/16/94
Aroclor-1221	<0.0005	0.0005	NIOSH 5503	12/16/94
Aroclor-1232	<0.0005	0.0005	NIOSH 5503	12/16/94
Aroclor-1242	0.011	0.0005	NIOSH 5503	12/16/94
Aroclor-1248	<0.0005	0.0005	NIOSH 5503	12/16/94
Aroclor-1254	<0.0005	0.0005	NIOSH 5503	12/16/94
Aroclor-1260	0.0028	0.0005	NIOSH 5503	12/16/94

Table 1 (continued)
Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 22080.00
Client Reference#: 199 BAY CITY

Sample Identification: B-4
Lab Number: 013a
Sample Type: Wipe
Analyst: CC

Date Sampled: 12/08/94
Date Received: 12/09/94

Analyte Name	Analytical Results (mg)	LOD (mg)	Method Reference	Date Analyz i
Aroclor-1016	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1221	<0.0005	0.0005	NIOSH 5503	12/14/ 1
Aroclor-1232	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1242	0.0031	0.0005	NIOSH 5503	12/14/94
Aroclor-1248	<0.0005	0.0005	NIOSH 5503	12/14/ 1
Aroclor-1254	<0.0005	0.0005	NIOSH 5503	12/14/ 1
Aroclor-1260	0.0008	0.0005	NIOSH 5503	12/14/94

Table 1 (continued)
Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 22080.00
Client Reference#: 199 BAY CITY

Sample Identification: B-5
Lab Number: 014a
Sample Type: Wipe
Analyst: CC

Date Sampled: 12/08/94
Date Received: 12/09/94

Analyte Name	Analytical Results (mg)	LOD (mg)	Method Reference	Date Analyzed
Aroclor-1016	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1221	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1232	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1242	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1248	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1254	<0.0005	0.0005	NIOSH 5503	12/14/94
Aroclor-1260	<0.0005	0.0005	NIOSH 5503	12/14/94

General Notes
<: Less than the indicated limit of detection (LOD)

Clayton
ENVIRONMENTAL CONSULTANTS

REQUEST FOR LABORATORY ANALYTICAL SERVICES

For Clayton Use Only	Page 2 of 2
Project No.	22080
Batch No.	
Ind. Code	W.P.
Date Logged In	By

REPORT RESULTS TO

Name: Lou Middleton — Title: Sr. Proj. Hydro.
Company: ETG — Dept.:
Mailing Address: 7707 Rickle Rd
City, State, Zip: Lansing, MI 48917
Telephone No.: 517 322-9311 — Telefax No.: 517 322-2936

Purchase Order No.: 1113 — Client Job No.: 199-Bay City

SEND INVOICE TO

Name: Same
Company: — Dept.:
Address:
City, State, Zip:

Date Results Req.: — Rush Charges Authorized? ☐ Yes ☒ No — Phone / Fax Results ☐ ☒

Special Instructions: (method, limit of detection, etc.)

* Explanation of Preservative:

Samples are: (check if applicable)
☐ Drinking Water
☐ Collected in the State of New York

ANALYSIS REQUESTED (Enter an 'X' in the box below to indicate request; Enter a 'P' if Preservative added.)

CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	PCBs										FOR LAB USE ONLY
B-1	12-8-94	Wipe		1	X										
B-2	12-8-94	Wipe		1	X										
B-3	12-8-94	Wipe		1	X										
B-4	12-8-94	Wipe		1	X										
B-5	12-8-94	Wipe		1	X										

CHAIN OF CUSTODY

Collected by: Lou Middleton (print) — Collector's Signature: [signature]
Relinquished by: [signature] — Date/Time
Relinquished by: [signature] — Date/Time 12/9/94 11:30 — Received by: [signature] — Date/Time 12/9/94
Received at Lab by: [signature] — Date/Time 1130
Method of Shipment:
Sample Condition Upon Receipt: ☐ Acceptable ☐ Other (explain)

Authorized by: _____ Date _____
(Client Signature Must Accompany Request)

Please return completed form and samples to one of the Clayton Environmental Consultants, Inc. labs listed below:

22345 Roethel Drive Novi, MI 48375 (810) 344-1770	Raritan Center 160 Fieldcrest Ave. Edison, NJ 08837 (908) 225-6040	400 Chastain Center Blvd., N.W. Suite 490 Kennesaw, GA 30144 (404) 499-7500	1252 Quarry Lane Pleasanton, CA 94566 (510) 426-2657

DISTRIBUTION:
WHITE - Clayton Laboratory
YELLOW - Clayton Accounting
PINK - Client Retains

2/92

Clayton
ENVIRONMENTAL
CONSULTANTS

REQUEST FOR LABORATORY ANALYTICAL SERVICES

For Clayton Use Only	Page 1 of 2
Project No.	99080
Batch No.	
Ind. Code	W.P.
Date Logged In	By

REPORT RESULTS TO

Name: Lou Middleton
Title: Sr. Proj. Hydro.
Company: ETG Environmental
Dept.:
Mailing Address: 7707 Rickle Rd
City, State, Zip: Lansing, MI 48917
Telephone No.: 517 322-9311
Telefax No.: 517 322-2936

Purchase Order No.: 1113
Client Job No.: 199-Bay City

SEND INVOICE TO

Name: Same
Company:
Address:
Dept.:
City, State, Zip:

Date Results Req.:
Rush Charges Authorized? ☐ Yes ☒ No
Phone / Fax Results ☐ ☒

Special Instructions: (method, limit of detection, etc.)

* Explanation of Preservative:

Samples are: (check if applicable)
☐ Drinking Water
☐ Collected in the State of New York

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request; Enter a 'P' if Preservative added.)

CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	PCBs										FOR LAB USE ONLY
A-1	12-8-94	wipe		1	X										
A-2	12-8-94	wipe		1	X										
A-3	12-8-94	wipe		1	X										
A-4	12-8-94	wipe		1	X										
A-5	12-8-94	wipe		1	X										
A-6	12-8-94	wipe		1	X										
A-7	12-8-94	wipe		1	X										
A-8	12-8-94	wipe		1	X										
A-9	12-8-94	wipe		1	X										

CHAIN OF CUSTODY

Collected by: Lou Middleton (print)
Relinquished by: [signature] Date/Time
Relinquished by: [signature] Date/Time 12/8/94 11:30
Method of Shipment:

Collector's Signature: Lou Middleton
Received by: [signature] Date/Time 12/9/94
Received at Lab by: [signature] Date/Time 11:30
Sample Condition Upon Receipt: ☐ Acceptable ☐ Other (explain)

Authorized by: _____ Date _____
(Client Signature Must Accompany Request)

RECEIVED [illegible]

Please return completed form and samples to one of the Clayton Environmental Consultants, Inc. labs listed below:

22345 Roethel Drive
Novi, MI 48375
(810) 344-1770

Raritan Center
160 Fieldcrest Ave.
Edison, NJ 08837
(908) 225-6040

400 Chastain Center Blvd., N.W.
Suite 490
Kennesaw, GA 30144
(404) 499-7500

1252 Quarry Lane
Pleasanton, CA 94566
(510) 426-2657

2/92

DISTRIBUTION:
WHITE - Clayton Laboratory
YELLOW - Clayton Accounting
PINK - Client Retains

ATTACHMENT I

ETG ENVIRONMENTAL, INC. - ANALYTICAL RESULTS OF 1995 SOIL, GROUNDWATER AND PRODUCT SAMPLES AND GEOLOGICAL BORING LOGS

Amdura–Bay City

All samples collected between 3–21–95 and 3–23–95, except samples from MW–18, MW–20, and MW–21.

VOCs (ug/L)	MW–1S	MW–1D	MW–2S	MW–2D	MW–3S	MW–3D	MW–4S	MW–4D
Acetone	<50	<50	<50	<50		<50	<50	<50
Benzene	1	2,800	<1	<1		<1	<1	<1
Bromodichloromethane	<1	<1	<1	<1		<1	<1	<1
Bromoform	<1	<1	<1	<1		<1	<1	<1
Bromomethane	<1	<1	<1	<1		<1	<1	<1
2–Butanone	<50	470	<50	<50		<50	<50	<50
Carbon disulfide	<50	<50	<50	<50	no	<50	<50	<50
Carbon tetrachloride	<1	<1	<1	<1	sample –	<1	<1	<1
Chlorobenzene	<1	<1	<1	<1	1.22 feet	<1	<1	<1
Chloroethane	<1	<1	<1	<1	of free	<1	<1	<1
Chloroform	<1	<1	<1	<1	product	<1	<1	<1
Chloromethane	<1	<1	<1	<1	(LNAPL)	<1	<1	<1
Dibromochloromethane	<1	<1	<1	<1		<1	<1	<1
1,2–Dichlorobenzene	<1	<1	<1	<1		<1	<1	<1
1,3–Dichlorobenzene	<1	<1	<1	<1		<1	<1	<1
1,4–Dichlorobenzene	<1	<1	<1	<1		<1	<1	<1
1,1–Dichloroethane	<1	<1	<1	<1		<1	<1	<1
1,2–Dichloroethane	<1	42	<1	<1		<1	<1	<1
1,1–Dichloroethene	<1	<1	<1	<1		<1	<1	<1
cis–1,2–Dichloroethene	<1	<1	<1	<1		<1	<1	<1
trans–1,2–Dichloroethene	<1	<1	<1	<1		<1	<1	<1
1,2–Dichloropropane	<1	<1	<1	<1		<1	<1	<1
cis–1,3–Dichloropropene	<1	<1	<1	<1		<1	<1	<1
trans–1,3–Dichloropropene	<1	<1	<1	<1		<1	<1	<1
Ethylbenzene	<1	89	<1	<1		<1	<1	<1
2–Hexanone	<50	<50	<50	<50		<50	<50	<50
Methylene chloride	<1	<1	<1	<1		<1	<1	<1
4–Methyl–2–pentanone	<50	<50	<50	<50		<50	<50	<50
Styrene	<1	<1	<1	<1		<1	<1	<1
1,1,2,2–Tetrachloroethane	<1	<1	<1	<1		<1	<1	<1
Tetrachloroethene	<1	<1	<1	<1		<1	<1	<1
Toluene	<1	48	<1	8		<1	<1	<1
1,1,1–Trichloroethane	<1	<1	<1	<1		<1	<1	<1
1,1,2–Trichloroethane	<1	<1	<1	<1		<1	<1	<1
Trichloroethene	<1	<1	<1	<1		<1	<1	<1
Vinyl acetate	<1	<1	<1	<1		<1	<1	<1
Vinyl chloride	<1	<1	<1	<1		<1	<1	<1
Xylenes (total)	<3	140	<3	<3		<3	<3	<3
PNAs (ug/L)								
Acenaphthene	<5	<5	<5	<5		<5	<5	<5
Acenaphthylene	<5	<5	<5	<5		<5	<5	<5
Anthracene	<5	<5	9	<5		<5	<5	<5
Benzo(a)anthracene	<5	<5	<5	<5		<5	<5	<5
Benzo(a)pyrene	<5	<5	<5	<5		<5	<5	<5
Benzo(b)fluoranthene	<5	<5	<5	<5		<5	<5	<5
Benzo(k)fluoroanthene	<5	<5	<5	<5		<5	<5	<5
Chyrsene	<5	<5	7	<5		<5	<5	<5
Dibenzo(a,h)anthracene	<5	<5	<5	<5		<5	<5	<5
Fluoranthene	<5	<5	16	<5		<5	<5	<5
Fluorene	<5	<5	14	<5		<5	<5	<5
Ideno(1,2,3–cd)pyrene	<5	<5	<5	<5		<5	<5	<5
Naphthalene	<5	78	<5	<5		<5	<5	<5
Phenanthrene	<5	<5	42	7		13	<5	<5
Pyrene	<5	<5	12	<5		<5	<5	<5
Dissolved Metals (mg/L)								
Arsenic	<0.002	<0.002	0.007	0.004		0.003	<0.002	0.002
Barium	0.2	0.3	0.4	1.5		1.6	<0.2	<0.2
Cadmium	<0.0002	<0.0002	0.0005	0.0004		0.0002	0.001	<0.0002
Chromium	<0.05	<0.05	<.002	<0.05		<0.05	<0.05	<0.05
Lead	<0.003	<0.003	<0.003	<0.003		<0.003	<0.003	<0.003
Selenium	<0.005	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005
Silver	<0.0005	0.0012	<0.0005	0.0023		0.0029	<0.0005	0.0006

Zinc	0.05	0.05	0.05	0.05		0.09	0.09	0.06
Cyanide (total, mg/L)	<0.01	0.67	<0.01	0.01		<0.01	<0.01	<0.01
< denotes detection limit								

Amdura – Bay City

All samples collected between 3–21–95 and 3–23–95, except samples from MW–18, MW–20, and MW–21.

