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Focused Investigation and Remedial Action Work Plan for Building S-106B

Naval Weapons Station Earle
Colts Neck, New Jersey

Northern Division
Naval Facilities Engineering Command

Contract No. N62472-90-D-1298
Contract Task Order 0206

Sptember 1997

Brown & Root Environmental

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R-51-8-7-3

FOCUSED INVESTIGATION AND REMEDIAL ACTION WORK PLAN
for
BUILDING S-106B
NAVAL WEAPONS STATION EARLE,
COLTS NECK, NEW JERSEY

COMPREHENSIVE LONG-TERM
ENVIRONMENTAL ACTION - NAVY (CLEAN) CONTRACT

Submitted to:
Northern Division
Environmental Branch, Code 18
Naval Facilities Engineering Command
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Contract No. N62472-90-D1298
Contract Task Order 0206

September 1997

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1.0 INTRODUCTION AND OVERVIEW

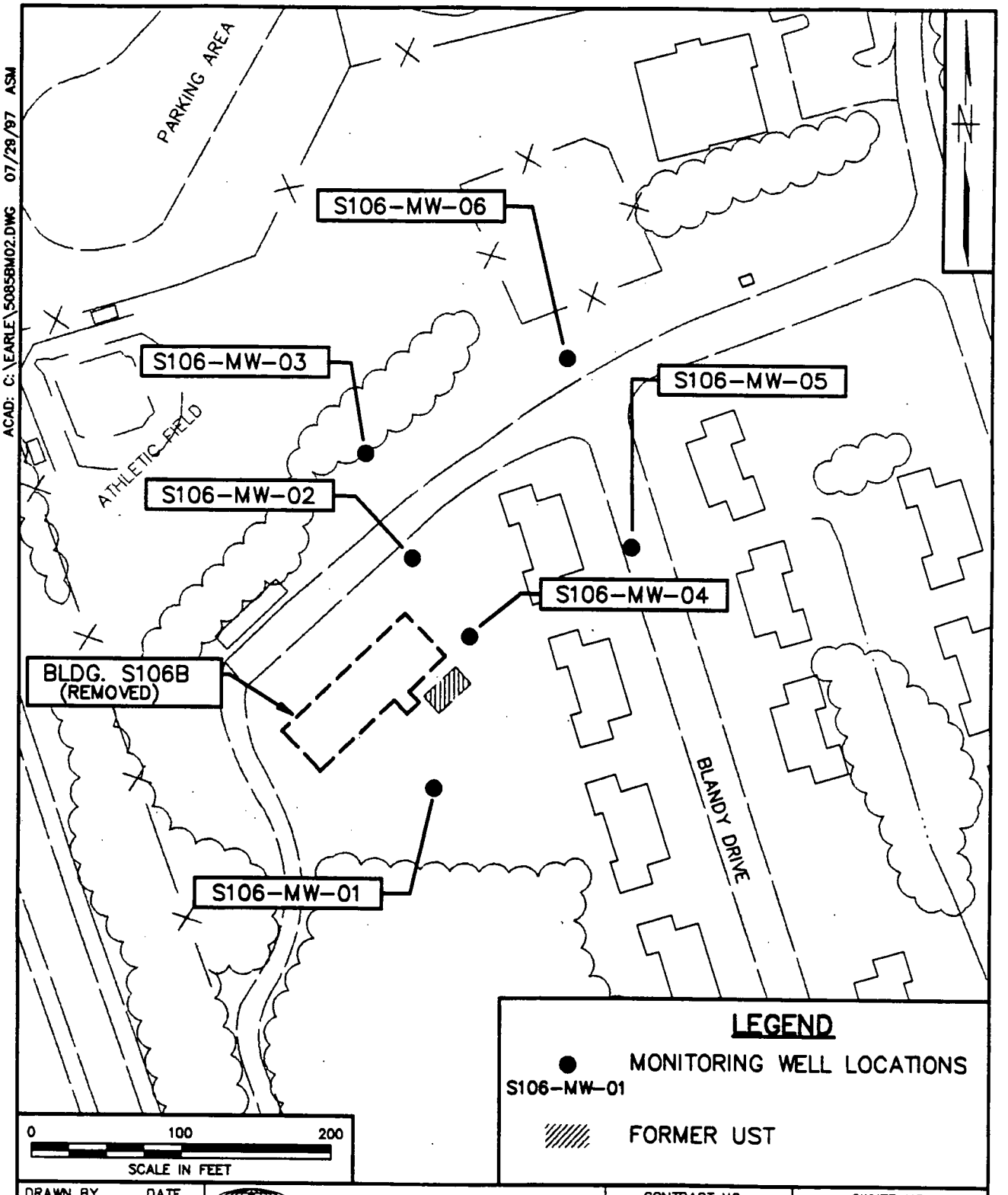
1.1 INTRODUCTION

Brown and Root (B&R) Environmental prepared this focused investigation and remedial action work plan (RAWP) report for Northern Division (NORTHDIV) Naval Facilities Engineering Command (NAVFAC) under the Comprehensive Long-Term Environmental Action - Navy (CLEAN) Contract Number N62472-92-D-1298, Contract Task Order (CTO) No. 0206. The purpose of this report is to present the results of an investigation and evaluation performed by B&R Environmental for NORTHDIV. The investigation focused on data collection to better define the extent of groundwater contamination within the vicinity of former Building S-106B. The investigation also evaluated natural attenuation of the dissolved-phase groundwater contamination from a No. 2 fuel oil discharge that occurred from a former 1,000-gallon underground storage tank (UST) located at the southeastern corner of former Building S-106B at the Naval Weapons Station (NWS) Earle. This work was performed as a follow-up to the Phase I remedial investigation (RI), also performed by B&R Environmental at the site. Refer to B&R Environmental's November 1996 Phase I RI report for detailed discussions of the site conditions, history, and extent of contamination.

1.2 HISTORICAL OVERVIEW

Building S-106B, now described as Area of Concern (AOC) S106B, was located on the Main Base, within the residential/housing area that is situated approximately 650 feet southeast of the Main Gate (Figure 1-1). Before it was demolished in 1996, Building S-106B was previously a residential dwelling. The UST on site was removed in 1991, at which time significant evidence of contamination was discovered. Approximately 392 tons of contaminated soil were removed during the UST closure. Post-excavation samples obtained at the same time indicated total petroleum hydrocarbon (TPH) levels as high as 11,659 mg/kg.

The Navy has implemented various response actions at the site, including installation of shallow piezometers, installation and operation of a free-product recovery well, and a Phase I RI to characterize the nature and extent of contamination. Refer to Section 2.1 of this report for a summary discussion of the results of the Phase I RI.



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CHECKED BY RJ DATE 9/16/97	AOC S106B LAYOUT CTO 206-FOCUSED INVESTIGATION AND RAWP NWS EARLE COLTS NECK , NEW JERSEY	APPROVED BY	DATE
COST/SCHED-AREA		APPROVED BY	DATE
SCALE 1" = 100'		DRAWING NO. FIGURE 1-1	REV. 0

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Additional details associated with these actions can also be found in the following reports:

- Brown & Root Environmental, November 1996. UST Phase I Remedial Investigation Report for Various Site Naval Weapons Station Earle Colts Neck, New Jersey. Contract No. N62472-90-0-1298. Contract Task Order No. 0206.

- Halliburton NUS Corporation, June 1994. Underground Storage Tank Remedial Investigation Work Plan, Various Sites Weapons Station Earle, Colts Neck, New Jersey. Contract No. N62472-90-0-1298, Contract Task Order No. 0085.

1.3 REPORT FORMAT

The format for this report consists of four sections. Section 1.0 is followed by Section 2.0, which includes a summary of the results of the Phase I RI, a detailed discussion of the results of the focused field investigation, a receptor evaluation, a contaminant fate and transport model, an exposure pathways analysis, and conclusions and recommendations. Section 3.0 provides a description of the proposed groundwater monitoring program for the long-term remedial action alternative. Section 4.0 provides a list of references.

2.0 SITE SUMMARY

2.1 RESULTS OF PHASE I RI

The Phase I RI confirmed the presence of dissolved-phase petroleum-related organic compounds in groundwater at levels above the New Jersey Department of Environmental Protection's (NJDEP) Groundwater Quality Standards (GWQSs). No indications of residual soil contamination were indicated in the vicinity of the former UST. No indications of free-product were observed at and immediately downgradient of the former UST. The organic compounds identified in the groundwater included benzene, xylene, fluorene, and naphthalene. The downgradient extent of the contamination was not fully delineated. The soil gas survey conducted during the Phase I RI identified low levels of toluene in the subsurface at a distance of more than 100 feet downgradient and side-gradient from the former UST.

The Phase I RI report recommended additional groundwater investigation for AOC-S106B to focus on the development of sufficient data to evaluate and implement natural attenuation as the final remedial action response. The specific recommendations included the following:

- Additional groundwater sampling and analysis for volatile organic compounds (VOCs) and semivolatile organic compounds (SVOCs) to identify the downgradient extent of contamination.

- Continued monitoring of the existing piezometers and recovery well to maintain current data on depth to groundwater and groundwater flow direction.

- After the downgradient extent of the contamination is confirmed, installation of permanent monitoring wells to identify, evaluate, and confirm site-specific natural attenuation processes.

After the Navy issued the Phase I RI report to the NJDEP, NJDEP commented on the report in correspondence to the Navy dated January 17, 1997. NJDEP approved the RI report pending responses to two comments. B&R Environmental responded to NJDEP's comments in a letter to the Navy dated March 5, 1997, and the Navy responded to NJDEP's comments using B&R Environmental's letter. NJDEP approved the Navy's response in correspondence dated June 26, 1997. Refer to Appendix A for copies of this correspondence.

2.2 FOCUSED FIELD INVESTIGATION

The focused field investigation included additional soil and groundwater sampling. Field analysis and laboratory analysis were performed on groundwater samples and laboratory analysis was performed on the soil samples. Groundwater levels were measured and slug tests were performed to determine hydraulic gradient and hydraulic conductivity. B&R Environmental performed all site activities; the field work was completed between March and June 1997. Soil borings and installation of permanent monitoring wells were performed by a licensed New Jersey well driller under subcontract to B&R Environmental. Laboratory analyses were performed by a licensed New Jersey laboratory under subcontract to B&R Environmental.

2.2.1 Technical Overview and Summary of Results

This section summarizes the technical objectives and subsequent results of the focused field investigation. Refer to Section 2.2.2 for detailed discussions of the investigation methods and results.

The primary objective of the focused field investigation was to delineate the downgradient extent of contamination and gather additional data to assess the potential for natural attenuation of the dissolved-phase groundwater contamination. The contaminants of concern are benzene, toluene, ethylbenzene, and xylenes (BTEX).

The general technical requirements and protocol for field measurements and data acquisition during the focused field investigation, including quality assurance and quality control procedures, were established in the original UST RI work plan. All field work was performed using NJDEP's Field Sampling Procedures Manual (FSPM), May 1992. The detailed technical requirements of the focused field investigation were expanded to address site-specific data requirements identified in the Phase I report. Site conditions observed during implementation of the UST Phase I RI helped determine the specific data objectives for the focused field investigation. However, site conditions changed between implementation of Phase I RI and the focused investigation: A Navy contractor demolished Building S106B and inadvertently removed the previously installed piezometers and free-product recovery well. These circumstances had no impact on the results of the focused investigation.

2.2.1.1 Data Objectives

Refer to Table 2-1 for a comprehensive summary of the data objectives and the field investigation activities that were implemented to collect the data.

TABLE 2-1
FOCUSED INVESTIGATION DATA OBJECTIVES SUMMARY
AOC-S106B FOCUSED INVESTIGATION AND RAWP
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

Data Objective	Activities Used To Collect the Data	Data Application
Identify site-specific levels of BTEX and additional chemical and physical natural attenuation indicators in soil and groundwater within the vicinity of AOC-S106B. Delineate the downgradient extent of contamination.	• Installed 1 permanent monitoring well within the area of dissolved-phase groundwater contamination and 1 permanent monitoring well downgradient of the anticipated extent of dissolved-phase groundwater contamination. Installed 4 additional monitoring wells located upgradient, side-gradient, and downgradient from the areas of contamination as data collection points for the focused investigation. • Collected soil samples during well installation. Performed laboratory analysis on select soil samples for total organic carbon (TOC) and particle size distribution. • Collected one round of groundwater samples from all wells. Performed field screening of samples for dissolved oxygen (DO), redox potential (Eh), dissolved CO_2, alkalinity, pH, temperature, conductivity, sulfate, and ferrous iron. Performed laboratory analysis for volatile organic compounds (VOC) + 10, semivolatile organic compounds (SVOC) + 15, methane, ethane, ethene, nitrate, phosphorus, chloride, and TOC.	• Provide data input parameters for the "Bio-Screen" natural attenuation fate and transport model.
Estimate the hydraulic gradient and hydraulic conductivity for the water-table aquifer within the vicinity of AOC-S106B.	• Performed water-level measurements in existing piezometers and newly installed monitoring wells. • Performed rising-head slug tests in selected monitoring wells to calculate average hydraulic conductivity. • Developed a contour map of the water-table aquifer and calculated an average hydraulic gradient.	• Provide data input parameters for the "Bio-Screen" natural attenuation fate and transport model.

2.2.1.2 Summary of Results

Although site conditions had changed since completion of the Phase I RI, the focused investigation was performed successfully. A summary of the key results is as follows:

- All field measurements and analytical data-input requirements for the natural attenuation fate and transport model were obtained and are considered to be reliable. Refer to Section 2.4.2 for further explanation of these results.

- Subsurface soil samples from the borings placed during monitoring well installation did not indicate contaminant levels above current NJDEP clean-up criteria.

- The inferred groundwater flow direction is primarily from the southwest to the northeast. This information coincides with the groundwater flow direction indicated in previous reports.

- The groundwater gradient is relatively flat, and hydraulic conductivities indicate high permeabilities.

- Groundwater samples obtained from the monitoring well located approximately 30 feet downgradient from the former UST indicated levels of petroleum-related compounds below current NJDEP Ground Water Quality Standards (GWQSs). However, 0.01 foot of free product was observed in this well.

- Groundwater samples from monitoring wells located within 100 feet side-gradient and 150 feet downgradient from the UST excavation did not identify petroleum-related contaminants. The results suggest that the extent of dissolved-phase contamination is limited to the area immediately proximal to the UST excavation. These results may also indicate that site conditions and previous natural attenuation processes have successfully helped minimize the extent of the dissolved-phase contamination.

- Chloroform and bromodichloromethane levels in a sample from one monitoring well located 150 feet downgradient from the UST excavation exceeded the current NJDEP GWQS. These compounds are not expected to be associated with the UST-related contamination.

2.2.1.3 Reliability of the Analytical Data

B&R Environmental reviewed the chemical laboratory data generated during the focused field investigation. No quality control problems were discovered that would impact the reliability of the conclusions presented herein. Refer to Section 2.2.2.3 for a summary and discussion of the quality assurance and quality control procedures performed throughout the investigation.

2.2.1.4 External Influences on Procedures or Results

No apparent significant events or seasonal variations that may have influenced sampling procedures or analytical results were noted at the time of the field investigation.

2.2.2 Methods and Results

The purpose of this section of the report is to document the field investigation procedures and analytical methods utilized to generate the data that were obtained. This section also includes a comprehensive summary of the analytical results for all environmental samples obtained during the RI or discussed herein.

2.2.2.1 Field Methods

The field work was performed in general accordance with the original NJDEP-approved UST RI work plan, and efforts were made to conduct the field work not addressed in the work plan in accordance with NJDEP's Field Sampling Procedures Manual (May 1992). B&R Environmental personnel performed all sample collection, sample handling, and sample management throughout this investigation. J.C. Anderson, Incorporated, of Mount Laurel, New Jersey, performed as a subcontractor to B&R Environmental and provided drilling and sampling equipment, equipment operators, and an NJDEP-licensed well driller. Soil borings were drilled, subsurface soil samples were obtained, and monitoring wells were installed and developed during March and May, 1997. Groundwater samples were obtained during two separate sampling events conducted in mid-April and early June 1997. Slug tests for hydraulic conductivity determination were performed concurrent with the first groundwater sampling event.

2.2.2.1.1 Soils Borings and Monitoring Wells

Soil borings were drilled, subsurface samples were obtained, and monitoring wells were installed during three events conducted on March 3 and 4, March 24 and 25, and May 22 and 23, 1997. A summary of the soil boring, soil sampling, and monitoring well installation activities is provided in Table 2-2.

Drilling was conducted at six soil boring locations during this investigation. One of the boring locations, S106-SB-04, was chosen for installation of a monitoring well and collection of subsurface soil samples for laboratory analysis within the area of known groundwater contamination. One of the boring locations, S106-SB-01, was chosen to install a monitoring well and to obtain subsurface soil samples for laboratory analysis from the area upgradient of the former UST and groundwater contamination. The remaining boring locations, S106-SB-02, S106-SB-03, S106-SB-05, and S106-SB-06, were chosen to install monitoring wells and to obtain subsurface soil samples for laboratory analysis within or near the downgradient limits of contaminated groundwater.

All the soil borings were drilled until saturated conditions were reached in order to obtain the subsurface soil samples from the 6-inch interval directly above the water table. The borings were then drilled several feet into the saturated zone in order to accommodate monitoring well installation. These borings ranged in depth from 26 to 34 feet below the ground surface.

Five of the six soil borings were advanced with a drilling rig using 4.25-inch inside diameter, hollow-stem augers to accommodate 2-inch-diameter monitoring wells. One boring, S106-SB-04, was drilled using 6.25-inch inside diameter, hollow-stem augers to accommodate a 4-inch-diameter monitoring well. Continuous split-spoon samples were obtained from the ground surface to total depth in two borings, from a depth of 14 feet to total depth in one boring, and from a depth of 10 feet to total depth in three borings. The B&R Environmental field geologist made a detailed log of each boring. Refer to Appendix B for copies of the boring logs.

Each of the six permanent monitoring wells were installed by advancing the hollow-stem augers to the desired depth below the water table, inserting slotted polyvinyl chloride (PVC) well screen and PVC riser, and backfilling the annular space to the appropriate depth with clean quartz sand, a pure bentonite seal, and cement-bentonite grout. Wells S106-MW-01, S106-MW-02, S106-MW-03, S106-MW-05, and S106-MW-06 were constructed using 2-inch-diameter, 0.01-inch slotted PVC screen, and 2-inch-diameter PVC riser inside the 4.25-inch inside diameter hollow-stem augers. Well S106-MW-04 was constructed using 4-inch-diameter, 0.01-inch slotted PVC screen, and 4-inch-diameter PVC riser inside the 6.25-inch inside diameter hollow-stem augers. Three of the wells were completed with steel protective casings and the

other three wells were completed with flush-mount covers, all set in concrete. The well risers were fitted with a water-tight, lockable caps. All well installation was performed under the supervision of the B&R Environmental field geologist. Refer to Appendix C for copies of the monitoring well construction sheets.

Each of the permanent monitoring wells were developed by pumping to remove sediment and fines from the well screen. Between 50 and 160 gallons of water were pumped from each well until the discharged water became clearer and free of significant observed sand, silt, and fines.

The ground elevation, inner casing elevation, protective casing elevation, adjacent ground surface elevation, and horizontal location coordinates of each monitoring well were determined by a licensed surveyor subcontracted by B&R Environmental.

Field decontamination of drilling and sampling equipment and subsequent collection of field rinse blanks were performed in accordance with the work plan and the NJDEP Field Sampling Procedures Manual. Investigation-derived wastes (IDW), including decontamination rinse waters and excess auger cuttings, were containerized on site in Department of Transportation (DOT)-approved 55-gallon steel drums. All IDW were disposed off site in accordance with NJDEP and federal requirements

2.2.2.1.2 Soil Sampling

Subsurface soil samples were obtained concurrent with the drilling of the soil borings on March 3 and 4, March 24 and 25, and May 22 and 23, 1997. A summary of the subsurface soil sampling activities is provided in Table 2-2.

Subsurface soil samples were obtained from the 6-inch interval above the saturated zone in each of the six borings that were drilled. All samples were obtained using 2-inch or 3-inch split-spoon sample barrels. The B&R Environmental field geologist made a detailed log of each boring and sample. Refer to Appendices B and D, respectively, for copies of the boring logs and sample logsheets.

All soil samples underwent laboratory analysis for VOCs + 10, SVOCs + 15, total organic carbon (TOC), pH, particle size distribution, and percent moisture content.

Field decontamination of drilling and sampling equipment and subsequent collection of field rinse blanks were performed in accordance with the work plan and the NJDEP Field Sampling Procedures Manual.

TABLE 2-2
SUMMARY OF SOIL BORING AND MONITORING WELL ACTIVITIES
BUILDING S106B FOCUSED INVESTIGATION AND RAWP
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

Soil Boring Number	Date Drilled	Drilling Method	Borehole Total Depth (ft.)	Soil Samples	Soil Sample Depth (ft.)	Installed Monitoring Well	Monitoring Well Construction	Screened Completion Depth (ft.)
S106-SB-01	3/3/97	4.25" H.S.A.	34	S106-SB-01-25.5	25.5 - 26.0	S106-MW-01	2-inch PVC	23.5 - 33.5
S106-SB-02	3/4/97	4.25" H.S.A.	30	S106-SB-02-22.5	22.5 - 23.0	S106-MW-02	2-inch PVC	21.0 - 31.0
S106-SB-03	3/24/97	4.25" H.S.A.	26	S106-SB-03-19.5	19.5 - 20.0	S106-MW-03	2-inch PVC	18.0 - 28.0
S106-SB-04	3/25/97	6.25" H.S.A.	28	S106-SB-04-20.5	20.5 - 21.0	S106-MW-04	4-inch PVC	19.0 - 29.0
S106-SB-05	5/23/97	4.25" H.S.A.	30	S106-SB-05-21	21.0 - 21.5	S106-MW-05	2-inch PVC	19.0 - 29.0
S106-SB-06	5/22/97	4.25" H.S.A.	28	S106-SB-06-19	19.0 - 19.5	S106-MW-06	2-inch PVC	18.0 - 28.0

* H.S.A. = hollow stem auger drilling.

2.2.2.1.3 Groundwater Sampling

Six groundwater samples (one from each monitoring well) were obtained during two separate events on April 9 through 15, 1997 and June 5, 1997. Well S106-MW-01 was sampled on April 19, Wells S106-MW-02 and S106-MW-03 were sampled on April 14, Well S106-MW-04 was sampled on April 15, and Wells S106-MW-05 and S106-MW-06 were sampled on June 5.

Wells S106-MW-01, S106-MW-02, S106-MW-03, S106-MW-05, and S106-MW-06 were each purged of approximately three well volumes and then sampled using low-flow bladder pumps. Well S106-MW-04 was observed to contain a layer of a free product approximately 0.01 foot thick atop the groundwater. This well was purged of one well volume and then sampled using a peristaltic pump and dedicated, disposable, polyethylene tubing. Only groundwater was pumped during purging and sampling of well S106-MW-04.

Groundwater samples from all wells underwent laboratory analysis for VOC + 10, SVOC + 15, methane, ethane, ethylene, nitrate, phosphorous, sulfate, chloride, TOC, and pH.

Refer to Appendix D for copies of the groundwater sample logsheets.

2.3.2.1.4 Hydraulic Conductivity Testing

Rising head slug tests were performed on April 15, 1997 in the first four of the six monitoring wells installed during this investigation. The project team induced water-level changes by quickly withdrawing a PVC slug of known dimensions and then measured subsequent water-level changes using a pressure transducer and automatic data logger. The recorded data were then plotted and analyzed using the Bouwer and Rice technique. All downhole slug testing equipment was decontaminated before and after use in each well.

Refer to Appendix E for copies of the slug test data and calculations.

2.3.2.1.5 Water-Level Measurements

One comprehensive round of water-level measurements was obtained from all six monitoring wells on June 16, 1997. Depths to groundwater were measured from the top of the inner well casing using an electronic water-level indicator capable of measuring water levels with an accuracy of 0.01 feet.

Groundwater elevations were calculated by subtracting the measured depths to water from the surveyed elevation of the top of the inner casing. No free product layer was reported in well S106-MW-04 during the June 16 water-level measurements; therefore, no correction for the presence of a free product layer is necessary. A summary of water-level measurements and elevations is provided in Table 2-3, Section 2.2.2.2.2.

2.3.2.1.6 Water Quality Measurements

Field water quality measurements were obtained from the six monitoring wells during the groundwater sampling events on April 9 through 15, 1997 and June 5, 1997. The field measurements were used to assess natural attenuation and as data input for the fate and transport model.

Field measurements of pH, specific conductivity, temperature, dissolved oxygen, oxidation-reduction potential, and turbidity were performed for each well volume purged using a Hydrolab Scout in-line water quality meter or a YSI meter and flow-through cell. The wet chemistry parameters reduced iron, carbon dioxide, sulfate, and alkalinity were measured using Hach kits upon completion of well purging.

Refer to Section 2.4.3 for a discussion of the water-quality measurements in relation to the natural attenuation evaluation. Refer to Appendix D for copies of the groundwater sample logsheets, which include the field measurements of water quality.

2.2.2.2 Field Results

2.2.2.2.1 Soils and Geology

Based on regional mapping, the AOC is near the contact between the Miocene Kirkwood and Vincentown Formations. The Vincentown Formation consists of gray and green, glauconitic, fine- to coarse-grained sand and brown, clayey, very fossiliferous glauconite and quartz calcarenite. The Kirkwood Formation consists of gray and tan, very fine- to medium-grained quartz sand and dark-colored, micaceous, diatomaceous clay. Upper colluvial deposits consisting of massive sand and gravel, possibly containing

quartz and ironstone pebbles, may also be present within the AOC. Direct-push borings completed during the RI generally encountered greenish-brown, brown, and orange very fine- to fine-grained sand.

Lithologic descriptions from the six soil borings drilled during this investigation are in close agreement with the geological description of the site presented in the UST RI report (B&R Environmental, October 1996). Each boring encountered approximately 5 feet of brown, grayish-brown, and orange-brown, silty, fine-grained sand with some pebbles. These surficial deposits are generally underlain by olive-brown and orange-brown, silty, fine-grained sand, silty, clayey, fine-grained sand, some clayey fine-grained sand, and some sandy silt and clay to depths of about 12 to 24 feet. Below this, the sediments generally consist of olive-brown and orange-brown, silty, fine- to medium-grained sand. The surficial deposits are interpreted to consist of soils and possibly some clean fill and/or upper colluvium. The subsurface deposits are interpreted to belong to the Vincentown Formation but may also contain some Kirkwood Formation sediments or upper colluvium in places.

Particle size analyses were performed on the subsurface soil samples from each of the six borings. The results indicate that the subsurface materials at the site are relatively uniform in composition. They contain from 11 to 30 percent fines (silt and clay), 43 to 69 percent fine-grained sand, 18 to 30 percent medium-grained sand, and about one percent or less coarse-grained sand and fine to coarse gravel. These sediments are classified as medium- to fine-grained sand with some fines and a trace of gravel.

2.2.2.2.2 Hydrogeology

Data from the additional soil borings and monitoring wells installed during the focused investigation support the hydrogeologic interpretations of the UST RI (B&R Environmental, November 1996). The shallow groundwater at the site occurs under water-table conditions within an aquifer composed of the sandy sediments, probably of the Vincentown Formation. The depth to groundwater throughout the site ranges from approximately 19 to 26 feet below the ground surface.

A contour map showing the approximate elevation of the water-table surface is included as Figure 2-1. This map was constructed using water-table elevations from the comprehensive round of water-level measurements performed on June 16, 1997. A summary of the focused investigation groundwater level measurements and elevations is included in Table 2-3.

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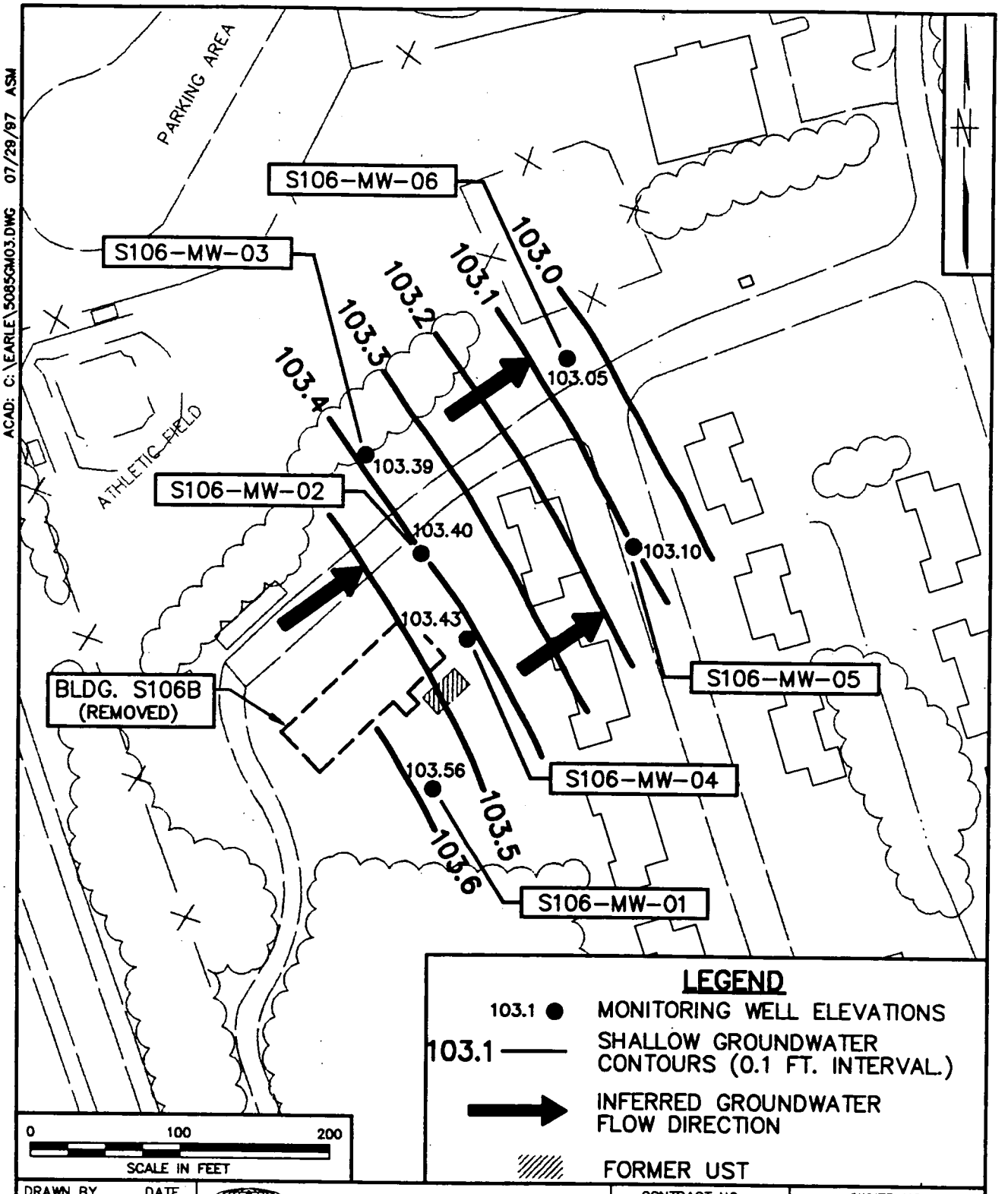

DRAWN BY ASM DATE 7/29/97	Brown & Root Environmental	CONTRACT NO. N62472-90-D-1298	OWNER NO. ———
CHECKED BY TGD DATE 9/16/97	SHALLOW GROUNDWATER CONTOURS JUNE 16, 1997 – AOC S106B CTO 206 FOCUSED INVESTIGATION AND RAWP NWS EARLE COLTS NECK, NEW JERSEY	APPROVED BY	DATE
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SCALE 1" = 100'		DRAWING NO. FIGURE 2-1	REV. 0

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TABLE 2-3
SUMMARY OF GROUNDWATER-LEVEL MEASUREMENTS - JUNE 16, 1997
AOC-S106B FOCUSED INVESTIGATION AND RAWP
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

Well Number	Top of Casing Elevation (ft. msl)	June 16, 1997	
		Depth to Groundwater (ft. below top of casing)	Water Table Elevation (ft. msl)
S106-MW-01	129.42	25.86	103.56
S106-MW-02	123.97	20.57	103.40
S106-MW-03	124.76	21.37	103.39
S106-MW-04	126.24	22.81	103.43
S106-MW-05	124.61	21.51	103.10
S106-MW-06	122.49	19.44	103.05

The water-table elevation contoured from the six site wells forms a smooth, almost planar surface in this area. The water-table gradient and the inferred groundwater flow direction are to the northeast. The average magnitude of the water-table gradient across the site based on the groundwater elevation measurements is approximately 0.0025.

Hydraulic conductivity estimates were calculated from rising head slug tests performed in six wells in the shallow water-table aquifer during the RA investigation. Duplicate tests were performed in several of the wells in order to check the accuracy of the data. The slug test results are summarized on Table 2-5.

TABLE 2-4

HYDRAULIC CONDUCTIVITY
AOC-S106B FOCUSED INVESTIGATION AND RAWP
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

Well Number	Hydraulic Conductivity (ft/sec)	Hydraulic Conductivity (cm/sec)
S106-MW-01	1.17E-03	3.56E-02
S106-MW-02	1.59E-03	4.84E-02
S106-MW-03	5.17E-04	1.58E-02
S106-MW-04	1.91E-04	5.84E-03

The hydraulic conductivity measurements indicate that the water-table aquifer at the site has relatively high permeability. This result is consistent with the well-sorted, sandy lithology of the sediments forming the aquifer and with the observed low magnitude of the water-table surface gradient at the site.

2.2.2.3 Analytical Methods and Quality Assurance/Quality Control

IEA of New Jersey performed all VOC and SVOC sample analyses. IEA subcontracted the analyses for TOC to IEA of Monroe, Connecticut and the grain size and percent moisture to Golder Associates of Mt. Laurel, New Jersey. Maximum holding times were maintained for all sample containers and quality control samples. No problems were encountered in sample shipment or chain-of-custody procedures. Table 2-5 summarizes the analytical methods and QA/QC requirements.

2.2.2.3.1 Additional Quality Control Assurance Indicators

Trip blanks, field duplicates, and matrix spike/matrix spike duplicate (MS/MSD) samples were provided during the focused field sampling events for VOC and SVOC analysis. Field rinse blanks were provided for soil sampling. Field rinse blanks were not provided for the groundwater sampling because dedicated disposable sample collection bailers were used.

TABLE 2-5
ANALYTICAL METHODS AND QUALITY ASSURANCE SUMMARY
AOC-S106B FOCUSED INVESTIGATION AND RAWP
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

ANALYTICAL PARAMETER	ANALYTICAL METHOD	HOLDING TIMES[1]	SAMPLE VOLUME	SAMPLE PRESERVATIVE
TCL VOC+10[2]	Aqueous: EPA SOW OLM03.1 Solid: EPA 8240B with NJDEP data quality/deliverable level 3	7 days	Aqueous: Two 40-ml glass jars with black phenolic plastic screw cap and Teflon-lined lid Solid: Two 60-ml glass jars with white polypropylene cap and Teflon-lined septum.	Aqueous: Cool to 4°C Solid: Cool to 4°C
TCL SVOC+15[3]	Aqueous: EPA SOW OLM03.1 Solid: EPA 8270B with NJDEP data quality/deliverable level 3	Aqueous: 7 days to extraction; 40 days to analysis. Solid: 7 days to extraction; 40 days to analysis.	Aqueous: One 1-liter amber glass jar with Teflon-lined lid. Solid: One 8-ounce amber glass jar with Teflon-lined lid.	Aqueous: Cool to 4°C Solid: Cool to 4°C
Particle Size	ASTM D421/D422	None	One 32-oz. clear wide-mouth glass jar	None
TOC[4]	EPA 9060 with NJDEP data quality/deliverable level 2	28 days (aqueous and soil)	One 4-oz. Clear wide-mouth glass jar	Aqueous: Cool to 4°C, H_2SO_4 Solid: Cool to 4°C
Moisture Content	ASTM D2216	None	One 32-oz. clear wide-mouth glass jar	None
Anions in Groundwater (sulfate, nitrate, phosphorus, and chloride)	EPA 300.0 with NJDEP data quality/deliverable level 2	28 days (Nitrate 48 hours)	One liter poly	For sulfate, chloride: Cool to 4°C For nitrate, phosphorus: Cool to 4° C, H_2SO_4
Dissolved Gases in Groundwater (methane, ethane, ethene)	Modified SW-846 3810 followed by Modified SW-846 8015 (GC/FID) with NJDEP data quality/deliverable level 2	As soon as possible	Two 40-ml glass jars with black phenolic plastic screw cap and Teflon-lined lid	Cool to 4°C

(1) Maximum allowable holding times are calculated from the time when the sample is collected in the field.
(2) TCL VOC+10 - Target Compound List volatile organic compounds plus library search for the 10 highest-concentration non-target tentatively identified compounds present in the sample.
(3) TCL SVOC +15 - Target Compound List semivolatile organic compounds plus library search for the 15 highest-concentration non-target tentatively identified compounds present in the sample.
(4) TOC - Total Organic Carbon

2.2.2.4 Laboratory Results

2.2.2.4.1 Subsurface Soil Samples

Six subsurface soil samples were collected from six borings by B&R Environmental. All of the samples were obtained from the 6-inch interval directly above the water table, and all underwent laboratory analysis for VOCs + 10, SVOCs + 15, TOC, pH, particle size distribution, and percent moisture. These results are presented in Figure 2-2 and Table 2-6 and were used to determine if soil contamination occurred at the well location and to construct and refine fate and transport models for the Building S106 study area. Refer to Appendix F for a summary of the soil sample results. Refer to Appendix H for a copy of the laboratory data sheets.

In general, the analytical results indicate the following:

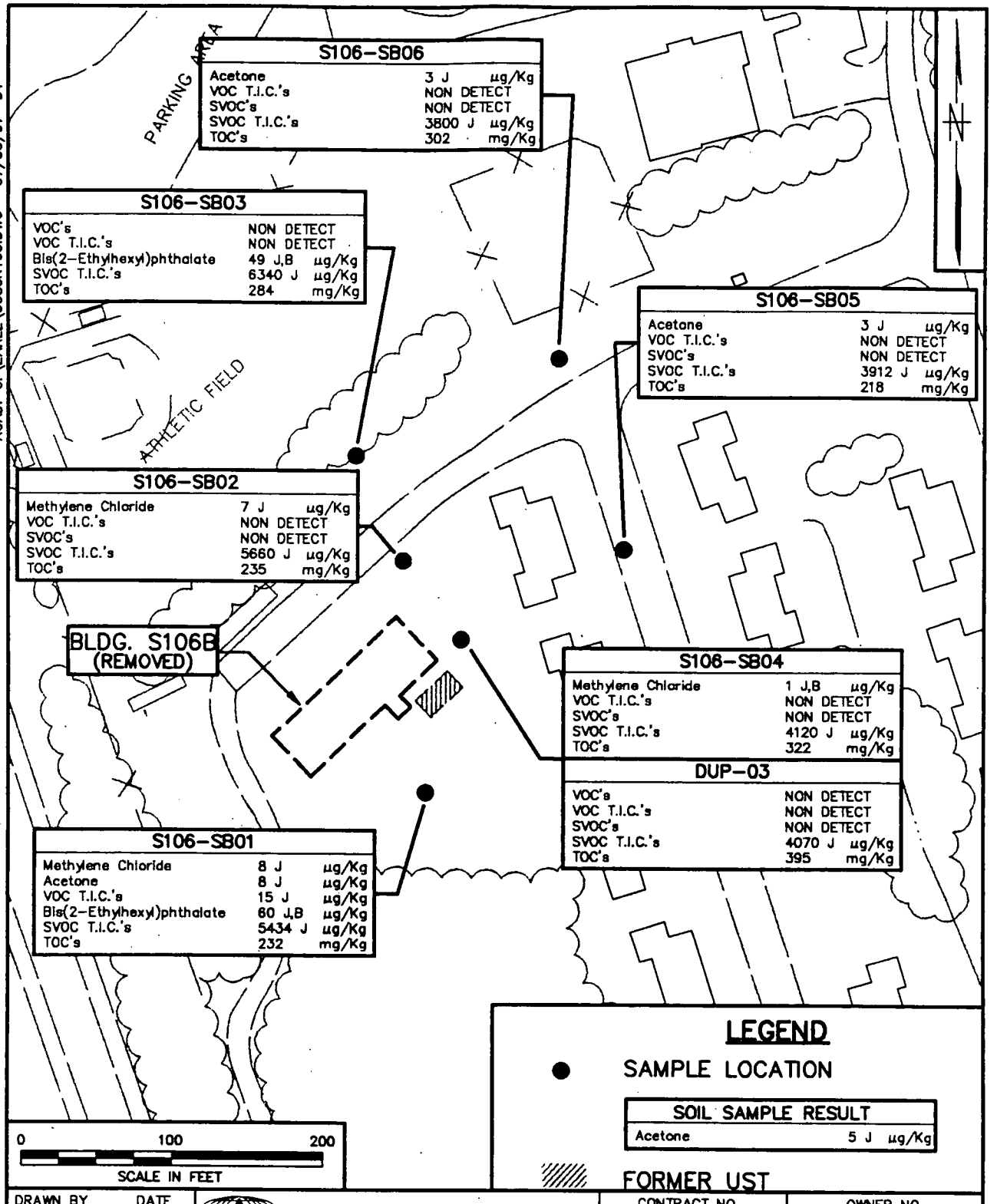
None of the analytical results for VOCs and SVOCs exceed the NJDEP Impact to Groundwater Cleanup Criteria, Non-Residential Direct Contact Cleanup Criteria, or Residential Direct Contact Cleanup Criteria.

Positive detections of VOCs occurred in five of the six samples for which they were analyzed. Acetone, considered a laboratory artifact or remnant from decontamination fluids, was detected in three samples at estimated levels ranging from 3 ug/kg to 8 ug/kg. Methylene chloride, also considered a laboratory artifact, was detected in three samples at estimated levels ranging from 1 ug/kg to 8 ug/kg.

Positive detections of one SVOC occurred in two of the six samples. Bis(2-ethylhexyl) phthalate was detected at estimated levels of 49 ug/kg and 60 ug/kg. This compound is also commonly attributed to laboratory-related contamination.

2.2.2.4.2 Groundwater Samples

B&R Environmental acquired groundwater samples from each of the wells installed as part of the focused investigation. All samples were analyzed for VOCs + 10 and SVOCs + 15, and natural attenuation indicator compounds including methane, ethane, ethylene, nitrate, phosphorous, sulfate, chloride, TOC, and pH. A trace layer of free product (0.01 foot) was observed in well S106-MW-04.



DRAWN BY ASM DATE 7/30/97	Brown & Root Environmental	CONTRACT NO. N62472-90-1298	OWNER NO. ———
CHECKED BY KJ DATE 9/16/97	SUBSURFACE SOIL SAMPLE RESULTS AOC S106B CTO 206 – FOCUSED INVESTIGATION AND RAWP NWS EARLE, COLTS NECK , NEW JERSEY	APPROVED BY	DATE
COST/SCHED-AREA		APPROVED BY	DATE
SCALE 1" = 100'		DRAWING NO. FIGURE 2-2	REV. 0

FORM CADD NO. SOUTH_AV.DWG – REV 0 – 02/07/97

TABLE 2-6
SUMMARY OF SUBSURFACE SOIL ANALYTICAL RESULTS
AOC S106B FOCUSED INVESTIGATION AND RAWP
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	S106SB01-25.5	S106SB03-22.5	S106SB02-19.5	S106SB04-20.5	DUP-03 (SB04)	S106SB05-21	S106SB06-19	NJDEP ACTION LEVELS		
DEPTH (FT):	25.5	22.5	19.5	20.5	20.5	21	19	RESIDENTIAL DIRECT CONTACT	NON-RESIDENTIAL DIRECT CONTACT	IMPACT TO GROUNDWATER
DATE:	3/3/97	3/4/97	3/24/97	3/25/96	3/25/97	5/23/97	5/22/97			
LABORATORY ID:	71029001	7129004	71294001	71294003	71294004	72229001	72191001			
VOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
Methylene Chloride	8J	7J	11U.	1JB	11U	11U	12U.	49,000	210,000	1,000
Acetone	18J	11U.	11U	11U	11U	3J	3J	1,000,000	1,000,000	100,000
SEMIVOLATILES	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg	ug/kg
bis(2-ethylhexyl)phthalate	60JB	370U	49JB	370U	370U	360U	390U	49,000	210,000	100,000
MISCELLANEOUS	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg			
Total Organic Carbon	232	235	284	322	395	218	302			

NOTES:

E - Value exceeds NJDEP clean-up criteria.
J - Value considered estimated due to exceedance of technical quality control criteria or because result is less than the Contract Required Quantitation Limit (CRQL).
** - Result is reported from a diluted analysis. * - Result is reported from a reanalysis.
X - MDL/PQL exceeds remedial standard.
U - Value is a non-detected result as reported by the laboratory or as qualified based upon blank contamination.
No result - This parameter was not analyzed for this sample.

Based on the water levels encountered during the RI, and during this investigation, the shallow groundwater flow direction is generally to the northeast. Therefore, wells S106-MW-02, S106-MW-03, and S106-MW-04 are located side gradient from the former UST, Wells S106-MW-05 and S106-MW-06 are located downgradient from the former UST, and Well S106-MW-01 is located upgradient from the former UST.

Based on the RI results, Well S106-MW-04 is located within the plume of contaminated groundwater. Wells S106-MW-02, S106-MW-03, S106-MW-05, and S106-MW-06 are located beyond the downgradient limits of the plume. Due to the transient groundwater conditions, the groundwater levels may change, thereby affecting the local flow directions. However, the predominant northward flow direction is not expected to change significantly. Refer to Figure 2-1 in Section 2.2.2.2.2 for the shallow groundwater contours associated with the comprehensive round of water-level measurements. Refer to Figure 2-3, Figure 2-4, and Table 2-7 for the well locations and a summary of the analytical results for each location.

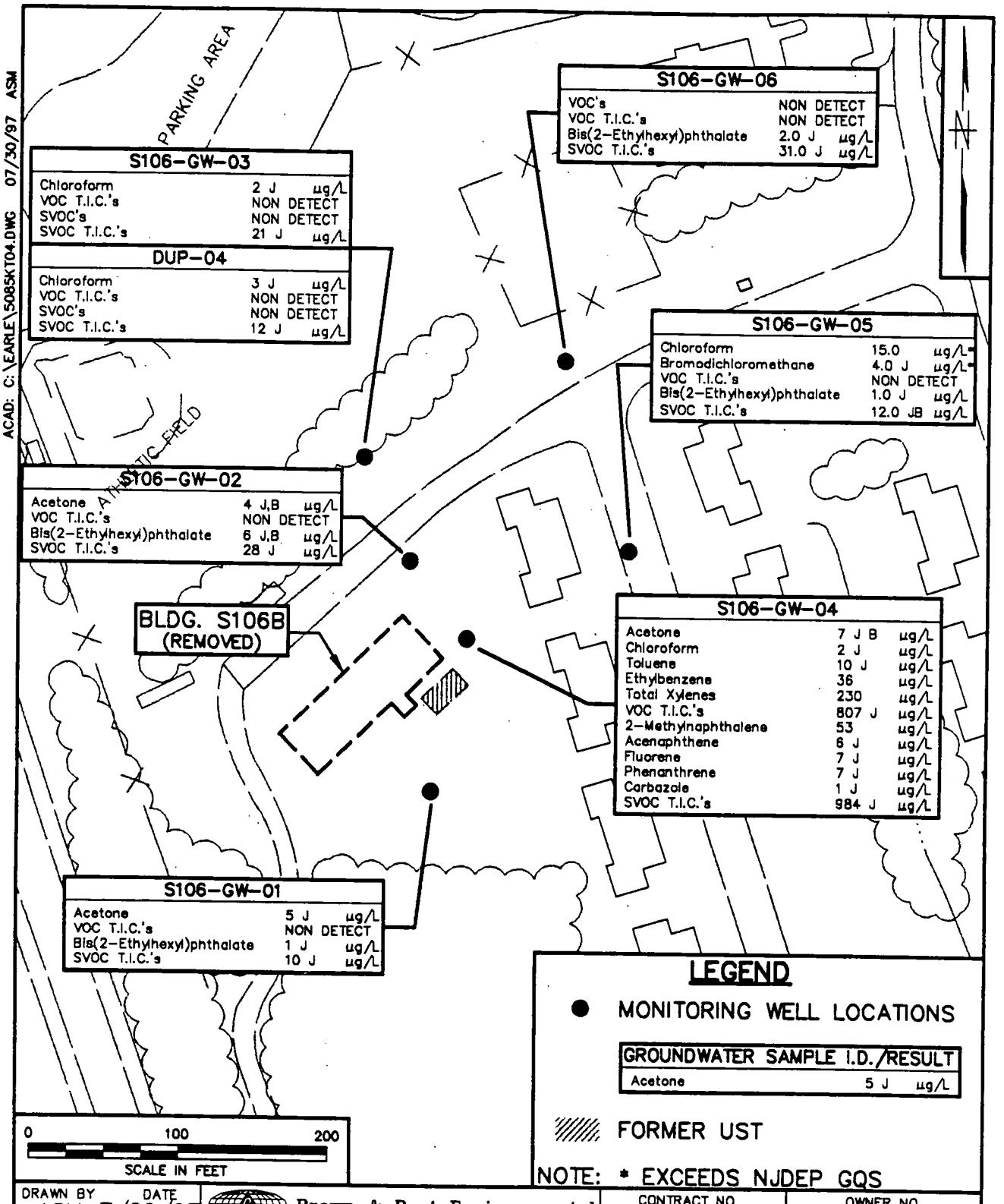
In general, the analytical results indicate the following:

Chloroform and bromodichloromethane levels were indicated in excess of the NJDEP GWQSs, at one of the six wells sampled. These compounds were identified in the sample obtained from Well S106-MW-05 located approximately 150 feet downgradient from the former UST. Neither compound was identified at levels exceeding NJDEP GWQSs in well S106-MW-04, located proximal to the former UST source area. Acetone, considered a laboratory artifact or remnant from decontamination fluids, was also detected in three samples at estimated levels ranging from 4 ug/kg to 7 ug/kg.

Low levels of several petroleum-related VOCs were indicated in the sample obtained from monitoring well S106-MW-04 including ethylbenzene at 36 ug/l, toluene at an estimated level of 10 ug/l, and total xylenes at 230 ug/l. None of these values exceed their respective NJDEP GWQSs. Ethylbenzene, toluene, and xylene were not detected in any of the other groundwater samples.

Bis(2-ethylhexyl) phthalate was identified in four of the six samples at estimated levels of 1 ug/l to 6 ug/l. Several other SVOCs were indicated at low levels in the sample obtained from Well S106-MW-04. None of the SVOCs exceeded NJDEP GWQSs. 2-Methylnaphthalene was identified at 53 ug/l. Acenapthene was identified at an estimated level of 6 ug/l. Fluorene was identified at an estimated level of 7 ug/l. Phenanthrene was identified at an estimated level of 7 ug/l. Carbazole was identified at an estimated level of 1 ug/l.

Refer to Section 2.4.3 for a detailed discussion of the groundwater sample results in relation to the natural attenuation assessment.



DRAWN BY ASM DATE 7/29/97	Brown & Root Environmental	CONTRACT NO. N62472-90-D-1298	OWNER NO. ———
CHECKED BY RJH DATE 9/16/97	GROUNDWATER SAMPLE RESULTS AOC S106B CTO 206 – FOCUSED INVESTIGATION AND RAWP NWS EARLE, COLTS NECK, NEW JERSEY	APPROVED BY	DATE
COST/SCHED-AREA		APPROVED BY	DATE
SCALE 1" = 100'		DRAWING NO. FIGURE 2-3	REV. 0

FORM CADD NO. SOUTH_W.DWG – REV 0 – 02/07/97

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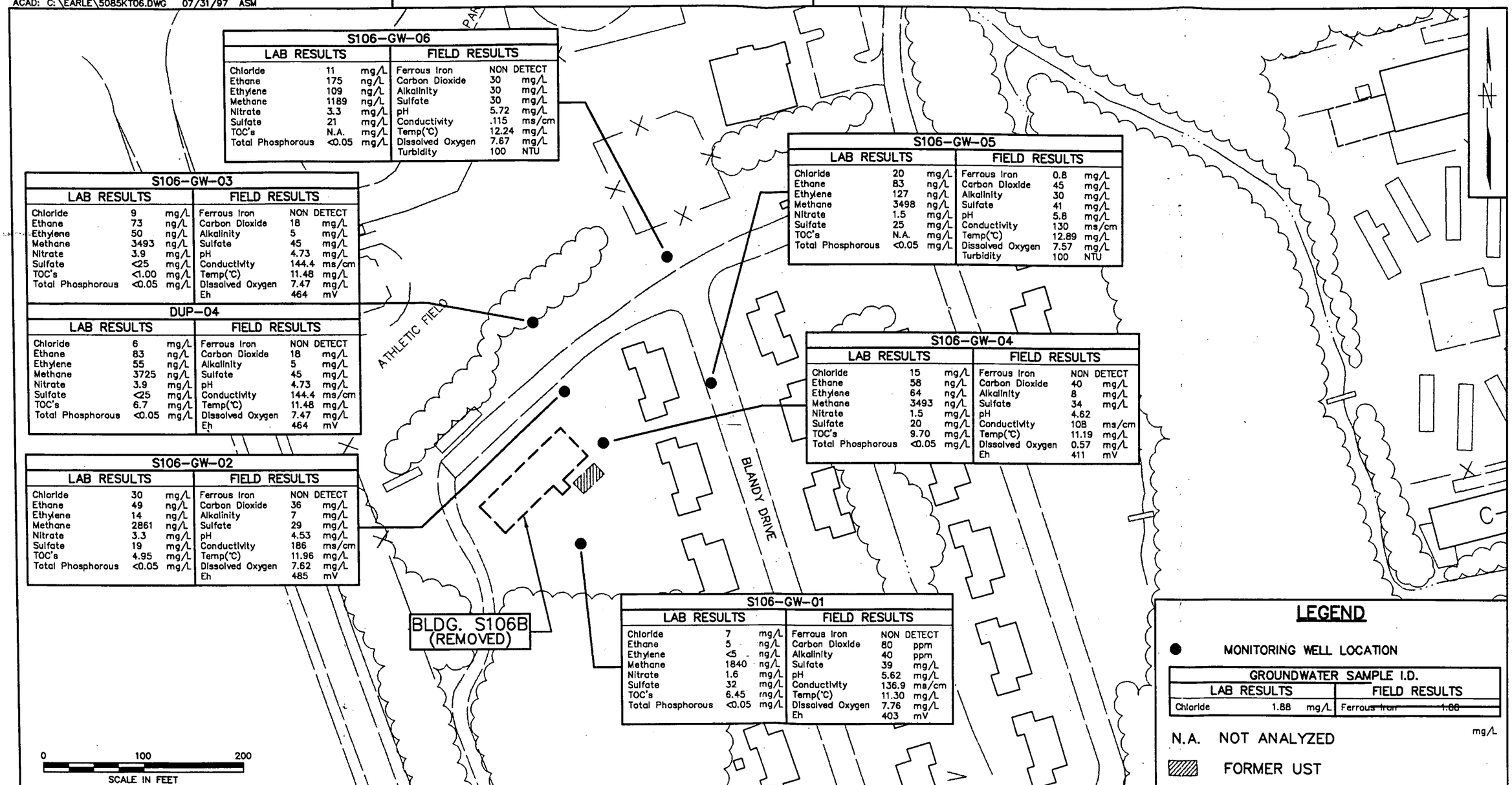

S106-GW-06

LAB RESULTS			FIELD RESULTS		
Chloride	11	mg/L	Ferrous Iron	NON DETECT	
Ethane	175	ng/L	Carbon Dioxide	30	mg/L
Ethylene	109	ng/L	Alkalinity	30	mg/L
Methane	1189	ng/L	Sulfate	30	mg/L
Nitrate	3.3	mg/L	pH	5.72	mg/L
Sulfate	21	mg/L	Conductivity	.115	ms/cm
TOC's	N.A.	mg/L	Temp(°C)	12.24	mg/L
Total Phosphorous	<0.05	mg/L	Dissolved Oxygen	7.67	mg/L
			Turbidity	100	NTU

S106-GW-05

LAB RESULTS			FIELD RESULTS		
Chloride	20	mg/L	Ferrous Iron	0.8	mg/L
Ethane	83	ng/L	Carbon Dioxide	45	mg/L
Ethylene	127	ng/L	Alkalinity	30	mg/L
Methane	3498	ng/L	Sulfate	41	mg/L
Nitrate	1.5	mg/L	pH	5.8	mg/L
Sulfate	25	mg/L	Conductivity	130	ms/cm
TOC's	N.A.	mg/L	Temp(°C)	12.89	mg/L
Total Phosphorous	<0.05	mg/L	Dissolved Oxygen	7.57	mg/L
			Turbidity	100	NTU

S106-GW-03

LAB RESULTS			FIELD RESULTS		
Chloride	9	mg/L	Ferrous Iron	NON DETECT	
Ethane	73	ng/L	Carbon Dioxide	18	mg/L
Ethylene	50	ng/L	Alkalinity	5	mg/L
Methane	3493	ng/L	Sulfate	45	mg/L
Nitrate	3.9	mg/L	pH	4.73	mg/L
Sulfate	<25	mg/L	Conductivity	144.4	ms/cm
TOC's	<1.00	mg/L	Temp(°C)	11.48	mg/L
Total Phosphorous	<0.05	mg/L	Dissolved Oxygen	7.47	mg/L
			Eh	464	mV

DUP-04

LAB RESULTS			FIELD RESULTS		
Chloride	6	mg/L	Ferrous Iron	NON DETECT	
Ethane	83	ng/L	Carbon Dioxide	18	mg/L
Ethylene	55	ng/L	Alkalinity	5	mg/L
Methane	3725	ng/L	Sulfate	45	mg/L
Nitrate	3.9	mg/L	pH	4.73	mg/L
Sulfate	<25	mg/L	Conductivity	144.4	ms/cm
TOC's	6.7	mg/L	Temp(°C)	11.48	mg/L
Total Phosphorous	<0.05	mg/L	Dissolved Oxygen	7.47	mg/L
			Eh	464	mV

S106-GW-04

LAB RESULTS			FIELD RESULTS		
Chloride	15	mg/L	Ferrous Iron	NON DETECT	
Ethane	58	ng/L	Carbon Dioxide	40	mg/L
Ethylene	64	ng/L	Alkalinity	8	mg/L
Methane	3493	ng/L	Sulfate	34	mg/L
Nitrate	1.5	mg/L	pH	4.62	
Sulfate	20	mg/L	Conductivity	108	ms/cm
TOC's	9.70	mg/L	Temp(°C)	11.19	mg/L
Total Phosphorous	<0.05	mg/L	Dissolved Oxygen	0.57	mg/L
			Eh	411	mV

S106-GW-02

LAB RESULTS			FIELD RESULTS		
Chloride	30	mg/L	Ferrous Iron	NON DETECT	
Ethane	49	ng/L	Carbon Dioxide	36	mg/L
Ethylene	14	ng/L	Alkalinity	7	mg/L
Methane	2861	ng/L	Sulfate	29	mg/L
Nitrate	3.3	mg/L	pH	4.53	mg/L
Sulfate	19	mg/L	Conductivity	186	ms/cm
TOC's	4.95	mg/L	Temp(°C)	11.96	mg/L
Total Phosphorous	<0.05	mg/L	Dissolved Oxygen	7.62	mg/L
			Eh	485	mV

S106-GW-01

LAB RESULTS			FIELD RESULTS		
Chloride	7	mg/L	Ferrous Iron	NON DETECT	
Ethane	5	ng/L	Carbon Dioxide	80	ppm
Ethylene	<5	ng/L	Alkalinity	40	ppm
Methane	1840	ng/L	Sulfate	39	mg/L
Nitrate	1.6	mg/L	pH	5.62	mg/L
Sulfate	32	mg/L	Conductivity	136.9	ms/cm
TOC's	6.45	mg/L	Temp(°C)	11.30	mg/L
Total Phosphorous	<0.05	mg/L	Dissolved Oxygen	7.76	mg/L
			Eh	403	mV

LEGEND

● MONITORING WELL LOCATION

GROUNDWATER SAMPLE I.D.			
LAB RESULTS			FIELD RESULTS
Chloride	1.88	mg/L	~~Ferrous Iron 1.88~~

N.A. NOT ANALYZED

FORMER UST

NO.	DATE	REVISIONS	BY	CHKD	APPD	REFERENCES

DRAWN BY ASM DATE 7/31/97

CHECKED BY RJD DATE 9/16/97

COST/SCHED-AREA

SCALE 1" = 100'

Brown & Root Environmental

NATURAL ATTENUATION INDICATOR PARAMETERS
AOC S106 B
CTO 206 – FOCUSED INVESTIGATION PARAMETERS
NWS EARLE
COLTS NECK, NEW JERSEY

CONTRACT NO. N62472-90-1298

OWNER NO. ----

APPROVED BY DATE

APPROVED BY DATE

DRAWING NO. FIGURE 2-4

REV. 0

FORM CADD NO. SOUTH_EH.DGN – REV 0 – 02/11/97

TABLE 2-7
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
AOC S106B FOCUSED INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	S106GW01	S106GW02	S106GW03	DUP-04(GW03)	S106GW04	S106MW-05	S106-MW-06	
LOCATION:	S106MW01	S106MW02	S106MW03	S106MW03	S106MW04	S106MW05	S106MW06	Groundwater
DATE:	4/09/97	4/14/97	4/14/97	4/14/97	4/15/97	6/5/97	6/5/97	Quality
LABORATORY ID:	71583003	71633005	71633002	71633006	71633007	72412002	72412003	Standard
VOLATILES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
acetone	5J	4JB	10U	10U	7JB	10U	10U	700.
chloroform	10U	10U	2J	3J	2J	15	10U	6.00
bromodichloromethane	10U	10U	10U	10U	10U	4J	10U	1.0
ethylbenzene	10U	10U	10U	10U	36	10U	10U	700
toluene	10U	10U	10U	10U	10J	10U	10U	1000
xylene (total)	10U	10U	10U	10U	230	10U	10U	1000
SEMIVOLATILES	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L
2-methylnaphthalene	10U	11U	10U	10U	53	10U	10U	-
acenaphthene	10U	11U	10U	10U	6J	10U	10U	400
bis(2-ethylhexyl)phthalate	1J	6JB	10U	10U	10U	1J	2J	30.0
carbazole	10U	11U	10U	10U	1J	10U	10U	-
fluorene	10U	11U	10U	10U	7J	10U	10U	300
phenathrene	10U	11U	10U	10U	7J	10U	10U	-
MISCELLANEOUS	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
chloride	7	30	9	6	15	20	11	-
ethane	5 ng/l	49 ng/l	73 ng/l	83 ng/l	58 ng/l	83 ng/l	175 ng/l	-
ethylene	5U	14 ng/l	50 ng/l	55 ng/l	64 ng/l	127 ng/l	109 ng/l	-
methane	1840 ng/l	2861 ng/l	3000 ng/l	3730 ng/l	3493 ng/l	3498 ng/l	1189 ng/l	-
nitrate as n	1.6	3.3	3.9	3.9	1.5	1.5	3.3	-
sulfate	32	19	25U	25U	20	25	21	-
total organic carbon	6.45	4.95	1U	6.7	9.7	-	-	-

NOTES:
E - Value exceeds NJDEP clean-up criteria/.
J - Value considered estimated due to exceedance of technical quality control criteria or because result is less than the Contract Required Limit (CRQL).
** - Result is reported froma diluted analysis. * - Result is reported from a reanalysis.
X - MDL/PQL exceeds remedial standard.
U - Value is a non-detected result as reported by the laboratory or as qualified based upon blank contamination.
No result - This parameter was not analyzed for this sample.

