Phase I Site Characterization of Disposal Area Three, Plum Brook Station, Ohio

June 5, 1992

Prepared for:

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HGCL
Environmental Scientists and Engineers

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1.0 Introduction

H⁺GCL was contracted by Analex Corporation to conduct a Phase I site characterization of Disposal Area Three, located on the Plum Brook facility of the National Aeronautics and Space Administration Lewis Research Center (NASA LeRC), Sandusky, Ohio (Figure 1-1). Phase I of the site characterization was designed to examine the potential soil contamination, which may have resulted from the historic use of a fire training pit, and two burnable dumps located within an area collectively referred to as Disposal Area Three and to evaluate the potential impact on the quality of the upper aquifer.

The Phase I site characterization included the following tasks to characterize the soils and the ground water underlying Disposal Area Three:

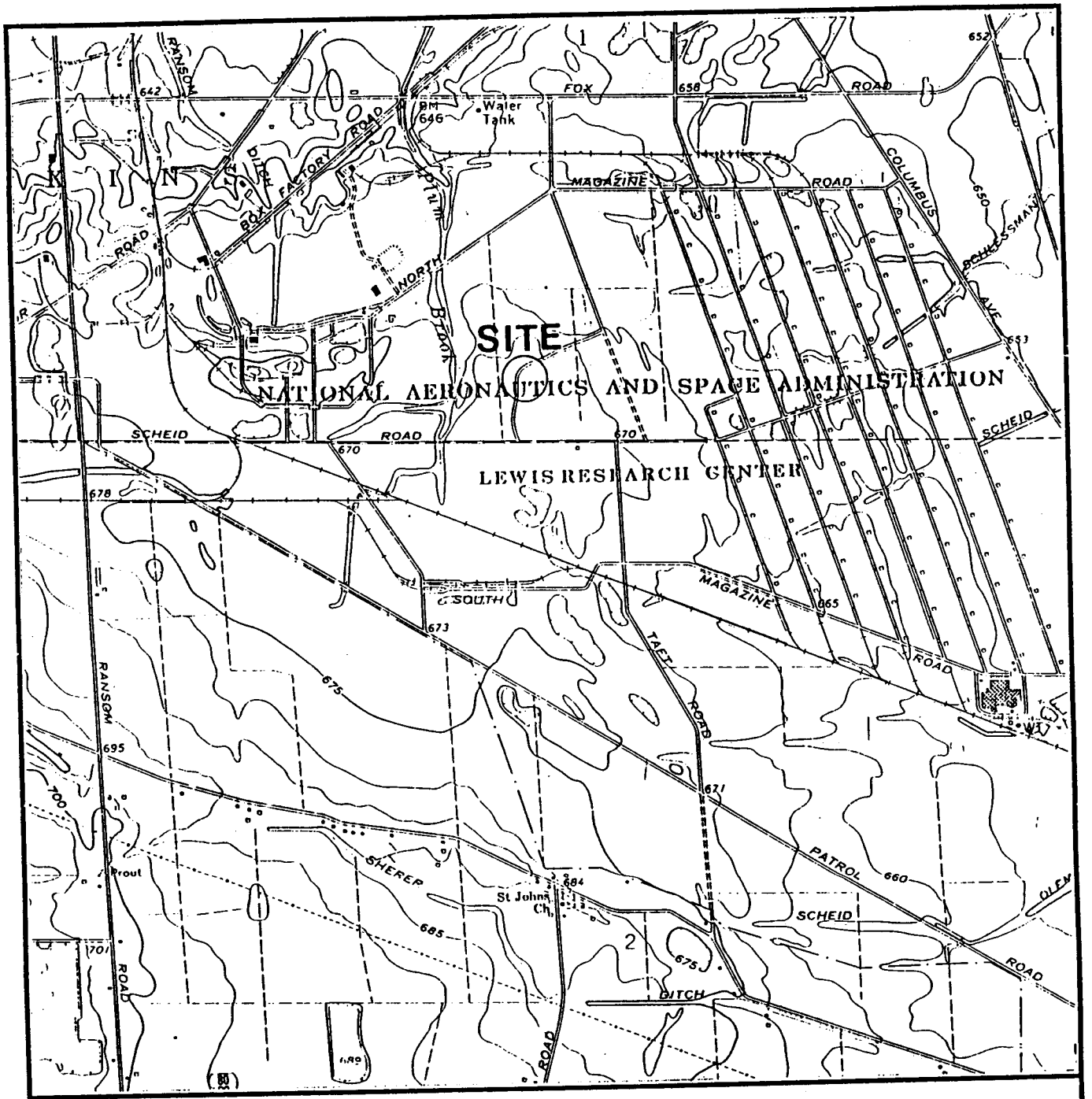
- A document search and interviews with facility personnel were conducted to determine the historic use of Disposal Area Three
- Nine soil borings were drilled, and soil samples were collected for both laboratory analysis and visual characterization
- Ground-water monitor wells were completed in four of the borings and ground-water samples were submitted for laboratory analysis

The compounds detected in the soil and ground water were compared to the following action levels or guidelines: State drinking water standards and Federal maximum contaminant levels (MCLs); Toxicity Characteristic Leaching Procedure (TCLP) standards; metal background concentration ranges for the eastern United States as presented in the USGS Professional Paper 1270 (1984); and proposed Resource Conservation and Recovery Act (RCRA) soil and ground-water action levels set forth in 55 FR 30798, July 27, 1990.

The soil at the site contains low levels of volatile organic compounds (VOCs), semi-volatile organic compounds, and total petroleum hydrocarbons (TPH); however, soil samples from the background location also exhibit low concentrations of four of the semivolatile organic compounds, TPH, and acetone. Ground water contains a very low concentration of benzene, total chromium, lead, silver, and zinc. Explosives, pesticides, and herbicides were not detected in the soil or ground-water samples submitted for analysis. Based on the information gathered during this site assessment and an evaluation of potential risks to human health, welfare, and the environment, H⁺GCL recommends that NASA pursue closure in place with limited resurfacing for this area; however, the open burning policy in

Figure 1-1

Site Location Map



Approximate Scale in Feet

1000 0 1000 2000 3000 4000

CONTOUR INTERVAL 5 FEET
DATUM IS MEAN SEA LEVEL

North

Taken from United States Geological Survey 7.5 Minute Quadrangle, Kimball, Ohio; 1969.

this area should be discontinued. No further site characterization or remediation activities are recommended.

The project objectives and site history are described in Section 2.0. Site characterization activities are described in Section 3.0. Section 4.0 presents a discussion of the analytical results, Section 5.0 presents analyses and conclusions and Section 6.0 presents the recommendations.

2.0 Project Objectives and Site History

2.1 Objectives of the Phase I Site Characterization

Based on the information presented in Analex's Request for Proposal, dated July 31, 1991, H⁺GCL originally prepared a Statement of Work (August 21, 1991) to investigate the fire training pit on the west side of Snake Road. However, background information obtained during research into the historical use of this property indicated that two burnable dumps located on the east side of Snake Road should also be investigated. One of these areas was used by NASA for burning combustible materials and the other area was used by the Army for burning explosive materials. Accordingly, the Work Plan for the site characterization was revised to incorporate the new information obtained during the historical document review task and was submitted for Analex/NASA approval on January 9, 1992. Initial field activities were conducted during the week of January 13, 1992, and one soil boring was completed on January 16, 1992. Information regarding depth to bedrock, as well as the large volume of soil required for all the requested analyses, subsequently prompted NASA, Analex, and H⁺GCL to revise the sampling methodology.

During a March 9, 1992 meeting at Plum Brook Station, attended by representatives from NASA, Analex and Bionetics (NASA subcontractors), and H⁺GCL, the following tasks presented in the January 9, 1992 Work Plan were modified:

- Characterization of Plum Brook surface water and sediment was deleted
- Metals analyses were limited to eight metals
- The proposed location for monitor well MW-3 was modified to assist in determining the direction of ground-water flow
- The soil sampling program was modified to determine the presence or absence of soil contaminants, not to define the extent of vertical and lateral contamination

The final objectives for Phase I of the investigation, as approved by Analex and NASA, are as follows:

- Determine the historic use of Disposal Area Three by both NASA and the Army

- Determine the types and concentrations of compounds present in the subsurface at Disposal Area Three
- Determine the impact, if any, of prior disposal activities on ground-water quality
- Determine the need for a Phase II Remedial Investigation and Baseline Risk Assessment

2.2 Site History

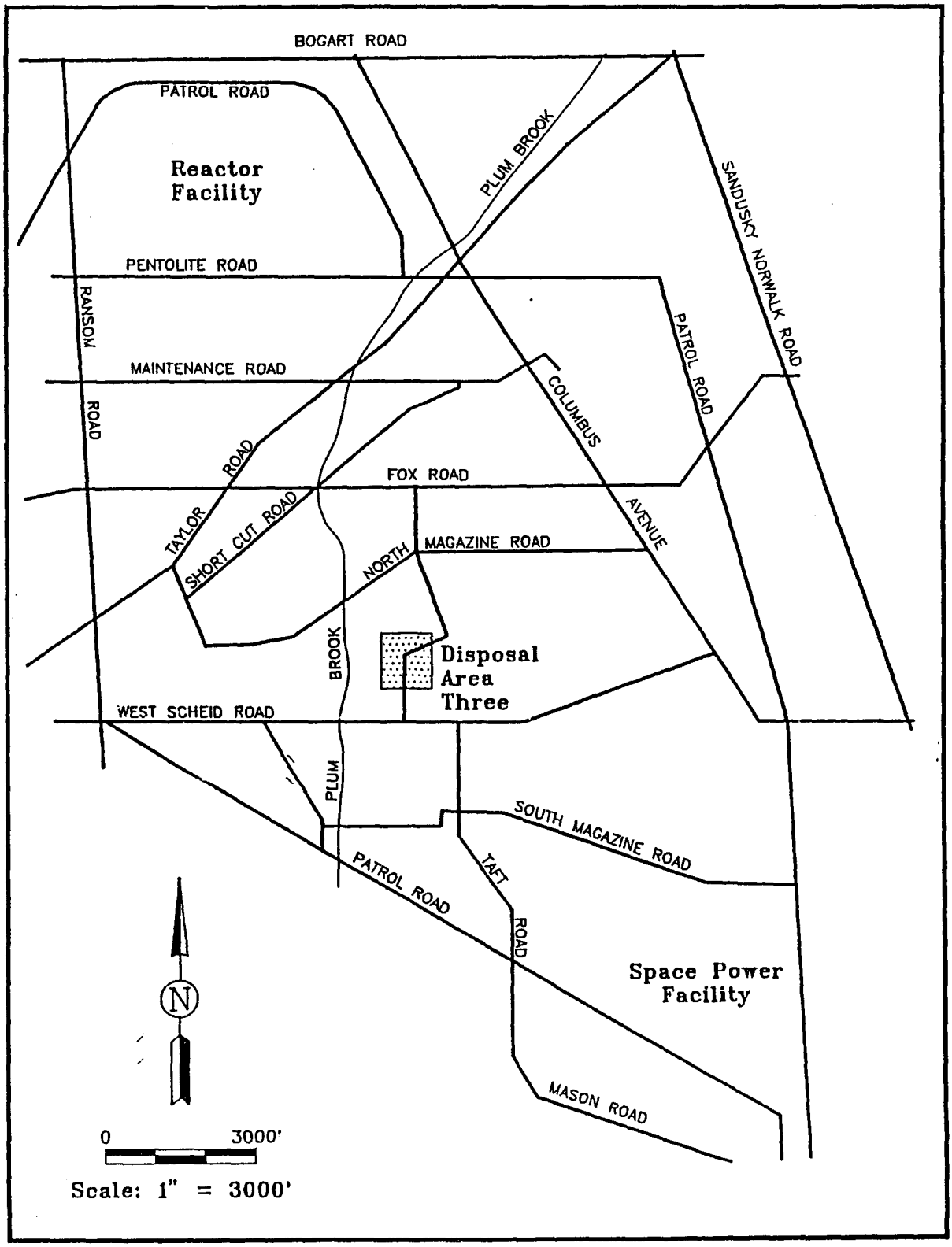
Plum Brook Station is a satellite operation of the Cleveland-based NASA LeRC. Plum Brook Station is located approximately 50 miles west of NASA LeRC, near Sandusky, Ohio, and it is primarily utilized as a research facility. Plum Brook Station covers approximately 6,400 acres south of Bogart Road and west of US 250 (Figure 2-1).

Use of the Plum Brook property dates back to 1941, when it was established by the U.S. Army as the Trojan Powder Plant. The Trojan Powder Plant manufactured weapons using trinitroluene (TNT), dinitroluene (DNT), and pentolite powders, acids, and related compounds. The facility was placed in standby condition from 1945 to 1946. During this period, the U.S. Army conducted decontamination and decommissioning of buildings and structures associated with the manufacturing of ordnance. Decontamination and decommissioning methods involved the removal and relocation of all explosives to an area east of Snake Road, where they were burned.

The National Advisory Committee for Aeronautics (NACA) leased 500 acres of the north portion of the site in 1956 to construct and operate a test reactor. In 1958 NACA was renamed NASA. In 1963, NASA acquired an additional 6,000 acres of the site for conducting aerospace research activities. Some of the major research operations conducted by NASA included a reactor facility, a space propulsion research facility (B2 Site Complex), space power facility (SPF), high energy rocket engine research facility, cryogenic propellant tank site (K Site), and the hypersonic tunnel facility (HTF). The reactor facility started operations in 1963 and was closed in 1973. In 1974, the Plum Brook facility was closed, although a skeleton crew remained on-site to conduct maintenance and oversight of the facility.

Figure 2-1

Plum Brook Station Facility Map



In 1988, NASA started to generate work for the satellite facility and some buildings were brought back on-line. The four major aerospace operations which were reactivated include:

- SPF - This facility is a large vacuum tank used to test spacecraft and/or their subsystems and components in a simulated space environment.
- K Site - This facility tests propellant tank insulation systems and determines pressurizing gas requirements during propellant outflow.
- B2 Site Complex - This facility tests space vehicles and upper stage rocket engines in a simulated space environment.
- HTF - In this facility, air velocities and temperatures were created to simulate rocket flight speeds up to seven times the speed of sound and altitude conditions up to 120,000 feet.

2.3 Disposal Area Three Historic Operations

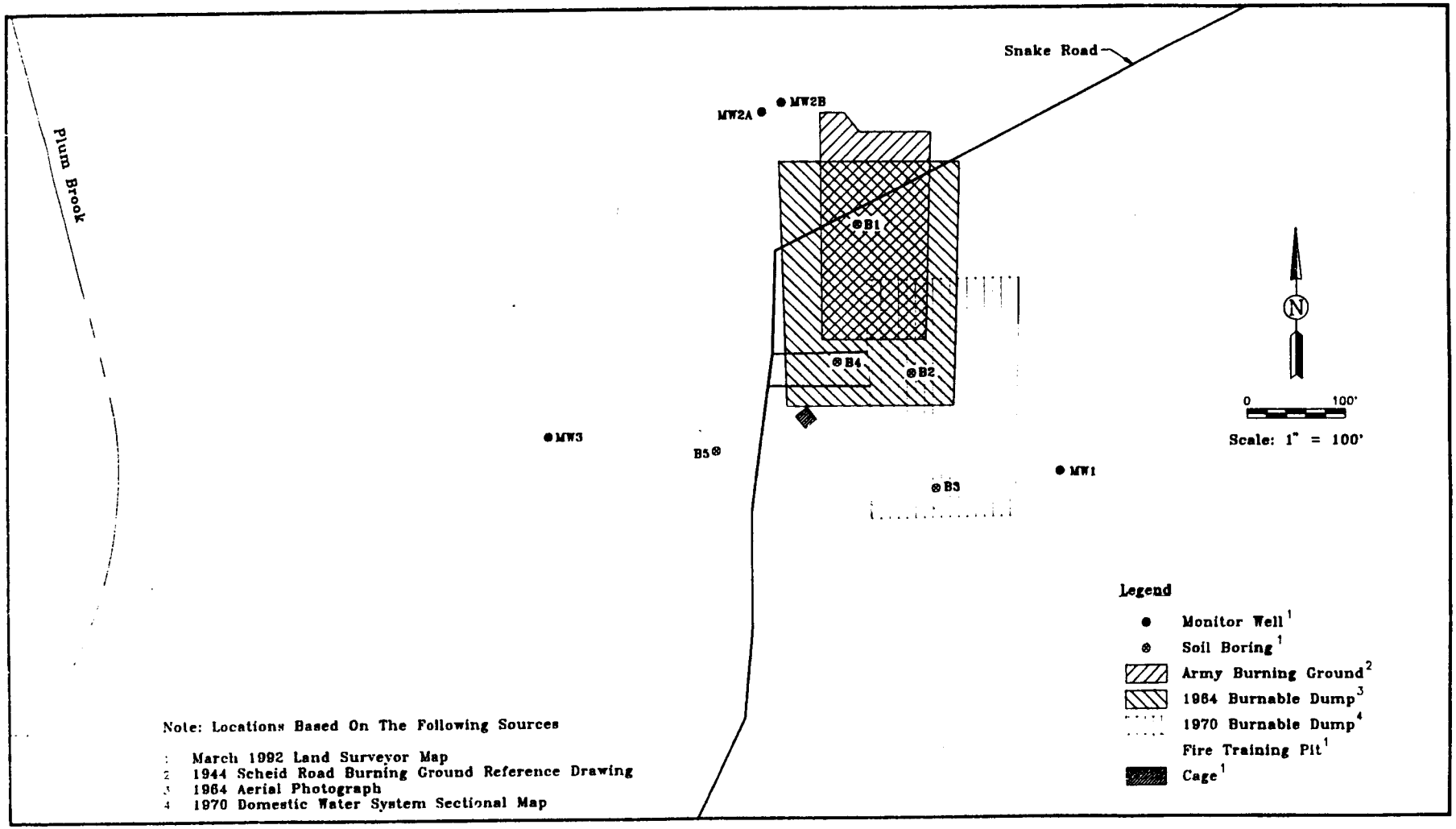
H⁺GCL personnel conducted interviews with NASA employees as well as current and retired NASA on-site contractor personnel. The following descriptions are based on information contained in SAIC's "Plum Brook Station Preliminary Assessment" and obtained during H⁺GCL's site visits, interviews, and document review.

The area under investigation referred to as "Disposal Area Three" is located adjacent to Snake Road and consists of a fire training pit, an Army burnable dump and a burnable dump used under NASA operations.

The fire training pit, located on the west side of Snake Road, was constructed in the early 1960s and was used by on-site personnel during fire training exercises (Figure 2-2). Fire training exercises were conducted by partially filling the burn pit with water and waste oil and/or diesel fuel, which floated on the surface. The oil was ignited and the fire was extinguished with either dry powder or carbon dioxide. The fire training pit area was also used to extinguish materials (such as fuel filters and diesel fuel) that were ignited in small metal pans to simulate small scale fires. Waste oil and solvent were also reportedly in the pit and burned. The volumes and types of solvents and waste oils disposed of in this manner were not documented and this practice was typically in conjunction with on-site fire-fighting training conducted in the pit.

Figure 2-2

Study Area Map
Disposal Area Three



In addition to fire training, the pit was also used on at least two occasions to dispose of solid and explosive waste. On one occasion, the pit was used to dispose of fuel oil filters. The filters were placed in the pit and set on fire in order to burn the fuel off. Remaining metal pieces associated with the filters were removed from the pit and disposed of as landfill waste. On the other occasion, in approximately 1971, the pit was used to dispose of a small amount of Class C explosives. Some metal pieces, not detonated during the process, remained after the explosives were burned and were removed from the pit for disposal as landfill waste.

An area on the east side of Snake Road was used by the Army in the period of 1941 to 1963 for the destruction (burning) of explosives during the decommissioning of the ordnance works. Based on the information collected to date, it is assumed that this area was contained by a dike around its perimeter. The volume of explosives destroyed in this area is unknown; however, hazardous substances destroyed at the burning grounds by the Army included materials contaminated with DNT, TNT, pentolite, and asbestos. Information relating to the Army's burnable dump is presented in the Draft Engineering Report for the Contamination Evaluation at the Former Plum Brook Ordnance Works Sandusky, Ohio (March 1990); this report was prepared for the Army by IT Corporation in March 1990.

The NASA burnable dump area, which includes a large wire cage, is located on the east side of Snake Road and was surrounded by a diked containment area, which is no longer present.

NASA continued to conduct decontamination and decommissioning at Plum Brook Station after the Army decommissioned the Trojan Powder Plant. Waste, generated during NASA's decontamination and decommissioning efforts that was contaminated or potentially contaminated with explosives or acids was also burned at Disposal Area Three. Other hazardous materials disposed of at the burning grounds by NASA may have included waste oils, solvents, and other chemicals. Common practice was to accumulate combustible/explosive waste in the burn pit and douse it with chemical waste prior to setting the waste pile on fire. The types and volumes of waste disposed in this manner were not documented. On May 14, 1973, a fire occurred at Disposal Area Three and the probable cause was stated to be either spontaneous combustion due to chemicals and oils dumped together or discarded smoking materials.

This area was also used during NASA's tenure for the destruction of combustible, non-contaminated solid waste (wood and paper-type debris). A wire cage, which remains on-site, was reportedly used to store combustible materials such as paper and cardboard prior to burning. It was also reported that metal, electrical equipment, wiring, rags, cardboard, and paper were burned in this area. The NASA burnable dump was used throughout the 1960s

and possibly to the mid-1970s; leftover unburned debris was periodically removed from the site. In the late 1970's, ash was removed from the burn pit and buried near Line Road 16 and North Magazine Road; the burn pit was then backfilled.

Figure 2-2 illustrates the approximate location of the fire training pit, two burnable dumps, and the current location of the wire cage. This figure illustrates the configuration of the dumps based on the following sources:

- 1964 aerial photo
- 1970 domestic water system sectional map
- 1944 Scheid Road Burning Ground reference drawing

Based on the information provided in the IT Corporation report, it is assumed that the Army's burnable area overlapped a portion of the 1964 burnable dump, which was located on the aerial photograph. The 1970 utility map location of the burnable dump, as depicted on Figure 2-2, may not be as accurate as the 1964 location since this area does not fully agree with NASA staff and subcontractor recollections. Some of the discrepancies may be attributed to the fact that Snake Road was previously oriented in a north/south direction and was relocated to its current orientation between 1964 and 1970. The Army's burnable dump and the 1964 burnable dump were situated east of the north/south aligned Snake Road. The 1970 burnable dump outline is located south of the new bend in Snake Road.

2.4 Previous Site Characterization

As of January 1991, there were over 17 ground-water monitor wells located at the Plum Brook site. Four wells were installed in late 1990 by IT Corporation during an investigation of the Army's disposal and decommissioning activities, and in early 1991, the remaining thirteen wells were installed by EBASCO to characterize leaking underground storage tanks at the nuclear reactor building, pump station, SPF, and the garage and vehicle maintenance area. None of these ground-water monitor wells are located within 3/4 of a mile of Disposal Area Three.

During IT Corporation's investigation of Disposal Area Three, four soil borings were installed in the vicinity of the area assumed to be the Army's burnable dump (Figure 2-3). Soil samples were collected from approximately the two to four foot depth interval and the samples were analyzed for volatile organic compounds (VOCs), semi-volatile organic

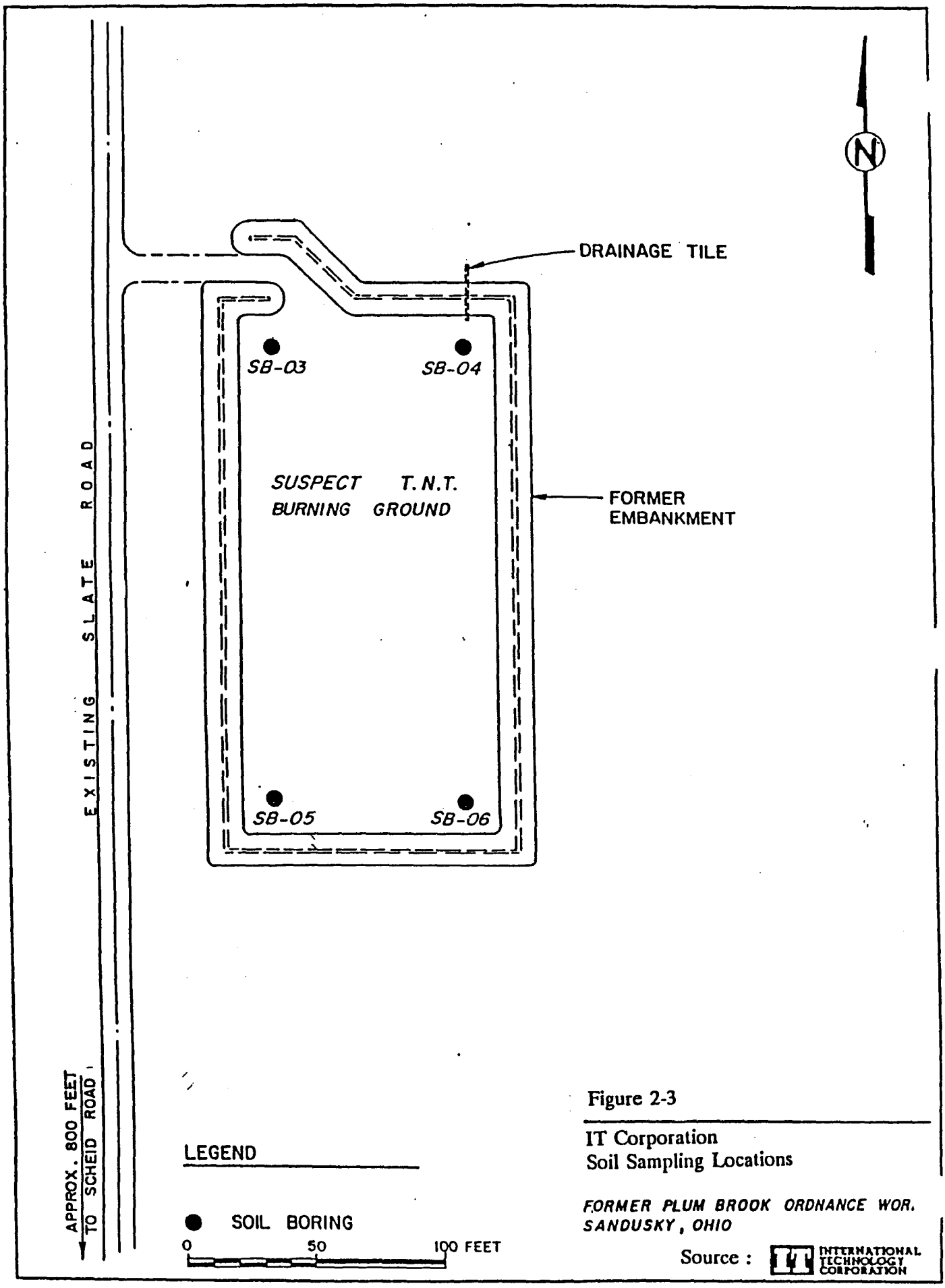


Figure 2-3

IT Corporation
Soil Sampling Locations

FORMER PLUM BROOK ORDNANCE WOR.
SANDUSKY, OHIO

Source : INTERNATIONAL TECHNOLOGY CORPORATION

compounds, metals, and explosive compounds. Table 2-1 presents a summary of the analytical results. A low concentration of 1,3,5-trinitrobenzene (0.093 mg/kg) was detected in soil boring SB-03. Volatile and semi-volatile compounds were also detected in the soil samples. Acetone was detected in all four soil samples with concentrations ranging from 65 µg/kg to 4,300 µg/kg; methylene chloride was detected in samples SB03 and SB04 at concentrations of 10 µg/kg and 8 µg/kg, respectively; and bis(2-ethylhexyl)phthalate was also detected in all four samples with concentrations ranging from 380 µg/kg to 1,200 µg/kg. IT Corporation concluded that the presence of acetone in these samples may have been related to laboratory contamination. Since organic compounds were detected in IT Corporation soil samples, H⁺GCL did not want to designate any of IT Corporation's samples as background for this investigation. In addition, the exact location of the soil samples cannot be accurately determined based on the documentation provided in IT Corporation's report.

2.5 Soils, Geology, and Hydrology

Soils mapped by the Ohio Department of Natural Resources at Plum Brook Station are the Arkport-Galem association in the northern part of the station, and the Prout association in the southern part of the station. The Prout association occurs overlying shale bedrock and is a somewhat poorly drained soil with a heavy silt loam to silty clay loam subsoil. It has a moderately low permeability, estimated between 6.3 and 12 inches per hour, and thickness ranges from 20 inches to 60 inches.

Bedrock in northwestern Ohio consists of carbonates (limestone and dolomite) and clastics (sandstones and shales), and regionally dips to the northeast toward Lake Erie. Bedrock at Plum Brook Station consists of four Devonian-aged formations (listed oldest to youngest): the Columbus Limestone, the Delaware Limestone, the Plum Brook Shale/Prout Limestone and the Ohio Shale. Disposal Area Three is situated in the Plum Brook Shale, described as a blue-grey calcareous shale or mudstone. The depth to bedrock is highly variable across Plum Brook Station ranging from 2 to 12 feet for shales and from approximately 19 to 25 feet for limestone, according to previous soil borings and monitor well data.

Topography at Plum Brook Station is relatively level and slopes gently down toward Lake Erie to the north. The northern Ohio topography in general has been created and modified by glacial processes. Disposal Area Three is approximately 670 feet above mean sea level. The nearest body of standing surface water is an unnamed pond approximately 800 feet to the east of Disposal Area Three. The closest body of running surface water is Plum Brook, which is approximately 800 feet west of the site. Plum Brook is one of five streams that originates outside of Plum Brook Station, and eventually drains into Lake Erie, approximately 15 miles to the north.

Table 2-1

IT Corporation's Soil Sampling Results
Disposal Area Three

IT Sample Number	Volatile Organics	Semivolatile Organics	Nitroexplosives	Metals
SB-03	Acetone, 990 ppb Methylene Chloride, 10 ppb	Bis (2-ethylhexyl) phthalate, 380 ppb	1,3,5-Trinitrobenzene, 0.093 ppm	Barium, 31.6 ppm Chromium, 10 ppm Iron, 15,600 ppm Lead, 50 ppm Manganese, 71.3 ppm Sodium, 76 ppm
SB-04	Acetone, 65 ppb Methylene Chloride, 8 ppb	Bis (2-ethylhexyl) phthalate, 1,200 ppb	None Detected	Barium, 41.0 ppm Chromium, 7 ppm Iron, 11,000 ppm Lead, 16 ppm Manganese, 14.5 ppm Silver, 0.5 ppm Sodium, 45 ppm
SB-05	Acetone, 4,300 ppb	Bis (2-ethylhexyl) phthalate, 420 ppb	None Detected	Arsenic, 2 ppm Barium, 21.1 ppm Chromium, 4 ppm Iron, 4,940 ppm Lead, 9 ppm Manganese, 35.0 ppm Sodium, 32 ppm
SB-06	Acetone, 2,300 ppb	Bis (2-ethylhexyl) phthalate, 470 ppb	None Detected	Barium, 58.9 ppm Chromium, 6 ppm Iron, 6,420 ppm Lead, 16 ppm Manganese, 129 ppm Sodium, 80 ppm

ppb = µg/kg
ppm = mg/kg

Local bedrock aquifers supply drinking water for parts of Erie County. The older limestone aquifers are highly productive, where yields of 100 to 500 gallons per minute may be developed. Municipal and industrial wells are located in the limestone aquifer in Sandusky, Ohio. The shales are poorly productive, where yields seldom exceed 3 gallons per minute. Domestic wells are located in the shale aquifer at approximate depths of 45 feet to 120 feet below the surface.

The surficial layer of glacial deposits may also contain discontinuous lenses of potentially water bearing sand and gravel. Shallow water-bearing sand lenses have been reported in the glacial deposits at Plum Brook Station at depths of less than 10 feet. Glacial till generally has a low permeability due to the high clay and silt content, making it a poor source of ground water. The lenses may be a bedrock recharge source. If vertical fractures are present, then the lenses are an eventual ground-water source for domestic wells.

3.0 Phase I Site Characterization

3.1 Technical Approach for the Phase I Site Characterization

The technical approach for the Phase I Site Characterization consisted of the following subtasks:

- Research the historic use of Disposal Area Three to confirm the compounds potentially released at the site
- Complete a soil boring program to determine the presence of possible soil contamination at the burnable dumps and the fire training pit
- Complete a ground-water sampling program to determine the impact of the fire training pit and burnable dumps, if any, on the upper aquifer

The following sections present a description of the activities accomplished during each of these tasks.

3.2 Historical Document Search and Interviews

Prior to commencement of field activities, H⁺GCL reviewed all readily available site data pertinent to the Phase I activities and conducted interviews with employees from several key NASA departments, contractors, and tenants. Where possible, individuals selected for the interviewers were those instrumental in the decision-making affecting the fate of several types of wastes at the Plum Brook facility, as well as those involved in the burning at Disposal Area Three.

The individuals interviewed were: Ray Ruffing, Don Young, Lynn Cherry, and Neil Casper of Sverdrup Technology Corporation; Bob Kanney and Amy Bower of NASA; Gene Freidt, retired, Teledyne; and Jack Ross, retired, Sverdrup.

Historical aerial photos (1958 and 1964) were reviewed to confirm that the confines of the pit did not migrate outside the area under investigation and that burn activities were concentrated in the same area. A review of available published geologic and hydrogeologic documents and local, county, and state records, was conducted. Site-specific assessments conducted by IT Corporation and Science Applications International Corporation (SAIC) were also reviewed. A complete list of references is presented in Section 7.0.

3.3 Soil Boring Program

3.3.1 Soil Boring Locations

Field activities were initiated during the week of January 13, 1992. On January 16, 1992 boring B-1 was completed, however, due to inclement weather, the remaining field activities were postponed until the week of March 9, 1992.

A total of nine soil borings were installed in this area upon completion of field activities. Four of these borings were completed as monitor wells, and the remaining five were grouted after soil sampling was completed. The soil boring and well locations are shown on Figure 2-2. Borings B1, B2, and B4 were designed to characterize the Army's burnable dump area. Borings B3 and B2 were placed to characterize NASA's burnable dump area. Boring B5 was placed adjacent to the fire training pit to characterize the potential types of soil contamination that could be present as a result of fire training activities. MW-1 was assumed to be the background location for this area. MW-2A and MW-2B were used to aid in the delineation of the soil contamination from the Army's burnable dump and MW-3 was used to define the direction of ground-water flow. The elevations of the borings were surveyed by John Hancock and Associates and the locations of the borings are tied into NASA's coordinate system.

3.3.2 Soil Sampling and Analysis Procedures

The data collected during the initial drilling conducted in January 1992 was used to amend the initial Work Plan, dated January 9, 1992. For example, bedrock was encountered in B-1 at eight feet below ground surface, and an insufficient amount of soil was collected from the split spoons to obtain two complete sets of samples from the boring, as delineated in the January 9, 1992 Work Plan. Therefore, soil samples from B1 were collected and submitted for the designated analyses from the following intervals.

- 0-1 Foot Interval — Total lead, mercury, and explosives
- 2-4 Foot Interval — VOCs
- 4-8 Foot Interval — Semi-volatile organic compounds
- 6-8 Foot Interval — TPH, Polychlorinated Biphenyls (PCBs), pesticides, and herbicides

This information was provided to Analex and NASA and was used to develop revised soil sampling procedures, which were implemented when the field activities were resumed on March 9, 1992. The revisions included:

- Collection of soil samples for field screening and possible VOC analysis from each split spoon
- Collection and submittal of composite samples for analysis from each boring
- Submittal for analysis of one VOC sample per boring, based on results of field screening

The soil samples were analyzed for VOCs, semi-volatile organic compounds, herbicides, pesticides, PCBs, total mercury and lead, trinitrotoluene (TNT), dinitrotoluene (DNT), Cyclotrimethylene trinitramine (RDX), Cyclotetramethylene tetranitramine (HMX), TCLP metals, total petroleum hydrocarbons reported as gasoline (TPH-(G)) and diesel (TPH-(D)). Table 3-1 presents a summary of the laboratory analytical methods used during this investigation.

The soil from all borings, with the exception of B-1, were composited over the entire borehole depth for all analyses except VOCs. One sample interval from each boring was submitted for VOC analysis based on the results of the field screening activities; for VOCs, the interval with the highest field reading was submitted for laboratory analysis.

The soil borings were drilled by advancing a string of hollow-stem augers. Soil samples were retrieved continuously utilizing a split spoon device until bedrock was encountered. A soil boring log was completed for each boring which describes the lithology and field observations. These logs are included in Appendix A.

After each split spoon sample was retrieved, the sample was split into three portions. First, a 4-oz jar for analysis of VOCs was filled with soil and held pending results of field screening. A second portion of the sample was placed in a "ziplock" bag, for field screening of VOCs using a photoionization detector (PID) with an 11.7 ev lamp. The bags were retained until the boring was completed; then, heated, manually agitated for approximately 30 seconds to promote disaggregation, and analyzed by piercing the bag with the sampling probe of the PID. VOC concentrations in the headspace vapors were recorded. The results of the preliminary field analysis were used to determine which sample interval was to be submitted for laboratory analyses of VOCs. The remaining portion of the soil sample was placed in a stainless steel bowl and composited with the remaining split-spoon samples

Table 3-1

Summary of Analytical Methods

SOIL SAMPLES ANALYTICAL SUMMARY

REFERENCE METHOD	PARAMETER	TECHNIQUE
EPA 8240	Volatile Organics	GC/MS
EPA 8270	Semivolatile Extractable Organics	GC/MS
EPA 6010/7000 Series	Metals: As, Ba, Cd, Cr, Pb, Hg, Se, Ag	ICP Emission Spectroscopy
Modified EPA 8015*	Total Petroleum Hydrocarbons as Gasoline and Diesel	GC/FID
EPA 8080	Pesticides, PCBs	GC-ECD
EPA 8150	Herbicides	GC-ECD or HALL
USATHAMA Method LW23	TNT, DNT, RDX, HMX	HPLC UV Analysis

WATER SAMPLES ANALYTICAL SUMMARY

REFERENCE METHOD	PARAMETER	TECHNIQUE
EPA 624/8240	Volatile Organics	GC/MS
EPA 625/8270	Semivolatile Extractable Organics	GC/MS
EPA 6010/7000	Metals: As, Ba, Cd, Cr, Pb, Hg, Se, Ag,	ICP Emission Spectroscopy
Modified EPA 8015*	Total Petroleum Hydrocarbons as Gasoline and Diesel	GC/FID
EPA 8080	Pesticides, PCBs	GC-ECD
EPA 8150	Herbicides	GC-ECD or HALL
USATHAMA Method LW23	TNT, DNT, RDX, HMX	HPLC UV Analysis

* Modifications as recommended by the California Department of Health Services

from that boring. After auger refusal was reached, the sample was thoroughly mixed, placed in the appropriate laboratory-cleaned jars, and kept at 4°C pending shipment to the laboratory.

H⁺GCL standard operating procedures for Chain-of-Custody were strictly adhered to during all sampling activities.

3.4 Ground-Water Characterization

3.4.1 Ground-Water Monitor Well Locations

Figure 2-2 illustrates the location of the ground-water monitor wells. H⁺GCL's ground-water monitor well, MW-1 was designated as a background well for Disposal Area Three. In the Work Plan dated January 9, 1992, H⁺GCL proposed to use existing on-site wells for background comparison; however, upon review of the analytical results obtained from the background well installed by IT Corporation, it became apparent that there may have been some acetone laboratory contamination in the groundwater sample. Therefore, H⁺GCL installed a background well specifically for this area at the location of MW-1 (Figure 2-2).

Monitor wells MW-2A and MW-2B are located adjacent to the NASA and Army burnable dumps. Evaluation of the ground water at this location is needed to determine the impact, if any, on ground-water quality as a result of the activities conducted at the burnable dump areas. Monitor wells MW-2A and MW-2B were installed as a well pair, MW-2A was screened from 12 feet to 22 feet and MW-2B was screened from 4.8 feet to 9.8 feet below grade. These wells were completed to investigate the presence of vertical ground-water flow gradients.

In H⁺GCL's January 9, 1992 Work Plan it was proposed that MW-3 be installed adjacent to the fire training pit to evaluate the potential impact on ground-water quality from this area. However, during the March 9, 1992 meeting between NASA, Analex, and H⁺GCL, it was agreed that this well location would be modified and MW-3 would be located closer to Plum Brook to aid in the determination of the ground-water flow direction at Disposal Area Three. However, the new location for MW-3 that was agreed upon is not directly downgradient from the area of concern.

3.4.2 Well Construction

The ground-water monitor wells were originally to be completed above the top of the competent shale using the hollow stem auger rig. However, weathered shale was present at a depth of 6.0 feet below grade and auger refusal was encountered at 8.0 feet below grade in boring B-1. Based on this information, the well installation procedures had to be modified to allow penetration of the bedrock, or the wells could not be completed with at least a 5-foot screen length. After consultation with Analex and NASA it was decided that the wells would be drilled using a hollow stem auger, and if bedrock could not be penetrated with the augers, then drilling would be completed using air rotary methods and the wells would be completed in the shale.

All of the wells with the exception of MW2A are screened in the unconsolidated sediments as well as the underlying shale; MW2A was screened entirely in the shale. The depth of the screened interval chosen for wells MW1, MW2B and MW3 was based on the observations made during drilling activities. Saturated materials appeared at approximately 5 to 6 feet below grade which coincided with the interface of the unconsolidated materials and the underlying shale bedrock. The well screens were placed at or slightly above the depth where the saturated materials were observed except for MW2A which was completed entirely in the shale.

The ground-water monitor wells were installed utilizing the hollow stem auger drilling method until bedrock was encountered, then the drilling method was switched to air rotary. From the depth of auger refusal the augers (12 3/4 inches in diameter) were left in place and the rotary trigone bit (6 inches in diameter) and drill rods were inserted through the augers to allow drilling activities to continue. This combination of drilling methods was necessary since the bedrock underlying the area, a competent shale, could not be penetrated using the hollow stem augers.

The monitor wells were constructed of stainless steel screen and casing to satisfy Ohio EPA requirements. The casing and screen was emplaced through the augers, and the augers were retracted during emplacement of the sand pack. The filter pack material extended from approximately 3.0 feet to 1.0 feet above the top of the screen due to the shallow depth to ground water. A bentonite seal was placed above the filter pack and the thickness of the seals ranged from approximately 3.0 feet to 1.0 feet. The remaining annulus of the borehole was grouted using a cement-bentonite grout, the thickness of the grout ranged from 2.0 feet to 7.0 feet depending on the depth of the top of the screen. Appendix B contains the lithologic logs and the well completion diagrams for the four monitor wells.

The wells were completed above grade and equipped with locking protective steel casing that was painted orange. A concrete pad centered around each well was also installed. The monitor wells were secured with locks that are keyed alike to prevent tampering or accidental contamination. The elevation of the pads and the top of the protective casings were surveyed by John Hancock and Associates of Sandusky, Ohio and the locations are tied into NASA's coordinate system. Photographs of field activities are included in Appendix C.

3.4.3 Ground-Water Development Sampling and Analysis

The ground-water monitor wells were developed after installation to ensure that a satisfactory hydraulic connection existed between the well and the screened formations and also to remove fine sediments from the gravel pack. Well development was accomplished using a bailer. During the development process, physical and chemical parameters, such as pH, specific conductance, and temperature were measured. Development continued until a minimum of five well volumes were removed or stabilization of pH, specific conductance, and temperature were achieved. Due to the presence of fine silts and sands underlying the site, the ground water is relatively turbid and the wells could not be developed until they were sediment free. No free product was observed during well development activities. The well development records were completed for each well and are presented in Appendix B.

Ground-water samples were collected from each well on March 14, 1992. The samples were analyzed for the compounds listed in Table 3-1.

3.5 Decontamination Procedures

All drilling and sampling equipment was steam-cleaned prior to commencement of drilling activities and the augers and drill rods were steam-cleaned between borings. Sampling equipment was also cleaned before and after sampling using the following procedures:

- Wash in potable water with a brush, removing soil deposits or sediment
- Wash in a soapy mixture of potable water and a laboratory detergent such as Alconox®
- Potable water rinse
- Methanol rinse

- Air dry

3.6 Waste Generation and Storage

Development, purge and decontamination water, and soil cuttings generated during field activities were placed in 55-gallon drums, labeled, and stored on-site pending receipt of analytical results. This material was not sampled during the March field activities since the decontamination water and soil cuttings were frozen. During the week of April 20, 1992, the materials were sampled and submitted for laboratory analysis. Prior to disposal, the drummed waste was characterized in terms of ignitability, reactivity, corrosivity, RCRA toxicity, and the paint filter liquids test (for soil). The drummed material was not sampled for TNT, DNT, RDX, and HMX since these compounds were not detected in any soil ground-water samples obtained during the investigation.

The analytical results for the drummed material indicate that the waste is non-hazardous, and it will be removed for appropriate disposal in a local landfill. Appendix E includes a summary of the laboratory results as well as the analytical data. Autumn Technical Services, Inc. will be used for the transport and disposal and will select the landfill. H+GCL is awaiting receipt of the schedule for drum removal and disposal.

3.7 Quality Assurance/Quality Control

A field rinsate blank, a trip blank and a replicate sample were collected to evaluate quality assurance (QA)/quality control (QC). The field rinsate blank tested the field sampling and decontamination procedures and thus the overall accuracy of the analysis. To obtain a rinsate blank, a volume of distilled water was poured through the split spoon and then into the appropriate container for analysis. The rinsate blank was collected for all compounds except TPH. A rinsate blank was not collected during ground-water sampling because disposable bailers were used to collect the samples.

A trip blank for VOC analysis was provided by the laboratory to ensure that the sample containers were not contaminated while in transit from the laboratory to the site or while in storage at the site.

The accuracy and precision of the laboratory was assessed by using a blind replicate sample. A replicate sample for all compounds, except TPH, was collected from MW-3 during ground-water sampling activities; this replicate sample was labeled MW-5, a non-existing well, for sampling identification purposes so that it was submitted as a "blind" sample to the laboratory.

4.0 Analytical Results

4.1 Soil Samples

Soil samples were collected from nine boreholes and the samples were analyzed for VOCs, semi-volatile organic compounds, PCBs, pesticides, herbicides, TPH, TCLP metals, TNT, DNT, RDX, and HMX. Samples from all borings, except B-1, were composited for all parameters except VOCs. The samples submitted for VOC analyses were selected from the specific interval which exhibited the most elevated field screening concentrations; for B-1, samples were collected for VOC analyses from the depth interval of 2-4 feet. Tables 4-1 through 4-3 include a summary of the soil sampling results by boring; these tables also include notations assigned by the laboratory relating to QC notations. Explosives, pesticides, and herbicides were not detected in any of the soil samples analyzed during this field investigation. Appendix D includes a copy of the complete laboratory data.

4.1.1 Volatile Organic Compounds

Table 4-1 presents a summary of the VOC soil sampling results, which includes the depth interval sampled. Samples that were reanalyzed by the laboratory because the surrogate recovery results were not within specified QC limits are discussed in the text using the highest concentration reported on the laboratory data sheets; both concentrations are included on the table for reference.

Acetone was detected in very low concentrations (9 µg/kg to 39 µg/kg) in all samples except the field QC samples. However, in four of the samples, acetone was also found in the associated laboratory blank (denoted by a B on the table). IT Corporation's sampling results also indicated the presence of acetone in this area, but H^+GCL's acetone concentrations were much lower.

Methylene chloride was found in all samples including the QC samples. In addition, methylene chloride was found in all of the laboratory blanks, therefore, methylene chloride can be considered a remnant of laboratory contamination.

The remaining VOCs were sporadically detected in the soils. In boring B-2, 11 µg/kg of 1,1 dichloroethane and 64 µg/kg of 1,1,1-trichloroethane was detected at a depth of 4 to 6 feet. In MW-2B and MW-3, 2-butanone was detected at 4 µg/kg and 6 µg/kg, respectively. Concentrations in both samples were reported by the laboratory as estimated (J) because

Table 4-1

Volatile Soil Sampling Disposal Area Three
NASA Plum Brook Station

Sample Location	Depth in Feet	H+GCL Sample Number	Acetone	Methylene Chloride	1,1-Dichloroethane	1,1,1-Trichloroethane	2-Butanone	Chloroform	Bromodichloromethane
B1	2-4	9201161345	9BJ	19B	<7	<7	<14	<7	<6
B2	4-6	9203101220	<12	7B	11	42	<12	<6	<6
		9203101220*	18	11B	11	64	<12	<6	<6
B3	6-8	9203100928	26	10B	<6	<6	<12	<6	<6
		9203100928*	32	13B	<6	<6	<12	<6	<6
B4	6-8	9203101453	31	11B	<6	<6	<12	<6	<6
		9203101453*	39	12B	<6	<6	<12	<6	<6
B5	2-4	9203071126	16	8B	<6	<6	<12	<6	<6
		9203071126*	46	10B	<6	<6	<12	<6	<6
MW1	0-2	9203101008	12	9B	<6	<6	<12	<6	<6
MW2A	2-4	9203111100	26B	23B	<6	<6	<12	<6	<6
MW2B	0-2	9203120925	15B	18B	<6	<6	4J	<6	<6
MW3	NA	9203121549	15B	18B	<6	<6	6BJ	<6	<6
		9203121549*	10BJ	15B	<6	<6	<12	<6	
Rinsate	NA	9203111121	<10	7B	<5	<5	<10	<5	<5
Trip Blank	NA	9203111000	<10	3BJ	<5	<5	<10	9	2J
Proposed RCRA Soil Action Level			8,000,000	90,000		7,000,000	4,000,000	100,000	500

Units in µg/kg
* Duplicate analysis that is not within control limits
B = The analyte is found in the associated blank as well as the sample
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the results is less than the sample quantitation sample quantitation limit but greater than zero
< = Indicates compound was analyzed for but not detected above the applicable method detection limit
NA = Not applicable

Table 4-2

Semi-Volatile Soil Sampling Results
Disposal Area Three
NASA Plum Brook Station

Sample Location	Type	H+GCL Sample Number	2 Methyl-napthalene	Phenanthrene	Napthalene	Di-n-butyl-phthalate	Pyrene	Chrysene	Benzo(b)-fluoranthene	Bis(2-ethylhexyl)-phthalate
B1	Grab 4-8'	9201161355	<760	<760	<760	48J	<760	<760	<760	220J
B2	Composite	9203101235	220J	70J	70J	<760	43J	55J	43J	<760
B3	Composite	9203100927	170J	48J	56J	<800	<800	<800	<800	<800
B4	Composite	9203101459	95J	56J	<800	82J	47J	52J	44J	43J
B5	Composite	9203071143	100J	69J	<800	<800	<800	<800	<800	<800
MW-1	Composite	9203101021	300J	99J	82J	72J	<810	<810	<810	<810
MW-2A	Composite	9203111134	450J	180J	100J	<850	<850	<850	<850	<850
MW-2B	Composite	9203120957	99J	68J	<760	<760	<760	<760	<760	<760
MW-3	Composite	9203121625	450J	100J	160J	<800	<800	<800	<800	<800
	Rinsate	9203111121	<10	<10	<10	<10	<10	<10	<10	<10
Proposed RCRA Soil Action Level						8,000,000				50,000

Units in µg/kg
< = Indicates compound was analyzed for but not detected above the applicable method detection limit
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the results is less than the sample quantitation limit but greater than zero

Table 4-3

Soil Sampling Results Disposal Area Three
NASA Plum Brook Station

ımple ıcation	Type	H+GCL Sample Number	PCB[1] 1248	PCB[1] 1260	TPH[2] Gasoline	TPH[2] Diesel	Total[2] Lead	Total[2] Mercury	TCLP[3] Barium	TCLP[3] Cadmium	TCLP[3] Chromium	TCLP[3] Lead	TCLP[3] Silver
B1	Grab 6-8'	9201161410	<92	<180	14	NA	-	-	-	-	-	-	-
B1	Grab Surface	9201171000	-	-	-	-	70	<0.11	-	-	-	-	-
B1	Grab 2-4'	9201161345	-	-	-	-	-	-	<0.5	<0.01	<0.02	<0.1	<0.01
B2	Composite	9203101235	980	330J	2	<10	272	0.23	0.79	0.014	0.013	0.3G	0.01L
B3	Composite	9203100927	<49	<98	3.5	<10	20	0.25	0.63	<0.01	<0.01	0.1G	0.005L
B4	Composite	9203101459	<190	100J	0.6	<10	43	<0.12	0.38	<0.01	0.013	0.1G	0.009L
B5	Composite	9203071143	<95	<190	1.7	<10	31	<0.12	0.23	<0.01	<0.01	<0.1	0.007L
MW-1	Composite	9203101021	<97	<190	2.3	<10	24	0.24	0.26	<0.01	<0.01	<0.01	0.012L
MW-2A	Composite	9203111134	<51	<100	0.9	<10	25	<0.1	0.35	<0.005	<0.01	<0.1	<0.005
MW-2B	Composite	9203120957	<46	<92	1.7	86	20	<0.12	0.28	<0.005	0.13	<0.1	0.005L
MW-3	Composite	9203121625	<48	<96	4.2	<10	21	<0.11	0.27	<0.005	<0.01	<0.1	<0.005
	Rinsate	9203111121	<0.5	<1	-	-	<0.003	<0.0008	<0.1	<0.005	<0.01	<0.1	<0.005
roposed RCRA Soil Action Level			90	90				20					
CLP Maximum Contaminant Concentration									100	1.0	5.0	5.0	5.0
hio State TPH Clean-Up Standard					1	1							

iits in µg/kg
iits in mg/kg
iits in mg/L
= Not analyzed
= Indicates an estimate value when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero
= The TCLP Matrix Spike recovery was lower than the lower limit of the analytical method
= Indicates compound was analyzed for but not detected above the applicable method detection limit
= The TCLP Matrix Spike recovery was greater than the upper limit of the analytical method

the concentrations were greater than zero but less than the quantation limit[1] for that particular sample. In addition, 2-butanone was also found in the laboratory blank associated with the sample from MW-3. The trip blank was the only sample that contained chloroform (9 μg/kg) and an estimated concentration of 2 μg/kg of bromodichloromethane.

4.1.2 Semi-Volatile Organic Compounds

The results from the semi-volatile samples are presented in Table 4-2. Eight compounds were detected in one or more of the borings; however, all of these results are estimated because the concentrations are less than the sample boring limit. Phenanthrene and 2-methylnapthalene were detected in all borings, except B-1, and the concentrations ranged from 48 μg/kg to 180 μg/kg and 95 μg/kg to 450 μg/kg, respectively. Naphthalene was detected in five borings and ranged in concentrations from 56 μg/kg to 160 μg/kg. Pyrene, chrysene, benzo(b)fluoroanthene were detected in B-2 and B-4 but in concentrations less than 56 μg/kg. Bis(2-ethylhexyl)phthalate was detected in B-1 (220 μg/kg) and B-4 (43 μg/kg); IT Corporation detected higher concentrations of this compound in all four of their borings. Di-n-butylphthalate was detected in MW-1 at a concentration of 72 μg/kg, in the 4 foot to 8 foot interval of B1 at a concentration of 48 μg/kg, and in the composite sample of B4 at a concentration of 82 μg/kg.

4.1.3 Metals, PCB, and TPH Concentrations

Table 4-3 includes the analytical results for the metals, PCBs, and TPH analyses. The concentrations for metals, using the TCLP procedure, are all well below the RCRA thresholds for characteristic hazardous waste. Total mercury in soil ranged from less than 0.1 μg/kg to 0.25 mg/kg, and total lead concentrations ranged from 20 μg/kg to 272 mg/kg with only one sample exhibiting a concentration greater than 70 mg/kg. The sample from B-2 contained 980 μg/kg of PCB 1248 and an estimated concentration of 330 μg/kg of PCB 1260. Boring B-4 also contained an estimated concentration of PCB 1260 (100 μg/kg) in the composite sample. TPH(G) was detected in all soil samples, however, the concentrations were below 15 mg/kg. TPH(D) was only detected in the sample from MW-2B, at a concentration of 86 mg/kg.

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[1] Quantitation limit is defined as the lowest concentration of an analyte that can be reliably quantified and is usually set at the concentration in the sample equivalent to the concentration of the lowest calibration standard analyzed for that analyte.

TPH analyses were accomplished using a gas chromatograph (GC) with a flame ionization detector. In order to determine the amount of volatile organics (gasoline) or semi-volatile organics (diesel) present in each sample a series of standards are injected into the GC. The chromotograms generated during this calibration are used to determine calibration curves and response factors which are compared against the actual chromtograms from the samples. This comparison yields a concentration that is quantified as gasoline (volatile portion) or diesel (semi-volatile portion) and these concentrations are presented on Table 4-3.