VOCs (ug/L)	MW–5	MW–6	MW–7	MW–8	MW–9	MW–10	MW–11	MW–12
Acetone	<50	<50	<50		<50	<50	<50	<50
Benzene	24	<1	<1		<1	<1	<1	<1
Bromodichloromethane	<1	<1	<1		<1	<1	<1	<1
Bromoform	<1	<1	<1		<1	<1	<1	<1
Bromomethane	<1	<1	<1		<1	<1	<1	<1
2–Butanone	<50	<50	<50		<50	<50	<50	<50
Carbon disulfide	<50	<50	<50	no	<50	<50	<50	<50
Carbon tetrachloride	<1	<1	<1	sample –	<1	<1	<1	<1
Chlorobenzene	<1	<1	<1	well	<1	<1	<1	<1
Chloroethane	<1	<1	<1	dry	9	<1	<1	<1
Chloroform	<1	<1	<1		<1	<1	<1	<1
Chloromethane	<1	<1	<1		<1	<1	<1	<1
Dibromochloromethane	<1	<1	<1		<1	<1	<1	<1
1,2–Dichlorobenzene	<1	<1	<1		<1	<1	<1	<1
1,3–Dichlorobenzene	<1	<1	<1		<1	<1	<1	<1
1,4–Dichlorobenzene	<1	<1	<1		<1	<1	<1	<1
1,1–Dichloroethane	1	<1	<1		<1	<1	<1	<1
1,2–Dichloroethane	<1	<1	<1		<1	<1	<1	<1
1,1–Dichloroethene	<1	<1	<1		<1	<1	<1	<1
cis–1,2–Dichloroethene	<1	<1	<1		<1	<1	<1	<1
trans–1,2–Dichloroethene	<1	<1	<1		<1	<1	<1	<1
1,2–Dichloropropane	<1	<1	<1		<1	<1	<1	<1
cis–1,3–Dichloropropene	<1	<1	<1		<1	<1	<1	<1
trans–1,3–Dichloropropene	<1	<1	<1		<1	<1	<1	<1
Ethylbenzene	<1	<1	<1		<1	<1	<1	<1
2–Hexanone	<50	<50	<50		<50	<50	<50	<50
Methylene chloride	<1	<1	<1		<1	<1	<1	<1
4–Methyl–2–pentanone	<50	<50	<50		<50	<50	<50	<50
tyrene	<1	<1	<1		<1	<1	<1	<1
1,1,2,2–Tetrachloroethane	<1	<1	<1		<1	<1	<1	<1
Tetrachloroethene	<1	<1	<1		<1	<1	<1	<1
Toluene	<1	<1	<1		<1	<1	<1	<1
1,1,1–Trichloroethane	2	<1	<1		<1	<1	<1	<1
1,1,2–Trichloroethane	<1	<1	<1		<1	<1	<1	<1
Trichloroethene	<1	<1	<1		<1	<1	<1	<1
Vinyl acetate	<1	<1	<1		<1	<1	<1	<1
Vinyl chloride	<1	<1	<1		<1	<1	<1	<1
Xylenes (total)	4	<3	<3		<3	<3	<3	<3
PNAs (ug/L)								
Acenaphthene	<5	<5	<5		<5	<5	<5	<5
Acenaphthylene	<5	<5	<5		<5	<5	<5	<5
Anthracene	<5	<5	21		<5	<5	<5	<5
Benzo(a)anthracene	<5	<5	<5		<5	<5	<5	<5
Benzo(a)pyrene	<5	<5	<5		<5	<5	<5	<5
Benzo(b)fluoranthene	<5	<5	<5		<5	<5	<5	<5
Benzo(k)fluoroanthene	<5	<5	<5		<5	<5	<5	<5
Chyrsene	<5	<5	<5		<5	<5	<5	<5
Dibenzo(a,h)anthracene	<5	<5	<5		<5	<5	<5	<5
Fluoranthene	<5	5	<5		<5	<5	<5	<5
Fluorene	<5	<5	7		<5	<5	<5	<5
Ideno(1,2,3–cd)pyrene	<5	<5	<5		<5	<5	<5	<5
Naphthalene	<5	<5	<5		<5	<5	<5	<5
Phenanthrene	<5	<5	21		<5	<5	<5	<5
Pyrene	<5	<5	<5		<5	<5	<5	<5
Dissolved Metals (mg/L)								
senic	0.003	<0.002	<0.002		0.002	<0.002	<0.002	0.019
arium	<0.2	0.2	<0.2		0.4	0.6	0.2	<0.2
Cadmium	<0.0002	0.0004	<0.0002		<0.0002	<0.0002	<0.0002	<0.0002
Chromium	<0.05	<0.05	<0.05		<0.05	<0.05	<0.05	<0.05
Lead	<0.003	<0.003	<0.003		0.003	<0.003	<0.003	<0.003
Selenium	<0.005	<0.005	<0.005		<0.005	<0.005	<0.005	<0.005
Silver	<0.0005	<0.0005	<0.0005		<0.0005	0.0013	<0.0005	<0.0005

Zinc	0.06	0.05	0.05		0.04	0.04	0.05	0.05
Cyanide (total, mg/L)	0.9	0.01	<0.01		<0.01	<0.01	<0.01	<0.01
< denotes detection limit								pcb all nd

Amdura – Bay City

MW–18 PNA sample collected on 4–13–95. and MW–20 & MW–21 samples collected on 11–17–95.
All other samples collected between 3–21–95 and 3–23–95.

VOCs (ug/L)	MW–13	MW–14	MW–15	MW–16	MW–17	MW–18	MW–19	MW–20	MW–21	MW–22
Acetone	<50	<50	<50	<50	<50	<50	<50	<50	<50	
Benzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Bromodichloromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Bromoform	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Bromomethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	
2–Butanone	<50	<50	<50	<50	<50	<50	<50	<50	<50	
Carbon disulfide	<50	<50	<50	<50	<50	<50	<50	<50	<50	
Carbon tetrachloride	<1	<1	<1	<1	<1	<1	<1	<1	<1	no
Chlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	sample –
Chloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	well
Chloroform	<1	<1	<1	<1	<1	<1	<1	<1	<1	dry
Chloromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Dibromochloromethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,2–Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,3–Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,4–Dichlorobenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,1–Dichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,2–Dichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,1–Dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1	
cis–1,2–Dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1	
trans–1,2–Dichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,2–Dichloropropane	<1	<1	<1	<1	<1	<1	<1	<1	<1	
cis–1,3–Dichloropropene	<1	<1	<1	<1	<1	<1	<1	<1	<1	
trans–1,3–Dichloropropene	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Ethylbenzene	<1	<1	<1	<1	<1	<1	<1	<1	<1	
2–Hexanone	<50	<50	<50	<50	<50	<50	<50	<50	<50	
Methylene chloride	<1	<1	<1	<1	<1	<1	<1	<1	<1	
4–Methyl–2–pentanone	<50	<50	<50	<50	<50	<50	<50	<50	<50	
Styrene	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,1,2,2–Tetrachloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Tetrachloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Toluene	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,1,1–Trichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	
1,1,2–Trichloroethane	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Trichloroethene	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Vinyl acetate	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Vinyl chloride	<1	<1	<1	<1	<1	<1	<1	<1	<1	
Xylenes (total)	<3	<3	<3	<3	<3	<3	<3	<3	<3	
PNAs (ug/L)										
Acenaphthene	<5	<5	<5	<5	<5	<5	7		<5	
Acenaphthylene	<5	<5	<5	<5	<5	<5	<5		<5	
Anthracene	<5	<5	<5	<5	<5	<5	5		<5	
Benzo(a)anthracene	<5	<5	<5	<5	<5	<5	<5	no	<5	
Benzo(a)pyrene	<5	<5	<5	<5	<5	<5	<5	sample	<5	
Benzo(b)fluoranthene	<5	<5	<5	<5	<5	<5	<5		<5	
Benzo(k)fluoroanthene	<5	<5	<5	<5	<5	<5	<5		<5	
Chyrsene	<5	<5	<5	<5	<5	<5	<5		<5	
Dibenzo(a,h)anthracene	<5	<5	<5	<5	<5	6	<5		<5	
Fluoranthene	<5	<5	<5	<5	<5	<5	<5		<5	
Fluorene	<5	<5	<5	<5	<5	<5	18		<5	
Ideno(1,2,3–cd)pyrene	<5	<5	<5	<5	<5	<5	<5		<5	
Naphthalene	<5	<5	<5	<5	<5	<5	<5		<5	
Phenanthrene	<5	<5	<5	7	<5	29	61		<5	
Pyrene	<5	<5	<5	<5	<5	12	<5		<5	
Dissolved Metals (mg/L)										
Arsenic	0.003	<0.002	0.012	<0.002	0.007	0.003	0.006			
Barium	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2			
Cadmium	0.0003	<0.0002	0.0002	<0.0002	0.0004	<0.0002	<0.0002			
Chromium	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			
Lead	0.005	<0.003	<0.003	<0.003	0.009	<0.003	0.026	no	no	
Selenium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	sample	sample	

Silver	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005			
Zinc	0.07	0.05	0.05	0.05	0.08	0.05	0.06			
Cyanide (total, mg/L)	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01			
< denotes detection limit							pcb all nd			

TOTAL P.04

[illegible]

[illegible] Drive
P.O. Box [illegible]
[illegible]
[illegible]
Fax [illegible]

Clayton
ENVIRONMENTAL
CONSULTANTS

LABORATORY
FAX TRANSMITTAL FORM

TO: MR. LOU MIDDLETON

FROM: CLIENT SERVICES

DATE: MARCH 21, 1995

FAX NO.: (517) 322-2936

19 **Pages After Transmittal Form**

SPECIAL INSTRUCTIONS:

Detroit Regional Office

22345 Roethel Drive
P.O. Box 8022
Novi, MI 48375
(810) 344-1770
Fax (810) 344-2654

Clayton
ENVIRONMENTAL
CONSULTANTS

March 21, 1995

Mr. Lou Middleton
ETG ENVIRONMENTAL, INC.
7707 Rickle Road
Lansing, MI 48917

Clayton Project No. 24487.00
Purchase Order No. 1271
Client Reference: 1076

Dear Mr. Middleton:

Attached is our analytical laboratory report for the samples received on March 6, 1995. Also enclosed is a copy of the Chain-of-Custody record acknowledging receipt of these samples.

Please note that any unused portion of the samples will be discarded after April 20, 1995, unless you have requested otherwise.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (810) 344-2650.

Sincerely,

Robert Lieckfield, Jr., CIH
Director, Laboratory Services
Detroit Regional Office

RL/al

Attachments

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification: SB-5 (3-5')
Lab Number: 001a/A8753.D
Sample Type: Soil
Preparation Method: --
Analytical Method: EPA 8260
Analyst: TF

Date Sampled: 02/28/95
Date Received: 03/06/95
Date Prepared: 03/10/95
Date Analyzed: 03/10/95
Moisture(%): 11

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	10	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	<10	10

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Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification:	SB-5 (3-5')	Date Sampled:	02/28/95
Lab Number:	001a/A8753.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	11
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

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Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification:	SB-5 (3-5')	Date Sampled:	02/28/95
Lab Number:	001b/F4055.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	EPA 3550	Date Analyzed:	03/17/95
Analytical Method:	EPA 8270	Moisture(%):	10
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification:	SB-5 (5-7')	Date Sampled:	02/28/95
Lab Number:	002a/A8754.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	11
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	20	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	10	10

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification:	SB-5 (5-7')	Date Sampled:	02/28/95
Lab Number:	002a/A8754.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	11
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification:	SB-5 (5-7')	Date Sampled:	02/28/95
Lab Number:	002b/F4056.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	EPA 3550	Date Analyzed:	03/17/95
Analytical Method:	EPA 8270	Moisture(%):	12
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification: MW-10 (0-2')
Lab Number: 003a/A8755.D
Sample Type: Soil
Preparation Method: --
Analytical Method: EPA 8260
Analyst: TF

Date Sampled: 03/01/95
Date Received: 03/06/95
Date Prepared: 03/10/95
Date Analyzed: 03/10/95
Moisture(%): 12

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	20	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	<10	10

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification:	MW-10 (0-2')	Date Sampled:	03/01/95
Lab Number:	003a/A8755.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	12
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification:	MW-10 (0-2')	Date Sampled:	03/01/95
Lab Number:	003b/F4057.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	EPA 3550	Date Analyzed:	03/17/95
Analytical Method:	EPA 8270	Moisture(%):	13
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification:	SB-3 (0-2')	Date Sampled:	03/01/95
Lab Number:	004a/A8756.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	11
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<10	10
Methylene chloride	<100	100
4-Methyl-2-pentanone	20	10
Styrene	<100	100
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	<10	10
	<10	10

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification:	SB-3 (0-2')	Date Sampled:	03/01/95
Lab Number:	004a/A8756.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	11
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification:	MW-3 (0-2')	Date Sampled:	03/01/95
Lab Number:	004b/F4058.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	EPA 3550	Date Analyzed:	03/18/95
Analytical Method:	EPA 8270	Moisture(%):	12
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification:	SB-3 (2-4')		
Lab Number:	005a/A8757.D	Date Sampled:	03/01/95
Sample Type:	Soil	Date Received:	03/06/95
Preparation Method:	--	Date Prepared:	03/10/95
Analytical Method:	EPA 8260	Date Analyzed:	03/10/95
Analyst:	TF	Moisture(%):	11

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	10	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	<10	10

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ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification:	SB-3 (2-4')	Date Sampled:	03/01/95
Lab Number:	005a/A8757.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	11
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification:	MW-3 (2-4')	Date Sampled:	03/01/95
Lab Number:	005b/F4059.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	EPA 3550	Date Analyzed:	03/18/95
Analytical Method:	EPA 8270	Moisture(%):	11
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

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ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification:	SB-4 (5-7')	Date Sampled:	03/01/95
Lab Number:	006a/A8758.D,A8764.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	12
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	[illegible]	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	280	10
2-Hexanone	<100	100
Methylene chloride	20	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	10	10

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification:	SB-4 (5-7')	Date Sampled:	03/01/95
Lab Number:	006a/A8758.D,A8764.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/10/95
Preparation Method:	--	Date Analyzed:	03/10/95
Analytical Method:	EPA 8260	Moisture(%):	12
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	40	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24487.00
Client Reference: 1076

Sample Identification:	MW-4 (5-7')	Date Sampled:	03/01/95
Lab Number:	006b/F4065.D	Date Received:	03/06/95
Sample Type:	Soil	Date Prepared:	03/09/95
Preparation Method:	EPA 3550	Date Analyzed:	03/19/95
Analytical Method:	EPA 8270	Moisture(%):	13
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	2,600	330
Pyrene	<330	330
	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Midwestern Operations

[illegible] Ruether Drive
P.O. Box [illegible]
Novi, MI [illegible]
(313) [illegible]
Fax (313) [illegible]

Clayton
ENVIRONMENTAL
CONSULTANTS

LABORATORY
FAX TRANSMITTAL FORM

TO: MR. LOU MIDDLETON

FROM: CLIENT SERVICES

DATE: MARCH 20, 1995

FAX NO.: (517) 322-2936

19 **Pages After Transmittal Form**

SPECIAL INSTRUCTIONS:

Detroit Regional Office

22345 Roethel Drive
P.O. Box 8022
Novi, MI 48375
(810) 344-1770
Fax (810) 344-2654

Clayton
ENVIRONMENTAL
CONSULTANTS

March 20, 1995

Mr. Lou Middleton
ETG ENVIRONMENTAL, INC.
7707 Rickle Road
Lansing, MI 48917

Clayton Project No. 24241.00
Purchase Order No. 1257
Client Reference: 1076

Dear Mr. Middleton:

Attached is our analytical laboratory report for the samples received on February 27, 1995. Also enclosed is a copy of the Chain-of-Custody record acknowledging receipt of these samples.