2.2.2.5 Evaluation of Results

The groundwater sample results from the focused investigation are inconsistent with the sample results obtained during the Phase I RI. Levels of petroleum-related compounds above the NJDEP GWQSs were not indicated during the focused investigation. However, a trace layer of free product and low levels of ethylbenzene, toluene, and xylene were indicated in Well S106-MW-04, which is located 30 feet downgradient from the former UST. No indication of petroleum-related contamination was observed at Well S106-MW-05, which is located 150 feet directly downgradient from the former UST. The impacted groundwater appears to be limited to the area immediately surrounding Well S106-MW-04.

2.3 RECEPTOR EVALUATION

No potential receptors have been identified that are currently impacted. Future potential receptors have been identified as future workers involved in excavation or other intrusive activities that may be exposed to contaminated groundwater via dermal contact. For the purposes of this RAWP, the receptor evaluation is as follows:

Groundwater - No private domestic wells or public supply wells have been identified within 1/2 mile of the site. Two domestic wells have been identified within 1 mile of the site. One is located approximately 1 mile south of the site. The second is located approximately 1 mile west of the site.

Surface water - No impacted groundwater from the site is expected to discharge into surface waters. Surface water runoff from the site would be expected to flow toward an unnamed tributary of Hockhockson Brook, located approximately 1/2 mile northeast of the AOC.

Structures - No basements, utility conduits, or other structures have been identified within the potential contaminant migration pathway that would act as a receptor or preferential migration pathway.

2.3.1 Exposure Pathway Analysis

Contact with groundwater that has been impacted by the contaminant plume has been identified as the only route of exposure. Potential human receptors would include off-site residents, on-site residents, on-site workers, and on-site visitors. Table 2-8 lists pathway evaluations for current land use scenarios. Table 2-9 lists pathway evaluations for future land use scenarios. A description of the potential receptors for both current and future scenarios is presented below.

Off-site residents - The site is located proximal to military housing. The nearest residential area for non-military personnel is approximately 1 mile north of the area of concern. No potable water wells have been identified within 1/2 mile of the site. No wells are anticipated to be installed within 1/2 mile of the site. No exposure pathways are evaluated for this receptor.

On-site residents - The site is located proximal to military housing. The nearest residential area for non-military personnel is approximately 1 mile north of the area of concern. No potable water wells have been identified within 1/2 mile of the site. No wells are anticipated to be installed within 1/2 mile of the site. No exposure pathways are evaluated for this receptor.

Workers - There are no workers currently in the area of hydrocarbon impact and base access is controlled. Future workers involved in excavation or other intrusive activities could be exposed to contaminated groundwater via dermal contact. Future workers could also be exposed to impacted groundwater discharge at the wetland area via dermal contact. Based on a review of current concentrations of potential contaminants of concern (COPCs) present in groundwater, all concentrations of COPCs are well below risk-based screening levels for an industrial dermal contact with groundwater exposure pathway. No further evaluation is merited.

Visitors - Visitors to the site are unlikely to be exposed to impacted groundwater. No potable water wells have been identified within 1/2 mile of the site. No wells are anticipated to be installed within 1/2 mile of the site. No exposure pathways are evaluated for this receptor.

Sensitive Environments - No sensitive environments have been identified proximal to the site.

TABLE 2-8
EXPOSURE PATHWAYS - CURRENT LAND USE
AOC-S106B FOCUSED INVESTIGATION AND RAWP
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

Potentially Exposed Population	Exposure Route, Medium, and Exposure Point	Pathway Selected for Evaluation?	Reason for Selection or Non-selection
Off-Site Resident	Ingestion of groundwater	No	No wells have been identified within 1/2 mile of the site
	Direct contact with surface soil	No	Off-site soil is not impacted
	Inhalation while showering	No	No wells have been identified within 1/2 mile of the site
	Dermal contact while showering	No	No wells have been identified within 1/2 mile of the site
	Inhalation of volatiles	No	No impacted soils identified
On-Site Resident	Ingestion of groundwater	No	No residents on site
	Direct contact with surface soil	No	No residents on site
	Inhalation while showering	No	No residents on site
	Dermal contact while showering	No	No residents on site
	Inhalation of volatiles	No	No residents on site
Worker	Ingestion of groundwater	No	No workers on site
	Direct contact with surface soil	No	No workers on site
	Inhalation while showering	No	N/A
	Dermal contact while showering	No	N/A
	Inhalation of volatiles	No	No workers on site
Visitor	Ingestion of groundwater	No	No wells have been identified within 1/2 mile of the site
	Direct contact with surface soil	No	N/A
	Inhalation while showering	No	N/A
	Dermal contact while showering	No	N/A
	Inhalation of volatiles	No	No impacted soils identified

TABLE 2-9
EXPOSURE PATHWAYS - FUTURE LAND USE
AOC-S106B FOCUSED INVESTIGATION AND RAWP
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

Potentially Exposed Population	Exposure Route, Medium, and Exposure Point	Pathway Selected for Evaluation?	Reason for Selection or Non-selection
Off-Site Resident	Ingestion of groundwater	No	No wells have been identified within 1/2 mile of the site
	Direct contact with surface soil	No	Off-site soil is not impacted
	Inhalation while showering	No	No wells have been identified within 1/2 mile of the site
	Dermal contact while showering	No	No wells have been identified within 1/2 mile of the site
	Inhalation of volatiles	No	No impacted soils identified
On-Site Resident	Ingestion of groundwater	No	No wells have been identified within 1/2 mile of the site
	Direct contact with surface soil	No	N/A
	Inhalation while showering	No	No wells have been identified within 1/2 mile of the site
	Dermal contact while showering	No	No wells have been identified within 1/2 mile of the site
	Inhalation of volatiles	No	No wells have been identified within 1/2 mile of the site
Worker	Ingestion of groundwater	No	No workers on site
	Direct contact with surface soil	No	No workers on site
	Inhalation while showering	No	N/A
	Dermal contact while showering	No	N/A
	Dermal contact with groundwater	Yes	A future worker could be exposed to groundwater during excavation or other intrusive operations
	Dermal contact with surface water	No	N/A
	Inhalation of volatiles	No	No impacted soils identified
Visitor	Ingestion of groundwater	No	No wells have been identified within 1/2 mile of the site
	Direct contact with surface soil	No	N/A
	Inhalation while showering	No	N/A
	Dermal contact while showering	No	N/A
	Dermal contact with surface water	No	N/A
	Inhalation of volatiles	No	No impacted soils identified

2.4 CONTAMINANT FATE AND TRANSPORT ANALYSIS

The fate and transport model used for the prediction of plume migration of dissolved BTEX compounds was the Bioscreen Natural Attenuation Decision Support System, published by the Technology Transfer Division of the Air Force Center For Environmental Excellence, June 1996. The *Bioscreen* software is based on the Domenico (1987) three-dimensional analytical solute transport model and has been adapted to provide three model types representing transport with no decay, transport with first-order decay, and transport with "instantaneous" biodegradation reaction. A brief description of each model type is presented below.

- Solute transport with no decay. This model predicts the movement of non-degrading solutes. The attenuation mechanisms accounted for in this model are three-dimensional dispersion and the adsorption of contaminants to the soil matrix.

- Solute transport with first-order decay. The conventional model for predicting hydrocarbon plumes, this model represents a solute degradation rate as being proportional to the solute concentration. This model does not account for the availability of electron acceptors nor does it assume any biodegradation of dissolved contaminants in the source zone. The model is typically calibrated using the first-order decay coefficient, adjusting the coefficient within a range of accepted values until the model results align with field data.

- Solute transport with "instantaneous" biodegradation reaction. This model provides a plume prediction based on superimposing the aerobic and anaerobic biodegradation capacity of electron acceptors onto the non-decayed plume concentrations predicted by the Domenico (Solute transport with no decay) model. The model assumes that all biodegradation occurs instantaneously relative to the hydraulic residence time in the source area and the plume. The primary calibration parameter for this model is dispersivity, adjusting the longitudinal and as a result, the transverse dispersivities within a range of accepted values until the model results align with field data.

2.4.1 Fate and Transport Model Data Input

Site-specific data were used wherever possible in the Bioscreen model. Where site-specific data were not available, a conservative value protective of human health and the environment was used. Specific input parameters used for the Bioscreen model are discussed below. Detailed support calculations are presented in Appendix G.

Hydraulic Conductivity - Results of slug tests conducted at the site in March 1997 yielded an average hydraulic conductivity of 2.64E-02 cm/sec. A geometric mean of 1.99E-02 was also calculated; however, to present a worst-case analysis, the higher value was input.

Hydraulic Gradient - A hydraulic gradient of 0.0025 ft/ft was calculated using water-level measurements collected on site in June 1997

Porosity - Porosity was estimated to be 0.30. This estimate is an average value based on an evaluation of grain size analysis conducted for the six samples obtained from soil boring samples collected at the site.

Estimated Plume Length - A plume length of 100 feet is estimated by measuring the distance from the former tank grave area, as identified in the Phase I RI, to a point halfway between monitoring wells S106-MW-04 and S106-MW-05.

Longitudinal, transverse, and vertical dispersivities are calculated by the model using the value input for estimated plume length. The Bioscreen authors indicate that the value for Longitudinal Dispersivity may be used to calibrate the Instantaneous Reaction curve, within a range of accepted values. The Instantaneous reaction model produced by Bioscreen predicts that all dissolved hydrocarbons would be attenuated by year 7. Attempts at calibrating the model using more conservative dispersivity values did not produce predictions that adequately correlated with field data from the site. Therefore, no calibration was performed using dispersivity values, and the values calculated by the model were retained.

Soil Bulk Density - A bulk density of 1.86 kg/l was used based on the estimated porosity and a particle density for soil/sand mixtures of 2.65 kg/l.

Partition Coefficient - Table X2.7, "Chemical Specific Properties", presented in the ASTM Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites (ASTM E 1739-95), lists partition coefficients for BTEX and other related compounds. For all runs of the Bioscreen model, the coefficient for benzene (38 l/kg) was used to predict a worst-case scenario.

Fraction Organic Carbon - Laboratory analysis of soil samples obtained prior to monitoring well installation indicate an average TOC result for unimpacted soils of 254 mg/kg. To determine fraction organic carbon, the laboratory result is converted to 0.0003 kg/kg.

Solute Half-Life - Table X3.2, "Reported Degradation Rates for Petroleum Hydrocarbons", presented in the ASTM Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites (ASTM E

1739-95), lists degradation rates for BTEX and other related compounds. For initial run of the Bioscreen model, the most conservative value for benzene (2 years) was input.

The Bioscreen authors indicate that this value may be used to calibrate the First- Order Decay curve, within a range of accepted values. The initial run of the first-order decay resulted in a plume length prediction that was too long. A final value of 0.1 year was input for solute half-life, resulting in a curve that more accurately correlated with the actual field data. This value was well within the accepted range of values that could be used for BTEX compounds.

Delta Oxygen, Delta Nitrate, Observed Ferrous Iron, Delta Sulfate, Observed Methane - Input values for these parameters correspond with appropriate field and laboratory data generated as part of the 1997 field investigation work effort.

Modeled Area Length and Width - A distance of 200 feet was modeled to accommodate the distance along the groundwater flow direction pathway from the tank grave to the most downgradient monitoring well. A modeled width of 200 ft was used to allow for dispersion of the plume.

Simulation Time - The model was run using a simulation time of 7 years, to correspond with the time period between the failed UST tightness test in 1990 and present day.

Source Thickness in Saturated Zone - A value of 10 feet was input based on an approximation of the distance between the UST and the water table.

Source Zone Concentrations, BTEX - Sample analyses from the 1997 site investigation show the highest concentrations of BTEX compounds occurring in S106-MW-04, totaling 0.276 mg/l total BTEX. S106-MW-04 is located approximately 15 feet from the UST grave. Initial runs of the model using this concentration resulted in too conservative curves for both degradation models. Using trial and error to "fit" the degradation curves to field data a maximum concentration of 0.7 mg/l is predicted by the model for the plume centerline at the source. A plume width of 20 feet was estimated for the plume's centerline concentration based on the approximate cross-sectional width of the tank grave as measured perpendicular to groundwater flow. A width of 10 feet was chosen to represent the next lower concentration contour to account for the horizontal dispersion of the contaminant plume perpendicular to groundwater flow based on the total BTEX result of 0.276 mg/l for S106-MW-04.

Soluble Mass in NAPL, Soil - The original mass of hydrocarbons released is unknown; however, no petroleum-related compounds have been identified in samples obtained from soil borings either in the Phase I investigation or during this work effort. One subsurface soil sample obtained during the UST

closure work effort in 1991 exhibited a total BTEX concentration of 9.94 mg/kg. A mass of 1.2 kg has been calculated based on this information and assuming a contaminated soil depth of 5 feet below the tank excavation. To provide a conservative model prediction, a value of 5 kg has been input.

2.4.2 Fate and Transport Model Output

One modeling scenario has been presented for review and analysis. The scenario attempts to predict present-day conditions based on a failed UST tightness test that occurred approximately 7 years ago (1990). The scenario presented is a prediction of total (summed) BTEX values. A summed BTEX model was chosen to present a worst-case (i.e., highest concentration) prediction. Individual contaminants were not modeled because groundwater contamination has not been identified at concentrations in groundwater that exceed NJDEP GWQSs.

The scenario presented is a prediction of total (summed) BTEX values. This model predicts that, if no degradation were occurring, BTEX constituents should be detected in downgradient monitoring wells. The First-Order Decay natural attenuation prediction model correlates well with observed data; however, the Instantaneous Reaction model predicts that dissolved BTEX would be attenuated by year 7. Using "trial and error" to produce an Instantaneous Reaction curve that correlates with current conditions, the model predicts an original soluble mass for BTEX compounds in soil of 40 kg, as compared to the 5 kg value used by the model to produce the First-Order Decay model. Both modeling runs (5 kg and 40 kg) have been presented in Appendix G for review and analysis.

2.4.3 Site-Specific Natural Attenuation Parameters

Field and fixed-base laboratory analyses for natural attenuation parameters were performed for groundwater samples obtained in March 1997. Analyses include indicator parameters such as dissolved oxygen, carbon dioxide, nitrate, ferrous iron, sulfate, and methane. Other parameters that can be used to evaluate site conditions with respect to natural attenuation include pH, temperature, and alkalinity. Field parameter results are summarized in Table 2-10. Analytical results are summarized in Table 2-11.

Aerobic Biodegradation Indicator Parameters

Microganisms capable of utilizing dissolved oxygen for aerobic metabolism provide the most energetically favorable degradation reactions and therefore are expected to predominate in plume regions where dissolved oxygen supplies have not been depleted (near the plume edges). During aerobic biodegradation, dissolved oxygen levels are reduced as aerobic respiration occurs. Aerobic biodegradation conditions may be further evidenced by oxidation/reduction potential (ORP)

measurements. A discussion of site-specific ORP conditions is included in the General Parameters portion of this section, presented below.

Dissolved oxygen (DO) in the aquifer was measured in the field, within and beyond the extent of known dissolved hydrocarbon contamination. Field DO results indicate DO concentrations outside the impacted area ranging from 7.47 mg/l at S106-MW-03 to 7.76 mg/l at S106-MW-01. Only a minimum threshold of 1 to 2 mg/l is necessary for aerobic biodegradation to occur (Chiang, et. al., 1989). For monitoring well S016-MW-04, located within the impacted area, a DO concentration of 0.57 mg/l was recorded. From a review of these data, it can be concluded that aerobic conditions that promote the rapid decomposition of the target constituents exist in the groundwater at the subject site. Natural groundwater flow into the impacted area would also provide a continuous supply of DO that would continue to encourage aerobic biodegradation.

Aerobic biodegradation may also be evidenced by increasing carbon dioxide (CO_2) concentrations within the source zone indicative of aerobic respiration. Increasing CO_2 may also be an indicator of methanogenesis, an anaerobic degradation process discussed below. Field CO_2 results indicate a CO_2 concentration outside the impacted area, ranging from 18 mg/l at S106-MW-03 to 80 mg/l at S106-MW-01. For monitoring well S106-MW-04, located within the impacted area, a CO_2 concentration of 40 mg/l was recorded. No data trends are identified from these data.

Anaerobic Parameters

A decrease in nitrate may be used as an indicator for biodegradation activity. Natural attenuation literature suggests that denitrification is the first preferred anaerobic process as DO nears depletion. Analytical results indicate nitrate concentrations outside the impacted area, ranging from 1.5 mg/l at S106-MW-05 to 3.9 mg/l at S106-MW-03. For monitoring well S106-MW-04, located within the impacted area, a nitrate concentration of 1.5 mg/l was reported. No data trends are identified from these data.

TABLE 2-10
NATURAL ATTENUATION INDICATOR COMPOUNDS - FIELD SCREENING RESULTS
AOC-S106B FOCUSED INVESTIGATION AND RAWP
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

Sample	pH	S.C. mS/cm	Temp °C	CO_2 mg/L	SO_4 mg/L	FE^{+2} mg/L	Alk. mg/L	D.O. mg/L	ORP mV
S106GW01	5.62	136.9	11.3	80	39	0	40	7.76	403
S106GW04	4.62	108	11.19	40	34	0	8	0.57	411
S106GW05	5.80	0.13	12.89	45	41	0.8	30	7.57	-
S106GW02	4.53	186	11.96	36	29	0	7	7.62	485
S106GW03	4.73	144.4	11.48	18	45	0	5	7.47	464
S106GW06	5.72	0.115	12.24	30	30	0	30	7.67	-

TABLE 2-11
NATURAL ATTENUATION INDICATOR COMPOUNDS - LABORATORY RESULTS
AOC-S106B FOCUSED INVESTIGATION AND RAWP
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

Parameter	units	S106-MW-01	S106-MW-04	S106-MW-05	S106-MW-02	S106-MW-03	S106-MW-06
Nitrate	mg/L	1.6	1.5	1.5	3.3	3.9	3.3
Sulfate	mg/L	32	20	25	19	<25	21
Methane	mg/L	0.0018	0.0035	0.0035	0.0029	0.0030	0.0012

ORP - Oxidation Reduction Potential

DO - Dissolved Oxygen

Alk - Alkalinity

S.C. - Specific Conductivity

Fe^{+2} - Ferrous Iron

SO_4 - Sulfate

CO_2 - Dissolved Carbon Dioxide

An additional indicator of anaerobic biodegradation is the presence of increased levels of ferrous iron, FE^{+2}. During the anaerobic degradation of petroleum hydrocarbons and in the presence of ferric iron, FE^{+3}, ferric iron may be reduced to ferrous iron, which may be soluble in water. With the exception of S106-MW-05 (0.8 mg/l), all wells exhibited no (0 mg/l) ferrous iron.

Sulfate reduction is reported as the next preferred anaerobic process. This process results in the production of sulfide. A decrease in sulfate concentrations would be expected as an indicator of the process. Analytical results indicate sulfate concentrations outside the impacted area, ranging from 19 mg/l at S106-MW-02 to 32 mg/l at S106-MW-01. For monitoring well S106-MW-04, located within the impacted area, a sulfate concentration of 20 mg/l was reported. No data trends are identified from these data.

Methane (CH_4) is produced during the anaerobic process called methanogenesis. Because methane is not present in fuels, it is considered a good indicator of biodegradation within the source zone. It has been reported that methanogenesis, coupled with high BTEX concentrations, may result in a significant rate of methane production. During this process, approximately 0.78 mg/l methane can be produced as a result of the degradation of 1 mg/l BTEX (Wiedemeier, et al., 1995). No definite conclusions can be drawn from site data. Results ranged from 0.0012 mg/l methane at S106-MW-06 to 0.0035 mg/l at both S106-MW-04 and S106-MW-05.

General Parameters

Groundwater pH was measured in the field. A pH between 6 and 8 is considered the preferred range for microbes capable of degrading petroleum hydrocarbons. The pH readings for the site ranged from 4.62 for S106-MW-04 to 5.72 for S106-MW-06, indicating less than optimal conditions for microbial activity.

Differences in pH and alkalinity can be an indicator of biological activity because microbial activity is known to generate acids during both aerobic and anaerobic biodegradation and can result in increased alkalinity as a result of aerobic respiration, denitrification, iron reduction, and sulfate reduction (Morel and Hering, 1993). A review of site alkalinity data is inconclusive. Field alkalinity results indicate concentrations outside the impacted area, ranging from 5 mg/l at S106-MW-03 to 40 mg/l at S106-MW-01. For Well S106-MW-04, located within the impacted area, a concentration of 8 mg/l was recorded.

Effective biodegradation can generally occur within a temperature range of 5°C to 45°C; ideally, temperature should be above 15°C for optimal biological activity (EPA, 1994). It is also reported that groundwater temperatures below 5°C tend to inhibit biodegradation activity (Wiedemeier, et al., 1995). Field measurements indicate groundwater temperatures for the site to range between 11.3°C and 12.89°C.

General guidelines are presented in natural attenuation literature regarding oxidation/reduction potential (ORP) readings and those processes that may occur within a certain range of redox conditions. Variations in physical characteristics of a site can also affect ORP. In general, for groundwater measurements obtained at pH = 7 and a temperature of 25°C, aerobic degradation would be expected to predominate for ORP readings of approximately 750 Millivolts (mV) and above, and anaerobic degradation conditions would be expected to predominate for those readings below 150 mV. However, it is much more common to see simultaneous evidence for multiple types of electron acceptor activity at a petroleum hydrocarbon site than a dominated hierarchy of only energetically preferred degradation process. ORP readings for the site ranged from 403 mV at to 464 mV at S106-MW-03 .

2.4.4 Historical Sample Data

Since no historical data exist for groundwater monitoring points installed as a result of this work effort, current data generated for one location are compared to groundwater data generated as a result of the Phase I RI from a sampling point (GW04) located proximal to the currently installed monitoring location (S106-MW-04). No other Phase I data points were located proximal to current monitoring well locations. GW04 was located approximately 10 feet east of S106-MW-04. Table 2-12 presents a comparison of BTEX and selected semivolatile data for GW04 and S106-MW-04.

Review and comparison of these data appear to indicate that the hydrocarbon constituent concentrations in groundwater are not increasing within the impacted area. Due to the lack of further historical data, further conclusions are not warranted.

TABLE 2-12
COMPARISON OF SELECTED GROUNDWATER RESULTS
AOC S106B FOCUSED INVESTIGATION REPORT
NAVAL WEAPONS STATION EARLE
COLTS NECK, NEW JERSEY

MW	Date	Benzene	Ethylbenzene	Toluene	Xylene	Naphthalene	2-Methylnaphthalene
S106GW04	4/97	ND	36	10 J	230	ND	53
GW04	1/96	11 J	81 J	130 J	430 J	210 J	200 J

J - Estimated
ND - Not Detected
All Results - ug/L

2.5 CONCLUSIONS AND RECOMMENDATIONS

The Phase I RI and the focused investigation indicate that groundwater within the immediate vicinity of Well S106-MW-04 has been impacted with low levels of benzene, toluene, ethylbenzene, and xylenes (BTEX). The adoption of a natural attenuation alternative is most applicable for remediating the apparent groundwater contamination. Modeling results indicate that concentrations of contaminants should decrease over time. Based on the most recent round of sampling, no contaminants occur in groundwater at levels exceeding the NJDEP GWQSs. Additional monitoring is indicated to confirm these findings.

The target constituents detected at the subject site (BTEX) are biologically degradable under site conditions. Groundwater sampling, analytical results, and screening models indicate favorable conditions for aerobic degradation of these constituents.

Quarterly groundwater monitoring for a minimum of four quarters will provide information on constituent degradation rates and ensure timely detection and reevaluation should constituents be noted above NJDEP GWQS or in downgradient "sentry" wells. The reliance on natural attenuation mechanisms for remediation is a cost-effective and environmentally sound resolution for the impacted groundwater identified at the subject site.

3.0 GROUNDWATER MONITORING PROGRAM

3.1 OBJECTIVES

The following groundwater monitoring program is proposed to document the migration, degradation, and attenuation of target constituents at the site. The proposed program contains a short-term monitoring effort to monitor current contamination and future decreasing contaminant trends and to provide assurance that non-compliances will be identified and reported in a timely manner.

3.2 PROPOSED MONITORING PROGRAM

The proposed monitoring program consists of the following:

- Confirmatory short-term monitoring: Institute sampling of groundwater from the following existing monitoring wells on a quarterly basis: S106-MW-01, S106-MW-02, S106-MW-03, S106-MW-04, S106-MW-05, and S106-MW-06. This effort will be conducted for a minimum of four quarters to establish historical flow and contaminant concentration data to document contaminant concentrations below NJDEP GWQS and decreasing contaminant trends.

- Laboratory analysis: Laboratory analysis will be conducted for BTEX compounds via EPA Method 8021A by a New-Jersey-certified Laboratory.

- Field Analysis: Dissolved oxygen, pH, and temperature will be measured using field instruments and recorded for all groundwater samples.

- Reporting: Groundwater monitoring reports will be submitted to NJDEP on an annual basis. The reports will include a tabulation of all sample results received during the reporting period pursuant to N.J.A.C. 7:26E-3.13(c)3 and will provide a brief narrative summarizing the data and presenting conclusions. In the event a non-compliance with this RAWP is identified (i.e., hydrocarbons detected above NJDEP GWQS or in a downgradient compliance well), NJDEP will be notified as soon as possible after detection.

- Long-term monitoring is not indicated at this time. The results of the short-term monitoring are expected to determine if further monitoring is required.

4.0 REFERENCES

1. Air Force Center for Environmental Excellence, November 1995. Technical Protocol for Implementing Intrinsic Remediation with Long-Term Monitoring for Natural Attenuation of Fuel Contamination Dissolved in Groundwater.

2. American Society for Testing and Materials (ASTM) E. 1739-95. Standard Guide for Risk-Based Corrective Action Applied at Petroluem Release Sites.

3. Brown & Root Environmental, July 1996. Remedial Investigation Report for Naval Weapons Station Earle Colts Neck, New Jersey. Contract No. N62472-90-0-1298. Contract Task Order No. 0231.

4. Chiang, C.Y., J.P.Salanitro, E.Y. Chai, J.D Colthart, and C.L. Klein, 1989. Aerobic Biodegradation of Benzene, Toluene, and Xylenes in a Sandy Aquifer. Ground Water. v. 27, no.6, p. 823-834.

5. Enviro-Tech, Incorporated, November 10, 1995. Site Investigation Report for United States Naval Weapons Station - Earle, Colts Neck, Monmouth County, New Jersey.

6. Halliburton NUS Corporation, June 1994. Underground Storage Tank Remedial Investigation Work Plan, Various Sites Weapons Station Earle, Colts Neck, New Jersey. Contract No. N62472-90-0-1298, Contract Task Order No. 0085.

7. Halliburton NUS Corporation, May 1992. Site Characterization Report Underground Storage Tank Investigation at Building C-17. Contract No. N62472-90-D-1298 Contract Task Order No. 0031.

8. Morel, F.M.M., and J.G. Hering, 1993. Principles and Applications of Aquatic Chemistry: John Wiley & Sons, Incorporated, New York

9. Navy Energy and Environmental Support Activity, June 1980. Sampling and Analysis Quality Assurance Requirements for the Navy Installation Restoration Program. NEESA 20:2-2478.

10. Naval Facilities Engineering Service Center, May 1996. Technical Requirements to Consider When Preparing a Scope of Work for Full-Scale Implementation of Bioventing. Technical Memorandum TM-2186-ENV.

11. Naval Facilities Engineering Service Center. Best Practices Manual for Bioslurping.

12. New Jersey Department of Environmental Protection and Energy, May 1992. Field Sampling Procedures Manual.

13. United States Environmental Protection Agency, October 1994. How To Evaluate Alternative Cleanup Technologies For Underground Storage Tank Sites, A Guide For Corrective Action Plan Reviewers. PB510-B-94-003.

14. Wiedemeier, T.H., J.T. Wilson, D.H. Kampbell, R.N. Miller, and J.E. Hansen, 1995. Technical Protocol for Implementing Intrinsic Remediation with Long-Term Monitoring for Natural Attenuation of Fuel Contamination Dissolved in Groundwater. Air Force Center For Environmental Excellence, Technology Transfer Division, Brooks Air Force Base, San Antonio, TX.

APPENDIX A

Phase I RI Report Correspondence

State of New Jersey
Department of Environmental Protection

ristine Todd Whitman
vernor

Robert C. Shinn Jr.
Commissioner

JAN 17 199

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
NO: P 642 595 318

Brian Helland
Northern Division
Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop 82
Lester, PA 19113

Dear Mr. Helland:

Re: Underground Storage Tank Phase I Remedial Investigation Report
for Various Sites
Naval Weapons Station Earle
Colts Neck Twp., Monmouth Co.

The New Jersey Department of Environmental Protection (Department) has reviewed the above referenced report, prepared by Brown & Root Environmental on behalf of the Naval Weapons Station Earle, dated November 1996. The report is approved pending incorporation of the following comments:

General Comments:

1. A narrative should be included to discuss the effectiveness of the EMFLUX sampling as a screening tool for the direct - push soil samples. For example, soil sample SS-1810 for AOC R-6/7 showed a TPH concentration of 2700 ppm when the corresponding EMFLUX samples showed non - detect. Please explain.

2. Section 2.5.8 - It would be inappropriate at this time to recommend natural attenuation as the chosen remedy since the ground water contamination has yet to be delineated.

If you have any questions, please call me at (609)-633-7327.

Sincerely,

Bob Marcolina

Bob Marcolina, Case Manager
Bureau of Federal Case Management

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c: Rick Correll, Brown & Root Environmental

Brown & Root Environmental

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BRPH/51-3-7-10

March 5, 1997

Mr. Brian Helland, Code 1812
Senior Environmental Engineer
Northern Division
Naval Facilities Engineering Command
10 Industrial Highway Mail Stop 82
Lester, Pennsylvania

Reference: CLEAN Contract No N62472-90-D-1298
Contract Task Order No. 206

Subject: Response To Comments
Phase I UST RI Report for Various UST Sites
NWS Earle, Colts Neck, New Jersey

Dear Mr. Helland:

Brown & Root (B&R) Environmental is providing the following response to the New Jersey State Department of Environmental Protection's (NJDEP's) January 17, 1997 comments on the subject report. Despite the general importance of the NJDEP's comments, we suggest incorporation of this letter into the case file, in-lieu of submission of a revised report.

General Comments:

1. *A narrative should be included to discuss the effectiveness of the EMFLUX sampling as a screening tool for the direct-push soil samples. For example, soil sample SS-1810 for AOC R-6/7 showed a TPH concentration of 2700 ppm when the corresponding EMFLUX samples showed non-detect. Please explain.*

R sponse:

There is no direct correlation between EMFLUX® soil gas results and soil or groundwater sample results. An indirect correlation may be theoretically demonstrated by mathematically converting the soil gas concentrations to corresponding soil or groundwater concentrations. B&R Environmental used EMFLUX® data along with other known site data to select locations for direct-push soil and groundwater samples. B&R Environmental considered EMFLUX® as a field screening tool only and the position of soil and groundwater sample locations were not determined based solely on the EMFLUX® results.

We attributed the apparent conflicting results to variations in analytical methods for soil gas samples and direct-push soil and groundwater samples, variations in surface conditions, the presence of non-target hydrocarbons, and high levels of target compounds. These factors were unique to each AOC and each sample location. Since EMFLUX® was a screening tool, describing these factors and then evaluating each individually, seemed beyond the scope of the RI Report. As a case in point and referring to NJDEP's example of SS-1810 at AOC R-6/7, we offer the following explanation:

Soil sample SS-1810 indicated TPH at 2,700 mg/kg, yet the nearest corresponding EMFLUX soil gas sample location indicated non-detect. The soil sample TPH results were determined using analytical test Method 418.1, which inherently identifies a wide range of light and heavy-end hydrocarbons, including non-petroleum (non-target contaminant) hydrocarbons. TPH results by Method 418.1 alone may not differentiate between target and non-target hydrocarbons. The EMFLUX® soil gas analysis on the other-

hand targeted petroleum-related hydrocarbons. Volatile organic compound (VOC) analysis also performed on soil sample SS-1810 indicated no target VOCs, which indirectly correlates with the EMFLUX® results.

Ultimately, we conclude that EMFLUX® technology is an acceptable screening method. However, it appears more suited for delineating low-level target compound contamination where surface conditions are similar throughout the aerial extent of the study area.

2. *Section 2.5.8 - It would be inappropriate at this time to recommend natural attenuation as the chosen remedy since the groundwater contamination has yet to be delineated.*

Response:

B&R Environmental will install and sample four additional permanent monitoring wells as part of the proposed groundwater investigation to evaluate natural attenuation. The monitoring wells will be placed at strategic locations based on the previously reported groundwater flow direction and the data generated during the RI. These efforts are expected to further define the up-gradient and down-gradient extent of contamination. If the potential for natural attenuation is demonstrated, the necessity to confirm the side-gradient boundaries of the contamination will be evaluated and additional investigation may be performed if necessary.

B&R Environmental trusts that this information adequately addresses the NJDEP's comments. Please do not hesitate to contact me at 610-971-0900 if you have any additional questions.

Sincerely,

Richard J. Gorrell

Richard J. Gorrell
Project Manager

RJG/dhn

c: Lawrence Burg, (NWS Earle)
John Trepanowski, P.E. (B&R Environmental)
Michael Turco, P.E., DEE (B&R Environmental)
Russell Turner, (B&R Environmental)

JUL -

State of New Jersey

Department of Environmental Protection

Christine Todd Whitman
Governor

Robert C. Shinn, Jr.
Commissioner

CERTIFIED MAIL
RETURN RECEIPT REQUESTED
NO: P 642 595 336

JUN 26 1997

Brian Helland
Northern Division
Naval Facilities Engineering Command
10 Industrial Highway, Mail Stop 82
Lester, PA 19113

Dear Mr. Helland:

Re: Approval of Response to Comments
Phase I UST RI Report for Various Ust Sites
Naval Weapons Station Earle
Colts Neck Twp., Monmouth Co.

The New Jersey Department of Environmental Protection (Department) has reviewed the Response to Comments to the above referenced document, prepared by Brown & Root Environmental on behalf of the Naval Weapons Station Earle, dated March 1997. The Responses are approved in their present form, no further modifications to the Response document or the RI Report are necessary.

If you have any questions, please call me at (609)-633-7327.

Sincerely,

Bob Marcolina

Bob Marcolina, Case Manager
Bureau of Federal Case Management

c: Rick Gorrell, Brown & Root Environmental

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APPENDIX B

Boring Logs

BORING LOG

BROWN AND ROOT ENVIRONMENTAL
A Division of Halliburton NUS

PROJECT NWS-EARLE
PROJECT NO. CTO-206/226
ELEVATION
WATER LEVEL DATA
(DATE, TIME & CONDITIONS)

BORING NO. S106-SB-01
DATE 3/3/97
DRILLER JCA · Drilling
FIELD GEOLOGIST Paul Davis

SAMPLE NO.	DEPTH (FT.)	BLOWS 6"	SAMPLE REC. LENGTH	LITHO. CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
S-1 @	1	3 / 4			Loose	Dr. Brn Grayish Black	Top Soil Silty Fine grained	SM	NO HNU
1128	2	5 / 5	20/24		Loose	Grayish black	Sand		
S-2 @	3	5 / 4			Loose	↓	↓ (pebbly)	SM	moist
1132	4	4 / 3	16/24		Loose	Grayish brown	↓ (pebbly)	SM	No HNU
S-3 @	5	2 / 2			very loose	orange brown	Silty Clayey F. Grain. Sand	SC	No HNU
1135	6	2 / 1	17/24		very loose	Brown	Clayey Fine G. Sand	SC	moist
S-4 @	7	3 / 3			loose	Brown	Clayey Fine Grained Sand	SC	moist
1213	8	3 / 4	14/24		loose	↓	↓	SC	NO HNU
S-5 @	9	3 / 6			loose	↓ brown	↓	SC	moist
1216	10	6 / 9	14/24		med. Dense	(some olive)	↓	SC	NO HNU
S-6 @	11	4 / 9			med. Dense	orange olive brown	Silty Clayey Fine grained Sand	SC	NO HNU
1219	12	10 / 11	12/24		med. Dense	↓	↓	SC	moist
S-7 @	13	7 / 8			med. Dense	↓	↓	SC	NO HNU
1236	14	10 / 12	10/24		med. Dense	↓	↓	SC	moist

REMARKS

130 lb hammer falling 30"

BORING NO.
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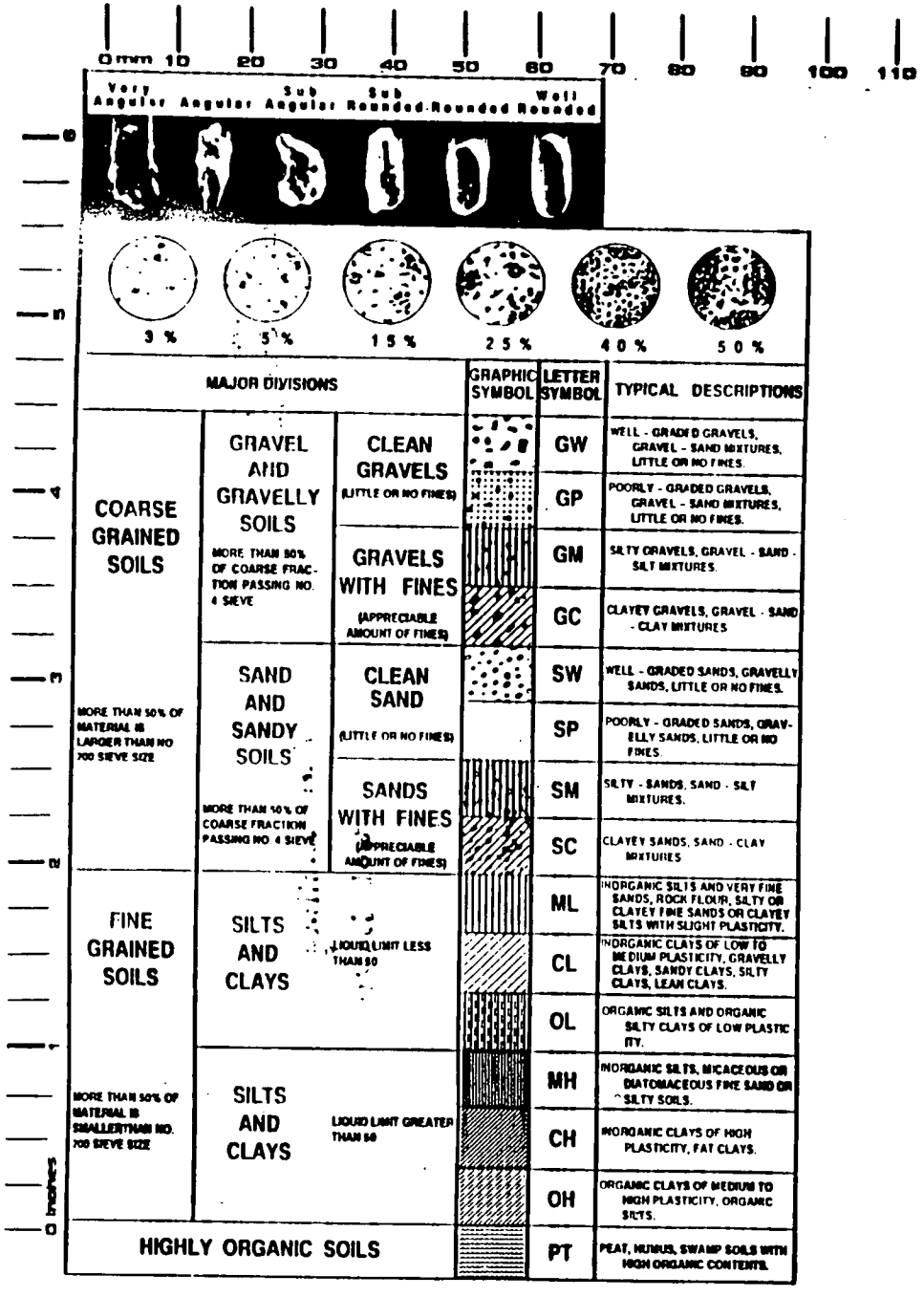
* See Legend on Back



CLAY

CLAY CONSISTENCY	THUMB PENETRATION	SPT, N BLOWS/FT.	Undrained Shear Strength c (PSF) TORVANE	Unconfined Compressive Strength q_u Pocket Penetrometer
VERY SOFT	Easily penetrated several inches by thumb. Exudes between thumb and fingers when squeezed in hand.	< 2	250	500
SOFT	Easily penetrated one inch by thumb. Molded by light finger pressure.	2 - 4	250 - 500	500 - 1000
MEDIUM STIFF	Can be penetrated over 1/4" by thumb with moderate effort. Molded by strong finger pressure.	4 - 8	500 - 1000	1000 - 2000
STIFF	Indented about 1/4" by thumb but penetrated only with great effort.	8 - 15	1000 - 2000	2000 - 4000
VERY STIFF	Readily indented by thumbnail.	15 - 30	2000 - 4000	4000 - 8000
HARD	Indented with difficulty by thumbnail.	> 30	> 4000	> 8000

SAND

SOILTYPE	SPT, N Blows/ft	Relative Density %	FIELD TEST
VERY LOOSE SAND	4	0 - 15	Easily penetrated with 1/2" reinforcing rod pushed by hand
LOOSE SAND	4 - 10	15 - 35	Easily penetrated with 1/2" reinforcing rod pushed by hand
MEDIUM DENSE SAND	10 - 30	35 - 65	Penetrated a few inches with 1/2" reinforcing rod driven with 5 lb hammer
DENSE SAND	30 - 50	65 - 85	Penetrated a few inches with 1/2" reinforcing rod driven with 5 lb hammer
VERY DENSE SAND	50	85 - 100	Penetrated only a few inches with 1/2" reinforcing rod driven with 5 lb hammer

Unified Soil Classification System (USCS)

	MILLIMETERS	INCHES	SIEVE SIZES
BOULDERS	> 300	> 11.8	-
COBBLES	75 - 300	2.9 - 11.8	-
GRAVEL:			
COARSE	75 - 19	2.9 - .75	-
FINE	19 - 4.8	.75 - .19	3/4" - No. 4
SAND:			
COARSE	4.8 - 2.0	.19 - .08	No. 4 - No. 10
MEDIUM	2.0 - .43	.08 - .02	No. 10 - No. 40
FINE	.43 - .08	.02 - .003	No. 40 - No. 200
FINES:			
SILTS	< .08	< .003	< No. 200
CLAYS	< .08	< .003	< No. 200

BORING LOG

BROWN AND ROOT ENVIRONMENTAL
A Division of Halliburton NUS

PROJECT NWS-EARLE
PROJECT NO. CTO-206/226
ELEVATION
WATER LEVEL DATA
(DATE, TIME & CONDITIONS)

BORING NO. S106-SB-01
DATE 3/3/97
DRILLER JCA Drilling
FIELD GEOLOGIST Paul Davis

SAMPLE NO.	DEPTH (FT.)	BLOWS 6"	SAMPLE REC. LENGTH	LITHO. CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
S-8 @	15	6 / 8			Med. Dense	orange olive brown	Silty clayey fine grained sand	SC	moist
1255	16	12 / 12	16/24						NO HNU
S-9 @	17	5 / 6							NO HNU
1300	18	8 / 9	18/24						moist
S-10 @	19	8 / 8							HNU: 3ppm
1309	20	11 / 12	14/24						HNU - questionable due to high humidity (snow)
S-11 @	21	10 / 11							
1320	22	11 / 14	16/24						moist
S-12 @	23	8 / 9				orange olive brown			very moist
1328	24	11 / 11	17/24						
S-13 @	25	8 / 9				olive green	Silty fine grained sand	SM	wet
1340	26	9 / 11	17/24						Saturated at 26'
S-14 @	27	8 / 10							
1500	28	10 / 12	16/24			orange olive brown			Saturated

REMARKS

130 lb hammer falling 30"

1340 collected S106-SB-01-25.5

BORING NO.

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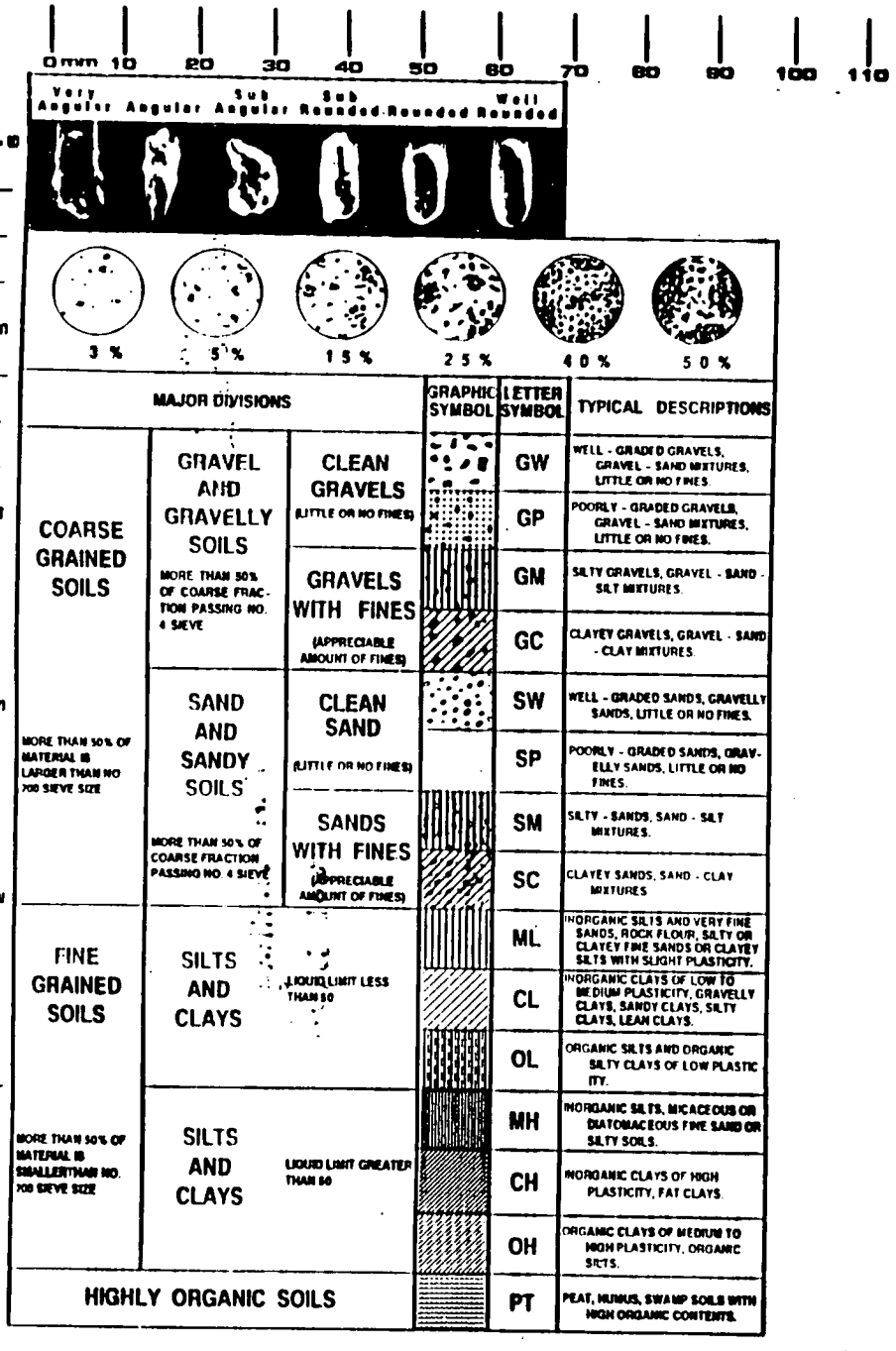

MAJOR DIVISIONS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL - GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES.
				GP	POORLY - GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES.
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES.
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES.
(MORE THAN 50% OF MATERIAL IS LARGER THAN NO 200 SIEVE SIZE)	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE)	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL - GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
				SP	POORLY - GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY - SANDS, SAND - SILT MIXTURES.
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES.
FINE GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY.
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS.
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY.
(MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS.
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS.
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS.

CLAY

CLAY CONSISTENCY	THUMB PENETRATION	SPT, N BLOWS/FT.	Undrained Shear Strength (PSF) TORVANE	Unconfined Compressive Strength q_u Pocket Penetrometer
VERY SOFT	Easily penetrated several inches by thumb. Exudes between thumb and fingers when squeezed in hand.	< 2	250	500
SOFT	Easily penetrated one inch by thumb. Molded by light finger pressure.	2 - 4	250 - 500	500 - 1000
MEDIUM STIFF	Can be penetrated over 1/4" by thumb with moderate effort. Molded by strong finger pressure.	4 - 8	500 - 1000	1000 - 2000
STIFF	Indented about 1/4" by thumb but penetrated only with great effort.	8 - 15	1000 - 2000	2000 - 4000
VERY STIFF	Readily indented by thumbnail.	15 - 30	2000 - 4000	4000 - 8000
HARD	Indented with difficulty by thumbnail.	> 30	> 4000	> 8000

SAND

SOILTYPE	SPT, N Relative Density %	FIELD TEST
VERY LOOSE SAND	4	0 - 15
LOOSE SAND	4 - 10	15 - 35
MEDIUM DENSE SAND	10 - 30	35 - 65
DENSE SAND	30 - 50	65 - 85
VERY DENSE SAND	50	85 - 100

Unified Soil Classification System (USCS)

	MILLIMETERS	INCHES	SIEVE SIZES
BOULDERS	> 300	> 11.8	-
COBBLES	75 - 300	2.9 - 11.8	-
GRAVEL:			
COARSE	75 - 19	2.9 - .75	-
FINE	19 - 4.8	.75 - .19	3/4" - No. 4
SAND:			
COARSE	4.8 - 2.0	.19 - .08	No. 4 - No. 10
MEDIUM	2.0 - .43	.08 - .02	No. 10 - No. 40
FINE	.43 - .08	.02 - .003	No. 40 - No. 200
FINES:			
SILTS	< .08	< .003	< No. 200
CLAYS	< .08	< .003	< No. 200

BORING LOG

BROWN AND ROOT ENVIRONMENTAL
A Division of Halliburton NUS

PROJECT NWS-EARLE
PROJECT NO. CTO-206/226
ELEVATION
WATER LEVEL DATA
(DATE, TIME & CONDITIONS)

BORING NO. S106-SB-01
DATE 3/3/97
DRILLER JCA · Drilling
FIELD GEOLOGIST Paul Davis

SAMPLE NO.	DEPTH (FT.)	BLOWS 6"	SAMPLE REC. LENGTH	LITHO. CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
S-15 @	29	8 / 9			med. Dense	orange olive brown	Silty fine grained Sand	SM	Saturated
1520	30	9 / 10	20/24		↓	↓	↓	↓	
S-16 @	31	10 / 12			↓	↓	↓	↓	Saturated
1530	32	14 / 18	20/24		Dense	↓	↓	↓	
S-17 @	33	16 / 15			↓	↓	↓	↓	Saturated
1540	34	14 / 14	20/24		med. Dense	↓	↓	↓	

REMARKS
130 lb hammer falling 30"

BORING NO.
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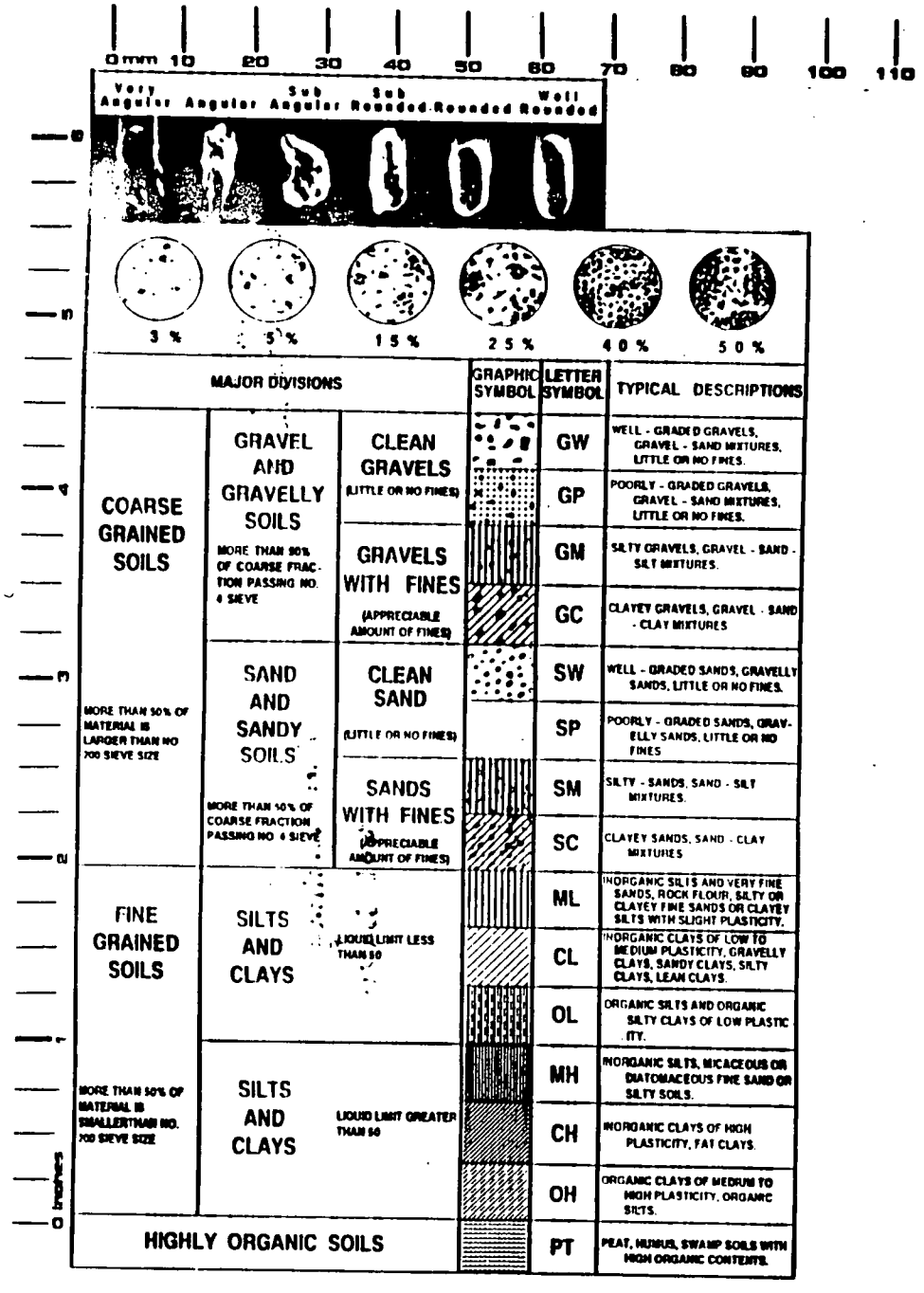

CLAY

CLAY CONSISTENCY	THUMB PENETRATION	SPT, N BLOWS/FT.	Undrained Shear Strength (PSF) TORVANE	Unconfined Compressive Strength (PSF) Pocket Penetrometer
VERY SOFT	Easily penetrated several inches by thumb. Exudes between thumb and fingers when squeezed in hand.	< 2	250	500
SOFT	Easily penetrated one inch by thumb. Molded by light finger pressure.	2 - 4	250 - 500	500 - 1000
MEDIUM STIFF	Can be penetrated over 1/4" by thumb with moderate effort. Molded by strong finger pressure.	4 - 8	500 - 1000	1000 - 2000
STIFF	Indented about 1/4" by thumb but penetrated only with great effort.	8 - 15	1000 - 2000	2000 - 4000
VERY STIFF	Readily indented by thumbnail.	15 - 30	2000 - 4000	4000 - 8000
HARD	Indented with difficulty by thumbnail.	> 30	> 4000	> 8000

SAND

SOILTYPE	SPT, N Relative Blows/ft Density %	FIELD TEST
VERY LOOSE SAND	4	0 - 15	Easily penetrated with 1/2" reinforcing rod pushed by hand.
LOOSE SAND	4 - 10	15 - 35	Easily penetrated with 1/2" reinforcing rod pushed by hand.
MEDIUM DENSE SAND	10 - 30	35 - 65	Penetrated a foot with 1/2" reinforcing rod driven with 5-10 hammer blows.
DENSE SAND	30 - 50	65 - 85	Penetrated a foot with 1/2" reinforcing rod driven with 5-10 hammer blows.
VERY DENSE SAND	50	85 - 100	Penetrated only a few inches with 1/2" reinforcing rod driven with 5-10 hammer blows.