4.2 Ground-Water Samples

Figure 4-1 presents the potentiometric surface map that was prepared from data collected on March 14, 1992. As is shown on the map, ground-water flow is to the northwest towards Plum Brook. Designated as the background well for this area, MW-1, is indeed upgradient of Disposal Area Three. The ground water in the shale exhibits the characteristics of a confined aquifer (i.e., water levels that equilibrate above the top of the observed saturated materials). An evaluation of the water levels in all the wells in this area indicates that the wells monitor the same aquifer, since the water level elevation in MW2A, which is completed in the shale, is comparable to the water level elevations in the other three wells, which are completed in both the unconsolidated materials and the shale. There appears to be only one aquifer in this area and the unconsolidated materials are part of this aquifer. The difference in ground-water elevations between MW-2A (deep) and MW-2B (shallow) indicates that there is a slight downward flow gradient (0.03) in this area, which may be due to recharge from the unconsolidated materials. However, the potentiometric surface at MW-2A indicates that this well is hydraulically connected to the uppermost aquifer.

A total of five ground-water samples were collected during this investigation. One sample was collected from each well and a replicate sample (MW-5) was collected from MW-3. Table 4-4 presents a summary of the laboratory data for these wells. Methylene chloride was detected in all samples at estimated concentrations ranging from 2 µg/L to 5 µg/L. Methylene chloride was also found in the laboratory blanks, rendering these sample results invalid. Acetone was also found in all wells except MW-1, and the concentrations ranged from 9 µg/L to 46 µg/L. Benzene was detected at an estimated concentration of 1 µg/L in MW-2A. Low levels of total chromium and lead were detected in all samples, and silver and arsenic were each detected in only one well, MW-2B and MW-1 respectively. The trip blank was only analyzed for VOCs and methylene chloride was the only analyte detected (at an estimated concentration of 2 µg/L).

Figure 4-1

Potentiometric Surface Map
Disposal Area Three

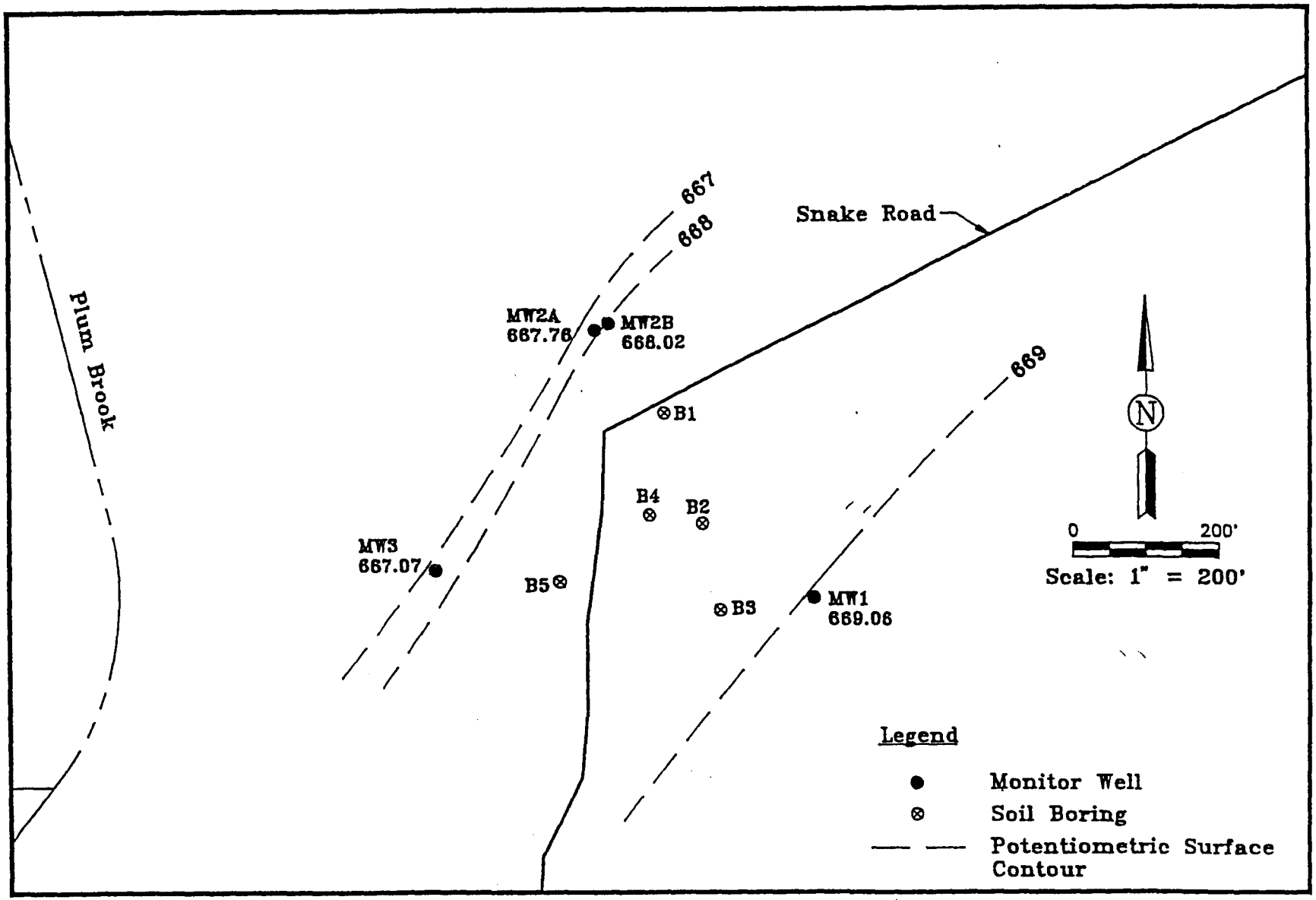

Table 4-4

Ground-Water Sampling Results Disposal Area Three
NASA Plum Brook Station

Sample Location	H+GCL Sample Number	Methylene Chloride[1]	Acetone[1]	Benzene[1]	Total Arsenic[2]	Total Chromium[2]	Total Lead[2]	Total Silver[2]
MW-1	9203141528	2BJ	<10	<5	0.0068	0.022	0.0091	<0.005
MW-2A	9203141121	2BJ	46	1J	<0.005	0.018	0.0048	<0.005
MW-2B	9203141210	5BJ	24	<5	<0.005	0.015	0.0037	0.006
MW-3	9203141317	5BJ	27	<5	<0.005	0.017	<0.003	<0.005
MW-5*	9203141300	4BJ	9J	<5	<0.005	0.011	0.003	<0.005
Trip Blank	9203141714	2BJ	<10	<5	-	-	-	-
Federal and State Maximum Contaminant Level				5	0.050	0.050	0.050	0.050
Proposed RCRA Water Action Level		50	4,000					

[1]Units in µg/l
[2]Units in mg/L

< = Indicates compound was analyzed for but not detected above the applicable method detection limit
- = Not analyzed
B = The analyte is found in the associated blank as well as the sample.
J = Indicates an estimated value when the mass spectral data indicates the presence of a compound that meets the identification criteria but the results is less than the sample nit limit but greater than zero.
* = MW5 is a duplicate sample from MW3.

Free product was not observed during purging or ground water sampling activities. Due to the absence of TPH in all wells and the extremely low benzene concentration in MW2A, the presence of free product would not be likely.

5.0 Analyses and Conclusions

The analytical results for the soil and ground-water samples were evaluated against published action levels to determine the need for further site characterization and/or remediation (Tables 4-1 through 4-4).

The compounds detected in the soil were compared to TCLP toxicity characteristics thresholds set forth in 40 C.F.R. Part 261; background metal concentrations as defined in U.S. Geological Survey Professional Paper 1270; proposed RCRA soil action levels as set forth in 55 FR 30798; and PCB Clean-up Standards set forth in 40 C.F.R. Part 761. The proposed soil action levels are health- and environment-based levels determined by EPA to be protective of human health and the environment.

The compounds detected in the ground water underlying Disposal Area Three were compared to State drinking water standards set forth in Ohio Administrative Code, 3745-54-94 and Federal maximum contaminant levels (MCLs) set forth in 40 C.F.R. Part 141.

Methylene chloride was detected in all of the samples as well as the laboratory banks. Therefore, the presence of methylene chloride is likely attributed to laboratory contamination since the associated method blanks also contained methylene chloride. Acetone was also found to be a laboratory contaminant in four of the nine samples analyzed. Since IT Corporation also found acetone in the soils in this area during their investigation, it is likely that low levels of acetone are present in the subsurface.

Samples that were determined by the laboratory to be associated with laboratory contamination or compounds only detected in the QC samples (i.e., chloroform and bromodichloromethane in the trip blank) were not considered further.

5.1 Soil Constituents

In addition to acetone and methylene chloride, low levels of 1,1-dichlorethane, 1,1,1-trichloroethane, and 2-butanone were detected in three of the soil borings. In B2, 1,1-dichloroethane and 1,1,1-trichloroethane are present in B2 at concentrations of 11 µg/kg and 64 µg/kg respectively. Estimated concentrations of 2-butanone were found in the soils of MW-2B (4 µg/kg) and MW-3 (6 µg/kg); however, the concentration at MW-3 may be related to laboratory contamination. There are proposed RCRA action levels in 55 FR 30798 for three of these compounds: 1,1,1-trichloroethane (7,000 mg/kg), acetone (8,000

mg/kg), and 2-butanone (4,000 mg/kg). Concentrations within Disposal Area Three are all well below these action levels.

Eight semi-volatile organic compounds were detected the soil samples; however, these compounds are present at levels below the sample limit and are therefore estimated values. Of the eight compounds detected, three of these compounds, 2-methylnaphthalene, phenanthrene, and naphthalene, were detected in more than half the samples. Soil samples obtained from B2 and B4 contained the greatest number of semi-volatile compounds. Of the semi-volatiles present, only bis(2-ethylhexyl)phthalate has a proposed RCRA soil action level of 50 mg/kg (50,000 µg/kg). This compound was detected in B1 at 220 µg/kg, a concentration well below the proposed RCRA action level.

The analytical results for TCLP metals in soils were below the RCRA TCLP thresholds for characterizing hazardous waste (Table 4-3). The total lead and mercury levels present in the soil (272 mg/kg maximum and 0.25 mg/kg maximum respectively) were within the reported background ranges for these constituents as reported in the U.S. Geological Survey Professional Paper 1270. In the eastern United States, the range for lead is less than 10 mg/kg to 300 mg/kg and the range for mercury is 0.01 mg/kg to 3.4 mg/kg.

The TPH(G) results ranged from 0.6 mg/kg to 14 mg/kg and TPH(D) concentrations were below detection limits with the exception of the soil sample from MW-2B (86 mg/kg). The recommended action level for petroleum based contamination in soils in Ohio is 1 mg/kg or background.

PCBs were detected in the soil at B2 and B4; however, the concentrations of 980 µg/kg and 100 µg/kg, respectively, are below EPA's recommended clean-up guideline of 10,000 µg/kg (10 ppm) for fresh PCB spills in a nonrestrictive area (40 C.F.R. § 761.120). The regulations require that during clean-up, soils be excavated to a depth of ten inches and replaced with clean soil (less than 1 ppm PCB). These two samples have PCB concentrations below the EPA clean-up guidelines as well as the criteria for clean backfill. The sample concentrations, however, exceed the proposed concentration of 90 µg/kg for RCRA proposed action levels (55 FR 30798).

Explosives, pesticides and herbicides were not detected in the soil samples submitted for laboratory analysis.

5.2 Ground-Water Constituents

Acetone was found in the ground water in all wells except MW-1. The concentrations of acetone encountered in the soils are of the same magnitude as the concentrations observed in the ground water. Based on this information, it is assumed that the concentrations in the ground water would not be expected to increase over time since the source area has similar concentrations. There are no MCLs for acetone in drinking water, but the proposed RCRA action level is 4,000 µg/L and acetone in the ground-water samples are below this proposed RCRA action level.

Benzene was detected in one ground-water sample at an estimated concentration of 1 µg/L, which is below the Federal and State MCL of 5 µg/L. The four metals that were detected in the ground water are also below the State and Federal MCLs for drinking water.

The ground-water monitoring system that was installed in Disposal Area Three was constructed to monitor the uppermost aquifer. Wells MW1, MW2B, and MW3 are completed in both the unconsolidated sediments and the shale, and MW2A is completed in the shale. Since the two units are hydraulically connected, this system will detect the presence of contaminants in the unconsolidated materials. This premise is further supported by the analytical results from both the soil and ground water samples. There are low levels of contaminants present in the soil at these locations, and the analytical results from the ground-water sampling do not indicate the presence of significant contamination in the ground water underlying the site.

5.3 Risk Assessment

The presence of the compounds in the soil listed in Tables 4-1 through 4-3, and the compounds in the ground water listed in Table 4-4, were evaluated in terms of potential exposure pathways. Since the NASA Plum Brook Station is an access-controlled facility, exposure to ingestion, dermal contact, or inhalation by the general public is prevented. In addition, because the area has been decommissioned as an active burning ground and fire training area through removal of ash and unburned materials, and through regrading with fill, the potential for airborne emissions and/or direct contact with the compounds detected in the soil, by NASA employees or subcontractors, is also minimized. The greatest potential for exposure is through surface water and/or ground-water transport. An evaluation is presented below of the public health threat posed to water supplies by the presence of the detected compounds.

5.3.1 Land Use, Population Exposure, and Drinking Water Supplies

Within a four mile radius of the Plum Brook Station, the land use is primarily residential and agricultural in nature. The cities and villages within this zone include Bogart, Sandusky, Bloomingville, Wilmes, and Kimball. Estimated population ranges from approximately 5,500 residences located within one to two miles of the facility to approximately 14,000 residences within three to four miles of the facility (SAIC, 3-27). City and rural water systems serve residences located north and east of Plum Brook Station. Residences south and west of Plum Brook utilize wells and/or cisterns. The Erie County Health Department does not permit surface water to be used as drinking water supplies.

Plum Brook obtains its drinking water supply from the City of Sandusky, which pumps water from Lake Erie for public, commercial, and industrial consumption.

Within a one-mile radius of the facility there are approximately 16 permitted drinking water well locations, most of which are located south of the Plum Brook Station property boundaries, upgradient of Disposal Area Three. Further, domestic wells are typically located in the shale aquifer at approximate depths of 45 feet to 120 feet.

From the ground-water analyses conducted at Disposal Area Three, there were no compounds detected in the upper aquifer which exceed established or proposed action levels requiring further site characterization or remediation to protect drinking water supplies.

5.3.2 Surface Water

Plum Brook is located within 800 feet of Disposal Area Three. Although the surface waters were not sampled, based upon the ground-water sampling and analysis results, the water quality of the stream is not likely affected by throughflow or baseflow. Storm water runoff may contain some compounds detected in the soil, but the concentrations reaching the stream are not likely to sufficiently deteriorate the water quality to constitute a threat to natural resources, including wildlife.

5.3.3 *Soils*

TPH and PCBs are the only compounds detected in the soil which exceed published action levels. Compounds detected in the soil for which there are no established action levels include 2-methylnapthalene, phenanthrene, naphthalene, pyrene, chrysene, benzo(b)fluoranthene, and 1,1-dichloroethane. Table 5-1 presents an evaluation of the solubility and experimental data regarding potential risks to human health. Most of the

Table 5-1

Contaminant Hazard Evaluation

Compound	Solubility in Water	Human Hazards	Experimental Data	Comments
Total Petroleum Hydrocarbons	N/A	N/A	N/A	N/A
2-Methylnaphthalene	Insoluble	No listd human health hazards. When heated to decomposition, emits acrid smoke and fumes.	Oral-rat LDL: 5000 mg/kg	HR: 1
Phenanthrene	Practically Insoluble	Photosensitiztion of skin. Carcinogen. Poisoning by intravenous route. Moderately toxic by ingestion. When heated to decomposition, emits acrid smoke and irritating fumes.	N/A	HR: 3
Naphthalene ppb	Insoluble	Poisoning by ingestion of large doses, inhalation, or skin absorption. When heated to decomposition, emits acrid smoke and irritating fumes.	OSHA PEL: TWA = 10 ppm OSHA STEL: 15 ppm	HR: 3
Pyrene	Insoluble	Inhalation. Skin irritant. Human mutation. Possible carcinogen. When heated to decomposition, emits acrid smoke and irritating fumes.	OSHA PEL: TWA = 0.2 mg/m^3	HR: 3
Chrysene	Insoluble	Confirmed carcinogen with experimental carcinogenic, neoplastigenic, and tumorigenic data by skin contact. Human mutation data reported. When heated to decomposition, emits acrid smoke and irritating fumes.	OSHA PEL: 0.2 mg/m^3 ACGIH TLV: Suspected human carcinogen	HR: 3
Benzo(b)fluoranthene	Probably Insoluble	Confirmed carcinogen with experimental carcinogenic and tumorigenic data. Mutation data reported. When heated to decomposition, emits acrid smoke and irritating fumes.	N/A	HR: 3
1,1-Dichloroethane ppb found	Oily Liquid - ≈1 part/200 parts H_2O	Poison by ingestion. When heated to decomposition, emits highly toxic fumes of phosgene and chlorine.	OSHA PEL: TWA = 100 ppm	RCRA Waste Number U076 HR: 3
Aroclor 1248/1260	Insoluble	Suspected human carcinogen. Experimental reproductive effects. Moderately toxic by skin contact. When heated to decomposition, emits highly toxic fumes of chlorine.	NIOSH REL: TWA (PCBs) = 0.001 mg/m^3	HR: 3
Lead	N/A	Suspected carcinogen. Poison by ingestion. Moderately toxic by intraperitoneal route. When heated, emits highly toxic fumes.	OSHA PEL: TWA = 0.05 mg(Pb)/m^3	HR: 3

Notes: HR = Hazard Rating of High (3), Medium (2), or Low (1)
PEL = Permissible Exposure Limit
STEL = Short-Term Exposure Limit
TWA = Time Weighted Average
OSHA = Occupational Safety and Health Administration
ACGIH = American Conference of Governmental Industrial Hygienists
NIOSH = National Institute for Occupational Safety and Health
N/A = Not Available

Sources: Lewis, R.J., Sr., 1990, Hazardous Material Desk Reference, 2nd ed., New York, N.Y., Van Nostrand Reinhold, 1579 p.
Sax, Irving, 1984, Dangerous Properties of Industrial Materials, 6th ed., New York, N.Y., Van Nostrand Reinhold, 3124 p.
Stecher, P.G., Ed., 1968, The Merck Index, 8th ed., Rahway, N.J., Merck & Co., Inc., 1713 p.

compounds, except benzo(b)fluoranthene and 1,1-dichloroethane, are relatively insoluble and, therefore, not likely to migrate substantially from Disposal Area Three. Of the two compounds which may be leached into ground water, the concentrations, 44 µg/kg for benzo(b)fluoranthene and 11 µg/km for 1,1-dichloroethane, are very low. Further, given the distance from the burn pit and dump to MW-3, where three compounds (2-methylnapthalene, phenanthrene, and naphthalene) were detected in the soil, there is a likelihood that low concentrations of these compounds are present on an area-wide basis and are not solely attributed to the historic burning ground activities.

A majority of the compounds identified in the soils at the site could pose a helth hazard if the compounds are heated to decomposition. (Table 5-1). Therefore, the practice of open burning at the site may impact human health and the environment by the generation of toxic or irritating fumes (chlorine or phosgene) and acrid smoke. Furthermore, the chemical reactions and decomposition products that could be generated during the burning activities are unknown since there are several compounds present in the soil. Therefore, we cannot recommend personnel protection or control to be employed based on the soil sampling conducted to date we cannot determine the exact depth or extent of PTO of these compounds. Consequently, H+GCL does not recommend that the open burning policy be continued in this area. Since we do not recommend open burning as an option and we cannot estimate what contaminates or fumes emitted during this practice; and H+GCL cannot offer an accurate opinion regarding the level of protection that would be required to adequately protect workers.

6.0 Recommendations

Since the presence of the compounds detected in the soil and ground water poses a very minor risk to public health and welfare and natural resources, H+GCL does not recommend any further site characterization or remediation. However, since all of the compounds presented in Table 5-1 have a high hazard ranking, as a precaution, the following actions are recommended for closure in place:

- The area should be posted and access restricted to "Authorized Personnel Only"
- Personnel authorized to access the area should be informed in writing of the potential exposures to air emissions and dermal contact if the surface cover is disturbed
- Written procedures should be developed before the area can be disturbed and restrictions should be recorded with the property deed and title
- Damage to the surface cover caused by the drilling operations should be repaired with relatively impermeable fill material
- The depression where the old fire training pit was located has been surveyed and should be filled in with impermeable material
- Open burning activities should not be allowed in this area.

7.0 References

Aerial Photograph, 1958

Aerial Photograph NASA Plum Brook Station, 1964

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Cherry, Lynn, Interviewed by B. Virginia Nicholas, H $^+$GCL, December 16, 1991.

Freidt, Gene, Interviewed by B. Virginia Nicholas, H $^+$GCL via telephone, December 18, 1991.

H $^+$GCL, August 21, 1991 Statement of Work to Conduct a Phase I Site Assessment of Disposal Area Three, Plum Brook Station, Ohio.

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IT Corporation, March 1990, Draft Engineering Report for the Contamination Evaluation at The Former Plum Brook Ordnance Works Sandusky, Ohio.

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U.S. EPA, 40 C.F.R. Part 141, §§ 141.11(b), Federal Drinking Water Standards.

U.S. EPA, 40 C.F.R. Part 261, §§ 261.24(b), Characteristics of Hazardous Waste.

U.S. EPA, 40 C.F.R. Part 761, §§ 761.125(4)

U.S. EPA, Proposed Corrective Action Rule for Solid Waste Management Units, 55 FR 30798, July 27, 1990

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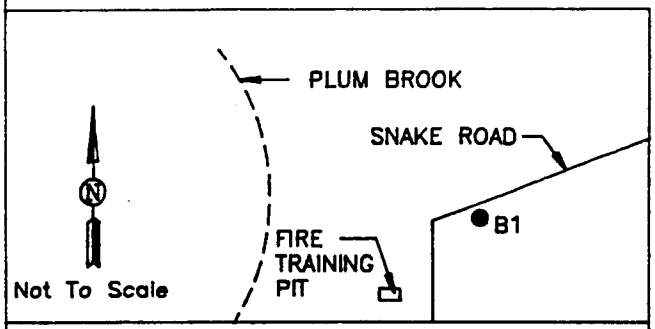
Appendix A

Soil Boring Logs

B1 Lithologic Log



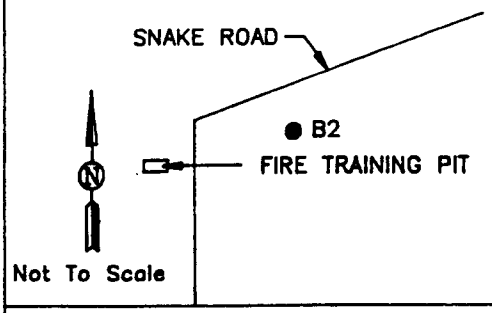
LOCATION MAP

SITE ID: Nasa Plum Brook BORING ID: B1
SITE COORDINATES (ft.):
N E
GROUND ELEVATION (ft. MSL):
STATE: Ohio COUNTY: Erie
SAMPLE METHOD: Split Spoon
TYPE OF DRILL RIG: CME-55 DRILLING METHOD: Hollow Stem Auger
NAME OF DRILLER: Fred Hefner
NOMINAL HOLE DIAMETER: 5.75" TOTAL BORING DEPTH: 8'
SAMPLE CONTR.: Northcoast Drilling
DATE STARTED: 1-16-92 DATE COMPLETED: 1-16-92
FIELD REP.: B.V. Nicholas
COMMENTS: Sample Split, Headspace Reading Taken After Boring Complete, Lithologic Description From Split Spoon Samples

LOCATION DESCRIPTION:

DEPTH (FT.)	BLOW COUNTS	REC	SAM	INST. READING (PID)* VAL.	FROM	TO	SAMPLE I.D.	SAMPLE TYPE	USCS	VISUAL DESCRIPTION	OBSERVATIONS (DEPTH TO WATER, FLUID LOSS, ETC.)
0							9201171000	Grab		0-2', No Split Spoon Sample Collected, Surface Sample Taken	Explosives And Hg And Pb
2-4	2,2,2,3	45%		1.0 ppm	2'	4'	9201161345	Grab	ML	2-4', Silty Clay; Dark Yellowish Orange 10YR 6/6 To Light Olive Grey 5Y 6/1, With Little Very Fine Sand; Moist	HNU Reading Less Than Background Of 2.0 ppm At 2-4' Interval VOA & TCLP Metals
4-6	2,4,3,5	40%		1.0 ppm	4'	6'	9201161355	Composite	ML	4-6', Silty Clay; Greyish Black N2 To Dark Yellowish Orange 10YR 6/6; Moist	HNU Reading Less Than Background Of 2.0 ppm At 4-6' Interval Partial Semi-Volitiles
6-8	4,50/6	90%		3.0 ppm	6'	8'	9201161410	Grab		6-8', Weathered Shale; Greyish Black N2, Saturated	TPH, PCB, Pesticides Partial Semi-Volitiles
8	50/1	90%									Auger Refusal At 8'

B2 Lithologic Log



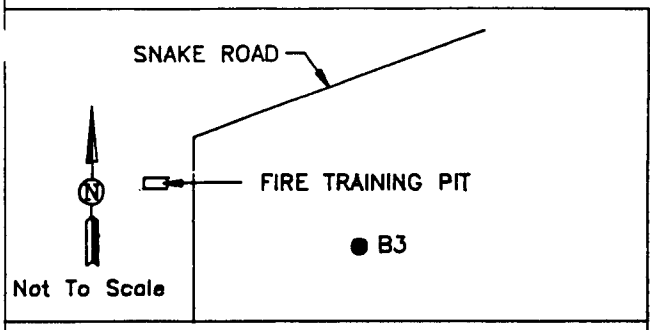
LOCATION MAP

SITE ID: Nasa Plum Brook BORING ID: B2
SITE COORDINATES (ft.):
N E
GROUND ELEVATION (ft. MSL): 671.23'
STATE: Ohio COUNTY: Erie
SAMPLE METHOD: Split Spoon
TYPE OF DRILL RIG: CME-55 DRILLING METHOD: Hollow Stem Auger
NAME OF DRILLER: John Walsh
NOMINAL HOLE DIAMETER: 5.75" TOTAL BORING DEPTH: 8'
SAMPLE CONTR.: Northcoast Drilling
DATE STARTED: 3-10-92 DATE COMPLETED: 3-10-92
FIELD REP.: B.V. Nicholas
COMMENTS:

LOCATION DESCRIPTION:

DEPTH (FT.)	BLOW COUNTS	REC	SAM	INST. READING (PID)* VAL.	FROM	TO	SAMPLE I.D.	SAMPLE TYPE	USCS	VISUAL DESCRIPTION	OBSERVATIONS (DEPTH TO WATER, FLUID LOSS, ETC.)
0	1,1,12, 10	80%		0.0 ppm					SM/SC	0-2', Top Soil, Silty Sand, Very Fine Grained, Dusky Yellowish Brown 10YR 2/2, Wet, Grades To Sandy Clay, Very Fine Grained, Dark Yellowish Orange 10YR 6/6 Mottled With Greyish Orange 10YR 7/4, Moist	
2-4	5,6,7,9	65%		0.0 ppm					SC/SM	2-4', Sandy Clay As Above Grades To Silty Sand, Very Fine Grained, Moderate Yellowish Brown, 10YR 5/4, Moist	
4-6	7,2,7,8	80%		5.0 ppm			9203101220 Volatiles	Grab	SC	4-6', Sandy Clay, Dark Yellowish Orange 10YR 6/6, Moist, With Weathered Shale Fragments	
6-8	7,10,8, 7	80%		0.0 ppm			9203101235	Composite	SM	6-8', Silty Sand, Very Fine Grained, Dusky Yellowish Brown 10YR 2/2 Grades To Shale At Approx. 7.5' Dusky Yellowish Brown 10YR 2/2, Saturated	Auger Refusal At 8'

B3 Lithologic Log



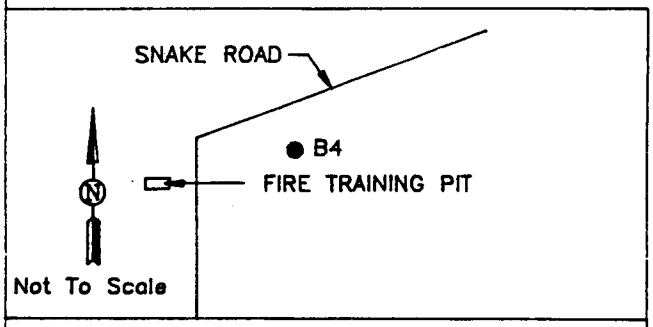
LOCATION MAP

SITE ID: Nasa Plum Brook BORING ID: B3
SITE COORDINATES (ft.):
N E
GROUND ELEVATION (ft. MSL): 670.79'
STATE: Ohio COUNTY: Erie
SAMPLE METHOD: Split Spoon
TYPE OF DRILL RIG: CME-55 DRILLING METHOD: Hollow Stem Auger
NAME OF DRILLER: John Walsh
NOMINAL HOLE DIAMETER: 5.75" TOTAL BORING DEPTH: 8'
SAMPLE CONTR.: Northcoast Drilling
DATE STARTED: 3-10-92 DATE COMPLETED: 3-10-92
FIELD REP.: B.V. Nicholas
COMMENTS: Note: Charred Wood Next Boring

LOCATION DESCRIPTION:

DEPTH (FT.)	BLOW COUNTS	REC	SAM	INST. READING (PID)* VAL.	FROM	TO	SAMPLE I.D.	SAMPLE TYPE	USCS	VISUAL DESCRIPTION	OBSERVATIONS (DEPTH TO WATER, FLUID LOSS, ETC.)
0	2,2,1,3	40%		1.0 ppm					SM	0-2', Top Soil, Sandy Silt, Brownish Black 5Y 2/1 Grading To Dark Yellowish Orange 10YR 6/6, Moist	
2-4	3,3,3,4	75%		0.0 ppm					SC	2-4', Snady Clay, Dark Yellowish Brown 10YR 4/2 Mottled With Dark Yellowish Orange 10YR 6/6, Moist	
4-6	3,3,5, 10	80%		0.0 ppm					SM	4-6', Silty Sand, Very Fine Grained Sand, Dark Yellowish Brown 10YR 4/2, Moist, Grades To Weathered Shale At 6 Feet Dusky Yellowish Brown 10YR 2/2	
6-8	4,14,17 50/4	60%		2.0 ppm			9203100928 Volatiles	Grab		6-8', Interbedded Silty Sand And Weathered Shale As Above, Saturated	Auger Refusal At 8'
							9203100927	Composite			

B4 Lithologic Log



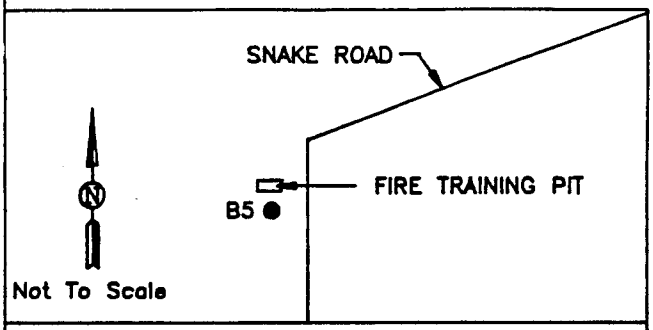
LOCATION MAP

SITE ID: Nasa Plum Brook BORING ID: B4
SITE COORDINATES (ft.):
N E
GROUND ELEVATION (ft. MSL): 671.19'
STATE: Ohio COUNTY: Erie
SAMPLE METHOD: Split Spoon
TYPE OF DRILL RIG: CME-55 DRILLING METHOD: Hollow Stem Auger
NAME OF DRILLER: John Walsh
NOMINAL HOLE DIAMETER: 5.75" TOTAL BORING DEPTH: 7.5'
SAMPLE CONTR.: Northcoast Drilling
DATE STARTED: 3-10-92 DATE COMPLETED: 3-10-92
FIELD REP.: B.V. Nicholas
COMMENTS:

LOCATION DESCRIPTION:

DEPTH (FT.)	BLOW COUNTS	REC	SAM	INST. READING (PID)* VAL.	FROM	TO	SAMPLE I.D.	SAMPLE TYPE	USCS	VISUAL DESCRIPTION	OBSERVATIONS (DEPTH TO WATER, FLUID LOSS, ETC.)
0	12,10,9,6	50%		6-7 ppm					SC	0-2', Clayey Sand, Pale Yellowish Brown 10YR 6/2, Mottled With Dark Yellowish Orange 10YR 6/6, Moist	
2-4	3,1,3,4	70%		0.0 ppm					SM	2-4', Silty Sand, Moderate Yellowish Brown 10YR 5/4 Interbedded With Clayey Sand As In 0-2' Interval, Moist	
4-6	3,4,6,6	70%		0.0 ppm					SM	4-6', Silty Sand, Dark Yellowish Brown 10YR 2/2 With Weathered Shale At 5 Feet, Dusky Yellowish Brown 10YR 2/2, Wet	
6-8	9,17, 100/1	50%		7.0 ppm			9203101453 Volatiles	Grab		6-8', Shale And Silty Sand As Above, Saturated	Auger Refusal At 7.5'
							9203101459	Composite			

B5 Lithologic Log



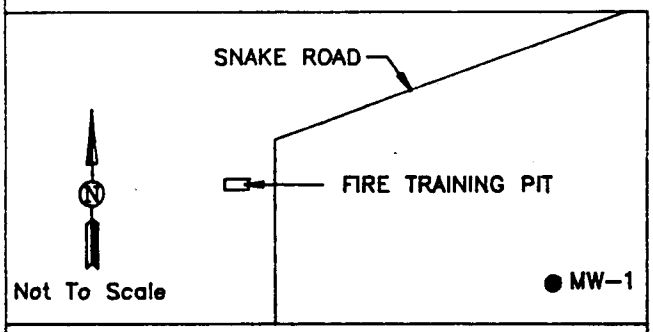
LOCATION MAP

SITE ID: Nasa Plum Brook BORING ID: B5
SITE COORDINATES (ft.):
N E
GROUND ELEVATION (ft. MSL): 670.59'
STATE: Ohio COUNTY: Erie
SAMPLE METHOD: Split Spoon
TYPE OF DRILL RIG: CME-55 DRILLING METHOD: Hollow Stem Auger
NAME OF DRILLER: John Walsh
NOMINAL HOLE DIAMETER: 5.75" TOTAL BORING DEPTH: 6.5'
SAMPLE CONTR.: Northcoast Drilling
DATE STARTED: 3-9-92 DATE COMPLETED: 3-9-92
FIELD REP.: B.V. Nicholas
COMMENTS:

LOCATION DESCRIPTION:

DEPTH (FT.)	BLOW COUNTS	REC	SAM	INST. READING (PID)* VAL.	FROM	TO	SAMPLE I.D.	SAMPLE TYPE	USCS	VISUAL DESCRIPTION	OBSERVATIONS (DEPTH TO WATER, FLUID LOSS, ETC.)
0	3,3,2,4	75%		5-7 ppm					SM	0-2', Silty Sand, Very Fine Grained, Dusky Yellowish Brown 10YR 3/2 To Moderate Yellowish Brown 10YR 5/4, Grades To Sandy Clay, Dark Yellowish Brown 10YR 4/2, Moist	
2-4	3,7,10, 11	80%		13-15 ppm			9203071126	Grab	SM	2-4', Silty Sand, Very Fine Grained, Moderate Yellowish Brown 10YR 5/4 To Very Pale Orange 10YR 8/2 With Sandy Clay Interbeds As Above, Moist, Weathered Shale At 4 Feet, Dusky Yellowish Brown 10YR 2/2	
4-6	10,11, 11,9	90%		7-8 ppm					SC	4-6', Sandy Clay, Moderate Yellowish Brown 10YR 5/4, Grades To Weathered Shale Dusky Brown 5YR 2/2 Mottled With Dark Yellowish Orange 10YR 6/6, Moist	
6-6.5	20,50/6	70%		3.0 ppm						6-6.5', Weathered Shale, Dark Grey N3 To Greyish Black N2	Auger Refusal At 6.5'
							9203071143	Composite			

MW-1 Lithologic Log



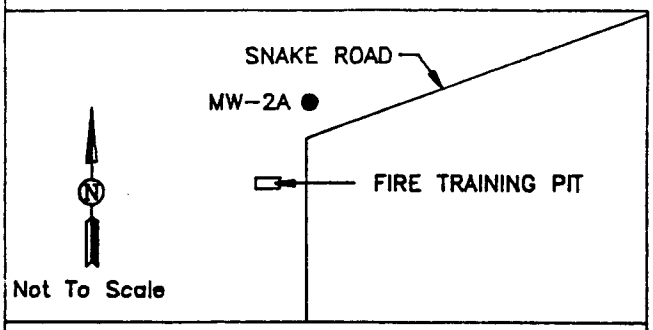
LOCATION MAP

SITE ID: Nasa Plum Brook BORING ID: MW-1
SITE COORDINATES (ft.):
N E
GROUND ELEVATION (ft. MSL): 671.31'
STATE: Ohio COUNTY: Erie
SAMPLE METHOD: Split Spoon
TYPE OF DRILL RIG: CME-55 DRILLING METHOD: HSA/Air Rotary
NAME OF DRILLER: John Walsh
NOMINAL HOLE DIAMETER: 12.75" TOTAL BORING DEPTH: 11.5'
SAMPLE CONTR.: Northcoast Drilling
DATE STARTED: 3-10-92 DATE COMPLETED: 3-12-92
FIELD REP.: B.V. Nicholas
COMMENTS: Initial Boring Not Completed As Well; Hole Was Redrilled Approx. 10' East Of Initial Boring Location

LOCATION DESCRIPTION:

DEPTH (FT.)	BLOW COUNTS	REC	SAM	INST. READING (PID)* VAL.	FROM	TO	SAMPLE I.D.	SAMPLE TYPE	USCS	VISUAL DESCRIPTION	OBSERVATIONS (DEPTH TO WATER, FLUID LOSS, ETC.)
0	2,5,3,2	60%		3.0 ppm			9203101008	Grab	SM	0-2', Topsoil, Silty Sand,Very Fine Grained, Dark Yellowish Brown 10YR 4/2 Grades To Moderate Yellowish Brown 10YR 5/4, Moist	
2-4	3,4,9,7	60%		1.0 ppm					SM	2-4', Silty Sand AS Above, Dark Yellowish Brown 10YR 4/2, Weathered Shale Fragments At 4', Dusky Yellowish Brown 10YR 2/2, Moist	
4-6	3,5,7,9	60%		0.0 ppm					SM	4-6', Silty Sand As Above, Moist, Grades To Weathered Shale At 6', Dusky Yellowish Brown 10YR 2/2	
6-8	8,4,4, 50/3	50%		1.0 ppm						6-8', Interbedded Weathered Shale And Silty Sands As Above, Saturated	
8-11.5							9203101021	Composite		8-11.5', Shale, Dusky Yellowish Brown 10YR 2/2	Auger Refusal At 9.5 Feet

MW-2A Lithologic Log



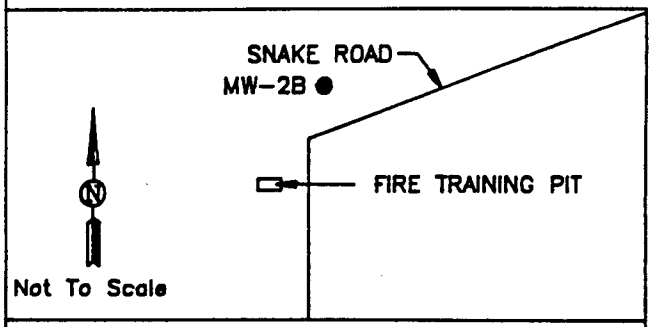
LOCATION MAP

SITE ID: Nasa Plum Brook BORING ID: MW-2A
SITE COORDINATES (ft.):
N E
GROUND ELEVATION (ft. MSL): 669.68'
STATE: Ohio COUNTY: Erie
SAMPLE METHOD: Split Spoon
TYPE OF DRILL RIG: CME-55 DRILLING METHOD: HSA/Air Rotary
NAME OF DRILLER: John Walsh
NOMINAL HOLE DIAMETER: 12.75" TOTAL BORING DEPTH: 23'
SAMPLE CONTR.: Northcoast Drilling
DATE STARTED: 3-11-92 DATE COMPLETED: 3-11-92
FIELD REP.: B.V. Nicholas
COMMENTS:

LOCATION DESCRIPTION:

DEPTH (FT.)	BLOW COUNTS	REC	SAM	INST. READING (PID)* VAL.	FROM	TO	SAMPLE I.D.	SAMPLE TYPE	USCS	VISUAL DESCRIPTION	OBSERVATIONS (DEPTH TO WATER, FLUID LOSS, ETC.)
0	3,4,3,4	70%		0.5 ppm					SM	0-2', Silty Sand, Very Fine Grained, Top Soil, Dusky Yellowish Brown 10YR 2/2 Grades To Dark Yellowish Orange 10YR 6/6, Moist	
2-4	6,6,8,8	60%		1.0 ppm			9203111100	Grab	SM	2-4', Silty Sand, Very Fine Grained, Dark Yellowish Orange 10YR 6/6 Mottled With Pale Yellowish Brown 10YR 6/2, Moist	
4-6	6,9,13, 50	60%		0.5 ppm					SM	4-6', Silty Sand As Above, With Saturated Shale Fragments At 6 Feet	
6-7	60, 100/4	40%		None						6-7', Shale, Greenish Grey 5G 6/1, Dry, To Dusky Yellowish Brown 10YR 2/2, Moist	
7-23							9203111134	Composite		7-23', Shale, Dusky Yellowish Brown 10YR 2/2	Auger Refusal At 7'

MW-2B Lithologic Log



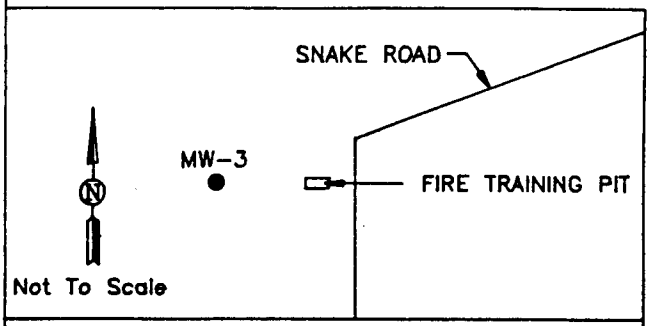
LOCATION MAP

SITE ID: Nasa Plum Brook BORING ID: MW-2B
SITE COORDINATES (ft.):
N E
GROUND ELEVATION (ft. MSL): 669.60'
STATE: Ohio COUNTY: Erie
SAMPLE METHOD: Split Spoon
TYPE OF DRILL RIG: CME-55 DRILLING METHOD: HSA/Air Rotary
NAME OF DRILLER: John Walsh
NOMINAL HOLE DIAMETER: 12.75" TOTAL BORING DEPTH: 10'
SAMPLE CONTR.: Northcoast Drilling
DATE STARTED: 3-12-92 DATE COMPLETED: 3-12-92
FIELD REP.: B.V. Nicholas
COMMENTS: Shallow Well

LOCATION DESCRIPTION:

DEPTH (FT.)	BLOW COUNTS	REC	SAM	INST. READING (PID)* VAL.	FROM	TO	SAMPLE I.D.	SAMPLE TYPE	USCS	VISUAL DESCRIPTION	OBSERVATIONS (DEPTH TO WATER, FLUID LOSS, ETC.)
0	5,5,4,4	80%		1.0 ppm			9203120925	Grab	SM	0-2', Top Soil (4"), Silty Sand, Very Fine Grained, Dusky Yellowish Brown 10YR 2/2, Grades To Dark Yellowish Orange 10YR 6/6, Moist	
2-4	4,10, 14,16	20%		0.0 ppm					ML	2-4', Silty Clay, Dark Yellowish Brown 10YR 4/2 Mottled With Dark Yellowish Orange 10YR 6/6, With Some Thin Sand Interbeds, Moist, Shale Fragments, Dusky Yellowish Brown 10YR 2/2 In Bottom 1" Of Spoon	
4-6	12,10, 12,23	100%		0.0 ppm						4-6' Weathered Shale, Dusky Yellowish Brown 10YR 2/2 With Very Fine Grained Sand Interbeds, Moderate Yellowish Brown 10YR 5/4, Moist	
6-7	91, 50/2	30%								6-7', Shale, Medium Bluish Grey 5B 5/1, Wet	
7-10							9203120957	Composite		7-10', Shale	Auger Refusal At 6'

MW-3 Lithologic Log



LOCATION MAP

SITE ID: Nasa Plum Brook BORING ID: MW-3
SITE COORDINATES (ft.):
N E
GROUND ELEVATION (ft. MSL): 668.67'
STATE: Ohio COUNTY: Erie
SAMPLE METHOD: Split Spoon
TYPE OF DRILL RIG: CME-55 DRILLING METHOD: HSA/Air Rotary
NAME OF DRILLER: John Walsh
NOMINAL HOLE DIAMETER: 12.75" TOTAL BORING DEPTH: 10.6'
SAMPLE CONTR.: Northcoast Drilling
DATE STARTED: 3-12-92 DATE COMPLETED: 3-12-92
FIELD REP.: B.V. Nicholas
COMMENTS:

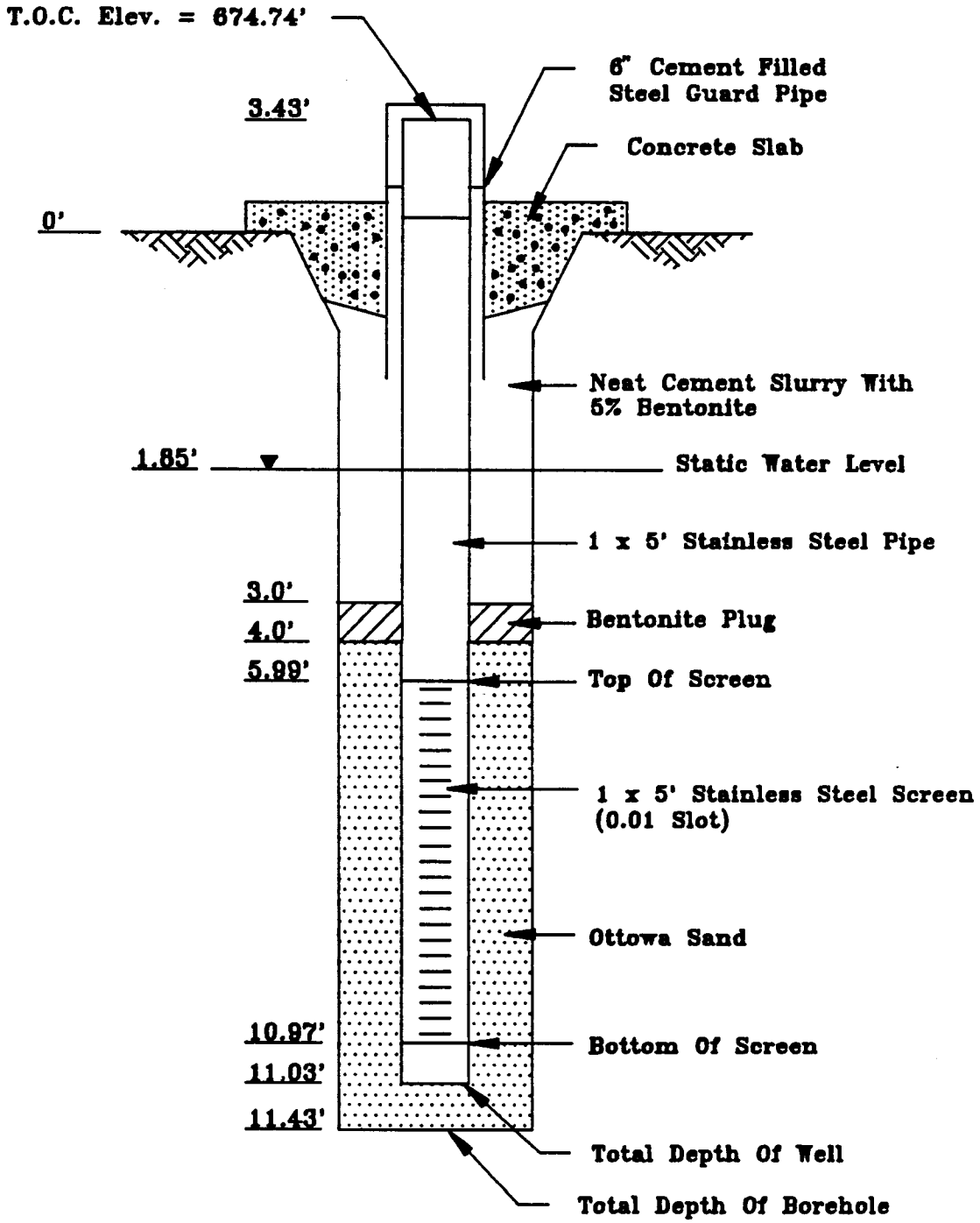
LOCATION DESCRIPTION:

DEPTH (FT.)	BLOW COUNTS	REC	SAM	INST. READING (PID)* VAL.	FROM	TO	SAMPLE I.D.	SAMPLE TYPE	USCS	VISUAL DESCRIPTION	OBSERVATIONS (DEPTH TO WATER, FLUID LOSS, ETC.)
0	4,3,4,7	70%		2.0 ppm			9203121549	Grab	SM	0-2', Top Soil 4", Silty Sand, Very Fine Grained, Dusky Yellowish Brown 10YR 2/2 Grades To Moderate Yellowish Brown 10YR 5/4, Moist	
2-4	4,3,7,7	80%		0.0 ppm					SM	2-4', Silty Sand, Very Fine Grained, Dusky Yellowish Brown 10YR 2/2 With Weathered Shale Pieces At 3.5 Feet, Dusky Yellowish Brown 10YR 2/2, Wet	
4-6	5,15, 17/1			0.5 ppm					SM	4-6', Silty Sand, Very Fine Grained, Dusky Yellowish Brown 10YR 2/2, Shale At 5 Feet, Dusky Yellowish Brown 10YR 2/2, Saturated	
6-10							9203121625	Composite		6-10', Shale, Dusky Yellowish Brown 10YR 2/2	Auger Refusal At 6'

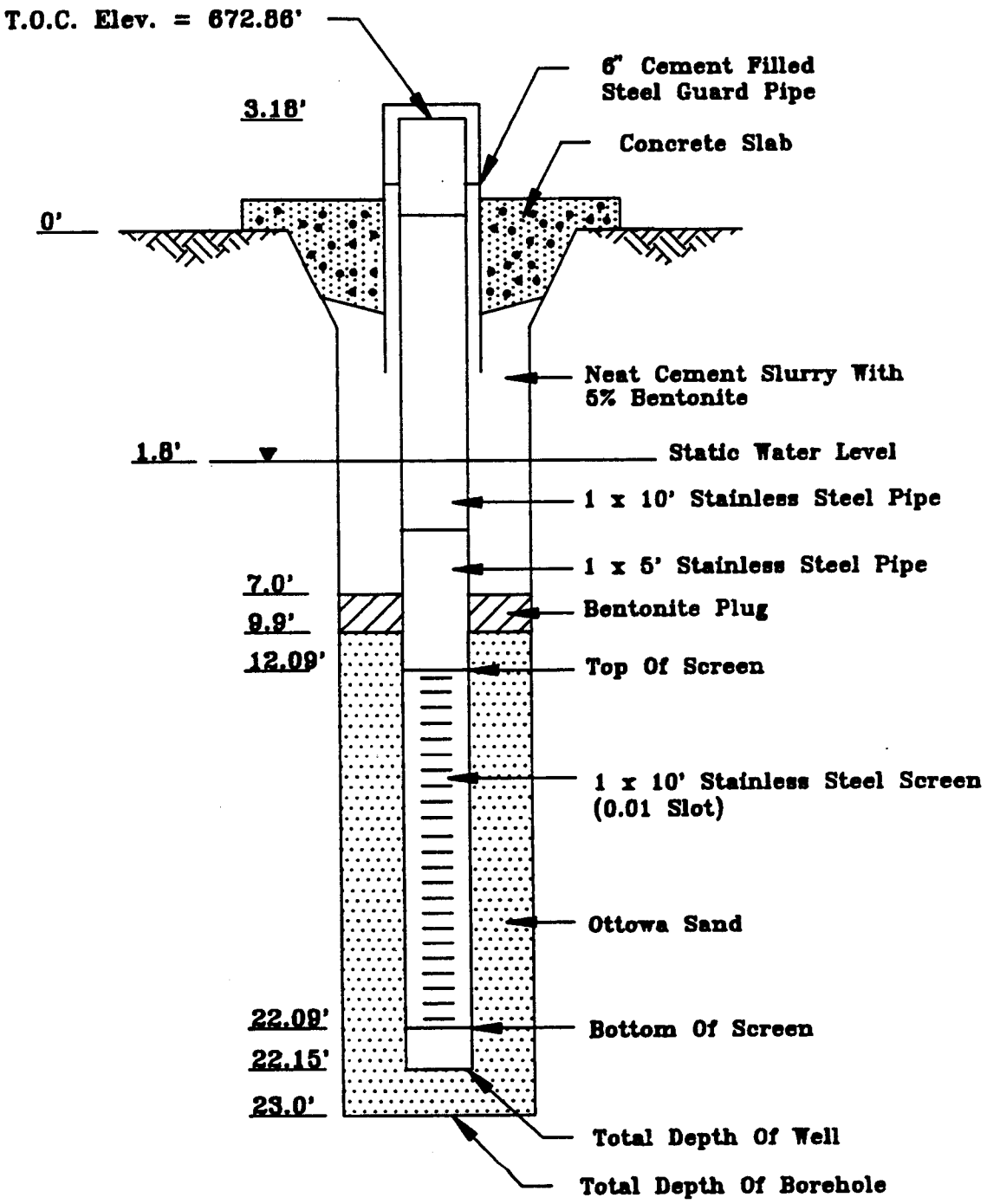
Appendix B

Monitor Well Completion Diagrams
and Development Records

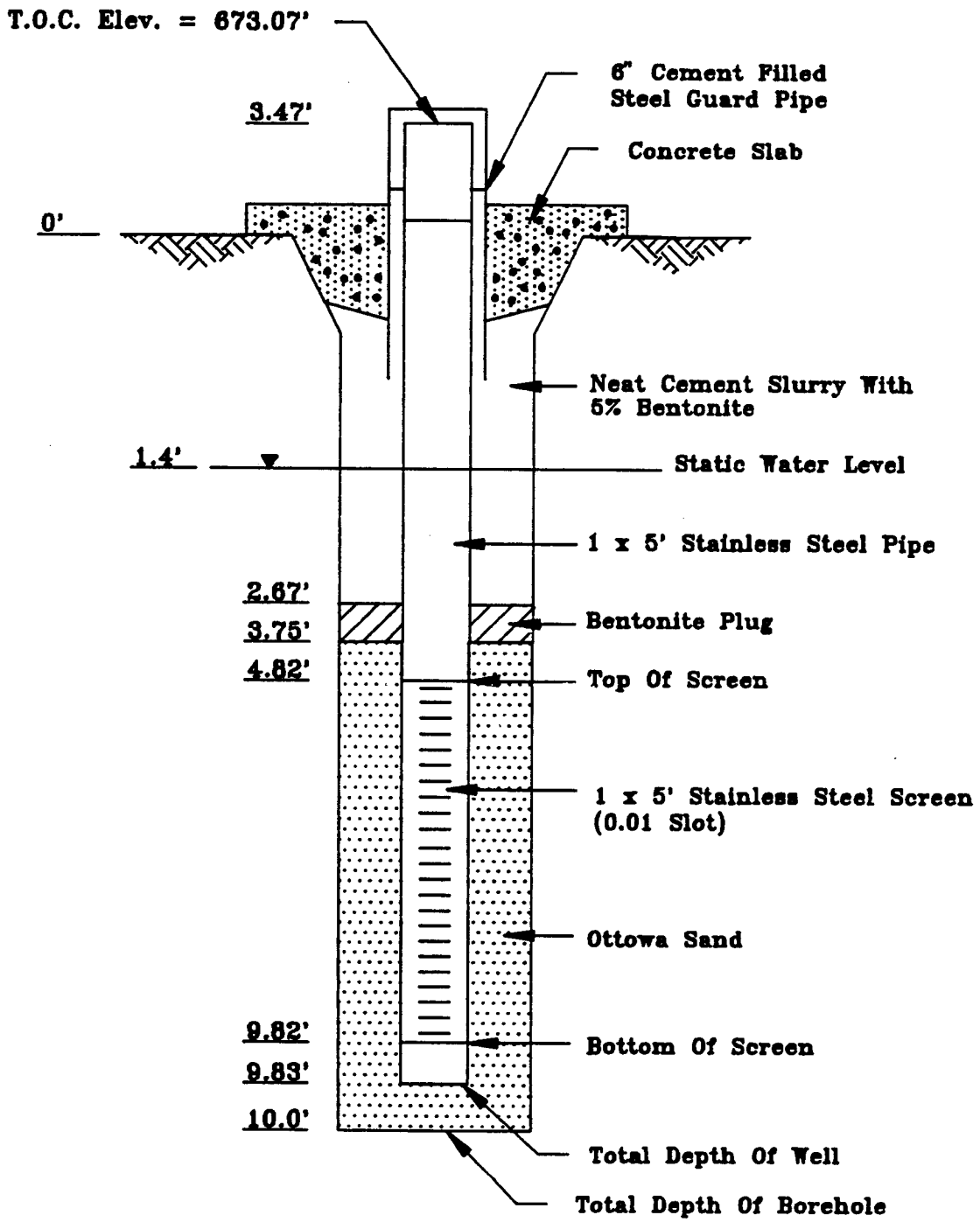
Monitor Well MW-1 Completion Diagram



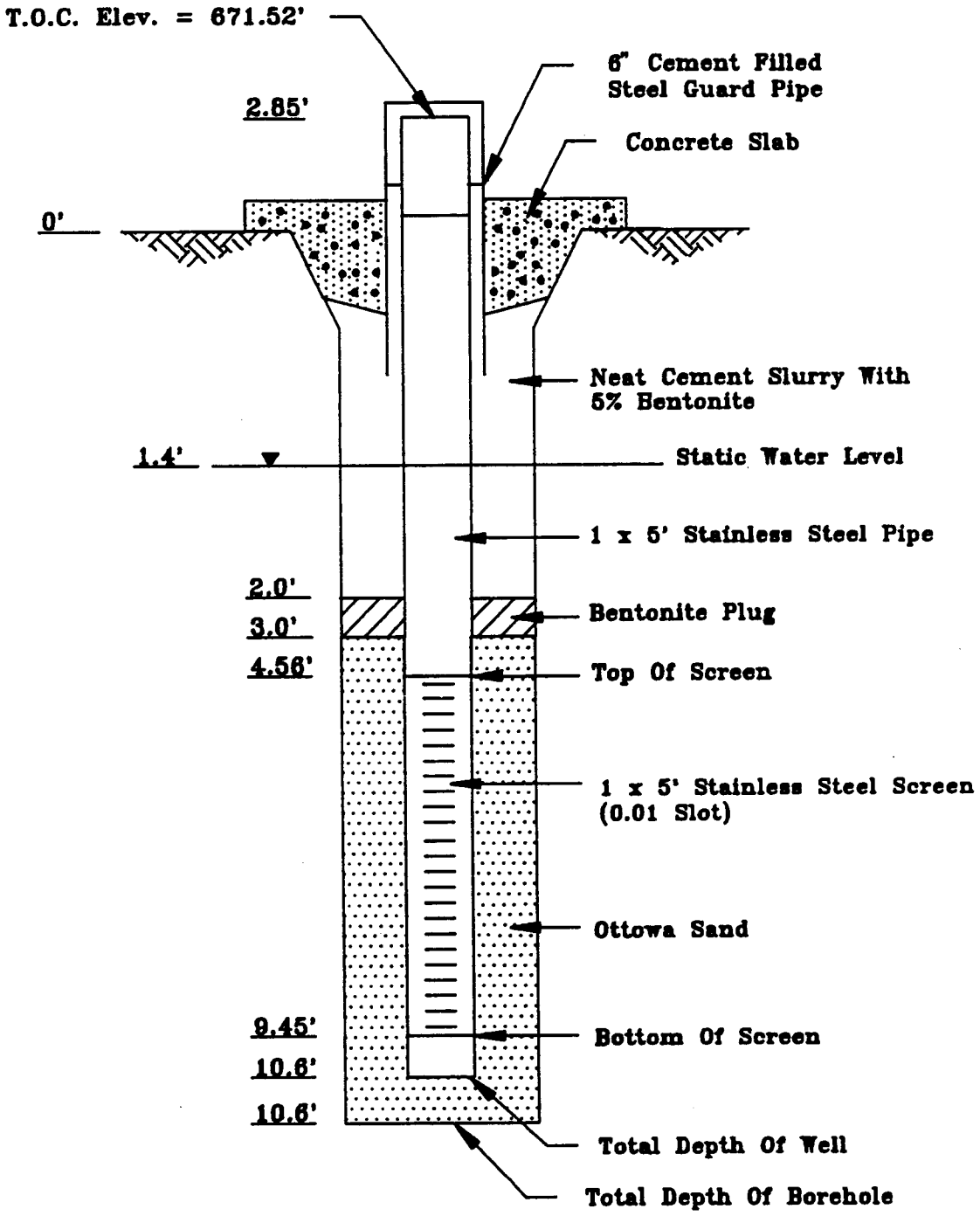
Monitor Well MW-2A Completion Diagram



Monitor Well MW-2B Completion Diagram



Monitor Well MW-3 Completion Diagram



WELL DEVELOPMENT RECORD

JOB NUMBER: 51033.01

DATE: 3-13-92 TIME: 1502

JOB NAME: NASA Plumbrook

ON-SITE REPRESENTATIVE: B.V. Nicholas

WELL ID: MW-1

STATIC WATER LEVEL: 1.85' gs
DATE/TIME: 3-13-90 1502
VOLUME OF STANDING WATER: 4.9 gals
CLARITY OF WATER: clear
PRIOR TO DEVELOPMENT:
SEDIMENT ON BOTTOM OF WELL
PRIOR TO DEVELOPMENT:
VOLUME OF WATER ADDED TO
WELL DURING CONSTRUCTION: none
SOURCE OF WATER ADDEDED TO
WELL DURING CONSTRUCTION:
CHEMICAL ANALYSIS PROVIDED?
pH PRIOR TO DEVELOPMENT: 6.89
SPECIFIC CONDUCTANCE
PRIOR TO DEVELOPMENT: 540us
TEMPERATURE PRIOR TO
DEVELOPMENT: 6°C

DEVELOPMENT METHOD: Bail
WELL DEVELOPMENT (TIME): 1:30
VOLUME OF SEDIMENT REMOVED:
CLARITY OF WATER
AFTER DEVELOPMENT: fairly clear
WATER LEVEL: 3.9' 3-13-92 1630
DATE/TIME:
WATER LEVEL:
DATE/TIME:
pH AFTER DEVELOPMENT: 6.70
SPECIFIC CONDUCTANCE
AFTER DEVELOPMENT: 620us
TEMPERATURE AFTER
DEVELOPMENT: 6°C

COMMENTS: Well has fine sediments in well bottom that can't be removed with bailer.

