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LUST 45-DAY SITE CLASSIFICATION COMPLETION REPORT BUILDING 1600A NS GREAT LAKES IL
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HERITAGE ENVIRONMENTAL SERVICES, INC

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LUST 45-DAY / SITE CLASSIFICATION COMPLETION REPORT BUILDING 1600A

LUST INVESTIGATION / REMEDIATION REPORT

Prepared for:

DEPARTMENT OF NAVY
PWC GREAT LAKES, ILLINOIS
ENVIRONMENTAL DEPARTMENT, BLDG. 1-A
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LUST 45-DAY / SITE CLASSIFICATION COMPLETION REPORT BUILDING 1600A LUST INVESTIGATION/REMEDIATION REPORT

Prepared for:

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1.0 INTRODUCTION

Heritage Environmental Services, Inc. (Heritage) was retained by the Navy Public Works Center, Great Lakes (PWC-GL) and the Naval Training Center, Great Lakes (NTC-GL) to perform a limited remedial action in respect to a leaking underground storage tank (LUST) located at Building 1600A at the United States Navy, Great Lakes Training Center. The LUST incident was apparently related to the former distribution piping, which had not been removed when the prior tanks had been replaced with the existing tanks. These existing tanks were removed on September 17, 1998.

In early September 1997, R.W. Collins, Inc. obtained the necessary permits, and on September 17, 1997 removed two (2) 10,000 gallon gasoline underground storage tanks (USTs), one (1) 6,500 gallon diesel UST, and the associated fuel dispensers. Following the removal of the USTs, residual petroleum impacted soils were observed withi9n the excavation. On September 25, 1997, Heritage mobilized to the site to remove the distribution piping and to excavate the petroleum contaminated soils within the immediate area of the former USTs. As approved by the Illinois EPA these excavated soils were transported to the Navy Fire Fighting Training Unit (FFTU) Building 3304 to be bio-remediated. During the performance of these limited remedial actions, Heritage also conducted a subsurface soil and groundwater investigation in the area of the former LUSTs to define the extent and magnitude of the petroleum contamination associated with these LUSTs.

This report has been prepared to document and summarize the activities conducted at the site and the findings of the investigative activities. The basis of the classification of this site and recommendations for further actions are also provided in this report.

1.1 Site Location

The site is identified as Building 1600A, Ray Street, Naval Training Center, Great Lakes, Lake County, Illinois. The site is geographically located Lake County, Illinois, in the SE quarter, of the NW quarter, of the SE quarter, of Section 5, Township 44 North, Range 12 East, East of the Third Principal Meridian, Longitude 87° 51.115' West, Latitude 42°

18.907' North. The location of the site is shown in Appendix 1, Figure 1. Figure 1, is reproduced from the USGS 7.5 minute Waukegan Quadrangle Topographic Map, Photorevised 1980.

1.2 Site Description

The site is located within the confines of the United States Navy, Great Lakes Training Facility. The site was utilized as a fueling station for US Navy motor pool vehicles from 1972 to September 1997. The UST's were registered with the Illinois Office of the State Fire Marshal (OSFM). The site was assigned OSFM Facility Registration No. 2023810.

Building 1600A was originally constructed in the 1950's for use as a fueling station for NTC vehicles. At this time two (2) 10,000-gallon steel USTs were installed along with steel distribution piping. In 1974, the gasoline steel storage tanks were replaced with fiberglass tanks, and a new 6,500-gallon fiberglass diesel storage tank was installed. The existing distribution piping was not replaced.

During 1997, the Navy relocated the fueling operations to a different area of the Great Lakes Naval Facility. In September 1997, R.W. Collins, Inc removed the USTs at the site. The UST removal activities included the excavation and removal of the three USTs, vent lines, and the fuel dispensers. The distribution lines remained in place until removed by Heritage in September 1997. The location of the former UST system is shown in Figure 2, Appendix 1.

1.3 UST Information

Three USTs were formerly located at the site, as shown in Appendix 1, Figure 2. The USTs were reportedly installed in 1972 (OSFM Registration Records) and consisted of two 10,000-gallon capacity gasoline tanks (OSFM record Tank's 1 and 2) and one 6,500-gallon capacity diesel tank (OSFM record Tank 3). The UST's were reported as single-wall fiberglass construction. Distribution piping was reported as single-wall steel construction

and was encased in concrete. The fuel dispensers were located approximately 70 feet north of the USTs.

In late 1990, a tank tightness test was performed on the UST System. The results of the tank tightness test indicated a leak in the dispenser lines. The Illinois Emergency Services and Disaster Agency (IESDA) was notified, and the site was assigned the incident number 90-3584. As a result of the UST system's failure of the tightness test in February 1991, Versar, Inc., Oak Brook, Illinois (Versar), performed an investigation of the subsurface soils in the area of the product dispenser piping to evaluate the potential impact to subsurface soils. The results of this investigation indicated that petroleum constituents had impacted the subsurface soils in the area of the dispensers. Subsequent to this determination, the two unleaded gasoline tanks were taken out of service until replacement of the UST dispenser piping was completed. In April 1991, the UST dispenser piping was replaced. Prior to the placement of the new dispenser piping, and back-filling of the excavated piping trench, two soil samples were collected from the floor of the excavated trench and submitted to a laboratory for analysis of petroleum constituents. One sample (TB1) was reported to exhibit BETX constituents above IEPA Cleanup Criteria. The sample TB1 was collected from the floor of the excavation trench for the replacement dispenser pipeline and near the fuel dispenser island.

After completion of the new dispenser piping installation, the piping was again tested for its tightness to confirm a leak-free installation. The system passed the tightness test. The piping trench was then back-filled, and the UST system was returned to service.

Approximately 55 cubic yards of petroleum impacted soils were excavated from the piping trench and transported for disposal. The quantity of petroleum product released as a result of this incident was unknown.

In September 1997, the UST System at the site was taken out of service, and the USTs were excavated and removed. The removal of the UST system was the result of a planned UST decommissioning and not the result of a new release incident. During the performance of the UST removal activities, petroleum impacted soils were encountered

1.4 UST Removal

On September 17, 1997, R.W. Collins Co. exposed the top of the tanks. Beaver Oil Company, Inc. pumped out the contents (gasoline, diesel and water mixture). The inside of the tanks were purged with high pressure water until the LEL was below 5%, then the rinseate and the residual sludges were pumped from the tanks until they were until empty. The fiberglass tanks were uncovered and lifted out from the excavation. The tanks were punctured and purged again with high-pressure water. This rinseate was then pumped from the tank. A total of 400 gallons of gasoline-water mixture (rinseate, sludge, gasoline, and diesel) was transported and disposed at the Beaver Oil Company, Inc. in Hodgkins, Illinois.

OSFM Inspector, George Pinkowski, was present to monitor these activities. Based upon inspection of the USTs it was determined that the USTs were not leaking. During the tank removal activities it was determined that the fill material, which is sand, and groundwater in this area had been impacted by petroleum hydocarbons. It was suspected that the original steel tank/piping had previously leaked. The site was reportedly classified by the OSFM. Based upon the site conditions, Heritage and the PWC-GL assume that the site was classified as a high priority site.

The incident was reported to the Illinois Emergency Management Agency (IEMA). The IEMA Incident number is 971739.

The fiberglass tanks along with any associated the fiberglass piping was transported by R.W. Collins Company to Newton County Landfill in Brook, Indiana for disposal.

Copies of the Removal Permit, Certificate of UST Destruction/Disposal Waste Manifest, Notification for Underground Storage Tanks, photographs, and the 20-Day Report are included in Appendix 11.

2.0 SITE INVESTIGATION

2.1 Subsurface Soil Investigation Activities

On September 25, 1997, Heritage mobilized the necessary personnel and equipment to perform a subsurface soil investigation at the site. The purpose of the investigation was to collect data for evaluation of the magnitude and extent of contamination of the subsurface soils and groundwater as a result of past operations of the former USTs at the site. At the time of the site investigation, the UST tanks and product dispensers had been excavated and removed from the site, although the product dispenser piping remained in place. Photographs reporting the various site activities are provided in Appendix 8.

2.1.1 Soil Boring and Sample Collection Procedures

Subsurface investigation activities at the site were performed utilizing a GeoProbe® drilling and soil sample collection technique. Drilling and soil sample collection was performed by Innovative Probing Solutions, Inc. (IPC), Mount Vernon, Illinois. Heritage provided engineering oversight for the investigative activities. Heritage oversight activities included determination of the location for constructed soil borings, sample collection intervals, sample logging, laboratory sample submittal, and other activities as necessary to coordinate and direct the site investigation.

IPS utilized a van-mounted GeoProbe® unit to advance all soil borings performed at the site and to collect soil samples. A total of 35 soil borings were advanced at the site. Soil borings were identified as B-1 through B-35. Soil boring logs for the borings completed at the site are provided in Appendix 2. Location for the soil borings at the site are shown in Appendix 1, Figure 3.

The GeoProbe® technique utilized at the site involves the use of hydraulic or manually driven probing equipment that allows the collection of soil and groundwater samples at discrete depths in the subsurface. A rotary impact hammer drill and masonry drill bit was utilized to drill through hard surface cover materials encountered at the site (concrete and asphalt) and allow insertion of the sample collection tube and probe rods to the underlying soils. Soil samples were collected into polypropylene sample-tube liners, which were inserted into the sample tubes. Appropriate drive rods are attached to the sample tube as the sample tube is driven into the subsurface until the sample collection depth is reached. The sample tube is then driven through the sample collection interval (4-foot length). The drive rods and sample tube, containing the collected sample, were removed from the boring, and the sample tube liner was removed from the sample tube.

The retrieved sample tube liner was cut open to expose the soil sample. A portion of the soil sample was collected into a laboratory supplied sample container for possible laboratory analysis (BETX and PNAs), labeled and placed in the sample cooler. A separate portion of the collected sample was placed into a container for PID/head-space testing and an additional sample collected for on-site analysis by IPS. The PID/head-space sample was set aside while the remaining sample was logged for soil types. After completion of the soil log, a PID/head-space reading was performed on the headspace sample and was recorded in the boring log. PID meter results are also summarized in Table 1, Appendix 4. Selected soil samples were analyzed on-site utilizing a field gas chromatograph for BETX compounds. Field analytical results are included in Appendix 5.

The sample tube and retractable drive point were decontaminated between each use by a detergent wash and water rinse. The sample tube components were dried, a new sample liner was installed, and the sample tube was reassembled for reuse.

At completion of each soil boring, the soil boring was abandoned by back-filling the borehole with bentonite clay to surface grade.

2.1.2 Soil Sampling Procedures

Soil samples collected for laboratory analysis were collected into one 2-ounce (BETX) and one 4-ounce (PNA) glass jars. Laboratory soil samples were packed for zero-headspace and labeled at the time of collection indicating sample collection location, sample ID, collection date and time, and requested laboratory analysis. To prevent sample cross-contamination, single-use latex sample gloves were utilized by the sample collector during all sample collection and handling activities. The soil samples were placed in an ice packed sample cooler, to maintain sample temperature at approximately 4°C, until shipment to the receiving laboratory was completed. Laboratory samples were logged on laboratory sample Chain of Custody Forms and transported to the receiving laboratory under Chain of Custody Documentation procedures. Laboratory Certificate of Analysis, Sample Certification Forms and Chain of Custody Documents are provided in Appendix 6.

2.2 Groundwater Investigation Activities

2.2.1 Piezometer Installation Procedures

Four piezometers were installed at the site utilizing GeoProbe® techniques. Innovative Probing Solutions, Inc. (IPS) performed the piezometer construction and installation. The piezometers are identified as P-1, P-2, P-3, and P-4. The piezometers were installed at the site to provide a means to evaluate local groundwater gradient and flow direction. In addition, groundwater samples were collected from the piezometers to evaluate the potential for petroleum impact upon groundwater at the site.

Soil boring procedures for the installation of the piezometers were similar to the procedures for advancing the soil borings of with the exception of soil sample collection activities. Soil samples were not collected from piezometer locations P-2, P-3, and P-4, as these locations were adjacent to soil boring locations B-13, B-11, and B-9, respectively. Soil samples were collected and logged during the installation of piezometer P-1. Where soil samples were not collected, an oversize drive shoe was attached to the drive rods to provide for a slightly larger borehole; facilitating the installation of the piezometer materials.

Piezometers installed at the site were constructed from PVC material. To prevent cross contamination during storage and transportation, all construction material arrived on-site in factory packaging material (plastic wrapping). In addition, single use nitrile sample gloves were utilized during handling, assembly, and installation of the piezometers. Piezometer-screen sections utilized at the site were five feet in length, utilized 0.010-inch mill slots, and were sheathed in a silt-sock to inhibit silt size particles from entering the piezometer through the screened section. The piezometer riser and riser-cap were also constructed of PVC materials. All well sections utilized threaded, PVC wire-tie, or press-on attachment; no glue or adhesives were utilized in piezometer construction or installation. A sand filter pack was poured in place around the screened section. A granular bentonite clay was poured in place above the screened section to surface grade to provide a seal for the annulus space of the riser piping. Piezometer well construction logs are provided in Appendix 3. The locations of the piezometers installed at the site are shown in Appendix 1, Figure 4.

2.2.2 Groundwater Sampling Procedures

On October 10, 1997, a reference survey was performed at the site to establish a vertical elevation reference datum. Locations of the soil borings, piezometers, as well as other surface grade features, were surveyed. Water level measurements were

then recorded from the piezometers. A summary of the survey data and groundwater elevation measurements are provided in Appendix 4, Table 5.

Subsequent to recording groundwater level measurements at each piezometer, the groundwater within the piezometers was purged by removal of 5 times the calculated standing volume of water within each piezometer. Piezometer purging and subsequent groundwater sample collection were facilitated utilizing a MasterFlex® Peristaltic Pump and single-use polypropylene tubing. A length of polypropylene tubing was inserted into, and extended to the base of the piezometer; the other end of the tubing was attached to the MasterFlex® pump. The pump was operated until 5 volumes of standing water were removed from the piezometer or the piezometer was purged dry. Subsequent to purging each piezometer, a groundwater sample was then collected directly into laboratory sample containers for BETX (2-40 ml. Glass vials with septum caps) and PNA analysis (1 Liter Amber-Glass container).

The collected groundwater samples were labeled at the time of collection indicating sample collection location, sample ID, collection date and time, and requested laboratory analysis. To prevent sample cross-contamination, single-use latex sample gloves were utilized by the sample collector during all sample collection and handling activities. The collected laboratory samples were placed in an ice packed sample cooler, to maintain sample temperature at approximately 4C, until shipment to the receiving laboratory was completed. Laboratory samples were logged on laboratory sample chain of custody forms and transported to the receiving laboratory under chain of custody documentation procedures. Laboratory certificates of analysis, sample certification forms and sample chain of custody documents are provided in Appendix 7.

3.0 FIELD AND LABORATORY ANALYTICAL RESULTS

A summary of the IPS field analytical results, provided by IPS, are provided in Appendix 4, Table 2. Soil and groundwater samples collected during the site investigation activities were submitted to Heritage Laboratories, 7901 West Morris Street, Indianapolis, Indiana for analysis. Samples were analyzed for Benzene, Ethylbenzene, Toluene, and Total Xylenes (BETX) constituents utilizing SW846-8240B methodology, and Polynuclear Aromatics (PNA's) utilizing SW846-8310 methodology. In addition, one sample was submitted for Total and TCLP Lead analysis utilizing SW846-6010A methodology. A Summary of Laboratory Results for the soil samples are provided in Appendix 4, Table 3. A Summary of the Laboratory Results of the groundwater samples analyzed at the site is provided in Appendix 3, Table 4.

4.0 LIMITED REMEDIAL ACTION ACTIVITIES

In addition to performing an investigation, to define the extent of petroleum impacted soils and groundwater at the site, Heritage provided the necessary personnel and equipment to complete the removal of the UST system (steel product piping) and excavate petroleum impacted soils in the immediate area of the former UST System.

Based on the preliminary findings of the subsurface soil investigation performed at the site, the extent of petroleum impacted soils were determined to be limited to the immediate area south, west and north of the former UST system. In these areas, the impacted soils were excavated. The excavation of the petroleum impacted soils to the east of the former UST excavation were limited by the presence of a buried water line traversing in a north-south direction, an access road, and railroad tracks. It was also determined, that based upon the extent of the lateral migration of the petroleum constituents in the eastward direction (Appendix 1, Figure 8), the continued excavation of these soils was not appropriate without further evaluation of alternative remedial actions. As a result, extensive excavation of petroleum impacted soils was not performed to the east of the former UST location.

Groundwater was encountered at a depth of 7 to 8 feet below surface grade at the excavation, and as a result, excavation of impacted soils was not advanced to a depth greater than 8 feet below surface grade.

On September 27, 1997, Heritage commenced the excavation and removal of petroleum impacted soils from the former UST excavation and dispenser pipeline area. Soils were excavated to the south of the UST excavation to the extent practical. The removal of soils to the south was limited by the presence of a buried electrical power utility line and a buried stormwater drainage line. The wood shoring for the stormwater utility pipeline was partially exposed along the south face of the excavation; refer to Appendix 8, Photograph 11.

Soils were excavated to the west of the former UST excavation to within 9 feet of Building 1600A and to within 15 feet of the building along the former distribution piping trench, see Appendix 1, Figure 8.

Soils were excavated to the east of the former UST excavation to within 4 feet of a buried water line utility which ran in a north-south direction along the west side of the access roadway. The wood shoring for this utility pipeline was partially exposed along the west face of the excavation; refer to Appendix 8, Photograph 13.

Soils were excavated to the north of the former UST excavation along the former product dispenser distribution pipeline. Soil excavation proceeded northward along the pipelines, from surface grade to a depth of 7 feet below surface grade, until encountering the former product dispenser area.

Free product was not encountered during the excavation activities. Groundwater was encountered during the excavation activities at a depth of 7 to 8 feet below surface grade. Groundwater was in contact with petroleum impacted soils at the floor of the excavation. Groundwater encountered at the floor of the excavation did not exhibit a petroleum sheen in the area of the former USTs but did exhibit a petroleum sheen along the former dispenser pipeline trench. As a result of the large number of soil borings advanced at the site, and the soil samples collected from these soil borings which were submitted to a laboratory for BETX and/or PNA constituent analysis, additional soil samples were not collected from the limits of the completed UST excavation.

Excavated petroleum impacted soils were temporarily stockpiled at the north end of the site until off-site transportation arrangements were in place. An estimated 800 cubic yards of petroleum impacted soils were excavated and stockpiled at the site (estimated 400 cubic yards of impacted backfill and 400 cubic yards impacted native soil). The stockpiled soils were transported to the former Naval Fire-Fighter Training Facility (Building 3304), and included in a bio-remediation project being conducted at this location as approved by the IEPA. These soils were kept separate from the other soils being processed at the bio-remediation site.

The UST excavation was back-filled to 1 foot of surface grade utilizing imported 3–inch crushed limestone and brought to final grade with imported grade-8 crushed limestone. Applying a new asphalt surface cover over the excavation area completed surface restoration.

5.0 SITE CHARACTERISTICS

5.1 Site Geology

Results of the field observations made during the subsurface soil investigation indicated the geology of the site, to a depth of 16 feet below surface grade, consisted primary of three soil units. The upper soil unit, extending from surface grade to 6 feet below surface grade, was Silty-clay to Clayey-silt, brown to red-brown, moist, and contained cobbles, pebbles, and sand. A thin, sandy, deposit was encountered in this upper soil unit at boring B-14. The middle soil unit, extending from 6 feet to 12 feet below surface grade, was a Sandy-silt to Silty-sand, medium to fine grained, brown to light-brown, water saturated, and containing cobbles, pebbles, and thin clay lenses. The lower soil unit, extending from 12 feet below surface grade to the maximum depth of the investigation, was a Clayey-silt to Silty-clay, gray, massive to interbedded silt and clay, moist, with included pebbles, shells, and sand. The two lower units appeared to be lacustrine in origin; the upper unit was consistent with glacial till material.

One notable exception to the natural soils encountered during the site investigation, was the concrete, slag, and coal encountered in the area of boring B-29. These materials were apparently remnants from a reported former coal storage area that had been located in the area of B-29 and B-30. Based upon a 1943 base map a building was located over the area in which these borings were advanced. The concrete debris may be part of the foundation or footings of this WW II era building. The presence of the concrete at 2 to 3 feet inhibited the completion of some of the soil borings attempted in the area. The failed borings are noted in Appendix 1, Figure 3.

Free product was encountered at soil boring location B-17. This was observed by the accumulation of approximately 0.2-inch of free product at the top of the second soil sample tube (4-8' BSG) after removal of the soil sample tube from the boring. This soil boring was immediately back-filled to surface grade utilizing granular bentonite clay following collection of a soil sample for submittal to the laboratory for analysis of lead. Free product

was not observed in the soils collected from the surrounding soil borings B-14, B-15, B-20, and B-22, indicating the occurrence of free product, or petroleum saturated soils, may be limited in extent. As a result of the small area indicated to be impacted by petroleum-saturated soils and the depth below surface grade this saturated soils was encountered, additional activities associated with the removal of this observed free product was not initiated.

A soil core sample was collected from the Silty-sand soil unit for submittal to a geotechnical laboratory for analysis of moisture content, moist density, dry density, specific gravity, porosity, soil pH, and coefficient of permeability. The laboratory analysis was performed to provide information on the hydraulic characteristics of the groundwater-saturated zone. Laboratory results for the sample are provided in Appendix 9.

Reference to the Stack Unit Map of Northern Illinois identifies the surface geology at the site as part of the Lake Border Moraines of the Wadsworth Till Member of the Wedron Formation. The Wedron Formation generally consists of silty and clayey diamictons and occurs in thickness exceeding 20 feet. The Wedron Formation is predominately till with interbedded deposits of waterlaid gravel, sand and silt.

Immediately east of the site are occurrences of the Dolton member of the Equity Formation. The Dolton member is predominantly shore and shallow-water lake deposits of sand, pebbly-sand, gravelly-sand, and silt beds. These lacustrine deposits are generally less than 20 feet in thickness and overlie older Wedron Formation deposits.

Soils encountered at the site are consistent with the characteristics of the Wadsworth Till. In addition, some surface deposits, or soils, in the investigation area may have been the result of past surface-fill activities.

5.2 Site Hydrogeology

Groundwater was encountered at the site, and within the area covered by the investigation, at a depth of approximately 7 feet below surface grade. Groundwater was primarily contained within the silty-sand soil unit. Groundwater elevation measurements utilizing the piezometers installed at the site indicated the groundwater elevation was consistent with observed saturated soils as noted in the soil boring logs. This similarity in groundwater elevations between the soil borings and piezometer measurements indicate the groundwater aquifer encountered is unconfined.

Groundwater flow direction across the site was determined using groundwater elevation measurements recorded on October 10, 1997. The groundwater elevation measurements indicated groundwater flow at the site was in a east to southeast direction. The groundwater gradient at the site was calculated as 0.0037 foot/foot.

Reference to the Potential for Contamination of shallow Aquifers from Land Burial of Municipal Wastes Map (Berg & Kempton) indicates the site is located in an area characterized as E; Uniform, relatively impermeable silty or clayey till at least 50 feet thick and little evidence of interbedded sand or gravel. The site also borders an area to the west of the site that is characterized as A2; thick, permeable sand and gravel within 20 feet of surface. The A2 characterization is consistent with the field observation of the silty-sand encountered at depth at the site and as a result, is the characterization considered applicable to the site. Releases occurring in areas characterized as A2 are considered to pose a potential for groundwater contamination.

5.3 Hydrology

There are no surface water bodies within 100 feet of the former UST area. Buildings and an asphaltic covering typify the terrain surrounding the former UST area. Stormwater runoff from these areas is collected in catch basins located along the edge of the area and discharge into the stormwater sewer system of the Great Lakes Center. The storm sewer, which flows

west to east and is located south of the UST excavation, discharges to a shallow ditch along the railroad tracks.

5.4 Site Climatology

The following site climatological conditions were referenced from the Soil Survey of DuPage and Part of Cook Counties, Illinois (USDA), and Climate of Illinois (Climatography of the United States No. 60). In addition, temperature records for the Waukegan Area, which were available on-line through the Midwest Climate Center, were accessed and are summarized in Appendix 4, Table 6.

Generally, the climatological conditions of the site are typically continental, with cold and snowy winters and warm summers. As a result of the site's location, near Lake Michigan, local temperatures are cooler than surrounding inland-regions.

As a result of the generally flat terrain of the surrounding region and proximity to Lake Michigan (within one-mile), the site experiences a full sweep of winds. Generally, the southeast and easterly winds bring mild and wet weather, southwesterly winds bring rain showers and warm temperatures, westerly winds bring dry and moderate temperatures, and winds from the north are cool and dry.

In winter, the average temperature is 25°F and the average minimum temperature is 17°F. The average seasonal snowfall is 39 inches. The driest month of the year is usually February. The average frost line reaches 3 feet in depth in mid-winter.

In summer, the average temperature is 71°F and the average daily maximum temperature is 81°F. The average summer precipitation, April through September, is 22 inches. The wettest month of the year is usually May or June. The average relative humidity in mid-afternoon (spring and summer months) is 61 percent and can reach as high as 80 percent at dawn.

6.0 LOCAL GROUNDWATER WELLS

The Illinois Water Well Survey records for Public-Industrial-Commercial and Private Well Database records were searched for groundwater wells within a 2,500-foot radius of the site, which might potentially be impacted by the release. This search was conducted by utilizing the on-line Database Query available through the Illinois Water Well Survey. A records query was performed for both the Public-Industrial-Commercial and Private Well Database records for Sections 4, 5, 6, 7, 8, and 9, of Township 44 North, Range 12 East, and Sections 34, 35, and 36 of Township 45 North, Range 12 East. The results of the above records search for Public-Industrial-Commercial and Private Well Database records are provided in Appendix 10.

Review of the results of the Public-Industrial-Comrnercial Well Database Query indicated eight water well records were on file for the search area. Of these eight records, five records indicated the well status as inactive, two records indicated the well status as emergency use only, and one record indicated the well status as active. None of the Public-Industrial-Commercial Water Well's identified by the database query was located within a 2,500-foot radius of the site.

Review of the results of the Private Well Database Query indicated 44 water well records were on file for the search area. Of these 44 records, none were located within a 2,500-foot radius of the site. Refer to Appendix 1, Figure 7, for a site map identifying a 200-foot. and 2,500-foot. radius from the site.

7.0 DISCUSSION OF RESULTS

7.1 Site Soil Conditions

The soil sample laboratory results indicate the petroleum constituents detected in the soil samples were generally below the IEPA Tier 1 Site Remediation Objectives for the ingestion, inhalation and migration to groundwater routes of exposure for Industrial-Commercial Properties uses. With the exception of benzene, the soils meet the Tier 1 Residential Properties Remediation Objectives. The analytical data indicates that the soil samples collected at B-14 and B-20, within the railroad right-of-way, were the only sample locations where benzene was detected at concentrations above the Tier 1 Residential Remediation Objectives. In general, the submitted soil samples were collected from the soil borings at depths and distances that were anticipated to identify the limits of petroleum impact at the site. Based upon the field data, PID readings and field analysis, a limited remediation was conducted by Heritage. There are some soil sample locations, where soil samples collected at depth, meet the Tier 1 Site Remediation Objectives but, based upon the field data, the overlying soils at these locations may contain some residual contamination in excess of the Tier 1 Site Remediation Objectives. This area of potential contamination above the Tier 1 criteria is east of the excavated area.

As a result of the number of soil borings and soil samples collected from these soil borings at the site, specific soil samples were not collected from the actual limits of the UST and UST distribution piping excavation. Laboratory results from soil samples submitted from soil borings B-18 (8-9ft.), B-19 (6-7ft.), B-1 (7-8ft.), B-25 (3-4ft.), B-2 (10-11ft.), B-3 (5-6ft.), and B-8 (6-7ft.), which were located in close proximity to the limits of the UST excavation, indicated that suspected petroleum impacted soils to the south, west and north of the UST excavation were remediated, by excavation and removal, to the extent necessary to meet the IEPA Tier 1 Cleanup Criteria for Industrial-Commercial Properties. The soil samples collected from the soils underlying the product distribution piping, to a depth of 7 feet below surface grade (groundwater surface contact) in the area of soil borings B-5, B-6 (11-12ft.), and B-7 verify that the soils were

remediated, by excavation and removal, to the extent necessary to meet IEPA Tier 1 Cleanup Objectives for Industrial-Commercial Properties and Residential Properties. Based on the field analytical results (BETX and TVH) provided by IPS, soils at 1 to 2 feet below the groundwater surface (i.e. soils 7 to 9 feet below surface grade) that remained in place at the site in the area of soil borings B-5, B-6, and B-7, are considered to satisfy the IEPA Tier 1 Cleanup Criteria for Industrial-Commercial Properties.

Subsurface soils, east of the excavation limits of the UST dispenser piping trench, are considered to be impacted by residual petroleum constituents at concentrations above IEPA Tier 1 Cleanup Criteria for Industrial-Commercial and Residential Properties. The estimated limits of these residual contaminated soils, east of the excavated area, are based on visual observations during the soil boring activities, analytical results provided by IPS on-site analysis, and laboratory results from samples submitted to Heritage Laboratories.

The vertical thickness of the impacted soil decreases at increasing distances from the former dispenser pipeline. Near the former dispenser pipeline, the vertical thickness is estimated at 8 feet (2 to 10-ft. interval), of which approximately 4 feet extends below the groundwater table surface. Further east of the excavated area, the vertical thickness decreases from 6 feet (6 to12-ft. interval) to 4 feet (9 to 13 ft. interval), and to nearly 2 feet (10 to 13 ft. interval) near the estimated eastern limit of impacted soils. The lower 4 to 5 feet of these impacted soils are below the groundwater table surface. Impacted soils, which occur below the groundwater surface, are attributed to fluctuations in the elevation of the groundwater table surface over time (seasonal variations in elevation). Based on the site investigation activity, the estimated horizontal extent of impacted soils is shown in Appendix 1, Figure 8, and the vertical extent is shown in Appendix 1, Figure 6.

7.2 Site Groundwater Conditions

Groundwater was encountered at the site approximately 7 feet below surface grade and extending to depths greater than 10 feet BSG. Based upon the site geology the groundwater at the site is considered as a Class I Groundwater Resource.

Groundwater at the site occurs within a Silty-sand soil unit that has an estimated average vertical thickness of 6 feet. This water-saturated zone is considered an unconfined aquifer with limited vertical extent (5 to 6 feet of water saturation).

The Clayey-silts underlying the Silty-sand aquifer is anticipated to behave as a lower confining unit, or aquitard, for the above aquifer.

Groundwater samples were collected from the four piezometers installed at the site. As a result of poor groundwater recovery at piezometers P-1 and P-4, only sufficient sample volume for BETX analysis was collected. Sufficient sample volume was collected from piezometers P-2 and P-3 for both BETX and PNA analysis. The groundwater sample laboratory results indicate that BETX and PNA petroleum constituents are below the IEPA Tier 1 Cleanup Criteria for Class I groundwater resources with the exception of the samples collected from piezometer P-3 and P-4. Specifically, the laboratory results from this groundwater samples reveal Benzene at concentrations of 0.3 mg/L and 0.009 mg/L, which are above the Class I Groundwater Cleanup Criteria of 0.005 mg/L. All other analytical constituents reported for these samples were below the Class I Groundwater Cleanup Criteria.

Water level measurements performed at the site, utilizing the installed piezometers, indicate that the groundwater flow direction across the site is generally to the east towards Lake Michigan. Based on the groundwater surface contours, derived from the water level measurements, a groundwater surface gradient of 3.57×10^{-3} ft/ft was calculated. Utilizing

the hydraulic conductivity results from the submitted soil core sample collected at soil boring B-20 of 1.09 x 10^{-4} cm/sec (3.58 x 10^{-6} ft/sec) groundwater flow velocity was estimated at 3.32 x 10^{-3} ft/day.

8.0 CONCLUSIONS

Based upon the site investigative and remedial activities, a 45-Day Report and Site Classification Report are hereby submitted, see Appendix 12. The estimated extent of petroleum contaminated soils and groundwater at the site is shown in Appendix 1, Figure 8. Within these areas of contamination, the shallow groundwater has been the apparent mechanism for the migration of contaminants from the UST area. The groundwater flow direction at the time of the investigation was to the southeast. The estimated contaminant plume indicates a more easterly direction of movement. This difference at this time may be the result of several factors. The groundwater flow direction may fluctuate seasonally; the contaminants are moving through more transmissive zones (i.e., sand seams on a easterly direction rather than the southeast); and/or the presence of the building and location of the piezometers may also be influencing the movement of groundwater in this area. The vertical extent of soil contamination decreases in thickness as distance increases from the UST excavation area. At the eastern limit of the UST excavation, the estimated thickness of contaminated soil is 6 feet. The thickness of contaminated soil decreases to less than 2 feet in thickness at the eastern most extent of contamination.

The site is classified as high priority primarily because contamination was detected off-site (railroad property) and the presence of free product in the subsurface soils at soil boring B-17. Free product recovery and submittal of the Free Product Removal Report should be initiated as soon as possible.

Within the area of the former USTs, several potential migration pathways were identified including a waterline and storm sewer. However, the water table elevation is beneath the invert elevations of the waterline and storm sewer. Therefore, based upon the site hydrogeology, these utility lines are not considered to be a migration pathway.

After completing early corrective action measures, there is no apparent evidence that through natural or man-made pathways, migration of petroleum vapors threaten human health and safety or could cause explosions in basements, crawl spaces, utility conduits, storm or sanitary sewers, vaults or other confined spaces.

Class III special resource groundwater is not located within 200 feet of the excavation. Surface bodies of water have not been adversely affected by the release. Groundwater quality standards have been exceeded at the site's eastern property boundary (bordering railroad property).

Based upon the well survey, see Appendix 10, there are no potable water wells within the 200 or 2,500-foot radii of the site. The site is not located within the minimum, maximum, or regulated recharge area of a potable water supply well. The site geology is consistent with the A2 characterization in the Illinois State Geological Survey Circular 532. Physical soil classification results are included in Appendix 9. The Navy does not utilize any groundwater wells for potable water supply.

9.0 RECOMMENDATIONS

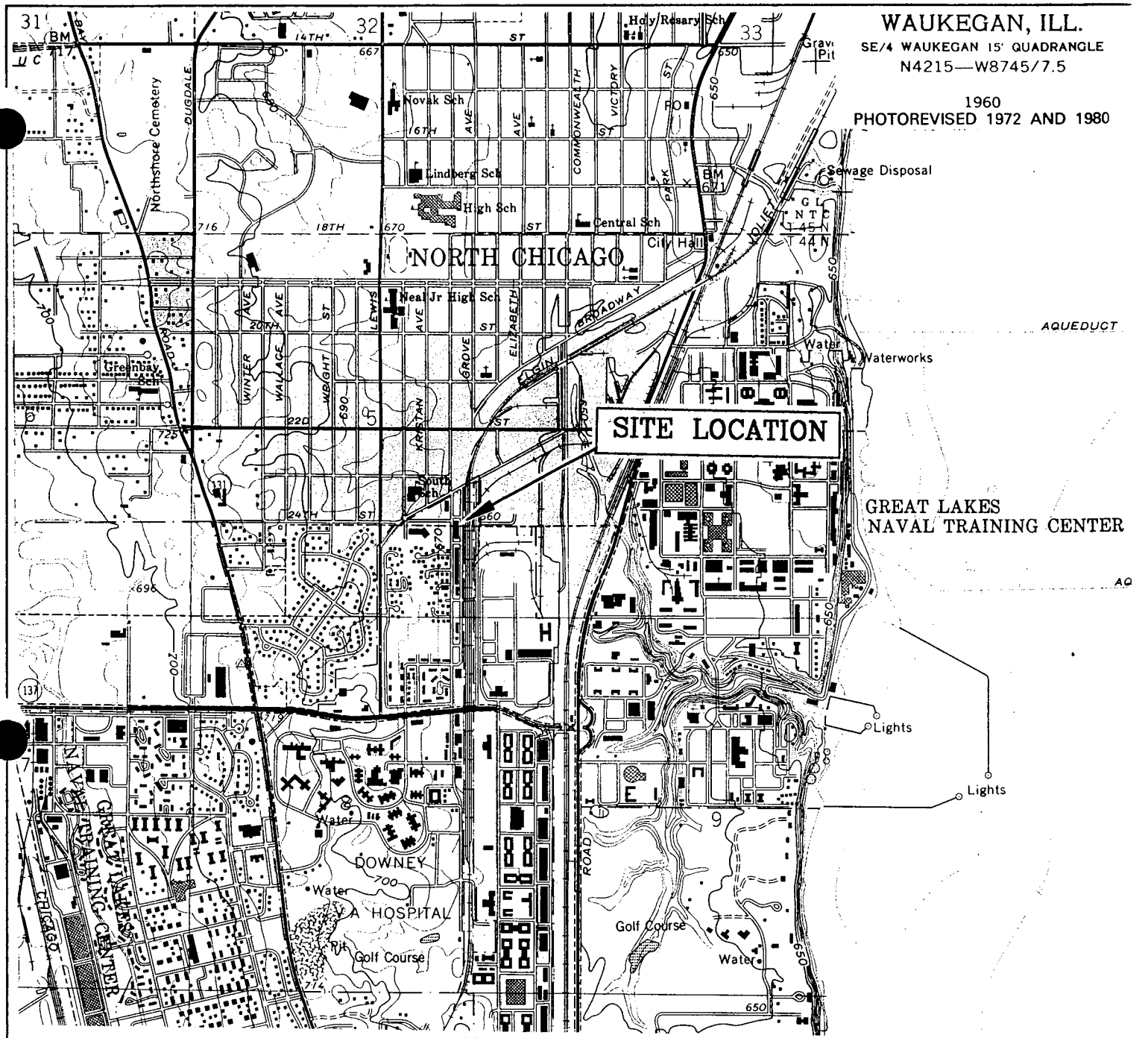
Heritage recommends that five monitoring wells be installed at the site to verify the extent and magnitude of the petroleum contamination. Possible locations are shown in Appendix 1, Figure 8. In addition, a recovery well should be installed in the vicinity of B-17 to facilitate recovery of the free product observed in this area. The wells should be constructed of stainless steel materials with the screened intervals varying from 5 to 10 feet, dependent upon the specific location (refer to cross sections in Appendix 1, Figure 6. The wells can be used to perform slug and/or pump tests to further evaluate the hydraulic conductivity of the aquifer materials.

Free product recovery should be started as soon as the recovery well is installed. Initial product recovery methods utilized may be passive or active, depending on the quantity of product exhibited in the recovery well. A Free Product Removal Report should be submitted to the IEPA as soon as practical.

With the additional information collected through the installation of a recovery well and monitoring wells, a remediation action plan can be developed to address the remaining soil and groundwater contamination at the site. Remedial technologies which would be evaluated include conventional groundwater recovery and treatment, and in-situ technologies including air sparging, soil vapor extraction, bioremediation or a combination of one or more of these technologies. IEPA and the US Navy will determine which of the recommended remedial technologies is best suited and most economical.

APPENDIX 1

Site Figures



US Navy
North Chicago, Illinois

TOPOGRAPHIC SITE LOCATION MAP
USN Base, North Chicago, IL, Building 1600A

REVISIONS			
10329F1.DWG			
DRAWN BY	DATE Nov. 11, 1997	FIGURE 1	
APPROVED BY	SCALE 1:24,000	JOB NO. 10319	

HERITAGE®
HERITAGE ENVIRONMENTIAL SERVICES, INC.

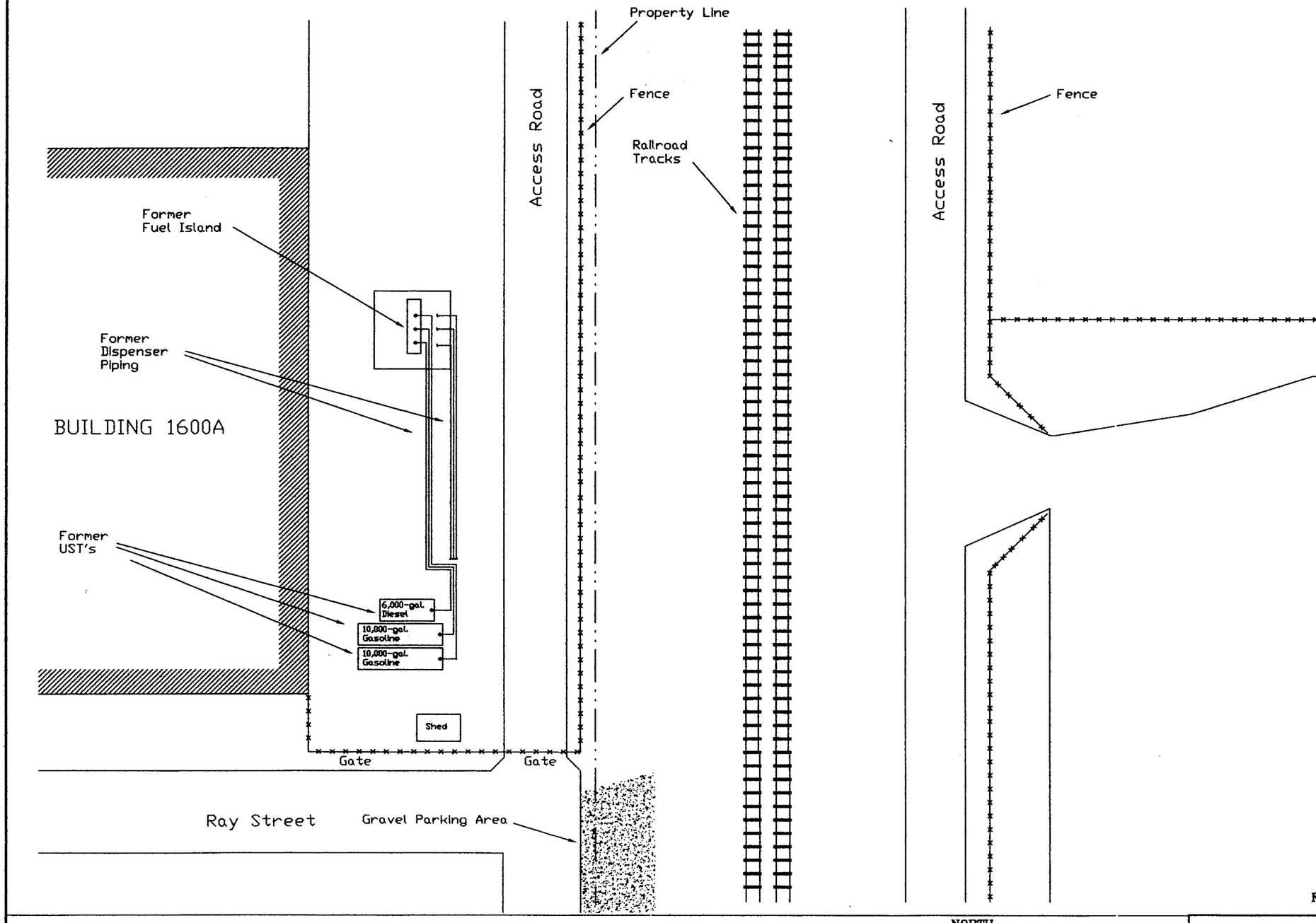


Figure 2

NORTH

SCALE: 1" = 30'

0 15' 30'

PWC GREAT LAKES

Former UST System Location

DRAWN BY: KJC		DATE:	10/20/97
APP. BY: KJR	HERITAGE	SCALE:	1" = 30'
JOB NO. 10319		DWG.	NAVY1.DWG

HERITAGE ENVIRONMENTAL SERVICES, INC.
LEMONT, ILLINOIS

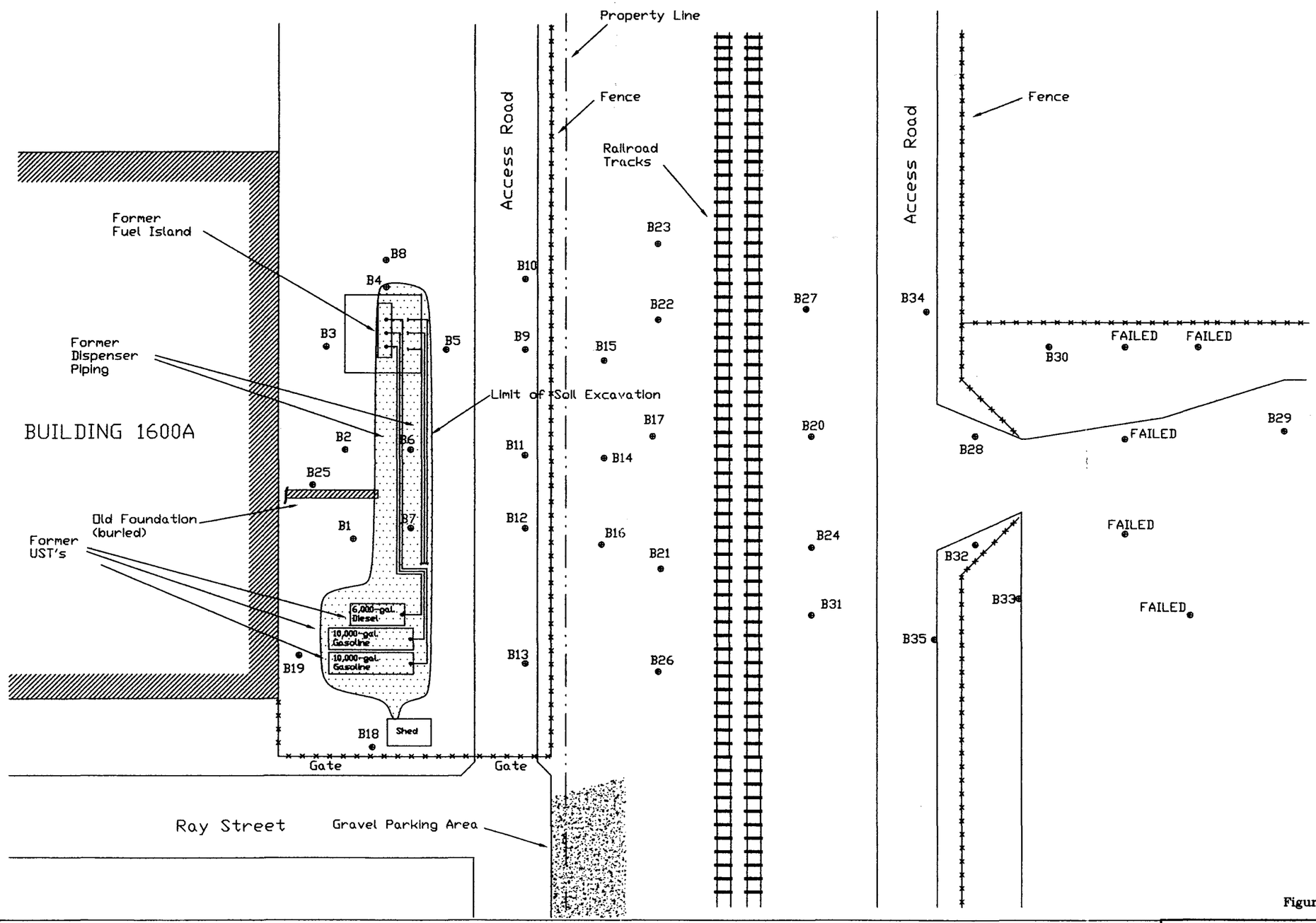


Figure 3

NORTH

SCALE: 1" = 30'

0 15' 30'

PWC GREAT LAKES

Soil Boring Location

DRAWN BY: KJC	DATE: 10/20/97
APP. BY: KJR	SCALE: 1" = 30'
JOB NO. 10319	DWG. NAVY1.DWG

HERITAGE

HERITAGE ENVIRONMENTAL SERVICES, INC.
LEMONT, ILLINOIS

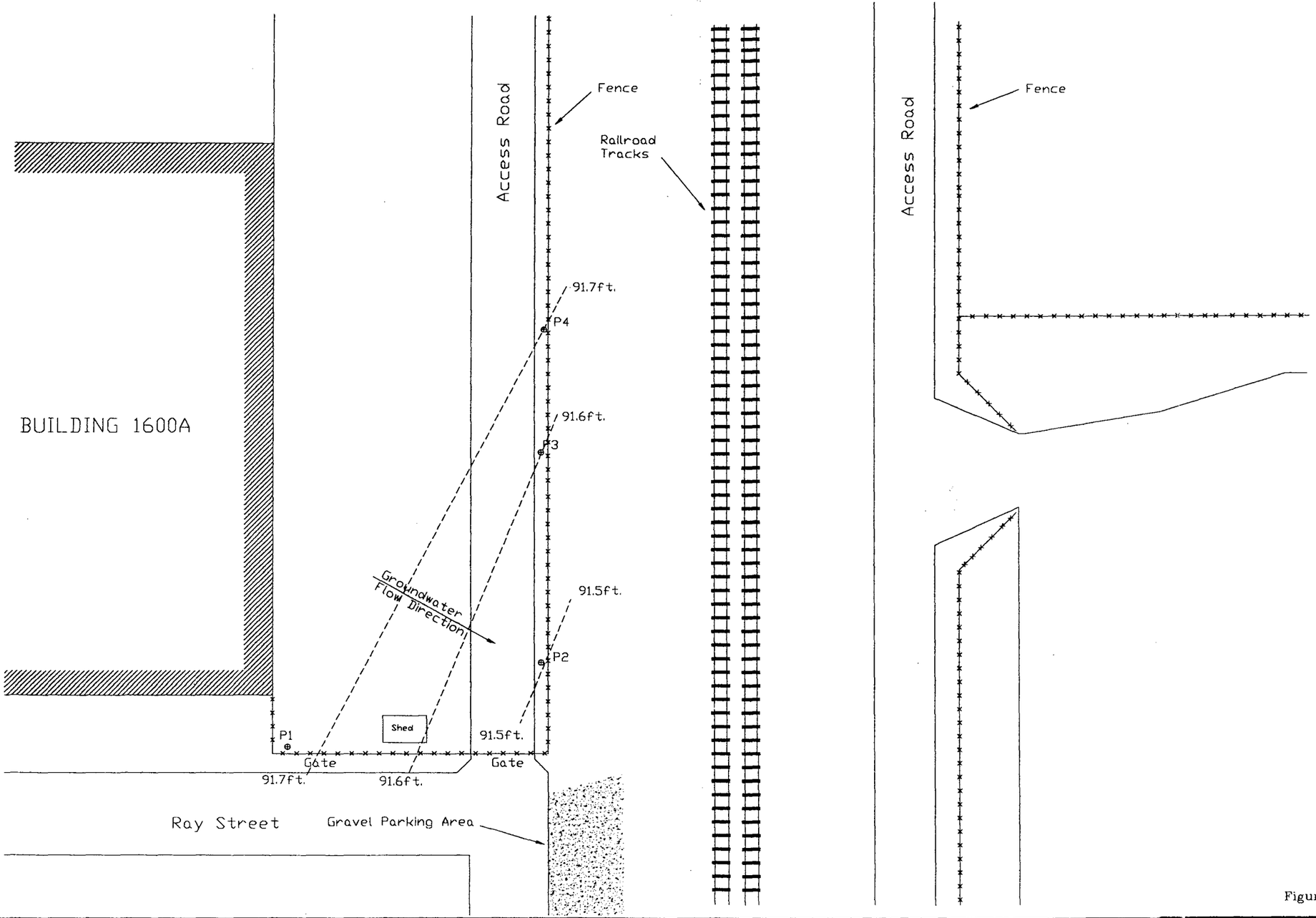


Figure 4

NORTH

SCALE: 1" = 30'