Unified Soil Classification System (USCS)

	MILLIMETERS	INCHES	SIEVE SIZES
BOULDERS	> 300	> 11.8	-
COBBLES	75 - 300	2.9 - 11.8	-
GRAVEL:			
COARSE	75 - 19	2.9 - .75	-
FINE	19 - 4.8	.75 - .19	3/4" - No. 4
SAND:			
COARSE	4.8 - 2.0	.19 - .08	No. 4 - No. 10
MEDIUM	2.0 - .43	.08 - .02	No. 10 - No. 40
FINE	.43 - .08	.02 - .003	No. 40 - No. 200
FINES:			
SILTS	< .08	< .003	< No. 200
CLAYS	< .08	< .003	< No. 200

BORING LOG

BROWN AND ROOT ENVIRONMENTAL
A Division of Halliburton NUS

PROJECT NWS-EARLE
PROJECT NO. CTO-206/226
ELEVATION
WATER LEVEL DATA
(DATE, TIME & CONDITIONS)

BORING NO. S106-SB-02
DATE 3/4/97
DRILLER JCA · Drilling
FIELD GEOLOGIST Paul Davis

SAMPLE NO.	DEPTH (FT.)	BLOWS 6"	SAMPLE REC. LENGTH	LITHO. CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
	14						Auger Down 14'		
S-1 @	15	8 / 9			med. Dense	Olive brown	Silty Clayey Fine grained Sand	SC	No Hnu
1025	16	9 / 12	10/24						moist
S-2 @	17	9 / 9							moist
1030	18	9 / 10	13/24						no hnu
S-3 @	19	9 / 8				Olive			moist
1039	20	10 / 11	17/24						no hnu
S-4 @	21	6 / 6							very moist Hnu: 2 ppm
1046	22	8 / 8	18/24						wet @ 22'
S-5 @	23	5 / 6							Saturated @ 23'
1055	24	6 / 7	20/24			Olive + orange	(orange mottles) Silty F.G. Sand	SM	Hnu: 2 ppm
S-6 @	25	6 / 9							Saturated
1106	26	9 / 10	16/24						Hnu: 2 ppm
									—

REMARKS

1301 hammer falling 30"

1050 Collected S106-SB-02-22.5'

BORING NO.

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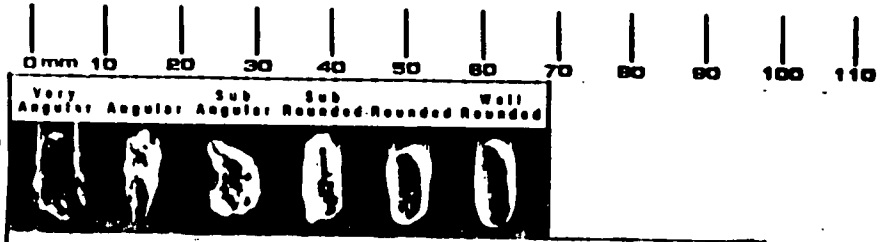

MAJOR DIVISIONS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE)	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL - GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES.
				GP	POORLY - GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES.
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES.
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES.
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE)	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL - GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
				SP	POORLY - GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY - SANDS, SAND - SILT MIXTURES.
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES.
FINE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS (LIQUID LIMIT LESS THAN 50)			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY.
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS.
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY.
	SILTS AND CLAYS (LIQUID LIMIT GREATER THAN 50)			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS.
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS.
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS.

0 inches

CLAY

CLAY CONSISTENCY	THUMB PENETRATION	SPT, N BLOWS/FT.	Undrained Shear Strength c, (PSF) TORVANE	Unconfined Compressive Strength q_u Pocket Penetrometer
VERY SOFT	Easily penetrated several inches by thumb. Exudes between thumb and fingers when squeezed in hand.	< 2	250	500
SOFT	Easily penetrated one inch by thumb. Molded by light finger pressure.	2 - 4	250 - 500	500 - 1000
MEDIUM STIFF	Can be penetrated over 1/4" by thumb with moderate effort. Molded by strong finger pressure.	4 - 8	500 - 1000	1000 - 2000
STIFF	Indented about 1/4" by thumb but penetrated only with great effort.	8 - 15	1000 - 2000	2000 - 4000
VERY STIFF	Readily indented by thumbnail.	15 - 30	2000 - 4000	4000 - 8000
HARD	Indented with difficulty by thumbnail.	> 30	> 4000	> 8000

SAND

SOILTYPE	SPT, N Blows/ft	Relative Density %	FIELD TEST
VERY LOOSE SAND	4	0 - 15	Easily penetrated with 1/2" reinforcing rod pushed by hand.
LOOSE SAND	4 - 10	15 - 35	Easily penetrated with 1/2" reinforcing rod pushed by hand.
MEDIUM DENSE SAND	10 - 30	35 - 65	Penetrated a few inches with 1/2" reinforcing rod driven with 5-lb hammer.
DENSE SAND	30 - 50	65 - 85	Penetrated only a few inches with 1/2" reinforcing rod driven with 5-lb hammer.
VERY DENSE SAND	50	85 - 100	Penetrated only a few inches with 1/2" reinforcing rod driven with 5-lb hammer.

Unified Soil Classification System (USCS)

	MILLIMETERS	INCHES	SIEVE SIZES
BOULDERS	> 300	> 11.8	-
COBBLES	75 - 300	2.9 - 11.8	-
GRAVEL:			
COARSE	75 - 19	2.9 - .75	-
FINE	19 - 4.8	.75 - .19	3/4" - No. 4
SAND:			
COARSE	4.8 - 2.0	.19 - .08	No. 4 - No. 10
MEDIUM	2.0 - .43	.08 - .02	No. 10 - No. 40
FINE	.43 - .08	.02 - .003	No. 40 - No. 200
FINES:			
SILTS	< .08	< .003	< No. 200
CLAYS	< .08	< .003	< No. 200

BORING LOG

BROWN AND ROOT ENVIRONMENTAL
A Division of Halliburton NUS

PROJECT NWS-EARLE
PROJECT NO. CTO-206/226
ELEVATION
WATER LEVEL DATA
(DATE, TIME & CONDITIONS)

BORING NO. S106-SB-02
DATE 3/4/97
DRILLER JCA · Drilling
FIELD GEOLOGIST Paul Davis

SAMPLE NO.	DEPTH (FT.)	BLOWS 6"	SAMPLE REC. LENGTH	LITHO. CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
S-7 @	27	9 / 8			med. dense	olive orange	Silty fine grained sand	SM	saturated
1116	28	11 / 12	16/24						No Hnu.
S-8 @	29	7 / 10							saturated
1126	30	11 / 13	21/24						No Hnu

REMARKS
130 lb hammer falling 30"

BORING NO.
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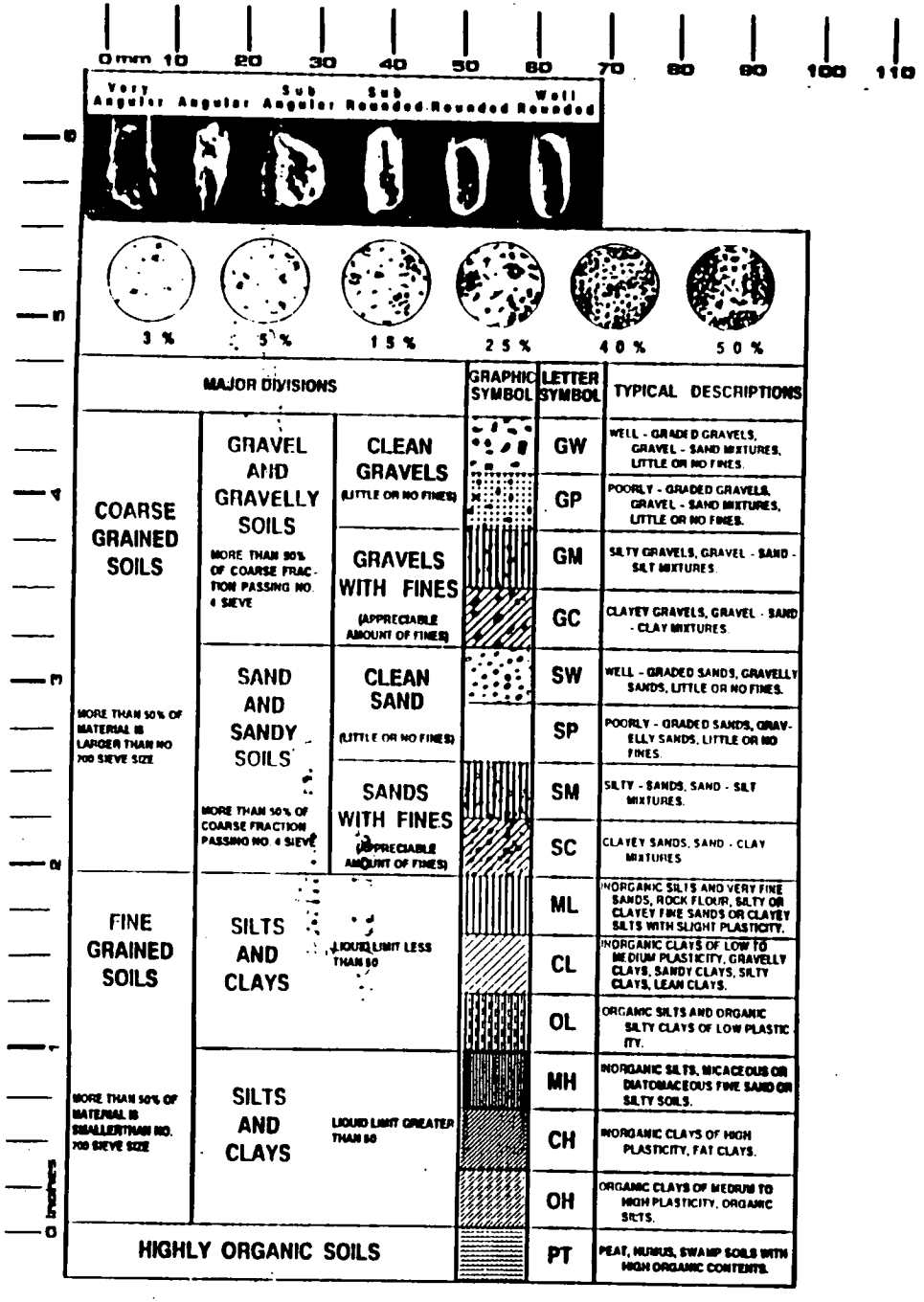

CLAY

CLAY CONSISTENCY	THUMB PENETRATION	SPT, N BLOWS/FT.	Undrained Shear Strength (PSF) TORVANE	Unconfined Compressive Strength q_u Pocket Penetrometer
VERY SOFT	Easily penetrated several inches by thumb. Exudes between thumb and fingers when squeezed in hand.	< 2	250	500
SOFT	Easily penetrated one inch by thumb. Molded by light finger pressure.	2 - 4	250 - 500	500 - 1000
MEDIUM STIFF	Can be penetrated over 1/4" by thumb with moderate effort. Molded by strong finger pressure.	4 - 8	500 - 1000	1000 - 2000
STIFF	Indented about 1/4" by thumb but penetrated only with great effort.	8 - 15	1000 - 2000	2000 - 4000
VERY STIFF	Readily indented by thumbnail.	15 - 30	2000 - 4000	4000 - 8000
HARD	Indented with difficulty by thumbnail.	> 30	> 4000	> 8000

SAND

SOILTYPE	SPT, N Relative Density %	FIELD TEST
VERY LOOSE SAND	4	0 - 15
LOOSE SAND	4 - 10	15 - 35
MEDIUM DENSE SAND	10 - 30	35 - 65
DENSE SAND	30 - 50	65 - 85
VERY DENSE SAND	50	85 - 100

Unified Soil Classification System (USCS)

	MILLIMETERS	INCHES	SIEVE SIZES
BOULDERS	> 300	> 11.8	-
COBBLES	75 - 300	2.9 - 11.8	-
GRAVEL:			
COARSE	75 - 19	2.9 - .75	-
FINE	19 - 4.8	.75 - .19	3/4" - No. 4
SAND:			
COARSE	4.8 - 2.0	.19 - .08	No. 4 - No. 10
MEDIUM	2.0 - .43	.08 - .02	No. 10 - No. 40
FINE	.43 - .08	.02 - .003	No. 40 - No. 200
FINES:			
SILTS	< .08	< .003	< No. 200
CLAYS	< .08	< .003	< No. 200

BORING LOG

BROWN AND ROOT ENVIRONMENTAL
A Division of Halliburton NUS

PROJECT NWS-EARLE
PROJECT NO. CTO-206/226
ELEVATION
WATER LEVEL DATA
(DATE, TIME & CONDITIONS)

BORING NO. S106-SB-03
DATE 3/24/97
DRILLER JCA-Drilling
FIELD GEOLOGIST Paul Davis

SAMPLE NO.	DEPTH (FT.)	BLOWS 6"	SAMPLE REC. LENGTH	LITHO. CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
S-1 @	1	2 / 4			loose	brown	TOP soil (grass/roots) Silty fine grained Sand	SM	moist
1116	2	6 / 10	16/24		med. Dense	↓	↓	↓	Hnu: 5 ppm
S-2 @	3	5 / 6				orange brown	Silty fine grained		moist
1120	4	9 / 9	18/24			↓	Sand (pebbly)		Hnu: 3 ppm
S-3 @	5	7 / 8				light brn.			moist
1123	6	9 / 9	16/24			↓	(Sub round pebbles)	↓	no Hnu
S-4 @	7	6 / 7				brown	Clayey Fine grained Sand	SC	wet
1125	8	8 / 8	18/24			Olive brown	clayey, silty F.G. Sand		no hnu.
S-5 @	9	5 / 7				↓	↓		moist
1140	10	8 / 9	20/24			↓	↓		Hnu: 2 ppm
S-6 @	11	7 / 8				Olive	Silty, clayey, fine		moist
1145	12	10 / 11	20/24			↓	Grained Sand		Hnu: 3 ppm
S-7 @	13	5 / 7							No recovery
1200	14	9 / 9	0/24		↓	↓	↓	↓	NO Recovery

REMARKS

130 lb hammer falling 30"

BORING NO.

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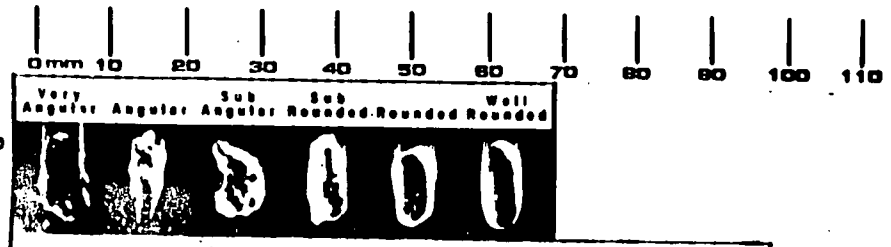
* See Legend on Back



MAJOR DIVISIONS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL - GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES.
				GP	POORLY - GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES.
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES.
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES.
(MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE)	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE)	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL - GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
				SP	POORLY - GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY - SANDS, SAND - SILT MIXTURES.
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES.
FINE GRAINED SOILS	SILTS AND CLAYS (LIQUID LIMIT LESS THAN 50)			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY.
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS.
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY.
(MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS (LIQUID LIMIT GREATER THAN 50)			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS.
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS.
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS.

CLAY

CLAY CONSISTENCY	THUMB PENETRATION	SPT, N BLOWS/FT.	Undrained Shear Strength (PSF) TORVANE	Undrained Shear Strength (PSF) Pocket Penetrometer	Unconfined Compressive Strength
VERY SOFT	Easily penetrated several inches by thumb. Exudes between thumb and fingers when squeezed in hand.	< 2	250	500	
SOFT	Easily penetrated one inch by thumb. Molded by light finger pressure.	2 - 4	250 - 500	500 - 1000	
MEDIUM STIFF	Can be penetrated over 1/4" by thumb with moderate effort. Molded by strong finger pressure.	4 - 8	500 - 1000	1000 - 2000	
STIFF	Indented about 1/4" by thumb but penetrated only with great effort.	8 - 15	1000 - 2000	2000 - 4000	
VERY STIFF	Readily indented by thumbnail.	15 - 30	2000 - 4000	4000 - 8000	
HARD	Indented with difficulty by thumbnail.	> 30	> 4000	> 8000	

SAND

SOILTYPE	SPT, N Blows/ft	Relative Density %	FIELD TEST
VERY LOOSE SAND	4	0 - 15	Easily penetrated with 1/2" reinforcing rod pushed by hand
LOOSE SAND	4 - 10	15 - 35	Easily penetrated with 1/2" reinforcing rod pushed by hand
MEDIUM DENSE SAND	10 - 30	35 - 65	Penetrated a few inches with 1/2" reinforcing rod driven with 5 lb. hammer
DENSE SAND	30 - 50	65 - 85	Penetrated a few inches with 1/2" reinforcing rod driven with 5 lb. hammer
VERY DENSE SAND	50	85 - 100	Penetrated only a few inches with 1/2" reinforcing rod driven with 5 lb. hammer

Unified Soil Classification System (USCS)

	MILLIMETERS	INCHES	SIEVE SIZES
BOULDERS	> 300	> 11.8	-
COBBLES	75 - 300	2.9 - 11.8	-
GRAVEL:			
COARSE	75 - 19	2.9 - .75	-
FINE	19 - 4.8	.75 - .19	3/4" - No. 4
SAND:			
COARSE	4.8 - 2.0	.19 - .08	No. 4 - No. 10
MEDIUM	2.0 - .43	.08 - .02	No. 10 - No. 40
FINE	.43 - .08	.02 - .003	No. 40 - No. 200
FINES:			
SILTS	< .08	< .003	< No. 200
CLAYS	< .08	< .003	< No. 200

BORING LOG

BROWN AND ROOT ENVIRONMENTAL
A Division of Halliburton NUS

PROJECT NWS-EARLE
PROJECT NO. CTO-206/226
ELEVATION
WATER LEVEL DATA
(DATE, TIME & CONDITIONS)

BORING NO. S106-SB-03
DATE 3/24/97
DRILLER JCA Drilling
FIELD GEOLOGIST Paul Davis

SAMPLE NO.	DEPTH (FT.)	BLOWS 6"	SAMPLE REC. LENGTH	LITHO. CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
S-8 @	15	7 / 8			Med. Dense	olive gray	Silty clayey fine grained sand	SC	moist
1213	16	9 / 9	21/24						Hnu: 3ppm
S-9 @	17	9 / 9				olive gray			moist
1224	18	10 / 12	18/24						Hnu: 1ppm
S-10 @	19	7 / 9							Hnu: 2ppm wet
1229	20	11 / 12	20/24				(orange banding)		Saturated @ 20'
S-11 @	21	11 / 10				olive			Saturated
1235	22	12 / 11	20/24						Hnu: 1ppm
S-12 @	23	10 / 12				olive	Silty fine grained sand	SM	Saturated
1320	24	14 / 16	20/24			(some orange)			No Hnu.
S-13 @	25	14 / 14							Saturated
1340	26	15 / 13	21/24						No Hnu.

REMARKS

130 lb hammer falling 30"

1230 collected S106-SB-03-19.5

BORING NO.

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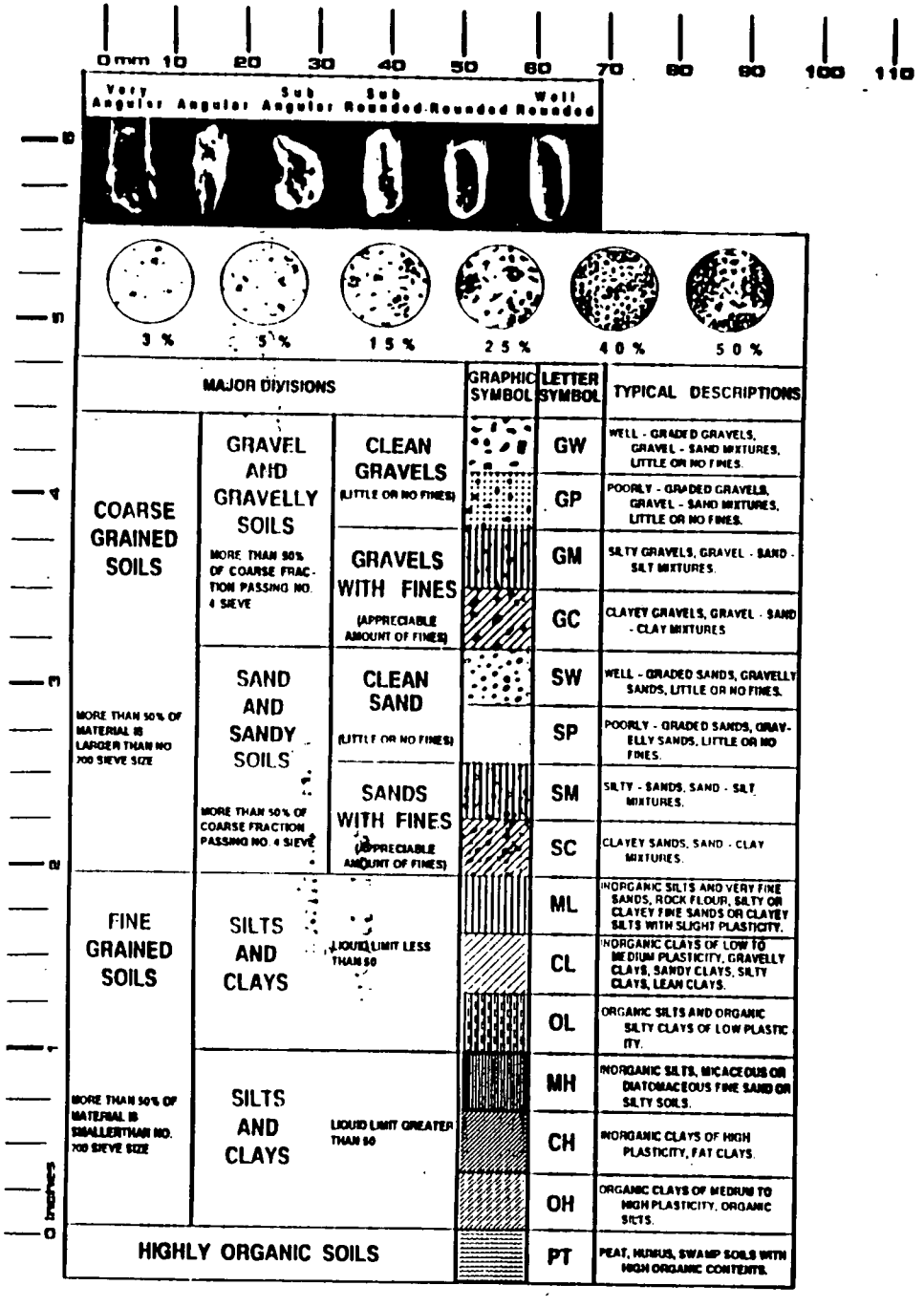

CLAY

CLAY CONSISTENCY	THUMB PENETRATION	SPT, N BLOWS/FT.	Undrained Shear Strength (PSF) TORVANE	Unconfined Compressive Strength q_u Pocket Penetrometer
VERY SOFT	Easily penetrated several inches by thumb. Extrudes between thumb and fingers when squeezed in hand.	< 2	250	500
SOFT	Easily penetrated one inch by thumb. Molded by light finger pressure.	2 - 4	250 - 500	500 - 1000
MEDIUM STIFF	Can be penetrated over 1/4" by thumb with moderate effort. Molded by strong finger pressure.	4 - 8	500 - 1000	1000 - 2000
STIFF	Indented about 1/4" by thumb but penetrated only with great effort.	8 - 15	1000 - 2000	2000 - 4000
VERY STIFF	Readily indented by thumbnail.	15 - 30	2000 - 4000	4000 - 8000
HARD	Indented with difficulty by thumbnail.	> 30	> 4000	> 8000

SAND

SOILTYPE	SPT, N Blows per Foot	Relative Density %	FIELD TEST
VERY LOOSE SAND	4	0 - 15	Easily penetrated with 1/2" reinforcing rod pushed by hand.
LOOSE SAND	4 - 10	15 - 35	Easily penetrated with 1/2" reinforcing rod pushed by hand.
MEDIUM DENSE SAND	10 - 30	35 - 65	Penetrated a foot with 1/2" reinforcing rod driven with 5 lb hammer.
DENSE SAND	30 - 50	65 - 85	Penetrated a foot with 1/2" reinforcing rod driven with 5 lb hammer.
VERY DENSE SAND	50	85 - 100	Penetrated only a few inches with 1/2" reinforcing rod driven with 5 lb hammer.

Unified Soil Classification System (USCS)

	MILLIMETERS	INCHES	SIEVE SIZES
BOULDERS	> 300	> 11.8	-
COBBLES	75 - 300	2.9 - 11.8	-
GRAVEL:			
COARSE	75 - 19	2.9 - .75	-
FINE	19 - 4.8	.75 - .19	3/4" - No. 4
SAND:			
COARSE	4.8 - 2.0	.19 - .08	No. 4 - No. 10
MEDIUM	2.0 - .43	.08 - .02	No. 10 - No. 40
FINE	.43 - .08	.02 - .003	No. 40 - No. 200
FINES:			
SILTS	< .08	< .003	< No. 200
CLAYS	< .08	< .003	< No. 200

BORING LOG

BROWN AND ROOT ENVIRONMENTAL
A Division of Halliburton NUS

PROJECT NWS-EARLE
PROJECT NO. CTO-206/226
ELEVATION
WATER LEVEL DATA
(DATE, TIME & CONDITIONS)

BORING NO. S106-SB-04
DATE 3/25/97
DRILLER JCA Drilling
FIELD GEOLOGIST Paul Davis

SAMPLE NO.	DEPTH (FT.)	BLOWS 6"	SAMPLE REC. LENGTH	LITHO. CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
	10						Auger Down 10'		
S-1 @	11	6 / 7			med. Dense	Olive-orange	Silty fine grained Sand	SM	moist
0843	12	7 / 8	23/24						No Hnu.
S-2 @	13	7 / 8							moist
0900	14	9 / 11	6/24						No Hnu.
S-3 @	15	8 / 8				Olive orange	Silty (some clay)		moist
0915	16	10 / 10	23/24				Fine grained sand		No Hnu.
S-4 @	17	9 / 11							moist
3" 0935	18	12 / 12	23/24						No Hnu.
S-5 @	19	7 / 9							very-wet moist
3" 0945	20	11 / 12	23/24						no hnu.
S-6 @	21	10 / 8							
3" 1000	22	10 / 11	23/24						No hnu. Saturated @ 21'

REMARKS

130 lb hammer falling 30"
1000 collected S106-SB-04-20.5 and DUP-03

BORING NO.
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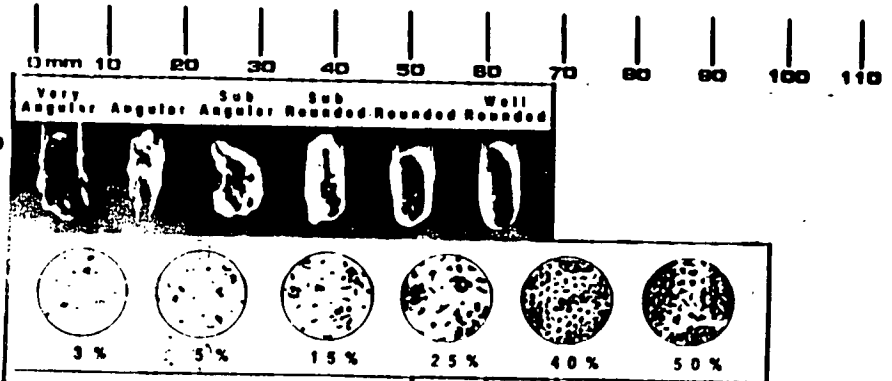

MAJOR DIVISIONS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL - GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES.
				GP	POORLY - GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES.
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES.
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
(MORE THAN 50% OF MATERIAL IS LARGER THAN NO 200 SIEVE SIZE)	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING NO 4 SIEVE)	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL - GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
				SP	POORLY - GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY - SANDS, SAND - SILT MIXTURES.
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	SILTS AND CLAYS (LIQUID LIMIT LESS THAN 50)			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY.
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS.
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY.
(MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS (LIQUID LIMIT GREATER THAN 50)			MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS.
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS.
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS.

CLAY

CLAY CONSISTENCY	THUMB PENETRATION	SPT, N BLOWS/FT.	Undrained Shear Strength (PSF) TORVANE	Unconfined Compressive Strength (PSF) Pocket Penetrometer
VERY SOFT	Easily penetrated several inches by thumb. Exudes between thumb and fingers when squeezed in hand.	< 2	250	500
SOFT	Easily penetrated one inch by thumb. Molded by light finger pressure.	2 - 4	250 - 500	500 - 1000
MEDIUM STIFF	Can be penetrated over 1/4" by thumb with moderate effort. Molded by strong finger pressure.	4 - 8	500 - 1000	1000 - 2000
STIFF	Indented about 1/4" by thumb but penetrated only with great effort.	8 - 15	1000 - 2000	2000 - 4000
VERY STIFF	Readily indented by thumbnail.	15 - 30	2000 - 4000	4000 - 8000
HARD	Indented with difficulty by thumbnail.	> 30	> 4000	> 8000

SAND

SOILTYPE	SPT, N (Relative Density %)	FIELD TEST
VERY LOOSE SAND	4	0 - 15
LOOSE SAND	4 - 10	15 - 35
MEDIUM DENSE SAND	10 - 30	35 - 65
DENSE SAND	30 - 50	65 - 85
VERY DENSE SAND	50	85 - 100

Unified Soil Classification System (USCS)

	MILLIMETERS	INCHES	SIEVE SIZES
BOULDERS	> 300	> 11.8	-
COBBLES	75 - 300	2.9 - 11.8	-
GRAVEL:			
COARSE	75 - 19	2.9 - .75	-
FINE	19 - 4.8	.75 - .19	3/4" - No. 4
SAND:			
COARSE	4.8 - 2.0	.19 - .08	No. 4 - No. 10
MEDIUM	2.0 - .43	.08 - .02	No. 10 - No. 40
FINE	.43 - .08	.02 - .003	No. 40 - No. 200
FINES:			
SILTS	< .08	< .003	< No. 200
CLAYS	< .08	< .003	< No. 200

BORING LOG

BROWN AND ROOT ENVIRONMENTAL
A Division of Halliburton NUS

PROJECT NWS-EARLE
PROJECT NO. CTO-206/226
ELEVATION
WATER LEVEL DATA
(DATE, TIME & CONDITIONS)

BORING NO. S106-SB-04
DATE 3/25/97
DRILLER JCA-Drilling
FIELD GEOLOGIST Paul Davis

SAMPLE NO.	DEPTH (FT.)	BLOWS 6"	SAMPLE REC. LENGTH	LITHO. CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
S-7 @	23	7 / 9			med. Dense	Olive	Silty fine grained sand	SM	Saturated
1220	24	9 / 11	23/24						strong petrol. odors Hnu = 80 ppm
S-8 @	25	5 / 7							Saturated
1226	26	7 / 8	23/24			Olive			very slight petrol.-odors Hnu = 3 ppm
S-9 @	27	7 / 9							Saturated
1237	28	9 / 11	23/24						very slight odors Hnu = 1 ppm

REMARKS
130 lb hammer falling 30"

BORING NO.
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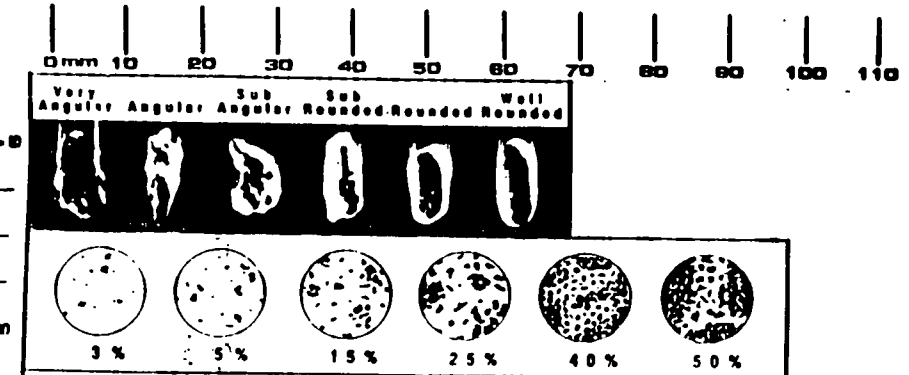

MAJOR DIVISIONS			GRAPHIC SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE)	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL - GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES.
				GP	POORLY - GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES.
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES.
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES.
	SAND AND SANDY SOILS (MORE THAN 50% OF COARSE FRACTION PASSING NO. 4 SIEVE)	CLEAN SAND (LITTLE OR NO FINES)		SW	WELL - GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
				SP	POORLY - GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES.
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY - SANDS, SAND - SILT MIXTURES.
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS (MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE)	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY.
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS.
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY.
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS.
				CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS.
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS.
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS.

CLAY

CLAY CONSISTENCY	THUMB PENETRATION	SPT. N BLOWS/FT.	Undrained Shear Strength (PSF) TORVANE	Unconfined Compressive Strength q_u Pocket Penetrometer
VERY SOFT	Easily penetrated several inches by thumb. Exudes between thumb and fingers when squeezed in hand.	< 2	250	500
SOFT	Easily penetrated one inch by thumb. Molded by light finger pressure.	2 - 4	250 - 500	500 - 1000
MEDIUM STIFF	Can be penetrated over 1/4" by thumb with moderate effort. Molded by strong finger pressure.	4 - 8	500 - 1000	1000 - 2000
STIFF	Indented about 1/4" by thumb but penetrated only with great effort.	8 - 15	1000 - 2000	2000 - 4000
VERY STIFF	Readily indented by thumbnail.	15 - 30	2000 - 4000	4000 - 8000
HARD	Indented with difficulty by thumbnail.	> 30	> 4000	> 8000

SAND

SOILTYPE	SPT. N Blows/ft. Relative Density %	FIELD TEST
VERY LOOSE SAND	4	0 - 15
LOOSE SAND	4 - 10	15 - 35
MEDIUM DENSE SAND	10 - 30	35 - 65
DENSE SAND	30 - 50	65 - 85
VERY DENSE SAND	50	85 - 100

Unified Soil Classification System (USCS)

	MILLIMETERS	INCHES	SIEVE SIZES
BOULDERS	> 300	> 11.8	-
COBBLES	75 - 300	2.9 - 11.8	-
GRAVEL:			
COARSE	75 - 19	2.9 - .75	-
FINE	19 - 4.8	.75 - .19	3/4" - No. 4
SAND:			
COARSE	4.8 - 2.0	.19 - .08	No. 4 - No. 10
MEDIUM	2.0 - .43	.08 - .02	No. 10 - No. 40
FINE	.43 - .08	.02 - .003	No. 40 - No. 200
FINES:			
SILTS	< .08	< .003	< No. 200
CLAYS	< .08	< .003	< No. 200

BORING LOG

BROWN AND ROOT ENVIRONMENTAL
A Division of Halliburton NUS

PROJECT NWS Earle
PROJECT NO. CTO-206
ELEVATION
WATER LEVEL DATA
(DATE, TIME & CONDITIONS)

BORING NO. S106-MW-05
DATE 5-23-97
DRILLER JCA Drilling
FIELD GEOLOGIST D. Whalen

SAMPLE NO.	DEPTH (FT.)	BLOWS 6"	SAMPLE REC. LENGTH	LITHO. CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
	0.0								
0850		–		- - - - -		Black	pavement		
		–							
		–				BRN	silty FGR sand		damp
	2.0	–						SM	
		–							
		–							
		–							
	4.0	–							
		–							
0859	5.0	–				orange-BRN	FGR silty sand, a few quartz pebbles	SM	damp
		2		- - - - -					
S-1		4	24/24			olive-BRN	sandy silt and clay	SC	0 ppm damp
@ 0904		5			LOOSE				
	7.0	5							
		–							
		–							
		–							
		–							
		–							
	10.0	–							
		6				Olive-BRN to ORANGE BRN	sandy silt and clay	SC	damp/moist 0 ppm
S-2		6	22/24						
@ 0912		5			LOOSE				
	12.0	5							
		5				olive-BRN to ORANGE BRN	silty sand	SM	damp/moist
S-3		5	22/24						
@ 0918		4			LOOSE				0 ppm
	14.0	4							

REMARKS 4 1/4" I.D. HSA, 140 lb. hammer
2" x 24" and 3" x 24" split spoons

BORING NO.
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* See Legend on Back

BORING LOG

BROWN AND ROOT ENVIRONMENTAL
A Division of Halliburton NUS

PROJECT NWS Earle
PROJECT NO. CT0206
ELEVATION N.A.
WATER LEVEL DATA N.A.
(DATE, TIME & CONDITIONS)

BORING NO. 5106 - MW - 05
DATE 5-23-97
DRILLER JCA Drilling
FIELD GEOLOGIST D. Whalen

SAMPLE NO	DEPTH (FT.)	BLOWS 6"	SAMPLE REC. LENGTH	LITHO. CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
S-4 @ 0924	15.0	5 5 5 4	20/24			olive Brn	silty clayey sand	SC	damp/moist
	16.0				LOOSE	olive to orange BRN	silty sand	SM	damp/moist 0ppm
S-5 @ 0933	18.0	5 5 5 6	21/24		M. DENSE	olive olive to orange Brn	clayey sand silty sand	SM	moist/damp 0ppm
S-6 @ 0939	20.0	5 6 9 11	24/24		M. DENSE	orange Brn grish-Brn	silty sand w/pebbles silty sand	SM SM	3" spoon damp/moist
S-7 @ 0945	22.0	9 10 11 13	22/24		M. DENSE	olive to olive Brn olive Brn	clayey sand to silty sand silty sand	SC SM	3" spoon damp/moist saturated
S-8 @ 0955	24.0	5 5 6 7	20/24		M. DENSE	olive grish-gray	F-MGR sand, some silt	SM	saturated
S-9 @ 1006	26.0	5 9 11 15	14/24		M. DENSE	orange Brn olive	F-mgr sand w/TR pebbles FGR sand TR silt	SM	0ppm saturated
S-10 @ 1015	28.0	10 11 13 14	22/24		M. DENSE	Brn to olive Brn	FGR silty sand, TR pebbles	SM	saturated

REMARKS

BORING NO.

PAGE 2 OF 3

* See Legend on Back

BORING LOG

BROWN AND ROOT ENVIRONMENTAL
A Division of Halliburton NUS

PROJECT NWS Earle
PROJECT NO. CTO206
ELEVATION
WATER LEVEL DATA
(DATE, TIME & CONDITIONS)

BORING NO. S106-MW-
DATE 5-23-97
DRILLER JCA Drilling
FIELD GEOLOGIST D. Whalen

SAMPLE NO.	DEPTH (FT.)	BLOWS 6"	SAMPLE REC. LENGTH	LITHO. CHANGE	MATERIAL DESCRIPTION* SOIL DENSITY HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
S-11		5 / 7	20/24			Olive Brn	silty FGR sand	SM	Saturated
10 / 1025	30.0	10 / 11			MDENSE	~~Orange Brn~~			Saturated
				T.D.					

REMARKS

BORING NO.

PAGE 3 OF 3

* See Legend on Back

BORING LOG

BROWN AND ROOT ENVIRONMENTAL
A Division of Halliburton NUS

PROJECT NWS EARLE
PROJECT NO. 5085 CTO 206
ELEVATION
WATER LEVEL DATA
(DATE, TIME & CONDITIONS)

BORING NO. S106-MW-06
DATE 5-22-97
DRILLER JCA, STEVE BURGER
FIELD GEOLOGIST ROBERT GOOD

SAMPLE NO	DEPTH (FT.)	BLOWS 6"	SAMPLE REC. LENGTH	LITHO. CHANGE	MATERIAL DESCRIPTION: SOIL DENSITY HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
1041	0.0					BRN	SANDY SILT-LOAM		DAMP
						BRN	FGR SILTY SAND		DAMP TO MOIST
	5.0								
S-1 @ 1049		4 / 2			LOOSE	BRN	SILTY FGR SAND AND SANDY SILT	SM/ML	0.0 PPm MOIST
	7.0	2 / 4	13"/24"						(WET ATOP SILT LAYERS)
	10.0								
S-2 @ 1056		4 / 4			MED.	BRN TO OLIVE-BRN	FGR SILTY SAND & SANDY SILT; POSS. SOME CLAY	SM/ML	0.0 PPm MOIST
	12.0	6 / 5	22"/24"		DENSE				
S-3 @ 1104		4 / 3			LOOSE	BRN & OLIVE-BRN	SILTY FGR SAND, SANDY SILT & CLAY, TRACE	SM/ML/CL	0.0 PPm MOIST
	14.0	2 / 4	18"/24"				PEBBLES & COARSE SAND		—

REMARKS CME 55 DRILL RIG; 4¼" I.D. HSA; 2"x24" SPLIT SPOON SAMPLES (UNLESS INDICATED AS 3"). 140 LB HAMMER

BORING NO. S106-MW-06
PAGE 1 OF 2

* See Legend on Back

BORING LOG

BROWN AND ROOT ENVIRONMENTAL
A Division of Halliburton NUS

PROJECT NWS EARLE
PROJECT NO. 5085
ELEVATION
WATER LEVEL DATA
(DATE, TIME & CONDITIONS)

BORING NO. S106 - MW - 06
DATE 5-22-97
DRILLER JCA, STEVE BURGER
FIELD GEOLOGIST ROBERT GOOD

SAMPLE NO	DEPTH (FT.)	BLOWS 6"	SAMPLE REC. LENGTH	LITHO. CHANGE	MATERIAL DESCRIPTION: SOIL DENSITY HARDNESS	COLOR	MATERIAL CLASSIFICATION	USCS	REMARKS
	14.0								
S-4 @ 1104		4 / 5			MED	OLIVE BRN TO	VERY SILTY FGR SAND TO SLIGHTLY SILTY FGR-MGR	SM/ML	0.0 PPM MOIST
	16.0	6 / 4	20"/24"		DENSE	ORANGE BRN	SAND		
S-5 @ 1125		7 / 6			MED.	BRN & ORANGE BRN	FGR-MGR SAND, SOME SILT	SM	0.0 PPM MOIST
	18.0	7 / 6	20"/24"		DENSE				
S-6 @ 1136		3 / 9			MED.	GRAY TO ORANGE	FGR-MGR SAND, SOME SILT	SM	0.0 PPM MOIST
	20.0	15 / 16	14"/24"	▽	DENSE	BRN			WET SATURATED
S-7 @ 1147		8 / 16			DENSE	GRAY & ORANGE	FGR-MGR SAND, SOME SILT	SM	0.0 PPM SATURATED
	22.0	16 / 17	13"/24"			BRN			
S-8 @ 1157		15 / 16			DENSE	GRAY & BRN	AS ABOVE	SM	0.0 PPM SATURATED
	24.0	18 / 23	16"/24"						
S-9 @ 1205		13 / 16			DENSE	GRAY & BRN	AS ABOVE	SM	0.0 PPM SATURATED
	26.0	18 / 20	15"/24"						
S-10 @ 1303		13 / 15			DENSE	OLIVE BRN TO	AS ABOVE	SM	0.0 PPM SATURATED
	28.0	23 / 27	17"/24"			GRAY BRN			—

REMARKS S-6, 18'-20', 3" SPLIT SPOON
SAMPLE S106-SB-06-19.5 FR 19.5'-20.0'
BOREHOLE DRILLED TO 29' T.D.

BORING NO. S106-MW-06
PAGE 2 OF 2

* See Legend on Back

APPENDIX C

Monitoring Well Construction Diagrams

SERIAL # 56587

DWR-133M (8/95)

Mail to

NJDEP
Bureau Water Allocation
CN 426
Trenton, NJ 08625-0426

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON, NJ

MONITORING WELL PERMIT

VALID ONLY AFTER APPROVAL BY THE D.E.P.

Permit No. 29 36 550

COORD #:

Owner U.S. Naval Weapons Station Earle
Address Route 34
Colts Neck, NJ 07722

Name of Facility Same
Address

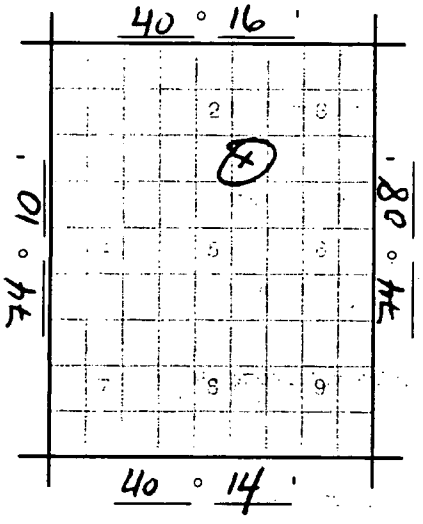
Driller James C. Anderson Assoc., Inc.
Address 907 Pleasant Valley Ave.
Mt Laurel, NJ 08054

Diameter of Well(s)	2 Inches	Proposed Depth of Well(s)	25 Feet
# of Wells Applied for (max. 10)	4	Will pumping equipment be installed?	YES ☐ NO ☑
Type of Well (see reverse)	Monitoring	If Yes, give pump capacity	cumulative GPM

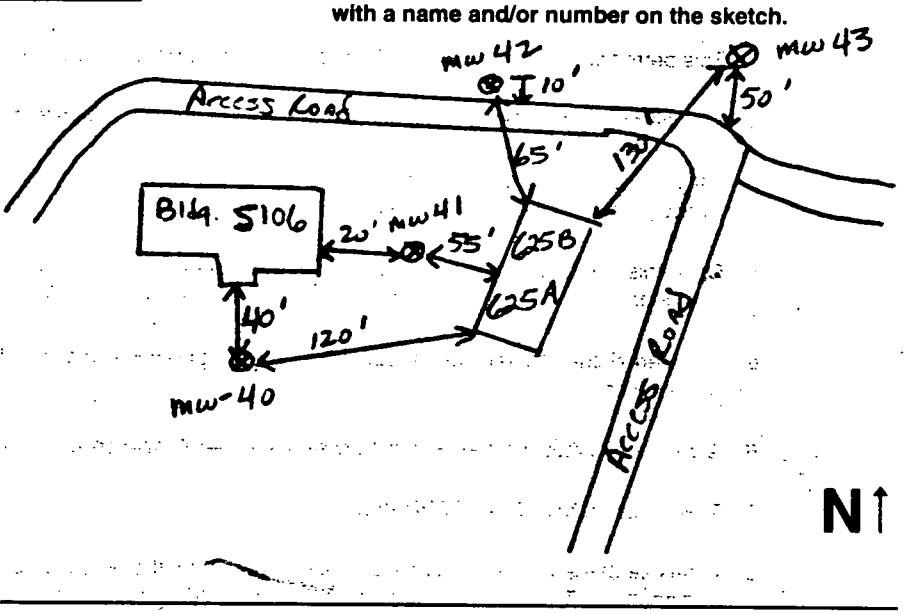
LOCATION OF WELL(S)

Lot #	Block #	Municipality	County
NOT ASSIGNED		Colts Neck	Monmouth

State Atlas Map No. 29



Draw sketch of well(s) nearest roads, buildings, etc. with marked distances in feet. Each well MUST be labeled with a name and/or number on the sketch.



FOR MONITORING WELLS, RECOVERY WELLS, OR PIEZOMETERS, THE FOLLOWING MUST BE COMPLETED BY THE APPLICANT. PLEASE INDICATE WHY THE WELLS ARE BEING INSTALLED:

- ☐ Spill Site
- ☐ ISRA Site
- ☒ CERCLA (Superfund) Site
- ☐ RCRA Site
- ☒ Underground Storage Tank Site
- ☐ Operational Ground Water Permit Site
- ☐ Pretreatment and Residuals Site
- ☐ Water and Hazardous Waste Enforcement Case
- ☐ Water Supply Aquifer Test Observation Well
- ☒ Other (explain) Federal Facility

CASE I.D. Number 90-05-09-1324

This Space for Approval Stamp

WELL PERMIT APPROVED
N.J.D.E.P.
FEB 4 1997
BUREAU OF WATER ALLOCATION

FOR D.E.P. USE
- ☐ Issuance of this permit is subject to the conditions attached. (see next page)
- ☑ For monitoring purposes only
- ☐ The well(s) may not be completed with more than 25 feet of total screen or uncased borehole.

SEE REVERSE SIDE FOR IMPORTANT PROVISIONS AND REGULATIONS PERTAINING TO THIS PERMIT.

In compliance with N.J.S.A. 58:4A-14, application is made for a permit to drill a well as described above.

Date January 31, 1997 Signature of Driller [signature] Registration No. M1224

Signature of Owner Gregory Goegfert

COPIES Water Allocation — White Health Dept. — Yellow Owner — Blue Driller — White

SERIAL # 57596

DWR-133M (8/95)

Mail to

NJDEP
Bureau Water Allocation
CN 426
Trenton, NJ 08625-0426

STATE OF NEW JERSEY
DEPARTMENT OF ENVIRONMENTAL PROTECTION
TRENTON, NJ

MONITORING WELL PERMIT

VALID ONLY AFTER APPROVAL BY THE D.E.P.

Permit No. 2736 ... 2936 ...

COORD #: 1.12.371

Owner U.S. Naval Weapons Station Earle
Address Route 34
Colts Neck NJ 07722

Name of Facility Same
Address

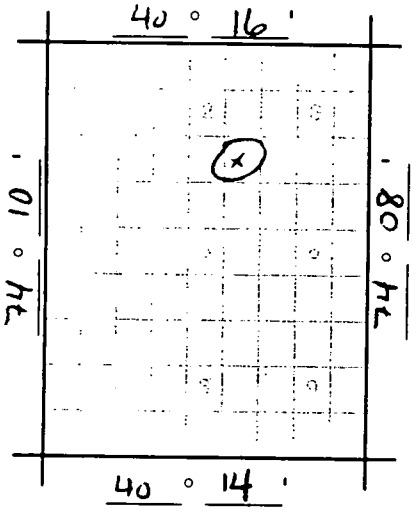
Driller James C Anderson Assoc., Inc
Address 707 Pleasant Valley Ave.
Mt. Laurel, NJ 08054

Diameter of Well(s)	2 Inches	Proposed Depth of Well(s)	25 Feet
# of Wells Applied for (max. 10)	2	Will pumping equipment be installed?	YES ☐ NO ☒
Type of Well (see reverse)	Monitoring	If Yes, give pump capacity	cumulative GPM

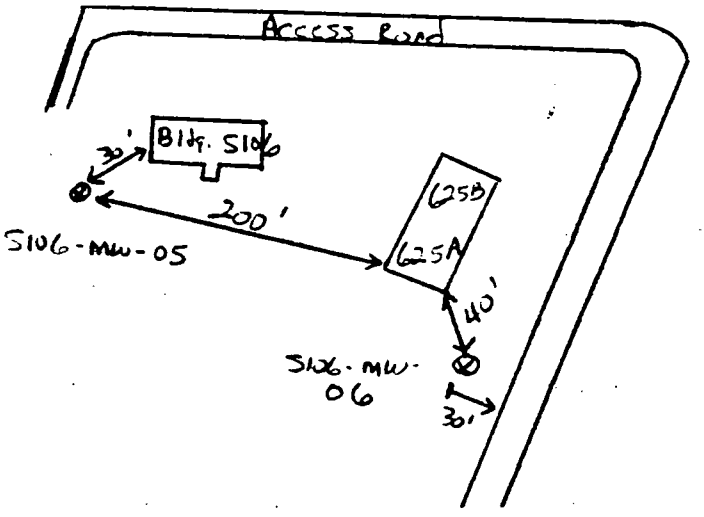
LOCATION OF WELL(S)

Lot #	Block #	Municipality	County
not assigned		Colts Neck	Monmouth

State Atlas Map No. 29



Draw sketch of well(s) nearest roads, buildings, etc. with marked distances in feet. Each well MUST be labeled with a name and/or number on the sketch.



FOR MONITORING WELLS, RECOVERY WELLS, OR PIEZOMETERS, THE FOLLOWING MUST BE COMPLETED BY THE APPLICANT. PLEASE INDICATE WHY THE WELLS ARE BEING INSTALLED:

- ☐ Spill Site
- ☐ ISRA Site
- ☒ CERCLA (Superfund) Site
- ☐ RCRA Site
- ☒ Underground Storage Tank Site
- ☐ Operational Ground Water Permit Site
- ☐ Pretreatment and Residuals Site
- ☐ Water and Hazardous Waste Enforcement Case
- ☐ Water Supply Aquifer Test Observation Well
- ☒ Other (explain) Federal Facility

CASE I.D. Number 90-05-09-1324

This Space for Approval Stamp

WELL PERMIT APPROVED
N.J.D.E.P.
MAY 8 1997
BUREAU OF WATER ALLOCATION

FOR D.E.P. USE
- ☐ Issuance of this permit is subject to the conditions attached. (see next page)
- ☒ For monitoring purposes only
- ☐
- ☒ The well(s) may not be completed with more than 25 feet of total screen or uncased borehole.

SEE REVERSE SIDE FOR IMPORTANT PROVISIONS AND REGULATIONS PERTAINING TO THIS PERMIT.

In compliance with N.J.S.A. 58:4A-14, application is made for a permit to drill a well as described above.

Date May 6, 1997 Signature of Driller [signature] Registration No. M1224

Signature of Owner Gregory Goegfert

BROWN & ROOT ENVIRONMENTAL

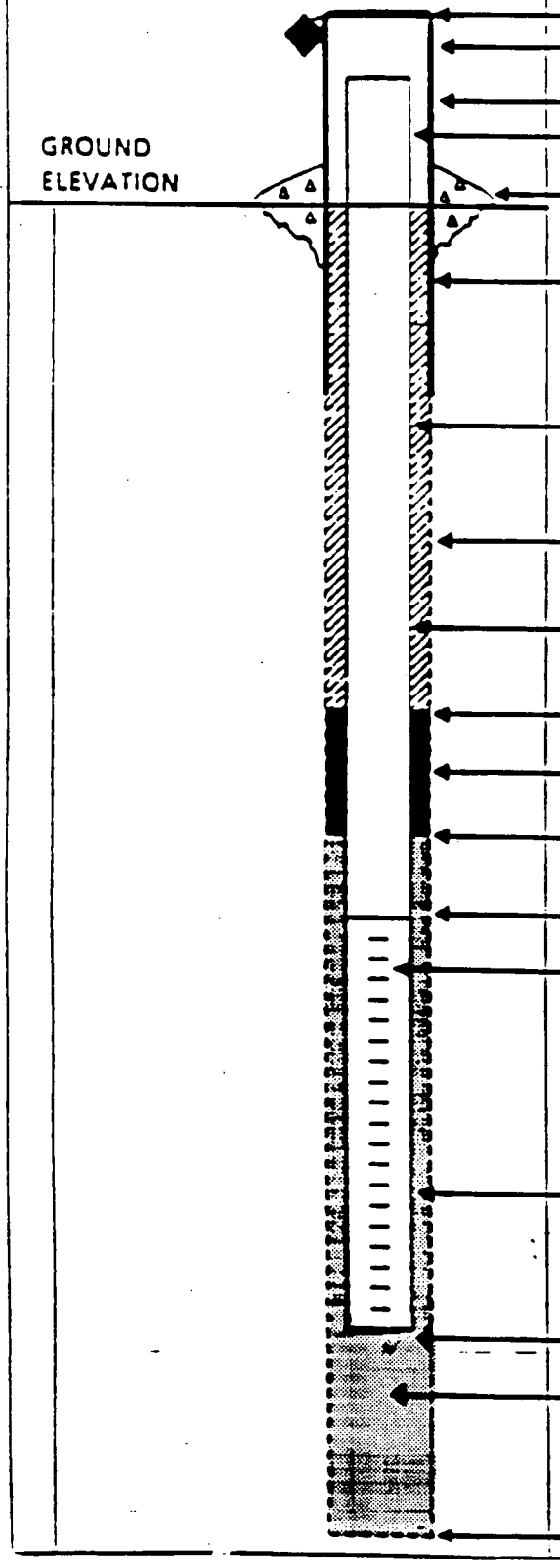
BORING NO S106-MW-01

OVERBURDEN MONITORING WELL SHEET

PROJECT NWS - Earle
PROJECT NO. CTO : 206/226
ELEVATION
FIELD GEOLOGIST Paul Davis

LOCATION Colts Neck, NJ
BORING S106-MW-01
DATE 3/3/97

DRILLER JCA - Drilling
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD Pump



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: + 33 1/2"
STICK - UP RISER PIPE: + 29 3/4"
TYPE OF SURFACE SEAL: Concrete
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Steel
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC - Schedule 40
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: Grout/bent. slurry
ELEVATION / DEPTH TOP OF SEAL: 19' bgs
TYPE OF SEAL: Bentonite slurry
DEPTH TOP OF SAND PACK: 21' bgs
ELEVATION / DEPTH TOP OF SCREEN: 23.5' bgs
TYPE OF SCREEN: ~~[illegible]~~ PVC Sch. 40
SLOT SIZE x LENGTH: .01 x 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: Morie #1 Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 33.5' bgs
ELEVATION / DEPTH BOTTOM OF SAND PACK: 33.5' bgs
TYPE OF BACKFILL BELOW OBSERVATION WELL:
ELEVATION / DEPTH OF HOLE: 33.5' bgs

DWR-138 M
11/96

New Jersey Department of Environmental Protection
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 29 36547

Atlas Sheet Coordinates 29 : 22 : 329

OWNER IDENTIFICATION - Owner US NAVAL WEAPONS STA. EARL
Address ROUTE 34
City COLTS NECK State NJ Zip Code

WELL LOCATION - If not the same as owner please give address. Owner's Well No. 3L66MW04 (3L66MW01)
County MONMOUTH Municipality COLTS NECK TWP Lot No. NA Block No. NA
Address ROUTE 34

DATE WELL STARTED 3/03/97
DATE WELL COMPETED 3/03/97

TYPE OF WELL (as per Well Permit Categories) MONITORING
Regulatory Program Requiring Well UST Case I.D.# ~~90-05-09~~-1324

CONSULTING FIRM/FIELD SUPERVISOR (if applicable) Tele. #

WELL CONSTRUCTION

Total depth drilled 33.5 ft.
Well finished to 33.5 ft.