STABILIZATION OF PHYSICAL AND CHEMICAL PARAMETERS

SL 5.9'gs 4.4'gs

VOLUME OF GROUND-WATER REMOVED	1 gal	5 gals	10 gals	15 gals	20 gals	25 gals
pH	6.89	6.83	6.78	6.75	6.74	6.70
SPECIFIC CONDUCTIVITY	540	560	620	600	590	620
TEMPERATURE	6°C	5°C	5°C	6°C	6°C	6°C

VOLUME OF GROUND-WATER REMOVED						
pH						
SPECIFIC CONDUCTIVITY						
TEMPERATURE						

WELL DEVELOPMENT RECORD

JOB NUMBER: 51033.01
DATE: 3-13-92 TIME: 10:00am
JOB NAME: NASA Plumbrook
ON-SITE REPRESENTATIVE: B.V. Nicholas

WELL ID: MW2A

STATIC WATER LEVEL: 1.8 below gs
DATE/TIME: 3-13-92
VOLUME OF STANDING WATER: 12.12 gals
CLARITY OF WATER: fairly clear
PRIOR TO DEVELOPMENT:
SEDIMENT ON BOTTOM OF WELL
PRIOR TO DEVELOPMENT:
VOLUME OF WATER ADDED TO
WELL DURING CONSTRUCTION: none
SOURCE OF WATER ADDEDED TO
WELL DURING CONSTRUCTION:
CHEMICAL ANALYSIS PROVIDED?
pH PRIOR TO DEVELOPMENT: 6.9
SPECIFIC CONDUCTANCE
PRIOR TO DEVELOPMENT: 545us
TEMPERATURE PRIOR TO
DEVELOPMENT: 9°c

DEVELOPMENT METHOD: Bailing
WELL DEVELOPMENT (TIME): 1:40
VOLUME OF SEDIMENT REMOVED:
CLARITY OF WATER
AFTER DEVELOPMENT: fairly clear
WATER LEVEL: 5.4'
DATE/TIME: 3-13-92 12:40
WATER LEVEL:
DATE/TIME:
pH AFTER DEVELOPMENT:
SPECIFIC CONDUCTANCE
AFTER DEVELOPMENT:
TEMPERATURE AFTER
DEVELOPMENT:

COMMENTS: Well bailed almost dry after 15 gallons, bailed 12.5 gals more

STABILIZATION OF PHYSICAL AND CHEMICAL PARAMETERS

VOLUME OF GROUND-WATER REMOVED gals	12.5 gals	22.5 gals	27.0 gals			
pH	6.85	7.23	7.24			
SPECIFIC CONDUCTIVITY	560	560	560			
TEMPERATURE	8°C	8°C	7°C			

VOLUME OF GROUND-WATER REMOVED						
pH						
SPECIFIC CONDUCTIVITY						
TEMPERATURE						

WELL DEVELOPMENT RECORD

JOB NUMBER: 51033.01 DATE: 3-13-92 TIME: 0915 - 1055

JOB NAME: NASA Plumbrook ON-SITE REPRESENTATIVE: B.V. Nicholas

WELL ID: MW2B

STATIC WATER LEVEL: 1.4' gs
DATE/TIME: 3-13-92
VOLUME OF STANDING WATER: 5.4 gals
CLARITY OF WATER: fairly clear
PRIOR TO DEVELOPMENT:
SEDIMENT ON BOTTOM OF WELL
PRIOR TO DEVELOPMENT:
VOLUME OF WATER ADDED TO
WELL DURING CONSTRUCTION:
SOURCE OF WATER ADDEDED TO
WELL DURING CONSTRUCTION: none
CHEMICAL ANALYSIS PROVIDED?
pH PRIOR TO DEVELOPMENT: 6.64
SPECIFIC CONDUCTANCE
PRIOR TO DEVELOPMENT: 680us
TEMPERATURE PRIOR TO
DEVELOPMENT: 7°C

DEVELOPMENT METHOD: Bailing
WELL DEVELOPMENT (TIME): 1:30
VOLUME OF SEDIMENT REMOVED:
CLARITY OF WATER
AFTER DEVELOPMENT: slightly turbid
WATER LEVEL: 3.6' from gs
DATE/TIME:
WATER LEVEL:
DATE/TIME:
pH AFTER DEVELOPMENT: 6.89
SPECIFIC CONDUCTANCE
AFTER DEVELOPMENT: 650
TEMPERATURE AFTER
DEVELOPMENT: 7°C

COMMENTS: Well has find sediment on well bottom that can't be removed with bailer

STABILIZATION OF PHYSICAL AND CHEMICAL PARAMETERS

WL 4.4'

VOLUME OF GROUND-WATER REMOVED gals	8 gals	12 gals	20 gals	25 gals	30 gals	32 gals
pH	6.67	6.63	7.00	6.79	6.78	6.89
SPECIFIC CONDUCTIVITY	609	593	628	598	650	650
TEMPERATURE	7°C	6°C	7°C	7°C	7°C	7°C

VOLUME OF GROUND-WATER REMOVED						
pH						
SPECIFIC CONDUCTIVITY						
TEMPERATURE						

WELL DEVELOPMENT RECORD

JOB NUMBER: 51033.01

DATE: 3-13-92 TIME: 1240 1406

JOB NAME: NASA Plumbrook

ON-SITE REPRESENTATIVE: B.V. Nicholas

WELL ID: MW3

STATIC WATER LEVEL: 1.4'
DATE/TIME: 3-13-92 1253
VOLUME OF STANDING WATER: 5.16 gals
CLARITY OF WATER: fairly clean
PRIOR TO DEVELOPMENT:
SEDIMENT ON BOTTOM OF WELL
PRIOR TO DEVELOPMENT:
VOLUME OF WATER ADDED TO
WELL DURING CONSTRUCTION: none
SOURCE OF WATER ADDEDED TO
WELL DURING CONSTRUCTION:
CHEMICAL ANALYSIS PROVIDED?
pH PRIOR TO DEVELOPMENT: 7.15
SPECIFIC CONDUCTANCE
PRIOR TO DEVELOPMENT: 550us
TEMPERATURE PRIOR TO
DEVELOPMENT: 5°C

DEVELOPMENT METHOD: Bailing
WELL DEVELOPMENT (TIME): 1:20
VOLUME OF SEDIMENT REMOVED:
CLARITY OF WATER
AFTER DEVELOPMENT: slightly turbid
WATER LEVEL: 6.41
DATE/TIME: 1406 3-13-92
WATER LEVEL:
DATE/TIME:
pH AFTER DEVELOPMENT: 7.0
SPECIFIC CONDUCTANCE
AFTER DEVELOPMENT: 500us
TEMPERATURE AFTER
DEVELOPMENT: 6°C

COMMENTS: Well is very silty near bottom.

Water Level 5.3 ft. after 20 gals.

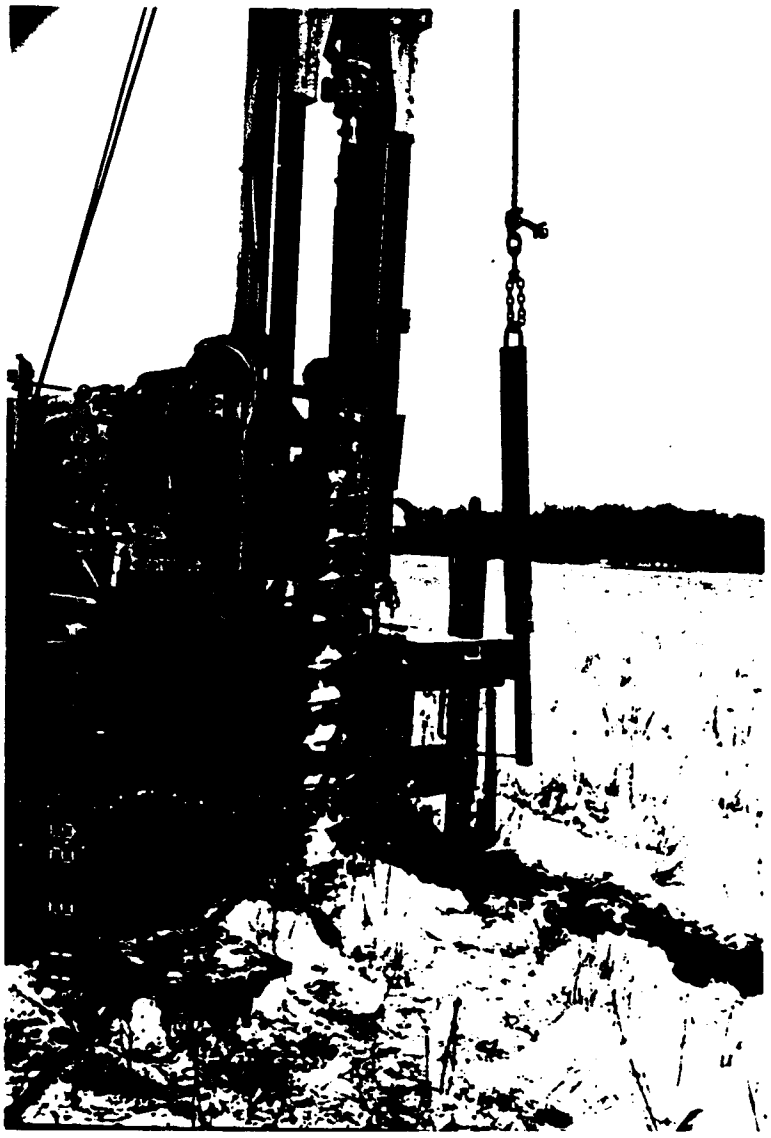
STABILIZATION OF PHYSICAL AND CHEMICAL PARAMETERS

VOLUME OF GROUND-WATER REMOVED gals	10 gals	20 gals	26 gals	30 gals	35 gals	
pH	7.08	7.1	7.08	7.04	7.0	
SPECIFIC CONDUCTIVITY	520	510	520	510	500	
TEMPERATURE	6°C	6°C	6°C	6°C	6°C	

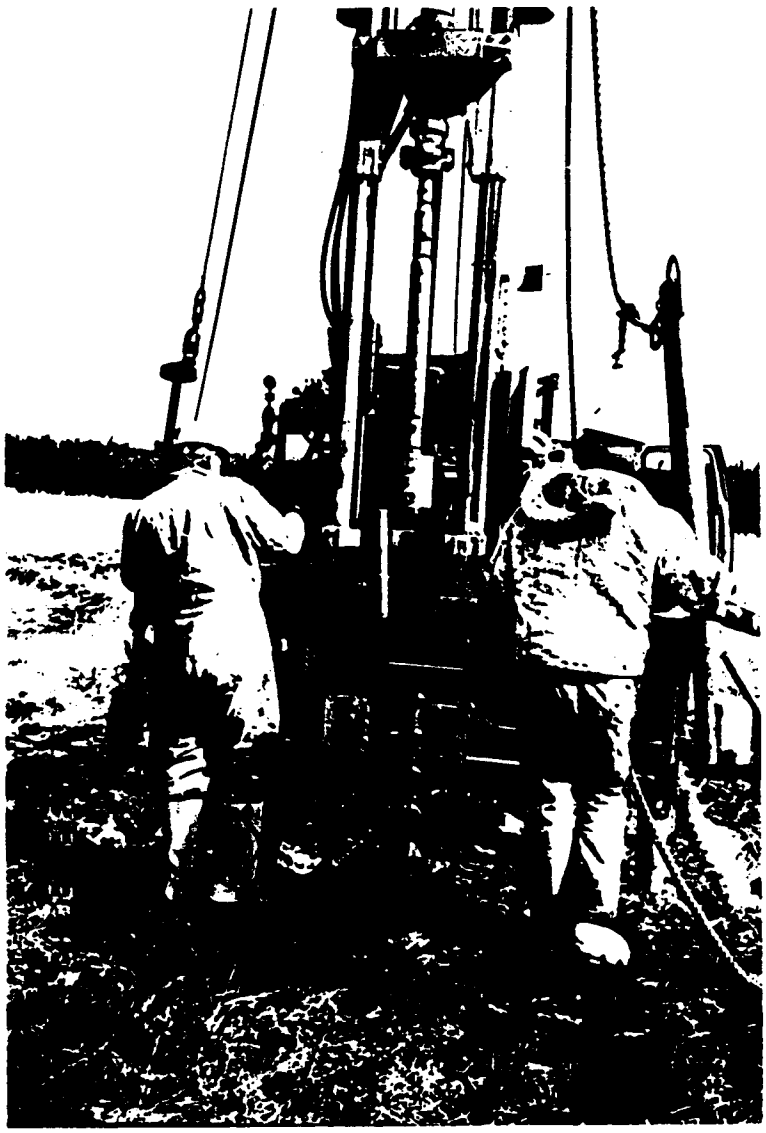
VOLUME OF GROUND-WATER REMOVED						
pH						
SPECIFIC CONDUCTIVITY						
TEMPERATURE						

Appendix C

Photographs of Field Activities

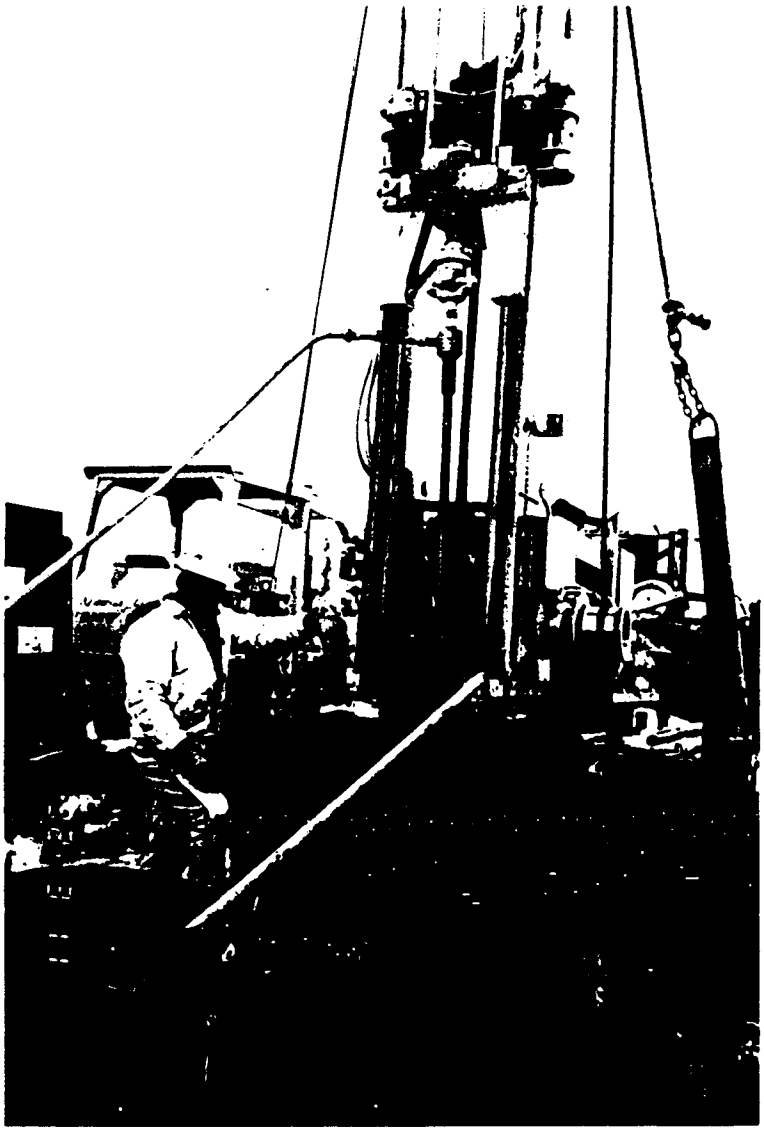


Hollow Stem Auger Set-up



Split Spoon Sampling

Split Spoon Sample

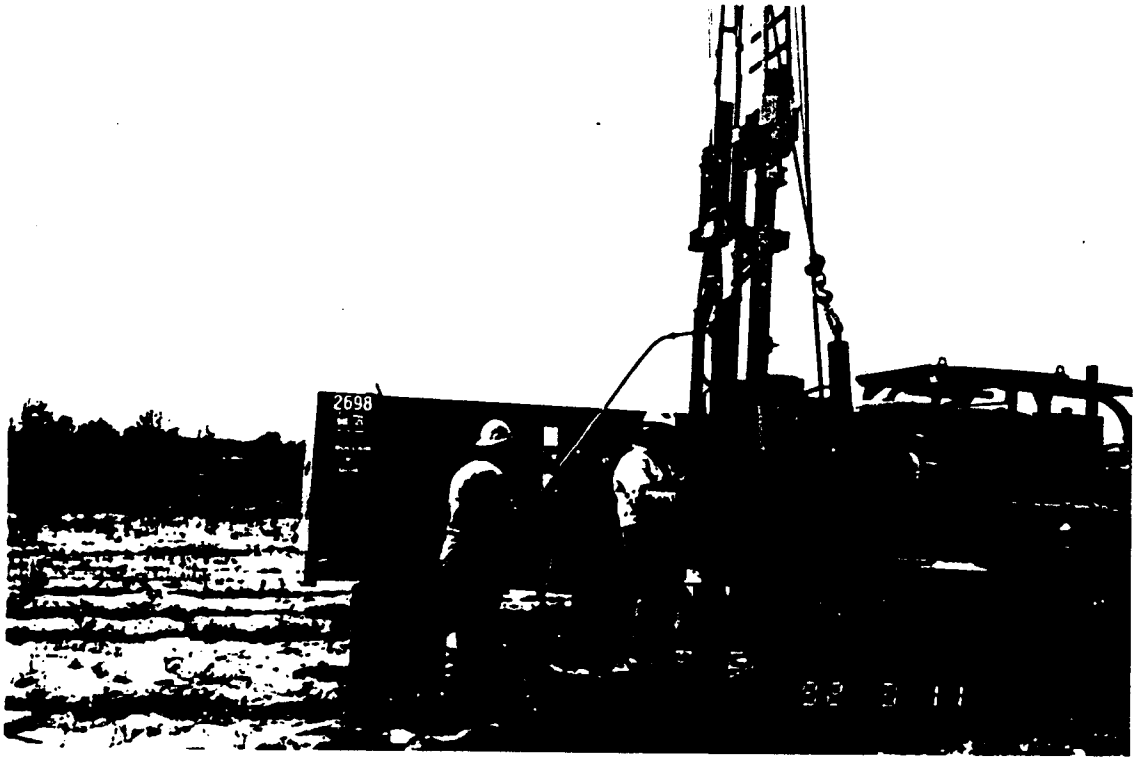


Air Rotary Drilling Acivities

Well Completion Activities

Clean-up Activities

Mobilization



Air Rotary Drilling Activities

Steam Cleaning Activities

Clean-up Activities

Survey Crew

Drum Storage Area

Appendix D

Laboratory Analytical Results

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 2
Part 1 of 1

Date 1/24/92
Agency Identification Number S92-0046
Account No. 03018

Geoscience Consultants, Ltd.
4221 Forbes Boulevard
Suite 240
Lanham, MD 20706
Attention: B. V. Nicholas

FAX
Telephone (301) 459-9677

Sampling Collection and Shipment

Sampling Site _____ Date of Collection January 17, 1992

Date Samples Received at DataChem January 20, 1992

Analysis

Method of Analysis LW23

Date(s) of Analysis January 23, 1992

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	TNT µg/gram	RDX µg/gram	HMX µg/gram	2,4-DNT µg/gram	2,6-DNT µg/gram			
9201171000	EL 0341	SOIL	ND*	ND*	ND*	ND*	ND*			
* Limit of Detection			2.00	1.28	2.00	2.50	2.00			

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** See comment on last page.
( ) Parameter between LOD and LOQ.

Julie A. Webb
Analyst: Julie A. Webb

Ken Spaulding
Reviewer: Ken M. Spaulding

Ken Spaulding
Laboratory Supervisor: Ken M. Spaulding

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Date 1/24/92

Agency Identification Number S92-0046

General Set Comments

USATHAMA method LW23 was used for analysis.

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

GCL

Geoscience Consultants, Ltd.

☐ Albuquerque	☒ East Coast	☐ Rocky Mountain	☐ Las Cruces
500 Copper N.W.	4221 Forbes Blvd.,	13111 E. Briarwood Ave.,	P.O. Drawer MM
Suite 200	Suite 240	Suite 250	Las Cruces, NM 88004
Albuquerque, NM 87102	Lanham, MD 20706	Englewood, CO 80112	(505) 524-5364
(505) 842-0001	(301) 459-9677	(303) 649-9001	

№ 4808

Chain of Custody

DATE 1/17/92 PAGE 1 OF 1

LAB NAME Data Chem
ADDRESS 960 West Levoy Dr.
SLC, Utah 84123
TELEPHONE 801-266-7700

SAMPLERS (SIGNATURE)
B.V. Nicholas

SAMPLE NUMBER	MATRIX	LOCATION	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418.1	TPH MODIFIED 8015	TNT/DNT/FEDX Jim	PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SDWA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE				NUMBER OF CONTAINERS
920117 1000	soil	B, Surface												X									1
EL 0341																							

PROJECT INFORMATION

PROJECT: Nasa Plumbrook
PROJECT DIRECTOR Nicholas
CHARGE CODE NO. 3113.01
SHIPPING ID. NO. 375 773 2355
VIA Fed EX

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	
CHAIN OF CUSTODY SEALS	
REC'D GOOD CONDITION/COLD	
CONFORMS TO RECORD	

LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS:
USE USTHAMA METHOD FOR Analytes

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
B.V. Nicholas		
(Signature) (Time) 2 pm	(Signature) (Time)	(Signature) (Time)
(Printed Name) (Date) H+GCL 1-17-92	(Printed Name) (Date)	(Printed Name) (Date)
(Company)	(Company)	(Company)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY ~~LABORATORY~~ 3.**
(Signature) (Time)	(Signature) (Time)	(Signature) (Time) 1-20-92 1000
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) Tom Jackson
(Company)	(Company)	ANALYTI

DISTRIBUTION: WHITE, CANARY - LABORATORY • PINK - GEOSCIENCE CONSULTANTS, LTD.

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Date 3/24/92
Agency Identification Number S92-0152
Account No. 03018

Geoscience Consultants, Ltd.
4221 Forbes Boulevard
Suite 240
Lanham, MD 20706
Attention: B. V. Nicholas

FAX
Telephone (301) 459-9677

Sampling Collection and Shipment

Sampling Site _____ Date of Collection March 07, 1992

Date Samples Received at DataChem March 11, 1992

Analysis

Method of Analysis USATHAM LW23

Date(s) of Analysis March 20, 1992

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	2,4,6-TNT µg/gram	2,4-DNT µg/gram	2,6-DNT µg/gram	RDX µg/gram	HMX µg/gram			
9203071143	EL 1033	SOIL	ND*	ND*	ND*	ND*	ND*			
9203100927	EL 1034	SOIL	ND*	ND*	ND*	ND*	ND*			
9203101021	EL 1035	SOIL	ND*	ND*	ND*	ND*	ND*			
9203101235	EL 1036	SOIL	ND*	ND*	ND*	ND*	ND*			
9203101459	EL 1037	SOIL	ND*	ND*	ND*	ND*	ND*			
* Limit of Detection			2.00	2.50	2.00	1.28	2.00			

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** See comment on last page.
( ) Parameter between LOD and LOQ.

Julie A. Webb
Analyst: Julie A. Webb

Ken M Spaulding
Reviewer: Ken M Spaulding

Ken M. Spaulding
Laboratory Supervisor: Ken M. Spaulding

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Date 3/24/92

Agency Identification Number S92-0152

General Set Comments

USATHAMA method LW23 was used for analysis.

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

GCL

Geoscience Consultants, Ltd.

☐ Albuquerque	☒ East Coast	☐ Rocky Mountain	☐ Las Cruces
500 Copper N.W.	4221 Forbes Blvd.,	13111 E. Briarwood Ave.,	P.O. Drawer MM
Suite 200	Suite 240	Suite 250	Las Cruces, NM 88004
Albuquerque, NM 87102	Lanham, MD 20706	Englewood, CO 80112	(505) 524-5364
(505) 842-0001	(301) 459-9677	(303) 649-9001	

№ 4898

Chain of Custody

DATE 3-9-92 PAGE 1 OF 1

LAB NAME Data Chem
ADDRESS 960 West Levoy Drive
Salt Lake City, Utah 84123
TELEPHONE 801-266-7700

SAMPLERS (SIGNATURE) B. V. Nicholas

SAMPLE NUMBER	MATRIX	LOCATION	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418.1	TPH MODIFIED 8015	ANALYSIS REQUEST: nitramines, TNT, DNT, RDX, HMX	PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SDWA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE				NUMBER OF CONTAINERS
9203101143	Soil	B3 Composite		EL	1033									X									2
9203100907	Soil	B3 Composite			1034									X									2
9203101021	Soil	HWI Composite			1035									X									2
9203101235	Soil	B2 Composite			1036									X									2
9203101459	Soil	B4 Composite			1037									X									2

PROJECT INFORMATION	SAMPLE RECEIPT	
PROJECT: Nesa Plumbrook	TOTAL NO. OF CONTAINERS	
PROJECT DIRECTOR Nicholas	CHAIN OF CUSTODY SEALS	
CHARGE CODE NO. 5103.3.01	REC'D GOOD CONDITION/COLD	
SHIPPING ID. NO. 7757732285	CONFORMS TO RECORD	
VIA: Fed EX	LAB NO.	

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
B. V. Nicholas 1800		
(Signature) (Time) 3-10-92	(Signature) (Time)	(Signature) (Time)
(Printed Name) (Date) H+GCL	(Printed Name) (Date)	(Printed Name) (Date)
(Company)	(Company)	(Company)
RECEIVED BY 1.	RECEIVED BY 2.	RECEIVED BY (LABORATORY) 3.
		1000
(Signature) (Time)	(Signature) (Time)	(Signature) (Time) Tom Jackson 3-11-92
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name)
(Company)	(Company)	ANALYTI

DISTRIBUTION: WHITE, CANARY - LABORATORY • PINK - GEOSCIENCE CONSULTANTS, LTD.

THIS SET DIES
Extraction: _____
Analysis:

DataChem Laboratories
CHAIN-OF-CUSTODY

Page _____ of _____

Client: Geoscience Consultants, Ltd. Account: 3018
DCL Set ID: 592 0152 Batch ID:
Comments:

Date Sampled	Field ID Number	DCL Sample Number(s)	Sample Matrix	QC	Splits: Explosives
3-7-92	9203071143	EL 1033	Soil		X
3-10-92	9203100927	1034			
	9203101021	1035			
	9203101235	1036			
	9203101459	1037			
					X

ORIGINAL FIELD SAMPLE CONTAINER(S) FOR ANALYSIS OF: →

Received: Date/Time/Signature 3-11-92 / 1000 /

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer of Custody
	3-11-92 1130	sample storage	storage
SS ALF	3-13-92 1600	Alvaro Fontaine	Explosive Ext

SAMPLE PREPARATION: LW23 LABORATORY NOTEBOOK NO.: Ext 13
Prepared on Date/Time: 7-13-92 / 17:30 Prepared By: Alvaro Fontaine

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer of Custody
Alvaro Fontaine	0200 3-15-92		Filter samples
	7/16/92 1500		analysis
	3/19/92 1200	Julia a. Webb	analysis

Rev 01/24/92

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Date 3/25/92
Agency Identification Number S92-0171-AB
Account No. 03018

Geoscience Consultants, Ltd.
4221 Forbes Boulevard
Suite 240
Lanham, MD 20706
Attention: B. V. Nicholas

FAX
Telephone (301) 459-9677

Sampling Collection and Shipment

Sampling Site _____ Date of Collection March 12, 1992

Date Samples Received at DataChem March 13, 1992

Analysis

Method of Analysis USATHAM LW23

Date(s) of Analysis March 20, 1992

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	2,4,6-TNT µg/gram	2,4-DNT µg/gram	2,6-DNT µg/gram	HMX µg/gram	RDX µg/gram			
9203121625	EL 1095	SOIL	ND*	ND*	ND*	ND*	ND*			
9203111134	EL 1096	SOIL	ND*	ND*	ND*	ND*	ND*			
9203120957	EL 1097	SOIL	ND*	ND*	ND*	ND*	ND*			
* Limit of Detection			2.00	2.50	2.00	2.00	1.28			
-										

- See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** See comment on last page.
( ) Parameter between LOD and LOQ.

Julie A. Webb
Analyst: Julie A. Webb

Reviewer: Ken M. Spaulding

Laboratory Supervisor: Ken M. Spaulding

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Date 3/25/92

Agency Identification Number S92-0171-AB

General Set Comments

- USATHAMA method LW23 was used for analysis.

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 2
Part 1 of 1

Date 03/26/92
Agency Identification Number S92-0171-BB
Account No. 03018

Geoscience Consultants, Ltd.
4221 Forbes Boulevard
Suite 240
Lanham, MD 20706
Attention: B. V. Nicholas

FAX
Telephone (301) 459-9677

Sampling Collection and Shipment

Sampling Site _____ Date of Collection March 12, 1992

Date Samples Received at DataChem March 13, 1992

Analysis

Method of Analysis UW25

Date(s) of Analysis March 24, 1992

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	2,4,6-TNT µg/L	2,4-DNT µg/L	2,6-DNT µg/L	HMX µg/L	RDX µg/L			
9203111121	EL 1098	WATER	ND*	ND*	ND*	ND*	ND*			
* Limit of Detection			0.426	0.397	0.600	0.533	0.416			

† See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** See comment on last page.
( ) Parameter between LOD and LOQ.

Julie A. Webb
Analyst: Julie A. Webb

Ken Spaulding
Reviewer: Ken M. Spaulding

Ken Spaulding
Laboratory Supervisor: Ken M. Spaulding

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Date 03/26/93

Agency Identification Number S92-0171-BB

General Set Comments

USATHAMA method UW25 was used for analysis.

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

GCL

Geoscience Consultants, Ltd.

☐ Albuquerque
500 Copper N.W.
Suite 200
Albuquerque, NM 87102
(505) 842-0001

☒ East Coast
4221 Forbes Blvd.,
Suite 240
Lanham, MD 20706
(301) 459-9677

☐ Rocky Mountain
13111 E. Briarwood Ave.,
Suite 250
Englewood, CO 80112
(303) 649-9001

☐ Las Cruces
P.O. Drawer MM
Las Cruces, NM 88004
(505) 524-5364

№ 4901

Chain of Custody

DATE 3-12-92 PAGE 1 OF 1

LAB NAME Data Chem
ADDRESS 960 West Levoy Dr
Salt Lake City, Utah 84123
TELEPHONE 801-266-7700

SAMPLERS (SIGNATURE)
B.V. Nicholas

SAMPLE NUMBER	MATRIX	LOCATION	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418.1	TPH MODIFIED 8015	TNT, DNT, RDX, HMX	PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SDWA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE				NUMBER OF CONTAINERS
9203121625	Soil	MW3	EL	1095										X									2
9203111134	Soil	MW2A	↓	1096										X									2
9203120957	Soil	MW2B		1097										X									2
9203111121	Water	Rinsate	↓	1098																			1

PROJECT INFORMATION
PROJECT: Nova Plumbrook
PROJECT DIRECTOR: Nicholas
CHARGE CODE NO. 51033.01
SHIPPING ID NO. 3757735344
VIA: Fed Ex

SAMPLE RECEIPT
TOTAL NO. OF CONTAINERS
CHAIN OF CUSTODY SEALS
REC'D GOOD CONDITION/COLD
CONFORMS TO RECORD
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
B.V. Nicholas 2000		
(Signature) (Time)	(Signature) (Time)	(Signature) (Time)
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) (Date)
H+GCL		
(Company)	(Company)	(Company)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3.**
		1000
(Signature) (Time)	(Signature) (Time)	(Signature) (Time)
		Tom Jackson 5-13-92
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name)
(Company)	(Company)	ANALYTI

DISTRIBUTION: WHITE, CANARY - LABORATORY • PINK - GEOSCIENCE CONSULTANTS, LTD.

THIS SET DIES
Extraction: _____
Analysis:

DataChem Laboratories
CHAIN-OF-CUSTODY

Page _____ of _____

Splits

Client: Geoscience Consultants, Ltd. Account: 3018
DCL Set ID: 592 0171 Batch ID:
Comments:

Date Sampled	Field ID Number	DCL Sample Number(s)	Sample Matrix	QC	Explosives
3-12-92	920312 1625	EL 1095	Soil		
	920311 1134	1096	↓		
	920312 0957	1097	↓		
↓	920311 1121	↓ 1098	Water		

ORIGINAL FIELD SAMPLE CONTAINER(S) FOR ANALYSIS OF: →

Received: Date/Time/Signature 3-13-92/ 1000 /

SAMPLE PREPARATION: LW23-Exp/o LABORATORY NOTEBOOK NO.:
Prepared on Date/Time: 3-16-92 9:30 Prepared By: Maria P. Rosetta

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer of Custody
	3-13-92 1100	sample storage	storage
Sample Storage MR	9:00 3-17-92	Maria P. Rosetta	To Extract.
MR 3-25-92 Maria P. Rosetta	Date/Time	Received By: (Signature)	Reason for Transfer of Custody
Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer of Custody
Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer of Custody
Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer of Custody
Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer of Custody

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer of Custody
Maria P. Rosetta	3/18/92 0900		analysis
	3/19/92 1200	Julie A. Webb	analysis
Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer of Custody
Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer of Custody
Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer of Custody
Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer of Custody
Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer of Custody

Revised 01/24/92

THIS SET DIES
Extraction: _____
Analysis:

DataChem Laboratories
CHAIN-OF-CUSTODY

Splits

Client: Geoscience Consultants, Ltd. Account: 3018
DCL Set ID: 92 0171 Batch ID:
Comments:

Date Sampled	Field ID Number	DCL Sample Number(s)	Sample Matrix	QC	Explosives
3-12-92	920312 1625	EL 1095	Soil		
	920311 1134	1096	↓		
	920312 0957	1097	↓		
↓	920311 1121	↓ 1098	Water		↓

ORIGINAL FIELD SAMPLE CONTAINER(S) FOR ANALYSIS OF: → X

Received: Date/Time/Signature 3-13-92/ 1000 /

SAMPLE PREPARATION: 4W 25 LABORATORY NOTEBOOK NO.: Ext 13
Prepared on Date/Time: 3-17-92 15:00 Prepared By: Alvaro Gutierrez

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer of Custody
	3-13-92 1100	sample storage	storage
Sample Storage MR	3-17-92 9:00	Maria P. Rosete	To Extract.

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer of Custody
Maria P. Rosete	3-17-92 15:00	Alvaro Gutierrez	Finish Extraction
Alvaro Gutierrez	3/19/92 0900	Ken Frank	analysis
Ken Frank	3/23/92 1600	Julie A. Welt	analysis

Revised 01/24/92

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Form ARF-AL
Page 1 of 2
Part 1 of 1

Date 03/26/92
Agency Identification Number S92-0180
Account No. 03018

Geoscience Consultants, Ltd.
4221 Forbes Boulevard
Suite 240
Lanham, MD 20706
Attention: B. V. Nicholas

FAX
Telephone (301) 459-9677

Sampling Collection and Shipment

Sampling Site _____ Date of Collection March 14, 1992

Date Samples Received at DataChem March 17, 1992

Analysis

Method of Analysis UW25

Date(s) of Analysis March 24, 1992

Analytical Results

Field Sample Number	DataChem Lab Number	Sample Type	2,4,6-TNT µg/L	2,4-DNT µg/L	2,6-DNT µg/L	HMX µg/L	RDX µg/L
9203141121	EL 1113	WATER	ND*	ND*	ND*	ND*	ND*
9203141210	EL 1114	WATER	ND*	ND*	ND*	ND*	ND*
9203141300	EL 1115	WATER	ND*	ND*	ND*	ND*	ND*
9203141317	EL 1116	WATER	ND*	ND*	ND*	ND*	ND*
9203141528	EL 1117	WATER	ND*	ND*	ND*	ND*	ND*
* Limit of Detection			0.426	0.397	0.600	5.33	0.416

* See comment on last page.
ND Parameter not detected.
NR Parameter not requested.

** See comment on last page.
( ) Parameter between LOD and LOQ.

Julia A. Webb
Analyst: Julie A. Webb

Ken Spaulding
Reviewer: Ken M. Spaulding

Ken Spaulding
Laboratory Supervisor: Ken M. Spaulding

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

DATA CHEM LABORATORIES

ANALYTICAL REPORT

Date 03/26/92

Agency Identification Number S92-0180

General Set Comments

USATHAMA method UW25 was used for analysis.
All samples were diluted (1:10) for analysis of HMX due to interferences.

960 West LeVoy Drive / Salt Lake City, Utah 84123-2547 / (801) 266-7700
A Sorenson Company

GCL

Geoscience Consultants, Ltd.

☐ Albuquerque	☐ East Coast	☐ Rocky Mountain	☐ Las Cruces
500 Copper N.W.	4221 Forbes Blvd.,	13111 E. Briarwood Ave.,	P.O. Drawer MM
Suite 200	Suite 240	Suite 250	Las Cruces, NM 88004
Albuquerque, NM 87102	Lanham, MD 20706	Englewood, CO 80112	(505) 524-5364
(505) 842-0001	(301) 459-9677	(303) 649-9001	

№ 4902

Chain of Custody

DATE 3-14-92 PAGE 1 OF 1

LAB NAME Data Chem
ADDRESS 960 W. LeVoy Dr
Salt Lake City Utah
TELEPHONE 801-266-7700 84123

SAMPLERS (SIGNATURE) B.V. Nicholas

SAMPLE NUMBER	MATRIX	LOCATION	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418.1	TPH MODIFIED 8015	TNT, DNT, HMX, RDX	PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SDWA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE				NUMBER OF CONTAINERS
920314 1121	H_2O	MW2A	EL	1112										X									1
920314 1210	↓	MW2B	↓	1114										X									1
920314 1300		MW5		1113										X									1
920314 1317		MW3		1116										X									1
920314 1528	↓	MW1	↓	1117										X									1

PROJECT INFORMATION

PROJECT: Nuna Plumbrook
PROJECT DIRECTOR: Nicholas
CHARGE CODE NO. 5033.01
SHIPPING ID NO. 3757732322
VIA: Fed-Ex

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	1
CHAIN OF CUSTODY SEALS	✓
REC'D GOOD CONDITION/COLD	✓
CONFORMS TO RECORD	✓

LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS: USTHAMA Method

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
B.V. Nicholas 1200		
(Signature) (Time) 3-16-92	(Signature) (Time)	(Signature) (Time)
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) (Date)
H+GLL		
(Company)	(Company)	(Company)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3.**
		1000
(Signature) (Time)	(Signature) (Time)	(Signature) (Time) Tom Jackson 3-17-92
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name)
(Company)	(Company)	ANALYTI

DISTRIBUTION: WHITE, CANARY - LABORATORY • PINK - GEOSCIENCE CONSULTANTS, LTD.

THIS SET DIES
Extraction: 3-21-92
Analysis:

DataChem Laboratories
CHAIN-OF-CUSTODY

Client: Geoscience Consultants, Ltd. Account: 3018
DCL Set ID: 592 0180 Batch ID:
Comments:

Date Sampled	Field ID Number	DCL Sample Number(s)	Sample Matrix	QC	Explosives	Splits
3-14-92	920314 1121	EL 1113	Water		X	
↓	920314 1210	1114	↓		↓	
↓	920314 1300	1115	↓		↓	
↓	920314 1317	1116	↓		↓	
↓	920314 1528	↓ 1117	↓		↓	

ORIGINAL FIELD SAMPLE CONTAINER(S) FOR ANALYSIS OF: →

Received: Date/Time/Signature 3-17-92 / 1000 /

SAMPLE PREP. FOR: UW 2S. Explosiv. LABORATORY NOTEBOOK NO.: _____
Prepared on Date/Time: 3-20-92/10:00 Prepared By: _____

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer/ Sample Location
	3-17-92 1100	sample storage	storage
sample storage	10:00 3-20-92	Maria P. Rosete	Explosive Extraction

Relinquished By: (Signature)	Date/Time	Received By: (Signature)	Reason for Transfer / Sample Location
Maria P. Rosete	10:00 3-20-92		Finish Ext +
	3-23-92/10		Delivery of extract
	3/23/92 1430	Julia A. Wolf	analysis

Revised 03/10/92

RECRA ENVIRONMENTAL, INC.
Chemical and Environmental Analysis Services

February 4, 1992

Ms. Carol Hodge
Geoscience Consultants, Ltd.
4221 Forbes Boulevard, Suite 240
Lanham, MD 20706

RE: Analytical Results

Dear Ms. Hodge:

Please find enclosed results concerning the analyses of the samples recently submitted by your firm. The Pertinent Information regarding these analyses is listed below.

Quote #:	NY92-894
Project Name:	NY2A3916 NASA PLUMBROOK
Matrix:	Soil
Samples Received:	1/18/92
Sample Dates:	1/16,17/92

If you have any questions concerning these data, please contact Ms. Candace Steady, Project Manager, at (716) 691-2600 and refer to the I.D. number listed below. It has been our pleasure to provide Geoscience Consultants, Ltd. with Environmental Testing Services. We look forward to serving you in the future.

Sincerely,

RECRA ENVIRONMENTAL, INC.

Kenneth C. Malinowski, PhD
Vice President

AH/KCM/dms
Enclosure

I.D. #MI92-0044
#OH92-041
#MD92-0006
#NY2A3916

ANALYTICAL RESULTS

Prepared For

Geoscience Consultants, Ltd.
4221 Forbes Boulevard, Suite 240
Lanham, Maryland 20706

Prepared By

Recra Environmental, Inc.
10 Hazelwood Drive, Suite 106
Amherst, New York 14228-2298

METHODOLOGIES

The specific methodologies employed in obtaining the enclosed analytical results are indicated on the specific data tables. The method numbers presented refer to one of the following U.S. Environmental Protection Agency references.

* U.S. Environmental Protection Agency "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods." Office of Solid Waste and Emergency Response. November 1986, SW-846, Third Edition.

* The Toxicity Characteristic Leaching Procedure was performed in accordance with method 1311, 40 CFR, Appendix II to Part 261, June 1990.

COMMENTS

Comments pertain to data on one or all pages of this report.

The enclosed data has been reported utilizing data qualifiers (Q) as defined on the Organic and Inorganic Data Comment Pages.

Quality control analysis was performed on a batch basis. All results were within acceptable limits.

Results of the analysis of soils are corrected for moisture content and reported on a dry weight basis.

The dry weights (103°) were as follows:

METHOD	SAMPLE I.D.	PERCENT DRY (%)
8240	9201161345 B_1 2'-4	74
8270	9201161355 B_1 4'-8'	88
8080	9201161410 B_1 6'-8'	87
8150	9201161410 B_1 6'-8'	87
8015	9201161410 B_1 6'-8'	92.1
METALS	9201171000 B_1 SURFACE	76.8

TCLP matrix spike quality control analysis was performed on sample 9201161345 B_1 2'-4'.

The measured values for sample 9201161345 B_1 2'-4' on the enclosed TCLP data have been corrected for analytical bias based upon the matrix spike results from sample 9201161345 B_1 2'-4' as required by the referenced TCLP protocol.

The TCLP extractions were performed on January 21, 1992.

Volatile Data

Volatile data was processed utilizing Hewlett Packard Autoquantitation. All compounds determined to be present by the computer-generated autoquantitation were subjected to a manual ion search for secondary and tertiary ions.

SEMIVOLATILE DATA

Semivolatile data was processed utilizing Hewlett Packard Autoquantitation. All compounds determined to be present by the computer-generated autoquantitation were subjected to a manual ion search for secondary and tertiary ions.

PCB/PESTICIDE AND HERBICIDE DATA

No deviations from protocol were observed during analyses.

ORGANIC DATA COMMENT PAGE

Laboratory Name RECRA ENVIRONMENTAL, INC.

USEPA Defined Organic Data Qualifiers:

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS.

B - This flag is used when the analyte is found in the associated blank as well as in the sample.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

G - The TCLP Matrix Spike recovery was greater than the upper limit of the analytical method.

L - The TCLP Matrix Spike recovery was lower than the lower limit of the analytical method.

T - This flag is used when the analyte is found in the associated TCLP extraction as well as in the sample.

INORGANIC DATA COMMENT PAGE

Laboratory Name RECRA ENVIRONMENTAL, INC.

USEPA Defined Inorganic Data Qualifiers:

B - Indicates a value greater than or equal to the instrument detection limit but less than the contract required detection limit.

U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 100).

E - Indicates a value estimated or not reported due to the presence of interference.

S - Indicates value determined by Method of Standard Addition.

N - Indicates spike sample recovery is not within control limits.

* - Indicates duplicate analysis is not within control limits.

+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

M - Indicates duplicate injection results exceeded control limits.

W - Post digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

G - The TCLP Matrix Spike recovery was greater than the upper limit of the analytical method.

L - The TCLP Matrix Spike recovery was lower than the lower limit of the analytical method.

