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Final

Remedial Investigation Report
Operable Unit No. 14
(Site 69)

Marine Corps Base
Camp Lejeune, North Carolina

Appendices A-N
Volume 1 of 2

Prepared For:

Department of the Navy
Atlantic Division
Naval Facilities
Engineering Command
Norfolk, Virginia

Under the

LANTDIV CLEAN Program

Comprehensive Long-Term
Environmental Action Navy

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APPENDIX A
SITE 69 GEOPHYSICAL INVESTIGATION

1.0 INTRODUCTION AND INVESTIGATION OBJECTIVES

A surface geophysical survey was conducted from August 24 to September 3, and December 14 to 18, 1992, at Marine Corps Base (MCB) Camp Lejeune, Jacksonville, North Carolina. At Site 69 - Rifle Range Chemical Dump, the survey objectives were to delineate suspected disposal trenches and to identify areas of buried metal. Figure 1-1 shows the location of Site 69.

2.0 METHODS OF INVESTIGATION

Non-invasive geophysical techniques that were utilized to meet the objectives included electromagnetic (EM) terrain conductivity, magnetometry, and ground penetrating radar (GPR).

2.1 Survey Control

Due to heavy vegetation and understory at Site 69, geophysical traverses were referenced to an old road crossing the site and located by compass bearing and taped distance measurements. These east-west oriented traverses were subsequently located and stationed at 50-foot intervals by Hoggard-Eure. A second phase geophysical investigation at Site 69 was then conducted to further define areas of suspected burial. Figure 2-1 shows the survey grid and surface conditions noted at Site 69.

2.2 Electromagnetic Terrain Conductivity

Electromagnetic terrain conductivity profiling was performed to map the lateral extent of buried material and to identify buried metal objects and other debris. Instrumentation utilized for this survey included a Geonics model EM-31, with an effective penetration depth of approximately 15 feet when operated in the vertical dipole mode (VDM).

The conductivity of the soil or buried materials is determined by measuring the response of the ground to an induced magnetic field. Factors affecting in-situ conductivity include porosity, moisture content, clay content, and the conductivity of subsurface fluids and materials. Former excavations or landfill boundaries may be detected through measurement of lateral variations in soil conductivity. This method may also be used to infer the presence of buried metal objects, such as drums, tanks, or utilities.

Both the quadrature-phase (terrain conductivity) and in-phase components of the EM field were measured in the vertical dipole mode. The quadrature-phase mode provides a measurement of soil conductivity, while the in-phase mode is responsive to the effects of highly conductive, buried metallic objects. Terrain conductivity is measured in millimhos/meter (mmhos/m) and the in-phase component is measured in parts per thousand (ppt) of the primary magnetic field.

EM-31 data were acquired at 5-foot intervals along each geophysical traverse. Both conductivity and in-phase measurements were recorded using a digital datalogger then downloaded to a portable computer for data processing and interpretation.

2.3 Magnetometry

Magnetic profiling was performed to complement the EM interpretation of subsurface objects and debris. A digital proton precession magnetometer (Geometrics model G-856X) was utilized for this geophysical investigation. Perturbations to the ambient magnetic field are indicative of nearby ferrous metal. The magnitude of these perturbations are a function of the mass of the metal object. The magnetometer measures the magnitude of the magnetic field to a resolution of 1.0 gamma.

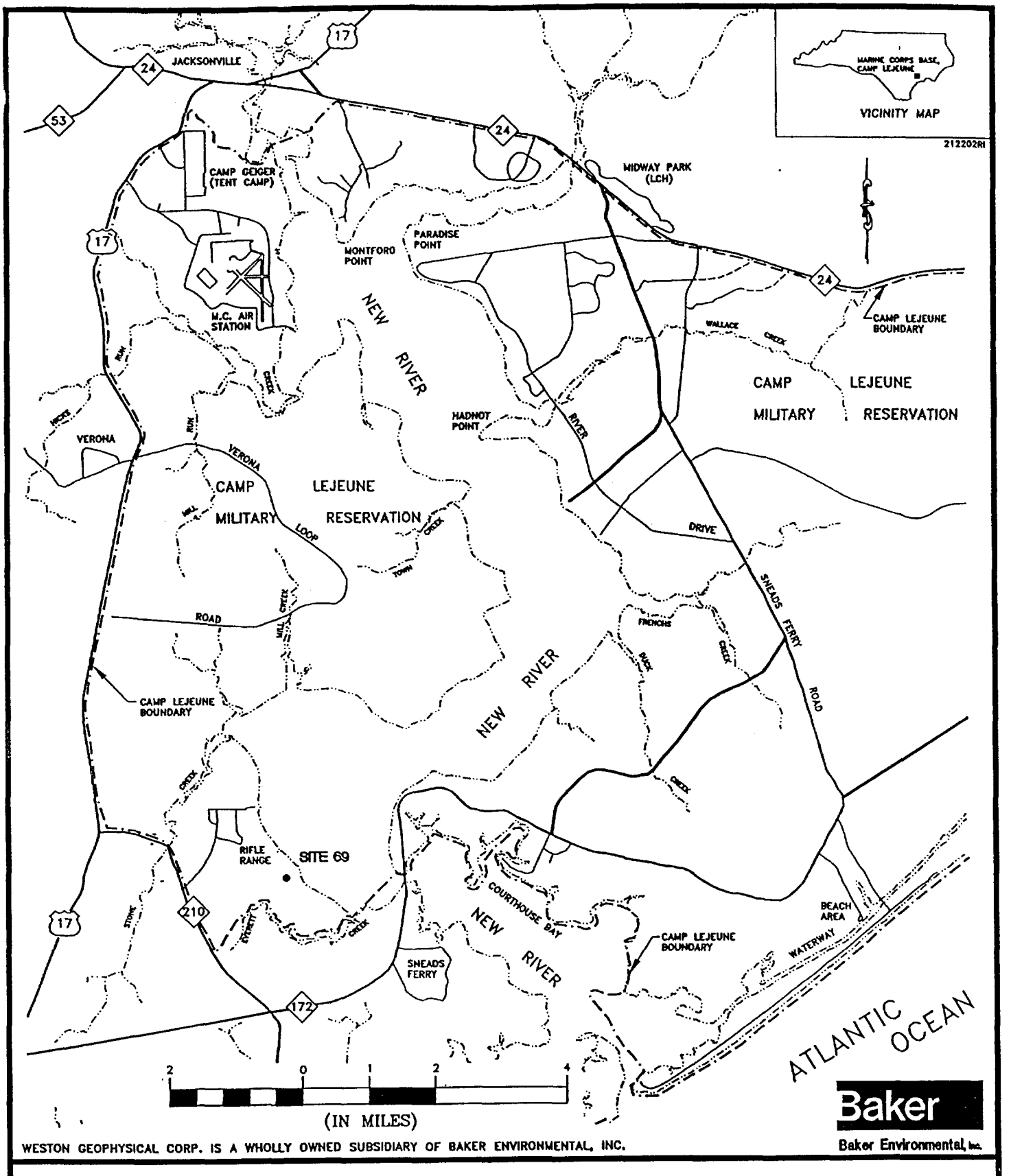
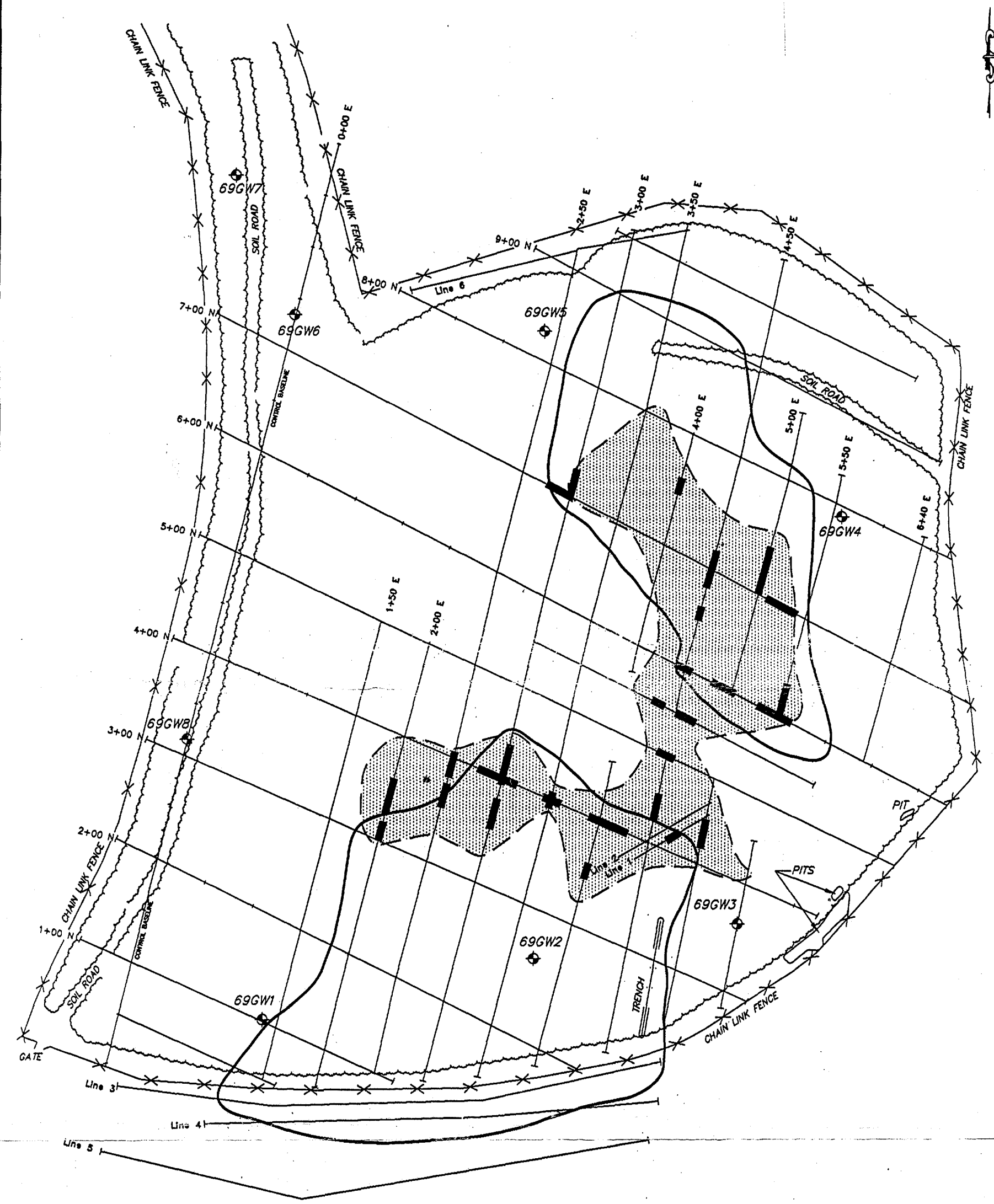


FIGURE 1-1
SITE LOCATION MAP
SITE 69 RIFLE RANGE CHEMICAL DUMP
REMEDIAL INVESTIGATION CTO-0212
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



100 0 50 100 200

1 inch = 100 ft.

212203RI

Baker

Baker Environmental, Inc.

LEGEND

- MONITORING WELL
- EM AND MAG SURVEY LINE
- INTERPRETED LIMIT OF INCREASED CONDUCTIVITY(>10 mmhos/m) INDICATIVE OF BACKFILL MATERIALS AND/OR CONTAMINANT PLUME
- INTERPRETED LIMIT OF INCREASED MAGNETIC INTENSITY INDICATIVE OF BURIED FERROUS METAL
- BURIED METALLIC OBJECT

FIGURE 2-1
GEOPHYSICAL GRID RESULTS
SITE 69 – RIFLE RANGE
CHEMICAL DUMP
REMEDIAL INVESTIGATION CTO-0212
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

01762W01Z

Magnetic data were acquired at 10-foot stations along selected traverses, and a magnetic base station was reoccupied at approximately one hour intervals to facilitate adjustment of the data for natural daily variations due to solar activity.

The magnetic data were downloaded to a portable computer, corrected for diurnal drift, and profiled prior to interpretation. The magnetic data were then compared to EM conductivity and in-phase data to determine whether specific geophysical anomalies were caused by ferrous or non-ferrous buried objects or fill.

2.4 Ground Penetrating Radar

Ground penetrating radar is an electromagnetic survey technique that reveals a graphic cross-sectional view of subsurface stratigraphy and buried objects (i.e., drums, pipelines, tanks, boulders, etc.). Data acquisition is continuous along lines of coverage and a graphic recorder provides an immediate view of the data, yielding both horizontal (lateral) and vertical (depth) control information. Penetration (typically 2 to 8 feet) and resolution are determined by the frequency of the antenna, but the overall effectiveness of GPR can be limited by highly reflective materials such as water-saturated clay, salt, slag, or highly conductive inorganic materials.

GPR profiling was completed with analog instrumentation that consisted of a GSSI SIR-7 mainframe, Adtek graphic recorder, and 500 megahertz antenna. This antenna was selected to provide high-resolution recordings of buried objects within the landfill.