0 15' 30'

PWC GREAT LAKES

Piezometer Location & Groundwater Contours

DRAWN BY:	KJC	DATE:	10/20/97
APP. BY:	KJR	SCALE:	1" = 30'
JOB NO.	10319	DWG.	NAVY1.DWG

HERITAGE

HERITAGE ENVIRONMENTAL SERVICES, INC.
LEMONT, ILLINOIS

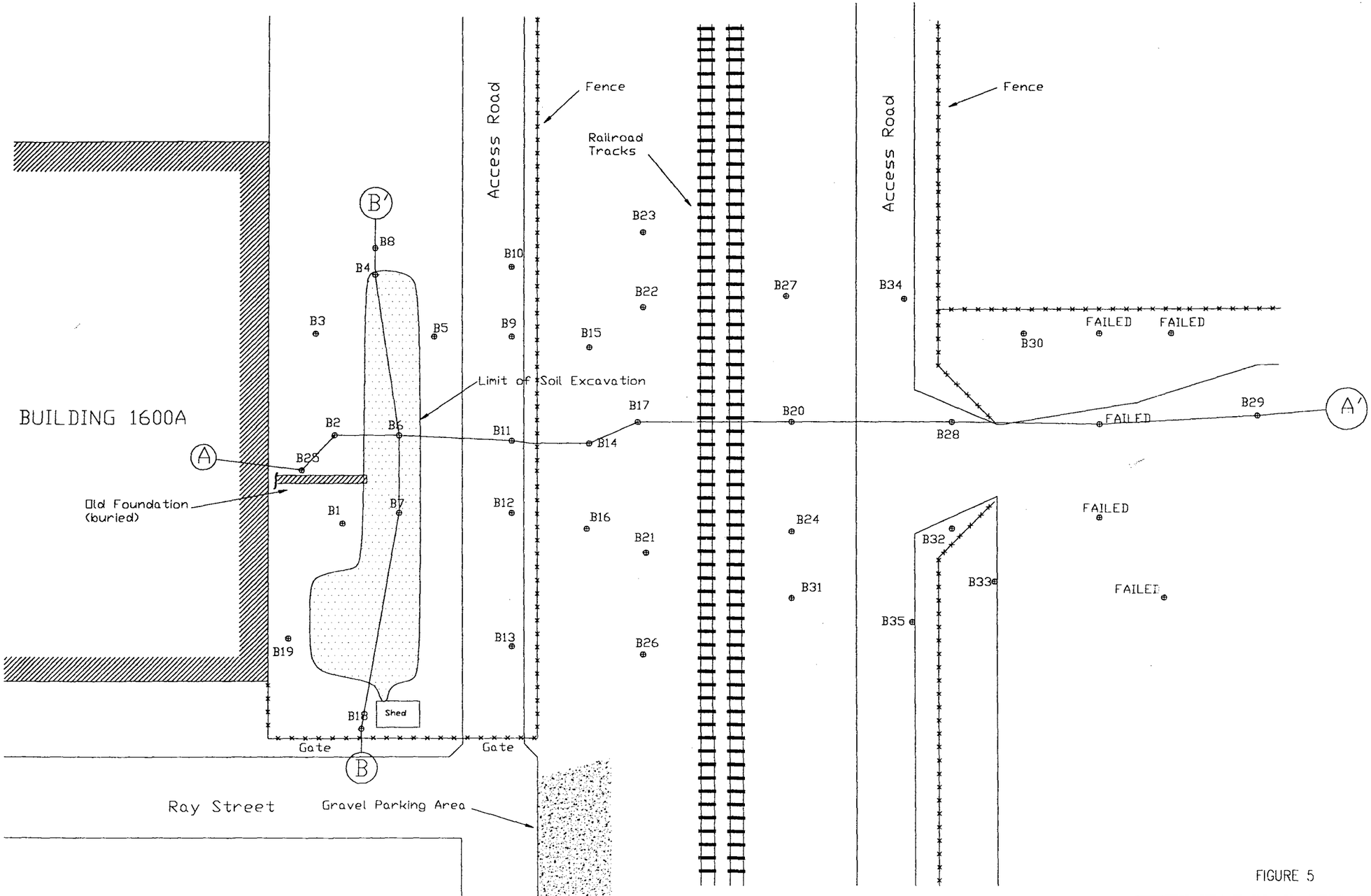


FIGURE 5

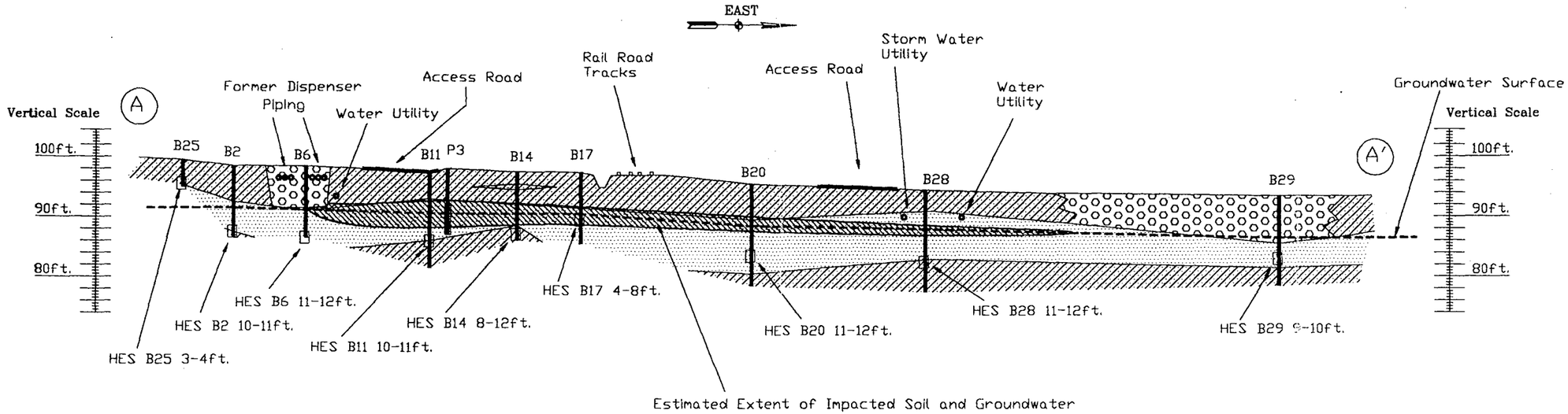
PWC GREAT LAKES

SITE CROSS-SECTIONS

DRAWN BY: KJC	DATE: 10/20/97
APP. BY: KJR	SCALE: 1" = 30'
JOB NO. 10319	DWG. NAVY1.DWG

HERITAGE

HERITAGE ENVIRONMENTAL SERVICES, INC.
LEMONT, ILLINOIS



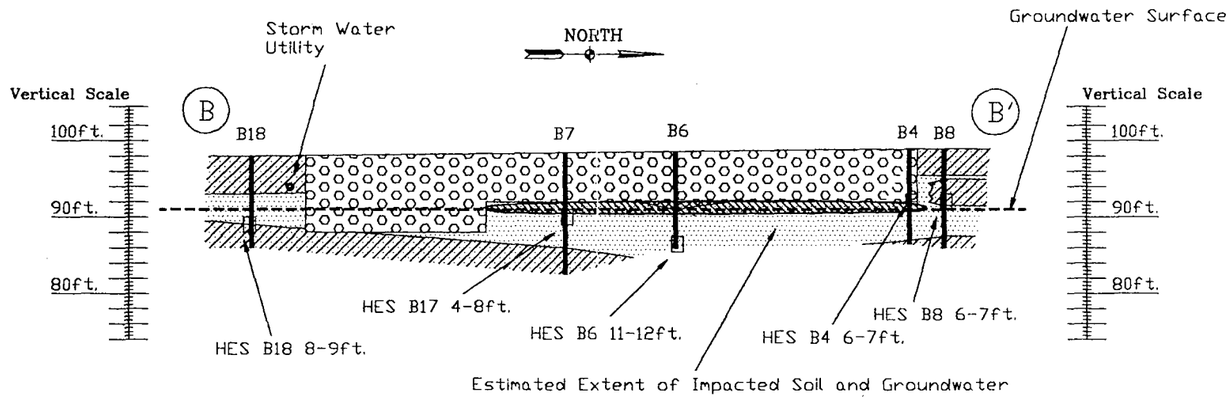


Figure 6

Clayey Silts & Silty Clays

Sand & Silty Sands

Placed Fill or Slag

Horizontal Scale

0 15' 30'

PWC GREAT LAKES

Site Cross-Sections

DRAWN BY: KJC	DATE: 10/20/97
APP. BY: KJR	SCALE: 1" = 30'
JOB NO. 10319	DWG. NAVY1.DWG

HERITAGE

HERITAGE ENVIRONMENTAL SERVICES, INC.
LEMONT, ILLINOIS

Illinois Water Well Data

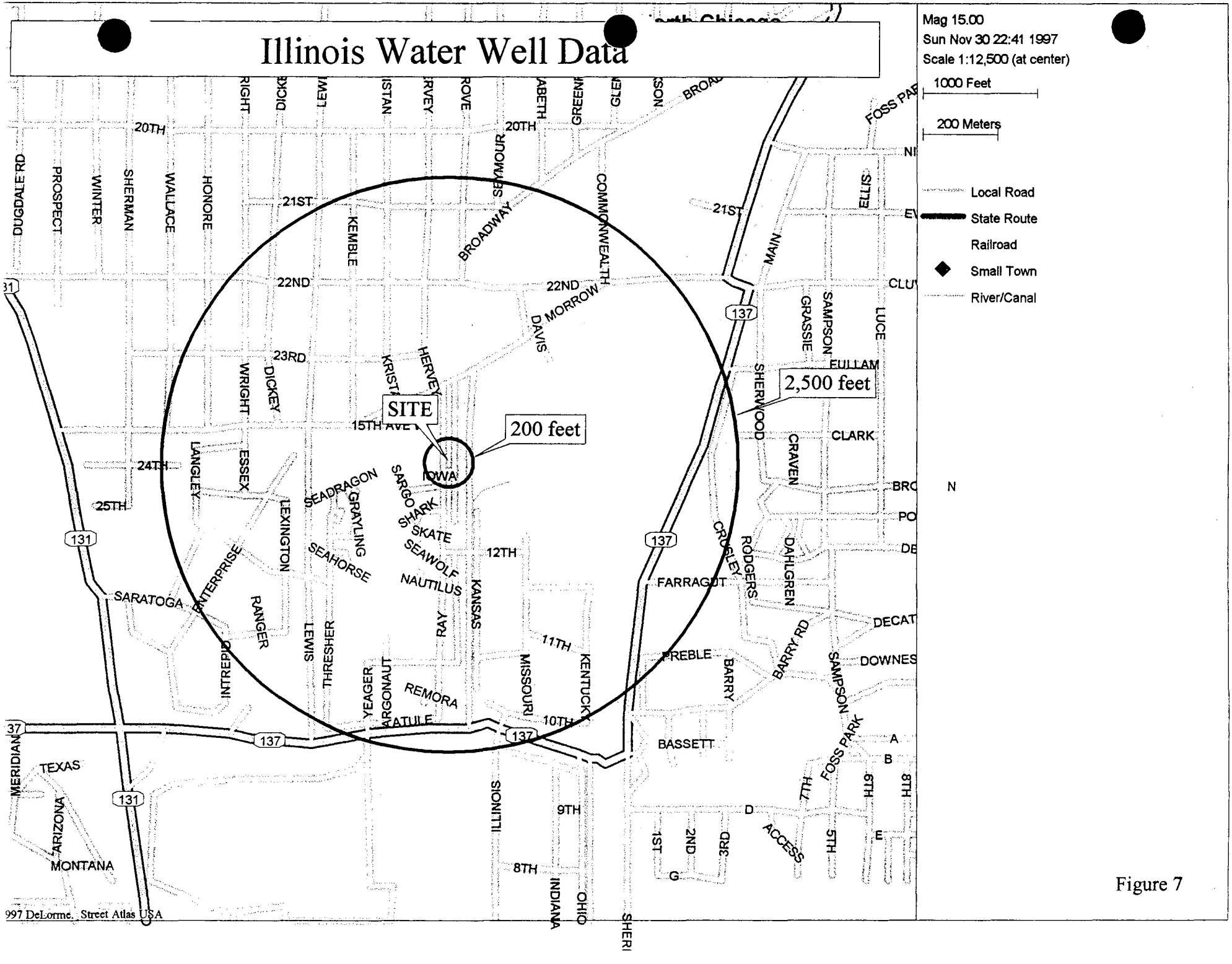


Figure 7

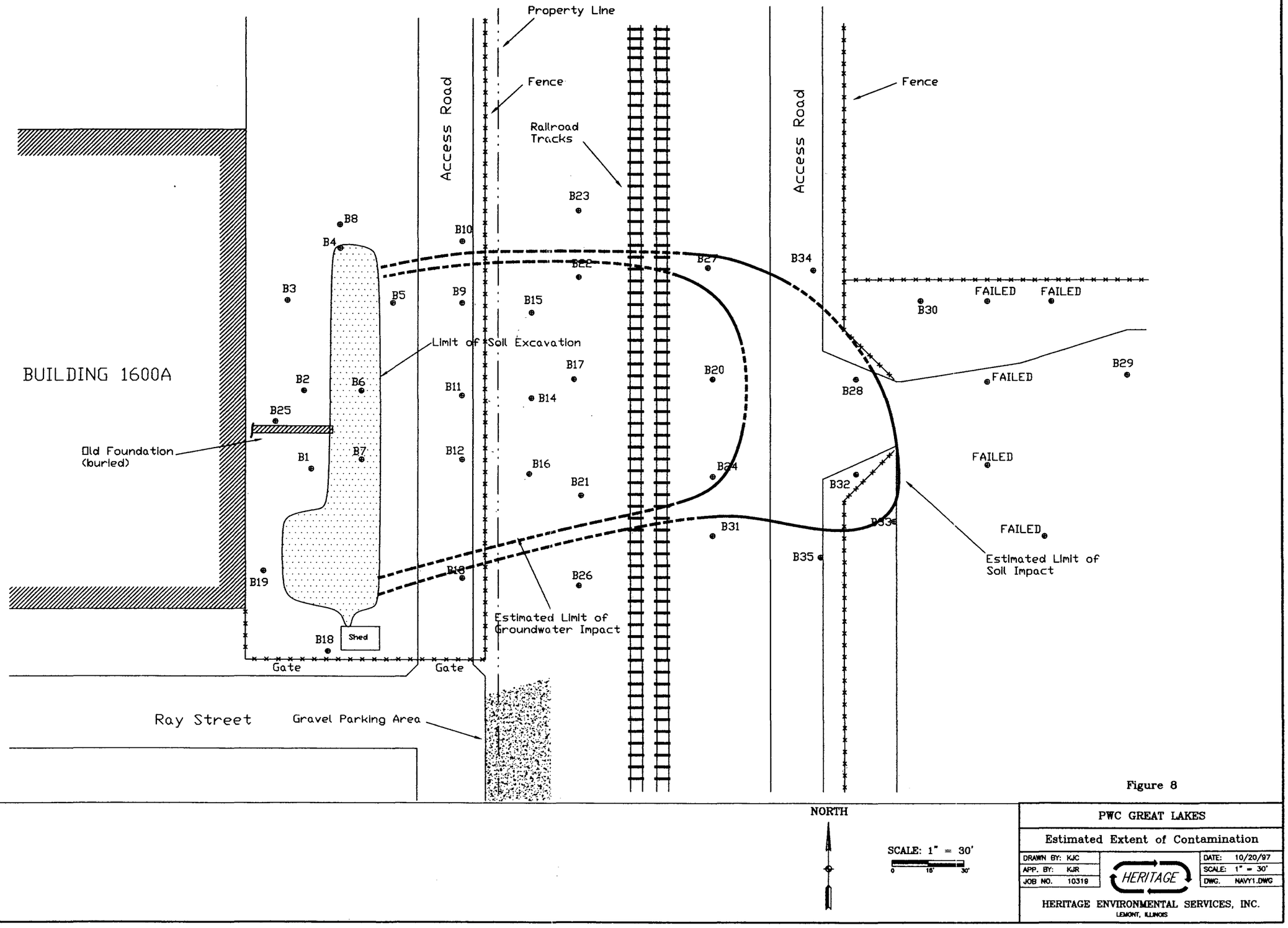


Figure 8

PWC GREAT LAKES

Estimated Extent of Contamination

DRAWN BY: KJC	DATE: 10/20/97
APP. BY: KJR	SCALE: 1" = 30'
JOB NO. 10319	DWG. NAVY1.DWG

HERITAGE

HERITAGE ENVIRONMENTAL SERVICES, INC.
LEMONT, ILLINOIS

APPENDIX 2

Soil Boring Logs

SOIL BORING LOG

LOG No. B-1

HERITAGE ENVIRONMENTAL SERVICES, INC.
[illegible]330 Canal Bank Road
[illegible]mont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

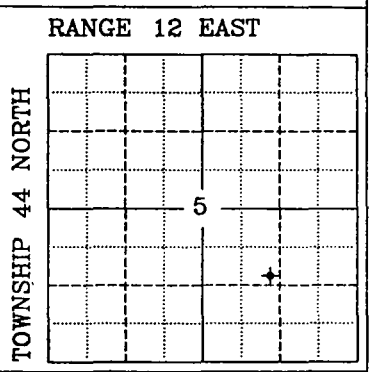
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/25/97
END:	9/25/97
DEPTH:	16 ft.
WATER LEVEL:	7 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Asphalt
							Silt, Sandy, moist.
		157	1	80%	0-4ft.	2	Clay, Silty, Dark-Brown with red streaks, some sand and gravel.
ISP-1	●					3	
						4	
						5	Perroleum staining and odors between 3 and 6 ft. interval.
		65	2	50%	4-8ft.	6	
HES-B1	■					7 ▽	Sand, Gravelly, water saturated.
						8	
ISP-2	●					9	Clay, Silty, Dark-Brown with red streaks, some sand and gravel. Water Saturated
		0	3	100%	8-12ft.	10	
						11	Clay, Brown, 2-inches.
						12	
						13	Clay, Silty, Dark-Brown with red streaks, some sand and gravel. Moist
		0	4	100%	12-16ft.	14	
						15	
						16	Sand, Clayey, Grey, moist, some gravel.
						17	Soil Boring B-1 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-2

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

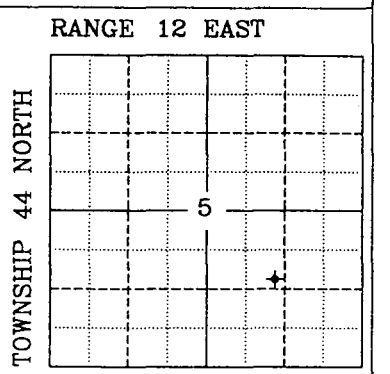
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/25/97
END:	9/25/97
DEPTH:	12 ft.
WATER LEVEL:	7 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Asphalt
		84	1	80%	0-4ft.	2	Clay, Silty, Dark-Brown with red streaks, some sand and gravel.
						3	
						4	Clay, Silty, Dark Brown, pebbly, friable, moist. Petroleum odors and staining between 3 to 4 ft.
						5	
		207	2	50%	4-8ft.	6	
ISP-3	●					7 ▽	Sand, medium, Brown, some gravel, water saturated at 7 ft., Black hydrocarbon staining at base, banded.
						8	Silt, brown, moist, massive, no hydrocarbon stain.
						9	Sand, medium, brown, very gravelly, water saturated, hydrocarbon staining and odor.
ISP-4	●	12	3	100%	8-12ft.	10	Silt, brown, moist.
HES-B2	■					11	Sand, medium, brown, gravelly, water saturated.
						12	Clay, silty, moist, some peagravel, stiff.
						13	Soil Boring B-2 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						14	
						15	
						16	
						17	
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-3

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

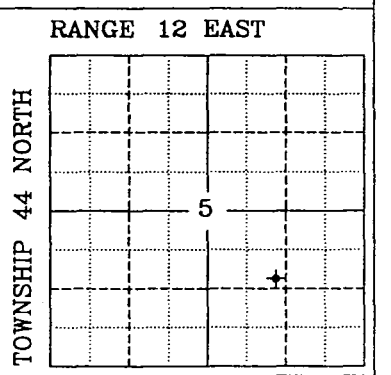
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/25/97
END:	9/25/97
DEPTH:	12 ft.
WATER LEVEL:	7 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
		1	1	80%	0-4ft.	1-4	Asphalt Clay, Silty, Dark-Brown with red streaks, some sand and gravel.
ISP-5 HES-B3		1	2	50%	4-8ft.	5-7	Sand, medium, Brown, some gravel, water saturated at 7.2 ft.
		0	3	100%	8-12ft.	8-12	Clay, Silty, brown, moist. Clay, silty, moist, some peagravel, stiff.

Soil Boring B-3 was abandoned by backfilling the bore hole with bentonite clay to surface grade.

SOIL BORING LOG

LOG No. B-4

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

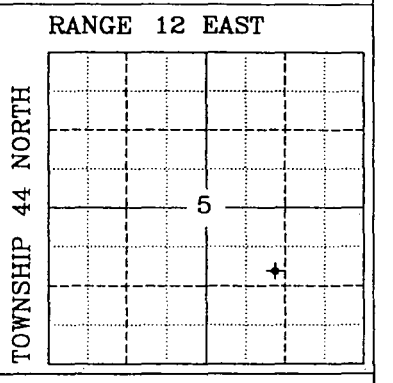
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/25/97
END:	9/25/97
DEPTH:	12 ft.
WATER LEVEL:	7 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Asphalt
		62	1	60%	0-4ft.	2	Clay, Silty, Dark-Brown with red streaks, some sand and gravel.
						3	
						4	
						5	Sand, medium, Brown, some gravel, water saturated at 7.2 ft.
ISP-6		75	2	60%	4-8ft.	6	Petroleum staining and odors between 5 to 6 ft. interval.
HES-B4						7 ▽	
						8	
						9	
		7	3	60%	8-12ft.	10	Sand, silty, brown, water saturated.
						11	Sand, medium, brown, some gravel, water saturated.
						12	Clay, silty, grey, moist, some peagravel, stiff.
						13	Soil Boring B-4 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						14	
						15	
						16	
						17	
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-5

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

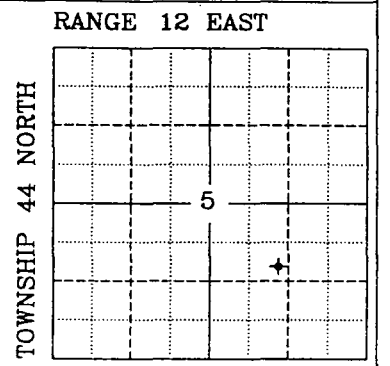
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/25/97
END:	9/25/97
DEPTH:	16 ft.
WATER LEVEL:	7.5 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Asphalt
		2000+	1	80%	0-4ft.	2	Clay, Silty, Dark-Brown with red streaks, some sand and gravel.
						3	
						4	Sand, silty, black, petroleum odor (gasoline), some slag, moist.
						5	Clay, silty, brown, some cobbles, moist, Petroleum odors not exhibited.
ISP-7		2000+	2	50%	4-8ft.	6	Sand, silty, brown, moist, petroleum odors exhibited.
HES-B5						7 ▽	Water saturated at 7 ft., petroleum staining exhibited at and below water line.
						8	
						9	
		121	3	100%	8-12ft.	10	Clay, grey, moist, plastic, some pebbles.
						11	
						12	
						13	
		22	3	100%	12-16ft.	14	
						15	
						16	
						17	Soil Boring B-5 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-6

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

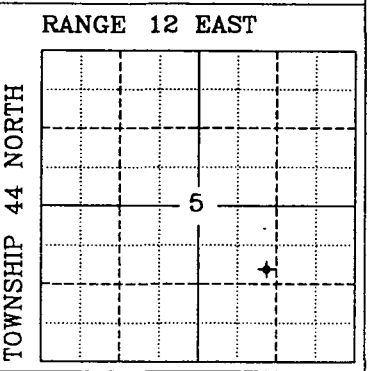
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/25/97
END:	9/25/97
DEPTH:	12 ft.
WATER LEVEL:	6.5 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Asphalt
		2000+	1	80%	0-4ft.	2	Clay, Silty, Dark-Brown with red streaks, some sand and gravel.
						3	
						4	Petroleum staing and odors exhibited at 3 ft. to 11 ft. interval
						5	
		2000+	2	80%	4-8ft.	6	
						7	Water saturated at 6.5 ft.
ISP-8						8	
						9	Sand, silty, cobbley, grey-brown, water saturated, petroleum odors and staining exhibited to 11 ft. depth.
		17	3	80%	8-12ft.	10	
						11	
HES-B6						12	Sand, silty, brown, some gravel, water saturated.
						13	Soil Boring B-6 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						14	
						15	
						16	
						17	
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-7

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

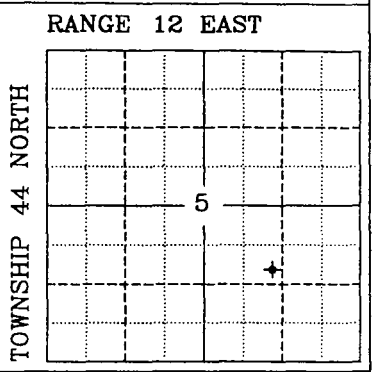
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/25/97
END:	9/25/97
DEPTH:	16 ft.
WATER LEVEL:	6.5 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Asphalt
		853	1	60%	0-4ft.	2	Silt, Sandy, Lt. grey, moist.
						3	Silt, clayey, red-brown, moist, petroleum odor.
						4	Silt, clayey, red-grey, moist, petroleum stained and odor.
		2000+	2	50%	4-8ft.	5	Sand, silty, Lt. grey-brown, some cobbles, petroleum odor, black streaks near base.
						6 ▽	
						7	
						8	
		128	3	80%	8-12ft.	9	Sand, medium grain, grey-drk. grey, silty, some cobbles, petroleum staining and odor, water saturated.
ISP-9	●					10	
						11	
						12	
HES-B7	▓	0	4	80%	12-16ft.	13	Clay, grey, stiff, pebbley, moist.
						14	
						15	
						16	
						17	Soil Boring B-7 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-8

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

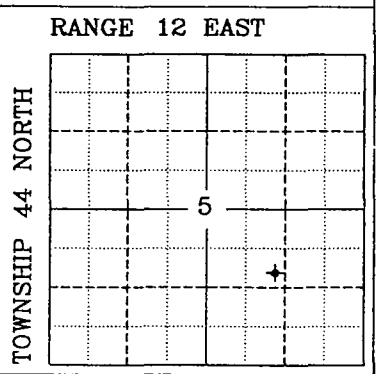
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.: Inovative Probing Co.
DRILL RIG: IPC Van / Hydraulic
DRILLING METHOD: Direct Push / Geoprobe
SAMPLING METHOD: 4 ft. sample tube
DRILLER: IPC
GEOLOGIST: K. CRANDELL
ENGINEER: R. MILLMAN
START: 9/25/97
END: 9/25/97
DEPTH: 12 ft.
WATER LEVEL: 7 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map
(at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Asphalt
		6	1	100%	0-4ft.	2	Silt, clayey, Black-brown, pebbley, moist.
						3	Silt, Clayey, red-brown, gravelly, moist.
						4	Sand, silty, red-brown, cobbley, moist.
						5	Silt, Clayey, red-brown, gravelly, moist.
HES-B8		0	2	50%	4-8ft.	6	
						▽ 7	
						8	Sand, silty, grey-brown, pebbley, water sarurated.
						9	
						10	
						11	Clay, grey, moist, stiff.
						12	
						13	Soil Boring B-8 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						14	
						15	
						16	
						17	
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-9

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

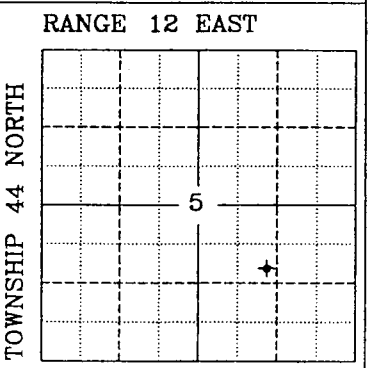
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/25/97
END:	9/25/97
DEPTH:	12 ft.
WATER LEVEL:	6.5 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
		370	1	60%	0-4ft.	1-4	Asphalt Silt, clayey, black-brown, moist, trace petroleum odor. Sand, silty, Drk. brown, gravelly, moist, petroleum odor.
ISP-10		59	2	60%	4-8ft.	5-8	Thin gravel lense, water saturated.
HES-B9		0	3	50%	8-12ft.	9-12	Clay, grey, pebbley, moist, stiff.
						13-26	Soil Boring B-9 was abandoned by backfilling the bore hole with bentonite clay to surface grade.

SOIL BORING LOG

LOG No. B-10

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

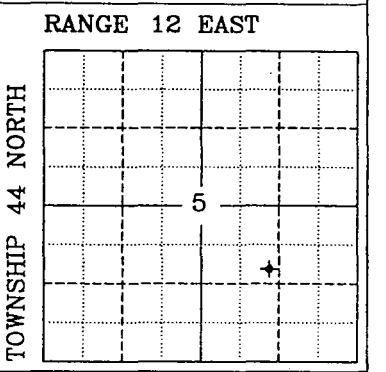
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/25/97
END:	9/25/97
DEPTH:	12 ft.
WATER LEVEL:	Not encountered

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
		5	1	80%	0-4ft.	1-4	Asphalt Silt, clayey, brown, moist, pebbley. Thin (1") charcoal layer. Sand, fine, silty, Drk. brown, gravelly, moist.
HES-B10 ISP-10		3	2	60%	4-8ft.	5-8	Silt, sandy, brown, massive, moist. Clay, grey, pebbley, moist, stiff.
		0	3	60%	8-12ft.	9-12	

Soil Boring B-10 was abandoned by backfilling the bore hole with bentonite clay to surface grade.

SOIL BORING LOG

LOG No. B-11

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

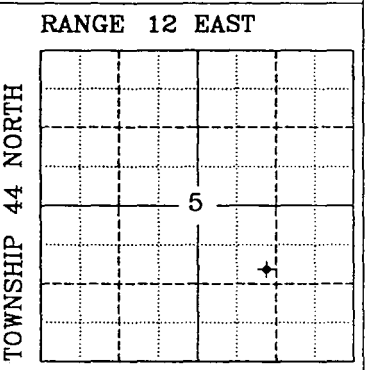
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.: Inovative Probing Co.
DRILL RIG: IPC Van / Hydraulic
DRILLING METHOD: Direct Push / Geoprobe
SAMPLING METHOD: 4 ft. sample tube
DRILLER: IPC
GEOLOGIST: K. CRANDELL
ENGINEER: R. MILLMAN
START: 9/25/97
END: 9/25/97
DEPTH: 16 ft.
WATER LEVEL: 6.5 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID HEADING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Asphalt
		467	1	80%	0-4ft.	2	Silt, organic, black, massive, trace pebbles, moist.
						3	Silt, sandy, brown, pebbley, moist, petroleum odor.
						4	
		2000+	2	30%	4-8ft.	5	Sand, fine, silty, red-brown, petroleum odor, water saturated.
						6 ▽	
						7	
						8	
HES-B11 at 10-11ft.		140	3	60%	8-12ft.	9	heavy petroleum staining at 9-10 ft. interval, petroleum odor.
						10	
						11	petroleum staining absent at base of unit.
						12	
HES-B11 at 13-14ft.		4	4	50%	12-16ft.	13	Silt, sandy, massive, abundant small shells, grey, moist.
						14	
						15	
						16	
						17	Soil Boring B-11 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-12

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

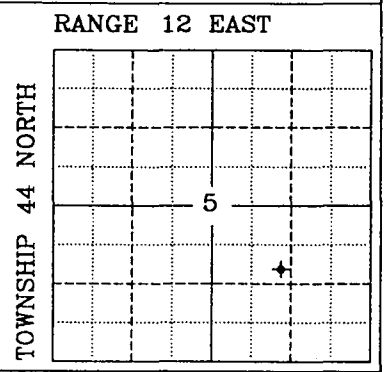
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/25/97
END:	9/25/97
DEPTH:	20 ft.
WATER LEVEL:	7.5 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map
(at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
		2000+	1	50%	0-4ft.	1-4	Asphalt Silt, clayey, black-brown, pebbley, sandy, root structures (grasses), trace petroleum odor, moist.
		1800	2	50%	4-8ft.	4-8	Sand, fine, brown-grey, laminated, petroleum odor, moist. Sand, silty, red-brown, cobbley, petroleum odor, water saturated at 7.5 ft.
		51	3	50%	8-12ft.	8-12	
HES-B12 ISP-12		20	4	50%	12-16ft.	12-16	petroleum odor not exhibited at base of unit. Sand, coarse, gravelly, brown, silt varves, water saturated.
		0	5	50%	16-20ft.	16-20	
						21-26	Soil Boring B-12 was abandoned by backfilling the bore hole with bentonite clay to surface grade.

SOIL BORING LOG

LOG No. B-13

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

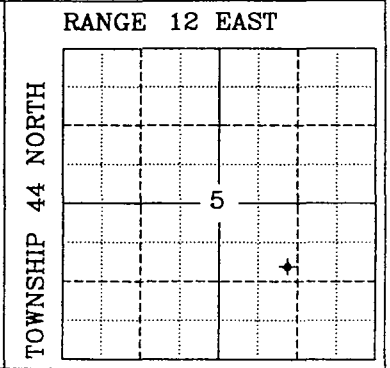
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/25/97
END:	9/25/97
DEPTH:	16 ft.
WATER LEVEL:	7 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Asphalt
		35	1	80%	0-4ft.	2	Silt, clayey, brown, gravelly, moist.
						3	
						4	Clay, silty, brown, gravelly, trace petroleum odor, moist.
						5	
HES-B13		7	2	50%	4-8ft.	6	Silt, sandy, brown, trace petroleum odor, water saturated at 7.5 ft., some gravel.
ISP-13						▽ 7	
						8	
						9	Sand, medium, silty, gravelly, water saturated.
		0	3	60%	8-12ft.	10	
						11	
						12	Sand, silty, red-brown, gravelly, water saturated.
						13	
		0	4	50%	12-16ft.	14	
						15	
						16	Silt, grey, pebbly, moist.
						17	Soil Boring B-13 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-14

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

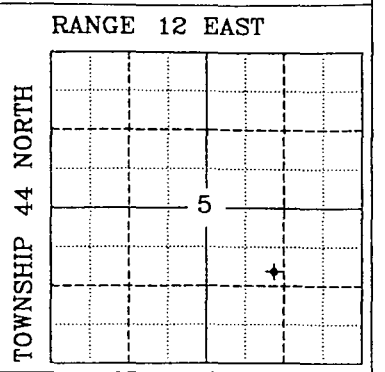
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/25/97
END:	9/25/97
DEPTH:	12 ft.
WATER LEVEL:	7 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Silt, sandy, drk. brown, root structures, moist.
		240	1	100%	0-4ft.	2	Silt, gravelly, brown, slightly moist.
						3	Sand, silty, red-brown, cobbles and pebbles, moist.
						4	
						5	Clay, silty, red-brown, mottled, pebbley, moist.
		2000+	2	50%	4-8ft.	6	
ISP-14	●					▽ 7	Sand, silty, red-brown, cobbles and gravel, moist, petroleum staining (blackened) and odor, water saturated.
						8	
						9	Gravel, sandy, water saturated, petroleum stained and odor.
HES-B14	■	110	3	60%	8-12ft.	10	Silt, massive, brown with grey laminae, water saturated.
						11	Silt, clayey, grey, massive, pebbley, moist, stiff.
						12	
						13	Soil Boring B-14 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						14	
						15	
						16	
						17	
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-15

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

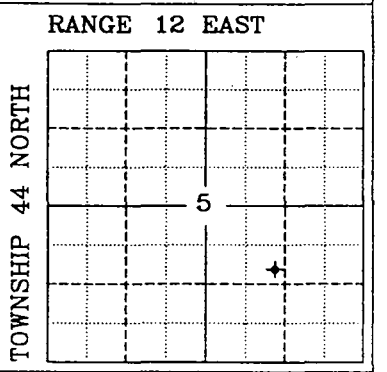
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/25/97
END:	9/25/97
DEPTH:	12 ft.
WATER LEVEL:	7.5 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
		0	1	100%	0-4ft.	1-4	Silt, sandy, drk. brown, root structures, moist. Silt, gravelly, brown, slightly moist. Silt, sandy, red-brown, moist.
HES-B15		501	2	50%	4-8ft.	5-8	Sand, silty, gravelly, red-brown, water saturated at 7.5 ft. Dark grey color at base of unit, petroleum odor.
		0	3	60%	8-12ft.	9-12	Clay, silty, brown, pebbley, moist. Silt, massive, brown, moist. Clay, grey, pebbley, moist.
						13-26	Soil Boring B-15 was abandoned by backfilling the bore hole with bentonite clay to surface grade.

SOIL BORING LOG

LOG No. B-16

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

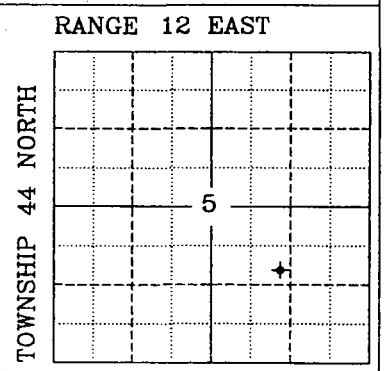
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/25/97
END:	9/25/97
DEPTH:	12 ft.
WATER LEVEL:	7 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
		0	1	100%	0-4ft.	1 2 3 4	Silt, black, slightly moist, root structures (grasses). Silt, brown, slightly moist, root structures. Silt, clayey, brown, root structures, moist. Silt, clayey, grey-brown, mottled, moist.
		2000+	2	20%	4-8ft.	5 6 ▽ 7 8	Sand, gravelly and silty, brown, water saturated, petroleum odor.
ISP-15 HES-B16		0	3	60%	8-12ft.	9 10 11 12	Silt, sandy, brown, moist. Clay, grey, pebbley, moist.
						13 14 15 16 17 18 19 20 21 22 23 24 25 26	Soil Boring B-16 was abandoned by backfilling the bore hole with bentonite clay to surface grade.

SOIL BORING LOG

LOG No. B-17

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

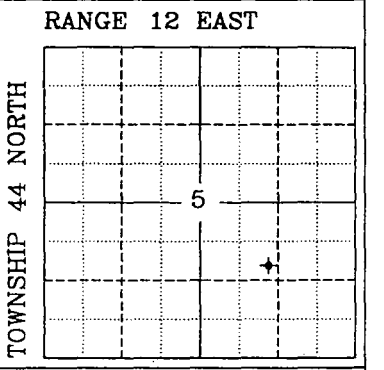
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/25/97
END:	9/25/97
DEPTH:	12 ft.
WATER LEVEL:	7 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Silt, black, slightly moist, root structures (grasses).
		30	1	100%	0-4ft.	2	Silt, sandy, gravel and cobble, brown, moist.
						3	
						4	Silt, clayey, mottled, grey-brown, moist.
						5	
		2000+	2	50%	4-8ft.	6	Grey color at base of unit.
						▽ 7	Sand, silty, grey-brown, water saturated, petroleum odor and staining.
						8	
						9	Small accumulation of free product noted at top of sanple tube #3.
		991	3	50%	8-12ft.	10	
						11	
						12	Unit appears less water saturated at base of sample tube #3.
						13	Soil Boring B-17 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						14	
						15	
						16	
						17	
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-18

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

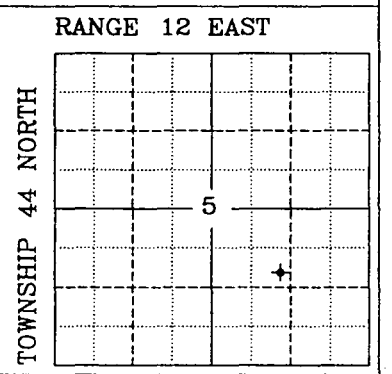
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/26/97
END:	9/26/97
DEPTH:	12 ft.
WATER LEVEL:	6 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map
(at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
							Asphalt.
		3	1	100%	0-4ft.	1-4	Clay, silty, drk. brown, pebbley, moist.
		4	2	70%	4-8ft.	4-8	Clay, silty, Lt. brown, pebbley, moist.
HES-B18		86	3	70%	8-12ft.	8-12	Sand, medium-fine, silty, some gravel and cobble, brown, water saturated.
							Clay, grey, stiff, pebbley, moist.
						13-26	Soil Boring B-18 was abandoned by backfilling the bore hole with bentonite clay to surface grade.

SOIL BORING LOG

LOG No. B-19

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

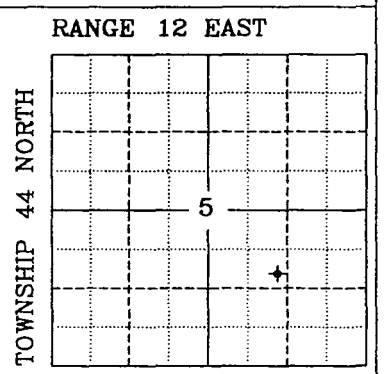
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/26/97
END:	9/26/97
DEPTH:	12 ft.
WATER LEVEL:	7 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Asphalt.
		0	1	90%	0-4ft.	2	Clay, sandy, brown, moist.
						3	Clay, humus, black, moist.
						4	Silt, sandy, red-brown, moist.
						5	
HES-B19		0	2	50%	4-8ft.	6	
						7 ▽	
						8	
ISP-16						9	Sand, gravelly, brown, silty, water saturated.
		0	3	90%	8-12ft.	10	
						11	Clay, grey, stiff, pebbely, moist.
						12	
						13	Soil Boring B-19 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						14	
						15	
						16	
						17	
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-20

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

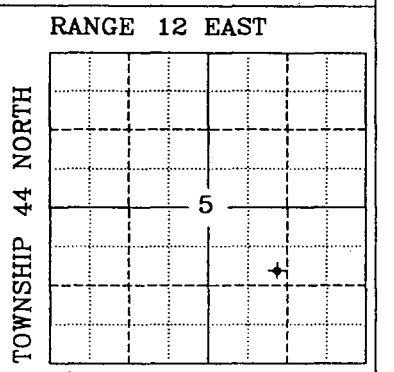
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.: Inovative Probing Co.
DRILL RIG: IPC Van / Hydraulic
DRILLING METHOD: Direct Push / Geoprobe
SAMPLING METHOD: 4 ft. sample tube
DRILLER: IPC
GEOLOGIST: K. CRANDELL
ENGINEER: R. MILLMAN
START: 9/26/97
END: 9/26/97
DEPTH: 16 ft.
WATER LEVEL: 7 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map
(at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Slag, black, glassy, moist.
							Clay, speckled, Lt. brown, moist.
		2	1	90%	0-4ft.	2	Clay, no speckling, Lt. brown, moist.
						3	
						4	
						5	Silt, clayey, brown, some peagravel, moist.
		1200	2	90%	4-8ft.	6	Clay, grey, silty, sandy, moist.
ISP-17						▽ 7	Sand, gravelly and silty, water saturated, trace petroleum odor and some staining (near top of unit).
						8	
						9	
		772	3	90%	8-12ft.	10	
ISP-18						11	
HES-B20						12	
						13	
ISP-19		119	4	90%	12-16ft.	14	Moist at base of unit.
						15	
						16	Silt, grey, sand laminea, moist.
						17	Soil Boring B-20 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-21

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

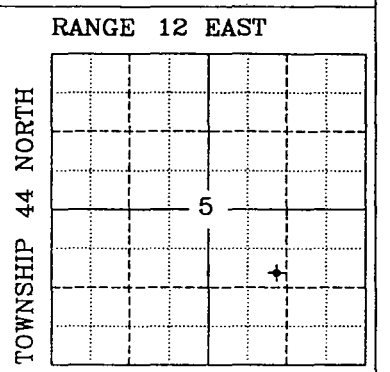
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/26/97
END:	9/26/97
DEPTH:	12 ft.
WATER LEVEL:	7.5 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
		0	1	90%	0-4ft.	1	Silt, clayey, black, root structures (grasses), moist.
						2	Silt, clayey, brown, moist.
						3	
						4	
						5	Mottled at base of unit.
		60	2	60%	4-8ft.	6	
HES-B21						7	Sand, gravelly and silty, brown, water saturated.
ISP-20						8	
						9	grades to grey color at 8.5ft.
ISP-21		3	3	90%	8-12ft.	10	Black streaks, petroleum odor and stains at 10.5 ft.
						11	Silt, gravelly, brown, moist.
						12	Silt, grey, massive, moist.
						13	Soil Boring B-21 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						14	
						15	
						16	
						17	
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-22

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

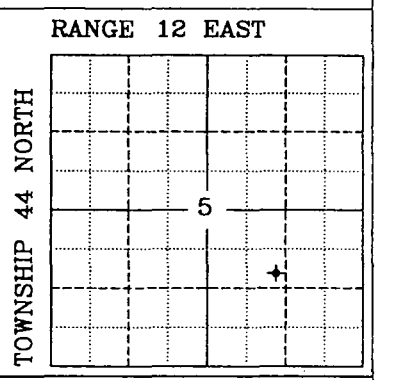
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/26/97
END:	9/26/97
DEPTH:	12 ft.
WATER LEVEL:	7 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map
(at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
		0	1	90%	0-4ft.	1-4	Silt, sandy, brown, root structures (grasses), moist.
						3-4	Silt, mottled, red-brown, moist.
		2000+	2	60%	4-8ft.	5-7	Sand, silty, gravelly, red-brown, moist.
ISP-22	●					▽ 7	water saturated at 7.ft., grey-black petroleum staining and petroleum odor.
						8-11	Sand, silt laminea, brown, water saturated.
ISP-23	●	127	3	90%	8-12ft.	12	Clay, brown, pebbley, moist, trace grey sand.
						13	Soil Boring B-22 was abandoned by backfilling the bore hole with bentonite clay to surface grade.

14 15 16 17 18 19 20 21 22 23 24 25 26

SOIL BORING LOG

LOG No. B-23

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

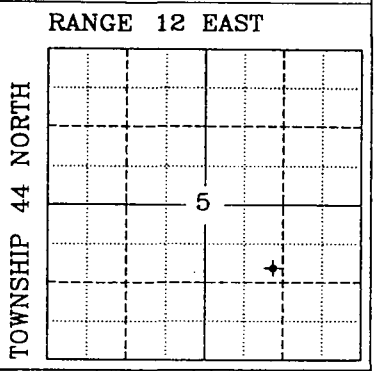
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/26/97
END:	9/26/97
DEPTH:	12 ft.
WATER LEVEL:	7 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
		0	1	80%	0-4ft.	1-4	Silt, sandy, brown, slightly moist. Silt, clayey, brown, moist. Silt, sandy, red-brown, very moist.
ISP-24 HES-B23		0	2	50%	4-8ft.	5-7	Sand, silty, gravelly, red-brown, very moist at top of unit, water saturated at 7 ft.
		0	3	90%	8-12ft.	8-12	Sand, silty, brown, water saturated. Silt, massive, brown, moist. Sand, gravelly, brown, water saturated, grey silt at base.
						13-26	Soil Boring B-23 was abandoned by backfilling the bore hole with bentonite clay to surface grade.