Borehole diameter:
Top 8 in.
Bottom 5 in.

Well was finished: ☑ above grade ☐ flush mounted

If finished above grade, casing height (stick up) above land surface 2.0 ft.

Was steel protective casing installed? ☑ Yes ☐ No

Static water level after drilling 20.2 ft.

Water level was measured using [illegible]

Well was developed for 1 hours at 2 gpm

Method of development 2" Sub [illegible]

Was permanent pumping equipment installed? ☐ Yes ☑ No

Pump capacity N/A gpm

Pump type: N/A

Drilling Fluid N/A Type of Rig CME 55

Health and Safety Plan submitted? ☑ Yes ☐ No

Level of Protection used on site (circle one) None D (C) B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	+2.0	23.5	2"	PVC	Sch 40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used)	23.5	33.5	2"	PVC	.010 Slot Sch 40
Blank Casings (No. Used)					
Tail Piece					
Gravel Pack	21.0	33.5	#1	Morie Sand	
Grout	6	21.0		Neat Cement Bentonite	564 lbs. 30 lbs.

Grouting Method Tremie Grout
Drilling Method Auger

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations.

0-6 Brown Fine Silty Clayey Sand
6-33.5 Orange dive Brown Fine Silty Sand

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company JAMES C. ANDERSON ASSOC. INC.

Well Driller (Print) STEVAN N BURGER JR.

Driller's Signature [signature]

Registration No. JD1624 Date 3/03/97

COPIES: White - DEP Canary - Driller Pink - Owner Goldenrod - Health Dept.

BROWN & ROOT ENVIRONMENTAL

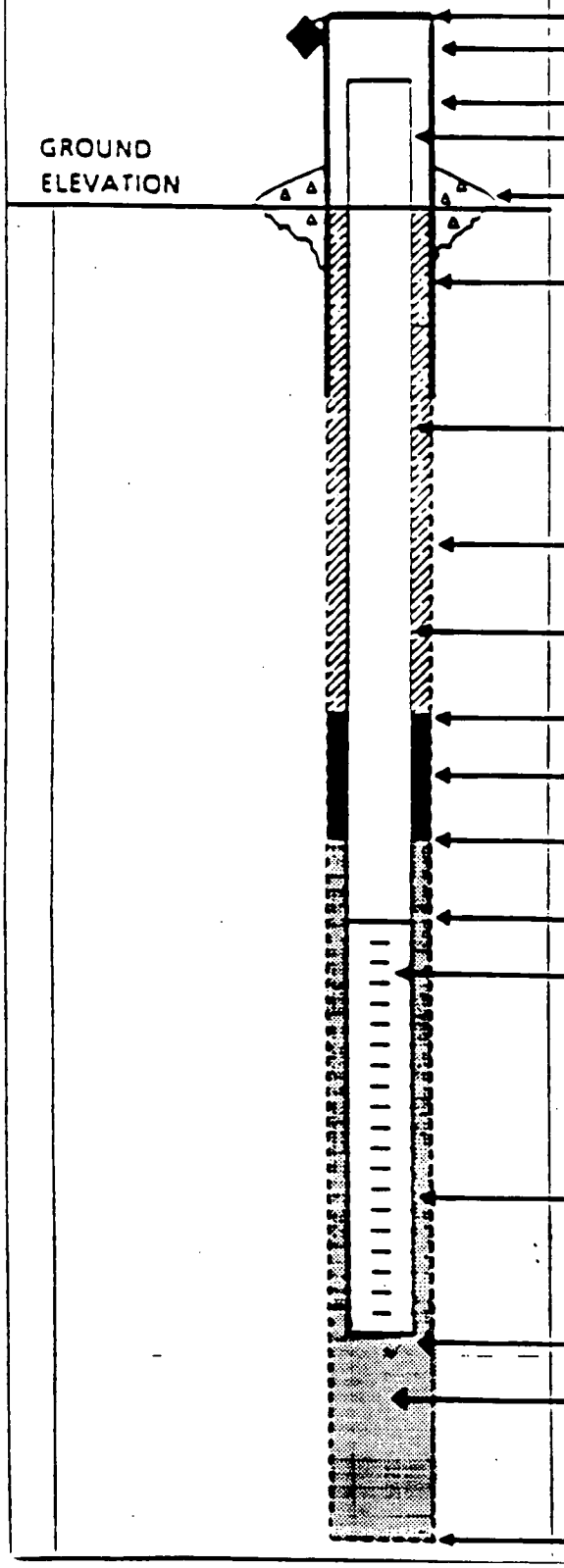
BORING NO 5106-MW-02

OVERBURDEN MONITORING WELL SHEET

PROJECT NWS - Earle
PROJECT NO. CTO : 206/226
ELEVATION
FIELD GEOLOGIST Paul Davis

LOCATION Colts Neck, NJ
BORING 5106-MW-02
DATE 3-4-97

DRILLER JCA - Drilling
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD Pump



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: Flush mount
STICK - UP RISER PIPE: 3 3/4" bgs
TYPE OF SURFACE SEAL: Concrete
I.D. OF SURFACE CASING:
TYPE OF SURFACE CASING:
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC Schedule 40
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: Grout/bentonite slurry
ELEVATION / DEPTH TOP OF SEAL: 17' bgs
TYPE OF SEAL: Bentonite slurry
DEPTH TOP OF SAND PACK: 19' bgs
ELEVATION / DEPTH TOP OF SCREEN: 21' bgs
TYPE OF SCREEN: PVC - Schedule 40
SLOT SIZE x LENGTH: .01 x 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: Morie #1 Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 31' bgs
ELEVATION / DEPTH BOTTOM OF SAND PACK: 31' bgs
TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A
ELEVATION / DEPTH OF HOLE: 31' bgs

DWR-138 M
11/96

New Jersey Department of Environmental Protection
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 29 . 36548

Atlas Sheet Coordinates 29 : 22 : 329

OWNER IDENTIFICATION - Owner US NAVAL WEAPONS STA. EARL
Address ROUTE 34
City COLTS NECK State NJ Zip Code

WELL LOCATION - If not the same as owner please give address. Owner's Well No. S16PMW42 (S16MW02)
County MONMOUTH Municipality COLTS NECK TWP Lot No. NA Block No. NA
Address ROUTE 34

TYPE OF WELL (as per Well Permit Categories) MONITORING
Regulatory Program Requiring Well UST
DATE WELL STARTED 3/04/97
DATE WELL COMPETED 3/04/97
Case I.D.# 90-05-09-1324

CONSULTING FIRM/FIELD SUPERVISOR (if applicable) Tele. #

WELL CONSTRUCTION

Total depth drilled 31.0 ft.
Well finished to 31.0 ft.

Borehole diameter:
Top 8.0 in.
Bottom 8.0 in.

Well was finished: ☐ above grade ☑ flush mounted

If finished above grade, casing height (stick up) above land surface 0 ft.

Was steel protective casing installed? ☐ Yes ☑ No

Static water level after drilling 22.0 ft.

Water level was measured using m Sounder

Well was developed for 1 hours at 2.0 gpm

Method of development Sub pump

Was permanent pumping equipment installed? ☐ Yes ☑ No

Pump capacity N/A gpm

Pump type: N/A

Drilling Fluid N/A Type of Rig CME 55

Health and Safety Plan submitted? ☑ Yes ☐ No

Level of Protection used on site (circle one) None D C B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	0	21.0	2"	PVC	Sch 40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used)	21.0	31.0	2"	PVC	.010 Slot Sch 40
Blank Casings (No. Used)					
Tail Piece					
Gravel Pack	18.0	31.0	#1	Morrie Sand	
Grout	0	18.0		Neat Cement Bentonite	470 lbs. 25 lbs.

Grouting Method Tremie Grout
Drilling Method Auger

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations.

0-6 Brown Fine Silty Clayey Sand
6-31 Orange Olive Brown Fine Silty Sand

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company JAMES C. ANDERSON ASSOC. INC.

Well Driller (Print) STEVAN N BURGO JR

Driller's Signature [signature]

Registration No. JD1624 Date 3/04/97

COPIES: White - DEP Canary - Driller Pink - Owner Goldenrod - Health Dept.

BROWN & ROOT ENVIRONMENTAL

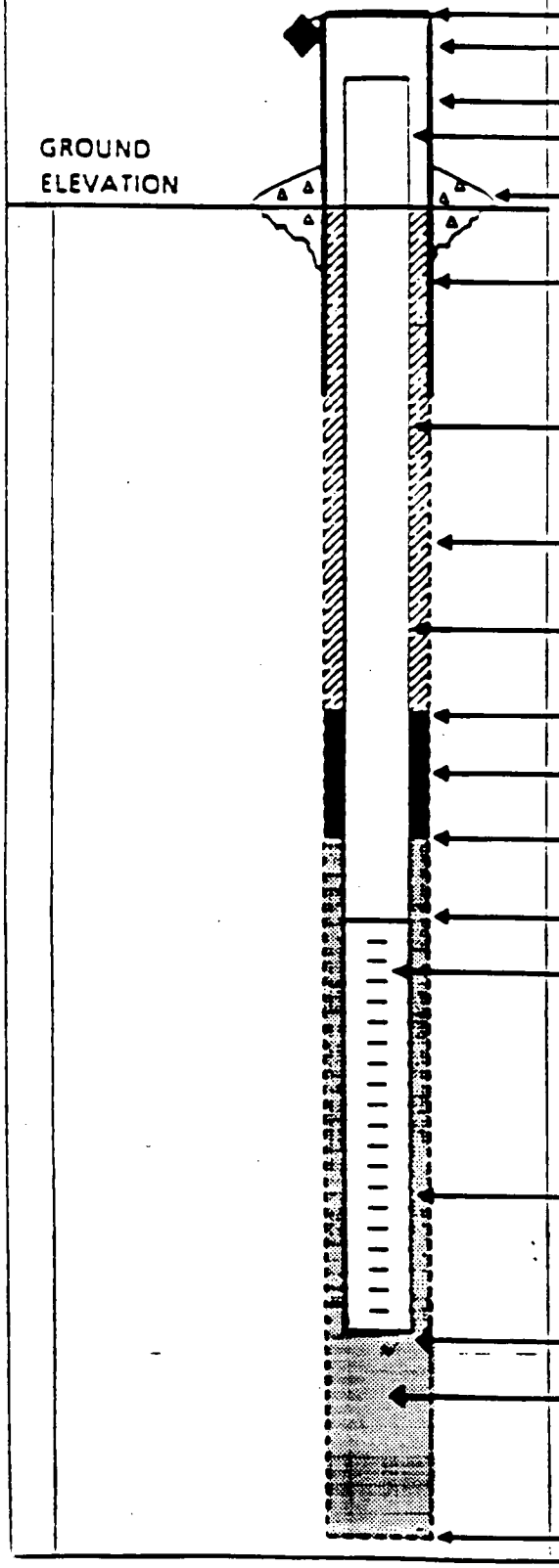
BORING NO S106-MW-03

OVERBURDEN MONITORING WELL SHEET

PROJECT NWS - Earle
PROJECT NO. CTO : 206/226
ELEVATION
FIELD GEOLOGIST Paul Davis

LOCATION Colts Neck, NJ
BORING S106-MW-03
DATE 3/24/97

DRILLER JCA - Drilling
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD Pump



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: + 26 1/4"
STICK - UP RISER PIPE: + 24 1/4"
TYPE OF SURFACE SEAL: Concrete
I.D. OF SURFACE CASING: 4"
TYPE OF SURFACE CASING: Steel
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: PVC - Schedule 40
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: Grout
ELEVATION / DEPTH TOP OF SEAL: 14' bgs
TYPE OF SEAL: Bentonite
DEPTH TOP OF SAND PACK: 16' bgs
ELEVATION / DEPTH TOP OF SCREEN: 18' bgs
TYPE OF SCREEN: PVC Sch. 40
SLOT SIZE x LENGTH: .01 x 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: Morie #1 Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 28' bgs
ELEVATION / DEPTH BOTTOM OF SAND PACK: 28' bgs
TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A
ELEVATION / DEPTH OF HOLE: 28' bgs

DWR-138 M
11/96

New Jersey Department of Environmental Protection
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 29. 36549

Atlas Sheet Coordinates 29 : 22 : 329

OWNER IDENTIFICATION - Owner US NAVAL WEAPONS STA. EARL
Address ROUTE 34
City COLTS NECK State NJ Zip Code

WELL LOCATION - If not the same as owner please give address. Owner's Well No. S106MW43 (S106MW03)
County MONMOUTH Municipality COLTS NECK TWP Lot No. NA Block No. NA
Address ROUTE 34

DATE WELL STARTED 3/24/97
DATE WELL COMPETED 3/24/97

TYPE OF WELL (as per Well Permit Categories) MONITORING
Regulatory Program Requiring Well UST Case I.D.# 90-05-09-1324

CONSULTING FIRM/FIELD SUPERVISOR (if applicable) Tele. #

WELL CONSTRUCTION

Total depth drilled 28.0 ft.
Well finished to 27.0 ft.

Borehole diameter:
Top 8.0 in.
Bottom 8.0 in.

Well was finished: ☑ above grade ☐ flush mounted

If finished above grade, casing height (stick up) above land surface 2.0 ft.

Was steel protective casing installed? ☑ Yes ☐ No

Static water level after drilling 21.55 ft.

Water level was measured using Dip-Tape

Well was developed for 1 hours at 2 gpm

Method of development 2" Sub pump

Was permanent pumping equipment installed? ☐ Yes ☑ No

Pump capacity N/A gpm

Pump type: N/A

Drilling Fluid N/A Type of Rig ATV 550

Health and Safety Plan submitted? ☑ Yes ☐ No

Level of Protection used on site (circle one) None D C B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	+2.0	18.0	2"		
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used)	18.0	28.0	2"	PVC	.010 Slot Sch 40
Blank Casings (No. Used)					
Tail Piece					
Gravel Pack	16.0	28.0	#1	Quartz Sand	
Grout	0	16.0		Neat Cement Bentonite	4.10 lbs. 25 lbs.

Grouting Method Tremie Grout
Drilling Method Auger

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations.

0-8 Brown Fine Silty Sand
8-28 Olive Brown Silty Clayey Sand

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company JAMES C. ANDERSON ASSOC. INC.

Well Driller (Print) STEVAN N BURGER SR.

Driller's Signature [signature]

Registration No. TD 1624 Date 3/24/97

COPIES: White - DEP Canary - Driller Pink - Owner Goldenrod - Health Dept.

BROWN & ROOT ENVIRONMENTAL

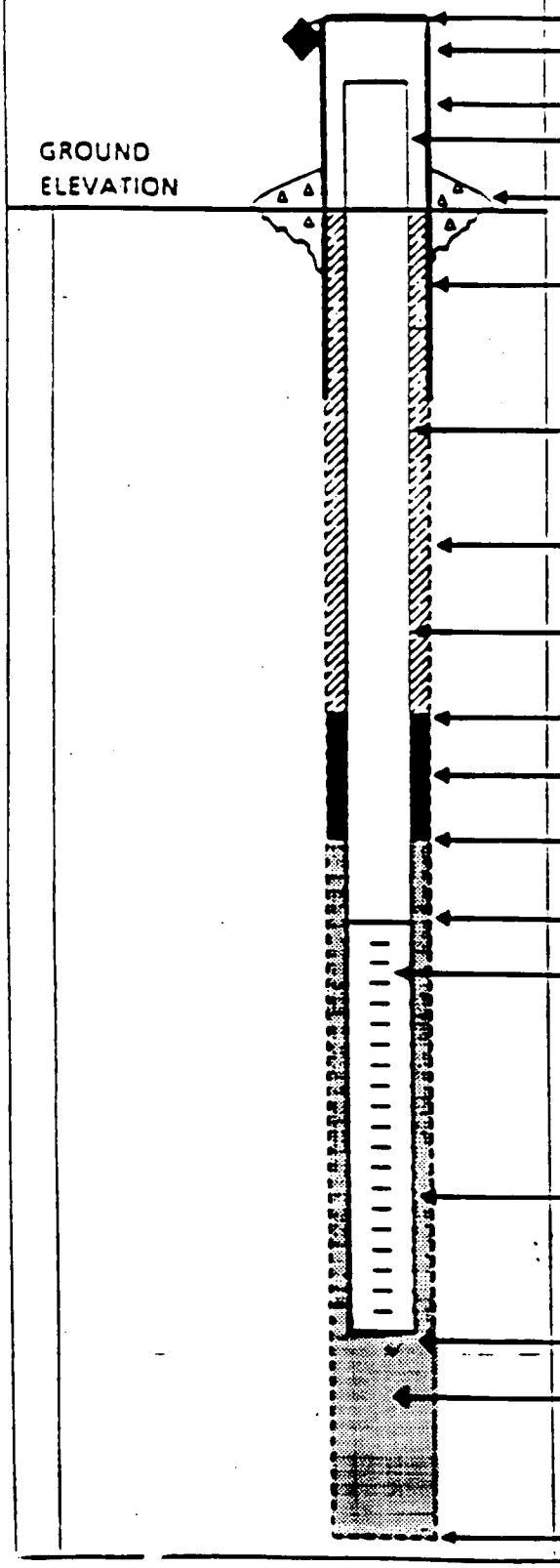
BORING NO S106-MW-04

OVERBURDEN MONITORING WELL SHEET

PROJECT NWS - Earle
PROJECT NO. CTO : 206/226
ELEVATION
FIELD GEOLOGIST Paul Davis

LOCATION Colts Neck, NJ
BORING S106-MW-04
DATE 3-25-97

DRILLER JCA - Drilling
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD Pump



ELEVATION OF TOP OF SURFACE CASING:
ELEVATION OF TOP OF RISER PIPE:
STICK - UP TOP OF SURFACE CASING: + 26 3/4"
STICK - UP RISER PIPE: + 23 1/2"
TYPE OF SURFACE SEAL: Concrete
I.D. OF SURFACE CASING:
TYPE OF SURFACE CASING: Steel
RISER PIPE I.D. 4"
TYPE OF RISER PIPE: PVC - Schedule 40
BOREHOLE DIAMETER: 12"
TYPE OF BACKFILL: Grout
ELEVATION / DEPTH TOP OF SEAL: 15' bgs
TYPE OF SEAL: Bentonite
DEPTH TOP OF SAND PACK: 17' bgs
ELEVATION / DEPTH TOP OF SCREEN: 19' bgs
TYPE OF SCREEN: PVC Sch. 40
SLOT SIZE x LENGTH: .01 x 10'
I.D. OF SCREEN: 4"
TYPE OF SAND PACK: Morie # 1 Sand
ELEVATION / DEPTH BOTTOM OF SCREEN: 29' bgs
ELEVATION / DEPTH BOTTOM OF SAND PACK: 29' bgs
TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A
ELEVATION / DEPTH OF HOLE: 29' bgs

DWR-138 M
11/96

New Jersey Department of Environmental Protection
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 29 36550

Atlas Sheet Coordinates 29 : 22 : 329

OWNER IDENTIFICATION - Owner US NAVAL WEAPONS STA. EARL
Address ROUTE 34
City COLTS NECK State NJ Zip Code

WELL LOCATION - If not the same as owner please give address. Owner's Well No. S106MW41 (S106MW04)
County MONMOUTH Municipality COLTS NECK TWP Lot No. NA Block No. NA
Address ROUTE 34

DATE WELL STARTED 3/25/97
DATE WELL COMPETED 3/25/97

TYPE OF WELL (as per Well Permit Categories) MONITORING
Regulatory Program Requiring Well UST Case I.D.# 90-05-09-1324

CONSULTING FIRM/FIELD SUPERVISOR (if applicable) Tele. #

WELL CONSTRUCTION

Total depth drilled 29.0 ft.
Well finished to 29.0 ft.

Borehole diameter:
Top 10.0 in.
Bottom in.

Well was finished: ☑ above grade ☐ flush mounted

If finished above grade, casing height (stick up) above land surface 2.0 ft.

Was steel protective casing installed? ☑ Yes ☐ No

Static water level after drilling 23.0 ft.

Water level was measured using hi Sounder

Well was developed for 1 hours at 3 gpm

Method of development Sub pump

Was permanent pumping equipment installed? ☐ Yes ☑ No

Pump capacity N/A gpm

Pump type: N/A

Drilling Fluid N/A Type of Rig ATV CME 550

Health and Safety Plan submitted? ☑ Yes ☐ No

Level of Protection used on site (circle one) None D (C) B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	+2.0	19.0	4"	PVC	Sch. 40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used)	19.0	29.0	4"	PVC	.010 Slot Sch 40
Blank Casings (No. Used)					
Tail Piece					
Gravel Pack	17.0	29.0	#1	Quartz Sand	
Grout	0	17.0		Neat Cement Bentonite	658 lbs. 35 lbs.

Grouting Method
Drilling Method

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations.

0-8.0 Brown Fine Silty Sand
8.0-29.0 Olive Brown Silty Clayey Sand

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company JAMES C. ANDERSON ASSOC. INC.

Well Driller (Print) STEVAN N BURGER III

Driller's Signature

Registration No. TD 1624 Date 3/25/97

COPIES: White - DEP Canary - Driller Pink - Owner Goldenrod - Health Dept.

BROWN & ROOT ENVIRONMENTAL

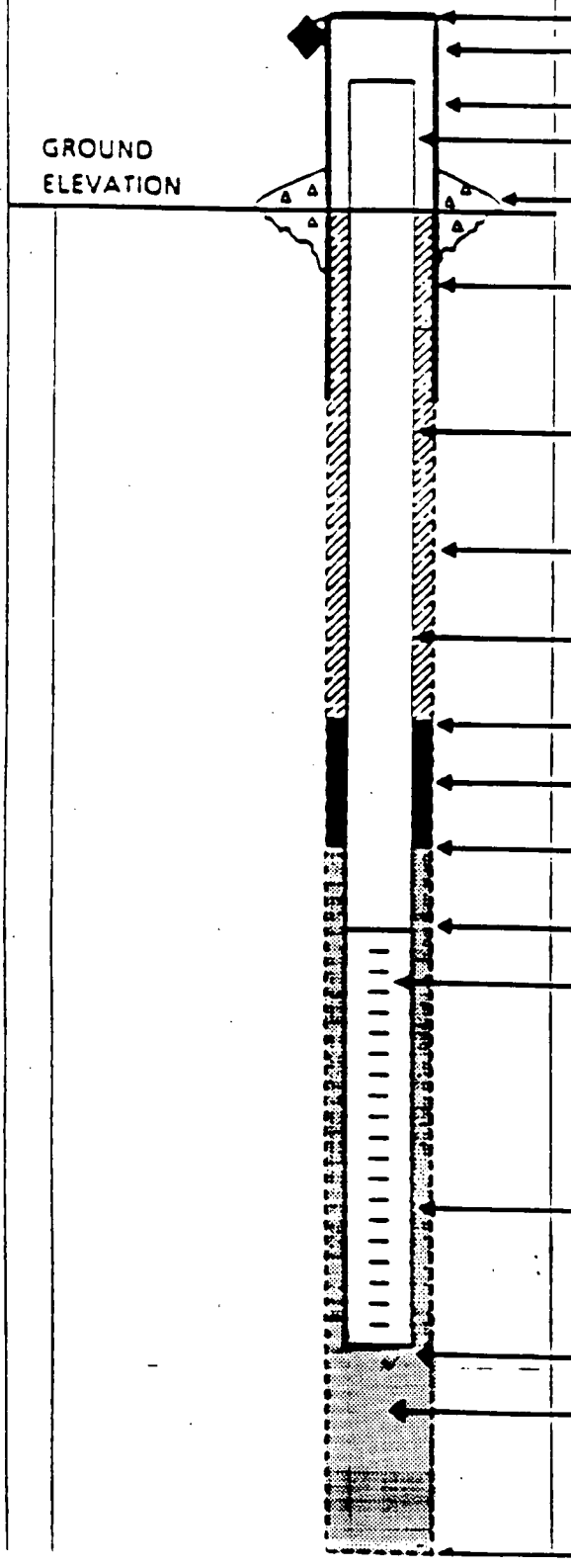
BORING NO _____

OVERBURDEN MONITORING WELL SHEET

PROJECT NWS Earle
PROJECT NO. 5085
ELEVATION _____
FIELD GEOLOGIST D. Whalen

LOCATION _____
BORING S106-MW-05
DATE 5-23-97

DRILLER JCA Drilling
DRILLING METHOD Hollow Stem Auger
DEVELOPMENT METHOD submers. pump



ELEVATION OF TOP OF SURFACE CASING: _____
ELEVATION OF TOP OF RISER PIPE: _____
STICK - UP TOP OF SURFACE CASING: N/A
STICK - UP RISER PIPE: N/A
TYPE OF SURFACE SEAL: Concrete
I.D. OF SURFACE CASING: N/A
TYPE OF SURFACE CASING: N/A
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: sch. 40 PVC
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: bentonite
ELEVATION / DEPTH TOP OF SEAL: 2' bgs
TYPE OF SEAL: bentonite
DEPTH TOP OF SAND PACK: 16.5' bgs
ELEVATION / DEPTH TOP OF SCREEN: 19' bgs
TYPE OF SCREEN: sch. 40 PVC
SLOT SIZE x LENGTH: 0.01 x 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: Morie No 1
ELEVATION / DEPTH BOTTOM OF SCREEN: 29' bgs
ELEVATION / DEPTH BOTTOM OF SAND PACK: 30' bgs
TYPE OF BACKFILL BELOW OBSERVATION WELL: N/A
ELEVATION / DEPTH OF HOLE: 30' bgs

DWR-138 M
11/96

New Jersey Department of Environmental Protection
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 29 36914

Atlas Sheet Coordinates 29 : 22 : 329

OWNER IDENTIFICATION - Owner U.S. NAVAL WEAPONS STATIO
Address RT. 34
City COLTS NECK State NJ Zip Code 07722

WELL LOCATION - If not the same as owner please give address. Owner's Well No. MW 05
County MONMOUTH Municipality COLTS NECK TWP Lot No. N/A Block No. N/A
Address RT. 34

DATE WELL STARTED 05/23/97
DATE WELL COMPETED 05/23/97

TYPE OF WELL (as per Well Permit Categories) MONITORING
Regulatory Program Requiring Well UST Case I.D.# ~~90-05-09-1324~~

CONSULTING FIRM/FIELD SUPERVISOR (if applicable) _____ Tele. # _____

WELL CONSTRUCTION

Total depth drilled 29.0 ft.
Well finished to 29.0 ft.

Borehole diameter:
Top 8.0 in.
Bottom 6 in.

Well was finished: ☐ above grade ☒ flush mounted

If finished above grade, casing height (stick up) above land surface _____ ft.

Was steel protective casing installed? ☒ Yes ☐ No

Static water level after drilling 20.0 ft.

Water level was measured using A-Sloper

Well was developed for 2 hours at 3 gpm

Method of development Sub pump

Was permanent pumping equipment installed? ☐ Yes ☒ No

Pump capacity N/A gpm

Pump type: N/A

Drilling Fluid N/A Type of Rig CME-55

Health and Safety Plan submitted? ☒ Yes ☐ No

Level of Protection used on site (circle one) None (D) C B A

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	0	19.0	2"	PVC	Sch 40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used .010)	19.0	29.0	2"	PVC	Sch 40 .010 slot
Blank Casings (No. Used)					
Tail Piece					
Gravel Pack	17.5	29.0	#1	marine gravel	
Grout	0	17.5		Neat Cement Bentonite	329 lbs. 50 lbs.

Grouting Method Tremie grout
Drilling Method HSA

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations.

0-15' Lt. tan brn fine to med, s trace silt
15'-29' tan brn fine to med sand

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company JAMES C. ANDERSON ASSOC. INC.

Well Driller (Print) Steven N. Burger

Driller's Signature Steve Burger

Registration No. D1624 Date 6/12/97

COPIES: White - DEP Canary - Driller Pink - Owner Goldenrod - Health Dept.

BROWN & ROOT ENVIRONMENTAL

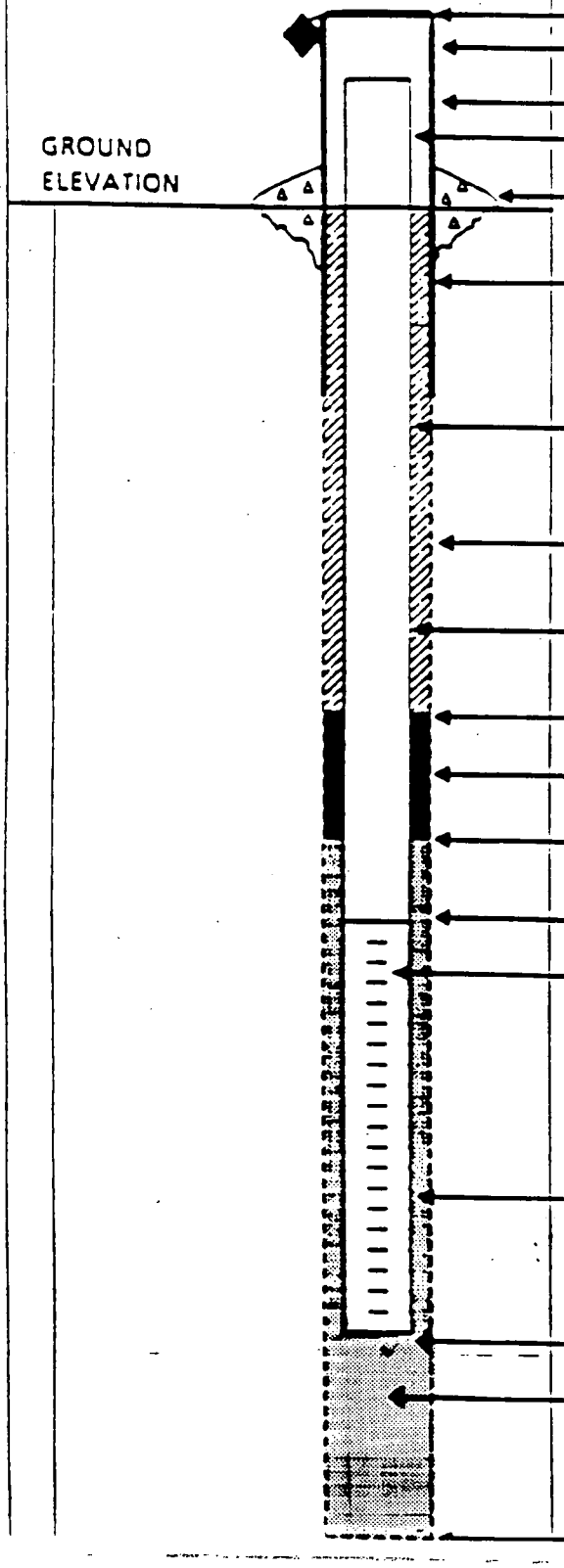
BORING NO _____

OVERBURDEN MONITORING WELL SHEET

PROJECT NWS EARLE
PROJECT NO. 5085
ELEVATION _____
FIELD GEOLOGIST R. GOOD

LOCATION S106
BORING S106 - MW - 06
DATE 5-22-97

DRILLER JCA DRILLING
DRILLING METHOD HSA
DEVELOPMENT METHOD SUB. PUMP.



ELEVATION OF TOP OF SURFACE CASING _____
ELEVATION OF TOP OF RISER PIPE: _____
STICK - UP TOP OF SURFACE CASING: 0'
STICK - UP RISER PIPE: -4"
TYPE OF SURFACE SEAL: CONCRETE
I.D. OF SURFACE CASING: _____
TYPE OF SURFACE CASING: STEEL FLUSH MOUNT MANHOLE
RISER PIPE I.D. 2"
TYPE OF RISER PIPE: SCH. 40 PVC
BOREHOLE DIAMETER: 8"
TYPE OF BACKFILL: CEMENT / BENTONITE GROUT
[redacted] DEPTH TOP OF SEAL: 14'
TYPE OF SEAL: PURE BENTONITE
DEPTH TOP OF SAND PACK: 16'
[redacted] DEPTH TOP OF SCREEN: 18'
TYPE OF SCREEN: SCH. 40 PVC
SLOT SIZE x LENGTH: 0.01" x 10'
I.D. OF SCREEN: 2"
TYPE OF SAND PACK: MORIE NO. 1
[redacted] DEPTH BOTTOM OF SCREEN: 28'
[redacted] DEPTH BOTTOM OF SAND PACK: 29'
TYPE OF BACKFILL BELOW OBSERVATION WELL: MORIE NO. 1 SAND
[redacted] DEPTH OF HOLE: 29'

DWR-138 M
11/96

New Jersey Department of Environmental Protection
Bureau of Water Allocation

MONITORING WELL RECORD

Well Permit No. 29 36915

Atlas Sheet Coordinates 29 : 22 : 329

OWNER IDENTIFICATION - Owner U.S. NAVAL WEAPONS STATION
Address FT 34
City COLTS NECK State NJ Zip Code 07722

WELL LOCATION - If not the same as owner please give address. Owner's Well No. MW06
County MONMOUTH Municipality COLTS NECK TWP Lot No. N/A Block No. N/A
Address FT 34

DATE WELL STARTED 05/22/91
DATE WELL COMPETED 05/22/91

TYPE OF WELL (as per Well Permit Categories) MONITORING
Regulatory Program Requiring Well UST Case I.D.# ~~90-05-09~~-1324

CONSULTING FIRM/FIELD SUPERVISOR (if applicable) _____ Tele. # _____

WELL CONSTRUCTION

Total depth drilled 28.0 ft.
Well finished to 28.0 ft.

Borehole diameter:
Top 8.0 in.
Bottom 8.0 in.

Well was finished: ☐ above grade ☑ flush mounted

If finished above grade, casing height (stick up) above land surface _____ ft.

Was steel protective casing installed? ☒ Yes ☐ No

Static water level after drilling 19.0 ft.

Water level was measured using M-Slope

Well was developed for 2 hours at 3 gpm

Note: Measure all depths from land surface	Depth to Top (ft.)	Depth to Bottom (ft.)	Diameter (inches)	Material	Wgt./Rating (lbs/sch no.)
Single/Inner Casing	Ø'	18.0'	2"	PVC	Sch. 40
Middle Casing (for triple cased wells only)					
Outer Casing (largest diameter)					
Open Hole or Screen (No. Used)	18.0	28.0	2"	PVC	Sch 40 .010 Slot
Blank Casings (No. Used)					
Tail Piece					
Gravel Pack	16.0'	28.0'	#morie gravel		
Grout	Ø	16.0'		Neat Cement Bentonite	327 lbs. 50 lbs.

Grouting Method Tremie Grout
Drilling Method HSA

Method of development sub pump

Was permanent pumping equipment installed? ☐ Yes ☑ No

Pump capacity N/A gpm

Pump type: N/A

Drilling Fluid N/A Type of Rig CME-55

Health and Safety Plan submitted? ☑ Yes ☐ No

Level of Protection used on site (circle one) None (D) C B A

I certify that I have constructed the above referenced well in accordance with all well permit requirements and applicable State rules and regulations.

Drilling Company JAMES C. ANDERSON ASSOC. INC.

Well Driller (Print) Steven N Burger

Driller's Signature Steve Burger

Registration No. JD1624 Date 6/17/97

GEOLOGIC LOG

Note each depth where water was encountered in consolidated formations.

0-15' Lt tan brn fine to med sand trace silt
15-28' tan brn fine to med sand

COPIES: White - DEP Canary - Driller Pink - Owner Goldenrod - Health Dept.

APPENDIX D

Sample Logs

SOLID/SOIL/SEDIMENT SAMPLE LOG SHEET

Brown & Root Environmental

- ☐ Surface Soil
- ■ Subsurface Soil
- ☐ Sediment
- ☐ Lagoon/Pond
- ☐ Other_____

Project Site Name: NWS · EARLE

Project Site Number: CTO · 206/226

Source Number: S106-SB-01-25.5

Source Location: Bldg S106-B

Sample Method: Split spoon & Trowel

Depth Sampled: 25.5'-26' bgs

Sample Date & Time: 3/3/97 @ 1340

Sampled by: Paul M. Davis

Signature(s): Paul M. Davis

Sample Type

- ■ Low Concentration
- ☐ High Concentration
- ■ Grab
- ☐ Composite
- ☐ Grab - Composite

Analysis	Preservative:
☒ TCL VOAs +10	dark, 4°C
☒ TCL SVOAs +15	dark, 4°C
☐ TCL Pest/PCBs	dark, 4°C
☐ TAL Metals	4°C
☐ Cyanide	4°C
x ~~mask~~ pH	
X TOC	
X particle size	
X % moisture	

Observations and Notes

☐ Duplicate sample taken

Composite Sample Data

Sample	Time	Color and Description
	N.A.	

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Olive green	Silty fine grained sand

Sample Location Map

Saturated at 26' bgs

Revised 4/5/96

SOLID/SOIL/SEDIMENT SAMPLE LOG SHEET

Brown & Root Environmental

- ☐ Surface Soil
- ■ Subsurface Soil
- ☐ Sediment
- ☐ Lagoon/Pond
- ☐ Other_____

Project Site Name NWS · EARLE

Project Site Number CTO · 206/226

Source Number S106-SB-02-22.5

Source Location Bldg - S106B

Sample Method: Split Spoon & Trowel

Depth Sampled: 22.5'-23' bgs

Sample Date & Time: 3/4/97 @ 1050

Sampled by: Paul M. Davis

Signature(s): Paul M. D

Sample Type

- ■ Low Concentration
- ☐ High Concentration
- ■ Grab
- ☐ Composite
- ☐ Grab - Composite

Analysis	Preservative:
☒ TCL VOAs +10	dark, 4°C
☒ TCL SVOAs +15	dark, 4°C
☐ TCL Pest/PCBs	dark, 4°C
☐ TAL Metals	4°C
☐ Cyanide	4°C
x pH	
x TOC	
x particle sz.	
x % moisture	

Observations and Notes

☐ Duplicate sample taken

Composite Sample Data

Sample	Time	Color and Description
	N.A.	

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
olive	silty clayey fine grained sand

Sample Location Map

Saturated at 23' bgs

Revised 4/5/96

SOLID/SOIL/SEDIMENT SAMPLE LOG SHEET

Brown & Root Environmental

- ☐ Surface Soil
- ■ Subsurface Soil
- ☐ Sediment
- ☐ Lagoon/Pond
- ☐ Other_____

Project Site Name NWS · EARLE

Project Site Number CTO · 206/226

Source Number 5106-SB-03-19.5

Source Location Bldg 5106 B

Sample Method: Split spoon & Trowel

Depth Sampled: 19.5' - 20.' bgs

Sample Date & Time: 3/24/97 @ 1230

Sampled by: Paul M. Davis

Signature(s): Paul M. D

Sample Type

- ■ Low Concentration
- ☐ High Concentration
- ■ Grab
- ☐ Composite
- ☐ Grab - Composite

Analysis	Preservative:
☒ TCL VOAs +10	dark, 4°C
☒ TCL SVOAs +15	dark, 4°C
☐ TCL Pest/PCBs	dark, 4°C
☐ TAL Metals	4°C
☐ Cyanide	4°C
X pH	
X TOC	
X particle sz.	
X % moisture	

Observations and Notes

☐ Duplicate sample taken

Composite Sample Data

Sample	Time	Color and Description
	N.A.	

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
olive gray	Silty Clayey fine grained sand

Sample Location Map

Hnu = 2 ppm

Saturated at 20' bgs

Revised 4/5/96

SOLID/SOIL/SEDIMENT SAMPLE LOG SHEET

Brown & Root Environmental

- ☐ Surface Soil
- ■ Subsurface Soil
- ☐ Sediment
- ☐ Lagoon/Pond
- ☐ Other_____

Project Site Name NWS · EARLE

Project Site Number CTO · 206/226

Source Number Dup-03

Source Location 9A/9C

Sample Method: Split spoon & Trowel

Depth Sampled: 20.5' - 21' bgs

Sample Date & Time: 3/25/97 @ 0000

Sampled by: Paul M. Davis

Signature(s): Paul M. D

Sample Type

- ■ Low Concentration
- ☐ High Concentration
- ■ Grab
- ☐ Composite
- ☐ Grab - Composite

Analysis	Preservative:
☒ TCL VOAs # 10	dark, 4°C
☒ TCL SVOAs # 15	dark, 4°C
☐ TCL Pest/PCBs	dark, 4°C
☐ TAL Metals	4°C
☐ Cyanide	4°C
x pH	
x TOC	
x particle sz.	
x % moisture	

Observations and Notes

☒ Duplicate sample taken S106-SB-04-20.5

Composite Sample Data

Sample	Time	Color and Description
	N.A.	

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
olive orange	Silty fine grained sand

Sample Location Map

No HNu reading

Saturated at 21' bgs

collected with S106-SB-04-20.5

Revised 4/5/96

SOLID/SOIL/SEDIMENT SAMPLE LOG SHEET

Brown & Root Environmental

- ☐ Surface Soil
- ■ Subsurface Soil
- ☐ Sediment
- ☐ Lagoon/Pond
- ☐ Other_____

Project Site Name NWS · EARLE

Project Site Number CTO · 206/226

Source Number S106-SB-04-20.5

Source Location Bldg. S106 B

Sample Method: Split Spoon & Trowel

Depth Sampled: 20.5'-21' bgs

Sample Date & Time: 3/25/97 @ 1000

Sampled by: Paul M. Davis

Signature(s): Paul M. Davis

Sample Type

- ■ Low Concentration
- ☐ High Concentration
- ■ Grab
- ☐ Composite
- ☐ Grab - Composite

Analysis	Preservative:
☒ TCL VOAs + 10	dark, 4°C
☒ TCL SVOAs + 15	dark, 4°C
☐ TCL Pest/PCBs	dark, 4°C
☐ TAL Metals	4°C
☐ Cyanide	4°C
x pH	
x TOC	
x particle sz.	
x % moisture	

Observations and Notes

☒ Duplicate sample taken (Dup-03)

Composite Sample Data

Sample	Time	Color and Description
	N.A.	

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Olive Orange	Silty fine grained sand

Sample Location Map

NO thru reading

Blind duplicate (Dup-03) collected here.

Saturated at 21' bgs

Revised 4/5/96

SOLID/SOIL/SEDIMENT SAMPLE LOG SHEET

Brown & Root Environmental

- ☐ Surface Soil
- ☒ Subsurface Soil
- ☐ Sediment
- ☐ Lagoon/Pond
- ☐ Other_____

Project Site Name: NWS Earle

Project Site Number: 5085

Source Number: 5106-SB-05-21

Source Location: Bldg. 5106 B

Sample Method: split spoon / s.s. trowel

Depth Sampled:

Sample Date & Time: 5-23-97 0950

Sampled by: DW

Signature(s): Donald Whalen

Sample Type

- ☒ Low Concentration
- ☐ High Concentration
- ☒ Grab
- ☐ Composite
- ☐ Grab - Composite

Analysis	Preservative:
☒ TCL VOAs +10	dark, 4°C
☒ TCL SVOAs +10	dark, 4°C
☐ TCL Pest/PCBs	dark, 4°C
☐ TAL Metals	4°C
☐ Cyanide	4°C
+ pH	
+ TOC	
+ particle size	
+ % moisture	

Observations and Notes

☐ Duplicate sample taken

Composite Sample Data

Sample	Time	Color and Description

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
olive Brn	silty sand moist

Sample Location Map

Revised 4/5/96

SOLID/SOIL/SEDIMENT SAMPLE LOG SHEET

Brown & Root Environmental

- ☐ Surface Soil
- ☒ Subsurface Soil
- ☐ Sediment
- ☐ Lagoon/Pond
- ☐ Other_____

Project Site Name NWS EARLE

Project Site Number 5085.2302

Source Number S106 - SB - 06 - 19

Source Location S106 - MW - 06

Sample Method: 3" SPLIT SPOON & STAINLESS SAMPLE TROWEL

Depth Sampled: 19.0 – 19.5 FT

Sample Date & Time: 5-22-97 ; 1136 HRS

Sampled by: ROBERT GOOD

Signature(s):

Sample Type

- ☒ Low Concentration
- ☐ High Concentration
- ☒ Grab
- ☐ Composite
- ☐ Grab - Composite

Analysis	Preservative:
☒ TCL VOAs +10	dark, 4°C
☒ TCL SVOAs +10	dark, 4°C
☐ TCL Pest/PCBs	dark, 4°C
☐ TAL Metals	4°C
☐ Cyanide	4°C
+ pH	
+ TOC	
+ Particle Size	
+ % Moisture	

Observations and Notes

☐ Duplicate sample taken

Composite Sample Data

Sample	Time	Color and Description

Sample Data

Color	Description: (Sand, Clay, Dry, Moist, Wet, etc.)
Grey to Orange - Brown	Fine to medium-grained sand w/ some silt. WET

Sample Location Map

Revised 4/5/96

GROUNDWATER
SAMPLE LOG SHEET

Brown & Root Environmental

- [x] Monitoring Well Data
- [ ] Domestic Well Data
- [ ] Other_____

Project Site Name: NWS - Earle

Project Site Number: CTO-206

Source Number: S106 - MW-01 (GW)

Source Location: Bldg. S106-B

Total Well Depth: 35.93' BTOC	
Well Casing Size & Depth: 2"-dia. (.1632 g/ft.)	
Static Water Level: 25.93' BTOC	
One Casing Volume: 1.632 gallons	
Start Purge (hrs): 1120	
End Purge (hrs.): 1150	
Total Purge Time (min.): 30	
Total Amount Purged (gal.): 5 gal	
Monitor reading: None	
Purge Method: Bladder pump	
Sample Method: Bladder pump	
Depth Sampled: 31' BTOC	
Sample Date & Time: 4/9/97 1215	
Sampled by: Paul Davis	
Signature(s): Paul Davis	

Purge Data

Volume	pH	S.C.	Temp (°C)	Color and Turbidity
0	5.73	128.5	11.18	Milky
1	5.69	135.6	11.17	clear
2	5.62	136.5	11.29	clear
3	5.62	136.9	11.30	clear

SAMPLE DATA

pH	S.C.	Temp (°C)	Color and Turbidity

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Analysis	Preservative:
[x] TCL VOAs + 10	HCl to pH<2, 4°C
[x] TCL SVOAs + 15	4°C
[ ] TCL Pest/PCBs	4°C
[ ] TAL Metals	HNO_3 to pH<2
[ ] Cyanide	NaOH to pH>12
x methane, ethane, ethene	
x sulfate	
x nitrate	
x phosphorus	
x chloride	
x TOC	
x pH	

Observations/Notes:

- [ ] Duplicate sample taken

Flow rate = 0.5 GPM

Field: wet chemistry Analytical

CO_2 = 80 ppm

SO_4 = 39 mg/L

Fe_2 = 0 ppm

Alkalinity

Phenol = 0 ppm

Total = 40 ppm

Revised 4/5/96

0

NWS EARLE, NJ

LOW FLOW PURGE DATA SHEET

Brown & Root Environmental

PROJECT NUMBER:

WELL I.D.: 5106-MW-01 (GW)

DATE: 4-9-97

Time (Hrs.)	Water Level (Ft. below TOB)	Flow (mL/Min.)	Temp. (Celcius)	pH (S.U.)	Sp. Cond. mS/cm	DO (mg/Lit)	Sal. (%)	Turb. (NTU)	Comments ORP
1120	25.93	0.5 gal	11.18	5.73	128.5	7.87			370
1122	25.93	0.5 gal	11.23	5.67	131.9	7.84			369
1124	25.93	0.5 gal	11.26	5.68	132.7	7.79			373
1126	25.93	0.5 gal	11.17	5.69	135.6	7.85			375
1128	25.93	0.5 gal	11.19	5.62	136.6	7.82			388
1130	25.93	0.5 gal	11.22	5.61	136.1	7.81			391
1132	25.93	0.5 gal	11.23	5.61	136.2	7.82			392
1134	25.93	0.5 gal	11.22	5.62	136.2	7.85			393
1136	25.93	0.5 gal	11.25	5.62	136.5	7.77			395
1138	25.93	0.5 gal	11.15	5.63	136.3	7.80			398
1140	25.93	0.5 gal	11.14	5.63	136.2	7.78			395
1142	25.93	0.5 gal	11.22	5.63	136.3	7.74			398
1144	25.93	0.5 gal	11.22	5.62	136.5	7.76			399
1146	25.93	0.5 gal	11.26	5.61	136.5	7.75			399
1148	25.93	0.5 gal	11.24	5.61	136.8	7.75			401
1150	25.93	0.5 gal	11.30	5.62	136.9	7.76			403

SIGNATURE(S) Anil M. D

GROUNDWATER
SAMPLE LOG SHEET

Brown & Root Environmental

- [x] Monitoring Well Data
- [ ] Domestic Well Data
- [ ] Other_____

Project Site Name: NWS EARLE

Project Site Number: CTO-206

Source Number: S106-GW-02

Source Location: Bldg. S106-B

Total Well Depth:	31.00
Well Casing Size & Depth:	2" PVC
Static Water Level:	20.55
One Casing Volume:	1.70
Start Purge (hrs):	1744
End Purge (hrs.):	1815
Total Purge Time (min.):	29
Total Amount Purged (gal.):	7.41
Monitor reading:	HNU reading of 70 ppm down Hole
Purge Method:	~~[illegible]~~ pump
Sample Method:	Geoguard pump
Depth Sampled:	26'
Sample Date & Time:	4/14/97 1845
Sampled by:	Paul Davis
Signature(s):	Paul Davis

Purge Data

Volume	pH	S.C.	Temp (°C)	Color and Turbidity
0	4.44	176	11.96	LT Brown
1	4.50	182	11.97	LT Brown
2	4.52	185	11.96	LT Brown
3	4.53	186	11.96	

SAMPLE DATA

pH	S.C.	Temp (°C)	Color and Turbidity

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Analysis	Preservative:
[x] TCL VOAs +10	HCl to pH<2, 4°C
[x] TCL SVOAs +15	4°C
[ ] TCL Pest/PCBs	4°C
[ ] TAL Metals	HNO_3 to pH<2
[ ] Cyanide	NaOH to pH>12
x methane/ethane/ethene	
x sulfate	
x nitrate	
x phosphorus	
x chloride	
x TOC	
x pH	

Observations/Notes:

- [ ] Duplicate sample taken

Purge rate of 0.35 gpm

Wet chemistry

$FeCl_2$ = 0
Dup $FeCl_2$ = 0
CO_2 = 36 mg/L
Dup CO_2 = 37.5 mg/L
Alkilinity
Phend = 0
Dup phend = 0
Total = 7 mg/L
Dup Total = 7 mg/L
SO4 = 29 mg/L
Dup SO4 = 29 mg/L

Revised 4/5/96

NWS EARLE, NJ

LOW FLOW PURGE DATA SHEET

Brown & Root Environmental

PROJECT NUMBER:

WELL I.D.: 5106-GW-02

DATE: 4/14/97

Time (Hrs.)	Water Level (Ft. below TOC)	Flow (mL/Min.)	Temp. (Celcius)	pH (S.U.)	Sp. Cond. mS/cm	DO (mg/L)	Sal. (%)	Turb. (NTU)	Comments Redox
1744	20.55	0.33	11.96	4.49	176	7.54			460
1746	20.55	0.33	11.97	4.49	178	7.84			462
1748	20.55	0.33	11.97	4.47	181	7.67			469
1750	20.55	0.33	11.97	4.50	181	7.65			471
1752	20.55	0.33	11.97	4.50	182	7.61			472
1754	20.55	0.33	11.97	4.51	183	7.62			473
1756	20.55	0.33	11.97	4.49	184	7.68			475
1758	20.55	0.33	11.99	4.51	184	7.67			478
1800	20.55	0.33	11.97	4.50	185	7.65			480
1802	20.55	0.33	11.96	4.52	185	7.60			481
1804	20.55	0.33	11.96	4.50	185	7.67			480
1806	20.55	0.33	11.96	4.53	186	7.66			482
1808	20.55	0.33	11.96	4.53	186	7.61			482
1810	20.55	0.33	11.96	4.54	186	7.57			483
1812	20.55	0.33	11.96	4.53	186	7.60			484
1814	20.55	0.33	11.96	4.53	186	7.62			485

SIGNATURE(S) Paul M. D.

TB 1300

GROUNDWATER
SAMPLE LOG SHEET

Brown & Root Environmental

- [x] Monitoring Well Data
- [ ] Domestic Well Data
- [ ] Other_____

Project Site Name: NWS-Earle

Project Site Number: CTO-206

Source Number: S106-MW-03 (Lin)

Source Location: Bldg. S106-B

Total Well Depth:	30.20
Well Casing Size & Depth:	2" PVC
Static Water Level:	21.26
One Casing Volume:	1.46 gal
Start Purge (hrs):	1445
End Purge (hrs.):	1518
Total Purge Time (min.):	33
Total Amount Purged (gal.):	4.5
Monitor reading:	HNu reading 40 ppm
Purge Method:	Geoguard pump
Sample Method:	Bladder pump
Depth Sampled:	25'
Sample Date & Time:	4/14/97 1552
Sampled by:	Paul Davis
Signature(s):	Paul Davis

Purge Data

Volume	pH	S.C.	Temp (°C)	Color and Turbidity
0	4.77	149.2	11.26	Brown
1	4.99	145.2	11.49	slight brown
2	4.72	144.7	11.48	clear
3	4.73	144.4	11.48	

SAMPLE DATA

pH	S.C.	Temp (°C)	Color and Turbidity

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Analysis	Preservative:
[x] TCL VOAs +10	HCl to pH<2, 4°C
[x] TCL SVOAs +5	4°C
[ ] TCL Pest/PCBs	4°C
[ ] TAL Metals	HNO_3 to pH<2
[ ] Cyanide	NaOH to pH>12
x methane/ethane/ethene	
x sulfate	
x nitrate	
x phosphorus	
x chloride	
x TOC	
x pH	

Observations/Notes:

- [x] Duplicate sample taken (DUP-04)

Purge rate of 0.25 gal per minute

wet chemistry

Fe_2 = 0 mg/L

CO_2 = 13 mg/L

Alkalinity

Phenol = 0 mg/L

Total = 5 mg/L

SO_4 = 45 mg/L

*collected MS/MSD on this sample; DUP-04 also

Revised 4/5/98

NWS EARLE, NJ

LOW FLOW PURGE DATA SHEET

Brown & Root Environmental

PROJECT NUMBER:

WELL I.D.: 5106-MW-03 (GW)

DATE: 4-14-97

Time (Hrs.)	Water Level (Ft. below TOB)	Flow (mL/Min.)	Temp. (Celcius)	pH (S.U.)	S. Cond. mS/cm	DO (mg/Lt)	Sal. (%)	Turb. (NTU)	Comments Redox
1445	21.26	0.25 gal	11.26	4.77	149.2	7.41			463
1447	21.26	0.25	11.28	4.74	147.3	7.43			462
1449	21.26	0.25	11.34	4.62	147.0	7.47			463
1451	21.26	0.25	11.37	4.58	145.2	7.45			460
1453	21.26	0.25	11.39	4.62	145.0	7.49			461
1455	21.26	0.25	11.43	4.70	144.8	7.49			460
1457	21.26	0.25	11.45	4.71	144.7	7.36			458
1459	21.26	0.25	11.48	4.73	144.7	7.45			457
1501	21.26	0.25	11.49	4.73	144.1	7.43			456
1503	21.26	0.25	11.49	4.75	144.2	7.39			457
1505	21.26	0.25	11.49	4.73	144.3	7.37			456
1507	21.26	0.25	11.49	4.72	144.4	7.40			457
1509	21.26	0.25	11.49	4.74	144.4	7.39			456
1511	21.26	0.25	11.49	4.69	144.1	7.39			458
1513	21.26	0.25	11.49	4.85	144.0	7.40			458
1515	21.26	0.25	11.49	4.73	144.3	7.48			459
1517	21.26	0.25	11.49	4.75	143.9	7.49			459
1519	21.26	0.25	11.48	4.73	144.4	7.47			464

SIGNATURE(S) Paul Stein

GROUNDWATER
SAMPLE LOG SHEET

Brown & Root Environmental

- [x] Monitoring Well Data
- [ ] Domestic Well Data
- [ ] Other_____

Project Site Name NWS EARLE

Project Site Number CTO-206

Source Number S106-GW-04

Source Location Bldg. S106-B

Total Well Depth:	31' BTOC
Well Casing Size & Depth:	(.653) 4" PVC
Static Water Level:	22.75
One Casing Volume:	5.38 gals.
Start Purge (hrs):	1935 4.14.97
End Purge (hrs.):	2000 4.14.97
Total Purge Time (min.):	25
Total Amount Purged (gal.):	5
Monitor reading:	~~none~~
Purge Method:	Peristaltic pump
Sample Method:	Peristaltic pump
Depth Sampled:	25'
Sample Date & Time:	4/15/97 @ 0745
Sampled by:	Paul Davis
Signature(s):	Paul Davis

Purge Data

Volume	pH	S.C.	Temp (°C)	Color and Turbidity
0	4.64	111.6	11.19	
1	4.63	108.2	11.19	

SAMPLE DATA

pH	S.C.	Temp (°C)	Color and Turbidity

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Analysis	Preservative:
[x] TCL VOAs +10	HCl to pH<2, 4°C
[x] TCL SVOAs +15	4°C
[ ] TCL Pest/PCBs	4°C
[ ] TAL Metals	HNO_3 to pH<2
[ ] Cyanide	NaOH to pH>12
x methane/ethane/ethene	
x sulfate	
x nitrate	
x phosphorus	
x chloride	
x TOC	
x pH	

Observations/Notes:

- [ ] Duplicate sample taken

Product layer was 1 100th of an ~~inch~~ foot

Fe_2 = 0 ppm

Alkalinity -

Phenol = 0 mg/L

Total = 8 mg/L

CO_2 = 50 mg/L

SO_4 = 34 mg/L

Revised 4/5/96

NWS EARLE, NJ

LOW FLOW PURGE DATA SHEET

Brown & Root Environmental

PROJECT NUMBER:

WELL I.D.: S106-GW-04

DATE: 4.14.97

Time (Hrs.)	Water Level (Ft. below TOB)	Flow (mL/Min.)	Temp. (Celcius)	pH (S.U.)	S. Cond. mS/cm	DO (mg/L)	~~Sat.~~ ORP mV %	Turb. (NTU)	Comments
1935			11.19	4.64	111.6	1.37	422		
1937			11.20	4.63	111.5	0.94	422		
1939			11.19	4.62	111.2	0.77	421		
1941			11.20	4.62	111.2	0.72	419		
1943			11.19	4.62	110.3	0.71	417		
1945			11.18	4.62	110.	0.69	417		
1947			11.17	4.62	109.5	0.68	415		
1949			11.19	4.62	108.7	0.66	414		
1951			11.19	4.63	108.2	0.65	414		
1953			11.19	4.61	108.1	0.63	413		
1955			11.19	4.62	108.0	0.57	411		

SIGNATURE(S) Paul D.