Please note that any unused portion of the samples will be discarded after April 19, 1995, unless you have requested otherwise.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (810) 344-2650.

Sincerely,

Robert Lieckfield, Jr., CIH
Director, Laboratory Services
Detroit Regional Office

RL/al

Attachments

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076.

Sample Identification:	ETG SB6, 5-7'	Date Sampled:	02/21/95
Lab Number:	001a/C6840.D	Date Received:	02/27/95
Sample Type:	Soil	Date Prepared:	03/04/95
Preparation Method:	--	Date Analyzed:	03/04/95
Analytical Method:	EPA 8260	Moisture(%):	13
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	300	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	<10	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	<10	10

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076

Sample Identification:	ETG SB6, 5-7'	Date Sampled:	02/21/95
Lab Number:	001a/C6840.D	Date Received:	02/27/95
Sample Type:	Soil	Date Prepared:	03/04/95
Preparation Method:	--	Date Analyzed:	03/04/95
Analytical Method:	EPA 8260	Moisture(%):	13
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	270	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC
Clayton Project No. 24241.00
Client Reference: 1076

Sample Identification:	ETG SB6, 5-7'	Date Sampled:	02/21/95
Lab Number:	001b/G0234.D	Date Received:	02/27/95
Sample Type:	Soil	Date Prepared:	03/03/95
Preparation Method:	EPA 3550	Date Analyzed:	03/16/95
Analytical Method:	EPA 8270	Moisture(%):	15
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076

Sample Identification:	ETG SB6, 7-9'	Date Sampled:	02/21/95
Lab Number:	002a/C6841.D	Date Received:	02/27/95
Sample Type:	Soil	Date Prepared:	03/04/95
Preparation Method:	--	Date Analyzed:	03/04/95
Analytical Method:	EPA 8260	Moisture(%):	14
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	180	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	<10	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	<10	10

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Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076.

Sample Identification:	ETG SB6, 7-9'	Date Sampled:	02/21/95
Lab Number:	002a/C6841.D	Date Received:	02/27/95
Sample Type:	Soil	Date Prepared:	03/04/95
Preparation Method:	--	Date Analyzed:	03/04/95
Analytical Method:	EPA 8260	Moisture(%):	14
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	80	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC
Clayton Project No. 24241.00
Client Reference: 1076

Sample Identification:	ETG SB6, 7-9'	Date Sampled:	02/21/95
Lab Number:	002b/G0235.D	Date Received:	02/27/95
Sample Type:	Soil	Date Prepared:	03/03/95
Preparation Method:	EPA 3550	Date Analyzed:	03/16/95
Analytical Method:	EPA 8270	Moisture(%):	16
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
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Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076.

Sample Identification:	ETG SB9, 2-4'	Date Sampled:	02/20/95
Lab Number:	003a/C6859.D	Date Received:	02/27/95
Sample Type:	Soil	Date Prepared:	03/04/95
Preparation Method:	--	Date Analyzed:	03/04/95
Analytical Method:	EPA 8260	Moisture(%):	11
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	10	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	<10	10

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076

Sample Identification:	ETG SB9, 2-4'	Date Sampled:	02/20/95
Lab Number:	003a/C6859.D	Date Received:	02/27/95
Sample Type:	Soil	Date Prepared:	03/04/95
Preparation Method:	--	Date Analyzed:	03/04/95
Analytical Method:	EPA 8260	Moisture(%):	11
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC
Clayton Project No. 24241.00
Client Reference: 1076

Sample Identification:	ETG SB9, 2-4'		
Lab Number:	003b/G0236.D	Date Sampled:	02/20/95
Sample Type:	Soil	Date Received:	02/27/95
Preparation Method:	EPA 3550	Date Prepared:	03/03/95
Analytical Method:	EPA 8270	Date Analyzed:	03/16/95
Analyst:	TF	Moisture(%):	13

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076.

Sample Identification:	ETG SB9, 4-6'	Date Sampled:	02/20/95
Lab Number:	004a/C6860.D	Date Received:	02/27/95
Sample Type:	Soil	Date Prepared:	03/04/95
Preparation Method:	--	Date Analyzed:	03/04/95
Analytical Method:	EPA 8260	Moisture(%):	10
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	10	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	<10	10

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Analytical Results
for
RTG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076

Sample Identification:	RTG SB9, 4-6'	Date Sampled:	02/20/95
Lab Number:	004a/C6860.D	Date Received:	02/27/95
Sample Type:	Soil	Date Prepared:	03/04/95
Preparation Method:	--	Date Analyzed:	03/04/95
Analytical Method:	EPA 8260	Moisture(%):	10
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC
Clayton Project No. 24241.00
Client Reference: 1076

Sample Identification:	ETG SB9, 4-6'	Date Sampled:	02/20/95
Lab Number:	004b/G0237.D	Date Received:	02/27/95
Sample Type:	Soil	Date Prepared:	03/03/95
Preparation Method:	EPA 3550	Date Analyzed:	03/16/95
Analytical Method:	EPA 8270	Moisture(%):	16
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076

Sample Identification:	ETG SB10, 2-4'	Date Sampled:	02/20/95
Lab Number:	005a/C6844.D	Date Received:	02/27/95
Sample Type:	Soil	Date Prepared:	03/04/95
Preparation Method:	--	Date Analyzed:	03/04/95
Analytical Method:	EPA 8260	Moisture(%):	18
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethane	<10	10
trans-1,2-Dichloroethane	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	<10	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	<10	10

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Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076

Sample Identification:	ETG SB10, 2-4'	Date Sampled:	02/20/95
Lab Number:	005a/C6844.D	Date Received:	02/27/95
Sample Type:	Soil	Date Prepared:	03/04/95
Preparation Method:	--	Date Analyzed:	03/04/95
Analytical Method:	EPA 8260	Moisture(%):	18
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

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Analytical Results
for
ETG ENVIRONMENTAL, INC
Clayton Project No. 24241.00
Client Reference: 1076

Sample Identification: ETG SB10, 2-4'
Lab Number: 005b/G0238.D
Sample Type: Soil
Preparation Method: EPA 3550
Analytical Method: EPA 8270
Analyst: TF

Date Sampled: 02/20/95
Date Received: 02/27/95
Date Prepared: 03/03/95
Date Analyzed: 03/16/95
Moisture(%): 12

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

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Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076

Sample Identification:	ETG SB10, 4-6'	Date Sampled:	02/20/95
Lab Number:	006a/C6845.D	Date Received:	02/27/95
Sample Type:	Soil	Date Prepared:	03/04/95
Preparation Method:	--	Date Analyzed:	03/04/95
Analytical Method:	EPA 8260	Moisture(%):	12
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds		
Acetone	<100	100
Benzene	<10	10
Bromodichloromethane	<10	10
Bromoform	<10	10
Bromomethane	<10	10
2-Butanone	<100	100
Carbon disulfide	<100	100
Carbon tetrachloride	<10	10
Chlorobenzene	<10	10
Chloroethane	<10	10
Chloroform	<10	10
Chloromethane	<10	10
Dibromochloromethane	<10	10
1,2-Dichlorobenzene	<10	10
1,3-Dichlorobenzene	<10	10
1,4-Dichlorobenzene	<10	10
1,1-Dichloroethane	<10	10
1,2-Dichloroethane	<10	10
1,1-Dichloroethene	<10	10
cis-1,2-Dichloroethene	<10	10
trans-1,2-Dichloroethene	<10	10
1,2-Dichloropropane	<10	10
cis-1,3-Dichloropropene	<10	10
trans-1,3-Dichloropropene	<10	10
Ethylbenzene	<10	10
2-Hexanone	<100	100
Methylene chloride	<10	10
4-Methyl-2-pentanone	<100	100
Styrene	<10	10
1,1,2,2-Tetrachloroethane	<10	10
Tetrachloroethene	<10	10
Toluene	<10	10

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Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 24241.00
Client Reference: 1076

Sample Identification:	ETG SB10, 4-6'	Date Sampled:	02/20/95
Lab Number:	006a/C6845.D	Date Received:	02/27/95
Sample Type:	Soil	Date Prepared:	03/04/95
Preparation Method:	--	Date Analyzed:	03/04/95
Analytical Method:	EPA 8260	Moisture(%):	12
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<10	10
1,1,2-Trichloroethane	<10	10
Trichloroethene	<10	10
Vinyl acetate	<10	10
Vinyl chloride	<10	10
Xylenes [total]	<30	30

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC
Clayton Project No. 24241.00
Client Reference: 1076

Sample Identification:	ETG SB10, 4-6'	Date Sampled:	02/20/95
Lab Number:	006b/G0239.D	Date Received:	02/27/95
Sample Type:	Soil	Date Prepared:	03/03/95
Preparation Method:	EPA 3550	Date Analyzed:	03/16/95
Analytical Method:	EPA 8270	Moisture(%):	15
Analyst:	TF		

Analyte	Concentration (µg/kg)	LOD (µg/kg)
Polynuclear Aromatics		
Acenaphthene	<330	330
Acenaphthylene	<330	330
Anthracene	<330	330
Benzo[a]anthracene	<330	330
Benzo[a]pyrene	<330	330
Benzo[b]fluoranthene	<330	330
Benzo[g,h,i]perylene	<330	330
Benzo[k]fluoranthene	<330	330
Chrysene	<330	330
Dibenzo[a,h]anthracene	<330	330
Fluoranthene	<330	330
Fluorene	<330	330
Indeno[1,2,3-cd]pyrene	<330	330
Naphthalene	<330	330
Phenanthrene	<330	330
Pyrene	<330	330

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable
Results are reported on a dry-weight basis.

ETG
Environmental, Inc.

Providing creative environmental solutions

MEMORANDUM

Date: September 20, 1995

From: Lou Middleton, C.P.G. LHM

To: Susan Padley, Esq.

Subject: Bay City, Michigan Site

Enclosed are the analytical results for the oil sample collected from monitoring well ETG-MW-3S at the former Industrial Brownhoist site located in Bay City Michigan. As previously communicated, PCB compounds were not detected above the method detection limit of 0.3 mg/Kg. If you have any questions or require additional information, please call me at (517)322-9311.

7707 Rickle Road, Lansing, MI 48917 • (517) 322-9311 • Fax (517) 322-2936
Regional Offices: Cincinnati, OH • Lansing, MI • Philadelphia, PA • Toledo, OH

Detroit Regional Office

22345 Roethel Drive
P.O. Box 8022
Novi, MI 48375
(810) 344-1770
Fax (810) 344-2654

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September 14, 1995

Mr. Lou Middleton
ETG ENVIRONMENTAL, INC.
7707 Rickle Road
Lansing, MI 48917

Clayton Project No. 30682.00
Purchase Order No. 1532
Client Reference: 1076

Dear Mr. Middleton:

Attached is our analytical laboratory report for the samples received on September 13, 1995. Also enclosed is a copy of the Chain-of-Custody record acknowledging receipt of these samples.

Please note that any unused portion of the samples will be discarded after October 14, 1995, unless you have requested otherwise.

We appreciate the opportunity to assist you. If you have any questions concerning this report, please contact a Client Services Representative at (810) 344-2650.

Sincerely,

Robert Lieckfield, Jr., CIH
Director, Laboratory Services
Detroit Regional Office

RL/pl

Attachments

Clayton
ENVIRONMENTAL CONSULTANTS

Table 1
Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 30682.00
Client Reference#: 1076

Sample Identification:	ETGMW-35	Date Sampled:	09/12/95
Lab Number:	001a	Date Received:	09/13/95
Sample Type:	Oil	Date Prepared:	09/13/95
Preparation Method:	EPA 600/4-81-045	Date Analyzed:	09/13/95
Analytical Method:	EPA 600/4-81-045		
Analyst:	JC		

Analyte	Concentration (mg/kg)	LOD (mg/kg)
Polychlorinated Biphenyls		
Aroclor-1016	<0.3	0.3
Aroclor-1221	<0.3	0.3
Aroclor-1232	<0.3	0.3
Aroclor-1242	<0.3	0.3
Aroclor-1248	<0.3	0.3
Aroclor-1254	<0.3	0.3
Aroclor-1260	<0.3	0.3

Clayton
ENVIRONMENTAL CONSULTANTS

REQUEST FOR LABORATORY ANALYTICAL SERVICES

For Clayton Use Only	Page 1 of 1
Project No. 301682	
Batch No.	
Ind. Code	W.P.
Date Logged In	By

REPORT RESULTS TO

Name: Lou Middleton — Title: Hydrogeologist
Company: ETG Environmental — Dept.:
Mailing Address: 7202 Rickle Rd
City, State, Zip: Lansing MI 48917
Telephone No.: 517 322-8311 — Telefax No.: 517 322-2836

Purchase Order No.: 1532 — Client Job No.: 1076

SEND INVOICE TO

Name:
Company: — Dept.:
Address:
City, State, Zip:

Date Results Req.: 9-14-95 — Rush Charges Authorized? ☒ Yes ☐ No — Phone / Fax Results ☐ ☒

Samples are: (check if applicable) ☐ Drinking Water ☐ Collected in the State of New York

Special Instructions: (method, limit of detection, etc.) Use method for analyze oil layer only.