GPR profiling was conducted in an attempt to provide further characterization of subsurface conditions and buried materials, e.g., to distinguish buried drums from concrete debris with steel rebar and to more precisely delineate the limits of any excavation.

3.0 RESULTS

The geophysical survey at Site 69 is presented in the following subsection.

3.1 Site 69 - MCB Rifle Range Chemical Dump

Site 69 is located west of the New River estuary, within MCB Camp Lejeune. The site is approximately 10 to 12 acres and is heavily wooded. The site was used as a chemical waste dump and materials were reportedly disposed in pits and trenches. These materials may include chemical surety materials (CSM), such as blister or nerve agents. The area of investigation and lines of geophysical coverage are shown in Figure 2-1.

EM conductivity and magnetic intensity measurements were obtained along orthogonal traverses extending across the site. EM measurements showed background conductivity levels at 10 mmhos/m. A distinct increase in conductivity above 10 mmhos/m, representative of a lateral change in conductivity due to buried waste and fill material, was measured across two broad areas as shown on Figure 2-1. Within these two areas, EM in-phase and magnetic measurements indicated buried metallic and ferrous metallic objects.

The greater lateral extent of increased conductivity, to that of detected buried metal, may suggest that previous widespread burial of non-metallic debris on site may have occurred. Furthermore, zones of highest conductivity were not always coincident with the area of buried metal, suggesting widespread disposal on site. An alternative explanation for the lateral extent of increased conductivity, primarily to the south and north, may be the presence of a conductive contaminant plume.

4.0 SUMMARY AND CONCLUSIONS

Conclusions of the geophysical investigations conducted at Site 69 is presented below.

4.1 Site 69 - Rifle Range Chemical Dump

At Site 69, lateral changes in conductivity were observed across two broad areas located in the south and north portions of the site. In the central portion of the site and partially coincident with the increased conductivities, buried metallic and ferrous metallic objects were detected. The greater lateral extent of increased conductivity relative to that of the buried metal locations, may indicate the previous widespread burial of non-metallic materials and/or the limits of a conductive contaminant plume. The areas identified with geophysics appear to be coincident with burial trenches identified on 1956, 1958, and 1964 aerial photographs by EPIC.

APPENDIX B
TARGET'S SITE SCREENING REPORTS

APPENDIX B.1
TARGET'S REPORT, 2/94

SITE SCREENING DATA

SITE 69
MCB CAMP LEJEUNE
JACKSONVILLE, NORTH CAROLINA

TARGET ENVIRONMENTAL SERVICES, INC.

SITE SCREENING DATA

SITE 69
MCB CAMP LEJEUNE
JACKSONVILLE, NORTH CAROLINA

PREPARED FOR

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PREPARED BY

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FEBRUARY 1994

SAMPLE COLLECTION AND ANALYSIS

On January 6-7, 1994, **TARGET Environmental Services, Inc. (TARGET)** conducted a site screening survey at **Site 69, MCB Camp Lejeune**, Jacksonville, North Carolina. A total of 14 groundwater samples were collected at the site. Due to fluctuations in the groundwater table the sampling depths varied from 1 to 22 feet and are recorded in Table 1. The sampling locations are shown on the attached copy of the field map.

To collect the samples a van-mounted hydraulic probe was used to advance 3-foot sections of 1-3/8" OD threaded steel casing (EW rod) to the sampling depth. The steel casing was removed and a 5-foot section of 1" diameter slotted PVC pipe connected to one or more 5-foot sections of PVC riser pipe was inserted to the full depth of the hole. The pipe was allowed to sit for a period of time to allow groundwater to fill the pipe. A 21" long by 7/16" OD stainless steel bailer was then used to collect the sample. Samples were placed in 40 ml, teflon septum-sealed glass vials and acidified to pH 2 using a 50% hydrochloric acid solution, sealed, labeled and shipped on ice to the laboratory.

Samples NE-7A and SE-7A were surface samples taken from swampy areas of the site. They were collected with clean sampling gloves by submerging clean vials and preserving as described above.

Prior to the day's field activities and after collection of each sample, the steel casing and the bailer apparatus were decontaminated by washing with Alconox (a biodegradable, laboratory grade detergent), rinsing with distilled water and drying with filtered ambient air to ensure discrete sampling.

All of the samples collected during the field phase of the survey were prepared for analysis according to EPA Method 3810 (modified) by pouring 15 ml of sample into a 30 ml EPA clean vial and sealing with a teflon-faced butyl rubber septum. The vial was heated for 10 minutes to volatilize hydrocarbons from the water.

The samples were analyzed according to EPA Method 8010 on a gas chromatograph equipped with an electron capture detector (ECD), and using direct injection. Specific analytes standardized for the ECD analysis were:

trans-1,2-dichloroethene (t12DCE)
cis-1,2-dichloroethene (c12DCE)
trichloroethene (TCE)
tetrachloroethene (PCE)

The chlorinated hydrocarbons in this suite were chosen because of their common usage in industrial solvents, and/or their degradational relationship to commonly used compounds.

The analytical equipment was calibrated using a 3-point instrument-response curve and injection of known concentrations of the target analytes. Retention times of the standards were used to identify the peaks in the chromatograms of the field samples, and their response factors were used to calculate the analyte concentrations.

The tabulated results of the laboratory analysis of the soil gas samples are reported in parts per billion (ppb) in Table 1.

Quality Assurance/Quality Control (QA/QC) Evaluation

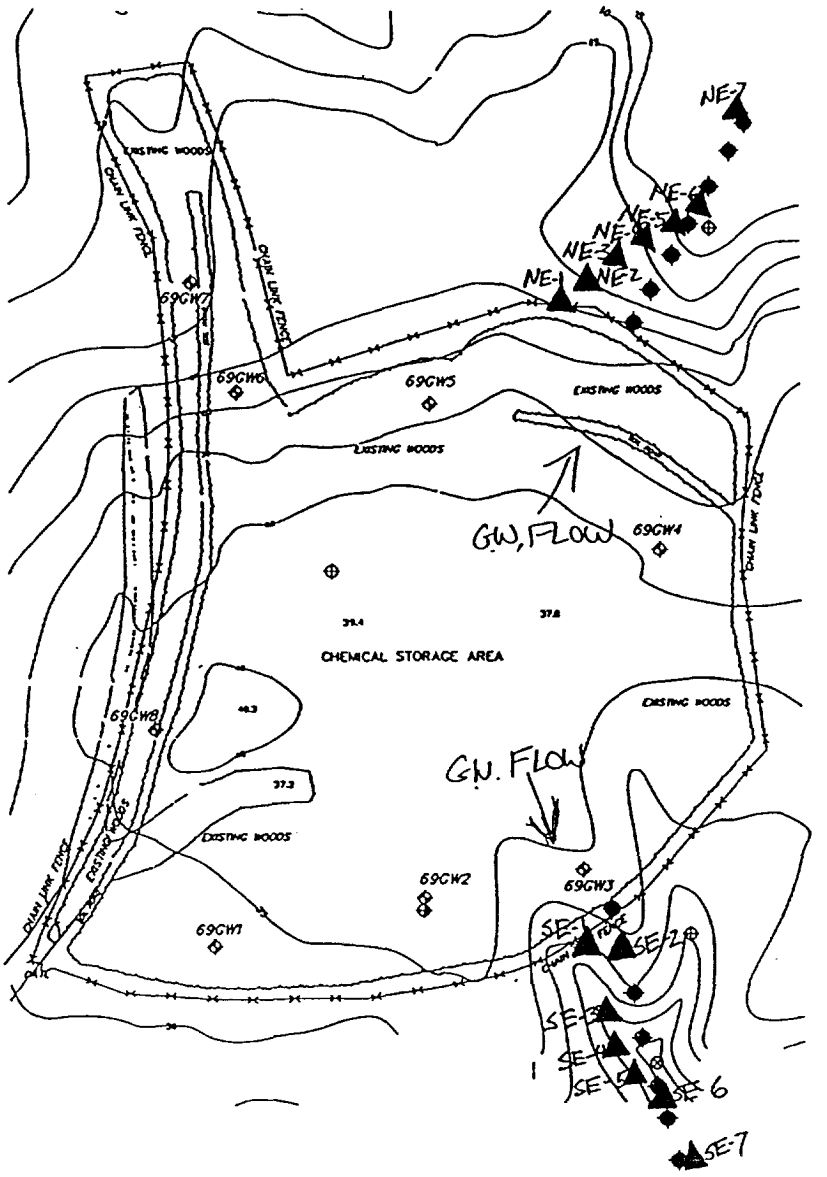
Field QA/QC Samples

Field control samples were collected at the beginning and end of the first day's field activities, and at the end of the last day's field activities. These QA/QC samples were obtained

by rinsing distilled water through the decontaminated stainless steel bailer into sample vials. The laboratory results of the analysis of these samples are reported in Table 1. Concentrations of all analytes except t12DCE were below the reporting limit in all field control samples. A review of the sample collection and analysis orders indicates that the very low concentrations of t12DCE in Samples 11A and 12A should not have affected survey results.

Laboratory QA/QC Samples

An analysis was performed on the duplicate of every tenth field sample. Laboratory blanks of nitrogen gas were also analyzed after every tenth field sample. The results of these analyses are reported in Table 1. All duplicate analyses were within acceptable limits. Concentrations of all analytes were below the reporting limit in all laboratory blanks.



1 inch = 235 ft.

200 0 100 200 400

Baker

Baker Environmental, Inc.

LEGEND

- 69GW2 — EXISTING SHALLOW WELLS
- PLANNED DEEP WELL
- PLANNED SHALLOW WELL
- PLANNED PAIR OF SHALLOW AND DEEP WELLS
- PLANNED HYDROPUNCH LOCATION
- FENCE
- VEGETATION
- ▲ GROUNDWATER SAMPLE LOCATIONS
- TOPOGRAPHIC ELEVATION LINES

SOURCE: REVISED FROM LANTDIV, OCT. 1991

FIGURE 1. Groundwater Sample Locations

TARGET ENVIRONMENTAL SERVICES, INC.

This map is integral to a written report and should be viewed in that context.

SITE 69
RIFLE RANGE CHEMICAL DUMP
MCB, CAMP LEJEUNE
NORTH CAROLINA

TABLE 1

ANALYTE CONCENTRATIONS VIA GC/ECD (ppb)

SAMPLE	DEPTH (FT)	t12DCE	C12DCE	TCE	PCE
REPORTING LIMIT		1.0	1.0	1.0	1.0
NE-1A	22	3.4	12	1.6	<1.0
NE-2A	22	1.2	2.7	2.0	1.0
NE-3A	15	<1.0	6.5	1.8	<1.0
NE-4A	15	<1.0	4.2	<1.0	<1.0
NE-5A	4	3.2	19	2.1	<1.0
NE-6A	7	1.7	1.5	<1.0	<1.0
NE-7A	0*	<1.0	<1.0	<1.0	<1.0
SE-1A	20	<1.0	2.5	<1.0	<1.0
SE-2A	3	7.8	30	<1.0	<1.0
SE-3A	3	<1.0	2.0	<1.0	<1.0
SE-4A	4	1.3	<1.0	<1.0	<1.0
SE-5A	3	<1.0	<1.0	<1.0	<1.0
SE-6A	1	<1.0	<1.0	<1.0	<1.0
SE-7A	0*	<1.0	<1.0	<1.0	<1.0
FIELD CONTROL SAMPLES					
10A	N/A	<1.0	<1.0	<1.0	<1.0
11A	N/A	1.4	<1.0	<1.0	<1.0
12A	N/A	1.2	<1.0	<1.0	<1.0
FIELD DUPLICATE SAMPLES					
NE-7A	0*	<1.0	<1.0	<1.0	<1.0
NE-7B	0*	<1.0	<1.0	<1.0	<1.0
LABORATORY BLANKS					
NE-7AB	N/A	<1.0	<1.0	<1.0	<1.0

* SAMPLE COLLECTED FROM SURFACE WATER (SWAMP)

c12DCE = cis-1,2-dichloroethene

t12DCE = trans-1,2-dichloroethene

PCE = tetrachloroethene

TCE = trichloroethene

APPENDIX B.2
TARGET'S REPORT, 4/95

SOIL & GROUNDWATER DATA

CAMP LEJEUNE, SITE 69
JACKONSVILLE, NORTH CAROLINA

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APRIL 1995

Introduction

On March 21-22, 1995, **TARGET Environmental Services, Inc. (TARGET)** conducted a soil and groundwater survey at **Camp LeJeune, Site 69** in Jacksonville, North Carolina. A total of 9 soil and 10 groundwater samples were collected at the site from 0 to 10 feet below grade. All of the soil and groundwater samples were collected under Health & Safety Level B conditions. Sample specific details are recorded in the copies of the field notes and sample chain of custody forms included in this report.

Sample Collection

Soil

To collect the soil samples, a truck-mounted hydraulic probe was used to advance a 24" long, 1.125" ID/1.378" OD steel sampling tube (equipped with an acetate liner and a piston stop tip) attached to connected 3-foot sections of 1" OD threaded steel casing down to the sampling depth. The piston stop was then released and the pipe driven an additional 2 feet, allowing soil to enter the sampling tube. The sampling tube was retrieved, and the liner containing the soil core was removed from the casing. The sample was immediately relinquished within the liner to the on-site **Baker Environmental** representative. The sampling tube was decontaminated by scrubbing with a solution of Liquinox/distilled water, rinsing with distilled water and drying with clean paper towels prior to reuse. A new liner was used for each sample.

