INDIANA
VOLUNTARY REMEDIATION PROGRAM

REMEDIATION WORK PLAN

FOR SOILS AT THE FORMER OLIVER PLOW WORKS
VRP SITE # 6001202

Located at:
533 S. CHAPIN STREET
SOUTH BEND, INDIANA 46601

Prepared for:
SOUTH BEND REDEVELOPMENT COMMISSION
1200 COUNTY-CITY BUILDING
SOUTH BEND, INDIANA 46601

Prepared by:
HULL & ASSOCIATES, INC.
4900 PARKWAY DRIVE
SUITE 100
MASON, OHIO 45040

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Hull & associates, inc.

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1.0 EXECUTIVE SUMMARY

The purpose of this of this Remediation Work Plan (RWP) is to describe activities necessary to support successful remediation of soil at the former Oliver Plow Works property (Area C – the Site) and to receive a Covenant Not to Sue from the State of Indiana under the Indiana Department of Environmental Management (IDEM) Voluntary Remediation Program (VRP). The Site occupies approximately 36 acres of land located at 533 South Chapin Street, South Bend, Indiana.

From 1876 to 1989 activities at the Site included manufacture of farm machinery and implements. More recently, the northwest portion of the Site has been used for warehousing of goods and the former administration building in the eastern portion of the Site has been used for office space, while the remainder of the Site has been vacant.

Several environmental assessments have been conducted at the Site. These assessments included sampling and testing of surface and subsurface soils for volatile organic compounds (VOCs), semivolatile organic compounds (SVOCs), Resource Conservation and Recovery Act (RCRA) metals, Target Analyte List (TAL) metals and/or polychlorinated biphenyls (PCBs). Testing completed thus far has revealed that lead is the only chemical of concern (COC) in soils that exceeds its VRP Tier II nonresidential cleanup goal. However, SVOCs, VOCs, metals and PCBs have been detected above laboratory reporting limits.

The following migration pathways for lead in soils were identified:

1. tracking of soil;
2. soil to air (particulates); and
3. leaching of soil to groundwater; and

Vapor migration from soils also constitutes a potential migration pathway in areas where VOCs were detected.

Potential exposure pathways include:

1. inhalation of outdoor ambient/indoor air containing fugitive dust from contaminated soil;
2. dermal contact with soil;
3. incidental ingestion of soil on-Site;
4. inhalation of outdoor ambient air containing VOCs released from subsurface soil; and
5. inhalation of indoor air containing VOCs released from subsurface soil.

It is anticipated that in the absence of engineering and institutional controls, VRP Tier II cleanup goals will be used to confirm that successful remediation has been completed in soil. Based on the current understanding of Site conditions, it is anticipated that soils exceeding VRP Tier II nonresidential standards will be excavated and consolidated on-Site or left in place and addressed with engineering and institutional controls. Appropriate engineering and institutional controls will be put in place for consolidated soils to limit potential migration of and exposure to COCs.

2.0 INTRODUCTION

Hull & Associates, Inc. (Hull) has been retained by the City of South Bend Department of Community and Economic Development (the City) to prepare a RWP and supporting documents to remediate the soils at the Site in accordance with Indiana's VRP. Supporting documents contained in the Work Plan include: a Quality Assurance Project Plan (QAPP), a Health and Safety Plan (HASP) and a Confirmation Sampling Plan. This RWP and associated documents were prepared in general conformance with the requirements contained in the VRP Resource Guide dated July 1996.

2.1 Site Background

2.1.1 Site Location and History

The Site (VRP Application #6001202) is located at 533 South Chapin Street, South Bend, Indiana. The Site encompasses approximately 36 acres and is bounded on the north by Norfolk Southern Railroad, to the east by Chapin Street, to the South by industrial and commercial properties and to the west by Arnold Street and residential properties. The location of the property is shown on Figure 1.

The Site has historically been used for the manufacturing of farm machinery and implements. The Site formerly contained 37 buildings covering approximately 913,800 square feet of buildings. To date, all but two of the buildings have been demolished. The two remaining buildings are the Former Boiler House Building and the Former #2 Forge Shop. The Site Plan showing the configuration of buildings and other features prior to demolition activities is included as Figure 2.

The Site began operations in or around 1876 and ceased manufacturing activities in 1989. Since 1989, the property has remained mostly vacant with the exception of contiguous Buildings #29 and #29A, which were used as warehouse space, and Building #1, which was used as Office space for the State of Indiana Welfare Services. The City acquired the property in March 2002.

Since 1988, numerous environmental investigations and cleanup activities have been completed at the Site. Section 2.2 of this Work Plan provides a list of the environmental site assessment (ESA) activities that have been completed. With the exception of Envirocorp

Services & Technology, Inc.'s (Envirocorp's) 1999 Phase II ESA, investigations have focused primarily on assessing and remediating surface and shallow soils. Remediation activities completed during this period included the removal and disposal of PCB contaminated soil and the removal of five underground storage tanks (USTs). This RWP has been prepared based on information derived from documentation of previous investigations and remedial efforts, which have formed Hull's current understanding of the Site. Additional areas requiring investigation have been identified following removal of the floor slabs from the demolished structures.

The following provides brief summaries of the assessments and remedial activities and respective analytical results for soils that have been completed at the Site to date.

Environmental Liabilities Assessments by Roy F. Weston, Inc.

In August 1988, Roy F. Weston, Inc. (Weston) conducted an "Environmental Liabilities Assessment" at the Site for Allied Products Inc., South Bend, Indiana. The assessment noted three USTs in the southwest portion of the Site and hazardous waste storage in the northeast portion of the Site. No soil and groundwater sampling activities were conducted as part of this assessment, although the report contains a proposal for sampling of soils and groundwater.

Weston later conducted another "Environmental Liabilities Assessment" at the Site for Allied Products in January 1990. Information from the assessment indicated that each of the USTs and all of the hazardous wastes noted in the 1988 report had been removed, although no soil sampling was documented.

In January 1990, Weston conducted a "Phase II Environmental Liability Assessment" at the Site. The assessment included installation of four hollow stem auger soil borings, designated SB-1 through SB-4, to a depth of approximately 25 feet below ground surface (bgs) and six hand-augered borings to a depth of approximately 1.5 feet bgs. The locations of these borings are shown on Figure 2. Soil samples submitted to the laboratory were collected at the approximate midpoint depth of the borings and near the bottom of the borings.

The soil samples from SB-1 through SB-4, located near the former UST area in the southwest portion of the Site, were noted to have a number of chlorinated compounds and elevated concentrations of total petroleum hydrocarbons (TPH). Low concentrations of chlorinated compounds were also noted in the former tank pit north of Building #21B.

Available portions of the report for the Phase II investigation are provided in Appendix A.

PCB Evaluation and Remediation by Chemical Waste Management, Inc.

In August 1992, Chemical Waste Management, Inc., (CWM) conducted a PCB evaluation in the vicinity of the six PCB containing transformer areas at the Site. Following removal and disposal of PCB-containing fluids from the transformers, CWM collected a series of grab samples that were composited to form a single sample. Following removal of the soils that exceeded a PCB cleanup goal of 5 mg/kg, CWM completed additional sampling activities to confirm the removal of impacted soils. Based on the confirmatory samples, additional soils were removed from three of the transformer areas and additional confirmatory samples were collected. In total, approximately 264.53 tons of soil were removed to accomplish remediation of PCB contamination.

A copy of the CWM report is provided in Appendix B.

Phase I and Phase II Investigations by Envirocorp

Envirocorp performed a Phase I "due diligence" investigation of the Site for the City of South Bend in 1998. A number of Recognized Environmental Conditions (RECs) were noted during this investigation, including the former UST areas, potential hazardous waste storage areas, and areas with stained soils. A report documenting Envirocorp's investigative efforts has been submitted to IDEM as part of the VRP Application for the Site.

A Phase II Site Assessment was performed by Envirocorp in the fall of 1999 to address the RECs noted in the Phase I. This investigation included the installation of 41direct-push soil borings to a depth of approximately 16 feet and a trenching investigation of near-surface soils in areas identified as potential locations where waste paints and solvents were dumped. The locations of the soil borings are shown on Figure 2 and borings logs are provided in Appendix C-1.

A total of 41 soil samples were collected from the above referenced soil borings. The samples were analyzed for VOCs, polynuclear aromatics (PNAs) and Resource Conservation and/or Recovery Act (RCRA) metals. Results from these analyses are summarized in the Tables contained in Appendix C-2.

Ken Herceg & Associates, Inc. – Former Foundry Soil Evaluation

In May 2002, Envirocorp, on behalf of Ken Herceg & Associates, Inc., evaluated the soils beneath the former foundry for the purpose of reuse during demolition activities. Herceg's evaluation included the installation of 17 soil borings. Selected soil samples collected from the borings were submitted to the laboratory for analysis of SVOCs and metals. None of the samples contained COCs at concentrations exceeding Tier II VRP Cleanup Goals for commercial/industrial land use. The locations of the soil borings are shown on Figure 2. A copy of Herceg's report is included in Appendix D.

Hull & Associates, Inc – Interim Phase II Environmental Site Assessment

In September 2003, Hull completed Interim Phase II ESA activities to characterize surface soils in eight RECs identified during review of previously completed environmental assessment reports. Phase II ESA activities included the installation of 29 soil borings using a direct-push unit. Soil sampling locations are shown on Figure 2. This investigation resulted in the sampling and analysis of soils in eight RECs located within areas that are or will be developed in the fall of 2003.

Immediately upon collection of each core sample from the direct-push borehole, Hull's field representative placed a representative portion of each soil sample into clean, laboratory-supplied sample jars with *Teflon*-lined lids for analytical consideration. In cases where VOCs were to be analyzed, samples were collected in Encore samplers. The sample jars and Encore samples were properly labeled and immediately placed on ice in a cooler.

Selected soil samples were analyzed for VOCs in accordance with Indiana Modified Method 5025; SVOCs in accordance with Method SW 846 8270; TPH-diesel range organics (DRO) in accordance with Method SW 846 8015; Target Analyte List (TAL) metals in accordance with U.S. EPA Method SW 846 6010/700 series; and/or polychlorinated biphenyls (PCBs) in accordance with U.S. EPA Method 8082. Note the analytical suites were selected based on the potential COCs of each REC.

Duplicate samples were collected at randomly selected borings. Field/equipment blanks were also collected and submitted along with a trip blank for analysis as part of Quality

Assurance/Quality Control (QA/QC) of field procedures. Chain-of-custody was documented for all samples.

None of the samples collected during Hull's 2003 investigation contained COCs at concentrations exceeding VRP Tier II Nonresidential cleanup goals.

Grauvogel & Associates, Inc. Interim Remedial Activities

Grauvogel & Associates, Inc. worked with Hull and the City to inspect environmental issues uncovered during demolition activities and to address these issues.

During March 2003, bricks, soil and blue debris were discovered by a field representative from Grauvogel & Associates, Inc. during the removal of a former loading docking located north of Building #35B. This material was excavated, stockpiled and characterized. Toxicity Characteristic Leaching Procedure (TCLP) analysis indicated that this material exceeded the characteristic hazardous criteria for lead. This material was manifested and sent off-Site for disposal.

In October 2003, petroleum impacted soils were encountered during the installation of the stormwater management system for the development. The source of the petroleum is not currently known; however, during excavation activities, an apparently compacted gravel layer were noted suggesting that a UST system may have been located in this area. Visually impacted soils were excavated with a track hoe to a depth of approximately 20 feet where groundwater was encountered. Impacted soils were transported to the northern portion of the Site where they were staged on a concrete pad for characterization. These stockpiles were later covered with visqueen. The location of the excavation is shown on Figure 2.

Following excavation, confirmation samples were collected by Gravougel & Associates, Inc. from the excavation to document removal of the petroleum impacted soils. These confirmatory samples were analyzed for TPH. The remaining soils contained TPH concentrations below 100 mg/Kg.

In November 2003, soils containing greenish particles were encountered in the utility trench for the storm water management systems. The location of this area is shown on Figure 2. Although the source of the greenish coloration is unknown, a small container (i.e., approximately

one gallon) containing green paint was discovered during excavation. The greenish material was removed and stockpiled in the northern portion of the Site. Approximately 65 cubic yards of this material were sent off site for disposal at a licensed disposal facility. The remaining material was relocated on-Site in a designated area.

2.1.2 Site Documentation

"Environmental Liabilities Assessment for the White Farm Equipment Facility, South Bend, Indiana," August 1988, Roy F. Weston, Inc.

"Phase II Environmental Liabilities Assessment for the White Farm Equipment Facility, South Bend, Indiana," January 1990, Roy F. Weston, Inc.

"Environmental Liabilities Assessment for the White Farm Equipment Facility, South Bend, Indiana," January 1990, Roy F. Weston, Inc.

"Project Summary of Allied Products, South Bend, IN Facility," late 1992, Chemical Waste Management Inc., ENRAC Division.

"Phase I Environmental Site Assessment, Oliver Plow Works," September 1997, Envirocorp Services & Technology, Inc.

"Phase II Site Assessment, Former Oliver Plow Works," December 1999, Envirocorp, Inc.

"Results of Borings in Former Foundry Area, Former Oliver Plow," June 2002, Ken Herceg & Associates, Inc.

"Additional Phase II Site Assessment of the Former Oliver Plow Works (Hull Document #SBI017.200.0002)," September 2003, Hull & Associates, Inc.

2.2 Summary of Site Investigation Activities

2.2.1 Sources and Extent of Contamination for Soil

Based on the information obtained from previous investigations at the Site, there are areas that will be further investigated and, if necessary, remediated under this Work Plan. The locations of these areas are shown on Figure 3, and include:

Area 1 - This area is located in the southwest corner of the Site and is directly north of MW-1. Two 10,000-gallon quench oil USTs, a drum storage area north of the old oil pump house, and two former fuel oil USTs were formerly located in this area. In addition, this area contained two USTs that were encountered and removed during demolition activities. Potential COCs include VOCS, SVOCs, PCBs and metals.

Area 2 - This area is located southeast of the Former Boiler House. A review of Sanborn Maps indicates that this area was primarily used for storage of coal and coke and for off-loading of materials on the south side of the Site. Previous investigations indicated a layer of coal/coke/foundry waste. Potential COCs include SVOCs and metals.

Area 3 - This area was the location for a number of the annealing ovens in the southern portion of the former foundry. Potential COCs include SVOCs and metals.

Area 4 - This area was the location of the gray iron foundry. A review of Sanborn maps indicates that the floor for the foundry was initially earthen. Potential COCs are metals.

Area 5 - This area contained old transformers that were located south of Buildings #14 and #14A. The transformers and the soils were noted to be impacted by PCBs. The area was remediated by removal of the transformers, transformer fluid and impacted soil. Confirmatory sampling conducted following excavation indicated that remaining PCB concentrations were below the Toxic Substance Control Act (TSCA) standards for PCBs. Potential COCs include PCBs and SVOCs.

Area 6 - This area was formerly occupied by two buildings and most recently found to have been used as a hazardous waste storage area (on the northern portion of the former building #20). Furthermore, a machine shop was located in Building #20. A UST was also noted on the southeast side of this area. Potential COCs include VOCS, SVOCs, PCBs and metals.

Area 7 - This area includes Building #30, a former paint shop, and a courtyard bounded by building #s 30, 31 and 33. A Japanning building once occupied the courtyard. Investigations in this area indicated SVOCs above detection limits, but below Tier II nonresidential cleanup goals. Potential COCs include SVOCs and metals.

Area 8 - This area is located in the northwest portion of the Site. The area was used for rail and surface transportation routes and loading/unloading. Potential COCs include SVOCs and metals.

Area 9 - This area is located on the northern portion of the Site. This area is the paved parking area north of the building complex. It was used as warehouse space since the 1880s. Barrels of waste were at one time staged in the warehouse. Potential COCs include VOCs, SVOCs and metals.

Area 10 - This area contained a 500,000-gallon water retention pond used for fire protection purposes and Building #31. A soil sample from MW-8 was found to contain lead at a concentration exceeding the VRP Tier II nonresidential cleanup goal. The sample also contained SVOCs above detection limits but below VRP Tier II nonresidential cleanup goals. Potential COCs include SVOCs and metals.

Area 11 - This area is the former location of the administration buildings for Oliver Plow in the northeast portion of the Site. The subsurface contained building debris and other demolition material prior to Phase II demolition activities. Sample results in this area indicate low levels of SVOCs below the VRP Tier II nonresidential cleanup goals. Potential COCs include SVOCs and metals.

Area 12 – This area is located in the southwest portion of the Site and was the former location of coke storage piles. In addition, this area formerly had PCB-containing transformers. Potential COCs include SVOCs, PCBs and metals.

Area 13 – This area is located in the southwest portion of Building #41A and is the location of a Former Quench Oil Pit. Potential COCs include SVOCs and metals.

Area 14 – This area includes the former railroad tracks and spurs that were located on the Site. Potential COCs include SVOCs and metals.

Area 15 – This area is located in the north central portion of Building #41A and is the location of former PCB-containing transformers. Potential COCs include SVOCs and PCBs.

Area 16 - This area is located in the north portion of Building #35 and is the location of former PCB-containing transformers. Potential COCs include SVOCs and PCBs.

Area 17 - This area is located to the west of Building #3 and is the location of former PCB-containing transformers. Potential COCs include SVOCs and PCBs.

Area 18 - This area is located in the central portion of the Site in the eastern portion of Building #39 and is the location of former USTs associated with former painting operations. Potential COCs include VOCs and metals.

Area 19 - This area is located in the central portion of Building #47 and is the location of former quench oil pits. Potential COCs include SVOCs and metals.

Area 20 - This area is located in the western portion of the Site to the west of Building #35 in the area of a former loading dock. During demolition activities, discolored soils were encountered in this area. Potential COCs include metals.

Area 21 – This area is located in the northern portion of Building #41 and is an area where discolored soils were encountered during demolition activities. Potential COCs include metals.

Area 22 – This area is located in the central portion of the Site and is an area where petroleum impacted surface and subsurface soils were discovered during installation of on-Site utilities. Impacted soils were removed; however, groundwater needs to be assessed. Potential COCs in groundwater include VOCs and SVOCs. These assessment activities will be described under a separate RWP that specifically address groundwater.

Area 23 - This area is located in the central portion of the Site and is an area of discolored subsurface soils that were discovered during installation of on-site utility. These discolored soils were removed; however, groundwater needs to be assessed. Potential COCs include metals. These assessment activities will be described under a separate RWP that specifically address groundwater.

Of the above-described areas, eight areas were investigated during the September 2003 Phase II ESA activities. These areas included Areas 2 though 5, Areas 7 and 8, and Areas 17 and 18. In addition, two soil borings were installed on the Hill's Truck Sale parcel, part of Area 14 that includes the location of the former railroad track and spurs. No COCs were detected in these areas at concentrations exceeding Tier II Cleanup Goals.

In addition to the above noted potential areas of concern, other areas may be identified following completion of the remaining demolition activities.

2.2.2 Ecological Assessment Results

The Site is located within the City of South Bend corporate limits in an urban (commercialized and residential) area. Prior to demolition activities most of the Site was covered by impervious cover, with limited areas of grass and scrub. No surface water bodies currently exist at the Site. Stormwater runoff across the Site was largely controlled by the Site's internal drainage system. Stormwater collected by this system was then diverted to the City's combined sanitary and storm sewer system. As part of the development activities, storm water will be managed on-site via a storm water retention located in the northwest portion of the Site. The nearest surface water body is the St. Joseph River, which is located approximately 1.3 miles northeast of the Site. Based on relatively low concentrations of COCs in Site surface soils and the distance to which COCs in groundwater must travel before discharging (i.e., the St. Joseph River), potential threats to terrestrial and aquatic wildlife are limited.

2.2.3 Baseline Hydrogeological Assessment Results

Intrusive investigations conducted by Envirocorp determined that unconsolidated deposits beneath the Site consist primarily of sand to sand and gravel (granular deposits), although a few silt deposits were also encountered. The granular deposits reportedly form an unconfined aquifer ranging in thickness from 25 to 75 ft. thick, with the water table situated approximately 20 ft. beneath the ground surface. The upper aquifer reportedly rests upon thick clay deposits, which confine an underlying sand and gravel aquifer.

Local geologic conditions are such that soils and groundwater are susceptible to releases of COCs, particularly given the extended period of heavy industrial activities that occurred at the Site. Specifically, the relatively permeable nature and lateral continuity of the unconsolidated deposits would tend to promote relatively rapid and extensive migration of contaminants in unsaturated soils. Furthermore, the absence of a confining layer over the uppermost aquifer

indicates that shallow groundwater would be susceptible to contamination. Finally, the relatively high permeability of the aquifer (i.e., 275 ft/day, as reported by Envirocorp) suggests that once mobile contaminants reach the water table, they have the potential to migrate relatively rapidly and extensively.

Groundwater flow in the unconfined aquifer is toward the northeast (toward the St. Joseph River, located approximately 1.3 miles from the Site) at an approximate gradient of 0.001 ft/ft. According to Envirocorp, potable water for residences and commercial properties is supplied by the City of South Bend; there are no private water supply wells in the vicinity of the Site. The nearest municipal water supply well obtains water from unconsolidated deposits and is located upgradient of the Site. The nearest downgradient municipal groundwater water supply (the North Well field, which is developed within a confined unconsolidated aquifer) is approximately one mile northeast of the Site.

3.0 CLEANUP CRITERIA SELECTION

Hull proposes to use the VRP Tier II nonresidential cleanup goals for applicable organic and inorganic COCs in soils. For lead in soil, Hull proposes to use the cleanup goals contained in IDEM's January 1996 Non-Rule Lead Policy for nonresidential land use. This policy provides for exposure limitations based on six-inches of soil cover that meets cleanup goals. The need to complete a Site-specific risk assessment for establishment of VRP Tier III cleanup goals is not currently anticipated. Should calculation of Tier III cleanup goals be necessary in the future, an amendment to this Work Plan will be prepared and submitted to IDEM for approval.

4.0 STATEMENT OF WORK

4.1 Objectives of Remedial Action

The Objectives of this Work Plan are to:

1. provide of a summary of the information collected to date;
2. establish the VRP cleanup goals to remediate the Site;
3. describe the remedial alternatives to achieve VRP cleanup goals for the Site;
4. describe the additional investigations that need to be completed to select the most appropriate remedial alternative for soils;
5. collect additional information to design the confirmatory sampling plan and project schedule; and
6. define the requirements, deliverables for completion of the remedial phase and confirmation sampling program.

4.2 Summary

Upon the acceptance of this RWP, additional investigation activities described in Section 6.0 will be implemented to collect the information necessary to complete the remedial activities. Following completion of these activities, an amended Work Plan will be submitted to IDEM for approval. This amended Work Plan will provide a description of the preferred remedial approach and specific project schedule for completion of remediation for groundwater and soils. This Amended Work Plan will also include a Site-specific confirmatory sampling and analysis plan for those areas for which a Covenant Not to Sue is pursued.

4.3 Health and Safety Plan

The Site-specific HASP provides the necessary health and safety protocols to be followed during completion of the additional Site investigation activities, implementation of the selected remedial alternatives for soils and completion of confirmatory sampling activities. This HASP was been prepared in general conformance with the requirements stated in Appendix A of the July 1996 VRP Resource Guide and the applicable requirements of the Occupational Safety and Health Administration's (OHSA) hazard waste site operation rule codified in 29 CFR1910.120. The HASP (Hull Document # SBI013.200.0019) governing this project was previously submitted to IDEM as part of the documentation for the Initial Phase II ESA for Area A.

4.4 Quality Assurance Project Plan

The QAPP addresses the laboratory analyses necessary to complete the additional investigation activities and the confirmatory sampling program. The QAPP also outlines the manner by which reliable analytical results will be obtained at the Site and specifies the quality assurance procedures for sample collection and analysis. At this time, there are no known exceptions to the procedures described in the QAPP. The QAPP (HAI Document # SBI013.200.0020) governing this project was previously submitted to IDEM as part of the documentation for the Initial Phase II ESA for Area A.

5.0 RISK ASSESSMENT

At this time, it is anticipated that only VRP Tier II nonresidential cleanup goals will be used to remediate the soils at the Site. Therefore, completion of this Section is not currently seen as necessary. Should information collected during the additional investigative activities indicate that development of VRP Tier III cleanup goals would support Site remediation, a risk assessment will be prepared and submitted to IDEM in the amended Work Plan.

6.0 REMEDIATION PLAN

6.1 Additional Field Investigation

To further evaluate the presence of COCs at the Site, and to determine the approximate vertical and lateral extent of the COCs in soil exceeding VRP Tier II nonresidential cleanup goals, additional investigation activities will include:

1. direct-push soil sampling to anticipated depths of approximately 10 to 20 ft. below ground surface (bgs);

2. analysis of 81 surface soil samples, including QA/QC samples;

   - up to 72 samples, including QA/QC samples, for RCRA metals using Method SW 846 6010/7000;
   - up to 20 samples, including QA/QC samples, for VOCs using Indiana Modified Method 5025;
   - up to 81 samples, including QA/QC samples, for SVOCs using Method SW846 8270; and
   - up to 10 samples, including QA/QC samples, for PCBs using Method 8082.

3. analysis of 81 subsurface soil sample, including QA/QC samples; and

   - up to 72 samples, including QA/QC samples, for RCRA metals using Method SW 846 6010/7000;
   - up to 20 samples, including QA/QC samples, for VOCs using Indiana Modified Method 5025;
   - up to 81 samples, including QA/QC samples, for SVOCs using Method SW846 8270; and
   - up to 10 samples, including QA/QC samples, for PCBs using Method 8082.

4. Installation of four continuously sampled soil borings to characterize the geologic conditions beneath the Site;

5. surveying on soil sampling locations; and

6. preparation and submittal of an Additional Phase II ESA report.

The locations of the proposed soil borings are shown on Figure 4.

An Additional Investigation Work Plan will be submitted to IDEM with 90 days of the Approval of the RWP.

6.2 Remediation Alternatives

6.2.1 Evaluation of Remedial Alternatives for Soil

There are several alternatives for addressing soils exceeding the VRP Tier II nonresidential cleanup goals, including:

1. excavation and off-Site disposal;
2. excavation and relocation on-Site in conjunction with institutional controls and use restrictions;
3. *in-situ* treatment; and
4. *ex-situ* treatment

All alternatives listed above are anticipated to be technically feasible and would be protective to human health and the environment. Completing soil remediation following Item 1 could prove costly with respect to the other alternatives depending on the volume of material that would require disposal. Item 3 and item 4 would probably require treatability studies. Item 2 is probably the most cost effective and is protective of human health and the environment, although it could impose encumbrances on future property use and development.

6.2.2 Recommended Remediation Alternatives

Based on information thus far obtained for environmental conditions and proposed redevelopment of the Site, Hull recommends that excavation and relocationof soils on-Site in conjunction with institutional controls and use restrictions. However, findings from proposed investigations and/or changes in the proposed redevelopment strategy could result in an alternative preferred remediation alternative.

6.3 Remediation System

As noted in Section 6.2.2, the preferred alternative to address soils exceeding VRP Tier II nonresidential cleanup goals will be to excavate and to consolidate them on-Site. Institutional controls and/or engineering controls would then be implemented to eliminate exposures.

Following completion of the additional investigation activities, a remediation system and plan will be prepared to describe in detail the remedial system for soil. This remediation system design will be provided in the Amended RWP that will be submitted to the IDEM for approval.

6.4 Monitoring/Confirmation Sampling Plan

At this time, due to the incomplete nature of data defining the vertical and lateral extent of COCs in soils exceeding VRP Tier II cleanup goals, a Site-specific confirmatory sampling and analysis plan cannot be completed. A confirmatory sampling plan will be prepared and submitted to the IDEM in the Amended RWP.

6.5 Data Management

All investigative and confirmatory data collected as part of this Work Plan will be submitted by the testing laboratory to Hull's database manager via electronic laboratory report deliverables. The data will be available to Hull, the City and IDEM (at IDEM's request) via a password protected web-based interface. The laboratory will follow the electronic deliverables with mail-out of hard-copy reports to Hull's office for indexed storage in preparation for report submittals. Field-recorded data will be carried back to Hull's office and kept in indexed storage in preparation for report submittals. In some cases (i.e., field boring logs), data will be transferred into an electronic format via specialized software. In other cases, the data will be summarized in spreadsheets. All of these electronic files will be stored in a computer database indexed by a unique project number.

Following completion of investigative activities, Hull will consolidate data into an investigative update report that will be submitted to IDEM and will include:

1. a summary of Site background, including an overview of operational history and a summary of previous environmental investigations;
2. a summary of the recent investigative activities conducted at the Site;
3. tabulated results of investigative data (incorporating, as appropriate, historical data) that compares results with applicable risk-based standards;
4. a text summary of findings from the investigations; and
5. conclusions about findings with respect to risks at the Site and evaluations of appropriate remediation strategies required to address the risks.

Depending upon the selected remedial approach and the time necessary to complete the remedy, progress reports may be completed for submittal to IDEM. The progress reports will follow the above format.

Upon completion of the remedy, a Remediation Completion report will be prepared and submitted to IDEM. The Remediation Completion Report will include the following information:

1. a description of Site background, including an overview of operational history and a summary of previous investigations;

2. a summary of the remediation approach employed at the Site;

3. a summary of confirmation sampling activities;

4. tabulated results from data obtained from confirmation sampling and statistical analysis if appropriate; and

5. comparison of confirmation sampling results with fate and transport modeling outputs and conclusions about the long-term effectiveness of the remedy.

7.0 OPERATION AND MAINTENANCE PLAN

At this time, as the final remediation alternative for soils has not been determined, a Site-specific operation and maintenance plan to address the selected remedial alternative and/or engineering controls can not be completed to address needs of the project. The required operation and maintenance plan will be prepared and submitted to the IDEM in an Amended RWP.

8.0 COMMUNITY RELATIONS

The Community Relations Plan (CRP) outlines the activities necessary to inform the public of various activities during the VRP. The CRP allows for a flexible community relations approach that will take into account the changing needs of the community and understanding of Site conditions. The CRP highlights the Site description; the community background; the techniques and timing of the various community relation activities including mailing lists, public meetings, information bulletins, and media use; and the key contacts and interested parties for the project. The CRP has been prepared in general conformance with the requirements described in the July 1996 VRP Resource Guide.

9.0 COMPLETION OF REMEDIAL ACTION

9.1 Completion Report

A Remediation Completion Report will be prepared to present the results of the remedial activities described in this Work Plan. The report will include a summary of all activities including additional investigations, remediation activities and confirmatory sampling. The information specified in the July 1996 Voluntary Remediation Program Resource Guide for inclusion in the Remediation Completion Report will be provided.

9.2 Future Use of Site

The expected future use of the Site is nonresidential. For approximately the past 120 years land use at the Site has been industrial and will probably remain light industrial/commercial because:

1. it is located in an area that is primarily commercial and industrial (the adjoining properties on the east and south sides are industrial and commercial);
2. the zoning for the Site is industrial and the properties to the east and south are commercial or industrial; and
3. the City intends to redevelop the Site to increase employment in the area.

As described in the July 1996 VRP Resource Guide, use of non residential Tier II cleanup levels will result in a use restriction attached to the Covenant Not to Sue.

10.0 SCHEDULE

As noted earlier, due to number of data gaps associated with the presence and vertical and lateral extent of parameter in soils exceeding VRP Tier II cleanup goals, a project schedule cannot be completed at this time. Following completion of the additional investigation activities, a project schedule will be prepared to, at a minimum, describe the time-line for completion of remedial activities, confirmatory sampling, and submittal of the completion report and will be submitted in the Amended RWP.

11.0 COST ESTIMATE

As noted earlier, due to the number of data gaps associated with the presence and vertical and lateral extent of parameters in soils exceeding VRP Tier II cleanup goals, a reliable cost estimate cannot be prepared, at this time. A cost estimate for all remedial activities, confirmatory sampling and reporting will be submitted in the Amended RWP.

12.0 REFERENCES

Chemical Waste Management Inc., ENRAC Division. "Project Summary of Allied Products, South Bend, IN Facility." Late 1992.

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Envirocorp, Inc. "Phase II Site Assessment, Former Oliver Plow Works." December 1999.

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Ken Herceg & Associates, Inc. "Results of Borings in Former Foundry Area, Former Oliver Plow," June 2002.

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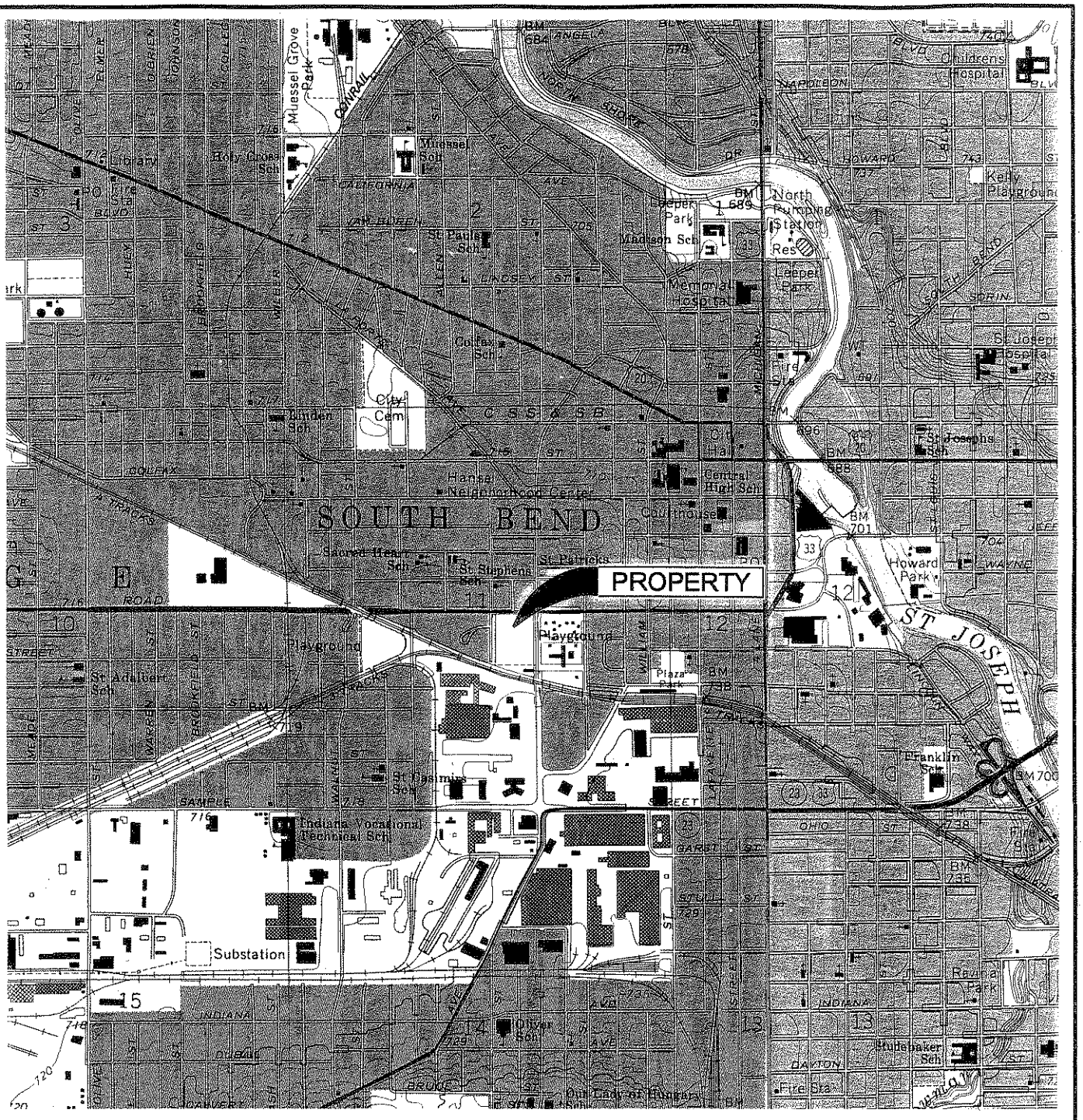
Roy F. Weston, Inc. "Environmental Liabilities Assessment for the White Farm Equipment Facility, South Bend, Indiana." January 1990.

FIGURE



QUADRANGLE LOCATION

SOURCE: USGS SOUTH BEND EAST, INDIANA – 1969
SOUTH BEND WEST, INDIANA – 1969
QUADRANGLE 1969
PHOTOREVISED 1987

0 500 1000 2000
SCALE IN FEET

N

Hull & associates, inc.
ENGINEERS | GEOLOGISTS | SCIENTISTS | PLANNERS

4900 PARKWAY
SUITE 100
MASON, OHIO 45040

PHONE: (513) 459-9677
FAX: (513) 459-9869
www.hullinc.com

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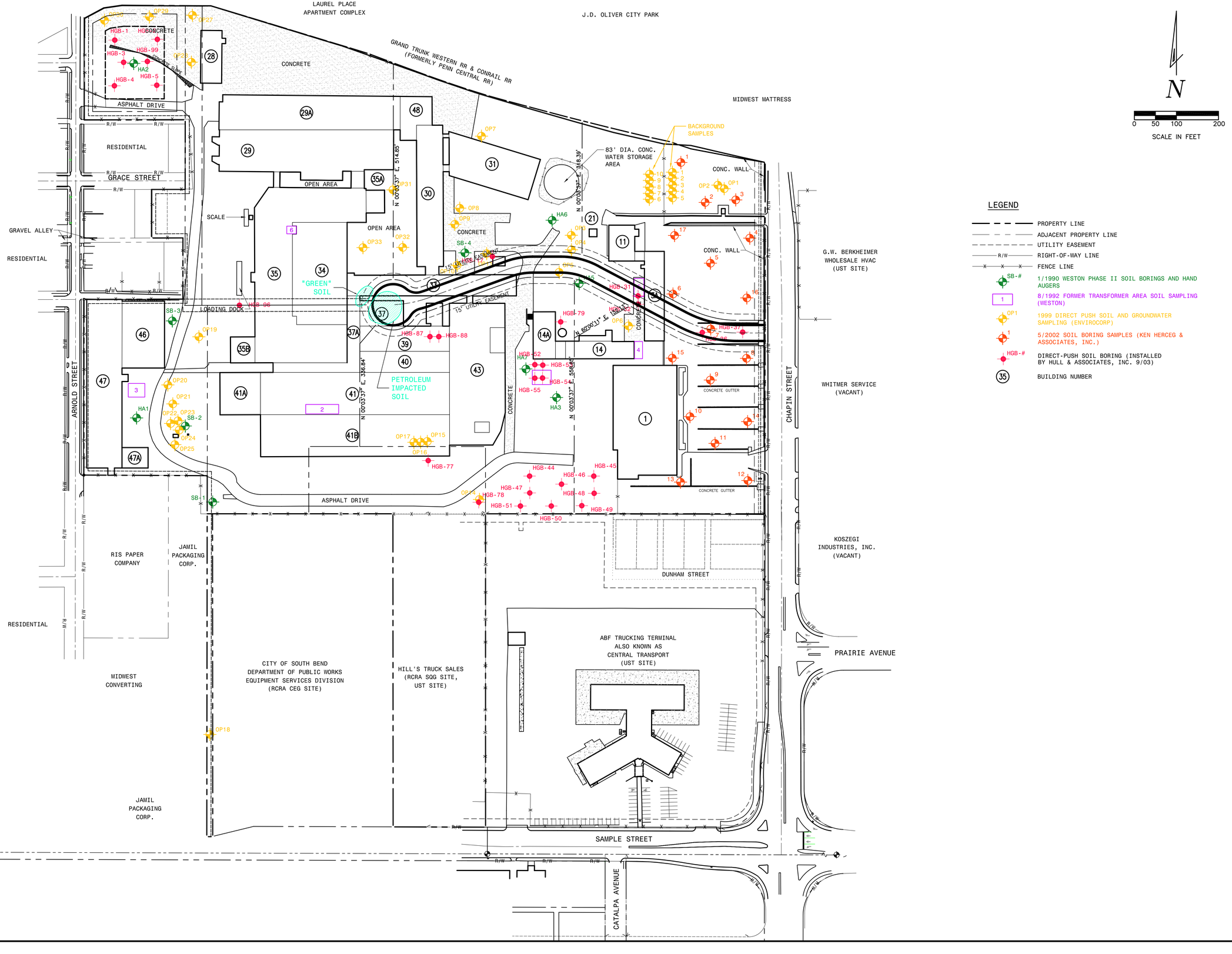
REMEDIATION WORK PLAN (VRP SITE #6001202)
FORMER OLIVER PLOW WORKS

FIGURE 1
SITE LOCATION MAP

SOUTH BEND, INDIANA

PROJECT NO.: SBI017	SUBMITTAL DATE: APRIL 2004
CAD DWG FILE: SBI017.200.0024	PLOT DATE: 4/30/04

PLATES



LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- UTILITY EASEMENT
- R/W — RIGHT-OF-WAY LINE
- FENCE LINE
- SB-# — 1/1990 WESTON PHASE II SOIL BORINGS AND HAND AUGERS
- 1 — 8/1992 FORMER TRANSFORMER AREA SOIL SAMPLING (WESTON)
- OP1 — 1999 DIRECT PUSH SOIL AND GROUNDWATER SAMPLING (ENVIROCORP)
- 1 — 5/2002 SOIL BORING SAMPLES (KEN HERCEG & ASSOCIATES, INC.)
- HGB-# — DIRECT-PUSH SOIL BORING (INSTALLED BY HULL & ASSOCIATES, INC. 9/03)
- 35 — BUILDING NUMBER

Hull & associates, inc.
ENGINEERS I GEOLOGISTS I SCIENTISTS I PLANNERS
4900 PARKWAY
SUITE 100
MASON, OHIO 45040
PHONE: (513) 459-9677
FAX: (513) 459-9869
www.hullinc.com

REMEDIATION WORK PLAN (VRP SITE #6001202)
FORMER OLIVER PLOW WORKS
533 S. CHAPIN STREET
SOUTH BEND, INDIANA

OWNER: SOUTH BEND REDEVELOPMENT COMMISSION

MARK	DATE	DESCRIPTION

PROJECT NO.:	SBI017
CAD DWG FILE:	SBI017.100.0014
PLOT DATE:	10/17/03
LAYOUT BY:	TRB
DRAWN BY:	GAC
CHECKED BY:	
SCALE:	1"=100'
SUBMITTAL DATE:	APRIL 2004

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SHEET TITLE:

FIGURE 2
PREVIOUS INVESTIGATION AREAS

C-101

SHEET 1 OF 1

LAUREL PLACE APARTMENT COMPLEX

J.D. OLIVER CITY PARK

GRAND TRUNK WESTERN RR & CONRAIL RR (FORMERLY PENN CENTRAL RR)

AREA 8

AREA 9

RETENTION EASEMENT

ASPHALT DRIVE

RESIDENTIAL

GRACE STREET

GRAVEL ALLEY

RESIDENTIAL

ARNOLD STREET

9.06 ACRES±

OPEN AREA

OPEN AREA

SCALE

AREA 16

AREA 20

AREA 23

LOADING DOCK

AREA 18

AREA 22

AREA 15

AREA 13

QUENCH OIL PIT

AREA 21

AREA 1

AREA 12

AREA 19

AREA 10

AREA 11

AREA 6

AREA 4

AREA 7

AREA 5

AREA 2

AREA 3

83' DIA. CONC. WATER STORAGE AREA

CONC. WALL

CONC. WALL

15' UTILITY EASEMENT

75' UTILITY EASEMENT

40' WIDE DRAINAGE EASEMENT

50' WIDE INGRESS, EGRESS, UTILITY & DRAINAGE EASEMENT

N 89°40'00" E 499.71'

N 89°40'00" E 152.13'

N 00°03'37" E. 514.85'

N 00°03'37" E. 336.84'

N 00°03'37" E. 558.85'

N 00°03'37" E. 310.39'

ASPHALT DRIVE

RIS PAPER COMPANY

JAMIL PACKAGING CORP.

MIDWEST CONVERTING

JAMIL PACKAGING CORP.

CITY OF SOUTH BEND DEPARTMENT OF PUBLIC WORKS EQUIPMENT SERVICES DIVISION (RCRA CEG SITE)

HILL'S TRUCK SALES (RCRA SQG SITE, UST SITE)

ABF TRUCKING TERMINAL ALSO KNOWN AS CENTRAL TRANSPORT (UST SITE)

RESIDENTIAL

SAMPLE STREET

SOUTH LINE OF SECTION 11, T.37N., R.2E.

N 89°48'59" W 2634.24' (REC. N 89°48'14" W)

SW CORNER, SE1/4 OF SEC. 11-T. 37N.-R. 2E.

PT. PARCEL 1

CATALPA AVENUE

DUNHAM STREET

13.8' WIDE (VACATED)

DUNHAM SUBDIVISION OF N. PART BANK OUTLOT 28

CHAPIN STREET

G.W. BERKHEIMER WHOLESALE HVAC (UST SITE)

NORTHERN INDIANA FOOD BANK

KOSZEGI INDUSTRIES, INC. (VACANT)

PRAIRIE AVENUE

PT. 68

R/W LINE

LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- DEVELOPMENT PARCEL LINE
- UTILITY EASEMENT
- R/W — RIGHT-OF-WAY LINE
- X X X — FENCE LINE
- (35) — BUILDING NUMBER
- (35) — BUILDING AND UTILITY DEMOLISHED DURING FALL OF 2002
- (47) — REMAINING BUILDINGS
- AREA 2 — INVESTIGATION AREAS

NOTE:

AREA 14 INCLUDES THE FORMER RAILROAD TRACKS AND SPURS (NOT SHOWN).

N

0 50 100 200

SCALE IN FEET

Hull & associates, inc.
ENGINEERS I GEOLOGISTS I SCIENTISTS I PLANNERS
4900 PARKWAY
SUITE 100
MASON, OHIO 45040
PHONE: (513) 459-9677
FAX: (513) 459-9869
www.hullinc.com

REMEDIATION WORK PLAN (VRP SITE #6001202)
FORMER OLIVER PLOW WORKS
533 S. CHAPIN STREET
SOUTH BEND, INDIANA

OWNER: SOUTH BEND REDEVELOPMENT COMMISSION

MARK	DATE	DESCRIPTION

PROJECT NO.:	SBI017
CAD DWG FILE:	SBI017.100.0015
PLOT DATE:	4/30/04
LAYOUT BY:	TB
DRAWN BY:	GAC
CHECKED BY:	
SCALE:	1"=100'
SUBMITTAL DATE:	APRIL 2004

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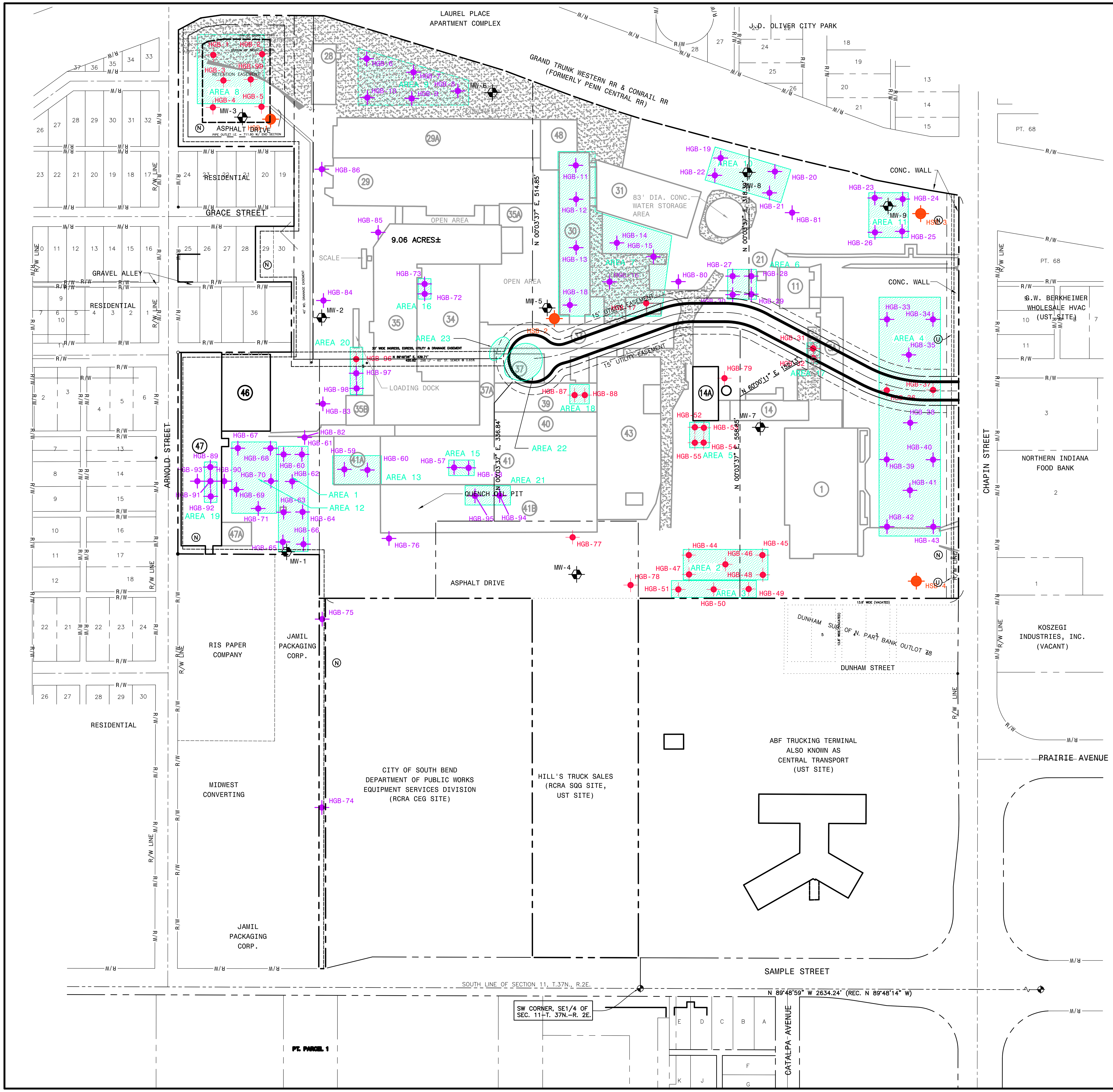
SHEET TITLE:

FIGURE 3
RECOGNIZED ENVIRONMENTAL CONDITIONS PLAN

C-101

SHEET 1 OF 1



LEGEND

- PROPERTY LINE
- ADJACENT PROPERTY LINE
- DEVELOPMENT PARCEL LINE
- UTILITY EASEMENT
- R/W RIGHT-OF-WAY LINE
- X FENCE LINE
- MW-# EXISTING MONITORING WELL
- HSB-# PROPOSED SOIL BORING LOCATION
- HGB-# PROPOSED DIRECT-PUSH LOCATION
- HGB-# DIRECT-PUSH SOIL BORING (INSTALLED BY HULL & ASSOCIATES, INC. 9/03)
- 35 BUILDING NUMBER
- 35 BUILDING AND UTILITY DEMOLISHED DURING FALL OF 2002
- 47 REMAINING BUILDINGS
- AREA 2 INVESTIGATION AREAS

NOTE:

AREA 14 INCLUDES THE FORMER RAILROAD TRACKS AND SPURS (NOT SHOWN).

Hull & associates, inc.
ENGINEERS I GEOLOGISTS I SCIENTISTS I PLANNERS
4900 PARKWAY
SUITE 100
MASON, OHIO 45040
PHONE: (513) 459-9677
FAX: (513) 459-9869
www.hullinc.com

REMEDIATION WORK PLAN (VRP SITE #6001202)
FORMER OLIVER PLOW WORKS
533 S. CHAPIN STREET
SOUTH BEND, INDIANA

OWNER: SOUTH BEND REDEVELOPMENT COMMISSION

MARK	DATE	DESCRIPTION

PROJECT NO.:	SBI017
CAD DWG FILE:	SBI017.100.0016
PLOT DATE:	4/30/04
LAYOUT BY:	TB
DRAWN BY:	GAC
CHECKED BY:	
SCALE:	1"=100'
SUBMITTAL DATE:	APRIL 2004

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SHEET TITLE:

FIGURE 4
PROPOSED SOIL SAMPLING LOCATION PLAN

C-101

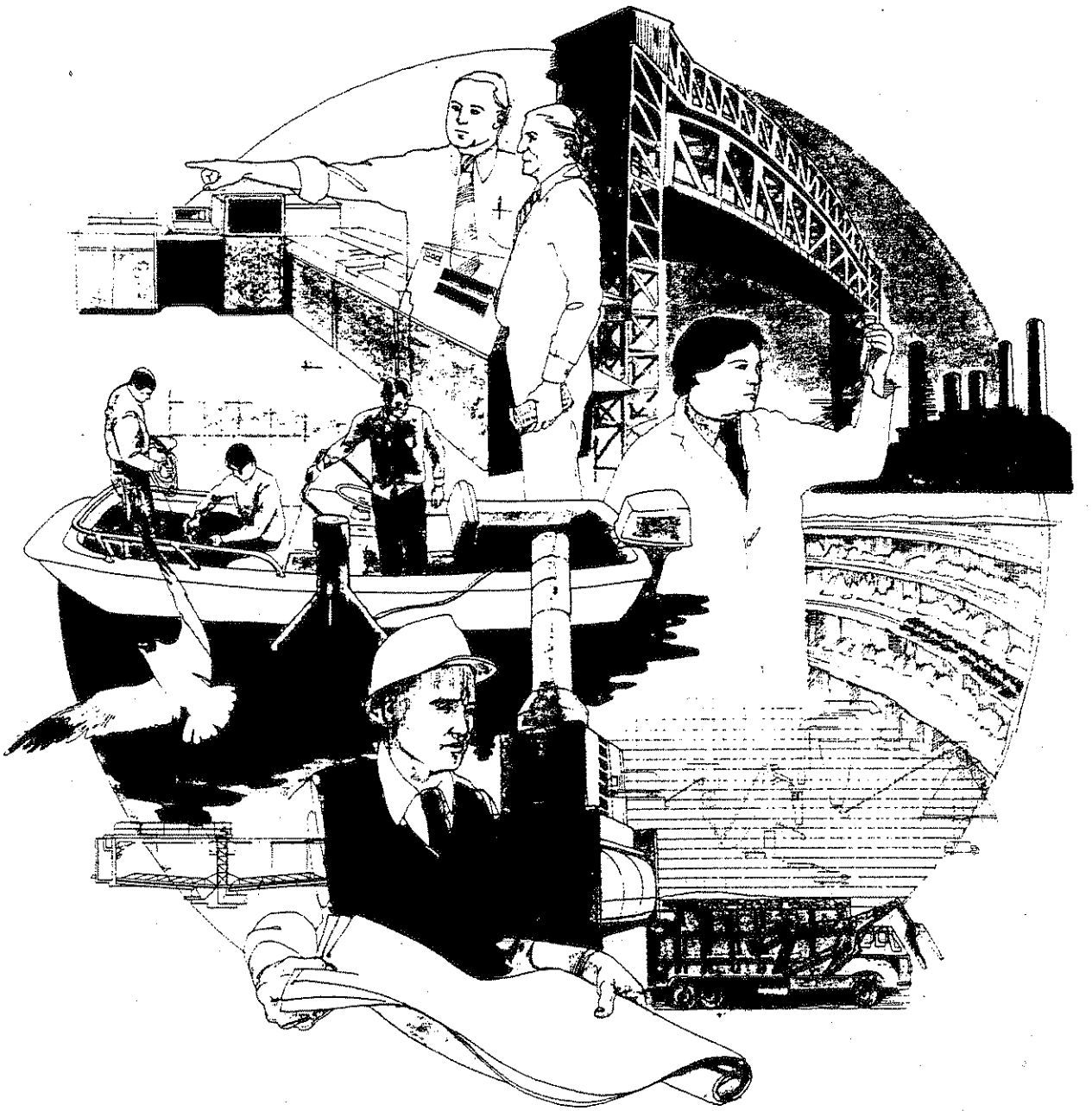
SHEET 1 OF 1

APPENDIX A

Roy F. Weston, Inc. Phase II Environmental Liability Assessment Report

SBI-017

WESTON
MANAGERS DESIGNERS/CONSULTANTS



ENVIRONMENTAL LIABILITIES ASSESSMENT
FOR THE
WHITE FARM EQUIPMENT FACILITY
SOUTH BEND, INDIANA

Prepared For:

Allied Products Corporation
10 South Riverside Plaza
Chicago, Illinois 60606

Stephen R. Clough, P.G.
Senior Project Geologist

Kurt S. Stimpson
Project Director

Prepared By:

Roy F. Weston, Inc.
100 Corporate North
Bannockburn, Illinois 60015

January 1990

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SECTION 1

INTRODUCTION

At the request of the Allied Products Corporation (Allied), representatives of Roy F. Weston, Inc. (WESTON) conducted a Phase I environmental liabilities assessment at the White Farm Equipment plant in South Bend, Indiana, during July 1988. The principle objective of this assessment was to identify potential environmental hazards and liabilities that might impact future development of the property. The assessment consisted of on-site inspections, discussions with various facility representatives, and completion of an audit questionnaire.