SOIL BORING LOG

LOG No. B-24

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

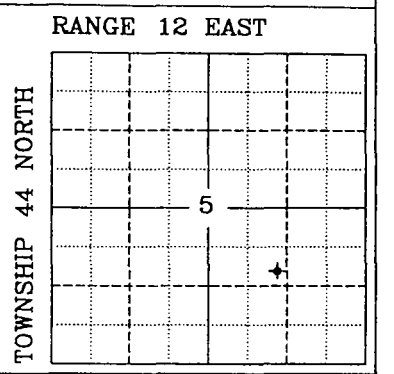
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/26/97
END:	9/26/97
DEPTH:	12 ft.
WATER LEVEL:	7.5 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Silt, black, root structures (grasses), moist.
		0	1	80%	0-4ft.	2	Clay, silty, drk. brown, pebbley, moist.
						3	Clay, silty, mottled, brown and grey, massive, moist.
						4	
						5	
		370	2	50%	4-8ft.	6	
ISP-25 HES-B24						▽ 7	Sand, silty, brown, water saturated.
						8	
						9	
		1	3	60%	8-12ft.	10	
						11	
						12	
						13	Soil Boring B-24 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						14	
						15	
						16	
						17	
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-25

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

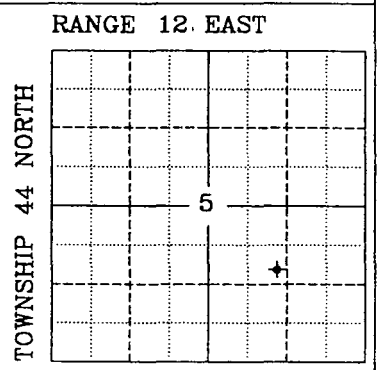
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/27/97
END:	9/27/97
DEPTH:	4 ft.
WATER LEVEL:	Not encountered

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Asphalt
		89	1	80%	0-4ft.	2	Silt, gravelly, brown, moist.
ISP-26	[redacted]					3	Silt, sandy, red-brown, moist, trace petroleum odor.
HES-B25						4	
						5	Soil Boring B-25 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						6	
						7	
						8	
						9	
						10	
						11	
						12	
						13	
						14	
						15	
						16	
						17	
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-26

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

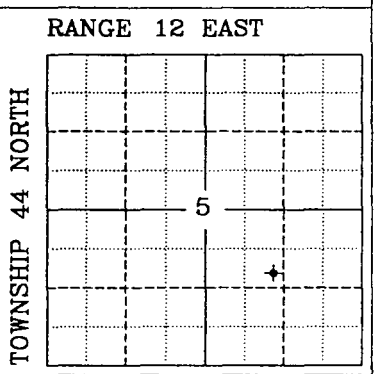
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/27/97
END:	9/27/97
DEPTH:	12 ft.
WATER LEVEL:	5.5 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
		3	1	90%	0-4ft.	1-4	Silt, sandy, drk. brown, root structures (grasses), dry. Silt, clayey, black, moist.
ISP-27 HES-B26		6	2	70%	4-8ft.	5-8	Sand, silty, brown, water saturated, some gravel.
		6	3	60%	8-12ft.	9-12	Sand, coarse, silty, grey, water saturated. Clay, stiff, grey, moist.
						13	Soil Boring B-26 was abandoned by backfilling the bore hole with bentonite clay to surface grade.

SOIL BORING LOG

LOG No. B-27

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

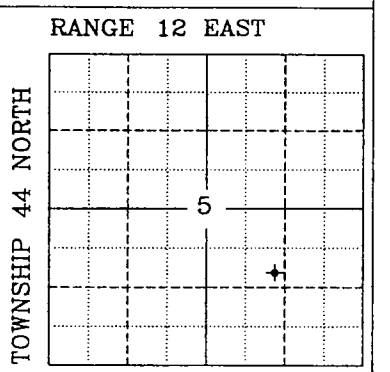
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/27/97
END:	9/27/97
DEPTH:	12 ft.
WATER LEVEL:	6 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
		6	1	90%	0-4ft.	1-4	Silt, black, slag, wood, dry. Silt, sandy, red-brown, some gravel, moist.
						4	Silt, Lt. brown, moist.
ISP-29		7	2	90%	4-8ft.	5-8	Sand, silty, red-brown, moist, some gravel. ▽ Water saturated at 6 ft. Old soil horizon, black humus, root structures (grasses).
HES-B27 ISP-28		2000+	3	70%	8-12ft.	9-12	Silt, grey, massive, moist.
						13	Soil Boring B-27 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						14-26	

SOIL BORING LOG

LOG No. B-28

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

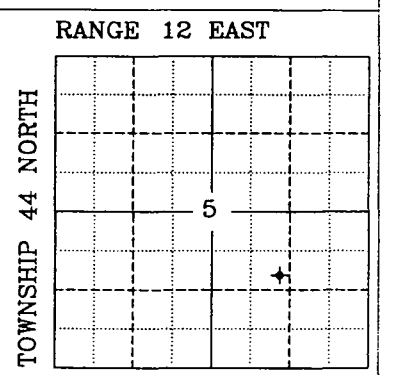
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/29/97
END:	9/29/97
DEPTH:	16 ft.
WATER LEVEL:	6.5 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Concrete.
							Subgrade gravel.
		9	1	50%	0-4ft.	2	Silt, sandy, slightly moist, brown.
						3	Clay, mottled, brown, moist.
						4	
						5	Sand, gravelly, brown, moist, silty.
ISP-30		380	2	60%	4-8ft.	6	
HES-B28 7-8ft.						7	Water saturated at 6.5 ft.
						8	
						9	
		20	3	60%	8-12ft.	10	
ISP-31						11	Sand, very fine, grey, silty.
HES-B28 11-12ft.						12	Clay, pebbley, grey, sandy. Interbeded silts at base of unit.
						13	
		8	4	50%	12-16ft	14	Clay, plastic, pebbley, grey, moist.
ISP-32						15	
						16	
						17	Soil Boring B-28 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-29

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

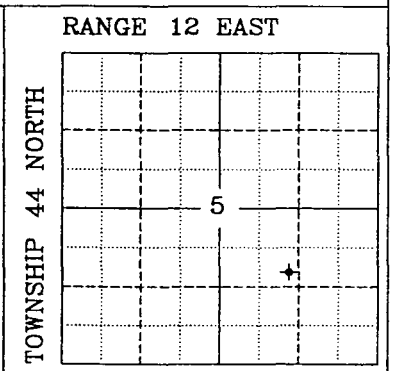
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/29/97
END:	9/29/97
DEPTH:	14 ft.
WATER LEVEL:	7 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Asphalt.
							Subgrade rock, limestone.
						2	No sample collected or retained in sample tube.
		1	1	70%	2-6ft.	3	Slage, Black, silt and sand matrix (brown), moist.
						4	
						5	
						6	
						7 ▽	
IPS-33		1	2	40%	6-10ft.	8	Silt, brown, moist, massive.
HES-B29 9-10ft.						9	Sand, gravelly, brown, water saturated.
						10	
ISP-34						11	
HES-B29 11-12ft.		0	3	60%	10-14ft.	12	
						13	Clay, grey, pebbley, moist.
						14	
						15	Soil Boring B-29 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						16	
						17	
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-30

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

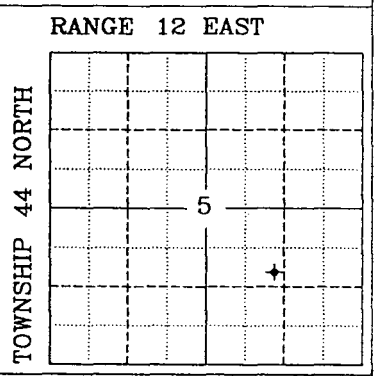
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/29/97
END:	9/29/97
DEPTH:	16 ft.
WATER LEVEL:	12.5 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
		0	1	90%	0-4ft.	1-4	Silt, sandy, brown, root structures (grasses), slightly moist, trace slag or coal.
						2-4	Clay, brown, stiff, slightly moist.
ISP-35 HES-B30		0	2	70%	4-8ft.	4-8	Clay, silty, plastic, very moist, Lt. brown-tan.
ISP-36		1	3	60%	8-12ft.	8-12	Sand, red-brown, gravelly, moist.
						12	Sand, brown, water saturated.
		0	4	50%	12-16ft.	13-16	Sand, red-brown, gravelly, water saturated.
						16	Sand, silt laminea, clayey at base, moist, grey.
						17	Soil Boring B-30 was abandoned by backfilling the bore hole with bentonite clay to surface grade.

SOIL BORING LOG

LOG No. B-31

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

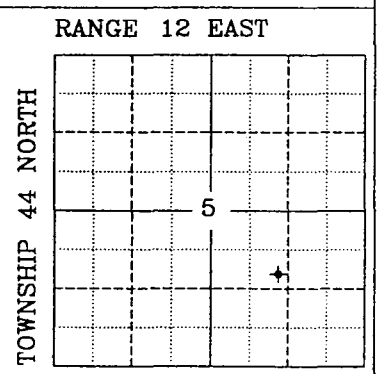
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/30/97
END:	9/30/97
DEPTH:	16 ft.
WATER LEVEL:	6 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
		4	1	80%	0-4ft.	1-4	Silt, sandy, black-brown, root structures, moist.
						2-4	Silt, drk. brown, moist.
						3-4	Clay, drk. brown, pebbley, mottled, mooist.
ISP-37		3	2	70%	4-8ft.	4-8	
HES-B31						5-8	
						6-8	
						7-8	Sand, gravelly, brown, silty, water saturated, cobbley.
		4	3	80%	8-12ft.	8-12	
ISP-38						9-12	
						10-12	
						11-12	
		0	4	50%	12-16ft.	12-16	
						13-16	
						14-16	Sand, medium, brown, water saturated.
						15-16	Silt, gray, sandy laminea, water saturated.
						16-26	Soil Boring B-31 was abandoned by backfilling the bore hole with bentonite clay to surface grade.

SOIL BORING LOG

LOG No. B-32

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

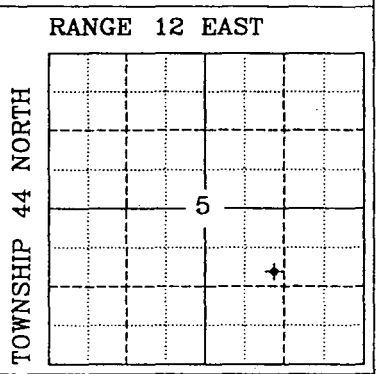
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/30/97
END:	9/30/97
DEPTH:	16 ft.
WATER LEVEL:	5.5 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
		3	1	90%	0-4ft.	1-4	Silt, drk. brown, root structures, moist. Sand, gravelly, brown, moist, silty. Clay, brown, mottled, stiff, moist.
ISP-39		4	2	90%	4-8ft.	5-8	Sand, gravelly, silty, red-brown, water saturated, trace petroleum odor.
ISP-40 HES-B32		95	3	90%	8-12ft.	9-12	
ISP-41		76	4	90%	12-16ft.	13-16	Silt, Sandy, grey, moist.
						17	Soil Boring B-32 was abandoned by backfilling the bore hole with bentonite clay to surface grade.

SOIL BORING LOG

LOG No. B-33

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

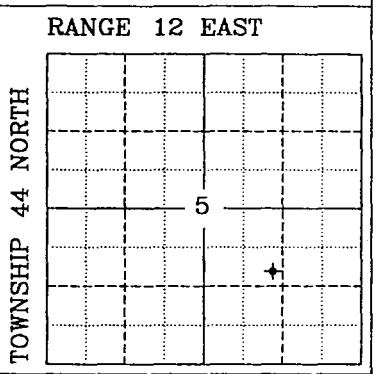
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/30/97
END:	9/30/97
DEPTH:	12 ft.
WATER LEVEL:	7 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Silt, sandy, gravelly, drk. brown, root structures, moist.
		2	1	80%	0-4ft.	2	Silt, gravelly, red-brown, moist.
						3	
						4	Silt, clayey, drk. brown, moisi, stiff.
						5	Clay, silty, brown, root structures, moist.
ISP-42	●	2	2	60%	4-8ft.	6	
						▽ 7	Water saturated at 7 ft.
HES-B33	■					8	
						9	
		65	3	80%	8-12ft.	10	Sand, grey, very silty, water saturated.
ISP-43	●					11	
						12	
						13	Soil Boring B-33 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						14	
						15	
						16	
						17	
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-34

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

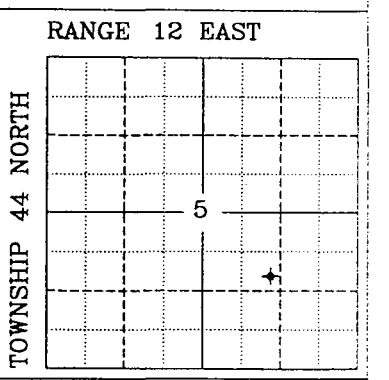
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/30/97
END:	9/30/97
DEPTH:	18 ft.
WATER LEVEL:	7 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Not sampled; asphalt and subgrade rock.
						2	
		0	1	70%	2-6ft.	3	Silt, mottled, drk. brown to brown, moist.
						4	
						5	
						6	
ISP-44						7 ▽	Water saturated at 7 ft.
HES-B34		0	2	60%	6-10ft.	8	
						9	Sand, gravelly, red-brown, silty, water saturated.
						10	
ISP-45						11	
		0	3	80%	10-14ft.	12	
						13	
						14	
						15	
		0	4	80%	14-18ft.	16	
ISP-46						17	Sand, silt laminea, grey, water saturated.
						18	
						19	Soil Boring B-34 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						20	
						21	
						22	
						23	
						24	
						25	
						26	

SOIL BORING LOG

LOG No. B-35

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

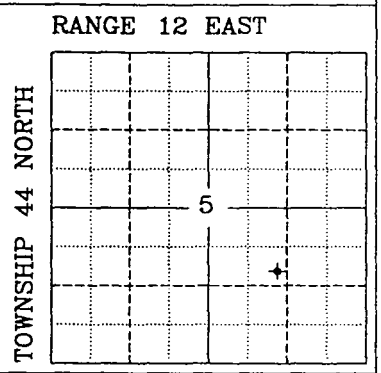
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

PROJECT No. 10319

DRILLING CO.: Inovative Probing Co.
DRILL RIG: IPC Van / Hydraulic
DRILLING METHOD: Direct Push / Geoprobe
SAMPLING METHOD: 4 ft. sample tube
DRILLER: IPC
GEOLOGIST: K. CRANDELL
ENGINEER: R. MILLMAN
START: 9/30/97
END: 9/30/97
DEPTH: 16 ft.
WATER LEVEL: 6.5 ft.

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map
(at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate



COMMENTS	LAB SAMPLE INTERVAL	PID READING (ppm)	SAMPLE NUMBER	PERCENT RECOVERY	SAMPLE INTERVAL	DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
						1	Asphalt.
							Subgrade rock (limestone)
		0	1	70%	0-4ft.	2	Silt, black, moist.
							Clay, drk. brown, mooist.
						3	Clay, brown, moist.
						4	
						5	
		0	2	70%	4-8ft.	6	Sand, gravelly, silty, red-brown, water saturated at 6.5 ft.
ISP-47						7	
						8	
						9	
							Silt laminea at base of unit.
ISP-48		1	3	60%	8-12ft.	10	
HES-B35						11	Sand, grey, silt laminea, water saturated.
						12	
						13	
		0	4	80%	12-16ft.	14	
						15	Silt, sandy, grey, water saturated.
						16	
						17	Soil Boring B-35 was abandoned by backfilling the bore hole with bentonite clay to surface grade.
						18	
						19	
						20	
						21	
						22	
						23	
						24	
						25	
						26	

APPENDIX 3

Piezometer Logs

WELL CONSTRUCTION LOG

LOG No. P-1

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

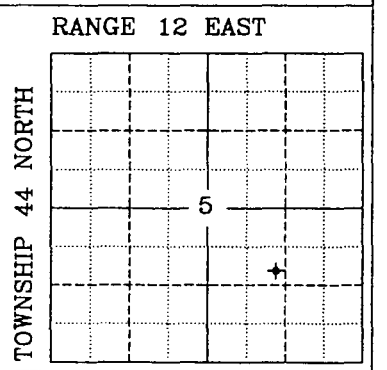
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

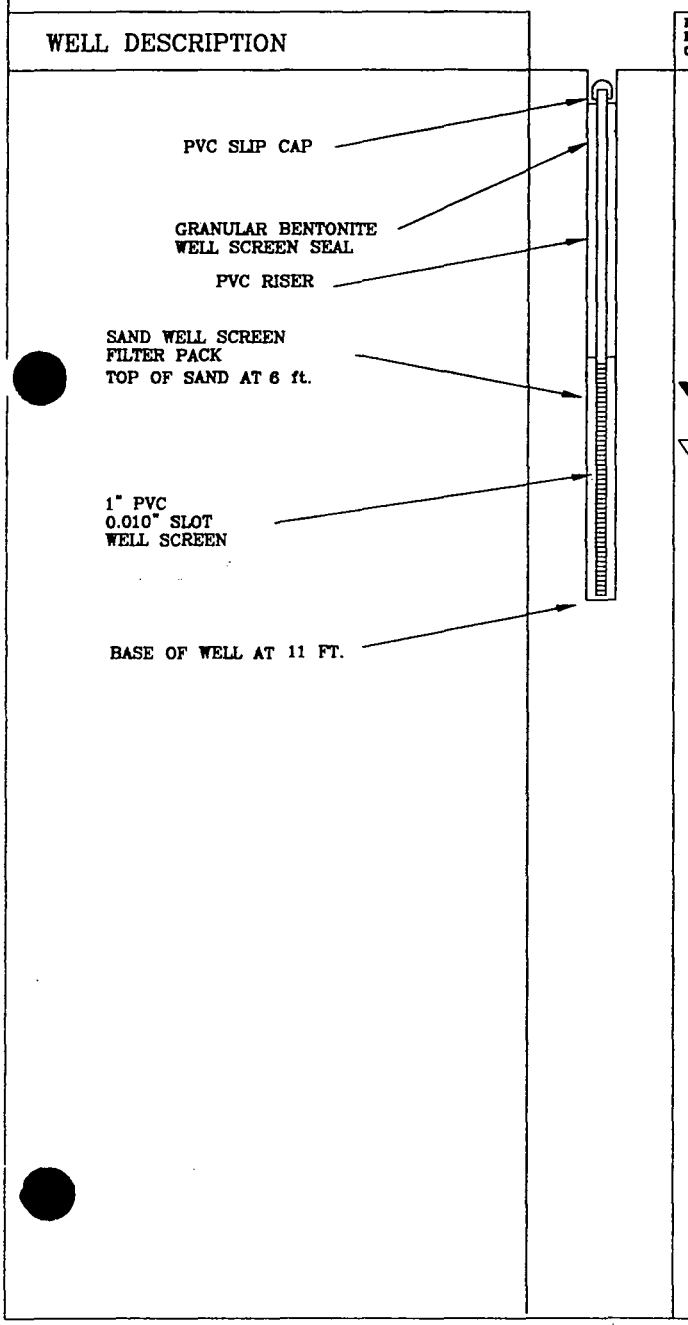
PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/26/97
END:	9/26/97
DEPTH:	12 ft.
WATER LEVEL:	6.51FT. FROM TOP OF CASING

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate





DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
0	Asphalt.
1	Clay, silty, lt. brown, pebbley, moist.
2	Clay, silty, sandy, red-brown, pebbley, moist.
3	
4	Clay, black, silty, massive, moist.
5	
6	Clay, silty, sandy, red-brown, moist.
7	
8	
8	Sand, fine, silty, brown, water saturated.
9	Silt, brown, massive, moist.
10	Sand, coarse, brown, moist.
11	Silt, brown, massive, moist.
12	
13	
14	
15	
16	
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	

WELL CONSTRUCTION LOG

LOG No. P-2

HERITAGE ENVIRONMENTAL SERVICES, INC.
5330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

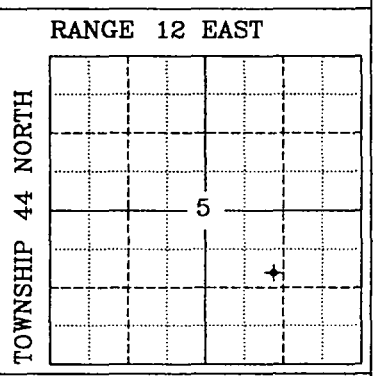
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

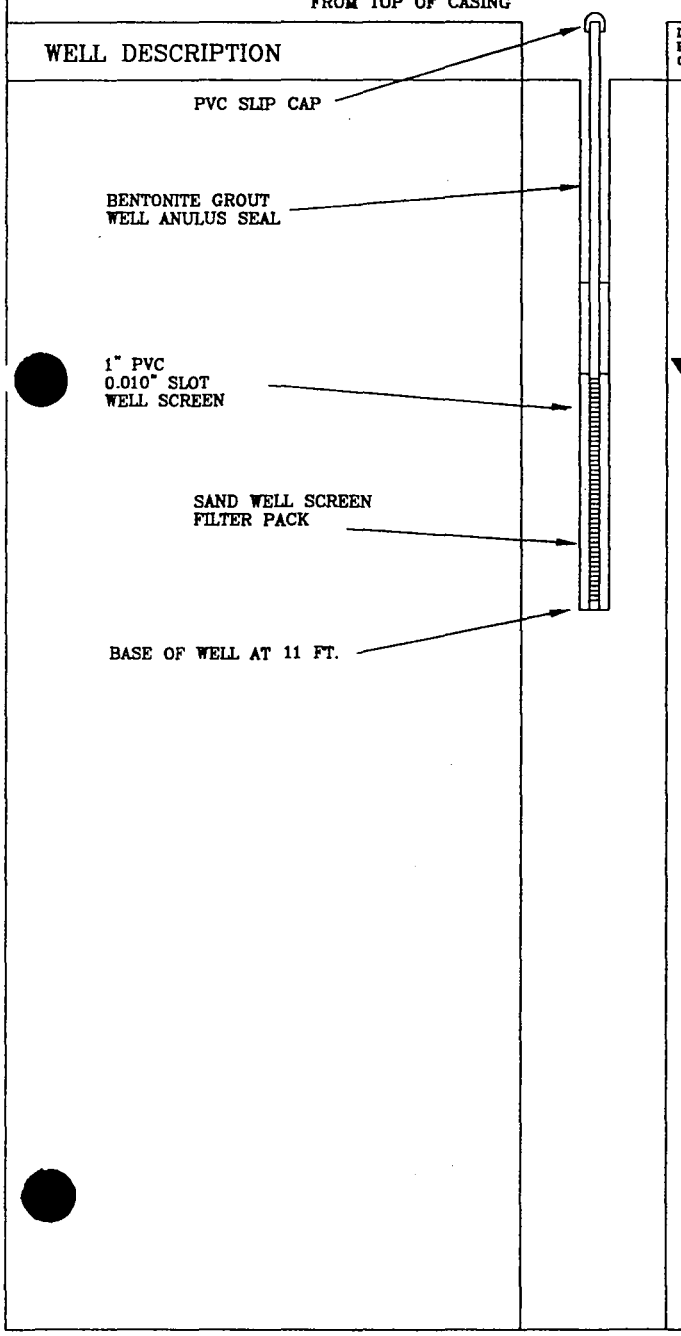
PROJECT No. 10319

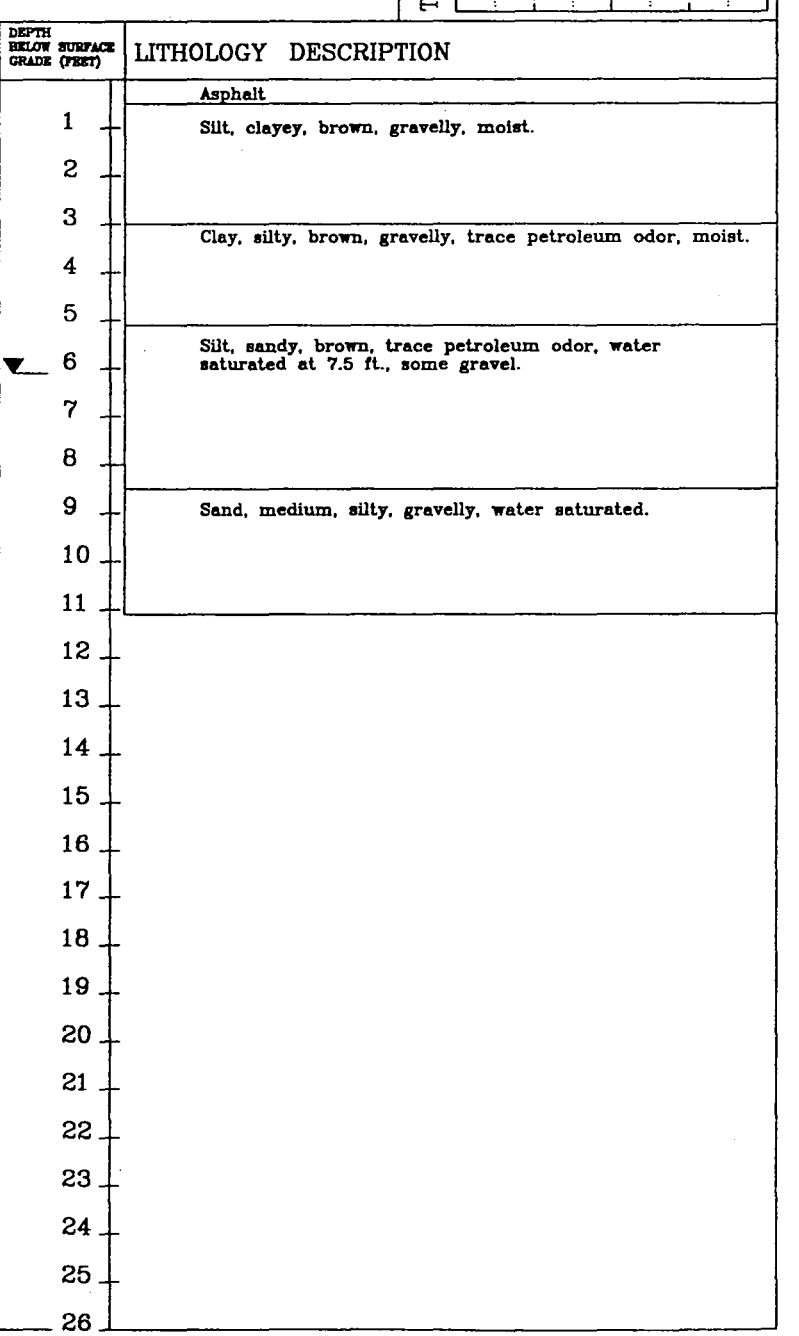
DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/26/97
END:	9/26/97
DEPTH:	11 ft.
WATER LEVEL:	6.97 ft. FROM TOP OF CASING

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate







WELL CONSTRUCTION LOG

LOG No. P-3

HERITAGE ENVIRONMENTAL SERVICES, INC.
5330 Canal Bank Road
mont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

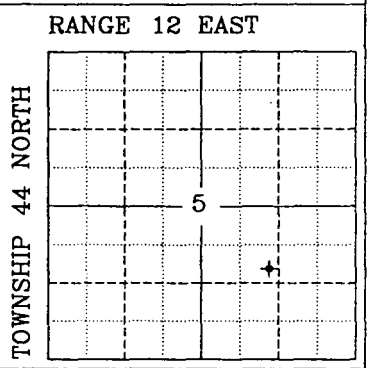
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

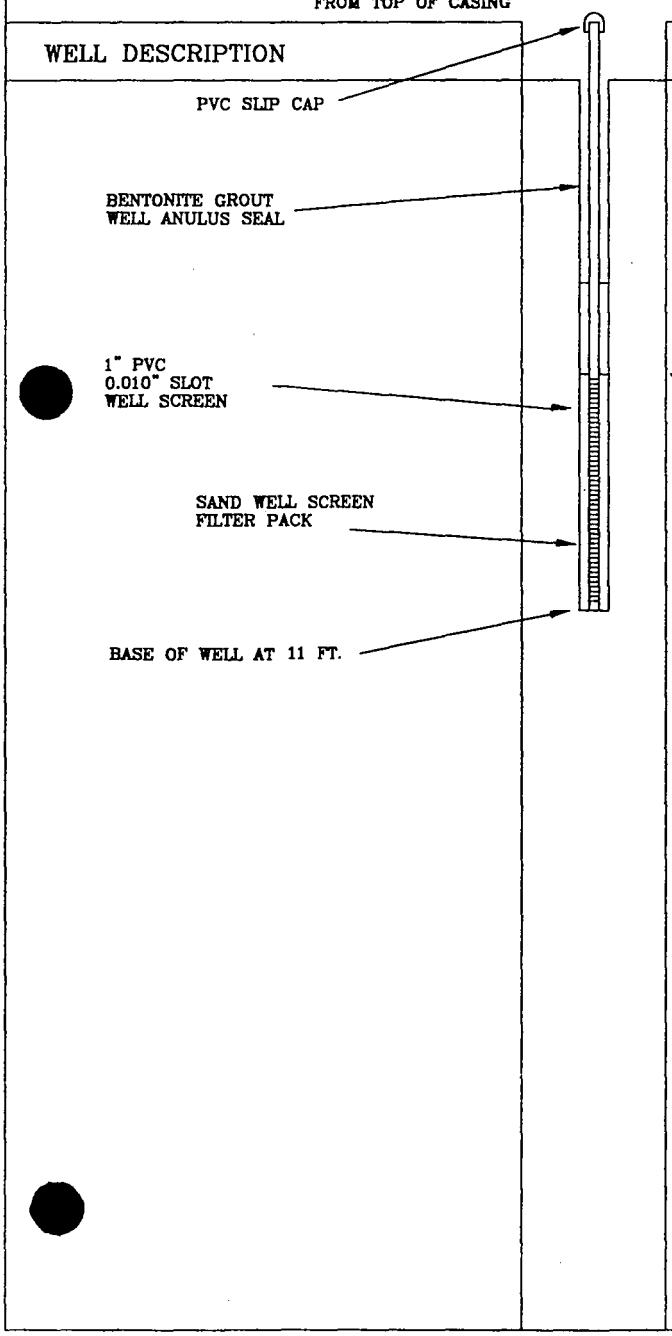
PROJECT No. 10319

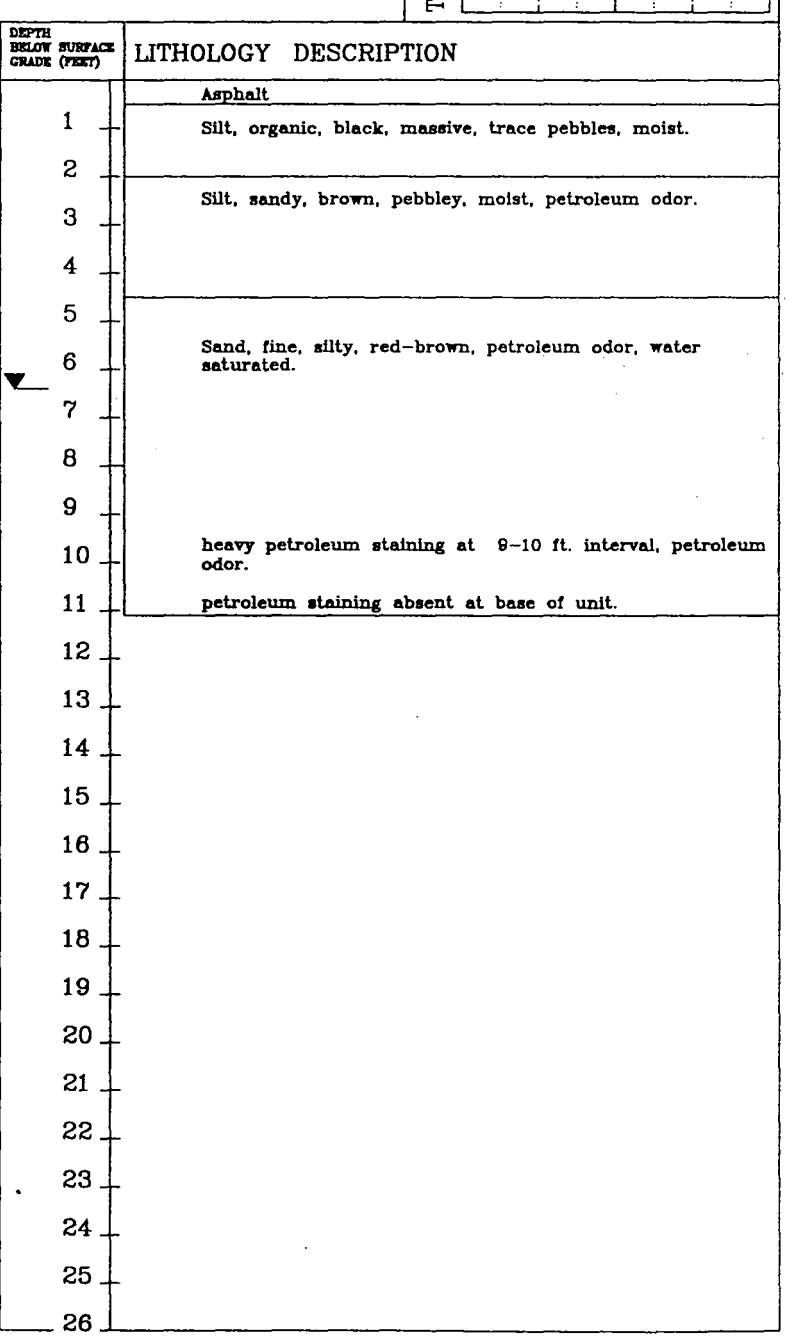
DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/26/97
END:	9/26/97
DEPTH:	11 ft.
WATER LEVEL:	6.48 ft. FROM TOP OF CASING

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate







WELL CONSTRUCTION LOG

LOG No. P-4

HERITAGE ENVIRONMENTAL SERVICES, INC.
15330 Canal Bank Road
Lemont, Illinois 60439
PHONE: (630) 739-1151
FAX: (630) 739-9491

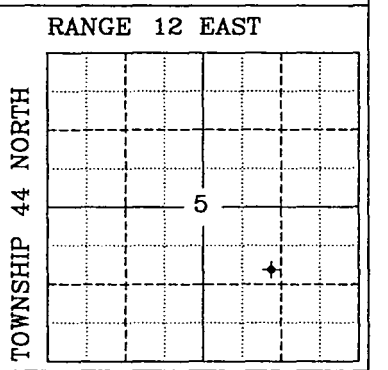
SITE LOCATION: US Navy
Building 1600A
North Chicago, Illinois

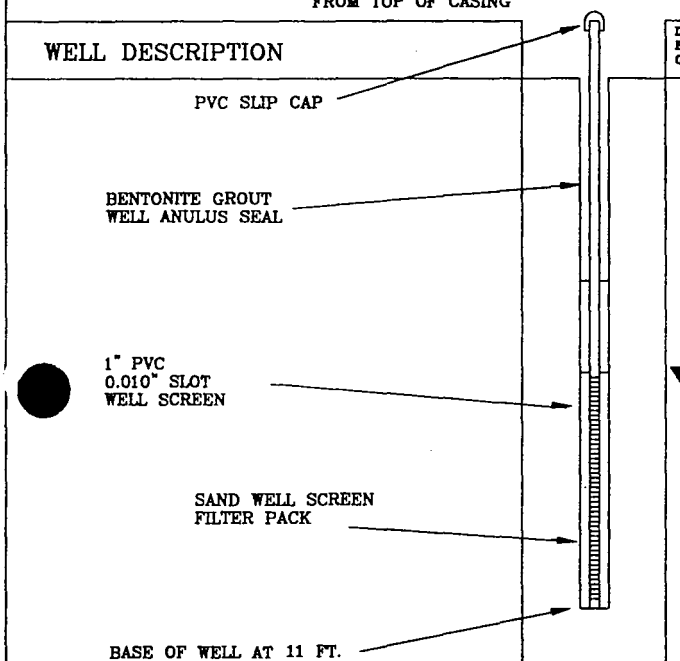
PROJECT No. 10319

DRILLING CO.:	Inovative Probing Co.
DRILL RIG:	IPC Van / Hydraulic
DRILLING METHOD:	Direct Push / Geoprobe
SAMPLING METHOD:	4 ft. sample tube
DRILLER:	IPC
GEOLOGIST:	K. CRANDELL
ENGINEER:	R. MILLMAN
START:	9/26/97
END:	9/26/97
DEPTH:	11 ft.
WATER LEVEL:	6.31 ft. FROM TOP OF CASING

COORDINATES:
X: See Site Map
Y: See Site Map
Z: See Site Map (at top of casing)

WEATHER:
TEMP: 70F
WIND: <5mph
HUMID: Moderate





DEPTH BELOW SURFACE GRADE (FEET)	LITHOLOGY DESCRIPTION
1	Asphalt
2	Silt, clayey, black-brown, moist, trace petroleum Odor.
3	Sand, silty, Drk. brown, gravelly, moist, petroleum odor.
4	
5	
6	Thin gravel lense, water saturated.
7	Clay, grey, pebbley, moist, stiff.
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APPENDIX 4

Tables

Table 1
Summary of Soil Sample Results (ppm)
Field PID Readings

Boring Location	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30	B31	B32	B33	B34	B35
Sample Depth	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.	0-4 ft.
PID	157	84	1	1	2000	2000	853	6	370	5	467	2000	35	240	0	0	30	3	0	2	0	0	0	0	89	3	6	9	1	0	4	3	2	0	0
Sample Depth	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.		4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.	4-8 ft.
PID	65	207	1	2	2000	2000	2000	0	59	3	2000	1800	7	2000	501	2000	2000	4	0	1200	60	2000	0	370		6	7	380	1	0	3	4	2	0	0
Sample Depth	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.		8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.		8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.	8-12 ft.
PID	0	12	0	3	121	17	128		0	0	140	51	0	110	0	0	991	86	0	772	3	127	0	1		6	2000	20	0	1	4	95	65	0	1
Sample Depth	12-16 ft.				12-16 ft.		12-16 ft.				12-16 ft.	12-16 ft.	12-16 ft.							12-16 ft.								12-16 ft.		12-16 ft.	12-16 ft.	12-16 ft.		12-16 ft.	12-16 ft.
PID	0				22		0				4	20	0							119								8		0	0	76		0	0
Sample Depth												16-20 ft.																							
PID												0																							

Comments:

ppm = parts per million.
(blank) = No sample collected.

Table 2
Summary of Soil Sample Results (ppm)
IPS Field Screening

Boring Location	B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30	B31	B32	B33	B34	B35
Sample Depth	3-4 ft.	7-8 ft.	5-6 ft.	6-7 ft.	6-7 ft.	7-8 ft.	11-12 ft.		7-8 ft.	6-7 ft.		15-16 ft.	6-7 ft.	7-8 ft.		9-10 ft.			9-10 ft.	7-8 ft.	7-8 ft.	7-8 ft.	7-8 ft.	7-8 ft.	3-4 ft.	7-8 ft.	7-8 ft.	7-8 ft.	9-10 ft.	7-8 ft.	7-8 ft.	7-8 ft.	7-8 ft.	7-8 ft.	7-8 ft.
Benzene	–	–	–	–	–	–	–		–	–		–	–	10.348		0.348			–	0.324	–	–	–	0.51	–	–	–	0.221	–	–	–	–	–	–	–
Ethylbenzene	–	–	–	–	3.62	1.45	0.132		–	–		–	–	–		–			–	0.072	–	–	–	0.034	–	–	–	0.12	–	–	–	–	–	–	–
Toluene	–	–	–	–	13.872	0.471	0.034		–	–		–	–	17.462		0.054			–	0.39	–	–	–	0.272	–	–	–	0.311	–	–	–	–	–	–	–
Xylenes	–	–	–	–	63.594	0.766	0.186		–	–		–	–	72.083		0.038			–	1.68	–	–	–	0.26	–	–	–	0.661	–	–	–	–	–	–	–
TVH	1.425	1.46	0.064	2.001	796.051	62.129	7.042		0.711	0.209		0.017	0.853	994.302		1.355			–	8.199	0.016	–	–	1.406	0.43	0.026	–	3.395	–	–	–	–	–	–	–
Sample Depth	8-9 ft.	10-11 ft.																		11-12 ft.	9-10 ft.	10-11 ft.					10-11 ft.	11-12 ft.	11-12 ft.	11-12 ft.	11-12 ft.	11-12 ft.	11-12 ft.	11-12 ft.	11-12 ft.
Benzene	–	–																		0.538	0.122	–					–	0.287	–	–	–	1.782	0.202	–	–
Ethylbenzene	–	–																		0.718	–	–					–	0.46	–	–	–	–	–	–	–
Toluene	–	–																		0.476	0.046	–					–	0.194	–	–	–	–	–	–	–
Xylenes	–	–																		2.062	–	–					–	0.11	–	–	–	–	–	–	–
TVH	0.349	0.129																		7.728	0.623	8.169					–	4.658	–	–	–	1.852	0.401	–	–
Sample Depth																				13-14 ft.								15-16 ft.				15-16 ft.		16-17 ft.	
Benzene																				1.22								–				0.655		–	
Ethylbenzene																				0.34								–				–		–	
Toluene																				0.208								–				–		–	
Xylenes																				0.072								–				–		–	
TVH																				3.553								–				0.903		–	

Comments:

(–) = Below Method Detection Limit
ppm = parts per million (mg/kg or mg/L)
(blank) = Sample not collected or not analyzed

Table 3
Summary of Soil Sample Results (ppm)
Heritage Laboratory

Boring Location	Cleanup Criteria (a)		Cleanup Criteria (b)		B1	B2	B3	B4	B5	B6	B7	B8	B9	B10	B11	B12	B13	B14	B15	B16	B17	B18	B19	B20	B21	B22	B23	B24	B25	B26	B27	B28	B29	B30	B31	B32	B33	B34	B35
Sample Depth	Inhalation	Migration	Inhalation	Migration	7-8 ft.	10-11 ft.	5-6 ft.			11-12 ft.		6-7 ft.	7.5-8.5ft.	5.5-6.5ft.		14-15 ft.	6-7 ft.	9.5-10.5ft.			7-8 ft.	8-9 ft.	6-7 ft.	11-12 ft.			7-8 ft.		3-4 ft.	7-8 ft.	10-11 ft.	11-12 ft.	9-10 ft.	7-8 ft.	6-7 ft.			7-8 ft.	11-12 ft.
BETX Constituents																																							
Benzene	0.8	0.03	1.5	0.17	–	–	–			0.003		–	–	–		–	–	0.013				–	–	0.15			–		–	–	–	–	–	–	–			–	–
Ethylbenzene	400	13	400	19	–	–	–			0.008		–	–	–		–	–	0.046				0.005	–	5.5			–		–	–	–	–	–	–	–			–	–
Toluene	650	12	650	29	–	–	–			0.029		–	–	–		–	–	0.058				–	–	3.3			–		–	–	–	–	–	–	–			–	–
Xylenes	410	150	410	150	–	–	–			0.04		–	–	–		0.025	–	0.19				0.007	–	23			–		–	–	–	–	–	–	–			–	–
PNA Constituents																																							
Naphthalene	-c-	84	-c-	420	–	–	–			–		–	–	–		0.0074	–	0.058					–				–		–	–	–								
Acenaphthylene	NL	NL	NL	NL	–	–	–			–		–	–	–		–	–	–					–				–		–	–	–								
Acenaphthene	-c-	570	-c-	2,900	–	–	–			–		–	–	–		–	–	–					–				–		–	–	–								
Fluorene	-c-	560	-c-	2,800	–	–	–			–		–	–	–		–	–	–					–				–		–	–	–								
Phenanthrene	NL	NL	NL	NL	–	–	–			0.0087		–	–	–		–	–	–					–				–		–	0.0097	–								
Anthracene	-c-	12,000	-c-	59,000	–	–	–			–		–	–	–		–	–	–					–				–		–	–	–								
Fluoranthene	-c-	4,300	-c-	21,000	–	–	–			0.0072		–	0.026	0.033		–	–	–					–				–		–	0.013	–								
Pyrene	-c-	4,200	-c-	21,000	–	–	–			–		–	0.016	0.03		–	–	–					–				–		–	–	–								
Benzo(a)Anthracene	-c-	2	-c-	8	–	–	–			–		–	0.005	0.0062		–	–	–					–				–		–	0.0038	–								
Chrysene	-c-	160	-c-	800	–	–	–			–		–	0.0084	0.0099		–	–	–					–				–		–	–	–								
Benzo(b)Fluoranthene	-c-	5	-c-	25	–	–	–			–		–	0.016	0.018		–	–	–					–				–		–	0.0058	–								
Benzo(k)Fluoranthene	-c-	49	-c-	250	–	–	–			–		–	0.0054	0.0089		–	0.0035	–					–				–		–	–	–								
Benzo(a)Pyrene	-c-	8	-c-	82	–	–	–			–		–	0.014	0.018		–	–	–					–				–		–	–	–								
Dibenzo(a,h)Anthracene	-c-	2	-c-	7.6	–	–	–			–		–	–	–		–	–	–					–				–		–	–	–								
Benzo(g,h,i)Perylene	-c-	NL	NL	NL	–	–	–			0.0094		–	0.014	0.014		0.0075	0.0079	0.0092					–				–		–	–	–								
Indeno(1,2,3-cd)Pyrene	-c-	14	-c-	69	–	–	–			–		–	0.012	0.011		–	0.0044	–					–				–		–	0.005	–								
Metal Constituents																																							
Total Lead	-c-		-c-																		15																		
TCLP Lead		0.0075		0.1																	–																		

Comments:

(–) = Below Method Detection Limit
ppm = parts per million (mg/kg or mg/L)
(blank) = Sample not collected or not analyzed

NL = Not Listed
-c- = No toxicity criteria avalable for this route of exposure.
(a) = Inhalation and Migration values for Tier 1 Residential Properties.
(b) = Inhalation and Migration values for Tier 1 Industrial-Comercial Properties.