Groundwater:

To collect the groundwater samples, the hydraulic probe was used to advance a permanent drive point connected to the bottom of the casing to the sampling depth within the corresponding soil boring. The steel casing was removed and connected 5-foot sections of 3/4" OD PVC slotted

screen and riser were inserted to the full depth of the hole. A water level sensor was used to detect the surface of the groundwater table and to ensure that a sufficient amount of water had entered the pipe to complete a sample. The water level sensor was removed and a 21" long by 7/16" OD stainless steel bailer was used to collect the sample. Samples were placed in 40 ml glass vials which were sealed, labeled and immediately relinquished to the **TARGET**'s on-site mobile laboratory for analysis.

Prior to the day's field activities and after collection of each groundwater sample, the steel casing and the bailer were decontaminated by washing with a solution of Liquinox/distilled water, rinsing with distilled water and allowing to air dry to ensure discrete sampling. All PVC screen and riser were removed from the borings at the end of the sampling activities, and the borings were backfilled with bentonite.

Sample Analysis

All of the groundwater samples collected during the field phase of the survey were prepared for analysis according to EPA Method 3810 (modified) by pouring 15 ml of the groundwater sample into a 30 ml EPA clean vial and sealing with a teflon-faced butyl rubber septum. The vial was heated for 10 minutes at 90°C to volatilize hydrocarbons from the water.

The prepared groundwater headspace samples collected were then subjected to dual analyses. One analysis was conducted according to EPA Method 8010 (modified) on a gas chromatograph equipped with an electron capture detector (ECD), and using direct injection. Specific analytes standardized for this analysis were:

1,1-dichloroethene (11DCE)
methylene chloride (CH_2Cl_2)
trans-1,2-dichloroethene (t12DCE)

1,1-dichloroethane (11DCA)
cis-1,2-dichloroethene (c12DCE)
1,1,1-trichloroethane (111TCA)
carbon tetrachloride (CCl_4)
trichloroethene (TCE)
1,1,2-trichloroethane (112TCA)
tetrachloroethene (PCE)

The chlorinated hydrocarbons in this suite were chosen because of their common usage in industrial solvents, and/or their degradational relationship to commonly used compounds.

The second analysis was conducted according to EPA Method 8020 (modified) on a gas chromatograph equipped with a flame ionization detector (FID), and using direct injection. The analytes selected for standardization in this analysis were:

benzene
toluene
ethylbenzene
meta- and para- xylene
ortho- xylene

These compounds were chosen because of their utility in evaluating the presence of fuel products, or petroleum based solvents.

The analytical equipment was calibrated using a 3-point instrument-response curve and injection of known concentrations of the target analytes. Retention times of the standards were used to identify the peaks in the chromatograms of the field samples, and their response factors were used to calculate the analyte concentrations.

Total FID Volatiles values were generated by summing the areas of all integrated chromatogram peaks and calculated using the instrument response factor for toluene. Injection peaks, which also contain the light hydrocarbon methane, were excluded to avoid the skewing of Total FID Volatiles values due to injection disturbances and biogenic methane. For samples with low hydrocarbon concentrations, the calculated Total FID Volatiles concentration is

occasionally lower than the sum of the individual analytes. This is because the response factor used for the Total FID Volatiles calculation is a constant, whereas the individual analyte response factors are compound specific. It is important to understand that the Total FID Volatiles levels reported are relative, not absolute, values.

The tabulated results of the laboratory analyses of the soil gas samples are reported in micrograms per liter-vapor (µg/l-v) in Tables 1 and 2. Although "micrograms per liter" is equivalent to "parts per billion (volume/volume)" in water analyses, they are not equivalent in gas analyses, due to the difference in the mass of equal volumes of water and gas matrices. The xylenes concentrations reported in Table 1 are the sum of the m- and p-xylene and the o-xylene concentrations for each sample. With TARGET's analytical run conditions, 11DCE/TCTFA and CCl_4/12DCA occur as co-eluting pairs and are reported in Table 2 in concentrations of 11DCE and CCl_4, respectively.

Quality Assurance/Quality Control (QA/QC) Evaluation

Equipment Rinseate Blanks

Equipment rinseate blanks were collected at the beginning and end of each day's field activities. These QA/QC blanks were obtained by rinsing distilled water through the decontaminated bailer (groundwater control blank) and soil sampling tube (soil control blank) into 40 ml vials and sealing them as previously described. Baker Environmental did not select the soil sampler rinseate blanks for analysis in the on-site mobile laboratory. The laboratory results of the analysis of the bailer rinseate blanks are reported in Tables 1 and 2. Concentrations of all analytes were below the reporting limit in all field control samples.

Laboratory QA/QC Samples

A duplicate analysis was performed on every tenth field sample. Laboratory blanks of nitrogen gas were also analyzed after every tenth field sample. The results of these analyses are reported in Tables 1 and 2. All duplicate analyses were within acceptable limits. Concentrations of all analytes were below the reporting limit in all laboratory blanks.

TABLE 1

ANALYTE CONCENTRATIONS IN HEADSPACE OF WATER VIA GC/FID (µg/l)

SAMPLE	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TOTAL FID VOLATILES*
REPORTING LIMIT	10	10	10	10	10
HP01W	ND	ND	ND	28	935
HP02W	ND	ND	ND	200	881
HP03W	ND	ND	ND	ND	ND
HP04W	ND	ND	ND	ND	ND
HP05W	ND	ND	ND	ND	ND
HP06W	ND	ND	ND	ND	ND
HP07W	ND	ND	ND	ND	ND
HP08W	ND	ND	ND	ND	ND
HP09W	ND	ND	ND	ND	ND
QC	ND	ND	ND	ND	77
EQUIPMENT RINSEATE SAMPLES					
101W	ND	ND	ND	ND	ND
102W	ND	ND	ND	ND	ND
103W	ND	ND	ND	ND	ND
104W	ND	ND	ND	ND	ND
LABORATORY DUPLICATE ANALYSIS					
HP06W	ND	ND	ND	ND	ND
HP06WDUP	ND	ND	ND	ND	ND
LABORATORY BLANKS					
BLANK (3-21)	ND	ND	ND	ND	ND
BLANK (3-22)	ND	ND	ND	ND	ND

** CALCULATED USING THE SUM OF THE AREAS OF ALL INTEGRATED CHOMATOGRAM PEAKS AND THE INSTRUMENT RESPONSE FACTOR FOR TOLUENE*

"ND" INDICATES NOT DETECTED AT OR ABOVE THE REPORTING LIMIT

TABLE 2

ANALYTE CONCENTRATIONS IN HEADSPACE OF WATER VIA GC/ECD (µg/l)

SAMPLE	11DCE	CH2Cl2	t12DCE	11DCA	c12DCE	111TCA	CCl4	TCE	112TCA	PCE
REPORTING LIMIT	10	10	10	10	10	1.0	1.0	1.0	1.0	1.0
HP01W	ND	ND	ND	ND	102	ND	ND	3.2	ND	ND
HP02W	ND	ND	1,110	ND	850	ND	ND	389	ND	59
HP03W	ND	ND	ND	ND	11	ND	ND	ND	ND	3.3
HP04W	ND	ND	15	ND	12	ND	ND	2.3	ND	ND
HP05W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HP06W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HP07W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HP08W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HP09W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
QC	ND	ND	117	ND	160	ND	ND	9.7	ND	1.6
EQUIPMENT RINSEATE SAMPLES										
101W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
102W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
103W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
104W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LABORATORY DUPLICATE ANALYSIS										
HP06W	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
HP06WDUP	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
LABORATORY BLANKS										
BLANK (3-21)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
BLANK (3-22)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND

11DCE = 1,1-dichloroethene
11DCA = 1,1-dichloroethane
111TCA = 1,1,1-trichloroethane
112TCA = 1,1,2-trichloroethane
CH2Cl2 = methylene chloride
c12DCE = cis-1,2-dichloroethene
CCl4 = carbon tetrachloride
PCE = tetrachloroethene
t12DCE = trans-1,2-dichloroethene
TCE = trichloroethene

11DCE/TCTFA and CCl4/12DCA are co-eluting pairs and are reported in concentrations of 11DCE and CCl4, respectively.
"ND" INDICATES NOT DETECTED AT OR ABOVE THE REPORTING LIMIT

JOB CODE: BEP003

DATE: 3-21-95

SAMPLE NUMBER	AREA: GENERAL: WOODS	FIELD	LANDSCAPED/PLANTER	PAVED OR GRAVEL LOT	ROAD	INSIDE BLDG.	EXCAVATION	OTHER	AREA: SPECIAL: U.S.T.	SURFACE TANKS	PUMPS/LINES	GROUND STAINS	DRUMS	JUNK/REFUSE	CONIFERS	SURFACE MATERIAL: VEGETATION	SOIL	GRAVEL	ASPHALT	CONCRETE	SUBSURFACE COMPOSITION: ORGANICS	CLAY	SILT	SAND	GRAVEL	FILL	MOISTURE: DRY	DAMP	WET	PROBE INFO. INT.: LIQUID	RESIDUE	DECON PROBE	EXT.: SOIL	RESIDUE	PULL: TIGHT	SUCTION	TYPE: 4 S.S. PROBE	JAMPACKER PROBE	Post Run Tubing	DEPTH	TYPE: ROTARY HAMMER	SLIDE HAMMER/DRIVE ROD	HYDRAULIC PROBE	SOIL GAS SAMPLE	WATER SAMPLE	SOIL SAMPLE	OTHER	ADDITIONAL OBSERVATIONS (WRITTEN DESCRIPTION OF SAMPLE LOCATIONS)
101 W																																																START OF DAY 3-21-9
																																															RINSEATE BLANK THRU BAILER
101S																																															GEOPROBE EQUIPMENT USED
																																															RINSEATE BLANK THRU SOIL SA
HP01	X														X	X	X	X					X	X					X											6-8			X			X		FIRST SAMPLE AT 6-8 VERY WET SECOND SAMPLE SHALLOWER TO 5-7 FOR DRIER SOIL PVC 10'
HP06	X														X	X	X	X					X	X					X											0-2			X			X		WATER 3' 2 SOIL SAMPLES AT 0-2' PVC- 8'
HP07	X														X	X	X	X					X	X					X											6-8			X			X		WATER 8' 2 SAMPLES AT 6-8' PVC 13'
HP09	X														X	X	X	X					X	X					X											4-6			X			X		WATER 6' 2 SAMPLES AT 5-7' PVC 11
HP08	X														X	X	X	X					X	X					X											4-6			X			X		WATER 6' 2 SAMPLES AT 4-6' PVC 11

ADDITIONAL NOTES:

Level D - 11-2:30 - 3:30 - 5:30 3/21/95

JOB CODE: BEP003

DATE: 3-21-95

SAMPLE NUMBER	AREA: GENERAL: WOODS	FIELD	LANDSCAPED/PLANTER	PAVED OR GRAVEL LOT	ROAD	INSIDE BLDG.	EXCAVATION	OTHER	AREA: SPECIAL: U.S.T.	SURFACE TANKS	PUMPS/LINES	GROUND STAINS	DRUMS	JUNK/REFUSE	CONIFERS	SURFACE MATERIAL: VEGETATION	SOIL	GRAVEL	ASPHALT	CONCRETE	SUBSURFACE COMPOSITION: ORGANICS	CLAY	SILT	SAND	GRAVEL	FILL	MOISTURE: DRY	DAMP	WET	PROBE INFO. INT.: LIQUID	RESIDUE	DECON PROBE	EXT.: SOIL	RESIDUE	PULL: TIGHT	SUCTION	TYPE: 4" S.S. PROBE	AMPACKER PROBE	Post Run Tubing	DEPTH	TYPE: ROTARY HAMMER	SLIDE HAMMER/DRIVE ROD	HYDRAULIC PROBE	SOIL GAS SAMPLE	WATER SAMPLE	SOIL SAMPLE	OTHER	ADDITIONAL OBSERVATIONS (WRITTEN DESCRIPTION OF SAMPLE LOCATIONS)
HP08W	X																																							11'			X		X			SAMPLES TAKEN FROM SAME LOCATIONS AS SOIL.
HP09W	X																																							11'			X		X			"
HP07W	X																																							13'			X		X			"
HP06W	X																																							8'			X		X			"
HP01W	X																																							10'			X		X			"
102S																																																	QA/QC END OF DAY BLANK 3-21-95 SUNNY, CLEAR DISTILLED WATER
102W																																																	QA/QC END OF DAY BLANK 3-21-95 SUNNY CLEAR, DISTILLED WATER

ADDITIONAL NOTES:

JOB CODE: BEP003

DATE: 3-22-95

SAMPLE NUMBER	AREA: GENERAL: WOODS	FIELD	LANDSCAPED/PLANTER	PAVED OR GRAVEL LOT	ROAD	INSIDE BLDG.	EXCAVATION	OTHER	AREA: SPECIAL: U.S.T.	SURFACE TANKS	PUMPS/LINES	GROUND STAINS	DRUMS	JUNK/REFUSE	CONTAINERS	SURFACE MATERIAL: VEGETATION	SOIL	GRAVEL	ASPHALT	CONCRETE	SUBSURFACE COMPOSITION: ORGANICS	CLAY	SILT	SAND	GRAVEL	FILL	MOISTURE: DRY	DAMP	WET	PROBE INFO. INT.: LIQUID	RESIDUE	DECON PROBE	EXT.: SOIL	RESIDUE	PULL: TIGHT	SUCTION	TYPE: 4" SS PROBE	JUMPACKER PROBE	Post Run Tubing	DEPTH	TYPE: ROTARY HAMMER	SLIDE HAMMER/DRIVE ROD	HYDRAULIC PROBE	SOIL GAS SAMPLE	WATER SAMPLE	SOIL SAMPLE	OTHER	ADDITIONAL OBSERVATIONS (WRITTEN DESCRIPTION OF SAMPLE LOCATIONS)
103W																																																	START OF DAY 3-22-95
																																																	RINSEATE BLANK, BAILER
103S																																																	
																																																	RINSEATE BLANK SOIL SAMPLER
HP03	X														X	X	X						X	X				X											4-6'			X			X			WATER 6' PVC 11' 2 SAMPLES AT 4-6'
HP04	X														X	X	X						X	X				X											3-5'			X			X			~~WATER~~ 6 PVC 10' 2 SAMPLES AT 3-5'
HP02	X														X	X	X						X	X				X											2-4'			X			X			WATER 5' PVC 9' 2 SAMPLES AT 2-4
HP02W																																							9'			X		X				WATER SAMPLE AT SAME LOCATION AS HP02 SOIL SAMPLE.
HP04W																																							10'			X						"

ADDITIONAL NOTES:

JOB CODE: BEP003

DATE: 3-22-95

SAMPLE NUMBER	AREA: GENERAL: WOODS	FIELD	LANDSCAPED/PLANTER	PAVED OR GRAVEL LOT	ROAD	INSIDE BLDG.	EXCAVATION	OTHER	SPECIAL: U.S.T.	SURFACE TANKS	PUMPS/LINES	GROUND STAINS	DRUMS	JUNK/REFUSE	SURFACE: MATERIAL: CONCRETE	VEGETATION	SOIL	GRAVEL	ASPHALT	CONCRETE	SUBSURFACE: COMPOSITION: ORGANICS	CLAY	SILT	SAND	GRAVEL	FILL	MOISTURE: DRY	DAMP	WET	PROBE INFO.: INT.: LIQUID	RESIDUE	DECON PROBE	EXT.: SOIL	RESIDUE	PULL: TIGHT	SUCTION	TYPE: 4" S.S. PROBE	AIRPACKER PROBE	Post Run Tubing	DEPTH	TYPE: ROTARY HAMMER	SLIDE HAMMER/DRIVE ROD	HYDRAULIC PROBE	SOIL GAS SAMPLE	WATER SAMPLE	SOIL SAMPLE	OTHER	ADDITIONAL OBSERVATIONS (WRITTEN DESCRIPTION OF SAMPLE LOCATIONS)
HP03W	X														X	X	X						X	X					X											11'			X		X			SAME LOC. AS HP03
QC		X													X	X	X						X	X					X																				MW LOCATED NEARBY
HP05	X														X	X	X						X	X				X												4-6'			X			X		WATER 6' PVC 11 2 SAMPLES AT 4-6'
HP05W																																								11'			X		X			SAME LOCATION AS ABOVE.
104W																																																	QA/QC BLANK END OF DAY 3-22-95 DI WATER RINSEATE BAILER
104S																																																	QA/QC BLANK END OF DAY 3-22-95 RINSEATE DI WATER

ADDITIONAL NOTES:

TARGET/TEG

(410) 992-6622

CHAIN-OF-CUSTODY RECORD

P.O. #:

CLIENT: BAKER ENVIRONMENTAL

ADDRESS: 420 ROUSER RD/CORAOPOLIS, PA 15108

PHONE: 412-269-4628 FAX: 412-269-2002

CLIENT PROJECT #: PROJECT MANAGER: CD KLEINKNIF

DATE: 21 MARCH 95 PAGE 1 OF 1

TEG PROJECT #: BCP003

LOCATION: CAMP LEJEUNE, NORTH CAROLINA

COLLECTOR: BRANDI/CHRISTIE DATE OF COLLECTION: 3/21

Sample Number	Depth	Time	Sample Type	Container Type	VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (g & d)	PNA 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	FIELD NOTES	Total Number Of Containers	Laboratory
HP-01	10'		WATER	40ml VIAL	X	X															2	
HP-06	5'		↓	↓	↓	↓															2	
HP-07	13'																				2	
HP-08	11'																				2	
HP-09	11'		↓	↓	↓	↓															2	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	21 MAR 95	[signature]	2:50 3/21/95
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

TARGET/TEG

(410) 992-6622

CHAIN-OF-CUSTODY RECORD

P.O. #: _____

CLIENT: Baker Environmental

ADDRESS: 470 Rouser Rd. Coraopolis PA 15108

PHONE: 412-269-2002 FAX: 412-269-4688

CLIENT PROJECT #: _____ PROJECT MANAGER: Ed Kleinkauf

DATE: 22 March 95 PAGE 1 OF 1

TEG PROJECT #: BEP003

LOCATION: Camp Lejeune N.C.

COLLECTOR: Frank Camacho DATE OF COLLECTION: 3/22

Sample Number	Depth	Time	Sample Type	Container Type	VOA 601/8010	VOA 602/8020	VOA 624/8240	Semi Vol 625/8270	TPH 418.1	TPH 8015 (gasoline)	TPH 8015 (diesel)	TPH 8015 (o & d)	PNA 610/8100	PEST/PCBs 8080	HEX CHROME	ORGANIC LEAD	TOTAL LEAD	pH	ASBESTOS	FIELD NOTES	Total Number Of Containers	Laboratory
HP-05W	11'		water	40ml VOA	Y	Y															2	
HP-03W	11'		↓	↓	↓	↓															2	
HP-02W	9'																				2	
HP-04W	10'																				2	
QC	10'		↓	↓	↓	↓															2	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME
[signature]	22 MAR 95	[signature]	3/22/95
RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	DATE/TIME

SAMPLE DISPOSAL INSTRUCTIONS

☐ TEG DISPOSAL @ $2.00 each ☐ Return ☐ Pickup

SAMPLE RECEIPT	
TOTAL NUMBER OF CONTAINERS	
CHAIN OF CUSTODY SEALS Y/N/NA	
SEALS INTACT? Y/N/NA	
RECEIVED GOOD COND./COLD	
NOTES:	

LABORATORY NOTES:

APPENDIX C
TEST BORING LOGS

APPENDIX C.1
SITE 69 ON-SITE

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC.
S.O. NO.: 62470-212 BORING NO.: 69-SB01
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/7/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 7 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.0	0.0-0.2' TOPSOIL 0.2-0.5' LIGHT GREY SILTY f SAND, MOIST, LOOSE 0.5-1.0' LIGHT BROWN SILTY f SAND, MOIST, LOOSE	
2							
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB01 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU# 4 CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-SB02
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/7/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 7 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 0.0	—	—	—	0.0	0.0-0.2' TOPSOIL, DECOMPOSED ORGANIC MATTER	
2						0.2-1.0' LIGHT BROWN SILTY f SAND MOIST, LOOSE	
3							
4							
5							
6							
7							
8							
9							
10							

Match to Sheet 2

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB02 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-SB03
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/7/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 7 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.0	0.0-0.3' MEDIUM BROWN SILTY f SAND, MOIST, SLIGHTLY LOOSE, ORGANIC	
2						0.3-1.0' LIGHT BROWN / LIGHT YELLOWISH BROWN SILTY f SAND, MOIST, LOOSE	
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB03 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69 - SB04
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/7/94	0 - 1.5'	—	—	-
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 7 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 0.0	—	—	—	0.0	MEDIUM BROWN SILTY f SAND, MOIST, LOOSE (FILL)	
2						* LOCATED ON TOP OF 24" MOUND, ≈ 3-4' IN ϕ.	
3							
4							
5							
6							
7							
8							
9							
10							

Match to Sheet 2

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69 - SB04 SHEET 1 OF

Baker

Baker Environmental, Inc.

TEST BORING RECORD

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69-SB 05
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/7/94	0 - 1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 7 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.0	LIGHT BROWN SILTY f SAND, MOIST LOOSE. SLIGHT LIGHT YELLOWISH BROWN COLOR.	
2							
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB05 SHEET 1 OF 1

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU#4 CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-SB06
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/7/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 7 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 0.0	—	—	—	0.0 BG 0.4 PS	0.0-0.3' MEDIUM BROWN SILTY & SAND MOIST, SLIGHTLY LOOSE, ORGANIC	
2						0.3-1.0' LIGHT YELLOWISH BROWN SILTY & SAND, MOIST, LOOSE	
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB06 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69 - SB 07
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/7/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 7 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 0.0	—	—	—	0.0	0.0 - 0.5' MEDIUM BROWN SILTY f SAND, MOIST, SLIGHTLY LOOSE, ORGANIC	
2						0.5 - 1.0' LIGHT BROWN / LIGHT YELLOWISH BROWN SILTY f SAND, MOIST, LOOSE	
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69 - SB 07 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69 - SB 08
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/7/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 7 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.0	0.0-0.5' LIGHT BROWN SILTY & SAND MOIST, LOOSE	
2						0.5-1.0' LIGHT GREY AND BLACK SILTY & SAND, MOIST, LOOSE	
3							
4							
5							
6							
7							
8							
9							
10							

Match to Sheet 2

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB 08 SHEET 1 OF

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-SB09
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/7/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 7 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 0.0	—	—	—	0.0	0.0-0.3' MEDIUM BROWN SILTY f SAND MOIST, SLIGHTLY LOOSE, ORGANIC	
2						0.3-0.6' REDDISH BROWN SILTY f SAND MOIST, LOOSE	
3						0.6-1.0' LIGHT BROWN/LIGHT YELLOWISH BROWN SILTY f SAND, MOIST, LOOSE	
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PEUKEY
DRILLER: N/A BORING NO.: 69-SB09 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-SB 10
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/7/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 7 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)		Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1		HA 00	—	—	—	0.0	LIGHT BROWN SILTY f SAND, MOIST LOOSE	
2								
3								
4								
5								
6								
7								
8								
9								
10							Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB 10 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU#4 CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-SB 11
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/8/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 8 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.0	0.0-0.8' LIGHT BROWN / LIGHT BROWN SILTY f SAND, MOIST, LOOSE	
2						0.8-1.0' BLACK SILTY f SAND MOIST, LOOSE	
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB 11 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69 - SB 12
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/7/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 7 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.0	0.0 – 0.5' LIGHT BROWN SILTY f SAND MOIST, LOOSE	
2						0.5 – 1.0' LIGHT YELLOWISH BROWN TO LIGHT ORANGISH BROWN SILTY f SAND, MOIST, LOOSE.	
3							
4							
5							
6							
7							
8							
9							
10							

Match to Sheet 2

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69 - SB 12 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-SB 13
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/7/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 7 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.2 BG 0.4 PS	LIGHT BROWN/LIGHT YELLOWISH BROWN SILTY SAND, MOIST, LOOSE	
2							
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF/W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB 13 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-SB 14
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/8/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 8 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.0	0.0-0.2' LIGHT GREY SILTY & SAND MOIST, LOOSE, SLIGHTLY ORGANIC	
2						0.2-1.0' LIGHT BROWN SILTY & SAND, MOIST, LOOSE.	
3							
4							
5							
6							
7							
8							
9							
10							

Match to Sheet 2

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB 14 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU#4 CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69-SB 15
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/8/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 8 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.0	LIGHT GREY / MEDIUM GREY SILTY f SAND, MOIST, LOOSE, SLIGHTLY ORGANIC	
2							
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB 15 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU#4 CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-SB16
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/8/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 8 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.0	0.0-0.3' LIGHT/MEDIUM GREY SILTY f SAND, MOIST, LOOSE. SLIGHTLY ORGANIC	
2						0.3-1.0' LIGHT BROWN SILTY f SAND MOIST, LOOSE	
3							
4							
5							
6							
7							
8							
9							
10							

Match to Sheet 2

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB16 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU#4 CAMP LEJEUNE, NC
S.O. NO.: 62740-212 BORING NO.: 69-SB 17
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/8/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 8 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.0	MEDIUM GREY SILTY & SAND, MOIST, LOOSE	
2							
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB 17 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU#4 CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69 - SB18
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/6/94	0 - 1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 6 JANUARY 1994

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 0.0	—	—	—	0.0	0.0 - 0.6' MEDIUM BROWN SILTY f SAND, MOIST, LOOSE	
2						0.6 - 1.0' LT. YELLOW BROWN SILTY f SAND, MOIST, LOOSE.	
3							
4							
5							
6							
7							
8							
9							
10							