* Explanation of Preservative:

ANALYSIS REQUESTED (Enter an 'X' in the box below to indicate request; Enter a 'P' if Preservative added. *

CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	PCBs	FOR LAB USE ONLY
ETGMW-3S	9-12-95	Oil		2	X	

Rush

CHAIN OF CUSTODY

Collected by: Lewis Middleton — Collector's Signature:
Relinquished by: — Date/Time 9-12 1:30 — Received by: — Date/Time 9-12-95 2:47 pm
Relinquished by: — Date/Time 9-13-95 8:41 am — Received at Lab by: — Date/Time
Method of Shipment: — Sample Condition Upon Receipt: ☐ Acceptable ☐ Other (explain)

Authorized by: — Date 9-12-95
(Client Signature Must Accompany Request)

RECEIVED SEP 13 1995

Please return completed form and samples to one of the Clayton Environmental Consultants, Inc. labs listed below:

22345 Roethel Drive Novi, MI 48375 (810) 344-1770	Raritan Center 160 Fieldcrest Ave. Edison, NJ 08837 (908) 225-6040	400 Chastain Center Blvd., N.W. Suite 490 Kennesaw, GA 30144 (404) 499-7500	1252 Quarry Lane Pleasanton, CA 94566 (510) 426-2657

* Boilers is radiating back PCB test

DISTRIBUTION:
WHITE - Clayton Laboratory
YELLOW - Clayton Accounting
PINK - Client Retains

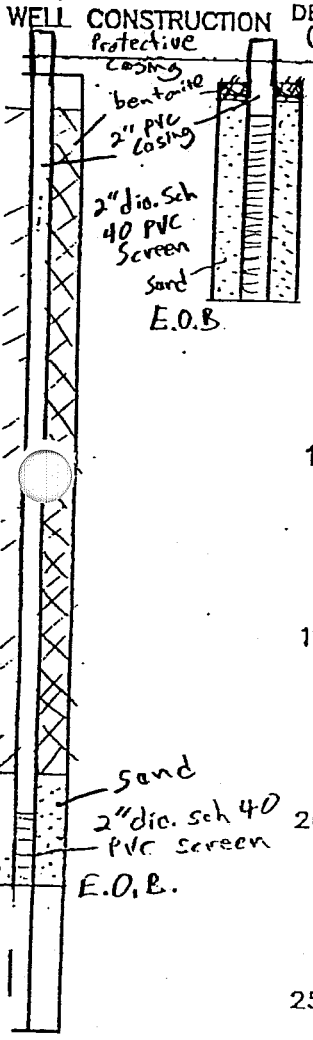
2/92

SITE IB
CITY, STATE Bay City
BORING NUMBER ETG MW-1S, 1D

PROJECT NUMBER: 1076 LOGGED BY: L HM
DRILLING CO: T & T DATE DRILLED: 2-23-95
BORING METHOD: H. S. A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H. Nu PID 101
ANALYTICAL METHOD: N/A
NOTES: Wells installed in the approximate center of the coal tar-pit.

-D 1-S

WELL CONSTRUCTION

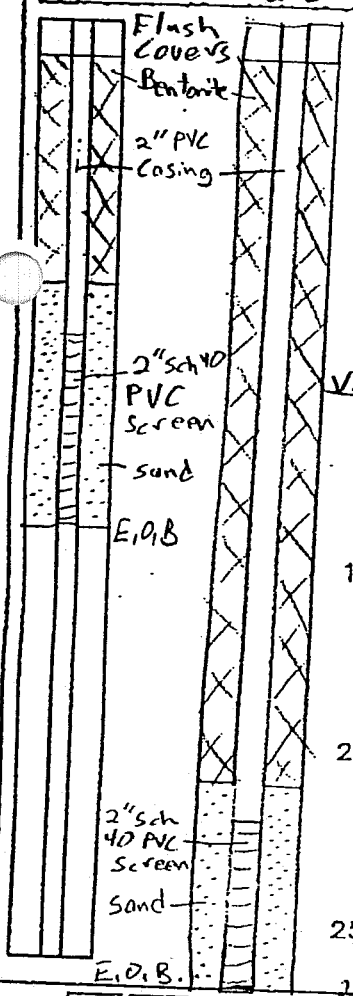


DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
0		dark gray sand, glass & gravel	X	N.D.	50%
			X	3	50%
5			X	0.5	40%
	fill		X	N.D.	10%
10			X	N.D.	60%
		sand w/gravel & slag	X	N/A	0%
			X	1	40%
15		silty sand w/ gravel	X	N.D.	40%
	fill		X	N.D.	10%
20			X	N.D.	5%
	CL	gray-brown tight clay w/ fine gravel	X	3	50%
25					

ETG ENVIRONMENTAL, INC.

SITE: IB
CITY, STATE: Bay City
BORING NUMBER: ETGMW2S, 2D

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T&T DATE DRILLED: 2-22-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: Hr Nu PID-101
ANALYTICAL METHOD: N/A
NOTES:



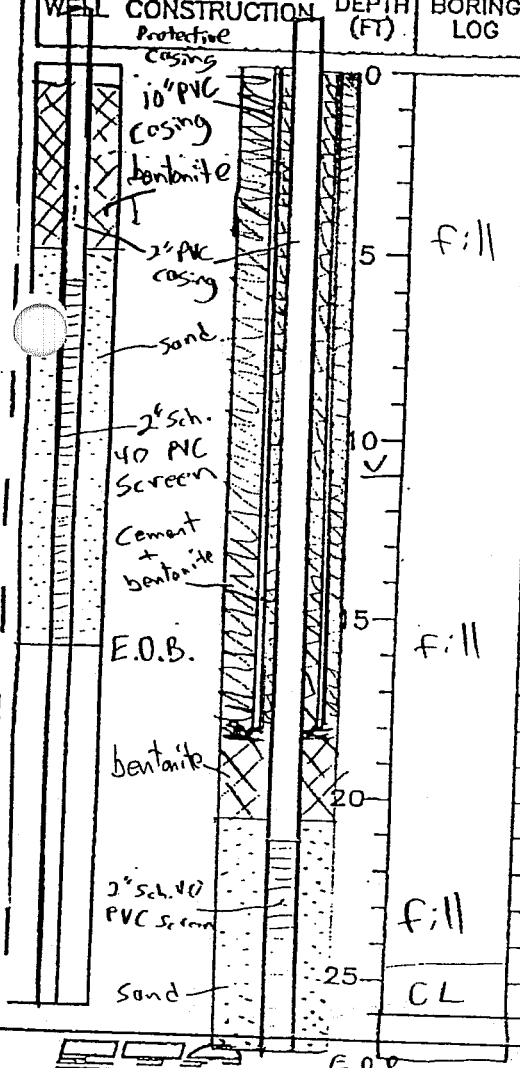
DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
0			X	N.D.	70%
5	fill	medium-dark brown sand w/silt & slag	X	N.D.	20%
			X	0.5	60%
			X	0.5	70%
10		medium-fine grained silty sand with slag, sewer-like odor	X	1	60%
			X	4	20%
15		Wood fill with silt.	X	4	0%
			X	5.5	5%
			X	4	5%
20	SM	Light-medium gray & gray-brown fine-medium grained slightly silty sand.	X	N/A	0%
	ML		X	1	100%
25			X	0.5	80%
27	CL	Plastic clay interbedded with sandy silt.	X	0.5	80%

ETG ENVIRONMENTAL, INC.

35 3 D

SITE IB
CITY, STATE Bay City
BORING NUMBER ETG MW 35, 3D

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T & T DATE DRILLED: 12-5-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split Spoon
FIELD SCREENING EQUIP.: HNu PID 101
ANALYTICAL METHOD: N/A
NOTES: moist samples @ 5' B.G., wet @ 8.5', static water level @ ≈ 11' B.G. w/free product Oil ⇒ "light bunker oil", greenish-brown & greasy

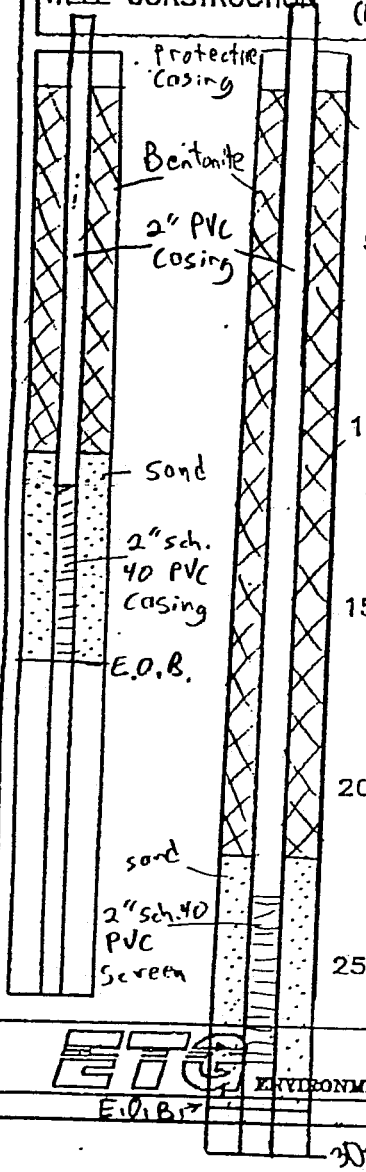


DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
0	fill	sand w/slag	X	N.D.	20%
5		slightly moist dark gray	X	N.D.	90%
			X	3	40%
		moist silty sand w/ slag, slight odor	X	7	70%
10		greasy silty sand, slag & wood w/oil-like odor	X	13	70%
			X	14	60%
15	fill	greasy-oily silty sand w/trace slag	X	15	50%
		Very silty soft clay w/ odor	No samples @ base of 10" casing.		
20		fine grained silty sand w/ wood (sl odor)	X	45	20%
	fill	wood	X	40	20%
25	CL	medium gray slightly silty moderately hard tight clay	X	N/A	0%
			X	N.D.	30%

ETG ENVIRONMENTAL, INC.

SITE I B
CITY, STATE Bay City
BORING NUMBER ETG MW4S, 4D

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T & T DATE DRILLED: 2-22-95
BORING METHOD: H. S. A.
SAMPLING METHOD: Split Spoon
FIELD SCREENING EQUIP.: H-Nu PID 101
ANALYTICAL METHOD: N/A
NOTES:

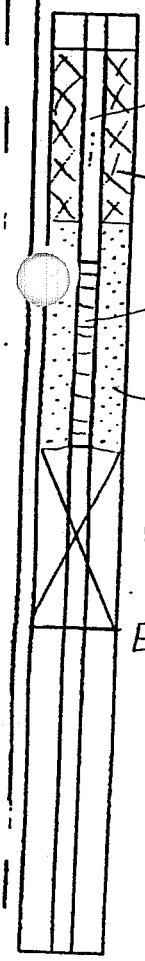


DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
0		Sand w/silt	X	4	80%
5	fill	Clay w/tr gravel	X	2	80%
			X	0.5	80%
			X	0.5	70%
10		Sand w/slag	X	0.5	
			X	0.5	
15			X	0.5	80%
			X	0.5	
20	fill	silty sand w/wood	X	1	80%
			X	0.5	80%
			X	N.D.	
25		sand, wood & clay	X	N.D.	
			X	N.D.	
			X	N.D.	
30	CL	med. grey brown stiff, slightly plastic clay	X	N.D.	

ETG ENVIRONMENTAL, INC.

SITE IB
CITY, STATE Bay City
BORING NUMBER ETG MW-5

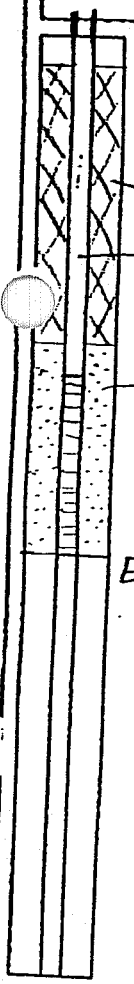
PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T & T DATE DRILLED: 2-21-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H-Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: Well appeared to be dry at time of installation, yet recharged O.K. at time of sampling.



DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
0	fill	sand, slag, wood, and brick fill	X	0.5	95%
5			X	0.5	95%
		paint odor	X	0.5	50%
		wood	X	0.5	70%
10			X	1.5	50%
	CL	Light to medium gray tight, slightly plastic clay with trace gravel	X	2	90%
15			X	11	95%
			X	N.D.	90%
20					
25					

ETG ENVIRONMENTAL, INC.

SITE	IB
CITY, STATE	Bay City, MI
BORING NUMBER	ETG MW-6
PROJECT NUMBER: 1076	LOGGED BY: L HM
DRILLING CO: T&T	DATE DRILLED: 2-21-95
BORING METHOD: H.S.A.	
SAMPLING METHOD: Split Spoon	
FIELD SCREENING EQUIP.: H-Nu PID-101	
ANALYTICAL METHOD: N/A	
NOTES:	



DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
0	fill	Concrete/debris	X	N/A	0
			X	1	95%
5		Clay, silt, and sand fill	X	N.D.	90%
			X	N.D.	10%
		sand, silt & gravel	X	N.D.	50%
10			X	N.D.	10%
		sand, silt and wood fill	X	N.D.	10%
15					
20					
25					

ETG ENVIRONMENTAL, INC.

SITE: IB
CITY, STATE: Bay City
BORING NUMBER: ETG MW-7

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T & T DATE DRILLED: 2-20-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H.Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: well screen set in only saturated zone. While saturation was oil-like at time of well installation, no oil was present during development

DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
0	fill	Sand, slag & wood fill	NO Sample	N/A	N/A
			X	N.D.	95%
5		moist wood, organic odor	X	3	10%
			X	N/A	50%
		saturated wood, poss. oil	X	3.5	70%
10	Fill				
	Fill	Wood, dry w/ sl odor	X	7	80%
			X	N.D.	50%
15	CL	medium gray-hard, stiff clay	X	N.D.	90%
20					
25					

ETG ENVIRONMENTAL, INC.