During this assessment, WESTON personnel, specifically trained to recognize both short- and long-term actual and potential environmental hazards and liabilities, employed accepted environmental audit procedures. Although the assessment was thorough, the conclusions provided herein are based, in part, on information provided to WESTON; WESTON did not perform environmental sampling or analysis during this review. Therefore, WESTON neither guarantees that additional problems will not arise in the future, nor warranties this property nor certifies its future use.

Subsequent to the initial assessment, information was submitted to WESTON by Allied which indicated that several areas of concern (identified in the 1988 assessment) had been addressed. This revised report reflects these corrective actions including the removal of five underground storage tanks (USTs) and numerous drums of liquid and solid wastes.

SECTION 2

SITE DESCRIPTION

2.1 SITE FACILITIES

The White Farm Equipment Company, now part of Allied Products Corporation, is located in South Bend, Indiana. Its primary operation was the manufacture of farm implements, which it performed from the early 1880s to 1988. Currently, no manufacturing operations are occurring at the plant nor are any planned for the future; rather, the site is being cleaned up for future disposition.

The plant is located on 35.68 acres and contains 37 buildings, with a total floor area of 904,944 square feet (Figure 2-1). Most of the buildings were constructed in the 1880s and early 1900s of brick and concrete. The open space between groups of buildings is either paved or grassed covered, although in certain locations, solid wastes are being stored. The site is surrounded by a fence of chain-link, topped with barbed wire and, in some locations, brick topped with barbed wire. To the north of the plant, lies a raised railroad line; to the east is plant parking, Chapin Street and, across the street, commercial/office facilities; to the south the plant is bordered by a distribution firm (ABF) whose land, at one time, was owned by White Farm; and to the west lie residential buildings.

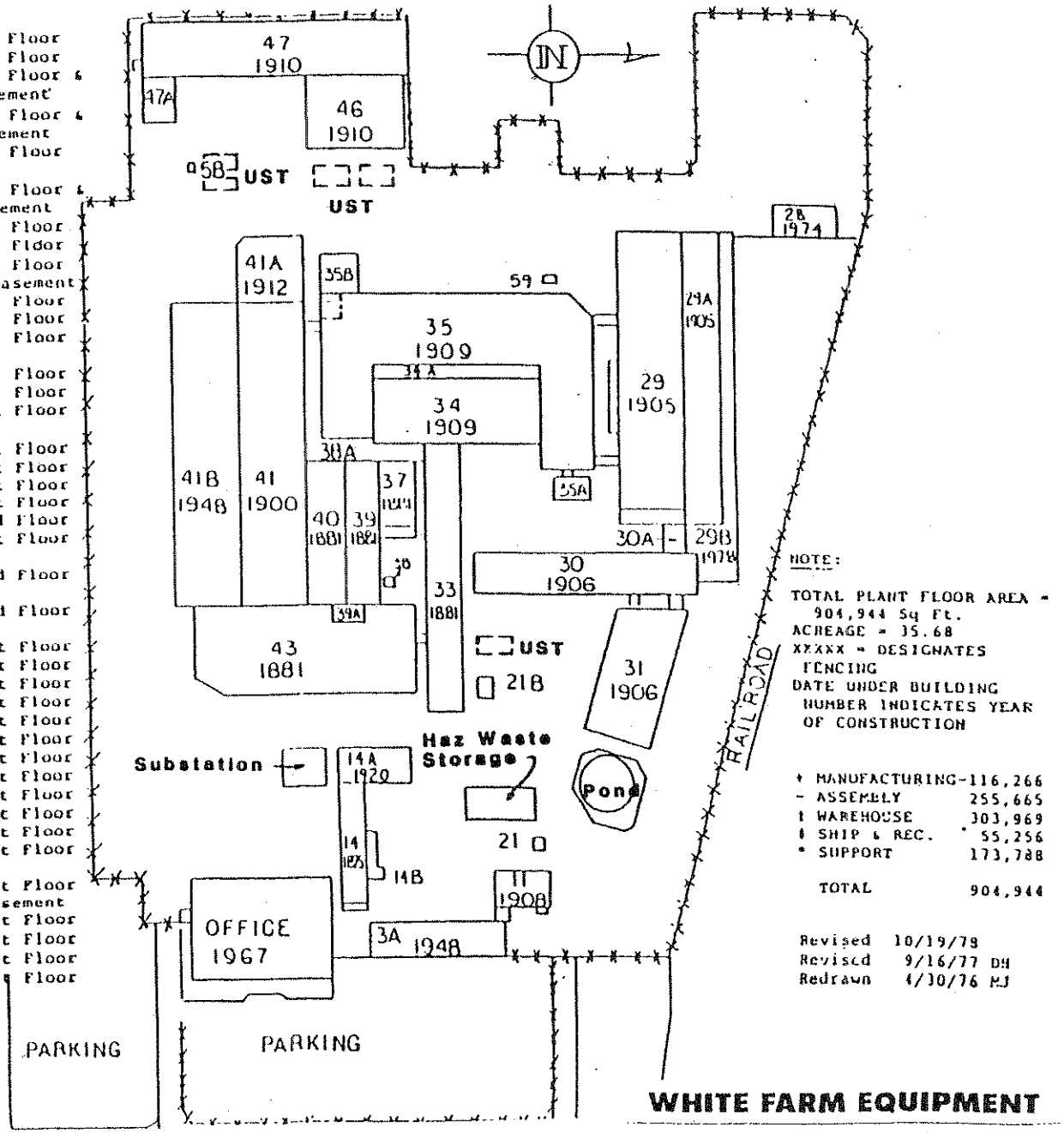
2.2 PLANT OPERATIONS

For over 100 years, the White Farm Equipment Company produced farm implements. These consisted of a variety of agriculture equipment that was hauled behind tractors, such as harrowers. The basic material used in the making of farm implements was raw steel, received in the form of plates and other shapes. The steel was fabricated into parts through the use of forging operations and metal finishing operations, such as flame cutting, presses, tumblers, and machining. Parts were also heat treated by heating them in a forge and subsequently quenching the part in oil. Following fabrication, the parts were welded, painted and assembled into farm implements.

A listing of each building, its location, general function, size and date of construction is presented in Figure 2-1, while a summary of the operations that occurred in various buildings and their current physical condition is presented

			Sq. ft.	
*	Office	201'x151'	30,351	1st Floor
*3A	Exp. Engr.	45'x211'	9,500	1st Floor
*11	Exp. Engr.	60'x 84'	15,120	3rd Floor & Basement
*14	Power House	38'x176'	6,688	1st Floor &
			6,688	Basement
*14B	Power House Annex	13'x 73'	949	1st Floor
*14A	Boiler House	53'x112'	5,936	1st Floor &
			5,936	Basement
*21B	Pump House	21'x 29'	600	1st Floor
28	Will Call	51'x125'	6,426	1st Flodr
‡29	Warehouse	100'x410'	246,000	5th Floor & Basement
‡29	Annex	100'x 44'	4,400	1st Floor
‡29A	Loading Dock	54'x427'	23,000	1st Floor
‡29B	Warehouse Northside	427'x 26' 73'x 31'	17,015	1st Floor
*30	Stock 1	64'x336'	21,500	1st Floor
*30A	Passageway	24'x 34'	816	1st Floor
-31	Assembly	100'x197' to 227'	21,200	1st Floor
33	Receiving	50'x175'	8,750	1st Floor
*33	Stock 1	50'x225'	11,250	1st Floor
-34	Assembly	97'x254'	24,638	1st Floor
*34A	Annex	21'x254'	5,334	1st Floor
	Office	10'x 80'	1,600	2nd Floor
-35	Assembly	81'x482' & 102'x254'	64,950	1st Floor
		81'x482' & 89'x254'	61,394	2nd Floor
		81'x482' & 88'x254'	61,394	3rd Floor
‡35A	Dry Room	39'x 54'	2,100	1st Floor
‡35B	Storage	57'x 62'	3,534	1st Floor
*37	Welding	60'x120'	7,200	1st Floor
*38A	Storage	26'x160'	4,480	1st Floor
*38	Office	32'x 34'	1,088	1st Floor
*39	Drill Room	58'x193'	11,194	1st Floor
*39A	Drill Rm Off	16'x 58'	928	1st Floor
*40	Drill Room	52'x211'	10,972	1st Floor
‡41	Steel Stg.	100'x449'	44,900	1st Floor
*41A	Heat Treat	96'x100'	9,660	1st Floor
*41B	Forge I	100'x449'	44,900	1st Floor
*43	Tool Room, Crib & Mnt.	132'x338'	44,616	1st Floor
-46	Base Fit	101'x159'	16,059	1st Floor
		67'x 90'	6,000	Basement
*47	Forge 2	81'x400'	32,400	1st Floor
‡47A	Steel Stg.	49'x 62'	3,038	1st Floor
*58	Oil Pump Hs.	8'x 12'	96	1st Floor
*59	Truck Scale		312	1st Floor

UST : Underground Storage Tank



NOTE:

TOTAL PLANT FLOOR AREA = 904,944 Sq Ft.
ACREAGE = 35.68
XXXXX = DESIGNATES FENCING
DATE UNDER BUILDING NUMBER INDICATES YEAR OF CONSTRUCTION

* MANUFACTURING	116,266
- ASSEMBLY	255,665
‡ WAREHOUSE	303,969
‡ SHIP & REC.	55,256
* SUPPORT	173,788
TOTAL	904,944

Revised 10/19/78
Revised 9/16/77 DH
Redrawn 4/30/76 MJ

WHITE FARM EQUIPMENT

SOUTH BEND, INDIANA

FIGURE 2-1

in Table 2-1. The operations that potentially had the most environmental impact were forging, heat treating, and painting. These operations are discussed in detail below.

Forging operations were carried out in gas-fired furnaces located in buildings 41A, 41B, 46 and 47. Adjacent to the furnaces were oftentimes presses and quench tanks for forming and cooling the hot metal parts. Forging operations have occurred at the site since the 1880s. They were discontinued in buildings 41A and 41B and 1984 and in buildings 46 and 47 in February 1988. Currently the buildings contain the forging furnaces and several pieces of equipment for shaping and finishing the metal parts.

The heat treatment process is designed to harden the metal parts and at the same time, provide ductility. Basically, the metal part is heated in a high temperature furnace and then quenched with oil. At White Farm, heat treatment occurred in buildings 41A, 46 and 47.

In 41A, the operation consisted of a furnace, heating by natural gas, followed by an oil quench pit, followed by several dry pits. The pits are of steel, recessed into the floor and surrounded by concrete. Overflow oils from the quench tank flow into the sewer. Heat treating operations in 41A were discontinued in 1984. Currently, the quench pit in building 41A is filled with about 3,000 gallons of quench oil that could be used for heat treating. The quench oil reportedly does not contain cyanides, nor were cyanides ever used at the facility.

In building 47, there exists a continuous heat treatment line called a RAY-DEC system. Metal parts were placed in a high temperature furnace at the front end, and then carried through by conveyors to an oil quench. Fumes from this line were destroyed in a gas-fired burner prior to atmospheric discharge. This line was in operation for several decades and was discontinued only recently in February 1988. The complete unit, with air pollution controls, remains in the building.

Paint operations probably varied in method throughout the facility's active life as the result of upgrading of painting equipment. Currently, the plant has automatic painting lines located in buildings 35, 46 and 47.

In building 35, the automatic paint system is a flo-coat type, in which the part is flooded with paint and the excess paint is collected and re-applied. The line begins with a phosphate dip, followed by a water wash and air dry. Next, the parts

TABLE 2-1

WHITE FARM EQUIPMENT COMPANY
BUILDING DESCRIPTIONS

Building Number	Building Description
29	A warehouse building currently in use, 5 stories tall, solid concrete clean floor.
29A	A shipping and receiving building, currently rented out for storage, oily floor.
30	A storage and assembly building, now contains racks of parts, clean floor.
31	A storage and assembly building, some painting formerly occurred here.
33	A steel storage building, now empty. An overhead steam line is wrapped with asbestos.
34	An assembly building, now contains racks and some parts.
35	An assembly building. Painting was conducted on the second floor. A flo-coat type paint system, preceded by a phosphate dip operation and followed by a bake operation on the third floor. This line was last operated in 1984. There was also an acid wash to clean paint from hooks. Floor is oily.
35B	A warehouse building, now contains storage racks.
37	A manufacturing building, welding occurred here; it is now empty.
39	A manufacturing building. Machining, milling, and lath work occurred here; now contains a few machines, but is nearly empty.
40	A manufacturing building like building 39. A few machines here now, but nearly empty.
41	A storage building for raw steel, now nearly empty, but contains a tumbling unit for removing scale from steel.

TABLE 2-1

WHITE FARM EQUIPMENT COMPANY
BUILDING DESCRIPTIONS

Building Number	Building Description
41A	A manufacturing building where forging and heat treating was conducted. Heat treat line consists of a gas heated furnace, followed by an oil quench pit and several dry pits. The pits are sunk into the floor. Overflow goes to the sewer. The quench pit currently contains usable quench oil.
41B	A manufacturing building where heat forming took place. Now contains several ovens with hydraulic and mechanical equipment. Oily floor.
43	This support building was used for die storage.
46	An assembly building. It contains a furnace for heat treating and a paint line that was last used in Februrary 1988.
47	A manufacturing building. It contains a continuous heat treat system called a RAY-DEC system. There is also a dip-type paint line that was last used in February 1988.

pass through the flo-coat paint operation, and finally, the painted part is dried in a heated baking operation. Wastes from the washing step were discharged to the sewer. This line was last operated in 1984. Adjacent to this paint line, was an acid wash line used to clean paint from hooks and consisted of two small tanks. The acid wash was neutralized prior to discharge to the sewer. The tanks are currently empty.

In buildings 46 and 47, there is in each case an automatic dip-type paint line. Both of these were operated as recently as February 1988, and have a faint paint odor emanating from paint that collected in the equipment.

In addition to manufacturing operations, the White Farm facility contains a coal-fired power plant that produces steam for heating site buildings. Its two boilers have an estimated capacity of 60,000 lbs/hr. The power plant was constructed in 1875 and last operated in March 1988. The power plant is still useable and may be employed in upcoming cold weather.

2.3 WATER

Until approximately 1984, the plant supplied all of its water from an on-site well located near building 21B. The well is a 12-inch unit with an estimated capacity of 700 to 800 gpm.

The water from the well was used for potable as well as industrial uses, such as steam production, cooling and parts washing. Because it had potable uses, the water was tested regularly by White Farm and the potable portion was chlorinated prior to use. Other manufacturing plants in the area also used on-site well water.

In 1984, the plant switched to municipal water in order to alleviate the "hassle" of using its own well. The on-site well is currently closed down but could be re-opened for testing purposes.

East of building 31, there exists a concrete enclosed pond. Water from this pond was held in case of fire at the plant. A fire pump house is located nearby in building 21. The pond is currently filled with water, but is not used for fire protection. The plant site now has several hydrants connected to the municipal system.

2.4 WASTEWATER

Wastewater from the plant is discharged to the City of South Bend sewer system at two separate locations. One of these

connections, in Chapin Street, along the eastern border of the plant, was regularly monitored by the City.

The sewer line received all industrial process wastewaters. Identified sources include the washwater from the phosphate coating process, the overflow from the quench oil tank, and the spent acid solution from the paint removal operation. In addition, the buildings had floor drains that tied directly to the sewer and collected the oil, grease, and paint spills and metal debris that landed on the floor. With the exception of the acid solution, which was neutralized prior to disposal, the wastewaters did not receive pretreatment. Discharge of process wastewaters ended in February 1988.

The processes employed at White Farm would be classified under the categories of electroplating/metal finishing and metal casting foundries, ferrous subcategory. Wastewaters from these operations are regulated for metals, cyanides, pH, oil and grease, and toxic organics. Based on WESTON's examination of the facilities and discussions with plant personnel, it was judged that, at a minimum, the plant's wastewater contained metals, such as chromium, lead, nickel and zinc, both from parts fabrication and from the paints; oil and greases from the heat treating and metal finishing operations; and toxic organics, such as naphthalene, benzene, toluene, and phenol, from the paints, quench oils and machining oils.

2.5 UNDERGROUND STORAGE TANKS

The plant site contained five underground storage tanks (USTs). The location of these tanks is shown in Figure 2-1.

East of building 46, there were two 4,000-gallon USTs which most recently contained #2 fuel oil. It is estimated that there was less than 1,000 gallons of #2 fuel oil in these tanks prior to removal.

Adjacent to building 58, there were two 10,000-gallon USTs, which most recently contained fuel oil in one tank and quench oil in the other. The estimated volumes of oils in these tanks prior to removal are: no fuel oil in the first tank, and less than 100 gallons of quench oil and water in the second tank.

The fifth underground storage tank was located east of building 33, near the well pump house, building 21B. This tank was 10,000 gallons in size and most recently contained gasoline. It is estimated it contained less than 200 gallons of gasoline prior to removal.

The material of construction for the tanks was steel with concrete saddles. Vents and ports were observed for several tanks during the July 1988 inspection. The age of the tanks is not known. Submittal to the State of Indiana of standard notification forms for these tanks was not completed.

The U.S. Environmental Protection Agency (U.S. EPA) required owners of USTs that store or dispense regulated substances to notify by 8 May 1986, and provide information on the age, size, type, location, and use of each tank. For Indiana, it is required that the owner use the U.S. EPA Notification Form and submit the form to the Division of Land Pollution Control, UST, Program, Indiana State Board of Health, P.O. Box 7015, Indianapolis, Indiana 46207. Only tanks used exclusively for on-site building heating purposes are exempt from notification requirements.

2.6 ELECTRICAL TRANSFORMERS

The site contains nine electrical transformers that are marked with signs indicating that they contain PCBs. The exact level of PCBs is, however, unknown. White Farm is the owner of the transformers.

The transformers are located in six separate sites. The largest number of transformers are situated in the main substation adjacent to the coal-fired power plant. Additional transformers are located adjacent to buildings 41, 46, 35, 3A and the main office.

The condition of the transformers was not checked during WESTON's visit due to that day's rainy weather. However, the site maintenance manager periodically checks these units for leaks and reported that there were no problems at the time of WESTON's site visit.

2.7 ASBESTOS

Asbestos was used to insulate the steam lines that run through many of the buildings. An evaluation of their condition and needed actions are being conducted by others.

2.8 SOLID WASTES

As a result of site cleanup, the plant is currently generating an unspecified volume of apparently nonhazardous solid wastes. These wastes include steel cuttings, scrap steel, "trash," and rubble. These materials are placed in open-top containers, and/or compactor and disposed of off site by a local

transporter. Solid wastes that were previously contained in an open area, west of building 28, have since been removed off site.

When the power plant is operating, it produces an ash from the burning of coal. The ash is also considered a nonhazardous solid waste and is transported off site by a local company.

The plant's heat treating, painting and other metal finishing operations generated wastes that could likely qualify as hazardous, due to their ignitability and toxicity. The volume of wastes generated during full activity, which occurred prior to 1984, is not known. However, according to plant personnel, these wastes were not removed on a regular basis. Rather, a large amount was collected and removed about 18 months prior to this audit.

Currently, the White Farm plant does not generate hazardous wastes because there are no manufacturing operations taking place. However, as a result of plant cleanup, various waste oils and paints were allowed to accumulate. These have been stored in drums and placed in one of two temporary storage locations.

The primary storage area is an outdoor concrete pad located between the power house (building 14) and the fire protection pond, and east of the water well house (building 21B). At the time of WESTON's site visit there were between 20 and 30 55-gallon metal drums containing waste oils and paints sitting on this pad. The drums are in various states of condition -- some are standing upright, while others are lying on their sides; some appear in good shape, while others look damaged from rust or internal pressure. The drums do not appear to be marked with dates of storage, types of materials or volume of contents. The site has no stormwater runoff or runon control.

A second temporary drum storage area is located in building 43. Here there are about half a dozen 55-gallon metal drums. They contain waste oils and are in good condition and standing upright. Being in a covered area, stormwater contact is not a concern.

The total volume of hazardous wastes stored on site is unknown because the volume contained in each drum varies. White Farm estimates that none of the drums have been located at their present storage sites for more than 60 days; however, off-site transport for these drums had yet to be arranged at the time of the July 1988 inspection. Subsequent documentation indicated that these drums had been properly disposed of in March 1989.

SECTION 3

CONCLUSIONS AND RECOMMENDATIONS

3.1 CONCLUSION

Based on WESTON's review of the plant site and conversations with plant personnel, it is concluded that the plant has the following areas of environmental risk.

1. Wastewater System

While the wastewaters carried most contaminants to the city sewer, there may be portions of the on-site sewer system that may contain residual levels of metals, oils and greases, and toxic organics. Potential sites for retained contaminants include manholes, shallow sloping pipes, bends and dead ends.

2. Buildings

Manufacturing operations have left the buildings with several environmental risks that will need to be addressed prior to their sale or demolition. The residual oils and greases on many of the building floors contain various amounts of metals and toxic organics. The quench oil stored in building 41A contains toxic organics associated with petroleum products. The drain lines leading to the sewer have potentially retained residual levels of metals, oil and grease, and organics (refer to earlier comment on wastewater system). The steam lines are wrapped with asbestos insulation. Miscellaneous items of equipment are coated with various oils that contain toxic organics associated with petroleum products. Residual paints, particularly on paint equipment in buildings 46 and 47, contain metals and toxic organics.

3. Underground Storage Tanks

The on-site USTs contained petroleum products which include toxic organics. Should the tanks have leaked, they would contaminate the local soils and possibly groundwater. The integrity of these tanks is unknown. Notification to the State of Indiana concerning these tanks, as required under RCRA regulations, has not been done. According to photographs provided by Allied the USTs were removed in 1988 and the excavations backfilled.

4. Electrical Transformers

The existence of PCBs in these transformers at unknown levels, make these units, at a minimum, "PCB Contaminated Electrical Equipment." Any leaks of electrical fluids from these units would contaminate the adjacent surface soils with PCBs, that potentially could reach the stormwater system during a heavy rain.

5. Hazardous Wastes

The hazardous wastes temporarily stored on the outdoor concrete pad, pose a potential threat to the environment. The storage pad contains no runoff or runon controls and leaking wastes could readily reach adjacent soils, percolate into the groundwater or be carried by stormwater to the storm drain system.

The hazardous wastes stored at the plant during the July 1988 site visit may have exceeded RCRA storage regulations. Assuming that the plant is no longer a hazardous waste generator, it can accumulate up to 1,000 kg (2,200 pounds) of waste without being subject to most RCRA requirements. If the plant stores more than 1,000 kg of waste, it becomes subject to small quantity generator requirements. These include labeling of containers, a storage quantity limit of 6,000 kg (13,200 pounds), and a storage time limit of no more than 180 days. If more than 6,000 kg of waste is stored on site or if it is held for more than 180 days, the storage site will require notification to the U.S. EPA, and possibly detailed plans for operation, contingencies and closure. The actual waste volume stored at the site is unknown, but there are currently 20 to 30 drums on site with various levels of waste. Since a full 55-gallon drum weighs about 450 pounds, the plant would exceed the 1,000 kg limit with 5 full drums, and would exceed the 6,000 kg limit with 30 full drums.

According to manifests provided by Allied all drummed wastes were shipped off-site for disposal in March 1989.

6. Soils

Contaminant levels in the soils are unknown, but soils have potentially been contaminated by spills of paints, oils and other process chemicals, runoff from waste storage facilities and leaks from transformers.

7. Groundwater

Groundwater could be contaminated as a result of leakage from the USTs, leaks from solid waste storage facilities, and infiltration of contaminated stormwater. Groundwater was a source of drinking water to the plant up until 1984; and, therefore, it can be expected to be of good quality. However, monitoring at the time did not cover the toxic organics that could potentially enter the groundwater from the routes described above.

3.2 RECOMMENDATIONS

The environmental risk areas, described in Section 3.1, require either field sampling to quantify the extent of any problems or specific remedial action to mitigate their risks and to allow future development of the site.

3.2.1 Wastewater System

To determine the amount of hazardous contaminants remaining in the building floor drains and plant sewer system, WESTON proposes to examine selected drain lines and manholes, collect samples of residual sediments and test for metal and organic contamination. Where contaminants have built up, the lines should be flushed with large volumes of water.

3.2.2 Buildings

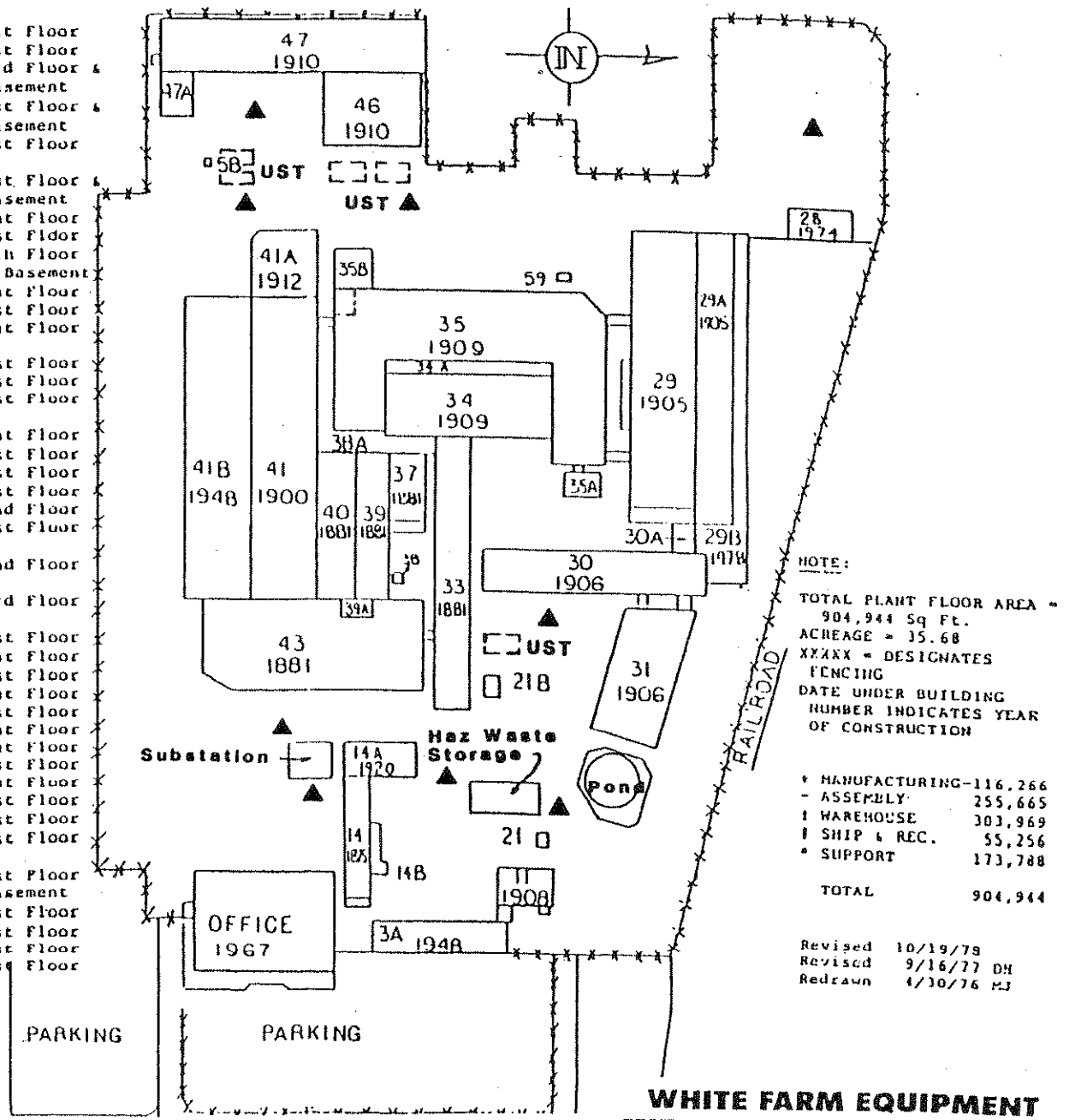
The asbestos insulation over the steam lines will require removal prior to re-use or demolition of the plant buildings. Oil and grease on the building floors will need to be removed if the buildings are re-used; otherwise, if the buildings are demolished, there is no need to clean them. For existing machinery and painting equipment, these units should be cleaned of excess oils and paints prior to disposal with other nonhazardous wastes. Sampling of selected floor drain lines is proposed (refer to Section 3.2.1). Where contaminants have built up, the lines should be flushed prior to disposition of the buildings.

For building 41A, where 3,000 gallons of quench oil is stored, it is recommended that the quench tank be regularly checked for leaks. Prior to disposition of the building, this oil will need to be removed either to another user or to disposal. Disposal options include oil reclamation or incineration.

			Sq. Ft.	
*	Office	201'x151'	30,351	1st Floor
*3A	Exp. Engr.	45'x211'	9,500	1st Floor
*11	Exp. Engr.	60'x 84'	15,120	3rd Floor & Basement
*14	Power House	38'x176'	6,688	1st Floor &
			6,688	Basement
*14B	Power House Annex	13'x 73'	949	1st Floor
*14A	Boiler House	53'x112'	5,936	1st Floor &
			5,936	Basement
*21B	Pump House	21'x 29'	600	1st Floor
28	Will Call	51'x125'	6,426	1st Fidor
‡29	Warehouse	100'x410'	246,000	5th Floor & Basement
‡29	Annex	100'x 44'	4,400	1st Floor
‡29A	Loading Dock	54'x427'	23,000	1st Floor
‡29B	Warehouse Northside	427'x 26' 73'x 31'	17,015	1st Floor
*30	Stock 1	64'x336'	21,500	1st Floor
*30A	Passageway	24'x 34'	816	1st Floor
-31	Assembly	100'x197' to 227'	21,200	1st Floor
33	Receiving	50'x175'	8,750	1st Floor
*33	Stock 1	50'x225'	11,250	1st Floor
-34	Assembly	97'x254'	24,638	1st Floor
*34A	Annex	21'x254'	5,314	1st Floor
	Office	10'x 80'	1,600	2nd Floor
-35	Assembly	81'x482' & 102'x254'	64,950	1st Floor
		81'x482' & 88'x254'	61,394	2nd Floor
		81'x482' & 88'x254'	61,394	3rd Floor
‡35A	Dry Room	39'x 54'	2,100	1st Floor
‡35B	Storage	57'x 62'	3,534	1st Floor
‡37	Welding	60'x120'	7,200	1st Floor
*38A	Storage	26'x160'	4,480	1st Floor
*38	Office	32'x 34'	1,088	1st Floor
‡39	Drill Room	58'x193'	11,194	1st Floor
*39A	Drill Rm Off	16'x 58'	928	1st Floor
‡40	Drill Room	52'x211'	10,972	1st Floor
‡41	Steel Stg.	100'x449'	44,900	1st Floor
‡41A	Heat Treat	96'x100'	9,660	1st Floor
‡41B	Forge 1	100'x449'	44,900	1st Floor
*43	Tool Room, Crib & Mnt.	132'x338'	44,616	1st Floor
-46	Base Fit	101'x159'	16,059	1st Floor
		67'x 90'	6,000	Basement
‡47	Forge 2	81'x400'	32,400	1st Floor
‡47A	Steel Stg.	49'x 62'	3,038	1st Floor
*58	Oil Pump Hs.	8'x 12'	96	1st Floor
*59	Truck Scale		312	1st Floor

UST : Underground Storage Tank

▲ **Soil Sample Site**



NOTE:

TOTAL PLANT FLOOR AREA = 904,944 Sq Ft.
ACREAGE = 35.68
XXXXX = DESIGNATES FENCING
DATE UNDER BUILDING NUMBER INDICATES YEAR OF CONSTRUCTION

* MANUFACTURING	116,266
- ASSEMBLY	255,665
‡ WAREHOUSE	303,969
‖ SHIP & REC.	55,256
^ SUPPORT	173,788
TOTAL	904,944

Revised 10/19/79
Revised 9/16/77 DH
Redrawn 4/30/76 MJ

WHITE FARM EQUIPMENT

SOUTH BEND, INDIANA

FIGURE 3-1
PROPOSED SOIL SAMPLE SITES

DRAFT
PHASE II ENVIRONMENTAL
LIABILITIES ASSESSMENT
FOR THE
WHITE FARM EQUIPMENT FACILITY

Prepared For:

Allied Products Corporation
10 South Riverside Plaza
Chicago, Illinois

Stephen R. Clough
Stephen R. Clough, P.G.
Senior Project Geologist

Kurt S. Stimpson
Project Director

Prepared By:

Roy F. Weston, Inc.
100 Corporate North
Bannockburn, Illinois 60015

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SECTION 2

FIELD SAMPLING PROGRAM

2.1 SOIL SAMPLING LOCATIONS

The soil sampling locations were selected based on the presence of product or waste management units, areas prone to spillage, and areas where surface soil staining was evident (see Figure 2-1). Each sampling location is described below:

- The southwest corner of the site - one soil boring (SB-1) was drilled in this area to a depth of approximately 17 feet. 2 soil samples were retained from this boring at 5 feet and 15 feet below grade. These samples were collected to determine if a reported chemical spill on adjacent property had migrated onto the subject property and to establish soil background quality.

- The three UST locations - 2 soil samples were collected at the location of each UST using a truck-mounted drill rig. Since the USTs had been removed subsequent to WESTON's Phase I assessment, one soil boring was drilled through the center of each backfilled UST excavation (SB-2, SB-3, and SB-4). One sample was collected from the fill material replaced after the tanks were removed. The boring was then advanced through the fill material and a second sample was collected from the undisturbed soils which once underlain the USTs. These samples were collected to determine if use of the previously removed USTs had impacted underlying soils.

- Stained soil adjacent to Building 47 - one shallow soil sample (HA-1) was collected 0.75 feet below grade using a hand auger. The target depth for this sample was 1.5 feet, however, refusal was encountered at 0.75 feet preventing further penetration. This sample was collected to evaluate the nature of the staining of surficial soils in this area.

- The area adjacent to building 28 - one shallow soil sample (HA-2) was collected 1.0 foot below grade using a hand auger. The target depth for this sample was 1.5 feet, however, refusal was encountered at 1 foot. This sample was collected

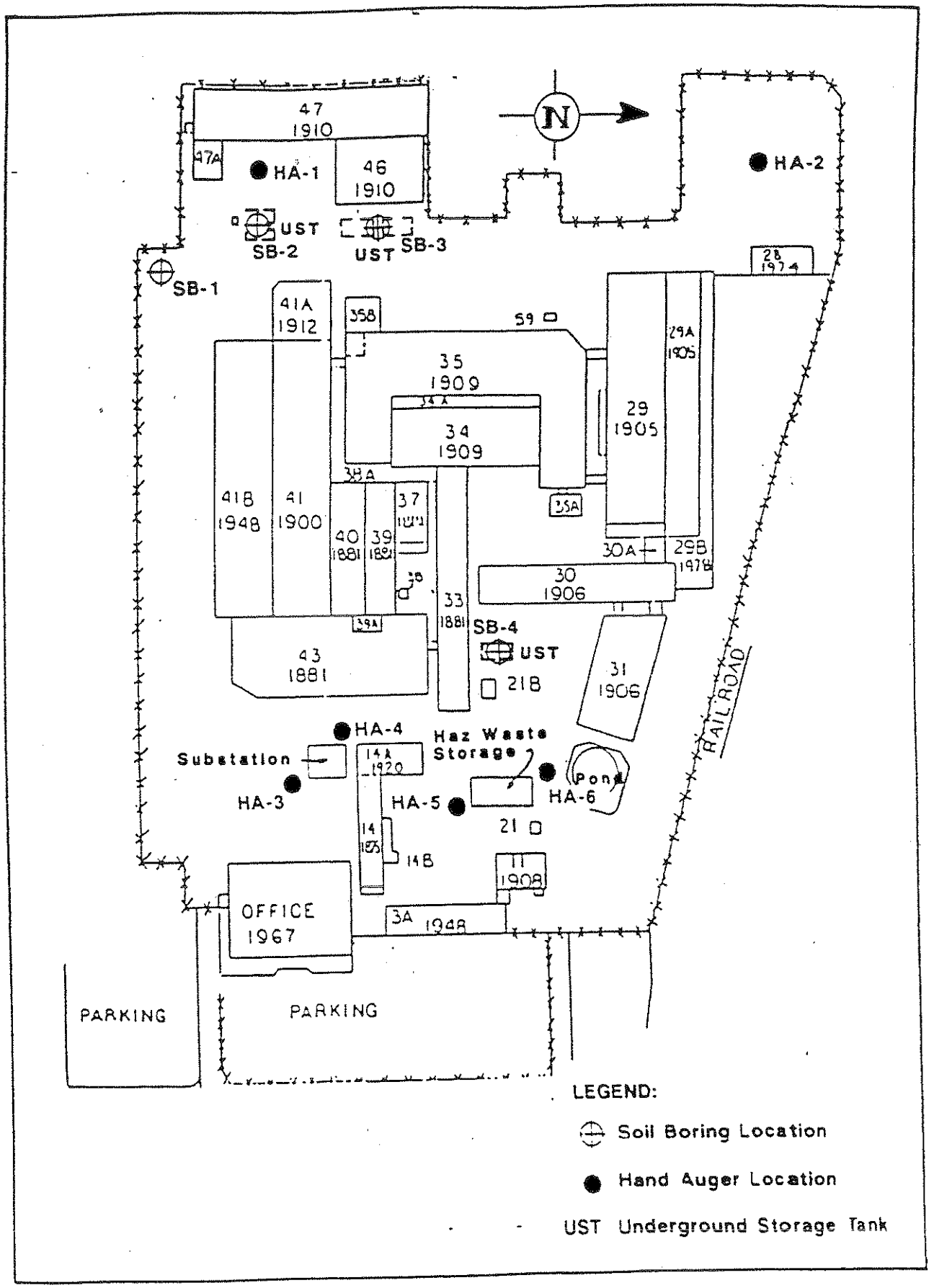

FIGURE 2-1 ALLIED PRODUCTS SITE LAYOUT
SOUTH BEND, INDIANA

adjacent to soil which appeared to be stained. This sample was collected to evaluate the nature of the staining of surficial soils in this area.

- The transformer substation - 2 shallow soil samples (HA-3 and HA-4) were collected at 0.34 and 1.5 feet below grade using a hand auger. These samples were collected adjacent to the transformer pad in order to determine whether incidental leakage from the transformers had resulted in a release of PCB contaminated oils.

- The temporary drum storage pad - 2 shallow soil samples (HA-5 and HA-6) were collected 1.5 feet below grade using a hand auger. These samples were collected adjacent to the storage pad to determine if temporary storage of drummed wastes in this area had impacted the near-surface soils.

2.2 ANALYTICAL PROGRAM

Since the facility has been in existence for over 100 years, there is a strong possibility that the chemical products and waste streams handled at the site have changed over the years. As such, the majority of the soil samples were analyzed for all the compounds found on the Hazardous Substance List (HSL). Table 2-1 describes the analyses performed by area, sample identification, and depth of collection for all samples collected as part of this investigation.

All analyses were performed by WESTON's Gulf Coast Laboratories in University Park, Illinois. All procedures were conducted in accordance with U.S. EPA protocols. The analyses performed, U.S. EPA method numbers, container types, and holding times are provided in Table 2-2.

2.3 SOIL SAMPLING PROCEDURES

Soil samples were obtained using both hand augers and a truck-mounted drill rig. The hand auger was used to obtain samples at a depth less than two feet below grade. This included those samples collected at the transformer pad, the drum storage pad, and areas of surface staining adjacent to buildings 28 and 47. Hand augered samples were transferred directly to the laboratory prepared bottles with a stainless steel scoopula. All sampling equipment was decontaminated prior to use at each sampling location according to the procedures described in section 2.4.

TABLE 2-1

ANALYSIS PERFORMED BY AREA

Area	Sample I.D.	Collection Depth	Analysis
Background (SW Corner)	SB-1-1	5 - 6.5	TPH
	SB-1-2	15 - 17	Full HSL Scan
USTs	SB-2-1	3 - 5	TPH
	SB-2-2	23 - 25	Full HSL Scan
	SB-3-1	3 - 5	TPH
	SB-3-2	23 - 25	Full HSL Scan
	SB-4-1	3 - 5	TPH
	SB-4-2	21 - 23	Full HSL Scan
Building 47	HA-1	1.3 - 1.5	Full HSL Scan
Building 28	HA-2	1.3 - 1.5	Full HSL Scan
Transformers	HA-3	0.2 - 0.3	Full HSL Scan, PCBs
	HA-4	1.2 - 1.4	Full HSL Scan, PCBs
rum Storage	HA-5	1.3 - 1.5	Full HSL Scan, PCBs
	HA-6	1.0 - 1.2	Full HSL Scan, PCBs

Note:
Full HSL Scan - VOCs, BNAs, and metals

TABLE 2-2

ANALYSES PERFORMED, METHOD NO., HOLDING TIME, AND CONTAINER TYPE

Analysis	Method No.	Holding Time (Days)	Container Type
VOCs	8010/8020	14	125ml (Teflon Lid)
BNAs	8270	7/40	250ml
PCBs	8080	7/40	250ml
TPH	418.1	28	125ml
Inorganics	6010	6 Months	250ml

Notes:

7/40 - 7 days holiday time prior to extraction, 40 days prior to analysis.

All methods conducted according to procedures found in SW-846 except TPH (Standard Methods for the examination of Water and Wastewater).

The truck-mounted drill rig was used to obtain those samples collected in the vicinity of the removed USTs and the southwest corner of the property. Two sampling intervals were selected to characterize these areas. One sample was obtained from the backfill material (approximately 5.0 feet below grade) to ensure that only clean fill was placed in the excavation after the USTs were removed. The second sample was collected from the undisturbed soils which once underlaid the USTs. All soil samples were field screened with an HNu in order to determine where the highest levels of contamination might exist. Each borehole was advanced using hollow-stem augers and split-spoon samplers. The soil samples obtained from each borehole were described and logged in accordance with the United Soil Classification System by a WESTON geologist. The detailed borehole logs are presented in Appendix A.

Soil samples retained for chemical analysis were transferred from the split-spoons to the appropriate sample containers using a stainless steel scoopula (decontaminated prior to use). The sample for VOC analysis was collected first upon opening the split-spoon. The additional sample aliquots (i.e. BNAs, metals, etc.) were collected from the soil remaining in the spoon. Each sample aliquot was collected from a discrete interval, no compositing occurred. As such, the sample analyses represent the chemical nature over the two-foot interval of soil retained in the split-spoon.

2.4 DECONTAMINATION PROCEDURES

To prevent cross contamination of soil samples, the drill rig, tools, augers (both hand and hollow-stem), and split-spoons were decontaminated prior to use at each borehole. The split-spoons were steam cleaned prior to use at each borehole. This prevented the introduction of any surficial or near surface contamination into the subsurface samples. The decontamination procedures included the following:

- All sampling equipment was cleaned with a solution of Alconox and water until all particulate matter was removed. The equipment was then rinsed with clean water.
- All equipment was rinsed with methanol and allowed to air dry.
- All equipment was rinsed with a solution of 10 % nitric acid and distilled water.

SECTION 3

SOIL SAMPLING RESULTS

In order to identify potential environmental liabilities at the site, action levels must be established given the site conditions. These action levels are used only as guidance to select areas which require further investigation or possible cleanup. To date, U.S. Environmental Protection Agency (U.S. EPA) has not established cleanup guidelines for most hazardous substances in soils. Cleanup objectives for contaminated soils are typically determined on a site by site basis. These cleanup objectives are based on the naturally occurring concentration of each contaminant, if any, and site-specific background data.

3.1 NATURALLY OCCURRING METALS CONCENTRATIONS

Inorganic compounds such as heavy metals (i.e. chromium, cobalt, lead, etc.) are naturally occurring at low concentrations in soils and are present in any soil analysis. The range of their concentration is dependent on the local conditions (i.e. geology, climate). The range in the concentration of several elements found naturally occurring in soils are presented in Table 3-1.

3.2 SOIL BACKGROUND QUALITY

The chemical nature of soils which have not been impacted by past operational practices (background) can also be used in evaluating the need for additional investigation or remediation. One soil boring location, SB-1 (see Figure 2-1), was located at the southwest corner of the subject property. Since this location is isolated from the product and waste handling areas it is an ideal location for establishing soil background quality. This location was also chosen to evaluate the potential of migration of contaminants on-site from a neighboring property. Two soil samples were obtained from this borehole. A shallow sample (SB-1-1) was collected from a depth of 5.0 feet for TPH analysis and a deep sample (SB-1-2) from 15.0 feet for HSL VOCs, BNAs, metals, and TPH analysis. The results of these analyses are summarized in Table 3-2. The detailed analytical narrative summaries are provided in Appendix B. As indicated in Table 3-2 the TPH analysis of the shallow sample indicated the presence of 48.4 mg/kg of hydrocarbons. Since this test is extremely sensitive to the presence of natural organic matter (e.g. roots) this concentration is believed to be representative of background

TABLE 3-1

TYPICAL ELEMENT CONCENTRATION IN NATURAL SOILS
(mg/kg)

Analyte	Range	Average
Aluminum	10,000 - 300,000	71,000
Arsenic	1 - 50	5
Barium	100 - 3,000	430
Beryllium	0.1 - 40	6
Cadmium	0.01 - 0.7	0.06
Cobalt	1 - 40	8
Chromium	1 - 1,000	100
Copper	2 - 100	30
Mercury	0.01 - 0.3	0.03
Magnesium	600 - 6,000	5,000
Manganese	20 - 3,000	600
Nickel	5 - 500	40
Lead	2 - 200	10
Selenium	0.1 - 2	0.3
Vanadium	20 - 500	100
Zinc	10 - 300	50

Source: Hazardous Waste Treatment, U.S. EPA, SW-874 (April 1983).

TABLE 3-2

SUMMARY OF SOIL ANALYSIS
SOIL BORINGS

Compounds Detected	Concentration (ug/kg) SB-1-1	SB-1-2	SB-2-1	SB-2-2	SB-3-1	SB-3-2	SB-4-1	SB-4-2
VOCs:								
Methylene Chloride	NA	31	NA	1,000	NA	29	NA	12
Acetone	NA	ND	NA	720 B	NA	18 B	NA	110
1,2-Dichloroethene	NA	ND	NA	1,900	NA	ND	NA	ND
1,1,1-Trichloroethane	NA	ND	NA	ND	NA	ND	NA	8
Trichloroethene	NA	ND	NA	1,400	NA	ND	NA	ND
Benzene	NA	ND	NA	ND	NA	ND	NA	7
Tetrachloroethene	NA	ND	NA	18,000	NA	10	NA	8
Toluene	NA	ND	NA	330	NA	ND	NA	25
Ethylbenzene	NA	ND	NA	ND	NA	ND	NA	26
Xylene	NA	ND	NA	ND	NA	ND	NA	120
BNAs:								
Naphthalene	NA	ND	NA	ND	NA	ND	NA	10,000
2-Methylnaphthalene	NA	ND	NA	E	NA	ND	NA	14,000
Total Petroleum Hydrocarbons (mg/kg)	48.4	ND	ND	1,060	45.0	ND	ND	860
Inorganics (mg/kg):								
Aluminum	NA	1,840	NA	834	NA	1,960	NA	1,450
Arsenic	NA	2.0	NA	ND	NA	2.7	NA	ND
Barium	NA	7.1	NA	ND	NA	7.5	NA	ND
Calcium	NA	25,600	NA	19,800	NA	41,000	NA	34,900
Cadmium	NA	ND	NA	ND	NA	0.66	NA	0.54
Cobalt	NA	2.2	NA	ND	NA	2.8	NA	ND
Chromium	NA	5.3	NA	2.2	NA	6.2	NA	4.7
Copper	NA	4.4	NA	ND	NA	5.8	NA	ND
Iron	NA	3,990	NA	2,500	NA	6,700	NA	3,480
Mercury	NA	ND	NA	ND	NA	ND	NA	0.44
Potasium	NA	269	NA	172	NA	282	NA	212
Magnesium	NA	5,570	NA	5,060	NA	12,500	NA	7,250
Manganese	NA	106	NA	49.9	NA	128	NA	82.7
Sodium	NA	80.2	NA	68.1	NA	104	NA	110
Nickel	NA	4.6	NA	2.5	NA	5.3	NA	4.7
Vanadium	NA	4.4	NA	2.3	NA	6.6	NA	3.7
Zinc	NA	15.7	NA	9.6	NA	19.1	NA	11.0

Notes:

NA - Not Analyzed
ND - Not Detected
B - Compound found in laboratory blank.
E - Estimated value below U.S. EPA specified detection limit.

conditions. The presence of methylene chloride and bis(2-ethylhexyl)phthalate in the deeper sample are considered to be lab artifacts. The concentration of inorganics in the soils are all within or below their respective ranges as specified in Table 3-1.

3.3 UNDERGROUND STORAGE TANKS

Three former UST locations were evaluated as part of the Phase II assessment (see Figure 2-1). One boring was completed at each location penetrating the backfill material and the underlying undisturbed soils. Two samples were retained from each boring for chemical analysis. The results of these analyses are summarized in Table 3-2. The detailed analytical narrative summaries are provided in Appendix B.

The UST located at the southwest corner of the property was used for the storage of quench oil. The analytical results indicate that the backfill material (sample SB-2-1) is free of petroleum hydrocarbon (TPH) contamination. The analysis of the native soils at a depth of 15 to 17 feet (sample SB-2-2) indicated the presence of several VOCs at elevated concentrations (see Table 3-2), tetrachloroethene (PCE) being the most prevalent at 18,000 µg/kg. Trichloroethene (TCE), methylene chloride, and 1,2-dichloroethene (DCE) were also identified at elevated concentrations (1,400, 1,000, and 1,900 µg/kg, respectively). These chemicals are typically used in degreasing operations and are very mobile in the subsurface. Several BNAs were also detected in the native soils, however, their concentrations were estimated below the U.S. EPA specified detection limit. These compounds are typically associated with coal tars or asphalt materials. The concentration of TPH (1,060 mg/kg) in the native soils is indicative of petroleum contamination. All of the inorganics identified in the native soils were within the range found naturally occurring.

The second UST examined was located immediately north of the first tank. The analytical results of the backfill materials (SB-3-1) indicate that the levels of TPH are below the background concentration found in SB-1. Analysis of the native soils (SB-3-2) indicate the presence of two VOCs; PCE and methylene chloride (10 and 29 µg/kg). Several BNAs were identified at concentrations below the method detection limit (i.e. estimated values). Two metals were identified above their naturally occurring concentrations; cadmium and magnesium (0.66 and 12,500 mg/kg, respectively).

The third UST location investigated was located on the eastern portion of the property adjacent to buildings 30 and 33. This UST was used for the storage of gasoline. Analysis of the backfill material indicated that it was free of petroleum contamination. Analysis of the native soils below the base of the former UST revealed the presence of several VOCs including; xylene (120 µg/kg), ethylbenzene (26 µg/kg), toluene (25 µg/kg), benzene (7 µg/kg), PCE (8 µg/kg), 1,1,1-trichloroethane (TCA, 8 µg/kg), acetone (110 µg/kg), and methylene chloride (12 µg/kg). Benzene, toluene, ethylbenzene, and xylene (BTEX) are common constituents of gasoline. Only two BNAs were identified in the analysis of the native soil, naphthalene (10,000 µg/kg) and 2-methyl-naphthalene (14,000 µg/kg). These compounds are typically found in diesel and fuel oils rather than gasoline.

3.4 STAINED SOILS - BUILDINGS 47 AND 28

Two shallow hand augers were completed in order to determine if the surface staining of soils was indicative of the contamination of near surface soils. Two areas were selected where the staining was the most extreme; adjacent to buildings 47 (HA-1) and 28 (HA-2). One soil sample was collected at each area for the analysis of VOCs, BNAs, metals, and TPH. The results of these analyses are summarized in Table 3-2. The detailed analytical narrative summaries are provided in Appendix B.

Borehole HA-1 was advanced to a depth of 0.75 feet below grade when refusal was encountered. Refusal was the result of large brick fragments and gravel which could not be penetrated by hand. The analytical results indicated the presence one VOC, methylene chloride, at a concentration typical of lab contamination (25 µg/kg). However, this compound was not detected in the lab blanks run concurrent with this sample and most be considered representative of the actual soil chemistry. Three BNAs were detected in the near surface soils; phenanthrene (1,000 µg/kg), fluoranthene (1,300 µg/kg), and pyrene (3,800 µg/kg). Both phenanthrene and fluoranthene were estimated concentrations below the instrument detection limit. These compounds are common in asphalt and coal tars. The concentration of TPH was reported at 6,450 mg/kg. This concentration is indicative of petroleum contamination. Only one metal, cadmium (3.1 mg/kg), was detected above the concentration at which its found naturally occurring.