Match to Sheet 2

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB18 SHEET 1 OF 1

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-SB19
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER									
	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/6/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 6 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.0	DARK BROWN SILTY f SAND, SATURATED, LOOSE.	
2							
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB19 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-SB20
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER									
	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/6/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 6 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.4 BG 0.5 PS	DARK BROWN SILTY f SAND, MOIST LOOSE.	
2							
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB20 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU#4 CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-SB21
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER									
	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/6/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 6 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample H = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 0.0	—	—	—	0.0	DARK BROWN SILTY f SAND, MOIST, LOOSE	
2							
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB21 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69 - SB 22
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/6/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 6 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.0	0.0-0.5' MEDIUM GREY SILTY f SAND MOIST, LOOSE	
2						0.5-1.0' LIGHT/MEDIUM BROWN SILTY f SAND, MOIST, LOOSE	
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB22 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-SB 23
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/6/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 6 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 0.0	—	—	—	0.0 BG 0.2 PS	0.0-0.6' LIGHT GREY SILTY f SAND MOIST LOOSE	
2						0.6-1.0' MEDIUM BROWN SILTY f SAND, MOIST, LOOSE	
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB 23 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU#4 CAMP LEJEUNE, NC.
S.O. NO.: 62470 - 212 BORING NO.: 69 - SB24
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)					1/6/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 6 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
1	HA 00	—	—	—	0.0	LT. GREY SILTY f/fm SAND, MOIST LOOSE, [LT. BROWN SILTY f/fm SAND @ 1.0' DEPTH].	
2							
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-SB24 SHEET 1 OF 1

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU#4 CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69 - SB 25
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/8/94	0 - 1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 8 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 0.0	—	—	—	0.0	0.0 – 0.2' LIGHT GREY SILTY f SAND, MOIST, LOOSE, SLIGHTLY ORGANIC	
2						0.2 – 1.0' LIGHT BROWN SILTY f SAND MOIST, LOOSE.	
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69 - SB 25 SHEET 1 OF

APPENDIX C.2
SITE 69 MONITORING WELLS

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69-GW02DW
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING:

RIG: Mobile B-47

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		4 1/4" ID		1-9-94	0-6.0	Sunny, cool	6.0	
LENGTH	2.0'		5.0'		1-10-94	6.0-16.0	Sunny, cool		
TYPE	STD		HSA		1-21-94	16.0-50.0			
HAMMER WT.	140#								
FALL	30"								
STICK UP	2 1/2'								

REMARKS: Continuous sampling to 50.0' (bgs). HNu background is .5 ppm. Type II mont well set 1-21

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1 – 2.0	Sample #01 is collected	1.0/2.0 50%	1 3 3 2		BG	SAND, fine to medium grained and SILT w/ organics. Black to yellowish brown to grayish brown, loose to medium dense, damp to wet.	
3 – 4.0	S-2	1.2/2.0 60%	3 4 7 11		BG		
5 – 6.0	Sample #03 is collected	1.5/2.0 75%	4 4 12 11		5.5		
7 – 8.0	S-4	1.6/2.0 80%	4 1 2 2		1.5	SAND, fine to medium grained and SILT w/ trace to little CLAY.	
9 – 10.0	S-5	1.8/2.0 90%	2 1 1 1		18	CLAY, w/ little to some SAND, fine grained, trace silt. Gray to black, very loose, wet.	

Match to Sheet 2

DRILLING CO.: Hardin Huber, Inc BAKER REP.: S. Moffett / E. Kleinkauf
DRILLER:

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69-GW02D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevati
11 – 12.0	S-6	1.7/2.0 85%	1 1 1 1		BG		
13 – 14.0	S-7	1.6/2.0 80%	1 1 1 1		5.8	CLAY w/ trace to little SILT. Gray to black, soft, moist	
15 – 16.0	S-8	1.8/2.0 90%	1 1 1 1		3.1		
17 – 18.0	S-9	24"/24" 100%	1 1 2 2		.7		
19 – 20.0	S-10	24"/24" 100%	2 2 1 3		.7		
21 – 22.0	S-11	24"/24" 100%	2 2 2 2		1.2	SANDY CLAY, fine grained. Medium gray, cohesive, moist	
23 – 24.0	S-12	24"/24" 100%	2 1 2 3		BG		
25 – 26.0	S-13	24"/24" 100%	2 2 3 2		BG		
27 – 28.0	S-14	24"/24" 100%	2 2 3 2		BG		
29 – 30.0	S-15	24"/24" 100%	2 2 2 3		.8		

DRILLING CO.: Hardin Huber, Inc BAKER REP.: E. Kleinkauf
DRILLER: Jay Corron BORING NO.: 69-GW02DW SHEET 2 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69-GW020W

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
31 – 32.0	S-16	24"/24" 100%	2 2 3 3		.9	SAND and CLAY w/ little ?, cohesive, moist	
33 – 34.0	S-17	24"/24" 100%	1 2 2 3		.7		
35 – 36.0	S-18	24"/24" 100%	1 1 8 32		.8	LIMESTONE. Green, hard	
37 – 38.0	S-19	24"/24" 100%	52 50/3"		BG	LIMESTONE / MARL w/ CLAY and shell fragments. White, hard	
39 – 40.0	S-20	24"/24" 100%	15 15 27 19		BG	LIMESTONE / MARL and shell fragments. CLAYEY areas increase. Green to white, hard, increase in coarseness.	
41 – 42.0	S-21	24"/24" 100%	21 26 24 26		.7		
43 – 44.0	S-22	24"/24" 100%	6 8 10 17		1.2		
45 – 46.0	S-23	22"/24" 91%	8 9 6 7		BG	SILTY SAND, fine to fine to medium grained w/ shell and rock fragments. Green, moist	
47 – 48.0	S-24	22"/24" 91%	5 8 12 16		1.1	SILTY SAND, fine to fine to medium grained. Green, loose, moist	
49 – 50.0	S-25	22"/24" 91%	6 8 9 23		BG		

TD: 50.0' END of Boring HNU background range .3 to .5 ppm

DRILLING CO.: Hardin Huber, Inc BAKER REP.: E. Kleinkauf
DRILLER: Jay Corron BORING NO.: 69-GW020W SHEET 3 OF 3

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74 & 41
S.O. NO.: 212 BORING NO.: 69GW02DD
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING:

RIG: Rig # 48

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID	12" / 8"	3 1/4" ID		5-17-94	0-12.0	Clear, Cool (60's)	6.5	
LENGTH	2.0'	12' / 73'	5.0		5-18-94	12.0-73.0	Clear, Cool (50's)		
TYPE	STD	Steel	HSA		5-19-94	73.0-127.0	Clear, Cool (50's)		
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Continuous sampling to 36.0' (bgs). HNu background range is .2 to .4 pp

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
1 – 2.0	S-1	1.4/2.0 70%	3 3 3 3		BG	SILTY SAND, fine grained. Dark brown to brown, loose, damp.	
3 – 4.0	S-2	1.1/2.0 55%	9 6 9 11		BG	SAND, fine grained w/ trace silt. Brown to light gray, medium dense, damp. Oxidation streaking present	
5 – 6.0	S-3	1.4/2.0 70%	10 10 10 10		BG		
7 – 8.0	S-4	1.5/2.0 75%	2 1 1 2		BG	SAND, fine to medium grained w/ trace silt. Light brown to gray, very loose, wet to moist	▼
9 – 10.0	S-5	2.0/2.0 100%	2 1 1 2		BG	CLAY w/ little to some SAND, fine grained w/ trace silt. Gray, very loose, moist.	

Match to Sheet 2

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW02DD SHEET 1 OF 7

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW02DD

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatic
11 – 12.0	S-6	2.0/2.0 100%	1 1 1 1		BG	CLAY w/ trace to little silt Gray to greenish gray, very soft to soft to medium stiff, moist.	
13							
14 – 16.0	S-7	2.0/2.0 100%	WOH/6" 2 3 3		BG		
16 – 18.0	S-8	2.0/2.0 100%	1 2 3 1		BG	SANDY CLAY, fine grained w/ trace silt. Greenish gray, soft to medium stiff, moist	
18 – 20.0	S-9	2.0/2.0 100%	2 2 2 2		BG		
20 – 22.0	S-10	2.0/2.0 100%	1 1 3 2		BG		
22 – 24.0	S-11	2.0/2.0 100%	2 2 2 2		BG		
24 – 26.0	S-12	2.0/2.0 100%	2 2 2 2		BG		
26 – 28.0	S-13	2.0/2.0 100%	2 2 2 2		BG		
28 – 30.0	S-14	2.0/2.0 100%	2 3 4 3		BG		

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW02DD SHEET 2 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O.NO.: 212 BORING NO.: 69GW02DD

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
31	S-15	2.0/2.0 100%	2 1 2 2		BG	SANDY CLAY, fine grained w/ trace silt. Greenish gray soft to medium stiff, moist	
32 – 32.0							
33	S-16	1.0/2.0 50%	2 2 2 2		BG		
34 – 34.0							
35	S-17	1.5/2.0 75%	WOH/6" 3 13 22		BG		
36 – 36.0						LIMESTONE. Dark green, medium dense, wet	
37							
38							
39							
40 – 40.0							
41	S-18	1.3/2.0 65%	7 16 16 32		BG.	LIMESTONE / MARL w/ shell fragments. Green and white medium dense, wet. Micrite cement is matrix only.	
42 – 42.0							
43							
44							
45 – 45.0							
46	S-19	1.3/2.0 65%	7 7 7 7		BG	SILTY SAND, fine to medium w/ trace to some shell material and fragment. Green and white, medium dense, wet.	
47 – 47.0							
48							
49							
50 – 50.0							

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW02DD SHEET 3 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW020D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
51 – 52.0	S-20	1.5/2.0 75%	6 6 7 14		BG	SILTY SAND, fine grained. Green, medium dense, wet.	
55 – 57.0	S-21	1.3/2.0 65%	6 9 17 28		BG	SILTY SAND, fine grained w/ trace to little shell fragments (bottom 1/2 of sample only). Green and white, medium dense, wet.	
60 – 62.0	S-22	1.6/2.0 80%	9 23 27 35		BG	SILTY SAND, fine grained w/ trace shell material. Green and white, very dense, wet.	
65 – 67.0	S-23	1.6/2.0 80%	11 14 26 27		BG	SILTY SAND, fine grained w/ some shell fragments. Green and white, dense, wet.	
70 – 70.0							

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW020D SHEET 4 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74 & 41
S.O. NO.: 212 BORING NO.: 69GW02DD

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
71 / 72.0	S-24	1.0/2.0 50%	37 51/5"		BG	SAND, fine to medium grained w/ little silt, shell fragments and pieces of FOSSILIFEROUS LIMESTONE Green and white, very dense, wet.	
73 / 74 / 75.0							
76 / 77.0	S-25	NR	51/4"		-	NO RECOVERY	
78 / 79 / 80.0							
81 / 82.0	S-26	1.0/2.0 50%	17 33 38 44		BG	SAND, fine grained w/ little silt. Greenish gray, very dense, wet.	
83 / 84 / 85.0							
86 / 87.0	S-27	1.0/2.0 50%	19 21 51/5"		BG	SAND, fine grained w/ trace silt. Greenish gray, very dense, wet.	
88 / 89 / 90.0							

DRILLING CO.: Hardin-Hubar, Inc BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW02DD SHEET 5 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW02DD

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
91 – 92.0	S-28	NR	30 51/5"		–	NO RECOVERY	
92 – 95.0							
95 – 97.0	S-29	.7/2.0 35%	19 33 51/4"		BG	SAND, fine grained w/ trace silt. Greenish gray, very dense, wet. Faint yellow staining is occasional	
97 – 100.0							
101 – 102.0	S-30	NR	33 51/5"		–	NO RECOVERY	
102 – 105.0							
106 – 107.0	S-31	.3/2.0 15%	17 51/6"		BG	SAND, fine grained w/ trace silt. Greenish gray, very dense, wet.	
107 – 110.0							

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW02DD SHEET 6 OF 7

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212
BORING NO.: 69GW02DD

SAMPLE TYPE
S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio.
111 – 112.0	S-32	1.0/2.0 50%	22 31 51/6"		BG	SAND, fine grained w/ trace silt. Greenish gray, very dense, wet	
112 – 113 – 114 – 115.0							
115 – 116 – 117.0	S-33	1.8/2.0 90%	11 17 22 40		BG	SAND, fine grained w/ trace silt. Green, dense, wet.	
117 – 118 – 119 – 120.0							
120 – 121 – 122.0	S-34	1.6/2.0 80%	17 23 25 5/5"		BG	SAND, fine grained w/ trace silt. Green, dense, wet.	
122 – 123 – 124 – 125.0							
125 – 126 – 127.0	S-35	1.8/2.0 90%	19 22 27 40		BG	SAND, fine grained w/ trace silt. Green, dense to very dense, wet.	
127 – 128 – 129 – 130						End of Boring TD: 127.0'	

DRILLING CO.: Hardin-Huber, Inc
DRILLER: Chad Chism
BAKER REP.: J.E. Zimmerman
BORING NO.: 69GW02DD
SHEET 2 OF 2