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9201161345
B1 2'-4'

Job No.: MD92006

Lab ID: BS000007

Sample Wt.: 5.0 g

File ID: FD461

% Moisture: 26

Date Sampled: 1/16/92

Blank ID: VBLKS1

Date Received: 1/18/92

Level: LOW

Date Analyzed: 1/23/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	14 U
Bromomethane	14 U
Vinyl Chloride	14 U
Chloroethane	14 U
Methylene Chloride	19 B
Acetone	9 BJ
Carbon Disulfide	7 U
1,1-Dichlorothene	7 U
1,1-Dichloroethane	7 U
1,2-Dichloroethene (total)	7 U
Chloroform	7 U
1,2-Dichloroethane	7 U
2-Butanone	14 U
1,1,1-Trichloroethane	7 U
Carbon Tetrachloride	7 U
Bromodichloromethane	7 U
1,2-Dichloropropane	7 U
1,3-Dichloropropene (cis)	7 U
Trichloroethene	7 U
Dibromochloromethane	7 U
1,1,2-Trichloroethane	7 U
Benzene	7 U
1,3-Dichloropropene (trans)	7 U
Bromoform	7 U
4-Methyl-2-Pentanone	14 U
2-Hexanone	14 U
Tetrachloroethene	7 U
1,1,2,2-Tetrachloroethane	7 U
Toluene	7 U
Chlorobenzene	7 U
Ethylbenzene	7 U
Styrene	7 U
Xylene (total)	7 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: VBLKS1

Job No.: MD92006

Lab ID: VBLKS1

Sample Wt.: 5.0 g

File ID: FD460

% Moisture: 0

Date Sampled:

Blank ID: VBLKS1

Date Received:

Level: LOW

Date Analyzed: 1/23/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	10 U
Bromomethane	10 U
Vinyl Chloride	10 U
Chloroethane	10 U
Methylene Chloride	5 J
Acetone	7 J
Carbon Disulfide	5 U
1,1-Dichlorothene	5 U
1,1-Dichloroethane	5 U
1,2-Dichloroethene (total)	5 U
Chloroform	5 U
1,2-Dichloroethane	5 U
2-Butanone	10 U
1,1,1-Trichloroethane	5 U
Carbon Tetrachloride	5 U
Bromodichloromethane	5 U
1,2-Dichloropropane	5 U
1,3-Dichloropropene (cis)	5 U
Trichloroethene	5 U
Dibromochloromethane	5 U
1,1,2-Trichloroethane	5 U
Benzene	5 U
1,3-Dichloropropene (trans)	5 U
Bromoform	5 U
4-Methyl-2-Pentanone	10 U
2-Hexanone	10 U
Tetrachloroethene	5 U
1,1,2,2-Tetrachloroethane	5 U
Toluene	5 U
Chlorobenzene	5 U
Ethylbenzene	5 U
Styrene	5 U
Xylene (total)	5 U

RECRA ENVIRONMENTAL, INC.
VOLATILE SURROGATE RECOVERY
SOIL MATRIX

Client: GEOSCIENCE

Job No.: MD92006

Level: LOW

	CLIENT SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
1	9201161345 B1 2'-4'	104	103	104		0
2	VBLKS1	104	101	85		0
3						
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

	QC LIMITS
S1 (TOL) = Toluene-d8	(81-117)
S2 (BFB) = Bromoflourobenzene	(74-121)
S3 (DCE) = 1,2-Dichloroethane-d4	(70-121)

\# Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9201161355 B1 4'-8'

Job No.: MD92006
Lab ID: BS000006

Sample Wt.: 30.0 g
File ID: BE878

% Moisture: 12
Date Sampled: 01/16/92

Blank ID: SBLKS1
Date Received: 01/18/92

Level: LOW
Date Extracted: 01/22/92

GPC Cleanup: YES
Date Analyzed: 01/24/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Phenol	760 U
Bis(2-Chloroethyl)ether	760 U
2-Chlorophenol	760 U
1,3-Dichlorobenzene	760 U
1,4-Dichlorobenzene	760 U
1,2-Dichlorobenzene	760 U
2-Methylphenol	760 U
2,2'-oxybis(1-Chloropropane)	760 U
4-Methylphenol	760 U
N-Nitroso-di-n-propylamine	760 U
Hexachloroethane	760 U
Nitrobenzene	760 U
Isophorone	760 U
2-Nitrophenol	760 U
2,4-Dimethylphenol	760 U
Bis(2-Chloroethoxy)methane	760 U
2,4-Dichlorophenol	760 U
1,2,4-Trichlorobenzene	760 U
Naphthalene	760 U
4-Chloroaniline	760 U
Hexachlorobutadiene	760 U
4-Chloro-3-methylphenol	760 U
2-Methylnaphthalene	760 U
Hexachlorocyclopentadiene	760 U
2,4,6-Trichlorophenol	760 U
2,4,5-Trichlorophenol	1900 U
2-Chloronaphthalene	760 U
2-Nitroaniline	1900 U
Dimethylphthalate	760 U
Acenaphthylene	760 U
2,6-Dinitrotoluene	760 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: 9201161355 B1 4'-8'

Job No.: MD92006
Lab ID: BS000006

Sample Wt.: 30.0 g
File ID: BE878

% Moisture: 12
Date Sampled: 01/16/92

Blank ID: SBLKS1
Date Received: 01/18/92

Level: LOW
Date Extracted: 01/22/91

GPC Cleanup: YES
Date Analyzed: 01/24/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
3-Nitroaniline	1900 U
Acenaphthene	760 U
2,4-Dinitrophenol	1900 U
4-Nitrophenol	1900 U
Dibenzofuran	760 U
2,4-Dinitrotoluene	760 U
Diethylphthalate	760 U
4-Chlorophenyl-phenylether	760 U
Fluorene	760 U
4-Nitroaniline	1900 U
4,6-Dinitro-2-methylphenol	1900 U
N-Nitrosodiphenylamine (1)	760 U
4-Bromophenyl-phenylether	760 U
Hexachlorobenzene	760 U
Pentachlorophenol	1900 U
Phenanthrene	760 U
Anthracene	760 U
Carbazole	760 U
Di-n-butylphthalate	48 J
Fluoranthene	760 U
Pyrene	760 U
Butylbenzylphthalate	760 U
3,3'-Dichlorobenzidine	760 U
Benzo(a)anthracene	760 U
Chrysene	760 U
bis(2-Ethylhexyl)phthalate	220 J
Di-n-octylphthalate	760 U
Benzo(b)fluoranthene	760 U
Benzo(k)fluoranthene	760 U
Benzo(a)pyrene	760 U
Indeno(1,2,3-cd)pyrene	760 U
Dibenz(a,h)anthracene	760 U
Benzo(g,h,i)perylene	760 U

(1) - Cannot be separated from Diphenylamine

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: SBLKS1

Job No.: MD92006
Lab ID: SBLKS1

Sample Wt.: 30.0 g
File ID: BE876

% Moisture: 0
Date Sampled:

Blank ID: SBLKS1
Date Received:

Level: LOW
Date Extracted: 01/22/92

GPC Cleanup: YES
Date Analyzed: 01/24/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Phenol	670 U
Bis(2-Chloroethyl)ether	670 U
2-Chlorophenol	670 U
1,3-Dichlorobenzene	670 U
1,4-Dichlorobenzene	670 U
1,2-Dichlorobenzene	670 U
2-Methylphenol	670 U
2,2'-oxybis(1-Chloropropane)	670 U
4-Methylphenol	670 U
N-Nitroso-di-n-propylamine	670 U
Hexachloroethane	670 U
Nitrobenzene	670 U
Isophorone	670 U
2-Nitrophenol	670 U
2,4-Dimethylphenol	670 U
Bis(2-Chloroethoxy)methane	670 U
2,4-Dichlorophenol	670 U
1,2,4-Trichlorobenzene	670 U
Naphthalene	670 U
4-Chloroaniline	670 U
Hexachlorobutadiene	670 U
4-Chloro-3-methylphenol	670 U
2-Methylnaphthalene	670 U
Hexachlorocyclopentadiene	670 U
2,4,6-Trichlorophenol	670 U
2,4,5-Trichlorophenol	1700 U
2-Chloronaphthalene	670 U
2-Nitroaniline	1700 U
Dimethylphthalate	670 U
Acenaphthylene	670 U
2,6-Dinitrotoluene	670 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: SBLKS1

Job No.: MD92006
Lab ID: SBLKS1

Sample Wt.: 30.0 g
File ID: BE876

% Moisture: 0
Date Sampled:

Blank ID: GC876
Date Received:

Level: LOW
Date Extracted: 01/22/91

GPC Cleanup: YES
Date Analyzed: 01/24/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
3-Nitroaniline	1700 U
Acenaphthene	670 U
2,4-Dinitrophenol	1700 U
4-Nitrophenol	1700 U
Dibenzofuran	670 U
2,4-Dinitrotoluene	670 U
Diethylphthalate	670 U
4-Chlorophenyl-phenylether	670 U
Fluorene	670 U
4-Nitroaniline	1700 U
4,6-Dinitro-2-methylphenol	1700 U
N-Nitrosodiphenylamine (1)	670 U
4-Bromophenyl-phenylether	670 U
Hexachlorobenzene	670 U
Pentachlorophenol	1700 U
Phenanthrene	670 U
Anthracene	670 U
Carbazole	670 U
Di-n-butylphthalate	670 U
Fluoranthene	670 U
Pyrene	670 U
Butylbenzylphthalate	670 U
3,3'-Dichlorobenzidine	670 U
Benzo(a)anthracene	670 U
Chrysene	670 U
bis(2-Ethylhexyl)phthalate	670 U
Di-n-octylphthalate	670 U
Benzo(b)fluoranthene	670 U
Benzo(k)fluoranthene	670 U
Benzo(a)pyrene	670 U
Indeno(1,2,3-cd)pyrene	670 U
Dibenz(a,h)anthracene	670 U
Benzo(g,h,i)perylene	670 U

(1) - Cannot be separated from Diphenylamine

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE SURROGATE RECOVERY
SOIL MATRIX

Client: GEOSCIENCE

Job No.: MD92006

Level: LOW

	CLIENT SAMPLE ID	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	TOT OUT
1	9201161355 B1 4'-8'	73	70	95	73	69	102	0
2	SBLKS1	77	83	94	72	72	79	0
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

	QC LIMITS
S1 (NBZ) = Nitrobenzene-d5	(23-120)
S2 (FBP) = 2- Fluorobiphenyl	(30-115)
S3 (TPH) = Terphenyl-d14	(18-137)
S4 (PHL) = Phenol-d6	(24-113)
S5 (2FP) = 2-Fluorophenol	(25-121)
S6 (TBP) = 2,4,6-Tribromophenol	(19-122)

\# Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9201161410
B1 6'-8'

Job No.: MD92006

Lab ID: BS000008

Sample Wt: 30.0 G

Date Sampled: 1/16/92

% Moisture: 13

Date Received: 1/18/92

Blank ID: PBLKS1

Date Extracted: 1/22/92

Level: LOW

Date Analyzed: 1/29/92

Dilution Factor: 1

GPC Cleanup: YES

COMPOUND	CONCENTRATION UNITS: ug/Kg
alpha-BHC	9 U
beta-BHC	9 U
delta-BHC	9 U
gamma-BHC (Lindane)	9 U
Heptachlor	9 U
Aldrin	9 U
Heptachlor epoxide	9 U
Endosulfan I	9 U
Dieldrin	18 U
4,4'-DDE	18 U
Endrin	18 U
Endosulfan II	18 U
4,4'-DDD	18 U
Endosulfan sulfate	18 U
4,4'-DDT	18 U
Methoxychlor	92 U
Endrin ketone	18 U
Endrin aldehyde	18 U
alpha -chlordane	92 U
gamma -chlordane	92 U
Toxaphene	180 U
PCB-1016	92 U
PCB-1221	92 U
PCB-1232	92 U
PCB-1242	92 U
PCB-1248	92 U
PCB-1254	180 U
PCB-1260	180 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
SOIL MATRIX

Client: GEOSCIENCE

Client ID: PBLKS1

Job No.: MD92006

Lab ID: 2BLK012292

Sample Wt: 30.0 G

Date Sampled:

% Moisture: 0

Date Received:

Blank ID: PBLKS1

Date Extracted: 1/22/92

Level: LOW

Date Analyzed: 1/29/92

Dilution Factor: 1

GPC Cleanup: YES

COMPOUND	CONCENTRATION UNITS: ug/Kg
alpha-BHC	8 U
beta-BHC	8 U
delta-BHC	8 U
gamma-BHC (Lindane)	8 U
Heptachlor	8 U
Aldrin	8 U
Heptachlor epoxide	8 U
Endosulfan I	8 U
Dieldrin	16 U
4,4'-DDE	16 U
Endrin	16 U
Endosulfan II	16 U
4,4'-DDD	16 U
Endosulfan sulfate	16 U
4,4'-DDT	16 U
Methoxychlor	80 U
Endrin ketone	16 U
Endrin aldehyde	16 U
alpha -chlordane	80 U
gamma -chlordane	80 U
Toxaphene	160 U
PCB-1016	80 U
PCB-1221	80 U
PCB-1232	80 U
PCB-1242	80 U
PCB-1248	80 U
PCB-1254	160 U
PCB-1260	160 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE SURROGATE RECOVERY
SOIL MATRIX

Client: GEOSCIENCE

Job No.: MD92006

Level: LOW

	CLIENT SAMPLE NO.	S1 (DBC) #	OTHER
1	9201161410 B1 6'-8'	110	
2	PBLKS1	64	
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

QC LIMITS

S1 (DBC) = Dibutylchlorendate (20-150)

Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

RECRA ENVIRONMENTAL, INC.
HERBICIDE ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9201161410
B1 6'-8'

Job No.: MD92006

Lab ID: BS000008

Sample Wt.: 50.1 g

Date Extracted: 01/21/92

% Moisture: 13

Date Analyzed: 01/24/92

Date Sampled: 01/16/92

Dilution Factor: 1

Date Received: 01/18/92

COMPOUND	CONCENTRATION UNITS: ug/Kg
2,4-D	280 U
2,4,5-T	46 U
2,4,5-TP (Silvex)	46 U
2,4-DB	210 U
Dalapon	1400 U
Dicamba	57 U
Dichloroprop	150 U
Dinoseb	17 U
MCPA	57000 U
MCPP	44000 U

RECRA ENVIRONMENTAL, INC.
HERBICIDE ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: HBLKS1

Job No.: MD92006

Lab ID: 1BLK012192

Sample Wt.: 50.0 g

Date Extracted: 01/21/92

% Moisture: 0

Date Analyzed: 01/24/92

Date Sampled:

Dilution Factor: 1

Date Received:

COMPOUND	CONCENTRATION UNITS: ug/Kg
2,4-D	240 U
2,4,5-T	40 U
2,4,5-TP (Silvex)	40 U
2,4-DB	180 U
Dalapon	1200 U
Dicamba	50 U
Dichloroprop	130 U
Dinoseb	15 U
MCPA	50000 U
MCPP	38000 U

RECRA ENVIRONMENTAL, INC.
HERBICIDE SURROGATE RECOVERY
SOIL MATRIX

Client: GEOSCIENCE Job No.: MD92006

	CLIENT SAMPLE NO.	S1 (PIC) #	OTHER
1	9201161410 B1 6'-8'	93	
2	HBLKS1	114	
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

S1 (PIC) = Picloram

Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

GEOSCIENCE CONSULTANTS LTD.

TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0044.1
RECRA SAMPLE ID: DS667
CLIENT SAMPLE ID: 9201161410 B1 6'-8'

SAMPLE DATE: 1/16/92
ANALYSIS DATE: 1/21/92

COMPOUND (UNITS OF MEASURE=MG/KG)	RESULT	Q
VOLATILE/GASOLINE	14	

% DRY WEIGHT = 92.1

DILUTION FACTOR = 1.0

GEOSCIENCE CONSULTANTS LTD.

TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0044.2 ANALYSIS DATE: 1/21/92
RECRA SAMPLE ID: METHOD BLANK

COMPOUND (UNITS OF MEASURE=MG/KG)	RESULT	Q
VOLATILE/GASOLINE	0.5	U

% DRY WEIGHT = 100

DILUTION FACTOR = 1.0

GEOSCIENCE CONSULTANTS, LTD.
SOIL MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. MI-0044 SAMPLE DATE 01/16/92
DESC BS000009FS
SAMPLE NO. 9201171000 B

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Lead	MG/KG	7420	01/24/92	70	
Total Mercury	MG/KG	7471	01/27/92	0.11	U

PERCENT DRY = 76.8
SAMPLE NO: 9201171000 B_1 SURFACE

GEOSCIENCE CONSULTANTS, LTD.
SOIL MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. MI-0044
DESC AR000875
SAMPLE NO. METHOD BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Lead	MG/KG	7420	01/24/92	10	U
Total Mercury	MG/KG	7471	01/27/92	0.08	U

GEOSCIENCE CONSULTANTS, LTD.
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. MI-0044 SAMPLE DATE 01/16/92
DESC BS000007FS
SAMPLE NO. 9201161345

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	01/24/92	5.0	0.005	0.005	U
Total Barium	7080	01/24/92	100.0	0.5	0.5	U
Total Cadmium	7130	01/23/92	1.0	0.01	0.01	U
Total Chromium	7190	01/24/92	5.0	0.02	0.02	U
Total Lead	7420	01/24/92	5.0	0.1	0.1	U
Total Mercury	7470	01/27/92	0.2	0.0008	0.0008	U
Total Selenium	7740	01/28/92	1.0	0.01	0.01	U
Total Silver	7760	01/24/92	5.0	0.01	0.01	U

SAMPLE NO: 9201161345 B_1 2'-4'

GEOSCIENCE CONSULTANTS, LTD.
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. MI-0044
DESC AR000876
SAMPLE NO. TCLP BLANK

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	01/24/92	5.0	0.005	0.0	U
Total Barium	7080	01/24/92	100.0	0.5	0.0	U
Total Cadmium	7130	01/23/92	1.0	0.01	0.0	U
Total Chromium	7190	01/24/92	5.0	0.02	0.0	U
Total Lead	7420	01/24/92	5.0	0.1	0.0	U
Total Mercury	7470	01/27/92	0.2	0.0008	0.0	U
Total Selenium	7740	01/28/92	1.0	0.01	0.0	U
Total Silver	7760	01/24/92	5.0	0.01	0.0	U

GEOSCIENCE CONSULTANTS, LTD.
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. MI-0044
DESC AR000875
SAMPLE NO. METHOD BLANK

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	01/24/92	5.0	0.005	0.0	U
Total Barium	7080	01/24/92	100.0	0.5	0.0	U
Total Cadmium	7130	01/23/92	1.0	0.01	0.0	U
Total Chromium	7190	01/24/92	5.0	0.02	0.0	U
Total Lead	7420	01/24/92	5.0	0.1	0.0	U
Total Mercury	7470	01/27/92	0.2	0.0008	0.0	U
Total Selenium	7740	01/28/92	1.0	0.01	0.0	U
Total Silver	7760	01/24/92	5.0	0.01	0.0	U

MATRIX SPIKE RECOVERY
TCLP EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
RECRA SAMPLE IDENTIFICATION BS000007 MATRIX SPIKE
CLIENT SAMPLE IDENTIFICATION 9201161345 B_1 2'-4' MS

PARAMETER	METHOD NUMBER	MICROGRAMS OF SPIKE	PERCENT RECOVERY	Q
Total Arsenic	7060	100	111	G
Total Barium	7080	10000	114	G
Total Cadmium	7130	1000	104	G
Total Chromium	7190	1000	91	
Total Lead	7420	10000	103	G
Total Mercury	7470	500	104	G
Total Selenium	7740	100	73	L
Total Silver	7760	1000	59	L

I.D. #MI92-0044.3

GCL

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Albuquerque, NM 87102	Lanham, MD 20706	Englewood, CO 80112	(505) 524-5364
(505) 842-0001	(301) 459-9677	(303) 649-9001	

№ 4821

Chain of Custody

DATE 1-16-92 PAGE 1 OF 1

LAB NAME RECRA ENVIRONMENTAL
ADDRESS 8320 Guilford Rd # F
Columbia, MD 21046
TELEPHONE 301-381-2288

SAMPLERS (SIGNATURE)
B.V. Nicholas

SAMPLE NUMBER	MATRIX	LOCATION	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB/Herb 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418.1	TPH 9253/diesel MODIFIED 8015	TCLP Metals	PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SDWA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE	Hg			NUMBER OF CONTAINERS
9201161355	Soil	B1 0'-4'-8'	X																				1
9201161345	Soil	B1 2'-4'		X										X									2
9201161410	Soil	B1 6'-8'			X								X										1
9201171000	Soil	B1 Surface																		X			1

PROJECT INFORMATION	SAMPLE RECEIPT	RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
PROJECT: NASA Plumbrook	TOTAL NO. OF CONTAINERS	B.V. Nicholas		
PROJECT DIRECTOR Nicholas	CHAIN OF CUSTODY SEALS	(Signature) (Time) 2:00 pm	(Signature) (Time)	(Signature) (Time)
CHARGE CODE NO. 51033.01	REC'D GOOD CONDITION/COLD	(Printed Name) (Date) H+SCL 1/17/92	(Printed Name) (Date)	(Printed Name) (Date)
SHIPPING ID. NO. 3757732366	CONFORMS TO RECORD	(Company)	(Company)	(Company)
VIA Fed EX	LAB NO.	RECEIVED BY 1. Tracy Zacheiss	RECEIVED BY 2.	RECEIVED BY (LABORATORY) 3.
SPECIAL INSTRUCTIONS/COMMENTS:		(Signature) (Time) 1000	(Signature) (Time)	(Signature) (Time)
		(Printed Name) (Date) Tracy Zacheiss 1-18-92	(Printed Name) (Date)	(Printed Name) ANALYTI
		(Company) RECRA	(Company)	

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RECRA ENVIRONMENTAL INC.

Chemical and Environmental Analysis Services

April 1, 1992

Ms. Virginia Nicholson
H + GCL, Inc.
4221 Forbes Boulevard, Suite 240
Lanham, MD 20706

RE: Analytical Results

Dear Ms. Nicholson:

Please find enclosed results concerning the analyses of the samples recently submitted by your firm. The Pertinent Information regarding these analyses is listed below.

Quote #:	NY91-894
Project Name:	Plumbrook
Matrix:	Soil, Aqueous
Samples Received:	3/13/92
Sample Dates:	3/11,12/92

If you have any questions concerning these data, please contact Ms. Julie Calvert Project Manager, Customer Service at (716) 691-2600 and refer to the I.D. number listed below. It has been our pleasure to provide H + GCL, Inc. with Environmental Testing Services. We look forward to serving you in the future.

Sincerely,

RECRA ENVIRONMENTAL, INC.

Kenneth C. Malinowski, PhD
Vice President

MKA/KCM/dms
Enclosure

I.D. #MI92-0204
#MD92-0059,A
#OH92-0173
#NY2A3916

CASE NARRATIVE

ANALYTICAL RESULTS

Prepared For

H + GCL, Inc.
4221 Forbes Boulevard, Suite 240
Lanham, Maryland 20706

Prepared By

Recra Environmental, Inc.
10 Hazelwood Drive, Suite 106
Amherst, New York 14228-2298

METHODOLOGIES

The specific methodologies employed in obtaining the enclosed analytical results are indicated on the specific data table. The method numbers presented refer to the following U.S. Environmental Protection Agency reference.

* U.S. Environmental Protection Agency "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods." Office of Solid Waste and Emergency Response. November 1986, SW-846,Third Edition.

* The Toxicity Characteristic Leaching Procedure was performed as per Method 1311, 40 CFR Appendix II to Part 261 June 1990.

COMMENTS

Comments pertain to data on one or all pages of this report.

The enclosed data has been reported utilizing USEPA data qualifiers (Q) as defined on the Organic and Inorganic Data Comment Pages.

The TCLP Matrix Spike quality analysis was performed on sample 9203101459MS. The measured values for the following samples have been corrected for analytical bias based upon the matrix spike results from sample 9203101459MS as required by the referenced TCLP protocol:

9203120957
9203111134
9203111121
9203121625

Quantitation limits are not corrected for analytical bias.

The TCLP extractions were performed on March 16,1992.

Results of the analysis of soil samples are corrected for moisture content and reported on a dry weight basis.

Quality control analyses were performed on a batch basis. All results were within quality control limits.

VOLATILE DATA

Volatile Method Blank VBLKW1 exhibits contamination by TCL compound Methylene Chloride. The level of contamination falls below protocol allowable limits, therefore the associated sample is both useable and compliant.

Volatile Method Blank VBLKS1 exhibits contamination by TCL compounds Methylene Chloride, Acetone and 2-Butanone. The levels of contamination fall below protocol allowable limits, therefore the associated samples are both useable and compliant.

Volatile Method Blank VBLKS2 exhibits contamination by TCL compounds Methylene Chloride and Acetone. The levels of contamination fall below protocol allowable limits, therefore the associated samples are both useable and compliant.

Sample 9203121549 required reanalysis due to the noncompliant recovery for Surrogate 1,2-Dichloroethane-d4. The reanalysis exhibited the same behavior indicating matrix interference.

SEMIVOLATILE DATA

No deviations from protocol were observed during analyses.

PESTICIDE/PCB DATA

No deviations from protocol were observed during analyses.

TPH 8015 DATA

No deviations from protocol were observed during analysis.

HERBICIDE DATA

No deviations from protocol were observed during analysis.

METAL DATA

No deviations from protocol were observed during analysis.

CHAIN OF CUSTODY

GCL **Geoscience Consultants, Ltd.**

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(505) 842-0001	(301) 459-9677	(303) 649-9001	

№ 4900

Chain of Custody

DATE 3-12-92 PAGE 1 OF 1

LAB NAME REIRA ENVIRONMENTAL
ADDRESS 8320 Guilford Rd #F
Columbia, MD 21046
TELEPHONE 301-381-2288

SAMPLERS (SIGNATURE)
B.V. Nicholas

SAMPLE NUMBER	MATRIX	LOCATION	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB/Herb 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418.1	TPH Gas. Diesel MODIFIED 8015	TCLP metals	PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SDWA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE	Pb Hg			NUMBER OF CONTAINERS
9203120957	Soil	MW2B Composite	X		X								X	+						+			4
9203111134	Soil	MW2A Composite	X		X								X	X						X			4
9203111100	Soil	MW2A 2.4' grab		X																			1
9203120925	Soil	MW2B 6.2' grab		X																			1
9203111121	Water	Rinsate	X	X	X									X						X			7
9203111000	Water	Trip Blank		X																			3
9203121625	Soil	MW3 Composite	X		X								X	X						X			4
9203121549	Soil	MW3 0.2' grab		X																			1

PROJECT INFORMATION	
PROJECT:	Neal Plumbrook
PROJECT DIRECTOR	Nicholas
CHARGE CODE NO.	51033.01
SHIPPING ID. NO.	Fed Ex
VIA:	3757732333

SAMPLE RECEIPT	
TOTAL NO. OF CONTAINERS	25
CHAIN OF CUSTODY SEALS	Y
REC'D GOOD CONDITION/COLD	Y
CONFORMS TO RECORD	Y
LAB NO.	

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
B.V. Nicholas 3000 (Signature) (Time)	(Signature) (Time)	(Signature) (Time)
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) (Date)
H+GCL (Company)	(Company)	(Company)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3.**
(Signature) (Time)	(Signature) (Time)	Tracy Jackson (Signature) (Time)
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) Tracy Jackson
(Company)	(Company)	ANALYTI Recd

DISTRIBUTION: WHITE, CANARY - LABORATORY • PINK - GEOSCIENCE CONSULTANTS, LTD.

VOLATILE DATA

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203111100

Job No.: MD92059A

Lab ID: BS000240

Sample Wt.: 5.0g

File ID: FD879

% Moisture: 20%

Date Sampled: 03/11/92

Blank ID: VBLKS1

Date Received: 03/13/92

Level: LOW

Date Analyzed: 03/16/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	12 U
Bromomethane	12 U
Vinyl Chloride	12 U
Chloroethane	12 U
Methylene Chloride	23 B
Acetone	26 B
Carbon Disulfide	6 U
1,1-Dichlorothene	6 U
1,1-Dichloroethane	6 U
1,2-Dichloroethene (total)	6 U
Chloroform	6 U
1,2-Dichloroethane	6 U
2-Butanone	12 U
1,1,1-Trichloroethane	6 U
Carbon Tetrachloride	6 U
Bromodichloromethane	6 U
1,2-Dichloropropane	6 U
1,3-Dichloropropene (cis)	6 U
Trichloroethene	6 U
Dibromochloromethane	6 U
1,1,2-Trichloroethane	6 U
Benzene	6 U
1,3-Dichloropropene (trans)	6 U
Bromoform	6 U
4-Methyl-2-Pentanone	12 U
2-Hexanone	12 U
Tetrachloroethene	6 U
1,1,2,2-Tetrachloroethane	6 U
Toluene	6 U
Chlorobenzene	6 U
Ethylbenzene	6 U
Styrene	6 U
Xylene (total)	6 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203120925

Job No.: MD92059A

Lab ID: BS000241

Sample Wt.: 5.0g

File ID: FD896

% Moisture: 14%

Date Sampled: 03/12/92

Blank ID: VBLKS2

Date Received: 03/13/92

Level: LOW

Date Analyzed: 03/17/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	12 U
Bromomethane	12 U
Vinyl Chloride	12 U
Chloroethane	12 U
Methylene Chloride	18 B
Acetone	15 B
Carbon Disulfide	6 U
1,1-Dichlorothene	6 U
1,1-Dichloroethane	6 U
1,2-Dichloroethene (total)	6 U
Chloroform	6 U
1,2-Dichloroethane	6 U
2-Butanone	4 J
1,1,1-Trichloroethane	6 U
Carbon Tetrachloride	6 U
Bromodichloromethane	6 U
1,2-Dichloropropane	6 U
1,3-Dichloropropene (cis)	6 U
Trichloroethene	6 U
Dibromochloromethane	6 U
1,1,2-Trichloroethane	6 U
Benzene	6 U
1,3-Dichloropropene (trans)	6 U
Bromoform	6 U
4-Methyl-2-Pentanone	12 U
2-Hexanone	12 U
Tetrachloroethene	6 U
1,1,2,2-Tetrachloroethane	6 U
Toluene	6 U
Chlorobenzene	6 U
Ethylbenzene	6 U
Styrene	6 U
Xylene (total)	6 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203121549

Job No.: MD92059A

Lab ID: BS000245

Sample Wt.: 5.0g

File ID: FD881

% Moisture: 16%

Date Sampled: 03/12/92

Blank ID: VBLKS1

Date Received: 03/13/92

Level: LOW

Date Analyzed: 03/16/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	12 U
Bromomethane	12 U
Vinyl Chloride	12 U
Chloroethane	12 U
Methylene Chloride	18 B
Acetone	15 B
Carbon Disulfide	6 U
1,1-Dichlorothene	6 U
1,1-Dichloroethane	6 U
1,2-Dichloroethene (total)	6 U
Chloroform	6 U
1,2-Dichloroethane	6 U
2-Butanone	6 BJ
1,1,1-Trichloroethane	6 U
Carbon Tetrachloride	6 U
Bromodichloromethane	6 U
1,2-Dichloropropane	6 U
1,3-Dichloropropene (cis)	6 U
Trichloroethene	6 U
Dibromochloromethane	6 U
1,1,2-Trichloroethane	6 U
Benzene	6 U
1,3-Dichloropropene (trans)	6 U
Bromoform	6 U
4-Methyl-2-Pentanone	12 U
2-Hexanone	12 U
Tetrachloroethene	6 U
1,1,2,2-Tetrachloroethane	6 U
Toluene	6 U
Chlorobenzene	6 U
Ethylbenzene	6 U
Styrene	6 U
Xylene (total)	6 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203121549RE

Job No.: MD92059A

Lab ID: BS000245RE

Sample Wt.: 5.0g

File ID: FD897

% Moisture: 16%

Date Sampled: 03/12/92

Blank ID: VBLKS2

Date Received: 03/13/92

Level: LOW

Date Analyzed: 03/17/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	12 U
Bromomethane	12 U
Vinyl Chloride	12 U
Chloroethane	12 U
Methylene Chloride	15 B
Acetone	10 BJ
Carbon Disulfide	6 U
1,1-Dichlorothene	6 U
1,1-Dichloroethane	6 U
1,2-Dichloroethene (total)	6 U
Chloroform	6 U
1,2-Dichloroethane	6 U
2-Butanone	12 U
1,1,1-Trichloroethane	6 U
Carbon Tetrachloride	6 U
Bromodichloromethane	6 U
1,2-Dichloropropane	6 U
1,3-Dichloropropene (cis)	6 U
Trichloroethene	6 U
Dibromochloromethane	6 U
1,1,2-Trichloroethane	6 U
Benzene	6 U
1,3-Dichloropropene (trans)	6 U
Bromoform	6 U
4-Methyl-2-Pentanone	12 U
2-Hexanone	12 U
Tetrachloroethene	6 U
1,1,2,2-Tetrachloroethane	6 U
Toluene	6 U
Chlorobenzene	6 U
Ethylbenzene	6 U
Styrene	6 U
Xylene (total)	6 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

12

Client: GEOSCIENCE

Client ID: 9203111121

Job No.: MD92059

Lab ID: BS000242

Sample Vol.: 5.0 mL

File ID: CH299

Blank ID: VBLKW1

Date Sampled: 03/11/92

Level: LOW

Date Received: 03/13/92

Dilution Factor: 1

Date Analyzed: 03/13/92

COMPOUND	CONCENTRATION UNITS: ug/L
Chloromethane	10 U
Bromomethane	10 U
Vinyl Chloride	10 U
Chloroethane	10 U
Methylene Chloride	7 B
Acetone	10 U
Carbon Disulfide	5 U
1,1-Dichlorothene	5 U
1,1-Dichloroethane	5 U
1,2-Dichloroethene (total)	5 U
Chloroform	5 U
1,2-Dichloroethane	5 U
2-Butanone	10 U
1,1,1-Trichloroethane	5 U
Carbon Tetrachloride	5 U
Bromodichloromethane	5 U
1,2-Dichloropropane	5 U
1,3-Dichloropropene (cis)	5 U
Trichloroethene	5 U
Dibromochloromethane	5 U
1,1,2-Trichloroethane	5 U
Benzene	5 U
1,3-Dichloropropene (trans)	5 U
Bromoform	5 U
4-Methyl-2-Pentanone	10 U
2-Hexanone	10 U
Tetrachloroethene	5 U
1,1,2,2-Tetrachloroethane	5 U
Toluene	5 U
Chlorobenzene	5 U
Ethylbenzene	5 U
Styrene	5 U
Xylene (total)	5 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203111000

Job No.: MD92059

Lab ID: BS000243

Sample Vol.: 5.0 mL

File ID: CH300

Blank ID: VBLKW1

Date Sampled: 03/11/92

Level: LOW

Date Received: 03/13/92

Dilution Factor: 1

Date Analyzed: 03/13/92

COMPOUND	CONCENTRATION UNITS: ug/L
Chloromethane	10 U
Bromomethane	10 U
Vinyl Chloride	10 U
Chloroethane	10 U
Methylene Chloride	3 BJ
Acetone	10 U
Carbon Disulfide	5 U
1,1-Dichlorothene	5 U
1,1-Dichloroethane	5 U
1,2-Dichloroethene (total)	5 U
Chloroform	9
1,2-Dichloroethane	5 U
2-Butanone	10 U
1,1,1-Trichloroethane	5 U
Carbon Tetrachloride	5 U
Bromodichloromethane	2 J
1,2-Dichloropropane	5 U
1,3-Dichloropropene (cis)	5 U
Trichloroethene	5 U
Dibromochloromethane	5 U
1,1,2-Trichloroethane	5 U
Benzene	5 U
1,3-Dichloropropene (trans)	5 U
Bromoform	5 U
4-Methyl-2-Pentanone	10 U
2-Hexanone	10 U
Tetrachloroethene	5 U
1,1,2,2-Tetrachloroethane	5 U
Toluene	5 U
Chlorobenzene	5 U
Ethylbenzene	5 U
Styrene	5 U
Xylene (total)	5 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: VBLKS1

Job No.: MD92059A

Lab ID: VBLKS1

Sample Wt.: 5.0 g

File ID: FD876

% Moisture: 0

Date Sampled:

Blank ID: VBLKS1

Date Received:

Level: LOW

Date Analyzed: 03/16/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	10 U
Bromomethane	10 U
Vinyl Chloride	10 U
Chloroethane	10 U
Methylene Chloride	6
Acetone	16
Carbon Disulfide	5 U
1,1-Dichlorothene	5 U
1,1-Dichloroethane	5 U
1,2-Dichloroethene (total)	5 U
Chloroform	5 U
1,2-Dichloroethane	5 U
2-Butanone	4 J
1,1,1-Trichloroethane	5 U
Carbon Tetrachloride	5 U
Bromodichloromethane	5 U
1,2-Dichloropropane	5 U
1,3-Dichloropropene (cis)	5 U
Trichloroethene	5 U
Dibromochloromethane	5 U
1,1,2-Trichloroethane	5 U
Benzene	5 U
1,3-Dichloropropene (trans)	5 U
Bromoform	5 U
4-Methyl-2-Pentanone	10 U
2-Hexanone	10 U
Tetrachloroethene	5 U
1,1,2,2-Tetrachloroethane	5 U
Toluene	5 U
Chlorobenzene	5 U
Ethylbenzene	5 U
Styrene	5 U
Xylene (total)	5 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: VBLKS2

Job No.: MD92059A

Lab ID: VBLKS2

Sample Wt.: 5.0 g

File ID: FD895

% Moisture: 0

Date Sampled:

Blank ID: VBLKS2

Date Received:

Level: LOW

Date Analyzed: 03/17/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	10 U
Bromomethane	10 U
Vinyl Chloride	10 U
Chloroethane	10 U
Methylene Chloride	6
Acetone	5 J
Carbon Disulfide	5 U
1,1-Dichlorothene	5 U
1,1-Dichloroethane	5 U
1,2-Dichloroethene (total)	5 U
Chloroform	5 U
1,2-Dichloroethane	5 U
2-Butanone	10 U
1,1,1-Trichloroethane	5 U
Carbon Tetrachloride	5 U
Bromodichloromethane	5 U
1,2-Dichloropropane	5 U
1,3-Dichloropropene (cis)	5 U
Trichloroethene	5 U
Dibromochloromethane	5 U
1,1,2-Trichloroethane	5 U
Benzene	5 U
1,3-Dichloropropene (trans)	5 U
Bromoform	5 U
4-Methyl-2-Pentanone	10 U
2-Hexanone	10 U
Tetrachloroethene	5 U
1,1,2,2-Tetrachloroethane	5 U
Toluene	5 U
Chlorobenzene	5 U
Ethylbenzene	5 U
Styrene	5 U
Xylene (total)	5 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: VBLKW1

Job No.: MD92059

Lab ID: VBLKW1

Sample Vol.: 5.0 mL

File ID: CH292

Blank ID:

Date Sampled:

Level: LOW

Date Received:

Dilution Factor: 1

Date Analyzed: 03/13/92

COMPOUND	CONCENTRATION UNITS: ug/L
Chloromethane	10 U
Bromomethane	10 U
Vinyl Chloride	10 U
Chloroethane	10 U
Methylene Chloride	2 J
Acetone	10 U
Carbon Disulfide	5 U
1,1-Dichlorothene	5 U
1,1-Dichloroethane	5 U
1,2-Dichloroethene (total)	5 U
Chloroform	5 U
1,2-Dichloroethane	5 U
2-Butanone	10 U
1,1,1-Trichloroethane	5 U
Carbon Tetrachloride	5 U
Bromodichloromethane	5 U
1,2-Dichloropropane	5 U
1,3-Dichloropropene (cis)	5 U
Trichloroethene	5 U
Dibromochloromethane	5 U
1,1,2-Trichloroethane	5 U
Benzene	5 U
1,3-Dichloropropene (trans)	5 U
Bromoform	5 U
4-Methyl-2-Pentanone	10 U
2-Hexanone	10 U
Tetrachloroethene	5 U
1,1,2,2-Tetrachloroethane	5 U
Toluene	5 U
Chlorobenzene	5 U
Ethylbenzene	5 U
Styrene	5 U
Xylene (total)	5 U

RECRA ENVIRONMENTAL, INC.
VOLATILE SURROGATE RECOVERY
SOIL MATRIX

Client: GEOSCIENCE

Job No.: MD92059A

Level: LOW

	CLIENT SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
1	9203111100	107	98	113		0
2	9203120925	103	103	116		0
3	9203121549	105	108	125 *		1
4	9203121549RE	104	103	123 *		1
5	VBLKS1	103	101	101		0
6	VBLKS2	102	104	93		0
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

	QC LIMITS
S1 (TOL) = Toluene-d8	(81-117)
S2 (BFB) = Bromoflourobenzene	(74-121)
S3 (DCE) = 1,2-Dichloroethane-d4	(70-121)

\# Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

RECRA ENVIRONMENTAL, INC.
VOLATILE SURROGATE RECOVERY
AQUEOUS MATRIX

Client: GEOSCIENCE

Job No.: MD92059

Level: LOW

	CLIENT SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
1	9203111121	103	100	103		0
2	9203111000	100	98	107		0
3	VBLKW1	99	91	96		0
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

	QC LIMITS
S1 (TOL) = Toluene-d8	(88-110)
S2 (BFB) = Bromoflourobenzene	(86-115)
S3 (DCE) = 1,2-Dichloroethane-d4	(76-114)

\# Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

RECRA ENVIRONMENTAL, INC.
VOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Job No.: MD92059A

Matrix: SOIL

Instrument ID: 70055

File ID: VD875

Date Analyzed: 03/16/92

Time Analyzed: 1115

		IS1(BCM) AREA	#	RT	IS2 (DFB) AREA	#	RT	IS3 (CBZ) AREA	#	RT
	12 HOUR STD	62478		9.01	112118		19.01	94325		23.90
	UPPER LIMIT	124956		9.51	224236		19.51	188650		24.40
	LOWER LIMIT	31239		8.51	56059		18.51	47162		23.40
	CLIENT SAMPLE NO.									
1	9203111100	42944		9.00	97960		19.05	69322		23.89
2	9203121549	34687		9.01	88386		19.01	67398		23.90
3	VBLKS1	67688		9.01	133192		19.01	105404		23.89
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

RECRA ENVIRONMENTAL, INC.
VOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Job No.: MD92059A

Matrix: SOIL

Instrument ID: 70055

File ID: VD894

Date Analyzed: 03/17/92

Time Analyzed: 1146

		IS1(BCM) AREA #	RT	IS2 (DFB) AREA #	RT	IS3 (CBZ) AREA #	RT
	12 HOUR STD	38401	9.02	71448	19.02	57922	23.91
	UPPER LIMIT	76802	9.52	142896	19.52	115844	24.41
	LOWER LIMIT	19200	8.52	35724	18.52	28961	23.41
	CLIENT SAMPLE NO.						
1	9203120925	29730	9.00	72102	19.05	53523	23.89
2	9203121549RE	29226	9.05	78202	19.05	56960	23.89
3	VBLKS2	40829	9.00	71170	19.05	57076	23.89
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

RECRA ENVIRONMENTAL, INC.
VOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Job No.: MD92059

Matrix: WATER

Instrument ID: 70033

File ID: ZH286

Date Analyzed: 03/13/92

Time Analyzed: 10:34

		IS1(BCM) AREA #	RT	IS2 (DFB) AREA #	RT	IS3 (CBZ) AREA #	RT
	12 HOUR STD	38927	8.89	145829	18.83	128659	23.62
	UPPER LIMIT	77854	9.39	291658	19.33	257318	24.12
	LOWER LIMIT	19464	8.39	72914	18.33	64330	23.12
	CLIENT SAMPLE NO.						
1	9203111121	37033	8.89	131647	18.83	107285	23.62
2	9203111000	40311	8.89	152721	18.83	120935	23.62
3	VBLKW1	38649	8.89	128997	18.83	108745	23.62
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

SEMIVOLATILE DATA

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9203120957

Job No.: MD92059A
Lab ID: BS000238

Sample Wt.: 30.0 g
File ID: DF212

% Moisture: 13%
Date Sampled: 03/12/92

Blank ID: SBLKS1
Date Received: 03/13/92

Level: LOW
Date Extracted: 03/20/92

GPC Cleanup: YES
Date Analyzed: 03/24/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Phenol	760 U
Bis(2-Chloroethyl)ether	760 U
2-Chlorophenol	760 U
1,3-Dichlorobenzene	760 U
1,4-Dichlorobenzene	760 U
1,2-Dichlorobenzene	760 U
2-Methylphenol	760 U
2,2'-oxybis(1-Chloropropane)	760 U
4-Methylphenol	760 U
N-Nitroso-di-n-propylamine	760 U
Hexachloroethane	760 U
Nitrobenzene	760 U
Isophorone	760 U
2-Nitrophenol	760 U
2,4-Dimethylphenol	760 U
Bis(2-Chloroethoxy)methane	760 U
2,4-Dichlorophenol	760 U
1,2,4-Trichlorobenzene	760 U
Naphthalene	760 U
4-Chloroaniline	760 U
Hexachlorobutadiene	760 U
4-Chloro-3-methylphenol	760 U
2-Methylnaphthalene	99 J
Hexachlorocyclopentadiene	760 U
2,4,6-Trichlorophenol	760 U
2,4,5-Trichlorophenol	3800 U
2-Chloronaphthalene	760 U
2-Nitroaniline	3800 U
Dimethylphthalate	760 U
Acenaphthylene	760 U
2,6-Dinitrotoluene	760 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9203120957

Job No.: MD92059A
Lab ID: BS000238

Sample Wt.: 30.0 g
File ID: DF212

% Moisture: 13%
Date Sampled: 03/12/92

Blank ID: SBLKS1
Date Received: 03/13/92

Level: LOW
Date Extracted: 03/20/92

GPC Cleanup: YES
Date Analyzed: 03/24/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
3-Nitroaniline	3800 U
Acenaphthene	760 U
2,4-Dinitrophenol	3800 U
4-Nitrophenol	3800 U
Dibenzofuran	760 U
2,4-Dinitrotoluene	760 U
Diethylphthalate	760 U
4-Chlorophenyl-phenylether	760 U
Fluorene	760 U
4-Nitroaniline	3800 U
4,6-Dinitro-2-methylphenol	3800 U
N-Nitrosodiphenylamine (1)	760 U
4-Bromophenyl-phenylether	760 U
Hexachlorobenzene	760 U
Pentachlorophenol	3800 U
Phenanthrene	68 J
Anthracene	760 U
Carbazole	760 U
Di-n-butylphthalate	760 U
Fluoranthene	760 U
Pyrene	760 U
Butylbenzylphthalate	760 U
3,3'-Dichlorobenzidine	760 U
Benzo(a)anthracene	760 U
Chrysene	760 U
bis(2-Ethylhexyl)phthalate	760 U
Di-n-octylphthalate	760 U
Benzo(b)fluoranthene	760 U
Benzo(k)fluoranthene	760 U
Benzo(a)pyrene	760 U
Indeno(1,2,3-cd)pyrene	760 U
Dibenz(a,h)anthracene	760 U
Benzo(g,h,i)perylene	760 U

(1) - Cannot be separated from Diphenylamine

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9203111134

Job No.: MD92059A
Lab ID: BS000239

Sample Wt.: 30.0 g
File ID: DF213

% Moisture: 22%
Date Sampled: 03/11/92

Blank ID: SBLKS1
Date Received: 03/13/92

Level: LOW
Date Extracted: 03/20/92

GPC Cleanup: YES
Date Analyzed: 03/24/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Phenol	850 U
Bis(2-Chloroethyl)ether	850 U
2-Chlorophenol	850 U
1,3-Dichlorobenzene	850 U
1,4-Dichlorobenzene	850 U
1,2-Dichlorobenzene	850 U
2-Methylphenol	850 U
2,2'-oxybis(1-Chloropropane)	850 U
4-Methylphenol	850 U
N-Nitroso-di-n-propylamine	850 U
Hexachloroethane	850 U
Nitrobenzene	850 U
Isophorone	850 U
2-Nitrophenol	850 U
2,4-Dimethylphenol	850 U
Bis(2-Chloroethoxy)methane	850 U
2,4-Dichlorophenol	850 U
1,2,4-Trichlorobenzene	850 U
Naphthalene	100 J
4-Chloroaniline	850 U
Hexachlorobutadiene	850 U
4-Chloro-3-methylphenol	850 U
2-Methylnaphthalene	450 J
Hexachlorocyclopentadiene	850 U
2,4,6-Trichlorophenol	850 U
2,4,5-Trichlorophenol	4200 U
2-Chloronaphthalene	850 U
2-Nitroaniline	4200 U
Dimethylphthalate	850 U
Acenaphthylene	850 U
2,6-Dinitrotoluene	850 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9203111134

Job No.: MD92059A
Lab ID: BS000239

Sample Wt.: 30.0 g
File ID: DF213

% Moisture: 22%
Date Sampled: 03/11/92

Blank ID: SBLKS1
Date Received: 03/13/92

Level: LOW
Date Extracted: 03/20/92

GPC Cleanup: YES
Date Analyzed: 03/24/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
3-Nitroaniline	4200 U
Acenaphthene	850 U
2,4-Dinitrophenol	4200 U
4-Nitrophenol	4200 U
Dibenzofuran	850 U
2,4-Dinitrotoluene	850 U
Diethylphthalate	850 U
4-Chlorophenyl-phenylether	850 U
Fluorene	850 U
4-Nitroaniline	4200 U
4,6-Dinitro-2-methylphenol	4200 U
N-Nitrosodiphenylamine (1)	850 U
4-Bromophenyl-phenylether	850 U
Hexachlorobenzene	850 U
Pentachlorophenol	4200 U
Phenanthrene	180 J
Anthracene	850 U
Carbazole	850 U
Di-n-butylphthalate	850 U
Fluoranthene	850 U
Pyrene	850 U
Butylbenzylphthalate	850 U
3,3'-Dichlorobenzidine	850 U
Benzo(a)anthracene	850 U
Chrysene	850 U
bis(2-Ethylhexyl)phthalate	850 U
Di-n-octylphthalate	850 U
Benzo(b)fluoranthene	850 U
Benzo(k)fluoranthene	850 U
Benzo(a)pyrene	850 U
Indeno(1,2,3-cd)pyrene	850 U
Dibenz(a,h)anthracene	850 U
Benzo(g,h,i)perylene	850 U

(1) - Cannot be separated from Diphenylamine

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9203121625

Job No.: MD92059A
Lab ID: BS000244

Sample Wt.: 30.0 g
File ID: DF214

% Moisture: 17%
Date Sampled: 03/12/92

Blank ID: SBLKS1
Date Received: 03/13/92

Level: LOW
Date Extracted: 03/20/92

GPC Cleanup: YES
Date Analyzed: 03/24/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Phenol	800 U
Bis(2-Chloroethyl)ether	800 U
2-Chlorophenol	800 U
1,3-Dichlorobenzene	800 U
1,4-Dichlorobenzene	800 U
1,2-Dichlorobenzene	800 U
2-Methylphenol	800 U
2,2'-oxybis(1-Chloropropane)	800 U
4-Methylphenol	800 U
N-Nitroso-di-n-propylamine	800 U
Hexachloroethane	800 U
Nitrobenzene	800 U
Isophorone	800 U
2-Nitrophenol	800 U
2,4-Dimethylphenol	800 U
Bis(2-Chloroethoxy)methane	800 U
2,4-Dichlorophenol	800 U
1,2,4-Trichlorobenzene	800 U
Naphthalene	160 J
4-Chloroaniline	800 U
Hexachlorobutadiene	800 U
4-Chloro-3-methylphenol	800 U
2-Methylnaphthalene	450 J
Hexachlorocyclopentadiene	800 U
2,4,6-Trichlorophenol	800 U
2,4,5-Trichlorophenol	4000 U
2-Chloronaphthalene	800 U
2-Nitroaniline	4000 U
Dimethylphthalate	800 U
Acenaphthylene	800 U
2,6-Dinitrotoluene	800 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9203121625

Job No.: MD92059A
Lab ID: BS000244

Sample Wt.: 30.0 g
File ID: DF214

% Moisture: 17%
Date Sampled: 03/12/92

Blank ID: SBLKS1
Date Received: 03/13/92

Level: LOW
Date Extracted: 03/20/92

GPC Cleanup: YES
Date Analyzed: 03/24/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
3-Nitroaniline	4000 U
Acenaphthene	800 U
2,4-Dinitrophenol	4000 U
4-Nitrophenol	4000 U
Dibenzofuran	800 U
2,4-Dinitrotoluene	800 U
Diethylphthalate	800 U
4-Chlorophenyl-phenylether	800 U
Fluorene	800 U
4-Nitroaniline	4000 U
4,6-Dinitro-2-methylphenol	4000 U
N-Nitrosodiphenylamine (1)	800 U
4-Bromophenyl-phenylether	800 U
Hexachlorobenzene	800 U
Pentachlorophenol	4000 U
Phenanthrene	100 J
Anthracene	800 U
Carbazole	800 U
Di-n-butylphthalate	800 U
Fluoranthene	800 U
Pyrene	800 U
Butylbenzylphthalate	800 U
3,3'-Dichlorobenzidine	800 U
Benzo(a)anthracene	800 U
Chrysene	800 U
bis(2-Ethylhexyl)phthalate	800 U
Di-n-octylphthalate	800 U
Benzo(b)fluoranthene	800 U
Benzo(k)fluoranthene	800 U
Benzo(a)pyrene	800 U
Indeno(1,2,3-cd)pyrene	800 U
Dibenz(a,h)anthracene	800 U
Benzo(g,h,i)perylene	800 U

(1) - Cannot be separated from Diphenylamine

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: 9203111121

Job No.: MD92059
Lab ID: BS000242

Sample Vol.: 1000ml
File ID: GD013

Blank ID: SBLKW1
Date Sampled: 03/11/92

Level: LOW
Date Received: 03/13/92

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
Phenol	10 U
Bis(2-Chloroethyl)ether	10 U
2-Chlorophenol	10 U
1,3-Dichlorobenzene	10 U
1,4-Dichlorobenzene	10 U
1,2-Dichlorobenzene	10 U
2-Methylphenol	10 U
2,2'-oxybis(1-Chloropropane)	10 U
4-Methylphenol	10 U
N-Nitroso-di-n-propylamine	10 U
Hexachloroethane	10 U
Nitrobenzene	10 U
Isophorone	10 U
2-Nitrophenol	10 U
2,4-Dimethylphenol	10 U
Bis(2-Chloroethoxy)methane	10 U
2,4-Dichlorophenol	10 U
1,2,4-Trichlorobenzene	10 U
Naphthalene	10 U
4-Chloroaniline	10 U
Hexachlorobutadiene	10 U
4-Chloro-3-methylphenol	10 U
2-Methylnaphthalene	10 U
Hexachlorocyclopentadiene	10 U
2,4,6-Trichlorophenol	10 U
2,4,5-Trichlorophenol	50 U
2-Chloronaphthalene	10 U
2-Nitroaniline	50 U
Dimethylphthalate	10 U
Acenaphthylene	10 U
2,6-Dinitrotoluene	10 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: 9203111121

Job No.: MD92059
Lab ID: BS000242

Sample Vol.: 1000ml
File ID: GD013

Blank ID: SBLKW1
Date Sampled: 03/11/92

Level: LOW
Date Received: 03/13/92

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
3-Nitroaniline	50 U
Acenaphthene	10 U
2,4-Dinitrophenol	50 U
4-Nitrophenol	50 U
Dibenzofuran	10 U
2,4-Dinitrotoluene	10 U
Diethylphthalate	10 U
4-Chlorophenyl-phenylether	10 U
Fluorene	10 U
4-Nitroaniline	50 U
4,6-Dinitro-2-methylphenol	50 U
N-Nitrosodiphenylamine (1)	10 U
4-Bromophenyl-phenylether	10 U
Hexachlorobenzene	10 U
Pentachlorophenol	50 U
Phenanthrene	10 U
Anthracene	10 U
Carbazole	10 U
Di-n-butylphthalate	10 U
Fluoranthene	10 U
Pyrene	10 U
Butylbenzylphthalate	10 U
3,3'-Dichlorobenzidine	10 U
Benzo(a)anthracene	10 U
Chrysene	10 U
bis(2-Ethylhexyl)phthalate	10 U
Di-n-octylphthalate	10 U
Benzo(b)fluoranthene	10 U
Benzo(k)fluoranthene	10 U
Benzo(a)pyrene	10 U
Indeno(1,2,3-cd)pyrene	10 U
Dibenz(a,h)anthracene	10 U
Benzo(g,h,i)perylene	10 U

(1) - Cannot be separated from Diphenylamine .....