Sample HA-2 was collected at a depth of 1.0 feet below grade. Further penetration was not possible since refusal was

TABLE 3-3

SUMMARY OF SOIL ANALYSIS
HAND AUGERS

Compounds Detected	Concentration (ug/kg) HA-1	HA-2	HA-3	HA-4	HA-5	HA-5(Dup)	HA-6
VOCs:							
Methylene Chloride	25	48	NA	NA	69	67	41
Acetone	ND	19 B	NA	NA	ND	ND	37
2-Butanone	ND	ND	NA	NA	ND	ND	10 J
1,1,1-Trichloroethane	ND	ND	NA	NA	ND	ND	27
Tetrachloroethene	ND	ND	NA	NA	5 J	10	12
Toluene	ND	ND	NA	NA	ND	ND	8
BNAs:							
Phenanthrene	E	680	NA	NA	1,600	660	E
Fluoranthene	E	680	NA	NA	1,400	E	E
Pyrene	3,800	560	NA	NA	1,300	460	E
Benzo(a)anthracene	ND	E	NA	NA	480	E	E
Chrysene	ND	360	NA	NA	590	E	E
PCB's							
Aroclor - 1260	NA	NA	100 J	160 J	ND	50 J	40 J
Total Petroleum Hydrocarbons (mg/kg)	6,450	NA	45.2	169	NA	NA	NA
Inorganics (mg/kg):							
Aluminum	8,350	22,800	NA	NA	4,880	5,750	3,090
Arsenic	4.8	6.4	NA	NA	2.2	1.9	3.7
Barium	78.1	202	NA	NA	32.3	33.1	45.1
Beryllium	1.6	1.3	NA	NA	ND	ND	ND
Calcium	31,100	42,800	NA	NA	875	843	2,250
Cadmium	3.1	2.0	NA	NA	ND	ND	0.91
Cobalt	9.5	5.7	NA	NA	3.6	3.5	5.8
Chromium	37.1	31.1	NA	NA	6.6	7.3	17.7
Copper	39.3	31.3	NA	NA	4.6	8.5	20.1
Iron	117,000.	34,000	NA	NA	6,200	6,400	60,200
Mercury	0.17	0.65	NA	NA	ND	0.16	2.2
Potasium	862	2,220	NA	NA	314	400	297
Magnesium	5,290	6,190	NA	NA	1,010	1,130	695
Manganese	1,400	3,400	NA	NA	224	184	697
Sodium	206	677	NA	NA	63.3	56.7	99.3
Nickel	32.8	7.7	NA	NA	5.5	5.8	11.4
Lead	84.6	43.1	NA	NA	8.2	6.2	163
Selenium	ND	ND	NA	NA	ND	ND	0.96
Vanadium	7.1	39.8	NA	NA	11.6	11.8	19.2
Zinc	72.4	44.0	NA	NA	19.3	20.0	33.9

Notes:

ND - Not Detected
B - Compound found in laboratory blank.
E - Estimated value below U.S. EPA specified detection limit.

encountered at this depth due to the presence of coarse gravel and rock fragments. The analytical results indicated that this sample also contained detectable quantities of methylene chloride (49 µg/kg) which could not be discounted as lab contamination. Acetone was also detected, however, this compound was detected in the lab blank and can be discarded as a lab artifact. Several BNAs were identified in this sample, however, all of the compounds were estimated values below the detection limit specified by the U.S. EPA. Four metals were detected above the concentration at which they occur naturally. These include cadmium, mercury, magnesium, and manganese (2.0, 0.65, 6,190, and 3,400 mg/kg, respectively).

3.5 TRANSFORMER SUBSTATION

Two hand augers (locations HA-3 and HA-4) were completed in this area to determine if minor leakage from the transformers had resulted in the contamination of the adjacent soils. These samples were obtained outside the fence which surrounds the transformer pad. The samples collected in this area were analyzed for TPH and PCBs. The results of both sample analyses are summarized in Table 3-2.

Sample HA-3 was collected from the southeast corner of the transformer pad at a depth of 0.34 feet below grade. At this depth a solid surface was encountered which could not be penetrated. The sample was obtained above this surface and submitted for analysis. The analytical results indicated the concentration of TPH was at 45.2 mg/kg. This value is very similar to the background concentration. One PCB isomer (Aroclor-1260) was identified although its concentration was estimated below the U.S. EPA specified detection limit, (100 µg/kg).

Sample HA-4 was collected from the northwest corner of the transformer pad at a depth of 1.5 feet below grade. The analytical results indicated the concentration of TPH to be 169 mg/kg, indicative of petroleum contamination. The PCB analysis indicated the presence of Aroclor-1260 at an estimated concentration of 160 µg/kg.

3.6 DRUM STORAGE PAD

Two-hand augers were completed at this area to determine if the past storage of drums had resulted in the contamination of near surface soils. Each soil sample was analyzed for VOCs, BNAs, metals, and PCBs. Boring HA-5 was completed

adjacent to the southeast corner of the drum pad. HA-6 was completed adjacent the northwest corner of the pad.

Sample HA-5 was collected at a depth of 1.5 feet below grade. A duplicate sample was collected at this location for quality control purposes. The analytical results of the near surface soils indicated the presence of 2 VOCs including methylene chloride (67.0 to 69.0 µg/kg) and PCE (5.0 to 10.0 µg/kg). Several BNAs were also identified, however, concentrations were all below the U.S. EPA specified detection limit. Aroclor-1260 was identified below detection limits at this location, however, its presence was only identified in the duplicate sample (see Table 3-3). None of the metals identified in these samples were above the average concentration at which they naturally occur.

Boring HA-6 was completed to a depth of 1.3 feet below grade. The analytical results of this sample indicated the presence of several VOCs. These included: methylene chloride (41.0 µg/kg); acetone (37.0 µg/kg); 2-butanone (10.0 µg/kg); 1,1,1-trichloroethane (27.0 µg/kg); PCE (12.0 µg/kg); and toluene (8.0 µg/kg). Several BNAs were also identified at concentrations below the U.S. EPA specified detection limit. Aroclor-1260 was identified in this soil sample at an estimated concentration of 40.0 µg/kg. The inorganic analyses indicated the presence of two metals, cadmium and mercury, above the concentration at which they occur naturally in soils.

SECTION 4

INTERPRETATION OF RESULTS

As discussed in Section 3, the analytical results indicate the presence of VOCs, BNAs, PCBs, metals, and petroleum hydrocarbons in the subsurface soils. When the concentration of an identified compound in soils is greater than its respective background or naturally occurring level, the compound is believed to be the result of a chemical spill or release. If the concentration of the contaminant exceeds an U.S. EPA or Indiana Department of Environmental Management (IDEM) specified cleanup level, remediation must be initiated. At this time IDEM has developed a cleanup level of 100 mg/kg for TPH and 100 mg/kg for BTEX in soils. However, these levels are used as guidance in evaluating remediation and are not regulation. The following subsections summarize those areas where additional investigation or soil remediation may be required.

4.1 UNDERGROUND STORAGE TANKS

The location of the three former USTs were investigated to determine if the past operation of these tanks had impacted the surrounding soils or if a spill had occurred during their removal. The analytical results indicated the presence of VOCs, BNAs, TPH, and metals at elevated concentrations. The analysis of the backfill material at each location indicated that this material was free of oil contamination. However, the samples obtained from the underlying undisturbed soils contained several contaminants. Although it was not believed that the tanks were used for the storage of solvents the contaminants identified at locations SB-2 and SB-4 are common solvents used in degreasing operations. The concentration of VOCs and TPH in the soils at locations SB-2 and SB-4 exceed background concentrations and cleanup levels and as such, warrant additional investigation and potentially remediation. The concentration of VOCs and TPH at location SB-3 were considerably less and do not warrant any further action at this time.

4.2 STAINED SOILS - BUILDINGS 47 AND 28

These areas were investigated due to the presence of surficial soil staining which appeared to be the result of spillage. The analytical results indicated the prime contaminants were petroleum hydrocarbons and metals. The soils adjacent to building 47 contained 6,450 mg/kg of TPH which is indicative

of petroleum contamination. In addition, cadmium was detected above background and its naturally occurring concentration. This data indicates the need for minimum soil remediation.

The soils adjacent to building 28 indicated the presence of several metals at concentrations above background and their naturally occurring concentrations. Although metals are typically immobile in the subsurface, minimal soil remediation is recommended.

4.3 TRANSFORMER SUBSTATION

This area was investigated to determine if incidental leakage from the transformers had resulted in widespread soil contamination. The analytical results indicated the presence of TPH and PCBs in the near surface soils. Only one sample contained TPH at a concentration indicative of petroleum contamination (HA-4). The concentration of PCBs in both samples does not warrant cleanup, however, the elevated level of TPH at HA-4 indicates the need for minimal remediation.

4.4 DRUM STORAGE PAD

This area was investigated to determine if the storage of drummed materials had resulted in soil contamination. The analytical results indicated the presence of several VOCs and BNAs, PCBs, and metals. Only two metals were identified at concentrations above background and their naturally occurring concentration. As such, minimal soil remediation is recommended.

SECTION 5

CONCLUSIONS AND RECOMMENDATIONS

The Phase II investigation of the subject property has resulted in the identification of several contaminants in the near surface and subsurface soils. Based on the analytical data and comparisons to IDEM cleanup guidelines and background data, the following conclusions are made:

- The concentration of metals detected in the soils are generally within the range at which they naturally occur. Consequently, the identified metals do not pose an environmental hazard.

- The concentration of volatile organic compounds (VOCs) and total petroleum hydrocarbons (TPH) in native soils below the base of two of the UST excavations (sample locations SB-2 and SB-4) are above background levels and the IDEM cleanup guideline for TPH.

- The concentration of TPH in near surface soils adjacent to building 47 are indicative of petroleum contamination.

- The concentration of TPH in near surface soils adjacent to the transformer substation indicate that leakage from the transformers has resulted in minor petroleum contamination of soils. PCB concentrations were inconsequential.

- The concentrations of VOCs, BNAs, and PCBs in near surface soils in the vicinity of the drum storage area indicate that minor spillage has occurred.

ENVIRONMENTAL LIABILITIES ASSESSMENT FOR THE WHITE FARM EQUIPMENT FACILITY SOUTH BEND, INDIANA

Prepared for:

Allied Products Corporation
10 South Riverside Plaza
Chicago, Illinois 60606

Frederick L. Test, P.E.
Senior Project Engineer

Joan M. Dunn
Senior Project Scientist

Kurt S. Stimpson
Project Director

Prepared by:

Roy F. Weston, Inc.
100 Corporate North, Suite 101
Bannockburn, Illinois 60015
(708) 918-4128

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SECTION 1

INTRODUCTION

At the request of the Allied Products Corporation, representatives of Roy F. Weston, Inc. (WESTON) conducted a Phase I environmental liabilities assessment at the White Farm Equipment plant in South Bend, Indiana, during July 1988. The principal objective of this assessment was to identify potential environmental hazards and liabilities that might impact future development of the property. The assessment consisted of on-site inspections, discussions with various facility representatives, and completion of an audit questionnaire.

During this assessment, WESTON personnel, specifically trained to recognize both short- and long-term actual and potential environmental hazards and liabilities, employed accepted environmental audit procedures. Although the assessment was thorough, the conclusions provided herein are based, in part, on information provided to WESTON; WESTON did not perform environmental sampling or analysis during this review. Therefore, WESTON neither guarantees that additional problems will not arise in the future, nor warranties this property nor certifies its future use.

SECTION 2

SITE DESCRIPTION

2.1 SITE FACILITIES

The White Farm Equipment Company, now part of Allied Products Corporation, is located in South Bend, Indiana. Its primary operation was the manufacture of farm implements, which it performed from the early 1880s to 1988. Currently, no manufacturing operations are occurring at the plant nor are any planned for the future; rather, the site is being cleaned up for future disposition.

The plant is located on 35.68 acres and contains 37 buildings, with a total floor area of 904,944 square feet (Figure 2-1). Most of the buildings were constructed in the 1880s and early 1900s of brick and concrete. The open space between groups of buildings is either paved or grass covered, although in certain locations, solid wastes are being stored. The site is surrounded by a fence of chain-link, topped with barbed wire and, in some locations, brick topped with barbed wire. To the north of the plant, lies a raised railroad line; to the east is plant parking, Chapin Street and, across the street, commercial/office facilities; to the south, the plant is bordered by a distribution firm (ABF) whose land, at one time, was owned by White Farm; and to the west lie residential buildings.

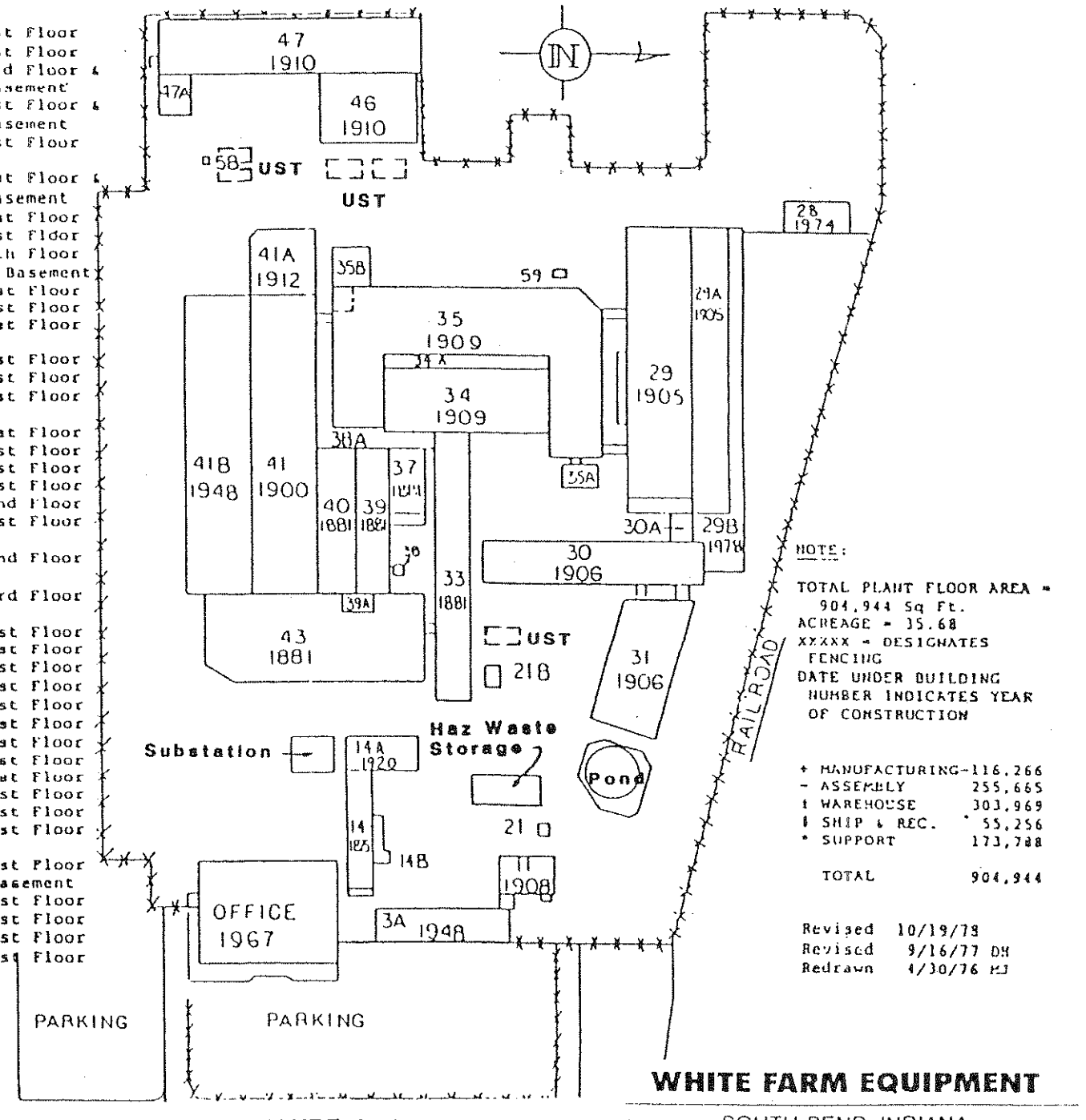
2.2 PLANT OPERATIONS

For over 100 years, the White Farm Equipment Company produced farm implements. These consisted of a variety of agriculture equipment that was hauled behind tractors, such as harrowers. The basic material used in the making of farm implements was raw steel, received in the form of plates and other shapes. The steel was fabricated into parts through the use of forging and metal finishing operations, such as flame cutting, presses, tumblers, and machining. Parts were also heat treated by heating them in a forge and subsequently quenching the part in oil. Following fabrication, the parts were welded, painted and assembled into farm implements.

A listing of each building, its location, general function, size and date of construction is presented in Figure 2-1, while a summary of the operations that occurred in various buildings and their current physical condition is presented in Table 2-1. The operations that potentially had the most

			Sq. Ft.	
*	Office	201'x151'	30,351	1st Floor
*3A	Exp. Engr.	45'x211'	9,500	1st Floor
*11	Exp. Engr.	60'x 84'	15,120	3rd Floor & Basement
*14	Power House	38'x176'	6,688	1st Floor &
			6,688	Basement
*14B	Power House Annex	13'x 73'	949	1st Floor
*14A	Boiler House	53'x112'	5,936	1st Floor &
			5,936	Basement
*21B	Pump House	21'x 29'	600	1st Floor
28	Will Call	51'x125'	6,426	1st Floor
‡29	Warehouse	100'x410'	246,000	5th Floor & Basement
‡29	Annex	100'x 44'	4,400	1st Floor
‡29A	Loading Dock	54'x427'	23,000	1st Floor
‡29B	Warehouse Northside	427'x 26' 73'x 31'	17,015	1st Floor
*30	Stock 1	64'x336'	21,500	1st Floor
*30A	Passageway	24'x 34'	816	1st Floor
-31	Assembly	100'x197' to 227'	21,200	1st Floor
33	Receiving	50'x175'	8,750	1st Floor
*33	Stock 1	50'x225'	11,250	1st Floor
-34	Assembly	97'x254'	24,638	1st Floor
*34A	Annex	21'x254'	5,334	1st Floor
	Office	10'x 80'	1,600	2nd Floor
-35	Assembly	81'x482' & 102'x254'	64,950	1st Floor
		81'x482' & 89'x254'	61,394	2nd Floor
		81'x482' & 88'x254'	61,394	3rd Floor
‡35A	Dry Room	39'x 54'	2,100	1st Floor
‡35B	Storage	57'x 62'	3,534	1st Floor
+37	Welding	60'x120'	7,200	1st Floor
*38A	Storage	26'x160'	4,480	1st Floor
*38	Office	32'x 34'	1,088	1st Floor
+39	Drill Room	58'x193'	11,194	1st Floor
*39A	Drill Rm Off	16'x 58'	928	1st Floor
+40	Drill Room	52'x211'	10,972	1st Floor
‡41	Steel Stg.	100'x449'	44,900	1st Floor
+41A	Heat Treat	96'x100'	9,660	1st Floor
+41B	Forge 1	100'x449'	44,900	1st Floor
*43	Tool Room, Crib & Mnt.	132'x138'	44,616	1st Floor
-46	Base Fit	101'x159'	16,059	1st Floor
		67'x 90'	6,000	Basement
+47	Forge 2	81'x400'	32,400	1st Floor
‡47A	Steel Stg.	49'x 62'	3,038	1st Floor
*58	Oil Pump Hs.	8'x 12'	96	1st Floor
*59	Truck Scale		312	1st Floor

UST : Underground Storage Tank



WHITE FARM EQUIPMENT

SOUTH BEND, INDIANA

FIGURE 2-1
SITE PLAN

TABLE 2-1

WHITE FARM EQUIPMENT COMPANY
BUILDING DESCRIPTIONS

Building Number	Building Description
29	A warehouse building currently in use, 5 stories tall, solid concrete clean floor.
29A	A shipping and receiving building, currently rented out for storage, oily floor.
30	A storage and assembly building, now contains racks of parts, clean floor.
31	A storage and assembly building, some painting formerly occurred here.
33	A steel storage building, now empty. An overhead steam line is wrapped with asbestos.
34	An assembly building, now contains racks and some parts.
35	An assembly building. Painting was conducted on the second floor. A flo-coat type paint system, preceded by a phosphate dip operation and followed by a bake operation on the third floor. This line was last operated in 1984. There was also an acid wash to clean paint from hooks. Floor is oily.
35B	A warehouse building, now contains storage racks.
37	A manufacturing building, welding occurred here; it is now empty.
39	A manufacturing building. Machining, milling, and lath work occurred here; now contains a few machines, but is nearly empty.
40	A manufacturing building like building 39. A few machines now here, but nearly empty.
41	A storage building for raw steel, now nearly empty, but contains a tumbling unit for removing scale from steel.

TABLE 2-1 (Continued)

WHITE FARM EQUIPMENT COMPANY
BUILDING DESCRIPTIONS

Building Number	Building Description
41A	A manufacturing building where forging and heat treating was conducted. Heat treat line consists of a gas heated furnace, followed by an oil quench pit and several dry pits. The pits are sunk into the floor. Overflow goes to the sewer. The quench pit currently contains usable quench oil.
41B	A manufacturing building where heat forming took place. Now contains several ovens with hydraulic and mechanical equipment. Oily floor.
43	This support building was used for die storage.
46	An assembly building. It contains a furnace for heat treating and a paint line that was last used in February 1988.
47	A manufacturing building. It contains a continuous heat treat system called a RAY-DEC system. There is also a dip-type paint line that was last used in February 1988.

environmental impact were forging, heat treating, and painting. These operations are discussed in detail below.

Forging operations were carried out in gas-fired furnaces located in buildings 41A, 41B, 46 and 47. Adjacent to the furnaces were oftentimes presses and quench tanks for forming and cooling the hot metal parts. Forging operations have occurred at the site since the 1880s. They were discontinued in buildings 41A and 41B and 1984 and in buildings 46 and 47 in February 1988. Currently the buildings contain the forging furnaces and several pieces of equipment for shaping and finishing the metal parts.

The heat treatment process is designed to harden the metal parts and at the same time, provide ductility. Basically, the metal part is heated in a high temperature furnace and then quenched with oil. At White Farm, heat treatment occurred in buildings 41A, 46 and 47.

In 41A, the operation consisted of a furnace, heated by natural gas, followed by an oil quench pit, followed by several dry pits. The pits are of steel, recessed into the floor and surrounded by concrete. Overflow oils from the quench tank flow into the sewer. Heat treating operations in 41A were discontinued in 1984. Currently, the quench pit in building 41A is filled with about 3,000 gallons of quench oil that could be used for heat treating. The quench oil reportedly does not contain cyanides, nor were cyanides ever used at the facility.

In building 47, there exists a continuous heat treatment line called a RAY-DEC system. Metal parts were placed in a high temperature furnace at the front end, and then carried through by conveyors to an oil quench. Fumes from this line were destroyed in a gas-fired burner prior to atmospheric discharge. This line was in operation for several decades and was discontinued only recently in February 1988. The complete unit, with air pollution controls, remains in the building.

Paint operations probably varied in method throughout the facility's active life as the result of upgrading of painting equipment. Currently, the plant has automatic painting lines located in buildings 35, 46 and 47.

In building 35, the automatic paint system is a flo-coat type, in which the part is flooded with paint and the excess paint is collected and re-applied. The line begins with a phosphate dip, followed by a water wash and air dry. Next, the parts pass through the flo-coat paint operation, and

finally, the painted part is dried in a heated baking operation. Wastes from the washing step were discharged to the sewer. This line was last operated in 1984. Adjacent to this paint line, was an acid wash line used to clean paint from hooks and consisting of two small tanks. The acid wash was neutralized prior to discharge to the sewer. The tanks are currently empty.

In buildings 46 and 47, there is in each case an automatic dip-type paint line. Both of these were operated as recently as February 1988, and have a faint paint odor emanating from paint that collected in the equipment.

In addition to manufacturing operations, the White Farm facility contains a coal-fired power plant that produces steam for heating site buildings. Its two boilers have an estimated capacity of 60,000 lbs/hr. The power plant was constructed in 1875 and last operated in March 1988. The power plant is still useable and may be employed in upcoming cold weather.

2.3 WATER

Until approximately 1984, the plant supplied all of its water from an on-site well located near building 21B. The well is a 12-inch unit with an estimated capacity of 700 to 800 gpm.

The water from the well was used for potable as well as industrial uses, such as steam production, cooling and parts washing. Because it had potable uses, the water was tested regularly by White Farm and was chlorinated prior to use. Other manufacturing plants in the area also used on-site well water.

In 1984, the plant switched to municipal water in order to alleviate the "hassle" of using its own well. The on-site well is currently closed down but could be re-opened for testing purposes.

East of building 31, there exists a concrete enclosed pond. Water from this pond was held in case of fire at the plant. A fire pump house is located nearby in building 21. The pond is currently filled with water, but is not used for fire protection. The plant site now has several hydrants connected to the municipal system.

2.4 WASTEWATER

Wastewater from the plant is discharged to the City of South

Bend sewer system at two separate locations. One of these connections, in Chapin Street, along the eastern border of the plant, was regularly monitored by the City.

The sewer line received all industrial process wastewaters. Identified sources include the washwater from the phosphate coating process, the overflow from the quench oil tank, and the spent acid solution from the paint removal operation. In addition, the buildings had floor drains that tied directly to the sewer and collected the oil, grease, and paint spills and metal debris that landed on the floor. With the exception of the acid solution, which was neutralized prior to disposal, the wastewaters did not receive pretreatment. Discharge of process wastewaters ended in February 1988.

The processes employed at White Farm would be classified under the categories of electroplating/metal finishing and metal casting foundries, ferrous subcategory. Wastewaters from these operations are regulated for metals, cyanides, pH, oil and grease, and hazardous organics. Based on WESTON's examination of the facilities and discussions with plant personnel, it was judged that, at a minimum, the plant's wastewater contained metals, such as chromium, lead, nickel and zinc, both from parts fabrication and from the paints; oil and greases from the heat treating and metal finishing operations; and hazardous organics, such as naphthalene, benzene, toluene, and phenol, from the paints, quench oils and machining oils.

2.5 UNDERGROUND STORAGE TANKS

The plant site contains five buried tanks. The location of these tanks is shown in Figure 2-1.

East of building 46, there are two 4,000-gallon underground storage tanks which most recently contained #2 fuel oil. It is estimated that currently there is less than 1,000 gallons of #2 fuel oil in these tanks.

Adjacent to building 58, there are two 10,000-gallon underground storage tanks, which most recently contained fuel oil in one tank and quench oil in the other. Currently, the estimated volumes of oils in these tanks are: no fuel oil in the first tank, and less than 100 gallons of quench oil and water in the second tank.

The fifth underground storage tank is located east of building 33, near the well pump house, building 21B. This tank is 10,000 gallons in size and most recently contained

gasoline. It is estimated that it currently contains less than 200 gallons of gasoline.

The material of construction for the tanks is steel with concrete saddles. Vents and ports were evident for several tanks. The age of the tanks is not known. Submittal to the State of Indiana of standard notification forms for these tanks has not been done.

The U.S. Environmental Protection Agency (USEPA) required owners of underground storage tanks that store or dispense regulated substances to notify by 8 May 1986, and provide information on the age, size, type, location, and use of each tank. For Indiana, it is required that the owner use the USEPA Notification Form and submit the form to the Division of Land Pollution Control, UST Program, Indiana State Board of Health, P.O. Box 7015, Indianapolis, Indiana 46207. Only tanks used exclusively for on-site building heating purposes are exempt from notification requirements.

2.6 ELECTRICAL TRANSFORMERS

The site contains nine electrical transformers that are marked with signs indicating that they contain PCBs. The exact level of PCBs is, however, unknown. White Farm is the owner of the transformers.

The transformers are located in six separate sites. The largest number of transformers are situated in the main substation adjacent to the coal-fired power plant. Additional transformers are located adjacent to buildings 41, 46, 35, 3A and the main office.

The condition of the transformers was not checked during WESTON's visit due to that day's rainy weather. However, the site maintenance manager periodically checks these units for leaks and reports that there are no current problems.

2.7 ASBESTOS

Asbestos was used to insulate the steam lines that run through many of the buildings. An evaluation of their condition is being conducted by others.

2.8 SOLID WASTES

As a result of site cleanup, the plant is currently generating an unspecified volume of apparently nonhazardous solid wastes. These wastes include steel cuttings, scrap steel, "trash," and rubble. These materials are placed in

open-top containers, and/or compactor and disposed of off site by a local transporter. Solid wastes that were previously contained in an open area, west of building 28, have since been removed off site.

When the power plant is operating, it produces an ash from the burning of coal. The ash is also considered a nonhazardous solid waste and is transported off site by a local company.

The plant's heat treating, painting and other metal finishing operations generated wastes that could likely qualify as hazardous, due to their ignitability and toxicity. The volume of wastes generated during full activity, which occurred prior to 1984, is not known. However, according to plant personnel, these wastes were not removed on a regular basis. Rather, a large amount was collected and removed about 18 months prior to this audit.

Currently, the White Farm plant does not generate hazardous wastes because there are no manufacturing operations taking place. However, as a result of plant cleanup, various waste oils and paints are being accumulated. These have been stored in drums and then placed in one of two temporary storage locations.

The primary storage area is an outdoor concrete pad located between the power house (building 14) and the fire protection pond, and east of the water well house (building 21B). Currently sitting on this pad are between 20 and 30 55-gallon metal drums containing waste oils and paints. The drums are in various states of condition -- some are standing upright, while others are lying on their sides; some appear in good shape, while others look damaged from rust or internal pressure. The drums do not appear to be marked with dates of storage, types of materials or volume of contents. The site has no stormwater runoff or runon control.

A second temporary drum storage area is located in building 43. Here there are about half a dozen 55-gallon metal drums. They contain waste oils and are in good condition and standing upright. Being in a covered area, stormwater contact is not a concern.

The total volume of hazardous wastes stored on site is unknown because the volume contained in each drum varies. White Farm estimates that none of the drums have been located at their present storage sites for more than 60 days; however, off-site transport for these drums has not been arranged.

4. Electrical Transformers

The existence of PCBs in these transformers at unknown levels, make these units, at a minimum, "PCB Contaminated Electrical Equipment," as defined by the Toxic Substances and Control Act (TSCA). Any leaks of electrical fluids from these units would contaminate the adjacent surface soils with PCBs, and potentially could reach the stormwater system during a heavy rain.

5. Hazardous Wastes

The hazardous wastes temporarily stored on the outdoor concrete pad, pose a potential threat to the environment. The storage pad contains no runoff or runon controls and leaking wastes could readily reach adjacent soils, percolate into the groundwater or be carried by stormwater to the storm drain system.

The hazardous wastes currently stored at the plant may also exceed RCRA storage regulations. Assuming that the plant is no longer a hazardous waste generator, it can accumulate up to 1,000 kg (2,200 pounds) of waste without being subject to most RCRA requirements. If the plant stores more than 1,000 kg of waste, it becomes subject to small quantity generator requirements. These requirements include labeling of containers, a storage quantity limit of 6,000 kg (13,200 pounds), and a storage time limit of no more than 180 days. If more than 6,000 kg of waste are stored on site or if it is held for more than 180 days, the storage site will require notification to the U.S. EPA, and possibly application for a permit, and detailed plans for operation, contingencies and closure. The actual waste volume stored at the site is unknown, but there are currently 20 to 30 drums on site with various levels of waste. Since a full 55-gallon drum weighs about 450 pounds, the plant would exceed the 1,000 kg limit with 5 full drums, and would exceed the 6,000 kg limit with 30 full drums.

6. Soils

Contaminant levels in the soils are unknown, but soils have potentially been contaminated by spills of paints, oils and other process chemicals, runoff from waste storage facilities and leaks from transformers.

7. Groundwater

Groundwater could be contaminated by leaks from underground storage tanks, leaks from solid waste storage facilities,

and infiltration of contaminated stormwater. Groundwater was a source of drinking water to the plant up until 1984; and, therefore, it can be expected to be of good quality. However, monitoring at the time did not cover the hazardous organics that could potentially enter the groundwater from the routes described above.

3.2 RECOMMENDATIONS

The environmental risk areas, described in Section 3.1, require either field sampling to quantify the extent of any problems or specific remedial action to mitigate their risks and to allow future development of the site.

3.2.1 Wastewater System

To determine the amount of hazardous contaminants remaining in the building floor drains and plant sewer system, WESTON proposes to examine selected drain lines and manholes, collect samples of residual sediments and test for metal and organic contamination. Where contaminants have built up, the lines should be flushed with large volumes of water, provided this action is acceptable to the City of South Bend.

3.2.2 Buildings

The asbestos insulation on the steam lines will require removal prior to re-use or demolition of the plant buildings. Oil and grease on the building floors will need to be removed if the buildings are re-used; otherwise, if the buildings are demolished, there is no need to clean them. For existing machinery and painting equipment, these units should be cleaned of excess oils and paints prior to disposal with other nonhazardous wastes. Sampling of selected floor drain lines is proposed (refer to Section 3.2.1). Where contaminants have built up, the lines should be flushed prior to disposition of the buildings, provided this action is acceptable to the City of South Bend.

For building 41A, where 3,000 gallons of quench oil is stored, it is recommended that the quench tank be regularly checked for leaks. Prior to disposition of the building, this oil will need to be removed either to another user or to disposal. Disposal options include oil reclamation or incineration.

3.2.3 Underground Storage Tanks

The underground storage tanks are no longer being used at the site, and there are no plans for their future use.

WESTON recommends that they be removed from the site. The process includes removal of tank contents for proper disposal or recycling, removal of connecting piping, removal of the tank from the ground, cleaning of tank residuals, and tank disposal. Notice of removal of the abandoned tanks should also be provided to the State of Indiana Board of Health, Division of Land Pollution Control, UST Program, in accordance with RCRA regulations.

If White Farm does not want to remove the tanks at this time, WESTON recommends that, at a minimum, all of their liquid contents be removed. Notice of the tanks' existence should also be provided to the Indiana Board of Health.

3.2.4 Electrical Transformers

The existing electrical transformers can continue to be used even though they contain electrical fluids with PCBs. They should, however, continue to be monitored for any leaks. If a leak occurs, the transformer must be removed and disposed of by a licensed PCB waste hauler. The soils around the leaking transformer will also need to be tested and, if contaminated with PCBs, removed by the PCB hauler.

Under the Toxic Substances and Control Act (TSCA), PCB transformers (that is, those with PCB levels above 500 ppm) will be severely limited in their allowable use after October 1990. PCBs also pose a continual maintenance concern and potential threat to the environment. Prospective new owners of the site may desire that they be removed or replaced. To address these concerns, White Farm has several choices. The transformers can be replaced, the PCB fluids can be monitored to demonstrate that PCB concentration is below 500 ppm, or the PCB fluids can be replaced with non-PCB fluids. WESTON recommends that, at this time, White Farm test the PCB content of selected transformers. Further actions can then be chosen based on these test results and the future use of the site.

3.2.5 Hazardous Wastes

The current hazardous waste handling system is inadequate and leaves the company in a position of potentially violating RCRA requirements and of polluting the environment. WESTON strongly recommends that all hazardous waste stored on the open concrete pad be properly identified, and be removed by a licensed hazardous waste hauler as soon as possible. Secondly, WESTON recommends that all subsequent temporary storage of hazardous waste be in sturdy, undeteriorated drums; that all drums be marked

with the type of waste, volume of waste and date of initial storage; that the site of temporary storage be equipped with means to prevent stormwater runoff and runon and to contain any leaks; and that on-site temporary storage be limited to 1,000 kg.

3.2.6 Soil

The soils within the plant site are potentially contaminated with hazardous materials as a result of manufacturing operations over the last 100 years, as well as from specific sources, such as nonhazardous and hazardous waste storage areas and electrical transformers.

WESTON proposes to collect shallow composite samples of soils in and around the following areas:

- Main substation;
- Hazardous waste storage pad;
- Solid waste storage area west of building 28;
- Stained soils east of building 47;
- Underground storage tank sites near buildings 46, 58, and 21 B.

Proposed samples sites are shown in Figure 3-1. Single composite samples will consist of a minimum of three discrete samples, collected with a stainless steel auger to a depth of approximately 10 inches, and thoroughly mixed into a composite sample prior to shipment to the laboratory. The samples collected near the main substation will be analyzed for PCBs, while the other samples will be analyzed for selected metals and hazardous organics. Based on these test results, recommendations can be made as to the need for and type of any soil remediation.

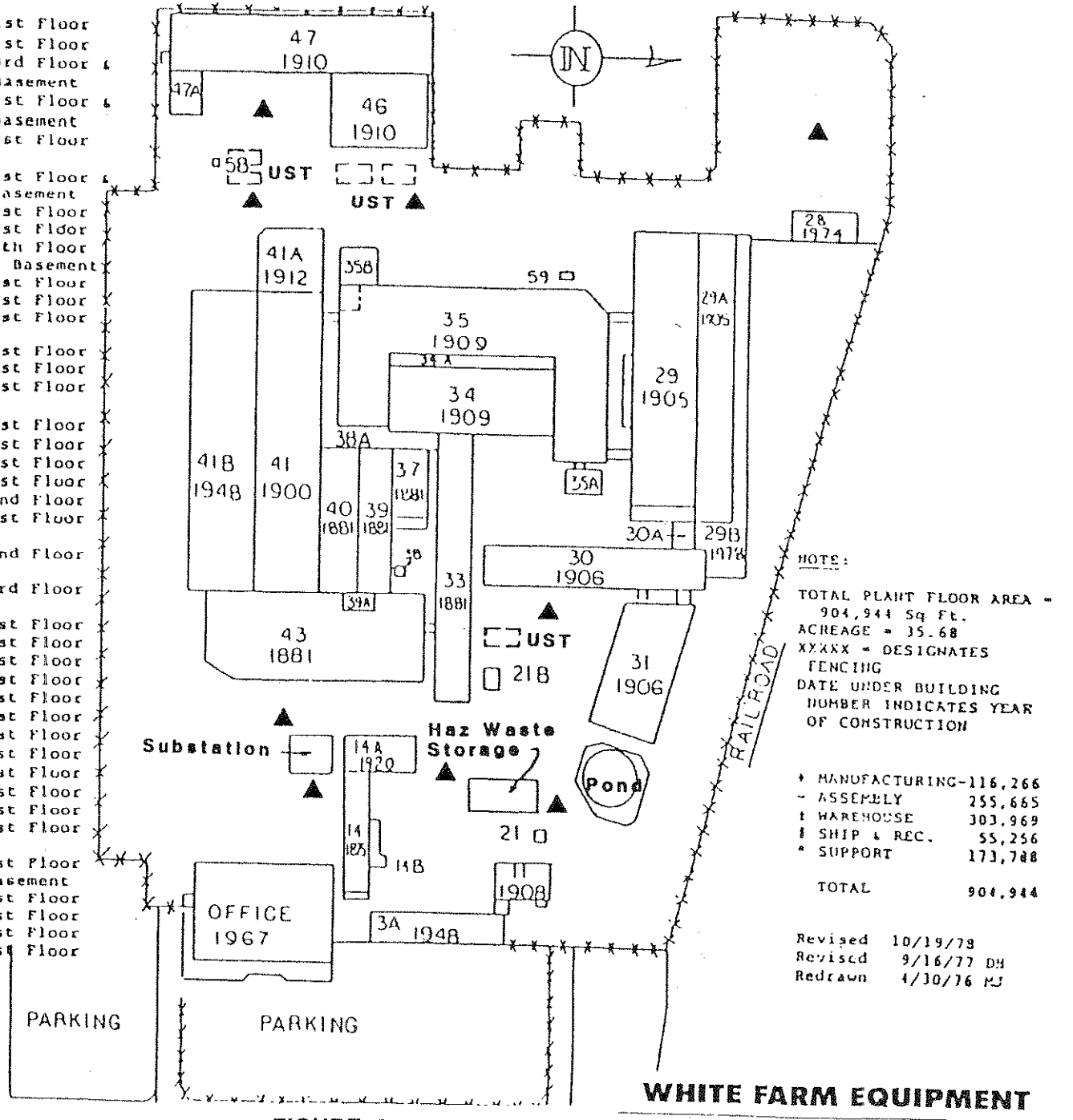
3.2.7 Groundwater

WESTON recommends that the groundwater be monitored to assess the impact on groundwater quality of certain areas of environmental risk. The areas of concern include the underground storage tanks near buildings 46, 58 and 21B, and the hazardous waste disposal pad. Monitoring wells will be established in five locations, as shown in Figure 3-2.

			Sq. ft.	
*	Office	201'x151'	30,351	1st Floor
*3A	Exp. Engr.	45'x211'	9,500	1st Floor
*11	Exp. Engr.	60'x 84'	15,120	3rd Floor & Basement
*14	Power House	38'x176'	6,688	1st Floor &
			6,688	Basement
*14B	Power House Annex	13'x 73'	949	1st Floor
*14A	Boiler House	53'x112'	5,936	1st Floor &
			5,936	Basement
*21B	Pump House	21'x 29'	600	1st Floor
28	Will Call	51'x125'	6,426	1st Floor
‡29	Warehouse	100'x410'	246,000	5th Floor & Basement
‡29	Annex	100'x 44'	4,400	1st Floor
‡29A	Loading Dock	54'x427'	23,000	1st Floor
‡29B	Warehouse Northside	427'x 26' 73'x 31'	17,015	1st Floor
*30	Stock 1	64'x336'	21,500	1st Floor
*30A	Passageway	24'x 34'	816	1st Floor
-31	Assembly	100'x197' to 227'	21,200	1st Floor
33	Receiving	50'x175'	8,750	1st Floor
*33	Stock 1	50'x225'	11,250	1st Floor
-34	Assembly	97'x254'	24,638	1st Floor
*34A	Annex	21'x254'	5,334	1st Floor
	Office	10'x 80'	1,600	2nd Floor
-35	Assembly	81'x482' & 102'x254'	64,950	1st Floor
		81'x482' & 88'x254'	61,394	2nd Floor
		81'x482' & 88'x254'	61,394	3rd Floor
‡35A	Dry Room	39'x 54'	2,100	1st Floor
‡35B	Storage	57'x 62'	3,534	1st Floor
+37	Welding	60'x120'	7,200	1st Floor
*38A	Storage	26'x160'	4,480	1st Floor
*38	Office	32'x 34'	1,088	1st Floor
+39	Drill Room	58'x193'	11,194	1st Floor
*39A	Drill Rm Off	16'x 58'	928	1st Floor
+40	Drill Room	52'x211'	10,972	1st Floor
‡41	Steel Stg.	100'x449'	44,900	1st Floor
+41A	Heat Treat	96'x100'	9,660	1st Floor
+41B	Forge 1	100'x449'	44,900	1st Floor
*43	Tool Room, Crib & Mnt.	132'x338'	44,616	1st Floor
-46	Base Fit	101'x159'	16,059	1st Floor
		67'x 90'	6,000	Basement
+47	Forge 2	81'x400'	32,400	1st Floor
‡47A	Steel Stg.	49'x 62'	3,038	1st Floor
*58	Oil Pump Hs.	8'x 12'	96	1st Floor
*59	Truck Scale		312	1st Floor

UST : Underground Storage Tank

▲ Soil Sample Site



NOTE:

TOTAL PLANT FLOOR AREA = 904,944 Sq Ft.
ACREAGE = 35.68
XXXXX = DESIGNATES FENCING
DATE UNDER BUILDING NUMBER INDICATES YEAR OF CONSTRUCTION

+ MANUFACTURING	116,266
- ASSEMBLY	255,665
‡ WAREHOUSE	303,969
‡ SHIP & REC.	55,256
* SUPPORT	173,788
TOTAL	904,944

Revised 10/19/78
Revised 9/16/77 DH
Redrawn 4/30/76 MJ

WHITE FARM EQUIPMENT

SOUTH BEND, INDIANA

FIGURE 3-1
PROPOSED SOIL SAMPLE SITES

			Sq. Ft.	
*	Office	201'x151'	30,351	1st Floor
*3A	Exp. Engr.	45'x211'	9,500	1st Floor
*11	Exp. Engr.	60'x 84'	15,120	3rd Floor & Basement
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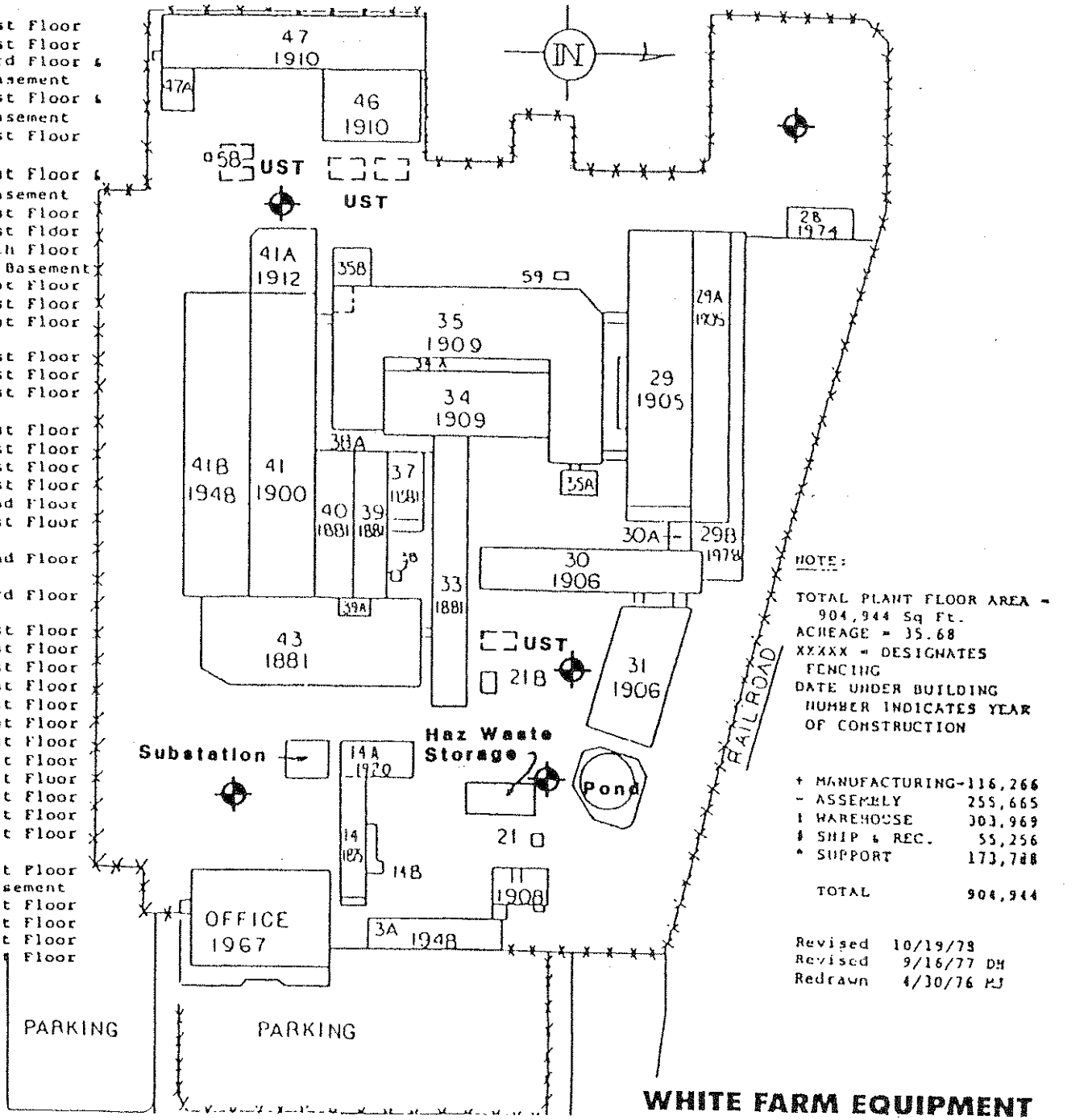
*58	Oil Pump Hs.	8'x 12'	96	1st Floor
*59	Truck Scale		312	1st Floor

UST : Underground Storage Tank

Monitoring Well



NOTE:

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# SHIP & REC.	55,256
* SUPPORT	173,788
TOTAL	904,944

Revised 10/19/78
Revised 9/16/77 DH
Redrawn 4/30/76 MJ

WHITE FARM EQUIPMENT

SOUTH BEND, INDIANA

FIGURE 3-2

PROPOSED MONITORING WELL LOCATIONS

Monitoring wells will be installed to shallow groundwater, and will be constructed of 2-inch PVC. Drilling of the well will be performed by hollow stem augers. While the augers are being advanced, split spoon samples of subsurface soils will be taken at depths of 1, 3, 5, and 10 feet below grade, and at 5-foot intervals thereafter until the well is completed.

Each well will be sampled twice. Parameters to be analyzed shall consist of selected metals and hazardous organics. The subsurface soil samples will also be analyzed for the same parameters. Based on this data, it will be possible to assess the groundwater quality, identify whether or not the risk areas are sources of contamination, and recommend future actions and potential costs.

SECTION 4

BUSINESS PROPOSAL

WESTON has developed an ESTIMATED PROBABLE COST to conduct the investigative scope of work described herein. Table 4-1 summarizes ESTIMATED PROBABLE COSTS for each work item and provides a breakdown of labor, and laboratory analysis. The separation into work items has been provided to allow Allied Products to review costs associated with each item and, if desired, prioritize various items.

A copy of WESTON's Standard Terms and Conditions is incorporated herein by reference (Attachment 1).

TABLE 4-1

COST ESTIMATE FOR PROPOSED FIELD SAMPLING

1.	Sewer Investigation	
	Sample collection -	1 man day @ $500
	Sample analysis -	5 samples @ $1,200
	Report preparation -	2 man days @ $500
	Total work item =	$7,500
2.	Soils Investigation	
	Sample collection -	1 man day @ $500
	Sample analysis -	2 @ $200 7 @ $1,200
	Report preparation -	3 man days @ $500
	Total work item =	$10,800
3.	Groundwater Investigation	
	Well installation -	5 wells @ $1,000
	Sample collection -	2 man days @ $500
	Sample analysis -	20 @ $1,200 (soil and water)
	Report preparation -	4 man days @ $500
	Total work item =	$32,000
Total All Work Items =		$50,300

APPENDIX B

Chemical Waste Management, Inc. PCB Evaluation and Remediation

Chemical Waste Management, Inc.

Project Summary

for

ALLIED PRODUCTS

South Bend, IN Facility

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c. Area 3

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e. Area 5

f. Area 6

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ALLIED PROJECT SUMMARY

On Wednesday August 5, Chemical Waste Management Remedial Services Group (CWM-RSG) mobilized a crew to the Allied Products facility in South Bend, Indiana. The first stage of the project was to drain twelve transformers into a CWM vacuum tanker. The tanker was sent to the Aptus facility in Coffeville, Kansas. The twelve transformers were loaded on CWM flatbed trucks and sent for disposal at the S.D. Meyers facility in Tallmadge, Ohio.

Area one, which contained transformer numbers one and two, was excavated and sampled. All of the analytical results for transformer one were below the allowable level of PCB contamination. Because the analytical results for transformer two exceeded the allowable level, that area was scheduled for further remediation. All concrete, soil, and debris were loaded into CWM dump trucks and transported to CWM Model City facility in Model City, New York under profile #A08542. Area two, which contained transformer numbers three and four, was also excavated and sampled. Transformer three analytical results were below allowable levels but transformer four exceeded them and was scheduled for further remediation. Area three, which contained transformers five and six, was excavated and sampled. The soil below both transformers exceeded the allowable level and was scheduled for further remediation. Area four, which contained transformer seven, was excavated and sampled. It exceeded the allowable level and was scheduled for further remediation. Area five, which contained transformers ten, eleven, and twelve, was excavated, sampled and exceeded the allowable levels. It was also scheduled for additional remediation. Area six, which contained transformers eight and nine, was excavated and sampled. The analytical results were below the allowable levels. In summary, area one transformer one and area six transformers eight and nine did not require any additional remediation. All personnel and equipment was demobilized from the South Bend facility.

The second phase of the project began on November 2, 1992. Area one, transformer two was excavated an additional one foot outward in each direction and one foot down. The area was then sampled and the analytical results were below the allowable level. Area two, transformer four was excavated an additional one foot down and one foot outward in each direction, with the exception of the south wall due to the close proximity of the wall and then sampled. Only sample B2-4-01 exceeded the allowable levels and was scheduled for additional remediation. Area three was excavated an additional one foot down and one foot in each direction. The analytical results exceeded the allowable levels and was scheduled for additional remediation. Area four was excavated an additional one foot down and one foot in all directions with the exception of the east wall due to the close proximity of the wall and then sampled. The analytical results were below the allowable levels. In summary, the only remaining areas above the allowable levels were area two and area three.

The third phase of the project began on October 21, 1992. Area two was excavated and sampled below sample point B2-4-01. The analytical results were below the allowable levels. Area three was excavated below sample points B3-04 and B3-05. One of the samples, C3-05, came back below the allowable levels, but sample C3-04 exceeded the allowable levels and was scheduled for additional remediation.

The fourth phase of the project began on December 9, 1992. Area three was excavated and sampled below point C3-04. The analytical results were below the allowable levels. The last roll-off box of soil/debris was shipped to the CWM Model City facility on December 22, 1992. The total amount of soil/debris, for the project was 264.53 tons.