GROUNDWATER
SAMPLE LOG SHEET

Brown & Root Environmental

- [x] Monitoring Well Data
- [ ] Domestic Well Data
- [ ] Other_____

Project Site Name NWS Earle

Project Site Number CTO 206

Source Number S106-MW-05

Source Location Building S106

Total Well Depth:	28.35
Well Casing Size & Depth:	2" PVC Casing
Static Water Level:	21.40
One Casing Volume:	1.13
Start Purge (hrs):	1009
End Purge (hrs.):	1038
Total Purge Time (min.):	28
Total Amount Purged (gal.):	4.0
Monitor reading:	NO HNU readings above background
Purge Method:	Geoguard pump
Sampl Method:	Geoguard pump
D pth Sampled:	
Sampl Date & Time:	6/5/97 1115
Sampled by:	Joy Dewor
Signature(s):	

Purge Data

Volume	pH	S.C.	Temp (°C)	Color and Turbidity
0	6.09	0.171	12.91	Tan 233.6
1	5.90	0.133	12.86	Lt Brown 986.6
2	5.87	0.134	12.87	Tan 250.1
3	5.84	0.131	12.86	Lt Tan 129.2
4	5.81	0.128	12.89	Lt Tan 104.5

SAMPLE DATA

pH	S.C.	Temp (°C)	Color and Turbidity
5.80	0.130	12.89	Lt Tan 100

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Analysis	Preservative:
[x] TCL VOAs	HCl to pH<2, 4°C
[x] TCL SVOAs	4°C
[ ] TCL Pest/PCBs	4°C
[ ] TAL Metals	HNO_3 to pH<2
[ ] Cyanide	NaOH to pH>12
Methane Ethane Ethene	4°C
Sulfate, Chloride	4°C
Nitrate, Phosphorus	H_2SO_4 4°C

Observations/Notes:

- [ ] Duplicate sample taken

The Geoguard pump was purging at a rate of 500 ml per minute

Fe^{+2} = 0.8 mg/L
CO_2 = 45 mg/L
Alk Phenol = 0.0 mg/L
Alk Total = 30.0 mg/L
Sulfate = 41 mg/L
DO = 7.57 mg/L

Revised 4/5/96

NWS EARLE, NJ

LOW FLOW PURGE DATA SHEET

Brown & Root Environmental

PROJECT NUMBER:

WELL I.D.: 5106-MW-05

DATE: 6/5/97

Time (Hrs.)	Water Level (Ft. below TOB)	Flow (mL/Min.)	Temp. (Celcius)	pH (S.U.)	S. Cond. mS/cm	DO mg/l %	Sal. %	Turb. (NTU)	Comments
	~~21.40~~								
1009	21.40		12.91	6.09	0.171	231.3		233.6	
1011			12.62	6.04	0.162	207.9		1138.3	
1013			12.77	6.00	0.151	208.4		1522.5	
1015			12.83	5.92	0.135	210.4		1443.3	
1017			12.86	5.90	0.133	210.2		986.6	
1019	21.50		12.90	5.90	0.135	209.0		524.8	
1021			12.88	5.90	0.136	210.7		403.6	
1023			12.90	5.88	0.134	212.9		298.3	
1025			12.87	5.87	0.134	213.4		250.1	
1027			12.88	5.86	0.133	214.7		193.0	
1029			12.87	5.86	0.133	215.9		179.0	
1031			12.89	5.84	0.131	216.3		139.0	
1033			12.86	5.83	0.128	217.3		139.2	
1035			12.86	5.82	0.129	216.2		105.2	
1037			12.89	5.81	0.128	217.5		104.5	
1038 - stop purge									

SIGNATURE(S) _____

GROUNDWATER
SAMPLE LOG SHEET

Brown & Root Environmental

- [x] Monitoring Well Data
- [ ] Domestic Well Data
- [ ] Other_____

Project Site Name NWS Earle

Project Site Number CTO 206

Source Number 5106-MW-06

Source Location Building 5106

		Purge Data				
Total Well Depth:	27.45	Volume	pH	S.C.	Temp (°C)	Color and Turbidity
Well Casing Size & Depth: 2" PVC Casing						
Static Water Level:	19.34	0	6.00	0.138	12.67	Lt Brown 364
One Casing Volume:	1.32	1	5.83	0.122	12.15	Lt Brown 220.3
Start Purge (hrs):	11.57	2	5.85	0.123	12.15	Lt Brown 144.6
End Purge (hrs.):	12.23	3	5.77	0.117	12.10	Tan 68.5
Total Purge Time (min.):	26	4				
Total Amount Purged (gal.):	4 gal					
Monitor reading: No HNU readings above background						
Purge Method: Geoguard Pump						
Sample Method: Geoguard Pump						
Depth Sampled:						
Sample Date & Time: 6/5/97 1240						
Sampled by: Jay D Voor						
Signature(s):		**SAMPLE DATA**				
		pH	S.C.	Temp (°C)	Color and Turbidity	
		5.72	0.115	12.24	Lt Tan 100	

Type of Sample

- [x] Low Concentration
- [ ] High Concentration
- [x] Grab
- [ ] Composite
- [ ] Grab - Composite

Analysis	Preservative:
[x] TCL VOAs	HCl to pH<2, 4°C
[x] TCL SVOAs	4°C
[ ] TCL Pest/PCBs	4°C
[ ] TAL Metals	HNO_3 to pH<2
[ ] Cyanide	NaOH to pH>12
✓ Methane Ethane Ethene	4°C
✓ Sulfate, Chloride	4°C
✓ Nitrate, Phosphorus	H_2SO_4

Observations/Notes:

- [ ] Duplicate sample taken

Geoguard purge rate of 500 ml per minute

Fe^{+2} = 0 mg/L
DO_2 = 30 mg/L
Alk phenol = 0 mg/L
Alk Total = 30 mg/L
Sulfate = 30 mg/L
DO = 7.67 mg/L

Revised 4/5/98

NWS EARLE, NJ

LOW FLOW PURGE DATA SHEET

Brown & Root Environmental

PROJECT NUMBER:

WELL I.D.: S106-MW-06

DATE: 6/5/97

Time (Hrs.)	Water Level (Ft. below TOB)	Flow (mL/Min.)	Temp. (Celcius)	pH (S.U.)	S. Cond. mS/cm	DO (mg/Lit)	Sal. (%)	Turb. (NTU)	Comments
1157			12.67	6.00	0.138	17.41		364	
1159			12.24	5.89	0.131	14.31		364.0	
1201			12.15	5.83	0.125	14.25		349.4	
1203			12.16	5.81	0.121	13.86		312.2	
1205			12.15	5.83	0.122	14.74		220.3	
1207			12.15	5.84	0.123	14.10		204.4	
1209			12.16	5.84	0.122	14.45		144.6	
1211			12.14	5.85	0.123	14.98		121.4	
1213			12.15	5.85	0.121	15.86		107.1	
1215			12.15	5.84	0.121	16.59		92.2	
1217	[redacted]		12.12	5.82	0.119	18.28		84.9	
1219			12.15	5.79	0.117	18.50		84.2	
1221			12.10	5.77	0.117	20.69		68.5	
1223			12.11	5.75	0.115	19.66		67.5	

SIGNATURE(S) _____

APPENDIX E

Slug Test Data and Calculations

NWS-Earle Site 106B Slug Testing Results		
Well No.	hydraulic conductivity (K) feet/sec	hydraulic conductivity (K) cm/sec
MW-01	1.17E-03	3.56E-02
MW-02	1.59E-03	4.84E-02
MW-03	5.17E-04	1.58E-02
MW-04	1.91E-04	5.84E-03
Site Average	8.67E-04	2.64E-02

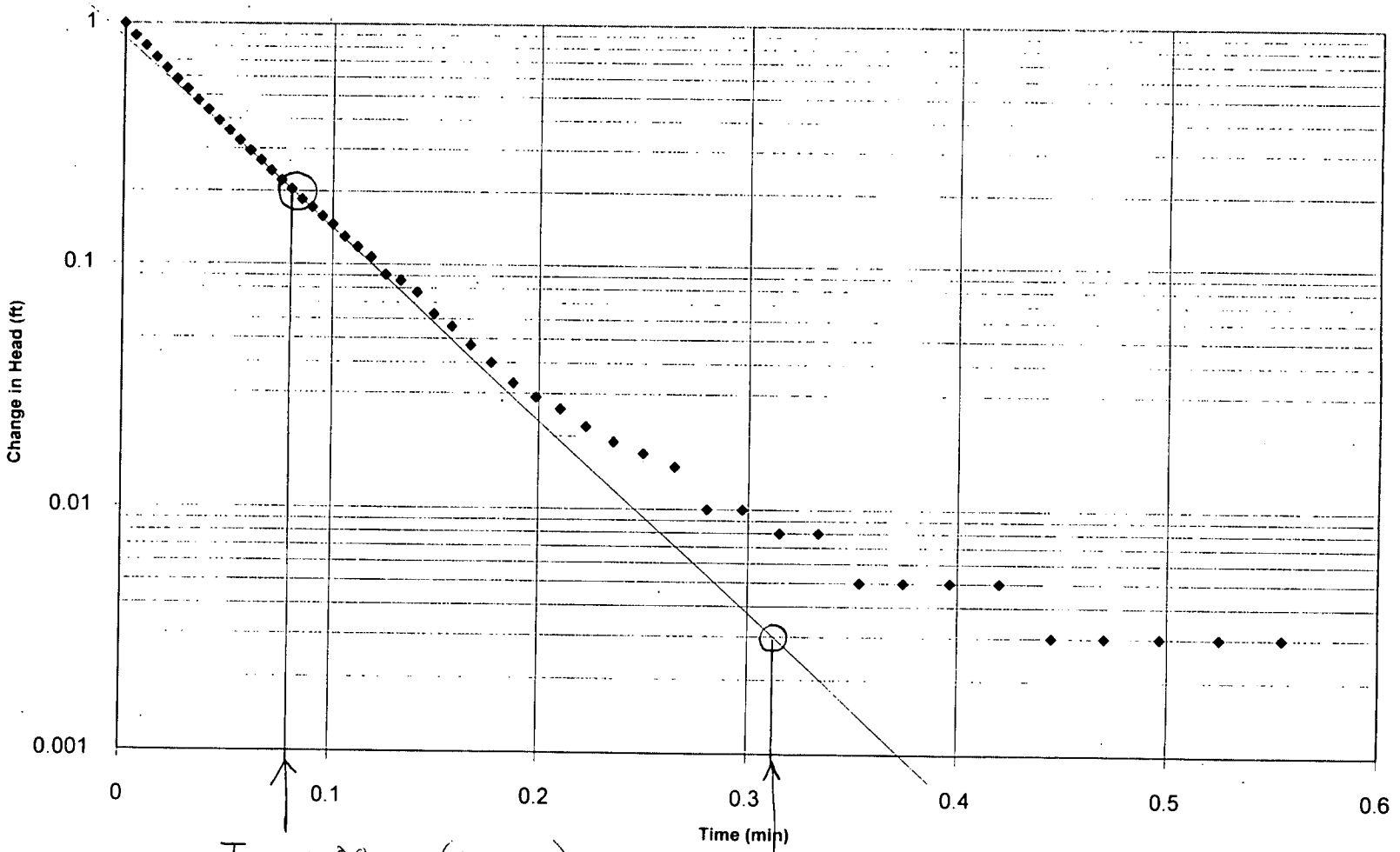
SLUG TEST Site 106B well MW-01

Scn Int L=	10	Tyo=	4.8	sec
WT to Well Bt H=	10	Yo=	0.2	feet
Aq Depth D=	75			
Rad Borehole Rw=	0.33	Tyt=	18.8	sec
Case Rcase=	0.0833	Yt=	0.003	feet
Cal Eff Rc' Rc=	0.194			
One used in K calc Rc=	0.194			
L\Rw=	30.30			
A=	2.5			
B=	0.45			
C=	2			

IF D>H

LN(Re/Rw)=	2.0686119	
Re=	2.6115641	
K=	1.17E-03	ft/sec
	3.56E-02	cm/sec

Earle S106B-MW01 Rising Head Slug Test



T_o = 0.08 min (4.8 sec)

y_o = 0.2 ft.

T_t = 0.313 min (18.8 sec)

y_t = 0.003

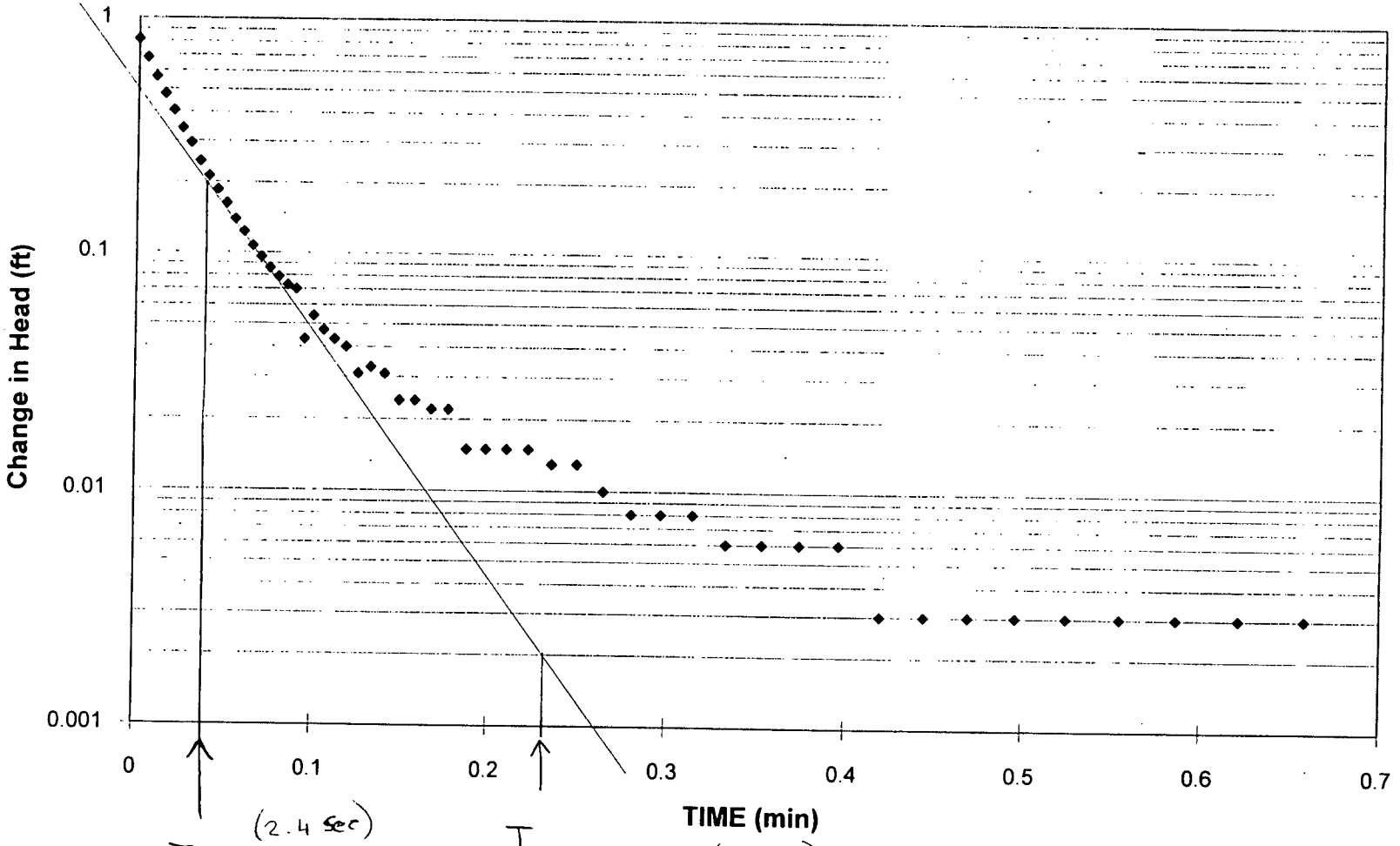
SLUG TEST Site 106B well MW-02

Scn Int L=	10	Tyo=	2.4	sec
WT to Well Bt H=	10.5	Yo=	0.2	feet
Aq Depth D=	75			
Rad Borehole Rw=	0.33	Tyt=	13.8	sec
Case Rcase=	0.0833	Yt=	0.002	feet
Cal Eff Rc' Rc=	0.194			
One used in K calc Rc=	0.194			
L\Rw=	30.30			
A=	2.5			
B=	0.45			
C=	2			

IF D>H

LN(Re/Rw)=	2.0887545	
Re=	2.664701	
K=	1.59E-03	ft/sec
	4.84E-02	cm/sec

NWS Earle S106B-MW02 Rising Head Slug Test



(2.4 sec)
T_o = 0.04 min
y_o = 0.2 ft.

T_t = 0.23 min (13.8 sec)
y_t = 0.002 ft.

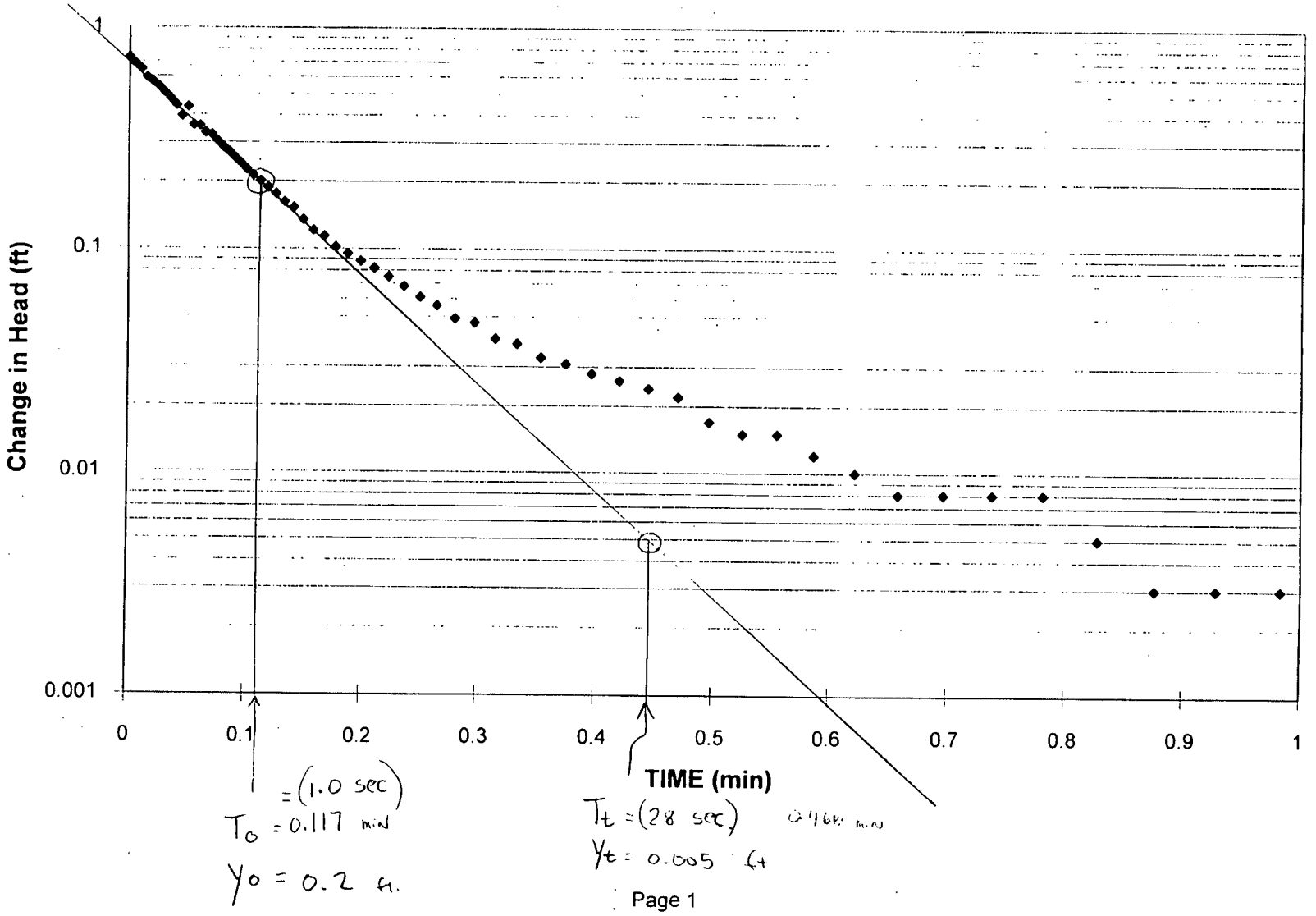
SLUG TEST Site 106B well MW-03

Scn Int L=	10	Tyo=	1	sec
WT to Well Bt H=	8.75	Yo=	0.2	feet
Aq Depth D=	75			
Rad Borehole Rw=	0.33	Tyt=	28	sec
Case Rcase=	0.0833	Yt=	0.005	feet
Cal Eff Rc' Rc=	0.194			
One used in K calc Rc=	0.194			
L\Rw=	30.30			
A=	2.5			
B=	0.45			
C=	2			

IF D>H

LN(Re/Rw)=	2.0127379	
Re=	2.4696472	
K=	5.17E-04	ft/sec
	1.58E-02	cm/sec

NWS-Earle S106B-MW03 Rising Head Slug Test



SLUG TEST Site 106B well MW-04

Scn Int L=	10	Tyo=	25.7	sec
WT to Well Bt H=	8.25	Yo=	0.6	feet
Aq Depth D=	75			
Rad Borehole Rw=	0.5	Tyt=	166.3	sec
Case Rcase=	0.1666	Yt=	0.02	feet
Cal Eff Rc' Rc=	0.307			
One used in K calc Rc=	0.307			
L\Rw=	20.00			
A=	2.2			
B=	0.38			
C=	1.7			

IF D>H

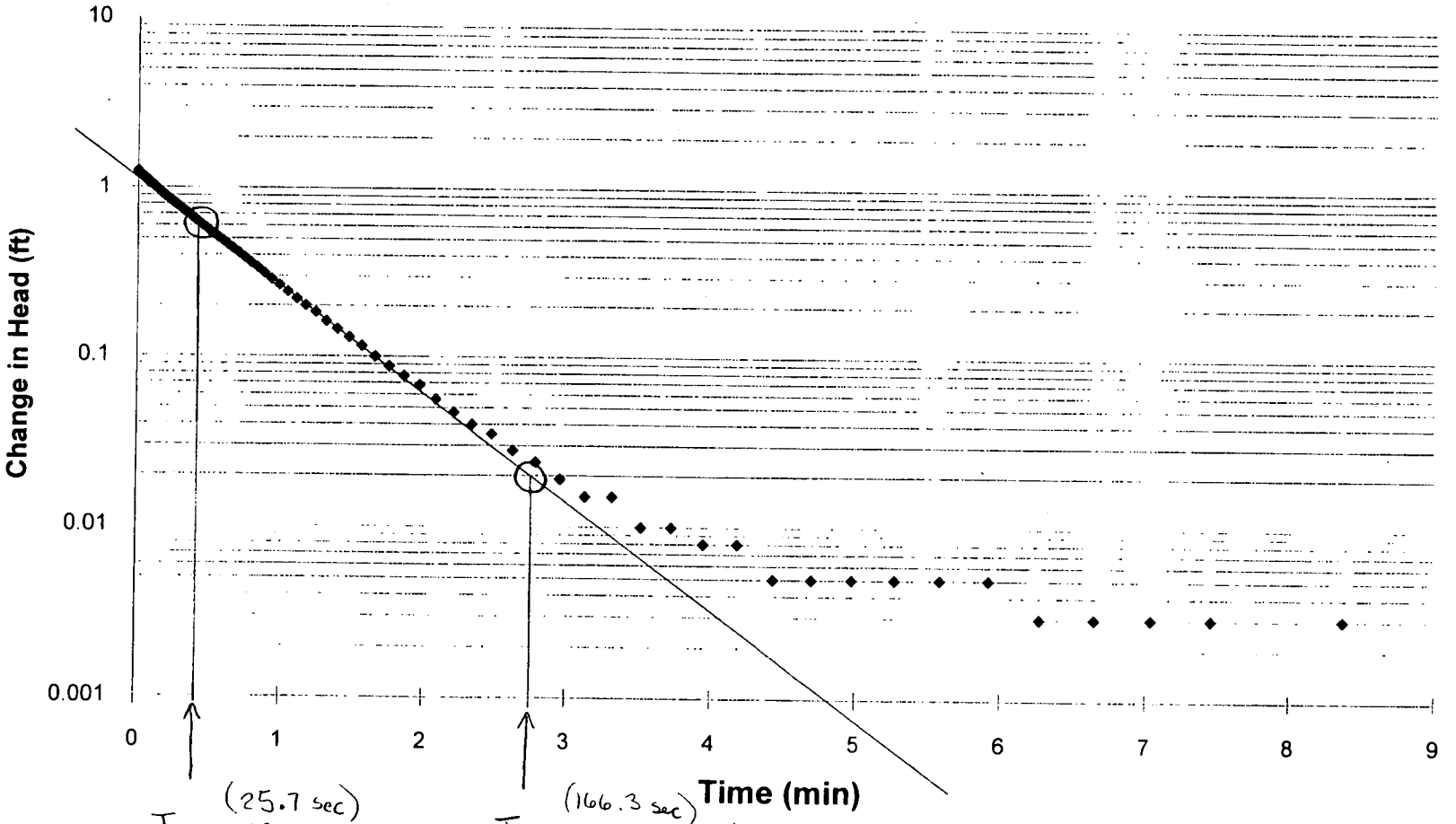
LN(Re/Rw)= 1.6796161

Re= 2.6817482

K= 1.91E-04 ft/sec

5.84E-03 cm/sec

S106 MW04 Rising Head Slug Test



(25.7 sec)
T_o = 0.43 min
y_o = 0.6 ft.

(166.3 sec)
T_t = 2.77 min
y_t = 0.02 ft.

APPENDIX F

Laboratory Results - Sample Data Summaries

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APPENDIX F
ANALYTICAL RESULTS FOR SOLID SAMPLES SITE - S106B
CTO 206 INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	S106SB01-25.5	S106SB02-22.5	S106SB03-19.5	S106SB04-20.5	DUP-03 (SB04)	S106SB05-21	S106SB06-19
LABORATORY ID:	71029001	71029004	71294001	71294003	71294004	72229001	72191001
SDG:	71029	71029	71294	71294	71294	72229	72191
SAMPLING DATE:	3/5/97	3/5/97	3/24/97	3/25/97	3/25/97	5/22/97	5/22/97
VOLATILES	Dilution Factor 1.00 Percent Solid 80.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 90.0	Dilution Factor 1.00 Percent Solid 92.0	Dilution Factor 1.00 Percent Solid 85.0
1,1,1-trichloroethane	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
1,1,2,2-tetrachloroethane	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
1,1,2- trichloroethane	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
1,1-dichloroethane	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
1,1-dichloroethene	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
1,2-dichloroethane	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
1,2-dichloroethene (total)	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
1,2-dichloropropane	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
2-butanone	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
2-hexanone	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
4-methyl-2-pentanone	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
acetone	8 J ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	3J ug/kg	3 J ug/kg
benzene	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
bromodichlormethane	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
bromoform	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
bromomethane	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
carbon disulfide	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
carbon tetrachloride	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
chlorobenzene	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
chlorothane	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg

APPENDIX F.
ANALYTICAL RESULTS FOR SOLID SAMPLES SITE - S106B
CTO 206 INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	S106SB01-25.5	S106SB02-22.5	S106SB03-19.5	S106SB04-20.5	DUP-03 (SB04)	S106SB05-21	S106SB06-19
LABORATORY ID:	71029001	71029004	71294001	71294003	71294004	72229001	72191001
SDG:	71029	71029	71294	71294	71294	72229	72191
SAMPLING DATE:	3/3/97	3/4/97	3/24/97	3/25/97	3/25/97	5/22/97	5/22/97
VOLATILES	Dilution Factor 1.00 Percent Solid 80.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 90.0	Dilution Factor 1.00 Percent Solid 92.0	Dilution Factor 1.00 Percent Solid 85.0
chloroform	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
chloromethane	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
cis-1,3-dichloropropane	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
dibromochloromethane	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
ethylbenzene	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
methyl tertiary butyl ether	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
methylene chloride	8J ug/kg	7J ug/kg	11U ug/kg	1JB ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
styrene	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
tertiary butyl alcohol	62U ug/kg	56U ug/kg	56U ug/kg	56U ug/kg	56U ug/kg	54U ug/kg	59U ug/kg
tetrachloroethene	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
toluene	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
trans-1,3-dichloropropene	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
trichloroethene	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
vinyl chloride	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg
xylene (total)	12U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	11U ug/kg	12U ug/kg

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APPENDIX F.
ANALYTICAL RESULTS FOR SOLID SAMPLES SITE - S106B
CTO 206 INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	S106SB01-25.5	S106SB02-22.5	S106SB03-19.5	S106SB04-20.5	DUP-03 (SB04)	S106SB05-21	S106SB06-19
LABORATORY ID:	71029001	71029004	71294001	71294003	71294004	72229001	72191001
SDG:	71029	71029	71294	71294	71294	72229	72191
SAMPLING DATE:	3/5/97	3/5/97	3/24/97	3/25/97	3/25/97	5/22/97	5/22/97
SEMIVOLATILES	Dilution Factor 1.00 Percent Solid 80.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 90.0	Dilution Factor 1.00 Percent Solid 92.0	Dilution Factor 1.00 Percent Solid 85.0
1,2,4-trichorobenzene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
1,2-dichlorobenzene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
1,3- dichlorobenzene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
1,4- dichlorobenzene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
2,2'-oxybis(1-chloropropane)	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
2,4-dinitrotoluene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
2,6-dinitrotoluene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
2-chloronapthalene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
2-methylnapthalene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
2-nitroaniline	1000U ug/kg	930U ug/kg	930U ug/kg	930U ug/kg	920U ug/kg	900U ug/kg	980U ug/kg
3,3'-dichlorobezidine	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
3-nitoraniline	1000U ug/kg	930U ug/kg	930U ug/kg	930U ug/kg	920U ug/kg	900U ug/kg	980U ug/kg
4-bromophenyl-phenylether	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	360U ug/kg
4-chloroaniline	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	360U ug/kg
4-chlorophenyl-phenylether	410 J ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	360U ug/kg
4-nitoraniline	1000U ug/kg	930U ug/kg	930U ug/kg	930U ug/kg	920U ug/kg	900U ug/kg	980U ug/kg
N-nitroso-di--n--propylamine	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
N-nitrosodiphenylamine (1)	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
acenaphthene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
acenaphthylene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg

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APPENDIX F.
ANALYTICAL RESULTS FOR SOLID SAMPLES SITE - S106B
CTO 206 INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	S106SB01-25.5	S106SB02-22.5	S106SB03-19.5	S106SB04-20.5	DUP-03 (SB04)	S106SB05-21	S106SB06-19
LABORATORY ID:	71029001	71029004	71294001	71294003	71294004	72229001	72191001
SDG:	71029	71029	71294	71294	71294	72229	72191
SAMPLING DATE:	3/3/97	3/4/97	3/24/97	3/25/97	3/25/97	5/22/97	5/22/97
SEMIVOLATILES	Dilution Factor 1.00 Percent Solid 80.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 90.0	Dilution Factor 1.00 Percent Solid 92.0	Dilution Factor 1.00 Percent Solid 85.0
anthracene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
benzo(a)anthracene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
benzo(a)pyrene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
benzo(b)fluoranthene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
benzo(g,h,i)perylene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
benzo(k)fluoranthene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
bis(2-chloroethoxy)methane	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
bis(2-chloroethyl)ether	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
bis(2-ethylhexyl)phthalate	60JB ug/kg	370U ug/kg	49U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
butylbenzylphthalate	1000U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
carbazole	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
chrysene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
di-n-butylphthalate	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
di-n-octylphthalate	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
dibenz(a,h)anthracene	410 J ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
dibenzofuran	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
deithylphthalate	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
dimethylphthalate	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
fluoranthene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
fluorene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg

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APPENDIX F.
ANALYTICAL RESULTS FOR SOLID SAMPLES SITE - S106B
CTO 206 INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	S106SB01-25.5	S106SB02-22.5	S106SB03-19.5	S106SB04-20.5	DUP-03 (SB04)	S106SB05-21	S106SB06-19
LABORATORY ID:	71029001	71029004	71294001	71294003	71294004	72229001	72191001
SDG:	71029	71029	71294	71294	71294	72229	72191
SAMPLING DATE:	3/3/97	3/4/97	3/24/97	3/25/97	3/25/97	5/22/97	5/22/97
SEMIVOLATILES	Dilution Factor 1.00 Percent Solid 80.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 90.0	Dilution Factor 1.00 Percent Solid 92.0	Dilution Factor 1.00 Percent Solid 85.0
hexachlorobenzene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
hexachlorobutadiene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
hexachlorocyclopentadiene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
hexachloroethane	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
indeno(1,2,3-cd)pyrene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
isophorone	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
naphthalene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
nitrobenzene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
phenanthrene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
pyrene	410U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	370U ug/kg	360U ug/kg	390U ug/kg
MISCELLANEOUS	Dilution Factor 1.00 Percent Solid 80.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 89.0	Dilution Factor 1.00 Percent Solid 90.0	Dilution Factor 1.00 Percent Solid 92.0	Dilution Factor 1.00 Percent Solid 85.0
total organic carbon	232 mg/kg	235 mg/kg	284 mg/kg	322 mg/kg	395 mg/kg	218 mg/kg	302 mg/kg

NOTES:

- J - Value considered estimated due to exceedance of technical quality control criteria or because result is less than the Contract Required Quantitation Limit (CRQL).
- U - Value is a non-detected result as reported by the laboratory.
- UJ - Non-detected result is considered estimated due to exceedance of technical quality control criteria.
- UL - Non-detected result is considered biased low due to exceedance of technical quality control criteria.
- L - Positive result is considered biased low due to exceedance of technical quality control criteria.
- K - Positive result is considered biased high due to exceedance of technical quality control criteria.
- B - Positive result is considered to be an artifact of blank contamination, and should not be considered present.
- * - Result is reported from reanalysis
- ** - Result is reported from diluted analysis

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APPENDIX F
ANALYTICAL RESULTS FOR WATER SAMPLES SITE - S106B
CTO 206 INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	S106GW01	S106GW02	S106GW03	DUP-04(GW03)	S106GW04	S106MW05	S106MW06
LABORATORY ID:	71583003	71633005	71633002	71633006	71633007	72412002	72412003
SDG:	71583	71633	71633	71633	71633	72412	72412
SAMPLING DATE:	4/9/97	4/14/97	4/14/97	4/14/97	4/15/97	6/5/97	6/5/97
VOLATILES	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00
1,1,1-trichloroethane	10U ug/l	10U ug l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,1,2,2-tetrachloroethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,1,2- trichloroethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,1-dichloroethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,1-dichloroethene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,2 dichloroethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,2-dichloroethene (total)	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,2-dichloropropane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
2-butanone	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
2-hexanone	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
4-methyl-2-pentanone	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
acetone	5 J ug/l	4 JB ug/l	10U ug/l	10U ug/l	7 JB ug/l	10U ug/l	10U ug/l
benzene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
bromodichlormethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	4J ug/l	10U ug/l
bromoform	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
bromomethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
carbon disulfide	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
carbon tetrachloride	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
chlorobenzene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
chlorothane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l

APPENDIX F
ANALYTICAL RESULTS FOR WATER SAMPLES SITE - S106B
CTO 206 INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	S106GW01	S106GW02	S106GW03	DUP-04(GW03)	S106GW04	S106MW05	S106MW06
LABORATORY ID:	71583003	71633005	71633002	71633006	71633007	72412002	72412003
SDG:	71583	71633	71633	71633	71633	72412	72412
SAMPLING DATE:	4/9/97	4/14/97	4/14/97	4/14/97	4/15/97	6/5/97	6/5/97
VOLATILES	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00
chloroform	10U ug/l	10U ug l	2J ug/l	3J ug/l	2J ug/l	15 ug/l	10U ug/l
chloromethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
cis-1,3-dichloropropene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
dibromochloromethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
ethylbenzene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	36 ug/l	10U ug/l	10U ug/l
methyl tertiary butyl ether	N/A	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
methylene chloride	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
styrene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
tertiary butyl alcohol	N/A	50U ug/l	50U ug/l	50U ug/l	50U ug/l	50U ug/l	50U ug/l
tetrachloroethene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
toluene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10J ug/l	10U ug/l	10U ug/l
trans-1,3-dichloropropene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
trichloroethene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	4J ug/l	10U ug/l
vinyl chloride	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
xylene (total)	10U ug/l	10U ug/l	10U ug/l	10U ug/l	230 ug/l	10U ug/l	10U ug/l

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APPENDIX F
ANALYTICAL RESULTS FOR WATER SAMPLES SITE - S106B
CTO 206 INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	S106GW01	S106GW02	S106GW03	DUP-04(GW03)	S106GW04	S106MW05	S106MW06
LABORATORY ID:	71583003	71633005	71633002	71633006	71633007	72412002	72412003
SDG:	71583	71633	71633	71633	71633	72412	72412
SAMPLING DATE:	4/9/97	4/14/97	4/14/97	4/14/97	4/15/97	6/5/97	6/5/97
SEMIVOLATILES	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00
1,2,4-trichlorobenzene	10U ug/l	11U ug l	10Uug/l	10Uug/l	10U ug/l	15U ug/l	10U ug/l
1,2-dichlorobenzene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,3-dichlorobenzene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,4-dichlorobenzene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
2,2'oxybis(1-chlropropane)	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
2,4-dinitrotoluene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
2,6-dinitrotoluene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
2-cloronaphthalene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
2-methylnaphthalene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	53 ug/l	10U ug/l	10U ug/l
2-nitroaniline	25U ug/l	27U ug/l	25U ug/l	25U ug/l	25U ug/l	25U ug/l	25U ug/l
3,3'-dichlorobenzidine	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
3- nitroaniline	25U ug/l	27U ug/l	25U ug/l	25U ug/l	25U ug/l	25U ug/l	25U ug/l
4-bromophenyl-phenylether	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
4-chloroaniline	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
4-chlorophenylphenylether	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
4- nitroaniline	25U ug/l	27U ug/l	25U ug/l	10U ug/l	25U ug/l	25U ug/l	25U ug/l
N-nitroso-di-n-propylamine	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
N-nitrosodiphenylamine (1)	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
acenaphthene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	6J ug/l	10U ug/l	10U ug/l
acenaphthylene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l

APPENDIX F
ANALYTICAL RESULTS FOR WATER SAMPLES SITE - S106B
CTO 206 INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	S106GW01	S106GW02	S106GW03	DUP-04(GW03)	S106GW04	S106MW05	S106MW06
LABORATORY ID:	71583003	71633005	71633002	71633006	71633007	72412002	72412003
SDG:	71583	71633	71633	71633	71633	72412	72412
SAMPLING DATE:	4/9/97	4/14/97	4/14/97	4/14/97	4/15/97	6/5/97	6/5/97
SEMIVOLATILES	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00
anthracene	10U ug/l	11U ug l	10Uug/l	10Uug/l	10U ug/l	10U ug/l	10U ug/l
benzo(a)anthracene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
benzo(a)pyrene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
benzo(b)fluoranthene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
benzo(g,h,i)perylene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
benzo(k)fluoranthene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
bis(2-chloroethoxy)methane	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
bis(2-chloroethyl)ether	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
bis(2-ethylhexyl)phthalate	1J ug/l	6JB ug/l	10U ug/l	10U ug/l	10U ug/l	1J ug/l	2J ug/l
butylbenzylphthalate	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
carbazole	10U ug/l	11U ug/l	10U ug/l	10U ug/l	1J ug/l	10U ug/l	10U ug/l
chrysene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
di-n-butylphthalate	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
di-n-octylphthalate	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
dibenz(a,h)anthracene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
dibenzofuran	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
deithylphthalate	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
dimethylphthalate	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
fluoranthene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
fluorene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	7J ug/l	10U ug/l	10U ug/l

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APPENDIX F
ANALYTICAL RESULTS FOR WATER SAMPLES SITE - S106B
CTO 206 INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	S106GW01	S106GW02	S106GW03	DUP-04(GW03)	S106GW04	S106MW05	S106MW06
LABORATORY ID:	71583003	71633005	71633002	71633006	71633007	72412002	72412003
SDG:	71583	71633	71633	71633	71633	72412	72412
SAMPLING DATE:	4/9/97	4/14/97	4/14/97	4/14/97	4/15/97	6/5/97	6/5/97
SEMIVOLATILES	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00
hexachlorobenzene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
hexachlorobutadiene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
hexachlorocyclopentadiene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
hexachloroethane	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
indeno(1,2,3-cd)pyrene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
isophorone	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
naphthlalene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
nitrobenzene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
phenanthrene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	7J ug/l	10U ug/l	10U ug/l
pyrene	10U ug/l	11U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l

APPENDIX F
ANALYTICAL RESULTS FOR WATER SAMPLES SITE - S106B
CTO 206 INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	S106GW01	S106GW02	S106GW03	DUP-04(GW03)	S106GW04	S106MW05	S106MW06
LABORATORY ID:	71583003	71633005	71633002	71633006	71633007	72412002	72412003
SDG:	71583	71633	71633	71633	71633	72412	72412
SAMPLING DATE:	4/9/97	4/14/97	4/14/97	4/14/97	4/15/97	6/5/97	6/5/97
SEMIVOLATILES	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00
chloride	7 mg/l	30 mg/l	9 mg/l	6 mg/l	15 mg/l	20 mg/l	11 mg/l
ethane	5 ng/l	49 ng/l	73 ng/l	83 ng/l	58 ng/l	83 ng/l	175 ng/l
ethylene	5 ng/l	14 ng/l	50 ng/l	55 ng/l	64 ng/l	127 ng/l	109 ng/l
methane	1840 ng/l	2860 ng/l	3000 ng/l	3730 ng/l	3490 ng/l	3498 ng/l	1189 ng/l
nitrate as n	1.6 mg/l	3.3 mg/l	3.9 mg/l	3.9 mg/l	1.5 mg/l	1.5 mg/l	3.3 mg/l
sulfate	32 mg/l	19 mg/l	25 mg/l	25 mg/l	20 mg/l	25 mg/l	21 mg/l
total oganic carbon	6.45 mg/l	4.95 mg/l	1 mg/l	6.7 mg/l	9.7 mg/l	1 mg/l	9.7 mg/l
total phosphorus	0.05U mg/l	0.05U mg/l	0.05U mg/l	0.05U mg/l	0.05U mg/l	0.05U mg/l	0.05U mg/l

NOTES:

J - Value considered estimated due to exceedance of technical quality control criteria or because result is less than the Contract Required Quantitation Limit (CRQL).
U - Value is a non-detected result as reported by the laboratory.
UJ - Non-detected result is considered estimated due to exceedance of technical quality control criteria.
UL - Non-detected result is considered biased low due to exceedance of technical quality control criteria.
L - Positive result is considered biased low due to exceedance of technical quality control criteria.
K - Positive result is considered biased high due to exceedance of technical quality control criteria.
B - Positive result is considered to be an artifact of blank contamination, and should not be considered present.
* - Result is reported from a reanalysis.
** - Result is reported from diluted analysis.
N/A - Not analyzed

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APPENDIX F
ANALYTICAL RESULTS FOR QA/QC SAMPLES SITE - S106B
CTO 206 INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	TB-030397	FB-030397	FB-032497	TB-040997	FB-040997	TB-041497	TB-052297	FB-052297	S106TB-060597
LABORATORY ID:	712029002	712029003	71294002	71583004	71583004	71633001	72191001	72191003	72412001
SDG:	712029	712029	71294	71583	71583	71633	72191	72191	72412
SAMPLING DATE:	3/3/97	3/3/97	3/24/97	4/9/97	4/9/97	4/14/97	5/22/97	5/22/97	6/5/97
VOLATILES	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	DilutionFactor1.00
1,1,1-trichloroethane	10U ug/l	11U ug/l	10U ug/l	10U ug/l	11U ug/l	10U ug/l	10U ug/l	11U ug/l	10U ug/l
1,1,2,2-tetrachloroethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,1,2- trichloroethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,1-dichloroethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,1-dichloroethene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,2 dichloroethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,2-dichloroethene (total)	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,2-dichloropropane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
2-butanone	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
2-hexanone	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
4-methyl-2-pentanone	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
acetone	10U ug/l	10U ug/l	10U ug/l	9JB ug/l	6JB ug/l	4JB ug/l	16B ug/l	1B ug/l	10U ug/l
benzene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
bromodichlormethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
bromoform	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
bromomethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
carbon disulfide	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
carbon tetrachloride	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
chlorobenzene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
chloroethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l

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APPENDIX F
ANALYTICAL RESULTS FOR QA/QC SAMPLES SITE - S106B
CTO 206 INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	TB-030397	FB-030397	FB-032497	TB-040997	FB-040997	TB-041497	TB-052297	FB-052297	S106TB-060597
LABORATORY ID:	712029002	712029003	71294002	71583004	71583008	71633001	72191001	72191003	72412001
SDG:	712029	712029	71294	71583	71583	71633	72191	72191	72412
SAMPLING DATE:	3/3/97	3/3/97	3/24/97	4/9/97	4/9/97	4/14/97	5/22/97	5/22/97	6/5/97
VOLATILES	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00
chloroform	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	11U ug/l	10U ug/l
chloromethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
cis-1,3-dichloropropene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
dibromochloromethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
ethylbenzene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
methyl tertiary butyl ether	10U ug/l	10U ug/l	10U ug/l	N/A	N/A	10U ug/l	10U ug/l	10U ug/l	10U ug/l
methylene choride	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
styrene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
tertiary butly alcohol	50U ug/l	50U ug/l	50U ug/l	N/A	N/A	50U ug/l	50U ug/l	50U ug/l	50U ug/l
tetrachloroethene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
toluene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
trans-1,3-dichloropropene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
trichoroethene	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
vinyl chloride	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l
xylene (total)	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l	10U ug/l

APPENDIX F
ANALYTICAL RESULTS FOR QA/QC SAMPLES SITE - S106B
CTO 206 INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	FB-030397	FB-032497	FB-040997	FB-052297
LABORATORY ID:	71029003	71294002	71583008	72191003
SDG:	71029	71294	71583	72191
SAMPLING DATE:	3/3/97	3/24/97	4/9/97	5/22/97
SEMIVOLATILES	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00
anthracene	10U ug/l	10U ug/l	10Uug/l	10U ug/l
benzo(a)anthracene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
benzo(a)pyrene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
benzo(b)fluoranthene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
benzo(g,h,i)perylene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
benzo(k)fluoranthene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
bis (2-chloroethoxy)methane	10U ug/l	10U ug/l	10U ug/l	10U ug/l
bis(2-chloroethyl)ether	10U ug/l	10U ug/l	10U ug/l	10U ug/l
bis(2-ethylhexyl)phthalate	2JB ug/l	10U ug/l	10U ug/l	10U ug/l
butylbenzylphthalate	10U ug/l	10U ug/l	10U ug/l	10U ug/l
carbazole	10U ug/l	10U ug/l	10U ug/l	10U ug/l
chrysene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
di-n-buytlphthlate	10U ug/l	10U ug/l	10U ug/l	10U ug/l
di-n-octylphthlate	10U ug/l	10U ug/l	10U ug/l	10U ug/l
dibenz(a,h)anthracene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
dibenzofuran	10U ug/l	10U ug/l	10U ug/l	10U ug/l
diethylphthalate	10U ug/l	10U ug/l	4JB ug/l	10U ug/l
dimethyphthalate	10U ug/l	10U ug/l	10U ug/l	10U ug/l
fluoranthene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
fluorene	10U ug/l	10U ug/l	10U ug/l	10U ug/l

APPENDIX F
ANALYTICAL RESULTS FOR QA/QC SAMPLES SITE - S106B
CTO 206 INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

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SDG:	71029	71294	71583	72191
SAMPLING DATE:	3/3/97	3/24/97	4/9/97	5/22/97
SEMIVOLATILES	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00
1,2,4-trichlorobenzene	10U ug/l	10U ug/l	10Uug/l	10U ug/l
1,2-dichlorobenzene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,3-dichlorobenzene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
1,4-dichlorobenzene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
2,2'-oxybis(1-chlropropane)	10U ug/l	10U ug/l	10U ug/l	10U ug/l
2,4-dinitrotoluene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
2,6-dinitrotoluene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
2-cloronaphthalene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
2-methylnaphthalene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
2-nitroaniline	25U ug/l	25U ug/l	25U ug/l	25U ug/l
3,3'-dichlorobenzidine	10U ug/l	10U ug/l	10U ug/l	10U ug/l
3-nitroaniline	25U ug/l	25U ug/l	25U ug/l	25U ug/l
4-bromophenyl-phenylether	10U ug/l	10U ug/l	10U ug/l	10U ug/l
4-chloroaniline	10U ug/l	10U ug/l	10U ug/l	10U ug/l
4-chlorophenyl-phenylether	10U ug/l	10U ug/l	10U ug/l	10U ug/l
4- nitroaniline	25 J ug/l	25 J ug/l	25U ug/l	25U ug/l
N-nitroso-di-n-propylamine	10U ug/l	10U ug/l	10U ug/l	10U ug/l
N-nitrosodiphenylamine (1)	10U ug/l	10U ug/l	10U ug/l	10U ug/l
acenaphthene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
acenaphthylene	10U ug/l	10U ug/l	10U ug/l	10U ug/l

DRAFT

APPENDIX F
ANALYTICAL RESULTS FOR QA/QC SAMPLES SITE - S106B
CTO 206 INVESTIGATION AND RAWP REPORT
NWS EARLE, COLTS NECK, NEW JERSEY

SAMPLE NUMBER:	FB-030397	FB-032497	FB-040997	FB-052297
LABORATORY ID:	71029003	71294002	71583008	72191003
SDG:	71029	71294	71583	72191
SAMPLING DATE:	3/3/97	3/24/97	4/9/97	5/22/97
SEMIVOLATILES	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00	Dilution Factor 1.00
hexachlorobenzene	10U ug/l	10U ug/l	10Uug/l	10U ug/l
hexachlorobutadiene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
hexachlorocyclopentadiene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
hexachloroethane	10U ug/l	10U ug/l	10U ug/l	10U ug/l
indeno(1,2,3-cd)pyrene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
isophorone	10U ug/l	10U ug/l	10U ug/l	10U ug/l
naphthalene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
nitrobenzene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
phenanthrene	10U ug/l	10U ug/l	10U ug/l	10U ug/l
pyrene	10U ug/l	10U ug/l	10U ug/l	10U ug/l

APPEDENDIX F
ANALYTICAL RESULTS FOR QA/QC SAMPLES - SITES S106B
NWS EARLE, COLTS NECK, NEW JERSEY

NOTES:
J - Value considered estimated due to exceedance of technical quality control criteria or because result is less than the Contract Required Quantitation Limit (CRQL).
U - Value is a non-detected result as reported by the laboratory.
UJ - Non-detected result is considered estimated due to exceedance of technical quality control criteria.
UL - Non-detected result is considered biased low due to exceedance of technical quality control criteria.
L - Positive result is considered biased low due to exceedance of technical quality control criteria.
K - Positive result is considered biased high due to exceedance of technical quality control criteria.
B - Positive result is considered to be an artifact of blank contamination, and should not be considered present.
* - Result is reported from a reanalysis
** - Result is reported from diluted analysis

APPENDIX G

Fate and Transport Model Calculations

BTEX, PRESENT DAY

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence — *Version 1.3*

NWS EARLE
UST Site S106B
Run Name

Data Input Instructions:

115 → 1. Enter value directly... or
or
0.02 → 2. Calculate by filling in grey cells below. (To restore formulas, hit button below).

Variable* → Data used directly in model.
20 → Value calculated by model. (Don't enter any data).

1. HYDROGEOLOGY

Seepage Velocity*	Vs	227.6	(ft/yr)
or		or	
Hydraulic Conductivity	K	2.6E-02	(cm/sec)
Hydraulic Gradient	i	0.0025	(ft/ft)
Porosity	n	0.3	(-)

2. DISPERSION

Longitudinal Dispersivity*	alpha x	7.1	(ft)
Transverse Dispersivity*	alpha y	0.7	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		or	
Estimated Plume Length	Lp	100	(ft)

3. ADSORPTION

Retardation Factor*	R	1.1	(-)
or		or	
Soil Bulk Density	rho	1.86	(kg/l)
Partition Coefficient	Koc	38	(L/kg)
FractionOrganicCarbon	foc	2.54E-04	(-)

4. BIODEGRADATION

1st Order Decay Coeff*	lambda	6.9E+0	(per yr)
or		or	
Solute Half-Life	t-half	0.10	(year)
or Instantaneous Reaction Model			
Delta Oxygen*	DO	7.05	(mg/L)
Delta Nitrate*	NO3	1.2	(mg/L)
Observed Ferrous Iron*	Fe2+	0	(mg/L)
Delta Sulfate*	SO4	4.4	(mg/L)
Observed Methane*	CH4	0.0035	(mg/L)

5. GENERAL

Modeled Area Length*	200	(ft)
Modeled Area Width*	200	(ft)
Simulation Time*	7	(yr)

L, W

6. SOURCE DATA

Source Thickness in Sat Zone* 10 (ft)

Source Zones:

Width* (ft)	Conc. (mg/L)*
10	0.3
20	0.7
10	0.3
0	0

Source Decay (see Help):

SourceHalflife*	1 - 9	(yr)
Soluble Mass	or	
In NAPL, Soil	5	(Kg)

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3

1 2 3 4 5

View of Plume Looking Down

Observed Centerline Concentrations at Monitoring Wells If No Data Leave Blank or Enter "0"

7. FIELD DATA FOR COMPARISON

Dist. from Source (ft)	0	20	40	60	80	100	120	140	160	180	200
Concentration (mg/L)		.28				.0					

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — View Output

RUN ARRAY — View Output

Help

Recalculate This Sheet

Paste Example Dataset

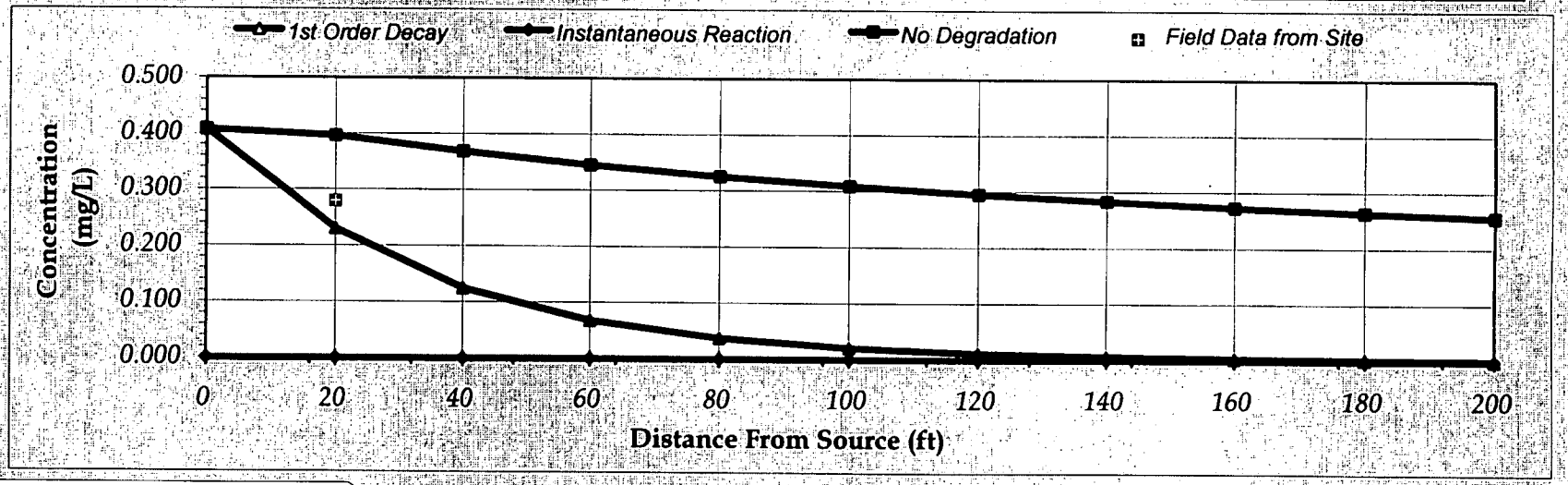
Restore Formulas for Vs, Dispersivities, R, lambda, other

Figure 1. BIOSCREEN Input Screen. UST Site S106B, NWS Earle.

BTEX, PRESENT DAY

DISSOLVED HYDROCARBON CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	20	40	60	80	100	120	140	160	180	200
No Degradation	0.407	0.396	0.369	0.345	0.326	0.309	0.295	0.283	0.273	0.264	0.256
1st Order Decay	0.407	0.231	0.125	0.068	0.037	0.021	0.011	0.006	0.004	0.002	0.001
Inst. Reaction	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site		0.280									



Calculate Animation

Time: 7 Years

Return to Input

Recalculate This Sheet

Figure 2. Centerline Output. UST Site S106B, NWS Earle.

BTEX, PRESENT DAY

BIOSCREEN Natural Attenuation Decision Support System

Air Force Center for Environmental Excellence — *Version 1.3*

NWS EARLE
UST Site S106B
Run Name

Data Input Instructions:

115 → 1. Enter value directly...or
or
0.02 → 2. Calculate by filling in grey cells below. (To restore formulas, hit button below).

Variable* → Data used directly in model.
20 → Value calculated by model. (Don't enter any data).