Table 4
Summary of Groundwater Results (ppm)
Heritage Laboratory

	Class II Groundwater Criteria (a)	Piezometer Location			
		P1	P2	P3	P4
BETX Constituents					
Benzene	0.025	--	--	0.3	0.009
Ethylbenzene	1	--	--	0.041	--
Toluene	2.5	--	--	0.43	--
Xylenes	10	--	--	0.19	--
PNA Constituents					
Naphthalene	0.039		--	0.006	
Acenaphthylene	NL		--	--	
Acenaphthene	2.1		--	--	
Fluorene	1.4		--	--	
Phenanthrene	NL		--	--	
Anthracene	10.5		--	--	
Fluoranthene	1.4		--	--	
Pyrene	1.05		--	--	
Benzo(a)Anthracene	0.00065		--	--	
Chrysene	0.0075		--	--	
Benzo(b)Fluoranthene	0.0009		--	--	
Benzo(k)Fluoranthene	0.00085		--	--	
Benzo(a)Pyrene	0.002		--	--	
Dibenzo(a,h)Anthracene	0.0015		--	--	
Benzo(g,h,i)Perylene	NL		--	--	
Indeno(1,2,3-cd)Pyrene	0.00215		--	--	

Comments:

-- = Below Method Detection Limit
ppm = parts per million (mg/L)
(blank) = Sample not collected or not analyzed
(a) = Tier 1 Industrial-Comerical Properties
NL = Not Listed

Table 5
Survey Data and Well Measurements

Location	Instrument Reading	Reference Datum	Closure	Water Level	Water Elevation
Fire Hydrant, top nut	3.61	100.00			
P1, TOC	5.19	98.42		6.51	91.91
P1, Grade	5.03	98.58			
B19	4.69	98.92			
B25	4.10	99.51			
Grade west of trench, along line of B25	4.86	98.75			
Grade west of pump island, near B3	4.59	99.02			
Grade north of pump island, near B4	4.77	98.84			
Grade east of pump island, near B5	5.32	98.29			
B18	5.29	98.32			
B13	6.33	97.28			
B12	6.16	97.45			
B11	6.09	97.52			
B9	6.01	97.60			
B10	6.09	97.52			
P4, TOC	4.67	98.94		7.24	91.70
P4, Grade	5.60	98.01			
P3, TOC	5.06	98.55		6.95	91.60
P3, Grade	5.53	98.08			
P2, TOC	5.13	98.48		6.97	91.51
P2, Grade	5.95	97.66			
CLOSE, Fire Hydrant, top nut	3.61	100.00	0.00		
Fire Hydrant, top nut	3.61	100.00			
B26	6.89	96.72			
B21	6.73	96.88			
B16	5.85	97.76			
B14	5.55	98.06			
B17	6.04	97.57			
B15	4.82	98.79			
B22	5.89	97.72			
B23	5.49	98.12			
Gully west of Track Gage, along B17	8.59	95.02			
West Track Gage, along B17	7.06	96.55			
East Track Gage, along B17	7.82	95.79			
B27	8.41	95.20			
B20	8.33	95.28			
B24	8.26	95.35			
B31	8.08	95.53			
B35	8.84	94.77			
B32	8.90	94.71			
B28	8.81	94.80			
B30	8.47	95.14			
B29	9.96	93.65			
B33	9.33	94.28			
B34	9.28	94.33			
CLOSE, Fire Hydrant, top nut	3.61	100.00	0.00		

Comments:

TEMPERATURE SUMMARY

Station: (119029) WAUKEGAN_2_WNW Missing Data: 2%
Averages: 1961-1990 Extremes: 1923-1996

	Averages			Daily Extremes				Mean Extremes		NCDC Averages			
	Max	Min	Mean	High	Date	Low	Date	High-Yr	Low-Yr	#Day-Max => 90	#Day-Max <= 32	#Day-Min <= 32	#Day-Min <= 0
Ja	27.9	10.8	19.3	64	25/1950	-27	19/1985	35.0 33	8.8 79	0	16	29	6.1
Fe	31.9	14.5	23.2	68	28/1976	-24	09/1933	34.9 54	11.5 36	0	12	27	3.3
Ma	42.5	25.1	33.8	83	27/1945	-12	01/1962	47.7 45	24.8 60	0	4.9	24	0.4
Ap	54.6	35.4	45.0	92	10/1930	8	07/1982	52.1 55	40.0 75	0	0.2	9.9	0
Ma	66.5	45.5	56.0	95	09/1934	24	10/1966	63.6 77	49.5 35	0.5	0	1.2	0
Jn	76.8	55.2	66.1	105	01/1934	32	09/1929	73.8 33	59.7 82	2.9	0	0	0
Jl	81.1	61.3	71.2	108	24/1934	41	03/1924	77.2 55	65.7 24	4.9	0	0	0
Au	79.5	59.9	69.7	102	01/1988	40	29/1935	77.3 47	64.7 86	3.8	0	0	0
Se	72.4	52.6	62.5	103	07/1939	27	25/1942	69.9 31	56.3 24	1.4	0	0.2	0
Oc	61.1	41.1	51.1	90	06/1963	11	29/1925	61.7 63	40.6 25	0	0	4.6	0
No	47.2	30.0	38.6	80	01/1944	-5	24/1950	47.5 31	30.8 76	0	2.5	18	0.2
De	33.0	17.3	25.2	66	08/1946	-23	24/1983	35.6 31	12.9 83	0	12	27	2.7
An	56.2	37.4	46.8	108	07/24/34	-27	01/19/85	51.8 31	42.6 85	14	48	140	13
Wi	30.9	14.2	22.6	68	02/28/76	-27	01/19/85	32.9 32	14.8 79	0	40	82	12
Sp	54.5	35.3	44.9	95	05/09/34	-12	03/01/62	51.1 77	41.0 96	0.6	5.1	35	0.4
Su	79.1	58.8	69.0	108	07/24/34	32	06/09/29	74.1 83	64.2 24	12	0	0	0
Fa	60.2	41.2	50.7	103	09/07/39	-5	11/24/50	57.9 31	46.4 76	1.4	2.5	22	0.2

PRECIPITATION SUMMARY

Station: (119029) WAUKEGAN_2_WNW Missing Data: 5%
Averages: 1961-1990 Extremes: 1923-1996

	Total Precipitation						Snow			#Days Precip		
	Mean	High	Yr	Low	Yr	1-Day Max	Mean	High	Yr	=>.01	=>.50	=>1.
Ja	1.71	5.27	65	0.00	87	2.37 24/1938	12.2	40.5	79	8.8	0.9	0.2
Fe	1.24	2.85	60	0.18	87	1.46 10/1939	9.9	23.9	67	7.7	0.6	0.1
Ma	2.45	5.90	83	0.30	36	2.23 5/1976	6.9	27.7	65	9.7	1.4	0.4
Ap	3.52	7.11	93	0.57	86	2.50 2/1983	1.8	11.0	70	10.9	2.4	0.7
Ma	3.31	8.13	45	0.34	92	1.97 19/1996	0.0	0.6	66	11.4	2.2	0.7
Jn	3.60	9.86	93	0.98	95	4.00 20/1972	0.0	0.0	49	10.2	2.3	1.0
Jl	3.74	7.50	82	0.26	46	3.40 22/1982	0.0	0.0	49	9.3	2.2	0.9
Au	3.97	10.57	87	0.35	25	3.70 7/1984	0.0	0.0	49	8.9	2.6	0.9
Se	3.71	15.11	86	0.02	79	3.10 26/1986	0.0	0.0	49	8.6	2.5	0.9
Oc	2.34	10.24	41	0.00	52	2.81 5/1991	0.2	3.0	67	8.0	1.6	0.5
No	2.38	5.89	35	0.50	76	2.36 17/1928	1.5	8.8	75	9.1	1.5	0.5
De	2.23	5.60	82	0.27	62	2.44 3/1982	8.6	25.8	73	8.8	1.2	0.2
An	34.20	50.35	72	18.45	89	4.00 6/20/72	40.0	66.9	65	110.5	21.2	6.9
Wi	5.18	11.98	74	1.21	31	2.44 12/ 3/82	31.0	68.4	79	26.2	2.8	0.6
Sp	9.28	14.44	45	2.82	34	2.50 4/ 2/83	8.7	28.0	65	31.7	5.8	1.8
Su	11.31	22.16	72	4.67	46	4.00 6/20/72	0.0	0.0	49	28.5	7.2	2.8
Fa	8.43	21.45	41	2.07	56	3.10 9/26/86	1.6	8.8	75	26.1	5.7	1.9

HEATING AND COOLING DEGREE DAY SUMMARY

Station: (119029) WAUKEGAN_2_WNW , IL Missing Data: 1.8%

Degree Days to Selected Base Temperatures (F)

Base	Heating Degree Days												
Below	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
65	1356	1164	950	582	297	78	18	24	134	428	773	1202	7006
60	1205	1023	797	442	183	30	3	3	59	293	625	1050	5713
57	1115	938	705	362	125	14	1	1	31	221	538	959	5010
55	1055	882	645	311	93	8	0	0	18	178	481	898	4569
50	904	741	498	196	36	1	0	0	4	90	344	747	3561

Base	Cooling Degree Days												
Above	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
55	0	0	5	31	134	345	504	455	250	70	7	0	1801
57	0	0	3	22	105	291	442	395	202	51	4	0	1515
60	0	0	1	13	71	217	352	306	141	30	1	0	1132
65	0	0	0	5	31	115	213	174	66	10	0	0	614
70	0	0	0	1	10	47	103	77	24	2	0	0	264

Derived from the 1961-1990 Data

****
********** GROWING DEGREE DAY SUMMARY **********
****

Station: (119029) WAUKEGAN_2_WNW Missing Data: 1.8%

Growing Degree Days to Selected Base Temperatures (F)

Base		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
40	M	4	5	57	206	504	787	967	912	681	366	99	13	4601
	S	4	9	66	272	776	1563	2530	3442	4123	4489	4588	4601	
45	M	1	1	28	119	359	638	812	759	532	237	48	4	3538
	S	1	2	30	149	508	1146	1958	2717	3249	3486	3534	3538	
50	M	0	0	13	64	231	488	658	607	385	137	21	1	2605
	S	0	0	13	77	308	796	1454	2061	2446	2583	2604	2605	
55	M	0	0	5	31	134	345	504	455	250	70	7	0	1801
	S	0	0	5	36	170	515	1019	1474	1724	1794	1801	1801	
60	M	0	0	1	13	71	217	352	306	141	30	2	0	1133
	S	0	0	1	14	85	302	654	960	1101	1131	1133	1133	

Modified* Growing Degree Days (Base 50F, Ceiling 86F)

		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Ann
50	M	2	3	36	117	288	492	641	598	410	202	50	7	2846
	S	2	5	41	158	446	938	1579	2177	2587	2789	2839	2846	

Derived from the 1961-1990 Data
M = Monthly Data S = Running Sum of Monthly Data
*Modified == If Low < 50F then Reset to 50F, If High > 86F then Reset to 86F

****
********** GROWING SEASON SUMMARY **********
****

Growing Season Summary
Station: (119029) WAUKEGAN_2_WNW
Years: 1961 To 1990 Missing Data: 1.9%

Base	Date of Last Spring Occurrence						Date of First Fall Occurrence					
Temp	Median	Early	90%	10%	Late	#yrs	Median	Early	10%	90%	Late	#yrs
32	5/01	4/08	4/10	5/09	5/13	30	10/15	9/22	10/02	11/03	11/03	30
30	4/26	3/31	4/08	5/09	5/13	30	10/22	9/23	10/08	11/11	1/01	30
28	4/14	3/31	4/02	5/01	5/10	30	10/28	10/02	10/12	11/18	1/01	30

24	4/07	3/18	3/24	4/17	5/10	30	11/08	10/11	10/23	11/25	1/04	30
20	3/26	2/23	3/14	4/07	4/10	30	11/20	10/24	11/02	12/04	1/09	30
16	3/19	2/19	2/26	3/31	4/08	30	11/30	11/07	11/13	12/10	1/16	30

Base	Length of Season (Days)					
Temp	Median	Shortest	10%	90%	Longest	#yrs
32	172	137	149	190	207	30
30	181	151	159	210	252	30
28	195	165	178	222	252	30
24	218	177	193	236	255	30
20	238	216	219	255	293	30
16	264	218	231	280	300	30

****
********** Midwestern CLimate Center, Champaign IL **********
****

APPENDIX 5

Field Analytical Results

PROJECT: Great Lakes Naval Training Center
N. Chicago, IL
Purchase Order 79419

CLIENT: Heritage Environmental Services
15330 Canal Bank Road
Lemont, IL 60439

SAMPLE DATE: September 24 - 30, 1997

REPORT DATE: October 1, 1997

REPORT NUMBER: 9709167

This report summarizes soil sampling activities along with on-site analyses at the above-referenced site. Discreet soil samples were obtained by hydraulically pushing and hammering specially designed soil sampler tubes to the desired depth. A plunger assembly, within the soil tubes, was disengaged at sampling depth to facilitate soil collection.

The static headspace method was utilized for all on-site soil analyses. All vapor samples were directly injected into a Shimadzu GC-14A and specific contaminant concentrations were calculated by a Shimadzu CR-4A computer integrator using a flame ionization detector (FID). A total of forty-eight (48) samples were analyzed for benzene, toluene, ethylbenzene, total xylenes (BTEX) and Total Volatile Hydrocarbons (TVH). Proven laboratory procedures were employed for quality assurance/quality control, including periodic blanks and calibration standards, resulting in a total of ninety-two (92) analyses.

The static headspace method utilized is a proven method for field screening of volatile organic compounds. Although at times results may prove similar to other laboratory methods, they may also prove to differ. The analytical procedure is one which provides a rapid screening for the targeted compounds with reproducible results.

Mr. Kevin Crandall of Heritage Environmental Services was present to direct sampling activities and acquired samples for additional off-site laboratory analysis.

Upon reviewing the following results, please do not hesitate to call with any questions. Thank you for choosing Innovative Probing Solutions for your project.

HERITAGE ENVIRONMENTAL SERVICES

Great Lakes Naval Training Center
N. Chicago, IL
Purchase Order #79419

Sept. 24- 25- 26- 27- 29- 30, 1997
Report #9709167

LOCATION	IPS 1	IPS 2	IPS 3	IPS 4
TYPE	Soil	Soil	Soil	Soil
DEPTH	4'	4'	7'	10'
BENZENE	BMDL	BMDL	BMDL	BMDL
TOLUENE	BMDL	BMDL	BMDL	BMDL
ETHYLBENZENE	BMDL	BMDL	BMDL	BMDL
XYLENES	BMDL	BMDL	BMDL	BMDL
TVH	1.425	0.349	1.461	0.129

LOCATION	IPS 5	IPS 6	IPS 7	IPS 8
TYPE	Soil	Soil	Soil	Soil
DEPTH	5'	7'	7'	8'
BENZENE	BMDL	BMDL	BMDL	BMDL
TOLUENE	BMDL	BMDL	3.620 E	1.450
ETHYLBENZENE	BMDL	BMDL	13.872 E	0.471
XYLENES	BMDL	BMDL	63.594 E	0.766
TVH	0.064	2.001	796.051 E	62.129

LOCATION	IPS 9	IPS 10	IPS 11	IPS 12
TYPE	Soil	Soil	Soil	Soil
DEPTH	12'	8'	6'	16'
BENZENE	BMDL	BMDL	BMDL	BMDL
TOLUENE	0.132	BMDL	BMDL	BMDL
ETHYLBENZENE	0.034	BMDL	BMDL	BMDL
XYLENES	0.186	BMDL	BMDL	BMDL
TVH	7.042	0.711	0.209	0.017

LOCATION	IPS 13	IPS 14	IPS 15	IPS 16
TYPE	Soil	Soil	Soil	Soil
DEPTH	13'	7'	10'	16'
BENZENE	BMDL	10.348	0.348	BMDL
TOLUENE	BMDL	BMDL	BMDL	BMDL
ETHYLBENZENE	BMDL	17.462	0.054	BMDL
XYLENES	BMDL	72.083	0.038	BMDL
TVH	0.853	994.302	1.355	<0.015

BMDL = BELOW METHOD DETECTION LIMIT
E = SAMPLE EXCEEDED TESTING PARAMETERS ESTIMATED READING GIVEN.
ALL RESULTS REPORTED IN PARTS PER MILLION
DETECTION LIMIT PER ANALYTE 0.015

LOCATION	IPS 17	IPS 18	IPS 19	IPS 20
TYPE	Soil	Soil	Soil	Soil
DEPTH	7'	12'	14'	17'
BENZENE	0.324	0.538	1.220	BMDL
TOLUENE	0.072	0.718	0.340	BMDL
ETHYLBENZENE	0.390	0.476	0.208	BMDL
XYLENES	1.680	2.062	0.072	BMDL
TVH	8.199	7.728	3.553	0.016

LOCATION	IPS 21	IPS 22	IPS 23	IPS 24
TYPE	Soil	Soil	Soil	Soil
DEPTH	9'	7'	10'	8'
BENZENE	0.122	BMDL	BMDL	BMDL
TOLUENE	BMDL	BMDL	BMDL	BMDL
ETHYLBENZENE	0.046	BMDL	BMDL	BMDL
XYLENES	BMDL	BMDL	BMDL	BMDL
TVH	0.623	<0.015	8.169	<0.015

LOCATION	IPS 25	IPS 26	IPS 27	IPS 28
TYPE	Soil	Soil	Soil	Soil
DEPTH	8'	4'	8'	11'
BENZENE	0.510	BMDL	BMDL	BMDL
TOLUENE	0.034	BMDL	BMDL	BMDL
ETHYLBENZENE	0.272	BMDL	BMDL	BMDL
XYLENES	0.260	BMDL	BMDL	BMDL
TVH	1.406	0.430	0.026	<0.015

LOCATION	IPS 29	IPS 30	IPS 31	IPS 32
TYPE	Soil	Soil	Soil	Soil
DEPTH	8'	7'	11'	15'
BENZENE	BMDL	0.221	0.287	BMDL
TOLUENE	BMDL	0.120	0.460	BMDL
ETHYLBENZENE	BMDL	0.311	0.194	BMDL
XYLENES	BMDL	0.661	0.110	BMDL
TVH	<0.015	3.395	4.658	<0.015

BMDL = BELOW METHOD DETECTION LIMIT
E = SAMPLE EXCEEDED TESTING PARAMETERS ESTIMATED READING GIVEN.
ALL RESULTS REPORTED IN PARTS PER MILLION
DETECTION LIMIT PER ANALYTE 0.015

LOCATION	IPS 33	IPS 34	IPS 35	IPS 36
TYPE	Soil	Soil	Soil	Soil
DEPTH	7'	10'	8'	11'
BENZENE	BMDL	BMDL	BMDL	BMDL
TOLUENE	BMDL	BMDL	BMDL	BMDL
ETHYLBENZENE	BMDL	BMDL	BMDL	BMDL
XYLENES	BMDL	BMDL	BMDL	BMDL
TVH	<0.015	<0.015	<0.015	<0.015

LOCATION	IPS 37	IPS 38	IPS 39	IPS 40
TYPE	Soil	Soil	Soil	Soil
DEPTH	7'	11'	7'	11'
BENZENE	BMDL	BMDL	BMDL	1.782
TOLUENE	BMDL	BMDL	BMDL	BMDL
ETHYLBENZENE	BMDL	BMDL	BMDL	BMDL
XYLENES	BMDL	BMDL	BMDL	BMDL
TVH	<0.015	<0.015	<0.015	1.852

LOCATION	IPS 41	IPS 42	IPS 43	IPS 44
TYPE	Soil	Soil	Soil	Soil
DEPTH	15'	7'	10'	7'
BENZENE	0.855	BMDL	0.202	BMDL
TOLUENE	BMDL	BMDL	BMDL	BMDL
ETHYLBENZENE	BMDL	BMDL	BMDL	BMDL
XYLENES	BMDL	BMDL	BMDL	BMDL
TVH	0.903	<0.015	0.401	<0.015

LOCATION	IPS 45	IPS 46	IPS 47	IPS 48
TYPE	Soil	Soil	Soil	Soil
DEPTH	11'	15'	7'	11'
BENZENE	BMDL	BMDL	BMDL	BMDL
TOLUENE	BMDL	BMDL	BMDL	BMDL
ETHYLBENZENE	BMDL	BMDL	BMDL	BMDL
XYLENES	BMDL	BMDL	BMDL	BMDL
TVH	<0.015	<0.015	<0.015	<0.015

BMDL = BELOW METHOD DETECTION LIMIT
E = SAMPLE EXCEEDED TESTING PARAMETERS ESTIMATED READING GIVEN.
ALL RESULTS REPORTED IN PARTS PER MILLION
DETECTION LIMIT PER ANALYTE 0.015

APPENDIX 6

Laboratory Certificates - Soil Samples

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
Laboratory Certification for Chemical Analysis

(SOIL INVESTIGATION SAMPLES)

A. Site Identification

IEMA Incident # (6 digit): _____ IEPA Generator # (10 digit): _____

Site Name: NAVY PUBLIC WORKS CENTER, Bldg. 1600A, RAY STREET

Site Address (Not a P.O. Box): NAVAL TRAINING CENTER

City: GREAT LAKES, IL 60088 County: LAKE

B. Sample Collector

I certify that:

1. Appropriate sampling equipment/methods were utilized to obtain representative samples. KJC (initial)
2. Chain of custody procedures were followed in the field. KJC (initial)
3. Sample integrity was maintained by proper preservation. KJC (initial)
4. All samples were properly labeled. KJC (initial)

C. Laboratory Representative

I certify that:

1. Proper chain of custody procedures were followed as documented on the chain of custody forms. CLS (initial)
2. Sample integrity was maintained by proper preservation. CLS (initial)
3. All samples were properly labeled. CLS (initial)
4. Quality assurance/quality control procedures were established and carried out. CLS (initial)

5. Sample holding times were not exceeded. CLS (initial)

6. SW-846 Analytical Laboratory Procedure (USEPA) methods were used for the analyses. CLS (initial)

D. Signatures

I hereby affirm that all information contained in this form is true and accurate to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sample Collector	**Laboratory Representative**
Name: KEVIN J. CRANDELL	Name: Christine Sarkan
Title: Project GEOLOGIST	Title: Quality Assurance Officer
Company: HERITAGE ENVIRONMENTAL	Company: Heritage Environmental - CLO
Address: 15330 CANAL BANK RD. Lemont IL 60439	Address: 15330 Canal Bank Rd. Lemont IL 60439
Phone: (630)-739-1151	Phone: 630-739-1151
Signature: Kevin Crandell	Signature: Christine Sarkan
Date: 11/20/97	Date: 11/20/97

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	30-SEP-97		A421701
	Complete	PO Number	
	10-OCT-97	79413	
	Printed	Sampled	
	14-OCT-97	24-SEP-97 10:30	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B1
PROJECT: US NAVY #10319
DESCRIPTION: 7-8'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: B. MAZUR Analysis Date: 07-OCT-97 17:02 Instrument: GC/MS VOA Test: O510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	4	ug/kg
ETHYL BENZENE	J 5	10	ug/kg
TOLUENE	BDL	10	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	10	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	107		% Rec
TOLUENE-D8	98		% Rec
4-BROMOFLUOROBENZENE	82		% Rec

BETX ONLY
1:2 Dilution
Unable to analyze sample at lower dilution due to high concentration of non-target compounds.

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 02-OCT-97 05:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.94		Grams
FINAL VOLUME	5.0		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 03-OCT-97 18:04 Instrument: HPLC Test: G630.0.0
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	BDL	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	BDL	3	ug/kg

HERITAGE ENVIRONMENTAL SERVICES, INC.

Sample ID: A421701 B1

Parameter	Result	Det. Limit	Units
PYRENE	BDL	2	ug/kg
BENZ(A)ANTHRACENE	BDL	2	ug/kg
CHRYSENE	BDL	4	ug/kg
BENZO(B)FLUORANTHENE	BDL	4	ug/kg
BENZO(K)FLUORANTHENE	BDL	3	ug/kg
BENZO(A)PYRENE	BDL	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	BDL	7	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	4	ug/kg
...			
SURROGATE RECOVERY			

2-FLUOROBIPHENYL	96		% Rec

Sample Comments

BDL Below Detection Limit
J Estimated

Sample chain of custody number 52101.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	30-SEP-97		A421702
	Complete	PO Number	
	10-OCT-97	79413	
	Printed	Sampled	
	14-OCT-97	24-SEP-97 11:30	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B2
PROJECT: US NAVY #10319
DESCRIPTION: 10-11'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: B. MAZUR Analysis Date: 07-OCT-97 12:59 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	105		% Rec
TOLUENE-D8	99		% Rec
4-BROMOFLUOROBENZENE	87		% Rec

BETX ONLY

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 02-OCT-97 05:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	32.80		Grams
FINAL VOLUME	5.0		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 03-OCT-97 18:45 Instrument: HPLC Test: 0630.0.0
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	BDL	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	BDL	3	ug/kg
PYRENE	BDL	2	ug/kg
BENZ(A)ANTHRACENE	BDL	2	ug/kg
CHRYSENE	BDL	4	ug/kg

HERITAGE ENVIRONMENTAL SERVICES, INC.

Sample ID: A421702 B2

Parameter	Result	Det. Limit	Units
BENZO(B)FLUORANTHENE	BDL	4	ug/kg
BENZO(K)FLUORANTHENE	BDL	3	ug/kg
BENZO(A)PYRENE	BDL	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	BDL	7	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	4	ug/kg
...			
SURROGATE RECOVERY			

2-FLUOROBIPHENYL	95		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52101.

Approved : P.K. Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	30-SEP-97		A421703
	Complete 10-OCT-97	PO Number 79413	
	Printed 14-OCT-97	Sampled 24-SEP-97 12:45	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B3
PROJECT: US NAVY #10319
DESCRIPTION: 5-6'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: B. MAZUR Analysis Date: 06-OCT-97 20:03 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	108		% Rec
TOLUENE-D8	96		% Rec
4-BROMOFLUOROBENZENE	85		% Rec

BETX ONLY

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 02-OCT-97 05:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.13		Grams
FINAL VOLUME	5.0		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 03-OCT-97 20:08 Instrument: HPLC Test: 0630.0.0

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A PZ36.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	BDL	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	BDL	3	ug/kg
PYRENE	BDL	2	ug/kg
BENZ(A)ANTHRACENE	BDL	2	ug/kg
CHRYSENE	BDL	4	ug/kg

Parameter	Result	Det. Limit	Units
BENZO(B)FLUORANTHENE	BDL	4	ug/kg
BENZO(K)FLUORANTHENE	BDL	3	ug/kg
BENZO(A)PYRENE	BDL	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	BDL	7	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	4	ug/kg
...			
SURROGATE RECOVERY			

2-FLUOROBIPHENYL	96		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52101.

Approved : P.K. Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	30-SEP-97		A421704
	Complete 10-OCT-97	PO Number 79413	
	Printed 14-OCT-97	Sampled 24-SEP-97 15:45	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B6
PROJECT: US NAVY #10319
DESCRIPTION: 11-12'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: B. MAZUR Analysis Date: 06-OCT-97 20:38 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	3	2	ug/kg
ETHYL BENZENE	8	5	ug/kg
TOLUENE	29	5	ug/kg
XYLENES (O/M/P-XYLENE)	40	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	105		% Rec
TOLUENE-D8	96		% Rec
4-BROMOFLUOROBENZENE	90		% Rec

BETX ONLY

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 02-OCT-97 05:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.18		Grams
FINAL VOLUME	5.0		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 03-OCT-97 20:49 Instrument: HPLC Test: 0630.0.0

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	BDL	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	BDL	3	ug/kg
PYRENE	BDL	2	ug/kg
BENZ(A)ANTHRACENE	BDL	2	ug/kg
CHRYSENE	BDL	4	ug/kg

Parameter	Result	Det. Limit	Units
BENZO(B)FLUORANTHENE	BDL	4	ug/kg
BENZO(K)FLUORANTHENE	BDL	3	ug/kg
BENZO(A)PYRENE	BDL	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	BDL	7	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	4	ug/kg
...			
SURROGATE RECOVERY			

2-FLUOROBIPHENYL	120		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52101.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	30-SEP-97		A421705
	Complete 10-OCT-97	PO Number 79413	
	Printed 14-OCT-97	Sampled 24-SEP-97 16:00	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B7
PROJECT: US NAVY #10319
DESCRIPTION: 12.5-13.5'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: B. MAZUR Analysis Date: 07-OCT-97 13:34 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	99		% Rec
TOLUENE-D8	92		% Rec
4-BROMOFLUOROBENZENE	81		% Rec

BETX ONLY
Sample reanalyzed with no improvement in internal standard areas.

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 02-OCT-97 05:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	32.00		Grams
FINAL VOLUME	5.0		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 03-OCT-97 21:30 Instrument: HPLC Test: 0630.0.0
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	8.7	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	7.2	3	ug/kg
PYRENE	BDL	2	ug/kg
BENZ(A)ANTHRACENE	BDL	2	ug/kg

Parameter	Result	Det. Limit	Units
CHRYSENE	BDL	4	ug/kg
BENZO(B)FLUORANTHENE	BDL	4	ug/kg
BENZO(K)FLUORANTHENE	BDL	3	ug/kg
BENZO(A)PYRENE	BDL	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	9.4	7	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	4	ug/kg
...			
SURROGATE RECOVERY			

2-FLUOROBIPHENYL	110		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52101.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	30-SEP-97		A421706
	Complete	PO Number	
	10-OCT-97	79413	
	Printed	Sampled	
	14-OCT-97	25-SEP-97 08:30	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B8
PROJECT: US NAVY #10319
DESCRIPTION: 6-7'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: B. MAZUR Analysis Date: 06-OCT-97 21:49 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	104		% Rec
TOLUENE-D8	101		% Rec
4-BROMOFLUOROBENZENE	82		% Rec

BETX ONLY

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 02-OCT-97 05:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	32.71		Grams
FINAL VOLUME	5.0		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 03-OCT-97 22:11 Instrument: HPLC Test: 0630.0.0
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	BDL	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	BDL	3	ug/kg
PYRENE	BDL	2	ug/kg
BENZ(A)ANTHRACENE	BDL	2	ug/kg
CHRYSENE	BDL	4	ug/kg

HERITAGE ENVIRONMENTAL SERVICES, INC.

Sample ID: A421706 B8

Parameter	Result	Det. Limit	Units
BENZO(B)FLUORANTHENE	BDL	4	ug/kg
BENZO(K)FLUORANTHENE	BDL	3	ug/kg
BENZO(A)PYRENE	BDL	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	BDL	7	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	4	ug/kg
...			
SURROGATE RECOVERY			

2-FLUOROBIPHENYL	100		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52101.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	30-SEP-97		A421707
	Complete	PO Number	
	10-OCT-97	79413	
	Printed	Sampled	
	14-OCT-97	25-SEP-97 09:15	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B9
PROJECT: US NAVY #10319
DESCRIPTION: 7.5-8.5'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: B. MAZUR Analysis Date: 06-OCT-97 22:24 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	106		% Rec
TOLUENE-D8	97		% Rec
4-BROMOFLUOROBENZENE	76		% Rec

BETX ONLY

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 02-OCT-97 05:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	31.00		Grams
FINAL VOLUME	5.0		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 03-OCT-97 22:52 Instrument: HPLC Test: 0630.0.0

Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A PZ36.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	BDL	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	26	3	ug/kg
PYRENE	16	2	ug/kg
BENZ(A)ANTHRACENE	5.0	2	ug/kg
CHRYSENE	8.4	4	ug/kg

Parameter	Result	Det. Limit	Units
BENZO(B)FLUORANTHENE	16	4	ug/kg
BENZO(K)FLUORANTHENE	5.4	3	ug/kg
BENZO(A)PYRENE	14	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	14	7	ug/kg
INDENO(1,2,3-CD)PYRENE	12	4	ug/kg
...			
SURROGATE RECOVERY			

2-FLUOROBIPHENYL	97		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52101.

Approved : P.K Spencer

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	30-SEP-97		A421708
	Complete 10-OCT-97	PO Number 79413	
	Printed 14-OCT-97	Sampled 25-SEP-97 09:45	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B10
PROJECT: US NAVY #10319
DESCRIPTION: 5.5-6.5'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: B. MAZUR Analysis Date: 06-OCT-97 22:59 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	103		% Rec
TOLUENE-D8	85		% Rec
4-BROMOFLUOROBENZENE	80		% Rec

BETX ONLY

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 02-OCT-97 05:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.41		Grams
FINAL VOLUME	5.0		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 03-OCT-97 23:34 Instrument: HPLC Test: 0630.0.0
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	BDL	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	33	3	ug/kg
PYRENE	30	2	ug/kg
BENZ(A)ANTHRACENE	6.2	2	ug/kg
CHRYSENE	9.9	4	ug/kg

Parameter	Result	Det. Limit	Units
BENZO(B)FLUORANTHENE	18	4	ug/kg
BENZO(K)FLUORANTHENE	8.9	3	ug/kg
BENZO(A)PYRENE	18	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	14	7	ug/kg
INDENO(1,2,3-CD)PYRENE	11	4	ug/kg
...			
SURROGATE RECOVERY			

2-FLUOROBIPHENYL	110		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52101.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	30-SEP-97		A421709
	Complete 10-OCT-97	PO Number 79413	
	Printed 14-OCT-97	Sampled 25-SEP-97 11:45	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B12
PROJECT: US NAVY #10319
DESCRIPTION: 14-15'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: B. MAZUR Analysis Date: 07-OCT-97 14:09 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	25	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	108		% Rec
TOLUENE-D8	83		% Rec
4-BROMOFLUOROBENZENE	80		% Rec

Matrix Spike is the reanalysis
BETX ONLY
Sample reanalyzed with no improvement in internal standard areas.

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 02-OCT-97 05:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	34.30		Grams
FINAL VOLUME	5.0		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 04-OCT-97 00:15 Instrument: HPLC Test: 0630.0.0
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	7.4	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	BDL	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	BDL	3	ug/kg
PYRENE	BDL	2	ug/kg

HERITAGE ENVIRONMENTAL SERVICES, INC.

Sample ID: A421709 B12

Parameter	Result	Det. Limit	Units
BENZ(A)ANTHRACENE	BDL	2	ug/kg
CHRYSENE	BDL	4	ug/kg
BENZO(B)FLUORANTHENE	BDL	4	ug/kg
BENZO(K)FLUORANTHENE	BDL	3	ug/kg
BENZO(A)PYRENE	BDL	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	7.5	7	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	4	ug/kg
...			
SURROGATE RECOVERY			

2-FLUOROBIPHENYL	91		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52101.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	30-SEP-97		A421710
	Complete	PO Number	
	10-OCT-97	79413	
	Printed	Sampled	
	14-OCT-97	25-SEP-97 13:40	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B13
PROJECT: US NAVY #10319
DESCRIPTION: 6-7'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: B. MAZUR Analysis Date: 07-OCT-97 00:10 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	103		% Rec
TOLUENE-D8	84		% Rec
4-BROMOFLUOROBENZENE	91		% Rec

BETX ONLY
Sample reanalyzed with no improvement in internal standard areas.

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 04-OCT-97 00:56 Instrument: HPLC Test: 0630.0.0
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	BDL	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	BDL	3	ug/kg
PYRENE	BDL	2	ug/kg
BENZ(A)ANTHRACENE	BDL	2	ug/kg
CHRYSENE	BDL	4	ug/kg
BENZO(B)FLUORANTHENE	BDL	4	ug/kg
BENZO(K)FLUORANTHENE	3.5	3	ug/kg
BENZO(A)PYRENE	BDL	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	7.9	7	ug/kg

Parameter	Result	Det. Limit	Units
INDENO(1,2,3-CD)PYRENE	4.4	4	ug/kg
SURROGATE RECOVERY			
2-FLUOROBIPHENYL	98		% Rec

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 02-OCT-97 05:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	31.86		Grams
FINAL VOLUME	5.0		mL

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52101.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	30-SEP-97		A421711
	Complete 10-OCT-97	PO Number 79413	
	Printed 14-OCT-97	Sampled 25-SEP-97 14:45	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B14
PROJECT: US NAVY #10319
DESCRIPTION: 9.5-10.5'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: B. MAZUR Analysis Date: 07-OCT-97 00:45 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	13	2	ug/kg
ETHYL BENZENE	46	5	ug/kg
TOLUENE	58	5	ug/kg
XYLENES (O/M/P-XYLENE)	190	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	105		% Rec
TOLUENE-D8	99		% Rec
4-BROMOFLUOROBENZENE	93		% Rec

BETX ONLY

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 02-OCT-97 05:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.72		Grams
FINAL VOLUME	5.0		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 04-OCT-97 01:37 Instrument: HPLC Test: 0630.0.0
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	58	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	BDL	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	BDL	3	ug/kg
PYRENE	BDL	2	ug/kg
BENZ(A)ANTHRACENE	BDL	2	ug/kg
CHRYSENE	BDL	4	ug/kg

Parameter	Result	Det. Limit	Units
BENZO(B)FLUORANTHENE	BDL	4	ug/kg
BENZO(K)FLUORANTHENE	BDL	3	ug/kg
BENZO(A)PYRENE	BDL	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	9.2	7	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	4	ug/kg
...			
SURROGATE RECOVERY			

2-FLUOROBIPHENYL	94		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52101.

Approved : P.K Spencer

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	02-OCT-97		A421998
	Complete	PO Number	
	09-OCT-97	79413	
	Printed	Sampled	
	10-OCT-97	30-SEP-97 10:30	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B17
DESCRIPTION: 4-8'

TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311

Analyst: E. MERRILL Analysis Date: 06-OCT-97 Instrument: PREP Test: P106.1.0

Parameter	Result	Det. Limit	Units
TOTAL SAMPLE WEIGHT	100.0		Grams
LIQUID FRACTION (GRAMS)	NA		Grams
EXTRACTED SAMPLE	100.0		Grams
SOLIDS	100.0		Percent
9.5 MM SIEVE TEST	YES		Passed
INITIAL PH	8.8		Std. Units
ADJUSTED PH	2.0		Std. Units
BUFFER SOLUTION PH	4.91		Std. Units
FINAL PH	6.1		Std. Units
VOLUME BUFFERED SOLUTION	2000		mL
VOLUME EXTRACT FILTERED	2000		mL
VOLUME LIQUID (ADD BACK)	NA		mL
TOTAL VOLUME FILTRATE	2000		mL
AMBIENT TEMPERATURE	22.9		Degrees C
INITIAL TIME	5007.8		HRS
FINAL TIME	5025.2		HRS
PHASE 0 VOLUME (REP 0)	2000		mL
PHASE 0 WEIGHT	NA		Grams
PHASE 0 DENSITY	NA		g/mL
PHASE 1 VOLUME (REP 1)	NA		mL
PHASE 1 WEIGHT	NA		Grams
PHASE 1 DENSITY	NA		g/mL

FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A

Analyst: P. MASTERS Analysis Date: 07-OCT-97 14:00 Instrument: PREP Test: P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	100		mL
FINAL VOLUME	100		mL

HERITAGE ENVIRONMENTAL SERVICES, INC.

LEAD ICP (1 POINT MSA) SW846-6010A — Sample ID: A421998 B17

Analyst: A. HILSCHER | Analysis Date: 08-OCT-97 12:28 | Instrument: ICP | Test: M616.7.0

Prep: FAA OR ICP ACID DIGESTION (LEACHATE) SW846-3010A P130.8.0

Prep: TOX CHAR LEACHING PROCEDURE (TCLP METALS ONLY) SW846-1311 P106.1.0

Parameter	Result	Det. Limit	Units
LEAD	BDL	0.25	mg/L
ADDITION 1	5.000		mg/L
SAMPLE	0.0124		Conc
SAMPLE + ADD 1	5.2130		Conc
DILUTION	5		

FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050A

Analyst: S. PUGH | Analysis Date: 06-OCT-97 12:00 | Instrument: PREP | Test: P129.7.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	1		Grams
FINAL VOLUME	100		mL

LEAD ICP SW846-6010A

Analyst: A. HILSCHER | Analysis Date: 07-OCT-97 13:14 | Instrument: ICP | Test: M116.3.0

Prep: FAA OR ICP ACID DIGESTION OF S/S/S SAMPLES SW846-3050A P129.7.0

Parameter	Result	Det. Limit	Units
LEAD	15.	5.0	mg/kg

Sample Comments

BDL Below Detection Limit
NA Not Applicable
YES Yes

Sample chain of custody number 52102.

Approved : _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	30-SEP-97		A421712
	Complete	PO Number	
	09-OCT-97	79413	
	Printed	Sampled	
	10-OCT-97	26-SEP-97 08:35	

Report To

KEVIN REINHARD
HERITAGE ENVIRONMENTAL SERVICES
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60442

Bill To

GLEN BORESI
HERITAGE ENVIRONMENTAL SERVICES
1319 MARQUETTE DRIVE
ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B18
PROJECT: US NAVY #10319
DESCRIPTION: 8-9'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: B. MAZUR Analysis Date: 07-OCT-97 01:22 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	5	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	7	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	83		% Rec
TOLUENE-D8	88		% Rec
4-BROMOFLUOROBENZENE	107		% Rec

BETX ONLY
Sample reanalyzed with no improvement in internal standard areas.

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52101.

Approved : _____

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	02-OCT-97		A421999
	Complete	PO Number	
	14-OCT-97	79413	
	Printed	Sampled	
	15-OCT-97	26-SEP-97 09:15	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 15330 CANAL BANK RD. LEMONT, IL 60439	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B19
DESCRIPTION: 6-7'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: R. SHAMP Analysis Date: 09-OCT-97 09:21 Instrument: GC/MS VOA Test: D510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	144		% Rec
TOLUENE-D8	103		% Rec
4-BROMOFLUOROBENZENE	122		% Rec

BETX ONLY
Sample reanalyzed with no improvement in surrogate recovery.

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 07-OCT-97 09:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.95		Grams
FINAL VOLUME	5.0		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 07-OCT-97 17:20 Instrument: HPLC Test: O630.0.0
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	BDL	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	BDL	3	ug/kg
PYRENE	BDL	2	ug/kg
BENZ(A)ANTHRACENE	BDL	2	ug/kg
CHRYSENE	BDL	4	ug/kg

HERITAGE ENVIRONMENTAL SERVICES, INC.

Sample ID: A421999 B19

Parameter	Result	Det. Limit	Units
BENZO(B)FLUORANTHENE	BDL	4	ug/kg
BENZO(K)FLUORANTHENE	BDL	3	ug/kg
BENZO(A)PYRENE	BDL	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	BDL	7	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	4	ug/kg
...			
SURROGATE RECOVERY			

2-FLUOROBIPHENYL	98		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52102.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	02-OCT-97		A422006
	Complete	PO Number	
	15-OCT-97	79413	
	Printed	Sampled	
	16-OCT-97	26-SEP-97 11:30	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 15330 CANAL BANK RD. LEMONT, IL 60439	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B20
DESCRIPTION: 11-12'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: R. SHAMP Analysis Date: 09-OCT-97 10:47 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	150	5	ug/kg
ETHYL BENZENE	*	5	ug/kg
TOLUENE	*	5	ug/kg
XYLENES (O/M/P-XYLENE)	*	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	159		% Rec
TOLUENE-D8	103		% Rec
4-BROMOFLUOROBENZENE	110		% Rec

BETX ONLY
Sample reanalyzed with no improvement in surrogate recovery.
Sample reanalyzed with no improvement in internal standard areas.
Dilution necessary due to high concentration of target compounds.
*Note: * Above linear range -- please see replicate 1.*

MEDIUM LEVEL PREP HLI

Analyst: R. SHAMP Analysis Date: 14-OCT-97 Instrument: PREP Test: P510.3.0

Parameter	Result	Det. Limit	Units
INITIAL SAMPLE WEIGHT	2.07		Grams
FINAL VOLUME	5		mL

VOLATILE ORGANICS SW846-8240B

Analyst: R. SHAMP Analysis Date: 15-OCT-97 07:15 Instrument: GC/MS VOA Test: 0510.3.0
Prep: MEDIUM LEVEL PREP HLI P510.3.0

Parameter	Result	Det. Limit	Units
BENZENE	0.38	0.31	mg/kg
ETHYL BENZENE	5.5	0.31	mg/kg
TOLUENE	3.3	0.31	mg/kg
XYLENES (O/M/P-XYLENE)	23	0.31	mg/kg
...			
SURROGATE RECOVERY			

Parameter	Result	Det. Limit	Units
DICHLOROETHANE-D4	117		% Rec
TOLUENE-D8	121		% Rec
4-BROMOFLUOROBENZENE	78		% Rec

1:63 DILUTION
SURROGATES FAIL QC CRITERIA.

Sample Comments

* *See Note for Parameter*

Sample chain of custody number 52102.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	02-OCT-97		A422001
	Complete	PO Number	
	14-OCT-97	79413	
	Printed	Sampled	
	15-OCT-97	26-SEP-97 15:40	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 15330 CANAL BANK RD. LEMONT, IL 60439	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B23
DESCRIPTION: 7-8'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: R. SHAMP Analysis Date: 09-OCT-97 10:04 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	150		% Rec
TOLUENE-D8	106		% Rec
4-BROMOFLUOROBENZENE	121		% Rec

BETX ONLY
Sample reanalyzed with no improvement in surrogate recovery.

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 07-OCT-97 09:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.02		Grams
FINAL VOLUME	5.0		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 07-OCT-97 18:01 Instrument: HPLC Test: 0630.0.0
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	BDL	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	BDL	3	ug/kg
PYRENE	BDL	2	ug/kg
BENZ(A)ANTHRACENE	BDL	2	ug/kg
CHRYSENE	BDL	4	ug/kg

Parameter	Result	Det. Limit	Units
BENZO(B)FLUORANTHENE	BDL	4	ug/kg
BENZO(K)FLUORANTHENE	BDL	3	ug/kg
BENZO(A)PYRENE	BDL	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	BDL	7	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	4	ug/kg
...			
SURROGATE RECOVERY			

2-FLUOROBIPHENYL	110		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52102.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	02-OCT-97		A422002
	Complete	PO Number	
	10-OCT-97	79413	
	Printed	Sampled	
	14-OCT-97	27-SEP-97 08:30	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B25
DESCRIPTION: 3-4'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: H. WILLIAMS Analysis Date: 07-OCT-97 08:23 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	110		% Rec
TOLUENE-D8	101		% Rec
4-BROMOFLUOROBENZENE	108		% Rec

BETX ONLY

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 07-OCT-97 09:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.63		Grams
FINAL VOLUME	5.0		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 07-OCT-97 18:43 Instrument: HPLC Test: 0630.0.0
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	BDL	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	BDL	3	ug/kg
PYRENE	BDL	2	ug/kg
BENZ(A)ANTHRACENE	BDL	2	ug/kg
CHRYSENE	BDL	4	ug/kg
BENZO(B)FLUORANTHENE	BDL	4	ug/kg

HERITAGE ENVIRONMENTAL SERVICES, INC.

Sample ID: A422002 B25

Parameter	Result	Det. Limit	Units
BENZO(K)FLUORANTHENE	BDL	3	ug/kg
BENZO(A)PYRENE	BDL	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	BDL	7	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	4	ug/kg
...			
SURROGATE RECOVERY			

2-FLUOROBIPHENYL	100		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52102.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	02-OCT-97		A422003
	Complete	PO Number	
	10-OCT-97	79413	
	Printed	Sampled	
	14-OCT-97	27-SEP-97 11:10	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B26
DESCRIPTION: 7-8'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: H. WILLIAMS Analysis Date: 08-OCT-97 05:47 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	115		% Rec
TOLUENE-D8	100		% Rec
4-BROMOFLUOROBENZENE	108		% Rec

BETX ONLY

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 07-OCT-97 09:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.38		Grams
FINAL VOLUME	5.0		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 07-OCT-97 19:24 Instrument: HPLC Test: 0630.0.0
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	9.7	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	13	3	ug/kg
PYRENE	BDL	2	ug/kg
BENZ(A)ANTHRACENE	3.8	2	ug/kg
CHRYSENE	BDL	4	ug/kg
BENZO(B)FLUORANTHENE	5.8	4	ug/kg

Parameter	Result	Det. Limit	Units
BENZO(K)FLUORANTHENE	BDL	3	ug/kg
BENZO(A)PYRENE	BDL	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	BDL	7	ug/kg
INDENO(1,2,3-CD)PYRENE	5.0	4	ug/kg
...			
SURROGATE RECOVERY			

2-FLUOROBIPHENYL	120		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52102.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	02-OCT-97		A422004
	Complete	PO Number	
	10-OCT-97	79413	
	Printed	Sampled	
	14-OCT-97	27-SEP-97 13:30	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B27
DESCRIPTION: 10-11'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: N. WILLIAMS Analysis Date: 08-OCT-97 06:30 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	121		% Rec
TOLUENE-D8	96		% Rec
4-BROMOFLUOROBENZENE	102		% Rec

BETX ONLY
Sample reanalyzed with no improvement in internal standard areas.

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 07-OCT-97 09:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	30.07		Grams
FINAL VOLUME	5.0		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 07-OCT-97 20:05 Instrument: HPLC Test: 0630.0.0
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	BDL	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	BDL	3	ug/kg
PYRENE	BDL	2	ug/kg
BENZ(A)ANTHRACENE	BDL	2	ug/kg
CHRYSENE	BDL	4	ug/kg

Parameter	Result	Det. Limit	Units
BENZO(B)FLUORANTHENE	BDL	4	ug/kg
BENZO(K)FLUORANTHENE	BDL	3	ug/kg
BENZO(A)PYRENE	BDL	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	BDL	7	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	4	ug/kg
...			
SURROGATE RECOVERY			

2-FLUOROBIPHENYL	120		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52102.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	02-OCT-97		A422007
	Complete	PO Number	
	10-OCT-97	79413	
	Printed	Sampled	
	14-OCT-97	29-SEP-97 10:15	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B28
DESCRIPTION: 11-12'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: H. WILLIAMS Analysis Date: 08-OCT-97 07:13 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	145		% Rec
TOLUENE-D8	94		% Rec
4-BROMOFLUOROBENZENE	103		% Rec

BETX ONLY
Sample reanalyzed with no improvement in internal standard areas.
Sample reanalyzed with no improvement in surrogate recovery.

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52102.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	02-OCT-97		A422008
	Complete	PO Number	
	10-OCT-97	79413	
	Printed	Sampled	
	14-OCT-97	29-SEP-97 13:25	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B29
DESCRIPTION: 9-10'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: H. WILLIAMS Analysis Date: 08-OCT-97 07:56 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	134		% Rec
TOLUENE-D8	102		% Rec
4-BROMOFLUOROBENZENE	109		% Rec

BETX ONLY
Sample reanalyzed with no improvement in surrogate recovery.
Sample reanalyzed with no improvement in internal standard areas.

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52102.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	02-OCT-97		A422009
	Complete	PO Number	
	10-OCT-97	79413	
	Printed	Sampled	
	14-OCT-97	29-SEP-97 15:25	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B30
DESCRIPTION: 7-8'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: H. WILLIAMS Analysis Date: 08-OCT-97 08:40 Instrument: GC/MS VOA Test: D510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	135		% Rec
TOLUENE-D8	101		% Rec
4-BROMOFLUOROBENZENE	117		% Rec

BETX ONLY
Sample reanalyzed with no improvement in surrogate recovery.
Sample reanalyzed with no improvement in internal standard areas.

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52102.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	02-OCT-97		A422005
	Complete 10-OCT-97	PO Number 79413	
	Printed 14-OCT-97	Sampled 30-SEP-97 08:25	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B31
DESCRIPTION: 6-7'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: H. WILLIAMS Analysis Date: 08-OCT-97 09:23 Instrument: GC/MS VOA Test: D510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	140		% Rec
TOLUENE-D8	96		% Rec
4-BROMOFLUOROBENZENE	106		% Rec

BETX ONLY
Sample reanalyzed with no improvement in surrogate recovery.
Sample reanalyzed with no improvement in internal standard areas.

GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A

Analyst: T. DAHN Analysis Date: 07-OCT-97 09:00 Instrument: PREP Test: P236.2.0

Parameter	Result	Det. Limit	Units
INITIAL WEIGHT OR VOLUME	32.30		Grams
FINAL VOLUME	5.0		mL

POLYNUCLEAR AROMATIC HYDROCARBONS BY HPLC SW846-8310

Analyst: T. DAHN Analysis Date: 07-OCT-97 20:46 Instrument: HPLC Test: D630.0.0
Prep: GOG SONICATION EXTRACTION FOR ORGANICS SW846-3550A P236.2.0

Parameter	Result	Det. Limit	Units
NAPHTHALENE	BDL	4	ug/kg
ACENAPHTHYLENE	BDL	13	ug/kg
ACENAPHTHENE	BDL	2	ug/kg
FLUORENE	BDL	4	ug/kg
PHENANTHRENE	BDL	2	ug/kg
ANTHRACENE	BDL	4	ug/kg
FLUORANTHENE	BDL	3	ug/kg
PYRENE	BDL	2	ug/kg
BENZ(A)ANTHRACENE	BDL	2	ug/kg

Parameter	Result	Det. Limit	Units
CHRYSENE	BDL	4	ug/kg
BENZO(B)FLUORANTHENE	BDL	4	ug/kg
BENZO(K)FLUORANTHENE	BDL	3	ug/kg
BENZO(A)PYRENE	BDL	8	ug/kg
DIBENZ(A,H)ANTHRACENE	BDL	5	ug/kg
BENZO(G,H,I)PERYLENE	BDL	7	ug/kg
INDENO(1,2,3-CD)PYRENE	BDL	4	ug/kg
...			
SURROGATE RECOVERY			

2-FLUOROBIPHENYL	100		% Rec

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52102.

Approved : P.K Spence

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	02-OCT-97		A422010
	Complete	PO Number	
	10-OCT-97	79413	
	Printed	Sampled	
	14-OCT-97	30-SEP-97 11:50	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60442	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B34
DESCRIPTION: 7-8'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: K. WILLIAMS Analysis Date: 08-OCT-97 10:06 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	140		% Rec
TOLUENE-D8	92		% Rec
4-BROMOFLUOROBENZENE	117		% Rec

BETX ONLY
Sample reanalyzed with no improvement in surrogate recovery.
Sample reanalyzed with no improvement in internal standard areas.

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52102.

Approved : P.K Spencer

CERTIFICATE OF ANALYSIS

Service Location	Received	Project	Lab ID
HERITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	02-OCT-97		A422011
	Complete	PO Number	
	14-OCT-97	79413	
	Printed	Sampled	
	15-OCT-97	30-SEP-97 12:55	

Report To	Bill To
KEVIN REINHARD HERITAGE ENVIRONMENTAL SERVICES 15330 CANAL BANK RD. LEMONT, IL 60439	GLEN BORESI HERITAGE ENVIRONMENTAL SERVICES 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: B35
DESCRIPTION: 11-12'

VOLATILE ORGANICS (HEATED PURGE & TRAP) SW846-8240B

Analyst: R. SHAMP Analysis Date: 09-OCT-97 06:12 Instrument: GC/MS VOA Test: 0510.9.0

Parameter	Result	Det. Limit	Units
BENZENE	BDL	2	ug/kg
ETHYL BENZENE	BDL	5	ug/kg
TOLUENE	BDL	5	ug/kg
XYLENES (O/M/P-XYLENE)	BDL	5	ug/kg
...			
SURROGATE RECOVERY			

DICHLOROETHANE-D4	129		% Rec
TOLUENE-D8	96		% Rec
4-BROMOFLUOROBENZENE	102		% Rec

BETX ONLY
Sample reanalyzed with no improvement in surrogate recovery.
Sample reanalyzed with no improvement in internal standard areas.

Sample Comments

BDL Below Detection Limit

Sample chain of custody number 52103.