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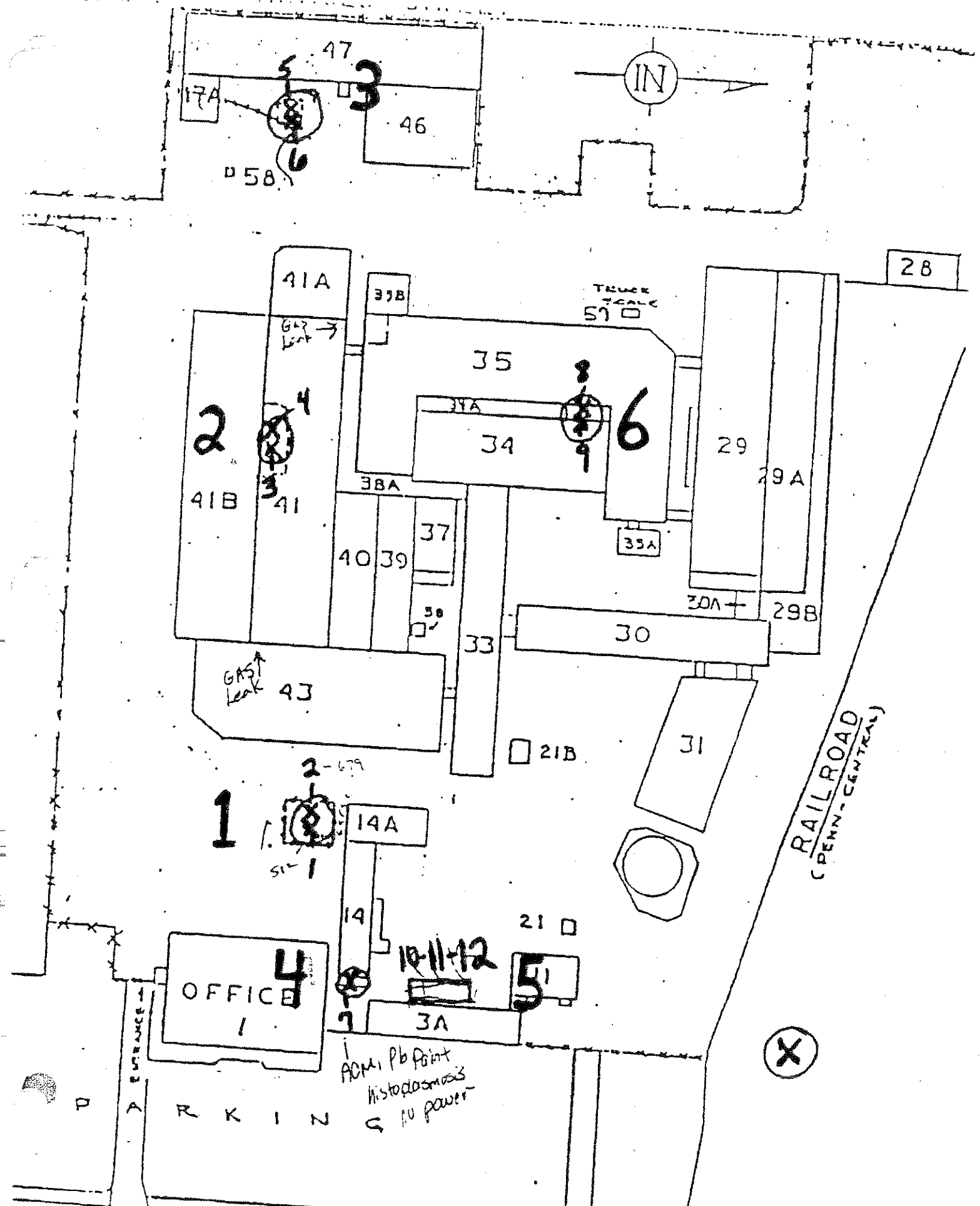
Transformer Number	Composite Number	Sample Points	Dilution Factor	Formula Limit, ppm	Total PCB Concentration, ppm	Pass/ Fail
	A1-01	1, 2, 3	3	4.727	2.60	P
	A1-02	4, 5, 6, 7	4	3.545	1.89	P
1	A1-03	9, 10, 11, 12	4	3.545	1.06	P
(Area 1)	A1-04	8, 13, 14, 17	4	3.545	1.00	P
	A1-05	15, 16, 18, 19	4	3.545	1.00	P
	A1-06	20, 21, 22	3	4.727	4.87	F
	A1-07	23, 24, 25, 26	4	3.545	2.79	P
2	A1-08	28, 29, 30, 31	4	3.545	80.90	F
(Area 1)	A1-09	27, 32, 33, 36	4	3.545	10.40	F
	A1-10	34, 35, 37, 38	4	3.545	11.90	F
		A2-01			1.93	P
		A2-02	None,		2.95	P
		A2-03	Individual		4.05	P
3		A2-04	Samples Taken	14.18	1.18	P
(Area 2)		A2-05			1.20	P
		A2-06			<1.00	P
		A2-07			<1.00	P
		A2-08			2.09	P
		A2-09	None,		221.00	F
		A2-10	Individual		111.00	F
4		A2-11	Samples Taken	14.18	228.00	F
(Area 2)		A2-12			16.70	F
		A2-13			606.00	F
		A2-14			16.50	F
	A3-01	1, 2, 3, 4	4	3.545	5.78	F
	A3-02	5, 6, 7, 8, 9	5	2.836	46.90	F
	A3-03	11, 12, 13, 14	4	3.545	8.60	F
	A3-04	10, 16, 17, 23	4	3.545	16.20	F
5, 6	A3-05	18, 19, 20, 21	4	3.545	17.90	F
(Area 3)	A3-06	15, 22, 27, 28	4	3.545	6.56	F
	A3-07	24, 25, 26, 29	4	3.545	6.15	F
	A3-08	30, 31, 32, 33	4	3.545	<1.00	P
	A3-09	34, 35, 36, 37	4	3.545	1.50	P
	A4-01	1, 2, 3	3	4.727	5.86	F
	A4-02	4, 5, 6, 7	4	3.545	<1.00	P
7	A4-03	9, 10, 11, 12	4	3.545	<1.00	P
(Area 4)	A4-04	8, 13, 14, 17	4	3.545	<1.00	P
	A4-05	15, 16, 18, 19	4	3.545	<1.00	P
	A6-01	1, 2, 3	3	4.727	<1.00	P
	A6-02	4, 5, 6, 7	4	3.545	<1.00	P
8	A6-03	9, 10, 11, 12	4	3.545	<1.00	P
(Area 6)	A6-04	8, 13, 14, 17	4	3.545	<1.00	P
	A6-05	15, 16, 18, 19	4	3.545	<1.00	P

Transformer Number	Composite Number	Sample Points	Dilution Factor	Formula Limit, ppm	Total PCB Concentration, ppm	Pass/ Fail
9 (Area 6)	A6-06	20, 21, 22	3	4.727	<1	P
	A6-07	23, 24, 25, 26	4	3.545	1.50	P
	A6-08	28, 29, 30, 31	4	3.545	<1.00	P
	A6-09	27, 32, 33, 36	4	3.545	1.51	P
	A6-10	34, 35, 37, 38	4	3.545	<1.00	P
10, 11, 12 (Area 5)	A5-01	1, 2, 3	3	4.727	1.68	P
	A5-02	4, 5, 6, 7	4	3.545	<1.00	P
	A5-03	9, 10, 11, 12	4	3.545	1.30	P
	A5-04	8, 13, 14, 17	4	3.545	1.67	P
	A5-05	15, 16, 18, 19	4	3.545	4.57	F

Transformer Number	*Dimensions of Excavation, L, W, D	**r, s, u Values		
1	8.5 x 8.5 x 12	5.5	2.64	2.31
2	8.5 x 8.5 x 10	5.5	2.64	2.31
3	4 x 5 x 10	3.1	2.70	2.32
4	5 x 5 x 10	3.1	2.70	2.32
5, 6	20 x 20 x 18	1.4	4.20	3.61
7	10 x 7 x 12	7.5	3.60	3.15
8	8 x 9 x 8	5.5	2.64	2.31
9	8 x 9 x 7	5.5	2.64	2.31
10, 11, 12	14.6 x 5.5 x 24	6.25	3.00	2.63

* L = length, feet
W = width, feet
D = depth, inches

** r = sampling radius
s = distance between adjacent sample points
u = distance between successive rows


47
3
17A
46
58
6
IN
28
41A
39B
TRUCK SCALE
57
35
34A
34
6
2
4
3
41B
41
38A
29
29A
37
40
39
35A
30A
29B
38
33
30
GAS Leak
43
31
21B
RAILROAD
(PENN-CENTRAL)
2-679
1
14A
14
21
10-11-12
5
OFFICE
1
4
3A
ACM, Pb Paint
histoplasmosis
no power
PARKING

ALLIED PRODUCTS–PCB SAMPLING ANALYSIS SUMMARY

South Bend, Indiana

TRANSFORMER NUMBER	SAMPLE NUMBER	PCB CONC.	SAMPLE NUMBER	PCB CONC.	SAMPLE NUMBER	PCB CONC.	SAMPLE NUMBER	PCB CONC.
	SAMPLE ROUND #1		SAMPLE ROUND #2		SAMPLE ROUND #3		SAMPLE ROUND #4	
1 (Area 1)	A1–01	2.6 (p)						
	A1–02	1.89 (p)						
	A1–03	1.06 (p)						
	A1–04	1.00 (p)						
	A1–05	1.00 (p)						
2 (Area 1)	A1–06	4.87 (f)	B1–06	<1.00 (p)				
	A1–07	2.79 (p)	B1–07	1.41 (p)				
	A1–08	80.90 (f)	B1–08	1.42 (p)				
	A1–09	10.40 (f)	B1–09	<1.00 (p)				
	A1–10	11.90 (f)	B1–10	<1.00 (p)				
3 (Area 2)	A2–01	1.93 (p)						
	A2–02	2.95 (p)						
	A2–03	4.05 (p)						
	A2–04	1.18 (p)						
	A2–05	1.20 (p)						
	A2–06	<1.00 (p)						
	A2–07	<1.00 (p)						

4 (Area 2)	A2-08 A2-09 A2-10 A2-11 A2-12 A2-13 A2-14	2.09 (p) 221.00 (f) 111.00 (f) 228.00 (f) 16.70 (f) 606.00 (f) 16.50 (f)	B2-4-01 B2-4-02 B2-4-03 B2-4-04 B2-4-05	14.96 (f) <1.00 (p) <1.00 (p) <1.00 (p) <1.00 (p)	C2-4-01	<1.00 (p)		
5, 6 (Area 3)	A3-01 A3-02 A3-03 A3-04 A3-05 A3-06 A3-07 A3-08 A3-09	5.78 (f) 46.90 (f) 8.60 (f) 16.20 (f) 17.90 (f) 6.56 (f) 6.15 (f) <1.00 (p) 1.50 (p)	B3-01 B3-02 B3-03 B3-04 B3-05 B3-06 B3-07 B3-08 B3-09	<1.00 (p) <1.00 (p) <1.00 (p) 4.5 (f) 5.3 (f) <1.00 (p) 1.52 (p) <1.00 (p) <1.00 (p)	C3-04 C3-05	28.73 (f) 3.77 (p)	D3-04	<1.00 (p)
7 (Area 4)	A4-01 A4-02 A4-03 A4-04 A4-05	5.86 (f) <1.00 (p) <1.00 (p) <1.00 (p) <1.00 (p)	B4-01-1 B4-01-2 B4-01-3	<1.00 (p) <1.00 (p) <1.00 (p)				
8 (Area 6)	A6-01 A6-02 A6-03 A6-04 A6-05	<1.00 (p) <1.00 (p) <1.00 (p) <1.00 (p) <1.00 (p)						

9 (Area 6)	A6–06 A6–07 A6–08 A6–09 A6–10	<1.00 (p) 1.50 (p) <1.00 (p) 1.51 (p) <1.00 (p)						
10, 11, 12 (Area 5)	A5–01 A5–02 A5–03 A5–04 A5–05	1.68 (p) <1.00 (p) 1.30 (p) 1.67 (p) 4.57 (f)	B5–01 B5–02 B5–03 B5–04 B5–05	1.63 (p) <1.00 (p) 2.19 (p) 2.55 (p) 3.16 (p)				

Note: (f) denotes that the sample concentration was above the allowable concentration.

(p) denotes that the sample concentration was less than or equal to the allowable concentration.

All concentrations are expressed in mg/L (ppm).

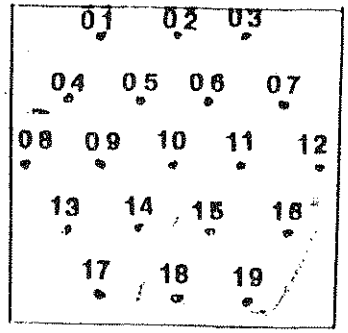
Sample Round # 1

EPA GRID SAMPLING OF PCB SPILL SITES

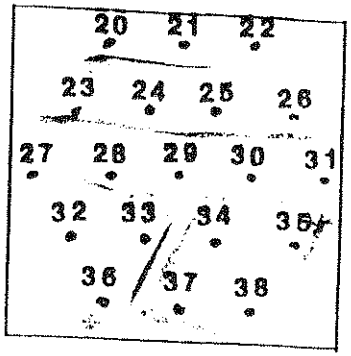
Color Code Sample #

- A1-01
- A1-02
- A1-03
- A1-04
- A1-05

Tformer 1

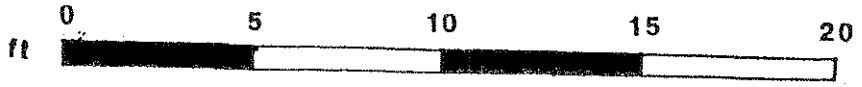


Tformer 2



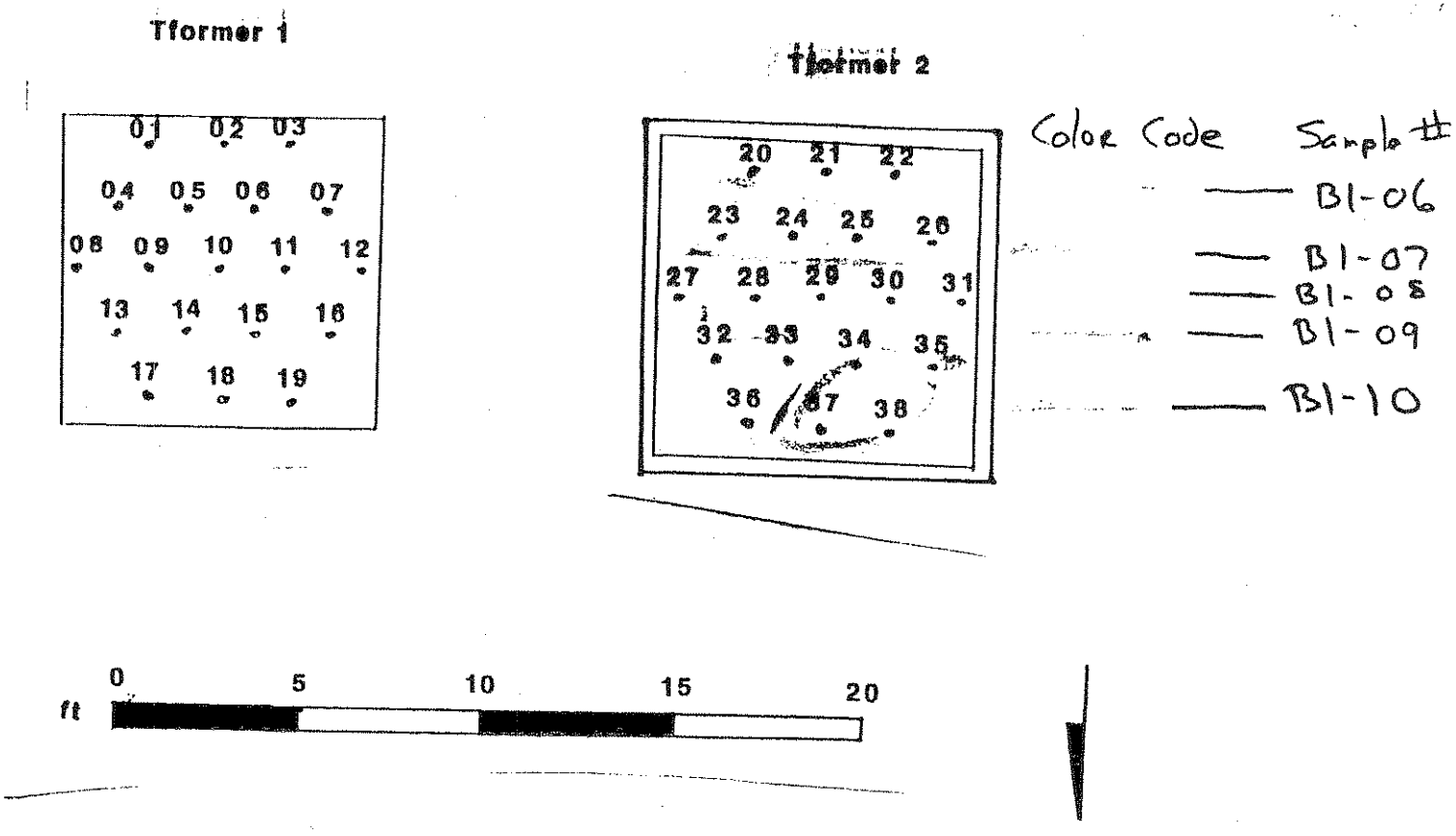
Color Code Sample #

- A1-06
- A1-07
- A1-08
- A1-09
- A1-10

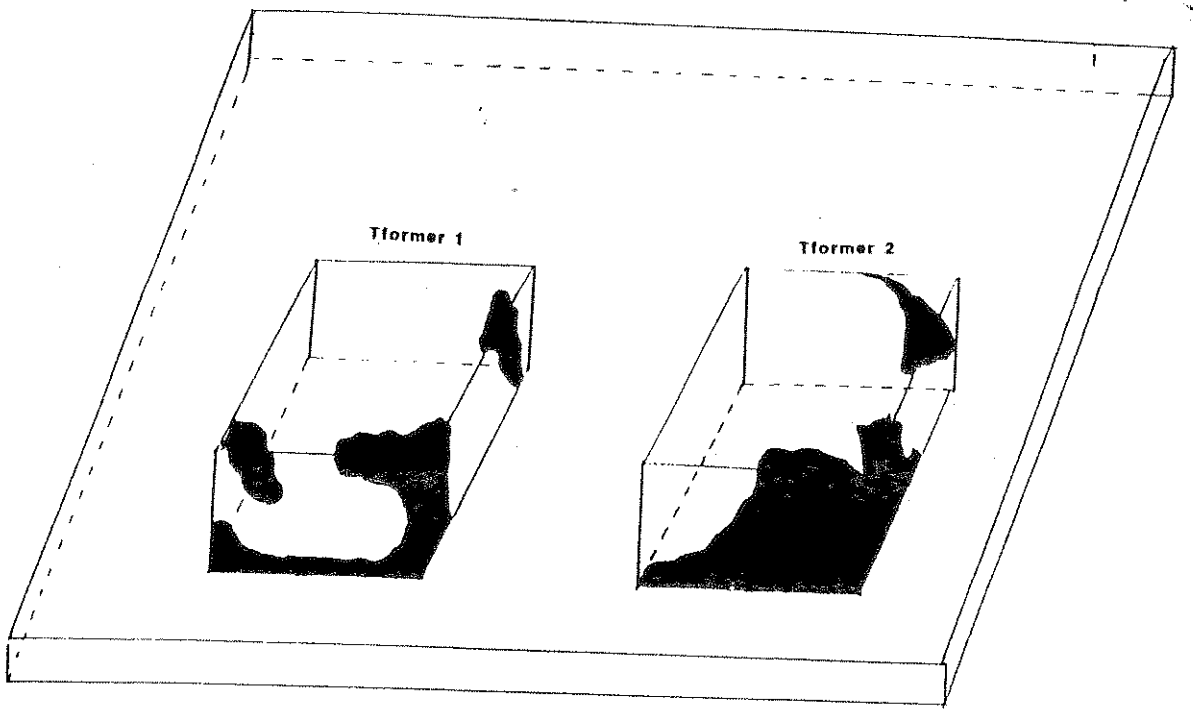


Sample Round #2

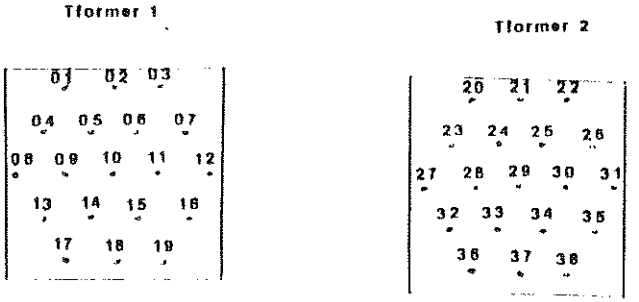
EPA GRID SAMPLING OF PCB SPILL SITES



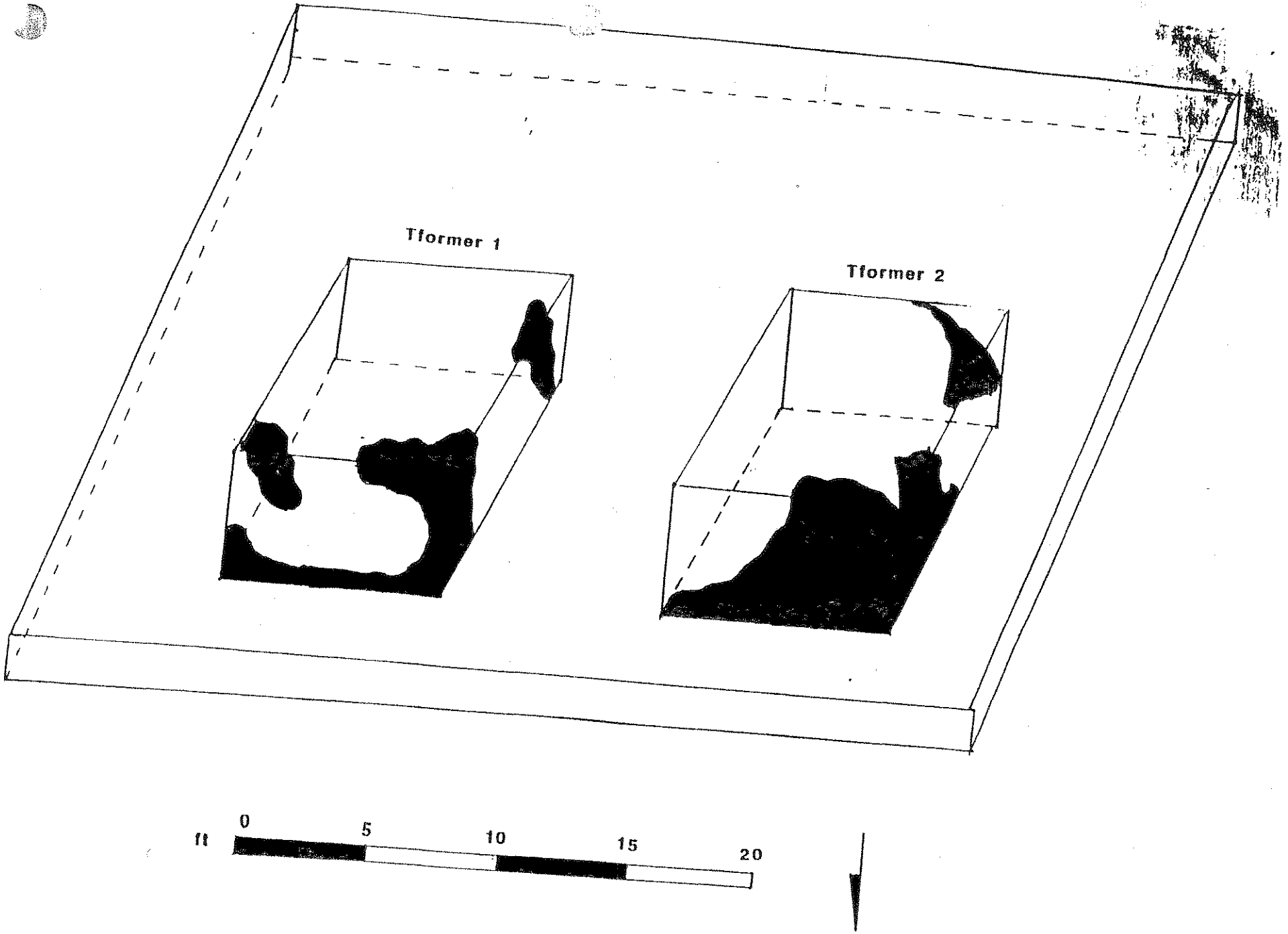
AREA I TRANSFORMERS 1 AND 2



EPA GRID SAMPLING OF PCB SPILL SITES



ALLIED PRODUCTS CORPORATION
SOUTH BEND, INDIANA
TRANSFORMER PAD/STAIN DIAGRAMS
PHASE I AUGUST 5-21, 1992


Tformer 1
Tformer 2
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ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

46899

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A1-02
Sample No.: 27435

TRANSFORMER 1 M.12 8-28-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	300	1500
PCB 1232	<1	<0.08	300	1500
PCB 1016 (1242)	<1	<0.08	300	1500
PCB 1248	<1	<0.08	300	1500
PCB 1254	<1	<0.08	300	3000
PCB 1260	1.89	<0.08	300	3000
(Total PCB)	1.89	<0.08	300	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zdroj

LABORATORY DIRECTOR

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3205
708/967-5666
FAX: 708/967-6735

LABORATORY REPORT

47200

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights. IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A1-03
Sample No.: 27436

M.R.
TRANSFORMER 1 8-28-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	200	1000
PCB 1232	<1	<0.08	200	1000
PCB 1016 (1242)	<1	<0.08	200	1000
PCB 1248	<1	<0.08	200	1000
PCB 1254	<1	<0.08	200	2000
PCB 1260	1.06	<0.08	200	2000
(Total PCB)	1.06	<0.08	200	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Linda E Zdeb

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

47201

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A1-04
Sample No.: 27437

M.R 9-29-92

TRANSFORMER 1

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	100	500
PCB 1232	<1	<0.08	100	500
PCB 1016 (1242)	<1	<0.08	100	500
PCB 1248	<1	<0.08	100	500
PCB 1254	<1	<0.08	100	1000
PCB 1260	<1	<0.08	100	1000
(Total PCB)	<1	<0.08	100	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

47202

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A1-05
Sample No.: 27438

TRANSFORMER 1 M.R. 8 18 92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	100	500
PCB 1232	<1	<0.08	100	500
PCB 1016 (1242)	<1	<0.08	100	500
PCB 1248	<1	<0.08	100	500
PCB 1254	<1	<0.08	100	1000
PCB 1260	<1	<0.08	100	1000
(Total PCB)	<1	<0.08	100	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zibrel

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

47203

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A1-06
Sample No.: 27440

TRANSFORMER 2 M.R. 5-25-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	400	2000
PCB 1232	<1	<0.08	400	2000
PCB 1016 (1242)	<1	<0.08	400	2000
PCB 1248	<1	<0.08	400	2000
PCB 1254	<1	<0.08	400	4000
PCB 1260	4.87	<0.08	400	4000
(Total PCB)	4.87	<0.08	400	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Linda E Zdrie

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

47204

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A1-07
Sample No.: 27441

TRANSFORMER 2 M.K. 8-28-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<6000	<0.08	6000	30000
PCB 1232	<6000	<0.08	6000	30000
PCB 1016 (1242)	<6000	<0.08	6000	30000
PCB 1248	<6000	<0.08	6000	30000
PCB 1254	<6000	<0.08	6000	60000
PCB 1260	279	<0.08	6000	60000
(Total PCB)	279	<0.08	6000	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Frank E Zdrec

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

47205

Chemical Waste Management - [illegible]
250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A1-08
Sample No.: 27442

TRANSFORMER 2 M.P. 8-25-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<2	<0.08	2000	10000
PCB 1232	<2	<0.08	2000	10000
PCB 1016 (1242)	<2	<0.08	2000	10000
PCB 1248	<2	<0.08	2000	10000
PCB 1254	<2	<0.08	2000	20000
PCB 1260	80.9	<0.08	2000	20000
(Total PCB)	80.9	<0.08	2000	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Linda E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX. 708/967-6735

LABORATORY REPORT

47206

Chemical Waste Management - LINRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: AI-09
Sample No.: 27443

TRANSFORMER 2

8-28-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	1000	0.5
PCB 1232	<1	<0.08	1000	0.5
PCB 1016 (1242)	<1	<0.08	1000	0.5
PCB 1248	<1	<0.08	1000	0.5
PCB 1254	<1	<0.08	1000	1.0
PCB 1260	10.4	<0.08	1000	1.0
(Total PCB)	10.4	<0.08	1000	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zdrec

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

47207

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A1-10
Sample No.: 27469

TRANSFORMER 2 N.R. 8-28-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	1000	5000
PCB 1232	<1	<0.08	1000	5000
PCB 1016 (1242)	<1	<0.08	1000	5000
PCB 1248	<1	<0.08	1000	5000
PCB 1254	<1	<0.08	1000	10000
PCB 1260	11.9	<0.08	1000	10000
(Total PCB)	11.9	<0.08	1000	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Lisa E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

3100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

46898

Generator: Allied
Sample Description: A1-01
Sample No.: 27434

Report Date: 8/21/92
Sample Received: 8/18/92

TRANSFORMER 1 M.P. 8-28-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	400	2000
PCB 1232	<1	<0.08	400	2000
PCB 1016 (1242)	<1	<0.08	400	2000
PCB 1248	<1	<0.08	400	2000
PCB 1254	<1	<0.08	400	4000
PCB 1260	2.6	<0.08	400	4000
(Total PCB)	2.6	<0.08	400	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Linda E Zehr

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX. 708/967-6735

LABORATORY REPORT

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

51677

Generator: Allied-South Bend, IN
Sample Description: Soil, B1-06
Sample No.: 32620

Report Date: 10/26/92
Sample Received: 10/22/92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	20	100
PCB 1232	<1	0.08	20	100
PCB 1016 (1242)	<1	<0.08	20	100
PCB 1248	<1	<0.08	20	100
PCB 1254	<1	<0.08	20	200
PCB 1260	<1	<0.08	20	200
(Total PCB)	<1	<0.08	20	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zdre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX 708/967-6735

LABORATORY REPORT

51678

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

Report Date: 10/26/92
Sample Received: 10/22/92

Generator: Allied-South Bend, IN
Sample Description: Soil, BI-07
Sample No.: 32621

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	100	500
PCB 1232	<1	0.08	100	500
PCB 1016 (1242)	<1	<0.08	100	500
PCB 1248	<1	<0.08	100	500
PCB 1254	<1	<0.08	100	1000
PCB 1260	1.41	<0.08	100	1000
(Total PCB)	1.41	<0.08	100	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Lyal E Zibre

LABORATORY DIRECTOR

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights. IL 60463

51679

Generator: Allied-South Bend, IN
Sample Description: Soil. B1-08
Sample No.: 32622

Report Date: 10/26/92
Sample Received: 10/22/92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	100	500
PCB 1232	<1	0.08	100	500
PCB 1016 (1242)	<1	<0.08	100	500
PCB 1248	<1	<0.08	100	500
PCB 1254	<1	<0.08	100	1000
PCB 1260	1.42	<0.08	100	1000
(Total PCB)	1.42	<0.08	100	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zeber

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

51680

Generator: Allied-South Bend, IN
Sample Description: Soil, B1-09
Sample No.: 32623

Report Date: 10/26/92
Sample Received: 10/22/92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	40	200
PCB 1232	<1	0.08	40	200
PCB 1016 (1242)	<1	<0.08	40	200
PCB 1248	<1	<0.08	40	200
PCB 1254	<1	<0.08	40	400
PCB 1260	<1	<0.08	40	400
(Total PCB)	<1	<0.08	40	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zuber

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX. 708/967-6735

LABORATORY REPORT

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights. IL 60463

51681

Generator: Allied-South Bend, IN
Sample Description: Soil, B1-10
Sample No.: 32624

Report Date: 10/26/92
Sample Received: 10/22/92

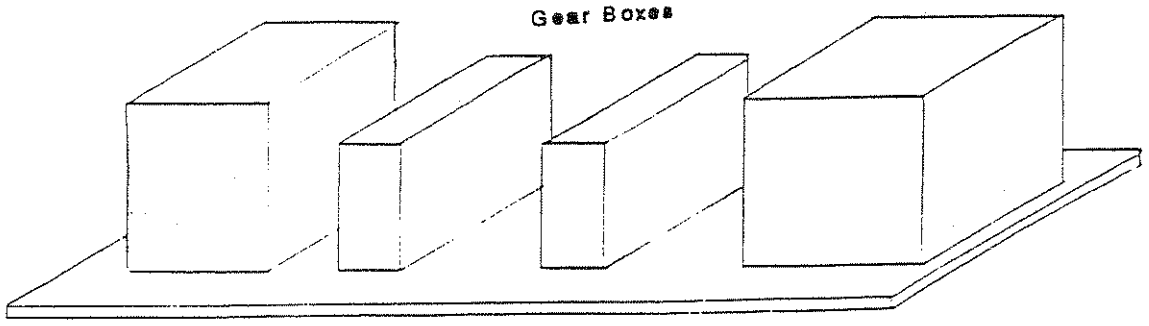
	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	20	100
PCB 1232	<1	0.08	20	100
PCB 1016 (1242)	<1	<0.03	20	100
PCB 1248	<1	<0.08	20	100
PCB 1254	<1	<0.08	20	200
PCB 1260	<1	<0.03	20	200
(Total PCB)	<1	<0.08	20	---

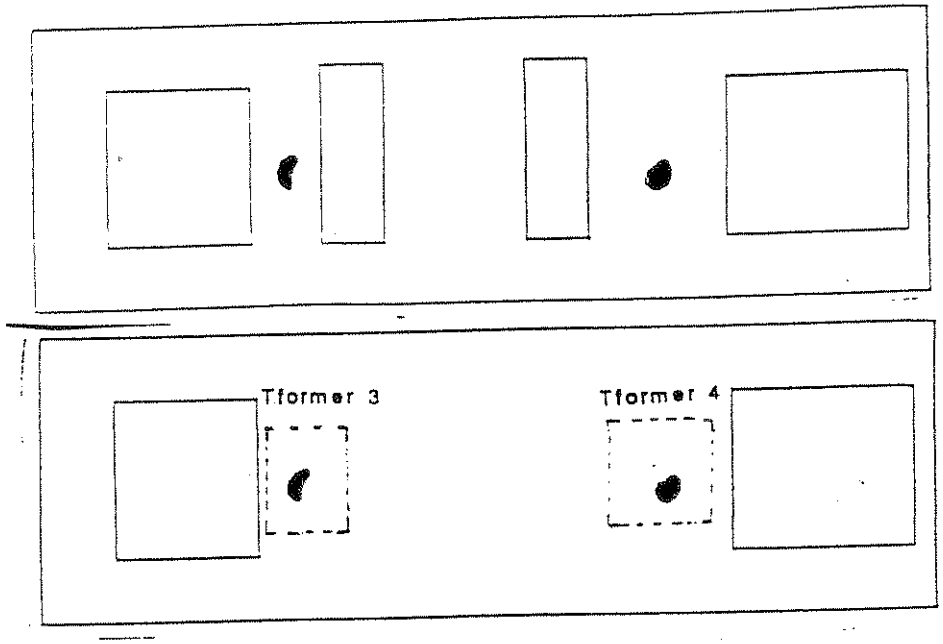
All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E. Zeh

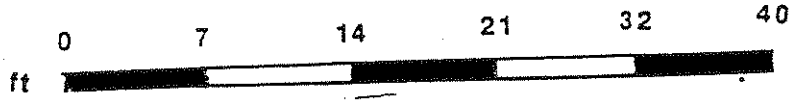
AREA 2 TRANSFORMERS 3 AND 4



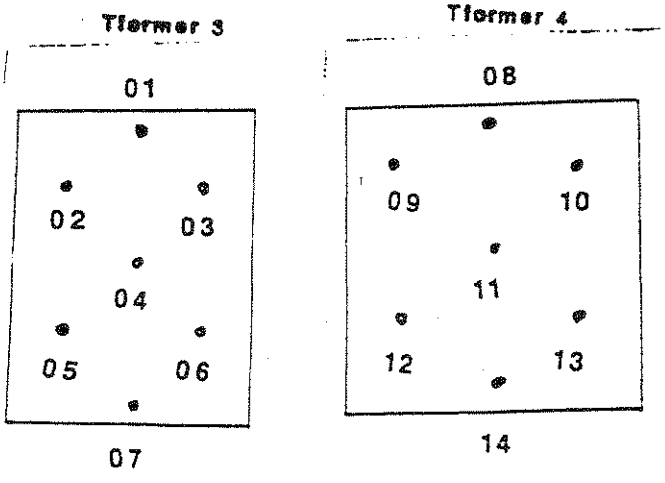


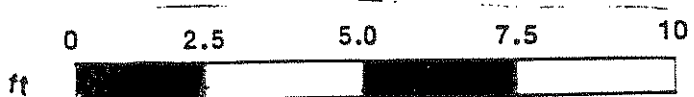
Sample Round # 1

Chart #	Sample #
1	A2-01
2	A2-02
3	A2-03
4	A2-04
5	A2-05
6	A2-06
7	A2-07
8	A2-08
9	A2-09
10	A2-10
11	A2-11
12	A2-12
13	A2-13
14	A2-14



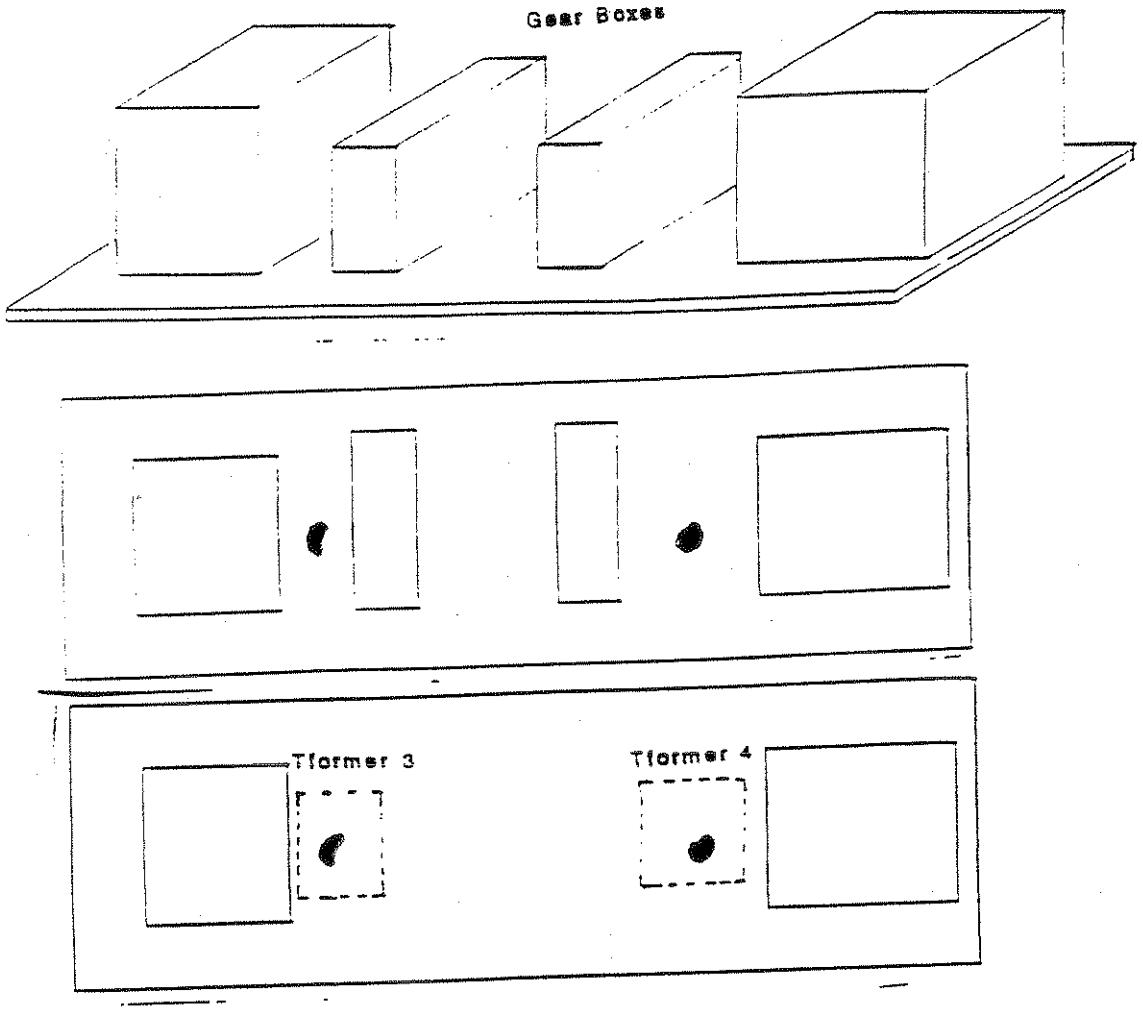
EPA GRID SAMPLING OF PCB SPILL SITES





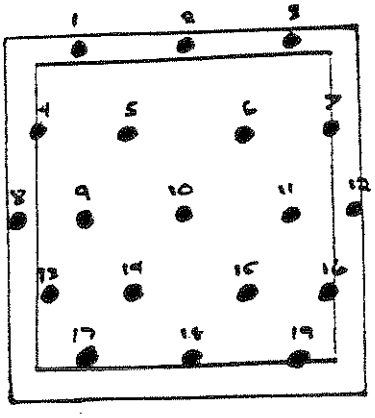
ALLIED PRODUCTS CORPORATION
SOUTH BEND, INDIANA
TRANSFORMER PAD/STAIN DIAGRAMS
AUGUST 5-21, 1992

AREA 2 TRANSFORMERS 3 AND 4



EPA GRID SAMPLING OF PCB SPILL SITES

Tformer 4



0 2.5 5.0 7.5 10

Sample Round # 2

— B2-4-01
— B2-4-02
— B2-4-03
— B2-4-04
— B2-4-05

ALLIED PRODUCTS CORPORATION
SOUTH BEND, INDIANA
TRANSFORMER PAD/STAIN DIAGRAM

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

46647

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A2-01 TRANSFORMER 3 A.R. 8-20-92
Sample No.: 27135

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	700	3000
PCB 1232	<1	<0.08	700	3000
PCB 1016 (1242)	<1	<0.08	700	3000
PCB 1248	<1	<0.08	700	3000
PCB 1254	<1	<0.08	700	6000
PCB 1260	1.93	<0.08	700	6000
(Total PCB)	1.93	<0.08	700	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zibre

LABORATORY DIRECTOR

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

46648

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A2-02
Sample No.: 27136

TRANSFORMER 3 M.R. 8-20 92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	1000	5000
PCB 1232	<1	<0.08	1000	5000
PCB 1016 (1242)	<1	<0.08	1000	5000
PCB 1248	<1	<0.08	1000	5000
PCB 1254	<1	<0.08	1000	10000
PCB 1260	2.95	<0.08	1000	10000
(Total PCB)	2.95	<0.08	1000	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Lisa E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-0666
FAX 708/967-6735

LABORATORY REPORT

46649

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A2-03
Sample No.: 27137

TRANSFORMER 3 M.R. 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	1000	5000
PCB 1232	<1	<0.08	1000	5000
PCB 1016 (1242)	<1	<0.08	1000	5000
PCB 1248	<1	<0.08	1000	5000
PCB 1254	<1	<0.08	1000	10000
PCB 1260	4.05	<0.08	1000	10000
(Total PCB)	4.05	<0.08	---	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Linda E Zeller

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

46650

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A2-04
Sample No.: 27138

TRANSFORMER 3 M.R. 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	700	5000
PCB 1232	<1	<0.08	700	5000
PCB 1016 (1242)	<1	<0.08	700	5000
PCB 1248	<1	<0.08	700	5000
PCB 1254	<1	<0.08	700	10000
PCB 1260	1.18	<0.08	700	10000
(Total PCB)	1.18	<0.08	---	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zibert

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

46651

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A2-05
Sample No.: 27139

TRANSFORMER 3 M.R. 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	1000	5000
PCB 1232	<1	<0.08	1000	5000
PCB 1016 (1242)	<1	<0.08	1000	5000
PCB 1248	<1	<0.08	1000	5000
PCB 1254	<1	<0.08	1000	10000
PCB 1260	1.2	<0.08	1000	10000
(Total PCB)	1.2	<0.08	---	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zebre

LABORATORY DIRECTOR

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6656
FAX: 708/967-6735

LABORATORY REPORT

46652

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A2-06
Sample No.: 27140

TRANSFORMER 3 M.R. 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1.0	<0.08	740	3000
PCB 1232	<1.0	<0.08	740	3000
PCB 1016 (1242)	<1.0	<0.08	740	3000
PCB 1248	<1.0	<0.08	740	3000
PCB 1254	<1.0	<0.08	740	6000
PCB 1260	<1.0	<0.08	740	6000
(Total PCB)	<1.0	<0.08	---	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zibre

LABORATORY DIRECTOR

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

46653

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A2-07 TRANSFORMER 3
Sample No.: 27141

N.R. 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	400	2000
PCB 1232	<1	<0.08	400	2000
PCB 1016 (1242)	<1	<0.08	400	2000
PCB 1248	<1	<0.08	400	2000
PCB 1254	<1	<0.08	400	4000
PCB 1260	<1	<0.08	400	4000
(Total PCB)	<1	<0.08	400	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Linda E Zdeb

LABORATORY DIRECTOR

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

46654

Chemical Waste Management - LANDFILL
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A2-03
Sample No.: 77142

TRANSFORMER 4 M.D. 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	200	1000
PCB 1232	<1	<0.08	200	1000
PCB 1016 (1242)	<1	<0.08	200	1000
PCB 1248	<1	<0.08	200	1000
PCB 1254	<1	<0.08	200	2000
PCB 1260	2.09	<0.08	200	2000
(Total PCB)	2.09	<0.08	200	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Lisa E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-5666
FAX: 708/967-6735

LABORATORY REPORT

#6655

Chemical Waste Management - CWMAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A2-09
Sample No.: 27143

TRANSFORMER 4 M.R. 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	1000	5000
PCB 1232	<1	<0.08	1000	5000
PCB 1016 (1242)	<1	<0.08	1000	5000
PCB 1248	<1	<0.08	1000	5000
PCB 1254	<1	<0.08	1000	10000
PCB 1260	221	<0.08	1000	10000
(Total PCB)	221	<0.08	1000	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

46658

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A2-10
Sample No.: 27144

TRANSFORMER 4 M.R. 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	1000	5000
PCB 1232	<1	<0.08	1000	5000
PCB 1016 (1242)	<1	<0.08	1000	5000
PCB 1248	<1	<0.08	1000	5000
PCB 1254	<1	<0.08	1000	10000
PCB 1260	111	<0.08	1000	10000
(Total PCB)	111	<0.08	1000	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

+6657

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A2-11
Sample No.: 27145

TRANSFORMER 4 M.R. 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<7	<0.08	7000	30000
PCB 1232	<7	<0.08	7000	30000
PCB 1016 (1242)	<7	<0.08	7000	30000
PCB 1248	<7	<0.08	7000	30000
PCB 1254	<7	<0.08	7000	60000
PCB 1260	228	<0.08	7000	60000
(Total PCB)	228	<0.08	7000	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

46659

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A2-12
Sample No.: 27146

TRANSFORMER 4 N.D 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	1000	5000
PCB 1232	<1	<0.08	1000	5000
PCB 1016 (1242)	<1	<0.08	1000	5000
PCB 1248	<1	<0.08	1000	5000
PCB 1254	<1	<0.08	1000	10000
PCB 1260	16.7	<0.08	1000	10000
(Total PCB)	16.7	<0.08	---	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zibert

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

46660

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A2-13
Sample No.: 27147

TRANSFORMER 4 M.R 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<10	<0.08	10000	50000
PCB 1232	<10	<0.08	10000	50000
PCB 1016 (1242)	<10	<0.08	10000	50000
PCB 1248	<10	<0.08	10000	50000
PCB 1254	<10	<0.08	10000	100000
PCB 1260	606	<0.08	10000	100000
(Total PCB)	606	<0.08	10000	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Linda E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

46661

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A2-14
Sample No.: 27148

TRANSFORMER 4 M.R. 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	904	4000
PCB 1232	<1	<0.08	904	4000
PCB 1016 (1242)	<1	<0.08	904	4000
PCB 1248	<1	<0.08	904	4000
PCB 1254	<1	<0.08	904	8000
PCB 1260	16.5	<0.08	904	8000
(Total PCB)	16.5	<0.08	---	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zehr

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

50789

Chemical Waste Management-R.S.M.W.
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 10/23/92
Sample Received: 10/21/92

Generator: Allied - South Bend, IN
Sample Description: Soil, B2-4-01
Sample No.: 32504

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	200	1000
PCB 1232	<1	<0.08	200	1000
PCB 1016 (1242)	<1	<0.08	200	1000
PCB 1248	<1	<0.08	200	1000
PCB 1254	<1	<0.08	200	2000
PCB 1260	14.96	<0.08	200	2000
(Total PCB)	14.96	<0.08	200	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zibee

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

50788

Chemical Waste Management-R.S.M.W.
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 10/23/92
Sample Received: 10/21/92

Generator: Allied - South Bend, IN
Sample Description: Soil, B2-4-02
Sample No.: 32505

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	40	200
PCB 1232	<1	<0.08	40	200
PCB 1016 (1242)	<1	<0.08	40	200
PCB 1248	<1	<0.08	40	200
PCB 1254	<1	<0.08	40	400
PCB 1260	<1	<0.08	40	400
(Total PCB)	<1	<0.08	40	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zeller

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708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

50790

Chemical Waste Management-R.S.M.W.
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 10/23/92
Sample Received: 10/21/92

Generator: Allied - South Bend, IN
Sample Description: Soil, B2-4-03
Sample No.: 32506

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	40	200
PCB 1232	<1	<0.08	40	200
PCB 1016 (1242)	<1	<0.08	40	200
PCB 1248	<1	<0.08	40	200
PCB 1254	<1	<0.08	40	400
PCB 1260	<1	<0.08	40	400
(Total PCB)	<1	<0.08	40	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Lisa E Zibre

LABORATORY DIRECTOR

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

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Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

50791

Chemical Waste Management-R.S.M.W.
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 10/23/92
Sample Received: 10/21/92

Generator: Allied - South Bend, IN
Sample Description: Soil, B2-4-04
Sample No.: 32507

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	200	1000
PCB 1232	<1	<0.08	200	1000
PCB 1016 (1242)	<1	<0.08	200	1000
PCB 1248	<1	<0.08	200	1000
PCB 1254	<1	<0.08	200	2000
PCB 1260	0.995	<0.08	40	2000
(Total PCB)	<1	<0.08	40	—

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zibre

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LABORATORY REPORT

50792

Chemical Waste Management-R.S.M.W.
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 10/23/92
Sample Received: 10/21/92

Generator: Allied - South Bend, IN
Sample Description: Soil, B2-4-05
Sample No.: 32508

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	20	100
PCB 1232	<1	<0.08	20	100
PCB 1016 (1242)	<1	<0.08	20	100
PCB 1248	<1	<0.08	20	100
PCB 1254	<1	<0.08	20	200
PCB 1260	<1	<0.08	20	200
(Total PCB)	<1	<0.08	20	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

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FROM TO 3618431 P.10

LABORATORY REPORT

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

50796

Generator: Allied-South Bend, IN
Sample Description: Soil, C2-4-01
Sample No.: 32605

Report Date: 10/23/92
Sample Received: 10/22/92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	50	250
PCB 1232	<1	0.08	50	250
	<1	<0.08	50	250
	<1	<0.08	50	250
	<1	<0.08	50	500
	<1	<0.08	50	500
tal PCB)	<1	<0.08	50	---

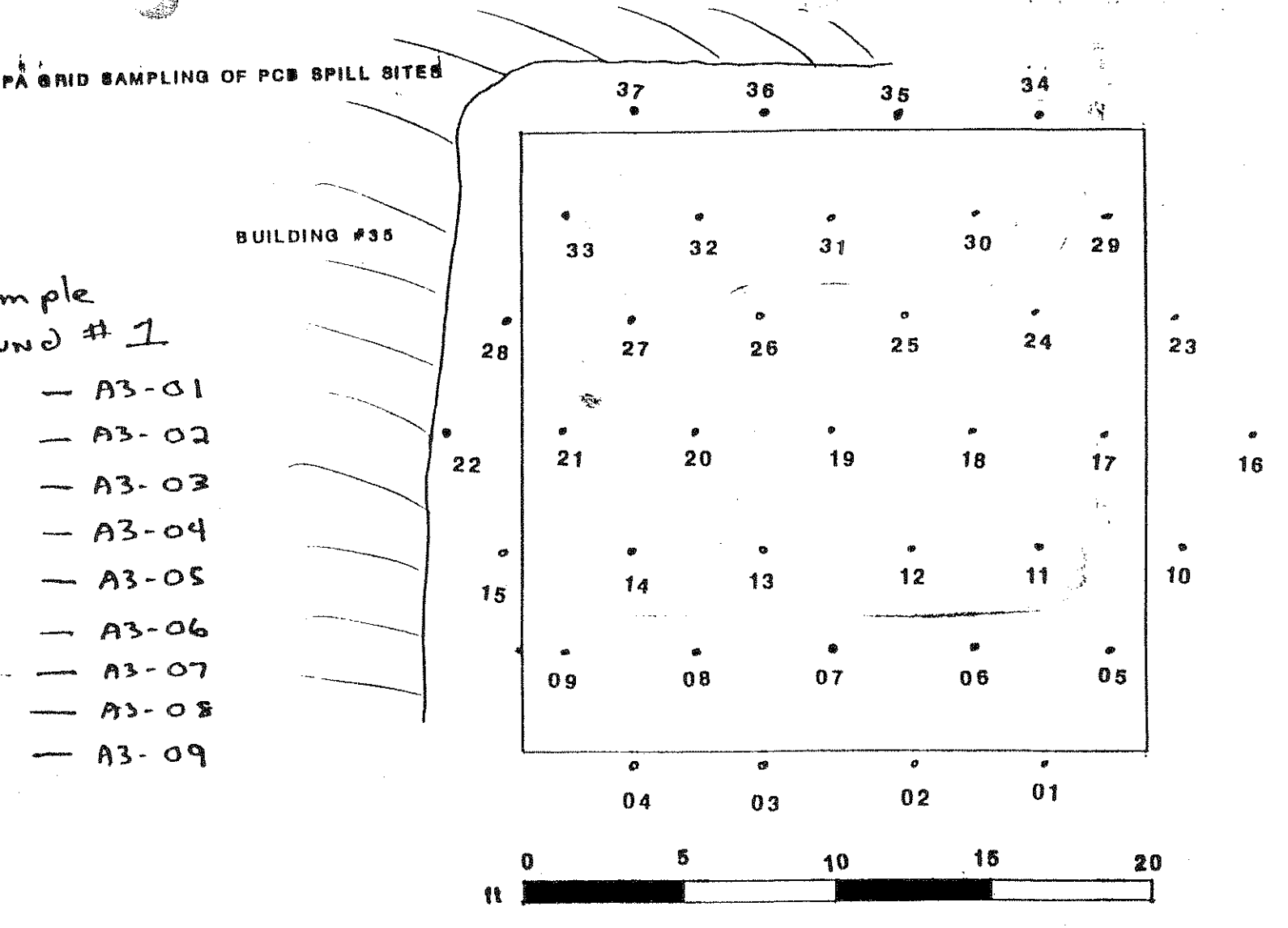
esults expressed as ppm unless otherwise indicated.

is performed according to SW-846, "Test Methods for Evaluating
e".