1. HYDROGEOLOGY

Seepage Velocity*	Vs	227.6	(ft/yr)
or		or	
Hydraulic Conductivity	K	2.6E-02	(cm/sec)
Hydraulic Gradient	i	0.0025	(ft/ft)
Porosity	n	0.3	(-)

2. DISPERSION

Longitudinal Dispersivity*	alpha x	7.1	(ft)
Transverse Dispersivity*	alpha y	0.7	(ft)
Vertical Dispersivity*	alpha z	0.0	(ft)
or		or	
Estimated Plume Length	Lp	100	(ft)

3. ADSORPTION

Retardation Factor*	R	1.1	(-)
or		or	
Soil Bulk Density	rho	1.86	(kg/l)
Partition Coefficient	Koc	38	(L/kg)
FractionOrganicCarbon	foc	2.54E-04	(-)

4. BIODEGRADATION

1st Order Decay Coeff*	lambda	6.9E+0	(per yr)
or		or	
Solute Half-Life	t-half	0.10	(year)
or Instantaneous Reaction Model			
Delta Oxygen*	DO	7.05	(mg/L)
Delta Nitrate*	NO3	1.2	(mg/L)
Observed Ferrous Iron*	Fe2+	0	(mg/L)
Delta Sulfate*	SO4	4.4	(mg/L)
Observed Methane*	CH4	0.0035	(mg/L)

5. GENERAL

Modeled Area Length*	200	(ft)
Modeled Area Width*	200	(ft)
Simulation Time*	7	(yr)

6. SOURCE DATA

Source Thickness in Sat Zone* 10 (ft)

Source Zones:

Width* (ft)	Conc. (mg/L)*
10	0.3
20	0.6
10	0.3
0	0

Source Decay (see Help):

SourceHalflife*	9 - 80	(yr)
Soluble Mass	or	
In NAPL, Soil	40	(Kg)

Vertical Plane Source: Look at Plume Cross-Section and Input Concentrations & Widths for Zones 1, 2, and 3

View of Plume Looking Down

Observed Centerline Concentrations at Monitoring Wells If No Data Leave Blank or Enter "0"

7. FIELD DATA FOR COMPARISON

Concentration (mg/L)		.28				.0					
Dist. from Source (ft)	0	20	40	60	80	100	120	140	160	180	200

8. CHOOSE TYPE OF OUTPUT TO SEE:

RUN CENTERLINE — View Output

RUN ARRAY — View Output

Help

Recalculate This Sheet

Paste Example Dataset

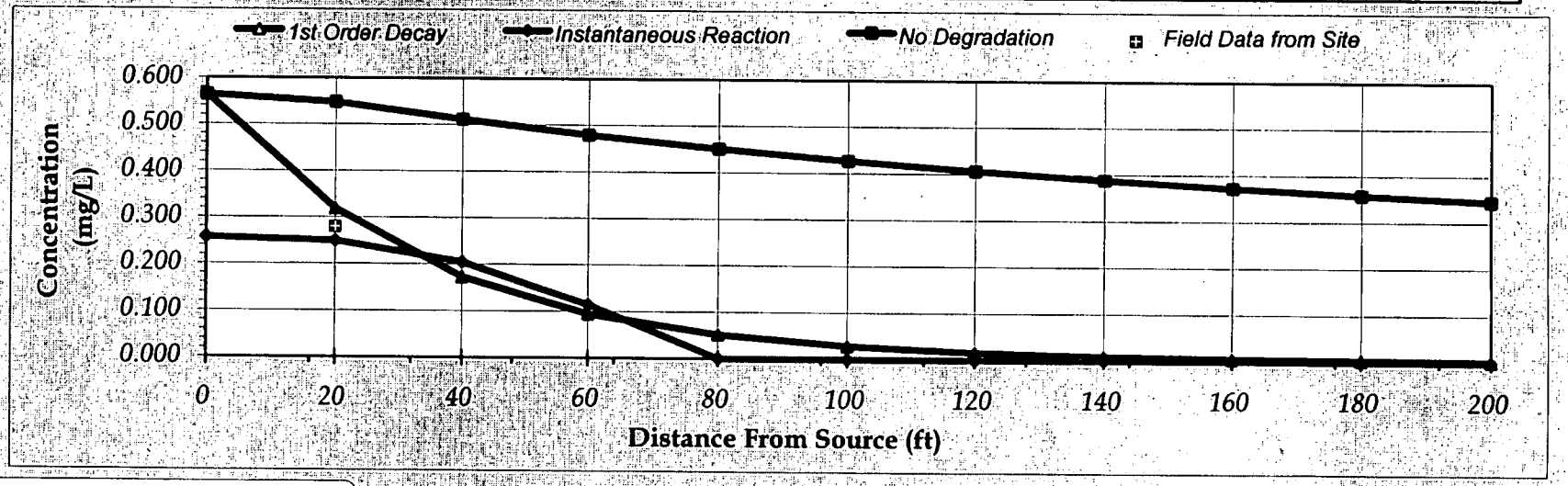
Restore Formulas for Vs, Dispersivities, R, lambda, other

Figure 1. BIOSCREEN Input Screen. UST Site S106B, NWS Earle.

BTEX, PRESENT DAY

DISSOLVED HYDROCARBON CONCENTRATION ALONG PLUME CENTERLINE (mg/L at Z=0)

TYPE OF MODEL	Distance from Source (ft) 0	20	40	60	80	100	120	140	160	180	200
No Degradation	0.565	0.548	0.511	0.479	0.451	0.427	0.407	0.388	0.372	0.358	0.346
1st Order Decay	0.565	0.319	0.173	0.094	0.052	0.028	0.016	0.009	0.005	0.003	0.002
Inst. Reaction	0.257	0.250	0.205	0.114	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Field Data from Site		0.280									



Calculate Animation

Time: 7 Years

Return to Input

Recalculate This Sheet

Figure 2. Centerline Output. UST Site S106B, NWS Earle.

CALCULATION WORKSHEET Order No. 19116 (01-91)

CLIENT CTO 206	JOB NUMBER 5085
SUBJECT GW Model Calcs - S106	
BASED ON	DRAWING NUMBER
BY MES / CHECKED BY [signature] 8/6/97	APPROVED BY / DATE

Section 1

Hydraulic Gradient

MW #	106MW01	106MW02	106MW03	106MW04	106MW05	106MW06
Surveyed Top of Casing	129.42	123.97	124.76	126.24	124.61	122.49
DTW 6/16/97	25.86	20.57	21.37	22.81	21.51	19.44
Water El	103.56 ✓	103.40 ✓	103.39 ✓	103.43 ✓	103.10 ✓	103.05 ✓

- steepest gradients are MW04-05 130ft = 0.0025
  and MW03-06 135ft = 0.0025

Hydraulic Conductivity Avg. from slug testing

Porosity - see porosity estimate - 0.30 ✓

Section 2

Estimated Plume Length - No Calc -
Estimate distance from Tank grave to halfway between MWS 04 & 05

USE - 100 ft.

Section 3

Soil Bulk Density - See bulk density estimate - 1.86 kg/L ✓

Fraction organic carbon - Avg. TOC for uncontaminated soils 254 mg/kg
= 0.000254 kg/kg

Partition Coefficient - From ASTM-E 1739-95 Avg. BTEX = 123 l/kg
Benzene = 38 l/kg

CLIENT CTO 206	JOB NUMBER 5085
SUBJECT GW Model Calcs - S106B	
BASED ON	DRAWING NUMBER
BY MES / CHECKED BY	APPROVED BY / DATE

Section 4

Solute Half-life - worst case, benzene 10day → 2yr. begin @ 2 yr.

Δ Oxygen	Background Avg. =	7.62
	Lowest observed = MW04	0.57
	Δ =	7.05 ✓
Δ Nitrate	Background Avg. =	2.7
	Lowest observed =	1.5
	Δ =	1.2 ✓

Observed Ferrous Iron - Avg. in source area = 0

Δ Sulfate	Background Avg. =	24.4
	Lowest observed	20
	Δ =	4.4 ✓

Observed Methane, Avg. in source Area

106 MW 04 = 0.0035 mg/L

CLIENT CTO 206		JOB NUMBER 5085	
SUBJECT GW Model Calcs - S106B			
BASED ON		DRAWING NUMBER	
BY MES	CHECKED BY	APPROVED BY	DATE

Section 6

Soluble Mass in NAPL, Soil
Source - UST RI Work Plan, CTO-0085, June 1994 pgs 2-39 → 2-41

Sample #16 from subsurface, TPH = 10,596 mg/kg
Benzene ND
Toluene ND
Ethylbenzene = 840 ug/kg
Xylenes, total = 9100 ug/kg

Total BTEX 9.94 mg/Kg use 10 mg/Kg

UST Footprint = 15 x 30
Assume contamination depth of 5 ft

∴ Vol of cont. soil = 15 x 30 x 5 = 2250 ft³

$$2250\ ft^3 \times \frac{28.3\ L}{Kg} \times \frac{1.86\ Kg}{L} \times 10\ mg/Kg \times 10^{-6} = 1.18\ Kg\ BTEX$$

(Bulk Density)

CALCULATION WORKSHEET Order No. 19116 (01-91)

CLIENT NWS - Earle	JOB NUMBER 5085
SUBJECT Site 106 B effective porosity and bulk density	
BASED ON	DRAWING NUMBER
BY T.L. / CHECKED BY A Hawkes 6/11/97	APPROVED BY / DATE

Estimated porosity (n) by evaluation of 6 samples - particle-size Analysis of soil (Estimate based on Fetter 1994)

Soil Sample ID	Soil Type (Laboratory description)	estimated porosity (n)
S106 SB01 - 25.5	m-f Sand, some fines	0.30
S106 SB02 - 22.5	m-f Sand, some fines	0.28
S106 SB03 - 19.5	m-f Sand, some fines	0.28
S106 SB04 - 20.5	m-f Sand, some fines	0.27
S106 SB05 - 21	m-f Sand, some fines, trace gravel	0.33
S106 SB06 - 19	m-f Sand, little ~~sands~~ fines	0.35

6/11/97 JL.

SITE 106 B Average porosity → 0.30

bulk density (ρ_b) of aquifer material is the mass of a soil sample after oven drying divided by original sample volume.

particle density is the oven dryed mass of a soil sample divided by the volume of mineral matter in the sample (volume determined by water displacement test).

bulk density can be computed from the relationship:

$$\rho_b = (1-n)\,\rho_p \quad \text{(Fetter 1994)}$$

$$= (1-0.30)\,2.65 \ \text{Kg/L}$$

$$= 1.86 \ \text{Kg/L} \quad \text{(at site 106 B)}$$

where ρ_b is bulk density

ρ_p is particle density - assumed 2.65 Kg/L for most rock and soil (Fetter 1994)

n is porosity

APPENDIX H

Laboratory Data Sheets

CHAIN OF CUSTODY RECORD

Brown & Root Env.

71029

PROJECT NO.: CTO-206

SITE NAME: NWS-Earle

SAMPLERS (SIGNATURE): Paul M. Dari

	STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	8 oz. VOC +10	8 oz. SVOC +1,5 & PH	4 oz. TOC	8 oz. particle size & % moist	4 x 1 vial VOC	1L amber BN's		REMARKS
01	S106	3/3/97	1340		✓	S106-SB-01-25.5	4	1	1	1	1	–	–	SO	
02	QA-QC	↓	1600		✓	TB-030397	3	–	–	–	–	3	–	WA	Trip Blank
03	QA-QC	↓	1615		✓	FB-030397	5	–	–	–	–	3	2	WA	Field Blank
04	S106	3/4/97	1050		✓	S106-SB-02-22.5	4	1	1	1	1	–	–	SO	
05	566	3/5/97	0855		✓	566-SB-50-23.5	2	–	–	1	1	–	–	SO	
06	566	↓	1100		✓	566-SB-51-4.5	2	–	–	1	1	–	–	SO	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
Paul M. Dari	3/5/97 1530	[illegible]			
[illegible]	3/5/97 2210				
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	
		Hrag Smith	3/5/97 2210		

Order No. 70440 (0693)

000006

VOLATILE ORGANICS ANALYSIS DATA SHEET

TB-030397

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: ____ SAS No.: ____ SDG No.: ____

Matrix: (soil/water) Water Lab Sample ID: 71029002

Sample wt/vol: 5 (g/mL) ml Lab File ID: A1182

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: not dec. ____ Date Analyzed: 03/10/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: ____ (uL) Soil Aliquot Volume: ____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene(total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Total Xylenes	10	U
1634-04-4	Methyl Tertiary Butyl Ether	10	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

TBR SAMPLE NO.
T3-030397

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71029002

Sample wt/vol: 5 (g/mL) ml Lab File ID: 6182

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: not dec. _____ Date Analyzed: 03/10/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
02.				
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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

TB-030397

Lab Name: IEA-NJ Contract: 68D5[illegible]

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71029003

Sample wt/vol: 5 (g/mL) ml Lab File ID: A6133

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: not dec. _____ Date Analyzed: 03/10/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
75-65-0	Tertiary Butyl Alcohol	50	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FB-030397

Lab Name: IEA-NJ Contract: 68D[illegible]

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71029003

Sample wt/vol: 5 (g/mL) ml Lab File ID: A6183

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: not dec. _____ Date Analyzed: 03/10/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene(total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Total Xylenes	10	U
1634-04-4	Methyl Tertiary Butyl Ether	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
000032

TB-030397

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71029002

Sample wt/vol: 5 (g/mL) ml Lab File ID: A6182

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: not dec. _____ Date Analyzed: 03/10/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
75-65-0	Tertiary Butyl Alcohol	50	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FB-030397

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71029003

Sample wt/vol: 5 (g/mL) ml Lab File ID: A0193

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: not dec. _____ Date Analyzed: 03/10/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FB-030397

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71029003

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7627

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 03/07/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 03/19/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
111-44-4	Bis(2-Chloroethyl)Ether	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
621-64-7	N-Nitrosodi-N-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
111-91-1	Bis(2-Chloroethoxy) Methane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-Phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
85-01-8	Phenanthrene	10	U

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
00163

FB-030397

Lab Name: IEA-NJ Contract: 68D[illegible]

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No. _____

Matrix: (soil/water) Water Lab Sample ID: 71029003

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7627

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 03/07/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 03/19/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-N-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-N-Octylphthalate	2	JB
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
50-32-8	Benzo(A)Pyrene	10	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FB-030397

Lab Name: IEA-NJ Contract: 68D[illegible]

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: [illegible]029003

Sample wt/vol: 1000 (g/mL) ml Lab File ID: [illegible]627

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: [illegible]/07/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 03/19/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

Number TICs Found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Unknown	4.22	10	JB
02.	Unknown	4.03	5	J
03.	Unknown Acid	10.23	3	J
04.	Unknown Acid	10.04	2	J
05.				
06.				
07.				
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1A

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

S106-SB-01

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71029001

Sample wt/vol: 5 (g/mL) g Lab File ID: A6186

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: not dec. 20 Date Analyzed: 03/10/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	8	J
67-64-1	Acetone	8	J
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene(total)	12	U
67-66-3	Chloroform	12	U
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	Trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Total Xylenes	12	U
1634-04-4	Methyl Tertiary Butyl Ether	12	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

00028

S106-SB-01

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71029001

Sample wt/vol: 5 (g/mL) g Lab File ID: A[illegible]36

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: not dec. 20 Date Analyzed: 03/10/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg	Q
75-65-0	Tertiary Butyl Alcohol	62	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO. 900029

S106-SB-01

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71029001

Sample wt/vol: 5 (g/mL) g Lab File ID: A6186

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: not dec. 20 Date Analyzed: 03/10/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Unknown Alkene	15.83	7	J
02.	Unknown Hydrocarbon	16.36	4	J
03.	Unknown Hydrocarbon	15.05	4	J
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1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

S106-SB-01

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71029001

Sample wt/vol: 30 (g/mL) g Lab File ID: H7629

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: 20 decanted: (Y/N) N Date Extracted: 03/13/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 03/19/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.06

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
111-44-4	Bis(2-Chloroethyl)Ether	410	U
541-73-1	1,3-Dichlorobenzene	410	U
106-46-7	1,4-Dichlorobenzene	410	U
95-50-1	1,2-Dichlorobenzene	410	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	410	U
621-64-7	N-Nitrosodi-N-Propylamine	410	U
67-72-1	Hexachloroethane	410	U
98-95-3	Nitrobenzene	410	U
78-59-1	Isophorone	410	U
111-91-1	Bis(2-Chloroethoxy) Methane	410	U
120-82-1	1,2,4-Trichlorobenzene	410	U
91-20-3	Naphthalene	410	U
106-47-8	4-Chloroaniline	410	U
87-68-3	Hexachlorobutadiene	410	U
91-57-6	2-Methylnaphthalene	410	U
77-47-4	Hexachlorocyclopentadiene	410	U
91-58-7	2-Chloronaphthalene	410	U
88-74-4	2-Nitroaniline	1000	U
131-11-3	Dimethylphthalate	410	U
208-96-8	Acenaphthylene	410	U
606-20-2	2,6-Dinitrotoluene	410	U
99-09-2	3-Nitroaniline	1000	U
83-32-9	Acenaphthene	410	U
132-64-9	Dibenzofuran	410	U
121-14-2	2,4-Dinitrotoluene	410	U
84-66-2	Diethylphthalate	410	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	410	U
86-73-7	Fluorene	410	U
100-01-6	4-Nitroaniline	1000	U
86-30-6	N-Nitrosodiphenylamine (1)	410	U
101-55-3	4-Bromophenyl-Phenylether	410	U
118-74-1	Hexachlorobenzene	410	U
85-01-8	Phenanthrene	410	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 000152

S106-SB-01

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71029001

Sample wt/vol: 30 (g/mL) g Lab File ID: H7629

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: 20 decanted: (Y/N) N Date Extracted: 03/13/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 03/19/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.06

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg	Q
120-12-7	Anthracene	410	U
86-74-8	Carbazole	410	U
84-74-2	Di-N-Butylphthalate	410	U
206-44-0	Fluoranthene	410	U
129-00-0	Pyrene	410	U
85-68-7	Butylbenzylphthalate	410	U
91-94-1	3,3'-Dichlorobenzidine	410	U
56-55-3	Benzo(A)Anthracene	410	U
218-01-9	Chrysene	410	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	60	JB
117-84-0	Di-N-Octylphthalate	410	U
205-99-2	Benzo(B)Fluoranthene	410	U
207-08-9	Benzo(K)Fluoranthene	410	U
50-32-8	Benzo(A)Pyrene	410	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	410	U
53-70-3	Dibenz(A,H)Anthracene	410	U
191-24-2	Benzo(G,H,I)Perylene	410	U

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

S106-SB-01

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71029001

Sample wt/vol: 30 (g/mL) g Lab File ID: H7629

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: 20 decanted: (Y/N) N Date Extracted: 03/13/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 03/19/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.06

Number TICs Found: 7

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Aldol Condensation Product	4.56	4800	JAB
02.	Unknown Alkene	19.58	140	J
03.	Unknown	6.01	120	JB
04.	Unknown Alkene	4.32	100	J
05.	Unknown Alkane	25.09	96	J
06.	Unknown Alkane	23.83	91	J
07.	Unknown Alkane	26.55	87	J
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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-SB-02

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71029004

Sample wt/vol: 5 (g/mL) g Lab File ID: A6187

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: not dec. 11 Date Analyzed: 03/10/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	7	J
67-64-1	Acetone	11	U
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene(total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	Trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Total Xylenes	11	U
1634-04-4	Methyl Tertiary Butyl Ether	11	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-SB-02

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71029004

Sample wt/vol: 5 (g/mL) g Lab File ID: A6187

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: not dec. 11 Date Analyzed: 03/10/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg	Q
75-65-0	Tertiary Butyl Alcohol	56	U

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

S106-SB-02

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71029004

Sample wt/vol: 5 (g/mL) g Lab File ID: A6187

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: not dec. 11 Date Analyzed: 03/10/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
02.				
03.				
04.				
05.				
06.				
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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-SB-02RE

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71029004RE

Sample wt/vol: 5 (g/mL) g Lab File ID: A6188

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: not dec. 11 Date Analyzed: 03/10/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	5	J
67-64-1	Acetone	11	U
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene(total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	Trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Total Xylenes	11	U
1634-04-4	Methyl Tertiary Butyl Ether	11	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

700053

S106-SB-02RE

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71029004RE

Sample wt/vol: 5 (g/mL) g Lab File ID: A6188

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: not dec. 11 Date Analyzed: 03/10/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg	Q
75-65-0	Tertiary Butyl Alcohol	56	U

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

S106-SB-02RE

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71029004RE

Sample wt/vol: 5 (g/mL) g Lab File ID: A6188

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: not dec. 11 Date Analyzed: 03/10/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
02.				
03.				
04.				
05.				
06.				
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
S106-SB-02

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71029004

Sample wt/vol: 30 (g/mL) g Lab File ID: H7634

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: 11 decanted: (Y/N) N Date Extracted: 03/13/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 03/20/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
111-44-4	Bis(2-Chloroethyl)Ether	370	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
95-50-1	1,2-Dichlorobenzene	370	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	370	U
621-64-7	N-Nitrosodi-N-Propylamine	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
111-91-1	Bis(2-Chloroethoxy) Methane	370	U
120-82-1	1,2,4-Trichlorobenzene	370	U
91-20-3	Naphthalene	370	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
91-57-6	2-Methylnaphthalene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	930	U
131-11-3	Dimethylphthalate	370	U
208-96-8	Acenaphthylene	370	U
606-20-2	2,6-Dinitrotoluene	370	U
99-09-2	3-Nitroaniline	930	U
83-32-9	Acenaphthene	370	U
132-64-9	Dibenzofuran	370	U
121-14-2	2,4-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	370	U
86-73-7	Fluorene	370	U
100-01-6	4-Nitroaniline	930	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-Phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
85-01-8	Phenanthrene	370	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-SB-02

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71089004

Sample wt/vol: 30 (g/mL) g Lab File ID: H7634

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: 11 decanted: (Y/N) N Date Extracted: 03/13/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 03/20/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
120-12-7	Anthracene	370	U
86-74-8	Carbazole	370	U
84-74-2	Di-N-Butylphthalate	370	U
206-44-0	Fluoranthene	370	U
129-00-0	Pyrene	370	U
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(A)Anthracene	370	U
218-01-9	Chrysene	370	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	370	U
117-84-0	Di-N-Octylphthalate	370	U
205-99-2	Benzo(B)Fluoranthene	370	U
207-08-9	Benzo(K)Fluoranthene	370	U
50-32-8	Benzo(A)Pyrene	370	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	370	U
53-70-3	Dibenz(A,H)Anthracene	370	U
191-24-2	Benzo(G,H,I)Perylene	370	U

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

S106-SB-02

Lab Name: IEA-NJ Contract: 68D59011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71029004

Sample wt/vol: 30 (g/mL) g Lab File ID: H7634

Level: (low/med) LOW Date Received: 03/05/97

% Moisture: 11 decanted: (Y/N) N Date Extracted: 03/13/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 03/20/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: _____

Number TICs Found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Aldol Condensation Product	4.64	5400	JAB
02.	Unknown Alkene	19.51	160	J
03.	Unknown	4.00	100	J
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11.				
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30.				

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.: 000240

S106-SB-01-25.5

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0509A SAS No. : _____ SDG No.: A0509

Matrix: (soil/water) SOIL Lab Sample ID: 0509001

% Solids: _____ Date Received: 03/07/97

Concentration Units (mg/L or mg/kg dry weight) : mg/Kg

Analyte	Concentration	C	Q	M
TOCD	232.			

Comments: _____

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

S106-E3-02-22.5

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0509A SAS No. : _____ SDG No.: A0509

Matrix: (soil/water) SOIL Lab Sample ID: 0509002

% Solids: _____ Date Received: 03/07/97

Concentration Units (mg/L or mg/kg dry weight) : mg/Kg

Analyte	Concentration	C	Q	M
TOCD	235.			

Comments: _____

FORM I - WC

PARTICLE-SIZE ANALYSIS OF SOILS

000254

ASTM D 421, D 422, D 1140, D 2216, D 2217

IEA/LAB GEOTECH/NJ
953-6243

SAMPLE #: 71029 (0)

MOISTURE CONTENT (Delivered Moisture)

tare #	79
wt soil&tare,moist (g)	645.51
wt soil&tare,dry (g)	589.59
wt tare (g)	351.46
wt moisture (g)	55.92
wt dry soil (g)	238.13
% moisture	23.48%

% PASSING #10 SIEVE

Total Wt (g)	238.12
Wt Split #10 (g)	238.05
% passing #10	99.97%

	SIEVE	wt ret (g)	% ret	% pass	SIEVE	
coarse gravel	3.000		0.00%	100.00%	3.000	coarse gravel
	1.500		0.00%	100.00%	1.500	
	1.000		0.00%	100.00%	1.000	
fine gravel	0.750		0.00%	100.00%	0.750	fine gravel
	0.375		0.00%	100.00%	0.375	
coarse sand	#4		0.00%	100.00%	#4	coarse sand
medium sand	#10	0.08	0.03%	99.97%	#10	medium sand

SAMPLE PREPARATION FOR HYDROMETER ANALYSIS

% Passing #10 Sieve	99.97	Initial Moist Weight	70.63
Specific Gravity (ASSUMED)	2.65	Calculated Dry Weight	70.47
ml Dispersing Agent Used (40 ml Na(PO4)n per 1000 ml H2O)	125		

MOISTURE CONTENT (Hygroscopic - #10)

tare #	53	tare #	32
wt soil&tare,moist (g)	71.27	wt soil&tare,dry (g)	436.17
wt soil&tare,dry (g)	71.16	wt soil&tare,wash (g)	422.58
wt tare (g)	21.29	wt tare (g)	365.70
wt moisture (g)	0.11	wt fines lost (g)	13.59
wt dry soil (g)	49.87	wt dry soil (g)	70.47
% moisture	0.22%	% fines lost	19.28%

LL:	-
PL:	-
PI:	-

PERCENT BETWEEN #10 AND #200 SIEVE CALCULATION

SIEVE	CUMUL WT RETAINED	CUMUL WT RET. CORR.	PERCENT PASSING	
#10	0.00	0.02	99.97%	#10 medium sand
#20	1.64	1.66	97.64%	#20
#40	21.43	21.45	69.57%	#40 fine sand
#60	50.24	50.26	28.70%	#60
#100	56.43	56.45	19.92%	#100
#200	56.88	56.90	19.28%	#200 fines

DATE	TIME	TIME,CUM (min)	READING R	TEMP T	HYD RDG H	PARTICLE DIAMETER	% FINER
3/18/97	8:25	2.0	13.0	19.0	6.0	0.039	9.93%
	8:27	4.0	13.0	19.0	6.0	0.027	9.93%
	8:31	8.0	13.0	19.0	6.0	0.019	9.93%
	8:38	15.0	13.0	19.0	6.0	0.014	9.93%
	8:53	30.0	12.0	19.0	6.0	0.010	8.51%
	9:23	60.0	12.0	19.0	6.5	0.007	7.80%
	10:23	120.0	12.0	19.0	6.5	0.005	7.80%
	12:23	240.0	11.5	19.5	6.0	0.004	7.80%
	16:23	480.0	10.0	22.0	5.0	0.002	7.09%
3/19/97	8:23	1440.0	9.0	23.0	5.0	0.001	5.67%

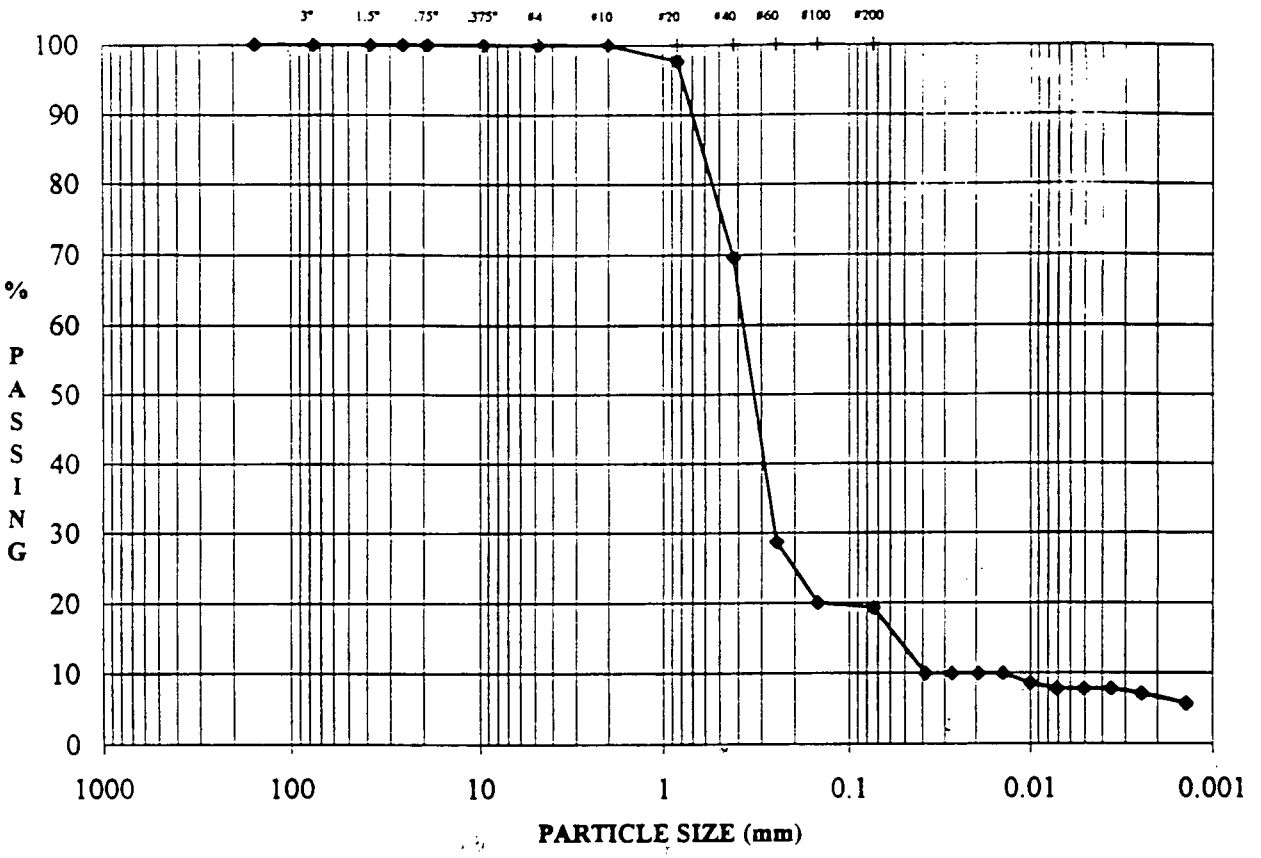
%C GRVL:	0.00%
%F GRVL:	0.00%
%C SAND:	0.03%
%M SAND:	30.40%
%F SAND:	50.28%
%FINES:	19.28%
%TOTAL:	100.00%

Wet Color: Olive
Description: m-f SAND, some fines

DATE	3/19/97
TECH	RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

PARTICLE-SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



COBBLES	Coarse	Fine	Cor	Med	Fine	Silt or Clay Size
	GRAVEL		SAND			FINES

SAMPLE #:	71029 001
WET COLOR:	Olive
DESCRIPTION:	m-f SAND, some fines

Mc:	23.48%
LL:	-
PL:	-
PI :	-
Gs:	-

IEA/LAB GEOTECH/NJ
953-6243

DATE	3/19/97
TECH	RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 421, D 422, D 1140, D 2216, D 2217

IEA/LAB GEOTECH/NJ
953-6243

SAMPLE #: 31629 004

MOISTURE CONTENT (Delivered Moisture)

tare #	20
wt soil&tare,moist (g)	645.55
wt soil&tare,dry (g)	616.20
wt tare (g)	344.75
wt moisture (g)	29.35
wt dry soil (g)	271.45
% moisture	10.81%

% PASSING #10 SIEVE

Total Wt (g)	271.45
Wt Split #10 (g)	270.17
% passing #10	99.53%

	SIEVE	wt ret (g)	% ret	% pass	SIEVE	
coarse gravel	3.000		0.00%	100.00%	3.000	coarse gravel
	1.500		0.00%	100.00%	1.500	
	1.000		0.00%	100.00%	1.000	
fine gravel	0.750		0.00%	100.00%	0.750	fine gravel
	0.375		0.00%	100.00%	0.375	
coarse sand	#4	0.93	0.34%	99.66%	#4	coarse sand
medium sand	#10	1.28	0.47%	99.53%	#10	medium sand

SAMPLE PREPARATION FOR HYDROMETER ANALYSIS

% Passing #10 Sieve	99.53	Initial Moist Weight	73.6
Specific Gravity (ASSUMED)	2.65	Calculated Dry Weight	73.47
ml Dispersing Agent Used (40 ml Na(PO4)n per 1000 ml H2O)	125		

MOISTURE CONTENT (Hygroscopic - #10)

tare #	13B	tare #	28		
wt soil&tare,moist (g)	48.10	wt soil&tare,dry (g)	405.99	LL:	-
wt soil&tare,dry (g)	48.05	wt soil&tare,wash (g)	385.26	PL:	-
wt tare (g)	19.71	wt tare (g)	332.52	PI:	-
wt moisture (g)	0.05	wt fines lost (g)	20.73		
wt dry soil (g)	28.34	wt dry soil (g)	73.47		
% moisture	0.18%	% fines lost	28.22%		

PERCENT BETWEEN #10 AND #200 SIEVE CALCULATION

SIEVE	CUMUL WT RETAINED	CUMUL WT RET. CORR.	PERCENT PASSING		
#10	0.00	0.35	99.53%	#10	medium sand
#20	2.03	2.38	96.78%	#20	
#40	17.87	18.22	75.32%	#40	fine sand
#60	46.00	46.35	37.21%	#60	
#100	52.54	52.89	28.35%	#100	
#200	52.74	53.09	28.08%	#200	fines

DATE	TIME	TIME,CUM (min)	READING R	TEMP T	HYD RDG H	PARTICLE DIAMETER	% FINER
3/18/97	8:27	2.0	16.5	19.0	6.0	0.038	14.22%
	8:29	4.0	16.0	19.0	6.0	0.027	13.55%
	8:33	8.0	16.0	19.0	6.0	0.019	13.55%
	8:40	15.0	15.5	19.0	6.0	0.014	12.87%
	8:55	30.0	15.0	19.0	6.0	0.010	12.19%
	9:25	60.0	14.5	19.0	6.5	0.007	10.84%
	10:25	120.0	14.5	19.0	6.5	0.005	10.84%
	12:25	240.0	14.5	19.5	6.5	0.004	10.84%
	16:25	480.0	13.0	22.0	5.0	0.002	10.84%
3/19/97	8:25	1440.0	11.5	23.0	5.0	0.001	8.81%

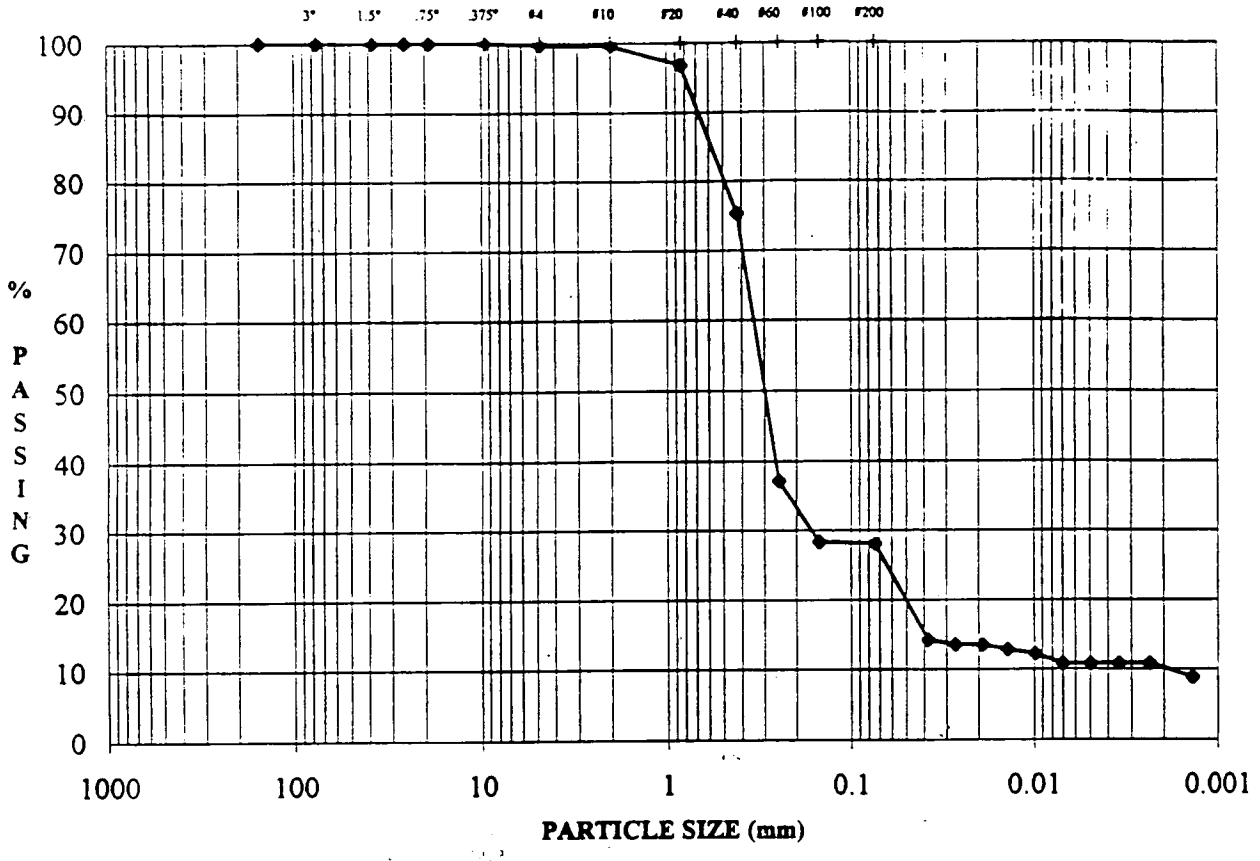
%C GRVL:	0.00%
%F GRVL:	0.34%
%C SAND:	0.13%
%M SAND:	24.21%
%F SAND:	47.24%
%FINES:	28.08%
%TOTAL:	100.00%

Wet Color: Light olive gray
Description: m-f SAND, some fines, trace gravel

DATE	3/19/97
TECH	RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

PARTICLE-SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



COBBLES	Coarse	Fine	Cor	Med	Fine	Silt or Clay Size
	GRAVEL		SAND			FINES

SAMPLE #:	71029 004
WET COLOR:	Light olive gray
DESCRIPTION:	m-f SAND, some fines, trace gravel

Mc:	10.81%
LL:	-
PL:	-
PI :	-
Gs:	-

IEA/LAB GEOTECH/NJ
953-6243

DATE	3/19/97
TECH	RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 421, D 422, D 1140, D 2216, D 2217

IEA/LAB GEOTECH/NJ
953-6243

SAMPLE #: 71029 005

MOISTURE CONTENT (Delivered Moisture)

tare #	1
wt soil&tare,moist (g)	617.77
wt soil&tare,dry (g)	585.67
wt tare (g)	339.05
wt moisture (g)	32.10
wt dry soil (g)	246.62
% moisture	13.02%

% PASSING #10 SIEVE

Total Wt (g)	246.62
Wt Split #10 (g)	246.54
% passing #10	99.97%

	SIEVE	wt ret (g)	% ret	% pass	SIEVE	
coarse gravel	3.000		0.00%	100.00%	3.000	coarse gravel
	1.500		0.00%	100.00%	1.500	
	1.000		0.00%	100.00%	1.000	
fine gravel	0.750		0.00%	100.00%	0.750	fine gravel
	0.375		0.00%	100.00%	0.375	
coarse sand	#4		0.00%	100.00%	#4	coarse sand
medium sand	#10	0.08	0.03%	99.97%	#10	medium sand

SAMPLE PREPARATION FOR HYDROMETER ANALYSIS

% Passing #10 Sieve	99.97	Initial Moist Weight	67.55
Specific Gravity (ASSUMED)	2.65	Calculated Dry Weight	67.45
ml Dispersing Agent Used (40 ml Na(PO4)n per 1000 ml H2O)	125		

MOISTURE CONTENT (Hygroscopic - #10)

tare #	45	tare #	21		
wt soil&tare,moist (g)	54.54	wt soil&tare,dry (g)	419.47	LL:	-
wt soil&tare,dry (g)	54.49	wt soil&tare,wash (g)	353.60	PL:	-
wt tare (g)	21.03	wt tare (g)	352.02	PI:	-
wt moisture (g)	0.05	wt fines lost (g)	65.87		
wt dry soil (g)	33.46	wt dry soil (g)	67.45		
% moisture	0.15%	% fines lost	97.66%		

PERCENT BETWEEN #10 AND #200 SIEVE CALCULATION

SIEVE	CUMUL WT RETAINED	CUMUL WT RET. CORR.	PERCENT PASSING	
#10	0.00	0.02	99.97%	#10 medium sand
#20	0.78	0.80	98.81%	#20
#40	1.15	1.17	98.26%	#40 fine sand
#60	1.34	1.36	97.98%	#60
#100	1.34	1.36	97.98%	#100
#200	1.58	1.60	97.63%	#200 fines

DATE	TIME	TIME,CUM (min)	READING R	TEMP T	HYD RDG H	PARTICLE DIAMETER	% FINER
3/18/97	8:29	2.0	14.5	19.0	6.0	0.038	12.60%
	8:31	4.0	14.0	19.0	6.0	0.027	11.86%
	8:35	8.0	13.0	19.0	6.0	0.019	10.37%
	8:42	15.0	13.0	19.0	6.0	0.014	10.37%
	8:57	30.0	11.0	19.0	6.0	0.010	7.41%
	9:27	60.0	11.0	19.0	6.5	0.007	6.67%
	10:27	120.0	10.0	19.0	6.5	0.005	5.19%
	12:27	240.0	9.5	19.5	6.0	0.004	5.19%
	16:27	480.0	8.0	22.0	5.0	0.002	4.45%
3/19/97	8:27	1440.0	7.0	23.0	5.0	0.001	2.96%

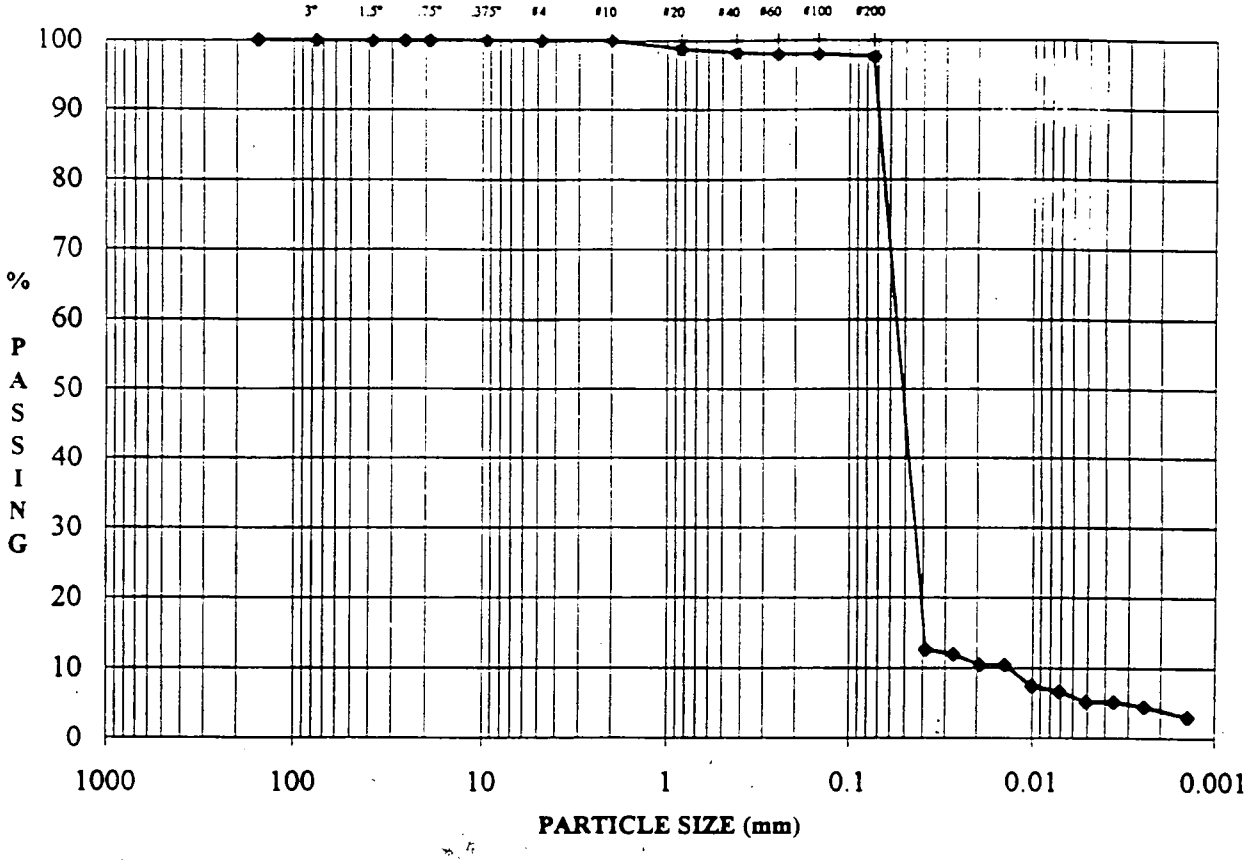
%C GRVL:	0.00%
%F GRVL:	0.00%
%C SAND:	0.03%
%M SAND:	1.70%
%F SAND:	0.64%
%FINES:	97.63%
%TOTAL:	100.00%

Wet Color: Gray
Description: FINES, trace sand

DATE	3/19/97
TECH	RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

PARTICLE-SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



COBBLES	Coarse	Fine	Cor	Med	Fine	Silt or Clay Size
	GRAVEL		SAND			FINES

SAMPLE #:	71029 005
WET COLOR:	Gray
DESCRIPTION:	FINES, trace sand

Mc:	13.02%
LL:	-
PL:	-
PI :	-
Gs:	-

IEA/LAB GEOTECH/NJ
953-6243

DATE	3/19/97
TECH	RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

PARTICLE-SIZE ANALYSIS OF SOILS

000260

ASTM D 421, D 422, D 1140, D 2216, D 2217

IEA/LAB GEOTECH/NJ
953-6243

SAMPLE #: 71029 006

MOISTURE CONTENT (Delivered Moisture)

tare #	27
wt soil&tare,moist (g)	673.22
wt soil&tare,dry (g)	628.84
wt tare (g)	337.06
wt moisture (g)	44.38
wt dry soil (g)	291.78
% moisture	15.21%

% PASSING #10 SIEVE

Total Wt (g)	291.78
Wt Split #10 (g)	280.59
% passing #10	96.16%

	SIEVE	wt ret (g)	% ret	% pass	SIEVE	
coarse gravel	3.000		0.00%	100.00%	3.000	coarse gravel
	1.500		0.00%	100.00%	1.500	
	1.000		0.00%	100.00%	1.000	
fine gravel	0.750		0.00%	100.00%	0.750	fine gravel
	0.375		0.00%	100.00%	0.375	
coarse sand	#4	3.82	1.31%	98.69%	#4	coarse sand
medium sand	#10	11.19	3.84%	96.16%	#10	medium sand

SAMPLE PREPARATION FOR HYDROMETER ANALYSIS

% Passing #10 Sieve	96.16	Initial Moist Weight	75.67
Specific Gravity (ASSUMED)	2.65	Calculated Dry Weight	75.62
ml Dispersing Agent Used (40 ml Na(PO4)n per 1000 ml H2O)	125		

MOISTURE CONTENT (Hygroscopic - #10)

tare #	105	tare #	88	LL:	-
wt soil&tare,moist (g)	50.55	wt soil&tare,dry (g)	400.69	PL:	-
wt soil&tare,dry (g)	50.53	wt soil&tare,wash (g)	360.75	PI:	-
wt tare (g)	21.17	wt tare (g)	325.07		
wt moisture (g)	0.02	wt fines lost (g)	39.94		
wt dry soil (g)	29.36	wt dry soil (g)	75.62		
% moisture	0.07%	% fines lost	52.82%		

PERCENT BETWEEN #10 AND #200 SIEVE CALCULATION

SIEVE	CUMUL WT RETAINED	CUMUL WT RET. CORR.	PERCENT PASSING	
#10	0.00	3.02	96.16%	#10 medium sand
#20	2.63	5.65	92.82%	#20
#40	9.75	12.77	83.77%	#40 fine sand
#60	19.42	22.44	71.47%	#60
#100	26.48	29.50	62.49%	#100
#200	35.68	38.70	50.79%	#200 fines

DATE	TIME	TIME,CUM (min)	READING R	TEMP T	HYD RDG H	PARTICLE DIAMETER	% FINER
3/18/97	8:48	2.0	16.0	19.0	6.0	0.038	12.72%
	8:50	4.0	16.0	19.0	6.0	0.027	12.72%
	8:54	8.0	14.5	19.0	6.0	0.019	10.81%
	9:01	15.0	14.5	19.0	6.0	0.014	10.81%
	9:16	30.0	10.0	19.0	6.0	0.010	5.09%
	9:46	60.0	10.0	19.0	6.5	0.007	4.45%
	10:46	120.0	10.0	19.0	6.5	0.005	4.45%
	12:46	240.0	9.5	19.5	6.0	0.004	4.45%
	16:46	480.0	8.0	22.0	5.0	0.002	3.82%
3/19/97	8:46	1440.0	6.5	23.0	5.0	0.001	1.91%

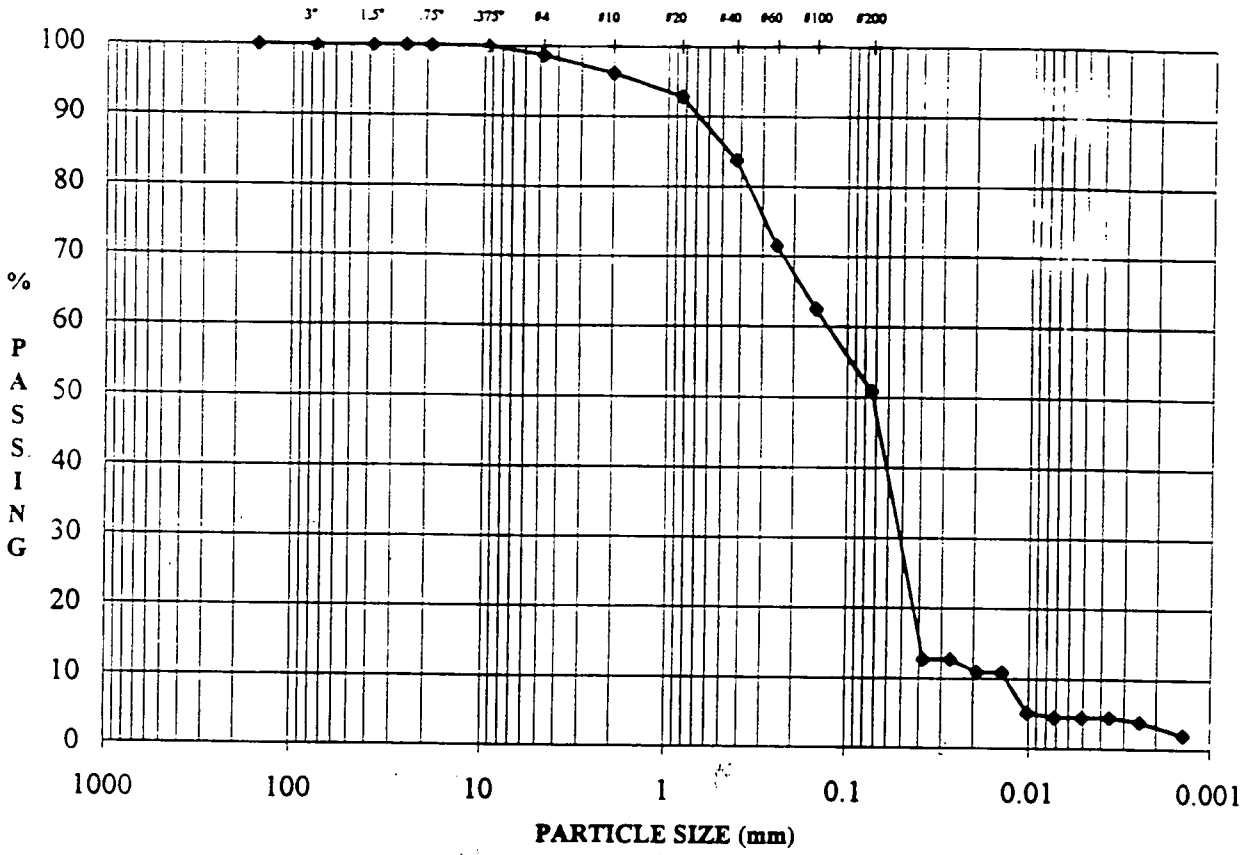
%C GRVL:	0.00%
%F GRVL:	1.31%
%C SAND:	2.53%
%M SAND:	12.40%
%F SAND:	32.98%
%FINES:	50.79%
%TOTAL:	100.00%

Wet Color: Dark grayish brown
Description: FINES and m-f SAND, trace gravel

DATE	3/19/97
TECH	RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

PARTICLE-SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



COBBLES	Coarse	Fine	Cor	Med	Fine	Silt or Clay Size
	GRAVEL		SAND			FINES

SAMPLE #:	71029 006
WET COLOR:	Dark grayish brown
DESCRIPTION:	FINES and m-f SAND, trace gravel

Mc:	15.21%
LL:	-
PL:	-
PI :	-
Gs:	-

IEA/LAB GEOTECH/NJ
953-6243

DATE	3/19/97
TECH	RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

CHAIN OF CUSTODY RECORD

Brown & Root Env.

#71294

PROJECT NO.: CTO-206

SITE NAME: NWS-Earle

SAMPLERS (SIGNATURE): Paul M. Dunn

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	40 ml. vial TCL VOC	4 oz. amber VOC+10	8 oz amb. SVOC+15	4 oz pH	8 oz TOC	8 oz moist. cont. particle size	1L amber SVOC+15	REMARKS
~~QA/QC~~	~~3/24/97~~	~~1230~~		~~✓~~	~~FB~~ PMD 3/24/97									
S106	↓	1230		✓	S106-SB-03-19.5	4	–	1	1	1	1	–	001	
QA/QC	↓	1300		✓	FB-032497	5	3	–	–	–	–	2	002	Field Blank
S106	3/25/97	1000		✓	S106-SB-04-20.5	4	–	1	1	1	1	–	003	
QA/QC	↓	0000		✓	Dup-03	4	–	1	1	1	1	–	004	

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
Paul M. Dunn	3/25/97 1840				
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:	
		S CHARTERS	3/26/97 0950		

Order No. 70440 (0693)

000008

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

000026

S106-SB-03

Lab Name: IEA-NJ

Job No. : 71294

Matrix: (soil/water) Soil

Lab Sample ID: 71294001

Sample wt/vol: 5 (g/mL) g

Lab File ID: >EL953

Level: (low/med) LOW

Date Received: 03/26/97

% Moisture: not dec. 11

Date Analyzed: 04/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	11	U
67-64-1	Acetone	11	U
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene(total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	Trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Total Xylenes	11	U
1634-04-4	Methyl Tertiary Butyl Ether	11	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

S106-SB-03

Lab Name: IEA-NJ

Job No. : 71294

Matrix: (soil/water) Soil

Lab Sample ID: 71294001

Sample wt/vol: 5 (g/mL) g

Lab File ID: >EL953

Level: (low/med) LOW

Date Received: 03/26/97

% Moisture: not dec. 11

Date Analyzed: 04/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg	Q
75-65-0	Tertiary Butyl Alcohol	56	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

S106-SB-03

Lab Name: IEA-NJ

Job No. : 71294

Matrix: (soil/water) Soil

Lab Sample ID: 71294001

Sample wt/vol: 5 (g/mL) g

Lab File ID: >EL953

Level: (low/med) LOW

Date Received: 03/26/97

% Moisture: not dec. 11

Date Analyzed: 04/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: ____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
02.				
03.				
04.				
05.				
06.				
07.				
08.				
09.				
10.				
11.				
12.				
13.				
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1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

S106-SB-03

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71294001

Sample wt/vol: 30 (g/mL) g Lab File ID: H7760

Level: (low/med) LOW Date Received: 03/26/97

% Moisture: 11 decanted: (Y/N) N Date Extracted: 04/02/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 04/03/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.36

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
111-44-4	Bis(2-Chloroethyl)Ether	370	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
95-50-1	1,2-Dichlorobenzene	370	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	370	U
621-64-7	N-Nitrosodi-N-Propylamine	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
111-91-1	Bis(2-Chloroethoxy) Methane	370	U
120-82-1	1,2,4-Trichlorobenzene	370	U
91-20-3	Naphthalene	370	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
91-57-6	2-Methylnaphthalene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	930	U
131-11-3	Dimethylphthalate	370	U
208-96-8	Acenaphthylene	370	U
606-20-2	2,6-Dinitrotoluene	370	U
99-09-2	3-Nitroaniline	930	U
83-32-9	Acenaphthene	370	U
132-64-9	Dibenzofuran	370	U
121-14-2	2,4-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	370	U
86-73-7	Fluorene	370	U
100-01-6	4-Nitroaniline	930	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-Phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
85-01-8	Phenanthrene	370	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-SB-03

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71294001

Sample wt/vol: 30 (g/mL) g Lab File ID: H7760

Level: (low/med) LOW Date Received: 03/26/97

% Moisture: 11 decanted: (Y/N) N Date Extracted: 04/02/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 04/03/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.36

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg	Q
120-12-7	Anthracene	370	U
86-74-8	Carbazole	370	U
84-74-2	Di-N-Butylphthalate	370	U
206-44-0	Fluoranthene	370	U
129-00-0	Pyrene	370	U
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(A)Anthracene	370	U
218-01-9	Chrysene	370	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	49	JB
117-84-0	Di-N-Octylphthalate	370	U
205-99-2	Benzo(B)Fluoranthene	370	U
207-08-9	Benzo(K)Fluoranthene	370	U
50-32-8	Benzo(A)Pyrene	370	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	370	U
53-70-3	Dibenz(A,H)Anthracene	370	U
191-24-2	Benzo(G,H,I)Perylene	370	U

1F

EPA SAMPLE NO.

S106-SB-03

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71294001

Sample wt/vol: 30 (g/mL) g Lab File ID: H7760

Level: (low/med) LOW Date Received: 03/26/97

% Moisture: 11 decanted: (Y/N) N Date Extracted: 04/02/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 04/03/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.36

Number TICs Found: 10

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Aldol Condensation Product	4.67	2300	JA
02.	Unknown Acid	4.47	1200	JB
03.	Unknown	4.07	990	JB
04.	Unknown Acid	9.94	800	JB
05.	Unknown Alcohol	8.08	350	JB
06.	Unknown Alkane	24.86	170	J
07.	Unknown	6.33	140	JB
08.	Unknown	4.30	140	JB
09.	Unknown Alkane	22.59	130	J
10.	Unknown	4.36	120	JB
11.				
12.				
13.				
14.				
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30.				