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.:
BORING NO.: 69GW03 I
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

RIG: Rig # 48	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID	10"	3 1/4" ID		5-20-94	0-16.0	Clear, cool (50's)	6.5	
LENGTH	2.0'	17'	5.0'		5-21-94	16.0-62.0	overcast, cool (50's)		
TYPE	STD	Steel	HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Continuous sampling to 36.0' (69S). HNu background range is .1 to .2 ppm

SAMPLE TYPE
S = Split Spoon, A = Auger
T = Shelby Tube, W = Wash
R = Air Rotary, C = Core
D = Denison, P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1 – 2.0	S-1	1.2 / 60%	5 4 4 5		BG	SILTY SAND, fine grained. Gray to brown, loose, damp.	
3 – 4.0	S-2	1.3 / 65%	3 4 3 5		BG	SAND, fine grained w/ trace silt. Brown to light brown to gray, very loose to loose to medium dense, damp to moist to wet.	
5 – 6.0	S-3	1.5 / 75%	4 5 6 6		BG		
7 – 8.0	S-4	1.3 / 65%	7 10 11 7		BG		
9 – 10.0	S-5	1.7 / 85%	1 2 1 3		BG		

Match to Sheet 2

DRILLING CO.: Hardin-Huber, Inc.
DRILLER: Chad Chism
BAKER REP.: J. E. Zimmerman
BORING NO.: 69GW03 I
SHEET 1 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O.NO.: 212 BORING NO.: 69GW03I

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
11 – 12.0	S-6	1.6/2.0 80%	3 5 4 3		BG	SAND, fine grained w/ trace silt and little CLAY (at bottom only). Gray, loose to medium dense, wet.	
13 – 14.0	S-7	1.4/2.0 70%	2 3 3 5		BG	CLAY w/ little to some SAND, fine grained w/ trace silt. Gray, loose to medium stiff, moist.	
15 – 16.0	S-8	2.0/2.0 100%	1 2 1 1		BG	CLAY w/ trace to little silt. Gray to greenish gray, soft to very soft, moist.	
17 – 18.0							
19 – 20.0	S-9	2.0/2.0 100%	2 2 1 2		BG		
21 – 21.0	S-10	.5/2.0 25%	1 1 1 1		BG	SANDY CLAY, fine grained w/ trace silt. Greenish gray, soft to medium stiff, moist	
23 – 24.0	S-11	2.0/2.0 100%	1 1 2 2		BG		
25 – 26.0	S-12	2.0/2.0 100%	1 2 2 1		BG		
27 – 28.0	S-13	2.0/2.0 100%	3 2 2 1		BG		
29 – 30.0	S-14	2.0/2.0 100%	1 2 2 2		BG		

DRILLING CO.: Hardin - Huber, Inc BAKER REP.: J. E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW03I SHEET 2 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW03I

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
31 – 32.0	S-15	2.0/2.0 100%	2 2 2 2		BG	SANDY CLAY, fine grained w/ trace silt. Greenish gray to dark green, soft to medium stiff, moist	
33 – 34.0	S-16	2.0/2.0 100%	2 2 2 2		BG		
35 – 36.0	S-17	2.0/2.0 100%	2 2 2 15		BG		
36 – 40.0						LIMESTONE / MARL. Dark green, medium dense, wet	
41 – 42.0	S-18	2.0/2.0 100%	7 8 9 11		BG	Limestone / MARL w/ shell fragments. Green to white medium dense, wet. Micrite cement is matrix only.	
45 – 47.0	S-19	1.6/2.0 80%	4 5 7 8		BG	SILTY SAND, fine to medium grained w/ shell material and fragments. Green and white, medium dense, wet.	
50.0							

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW03I SHEET 3 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O.NO.: 212 BORING NO.: 69GW03I

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatic
51 52.0	S-20	1.6/2.0 80%	5 6 10 12		BG	SILTY SAND, fine grained. Green, medium dense, wet.	
53 54 55.0							
56 57.0	S-21	.3/2.0 15%	10 14 15 16		BG	SILTY SAND, fine grained w/ trace to little shell fragments. Green and white, medium dense, wet.	
58 59 60.0							
61 62.0	S-22	NR	13 29 39 45		–	NO RECOVERY	
3 4 5 6 7 8 9 0						End of Boring TD: 62.0'	

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW03I SHEET 4 OF 4

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT:
S.O. NO.:
COORDINATES: EAST:
ELEVATION: SURFACE:
BORING NO.: 69-GW09
NORTH:
TOP OF PVC CASING:

RIG: Mobile B-47

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)	1 3/8" ID		4 1/4" ID		1-8-94	0.0 to 21.0	Sunny High 40's		
LENGTH	2.0'		50'						
TYPE	Std.		HSA						
HAMMER WT.	140 lbs								
FALL	30"								
STICK UP									

REMARKS: Background (BG) is 0.4 parts per million (ppm)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	~~Lab. Class.~~ TIME or ~~Pen. Rate~~	PID (ppm)	Visual Description	Elevat
1	S-1	1.7 85%	2 2 3 4	0926	2.0	Fine to medium sand and silt, leaves, pine needles and decaying vegetation Black, Damp, loose 0.5'	
2 (2.0)						Fine to medium sand and silt, Brownish black to grayish Brown, Damp, loose 1.7'	
3	S-2 69-GW09-02	1.6 80%	3 4 4 4	0922	BG	Fine to medium sand, Trace to little silt, grayish brown to yellowish brown, Damp to moist, loose 3.8'	
4 (4.0)							
5	S-3	1.3 65%	2 4 5 5	1006	2.0	Clay, little to some fine to medium sand, trace silt Brownish gray, Moist, strong reddish orange mottles loose	
6 (6.0)							
7	S-4	1.7 85%	2 3 4 4	1022	BG		
8 (8.0)							
9	S-5 69-GW09-05	1.5 75%	2 3 3 4	1036	BG		
10 (10.0)						Water at approximately 10 feet 9.7	

Match to Sheet 2

DRILLING CO.: Hardin-Huber, Inc.
DRILLER: P. Callahan
BAKER REP.: S. Moffett
BORING NO.: 69-GW09
SHEET 1 OF

TEST BORING RECORD

Baker

Baker Environmental, Inc

PROJECT:
S.O. NO.:
BORING NO.: 69-6W09

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	TIME Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevati
11 / 12.0	S-6	1.6 / 80%	2 2 3 4	1046	3.2	Fine sand and silt, trace to little clay, Brownish gray wet, strong reddish orange mottles, loose sand content and grain size increases with depth	
13 / 14.0	S-7	1.4 / 70%	2 2 3 3	1055	BG	14.0'	
15 / 16.0	S-8	1.8 / 90%	3 1 1 1	1105	BG	Fine to course sand, trace to little fine gravel Trace to little clay, trace silt, mottled greenish blue and dark brown (looks like oxidized copper), wet, very loose	
17 / 18.0	S-9	1.7 / 85%	1 1 1 2	1115	BG	17.5'	
19 / 20.0	S-10	1.4 / 70%	1 1 1 1	1125	BG	Fine to medium sand, little to some silt, trace clay Brownish gray, wet, very loose	
21.0	AW						
22						Bottom of Borehole at 21.0 Feet	
23							
24							
25							
26							
27							
28							
29							
30							

DRILLING CO.: Hardin-Huber Inc
DRILLER: P. Callahan
BAKER REP.: S Moffett
BORING NO.: 69-6W09
SHEET 2 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT:
S.O. NO.:
COORDINATES: EAST:
ELEVATION: SURFACE:

BORING NO.: 69-GW10
NORTH:
TOP OF PVC CASING:

RIG: Mobile B-47

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)	1 3/8" ID		4¼" ID		1-9-94	0.0 TO 17.0	Sunny low 40's		
LENGTH	2.0		5.0'						
TYPE	SSD		HSA						
HAMMER WT.	140 lb								
FALL	30"								
STICK UP									

REMARKS: Back Ground (BG) is 0.5 parts per million (ppm)

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	~~Lab. Class. or Pen Rate~~ Time	PID (ppm)	Visual Description	Eleva
1 – 2.0	S-1 69-GW10-01	1.5 75%	1 2 2 3	1040	1.9	Fine to medium sand and silt, leaves, pine needles and decaying vegetation in first few inches, yellow brown to grayish brown, damp to wet, loose to medium dense	
3 – 4.0	S-2	1.8 90%	3 4 4 8	1045	BG	Trace clay from 3.5 to 4.0 feet	
5 – 6.0	S-3 69-GW10-03	1.7 85%	4 8 12 13	1103	BG	water at approximately 5.5 feet	
7 – 8.0	S4	1.5 75%	7 4 5 6	1113	2.0	Black to grayish black at 7.5 feet	
9 – 10.0	S-5	1.3 65%	4 6 6 8	1122	BG		

Match to Sheet 2

DRILLING CO.: Hardin-Huber, Inc.
DRILLER: P. Callahan

BAKER REP.: S. Moffett
BORING NO.: 69-GW10

SHEET 1 OF

TEST BORING RECORD

Baker

Baker Environmental, Inc

PROJECT:
S.O. NO.:
BORING NO.: 69-GW10

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Time Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevati
11	S-6	1.8 50%	5 5 2 2	1147	BG	Fine to medium sand and silt, grayish black, wet loose to medium Dense	
12 (12.0)							12.0'
13	S-7	1.8 90%	1 3 1 3	1155	BG	Fine to medium sand and silt, trace to little clay, grayish black, wet, very loose to loose	
14 (14.0)							
15	S-8	1.8 90%	2 2 1 1	1200	BG		
16 (16.0)							
17 (17.0)	A-N					Bottom of Borehole at 17.0 Feet	
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

DRILLING CO.: Hardin - Huber, Inc
DRILLER: P Callahan
BAKER REP.: S. Moffett
BORING NO.: 69-GW10
SHEET 2 OF

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT:
S.O. NO.:
COORDINATES: EAST:
ELEVATION: SURFACE:
BORING NO.: 69-GW11
NORTH:
TOP OF PVC CASING:

RIG: Mobile B-47

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)	1 3/8" ID		4 1/4" ID		1-7-94	0.0 to 19.0	Sunny low 60's		
LENGTH	2.0'		5.0'						
TYPE	Std.		HSA						
HAMMER WT.	140 lbs								
FALL	30"								
STICK UP									

REMARKS: Background (BG) is 0.5 parts per million (ppm)

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	TIME Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevat
1 / 2 (2.0)	S-1	1.3 65%	3 2 3 3	0925	BG	Leaves, Pine Needles and Decaying vegetation, Pack, Damp loose 0.3 Fine to Medium sand, trace to little silt, grayish Brown to yellowish Brown, Damp to moist, loose	
3 / 4 (4.0)	S-2 69-GW11-02	1.3 65%	5 6 6 6	0920	BG		
5 / 6 (6.0)	S-3	0.3 15%	3 4 5 6	1006	BG	5.0' Clay, little fine to medium sand, trace to little silt, orangish brown, Damp, stiff 6.0'	
7 / 8 (8.0)	S-4 69-GW11-04	1.4 70%	3 10 8 8	1015	5.0' BG.	Fine to medium sand, trace to little silt, grayish brown to yellowish brown, Damp to wet, medium dense Water at Approximately 7.5 feet	
9 / 10 (10.0)	S-5	1.6 80%	3 5 5 4	1026	BG	9.5' Clay, little to some fine sand, trace silt gray, wet, Areas of orangish staining, loose	
					Light	Match to Sheet 2	

DRILLING CO.: Heron Huber Inc.
DRILLER: P. Callahan
BAKER REP.: S. Moffett
BORING NO.: 69-GW11
SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT:
S.O. NO.:
BORING NO.: 69-GW11

SAMPLE TYPE
S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	~~Lab. Class. or Pen. Rate~~ Time	PID (ppm)	Visual Description	Elevat
11 / 12.0	S-6	1.5 75%	1 1 3 4	1036	5.0	CLAY, little to some fine sand, trace silt, light gray, wet Areas of orangish staining, loose	
13 / 14.0	S-7	1.8 90%	2 3 3 4	1043	BG		
15 / 16.0	S-8	1.7 85%	4 3 3 4	1335	BG	Becomes a dark bluish gray color at 15 feet large areas of orangish staining	
17 / 18.0	S-9	0.9 45%	4 5 5 4	1353	BG		
19.0	A-N						19.0'
19						Bottom of Borehole at 19. Feet	
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

DRILLING CO.: Harding Huber, Inc
DRILLER: P. Callahan
BAKER REP.: S. Moffett
BORING NO.: 69-GW11
SHEET 2 OF

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT:
S.O. NO.:
COORDINATES: EAST:
ELEVATION: SURFACE:
BORING NO.: 69-GW-12
NORTH:
TOP OF PVC CASING:

RIG: MOBILE B-47

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		4 1/4" ID		1-6-94	0.0 to 13.5	SUNNY, High 30's		
LENGTH	2.0'		5.0'						
TYPE	std		HSA						
HAMMER WT.	140 lbs.								
FALL	30"								
STICK UP									

REMARKS: Back Ground (BG) is 0.3 parts per million (ppm)