SITE	IB
CITY, STATE	Bay City,
BORING NUMBER	ETG MW-8
PROJECT NUMBER: 1076	LOGGED BY: LHM
DRILLING CO: T & T	DATE DRILLED: 2-21-95
BORING METHOD: H.S.A.	
SAMPLING METHOD: Split Spoon	
FIELD SCREENING EQUIP.: H.Nu PID-101	
ANALYTICAL METHOD: N/A	
NOTES: soil sample wet @ 6' during drilling, however well was dry at time of development	

WELL CONSTRUCTION	DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
Protective casing						
Bentonite			Silty sand fill	Hand dig		
2" PVC casing			Sandy Clay with trace gravel			
2" dia. Sch. 40 PVC screen		fill	wet silty to clayey fill with gravel. sewer odor.	X	N/A	5%
sand				X	1.5	50%
E.O.B.	10			X	3	90%
	15					
	20					
	25					

ETG ENVIRONMENTAL, INC.

SITE IB
CITY, STATE Bay City
BORING NUMBER ETGMW-9

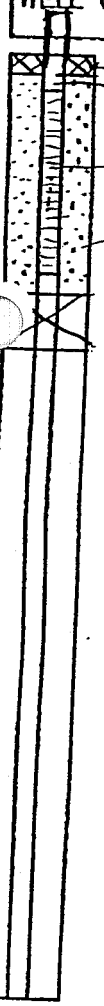
PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T&T DATE DRILLED: 2-21-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H.Nu PID 101
ANALYTICAL METHOD: N/A
NOTES:

WELL CONSTRUCTION	DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
flush mount	0					
2" PVC riser			Sand, silt, and slag fill	X	N.D.	80%
Bentonite		fill		X	0.5	70%
	5			X	0.5	20%
2" dia. Sch 40 PVC screen			Wet silty sand & wood fill	X	N.D.	10%
sand	10			X	N/A	0%
E.O.B.						
	15					
	20					
	25					

ETG ENVIRONMENTAL, INC.

SITE IB
CITY, STATE Bay City
BORING NUMBER ETG MW-10

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T&T DATE DRILLED: 3-1-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split Spoon
FIELD SCREENING EQUIP.: H-Nu PID-101
ANALYTICAL METHOD: Analyzed 0-2' sample for VOCs, PNAs, etc.
NOTES:

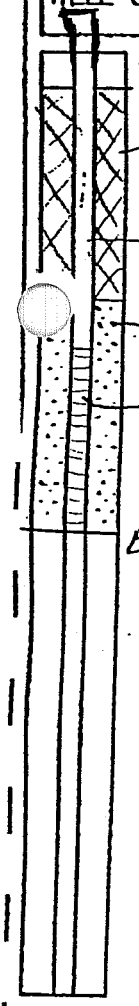


DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
0	CL	light brown tight clay	X	N.D.	60%
	ML	fine-medium grained slightly silty sand.	X	1	60%
5	CL	gray slightly silty tight clay	X	1.2	30%
			X	1	70%
10					
15					
20					
25					

ETG ENVIRONMENTAL, INC.

SITE: IB
CITY, STATE: Bay City
BORING NUMBER: ETGMW-11

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T&T DATE DRILLED: 3-14-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H-Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: Well installed just west of Weston location #9, where Weston reported possible free product.

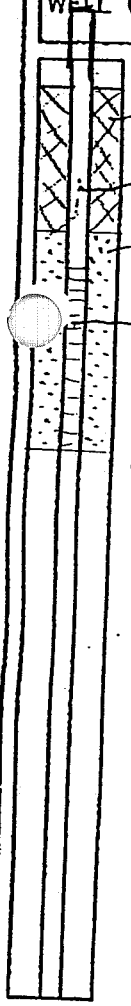


DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
0	fill	sl silty sand w/ slag	X	N.D	60%
			X	N.D.	70%
5		moist brown & gy-brn fine-medium gr. sand/slag	X	0.5	50%
		dark gray slag,	X	N.D.	50%
10		wet gravel & sand w/strong petro. odor	X	6	40%
		slag, wood & sand	X	9	50%
15		No product was encountered			
20					
25					

ETG ENVIRONMENTAL, INC.

SITE IB
CITY, STATE Bay City
BORING NUMBER ETGMW-12

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T & T DATE DRILLED: 3-14-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H-Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: Installed near transformer shed, hydraulically down-gradient from Weston location #9.



DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
0	Fill	slag	X	N/A	0%
			X	N/A	0%
5		apparent free product present during Install.	X	N/A	0%
	SM	* gray fine-medium grained slightly silty sand (strong odor)	X	N/A	0%
10			X	10	50%
		No product present during development/sampling			
15					
20					
25					

ETG ENVIRONMENTAL, INC.

SITE: IB
CITY, STATE: Bay City
BORING NUMBER: ETG MW-13

PROJECT NUMBER: 1076 LOGGED BY: CHM
DRILLING CO: T & T DATE DRILLED: 3-14-95
BORING METHOD: H. S. A.
SAMPLING METHOD: Split Spoon
FIELD SCREENING EQUIP.: H.Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: Well installed south of apparent product discovered @ ETG MW-12.

WELL CONSTRUCTION	DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
flush mount cover	0					
bentonite				X	N.D	0%
2" PVC casing	5			X	N.D.	
				X	0.5	
sand		fill	sand w/slag	X	0.5	
2" PVC screen	10		silty sand & clay	X	N.D.	80%
				X	N.D.	
E.O.B.	15		wet fine-medium grained sand	X	N.D.	
	20					
	25					

ETG ENVIRONMENTAL, INC.

SITE IB
CITY, STATE Bay City
BORING NUMBER ETG MW-15

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T&T DATE DRILLED: 3-15-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H-Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: well installed hydraulically down-gradient of apparent product discovered @ ETG MW-12.

WELL CONSTRUCTION	DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
flush mount Bentonite, 2" PVC, sand	0					
		SM	fine grained silty sand	X	N.D.	40%
2" Screen	5			X	N.D.	60%
				X	N.D.	60%
		CL	silty plastic clay	X	N.D.	
E.O.B.						
	10					
	15					
	20					
	25					

ETG ENVIRONMENTAL, INC.

SITE: IB
CITY, STATE: Bay City
BORING NUMBER: ETG-MW-16

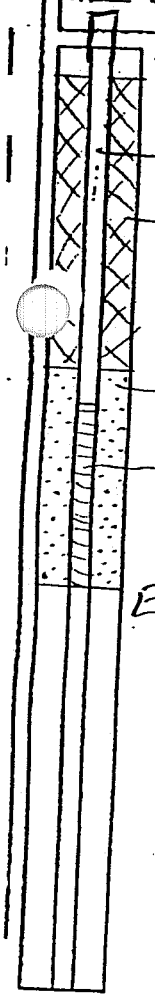
PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T & T DATE DRILLED: 3-15-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split Spoon
FIELD SCREENING EQUIP.: H.Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: Well installed north of product zone @ ETG MW-3

WELL CONSTRUCTION	DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
Flush mount	0			X	N.D.	40%
2" PVC			Slag w/ sand, trace wood	X	N.D.	50%
Bentonite	5	Fill		X	N.D.	60%
			silty to sandy clay	X	N.D.	60%
sand				X	N.D.	60%
2" PVC screen	10		sand, wood & slag	X	N.D	70%
			silty sand w/tr clay	X	1	80%
E.O.B.	15		silty clay & sand			
	20					
	25					

ETG ENVIRONMENTAL, INC.

SITE: IB
CITY, STATE: Bay City
BORING NUMBER: ETG MW-17

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T&T DATE DRILLED: 3-15-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H. Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: Installed south of product zone @ ETG MW-3.

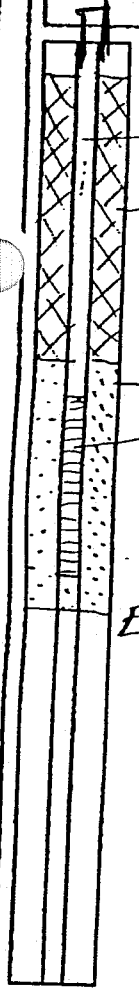


DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
0			X	N/A	0%
		Silty sand	X	N.D	30%
5	fill		X	N/A	0%
		Sand, slag, clay & concrete fill	X	N.D.	30%
10			X	N.D.	30%
			X	N.D.	90%
		light medium brown clean sand	X	N/A	0%
15					
20					
25					

ETG ENVIRONMENTAL, INC.

SITE IB
CITY, STATE Bay City
BORING NUMBER ETG-MW-18

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T & T DATE DRILLED: 3-16-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H.Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: Well installed hydraulically downgradient from product @ ETG-MW-3.



DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
0	fill	sand w/ slag	X	0.5	30%
			X	3	80%
5		sand, slag & clay	X	N.D.	70%
			X	N.D.	90%
			X	N.D.	20%
10			X	N/A	5%
		silty clay w/ gravel	X	N.D.	90%
15		silt, sand & wood	X	N.D.	20%
20					
25					

ETG ENVIRONMENTAL, INC.

SITE IB
CITY, STATE Bay City
BORING NUMBER ETG MW-19

PROJECT NUMBER: 1076 LOGGED BY: LHM
DRILLING CO: T&T DATE DRILLED: 3-16-95
BORING METHOD: H.S.A.
SAMPLING METHOD: Split spoon
FIELD SCREENING EQUIP.: H-Nu PID-101
ANALYTICAL METHOD: N/A
NOTES: Well installed hydraulically up-gradient of product @ ETG-MW-3

WELL CONSTRUCTION	DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
Flush mount	0					
bentonite			sand w/slag	X	N.D.	5%
	5			X	N.D.	10%
2" PVC				X	N.D.	40%
		fill	Slag, sand and building debris	X	N.D.	5%
2" PVC Screen	10			X		30%
				X		30%
sand				X		40%
Hole Plug E.O.B.	15		Silty sand w/wood Petroleum odor	X		30%
	20					
	25					

ETG ENVIRONMENTAL, INC.

ATTACHMENT J

ETG ENVIRONMENTAL, INC. - PROJECT SUMMARY, BORING LOGS AND ANALYTICAL RESULTS

PROJECT SUMMARY
FORMER INDUSTRIAL BROWNHOIST SITE
BAY CITY, MICHIGAN

ETG Environmental completed limited assessment and remedial activities at the former Industrial Brownhoist site located in Bay City, Michigan (**Figure 1**) in anticipation of "Due Care" issues related to the planned sale of the property. The areas of concern related to the Due Care issues are as follows:

- A area of coal tar contamination from an historical gasification facility, located at the northeast corner of Building 41, and

- A small area underlain by phase-separated hydrocarbons, surrounding monitoring well ETG MW-3S.

COAL TAR-PIT

The coal tar pit area was investigated to ascertain whether migration of coal tar-based contamination has occurred in the approximate 90 years since abandonment of the gasification facility. It was believed at the outset that the pit lies in a low-permeability formation, and was unlikely to constitute a contaminant source to surrounding soils and groundwater. The following steps were taken to support this expectation:

- Three deep monitoring wells (ETG MW-20, MW-21, and MW-22) were installed surrounding the Coal Tar-Pit (**Figure 2**).

- As depicted on the geologic cross-sections identified on **Figure 3** and presented in **Figure 4**, no lithologic pathways have been discovered to indicate that the Coal Tar-Pit is hydraulically connected to the surrounding soils.

- MW-20, installed east of Building 41 and south of the Coal-Tar Pit (to forty-three feet below grade), produced only enough water to collect samples for VOC analysis

- MW-21, installed north of Building 41 (to forty feet below grade), produced enough water to collect samples for both VOC and PNA analysis.

- MW-22, installed west of Building 41 (to forty-one feet below grade), did not produce enough water to collect samples.

- VOC compounds were not detected in samples collected from either MW-20 or MW-21.

- PNA compounds were not detected in the groundwater sample collected from MW-21.

Conclusions and Recommendations

- Lack of groundwater in MW-22, which is situated west of the Coal Tar Pit, indicates that this portion of the site is not hydraulically connected with the Coal Tar Pit. Consequently, contaminants situated in the Coal Tar-Pit cannot migrate in this direction.

- The fact that VOCs were not detected in either MW-20 or MW-21, while 2,800 ug/L benzene was detected in MW-1D, indicates that contaminant migration from the Coal Tar-Pit to the surrounding area has not occurred.

Given the fact that migration of contaminants is either not possible or, if possible, has not occurred in more than 90 years, no additional actions are required for the care of the coal tar pit area.

FREE PRODUCT AREA

A removal action was conducted to eliminate phase-separated hydrocarbons and associated soils from the area surrounding ETG MW 3S.

- A total of 360 cubic yards of product-contaminated soil was excavated (**Figure 5**) and removed for non-hazardous disposal at Tay-Ban Corporation's landfill located in Birch Run, Michigan.

- 5,300 gallons of product and groundwater were pumped from the excavation and transported for off-site non-hazardous disposal at Environmental Waste Control's Inkster, Michigan facility.

- A trench/sump piping system was installed in the excavation to facilitate additional product removal (**Figure 6**).

- The excavation was filled in with approximately 70 cubic yards of peastone, 280 cubic yards of clean sand, and approximately 150 cubic yards of native soil.

- Approximately 110 gallons of water was pumped from the trench/sump network on November 29, 1995. A slight petroleum odor was present, as was a sheen on the water. However, no product was present.