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

FB-032497

Lab Name: IEA-NJ

Job No. : 71294

Matrix: (soil/water) Water

Lab Sample ID: 71294002

Sample wt/vol: 5 (g/mL) ml

Lab File ID: >EL935

Level: (low/med) LOW

Date Received: 03/26/97

% Moisture: not dec. _____

Date Analyzed: 04/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: ____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene(total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Total Xylenes	10	U
1634-04-4	Methyl Tertiary Butyl Ether	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

000032

FB-032497

Lab Name: IEA-NJ

Job No. : 71294

Matrix: (soil/water) Water

Lab Sample ID: 71294002

Sample wt/vol: 5 (g/mL) ml

Lab File ID: >EL935

Level: (low/med) LOW

Date Received: 03/26/97

% Moisture: not dec. _____

Date Analyzed: 04/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
75-65-0	Tertiary Butyl Alcohol	50	U

FORM I VOA

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FB-032497

Lab Name: IEA-NJ

Job No. : 71294

Matrix: (soil/water) Water

Lab Sample ID: 71294002

Sample wt/vol: 5 (g/mL) ml

Lab File ID: >EL935

Level: (low/med) LOW

Date Received: 03/26/97

% Moisture: not dec. _____

Date Analyzed: 04/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
02.				
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FB-032497

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71294002

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7746

Level: (low/med) LOW Date Received: 03/26/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 03/31/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/01/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: _____

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
111-44-4	Bis(2-Chloroethyl)Ether	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
621-64-7	N-Nitrosodi-N-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
111-91-1	Bis(2-Chloroethoxy) Methane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-Phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
85-01-8	Phenanthrene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FB-032497

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71294002

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7746

Level: (low/med) LOW Date Received: 03/26/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 03/31/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/01/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-N-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-N-Octylphthalate	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
50-32-8	Benzo(A)Pyrene	10	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1F

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FB-032497

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71294002

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7746

Level: (low/med) LOW Date Received: 03/26/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 03/31/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/01/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

Number TICs Found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
02.				
03.				
04.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

000035A

S106-SB-04

Lab Name: IEA-NJ

Job No. : 71294

Matrix: (soil/water) Soil

Lab Sample ID: 71294003

Sample wt/vol: 5 (g/mL) g

Lab File ID: >EL954

Level: (low/med) LOW

Date Received: 03/26/97

% Moisture: not dec. 11

Date Analyzed: 04/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: ____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	1	JB
67-64-1	Acetone	11	U
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene(total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	Trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Total Xylenes	11	U
1634-04-4	Methyl Tertiary Butyl Ether	11	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

S106-SB-04

Lab Name: IEA-NJ

Job No. : 71294

Matrix: (soil/water) Soil

Lab Sample ID: 71294003

Sample wt/vol: 5 (g/mL) g

Lab File ID: >EL954

Level: (low/med) LOW

Date Received: 03/26/97

% Moisture: not dec. 11

Date Analyzed: 04/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg	Q
75-65-0	Tertiary Butyl Alcohol	56	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

000037

S106-SB-04

Lab Name: IEA-NJ

Job No. : 71294

Matrix: (soil/water) Soil

Lab Sample ID: 71294003

Sample wt/vol: 5 (g/mL) g

Lab File ID: >EL954

Level: (low/med) LOW

Date Received: 03/26/97

% Moisture: not dec. 11

Date Analyzed: 04/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
02.				
03.				
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-SB-04

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71294003

Sample wt/vol: 30 (g/mL) g Lab File ID: H7761

Level: (low/med) LOW Date Received: 03/26/97

% Moisture: 11 decanted: (Y/N) N Date Extracted: 04/02/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 04/03/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.07

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
111-44-4	Bis(2-Chloroethyl)Ether	370	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
95-50-1	1,2-Dichlorobenzene	370	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	370	U
621-64-7	N-Nitrosodi-N-Propylamine	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
111-91-1	Bis(2-Chloroethoxy) Methane	370	U
120-82-1	1,2,4-Trichlorobenzene	370	U
91-20-3	Naphthalene	370	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
91-57-6	2-Methylnaphthalene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	930	U
131-11-3	Dimethylphthalate	370	U
208-96-8	Acenaphthylene	370	U
606-20-2	2,6-Dinitrotoluene	370	U
99-09-2	3-Nitroaniline	930	U
83-32-9	Acenaphthene	370	U
132-64-9	Dibenzofuran	370	U
121-14-2	2,4-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	370	U
86-73-7	Fluorene	370	U
100-01-6	4-Nitroaniline	930	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-Phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
85-01-8	Phenanthrene	370	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-SB-04

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71294003

Sample wt/vol: 30 (g/mL) g Lab File ID: H7761

Level: (low/med) LOW Date Received: 03/26/97

% Moisture: 11 decanted: (Y/N) N Date Extracted: 04/02/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 04/03/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.07

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg	Q
120-12-7	Anthracene	370	U
86-74-8	Carbazole	370	U
84-74-2	Di-N-Butylphthalate	370	U
206-44-0	Fluoranthene	370	U
129-00-0	Pyrene	370	U
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(A)Anthracene	370	U
218-01-9	Chrysene	370	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	370	U
117-84-0	Di-N-Octylphthalate	370	U
205-99-2	Benzo(B)Fluoranthene	370	U
207-08-9	Benzo(K)Fluoranthene	370	U
50-32-8	Benzo(A)Pyrene	370	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	370	U
53-70-3	Dibenz(A,H)Anthracene	370	U
191-24-2	Benzo(G,H,I)Perylene	370	U

1F

EPA SAMPLE NO. 000142

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

S106-SB-04

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71294003

Sample wt/vol: 30 (g/mL) g Lab File ID: H7761

Level: (low/med) LOW Date Received: 03/26/97

% Moisture: 11 decanted: (Y/N) N Date Extracted: 04/02/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 04/03/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.07

Number TICs Found: 10

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Aldol Condensation Product	4.66	1500	JA
02.	Unknown Acid	10.13	700	JB
03.	Unknown Acid	9.94	430	JB
04.	Unknown PAH	17.11	380	J
05.	Unknown	26.78	230	J
06.	Unknown Alcohol	8.08	200	JB
07.	Unknown	4.41	180	JB
08.	Unknown Alkane	26.29	170	J
09.	Unknown Alkane	24.86	170	J
10.	Unknown Alkane	23.64	160	J
11.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

000041

DUP-03

Lab Name: IEA-NJ

Job No. : 71294

Matrix: (soil/water) Soil

Lab Sample ID: 71294004

Sample wt/vol: 5 (g/mL) g

Lab File ID: >EL955

Level: (low/med) LOW

Date Received: 03/26/97

% Moisture: not dec. 10

Date Analyzed: 04/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	11	U
67-64-1	Acetone	11	U
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene(total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	Trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Total Xylenes	11	U
1634-04-4	Methyl Tertiary Butyl Ether	11	U

FORM I VOA

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

DUP-03

Lab Name: IEA-NJ

Job No. : 71294

Matrix: (soil/water) Soil

Lab Sample ID: 71294004

Sample wt/vol: 5 (g/mL) g

Lab File ID: >EL955

Level: (low/med) LOW

Date Received: 03/26/97

% Moisture: not dec. 10

Date Analyzed: 04/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg	Q
75-65-0	Tertiary Butyl Alcohol	56	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

DUP-03

Lab Name: IEA-NJ

Job No. : 71294

Matrix: (soil/water) Soil

Lab Sample ID: 71294004

Sample wt/vol: 5 (g/mL) g

Lab File ID: >EL955

Level: (low/med) LOW

Date Received: 03/26/97

% Moisture: not dec. 10

Date Analyzed: 04/04/97

GC Column: DB-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
02.				
03.				
04.				
05.				
06.				
07.				
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1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

DUP-03

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71294004

Sample wt/vol: 30 (g/mL) g Lab File ID: H7764

Level: (low/med) LOW Date Received: 03/26/97

% Moisture: 10 decanted: (Y/N) N Date Extracted: 04/02/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 04/03/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.13

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
111-44-4	Bis(2-Chloroethyl)Ether	370	U
541-73-1	1,3-Dichlorobenzene	370	U
106-46-7	1,4-Dichlorobenzene	370	U
95-50-1	1,2-Dichlorobenzene	370	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	370	U
621-64-7	N-Nitrosodi-N-Propylamine	370	U
67-72-1	Hexachloroethane	370	U
98-95-3	Nitrobenzene	370	U
78-59-1	Isophorone	370	U
111-91-1	Bis(2-Chloroethoxy) Methane	370	U
120-82-1	1,2,4-Trichlorobenzene	370	U
91-20-3	Naphthalene	370	U
106-47-8	4-Chloroaniline	370	U
87-68-3	Hexachlorobutadiene	370	U
91-57-6	2-Methylnaphthalene	370	U
77-47-4	Hexachlorocyclopentadiene	370	U
91-58-7	2-Chloronaphthalene	370	U
88-74-4	2-Nitroaniline	920	U
131-11-3	Dimethylphthalate	370	U
208-96-8	Acenaphthylene	370	U
606-20-2	2,6-Dinitrotoluene	370	U
99-09-2	3-Nitroaniline	920	U
83-32-9	Acenaphthene	370	U
132-64-9	Dibenzofuran	370	U
121-14-2	2,4-Dinitrotoluene	370	U
84-66-2	Diethylphthalate	370	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	370	U
86-73-7	Fluorene	370	U
100-01-6	4-Nitroaniline	920	U
86-30-6	N-Nitrosodiphenylamine (1)	370	U
101-55-3	4-Bromophenyl-Phenylether	370	U
118-74-1	Hexachlorobenzene	370	U
85-01-8	Phenanthrene	370	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP-03

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71294004

Sample wt/vol: 30 (g/mL) g Lab File ID: H7764

Level: (low/med) LOW Date Received: 03/26/97

% Moisture: 10 decanted: (Y/N) N Date Extracted: 04/02/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 04/03/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.13

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg	Q
120-12-7	Anthracene	370	U
86-74-8	Carbazole	370	U
84-74-2	Di-N-Butylphthalate	370	U
206-44-0	Fluoranthene	370	U
129-00-0	Pyrene	370	U
85-68-7	Butylbenzylphthalate	370	U
91-94-1	3,3'-Dichlorobenzidine	370	U
56-55-3	Benzo(A)Anthracene	370	U
218-01-9	Chrysene	370	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	370	U
117-84-0	Di-N-Octylphthalate	370	U
205-99-2	Benzo(B)Fluoranthene	370	U
207-08-9	Benzo(K)Fluoranthene	370	U
50-32-8	Benzo(A)Pyrene	370	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	370	U
53-70-3	Dibenz(A,H)Anthracene	370	U
191-24-2	Benzo(G,H,I)Perylene	370	U

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

DUP-03

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 71294004

Sample wt/vol: 30 (g/mL) g Lab File ID: H7764

Level: (low/med) LOW Date Received: 03/26/97

% Moisture: 10 decanted: (Y/N) N Date Extracted: 04/02/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 04/03/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.13

Number TICs Found: 10

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Aldol Condensation Product	4.66	1300	JA
02.	Unknown Acid	10.13	1000	JB
03.	Unknown Acid	9.93	610	JB
04.	Unknown	26.76	240	J
05.	Unknown Alcohol	8.07	240	J
06.	Unknown	4.41	180	JB
07.	Unknown Alcohol	4.05	160	JB
08.	Unknown	4.46	150	JB
09.	Unknown Acid	5.99	110	J
10.	Unknown Alkane	24.85	80	J
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IEA NEW JERSEY
PERCENT SOLIDS and PH RESULTS

CLIENT: Brown & Root Environmental

JOB NO: 20970-71294

LAB I.D.	CLIENT I.D.	MX	PERCENT SOLIDS	PH
71294001	S106-SB-03	SO	88.95	5.36
71294001DUP	S106-SB-03	SO	89.05	5.37
71294002	FB-032497	WA		
71294003	S106-SB-04	SO	88.86	5.07
71294004	DUP-03	SO	89.76	5.13

SAMPLE NO. 000244

WET CHEM ANALYSIS DATA SHEET

S106-SB-03-19.5

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0677A SAS No. : _____ SDG No.: A0677

Matrix: (soil/water) SOIL Lab Sample ID: 0677001

% Solids: _____ Date Received: 03/27/97

Concentration Units (mg/L or mg/kg dry weight) : mg/Kg

Analyte	Concentration	C	Q	M
TOCD	284.			

Comments: _____

FORM I - WC

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.: 000245

S106-SB-04-20.5

Lab Name: IEA

Contract: _____

Lab Code: IEA

Case No.: 0677A

SAS No. : _____

SDG No.: A0677

Matrix: (soil/water) SOIL

Lab Sample ID: 0677002

% Solids: _____

Date Received: 03/27/97

Concentration Units (mg/L or mg/kg dry weight) : mg/Kg

Analyte	Concentration	C	Q	M
TOCD	322.			

Comments: _____

FORM I - WC

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO. 000246

DUP-03

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0677A SAS No. : _____ SDG No.: A0677

Matrix: (soil/water) SOIL Lab Sample ID: 0677003

% Solids: _____ Date Received: 03/27/97

Concentration Units (mg/L or mg/kg dry weight) : mg/Kg

Analyte	Concentration	C	Q	M
TOCD	395.			

Comments: _____

FORM I - WC

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 421, D 422, D 1140, D 2216, D 2217

IEA/LAB GEOTECH/NJ **953-6243**		**SAMPLE #:**	**71294 001**

MOISTURE CONTENT (Delivered Moisture)

tare #	6
wt soil&tare,moist (g)	554.48
wt soil&tare,dry (g)	537.84
wt tare (g)	350.39
wt moisture (g)	16.64
wt dry soil (g)	187.45
% moisture	**8.88%**

% PASSING #10 SIEVE

Total Wt (g)	187.45
Wt Split #10 (g)	187.45
% passing #10	100.00%

	SIEVE	wt ret (g)	% ret	% pass	SIEVE	
coarse gravel	3.000		0.00%	**100.00%**	3.000	coarse gravel
	1.500		0.00%	**100.00%**	1.500	
	1.000		0.00%	**100.00%**	1.000	
fine gravel	0.750		0.00%	**100.00%**	0.750	fine gravel
	0.375		0.00%	**100.00%**	0.375	
coarse sand	#4		0.00%	**100.00%**	#4	coarse sand
medium sand	#10		0.00%	**100.00%**	#10	medium sand

SAMPLE PREPARATION FOR HYDROMETER ANALYSIS

% Passing #10 Sieve	100.00	Initial Moist Weight	77.95
Specific Gravity (ASSUMED)	2.65	Calculated Dry Weight	77.79
ml Dispersing Agent Used (40 ml Na(PO4)n per 1000 ml H2O)	125		

MOISTURE CONTENT (Hygroscopic - #10)

tare #	13B	tare #	GH18		
wt soil&tare,moist (g)	43.87	wt soil&tare,dry (g)	232.90	LL:	-
wt soil&tare,dry (g)	43.82	wt soil&tare,wash (g)	211.67	PL:	-
wt tare (g)	19.71	wt tare (g)	155.11	PI:	-
wt moisture (g)	0.05	wt fines lost (g)	21.23		
wt dry soil (g)	24.11	wt dry soil (g)	77.79		
% moisture	**0.21%**	% fines lost	**27.29%**		

PERCENT BETWEEN #10 AND #200 SIEVE CALCULATION

SIEVE	CUMUL WT RETAINED	CUMUL WT RET. CORR.	PERCENT PASSING		
#10	0.00	0.00	**100.00%**	#10	medium sand
#20	1.64	1.64	**97.89%**	#20	
#40	20.74	20.74	**73.34%**	#40	fine sand
#60	50.02	50.02	**35.70%**	#60	
#100	56.24	56.24	**27.70%**	#100	
#200	56.56	56.56	**27.29%**	#200	fines

DATE	TIME	TIME,CUM (min)	READING R	TEMP T	HYD RDG H	PARTICLE DIAMETER	% FINER
3/31/97	8:59	2.0	17.5	20.0	6.0	0.037	**14.78%**
	9:01	4.0	17.0	20.0	6.0	0.026	**14.14%**
	9:05	8.0	17.0	20.0	6.0	0.019	**14.14%**
	9:12	15.0	16.0	20.5	5.5	0.014	**13.50%**
	9:27	30.0	16.0	21.0	5.5	0.010	**13.50%**
	9:57	60.0	16.0	21.0	6.0	0.007	**12.86%**
	10:57	120.0	15.0	21.0	6.0	0.005	**11.57%**
	12:57	240.0	14.5	21.5	5.5	0.003	**11.57%**
	16:57	480.0	14.0	20.0	5.5	0.002	**10.93%**
4/1/97	8:57	1440.0	14.0	17.0	6.0	0.001	**10.28%**

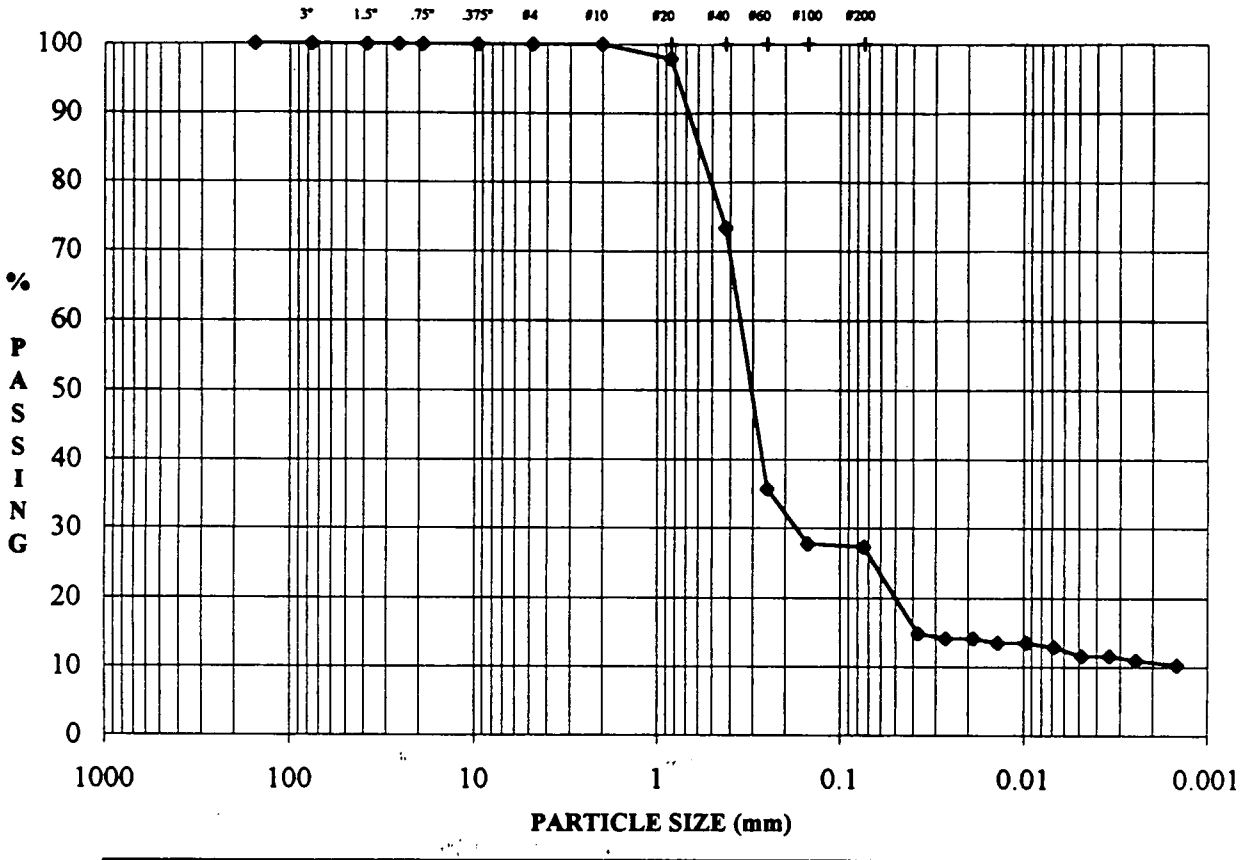
%C GRVL:	**0.00%**
%F GRVL:	**0.00%**
%C SAND:	**0.00%**
%M SAND:	**26.66%**
%F SAND:	**46.05%**
%FINES:	**27.29%**
%TOTAL:	**100.00%**

Wet Color: **Olive gray**
Description: **m-f SAND, some fines**

DATE	4/1/97
TECH	RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

PARTICLE-SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



COBBLES	Coarse	Fine	Cor	Med	Fine	Silt or Clay Size
	GRAVEL		SAND			FINES

SAMPLE #:	71294 001
WET COLOR:	Olive gray
DESCRIPTION:	m-f SAND, some fines

Mc:	8.88%
LL:	-
PL:	-
PI :	-
Gs:	-

IEA/LAB GEOTECH/NJ
953-6243

DATE	4/1/97
TECH	RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

000262A

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 421, D 422, D 1140, D 2216, D 2217

IEA/LAB GEOTECH/NJ 953-6243		SAMPLE #:	71294 003

MOISTURE CONTENT (Delivered Moisture)

tare #	79
wt soil&tare,moist (g)	639.60
wt soil&tare,dry (g)	613.85
wt tare (g)	351.46
wt moisture (g)	25.75
wt dry soil (g)	262.39
% moisture	9.81%

% PASSING #10 SIEVE

Total Wt (g)	262.39
Wt Split #10 (g)	262.39
% passing #10	100.00%

	SIEVE	wt ret (g)	% ret	% pass	SIEVE	
coarse gravel	3.000		0.00%	100.00%	3.000	coarse gravel
	1.500		0.00%	100.00%	1.500	
	1.000		0.00%	100.00%	1.000	
fine gravel	0.750		0.00%	100.00%	0.750	fine gravel
	0.375		0.00%	100.00%	0.375	
coarse sand	#4		0.00%	100.00%	#4	coarse sand
medium sand	#10		0.00%	100.00%	#10	medium sand

SAMPLE PREPARATION FOR HYDROMETER ANALYSIS

% Passing #10 Sieve	100.00	Initial Moist Weight	70.32
Specific Gravity (ASSUMED)	2.65	Calculated Dry Weight	70.09
ml Dispersing Agent Used (40 ml Na(PO4)n per 1000 ml H2O)	125		

MOISTURE CONTENT (Hygroscopic - #10)

tare #	CH15	tare #	GH19		
wt soil&tare,moist (g)	46.26	wt soil&tare,dry (g)	226.25	LL:	-
wt soil&tare,dry (g)	46.18	wt soil&tare,wash (g)	204.98	PL:	-
wt tare (g)	21.76	wt tare (g)	156.16	PI:	-
wt moisture (g)	0.08	wt fines lost (g)	21.27		
wt dry soil (g)	24.42	wt dry soil (g)	70.09		
% moisture	0.33%	% fines lost	30.35%		

PERCENT BETWEEN #10 AND #200 SIEVE CALCULATION

SIEVE	CUMUL WT RETAINED	CUMUL WT RET. CORR.	PERCENT PASSING		
#10	0.00	0.00	100.00%	#10	medium sand
#20	3.10	3.10	95.58%	#20	
#40	18.48	18.48	73.63%	#40	fine sand
#60	43.99	43.99	37.24%	#60	
#100	48.74	48.74	30.46%	#100	
#200	48.82	48.82	30.35%	#200	fines

DATE	TIME	TIME,CUM (min)	READING R	TEMP T	HYD RDG H	PARTICLE DIAMETER	% FINER
3/31/97	9:02	2.0	13.5	20.0	5.5	0.038	11.41%
	9:04	4.0	13.5	20.0	5.5	0.027	11.41%
	9:08	8.0	13.5	20.5	5.5	0.019	11.41%
	9:15	15.0	13.5	20.5	5.5	0.014	11.41%
	9:30	30.0	12.0	21.0	5.5	0.010	9.27%
	10:00	60.0	12.0	21.0	6.0	0.007	8.56%
	11:00	120.0	12.0	21.0	6.0	0.005	8.56%
	13:00	240.0	11.0	21.0	5.5	0.003	7.85%
	17:00	480.0	11.0	20.0	5.5	0.002	7.85%
4/1/97	9:00	1440.0	11.0	17.0	6.0	0.001	7.13%

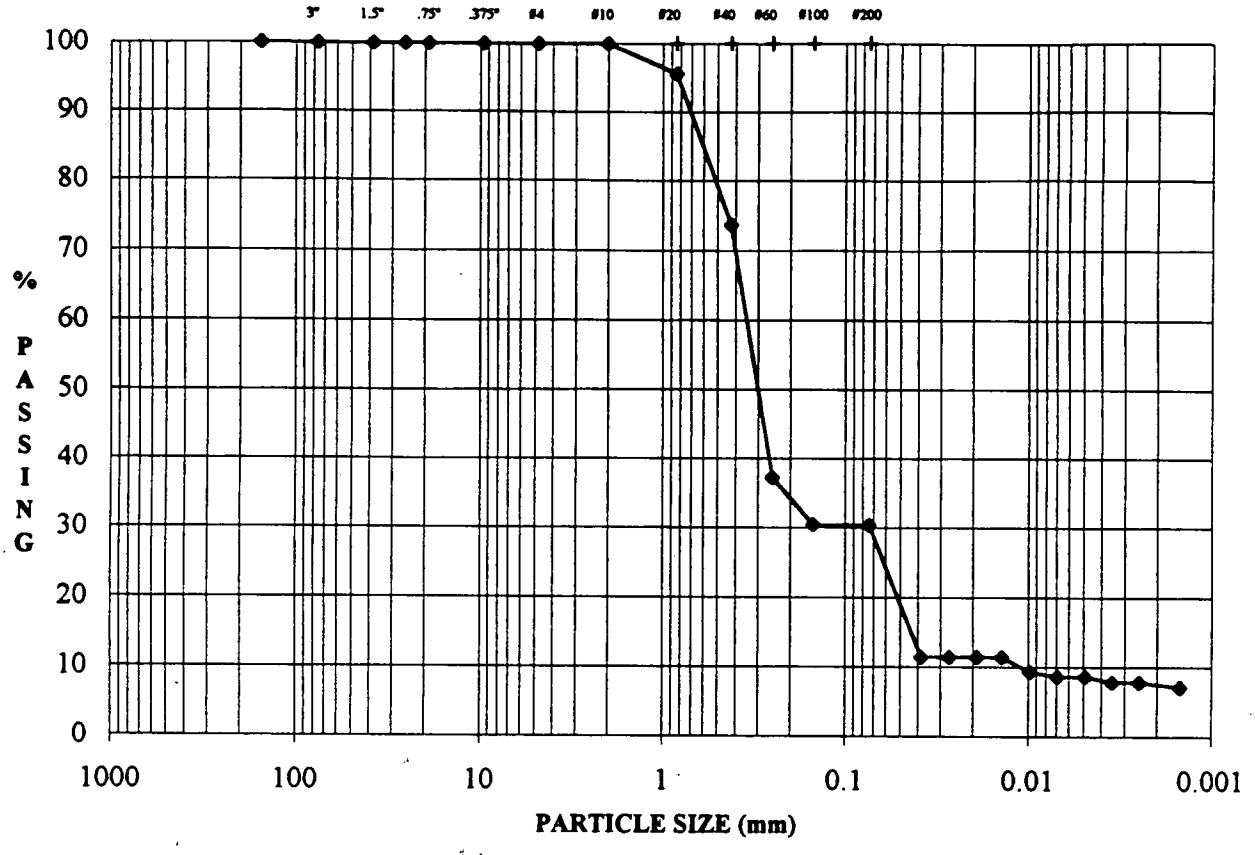
%C GRVL:	0.00%
%F GRVL:	0.00%
%C SAND:	0.00%
%M SAND:	26.37%
%F SAND:	43.29%
%FINES:	30.35%
%TOTAL:	100.00%

Wet Color: Olive gray
Description: m-f SAND, some fines

DATE	4/1/97
TECH	RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

PARTICLE-SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



COBBLES	Coarse	Fine	Cor	Med	Fine	Silt or Clay Size
	GRAVEL		SAND			FINES

SAMPLE #:	71294 003
WET COLOR:	Olive gray
DESCRIPTION:	m-f SAND, some fines

Mc:	9.81%
LL:	-
PL:	-
PI :	-
Gs:	-

IEA/LAB GEOTECH/NJ
953-6243

DATE	4/1/97
TECH	RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 421, D 422, D 1140, D 2216, D 2217

IEA/LAB GEOTECH/NJ 953-6243		SAMPLE #:	71294 004

MOISTURE CONTENT (Delivered Moisture)

tare #	84
wt soil&tare,moist (g)	648.36
wt soil&tare,dry (g)	620.31
wt tare (g)	334.33
wt moisture (g)	28.05
wt dry soil (g)	285.98
% moisture	9.81%

% PASSING #10 SIEVE

Total Wt (g)	285.98
Wt Split #10 (g)	285.98
% passing #10	100.00%

	SIEVE	wt ret (g)	% ret	% pass	SIEVE	
coarse gravel	3.000		0.00%	100.00%	3.000	coarse gravel
	1.500		0.00%	100.00%	1.500	
	1.000		0.00%	100.00%	1.000	
fine gravel	0.750		0.00%	100.00%	0.750	fine gravel
	0.375		0.00%	100.00%	0.375	
coarse sand	#4		0.00%	100.00%	#4	coarse sand
medium sand	#10		0.00%	100.00%	#10	medium sand

SAMPLE PREPARATION FOR HYDROMETER ANALYSIS

% Passing #10 Sieve	100.00	Initial Moist Weight	74.29
Specific Gravity (ASSUMED)	2.65	Calculated Dry Weight	74.20
ml Dispersing Agent Used (40 ml Na(PO4)n per 1000 ml H2O)	125		

MOISTURE CONTENT (Hygroscopic - #10)

tare #	CH20	tare #	GH2		
wt soil&tare,moist (g)	56.20	wt soil&tare,dry (g)	233.68	LL:	-
wt soil&tare,dry (g)	56.16	wt soil&tare,wash (g)	213.33	PL:	-
wt tare (g)	21.28	wt tare (g)	159.47	PI:	-
wt moisture (g)	0.04	wt fines lost (g)	20.35		
wt dry soil (g)	34.88	wt dry soil (g)	74.21		
% moisture	0.11%	% fines lost	27.42%		

PERCENT BETWEEN #10 AND #200 SIEVE CALCULATION

SIEVE	CUMUL WT RETAINED	CUMUL WT RET. CORR.	PERCENT PASSING		
#10	0.00	0.00	100.00%	#10	medium sand
#20	2.58	2.58	96.52%	#20	
#40	19.48	19.48	73.75%	#40	fine sand
#60	47.59	47.59	35.87%	#60	
#100	53.67	53.67	27.67%	#100	
#200	53.86	53.86	27.42%	#200	fines

DATE	TIME	TIME,CUM (min)	READING R	TEMP T	HYD RDG H	PARTICLE DIAMETER	% FINER
3/31/97	8:55	2.0	13.5	20.0	5.5	0.038	10.78%
	8:57	4.0	13.5	20.0	5.5	0.027	10.78%
	9:01	8.0	13.5	20.0	5.5	0.019	10.78%
	9:08	15.0	13.5	20.5	5.5	0.014	10.78%
	9:23	30.0	13.5	21.0	5.5	0.010	10.78%
	9:53	60.0	13.0	21.0	6.0	0.007	9.43%
	10:53	120.0	12.0	21.0	6.0	0.005	8.09%
	12:53	240.0	11.5	21.0	5.5	0.003	8.09%
	16:53	480.0	11.5	20.0	5.5	0.002	8.09%
4/1/97	8:53	1440.0	11.5	17.0	6.0	0.001	7.41%

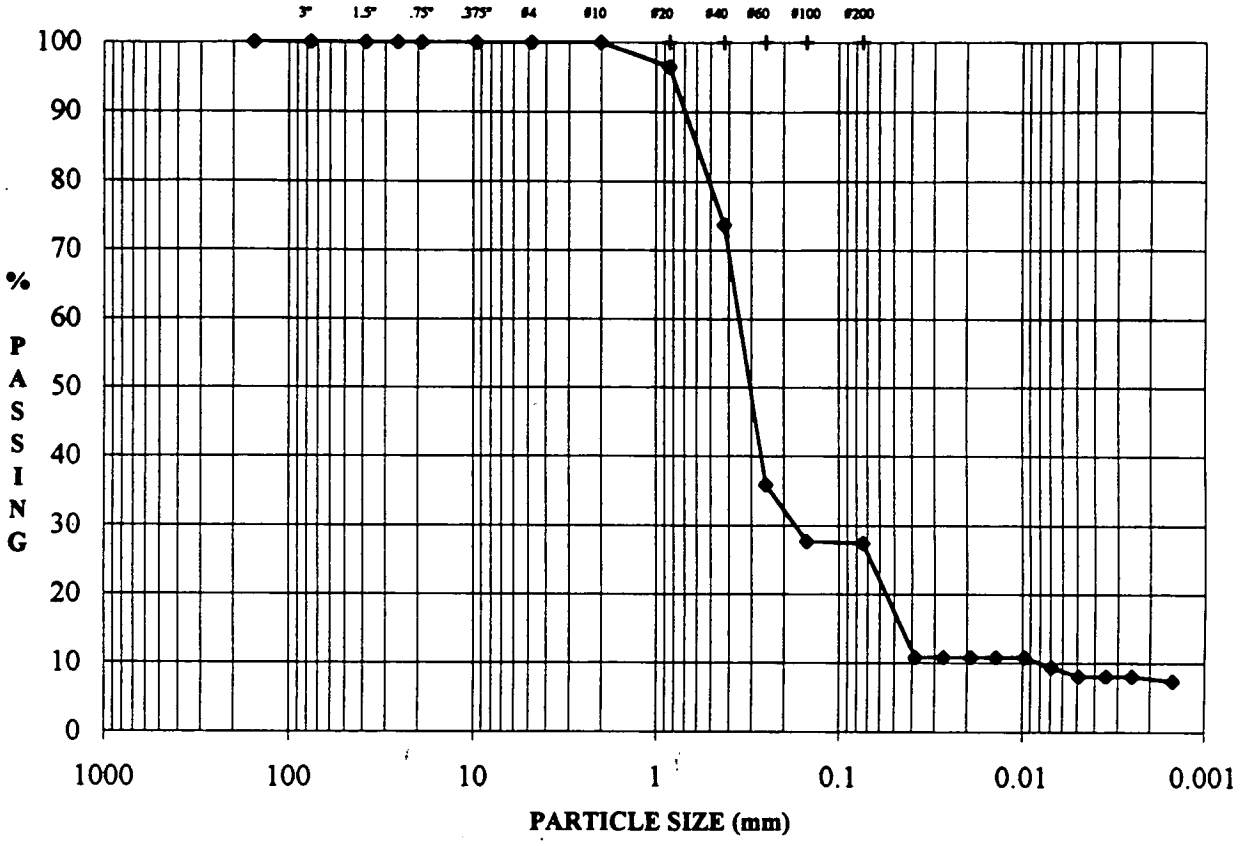
%C GRVL:	0.00%
%F GRVL:	0.00%
%C SAND:	0.00%
%M SAND:	26.25%
%F SAND:	46.33%
%FINES:	27.42%
%TOTAL:	100.00%

Wet Color: Olive gray
Description: m-f SAND, some fines

DATE	4/1/97
TECH	RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

PARTICLE-SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



COBBLES	Coarse	Fine	Cor	Med	Fine	Silt or Clay Size
	GRAVEL		SAND			FINES

SAMPLE #:	71294 004
WET COLOR:	Olive gray
DESCRIPTION:	m-f SAND, some fines

Mc:	9.81%
LL:	-
PL:	-
PI :	-
Gs:	-

IEA/LAB GEOTECH/NJ
953-6243

DATE	4/1/97
TECH	RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

CHAIN OF CUSTODY RECORD

Brown & Root Environ.

#71583

PROJECT N .: CTO-206/CTO-226

SITE NAME: NWS Earle

SAMPLERS (SIGNATURE): Charles Wagner, Paul M. Dri

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	4 oz TOC	8 oz particle sz/% moisture	40 ml vial VOC +10	40 ml vial pesticide/herbicide/ethanol	1L amber BN+15	1L poly PCB	1L poly nitrate/phosphorus	1L poly sulfate/chloride	500 ml amber TOC	40 ml vial pH	REMARKS
566	4/8/97	1445		✓	566-SB-57-02	2	1	1									001
↓	↓	1545		✓	566-SB-58-02	2	1	1									002
S106	4/9/97	1215		✓	S106-GW-01	11	–	–	3	2	2	1	1	1	1		003
566	4/9/97	0900		✓	TB-040997	3			3								004
566	4/9/97	1610		✓	566-GW-15	11			3	2	2	1	1	1	1		005
566	4/9/97	1622		✓	566-GW-13	11			3	2	2	1	1	1	1		006
566	4/9/97	1632		✓	566-GW-12	11			3	2	2	1	1	1	1		007
566	4/9/97	1800		✓	FB-040997	11			3	2	2	1	1	1	1		008

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
Charles Wagner	4/10/97 0935	[illegible]			
RELINQUISHED BY (SIGNATURE): Al Dabiele	DATE / TIME: 4/10/97 1110	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE): S CHARTERS	DATE / TIME: 4/10/97 9:30	REMARKS: Picked up by Courier From IEA Laboratory	

4/10/97

Order No. 70440 (0693)

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 000027

S106-GW-01

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71583003

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7143

Level: (low/med) LOW Date Received: 04/11/97

% Moisture: not dec. _____ Date Analyzed: 04/18/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	5	J
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene(total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Total Xylenes	10	U

1E

EPA SAMPLE NO. 000023

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

S106-GW-01

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71583003

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7143

Level: (low/med) LOW Date Received: 04/11/97

% Moisture: not dec. _____ Date Analyzed: 04/18/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
000121

S106-GW-01

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71583003

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7938

Level: (low/med) LOW Date Received: 04/11/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/15/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/17/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 5.09

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
111-44-4	Bis(2-Chloroethyl)Ether	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
621-64-7	N-Nitrosodi-N-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
111-91-1	Bis(2-Chloroethoxy) Methane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-Phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
85-01-8	Phenanthrene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 080122

S106-GW-01

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71583003

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7938

Level: (low/med) LOW Date Received: 04/11/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/15/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/17/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 5.09

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-N-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	1	J
117-84-0	Di-N-Octylphthalate	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
50-32-8	Benzo(A)Pyrene	10	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1F

EPA SAMPLE NO.

S106-GW-01

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71583003

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7938

Level: (low/med) LOW Date Received: 04/11/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/15/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/17/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 5.09

Number TICs Found: 3

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Unknown	4.05	4	JB
02.	Unknown	5.56	3	J
03.	Unknown Phthalate Ester	17.46	3	J
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SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-GW-01MS

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71583003MS

Sample wt/vol: 500 (g/mL) ml Lab File ID: H7939

Level: (low/med) LOW Date Received: 04/11/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/15/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/17/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 5.09

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
111-44-4	Bis(2-Chloroethyl)Ether	20	U
541-73-1	1,3-Dichlorobenzene	20	U
106-46-7	1,4-Dichlorobenzene	63	
95-50-1	1,2-Dichlorobenzene	20	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	20	U
621-64-7	N-Nitrosodi-N-Propylamine	64	
67-72-1	Hexachloroethane	20	U
98-95-3	Nitrobenzene	20	U
78-59-1	Isophorone	20	U
111-91-1	Bis(2-Chloroethoxy) Methane	20	U
120-82-1	1,2,4-Trichlorobenzene	71	
91-20-3	Naphthalene	20	U
106-47-8	4-Chloroaniline	20	U
87-68-3	Hexachlorobutadiene	20	U
91-57-6	2-Methylnaphthalene	20	U
77-47-4	Hexachlorocyclopentadiene	20	U
91-58-7	2-Chloronaphthalene	20	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	20	U
208-96-8	Acenaphthylene	20	U
606-20-2	2,6-Dinitrotoluene	20	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	76	
132-64-9	Dibenzofuran	20	U
121-14-2	2,4-Dinitrotoluene	80	
84-66-2	Diethylphthalate	20	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	20	U
86-73-7	Fluorene	20	U
100-01-6	4-Nitroaniline	50	U
86-30-6	N-Nitrosodiphenylamine (1)	20	U
101-55-3	4-Bromophenyl-Phenylether	20	U
118-74-1	Hexachlorobenzene	20	U
85-01-8	Phenanthrene	20	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-GW-01MS

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71583003MS

Sample wt/vol: 500 (g/mL) ml Lab File ID: H7939

Level: (low/med) LOW Date Received: 04/11/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/15/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/17/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 5.09

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
120-12-7	Anthracene	20	U
86-74-8	Carbazole	20	U
84-74-2	Di-N-Butylphthalate	20	U
206-44-0	Fluoranthene	20	U
129-00-0	Pyrene	75	
85-68-7	Butylbenzylphthalate	20	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(A)Anthracene	20	U
218-01-9	Chrysene	20	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	4	J
117-84-0	Di-N-Octylphthalate	20	U
205-99-2	Benzo(B)Fluoranthene	20	U
207-08-9	Benzo(K)Fluoranthene	20	U
50-32-8	Benzo(A)Pyrene	20	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	20	U
53-70-3	Dibenz(A,H)Anthracene	20	U
191-24-2	Benzo(G,H,I)Perylene	20	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-GW-01MSD

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71583003MSD

Sample wt/vol: 500 (g/mL) ml Lab File ID: H7940

Level: (low/med) LOW Date Received: 04/11/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/15/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/17/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 5.09

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
111-44-4	Bis(2-Chloroethyl)Ether	20	U
541-73-1	1,3-Dichlorobenzene	20	U
106-46-7	1,4-Dichlorobenzene	66	
95-50-1	1,2-Dichlorobenzene	20	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	20	U
621-64-7	N-Nitrosodi-N-Propylamine	71	
67-72-1	Hexachloroethane	20	U
98-95-3	Nitrobenzene	20	U
78-59-1	Isophorone	20	U
111-91-1	Bis(2-Chloroethoxy) Methane	20	U
120-82-1	1,2,4-Trichlorobenzene	73	
91-20-3	Naphthalene	20	U
106-47-8	4-Chloroaniline	20	U
87-68-3	Hexachlorobutadiene	20	U
91-57-6	2-Methylnaphthalene	20	U
77-47-4	Hexachlorocyclopentadiene	20	U
91-58-7	2-Chloronaphthalene	20	U
88-74-4	2-Nitroaniline	50	U
131-11-3	Dimethylphthalate	20	U
208-96-8	Acenaphthylene	20	U
606-20-2	2,6-Dinitrotoluene	20	U
99-09-2	3-Nitroaniline	50	U
83-32-9	Acenaphthene	79	
132-64-9	Dibenzofuran	20	U
121-14-2	2,4-Dinitrotoluene	81	
84-66-2	Diethylphthalate	20	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	20	U
86-73-7	Fluorene	20	U
100-01-6	4-Nitroaniline	50	U
86-30-6	N-Nitrosodiphenylamine (1)	20	U
101-55-3	4-Bromophenyl-Phenylether	20	U
118-74-1	Hexachlorobenzene	20	U
85-01-8	Phenanthrene	20	U

1C

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

S106-GW-01MSD

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71583003MSD

Sample wt/vol: 500 (g/mL) ml Lab File ID: H7940

Level: (low/med) LOW Date Received: 04/11/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/15/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/17/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 5.09

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
120-12-7	Anthracene	20	U
86-74-8	Carbazole	20	U
84-74-2	Di-N-Butylphthalate	20	U
206-44-0	Fluoranthene	20	U
129-00-0	Pyrene	76	
85-68-7	Butylbenzylphthalate	20	U
91-94-1	3,3'-Dichlorobenzidine	20	U
56-55-3	Benzo(A)Anthracene	20	U
218-01-9	Chrysene	20	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	20	U
117-84-0	Di-N-Octylphthalate	20	U
205-99-2	Benzo(B)Fluoranthene	20	U
207-08-9	Benzo(K)Fluoranthene	20	U
50-32-8	Benzo(A)Pyrene	20	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	20	U
53-70-3	Dibenz(A,H)Anthracene	20	U
191-24-2	Benzo(G,H,I)Perylene	20	U

SAMPLE NO. 000214

WET CHEM ANALYSIS DATA SHEET

S106GW01

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0836B SAS No. : _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 0836101

% Solids: 0.0 Date Received: 04/12/97

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
TOCD	6.45			

Comments: _____

FORM I - WC

VOLATILE ORGANICS ANALYSIS DATA SHEET

TB-040997

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71583004

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7144

Level: (low/med) LOW Date Received: 04/11/97

% Moisture: not dec. _____ Date Analyzed: 04/19/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	9	JB
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene(total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Total Xylenes	10	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TB-040997

Lab Name: IEA-NJ Contract: 68D5[illegible]011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71583004

Sample wt/vol: 5 (g/mL) ml Lab File ID: [illegible]7144

Level: (low/med) LOW Date Received: 04/11/97

% Moisture: not dec. _____ Date Analyzed: [illegible]/19/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FB-040997

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71583008

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7148

Level: (low/med) LOW Date Received: 04/11/97

% Moisture: not dec. _____ Date Analyzed: 04/19/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	6	J
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene(total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	[illegible]enes	10	U

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

FB-040997

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71583008

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7148

Level: (low/med) LOW Date Received: 04/11/97

% Moisture: not dec. _____ Date Analyzed: 04/19/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
02.				
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FB-040997

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71583008

Sample wt/vol: 1000 (g/mL) ml Lab File ID: 7801

Level: (low/med) LOW Date Received: 04/11/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/15/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.44

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
111-44-4	Bis(2-Chloroethyl)Ether	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
621-64-7	N-Nitrosodi-N-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
111-91-1	Bis(2-Chloroethoxy) Methane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	4	JB
7005-72-3	4-Chlorophenyl-Phenyl Ether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-Phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
85-01-8	Phenanthrene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.
FB-040997

Lab Name: IEA-NJ Contract: 68D[illegible]

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71583008

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7301

Level: (low/med) LOW Date Received: 04/11/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/15/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.44

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-N-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-N-Octylphthalate	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
50-32-8	Benzo(A)Pyrene	10	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

SAMPLE NO.
FB-040997

Lab Name: IEA-NJ Contract: 68D5[illegible]

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71583008

Sample wt/vol: 1000 (g/mL) ml Lab File ID. M7801

Level: (low/med) LOW Date Received: 04/11/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/15/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 6.44

Number TICs Found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Unknown Acid	9.89	35	J
02.	Unknown Alcohol	7.87	5	J
03.	Unknown	5.75	2	J
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SAMPLE 00021

WET CHEM ANALYSIS DATA SHEET

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0836B SAS No. : _____ SDG No.: _____

Matrix: (soil/water) WATER Lab Sample ID: 0836109

% Solids: 0.0 Date Received: --12/97

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
TOCD	6.38			

Comments: _____

FORM I - WC

Client: BROWN & ROOT ENVIRONMENTAL

Job No: 20970-71583

WATER

Miscellaneous Parameters

mg/l

Lab I.D.	71583003	71583005	71583006	DL
Client I.D.	S106-GW-01	566-GW-15	566-GW-13	
Analyte				
Chloride	7	7	13	2
Sulfate	32	23	<5.0	5.0

DL - Detection Limit

Client: BROWN & ROOT ENVIRONMENTAL

Job No: 20970-71583

WATER

Miscellaneous Parameters

mg/l

Lab I.D.	71583007	71583008	DL
Client I.D.	566-GW-12	FB-040997	
Analyte			
Chloride	8	<2	2
Sulfate	140	<5.0	5.0

DL - Detection Limit

MICROSEEPS

IEA33-972428

----- IEA OF NEW JERSEY -----
----- PROJECT: 20970-71583 -----
----- CONCENTRATIONS IN NANOGRAMS/LITER WATER -----

SAMPLE NAME	METHANE (ng/l)	ETHANE (ng/l)	ETHYLENE (ng/l)	FILE NAME	DATE SAMPLED	DATE RECEIVED	DATE ANALYZED
71583-003	1838	5	<5	C7 421	04/09/97	04/15/97	04/15/97
71583-005	5003786	91	10	C7 422/P14 482	04/09/97	04/15/97	04/15/97
71583-006	5174647	<5	23	C7 423/P14 483	04/09/97	04/15/97	04/15/97
71583-007	3026680	812	18	C7 424/P14 484	04/09/97	04/15/97	04/15/97
71583-008	9780	26	<5	C7 425	04/09/97	04/15/97	04/15/97
MDLs FOR ABOVE SAMPLES	15	5	5				

21-Apr-97

ANALYST INITIALS AS

LAB MANAGER INITIALS AS

CHYUN ASSOCIATES, INC. Environmental Testing Laboratory
609-924-5151 257 Wall Street, Princeton, N.J. 08540

LABORATORY ANALYSIS REPORT

Client: IEA, Inc.
Address: 628 Route 10
Whippany, NJ 07981

Attention: Mr. Mike Gemma

Test Number: L97517TT
Date Received: April 11, 1997
Date Sampled: April 9, 1997

Job Number: 083976-97TT

SAMPLE NUMBER	SAMPLE DESIGNATION/DESCRIPTION
003	71583-003 (S106GW01)
005	71583-005 (566GW15)
006	71583-006 (566GW13)
007	71583-007 (566GW12)
008	71583-008 (FBO40997)
Date	Analysis Date
Method	EPA Method Number

PARAMETER / CONSTITUENT	SAMPLE NUMBER						
	003	005	006	007	008	Date	Method
Nitrate as N	1.6	0.79	1.4	0.79	< 0.1	4/11/97	352.1
Detection Limit	0.1	0.1	0.1	0.1	0.1		
Phosphorus, total	< 0.05	0.16	0.19	0.24	< 0.05	4/16/97	365.2
Detection Limit	0.05	0.05	0.05	0.05	0.05		

All results in mg/l (ppm)

Laboratory ID No. 11198

Member of American Council of Independent Laboratories, Inc.

April 16, 1997

Michael Wright, Technical Director

CHAIN OF CUSTODY RECORD

#71633

PROJECT NO.: CTO 206

SITE NAME: NWS Earle

SAMPLERS (SIGNATURE): Charles Moore, Paul M. D

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	40 ml VOA vials HCl	40 ml VOA vials VOC + 10 methanol, ethanol, ethanol	1 liter Amber 13 N + 15	1 liter poly H_2SO_4 nitrates, phosphorus	1 liter poly H_2SO_4 sulfates, chlorides	500 ml Amber H_2SO_4 TOC	40 ml VOA vial pH	REMARKS
QA/QC	4/14/97	1300		✓	TB-041497	3	3							Trip Blank 001
S106	4/14/97	1552		✓	S106-GW-03	33	9	6	6	3	3	3	3	002, 003, 004 Do MS/MSD
"	4/14/97	1845		✓	S106-GW-02	11	3	2	2	1	1	1	1	005
QA/QC	4/14/97	0000		✓	DUP-04	11	3	2	2	1	1	1	1	006
S106	4/15/97	0745		✓	S106-GW-04	11	3	2	2	1	1	1	1	007

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
Paul M. D	4/15/97 0945	[illegible]			
[illegible]	4/15/97 1835	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LABORATORY BY (SIGNATURE): S CHARTERS	DATE / TIME: 4/15/97 1835	REMARKS:	

600000

Order No. 70440 (0693)

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TB-041497

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633001

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7324

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: not dec. _____ Date Analyzed: 04/25/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	4	JB
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene(total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Total Xylenes	10	U
1634-04-4	Methyl Tertiary Butyl Ether	10	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

TB-041497

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633001

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7324

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: not dec. _____ Date Analyzed: 04/25/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
75-65-0	Tertiary Butyl Alcohol	50	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

TB-041497

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633001

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7324

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: not dec. _____ Date Analyzed: 04/25/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
02.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
S106-GW-03

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633002

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7325

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: not dec. _____ Date Analyzed: 04/25/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene(total)	10	U
67-66-3	Chloroform	2	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Total Xylenes	10	U
1634-04-4	Methyl Tertiary Butyl Ether	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-GW-03

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633002

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7325

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: not dec. _____ Date Analyzed: 04/25/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
75-65-0	Tertiary Butyl Alcohol	50	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

S106-GW-03

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633002

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7325

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: not dec. _____ Date Analyzed: 04/25/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
02.				
03.				
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-GW-03

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633002

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7804

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/18/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 4.85

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
111-44-4	Bis(2-Chloroethyl)Ether	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
621-64-7	N-Nitrosodi-N-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
111-91-1	Bis(2-Chloroethoxy) Methane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-Phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
85-01-8	Phenanthrene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-GW-03

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633002

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7804

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/18/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 4.85

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-N-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-N-Octylphthalate	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
50-32-8	Benzo(A)Pyrene	10	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

S106-GW-03

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633002

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7804

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/18/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 4.85

Number TICs Found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Unknown Acid	9.89	8	JB
02.	Unknown Acid	9.81	7	J
03.	Unknown	5.47	4	JB
04.	Unknown	26.01	2	J
05.				
06.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
S106-GW-02

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633005

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7328

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: not dec. _____ Date Analyzed: 04/25/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	4	JB
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene(total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Total Xylenes	10	U
1634-04-4	Methyl Tertiary Butyl Ether	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-GW-02

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633005

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7328

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: not dec. _____ Date Analyzed: 04/25/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
75-65-0	Tertiary Butyl Alcohol	50	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
S106-GW-02

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633005

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7328

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: not dec. _____ Date Analyzed: 04/25/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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02.				
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-GW-02

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633005

Sample wt/vol: 930 (g/mL) ml Lab File ID: H7807

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/18/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 4.81

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
111-44-4	Bis(2-Chloroethyl)Ether	11	U
541-73-1	1,3-Dichlorobenzene	11	U
106-46-7	1,4-Dichlorobenzene	11	U
95-50-1	1,2-Dichlorobenzene	11	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	11	U
621-64-7	N-Nitrosodi-N-Propylamine	11	U
67-72-1	Hexachloroethane	11	U
98-95-3	Nitrobenzene	11	U
78-59-1	Isophorone	11	U
111-91-1	Bis(2-Chloroethoxy) Methane	11	U
120-82-1	1,2,4-Trichlorobenzene	11	U
91-20-3	Naphthalene	11	U
106-47-8	4-Chloroaniline	11	U
87-68-3	Hexachlorobutadiene	11	U
91-57-6	2-Methylnaphthalene	11	U
77-47-4	Hexachlorocyclopentadiene	11	U
91-58-7	2-Chloronaphthalene	11	U
88-74-4	2-Nitroaniline	27	U
131-11-3	Dimethylphthalate	11	U
208-96-8	Acenaphthylene	11	U
606-20-2	2,6-Dinitrotoluene	11	U
99-09-2	3-Nitroaniline	27	U
83-32-9	Acenaphthene	11	U
132-64-9	Dibenzofuran	11	U
121-14-2	2,4-Dinitrotoluene	11	U
84-66-2	Diethylphthalate	11	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	11	U
86-73-7	Fluorene	11	U
100-01-6	4-Nitroaniline	27	U
86-30-6	N-Nitrosodiphenylamine (1)	11	U
101-55-3	4-Bromophenyl-Phenylether	11	U
118-74-1	Hexachlorobenzene	11	U
85-01-8	Phenanthrene	11	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-GW-02

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633005

Sample wt/vol: 930 (g/mL) ml Lab File ID: H7807

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/18/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 4.81

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
120-12-7	Anthracene	11	U
86-74-8	Carbazole	11	U
84-74-2	Di-N-Butylphthalate	11	U
206-44-0	Fluoranthene	11	U
129-00-0	Pyrene	11	U
85-68-7	Butylbenzylphthalate	11	U
91-94-1	3,3'-Dichlorobenzidine	11	U
56-55-3	Benzo(A)Anthracene	11	U
218-01-9	Chrysene	11	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	6	JB
117-84-0	Di-N-Octylphthalate	11	U
205-99-2	Benzo(B)Fluoranthene	11	U
207-08-9	Benzo(K)Fluoranthene	11	U
50-32-8	Benzo(A)Pyrene	11	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	11	U
53-70-3	Dibenz(A,H)Anthracene	11	U
191-24-2	Benzo(G,H,I)Perylene	11	U

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

S106-GW-02

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633005

Sample wt/vol: 930 (g/mL) ml Lab File ID: H7807

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/18/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 4.81

Number TICs Found: 5

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Unknown	5.49	13	JB
02.	Unknown Acid	9.81	4	J
03.	Unknown Acid	9.89	4	JB
04.	Unknown Alkene	5.58	4	J
05.	Unknown	5.44	3	J
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP-04

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633006

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7329

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: not dec. _____ Date Analyzed: 04/25/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene(total)	10	U
67-66-3	Chloroform	3	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Total Xylenes	10	U
1634-04-4	Methyl Tertiary Butyl Ether	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP-04

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633006

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7329

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: not dec. _____ Date Analyzed: 04/25/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
75-65-0	Tertiary Butyl Alcohol	50	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

DUP-04

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633006

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7329

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: not dec. _____ Date Analyzed: 04/25/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP-04

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633006

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7808

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/18/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 4.85

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
111-44-4	Bis(2-Chloroethyl)Ether	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
621-64-7	N-Nitrosodi-N-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
111-91-1	Bis(2-Chloroethoxy) Methane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-Phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
85-01-8	Phenanthrene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

DUP-04

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633006

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7808

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/18/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 4.85

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-N-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-N-Octylphthalate	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
50-32-8	Benzo(A)Pyrene	10	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

DUP-04

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633006

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7808

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/18/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 4.85

Number TICs Found: 3

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Unknown Acid	9.89	5	JB
02.	Unknown Acid	9.82	4	J
03.	Unknown Alkene	5.48	3	J
04.				
05.				
06.				
07.				
08.				
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1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-GW-04

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633007

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7330

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: not dec. _____ Date Analyzed: 04/25/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	7	JB
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene(total)	10	U
67-66-3	Chloroform	2	J
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	J
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	36	
100-42-5	Styrene	10	U
1330-20-7	Total Xylenes	230	
1634-04-4	Methyl Tertiary Butyl Ether	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-GW-04

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633007

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7330

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: not dec. _____ Date Analyzed: 04/25/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
75-65-0	Tertiary Butyl Alcohol	50	U

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

S106-GW-04

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633007

Sample wt/vol: 5 (g/mL) ml Lab File ID: A7330

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: not dec. _____ Date Analyzed: 04/25/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 10

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Ethylmethyl Benzene Isomer	13.75	190	J
02.	Unknown PAH	15.52	160	J
03.	Trimethyl Benzene Isomer	14.42	140	J
04.	Trimethyl Benzene Isomer	15.10	100	J
05.	Ethylmethyl Benzene Isomer	14.19	68	J
06.	Unknown PAH	16.35	42	J
07.	Ethyl Dimethyl Benzene Isome	16.12	30	J
08.	Methyl Methylethyl Benzene I	15.98	28	J
09.	Unknown Aromatic	16.66	26	J
10.	Ethyl Dimethyl Benzene Isome	16.77	23	J
11.				
12.				
13.				
14.				
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO. 000142

S106-GW-04

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633007

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7809

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/18/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 4.91

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
111-44-4	Bis(2-Chloroethyl)Ether	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
621-64-7	N-Nitrosodi-N-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
111-91-1	Bis(2-Chloroethoxy) Methane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
91-57-6	2-Methylnaphthalene	53	
77-47-4	Hexachlorocyclopentadiene	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	6	J
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	10	U
86-73-7	Fluorene	7	J
100-01-6	4-Nitroaniline	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-Phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
85-01-8	Phenanthrene	7	J

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106-GW-04

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633007

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7809

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/18/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 4.91

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
120-12-7	Anthracene	10	U
86-74-8	Carbazole	1	J
84-74-2	Di-N-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-N-Octylphthalate	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
50-32-8	Benzo(A)Pyrene	10	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

S106-GW-04

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633007

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7809

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/18/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 4.91

Number TICs Found: 30

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Dimethyl Naphthalene Isomer	10.62	93	J
02.90120	Naphthalene, 1-methyl-	9.52	82	JN
03.	Trimethyl Benzene Isomer	6.36	68	J
04.	Dimethyl Naphthalene Isomer	10.48	66	J
05.	Unknown Alcohol	12.24	57	J
06.	Unknown Aromatic	7.69	49	J
07.	Ethylmethyl Benzene Isomer	5.71	47	J
08.	Ethyl Dimethyl Benzene Isome	6.96	42	J
09.	Unknown Aromatic	8.53	33	J
10.	Ethylmethyl Benzene Isomer	5.91	33	J
11.	Dimethyl Naphthalene Isomer	10.67	33	J
12.	Unknown Alkane	12.05	32	J
13.	Unknown	7.55	32	J
14.	Dimethyl Naphthalene Isomer	10.85	30	J
15.	Unknown Alkane	13.00	27	J
16.	Ethyl Dimethyl Benzene Isome	6.67	24	J
17.	Unknown Aromatic	12.48	23	J
18.	Unknown Aromatic	7.86	21	J
19.	Unknown Alkane	11.06	20	J
20.	Unknown Alkane	10.05	20	J
21.	Trimethyl Naphthalene Isomer	11.66	18	J
22.	Unknown PAH	8.87	17	J
23.	Unknown Aromatic	9.72	16	J
24.	Unknown PAH	8.93	16	J
25.	Unknown	9.09	15	J
26.	Unknown PAH	10.35	15	J
27.	Unknown Alkane	13.90	15	J
28.	Unknown PAH	11.46	14	J
29.	Unknown Alcohol	12.30	13	J
30.	Dimethyl Naphthalene Isomer	11.00	13	J

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106GW03MSMS

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633003MS

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7805

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/18/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 4.82

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
111-44-4	Bis(2-Chloroethyl)Ether	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	25	
95-50-1	1,2-Dichlorobenzene	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
621-64-7	N-Nitrosodi-N-Propylamine	32	
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
111-91-1	Bis(2-Chloroethoxy) Methane	10	U
120-82-1	1,2,4-Trichlorobenzene	28	
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	33	
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	34	
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-Phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
85-01-8	Phenanthrene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

000186

S106GW03MSMS

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633003MS

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7805

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/18/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 4.82

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-N-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	32	
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	2	JB
117-84-0	Di-N-Octylphthalate	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
50-32-8	Benzo(A)Pyrene	10	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106GW03MSDMSD

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633004MSD

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7806

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/18/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 4.88

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
111-44-4	Bis(2-Chloroethyl)Ether	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	24	
95-50-1	1,2-Dichlorobenzene	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
621-64-7	N-Nitrosodi-N-Propylamine	31	
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
111-91-1	Bis(2-Chloroethoxy) Methane	10	U
120-82-1	1,2,4-Trichlorobenzene	27	
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	31	
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	27	
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-Phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
85-01-8	Phenanthrene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106GW03MSDMSD

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 71633004MSD

Sample wt/vol: 1000 (g/mL) ml Lab File ID: H7806

Level: (low/med) LOW Date Received: 04/15/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 04/18/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 04/22/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: 4.88

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-N-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	29	
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-N-Octylphthalate	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
50-32-8	Benzo(A)Pyrene	10	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

Client: BROWN & ROOT ENVIRONMENTAL

Job No: 20970-71633

WATER

Miscellaneous Parameters

mg/l

Lab I.D.	71633002	71633003MS	71633004MD	DL
Client I.D.	S106-GW-03	S106GW03MS	S106GW03MD	
Analyte				
Chloride	9	106%	10	2
Sulfate	<25	100%	<25	5.0

DL - Detection Limit

Client: BROWN & ROOT ENVIRONMENTAL

Job No: 20970-71633

WATER

Miscellaneous Parameters

mg/l

Lab I.D.	71633005	71633006	71633007	DL
Client I.D.	S106-GW-02	DUP-04	S106-GW-04	
Analyte				
Chloride	30	6	15	2
Sulfate	19	<25	20	5.0

DL - Detection Limit

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.: S106GW03

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0878A SAS No. : _____ SDG No.: A0878

Matrix: (soil/water) WATER Lab Sample ID: 0878001

% Solids: 0.0 Date Received: 04/17/97

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
TOCD	1.00	U		

Comments: _____

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

S106GW02

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0878A SAS No. : _____ SDG No.: A0878

Matrix: (soil/water) WATER Lab Sample ID: 0878002

% Solids: 0.0 Date Received: 04/17/97

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
TOCD	4.95			

Comments: _____

FORM I - WC

SAMPLE NO.