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: SBLKS1

Job No.: MD92059A
Lab ID: SBLKS1

Sample Wt.: 30.0 g
File ID: DF211

% Moisture: 0
Date Sampled:

Blank ID: SBLKS1
Date Received:

Level: LOW
Date Extracted: 03/20/92

GPC Cleanup: YES
Date Analyzed: 03/24/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Phenol	670 U
Bis(2-Chloroethyl)ether	670 U
2-Chlorophenol	670 U
1,3-Dichlorobenzene	670 U
1,4-Dichlorobenzene	670 U
1,2-Dichlorobenzene	670 U
2-Methylphenol	670 U
2,2'-oxybis(1-Chloropropane)	670 U
4-Methylphenol	670 U
N-Nitroso-di-n-propylamine	670 U
Hexachloroethane	670 U
Nitrobenzene	670 U
Isophorone	670 U
2-Nitrophenol	670 U
2,4-Dimethylphenol	670 U
Bis(2-Chloroethoxy)methane	670 U
2,4-Dichlorophenol	670 U
1,2,4-Trichlorobenzene	670 U
Naphthalene	670 U
4-Chloroaniline	670 U
Hexachlorobutadiene	670 U
4-Chloro-3-methylphenol	670 U
2-Methylnaphthalene	670 U
Hexachlorocyclopentadiene	670 U
2,4,6-Trichlorophenol	670 U
2,4,5-Trichlorophenol	3300 U
2-Chloronaphthalene	670 U
2-Nitroaniline	3300 U
Dimethylphthalate	670 U
Acenaphthylene	670 U
2,6-Dinitrotoluene	670 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: SBLKS1

Job No.: MD92059A
Lab ID: SBLKS1

Sample Wt.: 30.0 g
File ID: DF211

% Moisture: 0
Date Sampled:

Blank ID: SBLKS1
Date Received:

Level: LOW
Date Extracted: 03/20/92

GPC Cleanup: YES
Date Analyzed: 03/24/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
3-Nitroaniline	3300 U
Acenaphthene	670 U
2,4-Dinitrophenol	3300 U
4-Nitrophenol	3300 U
Dibenzofuran	670 U
2,4-Dinitrotoluene	670 U
Diethylphthalate	670 U
4-Chlorophenyl-phenylether	670 U
Fluorene	670 U
4-Nitroaniline	3300 U
4,6-Dinitro-2-methylphenol	3300 U
N-Nitrosodiphenylamine (1)	670 U
4-Bromophenyl-phenylether	670 U
Hexachlorobenzene	670 U
Pentachlorophenol	3300 U
Phenanthrene	670 U
Anthracene	670 U
Carbazole	670 U
Di-n-butylphthalate	670 U
Fluoranthene	670 U
Pyrene	670 U
Butylbenzylphthalate	670 U
3,3'-Dichlorobenzidine	670 U
Benzo(a)anthracene	670 U
Chrysene	670 U
bis(2-Ethylhexyl)phthalate	670 U
Di-n-octylphthalate	670 U
Benzo(b)fluoranthene	670 U
Benzo(k)fluoranthene	670 U
Benzo(a)pyrene	670 U
Indeno(1,2,3-cd)pyrene	670 U
Dibenz(a,h)anthracene	670 U
Benzo(g,h,i)perylene	670 U

(1) - Cannot be separated from Diphenylamine

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: SBLKW1

Job No.: MD92059
Lab ID: SBLKW1

Sample Vol.: 1000ml
File ID: GD012

Blank ID: SBLKW1
Date Sampled:

Level: LOW
Date Received:

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
Phenol	10 U
Bis(2-Chloroethyl)ether	10 U
2-Chlorophenol	10 U
1,3-Dichlorobenzene	10 U
1,4-Dichlorobenzene	10 U
1,2-Dichlorobenzene	10 U
2-Methylphenol	10 U
2,2'-oxybis(1-Chloropropane)	10 U
4-Methylphenol	10 U
N-Nitroso-di-n-propylamine	10 U
Hexachloroethane	10 U
Nitrobenzene	10 U
Isophorone	10 U
2-Nitrophenol	10 U
2,4-Dimethylphenol	10 U
Bis(2-Chloroethoxy)methane	10 U
2,4-Dichlorophenol	10 U
1,2,4-Trichlorobenzene	10 U
Naphthalene	10 U
4-Chloroaniline	10 U
Hexachlorobutadiene	10 U
4-Chloro-3-methylphenol	10 U
2-Methylnaphthalene	10 U
Hexachlorocyclopentadiene	10 U
2,4,6-Trichlorophenol	10 U
2,4,5-Trichlorophenol	50 U
2-Chloronaphthalene	10 U
2-Nitroaniline	50 U
Dimethylphthalate	10 U
Acenaphthylene	10 U
2,6-Dinitrotoluene	10 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: SBLKW1

Job No.: MD92059
Lab ID: SBLKW1

Sample Vol.: 1000ml
File ID: GD012

Blank ID: SBLKW1
Date Sampled:

Level: LOW
Date Received:

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
3-Nitroaniline	50 U
Acenaphthene	10 U
2,4-Dinitrophenol	50 U
4-Nitrophenol	50 U
Dibenzofuran	10 U
2,4-Dinitrotoluene	10 U
Diethylphthalate	10 U
4-Chlorophenyl-phenylether	10 U
Fluorene	10 U
4-Nitroaniline	50 U
4,6-Dinitro-2-methylphenol	50 U
N-Nitrosodiphenylamine (1)	10 U
4-Bromophenyl-phenylether	10 U
Hexachlorobenzene	10 U
Pentachlorophenol	50 U
Phenanthrene	10 U
Anthracene	10 U
Carbazole	10 U
Di-n-butylphthalate	10 U
Fluoranthene	10 U
Pyrene	10 U
Butylbenzylphthalate	10 U
3,3'-Dichlorobenzidine	10 U
Benzo(a)anthracene	10 U
Chrysene	10 U
bis(2-Ethylhexyl)phthalate	10 U
Di-n-octylphthalate	10 U
Benzo(b)fluoranthene	10 U
Benzo(k)fluoranthene	10 U
Benzo(a)pyrene	10 U
Indeno(1,2,3-cd)pyrene	10 U
Dibenz(a,h)anthracene	10 U
Benzo(g,h,i)perylene	10 U

(1) - Cannot be separated from Diphenylamine

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE SURROGATE RECOVERY
SOIL MATRIX

Client: GEOSCIENCE

Job No.: MD92059A

Level: LOW

	CLIENT SAMPLE ID	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	TOT OUT
1	9203111134	69	76	81	70	63	60	0
2	9203120957	65	68	71	63	54	61	0
3	9203121625	72	75	81	71	58	67	0
4	SBLKS1	68	66	85	58	51	57	0
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

	QC LIMITS
S1 (NBZ) = Nitrobenzene-d5	(23-120)
S2 (FBP) = 2- Fluorobiphenyl	(30-115)
S3 (TPH) = Terphenyl-d14	(18-137)
S4 (PHL) = Phenol-d6	(24-113)
S5 (2FP) = 2-Fluorophenol	(25-121)
S6 (TBP) = 2,4,6-Tribromophenol	(19-122)

\# Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE SURROGATE RECOVERY
AQUEOUS MATRIX

Client: GEOSCIENCE

Job No.: MD92059

Level: LOW

	CLIENT SAMPLE ID	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	TOT OUT
1	9203111121	65	61	103	33	44	66	0
2	SBLKW1	73	66	106	33	43	68	0
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								

	QC LIMITS
S1 (NBZ) = Nitrobenzene-d5	(35-114)
S2 (FBP) = 2- Fluorobiphenyl	(43-116)
S3 (TPH) = Terphenyl-d14	(33-141)
S4 (PHL) = Phenol-d6	(10-94)
S5 (2FP) = 2-Fluorophenol	(21-100)
S6 (TBP) = 2,4,6-Tribromophenol	(10-123)

\# Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Instrument ID: 700404

Job No.: MD92059A

File ID: YF210

Matrix: SOIL

Date Analyzed: 03/24/92

Level: LOW

Time Analyzed: 1047

		IS1(DCB) AREA	#	RT	IS2 (NPT) AREA	#	RT	IS3 (ANT) AREA	#	RT
	12 HOUR STD	55895		8.61	196780		11.65	107076		16.17
	UPPER LIMIT	111790		9.11	393560		12.15	214152		16.67
	LOWER LIMIT	27948		8.11	98390		11.15	53538		15.67
	EPA SAMPLE NO.									
1	9203111134	35364		8.61	120070		11.64	66321		16.17
2	9203120957	55789		8.61	183604		11.64	99477		16.16
3	9203121625	57459		8.61	199526		11.65	107464		16.17
4	SBLKS1	65734		8.62	208326		11.65	106780		16.17
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Instrument ID : 700404

Job No.: MD92059A

File ID: YF210

Matrix: SOIL

Date Analyzed: 03/24/92

Level: LOW

Time Analyzed: 1047

		IS4(PHN) AREA	#	RT	IS5(CRY) AREA	#	RT	IS6(PRY) AREA	#	RT
	12 HOUR STD	149742		19.99	74498		26.93	50989		30.58
	UPPER LIMIT	299484		20.49	148996		27.43	101978		31.08
	LOWER LIMIT	74871		19.49	37249		26.43	25494		30.08
	EPA SAMPLE NO.									
1	9203111134	77751		19.99	38172		26.92	26755		30.56
2	9203120957	127912		19.99	70056		26.92	51204		30.57
3	9203121625	150539		19.98	74599		26.93	53992		30.57
4	SBLKS1	121601		19.98	52571		26.92	35192		30.58
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Job No.: MD92059

Matrix: WATER

Level: LOW

Instrument ID: 700606

File ID: WD011

Date Analyzed: 03/19/92

Time Analyzed: 1030

		IS1(DCB) AREA #	RT	IS2 (NPT) AREA #	RT	IS3 (ANT) AREA #	RT
	12 HOUR STD	46666	8.93	161681	12.00	87052	16.53
	UPPER LIMIT	93332	9.43	323362	12.50	174104	17.03
	LOWER LIMIT	23333	8.43	80840	11.50	43526	16.03
	EPA SAMPLE NO.						
1	9203111121	53478	8.93	175858	11.99	96689	16.53
2	SBLKW1	55402	8.93	185166	12.00	99434	16.54
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Instrument ID : 700606

Job No.: MD92059

File ID: WD011

Matrix: WATER

Date Analyzed: 03/19/92

Level: LOW

Time Analyzed: 1030

		IS4(PHN) AREA	#	RT	IS5(CRY) AREA	#	RT	IS6(PRY) AREA	#	RT
	12 HOUR STD	139756		20.38	117340		27.35	72162		31.11
	UPPER LIMIT	279512		20.88	234680		27.85	144324		31.61
	LOWER LIMIT	69878		19.88	58670		26.85	36081		30.61
	EPA SAMPLE NO.									
1	9203111121	134681		20.38	78288		27.34	60594		31.10
2	SBLKW1	133247		20.38	70330		27.35	60011		31.11
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

PESTICIDE/PCB DATA

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203120957

Job No.: MD92059A

Lab ID: BS000238

Sample Wt: 30.0g

Date Sampled: 03/12/92

% Moisture: 13%

Date Received: 03/13/92

Blank ID: PBLK1

Date Extracted: 03/20/92

Level: LOW

Date Analyzed: 03/25/92

Dilution Factor: 1

GPC Cleanup: YES

COMPOUND	CONCENTRATION UNITS: ug/Kg
alpha-BHC	4.6 U
beta-BHC	4.6 U
delta-BHC	4.6 U
gamma-BHC (Lindane)	4.6 U
Heptachlor	4.6 U
Aldrin	4.6 U
Heptachlor epoxide	4.6 U
Endosulfan I	4.6 U
Dieldrin	9.2 U
4,4'-DDE	9.2 U
Endrin	9.2 U
Endosulfan II	9.2 U
4,4'-DDD	9.2 U
Endosulfan sulfate	9.2 U
4,4'-DDT	9.2 U
Methoxychlor	46 U
Endrin ketone	9.2 U
Endrin aldehyde	9.2 U
alpha -chlordane	46 U
gamma -chlordane	46 U
Toxaphene	92 U
PCB-1016	46 U
PCB-1221	46 U
PCB-1232	46 U
PCB-1242	46 U
PCB-1248	46 U
PCB-1254	92 U
PCB-1260	92 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203111134

Job No.: MD92059A

Lab ID: BS000239

Sample Wt: 30.0g

Date Sampled: 03/11/92

% Moisture: 22%

Date Received: 03/13/92

Blank ID: PBLK1

Date Extracted: 03/20/92

Level: LOW

Date Analyzed: 03/25/92

Dilution Factor: 1

GPC Cleanup: YES

COMPOUND	CONCENTRATION UNITS: ug/Kg
alpha-BHC	5.1 U
beta-BHC	5.1 U
delta-BHC	5.1 U
gamma-BHC (Lindane)	5.1 U
Heptachlor	5.1 U
Aldrin	5.1 U
Heptachlor epoxide	5.1 U
Endosulfan I	5.1 U
Dieldrin	10 U
4,4'-DDE	10 U
Endrin	10 U
Endosulfan II	10 U
4,4'-DDD	10 U
Endosulfan sulfate	10 U
4,4'-DDT	10 U
Methoxychlor	51 U
Endrin ketone	10 U
Endrin aldehyde	10 U
alpha -chlordane	51 U
gamma -chlordane	51 U
Toxaphene	100 U
PCB-1016	51 U
PCB-1221	51 U
PCB-1232	51 U
PCB-1242	51 U
PCB-1248	51 U
PCB-1254	100 U
PCB-1260	100 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203121625

Job No.: MD92059A

Lab ID: BS000244

Sample Wt: 30.0g

Date Sampled: 03/12/92

% Moisture: 17%

Date Received: 03/13/92

Blank ID: PBLK1

Date Extracted: 03/20/92

Level: LOW

Date Analyzed: 03/25/92

Dilution Factor: 1

GPC Cleanup: YES

COMPOUND	CONCENTRATION UNITS: ug/Kg
alpha-BHC	4.8 U
beta-BHC	4.8 U
delta-BHC	4.8 U
gamma-BHC (Lindane)	4.8 U
Heptachlor	4.8 U
Aldrin	4.8 U
Heptachlor epoxide	4.8 U
Endosulfan I	4.8 U
Dieldrin	9.6 U
4,4'-DDE	9.6 U
Endrin	9.6 U
Endosulfan II	9.6 U
4,4'-DDD	9.6 U
Endosulfan sulfate	9.6 U
4,4'-DDT	9.6 U
Methoxychlor	48 U
Endrin ketone	9.6 U
Endrin aldehyde	9.6 U
alpha -chlordane	48 U
gamma -chlordane	48 U
Toxaphene	96 U
PCB-1016	48 U
PCB-1221	48 U
PCB-1232	48 U
PCB-1242	48 U
PCB-1248	48 U
PCB-1254	96 U
PCB-1260	96 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203111121

Job No.: MD92059

Lab ID: BS000242

Sample Vol: 1000ml

Date Sampled: 03/11/92

Blank ID: PBLK1

Date Received: 03/13/92

Level: LOW

Date Extracted: 03/18/92

Dilution Factor: 1

Date Analyzed: 03/21/92

GPC Cleanup: NO

COMPOUND	CONCENTRATION UNITS: ug/L
alpha-BHC	0.05 U
beta-BHC	0.05 U
delta-BHC	0.05 U
gamma-BHC (Lindane)	0.05 U
Heptachlor	0.05 U
Aldrin	0.05 U
Heptachlor epoxide	0.05 U
Endosulfan I	0.05 U
Dieldrin	0.1 U
4,4'-DDE	0.1 U
Endrin	0.1 U
Endosulfan II	0.1 U
4,4'-DDD	0.1 U
Endosulfan sulfate	0.1 U
4,4'-DDT	0.1 U
Methoxychlor	0.5 U
Endrin ketone	0.1 U
Endrin aldehyde	0.1 U
alpha -chlordane	0.5 U
gamma -chlordane	0.5 U
Toxaphene	1 U
PCB-1016	0.5 U
PCB-1221	0.5 U
PCB-1232	0.5 U
PCB-1242	0.5 U
PCB-1248	0.5 U
PCB-1254	1 U
PCB-1260	1 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
SOIL MATRIX

Client: GEOSCIENCE

Client ID: PBLK1

Job No.: MD92059A

Lab ID: PBLK1

Sample Wt: 30.0g

Date Sampled:

% Moisture: 0%

Date Received:

Blank ID: PBLK1

Date Extracted: 03/20/92

Level: LOW

Date Analyzed: 03/25/92

Dilution Factor: 1

GPC Cleanup: YES

COMPOUND	CONCENTRATION UNITS: ug/Kg
alpha-BHC	4 U
beta-BHC	4 U
delta-BHC	4 U
gamma-BHC (Lindane)	4 U
Heptachlor	4 U
Aldrin	4 U
Heptachlor epoxide	4 U
Endosulfan I	4 U
Dieldrin	8 U
4,4'-DDE	8 U
Endrin	8 U
Endosulfan II	8 U
4,4'-DDD	8 U
Endosulfan sulfate	8 U
4,4'-DDT	8 U
Methoxychlor	40 U
Endrin ketone	8 U
Endrin aldehyde	8 U
alpha -chlordane	40 U
gamma -chlordane	40 U
Toxaphene	80 U
PCB-1016	40 U
PCB-1221	40 U
PCB-1232	40 U
PCB-1242	40 U
PCB-1248	40 U
PCB-1254	80 U
PCB-1260	80 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: PBLK1

Job No.: MD92059

Lab ID: PBLK1

Sample Vol: 1000ml

Date Sampled:

Blank ID: PBLK1

Date Received:

Level: LOW

Date Extracted: 03/18/92

Dilution Factor: 1

Date Analyzed: 03/21/92

GPC Cleanup: NO

COMPOUND	CONCENTRATION UNITS: ug/L
alpha-BHC	0.05 U
beta-BHC	0.05 U
delta-BHC	0.05 U
gamma-BHC (Lindane)	0.05 U
Heptachlor	0.05 U
Aldrin	0.05 U
Heptachlor epoxide	0.05 U
Endosulfan I	0.05 U
Dieldrin	0.1 U
4,4'-DDE	0.1 U
Endrin	0.1 U
Endosulfan II	0.1 U
4,4'-DDD	0.1 U
Endosulfan sulfate	0.1 U
4,4'-DDT	0.1 U
Methoxychlor	0.5 U
Endrin ketone	0.1 U
Endrin aldehyde	0.1 U
alpha -chlordane	0.5 U
gamma -chlordane	0.5 U
Toxaphene	1 U
PCB-1016	0.5 U
PCB-1221	0.5 U
PCB-1232	0.5 U
PCB-1242	0.5 U
PCB-1248	0.5 U
PCB-1254	1 U
PCB-1260	1 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE SURROGATE RECOVERY
SOIL MATRIX

Client: GEOSCIENCE

Job No.: MD92059A

Level: LOW

	CLIENT SAMPLE NO.	S1 (DBC) #	OTHER
1	9203111134	114	
2	9203120957	113	
3	9203121625	87	
4	PBLK1	108	
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

QC LIMITS

S1 (DBC) = Dibutylchlorendate (20-150)

Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

RECRA ENVIRONMENTAL, INC.
PESTICIDE SURROGATE RECOVERY
AQUEOUS MATRIX

Client: GEOSCIENCE

Job No.: MD92059

Level: LOW

	CLIENT SAMPLE NO.	S1 (DBC) #	OTHER
1	9203111121	89	
2	PBLK1	95	
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

QC LIMITS
(24-154)

S1 (DBC) = Dibutylchlorendate

\# Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

HERBICIDE DATA

RECRA ENVIRONMENTAL, INC.
HERBICIDE ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203120957

Job No.: MD92059A

Lab ID: BS000238

Sample Wt.: 50.2 g

Date Extracted: 03/17/92

% Moisture: 13%

Date Analyzed: 03/25/92

Date Sampled: 03/12/92

Dilution Factor: 1

Date Received: 03/13/92

COMPOUND	CONCENTRATION UNITS: ug/Kg
2,4-D	270 U
2,4,5-T	46 U
2,4,5-TP (Silvex)	46 U
2,4-DB	210 U
Dalapon	140 U
Dicamba	69 U
Dichloroprop	140 U
Dinoseb	23 U
MCPA	5700 U
MCPP	4600 U

RECRA ENVIRONMENTAL, INC.
HERBICIDE ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203111134

Job No.: MD92059A

Lab ID: BS000239

Sample Wt.: 50.1 g

Date Extracted: 03/17/92

% Moisture: 22%

Date Analyzed: 03/25/92

Date Sampled: 03/11/92

Dilution Factor: 1

Date Received: 03/13/92

COMPOUND	CONCENTRATION UNITS: ug/Kg
2,4-D	310 U
2,4,5-T	51 U
2,4,5-TP (Silvex)	51 U
2,4-DB	230 U
Dalapon	150 U
Dicamba	77 U
Dichloroprop	150 U
Dinoseb	26 U
MCPA	6400 U
MCPP	5100 U

RECRA ENVIRONMENTAL, INC.
HERBICIDE ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203121625

Job No.: MD92059A

Lab ID: BS000244

Sample Wt.: 50.4 g

Date Extracted: 03/17/92

% Moisture: 17%

Date Analyzed: 03/25/92

Date Sampled: 03/12/92

Dilution Factor: 1

Date Received: 03/13/92

COMPOUND	CONCENTRATION UNITS: ug/Kg
2,4-D	290 U
2,4,5-T	48 U
2,4,5-TP (Silvex)	48 U
2,4-DB	220 U
Dalapon	140 U
Dicamba	72 U
Dichloroprop	140 U
Dinoseb	24 U
MCPA	6000 U
MCPP	4800 U

RECRA ENVIRONMENTAL, INC.
HERBICIDE ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203111121

Job No.: MD92059

Lab ID: BS000242

Sample Vol.: 1000 ml

Date Extracted: 03/19/92

Date Sampled: 03/11/92

Date Analyzed: 03/30/92

Date Received: 03/13/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/L
2,4-D	12 U
2,4,5-T	2.0 U
2,4,5-TP (Silvex)	2.0 U
2,4-DB	9.0 U
Dalapon	6.0 U
Dicamba	3.0 U
Dichloroprop	6.0 U
Dinoseb	1.0 U
MCPA	250 U
MCPP	200 U

RECRA ENVIRONMENTAL, INC.
HERBICIDE ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: HBLK1

Job No.: MD92059A

Lab ID: HBLK1

Sample Wt.: 50.0 g

Date Extracted: 03/17/92

% Moisture: 0

Date Analyzed: 03/25/92

Date Sampled:

Dilution Factor: 1

Date Received:

COMPOUND	CONCENTRATION UNITS: ug/Kg
2,4-D	240 U
2,4,5-T	40 U
2,4,5-TP (Silvex)	40 U
2,4-DB	180 U
Dalapon	120 U
Dicamba	60 U
Dichloroprop	120 U
Dinoseb	20 U
MCPA	5000 U
MCPP	4000 U

RECRA ENVIRONMENTAL, INC.
HERBICIDE ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: HBLK1

Job No.: MD92059

Lab ID: HBLK1

Sample Vol.: 1000 ml

Date Extracted: 03/19/92

Date Sampled:

Date Analyzed: 03/30/92

Date Received:

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/L
2,4-D	12 U
2,4,5-T	2.0 U
2,4,5-TP (Silvex)	2.0 U
2,4-DB	9.0 U
Dalapon	6.0 U
Dicamba	3.0 U
Dichloroprop	6.0 U
Dinoseb	1.0 U
MCPA	250 U
MCPP	200 U

RECRA ENVIRONMENTAL, INC.
HERBICIDE SURROGATE RECOVERY
SOIL MATRIX

Client: GEOSCIENCE Job No.: MD92059A

	CLIENT SAMPLE NO.	S1 (PIC) #	OTHER
1	9203111134	85	
2	9203120957	82	
3	9203121625	84	
4	HBLK1	82	
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

S1 (PIC) = Picloram

Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

RECRA ENVIRONMENTAL, INC.
HERBICIDE SURROGATE RECOVERY
AQUEOUS MATRIX

Client: GEOSCIENCE Job No.: MD92059

	CLIENT SAMPLE NO.	S1 (PIC) #	OTHER
1	9203111121	93	
2	HBLK1	93	
3			
4			
5			
6			
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

S1 (PIC) = Picloram

Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

METHOD 8015 DATA

CALIF1

H + GCL, INC.
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER:MI92-0204
RECRA SAMPLE ID:BS00238
CLIENT SAMPLE ID:9203120957

SAMPLE DATE: 3/12/92
ANALYSIS DATE: 3/19/92

COMPOUND (UNITS OF MEASURE= MG/KG)	RESULT	Q
VOLATILE/GASOLINE	1.7	

ID#MI92-0204

CALIF1

H + GCL, INC.
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER:MI92-0204
RECRA SAMPLE ID:BS00239
CLIENT SAMPLE ID:9203111134

SAMPLE DATE: 3/11/92
ANALYSIS DATE: 3/19/92

COMPOUND (UNITS OF MEASURE= MG/KG)	RESULT	Q
VOLATILE/GASOLINE	0.9	

ID#MI92-0204

CALIF1

H + GCL, INC.
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER:MI92-0204
RECRA SAMPLE ID:BS00244
CLIENT SAMPLE ID:9203121625

SAMPLE DATE: 3/12/92
ANALYSIS DATE: 3/19/92

COMPOUND (UNITS OF MEASURE= MG/KG)	RESULT	Q
VOLATILE/GASOLINE	4.2	

ID#MI92-0204

CALIF1

H + GCL, INC.
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER:MI92-0204 ANALYSIS DATE: 3/19/92
RECRA SAMPLE ID:AR001850
CLIENT SAMPLE ID:METHOD BLANK

COMPOUND (UNITS OF MEASURE= MG/KG)	RESULT	Q
VOLATILE/GASOLINE	0.5	U

ID#MI92-0204

CALIF2

TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0204
SAMPLE ID: BS000238
CLIENT SAMPLE ID: 9203120957

SAMPLE DATE: 3/12/92
EXTRACTION DATE: 3/18/92
ANALYSIS DATE: 3/23/92

COMPOUND (UNITS OF MEASURE=MG/KG)	RESULT	Q
EXTRACTABLE/DIESEL	86	

ID#MI92-0204

CALIF2

TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0204
SAMPLE ID: BS000239
CLIENT SAMPLE ID: 9203111134

SAMPLE DATE: 3/11/92
EXTRACTION DATE: 3/18/92
ANALYSIS DATE: 3/23/92

COMPOUND (UNITS OF MEASURE=MG/KG)	RESULT	Q
EXTRACTABLE/DIESEL	10	U

ID#MI92-0204

CALIF2

TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0204
SAMPLE ID: BS000244
CLIENT SAMPLE ID: 9203121625

SAMPLE DATE: 3/12/92
EXTRACTION DATE: 3/18/92
ANALYSIS DATE: 3/23/92

COMPOUND (UNITS OF MEASURE=MG/KG)	RESULT	Q
EXTRACTABLE/DIESEL	10	U

ID#MI92-0204

CALIF2

TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0204
SAMPLE ID: AR001850
CLIENT SAMPLE ID: METHOD BLANK

EXTRACTION DATE: 3/18/92
ANALYSIS DATE: 3/23/92

COMPOUND (UNITS OF MEASURE=MG/KG)	RESULT	Q
EXTRACTABLE/DIESEL	10	U

ID#MI92-0204

INORGANIC DATA

H + GCL, INC.
SOIL MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-0173
DESC BS000238
SAMPLE NO. 920-312-0957

SAMPLE DATE 03/12/92

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Lead	MG/KG	7420	03/25/92	20	
Total Mercury	MG/KG	7471	03/24/92	0.12	U

% DRY = 78.6

H + GCL, INC.
SOIL MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-0173
DESC BS000239
SAMPLE NO. 920-311-1134

SAMPLE DATE 03/11/92

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Lead	MG/KG	7420	03/25/92	25	
Total Mercury	MG/KG	7471	03/24/92	0.1	U

% DRY = 82.3

H + GCL, INC.
SOIL MATRIX
TOTAL METALS

71

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-0173
DESC BS000244
SAMPLE NO. 920-312-1625

SAMPLE DATE 03/12/92

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Lead	MG/KG	7420	03/25/92	21	
Total Mercury	MG/KG	7471	03/24/92	0.11	U

% DRY = 81.1

H + GCL, INC.
SOIL MATRIX
TOTAL METALS

72

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-0173

SAMPLE NO. METHOD BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Lead	MG/KG	7420	03/25/92	10	U
Total Mercury	MG/KG	7471	03/24/92	0.08	U

H + GCL, INC.
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-0173
DESC BS000242
SAMPLE NO. 920-311-1121

SAMPLE DATE 03/11/92

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Lead	MG/L	7421	03/27/92	0.003	U
Total Mercury	MG/L	7470	03/24/92	0.0008	U

H + GCL, INC.
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-0173

SAMPLE NO. METHOD BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Lead	MG/L	7421	03/27/92	0.003	U
Total Mercury	MG/L	7470	03/24/92	0.0008	U

H + GCL, INC.
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-0173
DESC BS000238
SAMPLE NO. 920-312-0957

SAMPLE DATE 03/12/92

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	03/24/92	5.0	0.005	0.005	U
Total Barium	6010	03/23/92	100.0	0.23	0.28	
Total Cadmium	6010	03/24/92	1.0	0.005	0.005	U
Total Chromium	6010	03/24/92	5.0	0.011	0.013	
Total Lead	7420	03/25/92	5.0	0.1	0.1	U
Total Mercury	7470	03/24/92	0.2	0.0008	0.0008	U
Total Selenium	7740	03/23/92	1.0	0.005	0.005	U
Total Silver	7760	03/25/92	5.0	0.005	0.005	L

MEASURED VALUES HAVE BEEN CORRECTED FOR ANALYTICAL BIAS.

H + GCL, INC.
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-0173
DESC BS000239
SAMPLE NO. 920-311-1134

SAMPLE DATE 03/11/92

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	03/24/92	5.0	0.005	0.005	U
Total Barium	6010	03/23/92	100.0	0.29	0.35	
Total Cadmium	6010	03/24/92	1.0	0.005	0.005	U
Total Chromium	6010	03/24/92	5.0	0.01	0.01	U
Total Lead	7420	03/25/92	5.0	0.1	0.1	U
Total Mercury	7470	03/24/92	0.2	0.0008	0.0008	U
Total Selenium	7740	03/23/92	1.0	0.005	0.005	U
Total Silver	7760	03/25/92	5.0	0.005	0.005	U

MEASURED VALUES HAVE BEEN CORRECTED FOR ANALYTICAL BIAS.

H + GCL, INC.
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-0173 SAMPLE DATE 03/11/92
DESC BS000242
SAMPLE NO. 920-311-1121

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	03/24/92	5.0	0.005	0.005	U
Total Barium	6010	03/23/92	100.0	0.1	0.1	U
Total Cadmium	6010	03/24/92	1.0	0.005	0.005	U
Total Chromium	6010	03/24/92	5.0	0.01	0.01	U
Total Lead	7420	03/25/92	5.0	0.1	0.1	U
Total Mercury	7470	03/24/92	0.2	0.0008	0.0008	U
Total Selenium	7740	03/23/92	1.0	0.005	0.005	U
Total Silver	7760	03/25/92	5.0	0.005	0.005	U

H + GCL, INC.
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-0173
DESC BS000244
SAMPLE NO. 920-312-1625

SAMPLE DATE 03/12/92

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	03/24/92	5.0	0.005	0.005	U
Total Barium	6010	03/23/92	100.0	0.22	0.27	
Total Cadmium	6010	03/24/92	1.0	0.005	0.005	U
Total Chromium	6010	03/24/92	5.0	0.01	0.01	U
Total Lead	7420	03/25/92	5.0	0.1	0.1	U
Total Mercury	7470	03/24/92	0.2	0.0008	0.0008	U
Total Selenium	7740	03/23/92	1.0	0.005	0.005	U
Total Silver	7760	03/25/92	5.0	0.005	0.005	U

MEASURED VALUES HAVE BEEN CORRECTED FOR ANALYTICAL BIAS.

H + GCL, INC.
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-0173

SAMPLE NO. EBLK*

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	03/24/92	5.0	0.005	0.0	U
Total Barium	6010	03/23/92	100.0	0.1	0.0	U
Total Cadmium	6010	03/24/92	1.0	0.005	0.0	U
Total Chromium	6010	03/24/92	5.0	0.01	0.0	U
Total Lead	7420	03/25/92	5.0	0.1	0.0	U
Total Mercury	7470	03/24/92	0.2	0.0008	0.0	U
Total Selenium	7740	03/23/92	1.0	0.005	0.0	U
Total Silver	7760	03/25/92	5.0	0.005	0.0	U

*TCLP EXTRACTOR BLANK

H + GCL, INC.
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-0173

SAMPLE NO. METHOD BLANK

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	03/24/92	5.0	0.005	0.0	U
Total Barium	6010	03/23/92	100.0	0.1	0.0	U
Total Cadmium	6010	03/24/92	1.0	0.005	0.0	U
Total Chromium	6010	03/24/92	5.0	0.01	0.0	U
Total Lead	7420	03/25/92	5.0	0.1	0.0	U
Total Mercury	7470	03/24/92	0.2	0.0008	0.0	U
Total Selenium	7740	03/23/92	1.0	0.005	0.0	U
Total Silver	7760	03/25/92	5.0	0.005	0.0	U

MATRIX CORRECTION SPIKE
TCLP EXTRACT
TOTAL METALS

LAB NAME: RECRA ENVIRONMENTAL INC.
RECRA SAMPLE IDENTIFICATION BS000218
CLIENT SAMPLE IDENTIFICATION 9203101459

PARAMETER	METHOD NUMBER	PPM OF SPIKE	PERCENT RECOVERY	Q
Total Arsenic	7060	0.04	93	
Total Barium	6010	1.0	82	
Total Cadmium	7130	0.10	99	
Total Chromium	7190	0.40	84	
Total Lead	7420	1.0	112	G
Total Mercury	7470	0.5	105	G
Total Selenium	7740	0.02	38	L
Total Silver	7760	0.10	40	L

I.D. #OH92-0165

RECRA ENVIRONMENTAL INC.

Chemical and Environmental Analysis Services

April 2, 1992

Ms. Virginia Nicholson
H + GCL, Inc.
4221 Forbes Boulevard, Suite 240
Lanhan, MD 20706

RE: Analytical Results

Dear Ms. Nicholson

Please find enclosed results concerning the analyses of the samples recently submitted by your firm. The Pertinent Information regarding these analyses is listed below.

Quote #:	NY91-894
Project Name:	Plumbrook
Matrix:	Soil
Samples Received:	3/11/92
Sample Date:	3/7,10/92

If you have any questions concerning these data, please contact Ms. Julie Calvert Project Manager, Customer Service at (716) 691-2600 and refer to the I.D. number listed below. It has been our pleasure to provide H + GCL, Inc. with Environmental Testing Services. We look forward to serving you in the future.

Sincerely,

RECRA ENVIRONMENTAL, INC.

Kenneth C. Malinowski, PhD
Vice President

MKA/KCM/dms
Enclosure

I.D. #OH92-0165
#MI92-0208
#MD92-0052
#NY2A3916

CASE NARRATIVE

ANALYTICAL RESULTS

Prepared For

H + GCL, Inc.
4221 Forbes Boulevard, Suite 240
Lanhan, Maryland 20706

Prepared By

Recra Environmental, Inc.
10 Hazelwood Drive, Suite 106
Amherst, New York 14228-2298

METHODOLOGIES

The specific methodologies employed in obtaining the enclosed analytical results are indicated on the specific data table. The method numbers presented refer to the following U.S. Environmental Protection Agency reference.

* U.S. Environmental Protection Agency "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods." Office of Solid Waste and Emergency Response. November 1986, SW-846,Third Edition.

* The Toxicity Characteristic Leaching Procedure was performed as per Method 1311, 40 CFR Appendix II to Part 261 June 1990.

COMMENTS

Comments pertain to data on one or all pages of this report.

The enclosed data has been reported utilizing USEPA data qualifiers (Q) as defined on the Organic and Inorganic Data Comment Pages.

The TCLP Matrix Spike quality analysis was performed on sample 9203101459MS. The measured values for the following samples have been corrected for analytical bias based upon the matrix spike results from sample 9203101459MS as required by the referenced TCLP protocol:

9203071143
9203100927
9203101021
9203101235
9203101459

Quantitation limits are not corrected for analytical bias.

The TCLP extractions were performed on March 13,1992.

Results of the analysis of soil samples are corrected for moisture content and reported on a dry weight basis.

Quality control analyses were performed on a batch basis. All results were within quality control limits.

VOLATILE DATA

Samples 9203071126, 9203100928, 9203101220 and 9203101453 had internal standard areas and/or surrogate recoveries outside of acceptance limits. These samples were reanalyzed with identical results thus demonstrating matrix interferences. Both analyses are submitted.

SEMIVOLATILE DATA

No deviations from protocol were observed during analyses.

PESTICIDE/PCB DATA

Samples 9203071143 and 9203101021 were initially analyzed at dilution factor of two (2) as a result of the matrix.

Sample 9203101235 was analyzed at a dilution factor of four (4) due to the concentration of Aroclors 1248 and 1260.

Sample 9203101459 was analyzed at a dilution factor of four (4) due to the concentration of Aroclor 1260.

TPH 8015 DATA

No deviations from protocol were observed during analysis.

HERBICIDE DATA

No deviations from protocol were observed during analysis.

METAL DATA

No deviations from protocol were observed during analysis.

CHAIN OF CUSTODY

RECRA
ENVIRONMENTAL
INC.

GCL

Geoscience Consultants, Ltd.

☐ Albuquerque
500 Copper N.W.
Suite 200
Albuquerque, NM 87102
(505) 842-0001

☒ East Coast
4221 Forbes Blvd.,
Suite 240
Lanham, MD 20706
(301) 459-9677

☐ Rocky Mountain
13111 E. Briarwood Ave.,
Suite 250
Englewood, CO 80112
(303) 649-9001

☐ Las Cruces
P.O. Drawer MM
Las Cruces, NM 88004
(505) 524-5364

N: 4807

Chain of Custody

DATE 3-9-92 PAGE 1 OF 2

LAB NAME RECRA Environmental
ADDRESS 8320 Guilford Road, Bldg F
Columbia, MD 21046
TELEPHONE 301-381-2288

SAMPLERS (SIGNATURE) B.V. Nicholas

SAMPLE NUMBER	MATRIX	LOCATION	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418.1	TPH gas/diesel MODIFIED 8015	TCLP metals	PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SDWA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE	Total Hg | Pb			NUMBER OF CONTAINERS
9203071143	Soil	B5 Composite	X		X								X	X							X			4
9203071126	Soil	B5 2-4'		X																				1
9203100927	Soil	B3 Composite	X		X								X	X							X			4
9203100928	Soil	B3 6-8'		X																				1
9203101021	Soil	MW1 Composite	X		X								X	X							X			4
9203101008	Soil	MW1 6-2'		X																				1
9203101235	Soil	B2 Composite	X		X								X	X							X			4
9203101220	Soil	B2 4-6		X																				1

PROJECT INFORMATION	SAMPLE RECEIPT
PROJECT: Plumbrook	TOTAL NO. OF CONTAINERS
PROJECT DIRECTOR: Nicholas	CHAIN OF CUSTODY SEALS
CHARGE CODE NO. 51033.01	REC'D GOOD CONDITION/COLD
SHIPPING NO. 3775732296	CONFORMS TO RECORD
VIA: FED EX	LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
B.V. Nicholas 1700		
(Signature) (Time) 3-10-92	(Signature) (Time)	(Signature) (Time)
(Printed Name) (Date) HGL	(Printed Name) (Date)	(Printed Name) (Date)
(Company)	(Company)	(Company)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3.**
		Recra
(Signature) (Time)	(Signature) (Time)	(Signature) 3.11.92 (Time) 1000
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) Tracy Zachess
(Company)	(Company)	ANALYTI

DISTRIBUTION: WHITE, CANARY - LABORATORY • PINK - GEOSCIENCE CONSULTANTS, LTD

337 No 4899

Geoscience Consultants, Ltd.

Chain of Custody

☐ Albuquerque	☒ East Coast	☐ Rocky Mountain	☐ Las Cruces
500 Copper N.W. Suite 200 Albuquerque, NM 87102 (505) 842-0001	4221 Forbes Blvd., Suite 240 Lanham, MD 20706 (301) 459-9677	13111 E. Briarwood Ave., Suite 250 Englewood, CO 80112 (303) 649-9001	P.O. Drawer MM Las Cruces, NM 88004 (505) 524-5364

DATE 3-9-92 PAGE 2 OF 2

LAB NAME RETRA ENVIRONMENTAL

ADDRESS

TELEPHONE

SAMPLERS (SIGNATURE) B.V. Nicholas

SAMPLE NUMBER	MATRIX	LOCATION	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418.1	TPH Modified 8015	TCLP metals	PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SDWA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE	Total Hg/Pb			NUMBER OF CONTAINERS
9203101459	Soil	B4 Composite	X		X								X	X									4
9203101453	Soil	B4		X																			1

PROJECT INFORMATION	
PROJECT	Near Plumbrook
PROJECT DIRECTOR	Nicholas
CHARGE CODE NO.	51033.01
SHIPPING ID NO.	3757732296
VIA:	FEDEX

SAMPLE RECEIPT	
TOTAL NO. OF CONTAINERS	
CHAIN OF CUSTODY SEALS	
REC'D GOOD CONDITION/COLD	
CONFORMS TO RECORD	
LAB NO.	

SPECIAL INSTRUCTIONS/COMMENTS:

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
B.V. Nicholas 1700		
(Signature) (Time)	(Signature) (Time)	(Signature) (Time)
3-10-92		
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) (Date)
HTGC		
(Company)	(Company)	(Company)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3.**
		Retra Tracy Zuchero
(Signature) (Time)	(Signature) (Time)	(Signature) (Time)
		3/11/92 1000
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) Tracy Zuchero
(Company)	(Company)	ANALYTI

DISTRIBUTION: WHITE CANARY - LABORATORY - PINK GEOSCIENCE CONSULTANTS, LTD

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO	SITE NAME	NO OF CONTAINERS	TCLP metals	Tot Pb+Hg					REMARKS
SAMPLERS (SIGNATURE)									
STATION NO / DATE / TIME / COMP / GRAB	STATION LOCATION								
	9203071143	1	X	X					
	9203101127	1	X	X					
	9210160-1	1	X	X					
	9203101233	1	X	X					
	9203101459	1	X	X					

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
Tracy Zahn	2-11-93	1700	George Hamilton				
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	REMARKS	

Distribution: Original accompanies shipment; copy to coordinator field files

CO

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M1

RECRA ENVIRONMENTAL, INC.

CHAIN OF CUSTODY RECORD

PROJECT NO	SITE NAME	NO OF CONTAINERS	TPH gas diesel	REMARKS
SAMPLERS (SIGNATURE)				

STATION NO	DATE	TIME	COMP	GRAB	STATION LOCATION	NO OF CONTAINERS	TPH gas diesel	REMARKS
	3/10/92				9203071143	1	X	
	3/10/92				9203100927	1	X	
					9203101021	1	X	
					9203101235	1	X	
	↓				9203101459	1	X	

RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
Tracy Jackson	3-11-92	1700	[illegible] 3/12 0800				
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)	RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED BY (SIGNATURE)
RELINQUISHED BY (SIGNATURE)	DATE	TIME	RECEIVED FOR LABORATORY BY (SIGNATURE)	DATE	TIME	REMARKS	

Distribution: Original accompanies shipment; copy to coordinator field files

10

VOLATILE DATA

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203071126

Job No.: MD92052

Lab ID: BS000211

Sample Wt.: 5.0 g

File ID: FD847

% Moisture: 17%

Date Sampled: 03/07/92

Blank ID: VBLKS1

Date Received: 03/11/92

Level: LOW

Date Analyzed: 03/12/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	12 U
Bromomethane	12 U
Vinyl Chloride	12 U
Chloroethane	12 U
Methylene Chloride	8 B
Acetone	16
Carbon Disulfide	6 U
1,1-Dichlorothene	6 U
1,1-Dichloroethane	6 U
1,2-Dichloroethene (total)	6 U
Chloroform	6 U
1,2-Dichloroethane	6 U
2-Butanone	12 U
1,1,1-Trichloroethane	6 U
Carbon Tetrachloride	6 U
Bromodichloromethane	6 U
1,2-Dichloropropane	6 U
1,3-Dichloropropene (cis)	6 U
Trichloroethene	6 U
Dibromochloromethane	6 U
1,1,2-Trichloroethane	6 U
Benzene	6 U
1,3-Dichloropropene (trans)	6 U
Bromoform	6 U
4-Methyl-2-Pentanone	12 U
2-Hexanone	12 U
Tetrachloroethene	6 U
1,1,2,2-Tetrachloroethane	6 U
Toluene	6 U
Chlorobenzene	6 U
Ethylbenzene	6 U
Styrene	6 U
Xylene (total)	6 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

12

Client: GEOSCIENCE

Client ID: 9203071126RE

Job No.: MD92052

Lab ID: BS000211RE

Sample Wt.: 5.0 g

File ID: FD852

% Moisture: 17%

Date Sampled: 03/07/92

Blank ID: VBLKS1

Date Received: 03/11/92

Level: LOW

Date Analyzed: 03/12/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	12 U
Bromomethane	12 U
Vinyl Chloride	12 U
Chloroethane	12 U
Methylene Chloride	10 B
Acetone	46
Carbon Disulfide	6 U
1,1-Dichlorothene	6 U
1,1-Dichloroethane	6 U
1,2-Dichloroethene (total)	6 U
Chloroform	6 U
1,2-Dichloroethane	6 U
2-Butanone	12 U
1,1,1-Trichloroethane	6 U
Carbon Tetrachloride	6 U
Bromodichloromethane	6 U
1,2-Dichloropropane	6 U
1,3-Dichloropropene (cis)	6 U
Trichloroethene	6 U
Dibromochloromethane	6 U
1,1,2-Trichloroethane	6 U
Benzene	6 U
1,3-Dichloropropene (trans)	6 U
Bromoform	6 U
4-Methyl-2-Pentanone	12 U
2-Hexanone	12 U
Tetrachloroethene	6 U
1,1,2,2-Tetrachloroethane	6 U
Toluene	6 U
Chlorobenzene	6 U
Ethylbenzene	6 U
Styrene	6 U
Xylene (total)	6 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203100928

Job No.: MD92052

Lab ID: BS000213

Sample Wt.: 5.0 g

File ID: FD848

% Moisture: 14%

Date Sampled: 03/10/92

Blank ID: VBLKS1

Date Received: 03/11/92

Level: LOW

Date Analyzed: 03/12/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	12 U
Bromomethane	12 U
Vinyl Chloride	12 U
Chloroethane	12 U
Methylene Chloride	10 B
Acetone	26
Carbon Disulfide	6 U
1,1-Dichlorothene	6 U
1,1-Dichloroethane	6 U
1,2-Dichloroethene (total)	6 U
Chloroform	6 U
1,2-Dichloroethane	6 U
2-Butanone	12 U
1,1,1-Trichloroethane	6 U
Carbon Tetrachloride	6 U
Bromodichloromethane	6 U
1,2-Dichloropropane	6 U
1,3-Dichloropropene (cis)	6 U
Trichloroethene	6 U
Dibromochloromethane	6 U
1,1,2-Trichloroethane	6 U
Benzene	6 U
1,3-Dichloropropene (trans)	6 U
Bromoform	6 U
4-Methyl-2-Pentanone	12 U
2-Hexanone	12 U
Tetrachloroethene	6 U
1,1,2,2-Tetrachloroethane	6 U
Toluene	6 U
Chlorobenzene	6 U
Ethylbenzene	6 U
Styrene	6 U
Xylene (total)	6 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203100928RE

Job No.: MD92052

Lab ID: BS000213RE

Sample Wt.: 5.0 g

File ID: FD853

% Moisture: 14%

Date Sampled: 03/10/92

Blank ID: VBLKS1

Date Received: 03/11/92

Level: LOW

Date Analyzed: 03/12/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	12 U
Bromomethane	12 U
Vinyl Chloride	12 U
Chloroethane	12 U
Methylene Chloride	13 B
Acetone	32
Carbon Disulfide	6 U
1,1-Dichlorothene	6 U
1,1-Dichloroethane	6 U
1,2-Dichloroethene (total)	6 U
Chloroform	6 U
1,2-Dichloroethane	6 U
2-Butanone	12 U
1,1,1-Trichloroethane	6 U
Carbon Tetrachloride	6 U
Bromodichloromethane	6 U
1,2-Dichloropropane	6 U
1,3-Dichloropropene (cis)	6 U
Trichloroethene	6 U
Dibromochloromethane	6 U
1,1,2-Trichloroethane	6 U
Benzene	6 U
1,3-Dichloropropene (trans)	6 U
Bromoform	6 U
4-Methyl-2-Pentanone	12 U
2-Hexanone	12 U
Tetrachloroethene	6 U
1,1,2,2-Tetrachloroethane	6 U
Toluene	6 U
Chlorobenzene	6 U
Ethylbenzene	6 U
Styrene	6 U
Xylene (total)	6 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203101008

Job No.: MD92052

Lab ID: BS000215

Sample Wt.: 5.0 g

File ID: FD849

% Moisture: 17%

Date Sampled: 03/10/92

Blank ID: VBLKS1

Date Received: 03/11/92

Level: LOW

Date Analyzed: 03/12/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	12 U
Bromomethane	12 U
Vinyl Chloride	12 U
Chloroethane	12 U
Methylene Chloride	9 B
Acetone	12
Carbon Disulfide	6 U
1,1-Dichlorothene	6 U
1,1-Dichloroethane	6 U
1,2-Dichloroethene (total)	6 U
Chloroform	6 U
1,2-Dichloroethane	6 U
2-Butanone	12 U
1,1,1-Trichloroethane	6 U
Carbon Tetrachloride	6 U
Bromodichloromethane	6 U
1,2-Dichloropropane	6 U
1,3-Dichloropropene (cis)	6 U
Trichloroethene	6 U
Dibromochloromethane	6 U
1,1,2-Trichloroethane	6 U
Benzene	6 U
1,3-Dichloropropene (trans)	6 U
Bromoform	6 U
4-Methyl-2-Pentanone	12 U
2-Hexanone	12 U
Tetrachloroethene	6 U
1,1,2,2-Tetrachloroethane	6 U
Toluene	6 U
Chlorobenzene	6 U
Ethylbenzene	6 U
Styrene	6 U
Xylene (total)	6 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203101220

Job No.: MD92052

Lab ID: BS000217

Sample Wt.: 5.0 g

File ID: FD850

% Moisture: 19%

Date Sampled: 03/10/92

Blank ID: VBLKS1

Date Received: 03/11/92

Level: LOW

Date Analyzed: 03/12/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	12 U
Bromomethane	12 U
Vinyl Chloride	12 U
Chloroethane	12 U
Methylene Chloride	7 B
Acetone	12 U
Carbon Disulfide	6 U
1,1-Dichlorothene	11
1,1-Dichloroethane	6 U
1,2-Dichloroethene (total)	6 U
Chloroform	6 U
1,2-Dichloroethane	6 U
2-Butanone	12 U
1,1,1-Trichloroethane	42
Carbon Tetrachloride	6 U
Bromodichloromethane	6 U
1,2-Dichloropropane	6 U
1,3-Dichloropropene (cis)	6 U
Trichloroethene	6 U
Dibromochloromethane	6 U
1,1,2-Trichloroethane	6 U
Benzene	6 U
1,3-Dichloropropene (trans)	6 U
Bromoform	6 U
4-Methyl-2-Pentanone	12 U
2-Hexanone	12 U
Tetrachloroethene	6 U
1,1,2,2-Tetrachloroethane	6 U
Toluene	6 U
Chlorobenzene	6 U
Ethylbenzene	6 U
Styrene	6 U
Xylene (total)	6 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203101220RE

Job No.: MD92052

Lab ID: BS000217RE

Sample Wt.: 5.0 g

File ID: FD854

% Moisture: 19%

Date Sampled: 03/10/92

Blank ID: VBLKS1

Date Received: 03/11/92

Level: LOW

Date Analyzed: 03/12/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	12 U
Bromomethane	12 U
Vinyl Chloride	12 U
Chloroethane	12 U
Methylene Chloride	11 B
Acetone	18
Carbon Disulfide	6 U
1,1-Dichlorothene	11
1,1-Dichloroethane	6 U
1,2-Dichloroethene (total)	6 U
Chloroform	6 U
1,2-Dichloroethane	6 U
2-Butanone	12 U
1,1,1-Trichloroethane	64
Carbon Tetrachloride	6 U
Bromodichloromethane	6 U
1,2-Dichloropropane	6 U
1,3-Dichloropropene (cis)	6 U
Trichloroethene	6 U
Dibromochloromethane	6 U
1,1,2-Trichloroethane	6 U
Benzene	6 U
1,3-Dichloropropene (trans)	6 U
Bromoform	6 U
4-Methyl-2-Pentanone	12 U
2-Hexanone	12 U
Tetrachloroethene	6 U
1,1,2,2-Tetrachloroethane	6 U
Toluene	6 U
Chlorobenzene	6 U
Ethylbenzene	6 U
Styrene	6 U
Xylene (total)	6 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203101453

Job No.: MD92052

Lab ID: BS000219

Sample Wt.: 5.0 g

File ID: FD851

% Moisture: 19%

Date Sampled: 03/10/92

Blank ID: VBLKS1

Date Received: 03/11/92

Level: LOW

Date Analyzed: 03/12/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	12 U
Bromomethane	12 U
Vinyl Chloride	12 U
Chloroethane	12 U
Methylene Chloride	11 B
Acetone	31
Carbon Disulfide	6 U
1,1-Dichlorothene	6 U
1,1-Dichloroethane	6 U
1,2-Dichloroethene (total)	6 U
Chloroform	6 U
1,2-Dichloroethane	6 U
2-Butanone	12 U
1,1,1-Trichloroethane	6 U
Carbon Tetrachloride	6 U
Bromodichloromethane	6 U
1,2-Dichloropropane	6 U
1,3-Dichloropropene (cis)	6 U
Trichloroethene	6 U
Dibromochloromethane	6 U
1,1,2-Trichloroethane	6 U
Benzene	6 U
1,3-Dichloropropene (trans)	6 U
Bromoform	6 U
4-Methyl-2-Pentanone	12 U
2-Hexanone	12 U
Tetrachloroethene	6 U
1,1,2,2-Tetrachloroethane	6 U
Toluene	6 U
Chlorobenzene	6 U
Ethylbenzene	6 U
Styrene	6 U
Xylene (total)	6 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203101453RE

Job No.: MD92052

Lab ID: BS000219RE

Sample Wt.: 5.0 g

File ID: FD855

% Moisture: 19%

Date Sampled: 03/10/92

Blank ID: VBLKS1

Date Received: 03/11/92

Level: LOW

Date Analyzed: 03/12/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Chloromethane	12 U
Bromomethane	12 U
Vinyl Chloride	12 U
Chloroethane	12 U
Methylene Chloride	12 B
Acetone	39
Carbon Disulfide	6 U
1,1-Dichlorothene	6 U
1,1-Dichloroethane	6 U
1,2-Dichloroethene (total)	6 U
Chloroform	6 U
1,2-Dichloroethane	6 U
2-Butanone	12 U
1,1,1-Trichloroethane	6 U
Carbon Tetrachloride	6 U
Bromodichloromethane	6 U
1,2-Dichloropropane	6 U
1,3-Dichloropropene (cis)	6 U
Trichloroethene	6 U
Dibromochloromethane	6 U
1,1,2-Trichloroethane	6 U
Benzene	6 U
1,3-Dichloropropene (trans)	6 U
Bromoform	6 U
4-Methyl-2-Pentanone	12 U
2-Hexanone	12 U
Tetrachloroethene	6 U
1,1,2,2-Tetrachloroethane	6 U
Toluene	6 U
Chlorobenzene	6 U
Ethylbenzene	6 U
Styrene	6 U
Xylene (total)	6 U

RECRA ENVIRONMENTAL, INC.
VOLATILE SURROGATE RECOVERY
SOIL MATRIX

Client: GEOSCIENCE

Job No.: MD92052

Level: LOW

	CLIENT SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
1	9203071126	97	100	89		0
2	9203071126RE	99	99	107		0
3	9203100928	126 *	78	79		1
4	9203100928RE	149 *	62 *	93		2
5	9203101008	103	98	103		0
6	9203101220	104	98	101		0
7	9203101220RE	107	91	100		0
8	9203101453	128 *	83	91		1
9	9203101453RE	142 *	67 *	88		2
10	VBLKS1	98	98	80		0
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

	QC LIMITS
S1 (TOL) = Toluene-d8	(81-117)
S2 (BFB) = Bromoflourobenzene	(74-121)
S3 (DCE) = 1,2-Dichloroethane-d4	(70-121)

\# Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

RECRA ENVIRONMENTAL, INC.
VOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Job No.: MD92052

Matrix: SOIL

Instrument ID: 70055

File ID: VD845

Date Analyzed: 03/12/92

Time Analyzed: 1143

		IS1(BCM) AREA	#	RT	IS2 (DFB) AREA	#	RT	IS3 (CBZ) AREA	#	RT
	12 HOUR STD	49406		9.00	131065		19.00	101764		23.89
	UPPER LIMIT	98812		9.50	262130		19.50	203528		24.39
	LOWER LIMIT	24703		8.50	65532		18.50	50882		23.39
	CLIENT SAMPLE NO.									
1	9203071126	26814		9.00	54895	*	19.04	43052	*	23.89
2	9203071126RE	22954	*	8.98	59954	*	19.03	45077	*	23.87
3	9203100928	17935	*	9.00	27667	*	19.05	15221	*	23.89
4	9203100928RE	16979	*	9.00	26907	*	19.00	10466	*	23.88
5	9203101008	27498		8.97	71555		19.01	51935		23.90
6	9203101220	25373		8.98	55816	*	19.03	39648	*	23.91
7	9203101220RE	23047	*	9.00	50227	*	19.00	34415	*	23.88
8	9203101453	19217	*	8.97	33301	*	19.01	17446	*	23.90
9	9203101453RE	16357	*	8.96	23659	*	19.00	10186	*	23.88
10	VBLKS1	46345		9.00	88827		19.04	68628		23.88
11										
12										
13										
14										
15										
16										
17										
18										

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

SEMIVOLATILE DATA

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9203071143

Job No.: MD92052
Lab ID: BS000210

Sample Wt.: 30.0 g
File ID: DF188

% Moisture: 17
Date Sampled: 03/07/92

Blank ID: SBLKS1
Date Received: 03/11/92

Level: LOW
Date Extracted: 03/13/92

GPC Cleanup: YES
Date Analyzed: 03/17/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Phenol	800 U
Bis(2-Chloroethyl)ether	800 U
2-Chlorophenol	800 U
1,3-Dichlorobenzene	800 U
1,4-Dichlorobenzene	800 U
1,2-Dichlorobenzene	800 U
2-Methylphenol	800 U
2,2'-oxybis(1-Chloropropane)	800 U
4-Methylphenol	800 U
N-Nitroso-di-n-propylamine	800 U
Hexachloroethane	800 U
Nitrobenzene	800 U
Isophorone	800 U
2-Nitrophenol	800 U
2,4-Dimethylphenol	800 U
Bis(2-Chloroethoxy)methane	800 U
2,4-Dichlorophenol	800 U
1,2,4-Trichlorobenzene	800 U
Naphthalene	800 U
4-Chloroaniline	800 U
Hexachlorobutadiene	800 U
4-Chloro-3-methylphenol	800 U
2-Methylnaphthalene	100 J
Hexachlorocyclopentadiene	800 U
2,4,6-Trichlorophenol	800 U
2,4,5-Trichlorophenol	4000 U
2-Chloronaphthalene	800 U
2-Nitroaniline	4000 U
Dimethylphthalate	800 U
Acenaphthylene	800 U
2,6-Dinitrotoluene	800 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9203071143

Job No.: MD92052
Lab ID: BS000210

Sample Wt.: 30.0 g
File ID: DF188

% Moisture: 17
Date Sampled: 03/07/92

Blank ID: SBLKS1
Date Received: 03/11/92

Level: LOW
Date Extracted: 03/13/92

GPC Cleanup: YES
Date Analyzed: 03/17/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
3-Nitroaniline	4000 U
Acenaphthene	800 U
2,4-Dinitrophenol	4000 U
4-Nitrophenol	4000 U
Dibenzofuran	800 U
2,4-Dinitrotoluene	800 U
Diethylphthalate	800 U
4-Chlorophenyl-phenylether	800 U
Fluorene	800 U
4-Nitroaniline	4000 U
4,6-Dinitro-2-methylphenol	4000 U
N-Nitrosodiphenylamine (1)	800 U
4-Bromophenyl-phenylether	800 U
Hexachlorobenzene	800 U
Pentachlorophenol	4000 U
Phenanthrene	69 J
Anthracene	800 U
Carbazole	800 U
Di-n-butylphthalate	800 U
Fluoranthene	800 U
Pyrene	800 U
Butylbenzylphthalate	800 U
3,3'-Dichlorobenzidine	800 U
Benzo(a)anthracene	800 U
Chrysene	800 U
bis(2-Ethylhexyl)phthalate	800 U
Di-n-octylphthalate	800 U
Benzo(b)fluoranthene	800 U
Benzo(k)fluoranthene	800 U
Benzo(a)pyrene	800 U
Indeno(1,2,3-cd)pyrene	800 U
Dibenz(a,h)anthracene	800 U
Benzo(g,h,i)perylene	800 U