Linda E Zibert

AREA 3 TRANSFORMERS 3 AND 6

PA GRID SAMPLING OF PCB SPILL SITES



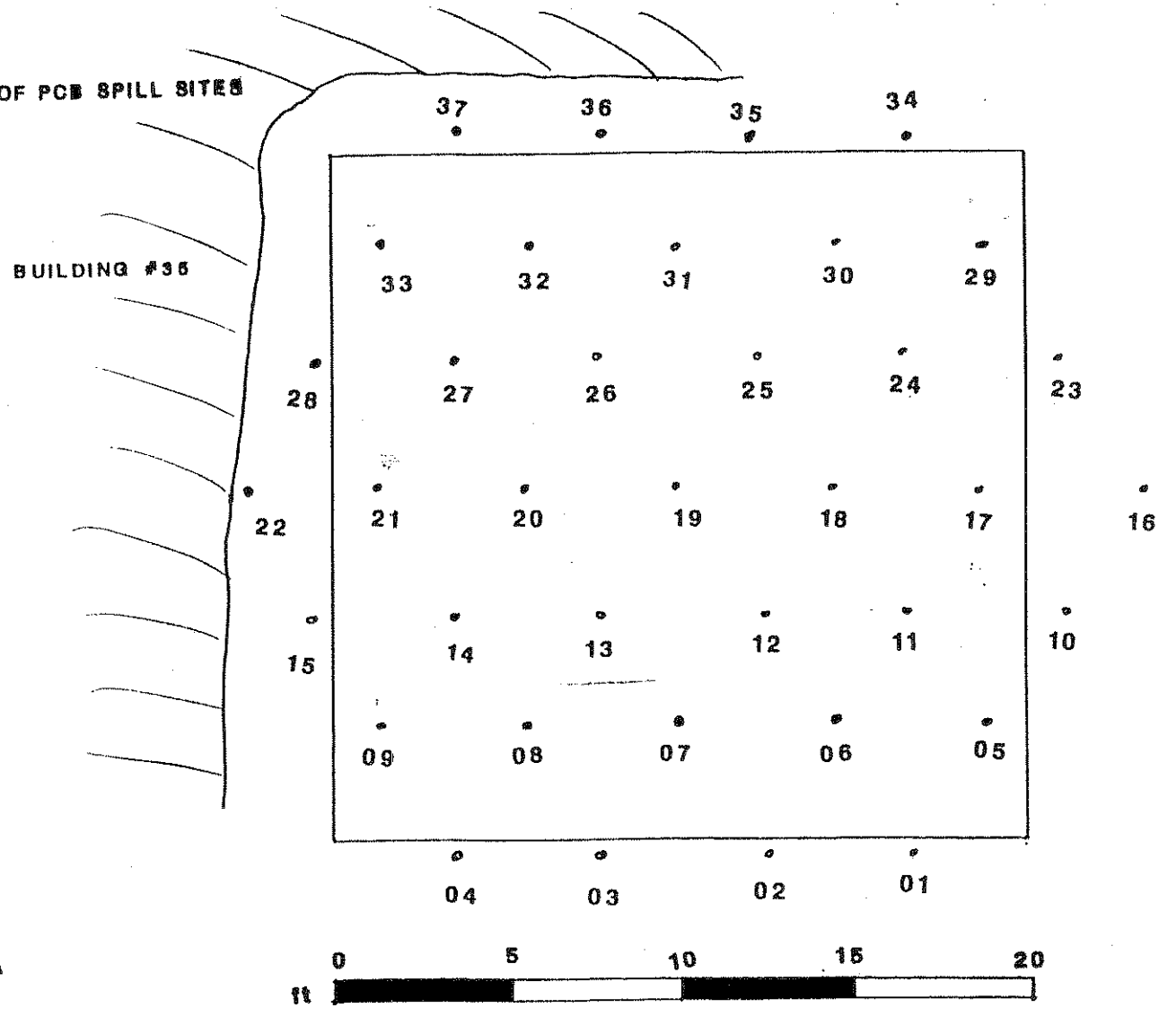
mple
und # 1

- A3-01
- A3-02
- A3-03
- A3-04
- A3-05
- A3-06
- A3-07
- A3-08
- A3-09

ALLIED PRODUCTS CORPORATION
SOUTH BEND, INDIANA
TRANSFORMER PAD/STAIN DIAGRAMS
PHASE I AUGUST 5-21, 1992

AREA 3 TRANSFORMERS 5 AND 6

A GRID SAMPLING OF PCB SPILL SITES



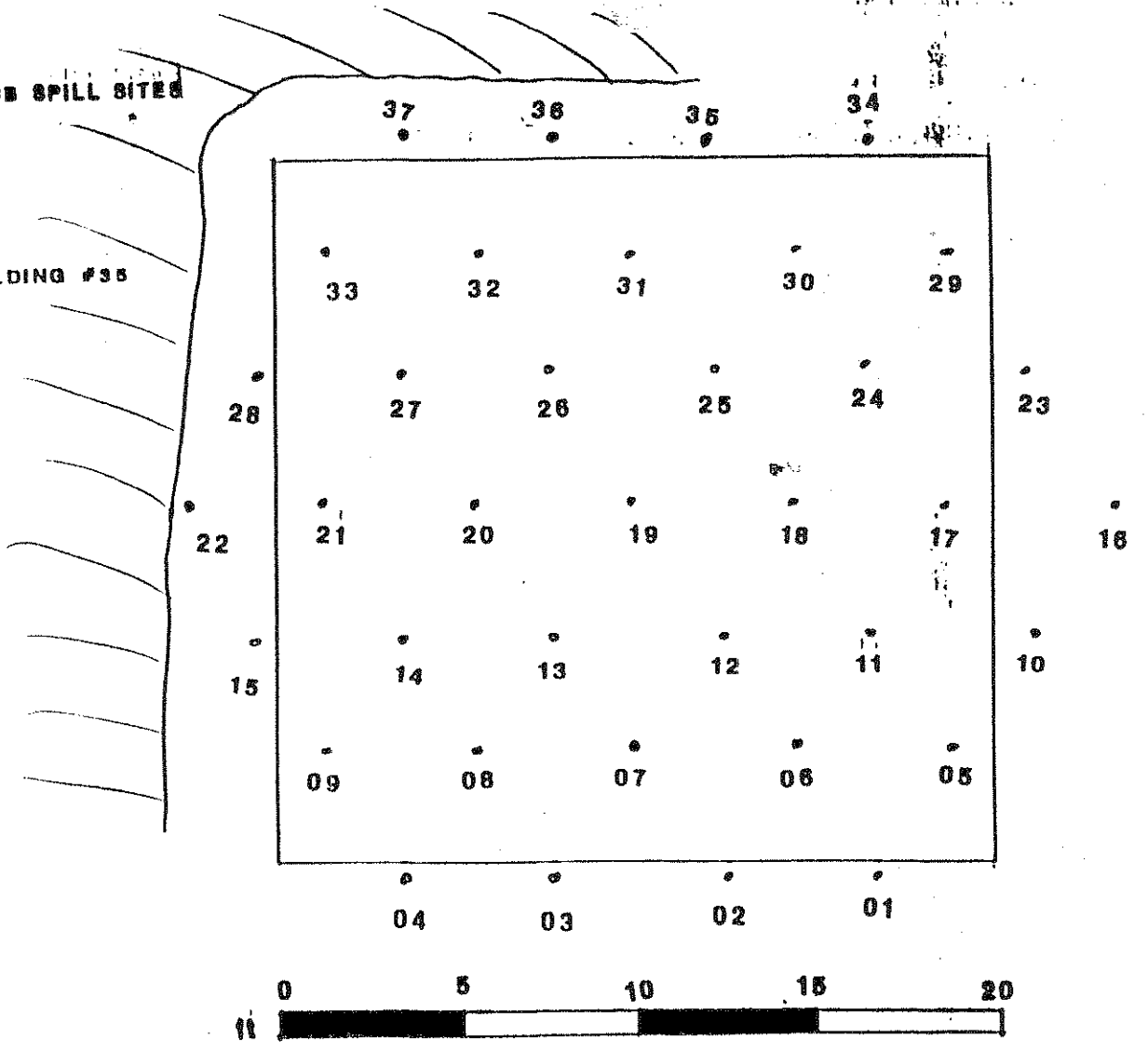
nple
ud #2

— B3-01
— B3-02
— B3-03
— B3-04
— B3-05
— B3-06
— B3-07
— B3-08
— B3-09

ALLIED PRODUCTS CORPORATION
SOUTH BEND, INDIANA
TRANSFORMER PAD/STAIN DIAGRAMS
PHASE I AUGUST 5-21, 1992

AREA 3 TRANSFORMERS 3 AND 8

SOIL SAMPLING OF PCB SPILL SITES



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ND #3

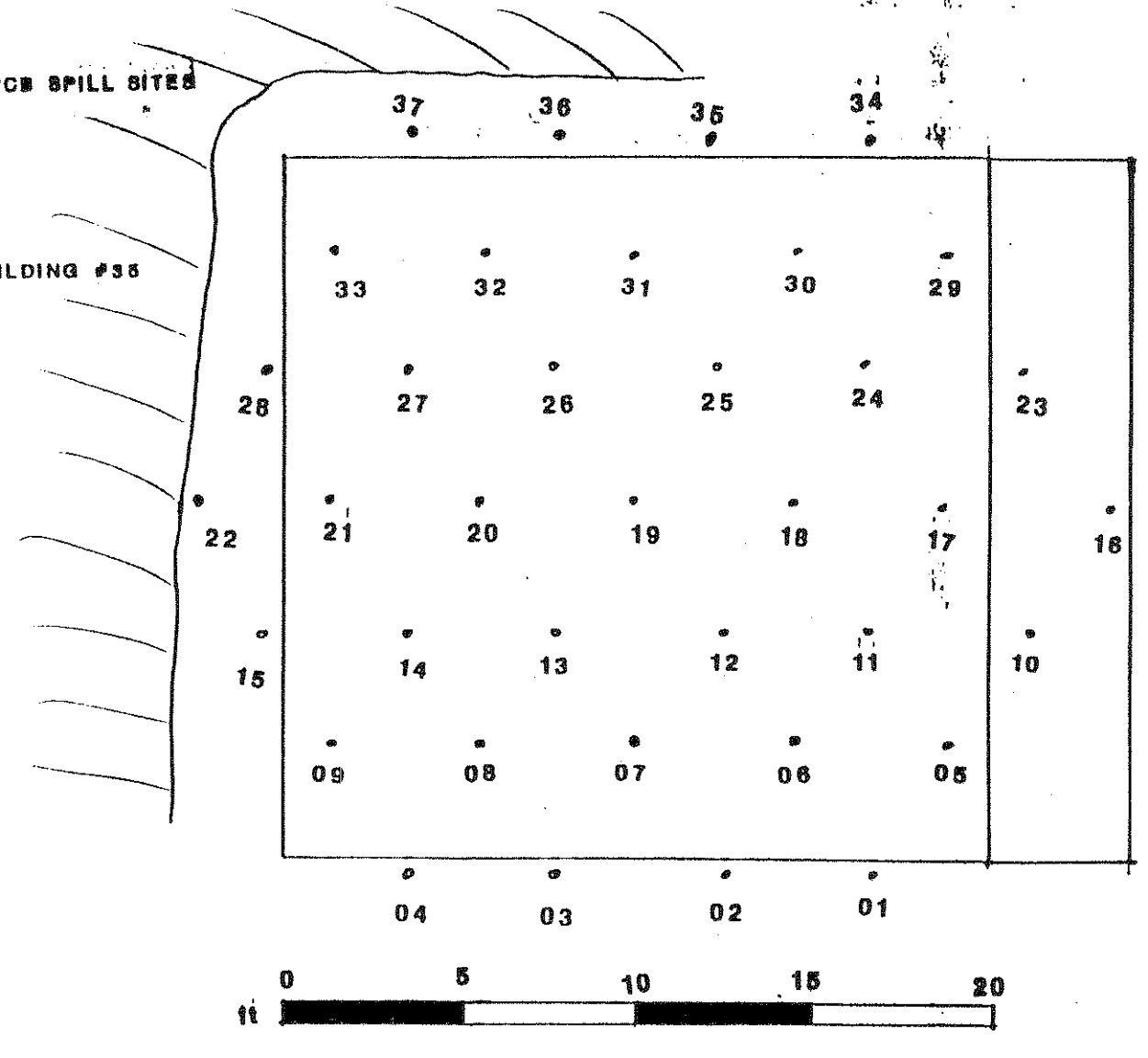
— C3-04

— C3-05

ALLIED PRODUCTS CORPORATION
SOUTH BEND, INDIANA
TRANSFORMER PAD/STAIN DIAGRAMS
PHASE I AUGUST 5-21, 1992

AREA 3 TRANSFORMERS 5 AND 6

A GRID SAMPLING OF PCB SPILL SITES



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ALLIED PRODUCTS CORPORATION
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TRANSFORMER PAD/STAIN DIAGRAMS
PHASE I AUGUST 5-21, 1992

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

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Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

46662

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: AJ-01
Sample No.: 27149

TRANSFORMERS 5 AND 6 M.R. 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	700	3000
PCB 1232	<1	<0.08	700	3000
PCB 1016 (1242)	<1	<0.08	700	3000
PCB 1248	<1	<0.08	700	3000
PCB 1254	<1	<0.08	700	6000
PCB 1260	5.78	<0.08	700	6000
(Total PCB)	5.78	<0.08	700	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zeller

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LABORATORY REPORT

46663

Chemical Waste Management - ENRAC
7250 W College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A3-02
Sample No.: 27150

TRANSFORMERS 5 AND 6

M.R 8-20-92

	Concentration Found in Sample (ppm)	Concentration Found in Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<3	<0.08	3000	15000
PCB 1232	<3	<0.08	3000	15000
PCB 1016 (1242)	<3	<0.08	3000	15000
PCB 1248	<3	<0.08	3000	15000
PCB 1254	<3	<0.08	3000	30000
PCB 1260	46.9	<0.08	3000	30000
(Total PCB)	46.9	<0.08	---	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Lisa E Zibrat

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FAX: 708/967-6735

LABORATORY REPORT

46664

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A3-03
Sample No.: 27151

TRANSFORMERS 5 AND 6

U.R 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	950	5000
PCB 1232	<1	<0.08	950	5000
PCB 1016 (1242)	<1	<0.08	950	5000
PCB 1248	<1	<0.08	950	5000
PCB 1254	<1	<0.08	950	10000
PCB 1260	8.6	<0.08	950	10000
(Total PCB)	8.6	<0.08	950	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zebert

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708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

46665

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A3-04
Sample No.: 27152

TRANSFORMERS 5 AND 6

M.R. 8-20-92

	Concentration Found in Sample (ppm)	Concentration Found in Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	500	2500
PCB 1232	<1	<0.08	500	2500
PCB 1016 (1242)	<1	<0.08	500	2500
PCB 1248	<1	<0.08	500	2500
PCB 1254	<1	<0.08	500	5000
PCB 1260	16.2	<0.08	500	5000
(Total PCB)	16.2	<0.08	500	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zibre

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708/967-6666
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LABORATORY REPORT

46666

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/10/92

Generator: Allied
Sample Description: A3-05
Sample No.: 27153

TRANSFORMERS 5 AND 6

M.R 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	1000	5000
PCB 1232	<1	<0.08	1000	5000
PCB 1016 (1242)	<1	<0.08	1000	5000
PCB 1248	<1	<0.08	1000	5000
PCB 1254	<1	<0.08	1000	10000
PCB 1260	17.9	<0.08	1000	10000
(Total PCB)	17.9	<0.08	---	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zilke

LABORATORY DIRECTOR

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

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LABORATORY REPORT

46667

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A3-06
Sample No.: 27154

TRANSFORMERS 5 AND 6

M.R 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	1000	5000
PCB 1232	<1	<0.08	1000	5000
PCB 1016 (1242)	<1	<0.08	1000	5000
PCB 1248	<1	<0.08	1000	5000
PCB 1254	<1	<0.08	1000	10000
PCB 1260	6.56	<0.08	1000	10000
(Total PCB)	6.56	<0.08	1000	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

LABORATORY DIRECTOR

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Morton Grove, Illinois 60053-3203
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LABORATORY REPORT

46668

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A3-07
Sample No.: 27155

TRANSFORMERS 5 AND 6

M.R. 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	1000	5000
PCB 1232	<1	<0.08	1000	5000
PCB 1016 (1242)	<1	<0.08	1000	5000
PCB 1248	<1	<0.08	1000	5000
PCB 1254	<1	<0.08	1000	10000
PCB 1260	6.15	<0.08	1000	10000
(Total PCB)	6.15	<0.08	---	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Linda E Zeller

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LABORATORY REPORT

46669

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/13/92

Generator: Allied
Sample Description: A3-08
Sample No.: 27156

TRANSFORMERS 5 AND 6

MP 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	100	500
PCB 1232	<1	<0.08	100	500
PCB 1016 (1242)	<1	<0.08	100	500
PCB 1248	<1	<0.08	100	500
PCB 1254	<1	<0.08	100	1000
PCB 1260	<1	<0.08	100	1000
(Total PCB)	<1	<0.08	100	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Linda E Zahn

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LABORATORY REPORT

46670

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/17/92
Sample Received: 8/15/92

Generator: Allied
Sample Description: A3-09
Sample No.: 27157

TRANSFORMERS 5 AND 6

M.R. 8-20-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	520	2500
PCB 1232	<1	<0.08	520	2500
PCB 1016 (1242)	<1	<0.08	520	2500
PCB 1248	<1	<0.08	520	2500
PCB 1254	<1	<0.08	520	5000
PCB 1260	1.5	<0.08	520	5000
(Total PCB)	1.5	<0.08	520	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

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LABORATORY REPORT

50797

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

Report Date: 10/23/92
Sample Received: 10/22/92

Generator: Allied-South Bend, IN
Sample Description: Soil, B3-01
Sample No.: 32606

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	23	100
PCB 1232	<1	0.08	23	100
PCB 1016 (1242)	<1	<0.08	23	100
PCB 1248	<1	<0.08	23	100
PCB 1254	<1	<0.08	23	200
PCB 1260	<1	<0.08	23	200
(Total PCB)	<1	<0.08	23	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Shah E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

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Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

50798

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

Report Date: 10/23/92
Sample Received: 10/22/92

Generator: Allied-South Bend, IN
Sample Description: Soil. BJ-02
Sample No.: 32607

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	30	150
PCB 1232	<1	0.08	30	150
PCB 1016 (1242)	<1	<0.08	30	150
PCB 1248	<1	<0.08	30	150
PCB 1254	<1	<0.08	30	300
PCB 1260	<1	<0.08	30	300
(Total PCB)	<1	<0.08	30	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zeller

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

9100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

50799

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

Report Date: 10/23/92
Sample Received: 10/22/92

Generator: Allied-South Bend, IN
Sample Description: Soil, B3-03
Sample No.: 32608

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	50	250
PCB 1232	<1	0.08	50	250
PCB 1016 (1242)	<1	<0.08	50	250
PCB 1248	<1	<0.08	50	250
PCB 1254	<1	<0.08	50	500
PCB 1260	<1	<0.08	50	500
(Total PCB)	<1	<0.08	50	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Gail E Zdrie

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

51632

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

Report Date: 10/26/92
Sample Received: 10/22/92

Generator: Allied-South Bend, IN
Sample Description: Soil, BJ-04
Sample No.: 32609

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	200	1000
PCB 1232	<1	0.08	200	1000
PCB 1016 (1242)	<1	<0.08	200	1000
PCB 1248	<1	<0.08	200	1000
PCB 1254	<1	<0.08	200	2000
PCB 1260	4.5	<0.08	200	2000
(Total PCB)	4.5	<0.08	200	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zeller

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

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708/967 6666
FAX: 708/967-6735

LABORATORY REPORT

51633

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

Report Date: 10/26/92
Sample Received: 10/22/92

Generator: Allied-South Bend, IN
Sample Description: Soil, B3-05
Sample No.: 32610

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	400	2000
PCB 1232	<1	0.08	400	2000
PCB 1016 (1242)	<1	<0.08	400	2000
PCB 1248	<1	<0.08	400	2000
PCB 1254	<1	<0.08	400	4000
PCB 1260	5.3	<0.08	400	4000
(Total PCB)	5.3	<0.08	400	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Frank E Zuber

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

51634

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

Report Date: 10/26/92
Sample Received: 10/22/92

Generator: Allied-South Bend, IN
Sample Description: Soil, B3-06
Sample No.: 32611

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	50	250
PCB 1232	<1	0.08	50	250
PCB 1016 (1242)	<1	<0.08	50	250
PCB 1248	<1	<0.08	50	250
PCB 1254	<1	<0.08	50	500
PCB 1260	<1	<0.08	50	500
(Total PCB)	<1	<0.08	50	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX:708/967-6735

LABORATORY REPORT

51635

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

Report Date: 10/26/92
Sample Received: 10/22/92

Generator: Allied-South Bend, IN
Sample Description: Soil, B3-07
Sample No.: 32612

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	20	50
PCB 1232	<1	0.08	20	50
PCB 1016 (1242)	<1	<0.08	20	50
PCB 1248	<1	<0.08	20	50
PCB 1254	<1	<0.08	20	100
PCB 1260	1.52	<0.08	20	100
(Total PCB)	1.52	<0.08	20	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zuber

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

S1636

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

Report Date: 10/26/92
Sample Received: 10/22/92

Generator: Allied-South Bend, IN
Sample Description: Soil, B3-08
Sample No.: 32613

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	20	100
PCB 1232	<1	0.08	20	100
PCB 1016 (1242)	<1	<0.08	20	100
PCB 1248	<1	<0.08	20	100
PCB 1254	<1	<0.08	20	100
PCB 1260	<1	<0.08	20	100
(Total PCB)	<1	<0.08	20	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Frank E Zehner

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX. 708/967-6735

LABORATORY REPORT

51637

Chemical Waste Management-R.S M.W.
7250 W. College Dr.
Palos Heights, IL 60463

Report Date: 10/26/92
Sample Received: 10/22/92

Generator: Allied-South Bend, IN
Sample Description: Soil. B3-09
Sample No.: 32614

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	3.0	15
PCB 1232	<1	0.08	3.0	15
PCB 1016 (1242)	<1	<0.08	3.0	15
PCB 1248	<1	<0.08	3.0	15
PCB 1254	<1	<0.08	3.0	30
PCB 1260	<1	<0.08	3.0	30
(Total PCB)	<1	<0.08	3.0	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Hal E Zibre

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8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

56073

Chemical Waste Management-ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 12/11/92
Sample Received: 12/10/92

Generator: Allied Products
Sample Description: D3-04
Sample No.: 36981

	Concentration Found In Sample (ppb)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<43	<0.08	43	200
PCB 1232	<43	<0.08	43	200
PCB 1016 (1242)	<43	<0.08	43	200
PCB 1248	<43	<0.08	43	200
PCB 1254	<43	<0.08	43	400
PCB 1260	<43	<0.08	43	400
(Total PCB)	<43	<0.08	43	

All results expressed as ppb unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leal E. Zibre

CHAIN-OF-CUSTODY RECORD

Generator's Name Allied Products Telephone (708) 361-7533

Address South Bend IN
street city state zip

Company Name Chemical Waste Management Telephone (708) 361-7533

Address 7250 W. College Dr. Palos Heights IL 60463
street city state zip

SAMPLE/POINT/I.D./ DESCRIPTION	DATE SAMPLED	TIME	NUMBER OF CONTAINERS	COMMENTS ANALYSIS REQUIRED
D3-04	12-9-92	200	1 40z	PCB (24 TAT

CHAIN OF POSSESSION

Relinquished By:[1] Organization/Individual (Signature)	Date[2]	Received By: Organization/Individual (Signature)	Da
1. Chris Curtis		Jeffrey DH and	12/
2.			
3.			
4.			
5.			

NOTE:
1. First "Relinquished by" signature shall be that of the sampler.
2. Apparent gaps or breaks in the inclusive dates in the "Chain of Possession" Section are covered by the site receiving/shipping logs.

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

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Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

52770

Chemical Waste Management/ENRAC
2250 W. College Drive
Palos Heights, IL 60463

Report Date: 11/10/92
Sample Received: 11/3/92

Project Name: Allied Products/South Bend, IN
Sample Description: Grab-C3-04
Sample No.: 33666

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<4	<0.08	4000	20000
PCB 1232	<4	<0.08	4000	20000
PCB 1016 (1242)	<4	<0.08	4000	20000
PCB 1248	<4	<0.08	4000	20000
PCB 1254	<4	<0.08	4000	40000
PCB 1260	28.73	<0.08	4000	40000
(Total PCB)	28.73	<0.08	4000	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Gail E Zehe

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

52771

Chemical Waste Management/ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 11/10/92
Sample Received: 11/3/92

Project Name: Allied Products/South Bend, IN
Sample Description: Grab-C3-05
Sample No.: 33667

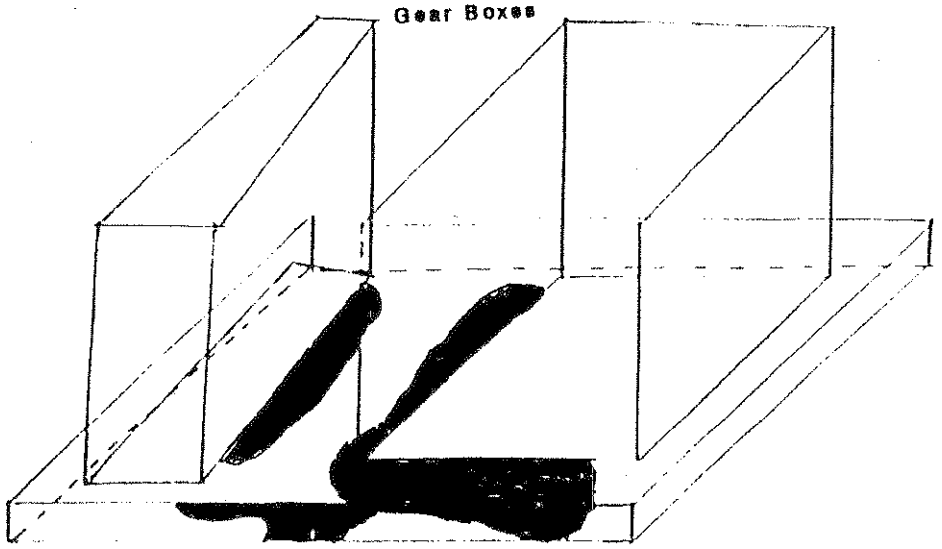
	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<2	<0.08	300	1500
PCB 1232	<2	<0.08	300	1500
PCB 1016 (1242)	<2	<0.08	300	1500
PCB 1248	<2	<0.08	300	1500
PCB 1254	<2	<0.08	300	3000
PCB 1260	3.77	<0.08	300	3000
(Total PCB)	3.77	<0.08	300	---

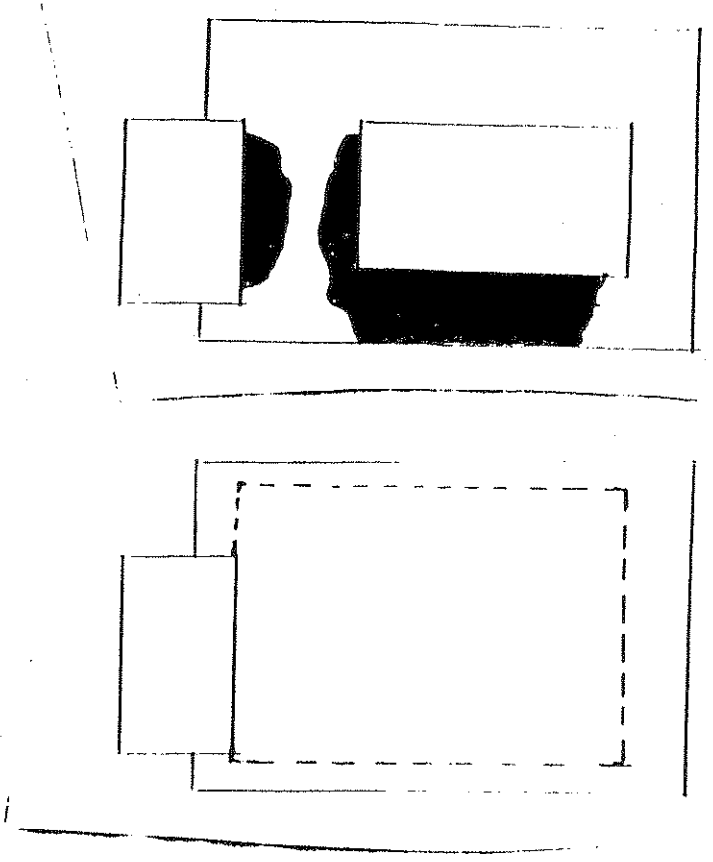
All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

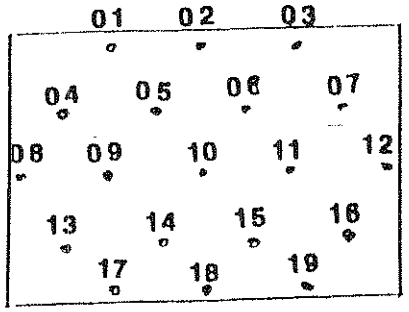
Fred E. Zibre

AREA 4 TRANSFORMER 7



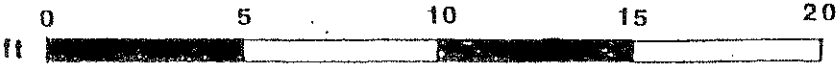


EPA GRID SAMPLING OF PCB SPILL SITES



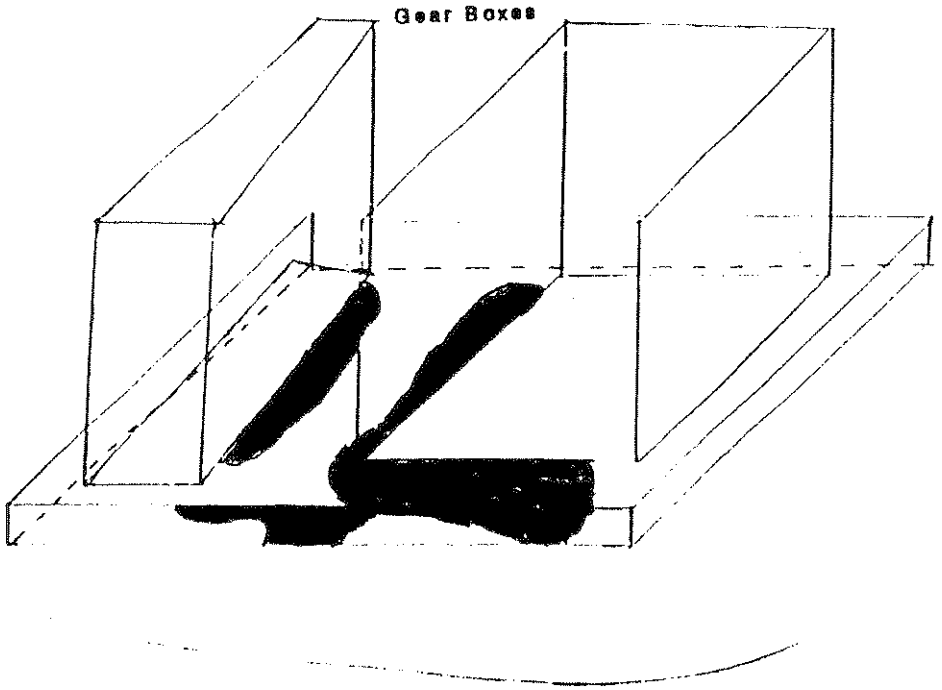
Sample Round #1

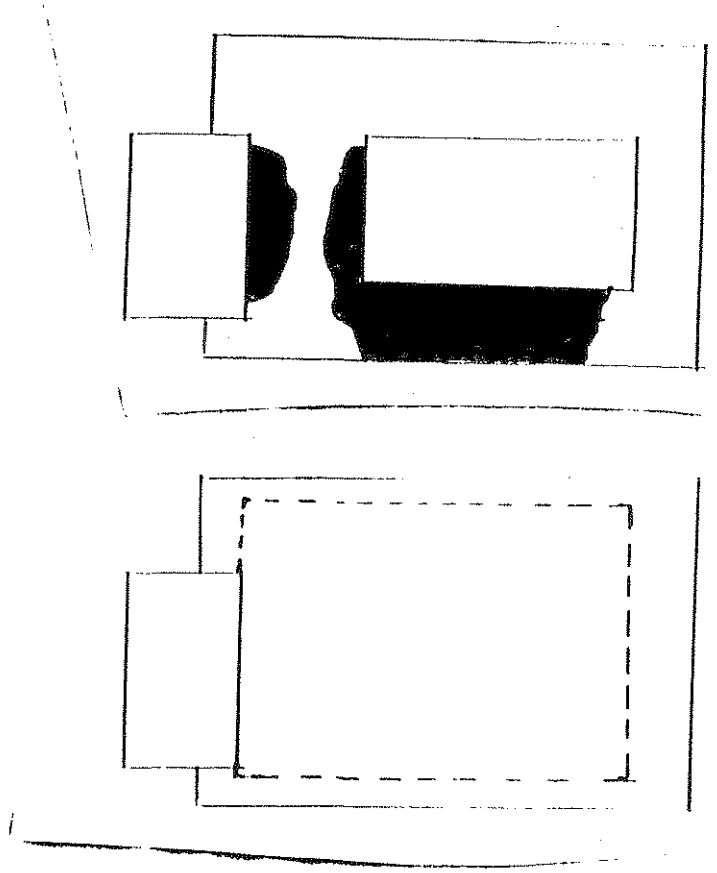
- A4-01
- A4-02
- A4-03
- A4-04
- A4-05



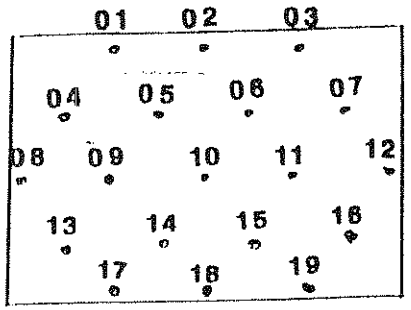
ALLIED PRODUCTS CORPORATION
SOUTH BEND, INDIANA
TRANSFORMER PAD/STAIN DIAGRAMS
PHASE I AUGUST 5-21, 1992

AREA 4 TRANSFORMER 7



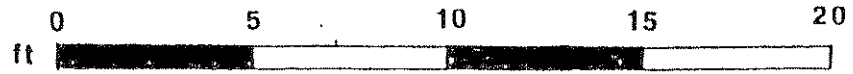


EPA GRID SAMPLING OF PCB SPILL SITES



Sample Round # 2

- B4-01-1
- B4-01-2
- B4-01-3



ALLIED PRODUCTS CORPORATION
SOUTH BEND, INDIANA
TRANSFORMER PAD/STAIN DIAGRAMS
PHASE I AUGUST 5-21, 1992

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

47208

LABORATORY REPORT

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A4-01
Sample No.: 27444

TRANSFORMER 7 U.P. 8-28-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	400	2000
PCB 1232	<1	<0.08	400	2000
PCB 1016 (1242)	<1	<0.08	400	2000
PCB 1248	<1	<0.08	400	2000
PCB 1254	<1	<0.08	400	4000
PCB 1260	5.86	<0.08	400	4000
(Total PCB)	5.86	<0.08	400	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zibee

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6665
FAX: 708/967-6739

LABORATORY REPORT

47209

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A4-02
Sample No.: 27445

TRANSFORMER 7 8/25/92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	100	500
PCB 1232	<1	<0.08	100	500
PCB 1016 (1242)	<1	<0.08	100	500
PCB 1248	<1	<0.08	100	500
PCB 1254	<1	<0.08	100	1000
PCB 1260	<1	<0.08	100	1000
(Total PCB)	<1	<0.08	100	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Linda E Zibrin

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

47210

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A4-03
Sample No.: 27446

TRANSFORMER 7 8-28-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	100	500
PCB 1232	<1	<0.08	100	500
PCB 1016 (1242)	<1	<0.08	100	500
PCB 1248	<1	<0.08	100	500
PCB 1254	<1	<0.08	100	1000
PCB 1260	<1	<0.08	100	1000
(Total PCB)	<1	<0.08	100	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zehr

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

47211

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A4-04
Sample No.: 27447

TRANSFORMER 7 M.P. 8-28-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	100	500
PCB 1232	<1	<0.08	100	500
PCB 1016 (1242)	<1	<0.08	100	500
PCB 1248	<1	<0.08	100	500
PCB 1254	<1	<0.08	100	1000
PCB 1260	<1	<0.08	100	1000
(Total PCB)	<1	<0.08	100	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Frank E Zeller

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

47212

Chemical Waste Management - LWRC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

M.R. 8.28.92

Generator: Allied
Sample Description: A4-05
Sample No.: 27448

TRANSFORMER 7

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	50	250
PCB 1232	<1	<0.08	50	250
PCB 1016 (1242)	<1	<0.08	50	250
PCB 1248	<1	<0.08	50	250
PCB 1254	<1	<0.08	50	500
PCB 1260	<1	<0.08	50	500
(Total PCB)	<1	<0.08	50	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Lael E Zehr

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

50785

Chemical Waste Management-R.S.M.W.
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 10/23/92
Sample Received: 10/21/92

Generator: Allied - South Bend, IN
Sample Description: Soil, B4-01
Sample No.: 32501

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	325	1500
PCB 1232	<1	<0.08	325	1500
PCB 1016 (1242)	<1	<0.08	325	1500
PCB 1248	<1	<0.08	325	1500
PCB 1254	<1	<0.08	325	3000
PCB 1260	<1	<0.08	325	3000
(Total PCB)	<1	<0.08	325	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Linda E. Zeller

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

50786

Chemical Waste Management-R.S.M.W.
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 10/23/92
Sample Received: 10/21/92

Generator: Allied - South Bend, IN
Sample Description: Soil, B4-02
Sample No.: 32502

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	10	50
PCB 1232	<1	<0.08	10	50
PCB 1016 (1242)	<1	<0.08	10	50
PCB 1248	<1	<0.08	10	50
PCB 1254	<1	<0.08	10	100
PCB 1260	<1	<0.08	10	100
(Total PCB)	<1	<0.08	10	—

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

50787

Chemical Waste Management-R.S.M.W.
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 10/23/92
Sample Received: 10/21/92

Generator: Allied - South Bend, IN
Sample Description: Soil, B4-03
Sample No.: 32503

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	10	50
PCB 1232	<1	<0.08	10	50
PCB 1016 (1242)	<1	<0.08	10	50
PCB 1248	<1	<0.08	10	50
PCB 1254	<1	<0.08	10	100
PCB 1260	<1	<0.08	10	100
(Total PCB)	<1	<0.08	10	---

All results expressed as ppm unless otherwise indicated.

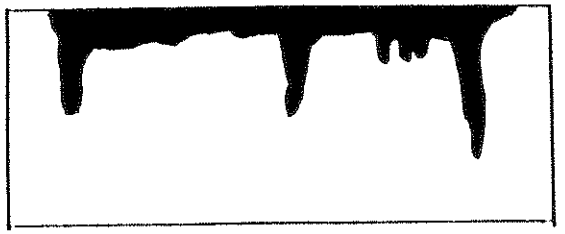
Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

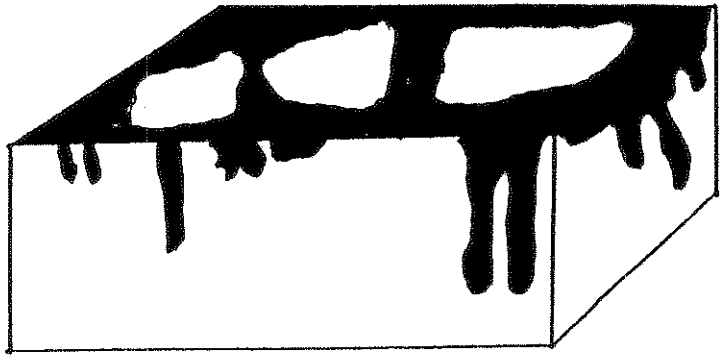
Fred E Zibra

AREA 5 TRANSFORMERS 10,11, AND 12

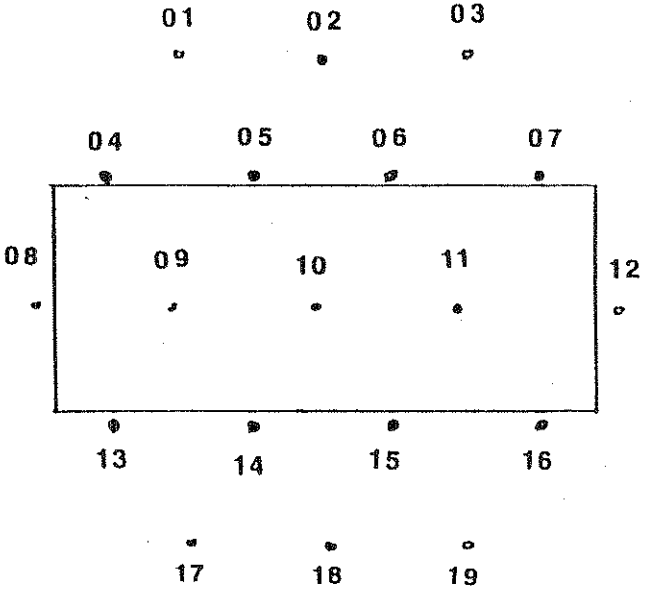
Sample Round #1

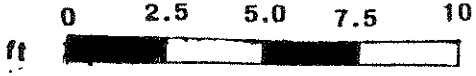
- A5-01
- A5-02
- A5-03
- A5-04
- A5-05





EPA GRID SAMPLING OF PCB SPILL SITES

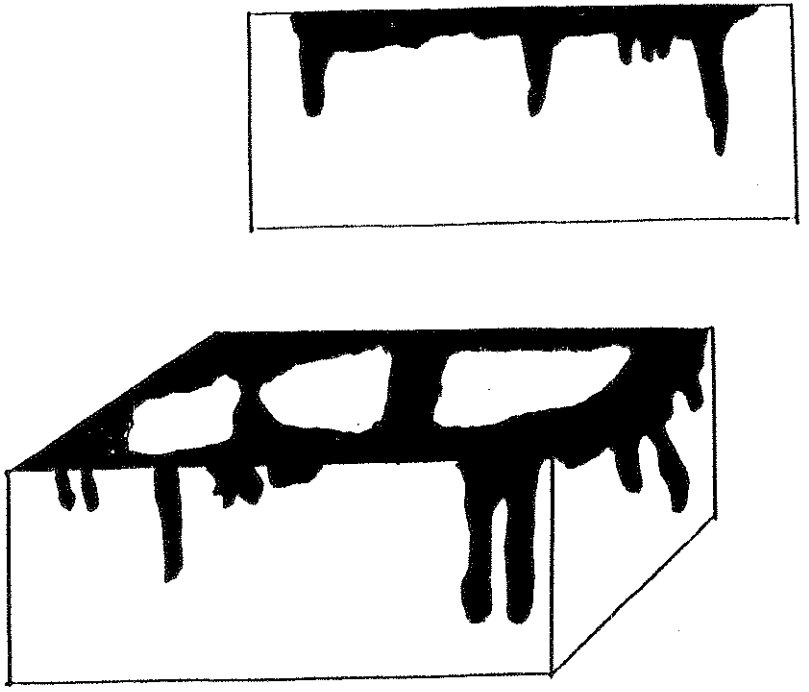




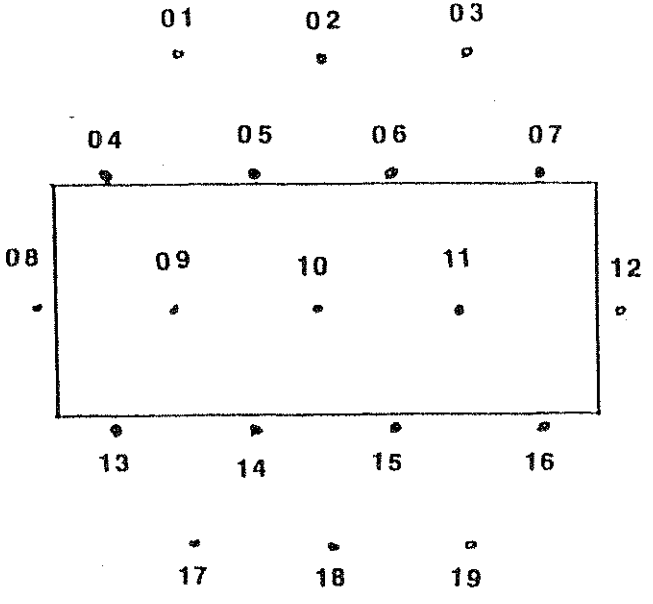
ALLIED PRODUCTS CORPORATION
SOUTH BEND, INDIANA
TRANSFORMER PAD/STAIN DIAGRAMS
PHASE I AUGUST 5-21, 1992

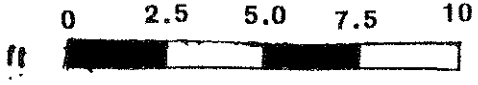
AREA 5 TRANSFORMERS 10,11, AND 12

Sample Round
2
— BS-01
— BS-02
— BS-03
— BS-04
— BS-05



EPA GRID SAMPLING OF PCB SPILL SITES





ALLIED PRODUCTS CORPORATION
SOUTH BEND, INDIANA
TRANSFORMER PAD/STAIN DIAGRAMS
PHASE I AUGUST 5-21, 1992

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6565
FAX: 708/967-6735

LABORATORY REPORT

47213

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: AS-01
Sample No.: 27449

TRANSFORMERS 10,11,12

M.E. 8-28-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	200	1000
PCB 1232	<1	<0.08	200	1000
PCB 1016 (1242)	<1	<0.08	200	1000
PCB 1248	<1	<0.08	200	1000
PCB 1254	<1	<0.08	200	2000
PCB 1260	1.68	<0.08	200	2000
(Total PCB)	1.68	<0.08	200	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zibert

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

47214

Chemical Waste Management - LWRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

M.D. 8.28.92

Generator: Allied
Sample Description: A5-02
Sample No.: 27450

TRANSFORMERS 10,11,12

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	100	500
PCB 1232	<1	<0.08	100	500
PCB 1016 (1242)	<1	<0.08	100	500
PCB 1248	<1	<0.08	100	500
PCB 1254	<1	<0.08	100	1000
PCB 1260	<1	<0.08	100	1000
(Total PCB)	<1	<0.08	100	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zeltner

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

47215

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A5-03
Sample No.: 27451

TRANSFORMERS 10,11,12

M.R. 8-28-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	200	1000
PCB 1232	<1	<0.08	200	1000
PCB 1016 (1242)	<1	<0.08	200	1000
PCB 1248	<1	<0.08	200	1000
PCB 1254	<1	<0.08	200	2000
PCB 1260	1.3	<0.08	200	2000
(Total PCB)	1.3	<0.08	200	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zebre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX. 708/967-6735

LABORATORY REPORT

47216

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A5-04
Sample No.: 27452

TRANSFORMERS 10,11,12 U.R. 8-28-92

	Concentration Found In Sample (ppm)	Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	200	1000
PCB 1232	<1	<0.08	200	1000
PCB 1016 (1242)	<1	<0.08	200	1000
PCB 1243	<1	<0.08	200	1000
PCB 1254	<1	<0.08	200	2000
PCB 1260	1.67	<0.08	200	2000
(Total PCB)	1.67	<0.08	200	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zebre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX 708/967-6735

LABORATORY REPORT

47217

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A5-05
Sample No.: 27453

TRANSFORMERS 10,11,12 M.R. 8-28-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	400	2000
PCB 1232	<1	<0.08	400	2000
PCB 1016 (1242)	<1	<0.08	400	2000
PCB 1248	<1	<0.08	400	2000
PCB 1254	<1	<0.08	400	4000
PCB 1260	4.57	<0.08	400	4000
(Total PCB)	4.57	<0.08	400	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zebre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

51672

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

Report Date: 10/26/92
Sample Received: 10/22/92

Generator: Allied-South Bend, IN
Sample Description: Soil, BS-01
Sample No.: 32615

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	50	250
PCB 1232	<1	0.08	50	250
PCB 1016 (1242)	<1	<0.08	50	250
PCB 1248	<1	<0.08	50	250
PCB 1254	<1	<0.08	50	500
PCB 1260	1.63	<0.08	50	500
(Total PCB)	1.63	<0.08	50	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

51673

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

Report Date: 10/26/92
Sample Received: 10/22/92

Generator: Allied-South Bend, IN
Sample Description: Soil, B5-02
Sample No.: 32616

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	4.5	25
PCB 1232	<1	0.08	4.5	25
PCB 1016 (1242)	<1	<0.08	4.5	25
PCB 1248	<1	<0.08	4.5	25
PCB 1254	<1	<0.08	4.5	50
PCB 1260	<1	<0.08	4.5	50
(Total PCB)	<1	<0.08	4.5	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Neal E Zibrin

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967 6666
FAX: 708/967-6735

LABORATORY REPORT

51674

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

Report Date: 10/26/92
Sample Received: 10/22/92

Generator: Allied-South Bend, IN
Sample Description: Soil, B5-03
Sample No.: 32617

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	100	500
PCB 1232	<1	0.08	100	500
PCB 1016 (1242)	<1	<0.08	100	500
PCB 1248	<1	<0.08	100	500
PCB 1254	<1	<0.08	100	1000
PCB 1260	2.19	<0.08	100	1000
(Total PCB)	2.19	<0.08	100	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

51675

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

Report Date: 10/26/92
Sample Received: 10/22/92

Generator: Allied-South Bend, IN
Sample Description: Soil, B5-04
Sample No.: 32618

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	100	500
PCB 1232	<1	0.08	100	500
PCB 1016 (1242)	<1	<0.08	100	500
PCB 1248	<1	<0.08	100	500
PCB 1254	<1	<0.08	100	1000
PCB 1260	2.55	<0.08	100	1000
(Total PCB)	2.55	<0.08	100	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zuber

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

S1676

Chemical Waste Management-R.S.M.W.
7250 W. College Dr.
Palos Heights, IL 60463

Report Date: 10/26/92
Sample Received: 10/22/92

Generator: Allied-South Bend, IN
Sample Description: Soil, BS-05
Sample No.: 32619

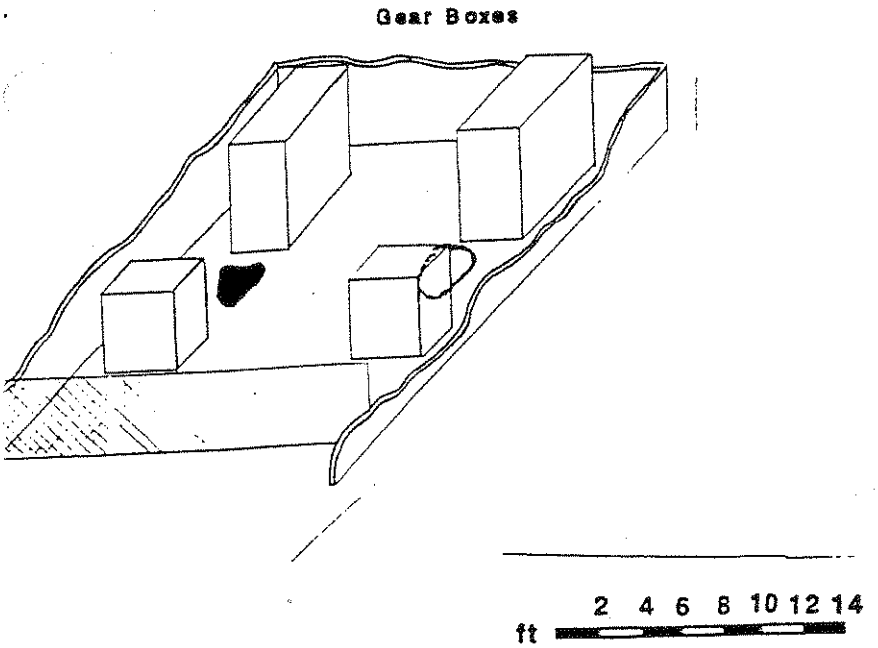
	Concentration Found In Sample (ppm)	Blank (ppb)	Method Detection Limit (MDL) ug/kg (ppb)	Quantitation Limit ug/kg (ppb)
PCB 1221	<1	0.08	200	1000
PCB 1232	<1	0.08	200	1000
PCB 1016 (1242)	<1	<0.08	200	1000
PCB 1248	<1	<0.08	200	1000
PCB 1254	<1	<0.08	200	2000
PCB 1260	3.16	<0.08	200	2000
(Total PCB)	3.16	<0.08	200	---

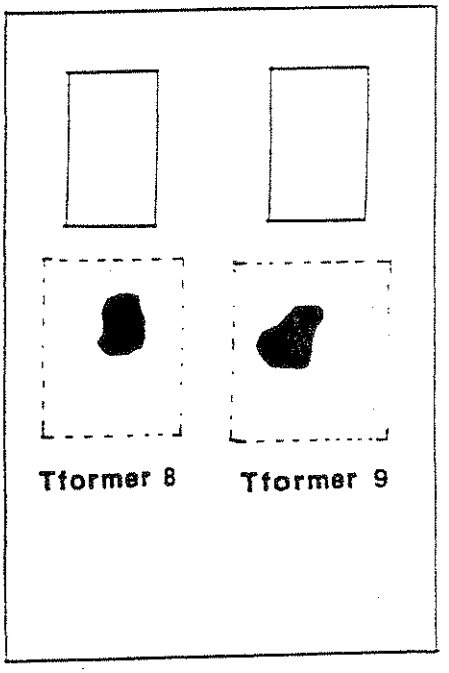
All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846. "Test Methods for Evaluating Solid Waste".

Lisa E Zibre

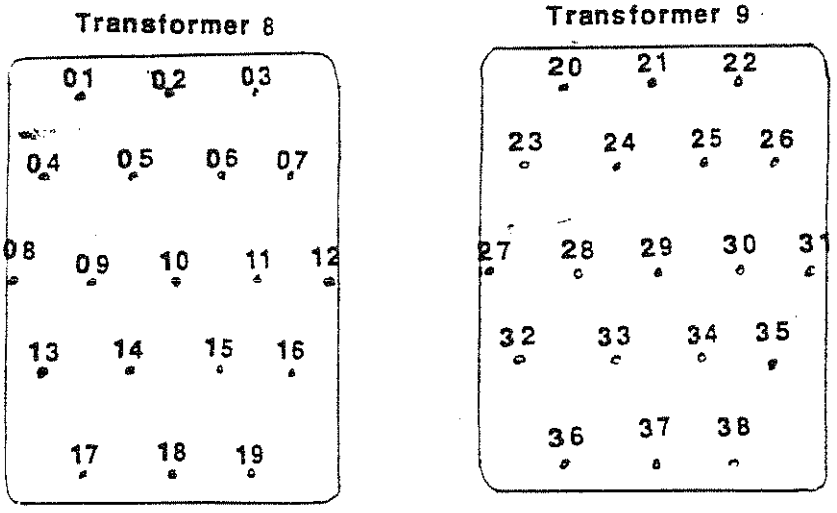
AREA 6 TRANSFORMERS 8 AND 9



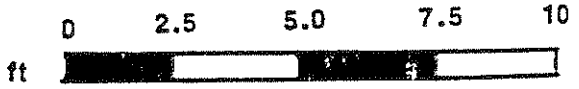


Sample Round #1

EPA GRID SAMPLING OF PCB SPILL SITES



- A6-01
- A6-02
- A6-03
- A6-04
- A6-05
- A6-06
- A6-07
- A6-08
- A6-09
- A6-10



ALLIED PRODUCTS CORPORATION
SOUTH BEND, INDIANA
TRANSFORMER PAD/STAIN DIAGRAMS
PHASE I AUGUST 5-21, 1992

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-5666
FAX: 708/967-6735

LABORATORY REPORT

47213

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A6-01
Sample No.: 27454

TRANSFORMER 8 .U.R. 8-28-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	100	500
PCB 1232	<1	<0.08	100	500
PCB 1016 (1242)	<1	<0.08	100	500
PCB 1248	<1	<0.08	100	500
PCB 1254	<1	<0.08	100	1000
PCB 1260	<1	<0.08	100	1000
(Total PCB)	<1	<0.08	100	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

47219

Chemical Waste Management - LEMAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A6-02
Sample No.: 27455

TRANSFORMER 8

M.R 8-28-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	200	1000
PCB 1232	<1	<0.08	200	1000
PCB 1016 (1242)	<1	<0.08	200	1000
PCB 1248	<1	<0.08	200	1000
PCB 1254	<1	<0.08	200	2000
PCB 1260	<1	<0.08	200	2000
(Total PCB)	<1	<0.08	200	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Lisa E Zdrie

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX. 708/967-6735

LABORATORY REPORT

47220

Chemical Waste Management ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A6-03 TRANSFORMER 8 M.R 8-28-92
Sample No.: 27456

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	200	1000
PCB 1232	<1	<0.08	200	1000
PCB 1016 (1242)	<1	<0.08	200	1000
PCB 1248	<1	<0.08	200	1000
PCB 1254	<1	<0.08	200	2000
PCB 1260	<1	<0.08	200	2000
(Total PCB)	<1	<0.08	200	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Kirk E Zibrin

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

47221

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92
4.F. 8-28-92

Generator: Allied
Sample Description: A6-04
Sample No.: 27457

TRANSFORMER 8

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	50	250
PCB 1232	<1	<0.08	50	250
PCB 1016 (1242)	<1	<0.08	50	250
PCB 1248	<1	<0.08	50	250
PCB 1254	<1	<0.08	50	500
PCB 1260	<1	<0.08	50	500
(Total PCB)	<1	<0.08	50	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zeller

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

47222

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A6-05 **TRANSFORMER 8**
Sample No.: 27458

M.R. 8-28-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	100	500
PCB 1232	<1	<0.08	100	500
PCB 1016 (1242)	<1	<0.08	100	500
PCB 1248	<1	<0.08	100	500
PCB 1254	<1	<0.08	100	1000
PCB 1260	<1	<0.08	100	1000
(Total PCB)	<1	<0.08	100	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Linda E Zibrec

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-5666
FAX: 708/967-6735

LABORATORY REPORT

47223

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A6-06
Sample No.: 37459

TRANSFORMER 9 M.P.S. 5592

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	100	500
PCB 1232	<1	<0.08	100	500
PCB 1016 (1242)	<1	<0.08	100	500
PCB 1248	<1	<0.08	100	500
PCB 1254	<1	<0.08	100	1000
PCB 1260	<1	<0.08	100	1000
(Total PCB)	<1	<0.08	100	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zehr

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX 708/967-6735

LABORATORY REPORT

47224

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A6-07 **TRANSFORMER 9**
Sample No.: 27460

M.D. 8-26-92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	100	5000
PCB 1232	<1	<0.08	100	5000
PCB 1016 (1242)	<1	<0.08	100	5000
PCB 1248	<1	<0.08	100	5000
PCB 1254	<1	<0.08	100	10000
PCB 1260	1.5	<0.08	100	10000
(Total PCB)	1.5	<0.08	100	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Leah E Zeller

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

47225

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

M.K. 8-28-92

Generator: Allied
Sample Description: A6-08 **TRANSFORMER 8**
Sample No.: 27461

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	100	500
PCB 1232	<1	<0.08	100	500
PCB 1016 (1242)	<1	<0.08	100	500
PCB 1248	<1	<0.08	100	500
PCB 1254	<1	<0.08	100	1000
PCB 1260	<1	<0.08	100	1000
(Total PCB)	<1	<0.08	100	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Gail E Zdrec

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-6666
FAX: 708/967-6735

LABORATORY REPORT

47226

Chemical Waste Management ENTRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A6-09
Sample No.: 27462

TRANSFORMER 9 M.P. 8.28.92

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	400	1000
PCB 1232	<1	<0.08	400	1000
PCB 1016 (1242)	<1	<0.08	400	1000
PCB 1248	<1	<0.08	400	1000
PCB 1254	<1	<0.08	400	2000
PCB 1260	1.51	<0.08	400	2000
(Total PCB)	1.51	<0.08	400	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zibre

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
708/967-5666
FAX: 708/967-6735

LABORATORY REPORT

47227

Chemical Waste Management - ENRAC
7250 W. College Drive
Palos Heights, IL 60463

Report Date: 8/21/92
Sample Received: 8/18/92

Generator: Allied
Sample Description: A6-10 **TRANSFORMER 8** M.P. 8.25-92
Sample No.: 27463

	Concentration Found In Sample (ppm)	Concentration Found In Blank (ppb)	Method Detection Limit (MDL) ug/L (ppb)	Quantitation Limit ug/L (ppb)
PCB 1221	<1	<0.08	200	1000
PCB 1232	<1	<0.08	200	1000
PCB 1016 (1242)	<1	<0.08	200	1000
PCB 1248	<1	<0.08	200	1000
PCB 1254	<1	<0.08	200	2000
PCB 1260	<1	<0.08	200	2000
(Total PCB)	<1	<0.08	200	---

All results expressed as ppm unless otherwise indicated.