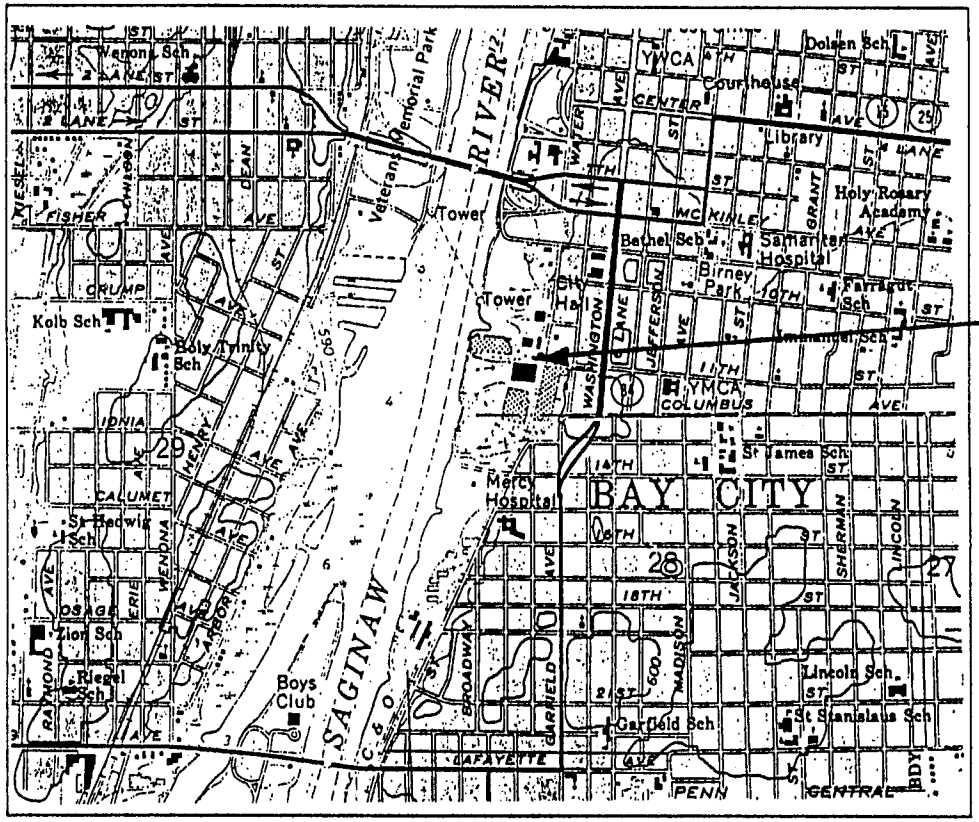
Conclusions and Recommendations

- Visual observations of the excavation area prior to installation of the trench/sump network indicate that the majority of product previously located in this area was removed during excavation and vacuum truck activities.

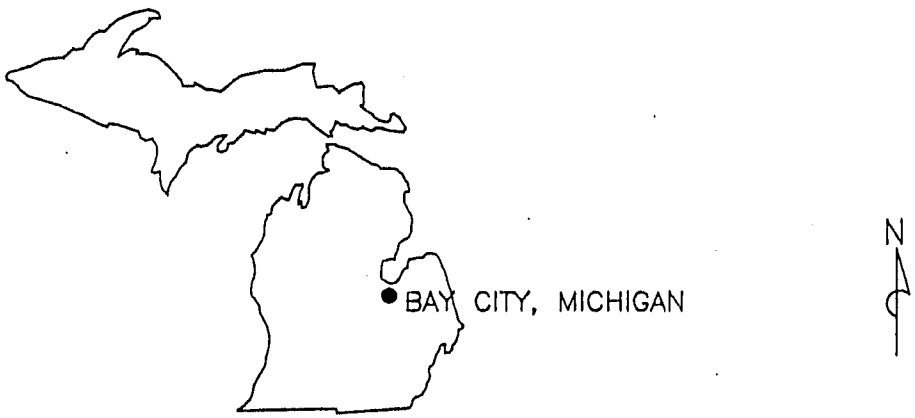
- The lack of free product present in the trench/sump network confirms that the amount of product remaining, if any, is minimal.

- The slight petroleum odor and visible sheen present on the water removed from the trench/sump network warrants an additional pumping event, which will be completed during the week of December 4, 1995.

Contingent on no additional recoverable free product during the week of December 4, 1995, the sump system will be removed and no additional actions will be required for this area.



Map reference from United States Geological Survey

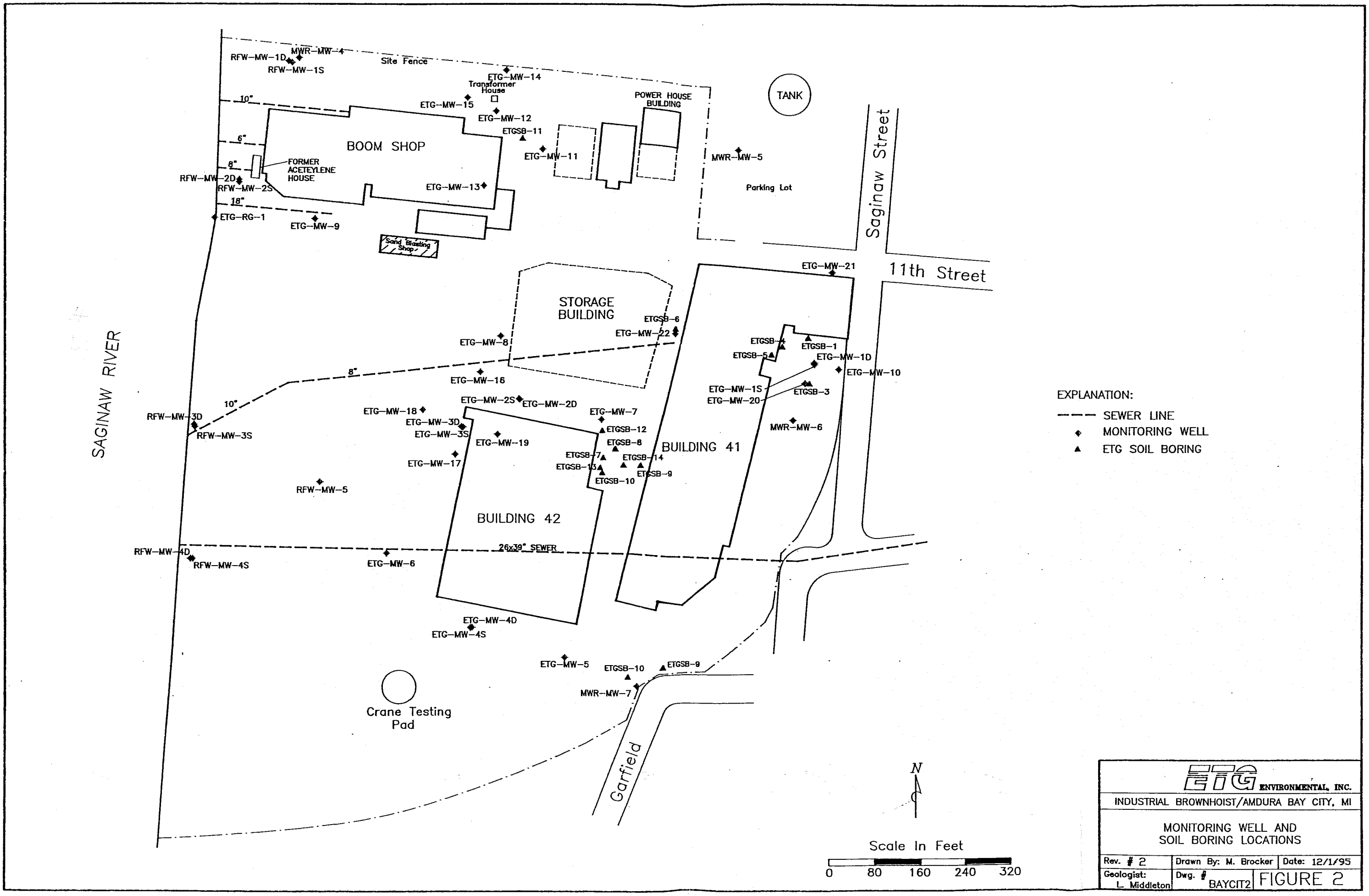


ETG ENVIRONMENTAL, INC.

AMDURA BAY CITY, MICHIGAN

SITE LOCATION MAP

Rev. # 1	Drawn By: M. Brocker	Date: 1/20/93
Geologist:	Dwg. # SITELOC	FIGURE 1



ETG ENVIRONMENTAL, INC.

INDUSTRIAL BROWNHOIST/AMDURA BAY CITY, MI

MONITORING WELL AND SOIL BORING LOCATIONS

Rev. # 2	Drawn By: M. Brocker	Date: 12/1/95
Geologist: L. Middleton	Dwg. # BAYCIT2	FIGURE 2

MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Andura, Bay City, MI	SB-9

Date Drilled	Sheet	Drilling Method	Geologist
8-1-89	9 of 16	Hex-Core	T. Ramos

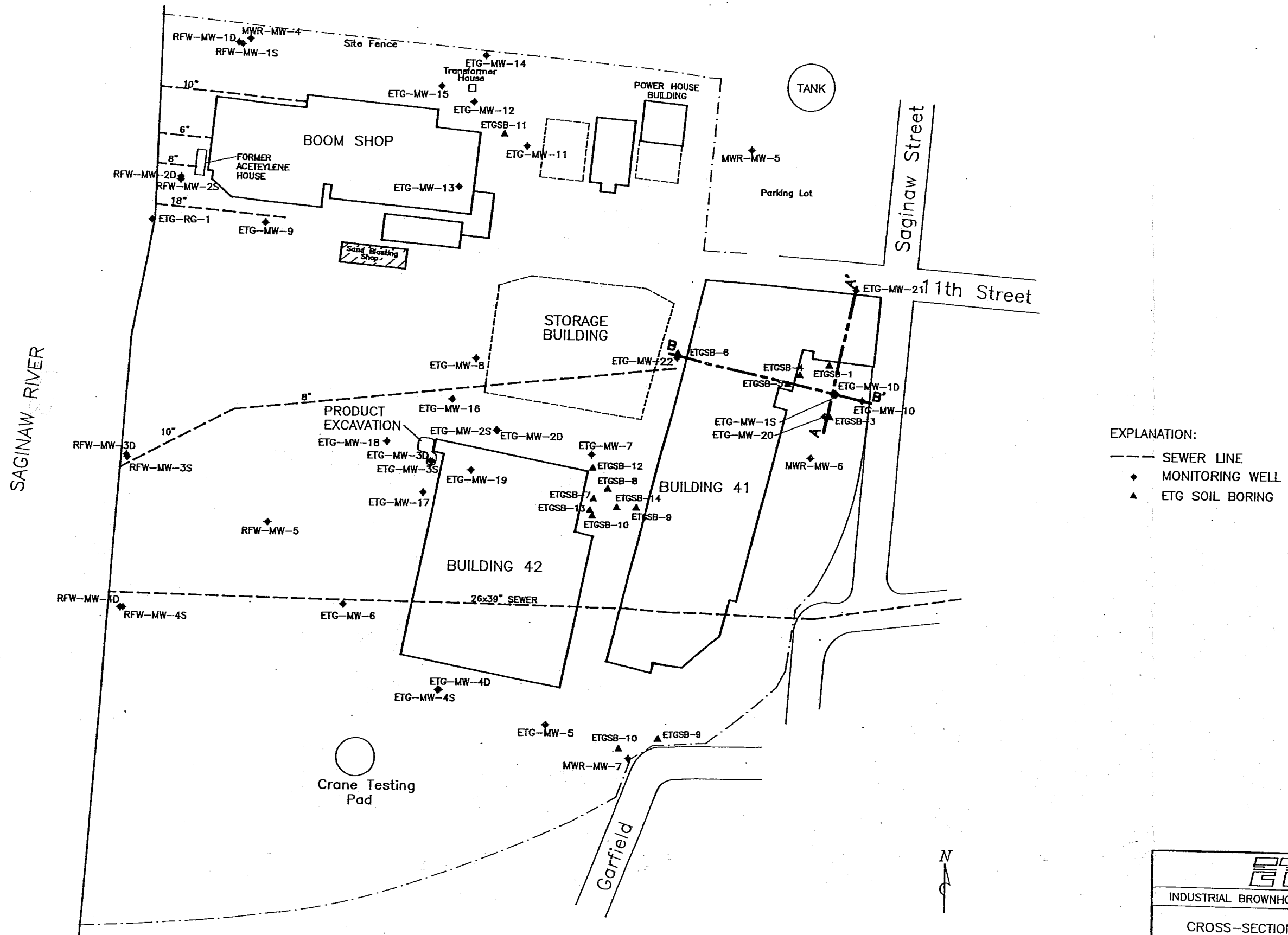
Surface Elevation	Top of Casing	Potentiometric (Date)

Hole Depth	Diameter	Casing Type	Screen Type
6 ft.	4 in.		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS16	18/24	15	11	12		1			Parking lot, black sand, 6" grey sand, Zone reddish-brown.	
						2				
						3			Black, fine-med. grained, sand, no odor, moist.	
SS17	18/24	5	3	5		4				
						5				
						6				
						7				
						8				
						9				
						10				
						11				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval



EXPLANATION:

- SEWER LINE
- MONITORING WELL
- ETG SOIL BORING

ETG ENVIRONMENTAL, INC.