SAMPLE TYPE
S = Split Spoon, A = Auger
T = Shelby Tube, W = Wash
R = Air Rotary, C = Core
D = Denison, P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	TIME ~~Lab. Class.~~ or Pen. Rate	PID (ppm)	Visual Description	Elevat
1	S-1 GA-GW12-01	1.5 75%	2 2 3 3	0925	12 / 1.5	Fine to Medium Sand and Silt, Black, Most: Dwell vegetation in the first few inches of sample some leaves and decaying white from 0.6 to 0.8 feet, very loose to loose	
2	2.0						
3	S-2	0.3 15%	1 1 2 3	0950	1.0	TREE ROOT stuck in spoon, poor recovery water at approximately 3.0 feet	
4	4.0						
5	S-3	2.0 100%	2 1 1 1	1010	BG	Fine to Medium Sand and Silt, Trace clay, Black, wet, very loose	4.5
6	6.0						
7	S-4	2.0 100%	1 2 1 1	1025	1.5		7.6'
8	8.0					Fine to Medium Sand and Silt, Black to grayish brown, wet, loose Silt content decreases with depth	
9	S-5	1.6 80%	5 3 1 5	1033	BG		
10	10.0					Fine to medium Sand, Trace to little silt, grayish brown wet, loose	Match to Sheet 2

DRILLING CO.: HARDING-HUBER, INC.
DRILLER: P. CALLAHAN
BAKER REP.: S. MOFFETT
BORING NO.: 69-GW12
SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT:
S.O. NO.: BORING NO.:

SAMPLE TYPE

S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevati
11	S-6	0.9 45%	4 3 2 2	1040	BG	Fine to Medium SAND, Trace to Little SILT, grayish brown, wet, loose	
12 (12.0)							
13 (13.5)	A-N					13.5	
14						Bottom of Bore hole at 13.5 feet	
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

DRILLING CO.: Harrow-Huber, Inc.
DRILLER: P. Callahan
BAKER REP.: S. Moffett
BORING NO.: 69-GW 12
SHEET 2 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69-GW12DW
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING:

RIG: Mobile B-47

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		4 1/4" ID		1-8-94	0-20.0	Sunny, Cool	3.0	
LENGTH	2.0'		5.0'		1-22-94	20.0-60.0			
TYPE	STO		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP	2 1/2'								

REMARKS: Continuous sampling to 6.0' (bgs). Type II monitoring well set 1-22-94

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1 – 2.0	Sample #01 is collected	1.0/2.0 50%	1 1 2 2		7.3	SAND, fine to medium grained and SILT w/ organics. Black to white to gray, very loose to loose, moist to wet.	
3 – 4.0	S-2	1.0/2.0 50%	1 2 2 4		5.5		
5 – 6.0	S-3	.6/2.0 30%	4 2 2 1		BG		
7 – 8.0	S-4	1.4 70%	2 1 2 2		BG	CLAY w/ little to some SAND, fine to medium grained and trace SILT.	
9 – 10.0	S-5	1.6/2.0 80%	1 2 2 2		BG		

Match to Sheet 2

DRILLING CO.: Hardin Huber, Inc BAKER REP.: S. Moffett / E. Kleinkauf
DRILLER: Pat Callahan BORING NO.: 69-GW12DW SHEET 1 OF 4

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41.
S.O. NO.: 212
BORING NO.: 69-GW12DW

SAMPLE TYPE
S = Split Spoon, A = Auger
T = Shelby Tube, W = Wash
R = Air Rotary, C = Core
D = Denison, P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
11 – 12.0	S-6	1.7/2.0 85%	1 1 3 3		BG	Mottled greenish blue and reddish orange, very loose to loose, wet. CLAY and SAND, fine to medium grained w/ trace to little SILT and trace fine gravel. Mottled green/blue/dark brown, loose to medium dense, wet.	
13 – 14.0	S-7	1.3/2.0 65%	2 6 4 7		BG		
15 – 16.0	S-8	1.6/2.0 80%	6 7 8 10		BG	SAND, fine to coarse grained w/ shell fragments and trace CLAY and SILT. Greenish blue, medium dense, wet.	
17 – 18.0	S-9	1.5/2.0 75%	4 7 11 17		BG		
19 – 20.0	S-10	1.4/2.0 70%	4 6 5 7		BG		
21 – 22.0	S-11	18"/24" 75%	5 4 7 8		BG	SILTY SAND, fine to fine to medium grained w/ little CLAY. Green, loose, moist	
23 – 24.0	S-12	24"/24" 100%	4 5 7 12		BG		
25 – 26.0	S-13	24"/24" 100%	5 5 12 21		.6		
27 – 28.0	S-14	22"/24" 91%	6 9 10 16		BG		
29 – 30.0	S-15	24"/24" 100%	4 5 7 10		.7		

DRILLING CO.: Hardin Huber, Inc
DRILLER: Jay Corron
BAKER REP.: E. Kleinkauf
BORING NO.: 69-GW12DW
SHEET 2 OF 4

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212
BORING NO.: 69-GW12DW

SAMPLE TYPE
S = Split Spoon, A = Auger
T = Shelby Tube, W = Wash
R = Air Rotary, C = Core
D = Denison, P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
31 – 32.0	S-16	19"/24" 79%	7 15 19 25		BG		
32 – 36.0						No sample from 32' to 34' (bgs). Driller miscalculated depth.	
36 – 38.0	S-17	23"/24" 95%	8 12 25 23		BG	SILTY SAND, fine to fine to medium grained w/ little CLAY. Green, loose, moist	
38 – 40.0	S-18	22"/24" 91%	10 13 22 24		BG		
40 – 42.0	S-19	23"/24" 95%	7 14 23 47		BG	SILTY SAND, fine to fine to medium grained w/ little CLAY and occasional shells. Green, loose, moist	
42 – 44.0	S-20	24"/24" 100%	10 14 20 48		BG		
44 – 44.9	S-21	10"/24" 41%	46 50/5"		BG	SILTY LIMESTONE fragments w/ trace CLAY. Light gray to tan, loose, hard, wet	
45 – 46.0	S-22				BG		
46 – 50.0						No sampling attempted	

DRILLING CO.: Hardin Huber, Inc
DRILLER: Jay Corron
BAKER REP.: E. Kleinkauf
BORING NO.: 69-GW12DW
SHEET 3 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69-GW12

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
50.9	S-23	8"/24" 33%	30 50/4"		BG	SILTY SAND, fine to fine to medium grained. Light gray to tan, loose to hard/dense, moist to wet. Slight increase in CLAY from 54' to 56' (bgs)	
52.0							
53.0	S-24	6"/24" 25%	25 50/6"		BG		
54.0							
56.0	S-25	18"/24" 75%	20 23 33 50/5"		BG		
58.0	S-26	19"/24" 79%	23 51 32 35		BG	SILTY SAND, fine grained w/ trace of CLAY. Light green to gray, slightly dense, moist to wet.	
60.0	S-27	17"/24" 70%	17 20 25 31		BG		
						End of Boring	

TD: 60.0'
HNu background range .2 to .5ppm

DRILLING CO.: Hardin Huber, Inc BAKER REP.: E. Kleinkauf
DRILLER: Jay Corron BORING NO.: 69-GW12DW SHEET 4 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW13
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING:

RIG: Rig #48	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID		5-24-94	0-13.0	partly cloudy warm, (80's)	6.5	
LENGTH	2.0'		5.0'						
TYPE	STD		HSA						
HAMMER WT.	140*								
FALL	30"								
STICK UP									

REMARKS: Continuous sampling to 13.0' (bgs). HNu background is .3 ppm

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)		Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1		S-1	1.2/2.0 60%	1 2 3 4		BG	SILTY SAND, fine grained. Gray to dark brown, loose, damp	
2	2.0							
3		S-2	1.0/2.0 50%	1 3 3 9		BG	SAND, fine grained w/trace silt. Dark brown to brown, loose to medium dense, damp to moist to wet.	
4	4.0							
5		S-3	1.0/2.0 50%	3 3 4 5		BG		
6	6.0							
7		S-4	1.5/2.0 75%	10 12 8 9		BG		
8	8.0							
9		S-5	1.8/2.0 90%	5 6 7 7		BG	WOOD, dark brown, medium dense, wet.	
10	10.0						SAND, fine grained w/trace silt. Greenish gray, medium dense, wet	
							WOOD, dark brown, loose, wet	

Match to Sheet 2

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW13

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
						Wood, dark brown, loose, wet.	
11	S-6	.4/2.0 20%	5 3 2 1		BG	CLAY, w/ little to some SAND, fine grained w/ trace silt. Greenish Gray, soft to medium stiff, moist.	
12.0							
12							
13							
14						End of Boring TD: 13.5'	
15							
16						* original well location abandoned and moved 12.0' due North. Lithologic descriptions are adapted from original well location.	
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: J. E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW13 SHEET 2 OF 2

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW13I
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING:

RIG: Rig #48

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID	10"	3 1/4" ID		5-21-94	0-22.0	overcast, cool (50's)	6.5	
LENGTH	2.0	23'	5.0'		5-23-94	22.0-62.0	clear, mild (60's)		
TYPE	STD	Steel	HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Continuous sampling to 38.0' (bgs). HNU background is .3 ppm.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1 – 2.0	S-1	1.0/2.0 50%	3 5 5 6		BG	SILTY SAND, fine grained, Gray to brown, medium dense, damp	
3 – 4.0	S-2	1.2/2.0 60%	4 4 5 6		BG	SAND, fine grained w/ trace silt. Brown to dark brown to greenish gray, very loose to loose to medium dense, damp to moist to wet.	
5 – 6.0	S-3	1.8/2.0 90%	8 6 6 6		BG		
7 – 8.0	S-4	1.7/2.0 85%	5 10 8 8		BG		
9 – 10.0	S-5	1.5/2.0 75%	2 9 9 7		BG		

Match to Sheet 2

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chiaus

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW13I

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
11 / 12.0	S-6	.6/2.0 30%	1 1 1 1		BG	SAND, fine grained w/trace silt. Greenish gray, very loose to loose, wet.	
13 / 14.0	S-7	1.8/2.0 90%	WOH/24"		BG	CLAY w/ little to some SAND fine grained w/trace silt. Greenish gray, soft, moist.	
15 / 16.0	S-8	1.1/2.0 55%	5 5 5 5		BG	SAND, fine grained w/ trace silt. Gray, medium dense, wet.	
17 / 18.0	S-9	1.8/2.0 90%	1 1 2 3		BG	CLAY w/ trace to little silt and trace SAND, fine grained. Greenish gray, soft to medium stiff, moist. Oxidation streaking	
19 / 20.0	S-10	1.7/2.0 85%	1 3 4 3		BG		
21 / 22.0	S-11	1.8/2.0 90%	1 2 3 3		BG		
23 / 24.0	S-12	2.0/2.0 100%	3 3 5 4		BG	SANDY CLAY, fine grained w/ trace silt. Greenish gray, soft to medium stiff, moist	
25 / 26.0	S-13	2.0/2.0 100%	WOH/6" 2 2 3		BG		
27 / 28.0	S-14	2.0/2.0 100%	2 3 3 3		BG		
29 / 30.0	S-15	2.0/2.0 100%	2 2 2 3		BG		

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW13I SHEET 2 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O.NO.: 212 BORING NO.: 69GW13I

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
31 – 32.0	S-16	2.0/2.0 100%	1 1 1 1		BG	SANDY CLAY, fine grained w/ trace silt. Greenish gray soft to medium stiff to hard, moist.	
33 – 34.0	S-17	2.0/2.0 100%	2 3 2 3		BG		
35 – 36.0	S-18	1.8/2.0 90%	3 9 23 23		BG		
37 – 38.0	S-19	1.4/2.0 70%	7 9 18 19		BG	SAND, fine to medium grained w/ trace of coarse gravel well rounded Greenish gray to dark green, medium dense, wet	
39 – 40.0							
41 – 42.0	S-20	1.6/2.0 80%	5 7 11 14		BG	LIMESTONE / MARL w/ shell fragments. Dark green to green to white, medium dense, wet Micrite cement is matrix only	
43 – 45.0							
46 – 47.0	S-21	1.1/2.0 55%	11 11 17 21		BG	SILTY SAND, fine to medium grained w/ shell material and fragments. Green and white, medium dense, wet.	
48 – 50.0							

DRILLING CO.: Hardin - Huber, Inc BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW13I SHEET 3 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW13I

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
51 / 52.0	S-22	1.0/2.0 50%	6 7 13 15		BG	SILTY SAND, fine grained w/ trace shell material. Green and white, medium dense, wet.	
53 / 54 / 55.0							
56 / 57.0	S-23	1.0/2.0 50%	6 6 7 9		BG	SILTY SAND, fine grained w/ trace to little shell fragments. Green and white, medium dense, wet.	
59 / 60.0							
61 / 62.0	S-24	NR	9 14 16 26		–	No RECOVERY	
3						End of Boring TD: 62.0'	
4							
5							
6							
7							
8							
9							
0							

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW13I SHEET 4 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-GW14
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING:

RIG: MOBILE

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID								
LENGTH	2.0'								
TYPE	STD								
HAMMER WT.	140#								
FALL	30"								
STICK UP	2½'								