(1) - Cannot be separated from Diphenylamine

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9203100927

Job No.: MD92052
Lab ID: BS000212

Sample Wt.: 30.0 g
File ID: DF189

% Moisture: 18
Date Sampled: 03/10/92

Blank ID: SBLKS1
Date Received: 03/11/92

Level: LOW
Date Extracted: 03/13/92

GPC Cleanup: YES
Date Analyzed: 03/17/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Phenol	800 U
Bis(2-Chloroethyl)ether	800 U
2-Chlorophenol	800 U
1,3-Dichlorobenzene	800 U
1,4-Dichlorobenzene	800 U
1,2-Dichlorobenzene	800 U
2-Methylphenol	800 U
2,2'-oxybis(1-Chloropropane)	800 U
4-Methylphenol	800 U
N-Nitroso-di-n-propylamine	800 U
Hexachloroethane	800 U
Nitrobenzene	800 U
Isophorone	800 U
2-Nitrophenol	800 U
2,4-Dimethylphenol	800 U
Bis(2-Chloroethoxy)methane	800 U
2,4-Dichlorophenol	800 U
1,2,4-Trichlorobenzene	800 U
Naphthalene	56 J
4-Chloroaniline	800 U
Hexachlorobutadiene	800 U
4-Chloro-3-methylphenol	800 U
2-Methylnaphthalene	170 J
Hexachlorocyclopentadiene	800 U
2,4,6-Trichlorophenol	800 U
2,4,5-Trichlorophenol	4000 U
2-Chloronaphthalene	800 U
2-Nitroaniline	4000 U
Dimethylphthalate	800 U
Acenaphthylene	800 U
2,6-Dinitrotoluene	800 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9203100927

Job No.: MD92052
Lab ID: BS000212

Sample Wt.: 30.0 g
File ID: DF189

% Moisture: 18
Date Sampled: 03/10/92

Blank ID: SBLKS1
Date Received: 03/11/92

Level: LOW
Date Extracted: 03/13/92

GPC Cleanup: YES
Date Analyzed: 03/17/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
3-Nitroaniline	4000 U
Acenaphthene	800 U
2,4-Dinitrophenol	4000 U
4-Nitrophenol	4000 U
Dibenzofuran	800 U
2,4-Dinitrotoluene	800 U
Diethylphthalate	800 U
4-Chlorophenyl-phenylether	800 U
Fluorene	800 U
4-Nitroaniline	4000 U
4,6-Dinitro-2-methylphenol	4000 U
N-Nitrosodiphenylamine (1)	800 U
4-Bromophenyl-phenylether	800 U
Hexachlorobenzene	800 U
Pentachlorophenol	4000 U
Phenanthrene	48 J
Anthracene	800 U
Carbazole	800 U
Di-n-butylphthalate	800 U
Fluoranthene	800 U
Pyrene	800 U
Butylbenzylphthalate	800 U
3,3'-Dichlorobenzidine	800 U
Benzo(a)anthracene	800 U
Chrysene	800 U
bis(2-Ethylhexyl)phthalate	800 U
Di-n-octylphthalate	800 U
Benzo(b)fluoranthene	800 U
Benzo(k)fluoranthene	800 U
Benzo(a)pyrene	800 U
Indeno(1,2,3-cd)pyrene	800 U
Dibenz(a,h)anthracene	800 U
Benzo(g,h,i)perylene	800 U

(1) - Cannot be separated from Diphenylamine

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9203101021

Job No.: MD92052
Lab ID: BS000214

Sample Wt.: 30.1 g
File ID: DF190

% Moisture: 19
Date Sampled: 03/10/92

Blank ID: SBLKS1
Date Received: 03/11/92

Level: LOW
Date Extracted: 03/13/92

GPC Cleanup: YES
Date Analyzed: 03/17/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Phenol	810 U
Bis(2-Chloroethyl)ether	810 U
2-Chlorophenol	810 U
1,3-Dichlorobenzene	810 U
1,4-Dichlorobenzene	810 U
1,2-Dichlorobenzene	810 U
2-Methylphenol	810 U
2,2'-oxybis(1-Chloropropane)	810 U
4-Methylphenol	810 U
N-Nitroso-di-n-propylamine	810 U
Hexachloroethane	810 U
Nitrobenzene	810 U
Isophorone	810 U
2-Nitrophenol	810 U
2,4-Dimethylphenol	810 U
Bis(2-Chloroethoxy)methane	810 U
2,4-Dichlorophenol	810 U
1,2,4-Trichlorobenzene	810 U
Naphthalene	82 J
4-Chloroaniline	810 U
Hexachlorobutadiene	810 U
4-Chloro-3-methylphenol	810 U
2-Methylnaphthalene	300 J
Hexachlorocyclopentadiene	810 U
2,4,6-Trichlorophenol	810 U
2,4,5-Trichlorophenol	4100 U
2-Chloronaphthalene	810 U
2-Nitroaniline	4100 U
Dimethylphthalate	810 U
Acenaphthylene	810 U
2,6-Dinitrotoluene	810 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9203101021

Job No.: MD92052
Lab ID: BS000214

Sample Wt.: 30.1 g
File ID: DF190

% Moisture: 19
Date Sampled: 03/10/92

Blank ID: SBLKS1
Date Received: 03/11/92

Level: LOW
Date Extracted: 03/13/92

GPC Cleanup: YES
Date Analyzed: 03/17/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
3-Nitroaniline	4100 U
Acenaphthene	810 U
2,4-Dinitrophenol	4100 U
4-Nitrophenol	4100 U
Dibenzofuran	810 U
2,4-Dinitrotoluene	810 U
Diethylphthalate	810 U
4-Chlorophenyl-phenylether	810 U
Fluorene	810 U
4-Nitroaniline	4100 U
4,6-Dinitro-2-methylphenol	4100 U
N-Nitrosodiphenylamine (1)	810 U
4-Bromophenyl-phenylether	810 U
Hexachlorobenzene	810 U
Pentachlorophenol	4100 U
Phenanthrene	99 J
Anthracene	810 U
Carbazole	810 U
Di-n-butylphthalate	72 J
Fluoranthene	810 U
Pyrene	810 U
Butylbenzylphthalate	810 U
3,3'-Dichlorobenzidine	810 U
Benzo(a)anthracene	810 U
Chrysene	810 U
bis(2-Ethylhexyl)phthalate	810 U
Di-n-octylphthalate	810 U
Benzo(b)fluoranthene	810 U
Benzo(k)fluoranthene	810 U
Benzo(a)pyrene	810 U
Indeno(1,2,3-cd)pyrene	810 U
Dibenz(a,h)anthracene	810 U
Benzo(g,h,i)perylene	810 U

(1) - Cannot be separated from Diphenylamine

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9203101235

Job No.: MD92052
Lab ID: BS000216

Sample Wt.: 30.2 g
File ID: DF191

% Moisture: 14
Date Sampled: 03/10/92

Blank ID: SBLKS1
Date Received: 03/11/92

Level: LOW
Date Extracted: 03/13/92

GPC Cleanup: YES
Date Analyzed: 03/17/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Phenol	760 U
Bis(2-Chloroethyl)ether	760 U
2-Chlorophenol	760 U
1,3-Dichlorobenzene	760 U
1,4-Dichlorobenzene	760 U
1,2-Dichlorobenzene	760 U
2-Methylphenol	760 U
2,2'-oxybis(1-Chloropropane)	760 U
4-Methylphenol	760 U
N-Nitroso-di-n-propylamine	760 U
Hexachloroethane	760 U
Nitrobenzene	760 U
Isophorone	760 U
2-Nitrophenol	760 U
2,4-Dimethylphenol	760 U
Bis(2-Chloroethoxy)methane	760 U
2,4-Dichlorophenol	760 U
1,2,4-Trichlorobenzene	760 U
Naphthalene	70 J
4-Chloroaniline	760 U
Hexachlorobutadiene	760 U
4-Chloro-3-methylphenol	760 U
2-Methylnaphthalene	220 J
Hexachlorocyclopentadiene	760 U
2,4,6-Trichlorophenol	760 U
2,4,5-Trichlorophenol	3800 U
2-Chloronaphthalene	760 U
2-Nitroaniline	3800 U
Dimethylphthalate	760 U
Acenaphthylene	760 U
2,6-Dinitrotoluene	760 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9203101235

Job No.: MD92052
Lab ID: BS000216

Sample Wt.: 30.2 g
File ID: DF191

% Moisture: 14
Date Sampled: 03/10/92

Blank ID: SBLKS1
Date Received: 03/11/92

Level: LOW
Date Extracted: 03/13/92

GPC Cleanup: YES
Date Analyzed: 03/17/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
3-Nitroaniline	3800 U
Acenaphthene	760 U
2,4-Dinitrophenol	3800 U
4-Nitrophenol	3800 U
Dibenzofuran	760 U
2,4-Dinitrotoluene	760 U
Diethylphthalate	760 U
4-Chlorophenyl-phenylether	760 U
Fluorene	760 U
4-Nitroaniline	3800 U
4,6-Dinitro-2-methylphenol	3800 U
N-Nitrosodiphenylamine (1)	760 U
4-Bromophenyl-phenylether	760 U
Hexachlorobenzene	760 U
Pentachlorophenol	3800 U
Phenanthrene	70 J
Anthracene	760 U
Carbazole	760 U
Di-n-butylphthalate	760 U
Fluoranthene	760 U
Pyrene	43 J
Butylbenzylphthalate	760 U
3,3'-Dichlorobenzidine	760 U
Benzo(a)anthracene	760 U
Chrysene	55 J
bis(2-Ethylhexyl)phthalate	760 U
Di-n-octylphthalate	760 U
Benzo(b)fluoranthene	43 J
Benzo(k)fluoranthene	760 U
Benzo(a)pyrene	760 U
Indeno(1,2,3-cd)pyrene	760 U
Dibenz(a,h)anthracene	760 U
Benzo(g,h,i)perylene	760 U

(1) - Cannot be separated from Diphenylamine

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9203101459

Job No.: MD92052
Lab ID: BS000218

Sample Wt.: 30.1 g
File ID: GD006

% Moisture: 18
Date Sampled: 03/10/92

Blank ID: SBLKS2
Date Received: 03/11/92

Level: LOW
Date Extracted: 03/13/92

GPC Cleanup: YES
Date Analyzed: 03/18/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Phenol	800 U
Bis(2-Chloroethyl)ether	800 U
2-Chlorophenol	800 U
1,3-Dichlorobenzene	800 U
1,4-Dichlorobenzene	800 U
1,2-Dichlorobenzene	800 U
2-Methylphenol	800 U
2,2'-oxybis(1-Chloropropane)	800 U
4-Methylphenol	800 U
N-Nitroso-di-n-propylamine	800 U
Hexachloroethane	800 U
Nitrobenzene	800 U
Isophorone	800 U
2-Nitrophenol	800 U
2,4-Dimethylphenol	800 U
Bis(2-Chloroethoxy)methane	800 U
2,4-Dichlorophenol	800 U
1,2,4-Trichlorobenzene	800 U
Naphthalene	800 U
4-Chloroaniline	800 U
Hexachlorobutadiene	800 U
4-Chloro-3-methylphenol	800 U
2-Methylnaphthalene	95 J
Hexachlorocyclopentadiene	800 U
2,4,6-Trichlorophenol	800 U
2,4,5-Trichlorophenol	4000 U
2-Chloronaphthalene	800 U
2-Nitroaniline	4000 U
Dimethylphthalate	800 U
Acenaphthylene	800 U
2,6-Dinitrotoluene	800 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: 9203101459

Job No.: MD92052
Lab ID: BS000218

Sample Wt.: 30.1 g
File ID: GD006

% Moisture: 18
Date Sampled: 03/10/92

Blank ID: SBLKS2
Date Received: 03/11/92

Level: LOW
Date Extracted: 03/13/92

GPC Cleanup: YES
Date Analyzed: 03/18/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
3-Nitroaniline	4000 U
Acenaphthene	800 U
2,4-Dinitrophenol	4000 U
4-Nitrophenol	4000 U
Dibenzofuran	800 U
2,4-Dinitrotoluene	800 U
Diethylphthalate	800 U
4-Chlorophenyl-phenylether	800 U
Fluorene	800 U
4-Nitroaniline	4000 U
4,6-Dinitro-2-methylphenol	4000 U
N-Nitrosodiphenylamine (1)	800 U
4-Bromophenyl-phenylether	800 U
Hexachlorobenzene	800 U
Pentachlorophenol	4000 U
Phenanthrene	56 J
Anthracene	800 U
Carbazole	800 U
Di-n-butylphthalate	82 J
Fluoranthene	800 U
Pyrene	47 J
Butylbenzylphthalate	800 U
3,3'-Dichlorobenzidine	800 U
Benzo(a)anthracene	800 U
Chrysene	52 J
bis(2-Ethylhexyl)phthalate	43 J
Di-n-octylphthalate	800 U
Benzo(b)fluoranthene	44 J
Benzo(k)fluoranthene	800 U
Benzo(a)pyrene	800 U
Indeno(1,2,3-cd)pyrene	800 U
Dibenz(a,h)anthracene	800 U
Benzo(g,h,i)perylene	800 U

(1) - Cannot be separated from Diphenylamine

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: SBLKS1

Job No.: MD92052
Lab ID: SBLKS1

Sample Wt.: 30.0 g
File ID: DF187

% Moisture: 0
Date Sampled:

Blank ID:
Date Received:

Level: LOW
Date Extracted: 03/13/92

GPC Cleanup: YES
Date Analyzed: 03/17/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Phenol	670 U
Bis(2-Chloroethyl)ether	670 U
2-Chlorophenol	670 U
1,3-Dichlorobenzene	670 U
1,4-Dichlorobenzene	670 U
1,2-Dichlorobenzene	670 U
2-Methylphenol	670 U
2,2'-oxybis(1-Chloropropane)	670 U
4-Methylphenol	670 U
N-Nitroso-di-n-propylamine	670 U
Hexachloroethane	670 U
Nitrobenzene	670 U
Isophorone	670 U
2-Nitrophenol	670 U
2,4-Dimethylphenol	670 U
Bis(2-Chloroethoxy)methane	670 U
2,4-Dichlorophenol	670 U
1,2,4-Trichlorobenzene	670 U
Naphthalene	670 U
4-Chloroaniline	670 U
Hexachlorobutadiene	670 U
4-Chloro-3-methylphenol	670 U
2-Methylnaphthalene	670 U
Hexachlorocyclopentadiene	670 U
2,4,6-Trichlorophenol	670 U
2,4,5-Trichlorophenol	3300 U
2-Chloronaphthalene	670 U
2-Nitroaniline	3300 U
Dimethylphthalate	670 U
Acenaphthylene	670 U
2,6-Dinitrotoluene	670 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: SBLKS1

Job No.: MD92052
Lab ID: SBLKS1

Sample Wt.: 30.0 g
File ID: DF187

% Moisture: 0
Date Sampled:

Blank ID:
Date Received:

Level: LOW
Date Extracted: 03/13/92

GPC Cleanup: YES
Date Analyzed: 03/17/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
3-Nitroaniline	3300 U
Acenaphthene	670 U
2,4-Dinitrophenol	3300 U
4-Nitrophenol	3300 U
Dibenzofuran	670 U
2,4-Dinitrotoluene	670 U
Diethylphthalate	670 U
4-Chlorophenyl-phenylether	670 U
Fluorene	670 U
4-Nitroaniline	3300 U
4,6-Dinitro-2-methylphenol	3300 U
N-Nitrosodiphenylamine (1)	670 U
4-Bromophenyl-phenylether	670 U
Hexachlorobenzene	670 U
Pentachlorophenol	3300 U
Phenanthrene	670 U
Anthracene	670 U
Carbazole	670 U
Di-n-butylphthalate	670 U
Fluoranthene	670 U
Pyrene	670 U
Butylbenzylphthalate	670 U
3,3'-Dichlorobenzidine	670 U
Benzo(a)anthracene	670 U
Chrysene	670 U
bis(2-Ethylhexyl)phthalate	670 U
Di-n-octylphthalate	670 U
Benzo(b)fluoranthene	670 U
Benzo(k)fluoranthene	670 U
Benzo(a)pyrene	670 U
Indeno(1,2,3-cd)pyrene	670 U
Dibenz(a,h)anthracene	670 U
Benzo(g,h,i)perylene	670 U

(1) - Cannot be separated from Diphenylamine

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: SBLKS2

Job No.: MD92052
Lab ID: SBLKS2

Sample Wt.: 30.0 g
File ID: GC999

% Moisture: 0
Date Sampled:

Blank ID:
Date Received:

Level: LOW
Date Extracted: 03/13/92

GPC Cleanup: YES
Date Analyzed: 03/17/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
Phenol	670 U
Bis(2-Chloroethyl)ether	670 U
2-Chlorophenol	670 U
1,3-Dichlorobenzene	670 U
1,4-Dichlorobenzene	670 U
1,2-Dichlorobenzene	670 U
2-Methylphenol	670 U
2,2'-oxybis(1-Chloropropane)	670 U
4-Methylphenol	670 U
N-Nitroso-di-n-propylamine	670 U
Hexachloroethane	670 U
Nitrobenzene	670 U
Isophorone	670 U
2-Nitrophenol	670 U
2,4-Dimethylphenol	670 U
Bis(2-Chloroethoxy)methane	670 U
2,4-Dichlorophenol	670 U
1,2,4-Trichlorobenzene	670 U
Naphthalene	670 U
4-Chloroaniline	670 U
Hexachlorobutadiene	670 U
4-Chloro-3-methylphenol	670 U
2-Methylnaphthalene	670 U
Hexachlorocyclopentadiene	670 U
2,4,6-Trichlorophenol	670 U
2,4,5-Trichlorophenol	3300 U
2-Chloronaphthalene	670 U
2-Nitroaniline	3300 U
Dimethylphthalate	670 U
Acenaphthylene	670 U
2,6-Dinitrotoluene	670 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
SOIL MATRIX

Client: GEOSCIENCE
Client ID: SBLKS2

Job No.: MD92052
Lab ID: SBLKS2

Sample Wt.: 30.0 g
File ID: GC999

% Moisture: 0
Date Sampled:

Blank ID:
Date Received:

Level: LOW
Date Extracted: 03/13/92

GPC Cleanup: YES
Date Analyzed: 03/17/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/Kg
3-Nitroaniline	3300 U
Acenaphthene	670 U
2,4-Dinitrophenol	3300 U
4-Nitrophenol	3300 U
Dibenzofuran	670 U
2,4-Dinitrotoluene	670 U
Diethylphthalate	670 U
4-Chlorophenyl-phenylether	670 U
Fluorene	670 U
4-Nitroaniline	3300 U
4,6-Dinitro-2-methylphenol	3300 U
N-Nitrosodiphenylamine (1)	670 U
4-Bromophenyl-phenylether	670 U
Hexachlorobenzene	670 U
Pentachlorophenol	3300 U
Phenanthrene	670 U
Anthracene	670 U
Carbazole	670 U
Di-n-butylphthalate	670 U
Fluoranthene	670 U
Pyrene	670 U
Butylbenzylphthalate	670 U
3,3'-Dichlorobenzidine	670 U
Benzo(a)anthracene	670 U
Chrysene	670 U
bis(2-Ethylhexyl)phthalate	670 U
Di-n-octylphthalate	670 U
Benzo(b)fluoranthene	670 U
Benzo(k)fluoranthene	670 U
Benzo(a)pyrene	670 U
Indeno(1,2,3-cd)pyrene	670 U
Dibenz(a,h)anthracene	670 U
Benzo(g,h,i)perylene	670 U

(1) - Cannot be separated from Diphenylamine

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE SURROGATE RECOVERY
SOIL MATRIX

Client: GEOSCIENCE

Job No.: MD92052

Level: LOW

	CLIENT SAMPLE ID	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	TOT OUT
1	9203071143	64	65	97	61	53	66	0
2	9203100927	62	61	86	56	51	62	0
3	9203101021	48	53	74	50	44	52	0
4	9203101235	60	62	79	58	52	64	0
5	9203101459	65	64	74	61	49	82	0
6	SBLKS1	68	65	99	59	52	66	0
7	SBLKS2	73	64	92	61	50	54	0
8								
9								
10								
11								
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17								
18								
19								
20								
21								
22								
23								
24								
25								

	QC LIMITS
S1 (NBZ) = Nitrobenzene-d5	(23-120)
S2 (FBP) = 2- Fluorobiphenyl	(30-115)
S3 (TPH) = Terphenyl-d14	(18-137)
S4 (PHL) = Phenol-d6	(24-113)
S5 (2FP) = 2-Fluorophenol	(25-121)
S6 (TBP) = 2,4,6-Tribromophenol	(19-122)

\# Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Instrument ID: 700404

Job No.: MD92052

File ID: QF185

Matrix: SOIL

Date Analyzed: 03/17/92

Level: LOW

Time Analyzed: 08:41

		IS1(DCB) AREA	#	RT	IS2 (NPT) AREA	#	RT	IS3 (ANT) AREA	#	RT
	12 HOUR STD	55776		8.72	193072		11.76	99099		16.28
	UPPER LIMIT	111552		9.22	386144		12.26	198198		16.78
	LOWER LIMIT	27888		8.22	96536		11.26	49550		15.78
	EPA SAMPLE NO.									
1	9203071143	57038		8.73	188195		11.76	96249		16.29
2	9203100927	63874		8.73	205073		11.77	102938		16.30
3	9203101021	57467		8.72	198036		11.77	104792		16.29
4	9203101235	50799		8.72	171117		11.76	94335		16.29
5	SBLKS1	66898		8.73	219127		11.77	111123		16.29
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Instrument ID : 700404

Job No.: MD92052

File ID: QF185

Matrix: SOIL

Date Analyzed: 03/17/92

Level: LOW

Time Analyzed: 08:41

		IS4(PHN) AREA	#	RT	IS5(CRY) AREA	#	RT	IS6(PRY) AREA	#	RT
	12 HOUR STD	137780		20.11	75235		27.07	38775		30.75
	UPPER LIMIT	275560		20.61	150470		27.57	77550		31.25
	LOWER LIMIT	68890		19.61	37618		26.57	19388		30.25
	EPA SAMPLE NO.									
1	9203071143	125764		20.12	45136		27.07	26022		30.77
2	9203100927	143390		20.12	59243		27.08	32696		30.77
3	9203101021	140166		20.12	57135		27.07	35956		30.76
4	9203101235	124642		20.12	55855		27.07	36679		30.76
5	SBLKS1	143972		20.12	60473		27.08	32075		30.77
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Job No.: MD92052

Matrix: SOIL

Level: LOW

Instrument ID: 700606

File ID: WC996

Date Analyzed: 03/17/92

Time Analyzed: 08:35

		IS1(DCB) AREA #	RT	IS2 (NPT) AREA #	RT	IS3 (ANT) AREA #	RT
	12 HOUR STD	56432	8.91	218176	11.97	116515	16.51
	UPPER LIMIT	112864	9.41	436352	12.47	233030	17.01
	LOWER LIMIT	28216	8.41	109088	11.47	58258	16.01
	EPA SAMPLE NO.						
1	SBLKS2	42322	8.91	154236	11.97	78772	16.51
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Job No.: MD92052

Matrix: SOIL

Level: LOW

Instrument ID : 700606

File ID: WC996

Date Analyzed: 03/17/92

Time Analyzed: 08:35

		IS4(PHN) AREA	#	RT	IS5(CRY) AREA	#	RT	IS6(PRY) AREA	#	RT
	12 HOUR STD	160668		20.35	105019		27.32	76295		31.07
	UPPER LIMIT	321336		20.85	210038		27.82	152590		31.57
	LOWER LIMIT	80334		19.85	52510		26.82	38148		30.57
	EPA SAMPLE NO.									
1	SBLKS2	97926		20.35	56245		27.32	41974		31.07
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Job No.: MD92052

Matrix: SOIL

Level: LOW

Instrument ID: 700606

File ID: WD005

Date Analyzed: 03/18/92

Time Analyzed: 08:54

		IS1(DCB) AREA	#	RT	IS2 (NPT) AREA	#	RT	IS3 (ANT) AREA	#	RT
	12 HOUR STD	57770		8.89	181238		11.95	86046		16.49
	UPPER LIMIT	115540		9.39	362476		12.45	172092		16.99
	LOWER LIMIT	28885		8.39	90619		11.45	43023		15.99
	EPA SAMPLE NO.									
1	9203101459	58039		8.90	191370		11.95	104153		16.49
2										
3										
4										
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Instrument ID : 700606

Job No.: MD92052

File ID: WD005

Matrix: SOIL

Date Analyzed: 03/18/92

Level: LOW

Time Analyzed: 08:54

		IS4(PHN) AREA	#	RT	IS5(CRY) AREA	#	RT	IS6(PRY) AREA	#	RT
	12 HOUR STD	117337		20.33	76583		27.29	62353		31.04
	UPPER LIMIT	234674		20.83	153166		27.79	124706		31.54
	LOWER LIMIT	58668		19.83	38292		26.79	31176		30.54
	EPA SAMPLE NO.									
1	9203101459	155585		20.33	117447		27.30	77654		31.04
2										
3										
4										
5										
6										
7										
8										
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11										
12										
13										
14										
15										
16										
17										
18										

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

PESTICIDE/PCB DATA

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203071143

Job No.: MD92052

Lab ID: BS000210

Sample Wt: 30.3g

Date Sampled: 03/07/92

% Moisture: 17%

Date Received: 03/11/92

Blank ID: PBLK1

Date Extracted: 03/13/92

Level: LOW

Date Analyzed: 03/24/92

Dilution Factor: 2

GPC Cleanup: YES

COMPOUND	CONCENTRATION UNITS: ug/Kg
alpha-BHC	9.5 U
beta-BHC	9.5 U
delta-BHC	9.5 U
gamma-BHC (Lindane)	9.5 U
Heptachlor	9.5 U
Aldrin	9.5 U
Heptachlor epoxide	9.5 U
Endosulfan I	9.5 U
Dieldrin	19 U
4,4'-DDE	19 U
Endrin	19 U
Endosulfan II	19 U
4,4'-DDD	19 U
Endosulfan sulfate	19 U
4,4'-DDT	19 U
Methoxychlor	95 U
Endrin ketone	19 U
Endrin aldehyde	19 U
alpha -chlordane	95 U
gamma -chlordane	95 U
Toxaphene	190 U
PCB-1016	95 U
PCB-1221	95 U
PCB-1232	95 U
PCB-1242	95 U
PCB-1248	95 U
PCB-1254	190 U
PCB-1260	190 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203100927

Job No.: MD92052

Lab ID: BS000212

Sample Wt: 30.0g

Date Sampled: 03/10/92

% Moisture: 18%

Date Received: 03/11/92

Blank ID: PBLK1

Date Extracted: 03/13/92

Level: LOW

Date Analyzed: 03/24/92

Dilution Factor: 1

GPC Cleanup: YES

COMPOUND	CONCENTRATION UNITS: ug/Kg
alpha-BHC	4.9 U
beta-BHC	4.9 U
delta-BHC	4.9 U
gamma-BHC (Lindane)	4.9 U
Heptachlor	4.9 U
Aldrin	4.9 U
Heptachlor epoxide	4.9 U
Endosulfan I	4.9 U
Dieldrin	9.8 U
4,4'-DDE	9.8 U
Endrin	9.8 U
Endosulfan II	9.8 U
4,4'-DDD	9.8 U
Endosulfan sulfate	9.8 U
4,4'-DDT	9.8 U
Methoxychlor	49 U
Endrin ketone	9.8 U
Endrin aldehyde	9.8 U
alpha -chlordane	49 U
gamma -chlordane	49 U
Toxaphene	98 U
PCB-1016	49 U
PCB-1221	49 U
PCB-1232	49 U
PCB-1242	49 U
PCB-1248	49 U
PCB-1254	98 U
PCB-1260	98 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203101021

Job No.: MD92052

Lab ID: BS000214

Sample Wt: 30.4g

Date Sampled: 03/10/92

% Moisture: 19%

Date Received: 03/11/92

Blank ID: PBLK1

Date Extracted: 03/13/92

Level: LOW

Date Analyzed: 03/25/92

Dilution Factor: 2

GPC Cleanup: YES

COMPOUND	CONCENTRATION UNITS: ug/Kg
alpha-BHC	9.7 U
beta-BHC	9.7 U
delta-BHC	9.7 U
gamma-BHC (Lindane)	9.7 U
Heptachlor	9.7 U
Aldrin	9.7 U
Heptachlor epoxide	9.7 U
Endosulfan I	9.7 U
Dieldrin	19 U
4,4'-DDE	19 U
Endrin	19 U
Endosulfan II	19 U
4,4'-DDD	19 U
Endosulfan sulfate	19 U
4,4'-DDT	19 U
Methoxychlor	97 U
Endrin ketone	19 U
Endrin aldehyde	19 U
alpha -chlordane	97 U
gamma -chlordane	97 U
Toxaphene	190 U
PCB-1016	97 U
PCB-1221	97 U
PCB-1232	97 U
PCB-1242	97 U
PCB-1248	97 U
PCB-1254	190 U
PCB-1260	190 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203101235

Job No.: MD92052

Lab ID: BS000216

Sample Wt: 30.1g

Date Sampled: 03/10/92

% Moisture: 14%

Date Received: 03/11/92

Blank ID: PBLK1

Date Extracted: 03/13/92

Level: LOW

Date Analyzed: 03/25/92

Dilution Factor: 4

GPC Cleanup: YES

COMPOUND	CONCENTRATION UNITS: ug/Kg
alpha-BHC	19 U
beta-BHC	19 U
delta-BHC	19 U
gamma-BHC (Lindane)	19 U
Heptachlor	19 U
Aldrin	19 U
Heptachlor epoxide	19 U
Endosulfan I	19 U
Dieldrin	37 U
4,4'-DDE	37 U
Endrin	37 U
Endosulfan II	37 U
4,4'-DDD	37 U
Endosulfan sulfate	37 U
4,4'-DDT	37 U
Methoxychlor	190 U
Endrin ketone	37 U
Endrin aldehyde	37 U
alpha -chlordane	190 U
gamma -chlordane	190 U
Toxaphene	370 U
PCB-1016	190 U
PCB-1221	190 U
PCB-1232	190 U
PCB-1242	190 U
PCB-1248	980
PCB-1254	370 U
PCB-1260	330 J

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
SOIL MATRIX

Client: GEOSCIENCE

Client ID: 9203101459

Job No.: MD92052

Lab ID: BS000218

Sample Wt: 30.2g

Date Sampled: 03/10/92

% Moisture: 18%

Date Received: 03/11/92

Blank ID: PBLK1

Date Extracted: 03/13/92

Level: LOW

Date Analyzed: 03/25/92

Dilution Factor: 4

GPC Cleanup: YES

COMPOUND	CONCENTRATION UNITS: ug/Kg
alpha-BHC	19 U
beta-BHC	19 U
delta-BHC	19 U
gamma-BHC (Lindane)	19 U
Heptachlor	19 U
Aldrin	19 U
Heptachlor epoxide	19 U
Endosulfan I	19 U
Dieldrin	39 U
4,4'-DDE	39 U
Endrin	39 U
Endosulfan II	39 U
4,4'-DDD	39 U
Endosulfan sulfate	39 U
4,4'-DDT	39 U
Methoxychlor	190 U
Endrin ketone	39 U
Endrin aldehyde	39 U
alpha -chlordane	190 U
gamma -chlordane	190 U
Toxaphene	390 U
PCB-1016	190 U
PCB-1221	190 U
PCB-1232	190 U
PCB-1242	190 U
PCB-1248	190 U
PCB-1254	390 U
PCB-1260	100 J

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
SOIL MATRIX

Client: GEOSCIENCE

Client ID: PBLK1

Job No.: MD92052

Lab ID: PBLK1

Sample Wt: 30.0g

Date Sampled:

% Moisture: 0%

Date Received:

Blank ID: PBLK1

Date Extracted: 03/13/92

Level: LOW

Date Analyzed: 03/24/92

Dilution Factor: 1

GPC Cleanup: YES

COMPOUND	CONCENTRATION UNITS: ug/Kg
alpha-BHC	4 U
beta-BHC	4 U
delta-BHC	4 U
gamma-BHC (Lindane)	4 U
Heptachlor	4 U
Aldrin	4 U
Heptachlor epoxide	4 U
Endosulfan I	4 U
Dieldrin	8 U
4,4'-DDE	8 U
Endrin	8 U
Endosulfan II	8 U
4,4'-DDD	8 U
Endosulfan sulfate	8 U
4,4'-DDT	8 U
Methoxychlor	40 U
Endrin ketone	8 U
Endrin aldehyde	8 U
alpha -chlordane	40 U
gamma -chlordane	40 U
Toxaphene	80 U
PCB-1016	40 U
PCB-1221	40 U
PCB-1232	40 U
PCB-1242	40 U
PCB-1248	40 U
PCB-1254	80 U
PCB-1260	80 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE SURROGATE RECOVERY
SOIL MATRIX

Client: GEOSCIENCE

Job No.: MD92052

Level: LOW

	CLIENT SAMPLE NO.	S1 (DBC) #	OTHER
1	9203071143	129	
2	9203100927	128	
3	9203101021	113	
4	9203101235	85	
5	9203101459	133	
6	PBLK1	124	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

S1 (DBC) = Dibutylchlorendate

QC LIMITS
(20-150)

Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

HERBICIDE DATA

RECRA ENVIRONMENTAL,INC.
HERBICIDE ANALYSIS DATA SHEET
SOIL MATRIX

CLIENT: GEOSCIENCE

CLIENT ID: 9203101143

JOB NO.: MD92-0052

LAB ID: BS000210

SAMPLE WT.: 50.0 g

DATE EXTRACTED: 3/17/92

DATE SAMPLED: 3/10/92

DATE ANALYZED: 3/25/92

DATE RECEIVED: 3/11/92

DILUTION FACTOR: 1

PERCENT MOISTURE: 17%

COMPOUND	CONCENTRATION UNITS: UG/KG	Q
2,4-D	290	U
2,4,5-T	48	U
2,4,5-TP (Silvex)	48	U
2,4-DB	220	U
Dalapon	140	U
Dicamba	72	U
Dichloroprop	140	U
Dinoseb	24	U
MCPA	6000	U
MCPP	4800	U

RECRA ENVIRONMENTAL,INC.
HERBICIDE ANALYSIS DATA SHEET
SOIL MATRIX

CLIENT: GEOSCIENCE

CLIENT ID: 923100927

JOB NO.: MD92-0052

LAB ID: BS000212

SAMPLE WT.: 50.0 g

DATE EXTRACTED: 3/17/92

DATE SAMPLED: 3/10/92

DATE ANALYZED: 3/25/92

DATE RECEIVED: 3/11/92

DILUTION FACTOR: 1

PERCENT MOISTURE: 18%

COMPOUND	CONCENTRATION UNITS: UG/KG	Q
2,4-D	290	U
2,4,5-T	49	U
2,4,5-TP (Silvex)	49	U
2,4-DB	220	U
Dalapon	150	U
Dicamba	73	U
Dichloroprop	150	U
Dinoseb	24	U
MCPA	6100	U
MCPP	4900	U

I.D.#MD92-0052

RECRA ENVIRONMENTAL,INC.
HERBICIDE ANALYSIS DATA SHEET
SOIL MATRIX

CLIENT: GEOSCIENCE

CLIENT ID: 923101021

JOB NO.: MD92-0052

LAB ID: BS000214

SAMPLE WT.: 50.0 g

DATE EXTRACTED: 3/17/92

DATE SAMPLED: 3/10/92

DATE ANALYZED: 3/25/92

DATE RECEIVED: 3/11/92

DILUTION FACTOR: 1

PERCENT MOISTURE: 19%

COMPOUND	CONCENTRATION UNITS: UG/KG	Q
2,4-D	300	U
2,4,5-T	49	U
2,4,5-TP (Silvex)	49	U
2,4-DB	220	U
Dalapon	150	U
Dicamba	74	U
Dichloroprop	150	U
Dinoseb	25	U
MCPA	6200	U
MCPP	4900	U

RECRA ENVIRONMENTAL,INC.
HERBICIDE ANALYSIS DATA SHEET
SOIL MATRIX

CLIENT: GEOSCIENCE

CLIENT ID: 9203101235

JOB NO.: MD92-0052

LAB ID: BS000216

SAMPLE WT.: 50.0 g

DATE EXTRACTED: 3/17/92

DATE SAMPLED: 3/10/92

DATE ANALYZED: 3/25/92

DATE RECEIVED: 3/11/92

DILUTION FACTOR: 1

PERCENT MOISTURE: 14%

COMPOUND	CONCENTRATION UNITS: UG/KG	Q
2,4-D	280	U
2,4,5-T	46	U
2,4,5-TP (Silvex)	46	U
2,4-DB	210	U
Dalapon	140	U
Dicamba	69	U
Dichloroprop	140	U
Dinoseb	23	U
MCPA	5800	U
MCPP	4600	U

I.D.#MD92-0052

RECRA ENVIRONMENTAL,INC.
HERBICIDE ANALYSIS DATA SHEET
SOIL MATRIX

CLIENT: GEOSCIENCE

CLIENT ID: 923101459

JOB NO.: MD92-0052

LAB ID: BS000218

SAMPLE WT.: 50.0 g

DATE EXTRACTED: 3/17/92

DATE SAMPLED: 3/10/92

DATE ANALYZED: 3/25/92

DATE RECEIVED: 3/11/92

DILUTION FACTOR: 1

PERCENT MOISTURE: 18%

COMPOUND	CONCENTRATION UNITS: UG/KG	Q
2,4-D	290	U
2,4,5-T	49	U
2,4,5-TP (Silvex)	49	U
2,4-DB	220	U
Dalapon	150	U
Dicamba	73	U
Dichloroprop	150	U
Dinoseb	24	U
MCPA	6100	U
MCPP	4900	U

RECRA ENVIRONMENTAL,INC.
HERBICIDE ANALYSIS DATA SHEET
SOIL MATRIX

CLIENT: GEOSCIENCE

CLIENT ID: HBLK1

JOB NO.: MD92-0052

LAB ID: AR001814

SAMPLE WT.: 50.0 g

DATE EXTRACTED: 3/17/92

DATE SAMPLED:

DATE ANALYZED: 3/25/92

DATE RECEIVED:

DILUTION FACTOR: 1

PERCENT MOISTURE: 0%

COMPOUND	CONCENTRATION UNITS: UG/KG	Q
2,4-D	240	U
2,4,5-T	40	U
2,4,5-TP (Silvex)	40	U
2,4-DB	180	U
Dalapon	120	U
Dicamba	60	U
Dichloroprop	120	U
Dinoseb	20	U
MCPA	5000	U
MCPP	4000	U

I.D.#MD92-0052

RECRA ENVIRONMENTAL,INC.
HERBICIDE SURROGATE RECOVERY
SOIL MATRIX

CLIENT: GEOSCIENCE JOB NO.: MD920052

CLIENT SAMPLE NO.		S1 (PIC) #	OTHER
01	9203071143	89	
02	9203100927	88	
03	9203101021	87	
04	9203101235	86	
05	9203101459	85	
06	HBLK1	82	

S1 (PIC)=Picloram

Column to be used to flag recovery values

* Indicates values outside of QC limits

D Indicates surrogates Diluted Out

METHOD 8015 DATA

GEOSCIENCE CONSULTANTS LTD.
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0208
RECRA SAMPLE ID: BS000210
CLIENT SAMPLE ID: 9203071143

SAMPLE DATE: 03/07/92
ANALYSIS DATE: 03/19/92

COMPOUND (UNITS OF MEASURE = MG/KG)	RESULT	Q
VOLATILE/GASOLINE	1.7	

% DRY WEIGHT = 84.9

I.D. #MI92-0208

GEOSCIENCE CONSULTANTS LTD.
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0208
RECRA SAMPLE ID: BS000212
CLIENT SAMPLE ID: 9203100927

SAMPLE DATE: 03/10/92
ANALYSIS DATE: 03/19/92

COMPOUND (UNITS OF MEASURE = MG/KG)	RESULT	Q
VOLATILE/GASOLINE	3.5	

% DRY WEIGHT = 81.3

I.D. #MI92-0208

GEOSCIENCE CONSULTANTS LTD.
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0208
RECRA SAMPLE ID: BS000214
CLIENT SAMPLE ID: 9203101021

SAMPLE DATE: 03/10/92
ANALYSIS DATE: 03/19/92

COMPOUND (UNITS OF MEASURE = MG/KG)	RESULT	Q
VOLATILE/GASOLINE	2.3	

% DRY WEIGHT = 78.0

I.D. #MI92-0208

GEOSCIENCE CONSULTANTS LTD.
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0208
RECRA SAMPLE ID: BS000216
CLIENT SAMPLE ID: 9203101235

SAMPLE DATE: 03/10/92
ANALYSIS DATE: 03/19/92

COMPOUND (UNITS OF MEASURE = MG/KG)	RESULT	Q
VOLATILE/GASOLINE	2.0	

% DRY WEIGHT = 88.5

I.D. #MI92-0208

GEOSCIENCE CONSULTANTS LTD.
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0208
RECRA SAMPLE ID: BS000218
CLIENT SAMPLE ID: 9203101459

SAMPLE DATE: 03/10/92
ANALYSIS DATE: 03/19/92

COMPOUND (UNITS OF MEASURE = MG/KG)	RESULT	Q
VOLATILE/GASOLINE	0.6	

% DRY WEIGHT = 82.6

I.D. #MI92-0208

GEOSCIENCE CONSULTANTS LTD.
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0208
RECRA SAMPLE ID: AR001800 ANALYSIS DATE: 03/19/92
CLIENT SAMPLE ID: METHOD BLANK

COMPOUND (UNITS OF MEASURE = MG/KG)	RESULT	Q
VOLATILE/GASOLINE	0.5	U

I.D. #MI92-0208

GEOSCIENCE CONSULTANTS LTD.
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0208
RECRA SAMPLE ID: BS000210
CLIENT SAMPLE ID: 9203071143

SAMPLE DATE: 03/07/92
EXTRACTION DATE: 03/18/92
ANALYSIS DATE: 03/23/92

COMPOUND (UNITS OF MEASURE = MG/KG)	RESULT	Q
EXTRACTABLE/DIESEL	10	U

% DRY WEIGHT = 84.9

I.D. #MI92-0208

GEOSCIENCE CONSULTANTS LTD.
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0208
RECRA SAMPLE ID: BS000212
CLIENT SAMPLE ID: 9203100927

SAMPLE DATE: 03/10/92
EXTRACTION DATE: 03/18/92
ANALYSIS DATE: 03/23/92

COMPOUND (UNITS OF MEASURE = MG/KG)	RESULT	Q
EXTRACTABLE/DIESEL	10	U

% DRY WEIGHT = 81.3

I.D. #MI92-0208

GEOSCIENCE CONSULTANTS LTD.
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0208
RECRA SAMPLE ID: BS000214
CLIENT SAMPLE ID: 9203101021

SAMPLE DATE: 03/10/92
EXTRACTION DATE: 03/18/92
ANALYSIS DATE: 03/23/92

COMPOUND (UNITS OF MEASURE = MG/KG)	RESULT	Q
EXTRACTABLE/DIESEL	10	U

% DRY WEIGHT = 78.0

I.D. #MI92-0208

GEOSCIENCE CONSULTANTS LTD.
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0208
RECRA SAMPLE ID: BS000216
CLIENT SAMPLE ID: 9203101235

SAMPLE DATE: 03/10/92
EXTRACTION DATE: 03/18/92
ANALYSIS DATE: 03/23/92

COMPOUND (UNITS OF MEASURE = MG/KG)	RESULT	Q
EXTRACTABLE/DIESEL	10	U

% DRY WEIGHT = 88.5

I.D. #MI92-0208

GEOSCIENCE CONSULTANTS LTD.
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0208
RECRA SAMPLE ID: BS000218
CLIENT SAMPLE ID: 9203101459

SAMPLE DATE: 03/10/92
EXTRACTION DATE: 03/18/92
ANALYSIS DATE: 03/23/92

COMPOUND (UNITS OF MEASURE = MG/KG)	RESULT	Q
EXTRACTABLE/DIESEL	10	U

% DRY WEIGHT = 82.6

I.D. #MI92-0208

GEOSCIENCE CONSULTANTS LTD.
TOTAL PETROLEUM HYDROCARBONS
SOIL MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: MI92-0208
RECRA SAMPLE ID: AR001800
CLIENT SAMPLE ID: METHOD BLANK

EXTRACTION DATE: 03/18/92
ANALYSIS DATE: 03/20/92

COMPOUND (UNITS OF MEASURE = MG/KG)	RESULT	Q
EXTRACTABLE/DIESEL	10	U

INORGANIC DATA

GEOSCIENCE CONSULTANTS LTD.
SOIL MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0165
DESC BS000210
SAMPLE NO. 9203071143

SAMPLE DATE 03/07/92

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Lead	MG/KG	7420	03/19/92	31	
Total Mercury	MG/KG	7471	03/23/92	0.12	U

% DRY WEIGHT = 84.9

GEOSCIENCE CONSULTANTS LTD.
SOIL MATRIX
TOTAL METALS

75

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0165
DESC BS000212
SAMPLE NO. 9203100927

SAMPLE DATE 03/10/92

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Lead	MG/KG	7420	03/19/92	20	
Total Mercury	MG/KG	7471	03/23/92	0.25	

% DRY WEIGHT = 81.3

GEOSCIENCE CONSULTANTS LTD.
SOIL MATRIX
TOTAL METALS

76

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0165
DESC BS000214
SAMPLE NO. 9203101021

SAMPLE DATE 03/10/92

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Lead	MG/KG	7420	03/19/92	24	
Total Mercury	MG/KG	7471	03/23/92	0.24	

% DRY WEIGHT = 78.0

GEOSCIENCE CONSULTANTS LTD.
SOIL MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0165
DESC BS000216
SAMPLE NO. 9203101235

SAMPLE DATE 03/10/92

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Lead	MG/KG	7420	03/19/92	272	
Total Mercury	MG/KG	7471	03/23/92	0.23	

% DRY WEIGHT = 88.5

GEOSCIENCE CONSULTANTS LTD.
SOIL MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0165
DESC BS000218
SAMPLE NO. 9203101459

SAMPLE DATE 03/10/92

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Lead	MG/KG	7420	03/19/92	43	
Total Mercury	MG/KG	7471	03/23/92	0.12	U

% DRY WEIGHT = 82.6

GEOSCIENCE CONSULTANTS LTD.
SOIL MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0165
DESC AR001801
SAMPLE NO. METHOD BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Lead	MG/KG	7420	03/19/92	0.1	U
Total Mercury	MG/KG	7471	03/23/92	0.0008	U

GEOSCIENCE CONSULTANTS LTD.
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

89

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0165
DESC BS000210
SAMPLE NO. 9203071143

SAMPLE DATE 03/07/92

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	03/18/92	5.0	0.005	0.005	U
Total Barium	6010	03/23/92	100.0	0.19	0.23	
Total Cadmium	7130	03/20/92	1.0	0.01	0.01	U
Total Chromium	7190	03/23/92	5.0	0.01	0.01	U
Total Lead	7420	03/19/92	5.0	0.1	0.1	U
Total Mercury	7470	03/23/92	0.2	0.0008	0.0008	U
Total Selenium	7740	03/20/92	1.0	0.005	0.005	U
Total Silver	7760	03/17/92	5.0	0.007	0.007	L

MEASURED VALUES HAVE BEEN CORRECTED FOR ANALYTICAL BIAS BASED UPON MATRIX SPIKE RESULTS.

GEOSCIENCE CONSULTANTS LTD.
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

81

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0165 SAMPLE DATE 03/10/92
DESC BS000212
SAMPLE NO. 9203100927

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	03/18/92	5.0	0.005	0.005	U
Total Barium	6010	03/23/92	100.0	0.52	0.63	
Total Cadmium	7130	03/20/92	1.0	0.01	0.01	U
Total Chromium	7190	03/23/92	5.0	0.01	0.01	U
Total Lead	7420	03/19/92	5.0	0.1	0.1	G
Total Mercury	7470	03/23/92	0.2	0.0008	0.0008	U
Total Selenium	7740	03/20/92	1.0	0.005	0.005	U
Total Silver	7760	03/17/92	5.0	0.005	0.005	L

MEASURED VALUES HAVE BEEN CORRECTED FOR ANALYTICAL
BIAS BASED UPON MATRIX SPIKE RESULTS.

GEOSCIENCE CONSULTANTS LTD.
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0165
DESC BS000214
SAMPLE NO. 9203101021

SAMPLE DATE 03/10/92

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	03/18/92	5.0	0.005	0.005	U
Total Barium	6010	03/23/92	100.0	0.21	0.26	
Total Cadmium	7130	03/20/92	1.0	0.01	0.01	U
Total Chromium	7190	03/23/92	5.0	0.01	0.01	U
Total Lead	7420	03/19/92	5.0	0.1	0.1	U
Total Mercury	7470	03/23/92	0.2	0.0008	0.0008	U
Total Selenium	7740	03/20/92	1.0	0.005	0.005	U
Total Silver	7760	03/17/92	5.0	0.012	0.012	L

MEASURED VALUES HAVE BEEN CORRECTED FOR ANALYTICAL BIAS BASED UPON MATRIX SPIKE RESULTS.

GEOSCIENCE CONSULTANTS LTD.
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0165
DESC BS000216
SAMPLE NO. 9203101235

SAMPLE DATE 03/10/92

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	03/18/92	5.0	0.005	0.005	U
Total Barium	6010	03/23/92	100.0	0.65	0.79	
Total Cadmium	7130	03/20/92	1.0	0.014	0.014	
Total Chromium	7190	03/23/92	5.0	0.011	0.013	
Total Lead	7420	03/19/92	5.0	0.3	0.3	G
Total Mercury	7470	03/23/92	0.2	0.0008	0.0008	U
Total Selenium	7740	03/20/92	1.0	0.005	0.005	U
Total Silver	7760	03/17/92	5.0	0.01	0.01	L

MEASURED VALUES HAVE BEEN CORRECTED FOR ANALYTICAL BIAS BASED UPON MATRIX SPIKE RESULTS.

GEOSCIENCE CONSULTANTS LTD.
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

84

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0165
DESC BS000218
SAMPLE NO. 9203101459

SAMPLE DATE 03/10/92

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	03/18/92	5.0	0.005	0.005	U
Total Barium	6010	03/23/92	100.0	0.31	0.38	
Total Cadmium	7130	03/20/92	1.0	0.01	0.01	U
Total Chromium	7190	03/23/92	5.0	0.011	0.013	
Total Lead	7420	03/19/92	5.0	0.1	0.1	G
Total Mercury	7470	03/23/92	0.2	0.0008	0.0008	U
Total Selenium	7740	03/20/92	1.0	0.005	0.005	U
Total Silver	7760	03/17/92	5.0	0.009	0.009	L

MEASURED VALUES HAVE BEEN CORRECTED FOR ANALYTICAL BIAS BASED UPON MATRIX SPIKE RESULTS.

GEOSCIENCE CONSULTANTS LTD.
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0165
DESC AR001802
SAMPLE NO. METHOD BLANK

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	03/18/92	5.0	0.005	0.0	U
Total Barium	6010	03/23/92	100.0	0.1	0.0	U
Total Cadmium	7130	03/20/92	1.0	0.01	0.0	U
Total Chromium	7190	03/23/92	5.0	0.01	0.0	U
Total Lead	7420	03/19/92	5.0	0.1	0.0	U
Total Mercury	7470	03/23/92	0.2	0.0008	0.0	U
Total Selenium	7740	03/20/92	1.0	0.005	0.0	U
Total Silver	7760	03/17/92	5.0	0.005	0.0	U

GEOSCIENCE CONSULTANTS LTD.
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0165
DESC AR001803
SAMPLE NO. EBLK

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	03/18/92	5.0	0.005	0.0	U
Total Barium	6010	03/23/92	100.0	0.1	0.0	U
Total Cadmium	7130	03/20/92	1.0	0.01	0.0	U
Total Chromium	7190	03/23/92	5.0	0.01	0.0	U
Total Lead	7420	03/19/92	5.0	0.1	0.0	U
Total Mercury	7470	03/23/92	0.2	0.0008	0.0	U
Total Selenium	7740	03/20/92	1.0	0.005	0.0	U
Total Silver	7760	03/17/92	5.0	0.005	0.0	U

SAMPLE NO.:TCLP EXTRACTOR BLANK

MATRIX CORRECTION SPIKE
TCLP EXTRACT
TOTAL METALS

LAB NAME: RECRA ENVIRONMENTAL INC.
RECRA SAMPLE IDENTIFICATION BS000218
CLIENT SAMPLE IDENTIFICATION 9203101459

PARAMETER	METHOD NUMBER	PPM OF SPIKE	PERCENT RECOVERY	Q
Total Arsenic	7060	0.04	93	
Total Barium	6010	1.0	82	
Total Cadmium	7130	0.10	99	
Total Chromium	7190	0.40	84	
Total Lead	7420	1.0	112	G
Total Mercury	7470	0.5	105	G
Total Selenium	7740	0.02	38	L
Total Silver	7760	0.10	40	L

I.D. #OH92-0165

RECRA ENVIRONMENTAL INC.

Chemical and Environmental Analysis Services

April 4, 1992

Ms. Virginia Nicholson
H + GCL, Inc.
4221 Forbes Boulevard, Suite 240
Lanham, MD 20706

RE: Analytical Results

Dear Ms. Nicholson:

Please find enclosed results concerning the analyses of the samples recently submitted by your firm. The Pertinent Information regarding these analyses is listed below.

Quote #:	NY91-894
Project Name:	Plumbrook
Matrix:	Aqueous
Samples Received:	3/16/92
Sample Date:	3/14/92

If you have any questions concerning these data, please contact Ms. Julie Calvert Project Manager, Customer Service at (716) 691-2600 and refer to the I.D. number listed below. It has been our pleasure to provide H + GCL, Inc. with Environmental Testing Services. We look forward to serving you in the future.

Sincerely,

RECRA ENVIRONMENTAL, INC.

Kenneth C. Malinowski, PhD
Vice President

MKA/KCM/dms
Enclosure

I.D. #MD92-0061
#OH92-0180
#MI92-0225
#NY2A3916

CASE NARRATIVE

RECRA
ENVIRONMENTAL
INC.

ANALYTICAL RESULTS

Prepared For

H + GCL, Inc.
4221 Forbes Boulevard, Suite 240
Lanham, Maryland 20706

Prepared By

Recra Environmental, Inc.
10 Hazelwood Drive, Suite 106
Amherst, New York 14228-2298

METHODOLOGIES

The specific methodologies employed in obtaining the enclosed analytical results are indicated on the specific data table. The method numbers presented refer to the following U.S. Environmental Protection Agency reference.

* U.S. Environmental Protection Agency "Test Methods for Evaluating Solid Waste - Physical/Chemical Methods." Office of Solid Waste and Emergency Response. November 1986, SW-846,Third Edition.

COMMENTS

Comments pertain to data on one or all pages of this report.

The enclosed data has been reported utilizing USEPA data qualifiers (Q) as defined on the Organic and Inorganic Data Comment Pages.

Quality control analyses were performed on a batch basis. All results were within quality control limits.

VOLATILE DATA

Volatile Method Blank VBLKW1 exhibits contamination by TCL compound Methylene Chloride. The level of contamination falls below protocol allowable limits, therefore the associated data is both useable and compliant.

SEMIVOLATILE DATA

No deviations from protocol were observed during analyses.

PESTICIDE/PCB DATA

No deviations from protocol were observed during analyses.

TPH 8015 DATA

No deviations from protocol were observed during analysis.

HERBICIDE DATA

No deviations from protocol were observed during analysis.

METAL DATA

No deviations from protocol were observed during analysis.

CHAIN OF CUSTODY

354

Geoscience Consultants, Ltd.

☐ Albuquerque	☒ East Coast	☐ Rocky Mountain	☐ Las Cruces
500 Copper N.W.	4221 Forbes Blvd.,	13111 E. Briarwood Ave.,	P.O. Drawer MM
Suite 200	Suite 240	Suite 250	Las Cruces, NM 88004
Albuquerque, NM 87102	Lanham, MD 20706	Englewood, CO 80112	(505) 524-5364
(505) 842-0001	(301) 459-9677	(303) 649-9001	

№ 4903

Chain of Custody

DATE 3-14-97 PAGE 1 OF 1

LAB NAME RECRA ENVIRONMENTAL
ADDRESS 8330 Guilford Rd #F
Columbia, MD 21046
TELEPHONE 301-381-3288

SAMPLERS (SIGNATURE) B.U. Nicholas

SAMPLE NUMBER	MATRIX	LOCATION	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 608/8080	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418.1	TPH MODIFIED 8015	TCLP Metals	PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SDWA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE	Herbicides			NUMBER OF CONTAINERS
9203141121	H_2O	MW2A	X	X	X								X	X						+			7
9203141210	H_2O	MW2B	X	X	X								X	X						X			7
9203141300	H_2O	MW5	X	X	X								X	X						X			7
9203141317	H_2O	MW3	X	X	X								X	X						X			7
9203141528	H_2O	MW1	X	X	X								X	X						X			7
9203141714	H_2O	Trip Blank		X																			3

PROJECT INFORMATION	
PROJECT:	Nisa Plumbrook
PROJECT DIRECTOR	Nicholas
CHARGE CODE NO.	51033.01
SHIPPING ID. NO.	
VIA:	Hand deliver

SAMPLE RECEIPT	
TOTAL NO. OF CONTAINERS	38
CHAIN OF CUSTODY SEALS	Y
REC'D GOOD CONDITION/COLD	Y
CONFORMS TO RECORD	N
LAB NO.	