Methods performed according to SW-846, "Test Methods for Evaluating Solid Waste".

Fred E Zebre

Some Chemical Aspects Relating to Arsenic Remedial Technologies

Robert G. Robins
AquaMin Science Consortium International
25 Adelaide Avenue, Lindfield NSW 2070, Australia
T/F: + 61 2 9416 3928, E: bobrobins@bigpond.com.au

The information which is summarized here originates mostly from publications by well known and established authors in the field, during their many years of research on this subject. Most of the material is mentioned only briefly, but will be found in a publications list which is available by e-mail from the author. Although there are many other excellent relevant references, the author has chosen the selected papers for their reliability and convenience, but they are not necessarily the earliest chronological references. There are many other statements here which originate from much unpublished work. This extended abstract is an abridged version of the paper (with the references) that is available by e-mail.

Introduction

The removal of arsenic from process solutions and effluents has been practiced by the mineral process industries for many years. Existing hydrometallurgical techniques are adequate for most present day product specifications but the stability of solid and liquid waste materials for long-term disposal or discharge will not meet the regulatory requirements of the future. The removal and disposal of arsenic from metallurgical process and effluent streams will become a greater problem as minerals with much higher arsenic content are processed in the future, and as regulations become more stringent. Disposal of stable residues will be critical, and the testing methods for assessing stability will need thorough revision.

The various unit processes that have been considered to deal with arsenic in hydrometallurgical processes include: oxidation-reduction, precipitation and thermal precipitation, coprecipitation, adsorption, electrolysis and cementation, solvent extraction, ion exchange, membrane separations, precipitate and ion flotation, and biological processing. These methods are not considered here, but are detailed in some of the references in the e-mail version of this paper. Here only precipitation, adsorption and cementation are considered, as these are the processes that are presently being more generally adopted, and need further investigation.

The aqueous solution chemistry of arsenic and the most common hydrometallurgical methods that have been applied commercially for arsenic removal, recovery, and disposal are only mentioned briefly here, as are some techniques which have been used only in the laboratory, and otherwise suggested as a means of eliminating or recovering arsenic from solution.

The aqueous solution chemistry of arsenic that relates to hydrometallurgical processes has been extensively covered in the literature, and the use of thermodynamic stability diagrams to describe the chemistry has been widely adopted. The important oxidation states of arsenic are -3, 0, +3, and +5, and all have been utilized in some way in hydrometallurgy. The removal of arsenic from solution has relied mostly on precipitation and adsorption processes and it has been considered that arsenic(V) is the oxidation state that leads to the most effective removal by precipitation since the simple metal arsenates generally have lower solubility than the arsenites, and also arsenate is more strongly adsorbed on certain substrates, but this is pH dependent. The general assumption that arsenic(V) is more easily removed from solution, even by adsorption, is not correct. Current work has identified other compounds and also the element (formed by either cementation or electrolysis) to be appropriate low solubility materials for effective removal of arsenic from solution. Arsenic complexation in solution has had little attention, and it seems that only complexes of arsenic(V) with iron(III) have been studied to any extent. Oxidation of arsenic(III) in solution to arsenic(V), and reduction of arsenic(V) to arsenic(III) have been investigated as

part of the overall chemistry relating to hydrometallurgy. Oxidants such as air and oxygen, chlorine and hypochlorite, hydrogen peroxide, permanganate, ozone, and SO_2/O_2 have been investigated, both with and without catalysts. Photochemical oxidation of arsenic(III) to arsenic(V) is a recent innovation. The removal of arsenic from gold process solutions has been of understandable interest over the years, and has perhaps been investigated more than for other hydrometallurgical processes.

Precipitation

The insolubility of certain inorganic arsenic(V) compounds is the basis of many hydrometallurgical arsenic removal processes, and the insoluble product is often a disposal material. The most common methods of removing arsenic from aqueous process streams are by precipitation as arsenic(III) sulfide, calcium arsenate, or ferric arsenate, but it has been shown that all of these materials are unstable under certain conditions and therefore not suitable for direct disposal to uncontained sites as they will produce leachate containing arsenic.

The sulfide As_2S_3 has its lowest solubility below pH=4, but that solubility is significantly higher than has been generally accepted. The sulfide is not usually the form that is disposed in residues as it is easily oxidized and increasingly soluble above pH=4. There have been unsuccessful attempts to use As_2S_3 in landfill in which acidic-anaerobic conditions are maintained, and also in cement cast admixes. Recent work on biological formation of arsenic sulfides may have an application in treating process residues, but containment of waste material remains a problem.

There are a number of calcium arsenates that can be precipitated from arsenic(V) solutions, by lime addition to high pH. Lime addition in excess can reduce arsenic concentrations in solution to <0.01 mg/L, but those calcium arsenates which are precipitated at pH>8 are not stable with respect to the CO_2 in the atmosphere which converts them into calcium carbonate, releasing arsenic to solution in balance with appropriate cations.

Arsenic(V) can be precipitated from aqueous solutions below about pH=2 with iron(III) to form ferric arsenate, $FeAsO_4.2H_2O$, which is white to very pale green in colour. At ambient precipitation temperatures the compound is very small in crystal particle size (<10nm) and is "2-Line X-ray amorphous", but these particles tend to agglomerate to about 100nm and the material is difficult to de-water by conventional operations. At temperatures above about 90°C the precipitated compound is crystalline (>100nm) and has a solubility about 2 orders of magnitude lower than the amorphous material (this is a particle size effect). The "amorphous" ferric arsenate exhibits incongruent solubility at about pH=1 (where [As] is about 500 mg/L) and at higher pH will convert very slowly to an arsenic bearing ferrioxyhydroxide, which initially forms around the surfaces of the ferric arsenate tending to stabilize the material and colouring it yellow to brown. Crystalline ferric arsenate (*scorodite*) has an incongruent solubility point at about pH=2 and is comparatively slow to convert to the arsenic bearing ferrioxyhydroxide, and for material of larger crystal particle size this may take some years. Crystals of $FeAsO_4.2H_2O$ do not grow to appreciable size (greater than about 1 mm) as they have a relatively high positive surface potential up to the pH of the incongruent point. Ferric arsenate of either form is not thermodynamically stable in the neutral to high pH region (the rate of decomposition being related to particle size and solution composition, and being controlled by diffusion through both the reactants and the product layer). The materials may pass conventional leach tests (such as the TCLP) and are not suited for direct un-contained disposal, but perhaps would satisfy a "slow release criteria" if regulatory authorities would give this option its deserved consideration. Ferric arsenate is also not stable in alkaline cement cast admixes.

There are other metal arsenates, such as those of Fe(II), Zn(II), Cu(II) and Pb(II), which are less soluble and more stable in the neutral pH region than the calcium arsenates or ferric arsenate, but these have not been seriously considered as disposal forms. Iron(II) arsenate has particular interest as a low solubility material and this

compound has recently been the basis of a process developed and sucessfully demonstrated in a variety of applications. Barium(II) arsenate was proposed as being an extremely insoluble arsenate, but this was shown to be incorrect. More complex compounds, such as the apatite structured calcium phosphate-arsenate have recently been demonstrated to be of low solubility and of appropriate stability (including being stable to atmospheric CO_2) for disposal considerations. Ferric arsenite sulfate is also of recent interest and may prove to be useful in stabilizing arsenic(III). One of the most insoluble arsenic compounds is lead(II) chloroarsenate, $Pb_5(AsO_4)_3Cl$, (the mineral form being *mimetite*) which has been studied in detail.

Very little attention has been given to mixed oxidation state materials (both Fe(II)-Fe(III) and As(III)-As(V) combination compounds have been tentatively identified, and the author is presently involved in a comprehensive study of these systems. The Fe(II)-Fe(III) hydroxy sulfate, $Fe^{II}_4Fe^{III}_2(OH)_{12}SO_4.8H_2O$, (known as "green rust") incorporates arsenic into the structure at pH<7, and is worthy of further study.

Adsorption of Arsenic on Ferrihydrite

Over many years there has been much attention directed to the removal of arsenic from hydrometallurgical process solutions and waste waters by precipitation and coprecipitation with iron(III). At relatively high concentrations of iron(III) and arsenic(V) (> about 0.001m) and at low pH, the precipitation results in the formation of ferric arsenate, $FeAsO_4.2H_2O$, as previously mentioned. At lower concentrations of arsenic(V) and higher iron(III) concentrations (where Fe/As>1), the coprecipitation of arsenic with ferrioxihydroxide (*ferrihydrite*) which occurs is probably the most effective method of removal of arsenic from aqueous solutions, and leads to a solid phase which can be stable at least for a year or so. The solid coprecipitate has been referred to as "basic ferric arsenate", and in 1985 a controversy commenced, as to whether the coprecipitated material was in fact a compound of iron(III) and arsenic(V) or simply an adsorptive binding of arsenic with ferrioxyhydroxide (*ferrihydrite*). There was even at that stage sufficient evidence to support the latter contention, but the use of the term "basic ferric arsenate" still exists and formulae such as "$FeAsO_4.xFe(OH)_3$" are used.

A number of studies have indicated that various complexes are formed in the adsorption of As(V) on ferrihydrite. EXAFS studies on arsenic bearing ferrihydrite formed at pH>7, have shown that arsenic(V) is adsorbed to ferrihydrite as a strongly bonded inner-sphere complex with either monodentate or bidentate attachment. It has also been reported that monodentate attachment predominates near the optimal pH=4-5 for adsorption.

The adsorption of arsenic(III) on ferrihydrite has also been investigated, but the optimal adsorption in this case occurs at pH 8-9, and although it seems an efficient process there is no evidence that the adsorbed species is in fact arsenic(III). It may be that during the process, oxidation of arsenic(III) will occur at the surface with some ease, being balanced by the reduction of Fe(III) to Fe(II) in the ferrihydrite structure, as has been shown in preliminary experiments by the author. It is well known that Fe(II) substitution in ferrihydrite does occur. Currently there is an investigation of the adsorption of As(III)-As(V) mixtures on ferrihydrite. Very little attention has been given to the possibility of modifying the ferrihydrite structure to improve its adsorptive capacity for arsenic in solution. It is well known that many cations will incorporate into the *goethite* structure, and therefore possibly into a precursor ferrihydrite. The author is aware of current work investigating the coprecipitation of both Al(III) and Mn(III) with Fe(III) to form an aluminic ferrihydrite and a manganic ferrihydrite respectively. Both materials are showing considerably better capacity for arsenic adsorption. The control of potential is important in this adsorption process. The effective oxidation of As(III) by manganese substituted goethite has been studied by XANES spectroscopy, and the implications are obvious in relation to adsorption mechanisms. There is little work reported on the adsorption of arsenic from solutions initially below say 50 µg/kg. This region of concentration is presently of immediate interest in relation to drinking water, where US EPA announced a new standard of 5 ppb (5 µg/kg) for the maximum level allowed (January 2001). However the scheduled effective date for applying this new rule has been delayed from 23 March to 22 May 2001.

Many substrates, other than ferrioxihydroxide, have been investigated and used commercially for removing arsenic from solution by adsorption. Some of these have shown excellent adsorptive capacity, but here there is not the scope for any details. Of personal interest is "adsorption" on sulfide minerals and titanium oxyhydroxide.

Cementation

It is well known that iron and other metals will replace arsenic from solution to produce arsenic as the element or as an alloy. This method of removing arsenic from solution to levels <2 µg/kg has been demonstrated on ground water at a commercial site in California at a pilot scale of 1-5 US gallons per minute. Cementation has also been suggested, demonstrated, and may be appropriate, for the removal of arsenic from drinking water.

Testing for Long Term Stability

Testing methods for evaluating the stability of hazardous waste residues have been defined by the US EPA in several "Background Document for Toxicity Characteristic Leaching Procedure" publications. The test methods do not adequately assess the long term stability of arsenical residues. Improved test methods must be designed which also include a characterization of physical properties and chemical components (mineralogy) so that predictions of behavior can be made.

Thermodynamic Modelling

The stability of arsenic species can be characterized by their standard free energies of formation ($\Delta_f G^0$). Many of the papers referenced in the e-mail version of this paper have free energy of formation data for arsenic species which have been invaluable to the author in producing thermodynamic stability diagrams to gain a better understanding of arsenic systems. None of the reputable thermodynamic databases have significant relevant data, but there are a number of publications where reasonable data can be obtained, and it is likely that these data will be evaluated and a compilation produced in the near future.

Conclusions

There have not been any significant and innovative improvements in the methods for removing arsenic from process and effluent solutions, or for stabilizing sludges and residues, in the last decade or so. The current needs to remove arsenic from drinking water it seems is now a world problem, and so that too must be addressed.

References

This paper is available with references from bobrobins@bigpond.com.au.

Some Chemical Aspects of Arsenic Remedial Technologies

BOB ROBINS . . . . . AMSCI

OUTLINE:

BRIEF MENTION OF HYDROMETALLURGICAL UNIT PROCESSES

SOME DETAIL OF PRECIPITATION AND ADSORPTION PROCESSES

- **PRECIPITATION OF ARSENIC SULFIDE As_2S_3**
- **PRECIPITATIOM OF CALCIUM ARSENATES $CaHAsO_4$ etc.**
- **PRECIPITATION OF FERRIC ARSENATE $FeAsO_4.2H_2O$**
- **PRECIPITATION OF OTHER INSOLUBLE COMPOUNDS**
- **ADSORPTION ON FERRIHYDRITE AND OTHER MATERIALS**

THERMODYNAMIC MODELING & STABILITY TESTING

Arsenic Geochemistry: Overview of an Underhanded Element

D. Kirk Nordstrom
U.S. Geological Survey
3215 Marine St., Boulder, CO 80303
T: 303-541-3037, F: 303-447-2505, E: dkn@usgs.gov

Arsenic is 38th in cosmic abundance but only about 52nd in earth and crustal abundance. The formation of the earth apparently discriminated against arsenic. In the ocean, however, it is 26th in abundance, suggesting accumulation in seawater over geologic time. Arsenic is preferentially concentrated in shales relative to other major rock types. Partitioning into shales reflects the strong adsorption tendency of arsenic for clay minerals. During high-temperature processes, arsenic can be expelled from sediments and volcanics and concentrated in the fluid phase, especially at low porosity. This phenomenon may explain high arsenic in hydrothermal fluids and their ore deposits.

The geochemical cycle of arsenic from magmatic-hydrothermal processes through weathering, sedimentation, and diagenesis transforms the element and produces an array of natural sources. Probably the single most abundant mineral source of arsenic is arsenian pyrite. Pyrite is ubiquitous in the earth's crust and arsenic has a strong affinity for the sulfur site in pyrite, substituting up to about 10wt. %. Arsenopyrite contains higher concentrations of arsenic (39-53%) but is a much rarer mineral. Other arsenic-rich minerals include orpiment, realgar, and enargite. Weathering of these minerals in oxidizing environments solubilizes arsenic as As^{III} and ultimately as As^{V}. Arsenate, or As^{V}, has a strong adsorption affinity for hydrated iron oxides and in oxidized sediments iron oxides can be a source of soluble arsenic if they undergo reductive dissolution during early diagenesis. Geothermal springs are commonly enriched in arsenic, containing 0.1-5 mg/L dissolved arsenic as both As^{III} and As^{V}.

Arsenic concentrations in ground waters can range from less than a few μg/L to tens or even hundreds of mg/L in locally contaminated environments. Both anthropogenic and natural sources for arsenic in ground waters occur in many locations world-wide. Natural sources cause or have caused poisoning of populations in India, Bangladesh, Chile, Argentina, Mexico, Taiwan, Mongolia, Japan, and China. Mining activities are responsible for arsenic poisoning in Thailand. Arsenic mass poisoning in Bangladesh is the largest known, affecting nearly 30 million people.

The primary source of industrial and commercial arsenic was arsenic trioxide, produced as a by-product of metal mining and processing. Stockpiles still exist and are releasing soluble arsenic to ground waters. Several arsenic insecticides, herbicides, dessicants, wood preservatives, animal feed additives, drugs, chemical weapons, and alloys were produced for many years and sites are contaminated from these industries and their applications. Roxarsone, an organic arsenical, is still widely used today to clean parasites out from the stomachs of pigs and poultry.

Arsenic in surface and ground waters occur dominantly as either arsenite, As(III), or arsenate, As(V). Reduction of arsenic can produce methylated forms of arsenic. Several microorganisms, including species of fungi, algae, and bacteria, catalyze the reduction of arsenic. Oxidation of As(III) is also catalyzed by microbes and it has been demonstrated that soluble As(III) and arsenic sulfide minerals such as arsenopyrite and orpiment can be catalytically oxidized to soluble As(V).

APPENDIX C

Envirocorp Phase II Investigation

C-1

Boring Logs from Envirocorp's Phase II Site Assessment

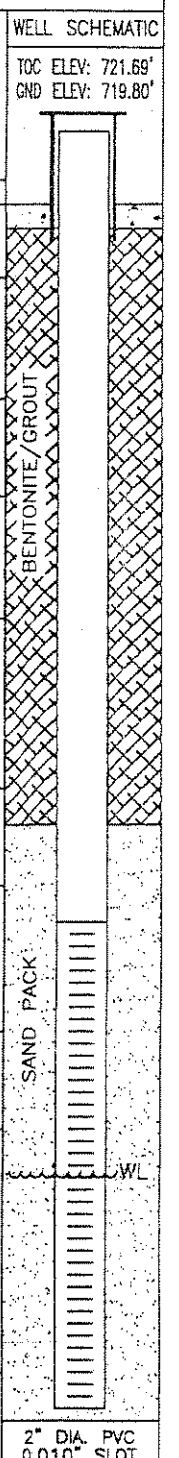
ENVIROCORP®

WELL LOG

DATE: 9/30/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

TE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: MW-9	GROUNDWATER ELEVATION: 699.95'		DRILLING METHOD: HSA

DEPTH (FEET)	SAMPLE TYPE	BLOW COUNT	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0					
1					FILL, RUBBLE, BRICK
2	SS	7-10 13-15	SW		BROWN, FINE TO COARSE SAND
3					
4	SS	6-7 7-8			RED, FINE SAND
5					
6					
7	SS	3-6 7-7			RED, FINE TO MEDIUM SAND
8					
9	SS	7-5 5-10			
10			SP		LIGHT BROWN/WHITE, FINE TO MEDIUM SAND WITH ORGANIC CLAY AT 10'
11					
12					
13					RED, FINE SAND
14	SS	5-8 15-10			
15					LIGHT BROWN, FINE SAND, TRACE MEDIUM SAND
16					
17					
18			SW		BROWN, FINE TO COARSE SAND, TRACE COARSE GRAVEL
19	SS	8-11 13-8			
20					
21			SP		BROWN, FINE TO MEDIUM SAND. WET AT 19'
22					
23					
24					
25					
26					
27					
28					
29					
30					



SS 2' SPLIT SPOON
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

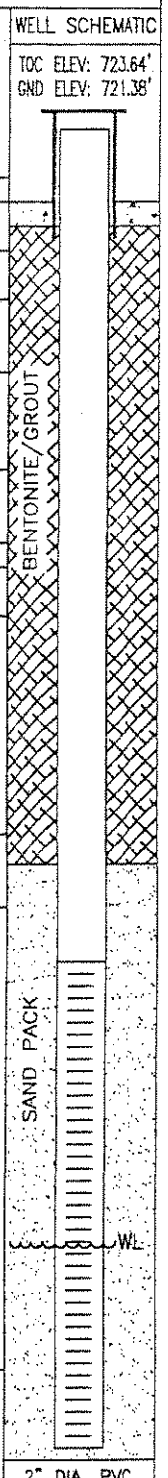
WELL LOG

DATE: 9/30/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

TE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: MW-8	GROUNDWATER ELEVATION: 700.06'		DRILLING METHOD: HSA

DEPTH (FEET)	SAMPLE TYPE	BLOW COUNT	LETTER SYMBOL	SOIL DESCRIPTION
0-1			SW	BLACK STAINED SOIL
1-2	SS	4-1 6-8	SM	RED, FINE, SILTY SAND
2-3			SP	RED, FINE SAND
3-4				
4-5	SS	4-8 9-9		BLACK STAINED SOIL, SLAG, COAL
5-6				
6-7	SS	3-3 4-4		LIGHT BROWN, FINE SAND
7-8			SM	BROWN, SILTY SAND
8			SP	BROWN, FINE SAND
9-10	SS	5-6 7-7	SW	BROWN, FINE TO MEDIUM SAND, TRACE COARSE SAND
10-13				
13-14	SS	9-12 16-18		BROWN, FINE TO COARSE SAND, TRACE FINE GRAVEL
14-19			SP	FINE, BROWN SAND. WET AT 19'
19-20	SS	4-7 8-6		
20-30				

WELL SCHEMATIC



SS 2' SPLIT SPOON
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

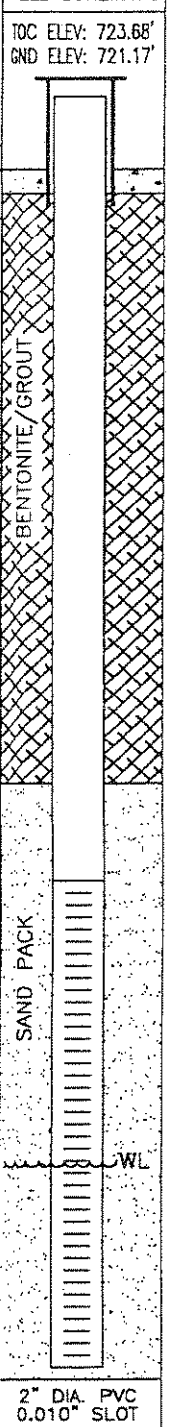
WELL LOG

DATE: 9/29/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

TE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: MW-7	GROUNDWATER ELEVATION: 700.73'		DRILLING METHOD: HSA

DEPTH (FEET)	SAMPLE TYPE	BLOW COUNT	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0					CONCRETE
1	SS	6-5			NO RECOVERY
2		6-7			
3			SP		BROWN, FINE SAND
4	SS	5-7			
5		4-6			
6					
7	SS	4-4	SW		LIGHT BROWN, FINE TO MEDIUM SAND, TRACE FINE GRAVEL
8		5-5			
9			SM		RED, SILTY SAND
10			SW		LIGHT BROWN/WHITE, FINE TO MEDIUM SAND, TRACE COARSE SAND
11					
12					
13					
14	SS	6-12			
15		15-18			
16			SP		FINE, BROWN SAND
17					
18					
19			SW		BROWN, MEDIUM TO COARSE SAND, TRACE FINE SAND, FINE GRAVEL. WET AT 19'
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

WELL SCHEMATIC



SS 2' SPLIT SPOON
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

WELL LOG

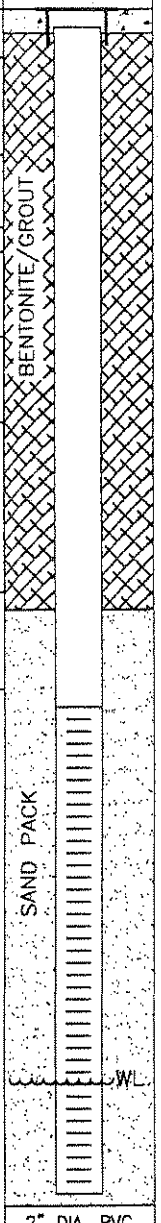
DATE: 9/31/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: MW-6	GROUNDWATER ELEVATION: 700.29'		DRILLING METHOD: HSA

DEPTH (FEET)	SAMPLE TYPE	BLOW COUNT	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0					CONCRETE
1	SS	6-9	SP		RED, FINE SAND
2		14-14			
3					BROWN, FINE SAND, TRACE MEDIUM GRAVEL
4	SS	3-3			
5		3-3	SM		RED, SILTY SAND
6			SW		DARK BROWN, FINE TO COARSE SAND
7	SS	3-3			LIGHT BROWN, FINE TO COARSE SAND
8		3-3			
9	SS	5-5	SP		LIGHT BROWN, FINE TO MEDIUM SAND
10		6-5			
11					
12					BROWN, FINE SAND
13					
14	SS	11-16	SW		BROWN, FINE TO COARSE SAND AND GRAVEL. WET AT 20'
15		18-22			
16					
17					
18					
19	SS	12-16			
20		17-17			
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

WELL SCHEMATIC

TOC ELEV: 721.78'
GND ELEV: 722.35'



SS 2' SPLIT SPOON
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

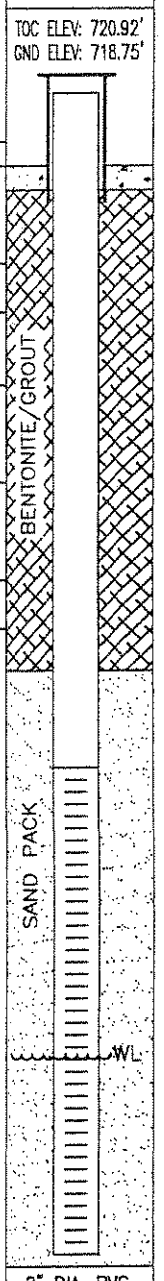
WELL LOG

DATE: 10/1/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

TE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: MW-5	GROUNDWATER ELEVATION: 700.54'		DRILLING METHOD: HSA

DEPTH (FEET)	SAMPLE TYPE	BLOW COUNT	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0-1					BLACK STAINED SAND, FOUNDRY SAND, COAL
2-3			SP		BROWN, FINE TO MEDIUM SAND
4	SS	6-6 8-5	ML		BROWN SILT
5-6			SP		LIGHT BROWN, FINE SAND
7	SS	5-7 10-8	SM		BROWN, SILTY SAND
8					
9	SS	4-6 19-24			LIGHT BROWN, CLAYEY, FINE SAND
10-13			SW		LIGHT BROWN, FINE TO COARSE SAND AND GRAVEL. WET AT 18'
14	SS	19-35 34-42			
15-18					
19	SS	11-21 31-42			
20-30					

WELL SCHEMATIC



SS 2' SPLIT SPOON
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

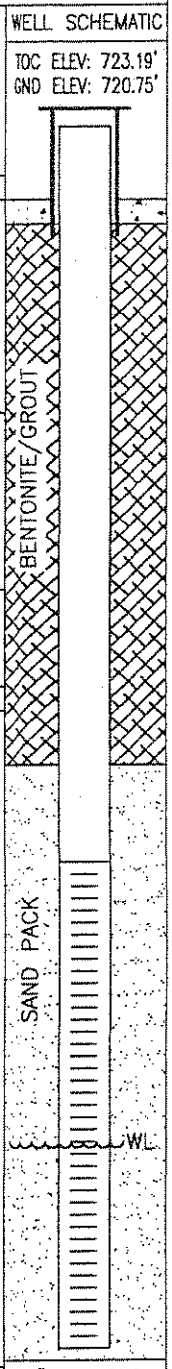
ENVIROCORP®

WELL LOG

DATE: 9/30/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: MW-4	GROUNDWATER ELEVATION: 701.40'		DRILLING METHOD: HSA

DEPTH (FEET)	SAMPLE TYPE	BLOW COUNT	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0					
1	SS	24-33	SP		BLACK STAINED, FINE SAND WITH COAL, SLAG, FOUNDRY SAND
2		30-30			
3					
4	SS	38-42			
5		36-50			BLACK STAINED, FINE SAND WITH SIGNIFICANT AMOUNTS OF FOUNDRY SAND, SLAG, COAL
6					
7	SS	40-25			
8		10-10			
9			SW		BLACK STAINED, FINE TO COARSE SAND. WET AT APPX. 10'
10	SS	5-3	CL		BLACK STAINED CLAY
11		4-4	SW		LIGHT BROWN, MEDIUM TO COARSE SAND, SOME FINE GRAVEL, FINE SAND WET AT 19'
12					
13					
14	SS	12-15			
15		17-20			
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					



SS 2' SPLIT SPOON
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

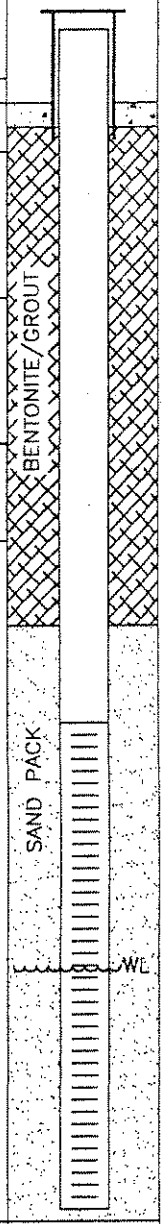
WELL LOG

DATE: 9/29/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: MW-3	GROUNDWATER ELEVATION: 700.62'		DRILLING METHOD: HSA

DEPTH (FEET)	SAMPLE TYPE	BLOW COUNT	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0					
1					LOAM (TOPSOIL)
2	SS	5-7 9-7	SP		BROWN, FINE SAND, TRACE COARSE SAND
3					
4	SS	4-4 6-6			
5					LIGHT RED, FINE SAND
6					
7	SS	7-10 14-16			
8					BROWN, FINE TO MEDIUM SAND
9			SW		
10					
11					
12					
13					
14	SS	5-9 10-10			
15					
16					LIGHT BROWN, FINE TO COARSE SAND, TRACE FINE GRAVEL. WET AT 17'
17					
18					
19	SS	10-12 14-17			
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

WELL SCHEMATIC



SS 2' SPLIT SPOON
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

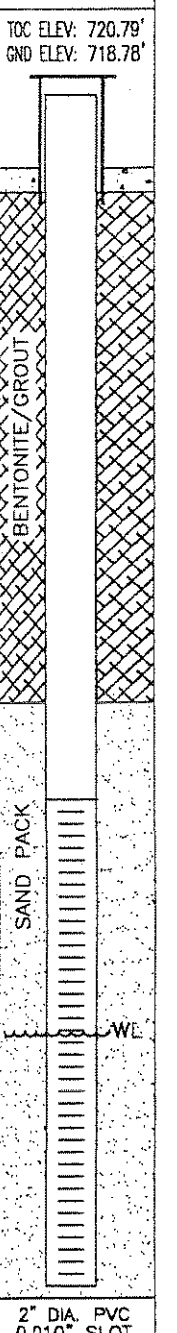
WELL LOG

DATE: 9/29/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

ITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: MW-2	GROUNDWATER ELEVATION: 701.01'		DRILLING METHOD: HSA

DEPTH (FEET)	SAMPLE TYPE	BLOW COUNT	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0					
1					FILL – COAL DEBRIS
2	SS	4–5 5–8			
3					
4	SS	6–5 6–7	SP		BROWN, FINE SAND
5					
6					
7	SS	5–6 5–6			BROWN, FINE TO MEDIUM SAND
8					
9	SS	8–12 16–18			
10			SW		LIGHT BROWN, FINE TO COARSE SAND, TRACE FINE GRAVEL
11					
12					
13					
14	SS	8–12 16–18			LIGHT BROWN, VERY FINE TO FINE SAND
15					
16					
17					
18			SP		BROWN, MEDIUM TO COARSE SAND AND GRAVEL
19	SS	8–9 12–14			
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					

WELL SCHEMATIC



SS 2' SPLIT SPOON
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

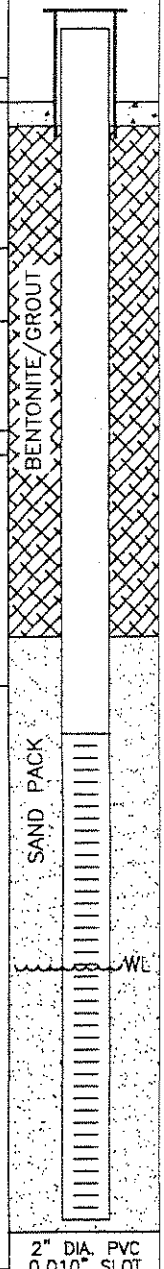
WELL LOG

DATE: 9/29/99
PROJECT NO.: 8OZ2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: MW-1	GROUNDWATER ELEVATION: 701.71'		DRILLING METHOD: HSA

DEPTH (FEET)	SAMPLE TYPE	BLOW COUNT	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0-2	SS	6-8 14-19			FILL - SLAG, FOUNDRY SAND
3-4	SS	4-3 3-4	SM		RED, SILTY SAND
5-6			SP		LIGHT BROWN, FINE SAND
6-7	SS	5-5 6-6	SM		RED, SILTY SAND
8-12			SW		RED/WHITE, FINE TO COARSE SAND
13-24	SS	10-12 16-18	SW		LIGHT YELLOW, FINE TO COARSE SAND. WET AT 19'

WELL SCHEMATIC



SS 2' SPLIT SPOON
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/24/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-33		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1			240		FILL	FILL (TRASH, WOOD FRAGMENTS)
2	S	75				
3			26			RED/WHITE, FINE TO VERY FINE SAND
4						
5			12			
6	S	65		SP		
7			7			BROWN/WHITE, FINE SAND
8						
9			24			
10	S	60		SC		GRAY, SANDY CLAY, DAMP
11			8	SP		WHITE, FINE TO MEDIUM SAND
12						
13			30			
14	S	50		SW		WHITE, FINE TO VERY COARSE SAND, TRACE FINE GRAVEL
15			8			
16						END OF BORING – 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/24/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

ITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-32		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0					LOAM	BLACK LOAM
1			8			
2	S	65				BLACK STAINED, FINE SAND, TRACE SMALL GRAVEL
3			24			
4						BROWN, FINE SAND
5			7	SP		BROWN, FINE TO MEDIUM SAND
6	S	70				
7			6			BROWN/WHITE, FINE TO MEDIUM SAND
8						
9			8			BROWN, FINE TO COARSE SAND
10	S	70				
11			6			
12				SW		
13			8			WHITE, FINE TO COARSE SAND, TRACE FINE GRAVEL. WET AT 14'
14	S	60				
15			7			
16						END OF BORING – 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/24/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-31		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1	S	75	8		LOAM	BLACK LOAM
2				SP		BROWN, FINE SAND
3			7			
4						
5	S	65	4	SW		REDDISH BROWN, FINE SAND, TRACE COARSE SAND
6						
7			6			
8						
9	S	85	5			WHITE, FINE TO COARSE SAND
10				SP		BROWN, FINE SAND. MOIST
11			7			
12				SW		WHITE, FINE TO COARSE SAND. DRY. TRACE CLAY AT 14'-14.5'. SOME FINE GRAVEL AT 14.5'-16'
13	S	75	6			
14						
15			6			
16						END OF BORING - 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/22/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-30		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1			3			CONCRETE
2	S	50		SP		LIGHT BROWN, FINE SAND
3			3			
4						
5			7	SP SW		DARK RED, FINE TO MEDIUM FOUNDRY SAND
6	S	70				
7			12	SM		LIGHT BROWN, SILTY SAND
8						BROWN, FINE SAND
9			8			
10	S	70		SP		BROWN AND WHITE, FINE SAND
11			9			
12						BROWN, FINE TO MEDIUM SAND
13			8			
14	S	80		SW		BROWN, FINE TO COARSE SAND AND GRAVEL
15			10	SP		WHITE, FINE SAND, TRACE FINE GRAVEL
16						END OF BORING - 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS
WT WATER TABLE
TD TOTAL DEPTH
LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/22/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-29		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1			6			CONCRETE
2	S	60		SP		BROWN, FINE SAND
3			3			
4						
5			6	SP SW		BLACK/DARK BROWN STAINED FOUNDRY SAND WITH GRAY MOTTLING
6	S	50				
7			6			LIGHT BROWN, FINE SAND, TRACE SILT
8						
9			3			
10	S	75				
11			8	SP		LIGHT BROWN, FINE TO VERY FINE SAND
12						
13			4			
14	S	70				
15			6			BROWN, FINE TO MEDIUM SAND. WET AT 14'
16						END OF BORING – 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS
WT WATER TABLE
TD TOTAL DEPTH
LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/22/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-28		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1			6			CONCRETE
2	S	85		SW		BLACK STAINED, RED, FINE TO COARSE SAND
3			4			CONCRETE
4						
5	S	85	3			BROWN, FINE SAND, TRACE SILT
6						
7			4			
8						LIGHT BROWN/RED, FINE SAND
9	S	45	3	SP		
10						
11			5			LIGHT BROWN, FINE TO MEDIUM SAND. MOIST 12'-14'. (EVIDENCE OF FILL FROM 12'-13')
12						
13	S	30	4			
14						
15			4			WHITE, FINE TO MEDIUM SAND. WET
16						END OF BORING - 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS
WT WATER TABLE
TD TOTAL DEPTH
LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/22/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

ITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-27		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1			–			CONCRETE
2	S	10			NO RECOV	NO RECOVERY
3			3			
4				SP		DARK BLACK STAINED, FINE SAND WITH RED FINE SAND (POSSIBLE FILL FROM 4'–5')
5			4			
6	S	60		SM		DARK BROWN, SILTY SAND
7			4			LIGHT BROWN, FINE SAND
8						
9			7			BLACK STAINED, FINE SAND, TRACE COAL – FILL
10	S	75				LIGHT BROWN, FINE SAND
11			6	SP		
12						
13			6			WHITE, FINE SAND. WET AT 15'
14	S	75				
15			2			
16						END OF BORING – 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS
WT WATER TABLE
TD TOTAL DEPTH
LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/23/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

ITE/COMPANY: FORMER OLIVER PLOW | STATE: INDIANA | COUNTY: ST. JOSEPH | CITY: SOUTH BEND

BORING NO./LOCATION: OP-26 | DRILLING METHOD: GEOPROBE

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1	S	60	8		LOAM AND FILL	TOPSOIL (LOAM), FILL MATERIAL, COAL FRAGMENTS
2						
3			5			
4				SM		BROWN, SILTY SAND
5	S	70	6			
6						
7			6			
8				SW		BROWN AND WHITE, FINE SAND, TRACE COARSE SAND AND FINE GRAVEL
9	S	70	8			
10						
11			8			
12				SP		BROWN, FINE SAND
13			6			
14	S	60				
15			7	SW		BROWN, FINE TO COARSE SAND. MOIST AT 15'
16				GW		FINE TO COARSE GRAVEL AND VERY COARSE SAND. WET
17			7			
18	S	50		SW		BROWN, FINE TO COARSE SAND. WET
19			–			
20						END OF BORING – 20'
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/23/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

TE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-25		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0					LOAM	BLACK LOAM
1			5			
2	S	70		SP		BLACK STAINED, FINE SAND
3			11			
4						
5			7			BROWN, FINE TO MEDIUM SAND
6	S	40				
7			8			
8						
9			8			
10	S	50		SW		BROWN, FINE TO COARSE SAND
11			7			
12						
13			9			
14	S	75		SP		BROWN, FINE SAND
15			10			
16						
17			10	SW		BROWN, FINE TO COARSE SAND, TRACE FINE GRAVEL
18	S	60				
19			20			
20						END OF BORING – 20'
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/23/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-24		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1			8			
2	S	40				
3			7	SP		RED/BROWN, FINE SAND
4						
5			8			
6	S	50				
7			8			
8						
9			11	SW		BLACK LOAM, FILL MATERIAL, COAL FRAGMENTS
10	S	70				
11			7			
12						
13			35	SP		BLACK, OILY, FINE SAND. STRONG PETROLEUM ODOR
14	S	50				
15			–			END OF BORING – REFUSAL AT 14' – CONCRETE
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE–GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE–GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL–GRADED GRAVELS AND GRAVEL–SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL–SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL–SAND–SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL–SAND–CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL–GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND–SILT MIXTURES
				SC	CLAYEY SANDS, SAND–CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/23/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-23		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1	S	50	9	SP		BROWN, FINE SAND
2						
3			10			
4						
5	S	50	9			
6						
7			8			DARK BROWN, FINE SAND
8						
9	S	60	10			
10						
11			10			
12						BLACK STAINED SAND. STRONG PETROLEUM/FUEL OIL SMELL
13	S	25	115			
14						END OF BORING – REFUSAL AT 14' – CONCRETE
15			–			
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/23/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-22		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1			7			
2	S	50				WHITE/RED, FINE SAND
3			7			
4						
5			3			
6	S	60		SP		LAYERED, WHITE/RED, FINE SAND
7			8			
8						
9			13			
10	S	60				DARK BROWN, FINE SAND, TRACE FINE GRAVEL
11			12			
12						BLACK STAINED, FINE SAND
				GP		COARSE GRAVEL
13			20			END OF BORING – REFUSAL AT 13' – CONCRETE
14	S	10				
15			–			
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/23/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-21		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1			0			RED, FINE SAND
2	S	60				
3			12	SP		DARK BROWN, FINE SAND, TRACE COAL AND SLAG
4						
5			11			
6	S	60				BLACK STAINED, FINE SAND. OILY
						UNKNOWN, WHITE MATERIAL
7			7			BLACK STAINED, FINE SAND. PETROLEUM ODOR
8						
9			16			
10	S	60				
11			14	SP		BLACK STAINED, FINE SAND. OILY AT 7.25'. WET AT 11'
12						
13			4			
14	S	10				
15			–			END OF BORING – REFUSAL AT 14.5'
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS
WT WATER TABLE
TD TOTAL DEPTH
LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/23/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

TE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-20		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						ASPHALT
1			11	SP		BROWN, FINE SAND. STAINED BLACK AT 2.5'
2	S	68				
3			13			
4						GRAY, COARSE SAND
5			9			BROWN, FINE SAND
6	S	75				
7			9			
8						
9			7	SW		BROWN, FINE TO COARSE SAND
10	S	75				
11			5	SP		WHITE AND BROWN, FINE TO MEDIUM SAND
12						
13			11			
14	S	75				
15			8			
16						END OF BORING – 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/23/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

TE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-19		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1			2			COAL DUST/BLACK STAINED SOIL
2	S			SP		BROWN, FINE SAND WITH RUBBLE
3			7			
4				SM		BROWN, SILTY SAND
5			6			LIGHT BROWN, FINE SAND
6	S					RED, FINE SAND. MOIST
7			2			WHITE, FINE TO MEDIUM SAND
8						
9			3			
10	S			SP		RED, FINE TO MEDIUM SAND
11			3			
12						
13			6			
14	S					WHITE, FINE TO MEDIUM SAND
15			2			
16						END OF BORING – 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
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28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/23/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

TE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-18		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1			3			BLACK STAINED SOIL
2	S			SM		RED, SILTY SAND
3			2			
4						RED, FINE SAND
5			2			
6	S					RED/WHITE, FINE SAND
7			3			
8						BROWN, FINE TO MEDIUM SAND
9			3	SP		
10	S					
11			4			
12						
13			5			WHITE, FINE TO MEDIUM SAND. BLACK STAINED LAYER AT 10'-10.1'. MOIST AT 15'
14	S					
15			1			
16						END OF BORING - 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/23/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

ITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-17		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1						RUBBLE
1			17			
2	S	75		SM		BROWN, SILTY SAND
3			10			
4						
5			9			
6	S	70		SP		RED, FINE SAND
7			3			
8						
9			13			
9				SW		WHITE, FINE TO COARSE SAND
10	S	65				
11			7			
12						
13			10	SP		WHITE, FINE TO MEDIUM SAND. DAMP AT 12', WET AT 15.5'
14	S	65				
15			17			
16						END OF BORING – 16'
17						
18						
19						
20						
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22						
23						
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25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/23/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

E/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-16		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1			9			DARK BROWN, SILTY SAND
2	S	50		SM		
3			6			LIGHT BROWN, SILTY SAND
4						
5			8			
6	S	40				LIGHT RED AND WHITE, FINE SAND
7			7			
8						
9			6			
10	S	70		SP		
11			3			
12						
13			11			
14	S	50				WHITE, FINE SAND
15			6			
16						END OF BORING – 16'
17						
18						
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26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/23/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-15		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1						CONCRETE
2	S	30	2	SM		BROWN, SILTY SAND
3			7			
4						
5			6			
6	S	60				
7			7	SP		BROWN, FINE SAND
8						
9			8			
10	S	60				
11			3			WHITE, FINE TO MEDIUM SAND, TRACE COARSE SAND
12				SW		
13			7			WHITE, FINE TO COARSE SAND
14	S	60				
15			7	SP		WHITE, FINE SAND
16						END OF BORING – 16'
17						
18						
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26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS
WT WATER TABLE
TD TOTAL DEPTH
LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/22/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

TE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-14		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1						CONCRETE
2	S	25	8	SP		BLACK STAINED, FINE TO MEDIUM SAND AND GRAVEL
3			9			
4						
5			22			BLACK STAINED, FINE SAND WITH CRUSHED ROCKS
6	S	65				
7			30	SM		BROWN, SILTY SAND
8						
9			17			BROWN, SILTY SAND WITH SIGNIFICANT COAL FRAGMENTS
10	S	75				BROWN, SILTY SAND
11			7			COAL FRAGMENTS
12						
13			11	SP		LIGHT BROWN, FINE SAND. DAMP AT 12'
14	S	75				
15			8			
16						END OF BORING — 16'
17						
18						
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27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/22/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

ITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-13		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1						REFUSAL – CONCRETE 3'–4' THICK – NO BORING
2						
3						
4						
5						
6						
7						
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30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/22/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

TE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-12		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1						REFUSAL – CONCRETE 3'–4' THICK – NO BORING
2						
3						
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S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/22/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

TE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-11		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1	S	70	4	SP		BROWN, FINE SAND AND BLACK STAINED FILL - CLAY TILE, COAL, ETC.
2						
3			12			
4	S	85	7			
5						
6						
7			6	SM		BROWN, FINE SAND, TRACE SILT
8	S	40	4	SP		BROWN/RED, FINE SAND BLACK STAINED, FINE TO MEDIUM SAND
9						
10			6			WHITE, FINE SAND
11						
12	S	70	8			
13						BLACK STAINED, FINE TO MEDIUM SAND
14						
15			10	SW		BROWN, FINE TO MEDIUM SAND AND GRAVEL. WET
16						END OF BORING - 16'
17						
18						
19						
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21						
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23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS
WT WATER TABLE
TD TOTAL DEPTH
LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/22/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-10		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0					LOAM	BLACK LOAM, TOPSOIL
1			2			
2	S	65		SP		LIGHT RED, FINE SAND, TRACE SILT
3			27			DARK RED, FINE SAND, SOME COARSE SAND
4						
5			22	SW		BROWN, FINE TO MEDIUM SAND. BLACK STAINED AT 5'-5.25'
6	S	95				
7			8			
8				SM		LIGHT BROWN, SILTY SAND
9			7			
10	S	50				
11			6			BROWN, FINE TO COARSE SAND, TRACE FINE GRAVEL
12						
13			9	SW		
14	S	80				WHITE, FINE TO COARSE SAND AND GRAVEL
15			5			
16						END OF BORING - 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/22/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-9		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1			14			CONCRETE
2	S	25			FILL	FILL – COAL, SAND, ETC.
3			9			
4				SM		RED, SILTY SAND
5			8			
6	S	65		SP		RED, FINE SAND
7			4			
8						
9			5		FILL	FILL MATERIAL – COAL DUST, ETC.
10	S	90		SP		RED, FINE SAND
11			2			
12						LIGHT BROWN, FINE TO MEDIUM SAND
13			5			
14	S	90		SW		WHITE, FINE TO COARSE SAND
15			3			
16						
17			5	SP		WHITE, FINE SAND
18	S	90				BLACK STAINED, FINE SAND, METAL SCALE
19			4			
20				SW		WHITE, FINE TO COARSE SAND AND GRAVEL. WET
						END OF BORING – 20'
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS
WT WATER TABLE
TD TOTAL DEPTH
LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/22/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

ITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-8		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0					LOAM	TOPSOIL/BLACK LOAM
1			7			
2	S	50		SW		BROWN, FINE TO MEDIUM SAND, TRACE SILT
3			7			
4						
5			7			
6	S	75		SP		LIGHT BROWN, FINE SAND, TRACE MEDIUM SAND
7			6			
8				SW		RED, FINE SAND, TRACE FINE GRAVEL
9			7			
10	S	75		SP		WHITE, FINE SAND
11			4			
12						
13			4	SW		WHITE, FINE TO COARSE SAND
14	S	50				
15			6			
16						END OF BORING – 16'
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28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/22/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-7		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1					LOAM	BLACK LOAM, TOPSOIL
2	S	50	7	SP		BROWN, FINE SAND. SOME RED PAINT STAINS
3			6			
4						
5	S	75	11	ML		BLACK STAINED, FINE SAND
6						RED, SANDY SILT
7			3	SP		BROWN, FINE SAND
8						
9	S	65	9			
10						
11			3			
12						
13	S	75	5	SW		DARK BROWN, FINE SAND, TRACE FINE GRAVEL
14						
15			3			BROWN, FINE TO COARSE SAND AND GRAVEL
16						END OF BORING – 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/22/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-6		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1			2			BROWN, FINE SAND, MEDIUM GRAVEL
2	S	40				
3			2			ROCKS AND CONCRETE FRAGMENTS
4						
5			5			
6	S	60		SP		RED, FINE SAND
7			3			
8						
9			5	SW		BLACK STAINED SOIL/RUBBLE
10	S	75				
11			2			
12						
13			2	SP		BROWN, FINE SAND. MOIST
14	S	75				
15			2			
16						END OF BORING — 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS

WT WATER TABLE
TD TOTAL DEPTH

LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/22/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-5		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1	S	0	1			CONCRETE AND SAND
2						
3			1			
4						
5	S	50	5	SP		RED, FINE SAND
6						
7			4			
8						
9	S	70	7			WHITE, FINE SAND
10						RED, FINE SAND
11			4			
12						
13	S	75	4			BROWN, FINE TO MEDIUM SAND
14						
15			4			
16						END OF BORING – 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS
WT WATER TABLE
TD TOTAL DEPTH
LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/22/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-4		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1			7		LOAM	BLACK TOPSOIL AND BLACK STAINED SAND
2	S	60				
3			3			
4						
5			5			RED AND WHITE, FINE SAND
6	S	70				
7			8			
8						
9			5	SP		BLACK, FINE SAND AND BUILDING DEBRIS
10	S	60				
11			8			
12						
13			5			LIGHT BROWN, FINE SAND
14	S	50				
15			7			
16						END OF BORING – 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS
WT WATER TABLE
TD TOTAL DEPTH
LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/22/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-3		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1	S	75	16			BLACK LOAM, TOP SOIL
2				SM		REDDISH BROWN, SILTY SAND
3			9	SP		BROWN, FINE SAND
4				SM		BROWN, SILTY SAND
5	S	75	7	SP		BROWN, FINE SAND
6						
7			7			
8						
9	S	60	7			BLACK STAINED, FINE SAND, BUILDING DEBRIS
10						
11			5			
12						
13	S	50	7			LIGHT BROWN, FINE SAND
14						
15			7			
16						END OF BORING – 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS
WT WATER TABLE
TD TOTAL DEPTH
LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/24/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

SITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-2		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1			1			
2	S	15			FILL	FILL – RUBBLE, BRICK, CONCRETE
3			11			
4						
5			8			FINE SAND, OILY WITH WOOD PIECES
6	S	60				
7			10			RED, FINE SAND
8						
9			11			WHITE, FINE SAND. MOIST
10	S	70		SP		
11			10			RED/WHITE, FINE SAND. MOIST
12						
13			12			BROWN, FINE SAND, SOME BLACK STAINS
14	S	70				
15			9			BROWN, FINE TO MEDIUM SAND
16						END OF BORING – 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS
WT WATER TABLE
TD TOTAL DEPTH
LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS 50% OR MORE PASSES No. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON No. 200 SIEVE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE	CLEAN GRAVELS LITTLE OR NO FINES		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES APPRECIABLE AMOUNT OF FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE	CLEAN SANDS LITTLE OR NO FINES		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES APPRECIABLE AMOUNT OF FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