INDUSTRIAL BROWNHOIST/AMDURA BAY CITY, MI

CROSS-SECTION AND EXCAVATION LOCATION MAP

Rev. # 2	Drawn By: M. Brocker	Date: 12/1/95
Geologist: L. Middleton	Dwg. # BAYCIT2	FIGURE 3

MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Amdura, Bay City, MI	SB-8

Date Drilled	Sheet	Drilling Method	Geologist
8-1-89	8 of 16	Hex-Core	T. Ramos

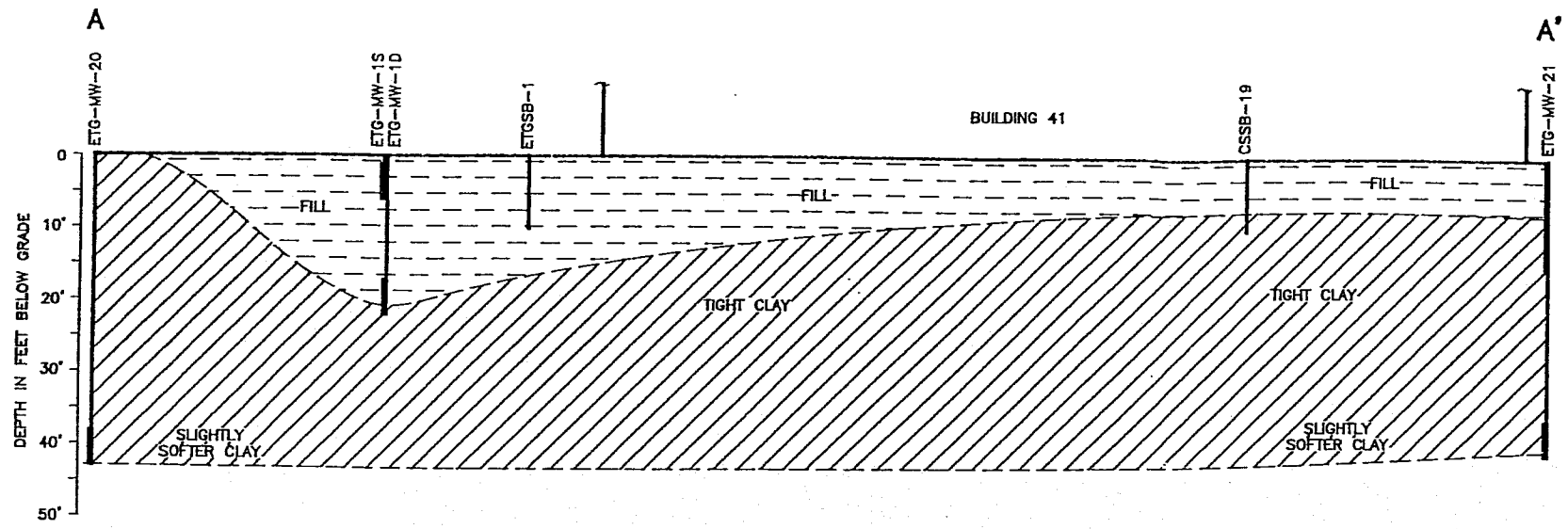
Surface Elevation	Top of Casing	Potentiometric (Date)

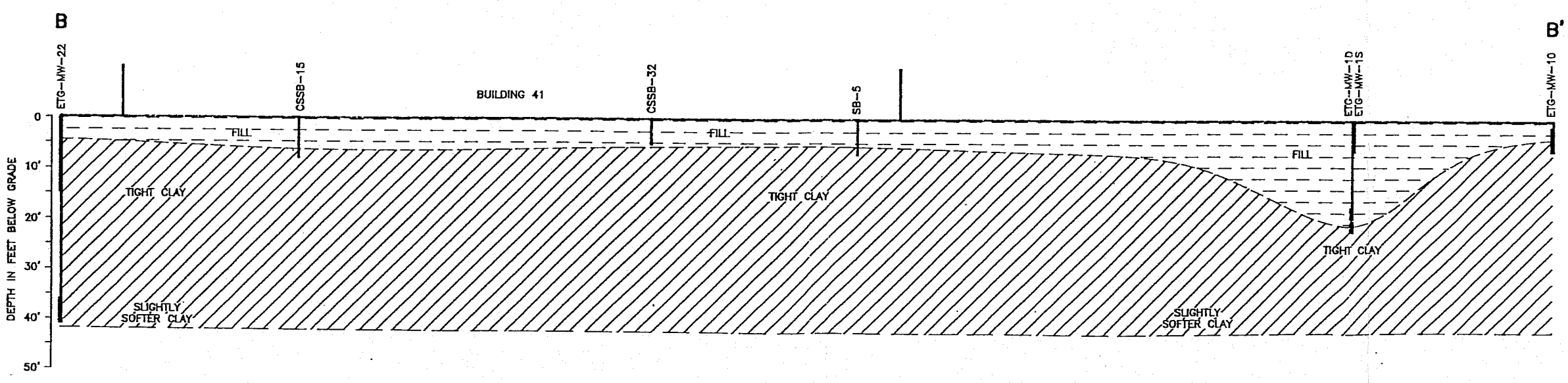
Hole Depth	Diameter	Casing Type	Screen Type
6 ft.	4 in.		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS14	12/24	9	12	7		1			Same Dark Sand with slag pebbles.	
						2, 3			Black, fine-med. grained sand, with rounded pebbles, no odor, moist.	
SS15	12/24	4	3	3		4, 5			Same, increases in moisture.	
						6, 7, 8, 9, 10, 11				

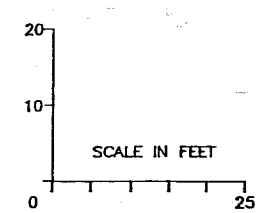
SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval





NOTE: MONITORING WELLS MW-21 AND MW-22 ARE DOUBLE CASED FROM 0-15' BELOW GRADE.



ETG ENVIRONMENTAL, INC.

INDUSTRIAL BROWNHOIST/AMDURA BAY CITY, MI

GEOLOGIC CROSS-SECTIONS

Rev. # 2	Drawn By: M. Brocker	Date: 12/2/95
Geologist: L. Middleton	Dwg. # BAY-CR	FIGURE 4

MIDWEST WATER RESOURCE, INC.

P.O. BOX 10
CHARLOTTE, MI 48813
(517) 543-8155

Soil Boring/Well Log

Project	Location	Boring No.
Howard & Howard	Andura, Bay City, MI	SB-7

Date Drilled	Sheet	Drilling Method	Geologist
8-1-89	7 of 16	Hex-Core	T. Ramos

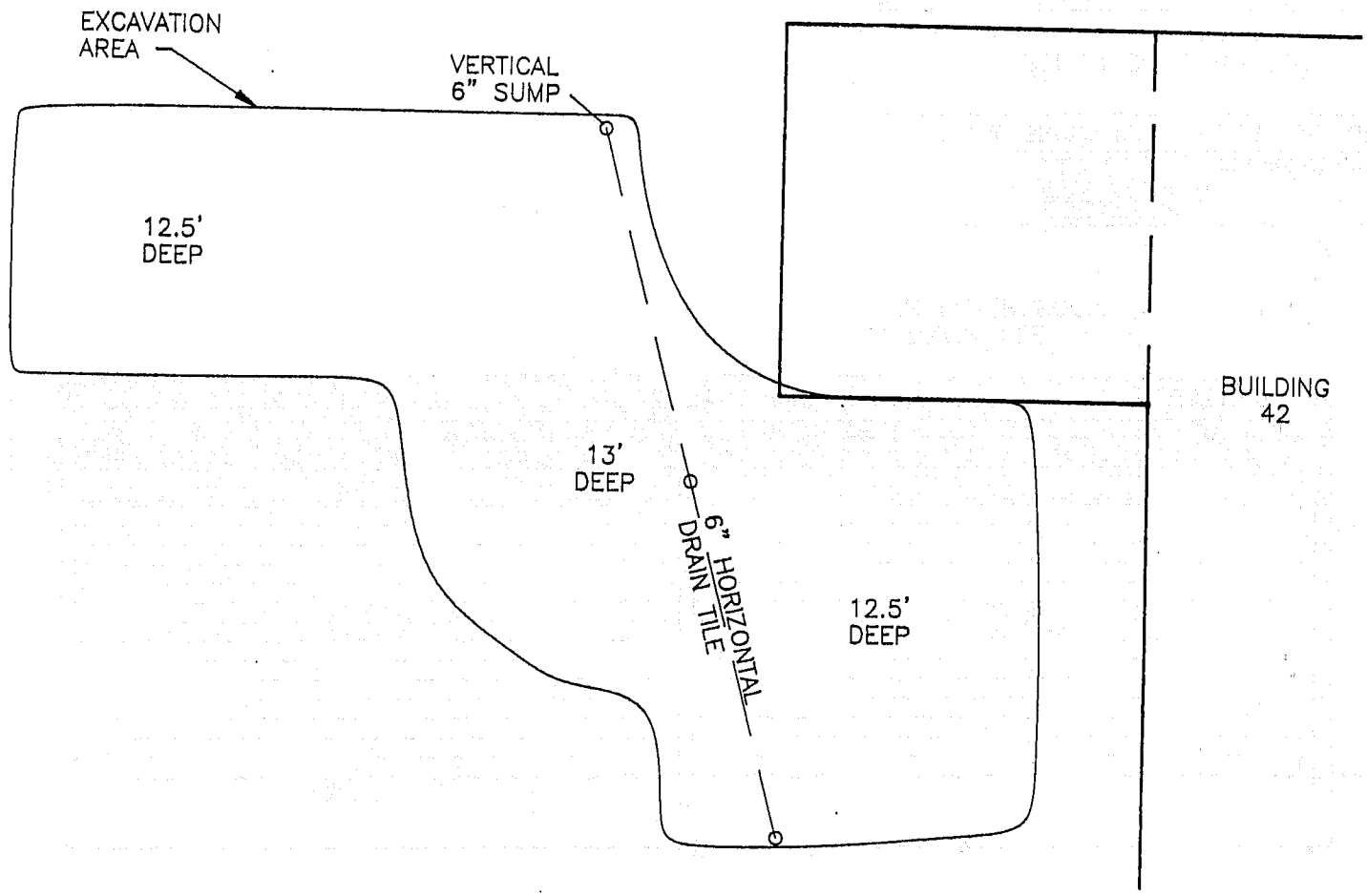
Surface Elevation	Top of Casing	Potentiometric (Date)

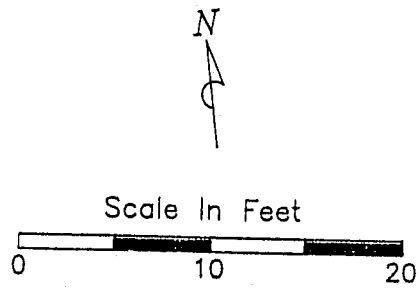
Hole Depth	Diameter	Casing Type	Screen Type
6 ft.	4 in		

Soil Sample No.	Penetration & Recovery (Inches)	Split Spoon Blow Counts 6" Intervals 1st	2nd	3rd	PID/OVA (ppm)	Depth Below Surface (ft.)	Static Water Level	Well Completion	Lithologic Description and Remarks	USCS Class
SS-12	12/24	8	7	5		1			Dark Reddish-brown, medium grained sand with larger angular pebbles, also slag pebbles, no odor, unconsolidated, moist.	
						2, 3			Dark Brown sand, fine-med. grained, no odor, with larger pebbles, moist.	
SS-13	6/24	3	2	3		4, 5			Grey sand, fine-grained, no odor, wet.	
						6, 7, 8, 9, 10, 11				

SS = Split Spoon
ST = Shelby Tube

Bentonite Slurry
Native Backfill
Concrete
Dry Granular Bentonite
Sand Screen Pack
Screened Interval



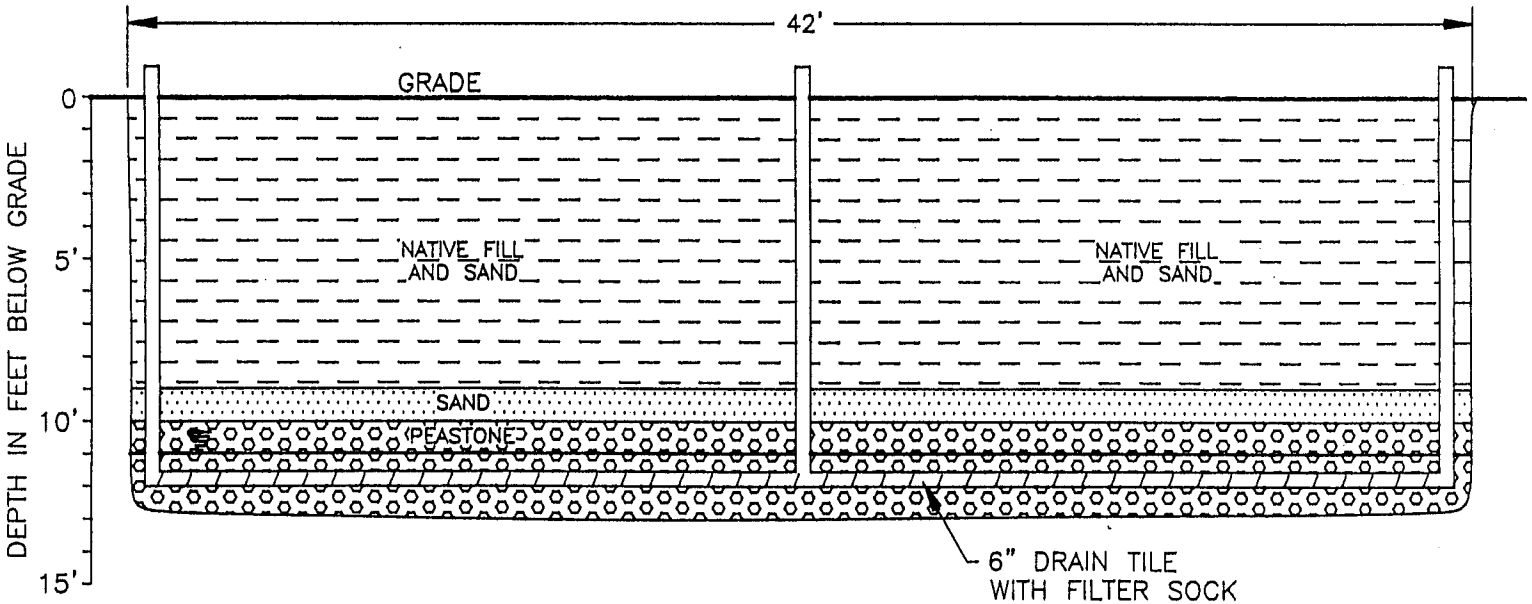


ETG ENVIRONMENTAL, INC.

INDUSTRIAL BROWNHOIST/AMDURA BAY CITY, MI

PRODUCT EXCAVATION AREA

Rev. # 1	Drawn By: M. Brocker	Date: 12/1/95
Geologist: L. Middleton	Dwg. # BAYEXCA	FIGURE 5



ETG ENVIRONMENTAL, INC.

INDUSTRIAL BROWNHOIST/AMDURA BAY CITY, MI

TRENCH CONSTRUCTION

Rev. # 1	Drawn By: M. Brocker	Date: 12/3/95
Geologist: L. Middleton	Dwg. # BAY-TRC	FIGURE 6

FORMER INDUSTRIAL BROWNHOIST SITE
BAY CITY, MICHIGAN
MONITORING WELL #MW-20

PROJECT NUMBER: 1076 LOGGED BY: J.A.