DUP 04

1

WET CHEM ANALYSIS DATA SHEET

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0878A SAS No. : _____ SDG No.: A0878

Matrix: (soil/water) WATER Lab Sample ID: 0878003

% Solids: 0.0 Date Received: 04/17/97

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
TOCD	6.70			

Comments: _____

FORM I - WC

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.: 000202

S106GW04

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 0878A SAS No. : _____ SDG No.: A0878

Matrix: (soil/water) WATER Lab Sample ID: 0878004

% Solids: 0.0 Date Received: 04/17/97

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
TOCD	9.70			

Comments: _____

FORM I - WC

CHYUN ASSOCIATES, INC. Environmental Testing Laboratory

609-924-5151 267 Wall Street, Princeton, N J 08540

LABORATORY ANALYSIS REPORT

Client: IEA, Inc.
Address: 628 Route 10
Whippany, NJ 07981

Attention: Mr. Mike Gemma

Test Number: L97605G
Date Received: April 16, 1997
Date Sampled: See below

Job Number: 083976-98G

SAMPLE NUMBER	SAMPLE DESIGNATION/DESCRIPTION
002	71633-002 (S106GW03) (4-14-97)
003	71633-003 (S106GW03) (4-14-97)
004	71633-004 (S106GW03) (4-14-97)
005	71633-005 (S106GW02) (4-14-97)
006	71633-006 (DUP 04) (4-14-97)
007	71633-007 (S106GW04) (4-15-97)
Method	EPA Method Number

PARAMETER / CONSTITUENT	SAMPLE NUMBER						
	002	003	004	005	006	007	Method
Nitrate as N	3.9*	93*	91*	3.3*	3.9*	1.5	352.1
Detection Limit	0.1	0.1	0.1	0.1	0.1	0.1	
Analysis Date	4/18/97	4/18/97	4/18/97	4/18/97	4/18/97	4/17/97	
Phosphorus, total	< 0.05	97+	100+	< 0.05	< 0.05	< 0.05	365.2
Detection Limit	0.05	0.05	0.05	0.05	0.05	0.05	
Analysis Date	4/18/97	4/29/97	4/29/97	4/18/97	4/18/97	4/18/97	

*Reported Results from diluted sample reanalysis on April 18, 1997
All samples initially run on April 17, 1997.
Results for sample 003 and 004 are percent recoveries
Nitrate samples (002 thru006) received out of hold time

All results in mg/l (ppm) Bottles labeled 71632 Laboratory ID No. 11198

Member of American Council of Independent Laboratories, Inc.

April 29, 1997

Michael Wright, Technical Director

MICROSEEPS

IEA34-972444

----- IEA OF NEW JERSEY -----
----- PROJECT: 20970-71633 -----
----- CONCENTRATIONS IN NANOGRAMS/LITER WATER -----

SAMPLE NAME	METHANE (ng/l)	ETHANE (ng/l)	ETHYLENE (ng/l)	FILE NAME	DATE SAMPLED	DATE RECEIVED	DATE ANALYZED
71633002 GW03	3000	73	50	C8 83	04/14/97	04/17/97	04/24/97
71633003MS	3532	88	64	C8 84	04/14/97	04/17/97	04/24/97
71633004MSD	3544	83	55	C8 85	04/14/97	04/17/97	04/24/97
71633005 GW02	2861	49	14	C8 86	04/14/97	04/17/97	04/24/97
71633006 DUP04	3725	83	55	C8 87	04/14/97	04/17/97	04/24/97
71633007 GW04	3493	58	64	C8 88	04/15/97	04/17/97	04/24/97
MDLs FOR ABOVE SAMPLES	15	5	5				

29-Apr-97

ANALYST INITIALS AS

LAB MANAGER INITIALS DOM

000204

WET CHEMISTRY

QC SUMMARY

CLIENT: Brown Root

JOB NUMBER: 71633

UNITS: mg/l (circled) mg/kg ug/l

SOIL MISC: _____ WATER (circled) SLUDGE

ANALYTE	METHOD BLANK	BLANK SPIKE	SAMPLE	DUP.	RPD	CONC. OF SPIKE ADDED	SPIKED SAMPLE CONC	UNSPIKED SAMPLE CONC	% REC.	DATE ANALYZED
Soil PHC										
Aqueous PHC										
Oil & Grease Grav. / IR										
BOD5										
Total Cyanide										
Ignitability										
Flashpoint (Degrees Farenheit)										
COD										
Total Phenolics										
TDS										
Total Solids										
~~TOC~~ Alkalinity Sulfate	<5.0	97%	<25	<25	NC	50	50	<25	100	4-29-97
Reactive Cyanide										
Reactive Sulfide										
Total Sulfide										
Hexavalent Chromium (7196A)										
Hexavalent Chromium (200.7)										
Chloride	<2	102%	9	10	10	88.6	103	9	106	4-28-97
Misc:										

RPD = Relative Percent Difference NA = Not Applicable NC = Not Calculable

QC performed on Sample: CHL 71633 004 DUP 003 MS

SO4 71633 004 DUP 003 MS

000205

72191

CHAIN OF CUSTODY RECORD

PROJECT NO.: CTO-206

SITE NAME: NWS EARLE

SAMPLERS (SIGNATURE): ROBERT GOOD

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	40 ml VOC w/HCl (AA)	1L BNA	8 oz TOC w/H2SO4 (AA)	4 oz VOC +10	4 oz TOC	8 oz BNA +10, pH	8 oz Particle Size or Moisture	REMARKS	
TB	5/22/97	0600		✓	TB-052297		3							TRIP BLANK	01
S106	5/22/97	1136		✓	S106-SB-06-19					1	1	1	1		02
FB	5/22/97	1250		✓	FB-052297		3	2	1					FIELD BLANK	03

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
	5/22/97 1700				5-22-97
	5/22/97 1642			5-22-97 18:20	8:20
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:	

000008

Order No. 70440 (0693)

1A

EPA SAMPLE NO. 000028

VOLATILE ORGANICS ANALYSIS DATA SHEET

TB-052297

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 72191001

Sample wt/vol: 5 (g/mL) ml Lab File ID: A8167

Level: (low/med) LOW Date Received: 05/22/97

% Moisture: not dec. _____ Date Analyzed: 05/30/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	16	B
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene(total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Total Xylenes	10	U
1634-04-4	Methyl Tertiary Butyl Ether	10	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

000029

TB-052297

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 72191001

Sample wt/vol: 5 (g/mL) ml Lab File ID: A8167

Level: (low/med) LOW Date Received: 05/22/97

% Moisture: not dec. _____ Date Analyzed: 05/30/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
75-65-0	Tertiary Butyl Alcohol	50	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.
000030

TB-052297

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 72191001

Sample wt/vol: 5 (g/mL) ml Lab File ID: A8167

Level: (low/med) LOW Date Received: 05/22/97

% Moisture: not dec. _____ Date Analyzed: 05/30/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.
~~000033~~ A
FB-052297

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 72191003

Sample wt/vol: 5 (g/mL) ml Lab File ID: A8168

Level: (low/med) LOW Date Received: 05/22/97

% Moisture: not dec. _____ Date Analyzed: 05/30/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	13	B
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene(total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Total Xylenes	10	U
1634-04-4	Methyl Tertiary Butyl Ether	10	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

000034

FB-052297

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 72191003

Sample wt/vol: 5 (g/mL) ml Lab File ID: A8168

Level: (low/med) LOW Date Received: 05/22/97

% Moisture: not dec. _____ Date Analyzed: 05/30/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
75-65-0	Tertiary Butyl Alcohol	50	U

1E

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

EPA SAMPLE NO.

FB-052297

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 72191003

Sample wt/vol: 5 (g/mL) ml Lab File ID: A8168

Level: (low/med) LOW Date Received: 05/22/97

% Moisture: not dec. _____ Date Analyzed: 05/30/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
02.				
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FB-052297

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 72191003

Sample wt/vol: 1000 (g/mL) ml Lab File ID: G0428

Level: (low/med) LOW Date Received: 05/22/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 05/27/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 06/01/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
108-95-2	Phenol	10	U
111-44-4	Bis(2-Chloroethyl)Ether	10	U
95-57-8	2-Chlorophenol	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
95-48-7	2-Methylphenol	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
106-44-5	4-Methylphenol	10	U
621-64-7	N-Nitrosodi-N-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
88-75-5	2-Nitrophenol	10	U
105-67-9	2,4-Dimethylphenol	10	U
111-91-1	Bis(2-Chloroethoxy) Methane	10	U
120-83-2	2,4-Dichlorophenol	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
59-50-7	4-Chloro-3-Methylphenol	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
88-06-2	2,4,6-Trichlorophenol	10	U
95-95-4	2,4,5-Trichlorophenol	25	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

FB-052297

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 72191003

Sample wt/vol: 1000 (g/mL) ml Lab File ID: G0428

Level: (low/med) LOW Date Received: 05/22/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 05/27/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 06/01/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
51-28-5	2,4-Dinitrophenol	25	U
100-02-7	4-Nitrophenol	25	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
534-52-1	4,6-Dinitro-2-Methylphenol	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-Phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
87-86-5	Pentachlorophenol	25	U
85-01-8	Phenanthrene	10	U
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-N-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	10	U
117-84-0	Di-N-Octylphthalate	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
50-32-8	Benzo(A)Pyrene	10	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1F

EPA SAMPLE NO.

FB-052297

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Water Lab Sample ID: 72191003

Sample wt/vol: 1000 (g/mL) ml Lab File ID: G0428

Level: (low/med) LOW Date Received: 05/22/97

% Moisture: _____ decanted: (Y/N) ___ Date Extracted: 05/27/97

Concentrated Extract Volume: 1000 (uL) Date Analyzed: 06/01/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

Number TICs Found: 11

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.872504	2-Pyrrolidinone, 1-methyl-	9.40	93	JN
02.	Unknown	8.49	14	J
03.	Unknown	8.31	13	J
04.	Unknown Alcohol	9.13	8	J
05.	Unknown Acid	14.55	7	JB
06.	Unknown Alcohol	3.09	4	J
07.	Unknown Alcohol	8.58	3	J
08.	Unknown Acid	4.87	3	JB
09.	Unknown Acid	10.69	2	J
10.	Unknown Alcohol	11.92	2	JB
11.5717373	(Carbethoxyethylidine)triphe	27.76	2	JN
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106SB0619

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 72191002

Sample wt/vol: 5 (g/mL) g Lab File ID: A8169

Level: (low/med) LOW Date Received: 05/22/97

% Moisture: not dec. 15 Date Analyzed: 05/30/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	12	U
74-83-9	Bromomethane	12	U
75-01-4	Vinyl Chloride	12	U
75-00-3	Chloroethane	12	U
75-09-2	Methylene Chloride	12	U
67-64-1	Acetone	3	J
75-15-0	Carbon Disulfide	12	U
75-35-4	1,1-Dichloroethene	12	U
75-34-3	1,1-Dichloroethane	12	U
540-59-0	1,2-Dichloroethene(total)	12	U
67-66-3	Chloroform	12	U
107-06-2	1,2-Dichloroethane	12	U
78-93-3	2-Butanone	12	U
71-55-6	1,1,1-Trichloroethane	12	U
56-23-5	Carbon Tetrachloride	12	U
75-27-4	Bromodichloromethane	12	U
78-87-5	1,2-Dichloropropane	12	U
10061-01-5	cis-1,3-Dichloropropene	12	U
79-01-6	Trichloroethene	12	U
124-48-1	Dibromochloromethane	12	U
79-00-5	1,1,2-Trichloroethane	12	U
71-43-2	Benzene	12	U
10061-02-6	Trans-1,3-Dichloropropene	12	U
75-25-2	Bromoform	12	U
108-10-1	4-Methyl-2-Pentanone	12	U
591-78-6	2-Hexanone	12	U
127-18-4	Tetrachloroethene	12	U
79-34-5	1,1,2,2-Tetrachloroethane	12	U
108-88-3	Toluene	12	U
108-90-7	Chlorobenzene	12	U
100-41-4	Ethylbenzene	12	U
100-42-5	Styrene	12	U
1330-20-7	Total Xylenes	12	U
1634-04-4	Methyl Tertiary Butyl Ether	12	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106SB0619

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 72191002

Sample wt/vol: 5 (g/mL) g Lab File ID: A8169

Level: (low/med) LOW Date Received: 05/22/97

% Moisture: not dec. 15 Date Analyzed: 05/30/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
75-65-0	Tertiary Butyl Alcohol	59	U

1E

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

S106SB0619

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 72191002

Sample wt/vol: 5 (g/mL) g Lab File ID: A8169

Level: (low/med) LOW Date Received: 05/22/97

% Moisture: not dec. 15 Date Analyzed: 05/30/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
02.				
03.				
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1B

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106SB0619

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 72191002

Sample wt/vol: 30 (g/mL) g Lab File ID: G0484

Level: (low/med) LOW Date Received: 05/22/97

% Moisture: 15 decanted: (Y/N) N Date Extracted: 05/30/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 06/04/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.02

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg	Q
108-95-2	Phenol	390	U
111-44-4	Bis(2-Chloroethyl)Ether	390	U
95-57-8	2-Chlorophenol	390	U
541-73-1	1,3-Dichlorobenzene	390	U
106-46-7	1,4-Dichlorobenzene	390	U
95-50-1	1,2-Dichlorobenzene	390	U
95-48-7	2-Methylphenol	390	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	390	U
106-44-5	4-Methylphenol	390	U
621-64-7	N-Nitrosodi-N-Propylamine	390	U
67-72-1	Hexachloroethane	390	U
98-95-3	Nitrobenzene	390	U
78-59-1	Isophorone	390	U
88-75-5	2-Nitrophenol	390	U
105-67-9	2,4-Dimethylphenol	390	U
111-91-1	Bis(2-Chloroethoxy) Methane	390	U
120-83-2	2,4-Dichlorophenol	390	U
120-82-1	1,2,4-Trichlorobenzene	390	U
91-20-3	Naphthalene	390	U
106-47-8	4-Chloroaniline	390	U
87-68-3	Hexachlorobutadiene	390	U
59-50-7	4-Chloro-3-Methylphenol	390	U
91-57-6	2-Methylnaphthalene	390	U
77-47-4	Hexachlorocyclopentadiene	390	U
88-06-2	2,4,6-Trichlorophenol	390	U
95-95-4	2,4,5-Trichlorophenol	980	U
91-58-7	2-Chloronaphthalene	390	U
88-74-4	2-Nitroaniline	980	U
131-11-3	Dimethylphthalate	390	U
208-96-8	Acenaphthylene	390	U
606-20-2	2,6-Dinitrotoluene	390	U
99-09-2	3-Nitroaniline	980	U
83-32-9	Acenaphthene	390	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106SB0619

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 72191002

Sample wt/vol: 30 (g/mL) g Lab File ID: G0484

Level: (low/med) LOW Date Received: 05/22/97

% Moisture: 15 decanted: (Y/N) N Date Extracted: 05/30/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 06/04/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.02

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
51-28-5	2,4-Dinitrophenol	980	U
100-02-7	4-Nitrophenol	980	U
132-64-9	Dibenzofuran	390	U
121-14-2	2,4-Dinitrotoluene	390	U
84-66-2	Diethylphthalate	390	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	390	U
86-73-7	Fluorene	390	U
100-01-6	4-Nitroaniline	980	U
534-52-1	4,6-Dinitro-2-Methylphenol	980	U
86-30-6	N-Nitrosodiphenylamine (1)	390	U
101-55-3	4-Bromophenyl-Phenylether	390	U
118-74-1	Hexachlorobenzene	390	U
87-86-5	Pentachlorophenol	980	U
85-01-8	Phenanthrene	390	U
120-12-7	Anthracene	390	U
86-74-8	Carbazole	390	U
84-74-2	Di-N-Butylphthalate	390	U
206-44-0	Fluoranthene	390	U
129-00-0	Pyrene	390	U
85-68-7	Butylbenzylphthalate	390	U
91-94-1	3,3'-Dichlorobenzidine	390	U
56-55-3	Benzo(A)Anthracene	390	U
218-01-9	Chrysene	390	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	390	U
117-84-0	Di-N-Octylphthalate	390	U
205-99-2	Benzo(B)Fluoranthene	390	U
207-08-9	Benzo(K)Fluoranthene	390	U
50-32-8	Benzo(A)Pyrene	390	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	390	U
53-70-3	Dibenz(A,H)Anthracene	390	U
191-24-2	Benzo(G,H,I)Perylene	390	U

1F

EPA SAMPLE NO.

S106SB0619

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 72191002

Sample wt/vol: 30 (g/mL) g Lab File ID: G0484

Level: (low/med) LOW Date Received: 05/22/97

% Moisture: 15 decanted: (Y/N) N Date Extracted: 05/30/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 06/04/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.02

Number TICs Found: 15

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Unknown	5.34	1600	JAB
02.	Unknown Acid	14.56	350	JB
03.	Unknown Ketone	6.90	280	JB
04.	Unknown	4.81	200	JB
05.	Unknown	7.90	170	JB
06.	Unknown Alcohol	3.31	170	J
07.	Unknown Alkene	4.36	150	JB
08.	Unknown Ketone	6.81	140	JB
09.	Unknown Alkene	4.99	130	JB
10.	Unknown	11.91	110	JB
11.	Unknown	4.92	110	JB
12.	Unknown Alcohol	8.59	110	J
13.	Unknown Alkene	6.16	100	J
14.	Unknown Cycloalkane	7.54	100	JB
15.	Unknown Acid	21.99	80	J
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IEA NEW JERSEY
PERCENT SOLIDS and PH RESULTS

CLIENT: Brown & Root Environmental

JOB NO: 20970-72191

LAB I.D.	CLIENT I.D.	MX	PERCENT SOLIDS	PH
72191001	TB-052297	SO		
72191002	S106SB0619	SO	85.46	5.02
72191002DUP	S106SB0619	SO	85.20	5.03
72191003	FB-052297	WA		

000224
SAMPLE NO.

WET CHEM ANALYSIS DATA SHEET

S106-SB-06

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 1211A SAS No. : _____ SDG No.: A1211

Matrix: (soil/water) SOIL Lab Sample ID: 1211001

% Solids: _____ Date Received: 05/24/97

Concentration Units (mg/L or mg/kg dry weight) : mg/Kg

Analyte	Concentration	C	Q	M
TOCD	302.			

Comments: _____

FORM I - WC

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

FB-052297

Lab Name: IEA Contract: _____

Lab Code: IEA Case No.: 1211A SAS No. : _____ SDG No.: A1211

Matrix: (soil/water) WATER Lab Sample ID: 1211002

% Solids: _____ Date Received: 05/24/97

Concentration Units (mg/L or mg/kg dry weight) : mg/L

Analyte	Concentration	C	Q	M
TOCD	1.00	U		

Comments: _____

FORM I - WC

PARTICLE-SIZE ANALYSIS OF SOILS

000226

ASTM D 421, D 422, D 1140, D 2216, D 2217

IEA/LAB GEOTECH/NJ
963-6243

SAMPLE #: S106-SB-06

MOISTURE CONTENT (Delivered Moisture)

tare #	GH17
wt soil&tare,moist (g)	546.62
wt soil&tare,dry (g)	481.19
wt tare (g)	154.40
wt moisture (g)	65.43
wt dry soil (g)	326.79
% moisture	20.02%

% PASSING #10 SIEVE

Total Wt (g)	326.79
Wt Split #10 (g)	326.61
% passing #10	99.94%

	SIEVE	wt ret (g)	% ret	% pass	SIEVE	
coarse gravel	3.000		0.00%	100.00%	3.000	coarse gravel
	1.500		0.00%	100.00%	1.500	
	1.000		0.00%	100.00%	1.000	
fine gravel	0.750		0.00%	100.00%	0.750	fine gravel
	0.375		0.00%	100.00%	0.375	
coarse sand	#4		0.00%	100.00%	#4	coarse sand
medium sand	#10	0.18	0.06%	99.94%	#10	medium sand

SAMPLE PREPARATION FOR HYDROMETER ANALYSIS

% Passing #10 Sieve	99.94	Initial Moist Weight	78.33
Specific Gravity (ASSUMED)	2.65	Calculated Dry Weight	78.13
ml Dispersing Agent Used (40 ml Na(PO4)n per 1000 ml H2O)	125		

MOISTURE CONTENT (Hygroscopic - #10)

tare #	26C	tare #	89		
wt soil&tare,moist (g)	55.05	wt soil&tare,dry (g)	434.29	LL:	-
wt soil&tare,dry (g)	54.96	wt soil&tare,wash (g)	425.68	PL:	-
wt tare (g)	20.61	wt tare (g)	356.10	PI:	-
wt moisture (g)	0.09	wt fines lost (g)	8.61		
wt dry soil (g)	34.35	wt dry soil (g)	78.19		
% moisture	0.26%	% fines lost	11.01%		

PERCENT BETWEEN #10 AND #200 SIEVE CALCULATION

SIEVE	CUMUL WT RETAINED	CUMUL WT RET. CORR.	PERCENT PASSING		
#10	0.00	0.04	99.94%	#10	medium sand
#20	1.18	1.22	98.44%	#20	
#40	15.24	15.28	80.45%	#40	fine sand
#60	58.87	58.91	24.63%	#60	
#100	68.22	68.26	12.67%	#100	
#200	69.52	69.56	11.01%	#200	fines

DATE	TIME	TIME,CUM (min)	READING R	TEMP T	HYD RDG H	PARTICLE DIAMETER	% FINER
6/15/97	7:51	2.0	12.5	22.0	4.0	0.037	10.87%
	7:53	4.0	12.5	22.0	4.0	0.026	10.87%
	7:57	8.0	12.5	22.0	4.0	0.018	10.87%
	8:04	15.0	12.5	22.0	4.0	0.014	10.87%
	8:19	30.0	12.5	22.0	4.0	0.010	10.87%
	8:50	61.0	12.5	22.0	4.0	0.007	10.87%
	9:49	120.0	12.0	22.0	4.5	0.005	9.59%
	11:49	240.0	11.5	23.0	4.0	0.003	9.59%
	15:49	480.0	11.0	23.0	4.0	0.002	8.96%
6/16/97	7:49	1440.0	10.0	23.0	4.0	0.001	7.68%

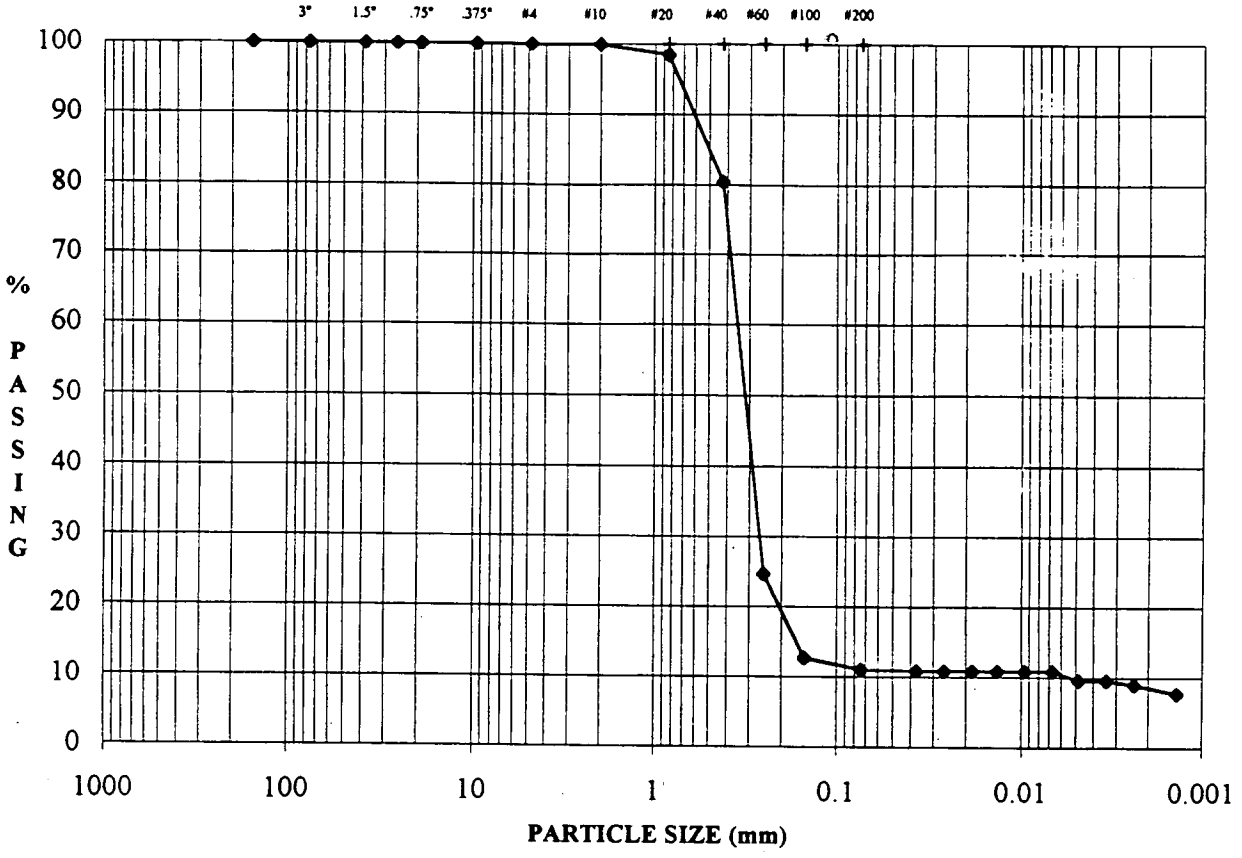
%C GRVL:	0.00%
%F GRVL:	0.00%
%C SAND:	0.06%
%M SAND:	19.50%
%F SAND:	69.44%
%FINES:	11.01%
%TOTAL:	100.00%

Wet Color: Olive,
Description: m-f Sand, little fines

DATE	6/16/97
TECH	NC/RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

PARTICLE-SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



COBBLES	Coarse	Fine	Cor	Med	Fine	Silt or Clay Size
	GRAVEL		SAND			FINES

SAMPLE #:	S106-SB-06
WET COLOR:	Olive,
DESCRIPTION:	m-f Sand, little fines

Mc:	20.02%
LL:	-
PL:	-
PI :	-
Gs:	-

IEA/LAB GEOTECH/NJ
963-6243

DATE	6/16/97
TECH	NC/RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

CHAIN OF CUSTODY RECORD

72229

PROJECT NO.: CTO 206

SITE NAME: NWS Earle

SAMPLERS (SIGNATURE): Donald W Kalen

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	4oz VOC+10	4oz TOC	8oz BN+10 PH	8oz Particle size % moisture			REMARKS
S106	5/23/97	0950		✓	S106-SB-05-21	4	1	1	1	1			

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
Donald W Kalen	5/23/97 1430	Ed Reynolds	Ed Reynolds	5/23/97 14"	
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE): Ed Reynolds	DATE / TIME: 5/23/97 1630	RECEIVED BY (SIGNATURE): Dennis Mikes 5/23/97 Dennis Mikes 1630
RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED FOR LAB RATORY BY (SIGNATURE):	DATE / TIME:	REMARKS:	

Order No. 70440 (0693)

00009

1A

EPA SAMPLE NO. 000023

VOLATILE ORGANICS ANALYSIS DATA SHEET

S106SB0521

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 72229001

Sample wt/vol: 5 (g/mL) g Lab File ID: A8170

Level: (low/med) LOW Date Received: 05/23/97

% Moisture: not dec. 8 Date Analyzed: 05/30/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
74-87-3	Chloromethane	11	U
74-83-9	Bromomethane	11	U
75-01-4	Vinyl Chloride	11	U
75-00-3	Chloroethane	11	U
75-09-2	Methylene Chloride	11	U
67-64-1	Acetone	3	J
75-15-0	Carbon Disulfide	11	U
75-35-4	1,1-Dichloroethene	11	U
75-34-3	1,1-Dichloroethane	11	U
540-59-0	1,2-Dichloroethene(total)	11	U
67-66-3	Chloroform	11	U
107-06-2	1,2-Dichloroethane	11	U
78-93-3	2-Butanone	11	U
71-55-6	1,1,1-Trichloroethane	11	U
56-23-5	Carbon Tetrachloride	11	U
75-27-4	Bromodichloromethane	11	U
78-87-5	1,2-Dichloropropane	11	U
10061-01-5	cis-1,3-Dichloropropene	11	U
79-01-6	Trichloroethene	11	U
124-48-1	Dibromochloromethane	11	U
79-00-5	1,1,2-Trichloroethane	11	U
71-43-2	Benzene	11	U
10061-02-6	Trans-1,3-Dichloropropene	11	U
75-25-2	Bromoform	11	U
108-10-1	4-Methyl-2-Pentanone	11	U
591-78-6	2-Hexanone	11	U
127-18-4	Tetrachloroethene	11	U
79-34-5	1,1,2,2-Tetrachloroethane	11	U
108-88-3	Toluene	11	U
108-90-7	Chlorobenzene	11	U
100-41-4	Ethylbenzene	11	U
100-42-5	Styrene	11	U
1330-20-7	Total Xylenes	11	U
1634-04-4	Methyl Tertiary Butyl Ether	11	U

1A

EPA SAMPLE NO.

VOLATILE ORGANICS ANALYSIS DATA SHEET

S106SB0521

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 72229001

Sample wt/vol: 5 (g/mL) g Lab File ID: A8170

Level: (low/med) LOW Date Received: 05/23/97

% Moisture: not dec. 8 Date Analyzed: 05/30/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg

CAS NO.	COMPOUND		Q
75-65-0	Tertiary Butyl Alcohol	54	U

EPA SAMPLE NO.

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

S106SB0521

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 72229001

Sample wt/vol: 5 (g/mL) g Lab File ID: A8170

Level: (low/med) LOW Date Received: 05/23/97

% Moisture: not dec. 8 Date Analyzed: 05/30/97

GC Column: RTX-624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____ (uL) Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
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1B

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

S106SB0521

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 72229001

Sample wt/vol: 30 (g/mL) g Lab File ID: G0485

Level: (low/med) LOW Date Received: 05/23/97

% Moisture: 8 decanted: (Y/N) N Date Extracted: 05/30/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 06/04/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.58

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg	Q
111-44-4	Bis(2-Chloroethyl)Ether	360	U
541-73-1	1,3-Dichlorobenzene	360	U
106-46-7	1,4-Dichlorobenzene	360	U
95-50-1	1,2-Dichlorobenzene	360	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	360	U
621-64-7	N-Nitrosodi-N-Propylamine	360	U
67-72-1	Hexachloroethane	360	U
98-95-3	Nitrobenzene	360	U
78-59-1	Isophorone	360	U
111-91-1	Bis(2-Chloroethoxy) Methane	360	U
120-82-1	1,2,4-Trichlorobenzene	360	U
91-20-3	Naphthalene	360	U
106-47-8	4-Chloroaniline	360	U
87-68-3	Hexachlorobutadiene	360	U
91-57-6	2-Methylnaphthalene	360	U
77-47-4	Hexachlorocyclopentadiene	360	U
91-58-7	2-Chloronaphthalene	360	U
88-74-4	2-Nitroaniline	900	U
131-11-3	Dimethylphthalate	360	U
208-96-8	Acenaphthylene	360	U
606-20-2	2,6-Dinitrotoluene	360	U
99-09-2	3-Nitroaniline	900	U
83-32-9	Acenaphthene	360	U
132-64-9	Dibenzofuran	360	U
121-14-2	2,4-Dinitrotoluene	360	U
84-66-2	Diethylphthalate	360	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	360	U
86-73-7	Fluorene	360	U
100-01-6	4-Nitroaniline	900	U
86-30-6	N-Nitrosodiphenylamine (1)	360	U
101-55-3	4-Bromophenyl-Phenylether	360	U
118-74-1	Hexachlorobenzene	360	U
85-01-8	Phenanthrene	360	U

1C

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

S106SB0521

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 72229001

Sample wt/vol: 30 (g/mL) g Lab File ID: G0485

Level: (low/med) LOW Date Received: 05/23/97

% Moisture: 8 decanted: (Y/N) N Date Extracted: 05/30/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 06/04/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.58

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/kg	Q
120-12-7	Anthracene	360	U
86-74-8	Carbazole	360	U
84-74-2	Di-N-Butylphthalate	360	U
206-44-0	Fluoranthene	360	U
129-00-0	Pyrene	360	U
85-68-7	Butylbenzylphthalate	360	U
91-94-1	3,3'-Dichlorobenzidine	360	U
56-55-3	Benzo(A)Anthracene	360	U
218-01-9	Chrysene	360	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	360	U
117-84-0	Di-N-Octylphthalate	360	U
205-99-2	Benzo(B)Fluoranthene	360	U
207-08-9	Benzo(K)Fluoranthene	360	U
50-32-8	Benzo(A)Pyrene	360	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	360	U
53-70-3	Dibenz(A,H)Anthracene	360	U
191-24-2	Benzo(G,H,I)Perylene	360	U

1F

EPA SAMPLE NO.

SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

S106SB0521

Lab Name: IEA-NJ Contract: 68D50011

Lab Code: IEANJ Case No.: _____ SAS No.: _____ SDG No.: _____

Matrix: (soil/water) Soil Lab Sample ID: 72229001

Sample wt/vol: 30 (g/mL) g Lab File ID: G0485

Level: (low/med) LOW Date Received: 05/23/97

% Moisture: 8 decanted: (Y/N) N Date Extracted: 05/30/97

Concentrated Extract Volume: 500 (uL) Date Analyzed: 06/04/97

Injection Volume: 2 (uL) Dilution Factor: 1.0

GPC Cleanup: (Y/N) Y pH: 5.58

Number TICs Found: 16

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/kg

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Unknown	5.34	1400	JB
02.	Unknown Acid	14.54	340	JB
03.	Unknown	6.90	300	JB
04.	Unknown	4.36	200	JB
05.	Unknown Alcohol	3.32	190	JB
06.	Unknown	4.81	190	JB
07.	Unknown	4.99	180	JB
08.	Unknown	7.90	170	JB
09.	Unknown	34.59	170	J
10.	Unknown Ketone	6.81	160	JB
11.	Unknown	4.92	120	JB
12.	Unknown Alcohol	11.91	110	J
13.	Unknown Alkene	6.16	110	JB
14.	Unknown Cycloalkane	7.54	100	JB
15.	Unknown	8.59	89	J
16.	Unknown Alcohol	4.70	83	J
17.				
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IEA NEW JERSEY
PERCENT SOLIDS and PH RESULTS

CLIENT: Brown & Root Environmental

JOB NO: 20970-72229

LAB I.D.	CLIENT I.D.	MX	PERCENT SOLIDS	PH
72229001	S106SB0521	SO	92.03	5.58
72229001DUP	S106SB0521	SO	91.38	5.58

1

WET CHEM ANALYSIS DATA SHEET

SAMPLE NO.

S106SB0521

ab Name: IEA Contract: _____

ab Code: IEA Case No.: 1214A SAS No. : _____ SDG No.: A1214

atrix: (soil/water) SOIL Lab Sample ID: 1214001

Solids: _____ Date Received: 05/28/97

Concentration Units (mg/L or mg/kg dry weight) : mg/Kg

Analyte	Concentration	C	Q	M
TOCD	218.			

Comments: _____

FORM I - WC

PARTICLE-SIZE ANALYSIS OF SOILS

ASTM D 421, D 422, D 1140, D 2216, D 2217

000143

IEA/LAB GEOTECH/NJ
963-6243

SAMPLE #: S106-SB-0521

MOISTURE CONTENT (Delivered Moisture)

tare #	26
wt soil&tare,moist (g)	695.97
wt soil&tare,dry (g)	658.37
wt tare (g)	353.92
wt moisture (g)	37.60
wt dry soil (g)	304.45
% moisture	12.35%

% PASSING #10 SIEVE

Total Wt (g)	304.45
Wt Split #10 (g)	300.37
% passing #10	98.66%

	SIEVE	wt ret (g)	% ret	% pass	SIEVE	
coarse gravel	3.000		0.00%	100.00%	3.000	coarse gravel
	1.500		0.00%	100.00%	1.500	
	1.000		0.00%	100.00%	1.000	
fine gravel	0.750		0.00%	100.00%	0.750	fine gravel
	0.375		0.00%	100.00%	0.375	
coarse sand	#4	1.14	0.37%	99.63%	#4	coarse sand
medium sand	#10	4.08	1.34%	98.66%	#10	medium sand

SAMPLE PREPARATION FOR HYDROMETER ANALYSIS

% Passing #10 Sieve	98.66	Initial Moist Weight	77.07
Specific Gravity (ASSUMED)	2.65	Calculated Dry Weight	76.87
ml Dispersing Agent Used (40 ml Na(PO4)n per 1000 ml H2O)	125		

MOISTURE CONTENT (Hygroscopic - #10)

tare #	23	tare #	RW18		
wt soil&tare,moist (g)	43.96	wt soil&tare,dry (g)	230.55	LL:	-
wt soil&tare,dry (g)	43.90	wt soil&tare,wash (g)	218.62	PL:	-
wt tare (g)	20.68	wt tare (g)	153.68	PI:	-
wt moisture (g)	0.06	wt fines lost (g)	11.93		
wt dry soil (g)	23.22	wt dry soil (g)	76.87		
% moisture	0.26%	% fines lost	15.52%		

PERCENT BETWEEN #10 AND #200 SIEVE CALCULATION

SIEVE	CUMUL WT RETAINED	CUMUL WT RET. CORR.	PERCENT PASSING		
#10	0.00	1.04	98.66%	#10	medium sand
#20	8.21	9.25	88.12%	#20	
#40	14.16	15.20	80.49%	#40	fine sand
#60	52.93	53.97	30.73%	#60	
#100	62.82	63.86	18.03%	#100	
#200	64.94	65.98	15.31%	#200	fines

DATE	TIME	TIME,CUM (min)	READING R	TEMP T	HYD RDG H	PARTICLE DIAMETER	% FINER
6/15/97	7:44	2.0	15.5	22.0	4.0	0.036	14.76%
	7:46	4.0	15.5	22.0	4.0	0.026	14.76%
	7:50	8.0	15.5	22.0	4.0	0.018	14.76%
	7:57	15.0	15.5	22.0	4.0	0.013	14.76%
	8:12	30.0	15.0	22.0	4.0	0.009	14.12%
	8:42	60.0	14.5	22.0	4.0	0.007	13.48%
	9:42	120.0	14.0	22.0	4.5	0.005	12.19%
	11:42	240.0	13.5	23.0	4.0	0.003	12.19%
	15:42	480.0	13.0	23.0	4.0	0.002	11.55%
6/16/97	7:42	1440.0	11.5	23.0	4.0	0.001	9.63%

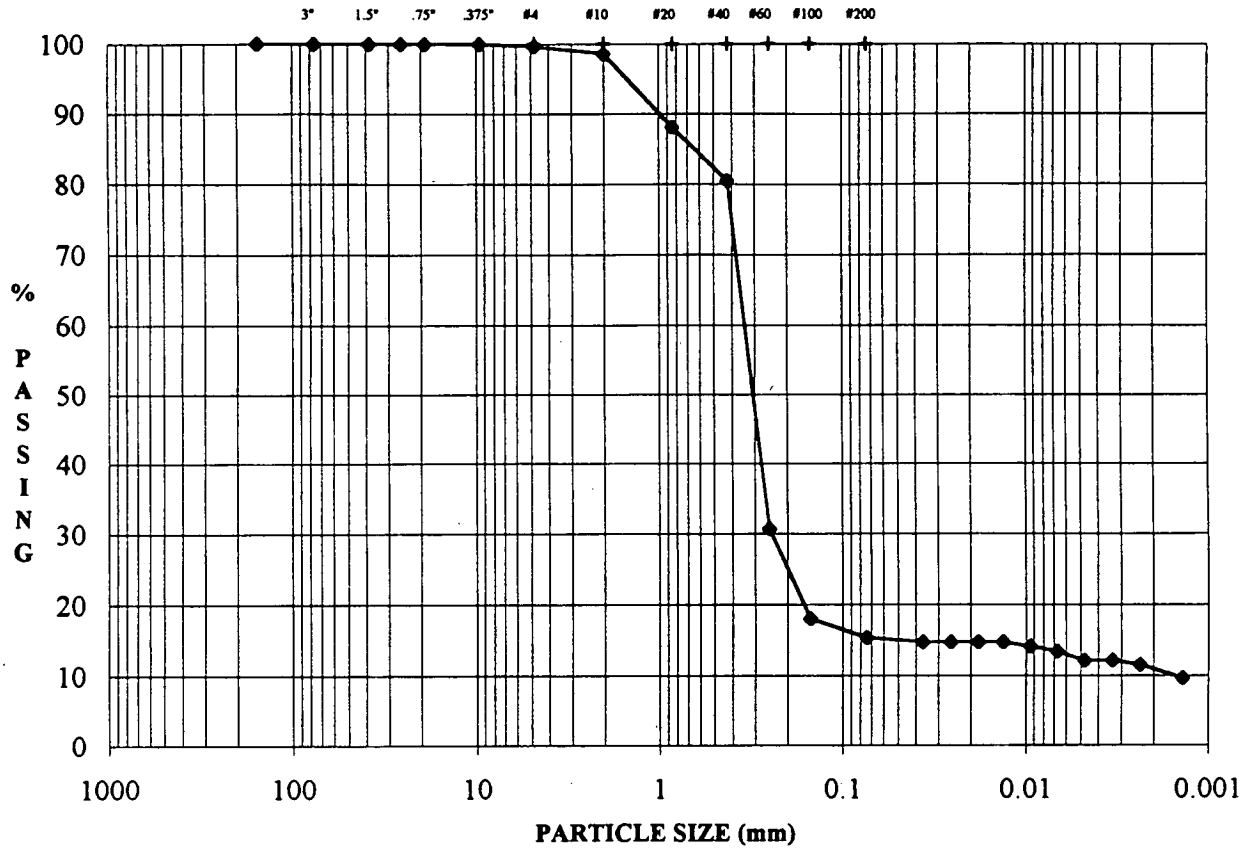
%C GRVL:	0.00%
%F GRVL:	0.37%
%C SAND:	0.97%
%M SAND:	18.17%
%F SAND:	65.17%
%FINES:	15.31%
%TOTAL:	100.00%

Wet Color: Olive,
Description: m-f Sand,, some fines, trace gravel

DATE	6/16/97
TECH	NC/RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

PARTICLE-SIZE DISTRIBUTION ASTM D 421 AND D 422
US STANDARD SIEVE OPENING SIZES



COBBLES	Coarse	Fine	Cor	Med	Fine	Silt or Clay Size
	GRAVEL		SAND			FINES

SAMPLE #:	S106-SB-0521
WET COLOR:	Olive,
DESCRIPTION:	m-f Sand,, some fines, trace gravel

Mc:	12.35%
LL:	-
PL:	-
PI :	-
Gs:	-

IEA/LAB GEOTECH/NJ
963-6243

DATE	6/16/97
TECH	NC/RDD
REVIEW	RMW

GOLDER ASSOCIATES INC.
MT. LAUREL, NEW JERSEY

CHAIN OF CUSTODY RECORD

72412

PROJECT NO.: CTO 206

SITE NAME: NWS Earle

SAMPLERS (SIGNATURE): [signature]

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	40 ml Amber Vials HCl	1 Liter Amber Glass TCL VOCs + 10	TCL SVOCs + 15 40 ml Amber Vials	Methanol, Ethanol, Ethanol	1 Liter Poly	Sulfate, Chloride	1 Liter Poly Nitrate, Phosphorus	REMARKS
001	6/5/97	0830		✓	S106-TB-060597	3	3							Trip Blank
002	6/5/97	1115		✓	S106-MW-05		3	2	2	1	1			
003	6/5/97	1240		✓	S106-MW-06		3	2	2	1	1			

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
[signature]	6/5/97 1830				
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): [signature]	DATE / TIME: 6/5/97 18:30	REMARKS: Shipped via Federal Express Airbill WO 5081400100	

000007

Order No. 70440 (0693)

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

000023

TB-060597

Lab Name: IEA-NJ

Job No. : 72412

Matrix: (soil/water) Water

Lab Sample ID: 72412001

Sample wt/vol: 5 (g/mL) ml

Lab File ID: A8564

Level: (low/med) LOW

Date Received: 06/05/97

% Moisture: not dec. _____

Date Analyzed: 06/13/97

GC Column: RTX-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: ____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene(total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Total Xylenes	10	U
1634-04-4	Methyl Tertiary Butyl Ether	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

000024

TB-060597

Lab Name: IEA-NJ

Job No. : 72412

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/mL) ml

Level: (low/med) LOW

% Moisture: not dec. _____

GC Column: RTX-624 ID: 0.53 (mm)

Soil Extract Volume: _____ (uL)

Lab Sample ID: 72412001

Lab File ID: A8564

Date Received: 06/05/97

Date Analyzed: 06/13/97

Dilution Factor: 1.0

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
75-65-0	Tertiary Butyl Alcohol	50	U

FORM I VOA

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

000025

TB-060597

Lab Name: IEA-NJ

Job No. : 72412

Matrix: (soil/water) Water

Lab Sample ID: 72412001

Sample wt/vol: 5 (g/mL) ml

Lab File ID: A8564

Level: (low/med) LOW

Date Received: 06/05/97

% Moisture: not dec. _____

Date Analyzed: 06/13/97

GC Column: RTX-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
02.				
03.				
04.				
05.				
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

MW-05

Lab Name: IEA-NJ

Job No. : 72412

Matrix: (soil/water) Water

Lab Sample ID: 72412002

Sample wt/vol: 5 (g/mL) ml

Lab File ID: A8574

Level: (low/med) LOW

Date Received: 06/05/97

% Moisture: not dec. _____

Date Analyzed: 06/13/97

GC Column: RTX-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene(total)	10	U
67-66-3	Chloroform	15	
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	4	J
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Total Xylenes	10	U
1634-04-4	Methyl Tertiary Butyl Ether	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

MW-05

Lab Name: IEA-NJ

Job No. : 72412

Matrix: (soil/water) Water

Lab Sample ID: 72412002

Sample wt/vol: 5 (g/mL) ml

Lab File ID: A8574

Level: (low/med) LOW

Date Received: 06/05/97

% Moisture: not dec. _____

Date Analyzed: 06/13/97

GC Column: RTX-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
75-65-0	Tertiary Butyl Alcohol	50	U

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

MW-05

Lab Name: IEA-NJ

Job No. : 72412

Matrix: (soil/water) Water

Lab Sample ID: 72412002

Sample wt/vol: 5 (g/mL) ml

Lab File ID: A8574

Level: (low/med) LOW

Date Received: 06/05/97

% Moisture: not dec. _____

Date Analyzed: 06/13/97

GC Column: RTX-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
02.				
03.				
04.				
05.				
06.				
07.				
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10.				
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW-05

Lab Name: IEA-NJ

Job No. : 72412

Matrix: (soil/water) Water

Lab Sample ID: 72412002

Sample wt/vol: 1000 (g/mL) ml

Lab File ID: H8587

Level: (low/med) LOW

Date Received: 06/05/97

% Moisture: _____ decanted: (Y/N) ___

Date Extracted: 06/09/97

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 06/14/97

Injection Volume: 2 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
111-44-4	Bis(2-Chloroethyl)Ether	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
621-64-7	N-Nitrosodi-N-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
111-91-1	Bis(2-Chloroethoxy) Methane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-Phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
85-01-8	Phenanthrene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW-05

Lab Name: IEA-NJ

Job No. : 72412

Matrix: (soil/water) Water

Lab Sample ID: 72412002

Sample wt/vol: 1000 (g/mL) ml

Lab File ID: H8587

Level: (low/med) LOW

Date Received: 06/05/97

% Moisture: _____ decanted: (Y/N) ___

Date Extracted: 06/09/97

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 06/14/97

Injection Volume: 2 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-N-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	1	J
117-84-0	Di-N-Octylphthalate	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
50-32-8	Benzo(A)Pyrene	10	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

MW-05

Lab Name: IEA-NJ

Job No. : 72412

Matrix: (soil/water) Water

Lab Sample ID: 72412002

Sample wt/vol: 1000 (g/mL) ml

Lab File ID: H8587

Level: (low/med) LOW

Date Received: 06/05/97

% Moisture: _____ decanted: (Y/N) ___

Date Extracted: 06/09/97

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 06/14/97

Injection Volume: 2 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

Number TICs Found: 4

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Unknown	3.92	5	JB
02.	Unknown	5.36	3	JB
03.	Unknown	5.63	2	JB
04.	Unknown Acid	9.70	2	JB
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1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

MW-06

Lab Name: IEA-NJ

Job No. : 72412

Matrix: (soil/water) Water

Lab Sample ID: 72412003

Sample wt/vol: 5 (g/mL) ml

Lab File ID: A8566

Level: (low/med) LOW

Date Received: 06/05/97

% Moisture: not dec. _____

Date Analyzed: 06/13/97

GC Column: RTX-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene(total)	10	U
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	Trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Total Xylenes	10	U
1634-04-4	Methyl Tertiary Butyl Ether	10	U

1A
VOLATILE ORGANICS ANALYSIS DATA SHEET

MW-06

Lab Name: IEA-NJ

Job No. : 72412

Matrix: (soil/water) Water

Lab Sample ID: 72412003

Sample wt/vol: 5 (g/mL) ml

Lab File ID: A8566

Level: (low/med) LOW

Date Received: 06/05/97

% Moisture: not dec. _____

Date Analyzed: 06/13/97

GC Column: RTX-624 ID: 0.53 (mm)

Dilution Factor: 1.0

Soil Extract Volume: _____ (uL)

Soil Aliquot Volume: _____ (uL)

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
75-65-0	Tertiary Butyl Alcohol	50	U

FORM I VOA

1E
VOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

MW-06

Lab Name: IEA-NJ

Job No. : 72412

Matrix: (soil/water) Water

Sample wt/vol: 5 (g/mL) ml

Level: (low/med) LOW

% Moisture: not dec. _____

GC Column: RTX-624 ID: 0.53 (mm)

Soil Extract Volume: _____ (uL)

Lab Sample ID: 72412003

Lab File ID: A8566

Date Received: 06/05/97

Date Analyzed: 06/13/97

Dilution Factor: 1.0

Soil Aliquot Volume: _____ (uL)

Number TICs Found: 0

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.				
02.				
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1B
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW-06

Lab Name: IEA-NJ

Job No. : 72412

Matrix: (soil/water) Water

Lab Sample ID: 72412003

Sample wt/vol: 1000 (g/mL) ml

Lab File ID: H8588

Level: (low/med) LOW

Date Received: 06/05/97

% Moisture: _____ decanted: (Y/N) ___

Date Extracted: 06/09/97

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 06/14/97

Injection Volume: 2 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l	Q
111-44-4	Bis(2-Chloroethyl)Ether	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U
108-60-1	2,2'-Oxybis(1-Chloropropane)	10	U
621-64-7	N-Nitrosodi-N-Propylamine	10	U
67-72-1	Hexachloroethane	10	U
98-95-3	Nitrobenzene	10	U
78-59-1	Isophorone	10	U
111-91-1	Bis(2-Chloroethoxy) Methane	10	U
120-82-1	1,2,4-Trichlorobenzene	10	U
91-20-3	Naphthalene	10	U
106-47-8	4-Chloroaniline	10	U
87-68-3	Hexachlorobutadiene	10	U
91-57-6	2-Methylnaphthalene	10	U
77-47-4	Hexachlorocyclopentadiene	10	U
91-58-7	2-Chloronaphthalene	10	U
88-74-4	2-Nitroaniline	25	U
131-11-3	Dimethylphthalate	10	U
208-96-8	Acenaphthylene	10	U
606-20-2	2,6-Dinitrotoluene	10	U
99-09-2	3-Nitroaniline	25	U
83-32-9	Acenaphthene	10	U
132-64-9	Dibenzofuran	10	U
121-14-2	2,4-Dinitrotoluene	10	U
84-66-2	Diethylphthalate	10	U
7005-72-3	4-Chlorophenyl-Phenyl Ether	10	U
86-73-7	Fluorene	10	U
100-01-6	4-Nitroaniline	25	U
86-30-6	N-Nitrosodiphenylamine (1)	10	U
101-55-3	4-Bromophenyl-Phenylether	10	U
118-74-1	Hexachlorobenzene	10	U
85-01-8	Phenanthrene	10	U

1C
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET

MW-06

Lab Name: IEA-NJ

Job No. : 72412

Matrix: (soil/water) Water

Lab Sample ID: 72412003

Sample wt/vol: 1000 (g/mL) ml

Lab File ID: H8588

Level: (low/med) LOW

Date Received: 06/05/97

% Moisture: _____ decanted: (Y/N) ___

Date Extracted: 06/09/97

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 06/14/97

Injection Volume: 2 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

CONCENTRATION UNITS: (ug/L or ug/Kg) ug/l

CAS NO.	COMPOUND		Q
120-12-7	Anthracene	10	U
86-74-8	Carbazole	10	U
84-74-2	Di-N-Butylphthalate	10	U
206-44-0	Fluoranthene	10	U
129-00-0	Pyrene	10	U
85-68-7	Butylbenzylphthalate	10	U
91-94-1	3,3'-Dichlorobenzidine	10	U
56-55-3	Benzo(A)Anthracene	10	U
218-01-9	Chrysene	10	U
117-81-7	Bis(2-Ethylhexyl)Phthalate	2	J
117-84-0	Di-N-Octylphthalate	10	U
205-99-2	Benzo(B)Fluoranthene	10	U
207-08-9	Benzo(K)Fluoranthene	10	U
50-32-8	Benzo(A)Pyrene	10	U
193-39-5	Indeno(1,2,3-Cd)Pyrene	10	U
53-70-3	Dibenz(A,H)Anthracene	10	U
191-24-2	Benzo(G,H,I)Perylene	10	U

1F
SEMIVOLATILE ORGANICS ANALYSIS DATA SHEET
TENTATIVELY IDENTIFIED COMPOUNDS

MW-06

Lab Name: IEA-NJ

Job No. : 72412

Matrix: (soil/water) Water

Lab Sample ID: 72412003

Sample wt/vol: 1000 (g/mL) ml

Lab File ID: H8588

Level: (low/med) LOW

Date Received: 06/05/97

% Moisture: _____ decanted: (Y/N) ___

Date Extracted: 06/09/97

Concentrated Extract Volume: 1000 (uL)

Date Analyzed: 06/14/97

Injection Volume: 2 (uL)

Dilution Factor: 1.0

GPC Cleanup: (Y/N) N pH: ____

Number TICs Found: 6

CONCENTRATION UNITS:
(ug/L or ug/Kg) ug/l

CAS NUMBER	COMPOUND NAME	RT	EST. CONC.	Q
01.	Unknown Acid	9.70	12	JB
02.	Unknown Acid	9.50	7	J
03.	Unknown	5.35	4	JB
04.	Unknown	3.91	4	JB
05.	Unknown	5.63	2	JB
06.	Unknown Alcohol	7.69	2	J
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MICROSEEPS

IEA36-972666

----- IEA OF NEW JERSEY -----
----- PROJECT: 72412 -----
----- CONCENTRATIONS IN NANOGRAMS/LITER WATER -----

SAMPLE NAME	METHANE (ng/l)	ETHANE (ng/l)	ETHYLENE (ng/l)	FILE NAME	DATE SAMPLED	DATE RECEIVED	DATE ANALYZED
5106-MW-05	3498	83	127	C9 174	06/05/97	06/07/97	06/10/97
5106-MW-06	1189	175	109	C9 175	06/05/97	06/07/97	06/10/97
MDLs FOR ABOVE SAMPLES	15	5	5				

11-Jun-97

ANALYST INITIALS BK

REVIEW AS

000142

Lab Name: IEA - NJ

Job No: 20970-72412

Client: Brown & Root Environmental

Matrix: Water

Miscellaneous Parameters

mg/l

Lab I.D.	Method	72412002	72412003	DL
Client I.D.		MW-05	MW-06	
Chloride	325.3	20	11	2
Sulfate	375.4	25	21	5

DL - Detection Limit

Reviewed by: K.J. Gen Date: 6/26/97

CHYUN ASSOCIATES, INC. Environmental Testing Laboratory
609-924-5151
267 Wall Street, Princeton, N J 08540

LABORATORY ANALYSIS REPORT

Client: IEA, Inc.
Address: 628 Route 10
Whippany, NJ 07981

Attention: Mr. Mike Gemma

Test Number: L97801R
Date Received: June 6, 1997
Date Sampled: June 5, 1997

Job Number: 083976-101R

SAMPLE NUMBER	SAMPLE DESIGNATION/DESCRIPTION
002	72412-002 (S106-MW-05)
003	72412-003 (S106-MW-06)
DL	Detection Limit
Date	Analysis Date
Method	EPA Method Number

PARAMETER / CONSTITUENT	SAMPLE NUMBER					
	002	003	DL	Date	Method	
Nitrate as N	1.5	3.3+	0.1	6/6/97	352.1	
Phosphorus, total	< 0.05	< 0.05	0.05	6/9/97	365.2	

+Reported result from diluted sample reanalysis on June 12, 1997

All results in mg/l (ppm)

Laboratory ID No. 11198

Member of American Council of Independent Laboratories, Inc.

June 13, 1997

Michael Wright, Technical Director