ENVIROCORP®

BORING LOG

DATE: 9/24/99
PROJECT NO.: 80Z2110
LOGGED BY: MAF

ITE/COMPANY: FORMER OLIVER PLOW	STATE: INDIANA	COUNTY: ST. JOSEPH	CITY: SOUTH BEND
BORING NO./LOCATION: OP-1		DRILLING METHOD: GEOPROBE	

DEPTH (FEET)	SAMPLE TYPE	% RECOVERY	PID READING (ppm)	LETTER SYMBOL	SOIL COLUMN	SOIL DESCRIPTION
0						
1	S	40	0		FILL	FILL - CEMENT, BRICKS, AND WOOD
2						
3			12			
4						
5	S	50	6			
6						
7			6			BROWN, FINE SAND
8						WHITE, FINE SAND
9	S	65	7			
10						RED, FINE SAND. MOIST
11			5	SP		BROWN, FINE TO VERY FINE SAND
12						
13	S	70	8			WHITE, FINE SAND
14						
15			6			
16						END OF BORING - 16'
17						
18						
19						
20						
21						
22						
23						
24						
25						
26						
27						
28						
29						
30						

S 4' SAMPLE SLEEVE
AC AUGER CUTTINGS
WT WATER TABLE
TD TOTAL DEPTH
LETTER SYMBOL
SEE OTHER SIDE FOR LEGEND

SOIL CLASSIFICATION CHART

MAJOR GROUPS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
FINE-GRAINED SOILS (50% OR MORE PASSES No. 200 SIEVE)	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50%			ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDS OR SILTS, ELASTIC SILTS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY
				PT	PEAT, MUCK, AND OTHER HIGHLY ORGANIC SOILS
COARSE-GRAINED SOILS (MORE THAN 50% RETAINED ON No. 200 SIEVE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION RETAINED ON No.4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY GRADED GRAVELS AND GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING No.4 SIEVE)	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY GRADED SANDS AND GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES

C-2

Summary of Analytical Results from Envirocorp's Phase II Site Assessment

TABLE 1

LABORATORY RESULTS OF SOIL ANALYSES - ORGANIC COMPOUNDS
FORMER OLIVER PLOW FACILITY
South Bend, Indiana
Envirocorp Project No. 80Z2110

ANALYTES DETECTED	VRP Surface	VRP Subsurface	OP-1 10'-12'	OP-2 12'-14'	OP-2D 12'-14'	OP-3 0'-2'	OP-4 5'-8'	OP-5 8'-10'	OP-6 8'-10'	OP-7 4'-6'	OP-7D 4'-6'
Volatile Organic Compounds			Results reported as parts per billion								
Acetone	1,000,000	136,290	<100	<100	<100	200	520	<100	<100	<100	<100
Chloroform	5,280	20,330	20*	14*	15*	<10	<10	<10	<10	<10	<10
Methylene Chloride	N/A	N/A	120*	140*	160*	180*	35*	17*	15*	180*	100*
Polynuclear Aromatic Compounds			Results reported as parts per million								
Phenanthrene	N/A	N/A	<0.33	4.20	1.10	1.30	<0.33	<0.33	<0.33	1.20	0.69
Anthrancene	10,000.0	10,000.0	<0.33	1.20	<0.46	<0.45	<0.33	<0.33	<0.33	<0.44	<0.45
Fluoranthene	10,000.0	10,000.0	<0.33	5.70	1.70	1.20	<0.33	<0.33	<0.33	1.60	0.85
Pyrene	10,000.0	10,000.0	<0.33	4.80	1.40	1.20	<0.33	<0.33	<0.33	1.40	0.74
Benzo(a)anthrancene	79.5	103.9	<0.33	2.40	0.68	0.49	<0.33	<0.33	<0.33	0.73	<0.45
Chrysene	7,945.2	10,000.0	<0.33	3.00	0.96	0.61	<0.33	<0.33	<0.33	0.88	0.49
Benzo(b)fluoranthene	79.5	355.0	<0.33	2.60	0.67	0.63	<0.33	<0.33	<0.33	0.92	0.54
Benzo(k)fluoranthene	794.5	3,759.1	<0.33	0.96	<0.46	<0.45	<0.33	<0.33	<0.33	<0.44	<0.45
Benzo(a)pyrene	7.9	69.9	<0.33	2.20	0.61	0.55	<0.33	<0.33	<0.33	0.74	<0.45
Indeno(1,2,3-cd)pyrene	79.5	629.2	<0.33	1.60	<0.46	<0.45	<0.33	<0.33	<0.33	<0.44	<0.45
Benzo(g,h,i)perylene	N/A	N/A	<0.33	1.20	<0.46	<0.45	<0.33	<0.33	<0.33	<0.44	<0.45

All Volatile Organic Results reported in parts per billion (ppb). All Polynuclear Aromonatic Compounds Results reported in parts per million (ppm). 1 part per million = 1,000 parts per billion

* = Blank was noted to be contaminated by methylene chloride - see text for discussion

VRP = Voluntary Remediation Program

All results in BOLD are above the VRP closure values for Non-Residential properties

N/A = Value not available

A complete list of all analytes is included with the laboratory analytical results

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TABLE 1 (Continued)
LABORATORY RESULTS OF SOIL ANALYSES - ORGANIC COMPOUNDS
FORMER OLIVER PLOW FACILITY
South Bend, Indiana

Envirocorp Project No. 80Z2110

ANALYTES DETECTED	VRP Surface	VRP Subsurface	OP-8 4'-6'	OP-9 18'-19'	OP-10 12'-14'	OP-11 12'-14'	OP-14 6'-8'	OP-15 14'-16'	OP-16 12'-14'	OP-17 14'-16'	OP-18 0'-2'
Volatile Organic Compounds			Results reported as parts per billion								
Trichloroethene	24,970	25,730	<10	<10	<10	<10	<10	<10	<10	<10	47
Methylene Chloride	N/A	N/A	30*	30*	60*	47*	33*	36*	32*	37*	49*
Polynuclear Aromatic Compounds			Results reported as parts per million								
Naphthalene	10,000.0	10,000.0	<0.33	<0.33	<0.43	<0.33	0.55	<0.33	<0.33	<0.33	<0.46
2-Methylnaphthalene	N/A	N/A	<0.33	<0.33	<0.43	<0.33	0.75	<0.33	<0.33	<0.33	<0.46
Phenanthrene	N/A	N/A	<0.33	<0.33	0.53	<0.33	<0.33	<0.33	<0.33	<0.33	3.50
Anthrancene	10,000.0	10,000.0	<0.33	<0.33	<0.43	<0.33	<0.33	<0.33	<0.33	<0.33	0.92
Fluoranthene	10,000.0	10,000.0	0.40	<0.33	1.60	<0.33	<0.33	<0.33	<0.33	<0.33	3.40
Pyrene	10,000.0	10,000.0	0.37	<0.33	1.40	<0.33	<0.33	<0.33	<0.33	<0.33	3.20
Benzo(a)anthrancene	79.5	103.9	<0.33	<0.33	0.78	<0.33	<0.33	<0.33	<0.33	<0.33	1.60
Chrysene	7,945.2	10,000.0	<0.33	<0.33	0.80	<0.33	<0.33	<0.33	<0.33	<0.33	2.40
Benzo(b)fluoranthene	79.5	355.0	<0.33	<0.33	0.85	<0.33	<0.33	<0.33	<0.33	<0.33	3.40
Benzo(k)fluoranthene	794.5	3,759.1	<0.33	<0.33	<0.43	<0.33	<0.33	<0.33	<0.33	<0.33	1.20
Benzo(a)pyrene	7.9	69.9	<0.33	<0.33	0.74	<0.33	<0.33	<0.33	<0.33	<0.33	2.20
Indeno(1,2,3-cd)pyrene	79.5	629.2	<0.33	<0.33	<0.43	<0.33	<0.33	<0.33	<0.33	<0.33	1.20
Benzo(g,h,i)perylene	N/A	N/A	<0.33	<0.33	<0.43	<0.33	<0.33	<0.33	<0.33	<0.33	1.20

All Volatile Organic Results reported in parts per billion (ppb). All Polynuclear Aromonatic Compounds Results reported in parts per million (ppm). 1 part per million = 1,000 parts per billion

* = Blank was noted to be contaminated by methylene chloride - see text for discussion

VRP = Voluntary Remediation Program

All results in BOLD are above the VRP closure values for Non-Residential properties

N/A = Value not available

A complete list of all analytes is included with the laboratoy analytical results

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TABLE 1 (Continued)
LABORATORY RESULTS OF SOIL ANALYSES - ORGANIC COMPOUNDS
FORMER OLIVER PLOW FACILITY
South Bend, Indiana
Envirocorp Project No. 80Z2110

ANALYTES DETECTED	VRP Surface	VRP Subsurface	OP-18 10'-12'	OP-19 2'-4'	OP-20 2'-4'	OP-21 8'-10'	OP-21D 8'-10'	OP-22 8'-10'	OP-22 10'-12'	OP-23 12'-14'	OP-24 12'-14'
Volatile Organic Compounds			Results reported as parts per billion								
Ethylbenzene	1,000,000	1,000,000	<10	<10	<10	<10	<10	<10	<10	<150	600
Xylene isomers	1,000,000	1,000,000	<30	<30	<30	<30	<30	<30	<30	<450	1700
Methylene Chloride	N/A	N/A	14*	75*	77*	100*	120*	<10	88*	<150	<10*
Polynuclear Aromatic Compounds			Results reported as parts per million								
Naphthalene	10,000.00	10,000.00	<0.33	<0.46	<0.33	<0.33	<0.51	<1.7	<3.7	6.40	6.70
2-Methylnaphthalene	N/A	N/A	<0.33	<0.46	<0.33	<0.33	<0.51	<1.7	<3.7	9.30	21.00
Acenaphthene	10,000.00	10,000.00	<0.33	<0.46	<0.33	<0.33	<0.51	<1.7	<3.7	<2.2	1.00
Fluorene	10,000.00	10,000.00	<0.33	<0.46	<0.33	0.33	<0.51	<1.7	<3.7	5.00	2.20
Phenanthrene	N/A	N/A	<0.33	<0.46	<0.33	0.71	1.90	2.80	<3.7	7.40	5.10
Anthrancene	10,000.00	10,000.00	<0.33	<0.46	<0.33	<0.33	<0.51	<1.7	<3.7	<2.2	1.00
Fluoranthene	10,000.00	10,000.00	<0.33	<0.46	<0.33	1.20	2.50	2.90	<3.7	2.40	1.80
Pyrene	10,000.00	10,000.00	<0.33	<0.46	<0.33	1.30	2.30	2.60	<3.7	3.20	2.50
Benzo(a)anthrancene	79.45	103.88	<0.33	<0.46	<0.33	0.60	0.91	<1.7	<3.7	<2.2	1.00
Chrysene	7,945.21	10,000.00	<0.33	<0.46	<0.33	0.76	1.10	<1.7	<3.7	2.70	1.50
Benzo(b)fluoranthene	79.45	354.98	<0.33	<0.46	<0.33	0.56	1.00	<1.7	<3.7	<2.2	0.95
Benzo(a)pyrene	7.94	69.85	<0.33	<0.46	<0.33	0.54	0.94	<1.7	<3.7	<2.2	0.89

All Volatile Organic Results reported in parts per billion (ppb). All Polynuclear Aromomatic Compounds Results reported in parts per million (ppm). 1 part per million = 1,000 parts per billion

* = Blank was noted to be contaminated by methylene chloride - see text for discussion

VRP = Voluntary Remediation Program

All results in BOLD are above the VRP closure values for Non-Residential properties

N/A = Value not available

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TABLE 1 (Continued)
LABORATORY RESULTS OF SOIL ANALYSES - ORGANIC COMPOUNDS
FORMER OLIVER PLOW FACILITY
South Bend, Indiana
Envirocorp Project No. 80Z2110

ANALYTES DETECTED	VRP Surface	VRP Subsurface	OP-25 18'-20'	OP-26 14'-16'	OP-27 8'-10'	OP-28 6'-8'	OP-29 6'-8'	OP-30 4'-6'	OP-30 6'-8'	OP-31 2'-4'	OP-32 2'-4'
Volatile Organic Compounds			Results reported as parts per billion								
Tetrachloroethene	101,230	8,010	160#	41#	<10	<10	<10	<10	<10	<10	<10
Methylene Chloride	N/A	N/A	45*	40*	88*	51*	55*	83*	58*	16*	65*
Polynuclear Aromatic Compounds			Results reported as parts per million								
Naphthalene	10,000.00	10,000.00	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<1.8
2-Methylnaphthalene	N/A	N/A	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<1.8
Acenaphthene	10,000.00	10,000.00	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<1.8
Fluorene	10,000.00	10,000.00	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<1.8
Phenanthrene	N/A	N/A	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<1.8
Anthrancene	10,000.00	10,000.00	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<1.8
Fluoranthene	10,000.00	10,000.00	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<1.8
Pyrene	10,000.00	10,000.00	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<1.8
Benzo(a)anthrancene	79.45	103.88	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<1.8
Chrysene	7,945.21	10,000.00	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<1.8
Benzo(b)fluoranthene	79.45	354.98	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<1.8
Benzo(k)fluoranthene	794.52	3,759.12	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<1.8
Benzo(a)pryene	7.94	69.85	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<1.8

- concentration an estimate due to surrogate recovery out of control - high

ANALYTES DETECTED	VRP Surface	VRP Subsurface	OP-33 8'-9'	OP-33 8'-10'	MW-4 8.5-1.5	MW-4 9'-10'	MW-8 1'-2'
Volatile Organic Compounds			Results reported as parts per billion				
Toluene	1,000,000	1,000,000	44	<10	<10	<10	<10
Ethylbenzene	1,000,000	1,000,000	55	<10	<10	<10	<10
Xylene isomers	1,000,000	1,000,000	830	<30	<30	<30	<30
Chloroform	5,280	20,330	<10	18*	13*	<10	<10
Methylene Chloride	N/A	N/A	55*	120*	190*$	150*	100*$
Polynuclear Aromatic Compounds			Results reported as parts per million				
Phenanthrene	N/A	N/A	<34	<0.33	1.20	<0.33	3.30
Fluoranthene	10,000.00	10,000.00	<34	<0.33	1.10	<0.33	4.30
Pyrene	10,000.00	10,000.00	<34	<0.33	1.10	<0.33	3.90
Benzo(a)anthrancene	79.45	103.88	<34	<0.33	<1.0	<0.33	2.10
Chrysene	7,945.21	103.88	<34	<0.33	1.20	<0.33	3.00
Benzo(b)fluoranthene	79.45	345.98	<34	<0.33	<1.0	<0.33	2.60
Benzo(k)fluoranthene	794.52	3,759.12	<34	<0.33	<1.0	<0.33	1.20
Benzo(a)pyrene	7.94	69.85	<34	<0.33	<1.0	<0.33	2.20
Indeno(1,2,3-cd)pyrene	79.45	629.17	<34	<0.33	<1.0	<0.33	2.00
Benzo(g,h,i)perylene	N/A	N/A	<34	<0.33	<1.0	<0.33	1.90

All Volatile Organic Results reported in parts per billion (ppb). All Polynuclear Aromomatic Compounds Results reported in parts per million (ppm). 1 part per million = 1,000 parts per billion

* = Blank was noted to be contaminated by methylene chloride - see text for discussion

$ = Results were greater than 10 times the method blank concentration - see text for discussion

VRP = Voluntary Remediation Program

N/A = Value not available

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TABLE 2

LABORATORY RESULTS OF SOIL ANALYSES - INORGANIC COMPOUNDS AND PCBS

FORMER OLIVER PLOW FACILITY

South Bend, Indiana

Envirocorp Project No. 80Z2110

ANALYTES DETECTED	VRP Surface	VRP Subsurface	OP-3 8'-2'	OP-4 6'-8'	OP-5 8'-10'	OP-7 4'-6'	OP-7D 4'-6'	OP-9 10'-12'	OP-10 12'-14'	OP-14 6'-8'	OP-18 8'-2'
RCRA Metals			Results reported as parts per million								
Silver	10,000.00	7,300.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Barium	10,000.00	10,000.00	210.00	9.80	11.00	67.00	53.00	47.00	37.60	27.00	58.00
Chromium	10,000.00	10,000.00	30.00	4.50	5.30	25.00	24.00	13.00	15.00	12.00	11.00
Lead	N/A	N/A	300.00	3.00	4.60	150.00	110.00	140.00	73.00	27.00	30.00
Arsenic	612.00	438.00	6.00	1.20	1.70	5.30	6.20	3.90	7.90	5.80	4.10
Cadmium	1,020.00	730.00	0.59	<0.05	<0.05	0.45	0.42	<0.05	<0.05	<0.05	0.22
Mercury	122.40	87.60	0.78	<0.1	<0.1	2.20	1.80	0.40	0.47	<0.1	<0.1
Selenium	10,000.00	7,300.00	0.26	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
PCBs	7.53	4.23	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33

ANALYTES DETECTED	VRP Surface	VRP Subsurface	OP-20 2'-4'	OP-21 8'-10'	OP-21D 8'-10'	OP-25 18'-20'	OP-27 8'-10'	OP-28 6'-8'	OP-29 4'-6'	OP-30 4'-6'	OP-30 6'-8'
RCRA Metals			Results reported as parts per million								
Silver	10,000.00	7,300.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Barium	10,000.00	10,000.00	100.00	44.00	41.00	6.20	34.00	24.00	33.00	37.00	50.00
Chromium	10,000.00	10,000.00	21.00	30.00	37.00	1.80	8.20	7.40	12.00	15.00	7.40
Lead	N/A	N/A	78.00	78.00	930.00	1.60	4.60	5.50	25.00	33.00	5.00
Arsenic	612.00	438.00	10.00	20.00	30.00	0.97	1.90	2.30	11.00	9.00	1.70
Cadmium	1,020.00	730.00	0.07	0.65	0.74	<0.05	<0.05	<0.05	<0.05	<0.05	<0.50
Mercury	122.40	87.60	3.10	1.40	0.84	<0.1	<0.1	<0.1	<0.1	0.16	<0.10
Selenium	10,000.00	7,300.00	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2
PCBs	7.53	4.23	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33	<0.33

All results reported in parts per million (ppm). 1 part per million = 1,000 parts per billion

VRP = Voluntary Remediation Program

All results in BOLD are above the VRP closure values for Non-Residential properties

N/A = Value not available

A complete list of all analytes is included with the laboratory analytical results

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TABLE 2 (Continued)
LABORATORY RESULTS OF SOIL ANALYSES - INORGANIC COMPOUNDS AND PCBS
FORMER OLIVER PLOW FACILITY
South Bend, Indiana
Envirocorp Project No. 80Z2110

ANALYTES DETECTED	VRP Surface	VRP Subsurface	OP-18 11'-12'	OP-33 8'-10'	MW-4 4.5'-5.5'	MW-4 9'-10'	MW-8 1'-2'	Bkg-1 5.5'-6'	Bkg-2 5.5'-6'	Bkg-3 5.5'-6'	Bkg-4 5.5'-6'
RCRA Metals			Results reported as parts per million								
Silver	10,000.00	7,300.00	<5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Barium	10,000.00	10,000.00	10.00	28.00	70.00	26.00	190.00	22.00	21.00	28.00	22.00
Chromium	10,000.00	10,000.00	3.60	6.50	44.00	9.90	66.00	5.80	5.80	7.50	4.70
Lead	N/A	N/A	3.00	13*	220.00	25.00	1,100.00	5.20	5.10	6.90	8.90
Arsenic	612.00	438.00	2.10	0.83	5.70	2.30	6.60	2.40	2.20	7.40	1.90
Cadmium	1,020.00	730.00	<0.05	<0.05	1.50	<0.50	0.79	<0.50	<0.05	<0.05	<0.05
Mercury	122.40	87.60	<0.1	<0.1	0.16	<0.1	19.00	<0.1	<0.1	<0.1	0.16
Selenium	10,000.00	7,300.00	<0.2	<0.2	0.51	<0.2	0.52	<0.2	<0.2	<0.2	<0.2
PCBs	7.53	4.23	<0.33	<0.33	<0.33	<0.33	<0.33	N/A	N/A	N/A	N/A

ANALYTES DETECTED	VRP Surface	VRP Subsurface	Bkg-5 5.5'-6'	Bkg-6 5.5'-6'	Bkg-7 5.5'-6'	Bkg-8 5.5'-6'	Bkg-9 5.5'-6'	Bkg-10 5.5'-6'
RCRA Metals			Results reported as parts per million					
Silver	10,000.00	7,300.00	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
Barium	10,000.00	10,000.00	27.00	26.00	26.00	39.00	17.00	40.00
Chromium	10,000.00	10,000.00	7.80	5.90	6.00	6.80	4.20	7.20
Lead	N/A	N/A	5.00	4.30	3.80	5.40	3.30	4.90
Arsenic	612.00	438.00	4.40	2.50	1.80	1.80	1.30	1.50
Cadmium	1,020.00	730.00	<0.50	<0.05	<0.050	<0.050	<0.050	<0.05
Mercury	122.40	87.60	<0.10	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium	10,000.00	7,300.00	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2

All results reported in parts per million (ppm). 1 part per million = 1,000 parts per billion

VRP = Voluntary Remediation Program

All results in BOLD are above the VRP closure values for Non-Residential properties

N/A = Value not available

* - Concentration an estimate due to matrix spike duplicate recovery out of control - high

A complete list of all analytes is included with the laboratory analytical results

TABLE 3

LABORATORY RESULTS OF GROUNDWATER ANALYSES
FORMER OLIVER PLOW FACILITY
South Bend, Indiana
Envirocorp Project No. 80Z2110

ANALYTES DETECTED	UNITS	VRP NR	MW-1 (10/30/97)	MW-2 (10/30/97)	MW-3 (10/30/97)	MW-4 (10/30/97)	MW-5 (10/30/97)	MW-6 (10/30/97)	MW-7 (10/30/97)	MW-8 (10/30/97)	MW-9 (10/30/97)	US EPA MCLs
Volitale Organic Compounds												
1,1,1-Trichloroethane	ug/L	9,918	1.5	<1	6.3	<1	<1	<1	<1	2.7	84	200
Trichloroethene	ug/L	260	7	5	26	12	<1	19	5.1	4.9	6.3	5
Tetrachloroethene	ug/L	56	4,700	<1	<1	<1	<1	<1	<1	4.8	<1	5
Chlorobenzene	ug/L	N/A	1.2	<1	<1	<1	<1	<1	<1	<1	<1	100
Vinyl chloride	ug/L	10	<1	2.2	<1	<1	<1	<1	<1	<1	<1	2
1,2-Dichloroethene (total)	ug/L	1,022*	<1	1.4	<1	<1	2.3	<1	<1	<1	<1	70*
1,1 Dichloroethane	ug/L	10,220	<1	2.1	<1	<1	2.7	<1	<1	<1	<1	N/A
Carbon Tertachloride	ug/L	N/A	<1	<1	<1	<1	<1	<1	<1	<1	15	5
Polynuclear Aromatic Compounds												
Fluoranthene	ug/L	818	<5	<5	<5	<5	<5	<5	7.4	<5	<5	N/A
Pyrene	ug/L	3,066	<5	<5	<5	<5	<5	<5	8	<5	<5	N/A
Benzo[a]anthracene	ug/L	10	<5	<5	<5	<5	<5	<5	5.3	<5	<5	N/A
Chrysene	ug/L	391.8	<5	<5	<5	<5	<5	<5	7	<5	<5	N/A
Benzo(b)fluoranthene	ug/L	39.2	<5	<5	<5	<5	<5	<5	6.1	<5	<5	N/A

VRP NR = Voluntary Remediation Program Non Residential Closure Levels

ug/l = micrograms per liter = parts per billion

* - cis-1,2 dichloroethene

Result in BOLD exceeds the VRP Non Residential Closure Level

APPENDIX D

Ken Herceg & Associates, Inc. Results of Borings n Former Foundry Area, Former Oliver Plow

ENVIROCORP®

MEMO

TO: Ann Kolata, Senior Redevelopment Specialist ✓
Andy Laurent, Redevelopment Specialist

FROM: Michael Furfaro MF

RE: Results of borings in former Foundry Area, Former Oliver Plow, Job #80D2530

DATE: June 5, 2002

On May 17, 2002, Envirocorp advanced a total of 18 borings at the above site. The boring locations were obtained from a map provided by the city. No boring was advanced at location #1 due to it's proximity to MW-9. Two additional borings were advanced at boring #4 and #2 after encountering concrete within the first four feet of the boring. The two additional borings were advanced approximately 10 feet west of borings #4 and #2. Boring #3 was also noted to contain brick fragments to a depth of 5 feet.

The soils obtained from the site were bagged over two foot intervals. The soil samples were then handed over to a representative of the city for engineering analysis. Staining was noted in the upper three feet in borings #5, #6, #7, #9, #11, #12, and #13. The stratigraphy of the soils from 3 to 12 feet were noted to be a fine to coarse sand with no saturation encountered.

Two soil samples for laboratory analysis were obtained from the upper four feet, one from boring #5 and one from boring #13. Low levels (below VRP non-residential clean up level [VRP NR]) of lead (33.4 parts per million [ppm]), chromium (9.1 ppm), and mercury (0.185 ppm) were noted in the sample from #5, with no PCBs, volatile or semi-volatile organics detected in this sample.

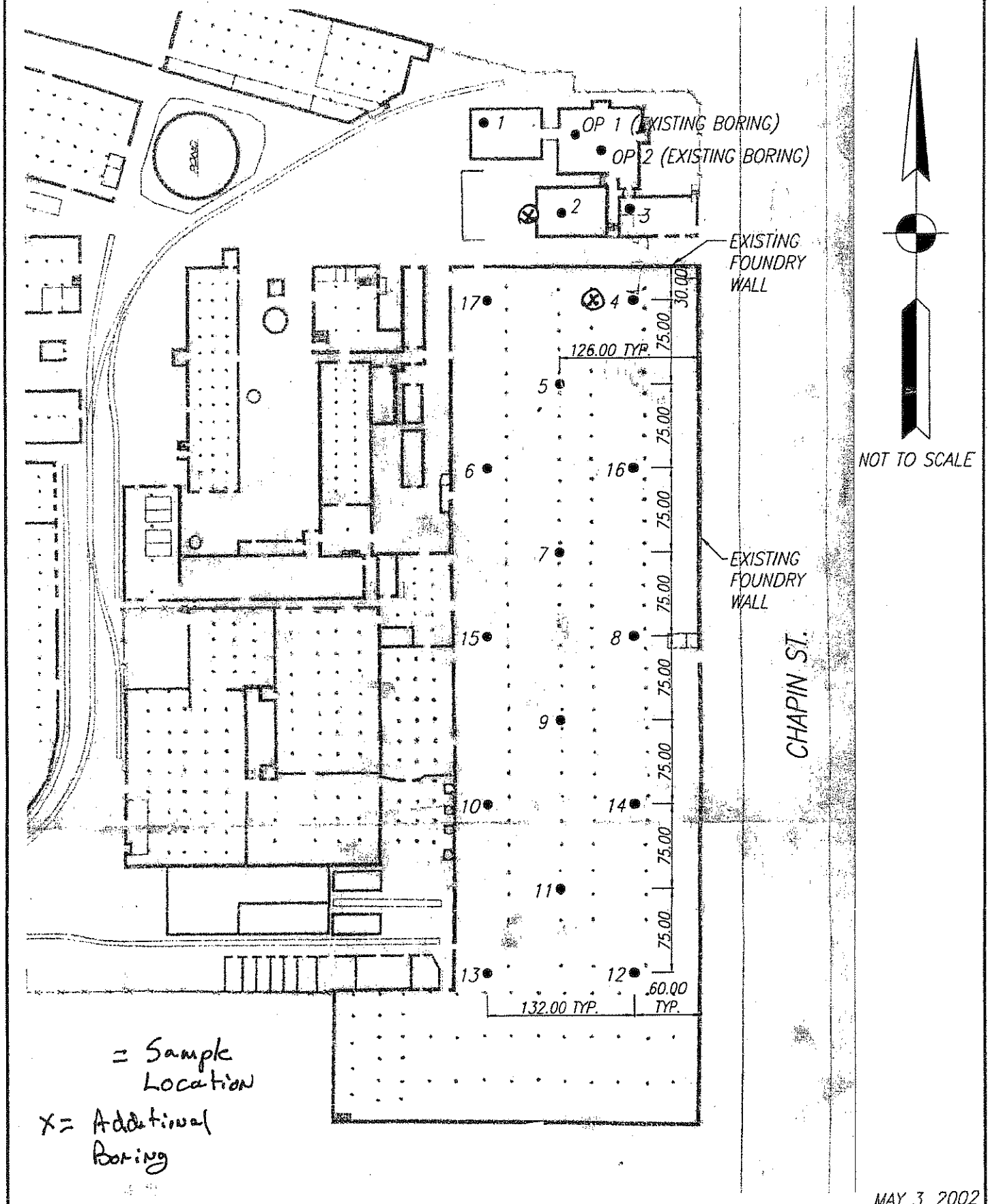
The soil sample from boring #13 was noted to contain lead (624 ppm), chromium (23.1 ppm), and mercury (0.360 ppm)below VRP NR, with no PCBs or volatile organics detected in this sample. Three semi-volatile organics were noted above detection limits but below VRP NR, including benzo(b)fluoranthene (0.390 ppm), chrysene (0.350 ppm) and fluoranthene (0.490 ppm).

The soil sample from boring #8 was obtained at 6 to 8 feet below grade. Low levels (below VRP NR) of lead (11.6 ppm), chromium (12.3 ppm), and mercury (0.0172 ppm) were noted, with no PCBs, or semi-volatile organics detected in this sample. One volatile organic, tetrachloroethylene, was noted at 5.6 ppb, well below the VRP NR.

The soil sample was obtained from the material encountered in the open pit below boring #10. This material was noted to contain low levels (below VRP NR) of lead (6.4 ppm), chromium (5.7 ppm), and beryllium (0.8 ppm) were noted, with no PCBs, or semi-volatile organics detected in this sample. One volatile organic, tetrachloroethylene, was noted at 5.9 ppb, well below the VRP NR.

ENVIROCORP, INC.
51728 S. R. 933 SOUTH BEND, INDIANA 46637-1706 219/287-2282 FAX 219/233-0026 1-800/323-2470

Direct Push Borings Performed by Enviracorp on May 1, 2002



KEN HERCEG & ASSOCIATES, INC.

ENGINEERS, ARCHITECTS & LAND SURVEYORS
211 W. Washington Street, Suite 2100, South Bend, Indiana 46601
Phone (219) 288-4580 Fax (219) 288-0195

PROPOSED SOIL BORING LOCATIONS, GREY IRON FOUNDRY

OLIVER PLOW WORKS
CITY OF SOUTH BEND
SOUTH BEND, INDIANA

K:\2002\111\GEN\FG02R00.DWG

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RECEIVED

ANALYTICAL AND QUALITY CONTROL REPORT

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Enclosed is the Analytical and Quality Control reports for the following samples submitted to the TestAmerica, Inc. Indianapolis Division.
Project Description: OLIVER FLOW-FORMER FOUNDRY AREA

Sample Number	Sample Description	Date Taken	Time Taken	Date Received
320129	B-5 (1-2')	05/17/2002	08:15	05/21/2002
320130	B-8 (6-8')	05/17/2002	10:15	05/21/2002
320131	B-10 (6-7')	05/17/2002	11:10	05/21/2002
320132	B-13 (3-4')	05/17/2002	12:05	05/21/2002

The Quality Control report is generated on a batch basis. All information contained in this report is for the analytical batch(es) in which your sample(s) were analyzed.

TestAmerica, Inc. certifies that the analytical results contained herein apply only to the specific samples analyzed.

TestAmerica Incorporated-Indianapolis Division is in compliance with the National Environmental Laboratory Accreditation Program (NELAP) Standards.

Reproduction of this analytical report is permitted only in its entirety.

Sarah Thomas
Project Representative

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320129	SAMPLE DESCRIPTION B-5 (1-2')							DATE-TIME TAKEN 05/17/2002 08:15	
ICP METALS NONAQUEOUS	Complete			Complete	05/26/2002 16:27	emd		2243	
[illegible]ic, ICP	ND		mg/kg	<6.6	05/26/2002 16:27	400	8242	2683	SW 6010B
[illegible]lium, ICP	ND		mg/kg	<0.3	05/26/2002 16:27	400	8242	2665	SW 6010B
Cadmium, ICP	ND		mg/kg	<2.0	05/26/2002 16:27	400	8242	2753	SW 6010B
Chromium, ICP	9.1		mg/kg	<2.6	05/26/2002 16:27	400	8242	2816	SW 6010B
Lead, ICP	33.4		mg/kg	<5.3	05/26/2002 16:27	400	8242	2820	SW 6010B
Mercury, CVAA	0.185		mg/kg	<0.0080	05/29/2002 14:55	400	289	945	SW 7471A
Selenium, ICP	ND		mg/kg	<6.6	05/26/2002 16:27	400	8242	2641	SW 6010B
Silver, ICP	ND		mg/kg	<2.6	05/26/2002 16:27	400	8242	2569	SW 6010B
ICP Metals Digestion-Solid	Complete			Complete	05/24/2002 18:00	400	8242		SW 3050B
Mercury-Non Aqueous Digestion	Complete			Complete	05/29/2002 12:45	400	289		SW 7471A

ND - NOT DETECTED AT THE REPORTING LIMIT.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

SAMPLE NO. 320129 — SAMPLE DESCRIPTION: B-5 (1-2') — DATE-TIME TAKEN: 05/17/2002 08:15

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
VOLATILES - 8260 (NONAQ)						401			
[illegible]ne	ND		ug/Kg	<100	05/31/2002	401		3762	SW 8260B
A[illegible]ein	ND		ug/Kg	<50	05/31/2002	401		3762	SW 8260B
Acrylonitrile	ND		ug/Kg	<50	05/31/2002	401		3762	SW 8260B
Benzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromobenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromochloromethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromodichloromethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromoform	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromomethane	ND		ug/Kg	<10.	05/31/2002	401		3762	SW 8260B
n-Butylbenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
sec-Butylbenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
tert-Butylbenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Carbon disulfide	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Carbon tetrachloride	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Chlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Chlorodibromomethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Chloroethane	ND		ug/Kg	<10.	05/31/2002	401		3762	SW 8260B
Chloroform	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Chloromethane	ND		ug/Kg	<10.	05/31/2002	401		3762	SW 8260B
2-Chlorotoluene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
4-Chlorotoluene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
2-Chloroethyl vinyl ether	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
1,2-Dibromo-3-chloropropane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B

ND - NOT DETECTED AT THE REPORTING LIMIT.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320129	SAMPLE DESCRIPTION B-5 (1-2')								DATE-TIME TAKEN 05/17/2002 08:15
1,2-Dibromoethane (EDB)	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
[illegible]momethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
[illegible]ichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,3-Dichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,4-Dichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Dichlorodifluoromethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
trans-1,4-Dichloro-2-butene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1-Dichloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2-Dichloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1-Dichloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
cis-1,2-Dichloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
trans-1,2-Dichloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2-Dichloropropane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,3-Dichloropropane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
2,2-Dichloropropane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1-Dichloropropene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
cis-1,3-Dichloropropene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
trans-1,3-Dichloropropene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Ethylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Ethyl methacrylate	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
2-Hexanone	ND		ug/Kg	<50.	05/31/2002	401	3762		SW 8260B
Hexachlorobutadiene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Iodomethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Isopropylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B

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ANALYTICAL REPORT

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320129	SAMPLE DESCRIPTION B-5 (1-2')								DATE-TIME TAKEN 05/17/2002 08:15
p-Isopropyltoluene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
[illegible]rlene chloride	ND		ug/Kg	<10.	05/31/2002	401	3762		SW 8260B
[illegible]yl Ethyl Ketone	ND		ug/Kg	<50.	05/31/2002	401	3762		SW 8260B
Methyl-tert-butyl-ether	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
4-Methyl-2-pentanone (MIBK)	ND		ug/Kg	<50.	05/31/2002	401	3762		SW 8260B
Naphthalene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
n-Propylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Styrene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1,1,2-Tetrachloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1,2,2-Tetrachloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Tetrachloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Toluene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2,3-Trichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2,4-Trichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1,1-Trichloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1,2-Trichloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Trichloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Trichlorofluoromethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2,3-Trichloropropane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2,4-Trimethylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,3,5-Trimethylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Vinyl acetate	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Vinyl chloride	ND		ug/Kg	<2.0	05/31/2002	401	3762		SW 8260B
Xylenes, (Total)	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B

ND - NOT DETECTED AT THE REPORTING LIMIT.

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ANALYTICAL REPORT

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320129	SAMPLE DESCRIPTION B-5 (1-2')							DATE-TIME TAKEN 05/17/2002 08:15	
SURR: Toluene-d8	104		%		05/31/2002	401	3762		SW 8260B
Dibromofluoromethane	100		%		05/31/2002	401	3762		SW 8260B
4-Bromofluorobenzene	105		%		05/31/2002	401	3762		SW 8260B

ND - NOT DETECTED AT THE REPORTING LIMIT.

TestAmerica
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ANALYTICAL REPORT

Mr. Mike Furfaro, CHMM
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51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

SAMPLE NO. 320129
SAMPLE DESCRIPTION B-5 (1-2')
DATE-TIME TAKEN 05/17/2002 08:15

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
BNA - 8270 (NONAQ)									
Acenaphthene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Acenaphthylene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Aniline	ND		ug/Kg	<660	05/22/2002 21:53	xia	1502	2320	SW 8270C
Anthracene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Benzidine	ND		ug/Kg	<7,000	05/22/2002 21:53	xia	1502	2320	SW 8270C
Benzo(a)anthracene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Benzo(b)fluoranthene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Benzo(k)fluoranthene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Benzo(a)pyrene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Benzo(ghi)perylene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Benzyl alcohol	ND		ug/Kg	<660	05/22/2002 21:53	xia	1502	2320	SW 8270C
Benzyl butyl phthalate	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Bis(2-chloroethyl)ether	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Bis(2-chloroethoxy)methane	ND		ug/Kg	<660	05/22/2002 21:53	xia	1502	2320	SW 8270C
Bis(2-ethylhexyl)phthalate	ND		ug/Kg	<660	05/22/2002 21:53	xia	1502	2320	SW 8270C
Bis(2-chloroisopropyl)ether	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
4-Bromophenyl phenyl ether	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Carbazole	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
4-Chloroaniline	ND		ug/Kg	<1,300	05/22/2002 21:53	xia	1502	2320	SW 8270C
2-Chloronaphthalene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
4-Chlorophenylphenyl ether	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Chrysene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Dibenzo(a,h)anthracene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C

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Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320129	SAMPLE DESCRIPTION B-5 (1-2')								DATE-TIME TAKEN 05/17/2002 08:15
Dibenzofuran	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
[illegible]-butylphthalate	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
[illegible]Dichlorobenzene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
1,2-Dichlorobenzene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
1,4-Dichlorobenzene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
3,3-Dichlorobenzidine	ND		ug/Kg	<1,400	05/22/2002 21:53	xia	1502	2320	SW 8270C
Diethyl phthalate	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
1,2-Diphenylhydrazine	ND		ug/Kg	<660	05/22/2002 21:53	xia	1502	2320	SW 8270C
Dimethyl phthalate	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
2,4-Dinitrotoluene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
2,6-Dinitrotoluene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Di-n-octylphthalate	ND		ug/Kg	<1,400	05/22/2002 21:53	xia	1502	2320	SW 8270C
Fluoranthene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Fluorene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Hexachlorobenzene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Hexachlorobutadiene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Hexachlorocyclopentadiene	ND		ug/Kg	<660	05/22/2002 21:53	xia	1502	2320	SW 8270C
Hexachloroethane	ND		ug/Kg	<660	05/22/2002 21:53	xia	1502	2320	SW 8270C
Indeno(1,2,3-cd)pyrene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Isophorone	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
2-Methylnaphthalene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Naphthalene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
2-Nitroaniline	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
3-Nitroaniline	ND		ug/Kg	<660	05/22/2002 21:53	xia	1502	2320	SW 8270C

ND - NOT DETECTED AT THE REPORTING LIMIT.

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Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

SAMPLE NO. 320129 — SAMPLE DESCRIPTION: B-5 (1-2') — DATE-TIME TAKEN: 05/17/2002 08:15

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
4-Nitroaniline	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
[illegible]benzene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
[illegible]rosodimethylamine	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
N-Nitrosodiphenylamine	ND		ug/Kg	<3,300	05/22/2002 21:53	xia	1502	2320	SW 8270C
N-Nitrosodi-n-propylamine	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Phenanthrene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Pyrene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
Pyridine	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
1,2,4-Trichlorobenzene	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
SURR: Nitrobenzene-d5	75		%		05/22/2002 21:53	xia	1502	2320	SW 8270C
SURR: 2-Fluorobiphenyl	64		%		05/22/2002 21:53	xia	1502	2320	SW 8270C
SURR: Terphenyl-d14	81		%		05/22/2002 21:53	xia	1502	2320	SW 8270C
Benzoic acid	ND		ug/Kg	<1,650	05/22/2002 21:53	xia	1502	2320	SW 8270C
4-Chloro-3-methylphenol	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
2-Chlorophenol	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
2,4-Dichlorophenol	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
2,4-Dimethylphenol	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
2,4-Dinitrophenol	ND		ug/Kg	<1,300	05/22/2002 21:53	xia	1502	2320	SW 8270C
4,6-Dinitro-2-methylphenol	ND		ug/Kg	<1,300	05/22/2002 21:53	xia	1502	2320	SW 8270C
2-Methylphenol	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
3 & 4-Methylphenol	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
2-Nitrophenol	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
4-Nitrophenol	ND	q	ug/Kg	<1,300	05/22/2002 21:53	xia	1502	2320	SW 8270C
Pentachlorophenol	ND	q	ug/Kg	<1,300	05/22/2002 21:53	xia	1502	2320	SW 8270C

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INCORPORATED

ANALYTICAL REPORT

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320129	SAMPLE DESCRIPTION B-5 (1-2')								DATE-TIME TAKEN 05/17/2002 08:15
Phenol	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
[illegible]-Trichlorophenol	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
[illegible]-Trichlorophenol	ND		ug/Kg	<330	05/22/2002 21:53	xia	1502	2320	SW 8270C
SURR: Phenol-d5	78		%		05/22/2002 21:53	xia	1502	2320	SW 8270C
SURR: 2-Fluorophenol	73		%		05/22/2002 21:53	xia	1502	2320	SW 8270C
SURR: 2,4,6-Tribromophenol	64		%		05/22/2002 21:53	xia	1502	2320	SW 8270C

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Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320129	SAMPLE DESCRIPTION B-5 (1-2')								DATE-TIME TAKEN 05/17/2002 08:15
BNA extraction, 8270 (nonaq)	complete				05/22/2002 13:00	mnw	1502		
- NONAQUEOUS S-8082						400			
PCB-1016	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1221	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1232	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1242	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1248	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1254	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1260	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
Surrogate	69/80		%	40-160	05/28/2002	400	1587	1054	SW 8082
PCB extraction (non-aqueous)	SW 3545			Complete	05/23/2002	400	1587		
SAMPLE NO. 320130	SAMPLE DESCRIPTION B-8 (6-8')								DATE-TIME TAKEN 05/17/2002 10:15
ICP METALS NONAQUEOUS	Complete			Complete	05/26/2002 16:30	emd		2243	
Arsenic, ICP	ND		mg/kg	<6.6	05/26/2002 16:30	400	8242	2683	SW 6010B
Beryllium, ICP	ND		mg/kg	<0.3	05/26/2002 16:30	400	8242	2665	SW 6010B
Cadmium, ICP	ND		mg/kg	<2.0	05/26/2002 16:30	400	8242	2753	SW 6010B
Chromium, ICP	12.3		mg/kg	<2.6	05/26/2002 17:08	400	8242	2816	SW 6010B
Lead, ICP	11.6		mg/kg	<5.3	05/26/2002 16:30	400	8242	2820	SW 6010B

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Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320130	SAMPLE DESCRIPTION B-8 (6-8')								DATE-TIME TAKEN 05/17/2002 10:15
Mercury, CVAA	0.0172		mg/kg	<0.0080	05/29/2002 14:48	400	289	945	SW 7471A
nium, ICP	ND		mg/kg	<6.6	05/26/2002 16:30	400	8242	2641	SW 6010B
ver, ICP	ND		mg/kg	<2.6	05/26/2002 16:30	400	8242	2569	SW 6010B
ICP Metals Digestion-Solid	Complete			Complete	05/24/2002 18:00	400	8242		SW 3050B
Mercury-Non Aqueous Digestion	Complete			Complete	05/29/2002 12:45	400	289		SW 7471A

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SAMPLE NO. 320130 — SAMPLE DESCRIPTION B-8 (6-8')

DATE-TIME TAKEN 05/17/2002 10:15

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
VOLATILES - 8260 (NONAQ)						401			
[illegible]ne	ND		ug/Kg	<100	05/31/2002	401		3762	SW 8260B
[illegible]lein	ND		ug/Kg	<50	05/31/2002	401		3762	SW 8260B
Acrylonitrile	ND		ug/Kg	<50	05/31/2002	401		3762	SW 8260B
Benzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromobenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromochloromethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromodichloromethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromoform	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromomethane	ND		ug/Kg	<10.	05/31/2002	401		3762	SW 8260B
n-Butylbenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
sec-Butylbenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
tert-Butylbenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Carbon disulfide	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Carbon tetrachloride	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Chlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Chlorodibromomethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Chloroethane	ND		ug/Kg	<10.	05/31/2002	401		3762	SW 8260B
Chloroform	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Chloromethane	ND		ug/Kg	<10.	05/31/2002	401		3762	SW 8260B
2-Chlorotoluene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
4-Chlorotoluene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
2-Chloroethyl vinyl ether	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
1,2-Dibromo-3-chloropropane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B

ND - NOT DETECTED AT THE REPORTING LIMIT.

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South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

SAMPLE NO. 320130 — SAMPLE DESCRIPTION: B-8 (6-8') — DATE-TIME TAKEN: 05/17/2002 10:15

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
1,2-Dibromoethane (EDB)	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
[illegible]momethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1[illegible]ichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,3-Dichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,4-Dichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Dichlorodifluoromethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
trans-1,4-Dichloro-2-butene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1-Dichloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2-Dichloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1-Dichloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
cis-1,2-Dichloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
trans-1,2-Dichloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2-Dichloropropane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,3-Dichloropropane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
2,2-Dichloropropane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1-Dichloropropene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
cis-1,3-Dichloropropene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
trans-1,3-Dichloropropene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Ethylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Ethyl methacrylate	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
2-Hexanone	ND		ug/Kg	<50.	05/31/2002	401	3762		SW 8260B
Hexachlorobutadiene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Iodomethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Isopropylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B

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South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320130	SAMPLE DESCRIPTION B-8 (6-8')							DATE-TIME TAKEN 05/17/2002 10:15	
p-Isopropyltoluene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
lene chloride	ND		ug/Kg	<10.	05/31/2002	401		3762	SW 8260B
yl Ethyl Ketone	ND		ug/Kg	<50.	05/31/2002	401		3762	SW 8260B
Methyl-tert-butyl-ether	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
4-Methyl-2-pentanone (MIBK)	ND		ug/Kg	<50.	05/31/2002	401		3762	SW 8260B
Naphthalene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
n-Propylbenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Styrene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
1,1,1,2-Tetrachloroethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
1,1,2,2-Tetrachloroethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Tetrachloroethene	5.6		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Toluene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
1,2,3-Trichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
1,2,4-Trichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
1,1,1-Trichloroethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
1,1,2-Trichloroethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Trichloroethene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Trichlorofluoromethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
1,2,3-Trichloropropane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
1,2,4-Trimethylbenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
1,3,5-Trimethylbenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Vinyl acetate	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Vinyl chloride	ND		ug/Kg	<2.0	05/31/2002	401		3762	SW 8260B
Xylenes, (Total)	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B

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Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320130	SAMPLE DESCRIPTION B-8 (6-8')								DATE-TIME TAKEN 05/17/2002 10:15
SURR: Toluene-d8	100		%		05/31/2002	401	3762		SW 8260B
Dibromofluoromethane	102		%		05/31/2002	401	3762		SW 8260B
SURR: 4-Bromofluorobenzene	95		%		05/31/2002	401	3762		SW 8260B

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Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320130	SAMPLE DESCRIPTION B-8 (6-8')							DATE-TIME TAKEN 05/17/2002 10:15	
NA - 8270 (NONAQ)									
phthene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
aphthylene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Aniline	ND		ug/Kg	<660	05/22/2002 23:59	xia	1502	2320	SW 8270C
nthracene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
enzidine	ND		ug/Kg	<7,000	05/22/2002 23:59	xia	1502	2320	SW 8270C
Benzo(a)anthracene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Benzo(b)fluoranthene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
enzo(k)fluoranthene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
enzo(a)pyrene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Benzo(ghi)perylene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
enzyl alcohol	ND		ug/Kg	<660	05/22/2002 23:59	xia	1502	2320	SW 8270C
enzyl butyl phthalate	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
is(2-chloroethyl)ether	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Bis(2-chloroethoxy)methane	ND		ug/Kg	<660	05/22/2002 23:59	xia	1502	2320	SW 8270C
is(2-ethylhexyl)phthalate	ND		ug/Kg	<660	05/22/2002 23:59	xia	1502	2320	SW 8270C
is(2-chloroisopropyl)ether	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
4-Bromophenyl phenyl ether	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Carbazole	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
-Chloroaniline	ND		ug/Kg	<1,300	05/22/2002 23:59	xia	1502	2320	SW 8270C
-Chloronaphthalene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
4-Chlorophenylphenyl ether	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Chrysene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
ibenzo(a,h)anthracene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C

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SAMPLE NO. 320130 — SAMPLE DESCRIPTION: B-8 (6-8') — DATE-TIME TAKEN: 05/17/2002 10:15

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
Dibenzofuran	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
-butylphthalate	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Dichlorobenzene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
1,2-Dichlorobenzene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
1,4-Dichlorobenzene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
3,3-Dichlorobenzidine	ND		ug/Kg	<1,400	05/22/2002 23:59	xia	1502	2320	SW 8270C
Diethyl phthalate	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
1,2-Diphenylhydrazine	ND		ug/Kg	<660	05/22/2002 23:59	xia	1502	2320	SW 8270C
Dimethyl phthalate	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
2,4-Dinitrotoluene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
2,6-Dinitrotoluene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Di-n-octylphthalate	ND		ug/Kg	<1,400	05/22/2002 23:59	xia	1502	2320	SW 8270C
Fluoranthene	1,400		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Fluorene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Hexachlorobenzene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Hexachlorobutadiene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Hexachlorocyclopentadiene	ND		ug/Kg	<660	05/22/2002 23:59	xia	1502	2320	SW 8270C
Hexachloroethane	ND		ug/Kg	<660	05/22/2002 23:59	xia	1502	2320	SW 8270C
Indeno(1,2,3-cd)pyrene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Isophorone	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
2-Methylnaphthalene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Naphthalene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
2-Nitroaniline	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
3-Nitroaniline	ND		ug/Kg	<660	05/22/2002 23:59	xia	1502	2320	SW 8270C

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ANALYTICAL REPORT

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320130	SAMPLE DESCRIPTION B-8 (6-8')								DATE-TIME TAKEN 05/17/2002 10:15
4-Nitroaniline	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
robenzene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
itrosodimethylamine	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
N-Nitrosodiphenylamine	ND		ug/Kg	<3,300	05/22/2002 23:59	xia	1502	2320	SW 8270C
N-Nitrosodi-n-propylamine	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Phenanthrene	1,700		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Pyrene	1,400		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
Pyridine	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
1,2,4-Trichlorobenzene	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
SURR: Nitrobenzene-d5	87		%		05/22/2002 23:59	xia	1502	2320	SW 8270C
SURR: 2-Fluorobiphenyl	74		%		05/22/2002 23:59	xia	1502	2320	SW 8270C
SURR: Terphenyl-d14	89		%		05/22/2002 23:59	xia	1502	2320	SW 8270C
Benzoic acid	ND		ug/Kg	<1,650	05/22/2002 23:59	xia	1502	2320	SW 8270C
4-Chloro-3-methylphenol	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
2-Chlorophenol	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
2,4-Dichlorophenol	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
2,4-Dimethylphenol	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
2,4-Dinitrophenol	ND		ug/Kg	<1,300	05/22/2002 23:59	xia	1502	2320	SW 8270C
4,6-Dinitro-2-methylphenol	ND		ug/Kg	<1,300	05/22/2002 23:59	xia	1502	2320	SW 8270C
2-Methylphenol	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
3 & 4-Methylphenol	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
2-Nitrophenol	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
4-Nitrophenol	ND		ug/Kg	<1,300	05/22/2002 23:59	xia	1502	2320	SW 8270C
Pentachlorophenol	ND		ug/Kg	<1,300	05/22/2002 23:59	xia	1502	2320	SW 8270C

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51728 State Route 933
South Bend, IN 46637-1706

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Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320130	SAMPLE DESCRIPTION B-8 (6-8')								DATE-TIME TAKEN 05/17/2002 10:15
Phenol	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
6-Trichlorophenol	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
5-Trichlorophenol	ND		ug/Kg	<330	05/22/2002 23:59	xia	1502	2320	SW 8270C
SURR: Phenol-d5	90		%		05/22/2002 23:59	xia	1502	2320	SW 8270C
SURR: 2-Fluorophenol	86		%		05/22/2002 23:59	xia	1502	2320	SW 8270C
SURR: 2,4,6-Tribromophenol	67		%		05/22/2002 23:59	xia	1502	2320	SW 8270C

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Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320130	**SAMPLE DESCRIPTION B-8 (6-8')**								**DATE-TIME TAKEN 05/17/2002 10:15**
BNA extraction, 8270 (nonaq) - NONAQUEOUS S-8082	complete				05/22/2002 13:00	mnw 400	1502		
1016	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1221	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1232	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1242	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1248	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1254	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1260	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
Surrogate	64/78		%	40-160	05/28/2002	400	1587	1054	SW 8082
PCB extraction (non-aqueous)	SW 3545			Complete	05/23/2002	400	1587		
SAMPLE NO. 320131	**SAMPLE DESCRIPTION B-10 (6-7')**								**DATE-TIME TAKEN 05/17/2002 11:10**
ICP METALS NONAQUEOUS	Complete			Complete	05/26/2002 16:33	emd		2243	
Arsenic, ICP	ND		mg/kg	<6.5	05/26/2002 16:33	400	8242	2683	SW 6010B
Beryllium, ICP	0.8		mg/kg	<0.3	05/26/2002 16:33	400	8242	2665	SW 6010B
Cadmium, ICP	ND		mg/kg	<2.0	05/26/2002 16:33	400	8242	2753	SW 6010B
Chromium, ICP	5.7		mg/kg	<2.6	05/26/2002 16:33	400	8242	2816	SW 6010B
Lead, ICP	6.4		mg/kg	<5.2	05/26/2002 16:33	400	8242	2820	SW 6010B

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Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320131	SAMPLE DESCRIPTION B-10 (6-7')							DATE-TIME TAKEN 05/17/2002 11:10	
ercury, CVAA	ND		mg/kg	<0.0080	05/29/2002 14:57	400	289	945	SW 7471A
um, ICP	ND		mg/kg	<6.5	05/26/2002 16:33	400	8242	2641	SW 6010B
Si r, ICP	ND		mg/kg	<2.6	05/26/2002 16:33	400	8242	2569	SW 6010B
ICP Metals Digestion-Solid	Complete			Complete	05/24/2002 18:00	400	8242		SW 3050B
ercury-Non Aqueous Digestion	Complete			Complete	05/29/2002 12:45	400	289		SW 7471A