DRILLING CO: T&T DRILLING DATE DRILLED: 11/8/95

BORING METHOD: 8 1/4" HOLLOW STEM AUGER

SAMPLING METHOD: CONTINUOS SPLIT SPOON

FIELD SCREENING EQUIP.: Hnu PID

ANALYTICAL METHOD: NA

NOTES: WELL APPEARED TO BE DRY AT TIME OF INSTALLATION.
SCREEN INTERVAL BASED ON SOFTER CLAY PRESENT 37–40'

WELL CONSTRUCTION	DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
1' CONCRETE W/ 2' STICK-UP SECURITY COVER	0	FILL	FILL		0	
		CL	LIGHT REDDISH BROWN SILTY CLAY WITH GRAVEL, LOW PLASTICITY AND SLIGHTLY MOIST		0	
	10				0	
BENTONITE/CEMENT GROUT			LIGHT GRAYISH BROWN SILTY CLAY WITH GRAVEL		0	
	20				0	
2" SCH. 40 PVC RISER		CL			0	
	30				0	
BENTONITE CHIPS			MOISTURE CONTENT INCREASES, BUT NOT TO POINT OF SATURATION		0	
10 SLOT SCH. 40 PVC SCREEN	40				0	
			END OF BORING @43'			
	50					

ETG ENVIRONMENTAL, INC.

FORMER INDUSTRIAL BROWNHOIST SITE
BAY CITY, MICHIGAN
MONITORING WELL #MW-21

PROJECT NUMBER: 1076 LOGGED BY: J.A.

DRILLING CO: T&T DRILLING DATE DRILLED: 11/8/95

BORING METHOD: 8 1/4" HOLLOW STEM AUGER

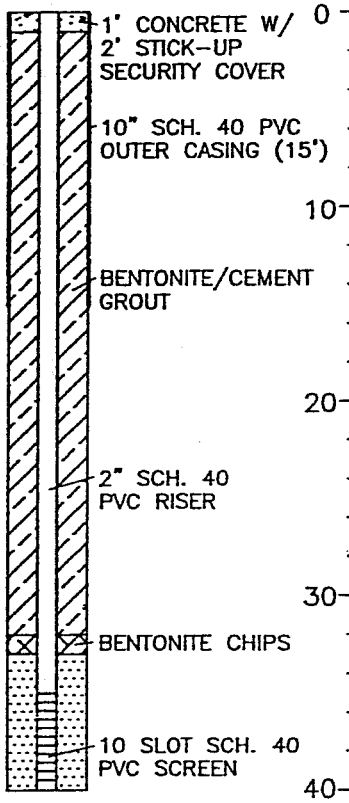
SAMPLING METHOD: CONTINUOS SPLIT SPOON

FIELD SCREENING EQUIP.: Hnu PID

ANALYTICAL METHOD: NA

NOTES: WELL APPEARED TO BE DRY AT TIME OF INSTALLATION.

SCREEN INTERVAL BASED ON SOFTER CLAY PRESENT 35-40'



DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
0	SM	MOIST INTERBEDDED SILTY CLAY WITH SAND		0	
				0	
		TIGHT SILTY CLAY WITH TRACE GRAVEL		0	
				0	
		GRAY-BROWN HARD, DRY CLAY		0	
10		CLAY TILL, DRY, HARD		0	
				0	
				0	
				0	
				0	
20	CL			0	
				0	
				0	
				0	
				0	
30				0	
				0	
		CLAY TILL, SLIGHTLY SOFTER THAN ABOVE		0	
				0	
				0	
40				0	
		END OF BORING @40'			
50					

ETG ENVIRONMENTAL, INC.

FORMER INDUSTRIAL BROWNHOIST SITE
BAY CITY, MICHIGAN
MONITORING WELL #MW-22

PROJECT NUMBER: 1076 LOGGED BY: J.A.

DRILLING CO: T&T DRILLING DATE DRILLED: 11/9-11/10/95

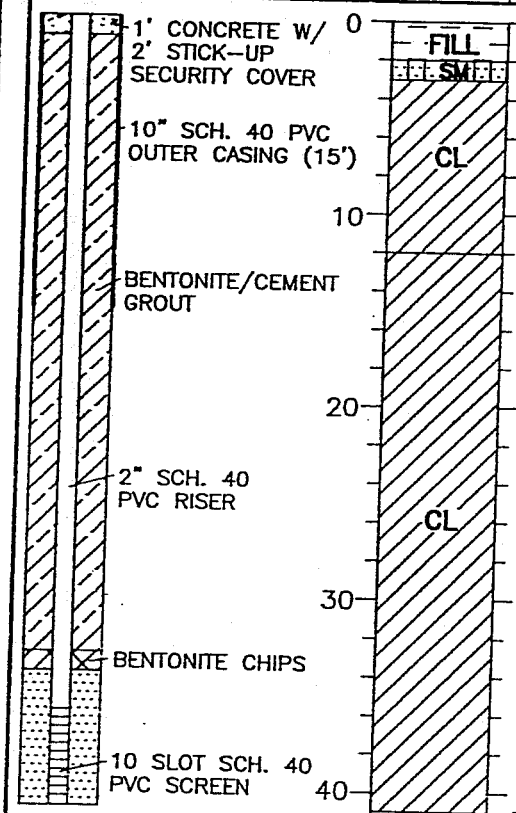
BORING METHOD: 8 1/4" HOLLOW STEM AUGER

SAMPLING METHOD: CONTINUOS SPLIT SPOON

FIELD SCREENING EQUIP.: Hnu PID

ANALYTICAL METHOD: NA

NOTES: WELL APPEARED TO BE DRY AT TIME OF INSTALLATION.
SCREEN INTERVAL BASED ON SOFTER CLAY PRESENT 36-41'



DEPTH (FT)	BORING LOG	DESCRIPTION AND COMMENTS	SAMPLES	HEAD SPACE (ppm)	RECOVERY
0	FILL	FILL			
	SM	LIGHT GRAY SILTY FINE SAND		0	
	CL	LIGHT GRAY SILTY CLAY WITH GRAVEL. TIGHT WITH LOW PLASTICITY		0	
10		LIGHT-MEDIUM BROWN SILTY CLAY WITH GRAVEL. PREDOMINATELY TIGHT AND SLIGHTLY MOIST.		0	
20	CL			0	
30				0	
		MOISTURE CONTENT INCREASES. CLAY BECOMES SOFT AND PLASTICITY INCREASES		0	
40		END OF BORING @41'		0	
50					

ETG ENVIRONMENTAL, INC.

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 32741.00
Client Reference: 1076.00

Sample Identification:	MW-20	Date Sampled:	--
Lab Number:	001a/D9075.D	Date Received:	11/20/95
Sample Type:	Water	Date Prepared:	11/20/95
Preparation Method:	--	Date Analyzed:	11/20/95
Analytical Method:	EPA 8260		
Analyst:	DS		

Analyte	Concentration (µg/L)	LOD (µg/L)
Volatile Compounds		
Acetone	<50	50
Benzene	<1	1
Bromodichloromethane	<1	1
Bromoform	<1	1
Bromomethane	<1	1
2-Butanone	<50	50
Carbon disulfide	<50	50
Carbon tetrachloride	<1	1
Chlorobenzene	<1	1
Chloroethane	<1	1
Chloroform	<1	1
Chloromethane	<1	1
Dibromochloromethane	<1	1
1,2-Dichlorobenzene	<1	1
1,3-Dichlorobenzene	<1	1
1,4-Dichlorobenzene	<1	1
1,1-Dichloroethane	<1	1
1,2-Dichloroethane	<1	1
1,1-Dichloroethene	<1	1
cis-1,2-Dichloroethene	<1	1
trans-1,2-Dichloroethene	<1	1
1,2-Dichloropropane	<1	1
cis-1,3-Dichloropropene	<1	1
trans-1,3-Dichloropropene	<1	1
Ethylbenzene	<1	1
2-Hexanone	<50	50
Methylene chloride	<1	1
4-Methyl-2-pentanone	<50	50
Styrene	<1	1
1,1,2,2-Tetrachloroethane	<1	1
Tetrachloroethene	<1	1
Toluene	<1	1

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 32741.00
Client Reference: 1076.00

Sample Identification:	MW-20		
Lab Number:	001a/D9075.D	Date Sampled:	--
Sample Type:	Water	Date Received:	11/20/95
Preparation Method:	--	Date Prepared:	11/20/95
Analytical Method:	EPA 8260	Date Analyzed:	11/20/95
Analyst:	DS		

Analyte	Concentration (µg/L)	LOD (µg/L)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<1	1
1,1,2-Trichloroethane	<1	1
Trichloroethene	<1	1
Vinyl acetate	<1	1
Vinyl chloride	<1	1
Xylenes [total]	<3	3

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 32741.00
Client Reference: 1076.00

Sample Identification:	MW-21	Date Sampled:	--
Lab Number:	002a/D9073.D	Date Received:	11/20/95
Sample Type:	Water	Date Prepared:	11/20/95
Preparation Method:	--	Date Analyzed:	11/20/95
Analytical Method:	EPA 8260		
Analyst:	DS		

Analyte	Concentration (µg/L)	LOD (µg/L)
Volatile Compounds		
Acetone	<50	50
Benzene	<1	1
Bromodichloromethane	<1	1
Bromoform	<1	1
Bromomethane	<1	1
2-Butanone	<50	50
Carbon disulfide	<50	50
Carbon tetrachloride	<1	1
Chlorobenzene	<1	1
Chloroethane	<1	1
Chloroform	<1	1
Chloromethane	<1	1
Dibromochloromethane	<1	1
1,2-Dichlorobenzene	<1	1
1,3-Dichlorobenzene	<1	1
1,4-Dichlorobenzene	<1	1
1,1-Dichloroethane	<1	1
1,2-Dichloroethane	<1	1
1,1-Dichloroethene	<1	1
cis-1,2-Dichloroethene	<1	1
trans-1,2-Dichloroethene	<1	1
1,2-Dichloropropane	<1	1
cis-1,3-Dichloropropene	<1	1
trans-1,3-Dichloropropene	<1	1
Ethylbenzene	<1	1
2-Hexanone	<50	50
Methylene chloride	<1	1
4-Methyl-2-pentanone	<50	50
Styrene	<1	1
1,1,2,2-Tetrachloroethane	<1	1
Tetrachloroethene	<1	1
Toluene	<1	1

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 32741.00
Client Reference: 1076.00

Sample Identification:	MW-21		
Lab Number:	002a/D9073.D	Date Sampled:	--
Sample Type:	Water	Date Received:	11/20/95
Preparation Method:	--	Date Prepared:	11/20/95
Analytical Method:	EPA 8260	Date Analyzed:	11/20/95
Analyst:	DS		

Analyte	Concentration (µg/L)	LOD (µg/L)
Volatile Compounds (continued)		
1,1,1-Trichloroethane	<1	1
1,1,2-Trichloroethane	<1	1
Trichloroethene	<1	1
Vinyl acetate	<1	1
Vinyl chloride	<1	1
Xylenes [total]	<3	3

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

Clayton
ENVIRONMENTAL CONSULTANTS

Analytical Results
for
ETG ENVIRONMENTAL, INC.
Clayton Project No. 32741.00
Client Reference: 1076.00

Sample Identification:	MW-21	Date Sampled:	--
Lab Number:	002b/E7868.D	Date Received:	11/20/95
Sample Type:	Water	Date Prepared:	11/20/95
Preparation Method:	EPA 3510A	Date Analyzed:	11/20/95
Analytical Method:	EPA 8270		
Analyst:	LL		

Analyte	Concentration (µg/L)	LOD (µg/L)
Polynuclear Aromatics		
Acenaphthene	<5	5
Acenaphthylene	<5	5
Anthracene	<5	5
Benzo[a]anthracene	<5	5
Benzo[a]pyrene	<5	5
Benzo[b]fluoranthene	<5	5
Benzo[g,h,i]perylene	<5	5
Benzo[k]fluoranthene	<5	5
Chrysene	<5	5
Dibenzo[a,h]anthracene	<5	5
Fluoranthene	<5	5
Fluorene	<5	5
Indeno[1,2,3-cd]pyrene	<5	5
Naphthalene	<5	5
Phenanthrene	<5	5
Pyrene	<5	5

General Notes:
<: Less than the indicated limit of detection (LOD)
--: Information not available or not applicable

ATTACHMENT K

ETG ENVIRONMENTAL, INC. - GASEOUS-PHASE BENZENE CONCENTRATIONS

ETG
Environmental, Inc.

Providing creative environmental solutions

December 5, 1995

Ms. Sally Bartz
Roy F. Weston, Inc.
Suite 270
2125 University Park Drive
Okemos, Michigan 48864

Re: Coal Tar Pit
Former Industrial Brownhoist Facility
Bay City Michigan

Dear Sally:

As a follow-up to our meeting with Michigan Department of Environmental Quality (MDEQ) yesterday, I am providing an estimate of gaseous-phase benzene in soils overlying the "coal tar pit" at the former Industrial Brownhoist facility. The objective is to determine whether the gaseous-phase concentration of benzene, at equilibrium, requires further attention.

My analysis is as follows:

1. Estimate the Henry's Law constant for benzene at 10°C.

Henry's Law indicates that the vapor pressure, P_A, for any compound, A, in the gas overlying an aqueous-phase solution of compound A, is proportional to the aqueous-phase concentration of A:

$$P_A\ (atm) = K_A\ (\frac{L \cdot atm}{mol}) \cdot [A]_{aq}\ (\frac{mol}{L}) \qquad \textbf{EQN 1}$$

The constant of proportionality, K_A, is the Henry's Law constant. The Henry's Law constant is temperature-dependent, and not broadly available at normal groundwater temperatures. It is necessary to derive a value for the constant, using solubility and vapor pressure values for benzene at 10°C. To do this, we use the fact that when the vapor pressure of benzene reaches that of pure benzene, the equilibrium aqueous-phase concentration is the saturation value for the temperature of interest. For

7707 Rickle Road, Lansing, MI 48917 • (517) 322-9311 • Fax (517) 322-2936
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