Approved : P.K Spence

TO ENSURE PROPER HANDLING OF SAMPLES PLEASE COMPLETE THIS ENTIRE FORM

HERITAGE ENVIRONMENTAL SERVICES

COMMERCIAL LABORATORY OPERATIONS

I-60734

7901 West Morris Street
Indianapolis, Indiana 46231 (317) 243-0811 Fax (317) 486-5095

Co. Name: HERITAGE Environmental Services

Project Name: USN # 10319

Quote No.: PO No.: 79413

ENVIRONMENTAL PROGRAM:

CWA NPDES _____ IWP _____ SLUDGE _____

RCRA MW _____ SW _____ DISPOSAL _____

SDWA _____ CERCLA/SUPERFUND _____ OTHER _____

Sampled by: Kevin Crandell

Report To:
Co: HERITAGE Environmental
Add: 15330 Canal Bank Rd.
Lemont IL 60439
Attn: Kevin Rienhardt
Phone: (630) 739 1151

Accelerated Turnaround Requested _____
(Subject to Additional Charge)

Result Request by: ___ / ___ / ___
Mo Day Yr
(Date must be Accepted and Approved by Lab)

Client ID:	Date:	Time:	Comp	Grab	Sample Description	Sample Type (Matrix): DW, GW, WW, Soil, Oil, Sludge, Other	No. of Containers	Analyses Requested (Note special detection limits or methods): BETX (8240)	PNA (8310)	Remarks:	LAB Sample No.
P1	10/17/97	1700 AM PM		X	Piezometer 1			X			
P2	10/17/97	1640 AM PM		X	Piezometer 2			X	X		
P3	10/17/97	1630 AM PM		X	Piezometer 3			X	X		
P4	10/17/97	1650 AM PM		X	Piezometer 4			X			
		AM PM									
		AM PM									
		AM PM									
		AM PM									
		AM PM									
		AM PM									
		AM PM									
		AM PM									

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Kevin J Crandell	10/20/97 0800			/	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	/			/	
Relinquished by: (Signature)	Date/Time	Received for Lab by: (Signature)	Date/Time	Remarks	
	/		/		

Properly Preserved _____

Broken Bottles _____

Distribution: White original and Yellow copy to accompany sample to laboratory.
Pink copy to be retained by client.

UPS overnight # N2809543259

Rev. 6/95

TO ENSURE PROPER HANDLING OF SAMPLES PLEASE COMPLETE THIS ENTIRE FORM

HERITAGE ENVIRONMENTAL SERVICES

COMMERCIAL LABORATORY OPERATIONS

I - 52102

7901 West Morris Street
Indianapolis, Indiana 46231 (317) 243-0811 Fax (317) 486-5095

Co. Name: HERITAGE ENVIRONMENTAL

Project Name: US NAVY #10319

Quote No.: PO No.: 79413

ENVIRONMENTAL PROGRAM:

CWA NPDES IWP SLUDGE

RCRA MW SW DISPOSAL

SDWA CERCLA/SUPERFUND OTHER

Sampled by: Kevin J Crandell

Report To:

Co: HERITAGE ENVIRONMENTAL

Add: 15330 CANAL BANK RD
LEMONT IL 60439

Attn: Kevin Reinhard

Phone: (630) 739-1151

Accelerated Turnaround Requested
(Subject to Additional Charge)

Result Request by: / / (Mo / Day / Yr)

(Date must be Accepted and Approved by Lab)

Client ID:	Date:	Time:	Comp	Grab	Sample Description	Sample Type (Matrix): DW, GW, WW, Soil, Oil, Sludge, Other	No. of Containers	BETX	PNA	TCLP Pb	TOTAL Pb	Remarks:	LAB Sample No.
B17	9/30/97	1030 AM/PM		X	4-8'	Soil	2			X	X		
B19	9/26/97	0915 AM/PM		X	6-7'		2	X	X				
B20	9/26/97	1130 AM/PM		X	11-12'		1	X					
B23	9/26/97	1540 AM/PM		X	7-8'		2	X	X				
B25	9/27/97	0830 AM/PM		X	3-4'		2	X	X				
B26	9/27/97	1110 AM/PM		X	7-8'		2	X	X				
B27	9/27/97	1330 AM/PM		X	10-11'		2	X	X				
B28	9/29/97	1015 AM/PM		X	11-12'		1	X					
B29	9/29/97	1325 AM/PM		X	9-10'		1	X					
B30	9/29/97	1525 AM/PM		X	7-8'		1	X					
B31	9/30/97	0825 AM/PM		X	6-7'		2	X	X				
B34	9/30/97	1150 AM/PM		X	7-8'	↓	1	X					

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Kevin Crandell	10/1/97 / 1800			/	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	/			/	
Relinquished by: (Signature)	Date/Time	Received for Lab by: (Signature)	Date/Time	Remarks	
	/		/		

Properly Preserved

Broken Bottles

Distribution: White original and Yellow copy to accompany sample to laboratory.
Pink copy to be retained by client.

UPS overnight # N2573486114

Rev. 6/95

TO ENSURE PROPER HANDLING OF SAMPLES PLEASE COMPLETE THIS ENTIRE FORM

HERITAGE ENVIRONMENTAL SERVICES

COMMERCIAL LABORATORY OPERATIONS

I - 52103

7901 West Morris Street
Indianapolis, Indiana 46231 (317) 243-0811 Fax (317) 486-5095

Co. Name: Heritage Environmental
Project Name: US Navy # 10319
Quote No.: PO No.: 79413
ENVIRONMENTAL PROGRAM:
CWA NPDES IWP SLUDGE
RCRA MW SW DISPOSAL
SDWA CERCLA/SUPERFUND OTHER
Sampled by: Kevin J. Crandell

Report To:
Co: Heritage Environmental
Add: 15330 Canal Bank Rd
Lemont IL 60439
Attn: Kevin Reinhard
Phone: (630) 739-1151
Accelerated Turnaround Requested ____ (Subject to Additional Charge)
Result Request by: ____/____/____ Mo Day Yr
(Date must be Accepted and Approved by Lab)

Client ID:	Date:	Time:	Comp	Grab	Sample Description	Sample Type (Matrix): DW, GW, WW, Soil, Oil, Sludge, Other	No. of Containers	BETX	PNA	TCLP Pb	TOTAL Pb	Remarks:	LAB Sample No.
B35	9/30/97	1255 AM/PM		X	11-12'	SOIL	1	X					
		AM/PM											
		AM/PM											
		AM/PM											
		AM/PM											
		AM/PM											
		AM/PM											
		AM/PM											
		AM/PM											
		AM/PM											
		AM/PM											
		AM/PM											
		AM/PM											

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Kevin Crandell	10/1/97 1800			/	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	/			/	
Relinquished by: (Signature)	Date/Time	Received for Lab by: (Signature)	Date/Time	Remarks	
	/		/		

Properly Preserved ____
Broken Bottles ____

Distribution: White original and Yellow copy to accompany sample to laboratory.
Pink copy to be retained by client.

UPS overnight # N27534861 14

Rev. 6/95

TO ENSURE PROPER HANDLING OF SAMPLES PLEASE COMPLETE THIS ENTIRE FORM

HERITAGE ENVIRONMENTAL SERVICES

COMMERCIAL LABORATORY OPERATIONS

I - 52101

7901 West Morris Street
Indianapolis, Indiana 46231 (317) 243-0811 Fax (317) 486-5095

Co. Name: HERITAGE ENVIRONMENTAL

Project Name: US NAVY # 10319

Quote No.: PO No.: 79413

ENVIRONMENTAL PROGRAM:

CWA NPDES _____ IWP _____ SLUDGE _____

RCRA MW _____ SW _____ DISPOSAL _____

SDWA _____ CERCLA/SUPERFUND _____ OTHER _____

Sampled by: Kevin Crandell

Report To:

Co: HERITAGE ENVIRONMENTAL

Add: 15330 Canal Bank Rd
Lemont IL 60439

Attn: Kevin Reinhard

Phone: 630 379 1151

Accelerated Turnaround Requested _____
(Subject to Additional Charge)

Result Request by: ____ / ____ / ____
Mo Day Yr

(Date must be Accepted and Approved by Lab)

Client ID:	Date:	Time:	Comp	Grab	Sample Description	Sample Type (Matrix): DW, GW, WW, Soil, Oil, Sludge, Other	No. of Containers	Analyses Requested: BETX	Analyses Requested: PNAs	Remarks:	LAB Sample No.
B1	9/24/97	1080 AM/PM		X	7-8'	SOIL	2	X	X	Extract PNA on Receipt	
B2	9/24/97	1130 AM/PM		X	10-11'	SOIL	2	X	X		
B3	9/24/97	1245 AM/PM		X	5-6'	SOIL	2	X	X		
B6	9/24/97	1545 AM/PM		X	11-12'	SOIL	2	X	X		
B7	9/24/97	1600 AM/PM		X	12.5-13.5'	SOIL	2	X	X		
B8	9/25/97	0830 AM/PM		X	6-7'	SOIL	2	X	X	Extract PNA within 1day of Receipt	
B9	9/25/97	0915 AM/PM		X	7.5-8.5'	SOIL	2	X	X		
B10	9/25/97	0945 AM/PM		X	5.5-6.5'	SOIL	2	X	X		
B12	9/25/97	1145 AM/PM		X	14-15'	SOIL	2	X	X		
B13	9/25/97	1340 AM/PM		X	6-7'	SOIL	2	X	X		
B14	9/25/97	1445 AM/PM		X	9.5-10.5	SOIL	2	X	X		
B18	9/26/97	0835 AM/PM		X	8-9'	SOIL	1	X		Extract PNA within 2 day of Receipt	

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Kevin Crandell	9/29/97 0600			/	
	/			/	
	/				

Remarks: Shipped UPS next day AM

Properly Preserved _____

Broken Bottles _____

Distribution: White original and Yellow copy to accompany sample to laboratory.
Pink copy to be retained by client.

Rev. 6/95

APPENDIX 7

Laboratory Certificates - Groundwater Samples

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
Laboratory Certification for Chemical Analysis
(groundwater Samples)

A. Site Identification

IEMA Incident # (6 digit): _____ IEPA Generator # (10 digit): _____

Site Name: NAVY Public Works Center, Bldg. 1600A, RAY Street

Site Address (Not a P.O. Box): NAVAL TRAINING Center

City: GREAT LAKES, IL 60088 County: LAKE

B. Sample Collector

I certify that:

1. Appropriate sampling equipment/methods were utilized to obtain representative samples. KJC (initial)
2. Chain of custody procedures were followed in the field. KJC (initial)
3. Sample integrity was maintained by proper preservation. KJC (initial)
4. All samples were properly labeled. KJC (initial)

C. Laboratory Representative

I certify that:

1. Proper chain of custody procedures were followed as documented on the chain of custody forms. (initial)
2. Sample integrity was maintained by proper preservation. (initial)
3. All samples were properly labeled. (initial)
4. Quality assurance/quality control procedures were established and carried out. (initial)

5. Sample holding times were not exceeded. CLS (initial)

6. SW-846 Analytical Laboratory Procedure (USEPA) methods were used for the analyses. CLS (initial)

D. Signatures

I hereby affirm that all information contained in this form is true and accurate to the best of my knowledge and belief. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Sample Collector	**Laboratory Representative**
Name: Kevin J. Crandell	Name: Christine Sarkain
Title: Project Geologist	Title: Quality Assurance Officer
Company: Heritage Environmental	Company: Heritage Environmental - CLO
Address: 15330 Canal Bank Rd. Lemont, IL 60439	Address: 15330 Canal Bank Rd Lemont IL 60439
Phone: (630) 739-1151	Phone: 630 739-1151
Signature: Kevin Crandell	Signature: Christine Sarkain
Date: 11/20/97	Date: 11/20/97

CERTIFICATE SUMMARY

Service Location	Received	Lab ID
[redacted]ITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	21-OCT-97	A423666
	Complete 31-OCT-97	PO Number 79413
	Printed 03-NOV-97	Sampled 17-OCT-97 17:00

Report To	Bill To
HERITAGE ENVIRONMENTAL SERVICES KEVIN REINHARD 15330 CANAL BANK RD. LEMONT, IL 60439	HERITAGE ENVIRONMENTAL SERVICES GLEN BORESI 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: P1
DESCRIPTION: PIEZOMETER 1
PROJECT: USN #10319

ORGANICS

Method	Rep	Parameter	Analyzed	Result	Det. Limit	Units
SW846-8240B	0	BENZENE	102797	BDL	2	ug/L
S[redacted]5-8240B	0	ETHYL BENZENE	102797	BDL	5	ug/L
S[redacted]5-8240B	0	TOLUENE	102797	BDL	5	ug/L
SW846-8240B	0	XYLENES (O/M/P-XYLENE)	102797	BDL	5	ug/L

SURROGATE

Method	Rep	Parameter	Analyzed	Result	Det. Limit	Units
SW846-8240B	0	4-BROMOFLUOROBENZENE	102797	98		% Rec
SW846-8240B	0	DICHLOROETHANE-D4	102797	87		% Rec
SW846-8240B	0	TOLUENE-D8	102797	95		% Rec

Sample Comments

SW846-8240B.0 On this instrument, packed column has been replaced by capillary column SW846-8240B.0 with 8240 criteria.

BDL Below Detection Limit
This is a summary report.
Complete analytical information regarding analysts, methods and dates analyzed can be found in the Certificate of Analysis.

Approved By: [redacted]

CERTIFICATE SUMMARY

Service Location	Received	Lab ID
[redacted]ITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	21-OCT-97	A423667
	Complete 04-NOV-97	PO Number 79413
	Printed 05-NOV-97	Sampled 17-OCT-97 16:40

Report To	Bill To
HERITAGE ENVIRONMENTAL SERVICES KEVIN REINHARD 15330 CANAL BANK RD. LEMONT, IL 60439	HERITAGE ENVIRONMENTAL SERVICES GLEN BORESI 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: P2
DESCRIPTION: PIEZOMETER 2
PROJECT: USN #10319

ORGANICS

Method	Rep	Parameter	Analyzed	Result	Det. Limit	Units
SW846-8240B	0	BENZENE	102497	BDL	2	ug/L
S[redacted]6-8240B	0	ETHYL BENZENE	102497	BDL	5	ug/L
S[redacted]6-8240B	0	TOLUENE	102497	BDL	5	ug/L
SW846-8240B	0	XYLENES (O/M/P-XYLENE)	102497	BDL	5	ug/L
SW846-8310(M	0	ACENAPHTHENE	103097	BDL	0.16	ug/L
SW846-8310(M	0	ACENAPHTHYLENE	103097	BDL	0.40	ug/L
SW846-8310(M	0	ANTHRACENE	103097	BDL	0.08	ug/L
SW846-8310(M	0	BENZ(A)ANTHRACENE	103097	BDL	0.13	ug/L
SW846-8310(M	0	BENZO(A)PYRENE	103097	BDL	0.23	ug/L
SW846-8310(M	0	BENZO(B)FLUORANTHENE	103097	BDL	0.10	ug/L
SW846-8310(M	0	BENZO(G,H,I)PERYLENE	103097	BDL	0.20	ug/L
SW846-8310(M	0	BENZO(K)FLUORANTHENE	103097	BDL	0.06	ug/L
SW846-8310(M	0	CHRYSENE	103097	BDL	0.05	ug/L
SW846-8310(M	0	DIBENZ(A,H)ANTHRACENE	103097	BDL	0.13	ug/L
SW846-8310(M	0	FLUORANTHENE	103097	BDL	0.08	ug/L
SW846-8310(M	0	FLUORENE	103097	BDL	0.13	ug/L
SW846-8310(M	0	INDENO(1,2,3-CD)PYRENE	103097	BDL	0.13	ug/L
SW846-8310(M	0	NAPHTHALENE	103097	BDL	0.16	ug/L
SW846-8310(M	0	PHENANTHRENE	103097	BDL	0.16	ug/L
SW846-8310(M	0	PYRENE	103097	BDL	0.08	ug/L

SURROGATE

Method	Rep	Parameter	Analyzed	Result	Det. Limit	Units
SW846-8240B	0	4-BROMOFLUOROBENZENE	102497	90		% Rec
S[redacted]-8240B	0	DICHLOROETHANE-D4	102497	86		% Rec
S[redacted]-8240B	0	TOLUENE-D8	102497	92		% Rec

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: A423667

Method	Rep	Parameter	Analyzed	Result	Det. Limit	Units
S[redacted]6-8310(M	0	2-FLUOROBIPHENYL	103097	94		% Rec

Sample Comments

SW846-8240B.0 On this instrument, packed column has been replaced by capillary column SW846-8240B.0 with 8240 criteria.

BDL Below Detection Limit
This is a summary report.
Complete analytical information regarding analysts, methods and dates analyzed can be found in the Certificate of Analysis.

Approved By:

CERTIFICATE SUMMARY

Service Location	Received	Lab ID
[redacted]ITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	21-OCT-97	A423668
	Complete 04-NOV-97	PO Number 79413
	Printed 05-NOV-97	Sampled 17-OCT-97 16:30

Report To	Bill To
HERITAGE ENVIRONMENTAL SERVICES KEVIN REINHARD 15330 CANAL BANK RD. LEMONT, IL 60439	HERITAGE ENVIRONMENTAL SERVICES GLEN BORESI 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: P3
DESCRIPTION: PIEZOMETER 3
PROJECT: USN #10319

ORGANICS

Method	Rep	Parameter	Analyzed	Result	Det. Limit	Units
SW[redacted]46-8240B	0	BENZENE	102497	*	2	ug/L
S[redacted]6-8240B	0	ETHYL BENZENE	102497	41	5	ug/L
S[redacted]6-8240B	0	TOLUENE	102497	*	5	ug/L
SW846-8240B	0	XYLENES (O/M/P-XYLENE)	102497	190	5	ug/L
SW846-8240B	1	BENZENE	102797	300	20	ug/L
SW846-8240B	1	ETHYL BENZENE	102797	BDL	50	ug/L
SW846-8240B	1	TOLUENE	102797	430	50	ug/L
SW846-8240B	1	XYLENES (O/M/P-XYLENE)	102797	190	50	ug/L
SW846-8310(M	0	ACENAPHTHENE	103097	BDL	0.16	ug/L
SW846-8310(M	0	ACENAPHTHYLENE	103097	BDL	0.40	ug/L
SW846-8310(M	0	ANTHRACENE	103097	BDL	0.08	ug/L
SW846-8310(M	0	BENZ(A)ANTHRACENE	103097	BDL	0.13	ug/L
SW846-8310(M	0	BENZO(A)PYRENE	103097	BDL	0.23	ug/L
SW846-8310(M	0	BENZO(B)FLUORANTHENE	103097	BDL	0.10	ug/L
SW846-8310(M	0	BENZO(G,H,I)PERYLENE	103097	BDL	0.20	ug/L
SW846-8310(M	0	BENZO(K)FLUORANTHENE	103097	BDL	0.06	ug/L
SW846-8310(M	0	CHRYSENE	103097	BDL	0.05	ug/L
SW846-8310(M	0	DIBENZ(A,H)ANTHRACENE	103097	BDL	0.13	ug/L
SW846-8310(M	0	FLUORANTHENE	103097	BDL	0.08	ug/L
SW846-8310(M	0	FLUORENE	103097	BDL	0.13	ug/L
SW846-8310(M	0	INDENO(1,2,3-CD)PYRENE	103097	BDL	0.13	ug/L
SW846-8310(M	0	NAPHTHALENE	103097	6.4	0.16	ug/L
SW846-8310(M	0	PHENANTHRENE	103097	BDL	0.16	ug/L
SW846-8310(M	0	PYRENE	103097	BDL	0.08	ug/L

SURROGATE

Method	Rep	Parameter	Analyzed	Result	Det. Limit	Units
SW846-8240B	0	4-BROMOFLUOROBENZENE	102497	93		% Rec

HERITAGE ENVIRONMENTAL SERVICES, INC. Lab Sample ID: A423668

Method	Rep	Parameter	Analyzed	Result	Det. Limit	Units
S[illegible]-8240B	0	DICHLOROETHANE-D4	102497	87		% Rec
SW846-8240B	0	TOLUENE-D8	102497	94		% Rec
SW846-8240B	1	4-BROMOFLUOROBENZENE	102797	97		% Rec
SW846-8240B	1	DICHLOROETHANE-D4	102797	89		% Rec
SW846-8240B	1	TOLUENE-D8	102797	95		% Rec
SW846-8310(M	0	2-FLUOROBIPHENYL	103097	94		% Rec

Sample Comments

SW846-8240B.0 Dilution necessary due to high concentration of target compounds.
SW846-8240B.0 On this instrument, packed column has been replaced by capillary column
SW846-8240B.0 with 8240 criteria.
*SW846-8240B.0 Note: * Above linear range -- please see replicate 1.*
SW846-8240B.0 pH = 7
SW846-8240B.1 1:10 Dilution necessary due to high concentration of target compounds.
SW846-8240B.1 On this instrument, packed column has been replaced by capillary column
SW846-8240B.1 with 8240 criteria.

** See Note for Parameter*
BDL Below Detection Limit
This is a summary report.
Complete analytical information regarding analysts, methods and dates analyzed can be found in the Certificate of Analysis.

Approved By: _____

CERTIFICATE SUMMARY

Service Location	Received	Lab ID
ITAGE ENVIRONMENTAL SERVICES, INC. COMMERCIAL LABORATORY OPERATIONS 7901 W. MORRIS ST. INDIANAPOLIS, IN 46231 (317)243-8304	21-OCT-97	A423669
	Complete 31-OCT-97	PO Number 79413
	Printed 03-NOV-97	Sampled 17-OCT-97 16:50

Report To	Bill To
HERITAGE ENVIRONMENTAL SERVICES KEVIN REINHARD 15330 CANAL BANK RD. LEMONT, IL 60439	HERITAGE ENVIRONMENTAL SERVICES GLEN BORESI 1319 MARQUETTE DRIVE ROMEOVILLE, IL 60441

Sample Description

CLIENT ID: P4
DESCRIPTION: PIEZOMETER 4
PROJECT: USN #10319

ORGANICS

Method	Rep	Parameter	Analyzed	Result	Det. Limit	Units
SW846-8240B	0	BENZENE	102797	9	2	ug/L
SW846-8240B	0	ETHYL BENZENE	102797	BDL	5	ug/L
SW846-8240B	0	TOLUENE	102797	BDL	5	ug/L
SW846-8240B	0	XYLENES (O/M/P-XYLENE)	102797	BDL	5	ug/L

SURROGATE

Method	Rep	Parameter	Analyzed	Result	Det. Limit	Units
SW846-8240B	0	4-BROMOFLUOROBENZENE	102797	95		% Rec
SW846-8240B	0	DICHLOROETHANE-D4	102797	88		% Rec
SW846-8240B	0	TOLUENE-D8	102797	97		% Rec

Sample Comments

SW846-8240B.0 On this instrument, packed column has been replaced by capillary column SW846-8240B.0 with 8240 criteria.

BDL Below Detection Limit
This is a summary report.
Complete analytical information regarding analysts, methods and dates analyzed can be found in the Certificate of Analysis.

Approved By: _____

TO ENSURE PROPER HANDLING OF SAMPLES PLEASE COMPLETE THIS ENTIRE FORM

HERITAGE ENVIRONMENTAL SERVICES

COMMERCIAL LABORATORY OPERATIONS

I-60734

7901 West Morris Street
Indianapolis, Indiana 46231 (317) 243-0811 Fax (317) 486-5095

Co. Name: HERITAGE Environmental Services

Project Name: USN # 10319

Quote No.: PO No.: 794/13

ENVIRONMENTAL PROGRAM:

CWA NPDES _____ IWP _____ SLUDGE _____

RCRA MW _____ SW _____ DISPOSAL _____

SDWA _____ CERCLA/SUPERFUND _____ OTHER _____

Sampled by: Kevin Crandell

Report To:
Co: HERITAGE Environmental
Add: 15330 Cedar Bank Rd.
Lemont IL 60439

Attn: Kevin Rienhard
Phone: (630) 739 1151

Accelerated Turnaround Requested _____
(Subject to Additional Charge)

Result Request by: ___/___/___
Mo Day Yr
(Date must be Accepted and Approved by Lab)

Client ID:	Date:	Time:	Comp	Grab	Sample Description	Sample Type (Matrix): DW, GW, WW, Soil, Oil, Sludge, Other	No. of Containers	Analyses Requested (Note special detection limits or methods) BETX (8240)	PNA (8310)	Remarks:	LAB Sample No.
P1	10/17/97	1700 AM PM		X	Piezometer 1			X			A42366
P2	10/17/97	1640 AM PM		X	Piezometer 2			X	X		667
P3	10/17/97	1630 AM PM		X	Piezometer 3			X	X		668
P4	10/17/97	1650 AM PM		X	Piezometer 4			X			669
		AM PM									
		AM PM									
		AM PM									
		AM PM									
		AM PM									
		AM PM									
		AM PM									
		AM PM									
		AM PM									

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Kevin J Crandell	10/20/97 0800			/	
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
	/			/	
Relinquished by: (Signature)	Date/Time	Received for Lab by: (Signature)	Date/Time	Remarks	
	/	Victor Hunter	10/21/97 12:35 pm	UPS overnight # N280 9543 259	Properly Preserved _____ Broken Bottles _____

Distribution: White original and Yellow copy to accompany sample to laboratory.
Pink copy to be retained by client.

Rev. 8/95

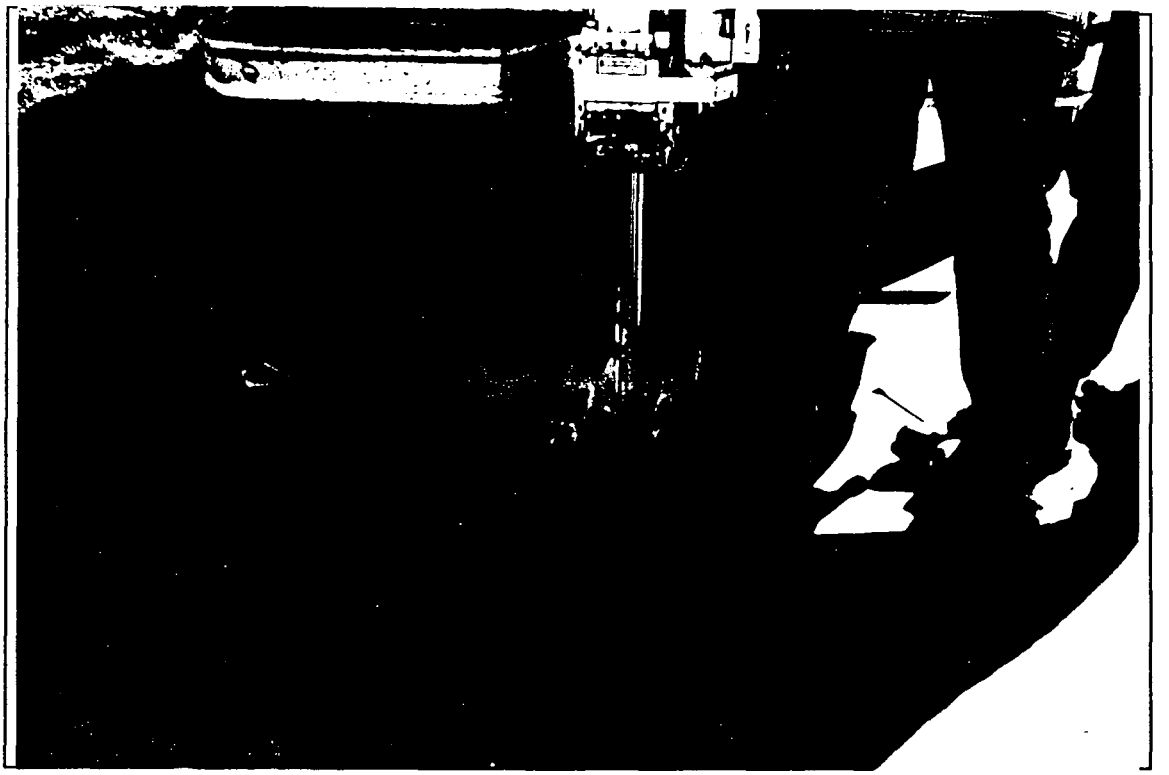
11/20/97 12:23 FAX 002

APPENDIX 8

Photographs

PHOTOGRAPH 1 (ABOVE): View of soil boring locations along east side of Building 1600A (red flags).

PHOTOGRAPH 2 (BELOW): View of soil boring locations east of fenceline and west of railroad tracks (red flags).

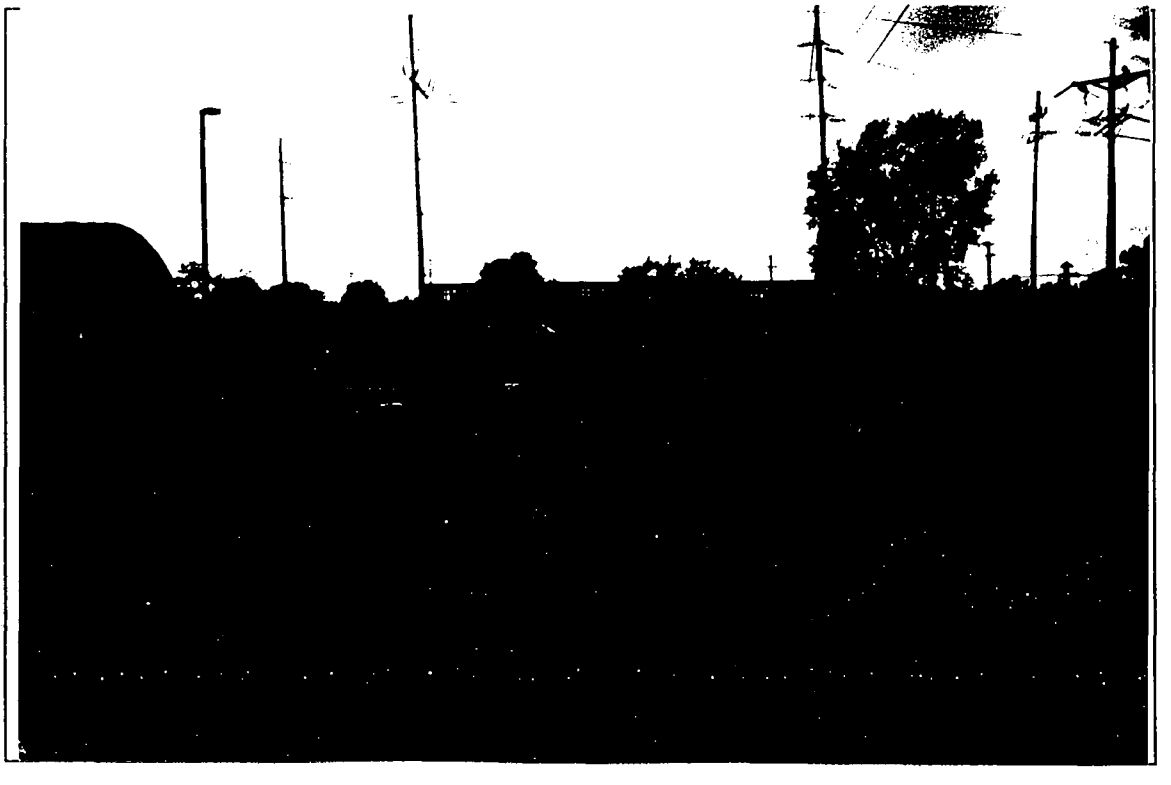


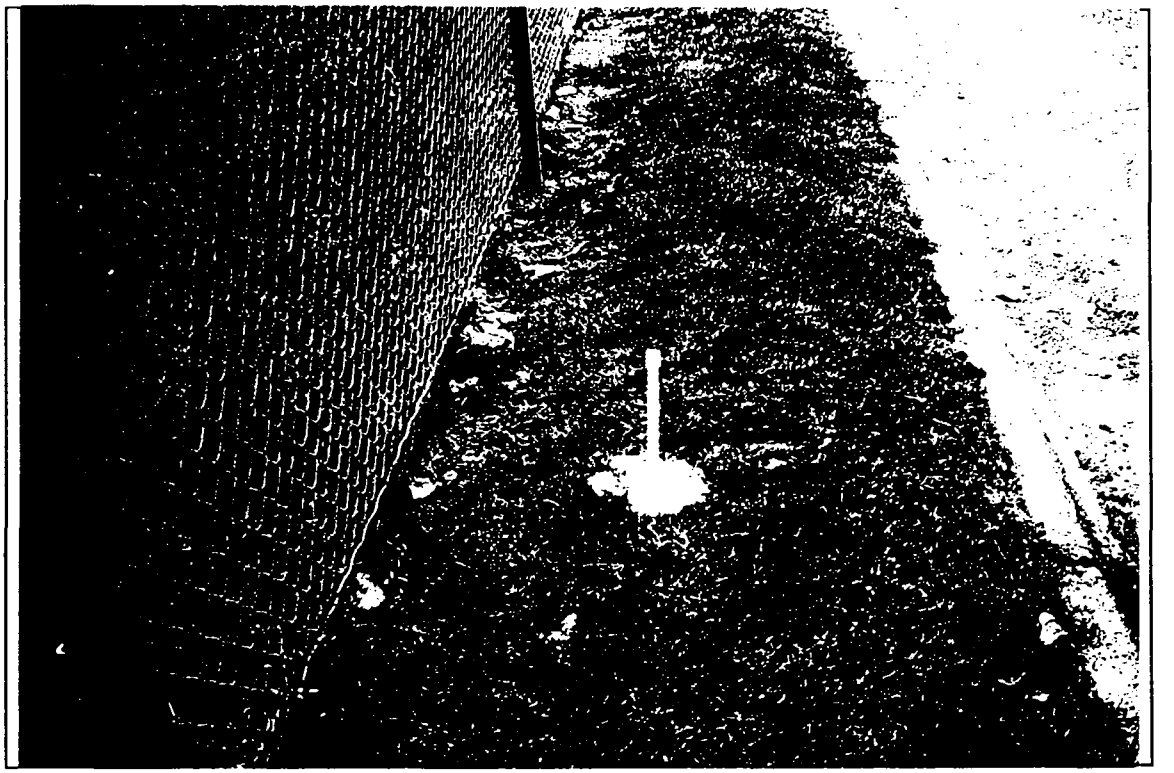
PHOTOGRAPH 3 (ABOVE): View of hydraulic push soil sampling equipment in operation.

PHOTOGRAPH 4 (BELOW): View of soil sample tube during removal from soil boring.

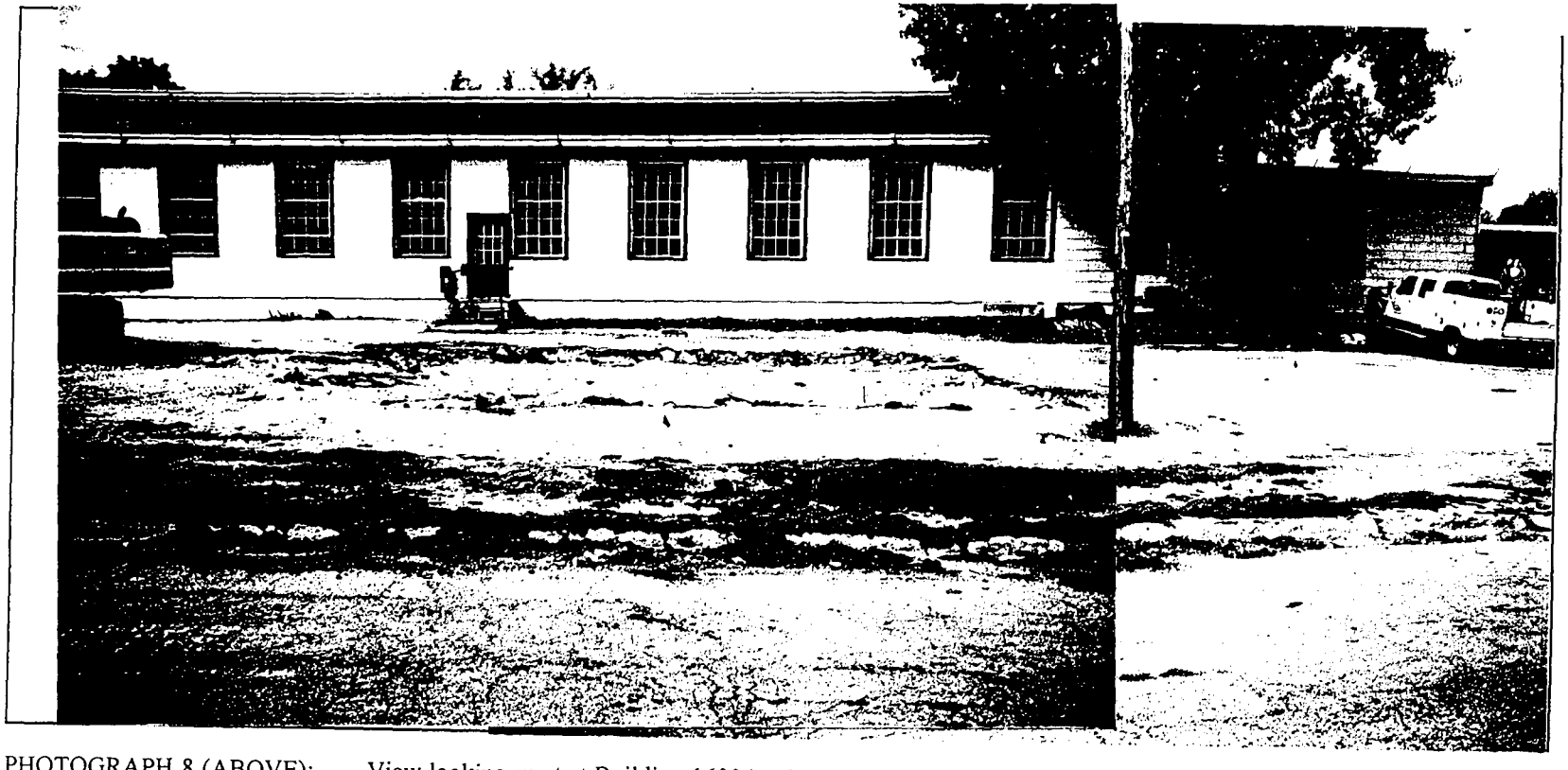
PHOTOGRAPH 5 (ABOVE): View of soil boring locations east of railroad tracks (Building 1600A can be seen in background).

PHOTOGRAPH 6 (BELOW) View from soil boring at far east end of investigation limit. Building 1600A can be seen in background.

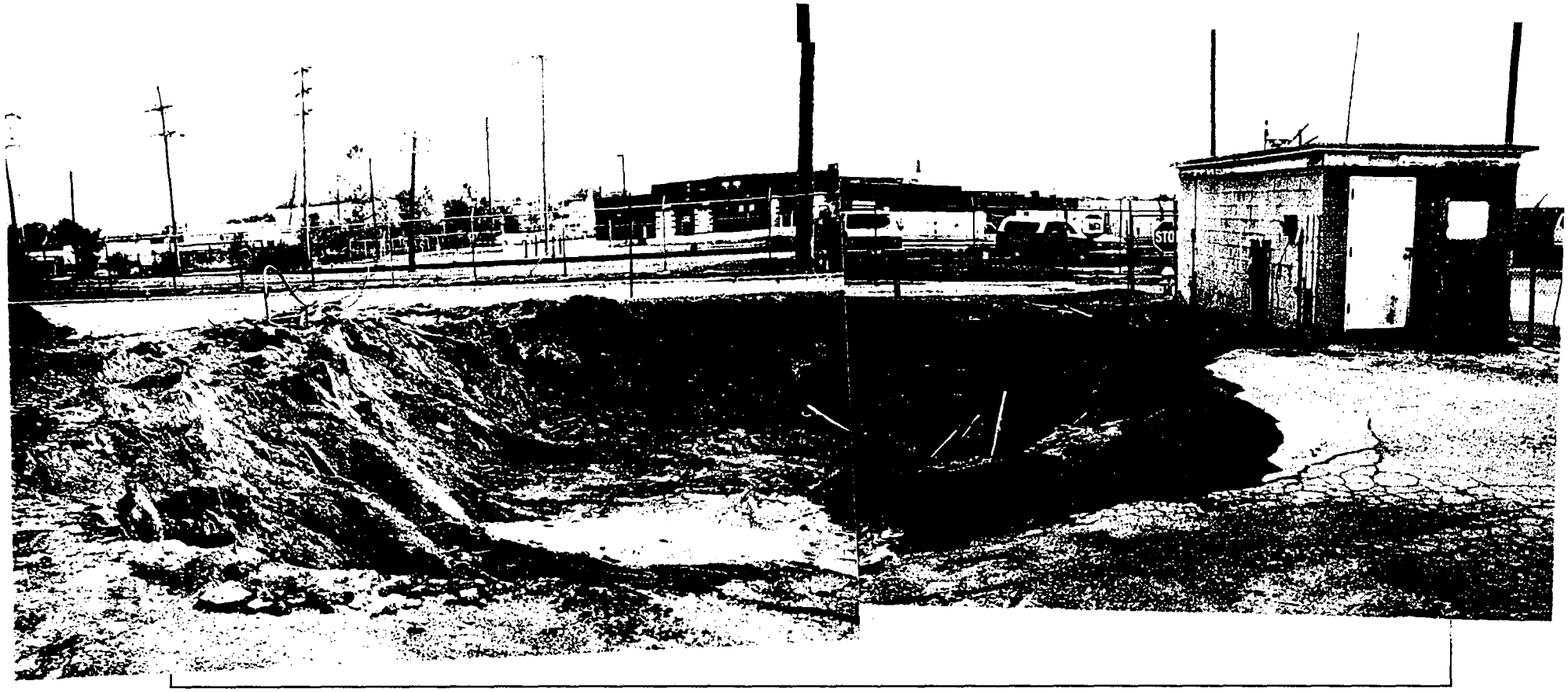




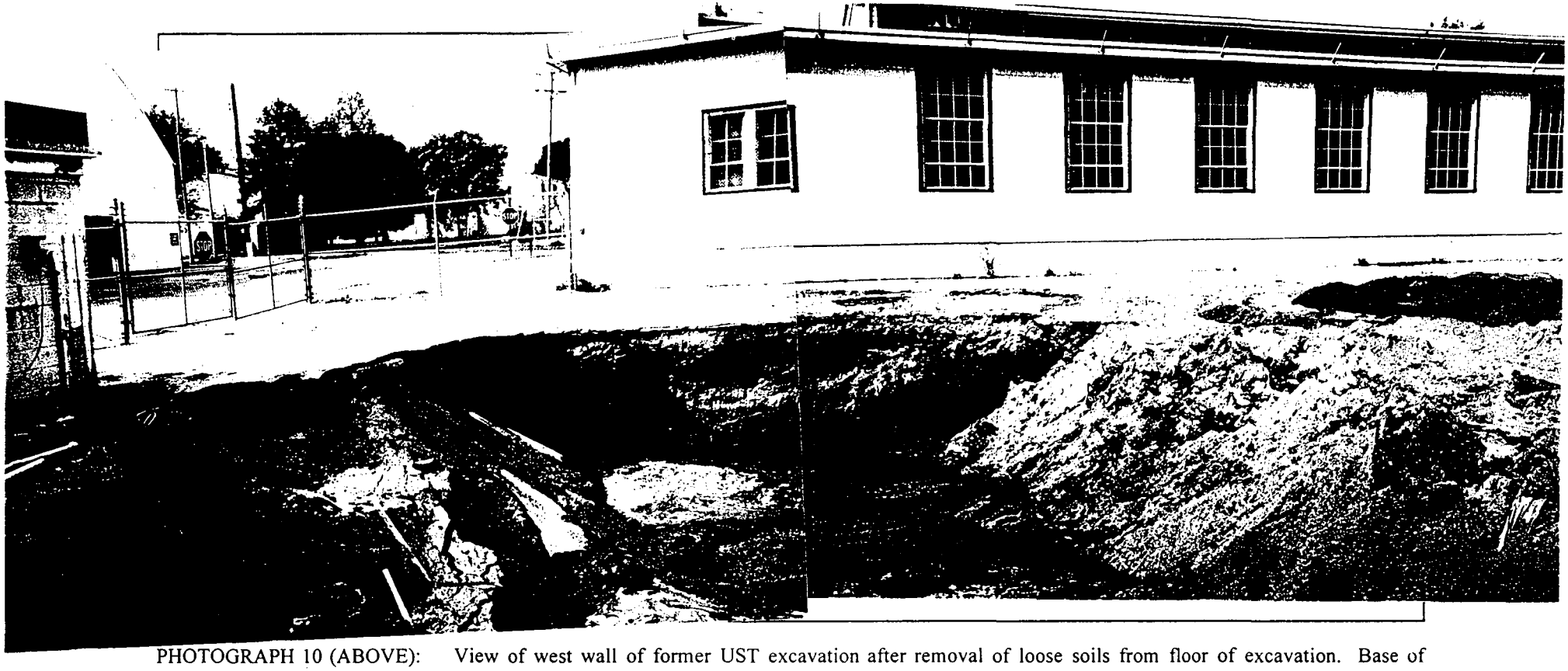
PHOTOGRAPH 7 (ABOVE): Typical view of piezometer installed at site.



PHOTOGRAPH 8 (ABOVE): View looking west at Building 1600A. Former fuel dispenser island area was located in area of surface excavation (center of photo).



PHOTOGRAPH 9 (ABOVE): View looking east at east wall of former UST location. View after removal of loose soils from floor of UST excavation area. IPC van can be seen in background performing soil borings east of fenceline.



PHOTOGRAPH 10 (ABOVE): View of west wall of former UST excavation after removal of loose soils from floor of excavation. Base of excavation is at local water table surface elevation.

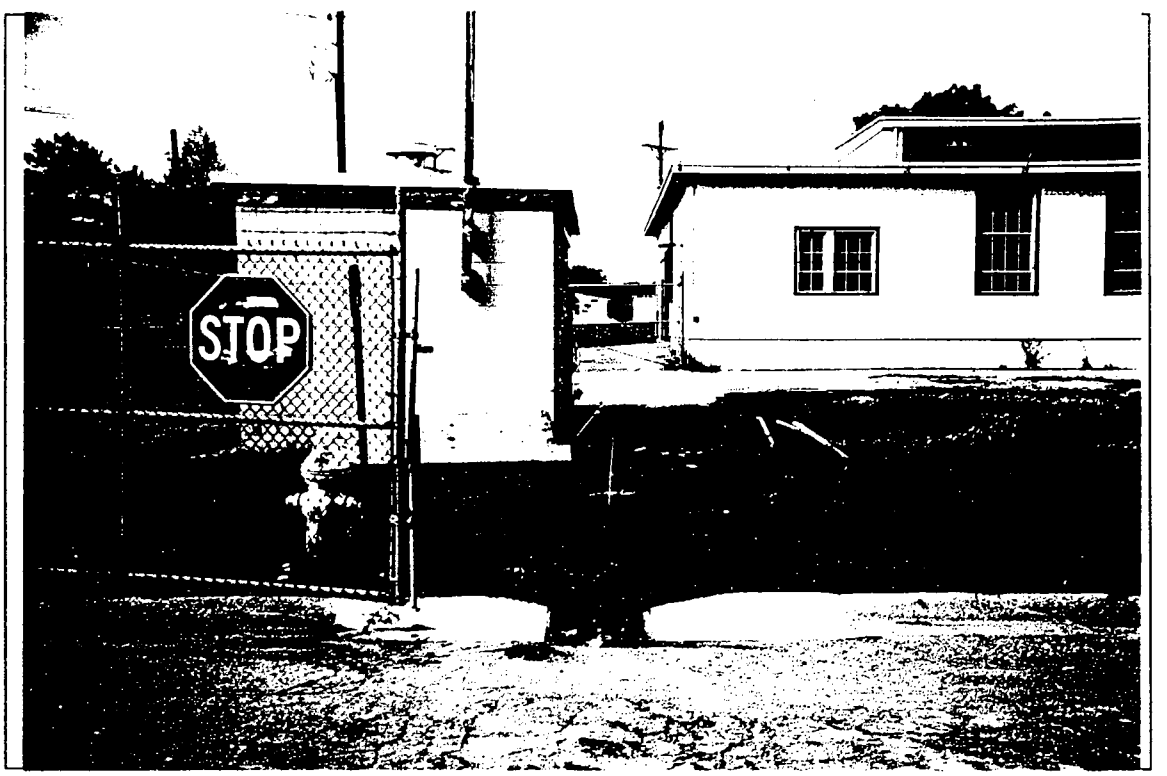
PHOTOGRAPH 11 (ABOVE): View of wooden shoring along south wall of UST excavation area (left of center). Flagging marks stormwater utility location.

PHOTOGRAPH 12 (BELOW): View looking north along east wall of UST excavation and along buried water utility (blue flagging).

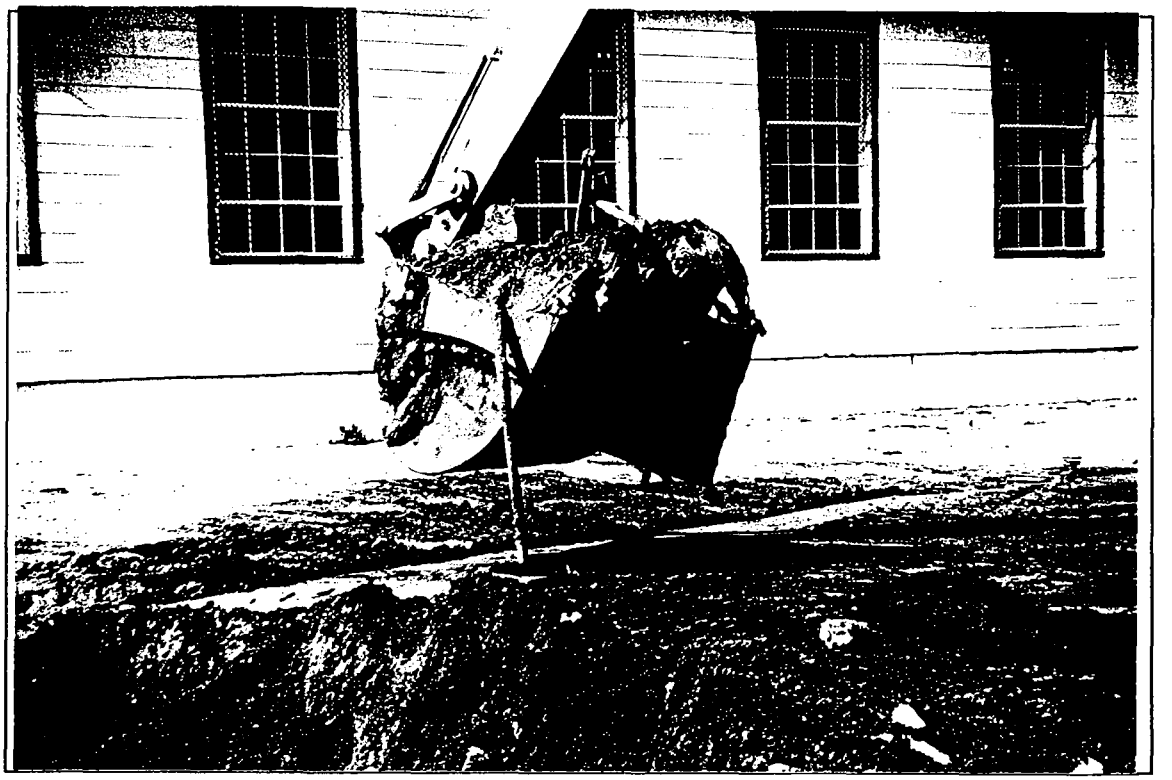
PHOTOGRAPH 13 (ABOVE): View of east wall of former UST excavation area during removal of petroleum impacted soil. Wood shoring for water utility can be seen at left.