SPECIAL INSTRUCTIONS/COMMENTS:
one 40 ml vial for VOA and one 40 ml vial for TPH poured off of organics bottles, per sample, due to improper preservation of sample.

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
B.U. Nicholas 0900		
(Signature) (Time)	(Signature) (Time)	(Signature) (Time)
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) (Date)
TTGCL 3-16-97		
(Company)	(Company)	(Company)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3.**
Tracy Barbers		
(Signature) (Time) 0915	(Signature) (Time)	(Signature) (Time)
(Printed Name) (Date) 3/16/97	(Printed Name) (Date)	(Printed Name)
(Company) Rec	(Company)	ANALYTI C

DISTRIBUTION: WHITE, CANARY - LABORATORY • PINK - GEOSCIENCE CONSULTANTS, LTD.

VOLATILE DATA

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203141121

Job No.: MD92061

Lab ID: BS000247

Sample Vol.: 5.0 mL

File ID: AG905

Blank ID: VBLKW1

Date Sampled: 03/14/92

Level: LOW

Date Received: 03/16/92

Dilution Factor: 1

Date Analyzed: 03/17/92

COMPOUND	CONCENTRATION UNITS: ug/L
Chloromethane	10 U
Bromomethane	10 U
Vinyl Chloride	10 U
Chloroethane	10 U
Methylene Chloride	2 BJ
Acetone	46
Carbon Disulfide	5 U
1,1-Dichlorothene	5 U
1,1-Dichloroethane	5 U
1,2-Dichloroethene (total)	5 U
Chloroform	5 U
1,2-Dichloroethane	5 U
2-Butanone	10 U
1,1,1-Trichloroethane	5 U
Carbon Tetrachloride	5 U
Bromodichloromethane	5 U
1,2-Dichloropropane	5 U
1,3-Dichloropropene (cis)	5 U
Trichloroethene	5 U
Dibromochloromethane	5 U
1,1,2-Trichloroethane	5 U
Benzene	1 J
1,3-Dichloropropene (trans)	5 U
Bromoform	5 U
4-Methyl-2-Pentanone	10 U
2-Hexanone	10 U
Tetrachloroethene	5 U
1,1,2,2-Tetrachloroethane	5 U
Toluene	5 U
Chlorobenzene	5 U
Ethylbenzene	5 U
Styrene	5 U
Xylene (total)	5 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203141210

Job No.: MD92061

Lab ID: BS000248

Sample Vol.: 5.0 mL

File ID: AG906

Blank ID: VBLKW1

Date Sampled: 03/14/92

Level: LOW

Date Received: 03/16/92

Dilution Factor: 1

Date Analyzed: 03/17/92

COMPOUND	CONCENTRATION UNITS: ug/L
Chloromethane	10 U
Bromomethane	10 U
Vinyl Chloride	10 U
Chloroethane	10 U
Methylene Chloride	5 BJ
Acetone	24
Carbon Disulfide	5 U
1,1-Dichlorothene	5 U
1,1-Dichloroethane	5 U
1,2-Dichloroethene (total)	5 U
Chloroform	5 U
1,2-Dichloroethane	5 U
2-Butanone	10 U
1,1,1-Trichloroethane	5 U
Carbon Tetrachloride	5 U
Bromodichloromethane	5 U
1,2-Dichloropropane	5 U
1,3-Dichloropropene (cis)	5 U
Trichloroethene	5 U
Dibromochloromethane	5 U
1,1,2-Trichloroethane	5 U
Benzene	5 U
1,3-Dichloropropene (trans)	5 U
Bromoform	5 U
4-Methyl-2-Pentanone	10 U
2-Hexanone	10 U
Tetrachloroethene	5 U
1,1,2,2-Tetrachloroethane	5 U
Toluene	5 U
Chlorobenzene	5 U
Ethylbenzene	5 U
Styrene	5 U
Xylene (total)	5 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203141300

Job No.: MD92061

Lab ID: BS000249

Sample Vol.: 5.0 mL

File ID: AG907

Blank ID: VBLKW1

Date Sampled: 03/14/92

Level: LOW

Date Received: 03/16/92

Dilution Factor: 1

Date Analyzed: 03/17/92

COMPOUND	CONCENTRATION UNITS: ug/L
Chloromethane	10 U
Bromomethane	10 U
Vinyl Chloride	10 U
Chloroethane	10 U
Methylene Chloride	4 BJ
Acetone	9 J
Carbon Disulfide	5 U
1,1-Dichlorothene	5 U
1,1-Dichloroethane	5 U
1,2-Dichloroethene (total)	5 U
Chloroform	5 U
1,2-Dichloroethane	5 U
2-Butanone	10 U
1,1,1-Trichloroethane	5 U
Carbon Tetrachloride	5 U
Bromodichloromethane	5 U
1,2-Dichloropropane	5 U
1,3-Dichloropropene (cis)	5 U
Trichloroethene	5 U
Dibromochloromethane	5 U
1,1,2-Trichloroethane	5 U
Benzene	5 U
1,3-Dichloropropene (trans)	5 U
Bromoform	5 U
4-Methyl-2-Pentanone	10 U
2-Hexanone	10 U
Tetrachloroethene	5 U
1,1,2,2-Tetrachloroethane	5 U
Toluene	5 U
Chlorobenzene	5 U
Ethylbenzene	5 U
Styrene	5 U
Xylene (total)	5 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203141317

Job No.: MD92061

Lab ID: BS000250

Sample Vol.: 5.0 mL

File ID: AG908

Blank ID: VBLKW1

Date Sampled: 03/14/92

Level: LOW

Date Received: 03/16/92

Dilution Factor: 1

Date Analyzed: 03/17/92

COMPOUND	CONCENTRATION UNITS: ug/L
Chloromethane	10 U
Bromomethane	10 U
Vinyl Chloride	10 U
Chloroethane	10 U
Methylene Chloride	5 BJ
Acetone	27
Carbon Disulfide	5 U
1,1-Dichlorothene	5 U
1,1-Dichloroethane	5 U
1,2-Dichloroethene (total)	5 U
Chloroform	5 U
1,2-Dichloroethane	5 U
2-Butanone	10 U
1,1,1-Trichloroethane	5 U
Carbon Tetrachloride	5 U
Bromodichloromethane	5 U
1,2-Dichloropropane	5 U
1,3-Dichloropropene (cis)	5 U
Trichloroethene	5 U
Dibromochloromethane	5 U
1,1,2-Trichloroethane	5 U
Benzene	5 U
1,3-Dichloropropene (trans)	5 U
Bromoform	5 U
4-Methyl-2-Pentanone	10 U
2-Hexanone	10 U
Tetrachloroethene	5 U
1,1,2,2-Tetrachloroethane	5 U
Toluene	5 U
Chlorobenzene	5 U
Ethylbenzene	5 U
Styrene	5 U
Xylene (total)	5 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203141528

Job No.: MD92061

Lab ID: BS000251

Sample Vol.: 5.0 mL

File ID: AG909

Blank ID: VBLKW1

Date Sampled: 03/14/92

Level: LOW

Date Received: 03/16/92

Dilution Factor: 1

Date Analyzed: 03/17/92

COMPOUND	CONCENTRATION UNITS: ug/L
Chloromethane	10 U
Bromomethane	10 U
Vinyl Chloride	10 U
Chloroethane	10 U
Methylene Chloride	2 BJ
Acetone	10 U
Carbon Disulfide	5 U
1,1-Dichlorothene	5 U
1,1-Dichloroethane	5 U
1,2-Dichloroethene (total)	5 U
Chloroform	5 U
1,2-Dichloroethane	5 U
2-Butanone	10 U
1,1,1-Trichloroethane	5 U
Carbon Tetrachloride	5 U
Bromodichloromethane	5 U
1,2-Dichloropropane	5 U
1,3-Dichloropropene (cis)	5 U
Trichloroethene	5 U
Dibromochloromethane	5 U
1,1,2-Trichloroethane	5 U
Benzene	5 U
1,3-Dichloropropene (trans)	5 U
Bromoform	5 U
4-Methyl-2-Pentanone	10 U
2-Hexanone	10 U
Tetrachloroethene	5 U
1,1,2,2-Tetrachloroethane	5 U
Toluene	5 U
Chlorobenzene	5 U
Ethylbenzene	5 U
Styrene	5 U
Xylene (total)	5 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203141714

Job No.: MD92061

Lab ID: BS000252

Sample Vol.: 5.0 mL

File ID: AG910

Blank ID: VBLKW1

Date Sampled: 03/14/92

Level: LOW

Date Received: 03/16/92

Dilution Factor: 1

Date Analyzed: 03/17/92

COMPOUND	CONCENTRATION UNITS: ug/L
Chloromethane	10 U
Bromomethane	10 U
Vinyl Chloride	10 U
Chloroethane	10 U
Methylene Chloride	2 BJ
Acetone	10 U
Carbon Disulfide	5 U
1,1-Dichlorothene	5 U
1,1-Dichloroethane	5 U
1,2-Dichloroethene (total)	5 U
Chloroform	5 U
1,2-Dichloroethane	5 U
2-Butanone	10 U
1,1,1-Trichloroethane	5 U
Carbon Tetrachloride	5 U
Bromodichloromethane	5 U
1,2-Dichloropropane	5 U
1,3-Dichloropropene (cis)	5 U
Trichloroethene	5 U
Dibromochloromethane	5 U
1,1,2-Trichloroethane	5 U
Benzene	5 U
1,3-Dichloropropene (trans)	5 U
Bromoform	5 U
4-Methyl-2-Pentanone	10 U
2-Hexanone	10 U
Tetrachloroethene	5 U
1,1,2,2-Tetrachloroethane	5 U
Toluene	5 U
Chlorobenzene	5 U
Ethylbenzene	5 U
Styrene	5 U
Xylene (total)	5 U

RECRA ENVIRONMENTAL, INC.
VOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: VBLKW1

Job No.: MD92061

Lab ID: VBLKW1

Sample Vol.: 5.0 mL

File ID: AG904

Blank ID: VBLKW1

Date Sampled:

Level: LOW

Date Received:

Dilution Factor: 1

Date Analyzed: 03/17/92

COMPOUND	CONCENTRATION UNITS: ug/L
Chloromethane	10 U
Bromomethane	10 U
Vinyl Chloride	10 U
Chloroethane	10 U
Methylene Chloride	3 J
Acetone	10 U
Carbon Disulfide	5 U
1,1-Dichlorothene	5 U
1,1-Dichloroethane	5 U
1,2-Dichloroethene (total)	5 U
Chloroform	5 U
1,2-Dichloroethane	5 U
2-Butanone	10 U
1,1,1-Trichloroethane	5 U
Carbon Tetrachloride	5 U
Bromodichloromethane	5 U
1,2-Dichloropropane	5 U
1,3-Dichloropropene (cis)	5 U
Trichloroethene	5 U
Dibromochloromethane	5 U
1,1,2-Trichloroethane	5 U
Benzene	5 U
1,3-Dichloropropene (trans)	5 U
Bromoform	5 U
4-Methyl-2-Pentanone	10 U
2-Hexanone	10 U
Tetrachloroethene	5 U
1,1,2,2-Tetrachloroethane	5 U
Toluene	5 U
Chlorobenzene	5 U
Ethylbenzene	5 U
Styrene	5 U
Xylene (total)	5 U

RECRA ENVIRONMENTAL, INC.
VOLATILE SURROGATE RECOVERY
AQUEOUS MATRIX

Client: GEOSCIENCE

Job No.: MD92061

Level: LOW

	CLIENT SAMPLE NO.	S1 (TOL) #	S2 (BFB) #	S3 (DCE) #	OTHER	TOT OUT
1	9203141121	94	94	89		0
2	9203141210	90	92	89		0
3	9203141300	91	95	89		0
4	9203141317	93	98	90		0
5	9203141528	92	94	89		0
6	9203141714	95	97	92		0
7	VBLKW1	88	90	86		0
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						
21						
22						
23						
24						
25						

	QC LIMITS
S1 (TOL) = Toluene-d8	(88-110)
S2 (BFB) = Bromoflourobenzene	(86-115)
S3 (DCE) = 1,2-Dichloroethane-d4	(76-114)

\# Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

RECRA ENVIRONMENTAL, INC.
VOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Job No.: MD92061

Matrix: WATER

Instrument ID: 70011

File ID: XG903

Date Analyzed: 03/17/92

Time Analyzed: 1014

		IS1(BCM) AREA #	RT	IS2 (DFB) AREA #	RT	IS3 (CBZ) AREA #	RT
	12 HOUR STD	38946	8.72	127347	18.66	106447	23.46
	UPPER LIMIT	77892	9.22	254694	19.16	212894	23.96
	LOWER LIMIT	19473	8.22	63674	18.16	532234	22.96
	CLIENT SAMPLE NO.						
1	9203141121	39537	8.72	130901	18.65	108367	23.46
2	9203141210	37071	8.76	118170	18.69	97289	23.50
3	9203141300	35643	8.73	111560	18.66	91893	23.51
4	9203141317	35137	8.77	111066	18.70	88438	23.50
5	9203141528	34142	8.74	111031	18.67	90073	23.47
6	9203141714	31953	8.73	101238	18.65	82475	23.50
7	VBLKW1	41479	8.72	133387	18.65	110221	23.46
8							
9							
10							
11							
12							
13							
14							
15							
16							
17							
18							

IS1 (BCM) = Bromochloromethane
IS2 (DFB) = 1,4-Difluorobenzene
IS3 (CBZ) = Chlorobenzene

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

SEMIVOLATILE DATA

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

17

Client: GEOSCIENCE
Client ID: 9203141121

Job No.: MD92061
Lab ID: BS000247

Sample Vol.: 1000ml
File ID: GD014

Blank ID: SBLKW2
Date Sampled: 03/14/92

Level: LOW
Date Received: 03/16/92

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
Phenol	10 U
Bis(2-Chloroethyl)ether	10 U
2-Chlorophenol	10 U
1,3-Dichlorobenzene	10 U
1,4-Dichlorobenzene	10 U
1,2-Dichlorobenzene	10 U
2-Methylphenol	10 U
2,2'-oxybis(1-Chloropropane)	10 U
4-Methylphenol	10 U
N-Nitroso-di-n-propylamine	10 U
Hexachloroethane	10 U
Nitrobenzene	10 U
Isophorone	10 U
2-Nitrophenol	10 U
2,4-Dimethylphenol	10 U
Bis(2-Chloroethoxy)methane	10 U
2,4-Dichlorophenol	10 U
1,2,4-Trichlorobenzene	10 U
Naphthalene	10 U
4-Chloroaniline	10 U
Hexachlorobutadiene	10 U
4-Chloro-3-methylphenol	10 U
2-Methylnaphthalene	10 U
Hexachlorocyclopentadiene	10 U
2,4,6-Trichlorophenol	10 U
2,4,5-Trichlorophenol	50 U
2-Chloronaphthalene	10 U
2-Nitroaniline	50 U
Dimethylphthalate	10 U
Acenaphthylene	10 U
2,6-Dinitrotoluene	10 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: 9203141121

Job No.: MD92061
Lab ID: BS000247

Sample Vol.: 1000ml
File ID: GD014

Blank ID: SBLKW2
Date Sampled: 03/14/92

Level: LOW
Date Received: 03/16/92

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
3-Nitroaniline	50 U
Acenaphthene	10 U
2,4-Dinitrophenol	50 U
4-Nitrophenol	50 U
Dibenzofuran	10 U
2,4-Dinitrotoluene	10 U
Diethylphthalate	10 U
4-Chlorophenyl-phenylether	10 U
Fluorene	10 U
4-Nitroaniline	50 U
4,6-Dinitro-2-methylphenol	50 U
N-Nitrosodiphenylamine (1)	10 U
4-Bromophenyl-phenylether	10 U
Hexachlorobenzene	10 U
Pentachlorophenol	50 U
Phenanthrene	10 U
Anthracene	10 U
Carbazole	10 U
Di-n-butylphthalate	10 U
Fluoranthene	10 U
Pyrene	10 U
Butylbenzylphthalate	10 U
3,3'-Dichlorobenzidine	10 U
Benzo(a)anthracene	10 U
Chrysene	10 U
bis(2-Ethylhexyl)phthalate	10 U
Di-n-octylphthalate	10 U
Benzo(b)fluoranthene	10 U
Benzo(k)fluoranthene	10 U
Benzo(a)pyrene	10 U
Indeno(1,2,3-cd)pyrene	10 U
Dibenz(a,h)anthracene	10 U
Benzo(g,h,i)perylene	10 U

(1) - Cannot be separated from Diphenylamine

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: 9203141210

Job No.: MD92061
Lab ID: BS000248

Sample Vol.: 1000ml
File ID: GD015

Blank ID: SBLKW2
Date Sampled: 03/14/92

Level: LOW
Date Received: 03/16/92

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
Phenol	10 U
Bis(2-Chloroethyl)ether	10 U
2-Chlorophenol	10 U
1,3-Dichlorobenzene	10 U
1,4-Dichlorobenzene	10 U
1,2-Dichlorobenzene	10 U
2-Methylphenol	10 U
2,2'-oxybis(1-Chloropropane)	10 U
4-Methylphenol	10 U
N-Nitroso-di-n-propylamine	10 U
Hexachloroethane	10 U
Nitrobenzene	10 U
Isophorone	10 U
2-Nitrophenol	10 U
2,4-Dimethylphenol	10 U
Bis(2-Chloroethoxy)methane	10 U
2,4-Dichlorophenol	10 U
1,2,4-Trichlorobenzene	10 U
Naphthalene	10 U
4-Chloroaniline	10 U
Hexachlorobutadiene	10 U
4-Chloro-3-methylphenol	10 U
2-Methylnaphthalene	10 U
Hexachlorocyclopentadiene	10 U
2,4,6-Trichlorophenol	10 U
2,4,5-Trichlorophenol	50 U
2-Chloronaphthalene	10 U
2-Nitroaniline	50 U
Dimethylphthalate	10 U
Acenaphthylene	10 U
2,6-Dinitrotoluene	10 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: 9203141210

Job No.: MD92061
Lab ID: BS000248

Sample Vol.: 1000ml
File ID: GD015

Blank ID: SBLKW2
Date Sampled: 03/14/92

Level: LOW
Date Received: 03/16/92

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
3-Nitroaniline	50 U
Acenaphthene	10 U
2,4-Dinitrophenol	50 U
4-Nitrophenol	50 U
Dibenzofuran	10 U
2,4-Dinitrotoluene	10 U
Diethylphthalate	10 U
4-Chlorophenyl-phenylether	10 U
Fluorene	10 U
4-Nitroaniline	50 U
4,6-Dinitro-2-methylphenol	50 U
N-Nitrosodiphenylamine (1)	10 U
4-Bromophenyl-phenylether	10 U
Hexachlorobenzene	10 U
Pentachlorophenol	50 U
Phenanthrene	10 U
Anthracene	10 U
Carbazole	10 U
Di-n-butylphthalate	10 U
Fluoranthene	10 U
Pyrene	10 U
Butylbenzylphthalate	10 U
3,3'-Dichlorobenzidine	10 U
Benzo(a)anthracene	10 U
Chrysene	10 U
bis(2-Ethylhexyl)phthalate	10 U
Di-n-octylphthalate	10 U
Benzo(b)fluoranthene	10 U
Benzo(k)fluoranthene	10 U
Benzo(a)pyrene	10 U
Indeno(1,2,3-cd)pyrene	10 U
Dibenz(a,h)anthracene	10 U
Benzo(g,h,i)perylene	10 U

(1) - Cannot be separated from Diphenylamine

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RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: 9203141300

Job No.: MD92061
Lab ID: BS000249

Sample Vol.: 910ml
File ID: BF201

Blank ID: SBLKW1
Date Sampled: 03/14/92

Level: LOW
Date Received: 03/16/92

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
Phenol	11 U
Bis(2-Chloroethyl)ether	11 U
2-Chlorophenol	11 U
1,3-Dichlorobenzene	11 U
1,4-Dichlorobenzene	11 U
1,2-Dichlorobenzene	11 U
2-Methylphenol	11 U
2,2'-oxybis(1-Chloropropane)	11 U
4-Methylphenol	11 U
N-Nitroso-di-n-propylamine	11 U
Hexachloroethane	11 U
Nitrobenzene	11 U
Isophorone	11 U
2-Nitrophenol	11 U
2,4-Dimethylphenol	11 U
Bis(2-Chloroethoxy)methane	11 U
2,4-Dichlorophenol	11 U
1,2,4-Trichlorobenzene	11 U
Naphthalene	11 U
4-Chloroaniline	11 U
Hexachlorobutadiene	11 U
4-Chloro-3-methylphenol	11 U
2-Methylnaphthalene	11 U
Hexachlorocyclopentadiene	11 U
2,4,6-Trichlorophenol	11 U
2,4,5-Trichlorophenol	55 U
2-Chloronaphthalene	11 U
2-Nitroaniline	55 U
Dimethylphthalate	11 U
Acenaphthylene	11 U
2,6-Dinitrotoluene	11 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: 9203141300

Job No.: MD92061
Lab ID: BS000249

Sample Vol.: 910ml
File ID: BF201

Blank ID: SBLKW1
Date Sampled: 03/14/92

Level: LOW
Date Received: 03/16/92

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
3-Nitroaniline	55 U
Acenaphthene	11 U
2,4-Dinitrophenol	55 U
4-Nitrophenol	55 U
Dibenzofuran	11 U
2,4-Dinitrotoluene	11 U
Diethylphthalate	11 U
4-Chlorophenyl-phenylether	11 U
Fluorene	11 U
4-Nitroaniline	55 U
4,6-Dinitro-2-methylphenol	55 U
N-Nitrosodiphenylamine (1)	11 U
4-Bromophenyl-phenylether	11 U
Hexachlorobenzene	11 U
Pentachlorophenol	55 U
Phenanthrene	11 U
Anthracene	11 U
Carbazole	11 U
Di-n-butylphthalate	11 U
Fluoranthene	11 U
Pyrene	11 U
Butylbenzylphthalate	11 U
3,3'-Dichlorobenzidine	11 U
Benzo(a)anthracene	11 U
Chrysene	11 U
bis(2-Ethylhexyl)phthalate	11 U
Di-n-octylphthalate	11 U
Benzo(b)fluoranthene	11 U
Benzo(k)fluoranthene	11 U
Benzo(a)pyrene	11 U
Indeno(1,2,3-cd)pyrene	11 U
Dibenz(a,h)anthracene	11 U
Benzo(g,h,i)perylene	11 U

(1) - Cannot be separated from Diphenylamine .....

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

23

Client: GEOSCIENCE
Client ID: 9203141317

Job No.: MD92061
Lab ID: BS000250

Sample Vol.: 930ml
File ID: BF202

Blank ID: SBLKW1
Date Sampled: 03/14/92

Level: LOW
Date Received: 03/16/92

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
Phenol	11 U
Bis(2-Chloroethyl)ether	11 U
2-Chlorophenol	11 U
1,3-Dichlorobenzene	11 U
1,4-Dichlorobenzene	11 U
1,2-Dichlorobenzene	11 U
2-Methylphenol	11 U
2,2'-oxybis(1-Chloropropane)	11 U
4-Methylphenol	11 U
N-Nitroso-di-n-propylamine	11 U
Hexachloroethane	11 U
Nitrobenzene	11 U
Isophorone	11 U
2-Nitrophenol	11 U
2,4-Dimethylphenol	11 U
Bis(2-Chloroethoxy)methane	11 U
2,4-Dichlorophenol	11 U
1,2,4-Trichlorobenzene	11 U
Naphthalene	11 U
4-Chloroaniline	11 U
Hexachlorobutadiene	11 U
4-Chloro-3-methylphenol	11 U
2-Methylnaphthalene	11 U
Hexachlorocyclopentadiene	11 U
2,4,6-Trichlorophenol	11 U
2,4,5-Trichlorophenol	54 U
2-Chloronaphthalene	11 U
2-Nitroaniline	54 U
Dimethylphthalate	11 U
Acenaphthylene	11 U
2,6-Dinitrotoluene	11 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: 9203141317

Job No.: MD92061
Lab ID: BS000250

Sample Vol.: 930ml
File ID: BF202

Blank ID: SBLKW1
Date Sampled: 03/14/92

Level: LOW
Date Received: 03/16/92

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
3-Nitroaniline	54 U
Acenaphthene	11 U
2,4-Dinitrophenol	54 U
4-Nitrophenol	54 U
Dibenzofuran	11 U
2,4-Dinitrotoluene	11 U
Diethylphthalate	11 U
4-Chlorophenyl-phenylether	11 U
Fluorene	11 U
4-Nitroaniline	54 U
4,6-Dinitro-2-methylphenol	54 U
N-Nitrosodiphenylamine (1)	11 U
4-Bromophenyl-phenylether	11 U
Hexachlorobenzene	11 U
Pentachlorophenol	54 U
Phenanthrene	11 U
Anthracene	11 U
Carbazole	11 U
Di-n-butylphthalate	11 U
Fluoranthene	11 U
Pyrene	11 U
Butylbenzylphthalate	11 U
3,3'-Dichlorobenzidine	11 U
Benzo(a)anthracene	11 U
Chrysene	11 U
bis(2-Ethylhexyl)phthalate	11 U
Di-n-octylphthalate	11 U
Benzo(b)fluoranthene	11 U
Benzo(k)fluoranthene	11 U
Benzo(a)pyrene	11 U
Indeno(1,2,3-cd)pyrene	11 U
Dibenz(a,h)anthracene	11 U
Benzo(g,h,i)perylene	11 U

(1) - Cannot be separated from Diphenylamine .....

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: 9203141528

Job No.: MD92061
Lab ID: BS000251

Sample Vol.: 900ml
File ID: GD017

Blank ID: SBLKW2
Date Sampled: 03/14/92

Level: LOW
Date Received: 03/16/92

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
Phenol	11 U
Bis(2-Chloroethyl)ether	11 U
2-Chlorophenol	11 U
1,3-Dichlorobenzene	11 U
1,4-Dichlorobenzene	11 U
1,2-Dichlorobenzene	11 U
2-Methylphenol	11 U
2,2'-oxybis(1-Chloropropane)	11 U
4-Methylphenol	11 U
N-Nitroso-di-n-propylamine	11 U
Hexachloroethane	11 U
Nitrobenzene	11 U
Isophorone	11 U
2-Nitrophenol	11 U
2,4-Dimethylphenol	11 U
Bis(2-Chloroethoxy)methane	11 U
2,4-Dichlorophenol	11 U
1,2,4-Trichlorobenzene	11 U
Naphthalene	11 U
4-Chloroaniline	11 U
Hexachlorobutadiene	11 U
4-Chloro-3-methylphenol	11 U
2-Methylnaphthalene	11 U
Hexachlorocyclopentadiene	11 U
2,4,6-Trichlorophenol	11 U
2,4,5-Trichlorophenol	56 U
2-Chloronaphthalene	11 U
2-Nitroaniline	56 U
Dimethylphthalate	11 U
Acenaphthylene	11 U
2,6-Dinitrotoluene	11 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: 9203141528

Job No.: MD92061
Lab ID: BS000251

Sample Vol.: 900ml
File ID: GD017

Blank ID: SBLKW2
Date Sampled: 03/14/92

Level: LOW
Date Received: 03/16/92

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
3-Nitroaniline	56 U
Acenaphthene	11 U
2,4-Dinitrophenol	56 U
4-Nitrophenol	56 U
Dibenzofuran	11 U
2,4-Dinitrotoluene	11 U
Diethylphthalate	11 U
4-Chlorophenyl-phenylether	11 U
Fluorene	11 U
4-Nitroaniline	56 U
4,6-Dinitro-2-methylphenol	56 U
N-Nitrosodiphenylamine (1)	11 U
4-Bromophenyl-phenylether	11 U
Hexachlorobenzene	11 U
Pentachlorophenol	56 U
Phenanthrene	11 U
Anthracene	11 U
Carbazole	11 U
Di-n-butylphthalate	11 U
Fluoranthene	11 U
Pyrene	11 U
Butylbenzylphthalate	11 U
3,3'-Dichlorobenzidine	11 U
Benzo(a)anthracene	11 U
Chrysene	11 U
bis(2-Ethylhexyl)phthalate	11 U
Di-n-octylphthalate	11 U
Benzo(b)fluoranthene	11 U
Benzo(k)fluoranthene	11 U
Benzo(a)pyrene	11 U
Indeno(1,2,3-cd)pyrene	11 U
Dibenz(a,h)anthracene	11 U
Benzo(g,h,i)perylene	11 U

(1) - Cannot be separated from Diphenylamine .....

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

27

Client: GEOSCIENCE | Client ID: SBLKW1

Job No.: MD92061 | Lab ID: SBLKW1

Sample Vol.: 1000ml | File ID: BF200

Blank ID: SBLKW1 | Date Sampled:

Level: LOW | Date Received:

GPC Cleanup: NO | Date Extracted: 03/18/92

Dilution Factor: 1 | Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
Phenol	10 U
Bis(2-Chloroethyl)ether	10 U
2-Chlorophenol	10 U
1,3-Dichlorobenzene	10 U
1,4-Dichlorobenzene	10 U
1,2-Dichlorobenzene	10 U
2-Methylphenol	10 U
2,2'-oxybis(1-Chloropropane)	10 U
4-Methylphenol	10 U
N-Nitroso-di-n-propylamine	10 U
Hexachloroethane	10 U
Nitrobenzene	10 U
Isophorone	10 U
2-Nitrophenol	10 U
2,4-Dimethylphenol	10 U
Bis(2-Chloroethoxy)methane	10 U
2,4-Dichlorophenol	10 U
1,2,4-Trichlorobenzene	10 U
Naphthalene	10 U
4-Chloroaniline	10 U
Hexachlorobutadiene	10 U
4-Chloro-3-methylphenol	10 U
2-Methylnaphthalene	10 U
Hexachlorocyclopentadiene	10 U
2,4,6-Trichlorophenol	10 U
2,4,5-Trichlorophenol	50 U
2-Chloronaphthalene	10 U
2-Nitroaniline	50 U
Dimethylphthalate	10 U
Acenaphthylene	10 U
2,6-Dinitrotoluene	10 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: SBLKW1

Job No.: MD92061
Lab ID: SBLKW1

Sample Vol.: 1000ml
File ID: BF200

Blank ID: SBLKW1
Date Sampled:

Level: LOW
Date Received:

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
3-Nitroaniline	50 U
Acenaphthene	10 U
2,4-Dinitrophenol	50 U
4-Nitrophenol	50 U
Dibenzofuran	10 U
2,4-Dinitrotoluene	10 U
Diethylphthalate	10 U
4-Chlorophenyl-phenylether	10 U
Fluorene	10 U
4-Nitroaniline	50 U
4,6-Dinitro-2-methylphenol	50 U
N-Nitrosodiphenylamine (1)	10 U
4-Bromophenyl-phenylether	10 U
Hexachlorobenzene	10 U
Pentachlorophenol	50 U
Phenanthrene	10 U
Anthracene	10 U
Carbazole	10 U
Di-n-butylphthalate	10 U
Fluoranthene	10 U
Pyrene	10 U
Butylbenzylphthalate	10 U
3,3'-Dichlorobenzidine	10 U
Benzo(a)anthracene	10 U
Chrysene	10 U
bis(2-Ethylhexyl)phthalate	10 U
Di-n-octylphthalate	10 U
Benzo(b)fluoranthene	10 U
Benzo(k)fluoranthene	10 U
Benzo(a)pyrene	10 U
Indeno(1,2,3-cd)pyrene	10 U
Dibenz(a,h)anthracene	10 U
Benzo(g,h,i)perylene	10 U

(1) - Cannot be separated from Diphenylamine

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: SBLKW2

Job No.: MD92061
Lab ID: SBLKW2

Sample Vol.: 1000ml
File ID: GD012

Blank ID: SBLKW2
Date Sampled:

Level: LOW
Date Received:

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
Phenol	10 U
Bis(2-Chloroethyl)ether	10 U
2-Chlorophenol	10 U
1,3-Dichlorobenzene	10 U
1,4-Dichlorobenzene	10 U
1,2-Dichlorobenzene	10 U
2-Methylphenol	10 U
2,2'-oxybis(1-Chloropropane)	10 U
4-Methylphenol	10 U
N-Nitroso-di-n-propylamine	10 U
Hexachloroethane	10 U
Nitrobenzene	10 U
Isophorone	10 U
2-Nitrophenol	10 U
2,4-Dimethylphenol	10 U
Bis(2-Chloroethoxy)methane	10 U
2,4-Dichlorophenol	10 U
1,2,4-Trichlorobenzene	10 U
Naphthalene	10 U
4-Chloroaniline	10 U
Hexachlorobutadiene	10 U
4-Chloro-3-methylphenol	10 U
2-Methylnaphthalene	10 U
Hexachlorocyclopentadiene	10 U
2,4,6-Trichlorophenol	10 U
2,4,5-Trichlorophenol	50 U
2-Chloronaphthalene	10 U
2-Nitroaniline	50 U
Dimethylphthalate	10 U
Acenaphthylene	10 U
2,6-Dinitrotoluene	10 U

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE
Client ID: SBLKW2

Job No.: MD92061
Lab ID: SBLKW2

Sample Vol.: 1000ml
File ID: GD012

Blank ID: SBLKW2
Date Sampled:

Level: LOW
Date Received:

GPC Cleanup: NO
Date Extracted: 03/18/92

Dilution Factor: 1
Date Analyzed: 03/19/92

COMPOUND	CONCENTRATION UNITS: ug/L
3-Nitroaniline	50 U
Acenaphthene	10 U
2,4-Dinitrophenol	50 U
4-Nitrophenol	50 U
Dibenzofuran	10 U
2,4-Dinitrotoluene	10 U
Diethylphthalate	10 U
4-Chlorophenyl-phenylether	10 U
Fluorene	10 U
4-Nitroaniline	50 U
4,6-Dinitro-2-methylphenol	50 U
N-Nitrosodiphenylamine (1)	10 U
4-Bromophenyl-phenylether	10 U
Hexachlorobenzene	10 U
Pentachlorophenol	50 U
Phenanthrene	10 U
Anthracene	10 U
Carbazole	10 U
Di-n-butylphthalate	10 U
Fluoranthene	10 U
Pyrene	10 U
Butylbenzylphthalate	10 U
3,3'-Dichlorobenzidine	10 U
Benzo(a)anthracene	10 U
Chrysene	10 U
bis(2-Ethylhexyl)phthalate	10 U
Di-n-octylphthalate	10 U
Benzo(b)fluoranthene	10 U
Benzo(k)fluoranthene	10 U
Benzo(a)pyrene	10 U
Indeno(1,2,3-cd)pyrene	10 U
Dibenz(a,h)anthracene	10 U
Benzo(g,h,i)perylene	10 U

(1) - Cannot be separated from Diphenylamine .....

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE SURROGATE RECOVERY
AQUEOUS MATRIX

Client: GEOSCIENCE

Job No.: MD92061

Level: LOW

	CLIENT SAMPLE ID	S1 (NBZ) #	S2 (FBP) #	S3 (TPH) #	S4 (PHL) #	S5 (2FP) #	S6 (TBP) #	TOT OUT
1	9203141121	77	67	100	29	38	70	0
2	9203141210	82	69	99	27	35	61	0
3	9203141300	71	65	101	26	33	61	0
4	9203141317	75	67	96	26	33	61	0
5	9203141528	75	69	107	31	41	69	0
6	SBLKW1	70	65	90	30	39	67	0
7	SBLKW2	73	66	106	33	43	68	0
8								
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22								
23								
24								
25								

	QC LIMITS
S1 (NBZ) = Nitrobenzene-d5	(35-114)
S2 (FBP) = 2- Fluorobiphenyl	(43-116)
S3 (TPH) = Terphenyl-d14	(33-141)
S4 (PHL) = Phenol-d6	(10-94)
S5 (2FP) = 2-Fluorophenol	(21-100)
S6 (TBP) = 2,4,6-Tribromophenol	(10-123)

\# Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Job No.: MD92061

Matrix: WATER

Level: LOW

Instrument ID: 700202

File ID: YF199

Date Analyzed: 03/19/92

Time Analyzed: 1022

		IS1(DCB) AREA #	RT	IS2 (NPT) AREA #	RT	IS3 (ANT) AREA #	RT
	12 HOUR STD	66097	9.72	253816	12.86	146909	17.49
	UPPER LIMIT	132194	10.22	507632	13.36	293818	17.99
	LOWER LIMIT	33048	9.22	126908	12.36	73454	16.99
	EPA SAMPLE NO.						
1	9203141300	83160	9.73	301515	12.86	159815	17.49
2	9203141317	84023	9.72	297104	12.86	159406	17.49
3	SBLKW1	80118	9.73	284003	12.87	154002	17.49
4							
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6							
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13							
14							
15							
16							
17							
18							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Instrument ID : 700202

Job No.: MD92061

File ID: YF199

Matrix: WATER

Date Analyzed: 03/19/92

Level: LOW

Time Analyzed: 1022

		IS4(PHN) AREA	#	RT	IS5(CRY) AREA	#	RT	IS6(PRY) AREA	#	RT
	12 HOUR STD	182095		21.41	62822		28.49	38694		32.85
	UPPER LIMIT	364190		21.91	125644		28.99	77388		33.35
	LOWER LIMIT	91048		20.91	31411		27.99	19347		32.35
	EPA SAMPLE NO.									
1	9203141300	190704		21.40	40550		28.48	25358		32.86
2	9203141317	187523		21.40	43777		28.49	26015		32.86
3	SBLKW1	183054		21.40	46598		28.49	32164		32.87
4										
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10										
11										
12										
13										
14										
15										
16										
17										
18										

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Instrument ID: 700606

Job No.: MD92061

File ID: WD011

Matrix: WATER

Date Analyzed: 03/19/92

Level: LOW

Time Analyzed: 1030

		IS1(DCB) AREA #	RT	IS2 (NPT) AREA #	RT	IS3 (ANT) AREA #	RT
	12 HOUR STD	46666	8.93	161681	12.00	87052	16.53
	UPPER LIMIT	93332	9.43	323362	12.50	174104	17.03
	LOWER LIMIT	23333	8.43	80840	11.50	43526	16.03
	EPA SAMPLE NO.						
1	9203141121	47676	8.93	155449	11.99	86470	16.53
2	9203141210	52249	8.92	173676	11.99	95344	16.53
3	9203141528	54684	8.92	176056	11.98	92266	16.52
4	SBLKW2	55402	8.93	185166	12.00	99434	16.54
5							
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12							
13							
14							
15							
16							
17							
18							

IS1 (DCB) = 1,4-Dichlorobenzene-d4
IS2 (NPT) = Naphthalene-d8
IS3 (ANT) = Acenaphthene-d10

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

RECRA ENVIRONMENTAL, INC.
SEMIVOLATILE INTERNAL STANDARD AREA SUMMARY

Client: GEOSCIENCE

Instrument ID : 700606

Job No.: MD92061

File ID: WD011

Matrix: WATER

Date Analyzed: 03/19/92

Level: LOW

Time Analyzed: 1030

		IS4(PHN) AREA	#	RT	IS5(CRY) AREA	#	RT	IS6(PRY) AREA	#	RT
	12 HOUR STD	139756		20.38	117340		27.35	72162		31.11
	UPPER LIMIT	279512		20.88	234680		27.85	144324		31.61
	LOWER LIMIT	69878		19.88	58670		26.85	36081		30.61
	EPA SAMPLE NO.									
1	9203141121	126394		20.37	86357		27.34	58057		31.10
2	9203141210	134445		20.37	86206		27.34	58914		31.10
3	9203141528	116829		20.36	66533		27.33	56369		31.09
4	SBLKW2	133247		20.38	70330		27.35	60011		31.11
5										
6										
7										
8										
9										
10										
11										
12										
13										
14										
15										
16										
17										
18										

IS4 (PHN) = Phenanthrene-d10
IS5 (CRY) = Chrysene-d12
IS6 (PRY) = Perylene-d12

UPPER LIMIT = + 100% of internal standard area.
LOWER LIMIT = - 50% of internal standard area.

Column used to flag internal standard area values with an asterisk

PESTICIDE/PCB DATA

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203141121

Job No.: MD92061

Lab ID: BS000247

Sample Vol: 940ml

Date Sampled: 03/14/92

Blank ID: PBLK1

Date Received: 03/16/92

Level: LOW

Date Extracted: 03/18/92

Dilution Factor: 1

Date Analyzed: 03/21/92

GPC Cleanup: NO

COMPOUND	CONCENTRATION UNITS: ug/L
alpha-BHC	0.05 U
beta-BHC	0.05 U
delta-BHC	0.05 U
gamma-BHC (Lindane)	0.05 U
Heptachlor	0.05 U
Aldrin	0.05 U
Heptachlor epoxide	0.05 U
Endosulfan I	0.05 U
Dieldrin	0.11 U
4,4'-DDE	0.11 U
Endrin	0.11 U
Endosulfan II	0.11 U
4,4'-DDD	0.11 U
Endosulfan sulfate	0.11 U
4,4'-DDT	0.11 U
Methoxychlor	0.53 U
Endrin ketone	0.11 U
Endrin aldehyde	0.11 U
alpha -chlordane	0.53 U
gamma -chlordane	0.53 U
Toxaphene	1.1 U
PCB-1016	0.53 U
PCB-1221	0.53 U
PCB-1232	0.53 U
PCB-1242	0.53 U
PCB-1248	0.53 U
PCB-1254	1.1 U
PCB-1260	1.1 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203141210

Job No.: MD92061

Lab ID: BS000248

Sample Vol: 1000ml

Date Sampled: 03/14/92

Blank ID: PBLK1

Date Received: 03/16/92

Level: LOW

Date Extracted: 03/18/92

Dilution Factor: 1

Date Analyzed: 03/21/92

GPC Cleanup: NO

COMPOUND	CONCENTRATION UNITS: ug/L
alpha-BHC	0.05 U
beta-BHC	0.05 U
delta-BHC	0.05 U
gamma-BHC (Lindane)	0.05 U
Heptachlor	0.05 U
Aldrin	0.05 U
Heptachlor epoxide	0.05 U
Endosulfan I	0.05 U
Dieldrin	0.1 U
4,4'-DDE	0.1 U
Endrin	0.1 U
Endosulfan II	0.1 U
4,4'-DDD	0.1 U
Endosulfan sulfate	0.1 U
4,4'-DDT	0.1 U
Methoxychlor	0.5 U
Endrin ketone	0.1 U
Endrin aldehyde	0.1 U
alpha -chlordane	0.5 U
gamma -chlordane	0.5 U
Toxaphene	1 U
PCB-1016	0.5 U
PCB-1221	0.5 U
PCB-1232	0.5 U
PCB-1242	0.5 U
PCB-1248	0.5 U
PCB-1254	1 U
PCB-1260	1 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203141300

Job No.: MD92061

Lab ID: BS000249

Sample Vol: 1000ml

Date Sampled: 03/14/92

Blank ID: PBLK1

Date Received: 03/16/92

Level: LOW

Date Extracted: 03/18/92

Dilution Factor: 1

Date Analyzed: 03/21/92

GPC Cleanup: NO

COMPOUND	CONCENTRATION UNITS: ug/L
alpha-BHC	0.05 U
beta-BHC	0.05 U
delta-BHC	0.05 U
gamma-BHC (Lindane)	0.05 U
Heptachlor	0.05 U
Aldrin	0.05 U
Heptachlor epoxide	0.05 U
Endosulfan I	0.05 U
Dieldrin	0.1 U
4,4'-DDE	0.1 U
Endrin	0.1 U
Endosulfan II	0.1 U
4,4'-DDD	0.1 U
Endosulfan sulfate	0.1 U
4,4'-DDT	0.1 U
Methoxychlor	0.5 U
Endrin ketone	0.1 U
Endrin aldehyde	0.1 U
alpha -chlordane	0.5 U
gamma -chlordane	0.5 U
Toxaphene	1 U
PCB-1016	0.5 U
PCB-1221	0.5 U
PCB-1232	0.5 U
PCB-1242	0.5 U
PCB-1248	0.5 U
PCB-1254	1 U
PCB-1260	1 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203141317

Job No.: MD92061

Lab ID: BS000250

Sample Vol: 910ml

Date Sampled: 03/14/92

Blank ID: PBLK1

Date Received: 03/16/92

Level: LOW

Date Extracted: 03/18/92

Dilution Factor: 1

Date Analyzed: 03/21/92

GPC Cleanup: NO

COMPOUND	CONCENTRATION UNITS: ug/L
alpha-BHC	0.05 U
beta-BHC	0.05 U
delta-BHC	0.05 U
gamma-BHC (Lindane)	0.05 U
Heptachlor	0.05 U
Aldrin	0.05 U
Heptachlor epoxide	0.05 U
Endosulfan I	0.05 U
Dieldrin	0.11 U
4,4'-DDE	0.11 U
Endrin	0.11 U
Endosulfan II	0.11 U
4,4'-DDD	0.11 U
Endosulfan sulfate	0.11 U
4,4'-DDT	0.11 U
Methoxychlor	0.55 U
Endrin ketone	0.11 U
Endrin aldehyde	0.11 U
alpha -chlordane	0.55 U
gamma -chlordane	0.55 U
Toxaphene	1.1 U
PCB-1016	0.55 U
PCB-1221	0.55 U
PCB-1232	0.55 U
PCB-1242	0.55 U
PCB-1248	0.55 U
PCB-1254	1.1 U
PCB-1260	1.1 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203141528

Job No.: MD92061

Lab ID: BS000251

Sample Vol: 1000ml

Date Sampled: 03/14/92

Blank ID: PBLK1

Date Received: 03/16/92

Level: LOW

Date Extracted: 03/18/92

Dilution Factor: 1

Date Analyzed: 03/21/92

GPC Cleanup: NO

COMPOUND	CONCENTRATION UNITS: ug/L
alpha-BHC	0.05 U
beta-BHC	0.05 U
delta-BHC	0.05 U
gamma-BHC (Lindane)	0.05 U
Heptachlor	0.05 U
Aldrin	0.05 U
Heptachlor epoxide	0.05 U
Endosulfan I	0.05 U
Dieldrin	0.1 U
4,4'-DDE	0.1 U
Endrin	0.1 U
Endosulfan II	0.1 U
4,4'-DDD	0.1 U
Endosulfan sulfate	0.1 U
4,4'-DDT	0.1 U
Methoxychlor	0.5 U
Endrin ketone	0.1 U
Endrin aldehyde	0.1 U
alpha -chlordane	0.5 U
gamma -chlordane	0.5 U
Toxaphene	1 U
PCB-1016	0.5 U
PCB-1221	0.5 U
PCB-1232	0.5 U
PCB-1242	0.5 U
PCB-1248	0.5 U
PCB-1254	1 U
PCB-1260	1 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE/PCB ANALYSIS - TARGET COMPOUND LIST
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: PBLK1

Job No.: MD92061

Lab ID: PBLK1

Sample Vol: 1000ml

Date Sampled:

Blank ID: PBLK1

Date Received:

Level: LOW

Date Extracted: 03/18/92

Dilution Factor: 1

Date Analyzed: 03/21/92

GPC Cleanup: NO

COMPOUND	CONCENTRATION UNITS: ug/L
alpha-BHC	0.05 U
beta-BHC	0.05 U
delta-BHC	0.05 U
gamma-BHC (Lindane)	0.05 U
Heptachlor	0.05 U
Aldrin	0.05 U
Heptachlor epoxide	0.05 U
Endosulfan I	0.05 U
Dieldrin	0.1 U
4,4'-DDE	0.1 U
Endrin	0.1 U
Endosulfan II	0.1 U
4,4'-DDD	0.1 U
Endosulfan sulfate	0.1 U
4,4'-DDT	0.1 U
Methoxychlor	0.5 U
Endrin ketone	0.1 U
Endrin aldehyde	0.1 U
alpha -chlordane	0.5 U
gamma -chlordane	0.5 U
Toxaphene	1 U
PCB-1016	0.5 U
PCB-1221	0.5 U
PCB-1232	0.5 U
PCB-1242	0.5 U
PCB-1248	0.5 U
PCB-1254	1 U
PCB-1260	1 U

RECRA ENVIRONMENTAL, INC.
PESTICIDE SURROGATE RECOVERY
AQUEOUS MATRIX

Client: GEOSCIENCE

Job No.: MD92061

Level: LOW

	CLIENT SAMPLE NO.	S1 (DBC) #	OTHER
1	9203141121	97	
2	9203141210	68	
3	9203141300	92	
4	9203141317	87	
5	9203141528	81	
6	PBLK1	95	
7			
8			
9			
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13			
14			
15			
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17			
18			
19			
20			
21			
22			
23			
24			
25			

QC LIMITS

S1 (DBC) = Dibutylchlorendate (24-154)

Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

HERBICIDE DATA

RECRA ENVIRONMENTAL, INC.
HERBICIDE ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203141121

Job No.: MD92061

Lab ID: BS000247

Sample Vol.: 1000 ml

Date Extracted: 03/19/92

Date Sampled: 03/14/92

Date Analyzed: 03/30/92

Date Received: 03/16/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/L
2,4-D	12 U
2,4,5-T	2.0 U
2,4,5-TP (Silvex)	2.0 U
2,4-DB	9.0 U
Dalapon	6.0 U
Dicamba	3.0 U
Dichloroprop	6.0 U
Dinoseb	1.0 U
MCPA	250 U
MCPP	200 U

RECRA ENVIRONMENTAL, INC.
HERBICIDE ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203141210

Job No.: MD92061

Lab ID: BS000248

Sample Vol.: 940 ml

Date Extracted: 03/19/92

Date Sampled: 03/14/92

Date Analyzed: 03/30/92

Date Received: 03/16/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/L
2,4-D	13 U
2,4,5-T	2.1 U
2,4,5-TP (Silvex)	2.1 U
2,4-DB	9.6 U
Dalapon	6.4 U
Dicamba	3.2 U
Dichloroprop	6.4 U
Dinoseb	1.1 U
MCPA	270 U
MCPP	210 U

RECRA ENVIRONMENTAL, INC.
HERBICIDE ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203141300

Job No.: MD92061

Lab ID: BS000249

Sample Vol.: 1000 ml

Date Extracted: 03/19/92

Date Sampled: 03/14/92

Date Analyzed: 03/30/92

Date Received: 03/16/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/L
2,4-D	12 U
2,4,5-T	2.0 U
2,4,5-TP (Silvex)	2.0 U
2,4-DB	9.0 U
Dalapon	6.0 U
Dicamba	3.0 U
Dichloroprop	6.0 U
Dinoseb	1.0 U
MCPA	250 U
MCPP	200 U

RECRA ENVIRONMENTAL, INC.
HERBICIDE ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203141317

Job No.: MD92061

Lab ID: BS000250

Sample Vol.: 1000 ml

Date Extracted: 03/19/92

Date Sampled: 03/14/92

Date Analyzed: 03/30/92

Date Received: 03/16/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/L
2,4-D	12 U
2,4,5-T	2.0 U
2,4,5-TP (Silvex)	2.0 U
2,4-DB	9.0 U
Dalapon	6.0 U
Dicamba	3.0 U
Dichloroprop	6.0 U
Dinoseb	1.0 U
MCPA	250 U
MCPP	200 U

RECRA ENVIRONMENTAL, INC.
HERBICIDE ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: 9203141528

Job No.: MD92061

Lab ID: BS000251

Sample Vol.: 1000 ml

Date Extracted: 03/19/92

Date Sampled: 03/14/92

Date Analyzed: 03/30/92

Date Received: 03/16/92

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/L
2,4-D	12 U
2,4,5-T	2.0 U
2,4,5-TP (Silvex)	2.0 U
2,4-DB	9.0 U
Dalapon	6.0 U
Dicamba	3.0 U
Dichloroprop	6.0 U
Dinoseb	1.0 U
MCPA	250 U
MCPP	200 U

RECRA ENVIRONMENTAL, INC.
HERBICIDE ANALYSIS DATA SHEET
AQUEOUS MATRIX

Client: GEOSCIENCE

Client ID: HBLK1

Job No.: MD92061

Lab ID: HBLK1

Sample Vol.: 1000 ml

Date Extracted: 03/19/92

Date Sampled:

Date Analyzed: 03/30/92

Date Received:

Dilution Factor: 1

COMPOUND	CONCENTRATION UNITS: ug/L
2,4-D	12 U
2,4,5-T	2.0 U
2,4,5-TP (Silvex)	2.0 U
2,4-DB	9.0 U
Dalapon	6.0 U
Dicamba	3.0 U
Dichloroprop	6.0 U
Dinoseb	1.0 U
MCPA	250 U
MCPP	200 U

RECRA ENVIRONMENTAL, INC.
HERBICIDE SURROGATE RECOVERY
AQUEOUS MATRIX

Client: GEOSCIENCE Job No.: MD92061

	CLIENT SAMPLE NO.	S1 (PIC) #	OTHER
1	9203141121	93	
2	9203141210	92	
3	9203141300	93	
4	9203141317	58	
5	9203141528	93	
6	HBLK1	93	
7			
8			
9			
10			
11			
12			
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			

S1 (PIC) = Picloram

Column to be used to flag recovery values
* Indicates values outside of QC limits
D Indicates surrogates diluted out

METHOD 8015 DATA

CALIF1

TOTAL PETROLEUM HYDROCARBONS
AQUEOUS MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: 92-0061
RECRA SAMPLE ID: BS000248
CLIENT SAMPLE ID: 9203141210

SAMPLE DATE: 3/14/92
ANALYSIS DATE: 3/24/92

COMPOUND (UNITS OF MEASURE= MG/L)	RESULT	Q
VOLATILE/GASOLINE	0.5	U

CALIF1

TOTAL PETROLEUM HYDROCARBONS
AQUEOUS MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: 92-0061
RECRA SAMPLE ID: BS000249
CLIENT SAMPLE ID: 9203141300

SAMPLE DATE: 3/14/92
ANALYSIS DATE: 3/24/92

COMPOUND (UNITS OF MEASURE= MG/L)	RESULT	Q
VOLATILE/GASOLINE	0.5	U

CALIF1

TOTAL PETROLEUM HYDROCARBONS
AQUEOUS MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: 92-0061
RECRA SAMPLE ID: BS000250
CLIENT SAMPLE ID: 9203141317

SAMPLE DATE: 3/14/92
ANALYSIS DATE: 3/24/92

COMPOUND (UNITS OF MEASURE= MG/L)	RESULT	Q
VOLATILE/GASOLINE	0.5	U

CALIF1

TOTAL PETROLEUM HYDROCARBONS
AQUEOUS MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: 92-0061
RECRA SAMPLE ID: BS000251
CLIENT SAMPLE ID: 9203141528

SAMPLE DATE: 3/14/92
ANALYSIS DATE: 3/24/92

COMPOUND (UNITS OF MEASURE= MG/L)	RESULT	Q
VOLATILE/GASOLINE	0.5	U

CALIF1

TOTAL PETROLEUM HYDROCARBONS
AQUEOUS MATRIX

LAB NAME: RECRA ENVIRONMENTAL INC.
JOB NUMBER: 92-0061 ANALYSIS DATE: 3/24/92
RECRA SAMPLE ID: AR001851
CLIENT SAMPLE ID: METHOD BLANK

COMPOUND (UNITS OF MEASURE= MG/L)	RESULT	Q
VOLATILE/GASOLINE	0.5	U

INORGANIC DATA

H & GCL
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0180
DESC BS000247
SAMPLE NO. 920-314-1121

SAMPLE DATE 03/14/92

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Arsenic	MG/L	7060	03/24/92	0.005	U
Total Barium	MG/L	7080	03/26/92	0.5	U
Total Cadmium	MG/L	6010	03/24/92	0.005	U
Total Chromium	MG/L	6010	03/24/92	0.018	
Total Lead	MG/L	7421	03/24/92	0.0048	
Total Mercury	MG/L	7470	03/24/92	0.0008	U
Total Selenium	MG/L	7740	03/23/92	0.005	U
Total Silver	MG/L	7760	03/24/92	0.005	U

H & GCL
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0180 SAMPLE DATE 03/14/92
DESC BS000248
SAMPLE NO. 920-314-1210

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Arsenic	MG/L	7060	03/24/92	0.005	U
Total Barium	MG/L	7080	03/26/92	0.5	U
Total Cadmium	MG/L	6010	03/24/92	0.005	U
Total Chromium	MG/L	6010	03/24/92	0.015	
Total Lead	MG/L	7421	03/24/92	0.0037	
Total Mercury	MG/L	7470	03/24/92	0.0008	U
Total Selenium	MG/L	7740	03/23/92	0.005	U
Total Silver	MG/L	7760	03/24/92	0.006	

H & GCL
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0180
DESC BS000249
SAMPLE NO. 920-314-1300

SAMPLE DATE 03/14/92

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Arsenic	MG/L	7060	03/24/92	0.005	U
Total Barium	MG/L	7080	03/26/92	0.5	U
Total Cadmium	MG/L	6010	03/24/92	0.005	U
Total Chromium	MG/L	6010	03/24/92	0.011	
Total Lead	MG/L	7421	03/24/92	0.003	
Total Mercury	MG/L	7470	03/24/92	0.0008	U
Total Selenium	MG/L	7740	03/23/92	0.005	U
Total Silver	MG/L	7760	03/24/92	0.005	U

H & GCL
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0180
DESC BS000250
SAMPLE NO. 920-314-1317

SAMPLE DATE 03/14/92

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Arsenic	MG/L	7060	03/24/92	0.005	U
Total Barium	MG/L	7080	03/26/92	0.5	U
Total Cadmium	MG/L	6010	03/24/92	0.005	U
Total Chromium	MG/L	6010	03/24/92	0.017	
Total Lead	MG/L	7421	03/24/92	0.003	U
Total Mercury	MG/L	7470	03/24/92	0.0008	U
Total Selenium	MG/L	7740	03/23/92	0.005	U
Total Silver	MG/L	7760	03/24/92	0.005	U

H & GCL
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0180
DESC BS000251
SAMPLE NO. 920-314-1528

SAMPLE DATE 03/14/92

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Arsenic	MG/L	7060	03/24/92	0.0068	
Total Barium	MG/L	7080	03/26/92	0.5	U
Total Cadmium	MG/L	6010	03/24/92	0.005	U
Total Chromium	MG/L	6010	03/24/92	0.022	
Total Lead	MG/L	7421	03/24/92	0.0091	
Total Mercury	MG/L	7470	03/24/92	0.0008	U
Total Selenium	MG/L	7740	03/23/92	0.005	U
Total Silver	MG/L	7760	03/24/92	0.005	U

H & GCL
AQUEOUS MATRIX
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. OH-0180
DESC AR001852
SAMPLE NO. METHOD BLANK

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Total Arsenic	MG/L	7060	03/24/92	0.005	U
Total Barium	MG/L	7080	03/26/92	0.5	U
Total Cadmium	MG/L	6010	03/24/92	0.005	U
Total Chromium	MG/L	6010	03/24/92	0.01	U
Total Lead	MG/L	7421	03/24/92	0.003	U
Total Mercury	MG/L	7470	03/24/92	0.0008	U
Total Selenium	MG/L	7740	03/23/92	0.005	U
Total Silver	MG/L	7760	03/24/92	0.005	U

Appendix E

Laboratory Analytical Results
Drum Samples

Table E-1

Toxicity Characteristic Leaching Procedure Extract Method 8240 - Volatiles

H+GCL Sample Number	Matrix Description	Benzene	Carbon tetra-chloride	Chloro-benzene	Chloro-form	1,2-Dichloro-ethane	1,1-Dichloro-ethane	Methyl ethyl ketone	Tetra-chloro-ethene	Tri-chloro-ethene	Vinyl chloride
9204221240	Soil	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1
9204221010	Water	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1
9204221045	Water	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1
9204221135	Water	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.1	<0.05	<0.05	<0.1
Maximum RCRA Toxicity Concentration		0.5	0.5	100.0	6.0	0.5	0.7	200.0	0.7	0.5	0.2

Concentrations in mg/L

Table E-2

Toxicity Characteristic Leaching Procedure Extract Method 8270 - Base/Neutrals/Acid Extractables

H+GCL Sample Number	Matrix Description	o-Cresol	m/p-Cresol	1,4-Dichloro-benzene	2,4-Dinitro-toluene	Hexa-chloro-benzene	Hexa-chloro-butadiene	Hexa-chloro-ethane	Nitro-benzene	Penta-chloro-phenol	Pyridine	2,4,5-Trichloro-phenol	2,4,6-Trichloro-phenol
9204221240	Soil	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.04	<0.2	<0.04	<0.2	<0.04
9204221010	Water	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.1	<0.02
9204221045	Water	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.1	<0.02
9204221135	Water	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.1	<0.02	<0.1	<0.02
Maximum RCRA Toxicity Concentration		200.0	200.0	7.5	0.13	0.13	0.5	3.0	2.0	100.0	5.0	400.0	2.0

Concentrations in mg/L

Table E-3

Toxicity Characteristics Leaching Procedure Extract Pesticides/Herbicides

H+GCL Sample Number	Matrix Description	Chlordane	Endrin	Heptachlor	Heptachlor epoxide	Lindane	Methoxychlor	Toxaphene	2,4-D	2,4,5-TP
9204221240	Soil	<0.05	<0.01	<0.005	<0.005	<0.005	<0.02	<0.2	<0.005	<0.005
9204221010	Water	<0.0013	<0.0002	<0.0001	<0.0001	<0.0001	<0.0005	<0.005	<0.0018	<0.0018
9204221045	Water	<0.0013	<0.0002	<0.0001	<0.0001	<0.0001	<0.0005	<0.005	<0.0026	<0.0026
9204221135	Water	<0.0013	<0.0002	<0.0001	<0.0001	<0.0001	<0.0005	<0.005	<0.0023	<0.0023
Maximum RCRA Toxicity Concentration		0.03	0.02	0.008	0.008	0.4	10.0	0.5	10.0	1.0

Concentrations in mg/L

Table E-4

Toxicity Characteristics Leaching Procedure Extract Total Metals

H+GCL Sample Number	Matrix Description	Total Arsenic	Total Barium	Total Cadmium	Total Chromium	Total Lead	Total Mercury	Total Selenium	Total Silver
9204221240	Soil	<0.005	0.38[1]	<0.01	<0.01	<0.09	<0.0004	<0.005	<0.01
9204221010	Water	<0.005	0.03	<0.01	<0.01	<0.003	<0.0004	<0.005	<0.01
9204221045	Water	<0.005	0.053	<0.01	0.012	<0.003	<0.0004	<0.005	<0.01
9204221135	Water	<0.005	0.46	<0.01	<0.01	<0.003	<0.0004	<0.005	<0.01
Maximum RCRA Toxicity Concentration		5.0	100.0	1.0	5.0	5.0	0.2	1.0	5.0

Concentrations in mg/L

[1] denotes The TCLP Matrix Spike recovery was greater than the upper limit of the analytical method.