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SAMPLE NO. 320131 — SAMPLE DESCRIPTION B-10 (6-7') — DATE-TIME TAKEN 05/17/2002 11:10

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
VOLATILES - 8260 (NONAQ)						401			
A[illegible]ne	ND		ug/Kg	<100	05/31/2002	401		3762	SW 8260B
[illegible]ein	ND		ug/Kg	<50	05/31/2002	401		3762	SW 8260B
Acrylonitrile	ND		ug/Kg	<50	05/31/2002	401		3762	SW 8260B
Benzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromobenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromochloromethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromodichloromethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromoform	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromomethane	ND		ug/Kg	<10.	05/31/2002	401		3762	SW 8260B
n-Butylbenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
sec-Butylbenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
tert-Butylbenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Carbon disulfide	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Carbon tetrachloride	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Chlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Chlorodibromomethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Chloroethane	ND		ug/Kg	<10.	05/31/2002	401		3762	SW 8260B
Chloroform	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Chloromethane	ND		ug/Kg	<10.	05/31/2002	401		3762	SW 8260B
2-Chlorotoluene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
4-Chlorotoluene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
2-Chloroethyl vinyl ether	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
1,2-Dibromo-3-chloropropane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B

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ANALYTICAL REPORT

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320131	SAMPLE DESCRIPTION B-10 (6-7')							DATE-TIME TAKEN 05/17/2002 11:10	
1,2-Dibromoethane (EDB)	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
[illegible]momethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
[illegible]Dichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,3-Dichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,4-Dichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Dichlorodifluoromethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
trans-1,4-Dichloro-2-butene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1-Dichloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2-Dichloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1-Dichloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
cis-1,2-Dichloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
trans-1,2-Dichloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2-Dichloropropane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,3-Dichloropropane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
2,2-Dichloropropane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1-Dichloropropene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
cis-1,3-Dichloropropene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
trans-1,3-Dichloropropene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Ethylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Ethyl methacrylate	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
2-Hexanone	ND		ug/Kg	<50.	05/31/2002	401	3762		SW 8260B
Hexachlorobutadiene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Iodomethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Isopropylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B

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Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320131	SAMPLE DESCRIPTION B-10 (6-7')							DATE-TIME TAKEN 05/17/2002 11:10	
p-Isopropyltoluene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
[illegible]ylene chloride	ND		ug/Kg	<10.	05/31/2002	401	3762		SW 8260B
[illegible]yl Ethyl Ketone	ND		ug/Kg	<50.	05/31/2002	401	3762		SW 8260B
Methyl-tert-butyl-ether	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
4-Methyl-2-pentanone (MIBK)	ND		ug/Kg	<50.	05/31/2002	401	3762		SW 8260B
Naphthalene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
n-Propylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Styrene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1,1,2-Tetrachloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1,2,2-Tetrachloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Tetrachloroethene	5.9		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Toluene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2,3-Trichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2,4-Trichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1,1-Trichloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1,2-Trichloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Trichloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Trichlorofluoromethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2,3-Trichloropropane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2,4-Trimethylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,3,5-Trimethylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Vinyl acetate	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Vinyl chloride	ND		ug/Kg	<2.0	05/31/2002	401	3762		SW 8260B
Xylenes, (Total)	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B

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Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320131	SAMPLE DESCRIPTION B-10 (6-7')								DATE-TIME TAKEN 05/17/2002 11:10
SURR: Toluene-d8	105		%		05/31/2002	401		3762	SW 8260B
SURR: Dibromofluoromethane	105		%		05/31/2002	401		3762	SW 8260B
SURR: 4-Bromofluorobenzene	106		%		05/31/2002	401		3762	SW 8260B

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SAMPLE NO. 320131 — SAMPLE DESCRIPTION B-10 (6-7') — DATE-TIME TAKEN 05/17/2002 11:10

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
BNA - 8270 (NONAQ)									
Acenaphthene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Acenaphthylene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Aniline	ND		ug/Kg	<660	05/25/2002 08:07	xia	1502	2328	SW 8270C
Anthracene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Benzidine	ND		ug/Kg	<7,000	05/25/2002 08:07	xia	1502	2328	SW 8270C
Benzo(a)anthracene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Benzo(b)fluoranthene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Benzo(k)fluoranthene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Benzo(a)pyrene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Benzo(ghi)perylene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Benzyl alcohol	ND		ug/Kg	<660	05/25/2002 08:07	xia	1502	2328	SW 8270C
Benzyl butyl phthalate	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Bis(2-chloroethyl)ether	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Bis(2-chloroethoxy)methane	ND		ug/Kg	<660	05/25/2002 08:07	xia	1502	2328	SW 8270C
Bis(2-ethylhexyl)phthalate	ND		ug/Kg	<660	05/25/2002 08:07	xia	1502	2328	SW 8270C
Bis(2-chloroisopropyl)ether	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
4-Bromophenyl phenyl ether	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Carbazole	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
4-Chloroaniline	ND		ug/Kg	<1,300	05/25/2002 08:07	xia	1502	2328	SW 8270C
2-Chloronaphthalene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
4-Chlorophenylphenyl ether	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Chrysene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Dibenzo(a,h)anthracene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C

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Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320131	SAMPLE DESCRIPTION B-10 (6-7')							DATE-TIME TAKEN 05/17/2002 11:10	
Dibenzofuran	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
butylphthalate	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
1,3-Dichlorobenzene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
1,2-Dichlorobenzene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
1,4-Dichlorobenzene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
3,3-Dichlorobenzidine	ND		ug/Kg	<1,400	05/25/2002 08:07	xia	1502	2328	SW 8270C
Diethyl phthalate	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
1,2-Diphenylhydrazine	ND		ug/Kg	<660	05/25/2002 08:07	xia	1502	2328	SW 8270C
Dimethyl phthalate	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
2,4-Dinitrotoluene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
2,6-Dinitrotoluene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Di-n-octylphthalate	ND		ug/Kg	<1,400	05/25/2002 08:07	xia	1502	2328	SW 8270C
Fluoranthene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Fluorene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Hexachlorobenzene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Hexachlorobutadiene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Hexachlorocyclopentadiene	ND		ug/Kg	<660	05/25/2002 08:07	xia	1502	2328	SW 8270C
Hexachloroethane	ND		ug/Kg	<660	05/25/2002 08:07	xia	1502	2328	SW 8270C
Indeno(1,2,3-cd)pyrene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Isophorone	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
2-Methylnaphthalene	350.		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Naphthalene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
2-Nitroaniline	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
3-Nitroaniline	ND		ug/Kg	<660	05/25/2002 08:07	xia	1502	2328	SW 8270C

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ANALYTICAL REPORT

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320131	SAMPLE DESCRIPTION B-10 (6-7')							DATE-TIME TAKEN 05/17/2002 11:10	
4-Nitroaniline	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Nitrobenzene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
N-Nitrosodimethylamine	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
N-Nitrosodiphenylamine	ND		ug/Kg	<3,300	05/25/2002 08:07	xia	1502	2328	SW 8270C
N-Nitrosodi-n-propylamine	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Phenanthrene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Pyrene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
Pyridine	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
1,2,4-Trichlorobenzene	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
SURR: Nitrobenzene-d5	64		%		05/25/2002 08:07	xia	1502	2328	SW 8270C
SURR: 2-Fluorobiphenyl	62		%		05/25/2002 08:07	xia	1502	2328	SW 8270C
SURR: Terphenyl-d14	68		%		05/25/2002 08:07	xia	1502	2328	SW 8270C
Benzoic acid	ND		ug/Kg	<1,650	05/25/2002 08:07	xia	1502	2328	SW 8270C
4-Chloro-3-methylphenol	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
2-Chlorophenol	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
2,4-Dichlorophenol	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
2,4-Dimethylphenol	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
2,4-Dinitrophenol	ND		ug/Kg	<1,300	05/25/2002 08:07	xia	1502	2328	SW 8270C
4,6-Dinitro-2-methylphenol	ND		ug/Kg	<1,300	05/25/2002 08:07	xia	1502	2328	SW 8270C
2-Methylphenol	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
3 & 4-Methylphenol	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
2-Nitrophenol	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
4-Nitrophenol	ND		ug/Kg	<1,300	05/25/2002 08:07	xia	1502	2328	SW 8270C
Pentachlorophenol	ND		ug/Kg	<1,300	05/25/2002 08:07	xia	1502	2328	SW 8270C

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South Bend, IN 46637-1706

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Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320131	SAMPLE DESCRIPTION B-10 (6-7')								DATE-TIME TAKEN 05/17/2002 11:10
Phenol	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
[illegible]-Trichlorophenol	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
2,[illegible]-Trichlorophenol	ND		ug/Kg	<330	05/25/2002 08:07	xia	1502	2328	SW 8270C
SURR: Phenol-d5	51		%		05/25/2002 08:07	xia	1502	2328	SW 8270C
SURR: 2-Fluorophenol	36		%		05/25/2002 08:07	xia	1502	2328	SW 8270C
SURR: 2,4,6-Tribromophenol	36	text	%		05/25/2002 08:07	xia	1502	2328	SW 8270C

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Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320131	**SAMPLE DESCRIPTION B-10 (6-7')**								**DATE-TIME TAKEN 05/17/2002 11:10**
BNA extraction, 8270 (nonaq)	complete				05/22/2002 13:00	mnw 400	1502		
[illegible] - NONAQUEOUS S-8082									
PCB-1016	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1221	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1232	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1242	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1248	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1254	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1260	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
Surrogate	53/66		%	40-160	05/28/2002	400	1587	1054	SW 8082
PCB extraction (non-aqueous)	SW 3545			Complete	05/23/2002	400	1587		
SAMPLE NO. 320132	**SAMPLE DESCRIPTION B-13 (3-4')**								**DATE-TIME TAKEN 05/17/2002 12:05**
ICP METALS NONAQUEOUS	Complete			Complete	05/26/2002 16:35	emd		2243	
Arsenic, ICP	ND		mg/kg	<16	05/26/2002 16:35	400	8242	2683	SW 6010B
Beryllium, ICP	ND		mg/kg	<0.8	05/26/2002 16:35	400	8242	2665	SW 6010B
Cadmium, ICP	ND		mg/kg	<4.9	05/26/2002 16:35	400	8242	2753	SW 6010B
Chromium, ICP	23.1		mg/kg	<6.5	05/26/2002 16:35	400	8242	2816	SW 6010B
Lead, ICP	624		mg/kg	<13	05/26/2002 16:35	400	8242	2820	SW 6010B

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Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320132	SAMPLE DESCRIPTION B-13 (3-4')								DATE-TIME TAKEN 05/17/2002 12:05
Mercury, CVAA	0.360		mg/kg	<0.0080	05/29/2002 15:00	400	289	945	SW 7471A
S[illegible]ium, ICP	ND		mg/kg	<16	05/26/2002 16:35	400	8242	2641	SW 6010B
S[illegible]r, ICP	ND		mg/kg	<6.5	05/26/2002 16:35	400	8242	2569	SW 6010B
ICP Metals Digestion-Solid	Complete			Complete	05/24/2002 18:00	400	8242		SW 3050B
Mercury-Non Aqueous Digestion	Complete			Complete	05/29/2002 12:45	400	289		SW 7471A

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SAMPLE NO. 320132 — SAMPLE DESCRIPTION: B-13 (3-4') — DATE-TIME TAKEN: 05/17/2002 12:05

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
VOLATILES - 8260 (NONAQ)						401			
ne	ND		ug/Kg	<100	05/31/2002	401		3762	SW 8260B
ein	ND		ug/Kg	<50	05/31/2002	401		3762	SW 8260B
Acrylonitrile	ND		ug/Kg	<50	05/31/2002	401		3762	SW 8260B
Benzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromobenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromochloromethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromodichloromethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromoform	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Bromomethane	ND		ug/Kg	<10.	05/31/2002	401		3762	SW 8260B
n-Butylbenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
sec-Butylbenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
tert-Butylbenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Carbon disulfide	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Carbon tetrachloride	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Chlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Chlorodibromomethane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Chloroethane	ND		ug/Kg	<10.	05/31/2002	401		3762	SW 8260B
Chloroform	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
Chloromethane	ND		ug/Kg	<10.	05/31/2002	401		3762	SW 8260B
2-Chlorotoluene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
4-Chlorotoluene	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
2-Chloroethyl vinyl ether	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B
1,2-Dibromo-3-chloropropane	ND		ug/Kg	<5.0	05/31/2002	401		3762	SW 8260B

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ANALYTICAL REPORT

Mr. Mike Furfaro, CHMM
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51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

SAMPLE NO. 320132 — SAMPLE DESCRIPTION: B-13 (3-4') — DATE-TIME TAKEN: 05/17/2002 12:05

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
1,2-Dibromoethane (EDB)	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
[illegible]momethane	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
[illegible]ichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
1,3-Dichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
1,4-Dichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
Dichlorodifluoromethane	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
trans-1,4-Dichloro-2-butene	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
1,1-Dichloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
1,2-Dichloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
1,1-Dichloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
cis-1,2-Dichloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
trans-1,2-Dichloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
1,2-Dichloropropane	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
1,3-Dichloropropane	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
2,2-Dichloropropane	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
1,1-Dichloropropene	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
cis-1,3-Dichloropropene	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
trans-1,3-Dichloropropene	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
Ethylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
Ethyl methacrylate	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
2-Hexanone	ND		ug/Kg	<50.	05/31/2002	401	3762	SW 8260B
Hexachlorobutadiene	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
Iodomethane	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B
Isopropylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762	SW 8260B

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SAMPLE NO. 320132 — SAMPLE DESCRIPTION B-13 (3-4') — DATE-TIME TAKEN 05/17/2002 12:05

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
p-Isopropyltoluene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
[illegible]lene chloride	ND		ug/Kg	<10.	05/31/2002	401	3762		SW 8260B
[illegible]yl Ethyl Ketone	ND		ug/Kg	<50.	05/31/2002	401	3762		SW 8260B
Methyl-tert-butyl-ether	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
4-Methyl-2-pentanone (MIBK)	ND		ug/Kg	<50.	05/31/2002	401	3762		SW 8260B
Naphthalene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
n-Propylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Styrene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1,1,2-Tetrachloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1,2,2-Tetrachloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Tetrachloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Toluene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2,3-Trichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2,4-Trichlorobenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1,1-Trichloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,1,2-Trichloroethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Trichloroethene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Trichlorofluoromethane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2,3-Trichloropropane	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,2,4-Trimethylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
1,3,5-Trimethylbenzene	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Vinyl acetate	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B
Vinyl chloride	ND		ug/Kg	<2.0	05/31/2002	401	3762		SW 8260B
Xylenes, (Total)	ND		ug/Kg	<5.0	05/31/2002	401	3762		SW 8260B

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Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320132	SAMPLE DESCRIPTION B-13 (3-4')							DATE-TIME TAKEN 05/17/2002 12:05	
SURR: Toluene-d8	101		%		05/31/2002	401		3762	SW 8260B
Dibromofluoromethane	102		%		05/31/2002	401		3762	SW 8260B
4-Bromofluorobenzene	97		%		05/31/2002	401		3762	SW 8260B

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SAMPLE NO. 320132 — SAMPLE DESCRIPTION B-13 (3-4') — DATE-TIME TAKEN 05/17/2002 12:05

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
BNA - 8270 (NONAQ)									
Acenaphthene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Acenaphthylene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Aniline	ND		ug/Kg	<660	05/25/2002 08:50	xia	1502	2328	SW 8270C
Anthracene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Benzidine	ND		ug/Kg	<7,000	05/25/2002 08:50	xia	1502	2328	SW 8270C
Benzo(a)anthracene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Benzo(b)fluoranthene	390		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Benzo(k)fluoranthene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Benzo(a)pyrene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Benzo(ghi)perylene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Benzyl alcohol	ND		ug/Kg	<660	05/25/2002 08:50	xia	1502	2328	SW 8270C
Benzyl butyl phthalate	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Bis(2-chloroethyl)ether	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Bis(2-chloroethoxy)methane	ND		ug/Kg	<660	05/25/2002 08:50	xia	1502	2328	SW 8270C
Bis(2-ethylhexyl)phthalate	ND		ug/Kg	<660	05/25/2002 08:50	xia	1502	2328	SW 8270C
Bis(2-chloroisopropyl)ether	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
4-Bromophenyl phenyl ether	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Carbazole	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
4-Chloroaniline	ND		ug/Kg	<1,300	05/25/2002 08:50	xia	1502	2328	SW 8270C
2-Chloronaphthalene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
4-Chlorophenylphenyl ether	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Chrysene	350		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Dibenzo(a,h)anthracene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C

ND - NOT DETECTED AT THE REPORTING LIMIT.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

SAMPLE NO. 320132 — SAMPLE DESCRIPTION B-13 (3-4') — DATE-TIME TAKEN 05/17/2002 12:05

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
Dibenzofuran	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Di-n-butylphthalate	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
1,4-Dichlorobenzene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
1,2-Dichlorobenzene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
1,4-Dichlorobenzene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
3,3-Dichlorobenzidine	ND		ug/Kg	<1,400	05/25/2002 08:50	xia	1502	2328	SW 8270C
Diethyl phthalate	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
1,2-Diphenylhydrazine	ND		ug/Kg	<660	05/25/2002 08:50	xia	1502	2328	SW 8270C
Dimethyl phthalate	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
2,4-Dinitrotoluene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
2,6-Dinitrotoluene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Di-n-octylphthalate	ND		ug/Kg	<1,400	05/25/2002 08:50	xia	1502	2328	SW 8270C
Fluoranthene	490		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Fluorene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Hexachlorobenzene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Hexachlorobutadiene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Hexachlorocyclopentadiene	ND		ug/Kg	<660	05/25/2002 08:50	xia	1502	2328	SW 8270C
Hexachloroethane	ND		ug/Kg	<660	05/25/2002 08:50	xia	1502	2328	SW 8270C
Indeno(1,2,3-cd)pyrene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Isophorone	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
2-Methylnaphthalene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Naphthalene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
2-Nitroaniline	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
3-Nitroaniline	ND		ug/Kg	<660	05/25/2002 08:50	xia	1502	2328	SW 8270C

ND - NOT DETECTED AT THE REPORTING LIMIT.

TestAmerica
INCORPORATED

ANALYTICAL REPORT

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

SAMPLE NO. 320132 — SAMPLE DESCRIPTION B-13 (3-4') — DATE-TIME TAKEN 05/17/2002 12:05

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
4-Nitroaniline	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Nitrobenzene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
N-Nitrosodimethylamine	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
N-Nitrosodiphenylamine	ND		ug/Kg	<3,300	05/25/2002 08:50	xia	1502	2328	SW 8270C
N-Nitrosodi-n-propylamine	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Phenanthrene	350		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Pyrene	550		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
Pyridine	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
1,2,4-Trichlorobenzene	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
SURR: Nitrobenzene-d5	68		%		05/25/2002 08:50	xia	1502	2328	SW 8270C
SURR: 2-Fluorobiphenyl	62		%		05/25/2002 08:50	xia	1502	2328	SW 8270C
SURR: Terphenyl-d14	70		%		05/25/2002 08:50	xia	1502	2328	SW 8270C
Benzoic acid	ND		ug/Kg	<1,650	05/25/2002 08:50	xia	1502	2328	SW 8270C
4-Chloro-3-methylphenol	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
2-Chlorophenol	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
2,4-Dichlorophenol	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
2,4-Dimethylphenol	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
2,4-Dinitrophenol	ND		ug/Kg	<1,300	05/25/2002 08:50	xia	1502	2328	SW 8270C
4,6-Dinitro-2-methylphenol	ND		ug/Kg	<1,300	05/25/2002 08:50	xia	1502	2328	SW 8270C
2-Methylphenol	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
3 & 4-Methylphenol	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
2-Nitrophenol	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
4-Nitrophenol	ND		ug/Kg	<1,300	05/25/2002 08:50	xia	1502	2328	SW 8270C
Pentachlorophenol	ND		ug/Kg	<1,300	05/25/2002 08:50	xia	1502	2328	SW 8270C

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ANALYTICAL REPORT

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320132	SAMPLE DESCRIPTION B-13 (3-4')								DATE-TIME TAKEN 05/17/2002 12:05
Phenol	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
[illegible]-Trichlorophenol	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
[illegible]5-Trichlorophenol	ND		ug/Kg	<330	05/25/2002 08:50	xia	1502	2328	SW 8270C
SURR: Phenol-d5	61		%		05/25/2002 08:50	xia	1502	2328	SW 8270C
SURR: 2-Fluorophenol	53		%		05/25/2002 08:50	xia	1502	2328	SW 8270C
SURR: 2,4,6-Tribromophenol	49		%		05/25/2002 08:50	xia	1502	2328	SW 8270C

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TestAmerica
INCORPORATED

ANALYTICAL REPORT

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Client Project ID: OLIVER FLOW-FORMER FOUNDRY AREA

Analyte	Wet Wt. Result	Flag	Units	Reporting Limit	Date/Time Analyzed	Analyst Initials	Prep Batch No.	Run Batch No.	Method Reference
SAMPLE NO. 320132	SAMPLE DESCRIPTION B-13 (3-4')								DATE-TIME TAKEN 05/17/2002 12:05
RNA extraction, 8270 (nonaq)	complete				05/22/2002 13:00	mnw	1502		
- NONAQUEOUS S-8082						400			
016	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1221	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
CB-1232	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
CB-1242	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1248	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
PCB-1254	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
CB-1260	ND		mg/kg	<0.50	05/28/2002	400	1587	1054	SW 8082
urrogate	66/83		%	40-160	05/28/2002	400	1587	1054	SW 8082
PCB extraction (non-aqueous)	SW 3545			Complete	05/23/2002	400	1587		

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TestAmerica
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QUALITY CONTROL REPORT

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

The following samples were submitted to TestAmerica, Inc. Indianapolis Division for analysis:

Project Description: OLIVER FLOW-FORMER FOUNDRY AREA

Sample Number	Sample Description	Date Taken	Time Taken	Date Received
320129	B-5 (1-2')	05/17/2002	08:15	05/21/2002
320130	B-8 (6-8')	05/17/2002	10:15	05/21/2002
320131	B-10 (6-7')	05/17/2002	11:10	05/21/2002
320132	B-13 (3-4')	05/17/2002	12:05	05/21/2002

Approved by:

TestAmerica
INCORPORATED

QUALITY CONTROL REPORT
CONTINUING CALIBRATION VERIFICATION

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Analyte	Prep Batch No.	Run Batch No.	CCV True Value	CCV Conc Found	CCV % Rec	Flag	Date Analyzed
Arsenic, ICP		2683	1.00	0.95	95		05/26/2002
Beryllium, ICP		2665	1.00	0.99	99		05/26/2002
Cadmium, ICP		2753	1.00	0.98	98		05/26/2002
Chromium, ICP		2816	1.00	0.99	99		05/26/2002
Lead, ICP		2820	1.00	1.01	101		05/26/2002
Mercury, CVAA		945	0.00300	0.00301	100		05/29/2002
Selenium, ICP		2641	1.00	0.98	98		05/26/2002
Silver, ICP		2569	1.00	0.99	99		05/26/2002
VOLATILES - 8260 (NONAQ)							
Bromoform		3762	50.0	52.0	104		05/31/2002
Chlorobenzene		3762	50.0	51.2	102		05/31/2002
Chloroform		3762	50.0	53.5	107		05/31/2002
Chloromethane		3762	50.0	52.7	105		05/31/2002
1,1-Dichloroethane		3762	50.0	54.6	109		05/31/2002
1,1-Dichloroethene		3762	50.0	56.5	113		05/31/2002
1,2-Dichloropropane		3762	50.0	53.2	106		05/31/2002
Ethylbenzene		3762	50.0	51.0	102		05/31/2002
1,1,2,2-Tetrachloroethane		3762	50.0	53.2	106		05/31/2002
Toluene		3762	50.0	51.2	102		05/31/2002
Vinyl chloride		3762	50.0	57.1	114		05/31/2002

TestAmerica
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QUALITY CONTROL REPORT
CONTINUING CALIBRATION VERIFICATION

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Analyte	Prep Batch No.	Run Batch No.	CCV True Value	CCV Conc Found	CCV % Rec	Flag	Date Analyzed
BNA - 8270 (NONAQ)							
Acenaphthene		2320	80.0	77.9	97		05/22/2002
Benzo(a)pyrene		2320	80.0	81.8	102		05/22/2002
1,4-Dichlorobenzene		2320	80.0	78.6	98		05/22/2002
2,4-Dinitrotoluene		2320	80.0	88.1	110		05/22/2002
Di-n-octylphthalate		2320	80.0	92.7	116		05/22/2002
Fluoranthene		2320	80.0	80.7	101		05/22/2002
Hexachlorobutadiene		2320	80.0	75.1	94		05/22/2002
Hexachlorocyclopentadiene		2320	160.0	151.	94		05/22/2002
N-Nitrosodiphenylamine		2320	80.0	67.8	85		05/22/2002
N-Nitrosodi-n-propylamine		2320	80.0	86.7	108		05/22/2002
Pyrene		2320	80.0	90.3	113		05/22/2002
1,2,4-Trichlorobenzene		2320	80.0	77.4	97		05/22/2002
4-Chloro-3-methylphenol		2320	80.0	88.9	111		05/22/2002
2-Chlorophenol		2320	80.0	83.5	104		05/22/2002
2,4-Dichlorophenol		2320	80.0	83.1	104		05/22/2002
2,4-Dinitrophenol		2320	160.0	73.4	46		05/22/2002
2-Nitrophenol		2320	80.0	84.1	105		05/22/2002
4-Nitrophenol		2320	160.0	183.	114		05/22/2002
Pentachlorophenol		2320	160.0	155.	97		05/22/2002
Phenol		2320	80.0	83.7	105		05/22/2002
2,4,6-Trichlorophenol		2320	80.0	87.8	110		05/22/2002

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QUALITY CONTROL REPORT
CONTINUING CALIBRATION VERIFICATION

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Analyte	Prep Batch No.	Run Batch No.	CCV True Value	CCV Conc Found	CCV % Rec	Flag	Date Analyzed
BNA - 8270 (NONAQ)							
Acenaphthene		2328	80.0	73.4	92		05/24/2002
Benzo(a)pyrene		2328	80.0	84.6	106		05/24/2002
1,4-Dichlorobenzene		2328	80.0	80.1	100		05/24/2002
2,4-Dinitrotoluene		2328	80.0	86.7	108		05/24/2002
Di-n-octylphthalate		2328	80.0	94.6	118		05/24/2002
Fluoranthene		2328	80.0	74.4	93		05/24/2002
Hexachlorobutadiene		2328	80.0	76.9	96		05/24/2002
Hexachlorocyclopentadiene		2328	160.0	124.	78		05/24/2002
N-Nitrosodiphenylamine		2328	80.0	68.2	85		05/24/2002
N-Nitrosodi-n-propylamine		2328	80.0	82.9	104		05/24/2002
Pyrene		2328	80.0	87.1	109		05/24/2002
1,2,4-Trichlorobenzene		2328	80.0	78.5	98		05/24/2002
4-Chloro-3-methylphenol		2328	80.0	87.3	109		05/24/2002
2-Chlorophenol		2328	80.0	82.3	103		05/24/2002
2,4-Dichlorophenol		2328	80.0	80.6	101		05/24/2002
2,4-Dinitrophenol		2328	160.0	115.	72		05/24/2002
2-Nitrophenol		2328	80.0	81.8	102		05/24/2002
4-Nitrophenol		2328	160.0	160.	100		05/24/2002
Pentachlorophenol		2328	160.0	153.	96		05/24/2002
Phenol		2328	80.0	80.8	101		05/24/2002
2,4,6-Trichlorophenol		2328	80.0	78.9	99		05/24/2002
PCBs - NONAQUEOUS S-8082							
PCB-1016		1054	1.0	0.96	96		05/28/2002
PCB-1260		1054	1.0	1.00	100		05/28/2002

TestAmerica
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QUALITY CONTROL REPORT
BLANKS

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Analyte	Prep Batch No.	Run Batch No.	Blank Value	Flag	Units	Reporting Limit	Date Analyzed
Arsenic, ICP	8242	2683	<0.10		mg/kg	<0.10	05/26/2002
Arsenic, ICP		2683	<0.10		mg/kg	<0.10	05/26/2002
Beryllium, ICP	8242	2665	<0.005		mg/kg	<0.005	05/26/2002
Beryllium, ICP		2665	<0.005		mg/kg	<0.005	05/26/2002
Cadmium, ICP	8242	2753	<0.030		mg/kg	<0.030	05/26/2002
Cadmium, ICP		2753	<0.030		mg/kg	<0.030	05/26/2002
Chromium, ICP	8242	2816	<0.040		mg/kg	<0.040	05/26/2002
Chromium, ICP		2816	<0.040		mg/kg	<0.040	05/26/2002
Lead, ICP	8242	2820	<0.080		mg/kg	<0.080	05/26/2002
Lead, ICP		2820	<0.080		mg/kg	<0.080	05/26/2002
Mercury, CVAA	289	945	<0.0080		mg/kg	<0.0080	05/29/2002
Selenium, ICP	8242	2641	<0.10		mg/kg	<0.10	05/26/2002
Selenium, ICP		2641	<0.10		mg/kg	<0.10	05/26/2002
Silver, ICP	8242	2569	<0.040		mg/kg	<0.040	05/26/2002
Silver, ICP		2569	<0.040		mg/kg	<0.040	05/26/2002
VOLATILES - 8260 (NONAQ)							
Acetone		3762	<100		ug/kg	<100	05/31/2002
Acrolein		3762	<50		ug/kg	<50	05/31/2002
Acrylonitrile		3762	<50		ug/kg	<50	05/31/2002
Benzene		3762	<5.0		ug/kg	<5.0	05/31/2002
Bromobenzene		3762	<5.0		ug/kg	<5.0	05/31/2002
Bromochloromethane		3762	<5.0		ug/kg	<5.0	05/31/2002
Bromodichloromethane		3762	<5.0		ug/kg	<5.0	05/31/2002
Bromoform		3762	<5.0		ug/kg	<5.0	05/31/2002
Bromomethane		3762	<10.		ug/kg	<10.	05/31/2002
n-Butylbenzene		3762	<5.0		ug/kg	<5.0	05/31/2002
sec-Butylbenzene		3762	<5.0		ug/kg	<5.0	05/31/2002
tert-Butylbenzene		3762	<5.0		ug/kg	<5.0	05/31/2002
Carbon disulfide		3762	<5.0		ug/kg	<5.0	05/31/2002
Carbon tetrachloride		3762	<5.0		ug/kg	<5.0	05/31/2002
Chlorobenzene		3762	<5.0		ug/kg	<5.0	05/31/2002
Chlorodibromomethane		3762	<5.0		ug/kg	<5.0	05/31/2002
Chloroethane		3762	<10.		ug/kg	<10.	05/31/2002
Chloroform		3762	<5.0		ug/kg	<5.0	05/31/2002

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QUALITY CONTROL REPORT
BLANKS

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Analyte	Prep Batch No.	Run Batch No.	Blank Value	Flag	Units	Reporting Limit	Date Analyzed
Chloromethane		3762	<10.		ug/kg	<10.	05/31/2002
2-Chlorotoluene		3762	<5.0		ug/kg	<5.0	05/31/2002
4-Chlorotoluene		3762	<5.0		ug/kg	<5.0	05/31/2002
2-Chloroethyl vinyl ether		3762	<5.0		ug/kg	<5.0	05/31/2002
1,2-Dibromo-3-chloropropane		3762	<5.0		ug/kg	<5.0	05/31/2002
1,2-Dibromoethane (EDB)		3762	<5.0		ug/kg	<5.0	05/31/2002
Dibromomethane		3762	<5.0		ug/kg	<5.0	05/31/2002
1,2-Dichlorobenzene		3762	<5.0		ug/kg	<5.0	05/31/2002
1,3-Dichlorobenzene		3762	<5.0		ug/kg	<5.0	05/31/2002
1,4-Dichlorobenzene		3762	<5.0		ug/kg	<5.0	05/31/2002
Dichlorodifluoromethane		3762	<5.0		ug/kg	<5.0	05/31/2002
trans-1,4-Dichloro-2-butene		3762	<5.0		ug/kg	<5.0	05/31/2002
1,1-Dichloroethane		3762	<5.0		ug/kg	<5.0	05/31/2002
1,2-Dichloroethane		3762	<5.0		ug/kg	<5.0	05/31/2002
1,1-Dichloroethene		3762	<5.0		ug/kg	<5.0	05/31/2002
cis-1,2-Dichloroethene		3762	<5.0		ug/kg	<5.0	05/31/2002
trans-1,2-Dichloroethene		3762	<5.0		ug/kg	<5.0	05/31/2002
1,2-Dichloropropane		3762	<5.0		ug/kg	<5.0	05/31/2002
1,3-Dichloropropane		3762	<5.0		ug/kg	<5.0	05/31/2002
2,2-Dichloropropane		3762	<5.0		ug/kg	<5.0	05/31/2002
1,1-Dichloropropene		3762	<5.0		ug/kg	<5.0	05/31/2002
cis-1,3-Dichloropropene		3762	<5.0		ug/kg	<5.0	05/31/2002
trans-1,3-Dichloropropene		3762	<5.0		ug/kg	<5.0	05/31/2002
Ethylbenzene		3762	<5.0		ug/kg	<5.0	05/31/2002
Ethyl methacrylate		3762	<5.0		ug/kg	<5.0	05/31/2002
2-Hexanone		3762	<50.		ug/kg	<50.	05/31/2002
Hexachlorobutadiene		3762	<5.0		ug/kg	<5.0	05/31/2002
Iodomethane		3762	<5.0		ug/kg	<5.0	05/31/2002
Isopropylbenzene		3762	<5.0		ug/kg	<5.0	05/31/2002
p-Isopropyltoluene		3762	<5.0		ug/kg	<5.0	05/31/2002
Methylene chloride		3762	<10.		ug/kg	<10.	05/31/2002
Methyl Ethyl Ketone		3762	<50.		ug/kg	<50.	05/31/2002
Methyl-tert-butyl-ether		3762	<5.0		ug/kg	<5.0	05/31/2002
4-Methyl-2-pentanone (MIBK)		3762	<50.		ug/kg	<50.	05/31/2002

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QUALITY CONTROL REPORT
BLANKS

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Analyte	Prep Batch No.	Run Batch No.	Blank Value	Flag	Units	Reporting Limit	Date Analyzed
Naphthalene		3762	<5.0		ug/kg	<5.0	05/31/2002
n-Propylbenzene		3762	<5.0		ug/kg	<5.0	05/31/2002
Styrene		3762	<5.0		ug/kg	<5.0	05/31/2002
1,1,1,2-Tetrachloroethane		3762	<5.0		ug/kg	<5.0	05/31/2002
1,1,2,2-Tetrachloroethane		3762	<5.0		ug/kg	<5.0	05/31/2002
Tetrachloroethene		3762	<5.0		ug/kg	<5.0	05/31/2002
Toluene		3762	<5.0		ug/kg	<5.0	05/31/2002
1,2,3-Trichlorobenzene		3762	<5.0		ug/kg	<5.0	05/31/2002
1,2,4-Trichlorobenzene		3762	<5.0		ug/kg	<5.0	05/31/2002
1,1,1-Trichloroethane		3762	<5.0		ug/kg	<5.0	05/31/2002
1,1,2-Trichloroethane		3762	<5.0		ug/kg	<5.0	05/31/2002
Trichloroethene		3762	<5.0		ug/kg	<5.0	05/31/2002
Trichlorofluoromethane		3762	<5.0		ug/kg	<5.0	05/31/2002
1,2,3-Trichloropropane		3762	<5.0		ug/kg	<5.0	05/31/2002
1,2,4-Trimethylbenzene		3762	<5.0		ug/kg	<5.0	05/31/2002
1,3,5-Trimethylbenzene		3762	<5.0		ug/kg	<5.0	05/31/2002
Vinyl acetate		3762	<5.0		ug/kg	<5.0	05/31/2002
Vinyl chloride		3762	<2.0		ug/kg	<2.0	05/31/2002
Xylenes, (Total)		3762	<5.0		ug/kg	<5.0	05/31/2002
SURR: Toluene-d8		3762	100		%		05/31/2002
SURR: Dibromofluoromethane		3762	103		%		05/31/2002
SURR: 4-Bromofluorobenzene		3762	96		%		05/31/2002

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QUALITY CONTROL REPORT
BLANKS

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Analyte	Prep Batch No.	Run Batch No.	Blank Value	Flag	Units	Reporting Limit	Date Analyzed
BNA - 8270 (NONAQ)							
Acenaphthene	1502	2320	<330		ug/kg	<330	05/22/2002
Acenaphthylene	1502	2320	<330		ug/kg	<330	05/22/2002
Aniline	1502	2320	<660		ug/kg	<660	05/22/2002
Anthracene	1502	2320	<330		ug/kg	<330	05/22/2002
Benzidine	1502	2320	<7,000		ug/kg	<7,000	05/22/2002
Benzo(a)anthracene	1502	2320	<330		ug/kg	<330	05/22/2002
Benzo(b)fluoranthene	1502	2320	<330		ug/kg	<330	05/22/2002
Benzo(k)fluoranthene	1502	2320	<330		ug/kg	<330	05/22/2002
Benzo(a)pyrene	1502	2320	<330		ug/kg	<330	05/22/2002
Benzo(ghi)perylene	1502	2320	<330		ug/kg	<330	05/22/2002
Benzyl alcohol	1502	2320	<660		ug/kg	<660	05/22/2002
Benzyl butyl phthalate	1502	2320	<330		ug/kg	<330	05/22/2002
Bis(2-chloroethyl)ether	1502	2320	<330		ug/kg	<330	05/22/2002
Bis(2-chloroethoxy)methane	1502	2320	<660		ug/kg	<660	05/22/2002
Bis(2-ethylhexyl)phthalate	1502	2320	<660		ug/kg	<660	05/22/2002
Bis(2-chloroisopropyl)ether	1502	2320	<330		ug/kg	<330	05/22/2002
4-Bromophenyl phenyl ether	1502	2320	<330		ug/kg	<330	05/22/2002
Carbazole	1502	2320	<330		ug/kg	<330	05/22/2002
4-Chloroaniline	1502	2320	<1,300		ug/kg	<1,300	05/22/2002
2-Chloronaphthalene	1502	2320	<330		ug/kg	<330	05/22/2002
4-Chlorophenylphenyl ether	1502	2320	<330		ug/kg	<330	05/22/2002
Chrysene	1502	2320	<330		ug/kg	<330	05/22/2002
Dibenzo(a,h)anthracene	1502	2320	<330		ug/kg	<330	05/22/2002
Dibenzofuran	1502	2320	<330		ug/kg	<330	05/22/2002
Di-n-butylphthalate	1502	2320	<330		ug/kg	<330	05/22/2002
1,3-Dichlorobenzene	1502	2320	<330		ug/kg	<330	05/22/2002
1,2-Dichlorobenzene	1502	2320	<330		ug/kg	<330	05/22/2002
1,4-Dichlorobenzene	1502	2320	<330		ug/kg	<330	05/22/2002
3,3-Dichlorobenzidine	1502	2320	<1,400		ug/kg	<1,400	05/22/2002
Diethyl phthalate	1502	2320	<330		ug/kg	<330	05/22/2002
1,2-Diphenylhydrazine	1502	2320	<660		ug/kg	<660	05/22/2002
Dimethyl phthalate	1502	2320	<330		ug/kg	<330	05/22/2002
2,4-Dinitrotoluene	1502	2320	<330		ug/kg	<330	05/22/2002

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QUALITY CONTROL REPORT
BLANKS

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Analyte	Prep Batch No.	Run Batch No.	Blank Value	Flag	Units	Reporting Limit	Date Analyzed
2,6-Dinitrotoluene	1502	2320	<330		ug/kg	<330	05/22/2002
Di-n-octylphthalate	1502	2320	<1,400		ug/kg	<1,400	05/22/2002
Fluoranthene	1502	2320	<330		ug/kg	<330	05/22/2002
Fluorene	1502	2320	<330		ug/kg	<330	05/22/2002
Hexachlorobenzene	1502	2320	<330		ug/kg	<330	05/22/2002
Hexachlorobutadiene	1502	2320	<330		ug/kg	<330	05/22/2002
Hexachlorocyclopentadiene	1502	2320	<660		ug/kg	<660	05/22/2002
Hexachloroethane	1502	2320	<660		ug/kg	<660	05/22/2002
Indeno(1,2,3-cd)pyrene	1502	2320	<330		ug/kg	<330	05/22/2002
Isophorone	1502	2320	<330		ug/kg	<330	05/22/2002
2-Methylnaphthalene	1502	2320	<330		ug/kg	<330	05/22/2002
Naphthalene	1502	2320	<330		ug/kg	<330	05/22/2002
2-Nitroaniline	1502	2320	<330		ug/kg	<330	05/22/2002
3-Nitroaniline	1502	2320	<660		ug/kg	<660	05/22/2002
4-Nitroaniline	1502	2320	<330		ug/kg	<330	05/22/2002
Nitrobenzene	1502	2320	<330		ug/kg	<330	05/22/2002
N-Nitrosodimethylamine	1502	2320	<330		ug/kg	<330	05/22/2002
N-Nitrosodiphenylamine	1502	2320	<3,300		ug/kg	<3,300	05/22/2002
N-Nitrosodi-n-propylamine	1502	2320	<330		ug/kg	<330	05/22/2002
Phenanthrene	1502	2320	<330		ug/kg	<330	05/22/2002
Pyrene	1502	2320	<330		ug/kg	<330	05/22/2002
Pyridine	1502	2320	<330		ug/kg	<330	05/22/2002
1,2,4-Trichlorobenzene	1502	2320	<330		ug/kg	<330	05/22/2002
SURR: Nitrobenzene-d5	1502	2320	80		%		05/22/2002
SURR: 2-Fluorobiphenyl	1502	2320	77		%		05/22/2002
SURR: Terphenyl-d14	1502	2320	69		%		05/22/2002
Benzoic acid	1502	2320	<1,650		ug/kg	<1,650	05/22/2002
4-Chloro-3-methylphenol	1502	2320	<330		ug/kg	<330	05/22/2002
2-Chlorophenol	1502	2320	<330		ug/kg	<330	05/22/2002
2,4-Dichlorophenol	1502	2320	<330		ug/kg	<330	05/22/2002
2,4-Dimethylphenol	1502	2320	<330		ug/kg	<330	05/22/2002
2,4-Dinitrophenol	1502	2320	<1,300		ug/kg	<1,300	05/22/2002
4,6-Dinitro-2-methylphenol	1502	2320	<1,300		ug/kg	<1,300	05/22/2002
2-Methylphenol	1502	2320	<330		ug/kg	<330	05/22/2002

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QUALITY CONTROL REPORT
BLANKS

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Analyte	Prep Batch No.	Run Batch No.	Blank Value	Flag	Units	Reporting Limit	Date Analyzed
3 & 4-Methylphenol	1502	2320	<330		ug/kg	<330	05/22/2002
2-Nitrophenol	1502	2320	<330		ug/kg	<330	05/22/2002
4-Nitrophenol	1502	2320	<1,300		ug/kg	<1,300	05/22/2002
Pentachlorophenol	1502	2320	<1,300		ug/kg	<1,300	05/22/2002
Phenol	1502	2320	<330		ug/kg	<330	05/22/2002
2,4,6-Trichlorophenol	1502	2320	<330		ug/kg	<330	05/22/2002
2,4,5-Trichlorophenol	1502	2320	<330		ug/kg	<330	05/22/2002
SURR: Phenol-d5	1502	2320	76		%		05/22/2002
SURR: 2-Fluorophenol	1502	2320	74		%		05/22/2002
SURR: 2,4,6-Tribromophenol	1502	2320	59		%		05/22/2002
PCBs - NONAQUEOUS S-8082							

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QUALITY CONTROL REPORT
LABORATORY CONTROL STANDARD

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Analyte	Prep Batch No.	Run Batch No.	LCS True Conc	LCS Conc Found	LCS % Rec.	LCS Dup. Conc Found	LCS Dup. % Rec.	RPD	Flag	Date Analyzed
Arsenic, ICP	8242	2683	1.00	0.92	92					05/26/2002
Beryllium, ICP	8242	2665	1.00	0.96	96					05/26/2002
Cadmium, ICP	8242	2753	1.00	0.94	94					05/26/2002
Chromium, ICP	8242	2816	1.00	0.96	96					05/26/2002
Lead, ICP	8242	2820	1.00	0.97	97					05/26/2002
Mercury, CVAA	289	945	0.00200	0.00196	98					05/29/2002
Selenium, ICP	8242	2641	1.00	0.96	96					05/26/2002
Silver, ICP	8242	2569	1.00	0.95	95					05/26/2002
ATILES - 8260 (NONAQ)										
Benzene		3762	50.0	17.3	35					05/31/2002
Chlorobenzene		3762	50.0	16.5	33					05/31/2002
1,1-Dichloroethene		3762	50.0	17.6	35					05/31/2002
Toluene		3762	50.0	17.2	34					05/31/2002
Trichloroethene		3762	50.0	18.2	36					05/31/2002

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QUALITY CONTROL REPORT
LABORATORY CONTROL STANDARD

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Analyte	Prep Batch No.	Run Batch No.	LCS True Conc	LCS Conc Found	LCS % Rec.	LCS Dup. Conc Found	LCS Dup. % Rec.	RPD	Flag	Date Analyzed
BNA - 8270 (NONAQ)										05/22/2002
Acenaphthene	1502	2320	3300	2,570	78					05/22/2002
1,4-Dichlorobenzene	1502	2320	3300	2,270	69					05/22/2002
2,4-Dinitrotoluene	1502	2320	3300	2,900	88					05/22/2002
N-Nitrosodi-n-propylamine	1502	2320	3300	2,600	79					05/22/2002
Pyrene	1502	2320	3300	2,680	81					05/22/2002
1,2,4-Trichlorobenzene	1502	2320	3300	2,290	69					05/22/2002
SURR: Nitrobenzene-d5	1502	2320	100	79	79					05/22/2002
SURR: 2-Fluorobiphenyl	1502	2320	100	74	74					05/22/2002
SURR: Terphenyl-d14	1502	2320	100	68	68					05/22/2002
4-Chloro-3-methylphenol	1502	2320	3300	2,710	82					05/22/2002
2-Chlorophenol	1502	2320	3300	2,400	73					05/22/2002
4-Nitrophenol	1502	2320	3300	2,600	79					05/22/2002
Pentachlorophenol	1502	2320	3300	1,670	51					05/22/2002
Phenol	1502	2320	3300	2,530	77					05/22/2002
SURR: Phenol-d5	1502	2320	100	77	77					05/22/2002
SURR: 2-Fluorophenol	1502	2320	100	74	74					05/22/2002
SURR: 2,4,6-Tribromophenol	1502	2320	100	73	73					05/22/2002
PCBs - NONAQUEOUS S-8082										

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QUALITY CONTROL REPORT
MATRIX SPIKE/MATRIX SPIKE DUPLICATE

Mr. Mike Furfaro, CHMM
ENVIROCORP INC.
51728 State Route 933
South Bend, IN 46637-1706

05/31/2002

Job Number: 02.02342

Analyte	Prep Batch No.	Run Batch No.	Conc. Spike Added	Sample Result	Conc. MS Result	MS % Rec.	Conc. MSD Result	MSD % Rec.	RPD	Flag	Date Analyzed	Sample Spiked
Arsenic, ICP	8242	2683	31.4	59	45.8	0	49.6	0	8	q	05/26/2002	-2046
Beryllium, ICP	8242	2665	31.4	4.7	31.7	86	35.6	93	12		05/26/2002	-2046
Beryllium, ICP	8242	2665	1.00	<0.005	0.98	98	0.96	96	2.1		05/26/2002	-2047
Cadmium, ICP	8242	2753	31.4	<1.0	27.8	89	30.9	93	11		05/26/2002	-2046
Chromium, ICP	8242	2816	31.4	17.6	40.2	72	47.3	89	16	q	05/26/2002	-2046
[illegible], ICP	8242	2820	31.4	37.8	88	160	90.9	160	3.2	q	05/26/2002	-2046
[illegible]ry, CVAA	289	945	0.0790	0.0172	0.0988	103	0.109	112	9.8		05/29/2002	320130
Selenium, ICP	8242	2641	31.4	<3.3	29.9	95	33.6	101	12		05/26/2002	-2046
Silver, ICP	8242	2569	31.4	<1.3	27.7	88	31.1	93	12		05/26/2002	-2046
BNA - 8270 (NONAQ)												320129
Acenaphthene	1502	2320	3300	<330	2,770	84	2,720	82	1.8		05/22/2002	320129
1,4-Dichlorobenzene	1502	2320	3300	<330	2,490	76	2,510	76	0.8		05/22/2002	320129
2,4-Dinitrotoluene	1502	2320	3300	<330	3,190	97	3,020	92	5.5		05/22/2002	320129
N-Nitrosodi-n-propylamin	1502	2320	3300	<330	2,970	90	2,890	88	2.7		05/22/2002	320129
Pyrene	1502	2320	3300	<330	3,910	119	3,660	111	6.6		05/22/2002	320129
1,2,4-Trichlorobenzene	1502	2320	3300	<330	2,440	74	2,340	71	4.2		05/22/2002	320129
4-Chloro-3-methylphenol	1502	2320	3300	<330	3,070	93	2,840	86	7.8		05/22/2002	320129
2-Chlorophenol	1502	2320	3300	<330	2,730	83	2,490	76	9.2		05/22/2002	320129
4-Nitrophenol	1502	2320	3300	<1,300	1,820	55	<1,300	0		q	05/22/2002	320129
Pentachlorophenol	1502	2320	3300	<1,300	<1,300	0	<1,300	0		q	05/22/2002	320129
Phenol	1502	2320	3300	<330	2,950	89	2,820	86	4.5		05/22/2002	320129
PCBs - NONAQUEOUS S-808												-2050
PCB-1016		1054	1.0	<0.50	0.91	91	0.91	91	0		05/28/2002	-2050
PCB-1260		1054	1.0	<0.50	0.83	83	0.91	91	9.2		05/28/2002	-2050

KEY TO ABBREVIATIONS

<	Less than; when appearing in the result column, indicates analyte not detected at or above the Reporting Limit.
%	Percent; To convert ppm to %, divide result by 10,000. To convert % to ppm, multiply the result by 10,000.
*	Indicates the Reporting Limit is elevated due to insufficient sample volume.
mg/L	Part per million; Concentration in units of milligrams of analyte per Liter of aqueous sample.
ug/L	Part per billion; Concentration in units of micrograms of analyte per Liter of aqueous sample.
mg/kg	Part per million; Concentration in units of milligrams of analyte per kilogram of non-aqueous sample.
ug/kg	Part per billion; Concentration in units of micrograms of analyte per kilogram of non-aqueous sample.
a	Indicates the sample concentration was quantitated using a diesel fuel standard.
b	Indicates the analyte of interest was also found in the method blank.
c	Sample resembles unknown Hydrocarbon.
dw	When indicated, the result is reported on a dry weight basis. The contribution of the moisture content in the sample has been subtracted when calculating the concentration.
d1	Indicates the analyte has elevated Reporting Limit due to high concentration.
d2	Indicates the analyte has elevated Reporting Limit due to matrix.
e	Indicates the reported concentration is estimated.
g	Indicates the sample concentration was quantitated using a gasoline standard.
h	Indicates the sample was analyzed past recommended holding time.
i	Insufficient spike concentration due to high analyte concentration in the sample.
j	Indicates the reported concentration is below the Reporting Limit.
k	Indicates the sample concentration was quantitated using a kerosene standard.
l	Indicates an MS/MSD was not analyzed due to insufficient sample. An LCS / LCS Duplicate provided for precision.
m	Indicates the sample concentration was quantitated using a mineral spirits standard.
o	Indicates the sample concentration was quantitated using a motor oil standard.
p	Indicates the sample was post spiked due to sample matrix.
q	Indicates MS/MSD exceeded control limits. The associated sample may exhibit similar matrix bias. All other quality control indicators are in control.
r	Indicates the sample was received past recommended holding time.
u	Indicates the sample was received improperly preserved and/or improperly contained.
uj	Indicates the result is below the Reporting Limit and is considered estimated.
z	Indicates the BOD dilution water blank depletion was between 0.2 and 0.5 mg/L.

TestAmerica INCORPORATED

Indianapolis Division
69640 Hillsdale Court
Indianapolis, IN 46250
Phone: 317-842-4261
Fax: 317-842-4286

To assist us in using the proper analytical methods, is this work being conducted for regulatory purposes?
Compliance Monitoring _____

RISC Project? Y / N (circle one)

Client Name: Envirocorp Client #: 26730
Address: 51728 State Route 933
City/State/Zip Code: South Bend IN 46637-1706
Project Manager: Michael Furfaro
Telephone Number: 574-287-2282 Fax: 574-233-0026
Sampler Name: (Print Name) Michael Furfaro
Sampler Signature: [signature]

Project Name: Oliver Plow - Former Foundry Area
Project #: 80D2530
Site/Location: South Bend State: IN
Report To: Michael Furfaro
Invoice To:
Quote #: Corp PO#: 80-14697

TAT: ✓ Standard; ___ Rush (surcharges may apply)
Date Needed: 1
Fax Results: Y N
Email Results: Y N

Matrix: SL - Sludge DW - Drinking Water GW - Groundwater S - Soil/Solid WW - Wastewater Specify Other
Preservation & # of Containers
Analyze For:

SAMPLE ID	Date Sampled	Time Sampled	G = Grab, C = Composite	Field Filtered	SL - Sludge DW - Drinking Water GW - Groundwater S - Soil/Solid WW - Wastewater Specify Other	HNO_3	HCl	NaOH	H_2SO_4	Methanol	None	Other (Specify)	VOC-8260	SVOCs-8270	PCB's	As, Ba, Pb, Cr, Cd (Hg, Se, Ag)							REMARKS
B-5 1'-2'	5/17/02	8:15	G	—	S						2		✓	✓	✓	✓							
B-8 6'-8'	5/17/02	10:15	G	—	S						2		✓	✓	✓	✓							
B-10 6'-7'	5/17/02	11:10	G	—	S						2		✓	✓	✓	✓							
B-13 3'-4'	5/17/02	12:05	G		S						2		✓	✓	✓	✓							

QC Deliverables: ___ None; ✓ Level 2 (Batch QC); ___ Level 3; ___ Level 4; Other: _____

Special Instructions: Use ICP-MS or metals for lower detection limits OK PER CLIENT

Relinquished By: [signature]	Date: 5/20/02	Time: 3:00	Received By: UPS	Date:	Time:
Relinquished By:	Date:	Time:	Received By: [signature]	Date: 5-21-02	Time: 1005
Relinquished By:	Date:	Time:	Received By:	Date:	Time:

LABORATORY COMMENTS:
Init Lab Temp:
Rec Lab Temp: 3.3°C
Custody Seals: Y N N/A
Bottles Supplied by TestAmerica: Y N
Method of Shipment: UPS