PHOTOGRAPH 14 (ABOVE): View looking west at south end of Building 1600A. Stormwater drain (outfall) can be seen in lower foreground.

PHOTOGRAPH 15 (BELOW): Close up view of stormwater utility near excavation area.

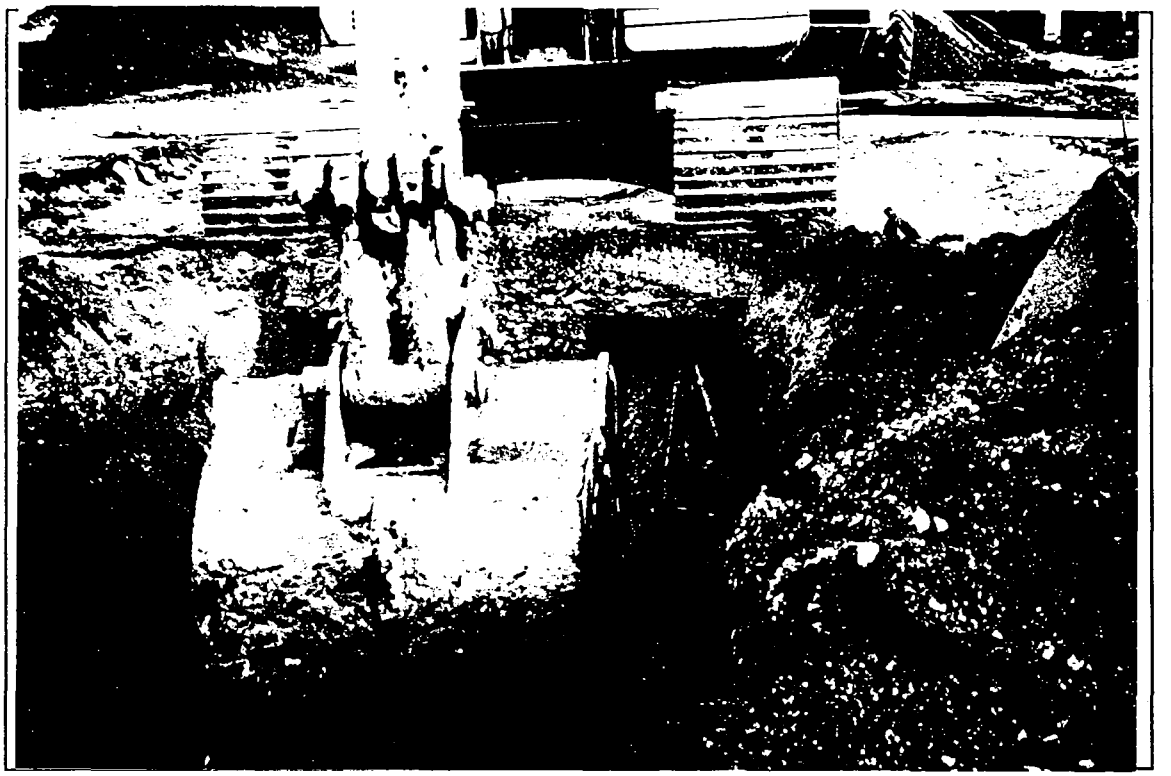


PHOTOGRAPH 16 (ABOVE): View looking north at north wall of UST removal area. Excavation of soils from former dispenser pipeline trench area underway in background.



PHOTOGRAPH 17 (ABOVE): View of oil 55 gallon steel drum removed from former UST excavation area.

PHOTOGRAPH 18 (BELOW): View of oil (foundation?) concrete wall encountered during excavation of west dispenser pipeline run. View is looking west at west wall of excavation trench.



PHOTOGRAPH 19 (ABOVE): View of west pipeline trench excavation near completion at north end of former dispenser location.

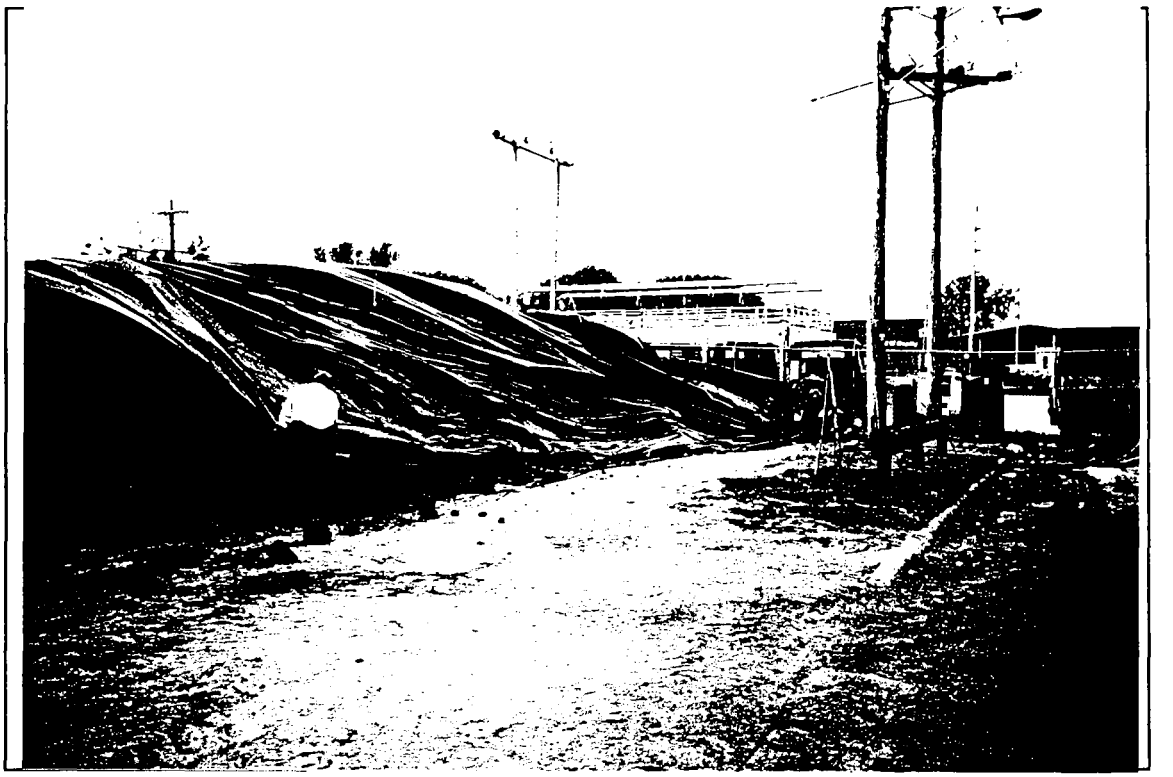
PHOTOGRAPH 20 (BELOW): View of pipeline excavation at east dispenser piping trench. Completed west dispenser piping trench can be seen at left.

PHOTOGRAPH 21 (ABOVE): View of dispenser piping concrete pad.

PHOTOGRAPH 22 (BELOW): View of dispenser piping trench after completion of soil and piping removal. Center soil island was collapsed into trench in preparation of placement of stone backfill.

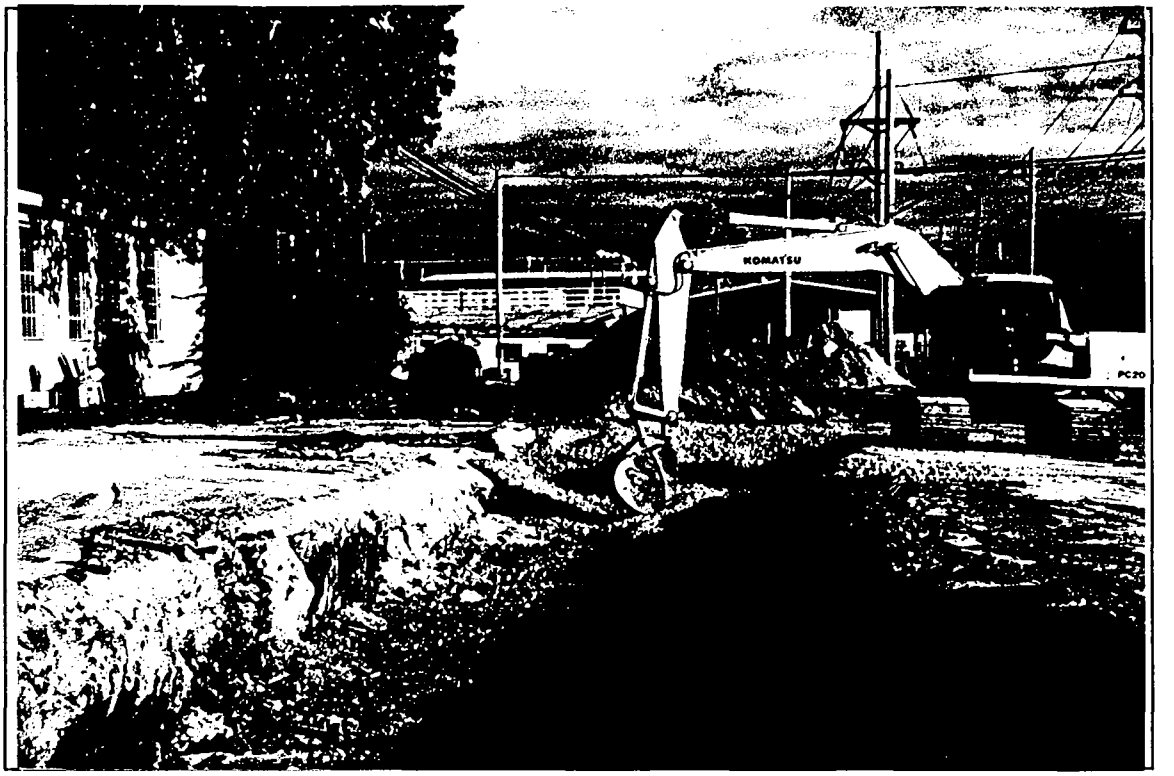
PHOTOGRAPH 23 (ABOVE): View of plastic pad utilized for placement of excavated soils from former UST area.

PHOTOGRAPH 24 (BELOW): View of front end loader moving excavated soils from excavation area to stockpile area. Red flags identify locations of soil borings and piezometers.



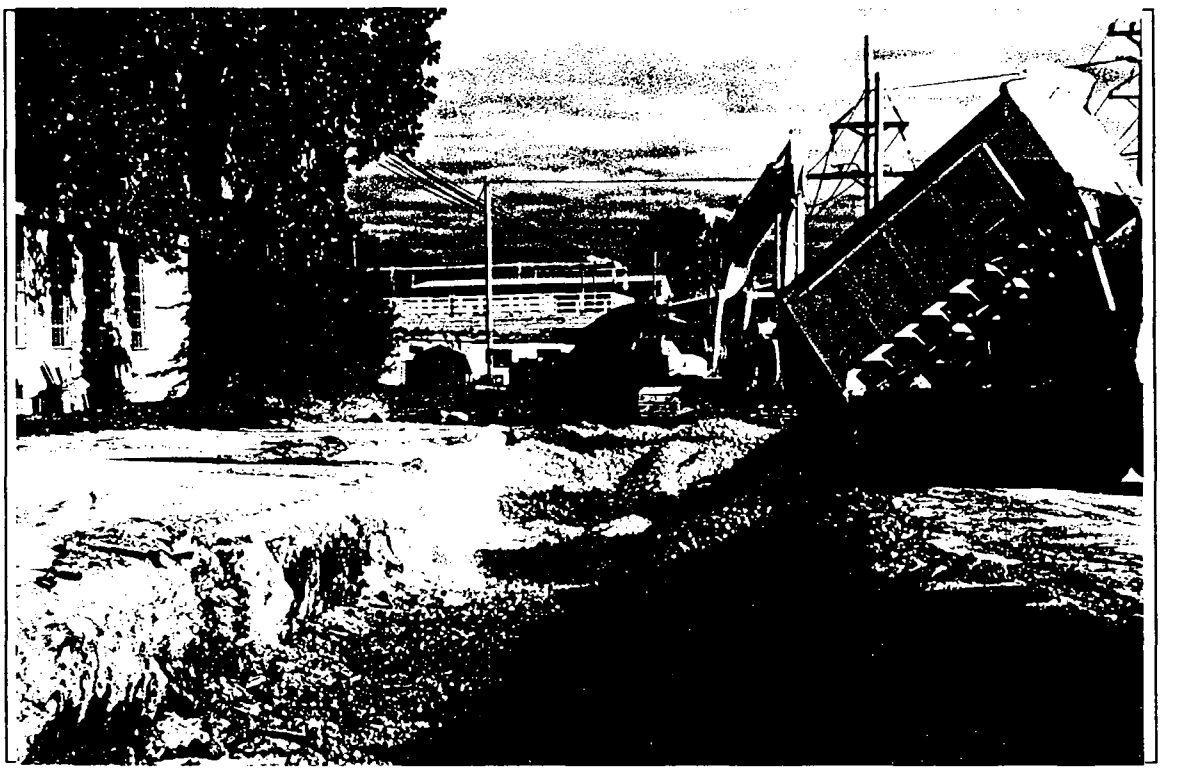
PHOTOGRAPH 25 (ABOVE): View of placement of overnight cover on stockpiled soil.

PHOTOGRAPH 26 (BELOW): Additional view of soil stockpile.



PHOTOGRAPH 27 (ABOVE): View of backfill stone placement.

PHOTOGRAPH 28 (BELOW): Additional view of backfill stone placement. Three inch rock was utilized to within 1 foot of surface. Final grade was established with Grade 8 stone material.



APPENDIX 9

Geotechnical Laboratory Results

TELEPHONE
309-673-2131
TESTS * INVESTIGATIONS
ANALYSIS * DESIGN * EVALUATIONS
CONSULTATION * REPORTS * INSPECTIONS
ARBITRATION * EXPERT WITNESS TESTIMONY
* * * * * * * * * *
SOILS * PORTLAND CEMENT CONCRETE
BITUMINOUS CONCRETE * STEEL
ASPHALT * AGGREGATES * EMULSIONS
POZOLANIC MATERIALS * LIME

WHITNEY & ASSOCIATES
INCORPORATED
2406 West Nebraska Avenue
PEORIA, ILLINOIS 61604-3193

TELEFAX
309-673-3050
GEOTECHNICAL ENGINEERING
CONSTRUCTION QUALITY CONTROL
SUBSURFACE EXPLORATIONS
ENVIRONMENTAL INVESTIGATIONS
* * * * * * * * * *
MONITORING WELL INSTALLATIONS
BUILT-UP ROOF INVESTIGATIONS
WELDER CERTIFICATIONS
INSURANCE INVESTIGATIONS

CLIENT:

W&A FILE NO. 9136001
DATE: 11-18-97

Mr. Kevin J. Crandell
Heritage Environmental Services, Inc.
15330 Canal Bank Road
Lemont, Illinois 60439

PROJECT:

Navy Building 1600A
North Chicago, Illinois
Job #10319 PO #79615

GEOTECHNICAL SOIL TEST RESULTS

SAMPLE DESIGNATION	:	USN #10319
SAMPLE CLASSIFICATION	:	SILTY SAND SM; Fine- To Medium-Grained; Considerable Coarse-Grained Sand And Fine-Grained Gravel
MOISTURE CONTENT - %	:	13.2
MOIST DENSITY - PCF	:	130.1
DRY DENSITY - PCF	:	114.9
SPECIFIC GRAVITY:	:	2.76
POROSITY	:	0.3332
SOIL PH	:	7.4
COEFFICIENT OF PERMEABILITY-CM/SEC.	:	1.09×10^{-4}

GRAIN SIZE ANALYSIS TEST RESULTS

SIEVE DESIGNATION	PERCENTAGE FINER-%
	USN #10319
3/4"	100
3/8"	91
#4	81
#10	66
#20	54
#40	44
#60	31
#140	20
#200	17.5
MAXIMUM DIAMETER-M.M.	
.0400	13
.0260	11
.0150	9
.0100	8
.0074	7
.0050	6
.0036	4
.0010	2
SAND-%	82
SILT -%	12
CLAY-%	6
SOIL CLASSIFICATION	SILTY SAND SM; Fine- To Medium-Grained; Considerable Coarse-Grained Sand And Fine-Grained Gravel

Should you have any questions or comments whatsoever in regard to these test results, or if any additional information is desired, please do not hesitate to contact me personally at your convenience.

Respectfully submitted,

WHITNEY & ASSOCIATES

(By) Douglas R. Whitney, P. E.

DRW:rma

TELEPHONE
309 673-2131

TESTS
DESIGN
REPORTS
ANALYSIS
INSPECTION
CONSULTATION
INVESTIGATIONS

WHITNEY & ASSOCIATES
INCORPORATED
2406 West Nebraska Avenue
PEORIA, ILLINOIS 61604

SPECIALISTS IN
SOILS - PORTLAND CEMENT CONCRETE
STEEL - BITUMINOUS CONCRETE
CONSTRUCTION MATERIALS
AGGREGATES - ASPHALT - POZ-O-PAC

SOILS AND GRAVEL SURVEYS
MATERIALS QUALITY CONTROL
SOIL MECHANICS AND
FOUNDATION ENGINEERING
DRILLING - CORING - TESTING

PROJECT: Navy Building 1600A
North Chicago, Illinois

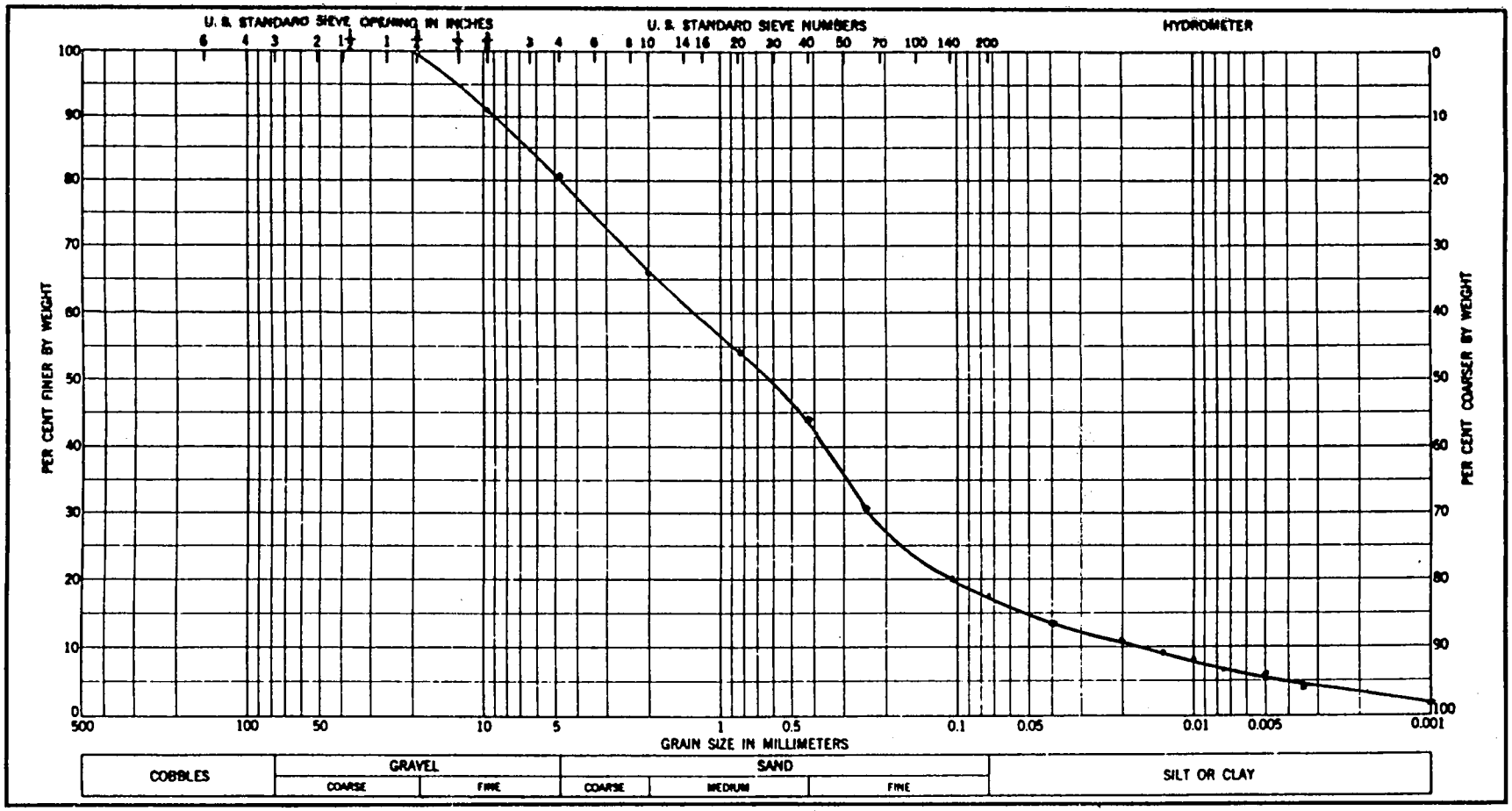
W. & A. FILE NO. 9136

DATE 11-18-97

CLIENT: Heritage Environmental
Lemont, Illinois

REPORT OF SOIL/AGGREGATE ANALYSIS

USN #10319



SOIL/AGGREGATE CLASSIFICATION SILTY SAND SM; Fine- To Medium-Grained; Considerable Coarse-Grained Sand And Fine-Grained Gravel

UNIFORMITY COEFFICIENT, $\frac{D_{60}}{D_{10}}$ = _____

EFFECTIVE GRAIN SIZE, D_{10} = 0.018

PERMEABILITY TEST REPORT

TEST DATA:

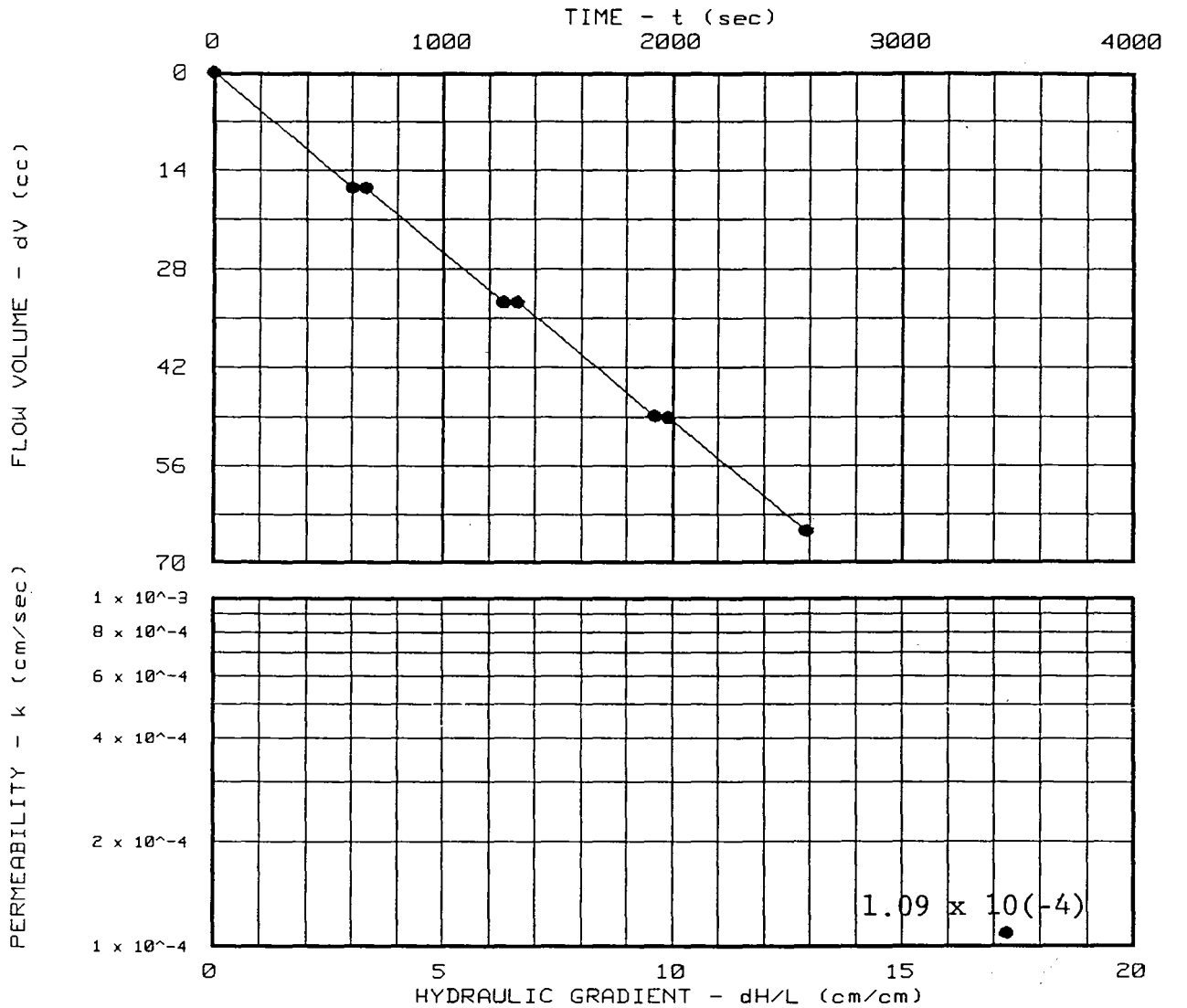
Specimen Height (cm): 4.32
Specimen Diameter (cm): 4.11
Dry Unit Weight (pcf): 114.9
Moisture Before Test (%): 13.2
Moisture After Test (%): 16.1
Run Number: 1 ● 2 ▲
Cell Pressure (psi): 9.0
Test Pressure (psi): 6.0
Back Pressure (psi): 4.9
Diff. Head (psi): 1.1
Flow Rate (cc/sec): 2.51 x 10^-2
Perm. (cm/sec): 1.09 x 10^-4

SAMPLE DATA:

Sample Identification: USN #10319

Visual Description: Brown SILTY SAND SM
Fine-Coarse Grained; Consid Co. Gravel
Remarks: ASTM D-5084 & IEPA
Test Parameters
Maximum Dry Density (pcf): -
Optimum Moisture Content (%): -

Percent Compaction:
Permeameter type: B-K Flexwall
Sample type: 1.6" S.S.



Project: NAVY BUILDING 1600A JOB #10319
Location: North Chicago, Illinois
Date: 11-12-97

PERMEABILITY TEST REPORT

WHITNEY & ASSOCIATES

Project No.: HER-1
File No.: 467
Lab No.: 3
Tested by: CMK
Checked by: JRK
Test: CH - Constant head

APPENDIX 10

Water Well Records

PUBLIC-INDUSTRIAL-COMMERCIAL DATABASE QUERY RESULTS
November 25, 1997

ISWS ID:	09704921
Name:	FULL MOON RESTAURANT
Well No:	1
Status:	I
Location:	09744N12E074D
Depth:	220
Type Log:	D
Const. Date:	1984
Driller:	MICHAEL GROSS
Lambert X/Y:	3437932,3377769

ISWS ID:	09704921
Name:	FULL MOON RESTAURANT
Well No:	2
Status:	I
Location:	09744N12E074D
Depth:	1000
Type Log:	D
Const. Date:	1992
Driller:	GEORGE E GAFFKE
Lambert X/Y:	3438034,3378029

ISWS ID:	09704940
Name:	PLANTATION CONFECTION CO
Well No:	1
Status:	I
Location:	09744N12E075E
Depth:	263
Type Log:	D
Const. Date:	1968
Driller:	HOOVER WATER WELL
Lambert X/Y:	3437441,3378621

ISWS ID:	09704945
Name:	SHOREACRES GOLF COURSE
Well No:	1
Status:	A
Location:	09744N12E094A
Depth:	285
Type Log:	-
Const. Date:	1920
Driller:	PETTIS
Lambert X/Y:	3448522,3375905

ISWS ID: 09704945

Name:	SHOREACRES GOLF COURSE
Well No:	3
Status:	I
Location:	09744N12E097A
Depth:	272
Type Log:	D
Const. Date:	1969
Driller:	HENRY BOYSEN CO
Lambert X/Y:	3446609,3376121

ISWS ID:	09704945
Name:	SHOREACRES GOLF COURSE
Well No:	2
Status:	I
Location:	09744N12E098D
Depth:	210
Type Log:	-
Const. Date:	1920
Driller:	PETTIS
Lambert X/Y:	3446090,3378336

ISWS ID:	09797090
Name:	STRAWBERRY 1 CONDOMINIUM DEVLP
Well No:	1
Status:	E
Location:	09744N12E076E
Depth:	215
Type Log:	D
Const. Date:	1972
Driller:	HENRY BOYSEN CO
Lambert X/Y:	3436689,3378966

ISWS ID:	09797090
Name:	STRAWBERRY 1 CONDOMINIUM DEVLP
Well No:	2
Status:	E
Location:	09744N12E076E
Depth:	295
Type Log:	D
Const. Date:	1972
Driller:	HENRY BOYSEN CO
Lambert X/Y:	3436493,3378464

PRIVATE WELL DATABASE QUERY RESULTS
November 25, 1997

Water Survey ID: 188305
FIPS #: 097
Twnshp: 44N
Range: 12E
Sec: 04
Plot: --
Owner: SAGES LOCK CO
Driller: FERGUSON
Constructed: 10241930
Permit #: --
Depth: 210
Record Type: O
Use: IC
Type: --
Aquifer: BR
Lambert X/Y: --

Water Survey ID: 188306
FIPS #: 097
Twnshp: 44N
Range: 2E
Sec: 05
Plot: --
Owner: CHICAGO HARDWARE FOUNDRY CO
Driller: FERGUSON
Constructed: 05001929
Permit #: --
Depth: 928
Record Type: CO
Use: IC
Type: --
Aquifer: BR
Lambert X/Y: 3442899,3383689

Water Survey ID: 189334
FIPS #: 097
Twnshp: 44N
Range: 12E
Sec: 05
Plot: --
Owner: CHICAGO HARDWARE FOUNDRY CO #5
Driller: --
Constructed: 00001920
Permit #: --
Depth: 200
Record Type: OGC
Use: IC

Type: --
Aquifer: BR
Lambert X/Y: 3442899,3383689

Water Survey ID: 188307
FIPS #: 097
Twnshp: 44N
Range: 12E
Sec: 05
Plot: --
Owner: CHICAGO HARDWARE FOUNDRY CO
Driller: FERGUSON
Constructed: 05001929
Permit #: --
Depth: 206
Record Type: CO
Use: IC
Type: --
Aquifer: BR
Lambert X/Y: 3442899,3383689

Water Survey ID: 189333
FIPS #: 097
Twnshp: 44N
Range: 12E
Sec: 05
Plot: --
Owner: CHICAGO HARDWARE FOUNDRY CO
Driller: --
Constructed: 00001923
Permit #: --
Depth: 928
Record Type: OG
Use: IC
Type: --
Aquifer: BR
Lambert X/Y: 3442899,3383689

Water Survey ID: 188316
FIPS #: 097
Twnshp: 44N
Range: 12E
Sec: 05
Plot: 1F
Owner: N CHICAGO REFINERS #2
Driller: HOOVER
Constructed: 12001970
Permit #: --
Depth: 1276

Record Type:		ICX
Use:		IC
Type:		--
Aquifer:	BR	
Lambert X/Y:		3445185,3384723

Water Survey ID:	188317	
FIPS #:		097
Twnshp:	44N	
Range:		12E
Sec:		05
Plot:		5H
Owner:		ERNIE PETERSON PLUMBING INC
Driller:		HOOVER
Constructed:		07291981
Permit #:		098171
Depth:		242
Record Type:		RGX
Use:		IC
Type:		--
Aquifer:	BR	
Lambert X/Y:		3442554,3386027

Water Survey ID:	188318	
FIPS #:		097
Twnshp:	44N	
Range:		12E
Sec:		06
Plot:		--
Owner:		THOMPSON DYKE & ASSOC
Driller:		HOOVER
Constructed:		01061986
Permit #:		--
Depth:		225
Record Type:		A
Use:		IC
Type:		--
Aquifer:	BR	
Lambert X/Y:		3437651,3383645

Water Survey ID:	188308	
FIPS #:		097
Twnshp:	44N	
Range:		12E
Sec:		06
Plot:		--
Owner:		ABBOTT LAB
Driller:		--
Constructed:		00001952

Permit #:		--
Depth:		157
Record Type:		O
Use:		IC
Type:		--
Aquifer:	BR	
Lambert X/Y:		3437651,3383645

Water Survey ID:	188319	
FIPS #:		097
Twnshp:	44N	
Range:		12E
Sec:		06
Plot:		1E
Owner:		BALMES GREENHOUSE
Driller:		GAFFKE
Constructed:		03151983
Permit #:		106413
Depth:		190
Record Type:		RG
Use:		IC
Type:		--
Aquifer:	BR	
Lambert X/Y:		3439943,3383990

Water Survey ID:	188320	
FIPS #:		097
Twnshp:	44N	
Range:		12E
Sec:		06
Plot:		2C
Owner:		LAKELAND BUS LINE #2
Driller:		HOOVER
Constructed:		12031971
Permit #:		015711
Depth:		107
Record Type:		RGX
Use:		IC
Type:		--
Aquifer:	UN	
Lambert X/Y:		3439296,3382652

Water Survey ID:	232184	
FIPS #:		097
Twnshp:	44N	
Range:		12E
Sec:		06
Plot:		5B
Owner:		ABBOTT LABORATORY

Driller:		HOOVER
Constructed:		00001988
Permit #:		--
Depth:		250
Record Type:		I
Use:		IC
Type:		--
Aquifer:	BR	
Lambert X/Y:		3437341,3381972

Water Survey ID:	189332	
FIPS #:		097
Twnshp:	44N	
Range:		12E
Sec:		06
Plot:		5B
Owner:		ABBOTT LABORATORY #2
Driller:		HOOVER
Constructed:		02151968
Permit #:		004233
Depth:		250
Record Type:		RG
Use:		IC
Type:		--
Aquifer:	BR	
Lambert X/Y:		3437341,3381972

Water Survey ID:	232183	
FIPS #:		097
Twnshp:	44N	
Range:		12E
Sec:		06
Plot:		5D
Owner:		ABBOTT LABORATORY
Driller:		--
Constructed:		00001953
Permit #:		--
Depth:		270
Record Type:		I
Use:		IC
Type:		--
Aquifer:	BR	
Lambert X/Y:		3437327,3383309

Water Survey ID: 188324

FIPS #:		097
Twnshp:	44N	
Range:		12E
Sec:		07
Plot:		--
Owner:		SEARLE TECH CENTER TEST HOLE 5
Driller:		MILLER
Constructed:		10001962
Permit #:		--
Depth:		168
Record Type:		OC
Use:		TH
Type:		--
Aquifer:	--	
Lambert X/Y:		3437704,3378356

Water Survey ID: 188309

FIPS #:		097
Twnshp:	44N	
Range:		12E
Sec:		07
Plot:		--
Owner:		TROJAN OIL CO
Driller:		BOYSEN
Constructed:		07001940
Permit #:		--
Depth:		187
Record Type:		OG
Use:		IC
Type:		--
Aquifer:	UN	
Lambert X/Y:		3437704,3378356

Water Survey ID: 188325

FIPS #:		097
Twnshp:	44N	
Range:		12E
Sec:		07
Plot:		--
Owner:		SEARLE TECHNOLOGICAL T H #6
Driller:		MILLER
Constructed:		10001962
Permit #:		--
Depth:		90
Record Type:		OC
Use:		TH
Type:		--
Aquifer:	UN	
Lambert X/Y:		3437704,3378356

Water Survey ID: 188326

FIPS #:		097
Twnshp:	44N	
Range:		12E
Sec:		07
Plot:		4D
Owner:		FULL MOON RESTAURANT
Driller:		GROSS
Constructed:		05011984
Permit #:		111773
Depth:		220
Record Type:		RG
Use:		IC
Type:		--
Aquifer:	BR	
Lambert X/Y:		3438034,3378029

Water Survey ID: 240264

FIPS #:		097
Twnshp:	44N	
Range:		12E
Sec:		07
Plot:		5C
Owner:		CHUNG LEE
Driller:		SNELTEN
Constructed:		02111992
Permit #:		91-12-1628
Depth:		202
Record Type:		RG
Use:		DO
Type:		--
Aquifer:	BR	
Lambert X/Y:		3437387,3377376

Water Survey ID: 188322

FIPS #:		097
Twnshp:	44N	
Range:		12E
Sec:		07
Plot:		5E
Owner:		PLANTATION BAKING CO
Driller:		HOOVER
Constructed:		04001968
Permit #:		--
Depth:		263
Record Type:		OICG
Use:		IC
Type:		--
Aquifer:	BR	
Lambert X/Y:		3437374,3378683

Water Survey ID: 188323

FIPS #:	097
Twnshp:	44N
Range:	12E
Sec:	07
Plot:	5G
Owner:	PICKERS CONS CO
Driller:	BOYSEN
Constructed:	07001961
Permit #:	--
Depth:	162
Record Type:	OCG
Use:	IC
Type:	--
Aquifer:	UN
Lambert X/Y:	3437362,3379990

Water Survey ID: 188321

FIPS #:	097
Twnshp:	44N
Range:	12E
Sec:	07
Plot:	8H
Owner:	PLANTATION BAKING CO
Driller:	HOOVER
Constructed:	05031968
Permit #:	004743
Depth:	263
Record Type:	RG
Use:	IC
Type:	--
Aquifer:	BR
Lambert X/Y:	3435401,3380632

Water Survey ID: 188310

FIPS #:	097
Twnshp:	44N
Range:	12E
Sec:	08
Plot:	--
Owner:	SHELL GAS STATION
Driller:	AUSHERMAN
Constructed:	00001930
Permit #:	--
Depth:	247
Record Type:	O
Use:	IC
Type:	--
Aquifer:	--
Lambert X/Y:	3442952,3378384

Water Survey ID: 188530
FIPS #: 097
Twnshp: 45N
Range: 12E
Sec: 31
Plot: --
Owner: BALMES NURSERY
Driller: BOYSEN
Constructed: 03081983
Permit #: --
Depth: 0
Record Type: A
Use: IC
Type: --
Aquifer: --
Lambert X/Y: 3437597,3388935

Water Survey ID: 286788
FIPS #: 097
Twnshp: 45N
Range: 12E
Sec: 31
Plot: --
Owner: AMHURST LAKE BUS. PARK #2
Driller: EFFLANDT
Constructed: 08201990
Permit #: 90-16-0491
Depth: 260
Record Type: RG
Use: IC
Type: DL
Aquifer: BR
Lambert X/Y: 3437937,3387954

Water Survey ID: 286787
FIPS #: 097
Twnshp: 45N
Range: 12E
Sec: 31
Plot: --
Owner: AMHURST LAKE BUS. PK. #1
Driller: EFFLANDT
Constructed: 05081990
Permit #: 90-16-0490
Depth: 260
Record Type: RG
Use: IC
Type: DL
Aquifer: BR
Lambert X/Y: 3437937,3387954

Water Survey ID: 293519

FIPS #:		097
Twnshp:	45N	
Range:		12E
Sec:		31
Plot:		2G
Owner:		R.LEAVITT CONST.
Driller:		BEACH PUMP & WELL
Constructed:		02141997
Permit #:		097-0682-96
Depth:		75
Record Type:		RG
Use:		DO
Type:		DL
Aquifer:	UN	
Lambert X/Y:		3439222,3390575

Water Survey ID: 229284

FIPS #:		097
Twnshp:	45N	
Range:		12E
Sec:		31
Plot:		5E
Owner:		AL CHRISTENSON LOT #12 & 13
Driller:		MICHAEL GROSS
Constructed:		03311991
Permit #:		90-16-0315
Depth:		238
Record Type:		RG
Use:		CS
Type:		--
Aquifer:	BR	
Lambert X/Y:		3437265,3389262

Water Survey ID: 188531

FIPS #:		097
Twnshp:	45N	
Range:		12E
Sec:		31
Plot:		7F
Owner:		LAKE COUNTY FOR PRES
Driller:		GAFFKE
Constructed:		10071982
Permit #:		105116
Depth:		195
Record Type:		RG
Use:		IR
Type:		--
Aquifer:	BR	
Lambert X/Y:		3435945,3389914

Water Survey ID: 230535

FIPS #:	097
Twnshp:	45N
Range:	12E
Sec:	32
Plot:	--
Owner:	GARY NEPSTAD LOT 61
Driller:	BEACH PUMP & WELL
Constructed:	01181991
Permit #:	WW# 91-16-0044
Depth:	175
Record Type:	RG
Use:	DO
Type:	--
Aquifer:	BR
Lambert X/Y:	3442846,3388986

Water Survey ID: 188533

FIPS #:	097
Twnshp:	45N
Range:	12E
Sec:	33
Plot:	--
Owner:	ABBOTT LABORATORIES
Driller:	BOYSEN
Constructed:	05061983
Permit #:	--
Depth:	134
Record Type:	A
Use:	IC
Type:	--
Aquifer:	BR
Lambert X/Y:	--

Water Survey ID: 188534

FIPS #:	097
Twnshp:	45N
Range:	12E
Sec:	33
Plot:	--
Owner:	ABBOTT LABORATORIES
Driller:	BOYSEN
Constructed:	05061983
Permit #:	--
Depth:	112
Record Type:	A
Use:	IC
Type:	--
Aquifer:	--
Lambert X/Y:	--

Water Survey ID: 188511
FIPS #: 097
Twnshp: 45N
Range: 12E
Sec: 33
Plot: --
Owner: ABBOTTS LABORATORY
Driller: DROVER
Constructed: 05001921
Permit #: --
Depth: 380
Record Type: RGC
Use: IC
Type: --
Aquifer: BR
Lambert X/Y: --

Water Survey ID: 188535
FIPS #: 097
Twnshp: 45N
Range: 12E
Sec: 33
Plot: --
Owner: ABBOTT LABORATORIES
Driller: BOYSEN
Constructed: 05061983
Permit #: --
Depth: 118
Record Type: A
Use: IC
Type: --
Aquifer: BR
Lambert X/Y: --

Water Survey ID: 188514
FIPS #: 097
Twnshp: 45N
Range: 12E
Sec: 33
Plot: --
Owner: CYCLONE FENCE CO
Driller: --
Constructed: 07001929
Permit #: --
Depth: 970
Record Type: C
Use: IC
Type: --
Aquifer: --
Lambert X/Y: --
Water Survey ID: 188536

FIPS #:	097
Twnshp:	45N
Range:	12E
Sec:	33
Plot:	--
Owner:	ABBOTT LABORATORIES
Driller:	BOYSEN
Constructed:	0506198
Permit #:	--
Depth:	82
Record Type:	A
Use:	IC
Type:	--
Aquifer:	UN
Lambert X/Y:	--

Water Survey ID: 188537

FIPS #:	097
Twnshp:	45N
Range:	2E
Sec:	33
Plot:	--
Owner:	AMERICAN STEEL & WIRE CO
Driller:	--
Constructed:	00001891
Permit #:	--
Depth:	2004
Record Type:	OG
Use:	IC
Type:	--
Aquifer:	BR
Lambert X/Y:	--

Water Survey ID: 188538

FIPS #:	097
Twnshp:	45N
Range:	12E
Sec:	33
Plot:	--
Owner:	AMERICAN STEEL & WIRE CO
Driller:	--
Constructed:	00001898
Permit #:	--
Depth:	2000
Record Type:	OG
Use:	IC
Type:	--
Aquifer:	BR
Lambert X/Y:	--

Water Survey ID: 188539

FIPS #:		097
Twnshp:	45N	
Range:		12E
Sec:		33
Plot:		--
Owner:		AMERICAN STEEL & WIRE CO #1
Driller:		--
Constructed:		00001923
Permit #:		--
Depth:		2193
Record Type:		OG
Use:		IC
Type:		--
Aquifer:	BR	
Lambert X/Y:		--

Water Survey ID: 189335

FIPS #:		097
Twnshp:	45N	
Range:		12E
Sec:		33
Plot:		--
Owner:		ABBOTT LABORATORY
Driller:		GRAY
Constructed:		00001955
Permit #:		--
Depth:		1600
Record Type:		A
Use:		IC
Type:		--
Aquifer:	BR	
Lambert X/Y:		--

Water Survey ID: 188513

FIPS #:		097
Twnshp:	45N	
Range:		12E
Sec:		33
Plot:		--
Owner:		AMERICAN STEEL & WIRE CO #2
Driller:		--
Constructed:		00001923
Permit #:		--
Depth:		2058
Record Type:		COG
Use:		IC
Type:		--
Aquifer:	BR	
Lambert X/Y:		--

Water Survey ID: 188512

FIPS #:		097
Twnshp:	45N	
Range:		12E
Sec:		33
Plot:		--
Owner:		AMERICAN STEEL & WIRE CO #5
Driller:		--
Constructed:		00001923
Permit #:		--
Depth:		2035
Record Type:		COG
Use:		IC
Type:		--
Aquifer:	BR	
Lambert X/Y:		--

Water Survey ID: 188532

FIPS #:		097
Twnshp:	45N	
Range:		12E
Sec:		33
Plot:		--
Owner:		ABBOTT LABORATORIES
Driller:		BOYSEN
Constructed:		05061983
Permit #:		--
Depth:		119
Record Type:		A
Use:		IC
Type:		--
Aquifer:	BR	
Lambert X/Y:		--

Water Survey ID: 188515

FIPS #:		097
Twnshp:	45N	
Range:		12E
Sec:		33
Plot:		2F
Owner:		AMERICAN STEEL & WIRE CO #4
Driller:		--
Constructed:		06001932
Permit #:		--
Depth:		0
Record Type:		C
Use:		IC
Type:		--
Aquifer:	--	
Lambert X/Y:		3449694,3390056

APPENDIX 11

UST Removal Documentation

OFFICE OF THE ILLINOIS STATE FIRE MARSHAL
Division of Petroleum and Chemical Safety
1035 Stevenson Drive
Springfield, Illinois 62703-4259
(217)785-1020 or (217)785-5878

RECEIVED
AUG 04 1997
DIV. OF PETROLEUM & CHEMICAL SAFETY

FOR OFFICE USE ONLY
Facility # 2023810
Permit # 2120-97 REM

APPLICATION for Permit for REMOVAL of Underground Storage Tanks. (Please type or print clearly)

(1) OWNER OF TANKS - Corporation, partnership, or other business entity: (Must be mailing address)

Naval Training Center, Great Lakes
Name
2703 Sheridan Rd., Suite 120
Street Address
Great Lakes IL 60088
City State Zip
Carlo L. Luciano 847-688-6375
Contact Person Phone

(2) FACILITY - Facility ID # _____
(Name and address where tanks are located:)

Naval Training Center, Public Works Center Bldg. #1600A
Name
1600 Ray St. (Ste DC Bldg. 1-A)
Street Address
Great Lakes IL 60088 Lake
City State Zip County
Carlo Luciano 847-687-6375
Contact Person Phone

(3) TANK(S): Fill in the appropriate blanks for the tank(s) to be removed. Attach additional sheet(s) if more space is needed.

# of Tanks	Capacity in gallons	Product to be stored	Date tank last used	# of Tanks	Capacity in gallons	Product to be stored	Date tank last used
1	10,000	gasoline	8/1/97				
1	10,000	gasoline	8/1/97				
1	6,500	diesel	8/1/97				

(4) CONTAMINATED SITE (complete this section for sites where a release has been reported). Reminder: Releases or suspected releases must be reported to IEMA at (800)782-7860 within 24 hours:

IEMA Incident # _____

(5) CONTRACTOR: I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that all information submitted is true, accurate and complete.

R. W. Collins Co.
Company Name
7225 West 66th Street
Address
Chicago IL 60638
City State Zip
708-458-6868 708-458-6870
Telephone # Fax #
IL IL772 2/9/98
Contractor License # Expiration Date
Ann H. Collins Corp. Sect.
Name of Authorized Representative Title or Position
Ann H. Collins 8/1/97
Signature Date

FOR OFFICE USE ONLY

After receiving an approved permit, the Contractor the permit was issued to or an employee of that contractor (this does not include a subcontractor) shall establish a date certain to perform the UST activity by contacting the Office of the State Fire Marshal, Division of Petroleum and Chemical Safety, by telephone at the Springfield office at (217)785-1020 or (217)785-5878 between 8:30 a.m. and 12:00 p.m., at which time a mutually agreed upon date and time for the UST activity shall be scheduled. THIS PERMIT IS VALID FOR SIX MONTHS FROM THE APPROVAL DATE.

Permission to remove underground storage tank(s) is hereby granted. Such removal shall not commence until 9-4-97.
A seventy-two hour (3 working day) notice to this office is required to confirm final date of removal for our Inspector to be on site.