Table E-5

Results of Corrosivity, Flash Point Paint Filter Test and Total Cyanide
for Drum Contents

H+GCL Sample Number	Matrix Description	Corrosivity (Standard units)	Flash Point (°F)	Paint Filter Test (pass/fail)	Total Available Cyanide (mg/kg)
9204221240	Soil	8.31	200*	Pass	<10
9204221010	Water	7.17	200*	Not required for water samples	<10
9204221045	Water	7.49	200*	Not required for water samples	<10
9204221135	Water	7.71	200*	Not required for water samples	<10

* denotes value obtained is greater than 200 degrees fahrenheit.

RECRA
ENVIRONMENTAL
INC.

Chemical and Environmental Analysis Services

May 14, 1992

Ms. Virginia Nicholas
H + GCL
4221 Forbes Blvd., Suite 240
Lanham, Maryland 20706

RE: Analytical Results

Dear Ms. Nicholas:

Please find enclosed results concerning the analyses of the samples recently submitted by your firm. The Pertinent Information regarding these analyses is listed below:

Quote #: NY91-984
Matrix: Aqueous and Soil
Samples Received: 4/24/92
Sample Date: 4/22/92

If you have any questions concerning these data, please contact Ms. Julie Calvert, Project Manager, Customer Service at (716) 691-2600 and refer to the I.D. number listed below. It has been our pleasure to provide H + GCL with Environmental Testing Services. We look forward to serving you in the future.

Sincerely,

RECRA ENVIRONMENTAL, INC.

Deborah J Kinecki /KPK

Deborah J. Kinecki,
Vice President

AH/DJK/ah
Enclosed

I.D. #92-1256
#92-1256A
#NY2A3916

ANALYTICAL RESULTS

Prepared For

H + GCL
4221 Forbes Blvd.
Suite 240
Lanham, Maryland 20706

Prepared By

Recra Environmental, Inc.
10 Hazelwood Drive, Suite 106
Amherst, New York 14228-2298

METHODOLOGIES

The specific methodologies employed in obtaining the enclosed analytical results are indicated on the specific data tables. The method numbers presented refer to the following U.S. Environmental Protection Agency reference.

* U.S. Environmental Protection Agency "Test Methods for Evaluating Solid Waste-Physical/Chemical Methods." Office of Solid Waste and Emergency Response. November 1986, SW-846, Third Edition.

* The Toxicity Characteristic Leaching Procedure was performed in accordance with both method 1311 and modified method 1311, 40CFR, Appendix II to Part 261, June 1990.

COMMENTS

Comments pertain to data on one or all pages of this report.

The enclosed data has been reported utilizing data qualifiers (Q) as defined on the Organic and Inorganic Data Comment Pages.

TCLP Matrix spike quality control analysis was performed on sample 9204221240. The measured values for sample 9204221240 on the enclosed TCLP data have been corrected for analytical bias based upon the matrix spike results from sample 9204221240 as required by the referenced TCLP protocol.

Due to limited sample volumes provided by H + GCL, no TCLP bias correction spike could be designated for samples 9204221010, 9204221045 or 9204221135. Therefore, these samples have not been corrected for analytical bias as required by the referenced TCLP protocol.

Quantitation limits are not corrected for analytical bias.

TCLP Extraction Dates are as follows:

Sample:	9204221240	
	Organics -	04/29/92
	Volatiles and Metals -	04/28/92
Samples:	9204221010	Dates: 04/27/92
	9204221045	04/27/92
	9204221135	04/27/92

The TCLP Extractor Blank is associated with sample 9204221240, only. Since all other samples were aqueous, they were filtered only, not extracted; therefore, there is no TCLP Extractor Blank associated with these samples.

ORGANIC DATA COMMENT PAGE

Laboratory Name RECRA ENVIRONMENTAL, INC.

USEPA Defined Organic Data Qualifiers:

U - Indicates compound was analyzed for but not detected.

J - Indicates an estimated value. This flag is used either when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, or when the mass spectral data indicate the presence of a compound that meets the identification criteria but the result is less than the sample quantitation limit but greater than zero.

C - This flag applies to pesticide results where the identification has been confirmed by GC/MS.

B - This flag is used when the analyte is found in the associated blank as well as in the sample.

E - This flag identifies compounds whose concentrations exceed the calibration range of the GC/MS instrument for that specific analysis.

D - This flag identifies all compounds identified in an analysis at a secondary dilution factor.

G - The TCLP Matrix Spike recovery was greater than the upper limit of the analytical method.

L - The TCLP Matrix Spike recovery was lower than the lower limit of the analytical method.

T - This flag is used when the analyte is found in the associated TCLP extraction as well as in the sample.

INORGANIC DATA COMMENT PAGE

Laboratory Name RECRA ENVIRONMENTAL, INC.

USEPA Defined Inorganic Data Qualifiers:

B - Indicates a value greater than or equal to the instrument detection limit but less than the contract required detection limit.

U - Indicates element was analyzed for but not detected. Report with the detection limit value (e.g., 100).

E - Indicates a value estimated or not reported due to the presence of interference.

S - Indicates value determined by Method of Standard Addition.

N - Indicates spike sample recovery is not within control limits.

* - Indicates duplicate analysis is not within control limits.

+ - Indicates the correlation coefficient for method of standard addition is less than 0.995.

M - Indicates duplicate injection results exceeded control limits.

W - Post digestion spike for Furnace AA analysis is out of control limits (85-115%), while sample absorbance is less than 50% of spike absorbance.

G - The TCLP Matrix Spike recovery was greater than the upper limit of the analytical method.

L - The TCLP Matrix Spike recovery was lower than the lower limit of the analytical method.

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
METHOD 8240 - VOLATILES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010341
SAMPLE NO. 9204221240

SAMPLE DATE 04/22/92

COMPOUND (MG/L)	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Benzene	04/28/92	0.5	0.05	0.05	U
Carbon tetrachloride	04/28/92	0.5	0.05	0.05	U
Chlorobenzene	04/28/92	100	0.05	0.05	U
Chloroform	04/28/92	6.0	0.05	0.05	U
1,2-Dichloroethane	04/28/92	0.5	0.05	0.05	U
1,1-Dichloroethylene	04/28/92	0.7	0.05	0.05	U
Methyl ethyl ketone	04/28/92	200	0.1	0.1	U
Tetrachloroethene	04/28/92	0.7	0.05	0.05	U
Trichloroethene	04/28/92	0.5	0.05	0.05	U
Vinyl chloride	04/28/92	0.2	0.1	0.1	U

DILUTION FACTOR = 10

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
METHOD 8240 - VOLATILES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256 SAMPLE DATE 04/22/92
DESC AS010341
SAMPLE NO. 9204221240 ANALYSIS DATE 04/28/92

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	57	
1,4-Difluorobenzene	51	
Chlorobenzene-D5	52	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	106	
1,2-Dichloroethane-D4	91	
Toluene-D8	98	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
METHOD 8240 - VOLATILES

7

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002356
SAMPLE NO. TCLP BLANK

COMPOUND (MG/L)	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Benzene	04/28/92	0.5	0.05	0.0	U
Carbon tetrachloride	04/28/92	0.5	0.05	0.0	U
Chlorobenzene	04/28/92	100	0.05	0.0	U
Chloroform	04/28/92	6.0	0.05	0.0	U
1,2-Dichloroethane	04/28/92	0.5	0.05	0.0	U
1,1-Dichloroethylene	04/28/92	0.7	0.05	0.0	U
Methyl ethyl ketone	04/28/92	200	0.1	0.0	U
Tetrachloroethene	04/28/92	0.7	0.05	0.0	U
Trichloroethene	04/28/92	0.5	0.05	0.0	U
Vinyl chloride	04/28/92	0.2	0.1	0.0	U

SAMPLE NUMBER = TCLP EXTRACTOR BLANK
DILUTION FACTOR = 10

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
METHOD 8240 - VOLATILES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002356
SAMPLE NO. TCLP BLANK

ANALYSIS DATE 04/28/92

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	78	
1,4-Difluorobenzene	75	
Chlorobenzene-D5	73	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	105	
1,2-Dichloroethane-D4	93	
Toluene-D8	101	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
METHOD 8240 - VOLATILES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002357
SAMPLE NO. VBLK 15

COMPOUND (MG/L)	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Benzene	04/28/92	0.5	0.005	0.0	U
Carbon tetrachloride	04/28/92	0.5	0.005	0.0	U
Chlorobenzene	04/28/92	100	0.005	0.0	U
Chloroform	04/28/92	6.0	0.005	0.0	U
1,2-Dichloroethane	04/28/92	0.5	0.005	0.0	U
1,1-Dichloroethylene	04/28/92	0.7	0.005	0.0	U
Methyl ethyl ketone	04/28/92	200	0.01	0.0	U
Tetrachloroethene	04/28/92	0.7	0.005	0.0	U
Trichloroethene	04/28/92	0.5	0.005	0.0	U
Vinyl chloride	04/28/92	0.2	0.01	0.0	U

SAMPLE NUMBER = VOLATILE METHOD BLANK
DILUTION FACTOR = 1

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
METHOD 8240 - VOLATILES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002357
SAMPLE NO. VBLK 15

ANALYSIS DATE 04/28/92

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	92	
1,4-Difluorobenzene	84	
Chlorobenzene-D5	81	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	107	
1,2-Dichloroethane-D4	89	
Toluene-D8	101	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
METHOD 8240 - VOLATILES

11

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010342
SAMPLE NO. 9204221010

SAMPLE DATE 04/22/92

COMPOUND (MG/L)	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Benzene	04/28/92	0.5	0.05	0.0	U
Carbon tetrachloride	04/28/92	0.5	0.05	0.0	U
Chlorobenzene	04/28/92	100	0.05	0.0	U
Chloroform	04/28/92	6.0	0.05	0.0	U
1,2-Dichloroethane	04/28/92	0.5	0.05	0.0	U
1,1-Dichloroethylene	04/28/92	0.7	0.05	0.0	U
Methyl ethyl ketone	04/28/92	200	0.1	0.0	U
Tetrachloroethene	04/28/92	0.7	0.05	0.0	U
Trichloroethene	04/28/92	0.5	0.05	0.0	U
Vinyl chloride	04/28/92	0.2	0.1	0.0	U

DILUTION FACTOR = 10

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
METHOD 8240 - VOLATILES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256 SAMPLE DATE 04/22/92
DESC AS010342
SAMPLE NO. 9204221010 ANALYSIS DATE 04/28/92

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	87	
1,4-Difluorobenzene	86	
Chlorobenzene-D5	84	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	100	
1,2-Dichloroethane-D4	98	
Toluene-D8	98	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
METHOD 8240 - VOLATILES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010343
SAMPLE NO. 9204221045

SAMPLE DATE 04/22/92

COMPOUND (MG/L)	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Benzene	04/28/92	0.5	0.05	0.0	U
Carbon tetrachloride	04/28/92	0.5	0.05	0.0	U
Chlorobenzene	04/28/92	100	0.05	0.0	U
Chloroform	04/28/92	6.0	0.05	0.0	U
1,2-Dichloroethane	04/28/92	0.5	0.05	0.0	U
1,1-Dichloroethylene	04/28/92	0.7	0.05	0.0	U
Methyl ethyl ketone	04/28/92	200	0.1	0.0	U
Tetrachloroethene	04/28/92	0.7	0.05	0.0	U
Trichloroethene	04/28/92	0.5	0.05	0.0	U
Vinyl chloride	04/28/92	0.2	0.1	0.0	U

DILUTION FACTOR = 10

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
METHOD 8240 - VOLATILES

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LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256 SAMPLE DATE 04/22/92
DESC AS010343
SAMPLE NO. 9204221045 ANALYSIS DATE 04/28/92

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	85	
1,4-Difluorobenzene	85	
Chlorobenzene-D5	83	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	100	
1,2-Dichloroethane-D4	98	
Toluene-D8	98	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
METHOD 8240 - VOLATILES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010344
SAMPLE NO. 9204221135

SAMPLE DATE 04/22/92

COMPOUND (MG/L)	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Benzene	04/28/92	0.5	0.05	0.0	U
Carbon tetrachloride	04/28/92	0.5	0.05	0.0	U
Chlorobenzene	04/28/92	100	0.05	0.0	U
Chloroform	04/28/92	6.0	0.05	0.0	U
1,2-Dichloroethane	04/28/92	0.5	0.05	0.0	U
1,1-Dichloroethylene	04/28/92	0.7	0.05	0.0	U
Methyl ethyl ketone	04/28/92	200	0.1	0.0	U
Tetrachloroethene	04/28/92	0.7	0.05	0.0	U
Trichloroethene	04/28/92	0.5	0.05	0.0	U
Vinyl chloride	04/28/92	0.2	0.1	0.0	U

DILUTION FACTOR = 10

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
METHOD 8240 - VOLATILES

18

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256 SAMPLE DATE 04/22/92
DESC AS010344
SAMPLE NO. 9204221135 ANALYSIS DATE 04/28/92

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	83	
1,4-Difluorobenzene	85	
Chlorobenzene-D5	82	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	99	
1,2-Dichloroethane-D4	99	
Toluene-D8	98	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
METHOD 8240 - VOLATILES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002373
SAMPLE NO. VBLK 26

COMPOUND (MG/L)	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Benzene	04/27/92	0.5	0.005	0.0	U
Carbon tetrachloride	04/27/92	0.5	0.005	0.0	U
Chlorobenzene	04/27/92	100	0.005	0.0	U
Chloroform	04/27/92	6.0	0.005	0.0	U
1,2-Dichloroethane	04/27/92	0.5	0.005	0.0	U
1,1-Dichloroethylene	04/27/92	0.7	0.005	0.0	U
Methyl ethyl ketone	04/27/92	200	0.01	0.0	U
Tetrachloroethene	04/27/92	0.7	0.005	0.0	U
Trichloroethene	04/27/92	0.5	0.005	0.0	U
Vinyl chloride	04/27/92	0.2	0.01	0.0	U

SAMPLE NUMBER = VOLATILE METHOD BLANK
DILUTION FACTOR = 1

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
METHOD 8240 - VOLATILES

18

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002373
SAMPLE NO. VBLK 26

ANALYSIS DATE 04/27/92

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
Bromochloromethane	96	
1,4-Difluorobenzene	95	
Chlorobenzene-D5	92	
Surrogates		
(%Recovery)		
p-Bromofluorobenzene	99	
1,2-Dichloroethane-D4	102	
Toluene-D8	101	

TCLPVOA

MATRIX CORRECTION SPIKE
TCLP EXTRACT
METHOD 8240

LAB NAME RECRA ENVIRONMENTAL INC.
ANALYSIS DATE 04/28/92
RECRA SAMPLE IDENTIFICATION AS010341
CLIENT SAMPLE IDENTIFICATION 9204221240

COMPOUND	MICROGRAMS OF SPIKE	PERCENT RECOVERY	Q
Vinyl chloride	250	120	G
1,1-Dichloroethene	250	95	
Chloroform	250	98	
1,2-Dichloroethane	250	95	
2-Butanone	250	79	
Carbon Tetrachloride	250	98	
Trichloroethene	250	101	G
Benzene	250	96	
Tetrachloroethene	250	99	
Chlorobenzene	250	99	
Internal Standards (% Recovery)			
Bromochloromethane		68	
1,4-Difluorobenzene		70	
Chlorobenzene-D5		70	
Surrogates (% Recovery)			
4-Bromofluorobenzene		104	
1,2-Dichloroethane-D4		102	
Toluene		98	

DILUTION FACTOR OF 10

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT METHOD 8270
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010341
SAMPLE NO. 9204221240

SAMPLE DATE 04/22/92
EXTRACTION DATE 04/29/92

COMPOUND (MG/L)	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
o-Cresol	05/07/92	200	0.04	0.04	U
m/p-Cresol	05/07/92	200	0.04	0.04	U
1,4-Dichlorobenzene	05/07/92	7.5	0.04	0.04	U
2,4-Dinitrotoluene	05/07/92	0.13	0.04	0.04	U
Hexachlorobenzene	05/07/92	0.13	0.04	0.04	U
Hexachlorobutadiene	05/07/92	0.52	0.04	0.04	U
Hexachloroethane	05/07/92	3.0	0.04	0.04	U
Nitrobenzene	05/07/92	2.0	0.04	0.04	U
Pentachlorophenol	05/07/92	100	0.2	0.2	U
Pyridine	05/07/92	5.0	0.04	0.04	U
2,4,5-Trichlorophenol	05/07/92	400	0.2	0.2	U
2,4,6-Trichlorophenol	05/07/92	2.0	0.04	0.04	U

*CHROMATOGRAPHICALLY META CRESOL AND PARA CRESOL
OELUTE.
EXTRACTION VOLUME = 250ML.
DILUTION FACTOR = 1

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT METHOD 8270
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010341
SAMPLE NO. 9204221240

SAMPLE DATE 04/22/92
EXTRACTION DATE 04/29/92
ANALYSIS DATE 05/07/92

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	113	
Naphthalene-D8	106	
Acenaphthene-D10	120	
Phenanthrene-D10	118	
Chrysene-D12	110	
Perylene-D12	132	
Surrogates		
(%Recovery)		
2-Fluorophenol	38	
Phenol-D5	45	
2,4,6-Tribromophenol	49	
Nitrobenzene-D5	81	
2-Fluorobiphenyl	78	
Terphenyl-D14	77	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT METHOD 8270
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002362 EXTRACTION DATE 04/29/92
SAMPLE NO. TCLP BLANK

COMPOUND (MG/L)	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
o-Cresol	05/06/92	200	0.01	0.0	U
m/p-Cresol	05/06/92	200	0.01	0.0	U
1,4-Dichlorobenzene	05/06/92	7.5	0.01	0.0	U
2,4-Dinitrotoluene	05/06/92	0.13	0.01	0.0	U
Hexachlorobenzene	05/06/92	0.13	0.01	0.0	U
Hexachlorobutadiene	05/06/92	0.52	0.01	0.0	U
Hexachloroethane	05/06/92	3.0	0.01	0.0	U
Nitrobenzene	05/06/92	2.0	0.01	0.0	U
Pentachlorophenol	05/06/92	100	0.07	0.0	U
Pyridine	05/06/92	5.0	0.01	0.0	U
2,4,5-Trichlorophenol	05/06/92	400	0.07	0.0	U
2,4,6-Trichlorophenol	05/06/92	2.0	0.01	0.0	U

*CHROMATOGRAPHICALLY META CRESOL AND PARA CRESOL COELUTE.
EXTRACTION VOLUME = 700 ML.
DILUTION FACTOR = 1
SAMPLE NUMBER = TCLP EXTRACTOR BLANK

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT METHOD 8270
BASE/NEUTRAL/ACID EXTRACTABLES

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LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002362 EXTRACTION DATE 04/29/92
SAMPLE NO. TCLP BLANK ANALYSIS DATE 05/06/92

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	111	
Naphthalene-D8	109	
Acenaphthene-D10	114	
Phenanthrene-D10	123	
Chrysene-D12	117	
Perylene-D12	114	
Surrogates		
(%Recovery)		
2-Fluorophenol	69	
Phenol-D5	54	
2,4,6-Tribromophenol	115	
Nitrobenzene-D5	78	
2-Fluorobiphenyl	81	
Terphenyl-D14	76	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT METHOD 8270
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002363 EXTRACTION DATE 04/29/92
SAMPLE NO. SBLK 14

COMPOUND (MG/L)	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
o-Cresol	05/07/92	200	0.01	0.0	U
m/p-Cresol	05/07/92	200	0.01	0.0	U
1,4-Dichlorobenzene	05/07/92	7.5	0.01	0.0	U
2,4-Dinitrotoluene	05/07/92	0.13	0.01	0.0	U
Hexachlorobenzene	05/07/92	0.13	0.01	0.0	U
Hexachlorobutadiene	05/07/92	0.52	0.01	0.0	U
Hexachloroethane	05/07/92	3.0	0.01	0.0	U
Nitrobenzene	05/07/92	2.0	0.01	0.0	U
Pentachlorophenol	05/07/92	100	0.05	0.0	U
Pyridine	05/07/92	5.0	0.01	0.0	U
2,4,5-Trichlorophenol	05/07/92	400	0.05	0.0	U
2,4,6-Trichlorophenol	05/07/92	2.0	0.01	0.0	U

*CHROMATOGRAPHICALLY META CRESOL AND PARA CRESOL
CELUTE.
EXTRACTION VOLUME = 1000 ML.
DILUTION FACTOR = 1
SAMPLE NUMBER = SEMIVOLATILE METHOD BLANK

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT METHOD 8270
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002363
SAMPLE NO. SBLK 14

EXTRACTION DATE 04/29/92
ANALYSIS DATE 05/07/92

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	112	
Naphthalene-D8	107	
Acenaphthene-D10	118	
Phenanthrene-D10	113	
Chrysene-D12	102	
Perylene-D12	106	
Surrogates		
(%Recovery)		
2-Fluorophenol	58	
Phenol-D5	40	
2,4,6-Tribromophenol	92	
Nitrobenzene-D5	74	
2-Fluorobiphenyl	76	
Terphenyl-D14	80	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT METHOD 8270
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010342
SAMPLE NO. 9204221010

SAMPLE DATE 04/22/92
EXTRACTION DATE 04/27/92

COMPOUND (MG/L)	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
o-Cresol	05/08/92	200	0.02	0.0	U
m/p-Cresol	05/08/92	200	0.02	0.0	U
1,4-Dichlorobenzene	05/08/92	7.5	0.02	0.0	U
2,4-Dinitrotoluene	05/08/92	0.13	0.02	0.0	U
Hexachlorobenzene	05/08/92	0.13	0.02	0.0	U
Hexachlorobutadiene	05/08/92	0.52	0.02	0.0	U
Hexachloroethane	05/08/92	3.0	0.02	0.0	U
Nitrobenzene	05/08/92	2.0	0.02	0.0	U
Pentachlorophenol	05/08/92	100	0.1	0.0	U
Pyridine	05/08/92	5.0	0.02	0.0	U
2,4,5-Trichlorophenol	05/08/92	400	0.1	0.0	U
2,4,6-Trichlorophenol	05/08/92	2.0	0.02	0.0	U

CHROMATOGRAPHICALLY META CRESOL AND PARA CRESOL COELUTE.
EXTRACTION VOLUME = 400 ML
DILUTION FACTOR = 1

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT METHOD 8270
BASE/NEUTRAL/ACID EXTRACTABLES

27

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010342
SAMPLE NO. 9204221010

SAMPLE DATE 04/22/92
EXTRACTION DATE 04/27/92
ANALYSIS DATE 05/08/92

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	96	
Naphthalene-D8	86	
Acenaphthene-D10	96	
Phenanthrene-D10	108	
Chrysene-D12	96	
Perylene-D12	99	
Surrogates		
(%Recovery)		
2-Fluorophenol	70	
Phenol-D5	64	
2,4,6-Tribromophenol	100	
Nitrobenzene-D5	90	
2-Fluorobiphenyl	85	
Terphenyl-D14	92	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT METHOD 8270
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010343
SAMPLE NO. 9204221045

SAMPLE DATE 04/22/92
EXTRACTION DATE 04/27/92

COMPOUND (MG/L)	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
o-Cresol	05/08/92	200	0.02	0.0	U
m/p-Cresol	05/08/92	200	0.02	0.0	U
1,4-Dichlorobenzene	05/08/92	7.5	0.02	0.0	U
2,4-Dinitrotoluene	05/08/92	0.13	0.02	0.0	U
Hexachlorobenzene	05/08/92	0.13	0.02	0.0	U
Hexachlorobutadiene	05/08/92	0.52	0.02	0.0	U
Hexachloroethane	05/08/92	3.0	0.02	0.0	U
Nitrobenzene	05/08/92	2.0	0.02	0.0	U
Pentachlorophenol	05/08/92	100	0.1	0.0	U
Pyridine	05/08/92	5.0	0.02	0.0	U
2,4,5-Trichlorophenol	05/08/92	400	0.1	0.0	U
2,4,6-Trichlorophenol	05/08/92	2.0	0.02	0.0	U

*CHROMATOGRAPHICALLY META CRESOL AND PARA CRESOL
OELUTE.
EXTRACTION VOLUME = 400 ML.
DILUTION FACTOR = 1

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT METHOD 8270
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256 SAMPLE DATE 04/22/92
DESC AS010343 EXTRACTION DATE 04/27/92
SAMPLE NO. 9204221045 ANALYSIS DATE 05/08/92

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	106	
Naphthalene-D8	100	
Acenaphthene-D10	100	
Phenanthrene-D10	94	
Chrysene-D12	75	
Perylene-D12	80	
Surrogates		
(%Recovery)		
2-Fluorophenol	82	
Phenol-D5	74	
2,4,6-Tribromophenol	93	
Nitrobenzene-D5	97	
2-Fluorobiphenyl	92	
Terphenyl-D14	91	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT METHOD 8270
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010344
SAMPLE NO. 9204221135

SAMPLE DATE 04/22/92
EXTRACTION DATE 04/27/92

COMPOUND (MG/L)	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
o-Cresol	05/08/92	200	0.02	0.0	U
m/p-Cresol	05/08/92	200	0.02	0.0	U
1,4-Dichlorobenzene	05/08/92	7.5	0.02	0.0	U
2,4-Dinitrotoluene	05/08/92	0.13	0.02	0.0	U
Hexachlorobenzene	05/08/92	0.13	0.02	0.0	U
Hexachlorobutadiene	05/08/92	0.52	0.02	0.0	U
Hexachloroethane	05/08/92	3.0	0.02	0.0	U
Nitrobenzene	05/08/92	2.0	0.02	0.0	U
Pentachlorophenol	05/08/92	100	0.1	0.0	U
Pyridine	05/08/92	5.0	0.02	0.0	U
2,4,5-Trichlorophenol	05/08/92	400	0.1	0.0	U
2,4,6-Trichlorophenol	05/08/92	2.0	0.02	0.0	U

*CHROMATOGRAPHICALLY META CRESOL AND PARA CRESOL
OELUTE.
EXTRACTION VOLUME = 400 ML.
DILUTION FACTOR = 1

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT METHOD 8270
BASE/NEUTRAL/ACID EXTRACTABLES

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LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010344
SAMPLE NO. 9204221135

SAMPLE DATE 04/22/92
EXTRACTION DATE 04/27/92
ANALYSIS DATE 05/08/92

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	93	
Naphthalene-D8	86	
Acenaphthene-D10	89	
Phenanthrene-D10	83	
Chrysene-D12	65	
Perylene-D12	68	
Surrogates		
(%Recovery)		
2-Fluorophenol	78	
Phenol-D5	69	
2,4,6-Tribromophenol	62	
Nitrobenzene-D5	89	
2-Fluorobiphenyl	89	
Terphenyl-D14	92	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT METHOD 8270
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002374 EXTRACTION DATE 04/27/92
SAMPLE NO. SBLK 77

COMPOUND (MG/L)	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
o-Cresol	05/08/92	200	0.01	0.0	U
m/p-Cresol	05/08/92	200	0.01	0.0	U
1,4-Dichlorobenzene	05/08/92	7.5	0.01	0.0	U
2,4-Dinitrotoluene	05/08/92	0.13	0.01	0.0	U
Hexachlorobenzene	05/08/92	0.13	0.01	0.0	U
Hexachlorobutadiene	05/08/92	0.52	0.01	0.0	U
Hexachloroethane	05/08/92	3.0	0.01	0.0	U
Nitrobenzene	05/08/92	2.0	0.01	0.0	U
Pentachlorophenol	05/08/92	100	0.05	0.0	U
Pyridine	05/08/92	5.0	0.01	0.0	U
2,4,5-Trichlorophenol	05/08/92	400	0.05	0.0	U
2,4,6-Trichlorophenol	05/08/92	2.0	0.01	0.0	U

*CHROMATOGRAPHICALLY META CRESOL AND PARA CRESOL
OELUTE.
EXTRACTION VOLUME = 1000 ML.
DILUTION FACTOR = 1
SAMPLE NUMBER = VOLATILE METHOD BLANK

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT METHOD 8270
BASE/NEUTRAL/ACID EXTRACTABLES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002374
SAMPLE NO. SBLK 77

EXTRACTION DATE 04/27/92
ANALYSIS DATE 05/08/92

COMPOUND	RESULT	Q
Internal Standards		
(%Recovery)		
1,4-Dichlorobenzene-D4	102	
Naphthalene-D8	92	
Acenaphthene-D10	92	
Phenanthrene-D10	85	
Chrysene-D12	69	
Perylene-D12	77	
Surrogates		
(%Recovery)		
2-Fluorophenol	72	
Phenol-D5	48	
2,4,6-Tribromophenol	121	
Nitrobenzene-D5	84	
2-Fluorobiphenyl	85	
Terphenyl-D14	95	

TCLPEXT

MATRIX CORRECTION SPIKE
TCLP EXTRACT
METHOD 8270

LAB NAME RECRA ENVIRONMENTAL INC.
ANALYSIS DATE 05/07/92
EXTRACTION DATE 04/29/92
RECRA SAMPLE IDENTIFICATION AS010341
CLIENT SAMPLE IDENTIFICATION 9204221240

COMPOUND	MICROGRAMS OF SPIKE	PERCENT RECOVERY	Q
o-Cresol	100	73	
m/p-Cresol*	100	45	
1,4-Dichlorobenzene	100	79	
2,4-Dinitrotoluene	100	100	
Hexachlorobenzene	100	86	
Hexachlorobutadiene	100	79	
Hexachloroethane	100	76	
Nitrobenzene	100	93	
Pyridine	100	80	
Pentachlorophenol	100	87	
2,4,6-Trichlorophenol	100	78	
2,4,5-Trichlorophenol	100	96	
Internal Standards (% Recovery)			
1,4-Dichlorobenzene		117	
Naphthalene-d8		107	
Acenaphthalene-d10		117	
Phenanthrene-d10		115	
Chrysene-d12		106	
Perylene-d12		130	
Surrogates (% Recovery)			
2-Fluorophenol		74	
Phenol-d5		74	
2,4,6-Tribromophenol		87	
Nitrobenzene-d5		97	
2-Fluorobiphenol		85	
Terphenyl-d14		75	

*Chromatographically, meta-Cresol and para-Cresol coelute.

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010341
SAMPLE NO. 9204221240

SAMPLE DATE 04/22/92

COMPOUND (MG/L)	EXTRACT. DATE	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Chlordane	04/29/92	05/02/92	0.03	0.05	0.05	U
Endrin	04/29/92	05/02/92	0.02	0.01	0.01	U
Heptachlor	04/29/92	05/02/92	0.008	0.005	0.005	U
Heptachlor epoxide	04/29/92	05/02/92	0.008	0.005	0.005	U
Lindane	04/29/92	05/02/92	0.4	0.005	0.005	U
Methoxychlor	04/29/92	05/02/92	10.0	0.02	0.02	U
Toxaphene	04/29/92	05/02/92	0.5	0.2	0.2	U
2,4-D	04/30/92	05/03/92	10.0	0.005	0.005	U
2,4,5-TP	04/30/92	05/03/92	1.0	0.005	0.005	U

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010341
SAMPLE NO. 9204221240

SAMPLE DATE 04/22/92
EXTRACTION DATE 04/29/92
ANALYSIS DATE 05/02/92

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) Dibutylchlorendate	128	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

37

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010341
SAMPLE NO. 9204221240

SAMPLE DATE 04/22/92
EXTRACTION DATE 04/30/92
ANALYSIS DATE 05/03/92

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) 2,4 Dichlorophenoxybutyric acid	33	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002364
SAMPLE NO. TCLP BLANK

COMPOUND (MG/L)	EXTRACT. DATE	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Chlordane	04/29/92	05/02/92	0.03	0.014	0.0	U
Endrin	04/29/92	05/02/92	0.02	0.0029	0.0	U
Heptachlor	04/29/92	05/02/92	0.008	0.0014	0.0	U
Heptachlor epoxide	04/29/92	05/02/92	0.008	0.0014	0.0	U
Lindane	04/29/92	05/02/92	0.4	0.0014	0.0	U
Methoxychlor	04/29/92	05/02/92	10.0	0.0057	0.0	U
Toxaphene	04/29/92	05/02/92	0.5	0.057	0.0	U
2,4-D	04/25/92	05/03/92	10.0	0.0012	0.0	U
2,4,5-TP	04/25/92	05/03/92	1.0	0.0012	0.0	U

SAMPLE NUMBER = TCLP EXTRACTOR BLANK

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002364
SAMPLE NO. TCLP BLANK

EXTRACTION DATE 04/29/92
ANALYSIS DATE 05/02/92

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) Dibutylchlorendate	142	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002364
SAMPLE NO. TCLP BLANK

EXTRACTION DATE 04/25/92
ANALYSIS DATE 05/03/92

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) 2,4 Dichlorophenoxybutyric acid	13	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

41

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010342
SAMPLE NO. 9204221010

SAMPLE DATE 04/22/92

COMPOUND (MG/L)	EXTRACT. DATE	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Chlordane	04/27/92	05/02/92	0.03	0.0013	0.0	U
Endrin	04/27/92	05/02/92	0.02	0.0002	0.0	U
Heptachlor	04/27/92	05/02/92	0.008	0.0001	0.0	U
Heptachlor epoxide	04/27/92	05/02/92	0.008	0.0001	0.0	U
Lindane	04/27/92	05/02/92	0.4	0.0001	0.0	U
Methoxychlor	04/27/92	05/02/92	10.0	0.0005	0.0	U
Toxaphene	04/27/92	05/02/92	0.5	0.005	0.0	U
2,4-D	04/30/92	05/03/92	10.0	0.0018	0.0	U
2,4,5-TP	04/30/92	05/03/92	1.0	0.0018	0.0	U

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010342
SAMPLE NO. 9204221010

SAMPLE DATE 04/22/92
EXTRACTION DATE 04/27/92
ANALYSIS DATE 05/02/92

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) Dibutylchlorendate	128	

H + GCL

TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010342
SAMPLE NO. 9204221010

SAMPLE DATE 04/22/92
EXTRACTION DATE 04/30/92
ANALYSIS DATE 05/03/92

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) 2,4 Dichlorophenoxybutyric acid	70	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010343
SAMPLE NO. 9204221045

SAMPLE DATE 04/22/92

COMPOUND (MG/L)	EXTRACT. DATE	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Chlordane	04/27/92	05/02/92	0.03	0.0013	0.0	U
Endrin	04/27/92	05/02/92	0.02	0.0002	0.0	U
Heptachlor	04/27/92	05/02/92	0.008	0.0001	0.0	U
Heptachlor epoxide	04/27/92	05/02/92	0.008	0.0001	0.0	U
Lindane	04/27/92	05/02/92	0.4	0.0001	0.0	U
Methoxychlor	04/27/92	05/02/92	10.0	0.0005	0.0	U
Toxaphene	04/27/92	05/02/92	0.5	0.005	0.0	U
2,4-D	04/30/92	05/03/92	10.0	0.0026	0.0	U
2,4,5-TP	04/30/92	05/03/92	1.0	0.0026	0.0	U

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010343
SAMPLE NO. 9204221045

SAMPLE DATE 04/22/92
EXTRACTION DATE 04/27/92
ANALYSIS DATE 05/02/92

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) Dibutylchlorendate	145	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010343
SAMPLE NO. 9204221045

SAMPLE DATE 04/22/92
EXTRACTION DATE 04/30/92
ANALYSIS DATE 05/03/92

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) 2,4 Dichlorophenoxybutyric acid	67	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010344
SAMPLE NO. 9204221135

SAMPLE DATE 04/22/92

COMPOUND (MG/L)	EXTRACT. DATE	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Chlordane	04/27/92	05/02/92	0.03	0.0013	0.0	U
Endrin	04/27/92	05/02/92	0.02	0.0002	0.0	U
Heptachlor	04/27/92	05/02/92	0.008	0.0001	0.0	U
Heptachlor epoxide	04/27/92	05/02/92	0.008	0.0001	0.0	U
Lindane	04/27/92	05/02/92	0.4	0.0001	0.0	U
Methoxychlor	04/27/92	05/02/92	10.0	0.0005	0.0	U
Toxaphene	04/27/92	05/02/92	0.5	0.005	0.0	U
2,4-D	04/30/92	05/03/92	10.0	0.0023	0.0	U
2,4,5-TP	04/30/92	05/03/92	1.0	0.0023	0.0	U

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010344
SAMPLE NO. 9204221135

SAMPLE DATE 04/22/92
EXTRACTION DATE 04/27/92
ANALYSIS DATE 05/02/92

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) Dibutylchlorendate	128	

177

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010344
SAMPLE NO. 9204221135

SAMPLE DATE 04/22/92
EXTRACTION DATE 04/30/92
ANALYSIS DATE 05/03/92

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) 2,4 Dichlorophenoxybutyric acid	65	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002365
SAMPLE NO. METHOD BLANK

COMPOUND (MG/L)	EXTRACT. DATE	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Chlordane	04/29/92	05/02/92	0.03	0.006	0.0	U
Endrin	04/29/92	05/02/92	0.02	0.002	0.0	U
Heptachlor	04/29/92	05/02/92	0.008	0.001	0.0	U
Heptachlor epoxide	04/29/92	05/02/92	0.008	0.001	0.0	U
Lindane	04/29/92	05/02/92	0.4	0.001	0.0	U
Methoxychlor	04/29/92	05/02/92	10.0	0.004	0.0	U
Toxaphene	04/29/92	05/02/92	0.5	0.04	0.0	U
2,4-D	04/30/92	05/02/92	10.0	0.001	0.0	U
2,4,5-TP	04/30/92	05/02/92	1.0	0.001	0.0	U

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002365
SAMPLE NO. METHOD BLANK

EXTRACTION DATE 04/29/92
ANALYSIS DATE 05/02/92

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) Dibutylchlorendate	125	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

52

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002365
SAMPLE NO. METHOD BLANK

EXTRACTION DATE 04/30/92
ANALYSIS DATE 05/02/92

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) 2,4 Dichlorophenoxybutyric acid	63	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

5.3

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002418
SAMPLE NO. MB-2

COMPOUND (MG/L)	EXTRACT. DATE	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Chlordane	04/27/92	05/02/92	0.03	0.0005	0.0	U
Endrin	04/27/92	05/02/92	0.02	0.0001	0.0	U
Heptachlor	04/27/92	05/02/92	0.008	0.0001	0.0	U
Heptachlor epoxide	04/27/92	05/02/92	0.008	0.0001	0.0	U
Lindane	04/27/92	05/02/92	0.4	0.0001	0.0	U
Methoxychlor	04/27/92	05/02/92	10.0	0.0002	0.0	U
Toxaphene	04/27/92	05/02/92	0.5	0.002	0.0	U
2,4-D	04/30/92	05/02/92	10.0	0.001	0.0	U
2,4,5-TP	04/30/92	05/02/92	1.0	0.001	0.0	U

SAMPLE NUMBER = METHOD BLANK

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002418
SAMPLE NO. MB-2

EXTRACTION DATE 04/27/92
ANALYSIS DATE 05/02/92

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) Dibutylchlorendate	119	

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002418
SAMPLE NO. MB-2

EXTRACTION DATE 04/30/92
ANALYSIS DATE 05/02/92

COMPOUND	RESULT	Q
Surrogates		
(%Recovery) 2,4 Dichlorophenoxybutyric acid	63	

TCLPGC

MATRIX CORRECTION SPIKE
TCLP EXTRACT
PESTICIDES/HERBICIDES

LAB NAME RECRA ENVIRONMENTAL INC.
ANALYSIS DATE: 05/02/92
EXTRACTION DATE: 04/29/92
RECRA SAMPLE IDENTIFICATION AS010341
CLIENT SAMPLE IDENTIFICATION 9204221240

PARAMETER	NG OF SPIKE	PERCENT RECOVERY	Q
Endrin	0.10	138	G
Lindane	0.10	120	G
Methoxychlor	0.10	121	G
Heptachlor	0.10	129	G
Heptachlor epoxide	0.10	124	G
2,4-D	0.74	80	
2,4,5-TP (Silvex)	0.23	96	
SURROGATE (% Recovery)			
Dibutylchlorendate		132	
2,4-Dichlorophenoxybutyric acid		33	

HERBICIDES - ANALYSIS DATE: 05/03/92
EXTRACTION DATE: 04/30/92

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010341
SAMPLE NO. 9204221240

SAMPLE DATE 04/22/92

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	04/30/92	5.0	0.005	0.005	U
Total Barium	6010	04/30/92	100.0	0.38	0.38	G
Total Cadmium	7130	04/30/92	1.0	0.01	0.01	U
Total Chromium	7190	04/30/92	5.0	0.01	0.01	U
Total Lead	7420	05/01/92	5.0	0.09	0.09	U
Total Mercury	7470	04/29/92	0.2	0.0004	0.0004	U
Total Selenium	7740	04/30/92	1.0	0.005	0.005	U
Total Silver	6010	04/30/92	5.0	0.01	0.01	U

MEASURED VALUE COULD NOT BE CORRECTED FOR
ANALYTICAL BIAS DUE TO ELEVATED SPIKE RECOVERY.

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002366
SAMPLE NO. TCLP BLANK

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	04/30/92	5.0	0.005	0.0	U
Total Barium	6010	04/30/92	100.0	0.03	0.0	U
Total Cadmium	7130	04/30/92	1.0	0.01	0.0	U
Total Chromium	7190	04/30/92	5.0	0.01	0.0	U
Total Lead	7420	05/01/92	5.0	0.09	0.0	U
Total Mercury	7470	04/29/92	0.2	0.0004	0.0	U
Total Selenium	7740	04/30/92	1.0	0.005	0.0	U
Total Silver	6010	04/30/92	5.0	0.01	0.0	U

SAMPLE NUMBER = TCLP EXTRACTOR BLANK

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002367
SAMPLE NO. MB-1

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	04/30/92	5.0	0.005	0.0	U
Total Barium	6010	04/30/92	100.0	0.03	0.0	U
Total Cadmium	7130	04/30/92	1.0	0.01	0.0	U
Total Chromium	7190	04/30/92	5.0	0.01	0.0	U
Total Lead	7420	05/01/92	5.0	0.09	0.0	U
Total Mercury	7470	04/29/92	0.2	0.0002	0.0	U
Total Selenium	7740	04/30/92	1.0	0.005	0.0	U
Total Silver	6010	04/30/92	5.0	0.01	0.0	U

SAMPLE NUMBER = METHOD BLANK

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

60

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010342
SAMPLE NO. 9204221010

SAMPLE DATE 04/22/92

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	04/30/92	5.0	0.005	0.0	U
Total Barium	6010	04/29/92	100.0	0.03	0.0	
Total Cadmium	7130	04/30/92	1.0	0.01	0.0	U
Total Chromium	7190	04/29/92	5.0	0.01	0.0	U
Total Lead	7421	04/29/92	5.0	0.003	0.0	U
Total Mercury	7470	04/29/92	0.2	0.0004	0.0	U
Total Selenium	7740	04/30/92	1.0	0.005	0.0	U
Total Silver	6010	04/29/92	5.0	0.01	0.0	U

MEASURED VALUES HAVE NOT BEEN CORRECTED FOR ANALYTICAL BIAS.

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010343
SAMPLE NO. 9204221045

SAMPLE DATE 04/22/92

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	04/30/92	5.0	0.005	0.0	U
Total Barium	6010	04/29/92	100.0	0.053	0.0	
Total Cadmium	7130	04/30/92	1.0	0.01	0.0	U
Total Chromium	7190	04/29/92	5.0	0.012	0.0	
Total Lead	7421	04/29/92	5.0	0.003	0.0	U
Total Mercury	7470	04/29/92	0.2	0.0004	0.0	U
Total Selenium	7740	04/30/92	1.0	0.005	0.0	U
Total Silver	6010	04/29/92	5.0	0.01	0.0	U

MEASURED VALUES HAVE NOT BEEN CORRECTED FOR ANALYTICAL BIAS.

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010344
SAMPLE NO. 9204221135

SAMPLE DATE 04/22/92

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	04/30/92	5.0	0.005	0.0	U
Total Barium	6010	04/29/92	100.0	0.46	0.0	
Total Cadmium	7130	04/30/92	1.0	0.01	0.0	U
Total Chromium	7190	04/29/92	5.0	0.01	0.0	U
Total Lead	7421	04/29/92	5.0	0.003	0.0	U
Total Mercury	7470	04/29/92	0.2	0.0004	0.0	U
Total Selenium	7740	04/30/92	1.0	0.005	0.0	U
Total Silver	6010	04/29/92	5.0	0.01	0.0	U

MEASURED VALUES HAVE NOT BEEN CORRECTED FOR .
ANALYTICAL BIAS.

H + GCL
TOXICITY CHARACTERISTIC
LEACHING PROCEDURE EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002372
SAMPLE NO. MB-2

COMPOUND (MG/L)	METHOD NUMBER	ANALYSIS DATE	EPA MAX. CONC.	RESULT	MATRIX CORR. VALUE	Q
Total Arsenic	7060	04/30/92	5.0	0.005	0.0	U
Total Barium	6010	04/29/92	100.0	0.03	0.0	U
Total Cadmium	7130	04/30/92	1.0	0.01	0.0	U
Total Chromium	7190	04/29/92	5.0	0.01	0.0	U
Total Lead	7421	04/29/92	5.0	0.003	0.0	U
Total Mercury	7470	04/29/92	0.2	0.0002	0.0	U
Total Selenium	7740	04/30/92	1.0	0.005	0.0	U
Total Silver	6010	04/29/92	5.0	0.01	0.0	U

SAMPLE NUMBER = METHOD BLANK

TCLPTM-1

MATRIX CORRECTION SPIKE
TCLP EXTRACT
TOTAL METALS

LAB NAME RECRA ENVIRONMENTAL INC.
RECRA SAMPLE IDENTIFICATION AS010341
CLIENT SAMPLE IDENTIFICATION 9204221240

PARAMETER	METHOD NUMBER	MICROGRAMS OF SPIKE	PERCENT RECOVERY	Q
Total Arsenic	7060	40	120	G
Total Barium	6010	2000	103	G
Total Cadmium	7130	50	108	G
Total Chromium	7190	200	117	G
Total Lead	7420	500	106	G
Total Mercury	7470	0.4	96	
Total Selenium	7740	10	0	L
Total Silver	6010	50	0	L

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010341
SAMPLE NO. 9204221240

SAMPLE DATE 04/22/92

COMPOUND	UNIT OF MEASURE	METHOD NUMBER	ANALYSIS DATE	RESULT	Q
Corrosivity	STD uni	1110	04/29/92	8.31	
Flash Point	°F	1010	04/30/92	200	*
Paint Filter Test	p/f	9095	05/05/92	0.0	P
Total Available Cyanide	MG/KG	7.3.2	04/30/92	10	U

P=PASS
* VALUE OBTAINED IS GREATER THAN 200 DEGREES FAHRENHEIT.

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010342
SAMPLE NO. 9204221010

SAMPLE DATE 04/22/92

PARAMETER	UNIT OF MEASURE	ANALYSIS DATE	RESULT	Q
Corrosivity	*	04/28/92	7.17	
Flash Point	°F	04/30/92	200	**
Total Available Cyanide	mg/kg	04/30/92	10	U

* STANDARD UNITS
** VALUE OBTAINED IS GREATER THAN 200 DEGREES FAHRENHEIT.

H + GCL

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010343
SAMPLE NO. 9204221045

SAMPLE DATE 04/22/92

PARAMETER	UNIT OF MEASURE	ANALYSIS DATE	RESULT	Q
Corrosivity	*	04/28/92	7.49	
Flash Point	°F	04/30/92	200	**
Total Available Cyanide	mg/kg	04/30/92	10	U

* STANDARD UNITS
** VALUE OBTAINED IS GREATER THAN 200 DEGREES FAHRENHEIT.

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AS010344
SAMPLE NO. 9204221135

SAMPLE DATE 04/22/92

PARAMETER	UNIT OF MEASURE	ANALYSIS DATE	RESULT	Q
Corrosivity	*	04/28/92	7.71	
Flash Point	°F	04/30/92	200	**
Total Available Cyanide	mg/kg	04/30/92	10	U

* STANDARD UNITS
** VALUE OBTAINED IS GREATER THAN 200 DEGREES FAHRENHEIT.

LAB NAME RECRA ENVIRONMENTAL INC.
JOB NO. 92-1256
DESC AR002368
SAMPLE NO. METHOD BLANK

PARAMETER	UNIT OF MEASURE	ANALYSIS DATE	RESULT	Q
Total Available Cyanide	mg/kg	04/30/92	10	U

GCL

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Las Cruces, NM 88004
(505) 524-5364

No 4923

Chain of Custody

DATE 4/22/92 PAGE 1 OF 1

LAB NAME RECRA ENVIRONMENTAL
ADDRESS 8320 GUILFORD ROAD Suite F
Columbia MD 21046
TELEPHONE (301) 381-2288

SAMPLERS (SIGNATURE)
W. Brown

SAMPLE NUMBER	MATRIX	LOCATION	BASE/NEU/ACID CMPDS. GC/MS/ 625/8270	VOLATILE CMPDS. GC/MS/ 624/8240	PESTICIDES/PCB 608/8080 TCL & TAL METALS	POLYNUCLEAR AROMATIC 610/8310	PHENOLS, SUB PHENOLS 604/8040	HALOGENATED VOLATILES 601/8010	AROMATIC VOLATILES 602/8020	TOTAL ORGANIC CARBON 415/9060	TOTAL ORGANIC HALIDES 9020	PETROLEUM HYDROCARBONS 418.1	TPH MODIFIED 8015	TOTAL TCLP	PRIORITY POLLUTANT METALS (13)	CAM METALS (18) TTLC/STLC	EP TOX METALS (8)	SDWA-INORGANICS PRIMARY/SECONDARY	HAZARDOUS WASTE PROFILE	PAINT FILTER	CORROSIVITY REACTIVITY	FLASHPOINT	NUMBER OF CONTAINERS
9204221010	H2O	Plum Brook		✓	✓									✓							✓	✓	8
9204221045	"	"		✓	✓									✓							✓	✓	8
9204221135	"	"		✓	✓									✓							✓	✓	8
9204221240	SOIL	"												✓						✓	✓	✓	2

PROJECT INFORMATION
PROJECT: NASA
PROJECT DIRECTOR: VIRGINIA NICHOLAS
CHARGE CODE NO. 5103-01
SHIPPING ID. NO.
VIA: FED EX

SAMPLE RECEIPT
TOTAL NO. OF CONTAINERS: 26
CHAIN OF CUSTODY SEALS:
REC'D GOOD CONDITION/COLD:
CONFORMS TO RECORD:
LAB NO.

SPECIAL INSTRUCTIONS/COMMENTS:
2 WK TURNAROUND

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
William Brown		
(Signature) (Time)	(Signature) (Time)	(Signature) (Time)
William Brown		
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name) (Date)
(Company)	(Company)	(Company)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3.**
(Signature) (Time)	(Signature) (Time)	(Signature) (Time)
		Derrick Johnson 4.24.92 0830
(Printed Name) (Date)	(Printed Name) (Date)	(Printed Name)
(Company)	(Company)	ANALYTI

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