8-6-97 W. Dale Tanke
Approval Date Approved

2-6-98
Permit Expires

(Complete the back side)

RW COLLINS CO.
7225 W. 66th St., CHICAGO, ILLINOIS 60638 312-767-3030 708-458-6858

CERTIFICATE OF UST DESTRUCTION/DISPOSAL

1. UST OWNER/GENERATOR: Name: Naval Training Ctr Great Lakes
   Address: 2703 Sheridan Rd Suite 120
   Great Lakes IL 60088
   Contact: - Carlo Luciano -
   Phone: 847-688-6375

2. UST SITE LOCATION: Name: Great Lakes Naval Training Ctr
   Address: 1600 Bldg
   North Chicago / Great Lakes IL
   Contact:
   Phone:

3. DATE OF UST REMOVAL: 9/17/97
   DATE OF UST CLEANING: 9/17/97
   DATE OF UST DISPOSAL: 9/17/97

4. USTs REMOVED:

	1	2	3	4	5
a) PREVIOUS CONTENTS:	Diesel	Gasoline	Gasoline		
b) CAPACITY (gallons)	6000	10,000	10,000		
c) SIZE (dia. x length)	96x22	96x27'	96x27'		
d) MATERIAL OF CONSTRUCTION (Steel, FG, etc)	FG	FG	FG		
e) OBSERVED INTEGRITY	good	good	good		
f) LEL BEFORE OPENING	5%	5%	4%		

5. UST CLEANING PROCEDURE:

a) HIGH PRESSURE WASH					
b) SCRAPE AND SHOVEL	✓	✓	✓		

6. DISPOSAL FACILITY
   Scrap Metal Recycler ____, Landfill ✓, Other ____
   a) NAME: Newton Co. Landfill
   b) ADDRESS: 2266 E 500 S
   c) CITY/STATE/ZIP: Brook IN 47922
   d) PHONE NO: 219-394-2806

7. DISPOSAL CERTIFICATION:
   THE AFOREMENTIONED USTs WERE OPENED WITH HYDRAULIC SHEAR/ ~~METAL MUNCHER~~, RENDERING THEM UNFIT FOR FURTHER USE. THEY ARE BEING RECYCLED AS ~~SCRAP METAL~~/DISPOSED IN A LANDFILL IN ACCORDANCE WITH FEDERAL, STATE AND LOCAL REGULATORY REQUIREMENTS.

   BY: Steven Lisiecki
   Signed and sealed this 17th day of September, 1997

Alisa C Anderson

OFFICIAL SEAL
ALISA C ANDERSON
NOTARY PUBLIC, ILLINOIS
MY COMMISSION EXPIRES 8/99

TEC, 1558

STATE OF ILLINOIS

ENVIRONMENTAL PROTECTION AGENCY DIVISION OF LAND POLLUTION CONTROL

P.O. BOX 19276 SPRINGFIELD, ILLINOIS 62794-9276 (217) 782-6761

State Form LPC 62 8/81 IL532-0610

FOR SHIPMENT OF HAZARDOUS AND SPECIAL WASTE

PLEASE TYPE (Form designed for use on elite (12 pitch) typewriter.) **EPA Form 8700-22 (Rev. 6-89)** Form Approved. OMB No. 2050-0039

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: IL7170024577 | Manifest Document No.: 70100

2. Page 1 of 1 | Information in the shaded areas is not required by Federal law, but is required by Illinois law.

GENERATOR

3. Generator's Name and Mailing Address / Location If Different
NAVY PUBLIC WORK CENTER, Code 900
2703 Shea Ann Road, Suite #120
Great Lakes, Illinois, 60088-5600

4. "24 HOUR EMERGENCY AND SPILL ASSISTANCE NUMBERS"

A. Illinois Manifest Document Number: IL 7457846 FEE PAID IF APPLICABLE

B. Illinois Generator's ID: 0971251510104

5. Transporter 1 Company Name: NORTH BRANCH ENVIRONMENTAL
6. US EPA ID Number: ILD983100274
C. Illinois Transporter's ID: 01204
D. 630 529-0240 Transporter's Phone

7. Transporter 2 Company Name
8. US EPA ID Number
E. Illinois Transporter's ID
F. ( ) Transporter's Phone

9. Designated Facility Name and Site Address
BEAVER OIL CO., INC
6037 LENZI AVE
HODGKINS, IL. 60525
10. US EPA ID Number: ILD006441353
G. Illinois Facility's ID: 0311126001
H. Facility's Phone: 708) 354-4040

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. WASTE FLAMMABLE LIQUID N.O.S, 3, UN 1993, PGI, (GASOLINE WATER MIXTURE)	0.0.1	T T	0.0.4.0.0	G	EPA HW Number XX / Authorization Number
b.					EPA HW Number XX / Authorization Number
c.					EPA HW Number XX / Authorization Number
d.					EPA HW Number XX / Authorization Number

J. Additional Description for Materials Listed Above

K. Handling Codes for Wastes Listed Above In Item #14
GALLONS

15. Special Handling Instructions and Additional Information
24 HOUR EMERGENCY RESPONSE 630 529-0240

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, and disposal currently available to me which minimizes the present and future threat to human health and the environment; **OR,** if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Mark S. Hoyer | Signature: Mark S. Hoyer | Date (Month Day Year): 09 1 '79

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: KEN SEBESTA | Signature: Ken Sebesta | Date (Month Day Year): 09 1 79

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Date (Month Day Year)

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.

Printed/Typed Name | Signature | Date (Month Day Year)

This Agency is authorized to require, pursuant to Illinois Revised Statute, 1989, Chapter 111 1/2, Section 1004 and 1021, that this information be submitted to the Agency. Failure to provide this information may result in a civil penalty against the owner or operator not to exceed $25,000 per day of violation. Falsification of this information may result in a fine up to $50,000 per day of violation and imprisonment up to 5 years. This form has been approved by the Forms Management Center.

TO GENERATOR

NOTICE TO GFA CUSTOMER: ACCEPTANCE OF THIS GENERATOR'S WASTE INCLUDES ONLY THOSE SITES IN THE APPROPRIATE PERMITS FOR AND WILL ACCEPT THE WASTE THE GENERATOR IS SHIPPING.

GENERATOR NAME:	GREAT LAKES NAVAL	FACILITY CONTACT:	CARLO LUCCIANO
FACILITY ADDRESS:	TRAINING CENTER	PHONE:	(847) 688-6375
	1600 RAY ST.	ILL EPA GEN#:	0971255004
	GREAT LAKES IL 60088	US EPA ID#:	ILD 1700 24577
BILLING NAME &	VAN HOESEN INDUSTRIES	MANIFEST MAILING	
ADDRESS IF	7N458 GARDEN AVE	ADDRESS IF	SAME
DIFFERENT THAN	ROSELLE, IL 60172	DIFFERENT THAN	
GENERATOR:		GENERATOR:	

NAME OF WASTE: GASOLINE WATER MIXTURE

PROCESS GENERATING WASTE: UST REMOVAL

IS THIS A US EPA HAZARDOUS WASTE(40 CFR 261)? ~~YES~~ ___NO IF YES, LAND DISPOSAL CERTIFICATION WILL BE REQUIRED WITH SHIPMENT.

PLEASE PROVIDE APPLICABLE HAZARDOUS WASTE CODES: D001

BROKER NORTH BRANCH CONTACT: JOHN DAVIDS PHONE# (630) 524-0240

PHYSICAL/CHEMICAL CHARACTERISTICS OF WASTE

PHYSICAL STATE @ 70 F
- ___ SOLID
- ___ SEMI SOLID
- X LIQUID
- ___ POWDER

FLASHPOINT
- ___ (141° F
- X) 140° F
- ___ EXACT

PH 6

OTHER COMPONENTS - TOTAL (PPM)

CYANIDE		PESTICIDES	
SULFIDE		HERBICIDES	
PCB'S		CHLORINE	

CHEMICAL COMPOSITION (TOTAL MUST BE 100%)

GASOLINE	55 %		%
WATER	45 %		%
	%		%

SHIPPING INFORMATION

METHOD OF SHIPMENT:
- X BULK LIQUID
- ___ DRUM (TYPE/SIZE) ___

ANTICIPATED VOLUME:
- 2000 GALLONS
- ___ DRUMS

PER:
- ___ ONE TIME
- ___ WEEK
- ___ MONTH
- ___ QUARTER
- ___ YEAR

IS THIS A DOT HAZARDOUS WASTE? X YES ___NO IF YES, HAZARDOUS CLASS III

PROPER DOT SHIPPING NAME WASTE FLAMMABLE LIQUID

APPROVED BY: ___ DATE: ___ WASTE CLASS: ___

APPROVAL #: ___

HW CODE(S): ___

WASTE CHARACTERISTICS

TABLE 40 CFR 261.24: MAXIMUM CONCENTRATION OF CONTAMINANTS FOR THE TOXICITY CHARACTERISTIC

G = DETERMINATION MADE BY GENERATOR INVESTIGATION / A = DETERMINATION MADE BY ACTUAL ANALYSIS

TO THE GENERATOR: ANY WASTE WHICH CONTAINS CONSTITUENTS IN CONCENTRATIONS ABOVE THE REGULATORY LEVEL SHOWN CONSTITUTES THAT WASTE AS A HAZARDOUS WASTE

CONSTITUENT	REGULATORY LEVEL (mg/L)	ANALYSIS (mg/L)	G	A	CONSTITUENT	REGULATORY LEVEL (mg/L)	ANALYSIS (mg/L)	G	A
ARSENIC	5.0	<5.0			HEXACHLOROBENZENE	0.13	<0.13		
BARIUM	100.0	<100.0			HEXACHLOROBUTADIENE	0.5	<0.5		
BENZENE	0.5	<0.5			HEXACHLOROETHANE	3.0	<3.0		
CADMIUM	1.0	<1.0			LEAD	5.0	<5.0		
CARBON TETRACHLORIDE	0.5	<0.5			LINDANE	0.4	<0.4		
CHLORDANE	0.03	<0.03			MERCURY	0.2	<0.2		
CHLOROBENZENE	100.0	<100.0			METHOXYCHLOR	10.0	<10.0		
CHLOROFORM	6.0	<6.0			METHYL ETHYL KETONE	200.0	<200.0		
CHROMIUM	5.0	<5.0			NITROBENZENE	2.0	<2.0		
O-CRESOL	200.0 (*)	<200.0 (*)			PENTACHLOROPHENOL	100.0	<100.0		
M-CRESOL	200.0 (*)	<200.0 (*)			PYRIDINE	5.0	<5.0		
P-CRESOL	200.0 (*)	<200.0 (*)			SELENIUM	1.0	<1.0		
CRESOL	200.0 (*)	<200.0 (*)			SILVER	5.0	<5.0		
2,4-D	10.0	<10.0			TETRACHLOROETHYLENE	0.7	<0.7		
1,4-DICHLOROBENZENE	7.5	<7.5			TOXAPHENE	0.5	<0.5		
1,2-DICHLOROETHANE	0.5	<0.5			TRICHLOROETHYLENE	0.7	<0.7		
1,1-DICHLOROETHYLENE	0.7	<0.7			2,4,5-TRICHLOROPHENOL	400.0	<400.0		
2,4-DINITROTOLUENE	0.13	<0.13			2,4,6-TRICHLOROPHENOL	2.0	<2.0		
ENDRIN	0.02	<0.02			2,4,5-TP (SILVEX)	1.0	<1.0		
HEPTACHLOR (and epoxide)	0.008	<0.008			VINYL CHLORIDE	0.2	<0.2		

(*): IF O-, M-, AND P-CRESOL CONCENTRATIONS CANNOT BE DIFFERENTIATED, THE TOTAL CRESOL CONCENTRATION IS USED.

TOTAL METAL ANALYSIS

METAL	PPM	METAL	PPM	METAL	PPM	METAL	PPM
ARSENIC		CHROMIUM		SELENIUM		NICKEL	
BARIUM		MERCURY		SILVER		ZINC	
CADMIUM		LEAD		COPPER		IRON	

IS THIS WASTE CLASSIFIED AS A F001-F005, F039, D001, D002, OR D012-D043 WASTE? ✓ YES ___ NO

IF YES, ENTER UNDERLYING HAZARDOUS CONSTITUENTS AND THEIR CONCENTRATIONS: _____

CHECK THE APPROPRIATE TOC CONCENTRATION: ___ ≥ 1% ✓ < 1%

BENZENE WASTE OPERATIONS CERTIFICATION:

DOES THIS WASTE CONTAIN BENZENE WHICH IS REQUIRED TO BE MANAGED AND TREATED IN ACCORDANCE WITH THE PROVISIONS OF 40 CFR 61.342 SUBPART (f)(2)? ✓ YES ___ NO

IF YES, ENTER THE FLOW-WEIGHTED ANNUAL AVERAGE BENZENE CONCENTRATION 1.25 (ppm) AND/OR THE TOTAL ANNUAL BENZENE QUANTITY IN ALL WASTE STREAMS _____ (MG/YEAR)

GENERATOR'S CERTIFICATION:

I HEREBY CERTIFY THAT ALL INFORMATION WHICH I HAVE PROVIDED ABOVE DESCRIBES THE WASTE STREAM THAT IS BEING OR IS PROPOSED TO BE SENT TO BEAVER OIL COMPANY'S HODGKINS, ILLINOIS AND / OR GARY, INDIANA FACILITY. I UNDERSTAND IT IS MY RESPONSIBILITY TO PROPERLY IDENTIFY AND CLASSIFY MY MATERIAL IN ACCORDANCE WITH STATE AND / OR FEDERAL REGULATIONS. I ALSO CERTIFY THAT THE ABOVE INFORMATION IS COMPLETE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

AUTHORIZED SIGNATURE _____ TITLE PLANT ENGR. DATE 09-17-97

BEAVER OIL JOB, INC.

3037 ARNOLD AVENUE • ROSCOE, ILLINOIS 61073
PHONE: (815) 654-4040 • FEDERAL ID # ILD984110881

GENERATOR'S WASTE IDENTIFICATION AND LAND DISPOSAL RESTRICTIONS COMPLIANCE CERTIFICATION

GENERATOR'S NAME: GREAT LAKE NAVAL TRAINING CENTER
ADDRESS: 1600 RAY ST GREAT LAKES IL 60088
ILLINOIS EPA I.D. NUMBER: 0971255004 FEDERAL EPA I.D.: IL0170024577
UNIFORM HAZARDOUS WASTE MANIFEST NUMBER: _____ Line No. 11A 11B 11C 11D

US EPA HAZARDOUS WASTE CODES	TREATMENT SUBCATEGORY (IF APPLICABLE)	US EPA HAZARDOUS WASTE CODES	TREATMENT SUBCATEGORY (IF APPLICABLE)
D001			

WASTEWATER? GROUP WATER ONLY ___ WASTEWATER ___ NON-WASTEWATER X

FOR F001-F005, D001, D012, AND D018-D043, WASTES, PLEASE LIST ALL US EPA HAZARDOUS CONSTITUENTS BELOW: (PLEASE REFER TO 40 CFR 268.48, TABLE UTS (ATTACHED))

PLEASE LIST ANY WASTE CODES SUBJECT TO TREATMENT UNDER 40 CFR 268.40: _____

PLEASE CHECK BELOW IF YOUR WASTE MEETS ANY OF THE FOLLOWING PROHIBITIONS:
___ pH< 2.0 ___ Halogenated Organic Carbon >1000 ppm ___ PCBs>50 ppm
IS THIS WASTE A PROHIBITION UNDER RCRA SECTION 3004(d) OR CALIFORNIA LIST WASTES(CFR 268.32(a))? (CHECK ONE) ___ YES X NO
IS THIS WASTE A HAZARDOUS WASTE DEBRIS UNDER 40 CFR 268.45? ___ YES X NO
ARE THE CONSTITUENTS OF THIS WASTE PRESENT IN GREATER CONCENTRATIONS THAN ALLOWED BY 40 CFR 268.48, TABLE UTS (PAGES 8-4)? ___ YES X NO

IF A RESTRICTED WASTE HAS NOT BEEN REGULATED BY 40 CFR 268.40 OR 268.45, PLEASE COMPLETE THE FOLLOWING:

USEPA HAZARDOUS WASTE CODE	SUBCATEGORY (IF APPLICABLE)	APPROPRIATE TREATMENT STANDARD	ALTERNATIVE TREATMENT TECHNOLOGY

ALL ABOVE DETERMINATIONS WERE MADE USING:
X KNOWLEDGE OF THE PROCESS PRODUCING THE WASTES, RAW MATERIALS ENTERING AND BYPRODUCTS LEAVING THE PROCESS
___ RESULTS OF ANALYSES PERFORMED ON THE WASTES USING SUBMITTED FOR TREATMENT

WASTE ANALYSIS AVAILABLE? YES___ NO X IF YES, PLEASE ATTACH A COPY OF THE ANALYSIS.

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this petition and all attached documents, and that, based on my inquiry of those individuals immediately responsible for obtaining the information, I believe that submitted information is true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment.

Signature: _____ Company Name: GT LKS Naval Training Center
Printed Name: MARK S. HOYER Date: 9/17/97

BEAVER OIL COMPANY, INC.

40 CFR 268.40, Table UTS - Universal Treatment Standards (effective [illegible])
THE WASTE CODES LISTED ON PAGE [illegible] OF THE LAND DISPOSAL RESTRICTIONS OF 40 CFR 268 SUBPART C, AS REQUIRED BY 40 CFR 268.7 AND 268.9, THE ABOVE MENTIONED WASTE CODES ARE REQUIRED TO BE ANALYZED TO DETERMINE IF THE WASTE IS RESTRICTED, EXCEPT D001 WASTES WHICH CAN BE TREATED BY OMEGA(S) (40 CFR 268.42). THE CONSTITUENTS OF THESE WASTES ARE PRESENT IN GREATER CONCENTRATIONS THAN THE FOLLOWING TABLE (40 CFR 268.43) OR EXCEED THE WASTE SPECIFIC PROHIBITION CONCENTRATIONS REQUIRED IN 40 CFR 268.32 (CALIFORNIA LIST WASTES) OR RCRA SECTION 3004 (d). GENERATORS ARE REQUIRED TO IDENTIFY THE CONSTITUENTS IN F001-F005, F039, D001 (EXCEPT AS STATED ABOVE), D002, AND D012-D043 WASTES.

Constituent	Wastewater Standard (mg/L)	Non-WW Standard (mg/kg)	Constituent	Wastewater Standard (mg/L)	Non-WW Standard (mg/kg)
Acenaphthylene	0.059	3.4	Chlorobenzilate	0.10	NA
Acenaphthene	0.059	3.4	2-Chloro-1,3-butadiene	0.057	0.28
Acetone	0.28	160	Chlorodibromomethane	0.057	15
Acetonitrile	5.6	1.8	Chloroethane	0.27	6.0
Acetophenone	0.010	9.7	bis (2-Chloroethoxy)methane	0.036	7.2
2-Acetylaminofluorene	0.059	140	bis (2-Chloroethyl) ether	0.033	6.0
Acrolein	0.29	NA	Chloroform	0.046	6.0
Acrylamide	19	23	bis(2-Chloroisopropyl)ether	0.055	7.2
Acrylonitrile	0.24	84	p-Chloro-m-cresol	0.018	14
Aldrin	0.021	0.066	2-Chloroethyl vinyl ether	0.062	NA
4-Aminobiphenyl	0.13	NA	Chloromethane (Methyl chloride)	0.19	30
Aniline	0.81	14	2-Chloronaphthalene	0.055	5.6
Anthracene	0.059	3.4	2-Chlorophenol	0.044	5.7
Aramite	0.36	NA	3-Chloropropylene	0.036	30
alpha-BHC	0.00014	0.066	Chrysene	0.059	3.4
beta-BHC	0.00014	0.066	o-Cresol	0.11	5.6
delta-BHC	0.023	0.066	m-Cresol	0.77	5.6
gamma-BHC	0.0017	0.066	p-Cresol	0.77	5.6
Benzene	0.14	10	Cyclohexanone	0.36	0.75
Benz(a)anthracene	0.059	3.4	1,2-Dibromo-3-chloropropane	0.11	15
Benzal chloride	0.055	6.0	Dibutyl phthalate	0.028	15
Benzo(b)fluoranthene	0.11	6.8	Dibromomethane	0.11	15
Benzo(k)fluoranthene	0.11	6.8	(2,4-Dichlorophenoxy)acetic acid)	0.72	10
Benzo(g,h,i)perylene	0.0055	1.8	o,p'-DDD	0.023	0.087
Benzo(a)pyrene	0.061	3.4	p,p'-DDD	0.023	0.087
Bromodichloromethane	0.35	15	o,p'-DDE	0.031	0.087
Methyl bromide	0.11	15	p,p'-DDE	0.031	0.087
4-Bromophenyl phenyl ether	0.055	15	o,p'-DDT	0.0039	0.087
n-Butyl alcohol	5.6	2.6	p,p'-DDT	0.0039	0.087
Butyl benzyl phthalate	0.017	28	Dibenz(a,h)anthracene	0.055	8.2
2-sec-Butyl-4,6-dinitrophenol	0.066	2.8	Dibenz(a,e)pyrene	0.061	NA
Carbon disulfide	3.8	4.8 (TCLP)	m-Dichlorobenzene	0.036	6.0
Carbon tetrachloride	0.057	6.0	o-Dichlorobenzene	0.088	6.0
Chlordane (alpha and gamma)	0.0033	0.26	p-Dichlorobenzene	0.090	6.0
p-Chloroaniline	0.46	16	Dichlorodifluoromethane	0.23	7.2
Chlorobenzene	0.057	6.0	1,1-Dichloroethane	0.059	6.0

TCLP CONCENTRATIONS GIVEN IN mg/L.

BEAVER OIL COMPANY, INC.

40 CFR 268.48: Table UTS - Universal Treatment Standards (September, 1994)

	Constituent	Wastewater Standard (mg/L)	Non-WW Standard (mg/kg)		Constituent	Wastewater Standard (mg/L)	Non-WW Standard (mg/kg)
	1,2-Dichloroethane	0.21	6.0		Ethyl methacrylate	0.14	160
	1,1-Dichloroethylene	0.025	6.0		Ethylene oxide	0.12	NA
	trans-1,2-Dichloroethylene	0.054	30		Famphur	0.017	15
	2,4-Dichlorophenol	0.044	14		Fluoranthene	0.068	3.4
	2,6-Dichlorophenol	0.044	14		Fluorene	0.059	3.4
	1,2-Dichloropropane	0.85	18	*	Heptachlor	0.0012	0.066
	cis-1,3-Dichloropropylene	0.036	18		Heptachlor epoxide	0.016	0.066
	trans-1,3-Dichloropropylene	0.036	18		Hexachlorobenzene	0.055	10
	Dieldrin	0.017	0.13		Hexachlorobutadiene	0.055	5.6
	Diethyl phthalate	0.20	28		Hexachlorocyclopentadiene	0.057	2.4
	2-4-Dimethyl phenol	0.036	14		HxCDDs	0.000063	0.001
	Dimethyl phthalate	0.047	28		HxCDFs	0.000063	0.001
	Di-n-butyl phthalate	0.057	28		Hexachloroethane	0.055	30
	1,4-Dinitrobenzene	0.32	2.3		Hexachloropropylene	0.035	30
	4,6-Dinitro-o-cresol	0.28	160		Indeno (1,2,3-c,d) pyrene	0.0055	3.4
	2,4-Dinitrophenol	0.12	160		Iodomethane	0.19	65
	2,4-Dinitrotoluene	0.32	140		Isobutyl alcohol	5.6	170
	2,6-Dinitrotoluene	0.55	28		Isodrin	0.021	0.066
	Di-n-octyl phthalate	0.017	28		Isosafrole	0.081	2.6
	p-Dimethylaminoazobenzene	0.13	NA		Kepone	0.0011	0.13
	Di-n-propylnitrosamine	0.40	14		Methacrylonitrile	0.24	84
	1,4-dioxane	NA	170		Methanol	5.6	0.75(TCLP)
	Diphenylamine	0.92	13		Methapyrilene	0.081	1.5
	Diphenylnitrosamine	0.92	13		Methoxychlor	0.25	0.18
	1,2-Diphenylhydrazine	0.087	NA		3-Methylcholanthrene	0.0055	15
	Disulfoton	0.017	6.2		4,4-Methylene bis 2-chloroaniline	0.50	30
	Endosulfan I	0.023	0.066		Methylene chloride	0.089	30
	Endosulfan II	0.029	0.13		Methyl ethyl ketone	0.28	36
	Endosulfan sulfate	0.029	0.13		Methyl isobutyl ketone	0.14	33
	Endrin	0.0028	0.13		Methyl methacrylate	0.14	160
	Endrin aldehyde	0.025	0.13		Methyl methanesulfonate	0.018	NA
	Ethyl acetate	0.34	33		Methyl parathion	0.014	4.6
	Ethyl cyanide (Propanenitrile)	0.24	360		Naphthalene	0.059	5.6
	Ethyl benzene	0.057	10		2-Naphthylamine	0.52	NA
	Ethyl ether	0.12	160		o-Nitroaniline	0.27	14
	bis(2-Ethylhexyl) phthalate	0.28	28		p-Nitroaniline	0.028	28

TCLP CONCENTRATIONS GIVEN IN mg/L.

BEAVER OIL COMPANY, INC.

40 CFR 268.48 Table UTS - Universal Treatment Standards, Supplement, 1994

Constituent	Wastewater Standard (mg/L)	Non-WW Standard (mg/kg)	Constituent	Wastewater Standard (mg/L)	Non-WW Standard (mg/kg)
Acenaphthylene	0.059	3.4	Tetrachloroethylene	0.056	6.0
Acetonitrile	5.6	38	2,3,4,6-Tetrachlorophenol	0.030	7.4
Acetophenone	0.010	19	Toluene	0.080	10
2-Acetylaminofluorene	0.059	140	Toxaphene	0.0095	2.6
Acrolein	0.29	23	Tribromomethane (Bromoform)	0.63	10
Acrylamide	19	23	1,2,4-Trichlorobenzene	0.055	19
Acrylonitrile	0.24	84	1,1,1-Trichloroethane	0.054	6.0
Aldrin	0.021	0.066	1,1,2-Trichloroethane	0.054	6.0
Allyl alcohol	2.9	97	Trichloroethylene	0.054	6.0
Allyl chloride	0.036	36	Trichlorofluoromethane	0.020	30
4-Aminobiphenyl	0.13	35	2,4,5-Trichlorophenol	0.18	7.4
Aniline	0.014	14	2,4,6-Trichlorophenol	0.035	7.4
Anthracene	0.059	3.4	1,2,3-Trichloropropane	0.85	30
Aramite	0.36	19	1,1,2-Trichloro-1,2,2-TFE	057	30
alpha-BHC	0.00014	0.066	tris-(2,3-Dibromopropyl)phosphate	0.11	0.10
beta-BHC	0.00014	0.066	Vinyl acetate	0.27	33
delta-BHC	0.023	0.066	Xylenes - mixed isomers	0.32	30
gamma-BHC (Lindane)	0.0017	0.066	Antimony	1.9	3.1(TCLP)
Bromodichloromethane	0.35	15	Arsenic	1.4	5.0(TCLP)
Bromomethane	0.11	15	Barium	1.2	7.6(TCLP)
4-Bromophenyl phenyl ether	0.055	15	Beryllium	0.82	0.014(TCLP)
n-Butyl alcohol	5.6	2.6	Cadmium	0.69	0.19(TCLP)
Butylate	0.042	1.4	Chromium (Total)	2.77	0.86(TCLP)
Butylbenzyl phthalate	0.017	28	Cyanides (Total)	1.2	590
2-sec-Butyl-4,6-dinitrophenol (Dinoseb)	0.066	28	Cyanides (Amenable)	0.86	30
Carbaryl	0.006	0.14	Fluoride	35	NA
Carbenzadim	0.056	1.4	Lead	0.69	0.37(TCLP)
Carbofuran	0.006	0.14	Mercury - Non WW from Retort	NA	0.20(TCLP)
Carbon disulfide	3.8	3.8	Mercury - All others	0.15	0.025(TCLP)
Carbon tetrachloride	0.057	6.0	Nickel	3.98	5.3(TCLP)
Carbosulfan	0.028	1.4	Selenium	0.82	5.16(TCLP)
Chlordane	0.0033	0.13	Silver	0.43	0.30(TCLP)
p-Chloroaniline	0.46	16	Sulfide	14	NA
Chlorobenzene	0.057	6.0	Thallium	1.4	0.078(TCLP)
Chlorobenzilate	0.10	9.0	Vanadium	4.3	1.6(TCLP)
2-Chloro-1,3-butadiene	0.057	0.28	Zinc	2.61	4.3(TCLP)

TCLP CONCENTRATIONS GIVEN IN mg/L

DEPARTMENT OF THE NAVY
NAVY PUBLIC WORKS CENTER
AND
ENGINEERING FIELD ACTIVITY, MIDWEST
BUILDING 1-A
2703 SHERIDAN ROAD, SUITE #120
GREAT LAKES, ILLINOIS 60088-5600

5090
Ser N45/000506
24 SEP 1997

Office of the State Fire Marshal
Division of Petroleum and Chemical Safety
1035 Stevenson Drive
Springfield, IL 62703-4259

Ladies and Gentlemen:

This is to inform your office that Tank No's 12M-T-1, 12M-T-2, and 12M-T-3 were been removed on Sept. 17, 1997. The tank removal was overseen by a representative from your office, Mr. George Pinkowski.

Point of Contact for this office is Carlo Luciano at (847) 688-5999, X-50.

Sincerely,

MARK SCHULTZ
Head, Environmental Department
By direction of
the Commanding Officer

Enclosure: (1) Notification for Underground Storage Tanks, Permit No. 2120-97

IL Notification for Underground Storage Tanks

OFFICE USE ONLY

ID NUMBER

DATE RECEIVED

- A separate form must be used for each site.
- If you have more than five tanks, photocopy pages 1-5 and attach to this notification form.
- Please type, or print in ink; the signature under "certification" (section IX) must be signed in ink.

Facility I.D. # (if known) _____ Owner I.D. # (if known) _____

TYPE OF NOTIFICATION

☐ New Facility ☒ Amended (Changes/Corrections/Additional Tanks) Mark all that apply:

_____ Owner Address Change (this facility only)
_____ Owner Address Change (all facilities owned)
_____ New Owner
X Tank(s) Removed (Permit # 2120-97)
_____ Other _____

_____ Tanks Relined (Permit # _____)
_____ Tanks Installed (Permit # _____)
_____ Tanks Upgraded/Repaired (Permit # _____)
_____ Abandonment Notice (Permit # _____)

I. Ownership of Tank(s)

Owner Name (Corp., Individual., Public Agency or other Entity)
NAVAL TRAINING CENTER

Mailing Address
2703 SHERIDAN RD.,Bldg.1A,Suite 120

City: Great Lakes State: IL Zip: 60088

County: Lake

Contact Name: Carlo Luciano (Area Code) Phone: (847)688-5999 x-50

II. Location of Tank(s) (If same as Section I, Mark box) ☒

Facility Name or Company Site Identifier, as applicable

Street Address or State Road, as applicable (exact address)

City State Zip

County

Contact Name (Area Code) Phone

III. TYPE OF OWNERSHIP (mark all that apply)

☒ Current Owner of Tanks
Date Purchased ___/___/74
☐ Former Owner
☐ Ownership Uncertain _____
☐ Other _____

IV. TYPE OF FACILITY

Type of Facility: (Circle correct code)

A. Service Station
B. Bulk Plant
C. Petroleum Distributor
D. Convenience Store
E. Auto Dealer
F. Commercial/Retail
G. Industrial/Manufacturing
H. Private Institution
I. Residence (Non-Farm)
J. Farm
K. Airport
L. Marina
M. City/Town
N. County
O. State
(P.) Federal (Military)
Q. Federal (Non-Military)
R. School District
S. Port District
T. Utility District
U. Fire Dept.
V. Other Special Service Districts
W. Other _____ (Please Specify)

V. Description of Underground Storage Tanks (Complete entire column for each tank)

Tank Identification Number	Tank No.___	Tank No.___	Tank No.___	Tank No.___	Tank No.___
1. Status of Tanks	12M-T-1	12M-T-2	12M-T-3		
Currently in use	☐	☐	☐	☐	☐
Temporarily out of use (Section 2 must be completed)	☐	☐	☐	☐	☐
Permanently out of use (Section 2 must be completed)	☐	☐	☐	☐	☐
Removed (Section 3 must be completed)	☒	☒	☒	☐	☐
Abandoned in place (Section 4 must be completed)	☐	☐	☐	☐	☐
2. Tanks Permanently & Temporarily Out of Use					
Estimated date last used	/ /	/ /	/ /	/ /	/ /
3. Tanks Removed					
Date tank(s) removed	09/17/97	09/17/97	09/17/97	/ /	/ /
Estimated date last used	08/01/97	08/01/97	08/01/97	/ /	/ /
4. Abandoned in Place					
Date tanks filled	/ /	/ /	/ /	/ /	/ /
Tank filled with:					
Inert materials (sand, etc.)	☐	☐	☐	☐	☐
Water	☐	☐	☐	☐	☐
Unknown	☐	☐	☐	☐	☐
Other (please specify)					
5. Age of Tank					
Date tank installed	/ /74	/ /74	/ /74	/ /	/ /
Date product placed in tank	/ /74	/ /74	/ /74	/ /	/ /
6. Estimated Total Capacity (gallons)	10,000	10,000	6,500		
7. Substances Currently or Last Stored:					
Petroleum					
Diesel	☐	☐	☒	☐	☐
Kerosene	☐	☐	☐	☐	☐
Gasoline	☒	☒	☐	☐	☐
Used oil	☐	☐	☐	☐	☐
Other (Please specify)					
Petroleum Use (if applicable):					
Heating oil (consumptive use on premises)	☐	☐	☐	☐	☐
Back-up generator	☐	☐	☐	☐	☐
Other (please specify)	Fuel-Vehicles	Fuel-Vehicles	Fuel-Vehicles		
Hazardous Substance:					
Name of principal CERCLA substance					
Chemical Abstract Service (CAS No)					

VI. Description of Underground Storage Tanks (Complete entire column for each tank)

Tank Identification Number	Tank No. 12M-T-1	Tank No. 12M-T-2	Tank No. 12M-T-3	Tank No.	Tank No.
1. Material of Construction (mark all that apply)					
Asphalt coated or bare steel	☐	☐	☐	☐	☐
Cathodically protected steel	☐	☐	☐	☐	☐
Dielectric coated steel	☐	☐	☐	☐	☐
Composite (steel with fiberglass)	☐	☐	☐	☐	☐
Fiberglass reinforced plastic	X	X	X	☐	☐
Lined interior	☐	☐	☐	☐	☐
Double-walled	☐	☐	☐	☐	☐
Secondary containment	☐	☐	☐	☐	☐
Steel STI-P3	☐	☐	☐	☐	☐
Other (please specify)					
2. Piping Materials (mark all that apply)					
Bare steel	☐	☐	☐	☐	☐
Galvanized steel	☐	☐	☐	☐	☐
Fiberglass reinforced plastic	X	X	X	☐	☐
Cathodically protected	☐	☐	☐	☐	☐
Double-walled	☐	☐	☐	☐	☐
Secondary containment	☐	☐	☐	☐	☐
Dielectric coating	☐	☐	☐	☐	☐
Other (please specify)					
3. Piping Type (mark all that apply)					
European suction	☐	☐	☐	☐	☐
American suction	☐	☐	☐	☐	☐
Pressure	☐	☐	☐	☐	☐
Gravity feed	☐	☐	☐	☐	☐
Other (please specify)					

Tank Identification Number	Tank No. 12M-T-1		Tank No. 12M-T-2		Tank No. 12M-T-3		Tank No.		Tank No.	
4. Release Detection (Mark all that apply)	Tank	Piping	Tank	Piping	Tank	Piping	Tank	Piping	Tank	Piping
Manual tank gauging	X		X		X					
Inventory controls										
Automatic tank gauging										
Vapor monitoring										
Groundwater monitoring										
Interstitial monitoring double-walled tank/piping										
Interstitial monitoring /secondary containment										
Tank tightness testing										
Automatic line leak detector										
Line tightness testing										
Automatic shut-off device										
Continuous alarm system										
No requirements (european suction)										
Other (please specify)	D-Tech System		D-Tech System		D-Tech System					
5. Corrosion Protection (mark all that apply)	Tank	Piping	Tank	Piping	Tank	Piping	Tank	Piping	Tank	Piping
Cathodic protection										
Impressed current										
Secondary containment										
Exterior coating										
Fiberglass reinforced plastic	X	X	X	X	X	X				
Double-walled										
Interior lining										
Other (please specify)										
6. Spill & Overfill Prevention (Mark all that apply)										
Overfill device										
Automatic shut-off										
Overfill Alarm										
Ball float valve										
Spill containment device	X		X		X					
Other (Please specify)	High Level Alarm		High Level Alarm		High Level Alarm					

VII. Certification of Compliance (Complete for all new, upgraded and relined tanks at this location)

Installation (mark all that apply)					
Installer certified by tank and piping manufacturers	☐	☐	☐	☐	☐
Installer certified or licensed by implementing agency	☐	☐	☐	☐	☐
Installer registered by implementing agency	☐	☐	☐	☐	☐
Installer is the owner of the tank(s)	☐	☐	☐	☐	☐
Installation inspected by a registered engineer	☐	☐	☐	☐	☐
Installation inspected & approved by implementing agency	☐	☐	☐	☐	☐
Manufacturer's installation checklists have been completed	☐	☐	☐	☐	☐
Another method allowed by state agency (please specify)	_____	_____	_____	_____	_____

OATH: I certify the information that is provided in section VII is true to the best of my knowledge, and certify that the installation was performed in accordance with all applicable state and federal laws and regulations. (THIS SECTION MAY ONLY BE COMPLETED BY THE CONTRACTOR. SEPARATE OATH MUST BE SUBMITTED FOR EACH ACTIVITY PERFORMED BY DIFFERENT CONTRACTOR.)

Tank No. _____ Permit No. _____

Contractor: _____ (Name) _____ (Signature (must be original)) _____ (Date)

_____ (Position) _____ (Company)

VIII. Financial Responsibility

Mark all that apply:

☐ Self-Insurance ☐ Guarantee ☐ Certificate of Deposit

☐ Commercial Insurance ☐ Surety Bond ☐ Trust Fund

☐ Risk Retention Group ☐ Letter of Credit ☐ Other Method Allowed

(please specify) _____

IX. Certification (Read and sign after completing all sections)

I certify under penalty of law that I have personally examined and am familiar with the information submitted in this and all attached documents, and that based on my inquiry of those immediately responsible for obtaining the information, I believe that the submitted information is true, accurate and complete.

MARK SCHULTZ/Head Envtl. Dept. — Name and official title of owner or owner's authorized representative (print)

Mark Schultz — Signature (must be original)

9/22/97 — Date Signed

DEPARTMENT OF THE NAVY
NAVY PUBLIC WORKS CENTER
AND
ENGINEERING FIELD ACTIVITY, MIDWEST
BUILDING 1-A
2703 SHERIDAN ROAD, SUITE #120
GREAT LAKES, ILLINOIS 60088-5600

5090
Ser N45/ 000533
06 OCT 1997

Illinois Environmental Protection Agency
LUST Section
Division of Remediation Management
Bureau of Land
2200 Churchill Road
Springfield, IL 62794-9276

Ladies and Gentlemen:

SUBJECT: NAVAL TRAINING CENTER, GREAT LAKES, BLDG. #1600A
INCIDENT # 971739

Attached is the 20 Day Certification for Leaking Underground Storage Tank (LUST) for the subject building.

During removal of the USTs 12M-T-1, 12M-T-2, and 12M-T-3 on 17 Sep 97, the tanks were all found to be in good condition and not leaking. Soil from the excavation was contaminated with petroleum. Later, it was discovered that the piping runs between the tanks and the dispensing area leaked causing the contamination. This Command is in the process of preparing the 45 Day and Corrective Action reports for this site.

Point of Contact for this office is Carlo Luciano at (847) 688-5999 x-50.

Sincerely,

Mark Schultz

MARK SCHULTZ
Head, Environmental Department
By direction of
the Commanding Officer

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
20 Day Certification

A. Site Identification

IEMA Incident # (6 digit): 971739 IEPA Generator # (10 digit): 0971255004

Site Name: Bldg. 1600A

Site Address (Not a P.O. Box): Naval Training Center Great Lakes

City: Great Lakes County: Lake

B. Certification

1. I am/we are the owner and operator of the underground storage tank system(s) from which a release was reported under the IEMA incident correctly identified above;

2. As much of the regulated substance as necessary to prevent further release to the environment has been removed;

3. There has been a visual inspection of any above ground releases or exposed below ground releases;

4. Further migration of the released substance into surrounding soils and groundwater has been prevented;

5. Monitoring of any fire and safety hazards posed by vapors or free product that have migrated from the UST excavation zone and entered subsurface structures (such as sewers or basements) will continue;

6. Hazards posed by contaminated soils that are excavated or exposed as a result of release confirmation, site investigation, abatement or corrective action activities have been remedied;

7. If the treatment remedies included treatment or disposal of soils, the owner/operator has complied with 35 Ill. Adm. Code Parts 722, 724, 725, and 807 through 815;

8. Measurement for the presence of a release has been conducted where contamination was most likely to be present at the UST site;

9. In selecting sample types, sample locations and measurement methods, the nature of the stored substance, type of backfill, depth to groundwater and other factors as appropriate for identifying the presence and source of the release have been considered;

10. The investigations to determine the possible presence of free product, and begin free product removal as soon as possible, if applicable, in accordance with 35 Ill. Adm. Code Section 731.164 or 732.203:

C. Signatures

Owner

Name: MARK SCHULTZ

Title: Head, Environmental Dept.

Address: NTCGL, Great Lakes, IL.

Phone: (847) 688-5999 x-40

Signature: Mark Schultz

Date: 10-2-97

Operator

Name: _____

Title: _____

Address: _____

Phone: _____

Signature: _____

Date: _____

Consultant

Firm: _____

Contact: _____

Title: _____

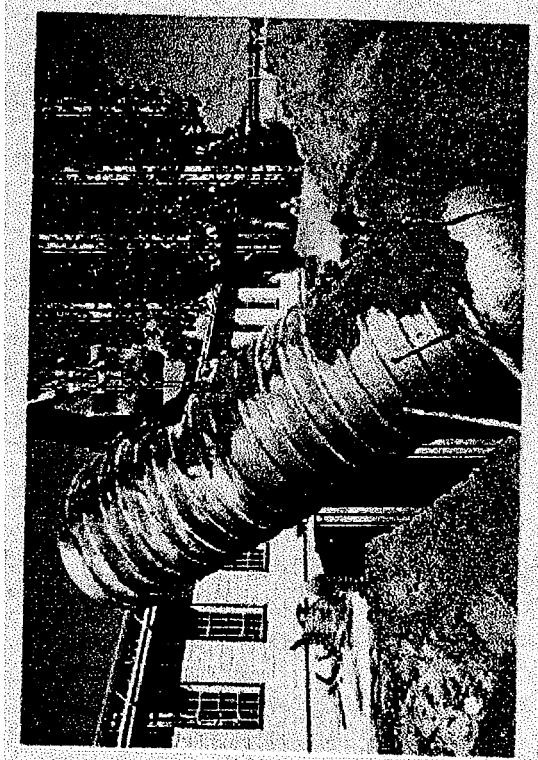
Address: _____

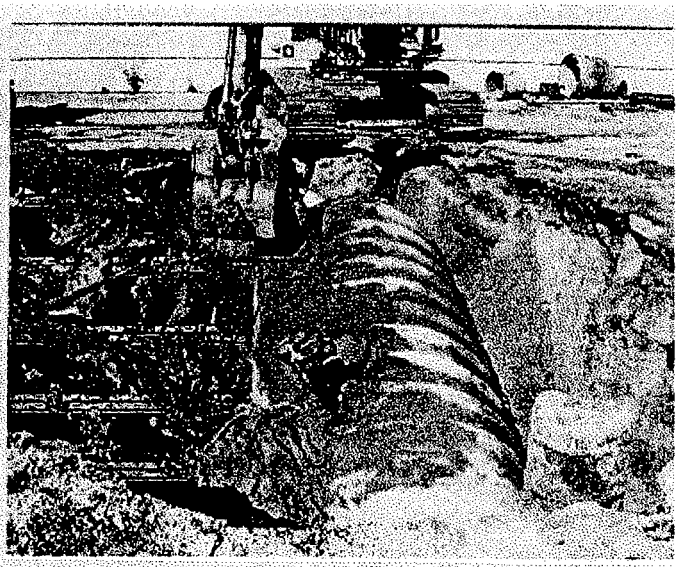
_____

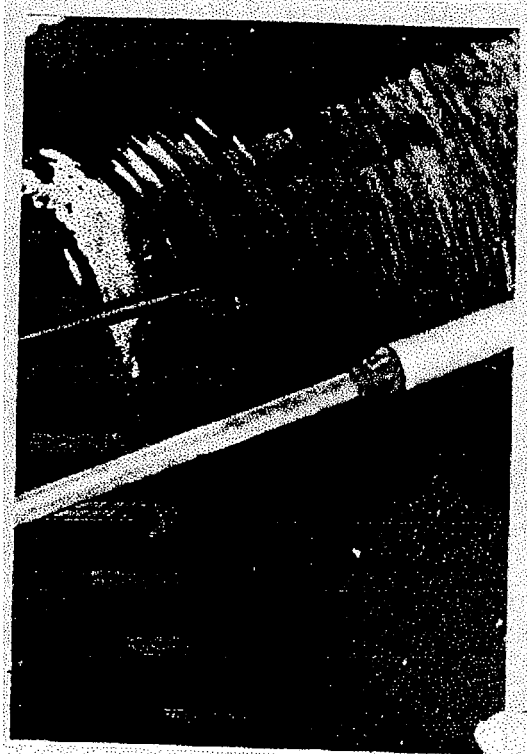
Phone: _____

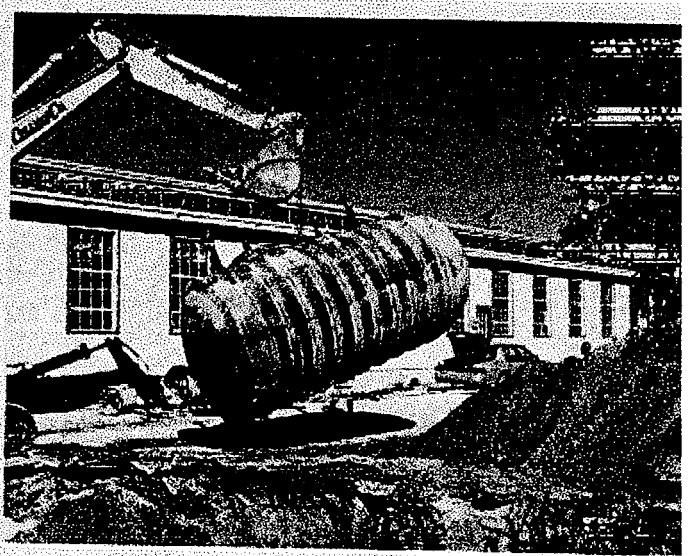
Signature: _____

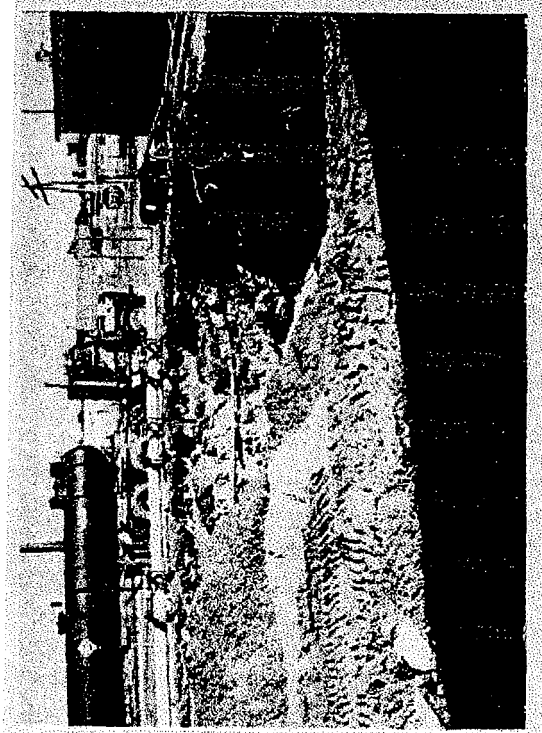
Date: _____

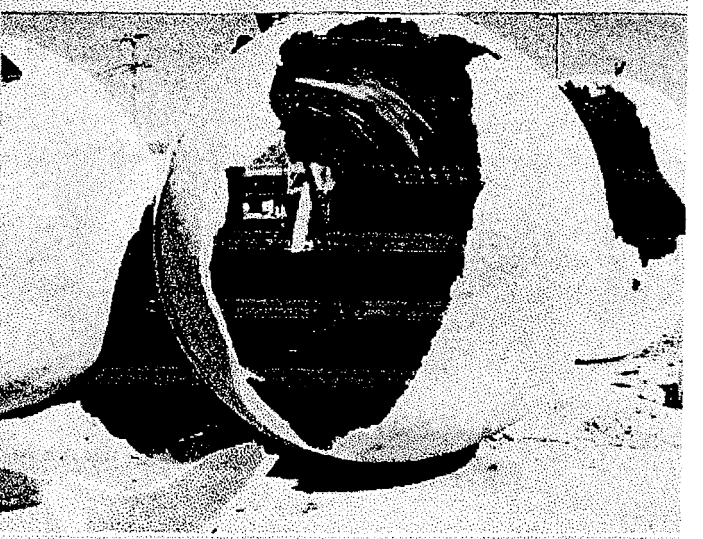


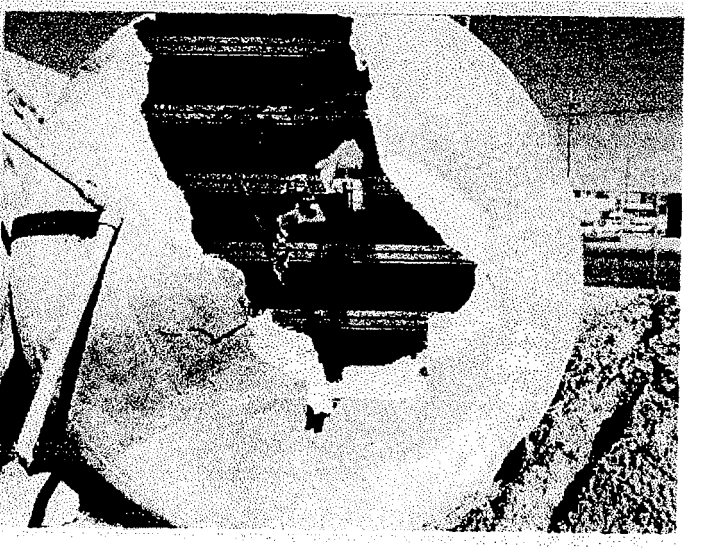


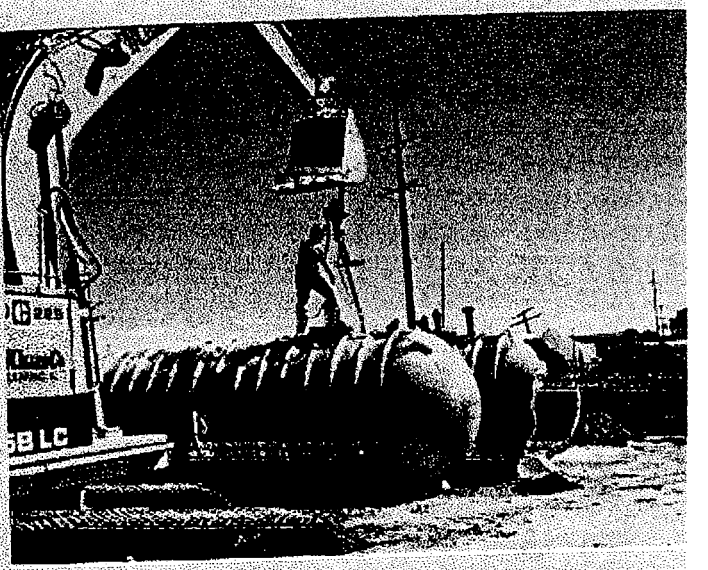


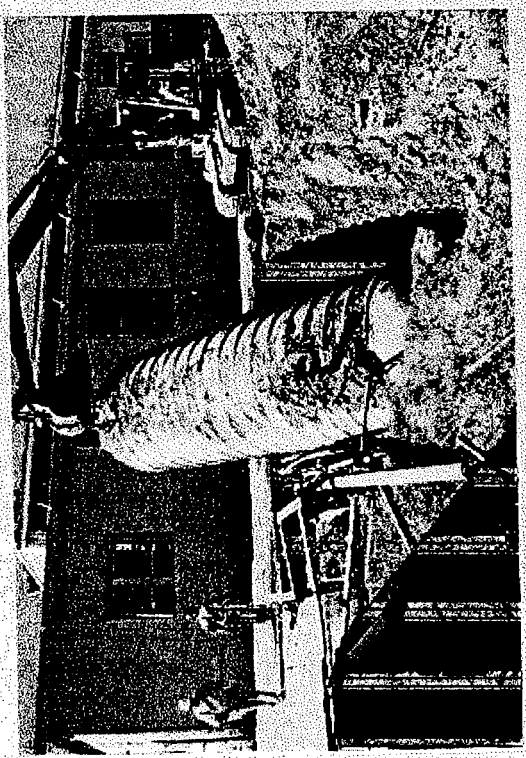


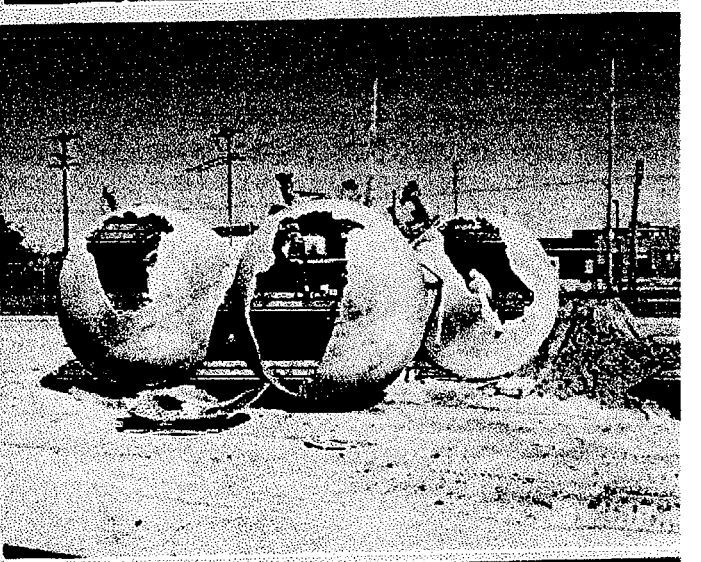


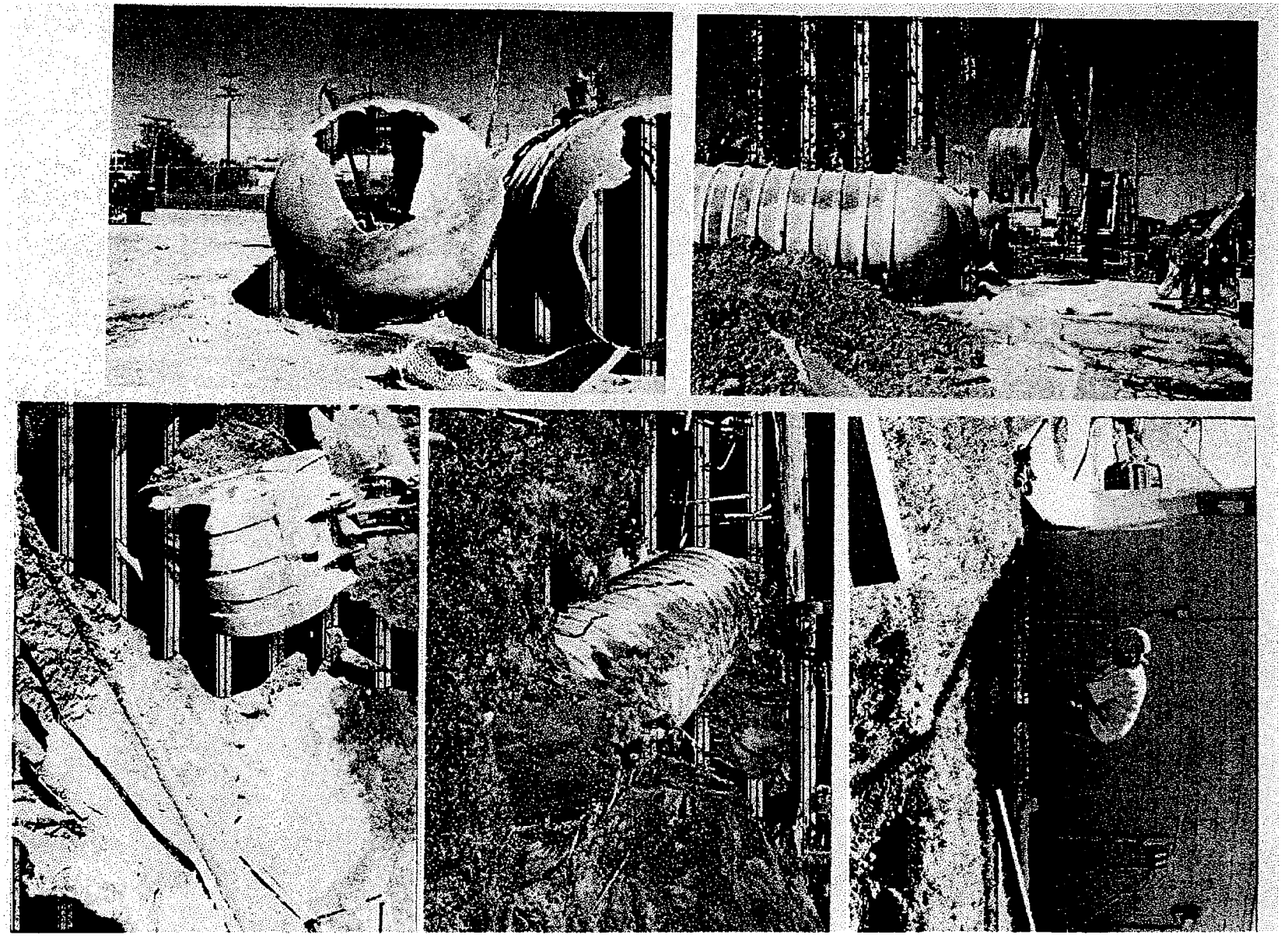


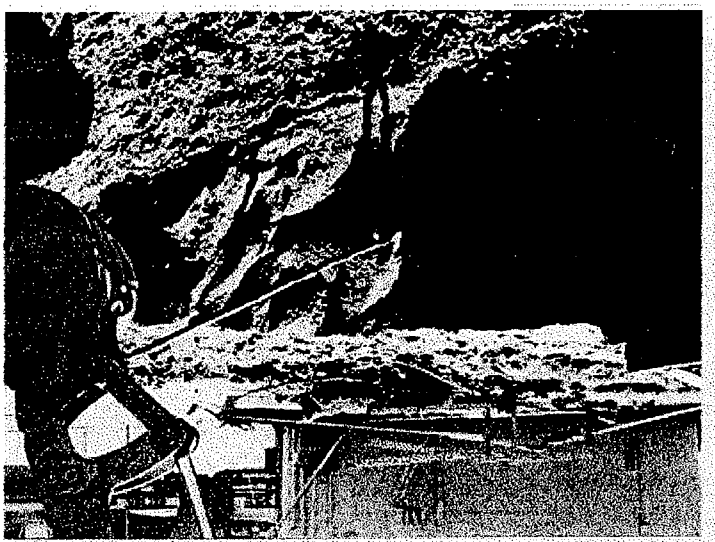


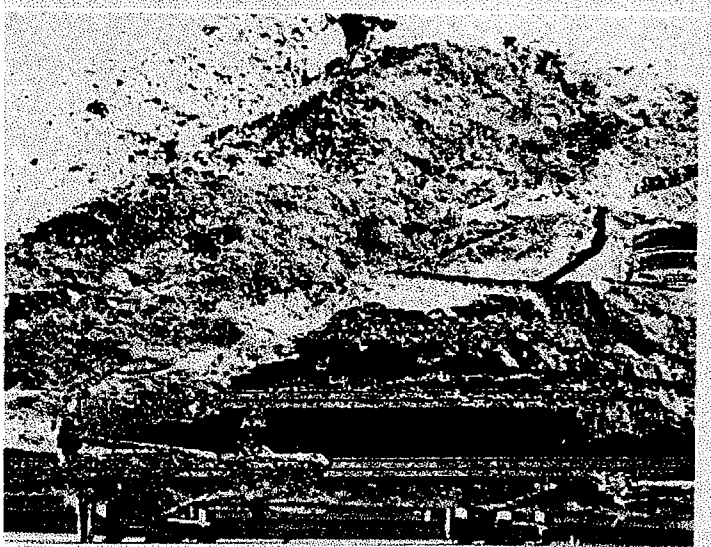


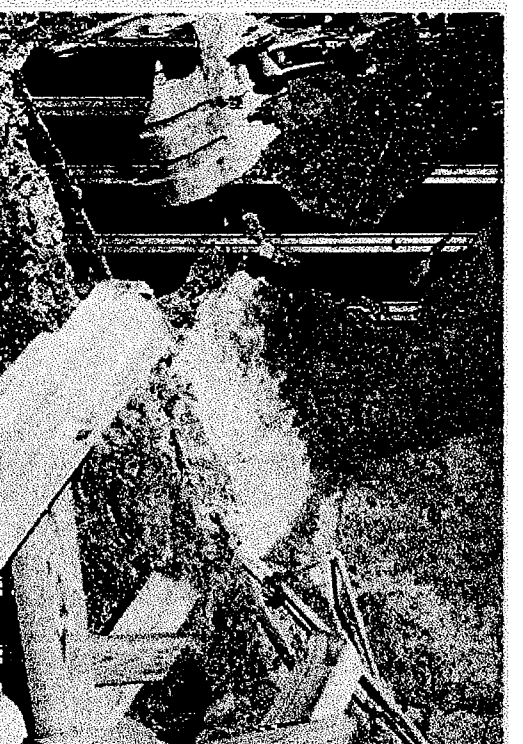












APPENDIX 12

Site Classification Completion Report
And
45-Day Report

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
Site Classification Completion Report

A. Site Identification

IEMA Incident # (6 digit): 971739 IEPA Generator # (10 digit): 0971255004

Site Name: United States Navy, Great Lakes Training Center

Site Address (Not a P.O. Box): Building 1600 A, Ray Street

City: Great Lakes County: Lake

B. Site Information

1. Is this an amended report? Yes___ No_X_

2. Has a Site Classification Work Plan been approved? Yes___ No_X_
   Date of approval letter: _____

C. Site Classification Summary

1. This site is classified as:

NO FURTHER ACTION	_____	(applies to methods 1, 2 and pathway exclusion)
LOW PRIORITY	_____	(applies to methods 1 and 2 only)
HIGH PRIORITY	X	(applies to methods 1, 2 and pathway exclusion)

2. The method of site classification used was:

Method 1	X	
Method 2	_____	
Exposure Pathway Exclusion	_____	(proceed to Section J)

D. Site Classification by Methods 1 or 2

1. Is the UST(s) system located within the minimum or maximum setback zone or regulated recharge area of a potable water supply well? Yes___ No_X_

2. After completing Early Action measures, is there evidence that through natural or man-made pathways, migration of petroleum or vapors threaten human health or human safety or could cause explosions in basements, crawl spaces, utility conduits, storm or sanitary sewers, vaults or other confined spaces present or in the past? Yes___ No_X_

3. Is Class III Special Resource Groundwater located within 200 feet of the excavation? Yes___ No_X_

4. After completing Early Action measures, has a surface body of water been adversely affected (i.e. visible sheen, free product layer) by a release from an UST system? Yes___ No_X_

5. Has a groundwater quality standard or groundwater objective for any applicable indicator contaminant been exceeded at the property boundary line or 200 feet from the UST excavation, whichever is less? Yes_X_ No___

6. If Method One was chosen, indicate the rating, as described in the Illinois State Geological Survey Circular 532, with which the actual site geology is consistent. A2

7. If Method Two was chosen, answer the following questions regarding the first 15 feet of native material (below the invert elevation of the UST):

   a. Did the material contain unconsolidated sand, gravel, and/or sand and gravel that is 5 feet or more in thickness with 12 percent or less fines? Yes___ No___
   b. Did the material contain sandstone 10 feet or more in thickness, or fractured carbonate 15 feet or more in thickness? Yes___ No___
   c. Is the material capable of the following:

      i. sustaining a groundwater yield, from a 12 inch borehole, of 150 gallons per day or more from a thickness of 15 feet or less? Yes___ No___
      ii. does the material have a hydraulic conductivity of 1×10^{-4} cm/sec or greater? Yes___ No___

E. Site Evaluation

1. Physical Soil Classification:

   Provide the following:

   a. Soil borings

      1. A list of publications reviewed and preliminary conclusions concerning the site geology;
      2. Soil boring logs;
      3. A site map to scale and oriented north showing:

         a. Soil boring locations;
         b. UST system(s);
         c. 200 foot radius from UST system;
         d. Property boundaries.

   b. Method 1 soil properties test results (include calculations, methodologies, and complete laboratory reports)

      1. Soil particle analysis;

2. Soil moisture content;
3. Soil classification;
4. Unconfined compression test;
5. In-situ hydraulic conductivity; **OR**
6. Ex-situ hydraulic conductivity.

c. Method 2 soil properties test results (include calculations, methodologies, and complete laboratory reports)

1. Soil particle analysis;
2. Ex-situ hydraulic conductivity; **OR**
3. In-situ hydraulic conductivity and yield of geologic material.

2. Groundwater Investigation

Provide the following:

a. A discussion of how the monitoring well configuration provides the greatest likelihood of detecting migration of groundwater contamination;
b. Monitoring well construction diagrams;
c. A table showing static water elevations;
d. Sample collection shipment and preservation information;
e. Completed chain-of-custody form(s);
f. Copies of laboratory reports (include field and lab blanks);
g. Analytical results in tabular format;
h. A site map to scale and oriented north showing:

i. Monitoring well locations;
ii. Potentiometric surface map;
iii. Groundwater flow direction;
iv. 200 foot radius from UST system;
v. Property boundaries.

F. Water Well Survey

Provide the following:

1. The results of the survey conducted to identify all community water supply wells within 2,500 feet of the UST system and all potable water supply wells within 200 feet of the UST system (include copies of well logs and all correspondence to and from the Illinois State Water Survey and the Illinois State Geological Survey).

2. The local units of government contacted to determine if there is a local ordinance or policy regulating the usage of potable water supply wells.

3. A site map to scale showing all of the community water supply wells within 2,500 feet of the UST system and all potable water supply wells within 1,000 feet of the UST system (radii of 200, 400, 1,000 and 2,500 feet from the UST system should be marked on the map).

4. A table indicating the setback zone for each community or potable water supply well and the distance from the UST system to the well (the location of each well must be identified on the map by numbers corresponding to information provided in the table).

5. The sources consulted in determining whether the UST system is within the regulated recharge area of any community or potable water supply well.

G. Migration Pathways

Provide the following:

1. A discussion of the investigation conducted to identify all potential natural and man-made migration pathways that are on the site, rights-of-way attached to the site, or in any area surrounding the site that may be adversely affected as a result of a release of petroleum from the UST system.

2. A discussion of further investigations conducted to determine if there is evidence that migration of petroleum or vapors along such pathways threatens human health or the environment or may cause explosions in basements, crawl spaces, utility conduits, storm or sanitary sewers, vaults or other confined spaces.

3 A discussion of the findings based on the investigations performed.

4. A site map to scale and oriented north showing:

   a. The UST system(s) and excavation;
   b. Product and dispenser lines;
   c. Potential natural and man-made pathways on-site, in rights-of-way attached to the site or in areas that may be adversely affected by the release;
   d. Soil boring locations;
   e. Property boundaries.

H. Class III Special Resource Groundwater

Provide the following:

1. A discussion of the steps taken to determine if Class III groundwater exists within 200 feet of the site.

2. A site map to scale and oriented north showing:

   a. Location of Class III groundwater;
   b. Radius of 200 feet from the UST system(s).

I. Surface Bodies of Water

Provide the following:

1. A discussion of the steps taken to locate all surface bodies of water on site and within 100 feet of the site, and once located, the steps taken to determine if they have been adversely affected by the presence of a sheen or free product layer resulting from a release of petroleum from the UST system.

2. A site map to scale and oriented north showing the locations of the surface bodies of water on site and within 100 feet of the site.

J. Classification by Exposure Pathway Exclusion

1. Extent of contamination exceeding Tier 1 objectives

   Provide the following:

   a. A table showing the analytical results and depth of samples;
   b. A site map showing the soil sample location points and groundwater monitoring well locations;
   c. A site map showing the extent of soil and/or groundwater contamination exceeding Tier objectives;
   d. A cross-section of the site showing the areas of soil contamination exceeding Tier 1 objectives;

2. Physical soil characteristics

   Provide the results of the tests performed to determine the following:

   a. Whether or not the concentration of any organic contaminants exceeded the attenuation capacity of the soil.
   b. Whether or not the organic contaminants exceeded the soil saturation limit.
   c. Whether or not the soils exhibited any characteristics of reactivity for hazardous waste.
   d. The pH of the soils.
   e. Whether or not contaminated soils exhibited any characteristics of toxicity for hazardous waste.

3. Inhalation exposure route

   Demonstrate the following:

   a. An institutional control is in place that requires safety precautions for construction worker populations and compliance with (b) below.
   b. That any contaminant of concern within ten (10) feet of the land surface or within ten (10) feet of any man-made pathway does not exceed Tier 1 cleanup objective or that an Agency-approved engineered barrier is in place.

4. Ingestion exposure route

   Demonstrate the following:

   a. An institutional control is in place that requires safety precautions for construction worker populations and compliance with (b) below.
   b. That any contaminant of concern within three (3) feet of the land surface does not exceed the Tier 1 cleanup objectives or an Agency-approved engineer barrier is in place.

5. Groundwater ingestion exposure route

   Demonstrate the following:

   a. The source of the release is not located within the minimum or maximum setback zone or regulated recharge area of a potable water supply well.
   b. Any area within 2,500 feet from the source of the release is restricted under a local ordinance which prohibits the use of groundwater as a potable supply.
   c. The concentration of any contaminant of concern in groundwater within the minimum or maximum setback zone of a potable water supply well will meet the applicable Tier 1 cleanup objective.
   d. The concentration of any contaminant of concern in groundwater discharging into a surface water will meet the applicable surface water quality standard per 35 IAC Section 302.

K. Supporting Documentation

Provide the following:

1. A site map to scale and oriented north showing:

   a. UST system(s) and excavation;
   b. Product and dispenser lines;
   c. Pumps and islands;
   d. Underground utilities (sewer, gas, water, etc.);
   e. Nearby structures (buildings, roads, etc.);
   f. Location of the soil boring(s);
   g. Location of the monitoring wells;
   h. Property boundaries;
   i. 200 foot radius from the UST System(s).

2. A horizontal cross section showing the various geologic units and the depth to groundwater.

3. Laboratory Certification(s).

L. Signatures

I certify under penalty of law that this report, supporting documents and all attachments were prepared under my direction or supervision. To the best of my knowledge and belief, this report, supporting documents and all attachments are true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner

Name: MARK SCHULTZ
Title: HEAD, NTC GL ENVIRONMENTAL DEPT.
Address: 201 DECATUR AVENUE
GREAT LAKES, IL 60088-5600
Phone: (847) 688-5999 ext. 40
Signature: Mark Schultz
Date: 6-15-98

Operator

Name: MARK SCHULTZ
Title: HEAD, NTC GL ENVIRONMENTAL DEPT.
Address: 201 DECATUR AVENUE
GREAT LAKES, IL 60088-5600
Phone: (847) 688-5999 ext. 40
Signature: Mark Schultz
Date: 6-15-98

Consultant

Firm: Heritage Environmental Services, Inc.
Contact: Robert J. Millman
Title: Senior Project Engineer
Address: 15330 Canal Bank Road
Lemont, Illinois 60439
Phone: (630) 739-1151
Signature:
Date: May 8, 1998

M. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision. I also certify under penalty of law that the classification for this site is ☐ No Further Action ☐ Low Priority ☒ High Priority and that this classification satisfies all the requirements of 35 Illinois Administrative Code Part 732, Subpart C. In addition, I certify that there ☐ **is** ☒ **is no** evidence that, through natural or man-made pathways, migration of petroleum or vapors threaten human health or human safety or may cause explosions in basements, crawl spaces, utility conduits, storm or sanitary sewers, vaults or other confined spaces. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Professional Engineer **P. E. Seal**

Name: Robert J. Millman

Firm: Heritage Environmental Services, Inc.

Address: 15330 Canal Bank Road

Lemont, Illinois 60439

Phone: (630) 739-1151

Ill. Registration No.: 062-039024

License Expiration Date: 11/30/98

Signature:

Date: May 8, 1998

Illinois Environmental Protection Agency
Leaking Underground Storage Tank Program
45 Day Report

A. Site Identification

IEMA Incident # (6 digit): 971739 IEPA Generator # (10 digit): 0971255004

Site Name: Building 1600A

Site Address (Not a P.O. Box): Naval Training Center Great Lakes

City: Great Lakes County: Lake

B. Release Information

1. Will the owner/operator seek reimbursement from the Underground Storage Tank Fund? Yes___ No X

2. Identify the material(s) released: gasoline

3. The material(s) released was (check all that apply):

   a. Petroleum X
   b. Nonpetroleum ___

4. Is this report intended to serve as theCorrective Action Completion Report? Yes___ No X

C. Early Action

1. What was the volume of backfill material excavated? ≈400 yds^3

2. What was the volume of native soil excavated? ≈400 yds^3

3. Was groundwater encountered at the site? Yes X No___

4. Did the groundwater exhibit a sheen? Yes X No___

5. Was free product encountered? Yes X No___
   If Yes, the owner/operator must submit a free product removal report.

D. Site Information

Provide the following:

1. Data on the nature and estimated quantity of the release; Refer to Report Sections 7 and 8.

2. Data from available sources or site investigations concerning the following factors:

   a. Surrounding populations;
   b. Water quality;
   c. Use and approximate locations of wells potentially affected by the release;
   d. Subsurface soil conditions;
   e. Location of subsurface sewers;
   f. Climatological conditions;
   g. Land use.

   Refer to Report Sections 1, 5, 7 and 8.

3. A discussion of what was done to measure for the presence of a release where contamination was most likely to be present at the UST site; Refer to Report Sections 2, 3, 5 and 7.

4. The results of the free product investigations; Refer to Report Sections 7, 8 and 9.

5. A discussion of the action taken to prevent further release of the regulated substance into the environment; Refer to Report Section 4.

6. A discussion of the action taken to mitigate fire and safety hazards posed by vapors or free product that has migrated from the UST excavation zone and entered subsurface structures; Refer to Report Section 4.

7. Any other information collected while performing initial abatement measures pursuant to 35 Ill. Adm. Code Section 731.162 or 732.202(b). Refer to report.

E. Supporting Documentation

Provide the following:

1. Site map to scale and oriented north showing: Refer to Report Appendix 1.

   a. UST(s) system(s) and excavation limits;
   b. Product and dispenser lines;
   c. Pumps and islands;
   d. Underground utilities (sewer, gas, water, etc.);
   e. Nearby structures (buildings, roads, etc.);
   f. Soil boring(s) (if present);
   g. Monitoring well(s) and/or sumps (if present);
   h. Property boundaries;
   i. Sample location points;

2. An area map showing the site in relation to surrounding properties. This map should identify the facilities on the surrounding properties; Refer to Report Appendix 1.

3. A cross section, to scale, with dimensions showing the UST(s) and the excavation; Refer to Report Appendix 1.

4. Analytical/screening results in tabular format; Refer to Report Appendix 3.

5. UST(s) information in a tabular format and that at a minimum includes: Refer to Report Section 1 and Appendix 11.
   a. The total number of UST(s) on site;
   b. The volume of the UST(s) (in gallons);
   c. The material stored in the UST(s);
   d. Identification of UST system(s) that had a release;
   e. Identification of UST system(s) that were repaired, removed, or abandoned-in-place.

6. A copy of the Office of the State Fire Marshal Permit for Removal, Abandonment-in-Place or other OSFM permits or notifications; Refer to Report Appendix 11.

7. A narrative of tank removal and cleaning operations; describe how wastes generated during the tank removal were managed, treated, and disposed; Refer to Report Section 1, Appendix 11.

8. Photographs of UST removal activities and the excavation; Refer to Report Section 1, Appendix 11.

9. Copies of manifests for soil and groundwater transported off-site. Refer to Report Appendix 11. Soils transported to the FFTU for bio-remediation were transported without a manifest, under a bill of lading. Refer to Appendix 13.

F. Signatures

I certify under penalty of law that this report, supporting documents and all attachments were prepared under my direction or supervision. To the best of my knowledge and belief, this report, supporting documents and all attachments are true, accurate and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Owner

Name: MARK SCHULTZ
Title: HEAD, NTC GL ENVIRONMENTAL DEPT.
Address: 201 DECATUR AVENUE
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Phone: (847) 688-5999 ext. 40
Signature: Mark Schultz
Date: 6-15-98

Consultant

Firm: Heritage Environmental Services, Inc.

Contact: Robert J. Millman

Title: Senior Project Engineer

Address: 15330 Canal Bank Road

Lemont, Illinois 60439

Phone: 630/739-1151

Signature:

Date: May 8, 1998

Professional Engineer **P. E. Seal**

Name: ROBERT J. MILLMAN

Firm: HERITAGE ENVIRONMENTAL SERVICES, LLC

Address: 15330 CANAL BANK ROAD

LEMONT, ILLINOIS 60439

Phone: 630/739-1151

Ill. Registration No.: 062-039024

License Expiration Date: 11/30/99

Signature:

Date: SEPTEMBER 23, 1999

APPENDIX 13

Documentation of Soil Transportation to FFTU for Bioremediation

DEPARTMENT OF THE NAVY
NAVY PUBLIC WORKS CENTER
AND
ENGINEERING FIELD ACTIVITY, MIDWEST
BUILDING 1-A
2703 SHERIDAN ROAD, SUITE #120
GREAT LAKES, ILLINOIS 60088-5600

5090
Ser N45/ 000536
08 OCT 1997

Donald Harrison
Remedial Project Manager
Illinois Environmental Protection Agency
Bureau of Land - Division of Remedial Management
Remedial Project Management Section - Federal Facilities Unit
2200 Churchill Road
Springfield, Illinois 62794-9276

Subj: CERTIFICATION OF NON-HAZARDOUS, NON-SPECIAL WASTE FOR PETROLEUM CONTAMINATED SOIL AT BUILDING 1600A; PURSUANT TO SECTION 808 OF ILLINOIS ADMINISTRATIVE CODE TITLE 35

Dear Mr. Harrison:

Naval Training Center (NTC), Great Lakes, Illinois is certifying through this letter that the proposed waste described within enclosure (1) does not meet the criteria for a hazardous waste (toxicity, corrosivity, iginitability and reactivity), is not a liquid waste, does not contain asbestos, polychlorinated biphenyl's (PCBs) or auto fluff.

Generated waste is a result of a leaking underground storage tank (UST) removal project. The underground storage tanks were utilized throughout their service life to contain only petroleum products (gasoline and #2 diesel fuel). Petroleum product from the UST's has leaked from the tanks and/or piping over their service life and contaminated the surrounding soil.

Provided in enclosure (1) are site and vicinity maps, drawings, historical data and analytical results to verify that the subject waste can be characterized as ordinary municipal waste pursuant to 35 IAC Section 808 are also included.

The waste (soil) is to be transported to the old Firefighting Training Unit (FFTU) site within Willow Glen golf course. This property is also Federal/Navy property and is being used as a biopile site for passive bioremediation of petroleum contaminated soils, such as the subject waste. Approximately 700 cubic yards (CY) of petroleum contaminated soil will be transported from Building 1600A to the FFTU site for bioremediation.

Subj: CERTIFICATION OF NON-HAZARDOUS, NON-SPECIAL WASTE FOR PETROLEUM CONTAMINATED SOIL AT BUILDING 1600A; PURSUANT TO SECTION 808 OF ILLINOIS ADMINISTRATIVE CODE TITLE 35

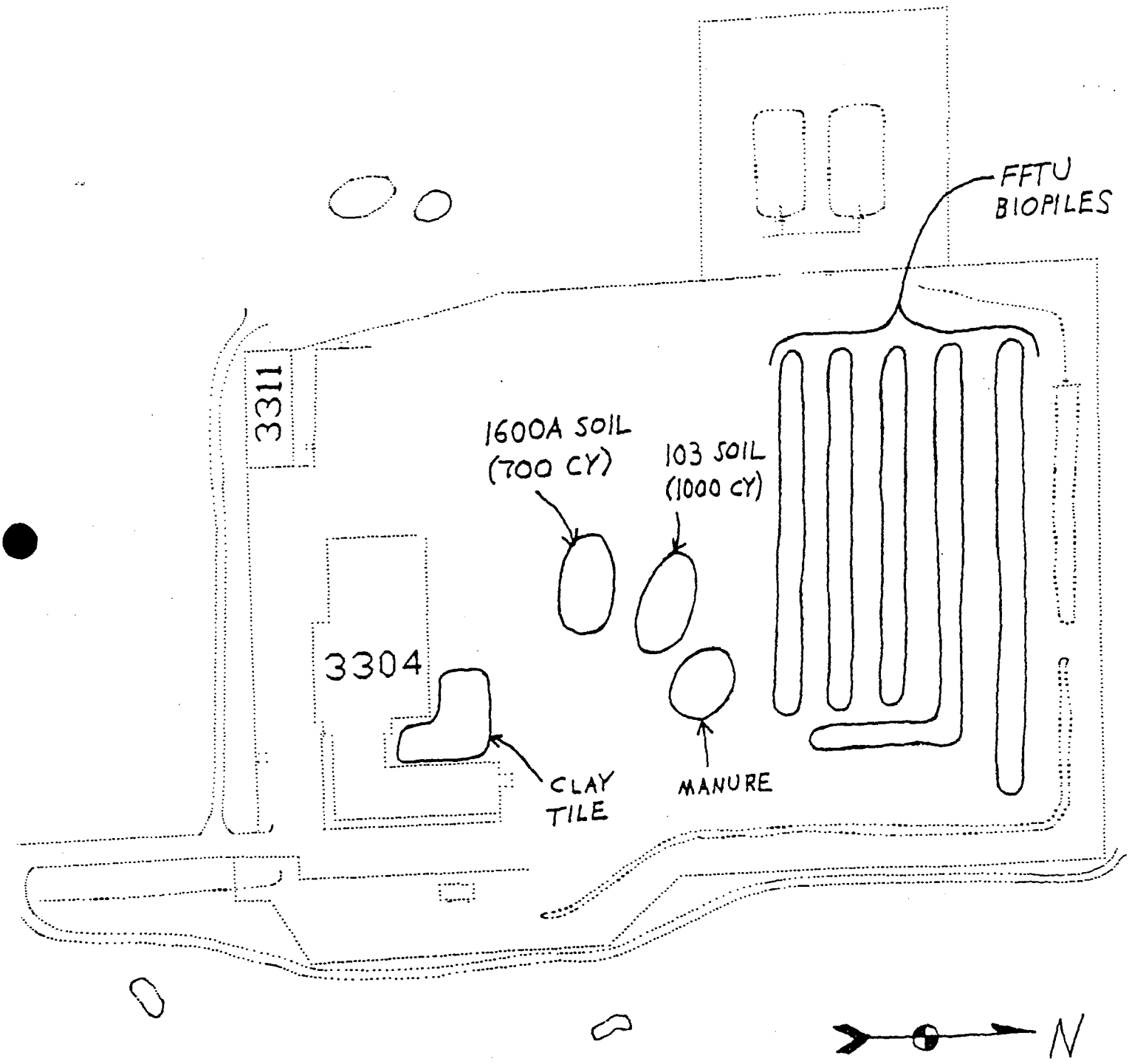
Please contact Mr. Terry Aide or J.P. Messier at (847) 688-5999 extension 44 or 51, respectively if there is any additional information you may want on this matter.

Sincerely,

MARK SCHULTZ
Environmental Officer
By direction of
the Commanding Officer

Enclosure (1): Project Information

FFTU


FFTU
BIOPILES
3311
1600A SOIL
(700 CY)
103 SOIL
(1000 CY)
3304
CLAY
TILE
MANURE
N

POINT PAPER

JP Messier/Terry Aide
N45/(847) 688-5999
3 Oct 97

Subj: Buildings 11, 103 and 1600A - Petroleum Impacted Soil Disposal Certification Pursuant to the Illinois Environmental Protection Act and 35 IAC Section 808

BACKGROUND

A recent Amendment passed August 19, 1997 to the Illinois Environmental Protection Act allows for the disposal of pollution prevention waste as a municipal landfill waste as long as it has been proven to be a non-hazardous solid waste.

The intent of this point paper is to act as the certifying document for disposal of pollution prevention waste created as a result of release from underground petroleum-containing storage tanks at Buildings 11, 103 and 1600A on the Naval Training Center, Great Lakes, Illinois.

HISTORY AND DISCUSSION

Building 11 is the Navy Public Works Center power plant. Part of its operation utilized a MUSE backup generator with a 2,000 gallon fiberglass diesel UST. Last year, a new generator and AST rendered the MUSE generator and tank obsolete. The UST is scheduled to be removed on October 7-8, 1997. Petroleum contamination may be encountered in the area when the tank is removed.

Building 103 served as the Great Lakes Gas Station during the first half of the century. A historical photograph from 1939 shows cars being fueled at the station (enclosed). The gasoline station was shut down many years ago and there were no records showing the tanks being removed. A magnetometer survey and interviews with older employees verified the existence of three (3) underground gasoline tanks (approx. 10,000 gallons each), one (1) diesel heating tank (approx. 12,500 gallons) and one (1) kerosene tank (approx. 1,000 gallons). Results of the survey are enclosed. These USTs are scheduled to be removed on October 7-8, 1997. Petroleum contamination is expected to be encountered when these tanks are removed.

The Building 1600A Gas Station served as the gas station for the Navy Public Works Center, Great Lakes until August, 1997. It contained two (2) underground gasoline storage tanks (10,000 gallons each) and one (1) underground diesel tank (6,500 gallons). When the tanks and fuel dispensers were recently removed, petroleum contamination was found throughout the area.

Subj: Buildings 11, 103 and 1600A - Petroleum Impacted Soil Disposal Certification Pursuant to the Illinois Environmental Protection Act and 35 IAC Section 808

ACTION

The Great Lakes Environmental Department certifies that only petroleum products (gasoline, diesel and kerosene) were stored in the underground tanks at these sites. All tanks and piping (fuel, vent and electrical) will be excavated and removed from these sites along with concrete, asphalt and other debris. Petroleum contaminated soils will be removed until cleanup objectives are met or until structures not slated for demolition have the potential to be impacted.

A composite soil characterization sample will be collected from areas of visibly stained soils at each site. Each composite sample will consist of samples taken from observed contaminated regions from each of the following: One from each tank wall (four total), two from the tank floor, and one for every ten feet of piping run. All samples will be collected and analyzed utilizing the sampling, custody and analytical procedures outlined in the Fire Fighting Training Unit (FFTU) Quality Assurance Project Plan (QAPP), written by Beling Consultants (August 1997).

An analysis for petroleum contaminated soils from the building 1600A site is enclosed. The composite sample was taken using the procedures referenced above. Results show that the soil is neither a hazardous waste or a special waste. Composite samples from both the building 103 and 11 sites will be analyzed for BTEX, PNA/PAH in addition to the same items shown on the building 1600A analysis. Petroleum contaminated soil from these sites do not meet the criteria for a hazardous waste, is not a liquid waste, does not contain asbestos, polychlorinated biphenyl's (PCBs) or auto fluff. If the analysis verifies that the petroleum contaminated soils are neither hazardous or a special waste, the soil will then be taken to the FFTU site within Willow Glen golf course. This property is also Federal/Navy property and is being used as a biopile site for passive bioremediation of petroleum contaminated soils.

Petroleum contaminated soils will be placed directly in transport trucks for transport over to the FFTU site at building 3304. Each load will be internally documented with a bill of lading that includes a description of the location where soil was removed from each site. Excavated soil will be stockpiled and segregated at the FFTU for biopile construction.

Biopiles will be constructed in accordance with the Fire Fighting Training Unit (FFTU) Revised Workplan for Excavation of Drainage Piping, and Field Pilot Study for Bioremediation of Petroleum Contaminated Soil, written by Beling Consultants (July, 1997).

Subj: Buildings 11, 103 and 1600A - Petroleum Impacted Soil Disposal Certification Pursuant to the Illinois Environmental Protection Act and 35 IAC Section 808

Operation and Maintenance of the biopiles to track progress toward compliance with the Tiered Approach to Corrective Action Objectives (TACO) standards found in 35 IAC 742 will also be done in accordance with the Fire Fighting Training Unit (FFTU) Revised Workplan for Excavation of Drainage Piping, and Field Pilot Study for Bioremediation of Petroleum Contaminated Soil, written by Beling Consultants (July, 1997).

RECOMMENDATIONS AND CONCLUSIONS

All soil pursuant to the excavation at buildings 11, 103 and 1600A will be certified as both a non-hazardous and non-special waste in accordance with requirements set forth by the Illinois Environmental Protection Act. This will be fully proven by laboratory analysis of the waste stream for all of the RCRA hazardous constituents (toxicity, ignitibility, reactibility and corrosivity).

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6660
FAX: 847-967-6735

LABORATORY REPORT

170668

Heritage Environmental Services, Inc.
15330 Canal Bank Road
Lemont, IL 60439

Report Date: 10/1/97
Sample Received: 9/25/97

Project No.: 10319
Project Name: Navy Bldg 1600A
Sample Description: Soil Grab - BLDG 1600A
Sample No.: 23026

Analyte	Result	Date Completed	By	Method
Ash content	92.7%	09/26/97	SS	2540E(2)
Water Compatibility	no reaction sinks	09/25/97	DM	D5058-90(21)
Cyanide	<5.0	09/26/97	SM	D5049-90(21)
Odor of sample	none	09/25/97	DM	D4979-89(21)
Open Cup Flash Point	>180.°F	09/26/97	DM	D92-90(21)
Paint Filter	pass	09/25/97	DM	9095(6)
Total Phenolics	<10.0	09/26/97	SM	9065(6)
Physical Appearance	tan sand	09/25/97	DM	D4979-89(21)
Total Solids	93.6%	09/26/97	SS	2540B(2)
Sulfide	>10	09/25/97	RG	D4978-89(21)
Reactive Sulfide	<25.0	09/30/97	RG	7.3.4(6)
pH (10% Solution)	9.08units	09/25/97	DM	9045(6)
Analysis Performed on TCLP Extract				
Arsenic	<0.200	09/26/97	MG	6010A(6)
Barium	<0.50	09/26/97	MG	6010A(6)
Cadmium	<0.02	09/26/97	MG	6010A(6)
Chromium	<0.10	09/26/97	MG	6010A(6)
Copper	<0.10	09/26/97	MG	6010A(6)
Lead	<0.20	09/26/97	MG	6010A(6)
Mercury	<0.0100	09/26/97	ML	7470A(6)
Nickel	<0.10	09/26/97	MG	6010A(6)
Selenium	<0.200	09/26/97	MG	6010A(6)
Silver	<0.20	09/26/97	MG	6010A(6)
Zinc	<0.50	09/26/97	MG	6010A(6)

All results expressed as ppm unless otherwise indicated

(2) Analysis performed using "Standard Methods for the Examination of Wastewater",19th Edition
(21) Analysis performed using ASTM Method
(6) Methods performed according to SW-846 "Test Methods for Evaluating Solid Waste"

Danny W. Wright
LABORATORY DIRECTOR

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

170668-C

Heritage Environmental Services, Inc.
15330 Canal Bank Road
Lemont, IL 60439

Report Date: 10/1/97
Sample Received: 9/25/97

Project No.: 10319
Project Name: Navy Bldg 1600A
Sample Description: Soil Grab - BLDG 1600A
Sample No.: 23026

Compounds	Concentration Found In Sample	Concentration Found In Blank	Method Detection Limit (MDL)	Regulatory Limit
1. Benzene	<0.25	<0.01	0.01	0.50
2. Carbon Tetrachloride	<0.25	<0.01	0.01	0.50
3. Chlorobenzene	<50.0	<0.01	0.01	100.00
4. Chloroform	<3.0	<0.01	0.01	6.00
5. o-Cresol	<100.0	<0.01	0.01	200.00
6. m-Cresol	<100.0	<0.01	0.01	200.00
7. p-Cresol	<100.0	<0.01	0.01	200.00
Total Cresol	<100.0	<0.01	0.01	200.00
8. 1,4-Dichlorobenzene	<3.75	<0.01	0.01	7.50
9. 1,2-Dichloroethane	<0.25	<0.01	0.01	0.50
10. 1,1-Dichloroethene	<0.35	<0.01	0.01	0.700
11. 2,4-Dinitrotoluene	<0.07	<0.01	0.01	0.13
12. Hexachlorobenzene	<0.07	<0.01	0.01	0.13
13. Hexachloro-1,3 -butadiene	<0.25	<0.01	0.01	0.50
14. Hexachloroethane	<1.50	<0.01	0.01	3.00
15. Methyl Ethyl Ketone	<100.0	<0.01	0.01	200.00
16. Nitrobenzene	<1.00	<0.01	0.01	2.00
17. Pentachlorophenol	<50.00	<0.01	0.01	100.00
18. Pyridine	<2.50	<0.01	0.01	5.00
19. Tetrachloroethylene	<0.35	<0.01	0.01	0.70
20. Trichloroethylene	<0.25	<0.01	0.01	0.50
21. 2,4,5-Trichlorophenol	<200.00	<0.01	0.01	400.00
22. 2,4,6-Trichlorophenol	<1.00	<0.01	0.01	2.00
23. Vinyl Chloride	<0.10	<0.01	0.01	0.20

All results expressed as ppm unless otherwise indicated.
Methods performed according to SW-846, "Test methods for Evaluating Solid Wastes".

Analysis performed on Extract from TCLP.

The contents of this report apply only to the sample analyzed. No duplication of this report is allowed except in its entirety.

Leah E. Fahrer
LABORATORY DIRECTOR

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

17C668-A

Heritage Environmental Services, Inc.
15330 Canal Bank Road
Lemont, IL 60439

Project No.: 10319
Project Name: Navy Bldg 1600A
Sample Description: Soil Grab - BLDG 1600A
Sample No.: 23026

Report Date: 10/1/97
Date Sampled: 9/24/97
Date Sample Received: 9/25/97
Date Extracted: 9/25/97
Date Analyzed: 9/26/97

	Concentration Found In Sample (mg/kg)	Method Detection Limit (MDL) (mg/kg)
Diesel Range Organics	51.7	10

The sample contains Diesel.
Sample was received in incorrect container.

-Samples received on ice
-All results expressed in ppm on a dry weight basis unless otherwise indicated.

Leah E. Zhou

LABORATORY DIRECTOR

ENVIRONMENTAL MONITORING AND TECHNOLOGIES, INC.

8100 North Austin Avenue
Morton Grove, Illinois 60053-3203
847-967-6666
FAX: 847-967-6735

LABORATORY REPORT

170668-B

Heritage Environmental Services, Inc.
15330 Canal Bank Road
Lemont, IL 60439

Report Date: 10/1/97
Date Sampled: 9/24/97
Date Sample Received: 9/25/97
Date Extracted: 9/25/97
Date Analyzed: 9/26/97

Project No.: 10319
Project Name: Navy Bldg 1600A
Sample Description: Soil Grab - BLDG 1600A
Sample No.: 23026

	Concentration Found In Sample (mg/kg)	Method Detection Limit (MDL) (mg/kg)
Gasoline Range Organics	<10	10

1. The sample was received without MeOH preservation.
2. The sample was run as a normal 8015 sample for TPH.

-Samples received on ice
-All results expressed in ppm on a dry weight basis unless otherwise indicated.

Leah E. Zehner

LABORATORY DIRECTOR

TOPS. Snap-off®

CARBONLESS FORM 38411

BILL OF LADING

TRIPLICATE

ALTERNATE STRAIGHT BILL OF LADING—SHORT FORM

Original—Not Negotiable

Shipper No. _____

Carrier No. _____

Date 10-2-97

Jack Gray Trucking
(Name of Carrier)

TO: Consignee Bldg. 3304 Great Lakes NTC	FROM: Shipper Bldg 1600A Great Lakes NTC
Street Great Lakes Drive	Street Ray St.
Destination	Origin Zip Code 60088
Route: Ray St. to Buckley Rd. West to Great Lakes Drive	Vehicle No.

No. Shipping Units	Kind of Packaging, Description of Articles Special Marks and Exceptions	Weight (Subject to Correction)	RATE	CHARGES
	Soil (Sand, clay & gravel)	315		

REMIT C.O.D. TO ADDRESS

COD Amt: $

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $

TOTAL CHARGES: $

Note—Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

$ _____ per _____

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement.

The carrier shall not make delivery of this shipment without payment of freight and all other charges.

_____
(Signature of Consignor)

FREIGHT CHARGES

Check Appropriate Box:

☐ Freight prepaid ☐ Collect

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of the shipment.

Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER Navy PWC Great Lakes	CARRIER Jack Gray
PER	PER DATE

TOPS FORM No. 38411

Made in U.S.A.

TOPS Snap-off®

CARBONLESS FORM 38411

BILL OF LADING

TRIPLICATE

ALTERNATE STRAIGHT BILL OF LADING—SHORT FORM

Original—Not Negotiable

Shipper No. _____

Carrier No. _____

Jack Gray Trucking
(Name of Carrier)

Date 10-2-97

TO: Consignee Bldg 3304 Great Lakes NTC	FROM: Shipper Bldg 1600A Great Lakes NTC
Street Great Lakes Drive	Street Ray St.
Destination	Zip Code 60088 Origin	Zip Code 60088
Route: Ray St. to Buckley Rd. west to Great Lakes Drive	Vehicle No.

No. Shipping Units	Kind of Packaging, Description of Articles Special Marks and Exceptions	Weight (Subject to Correction)	RATE	CHARGES
1	Soil (sand, clay & gravel)	300		

REMIT C.O.D. TO: ADDRESS _____ COD Amt: $ _____

C.O.D. FEE: PREPAID ☐ COLLECT ☐ $ _____

TOTAL CHARGES: $ _____

Note—Where the rate is dependent on value, shippers are required to state specifically in writing the agreed or declared value of the property.

The agreed or declared value of the property is hereby specifically stated by the shipper to be not exceeding

$ _____ per _____

Subject to Section 7 of the conditions, if this shipment is to be delivered to the consignee without recourse on the consignor, the consignor shall sign the following statement.

The carrier shall not make delivery of this shipment without payment of freight and all other charges.

(Signature of Consignor)

FREIGHT CHARGES

Check Appropriate Box:

☐ Freight prepaid ☐ Collect

RECEIVED, subject to the classifications and lawfully filed tariffs in effect on the date of the issue of this Bill of Lading, the property described above in apparent good order, except as noted (contents and condition of contents of packages unknown), marked, consigned, and destined as indicated above which said carrier (the word carrier being understood throughout this contract as meaning any person or corporation in possession of the property under the contract) agrees to carry to its usual place of delivery at said destination, if on its route, otherwise to deliver to another carrier on the route to said destination. It is mutually agreed as to each carrier of all or any of, said property over all or any portion of said route to destination and as to each party at any time interested in all or any of said property, that every service to be performed hereunder shall be subject to all the bill of lading terms and conditions in the governing classification on the date of the shipment.

Shipper hereby certifies that he is familiar with all the bill of lading terms and conditions in the governing classification and the said terms and conditions are hereby agreed to by the shipper and accepted for himself and his assigns.

SHIPPER Navy Pier Great Lakes	CARRIER Jack Gray
PER	PER DATE

TOPS FORM No. 38411