REMARKS:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1	SS S-1	1.3' 65%	1 2 2 2		0.1 (BG)	SILTY SAND: FINE GRAINED, DARK BROWN	
						SAND: FINE GRAINED, TRACE SILT, LOOSE, BROWN, DAMP	
2							
3	SS S-2	1.3' 65%	3 3 4 5		0.1 (BG)	SAND: FINE GRAINED, TRACE SILT, LOOSE, BROWN, MOIST TO WET.	
4							
5	SS S-3	1.8' 90%	4 5 5 6		0.1 (BG)	SAND: FINE GRAINED, TRACE SILT, MEDIUM DENSE, LIGHT GRAY, WET	
6							
7	SS S-4	1.9' 95%	2 2 2 3		0.1 (BG)	SAND: FINE TO MEDIUM GRAINED, TRACE SILT, LITTLE CLAY (AT BOTTOM), LOOSE TO SOFT, LIGHT BROWN / GRAY, WET TO MOIST	
8							
9	SS S-5	2.0' 100%	1 1 1 1		0.1 (BG)	CLAY: LITTLE TO SOME FINE GRAINED SAND, TRACE SILT, SOFT TO LOOSE, GRAY MOIST	
10							

Match to Sheet 2

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14 SHEET 1 OF 2

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-GW14

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatic
	SS	1.8'	1 2		0.1	CLAY: TRACE TO LITTLE SILT, VERY SOFT, GRAY, MOIST	
11	S-6	90%	1 2		(BG)		
12	SS	1.8'	1 1		0.1	SAME	
13	S-7	90%	2 1		(BG)		
14						BOTTOM OF BORING AT 14.0'	
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14 SHEET 2 OF 2

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-GW14IW
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING:

RIG: MOBILE

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID								
LENGTH	2.0'								
TYPE	STD								
HAMMER WT.	140#								
FALL	30"								
STICK UP	2 1/2'								

REMARKS:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1	SS S-1	1.4' 70%	3 3 4 4		0.1 (BG)	SILTY SAND: FINE GRAINED, DARK BROWN WOOD	
2						SAND: FINE GRAINED, TRACE SILT, LOOSE BROWN, DAMP	
3	SS S-2	1.5' 75%	3 4 5 6		0.1 (BG)	SAME (MEDIUM DENSE)	
4							
5	SS S-3	1.3' 65%	5 5 5 4		0.1 (BG)	SAND: FINE GRAINED, TRACE SILT, MEDIUM DENSE, LIGHT GRAY, DAMP TO MOIST	
6							
7	SS S-4	1.4' 70%	3 2 2 2		0.1 (BG)	SAND: FINE TO MEDIUM GRAINED, TRACE SILT, LITTLE CLAY (AT BOTTOM) LOOSE TO SOFT, LIGHT BROWN TO GRAY, WET TO MOIST.	
8							
9	SS S-5	2.0' 100%	1 2 1 1		0.1 (BG)	CLAY: LITTLE TO SOME FINE GRAINED SAND, TRACE SILT, SOFT TO LOOSE, GRAY, MOIST	
10							

Match to Sheet 2

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14IW SHEET 1 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69-GW14 IW

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
	SS	2.0'	1 1		0.1	CLAY: TRACE TO LITTLE SILT, VERY SOFT, GRAY, MOIST	
11	S-6	(100)%	2 2		(0G)		
12						* 6" ϕ CASING (STEEL) SET AT 12' AND GROUTED	
13							
14							
15						NO SAMPLING UNTIL 30.0'	
16							
17							
18						(FROM 69-GW14DW LOG)	
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14 IW SHEET 2 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-GW14IW

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
31	SS S-7	2.0' 100%	3 3 3 3		0.1 (BG)	SANDY CLAY: FINE GRAINED, TRACE SILT, MEDIUM STIFF, GREENISH GRAY, MOIST	
32							
33							
34							
35	SS S-8	1.0' 50%	7 15 18 22		0.1 (BG)	LIMESTONE/MARL/SHELL FRAGMENTS, MICRITE CEMENT IS MATRIX, DENSE, DARK GREEN/GREEN/WHITE, WET	
36							
37							
38							
39							
40	SS S-9	1.3' 65%	19 15 16 15		0.1 (BG)	SAME	
41							
42							
43							
44							
45	SS S-10	1.8' 90%	6 8 17 20		0.1 (BG)	SILTY SAND: FINE TO MEDIUM GRAINED, TRACE TO SOME SHELL MATERIAL, MEDIUM DENSE, GREEN/WHITE, WET	
46							
47							
48							
49							
50							

DRILLING CO.: HARDIN-HUGER, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14IW SHEET 3 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-GW14I

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
51	SS S-11	1.8' 90%	8 16 22 25		0.1 (BG)	SILTY SAND: FINE GRAINED, DENSE, GREEN, WET	
52							
53							
54							
55	SS S-12	1.8' 90%	7 23 50/5"		0.1 (BG)	SILTY SAND: FINE GRAINED, TRACE TO LITTLE SHELL FRAGMENTS (BOTTOM 1/2 OF SAMPLE), DENSE, GREEN/WHITE, WET	
56							
57							
58							
59							
60	SS S-13	1.6' 80%	20 40 41 50/3"		0.1 (BG)	SAME	
61							
62							
63						BOTTOM OF BORING AT 62.0'	
64							
65							
66							
67							
68							
69							
70							

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14IW SHEET 4 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI - OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-GW14DW
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING:

RIG: MOBILE

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID								
LENGTH	2.0'								
TYPE	STD								
HAMMER WT.	140#								
FALL	30"								
STICK UP	2 1/2"								

REMARKS:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1, 2, 3, 4						NO SAMPLE	
5, 6	SS S-1	1.4'	6 5 4 4		0.1 (BG)	SAND: FING GRAINED, TRACE SILT, LOOSE TO MEDIUM DENSE, LIGHT GRAY, DAMP TO MOIST.	
7, 8	SS S-2	1.5 75%	3 2 2 1		0.1 (BG)	SAND: FINE TO MEDIUM GRAINED, TRACE SILT, LITTLE CLAY (AT BOTTOM), LOOSE TO SOFT, LIGHT BROWN TO GRAY, WET TO MOIST	▼
9, 10	SS S-3	2.0 100%	1/8" 1/8" 1/8"		0.1 (BG)	CLAY: LITTLE TO SOME FINE GRAINED SAND, TRACE SILT, SOFT TO LOOSE, GRAY, MOIST. Match to Sheet 2	

DRILLING CO.: HARDIN HUBER, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 1 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69-GW14DW

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
11	SS S-4	2.0' 100%	3 2 2 2		0.1 (BG)	CLAY: TRACE TO LITTLE SILT, VERY SOFT, GRAY, MOIST	
12						* 10" ϕ CASING (STEEL) SET AT 12.0' AND GROUTED	
13							
14							
15	SS S-5	2.0' 100%	2 2 2 2		0.2 (BG)	CLAY: TRACE TO LITTLE SILT, SOFT TO MEDIUM STIFF, GREENISH GRAY, MOIST	
16							
17							
18							
19							
20	SS S-6	2.0' 100%	3 3 4 4		0.2 (BG)	SANDY CLAY: FINE GRAINED, TRACE SILT, SOFT TO MEDIUM STIFF, GREENISH GRAY, MOIST	
21							
22							
23							
24							
25	SS S-7	2.0' 100%	1 2 2 2		0.2 (BG)	SAME	
26							
27							
28							
29							
30							

DRILLING CO.: HARDIN - HUBER, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 2 OF 7

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE
S.O. NO.: 62470-212 BORING NO.: 69-GW14DW

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
31	SS S-8	2.0 100%	2 1 2 2		0.2 (BG)	SANDY CLAY: FINE GRAINED, TRACE SILT, SOFT TO MEDIUM STIFF, GREENISH GRAY, MOIST	
32							
33							
34							
35	SS S-9	2.0' 100%	5 16 20 23		0.2 (BG)	LIMESTONE/MARL/SHELL FRAGMENTS THROUGHOUT. MICRITE CEMENT MATRIX, DENSE, DARK GREEN/GREEN/WHITE, WET.	
36							
37							
38							
39							
40	SS S-10	2.0' 100%	9 11 12 11		0.2 (BG)	SAME (MEDIUM DENSE)	
41							
42							
43							
44							
45	SS S-11	1.8'	7 12 14 18		0.2 (BG)	SILTY SAND: FINE TO MEDIUM GRAINED, TRACE TO SOME SHELL FRAGMENTS, MEDIUM DENSE, GREEN/WHITE, WET.	
46							
47							
48							
49							
50							

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 3 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69-GW14D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
51	SS S-12	1.8'	7 18 19 20		0.2 (BG)	SILTY SAND: FINE GRAINED, DENSE, GREEN, WET	
52							
53							
54							
55	SS S-13	1.9'	18 23 24 50/3"		0.2 (BG)	SILTY SAND: FINE GRAINED, TRACE TO LITTLE SHELL FRAGMENTS (BOTTOM 1/2 OF SAMPLE), DENSE, GREEN/WHITE, WET	
56							
57							
58							
59							
60	SS S-14		25 50/4"		0.2 (BG)	SILTY SAND: FINE GRAINED, TRACE SHELL FRAGMENTS, VERY DENSE, GREEN/WHITE, WET.	
61							
62							
63							
64							
65	SS S-15		18 28 50/4"		0.2 (BG)	SILTY SAND: FINE GRAINED, SOME SHELL FRAGMENTS, VERY DENSE, GREEN/WHITE, WET	
66							
67							
68							
69							
70							

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 4 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-GW14DW

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
71	SS S-16	1.0' 100%	42 50/.4		0.2 (BG)	SAND: FINE TO MEDIUM GRAINED, LITTLE SILT, SHELL FRAGMENTS AND PIECES OF FRACTURED FOSSILIFEROUS LIMESTONE, VERY DENSE, GREEN/LIGHT GRAY/WHITE, WET	
72							
73						* 6" ϕ CASING (STEEL) SET TO 72' AND GROUTED.	
74							
75	SS S-17	NR	100/.5		—	NO RECOVERY	
76							
77							
78							
79							
80	SS S-18	0.9 98%	35 50/.5		0.3 (BG)	SAND: FINE GRAINED, LITTLE SILT, VERY DENSE, GREENISH GRAY, WET.	
81							
82							
83							
84							
85	SS S-19	0.9 100%	32 50/.3		0.3 (BG)	SAND: FINE GRAINED, TRACE SILT, VERY DENSE, GREENISH GRAY, WET	
86							
87							
88							
89							
90							

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 5 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-GW14

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
91	SS S-20	NR	38 50/3"		—	No RECOVERY	
92							
93							
94							
95	SS S-21	0.3' 36%	40 50/4"		0.3 (BG)	SAND: FINE GRAINED, TRACE SILT, VERY DENSE, GREENISH GRAY, WET	
96							
97							
98							
99							
100	SS S-22	1.0' 100%	100/5"		0.3 (BG)	SAME	
101							
102							
103							
104							
105	SS S-23	0.8' 87%	100/7"		0.3 (BG)	SAME	
106							
107							
108							
109							
110							

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 6 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69-GW14DW

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
111	SS S-24	1.1' 100%	28 50/5"		0.3 (BG)	SAND; FINE GRAINED, TRACE SILT, VERY DENSE, GREENISH GRAY, WET	
112							
113							
114							
115	SS S-25	1.6' 100%	28 34 50/4"		0.3 (BG)	SAND; FINE GRAINED, TRACE SILT, VERY DENSE, GREEN, WET.	
116							
117							
118							
119							
120	SS S-26	1.6' 100%	32 50/5"		0.2 (BG)	SAME	
121							
122							
123							
124							
125	SS S-27	1.5' 100%	34 50/5"		0.2 (BG)	SAME	
126							
127						BOTTOM OF BORING @ 127.0'	
128							
129							
130							

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 7 OF 7

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 69-GW15

SHEET: 1 OF 1

PROJECT NUMBER: 62470-212
PROJECT NAME: SITE 69 - CHEMICAL STORAGE AREA
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARROTT-WOLFF, INC.
RIG TYPE & NUMBER: ATV (TRACK) RIG
DRILLING METHOD: AUGERS
WEATHER: SUNNY, WARM, HUMID
GEOLOGIST: E.J. KLEINKAUF
ENV. SCIENTIST: -
DATE BEGUN: 3/23/95 DATE COMPLETED: 3/23/95

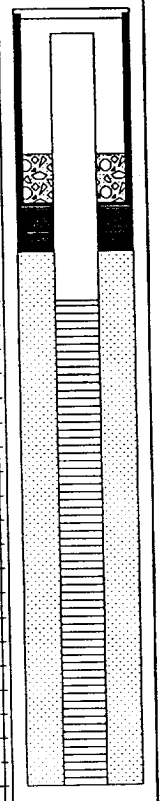
GROUND SURFACE ELEVATION: 35.70' msl
TOP OF PVC CASING ELEVATION: 16.07' msl

WELL DETAILS (FT)

STICKUP:	1.7
LENGTH OF RISER (2"I.D.):	3.0
LENGTH OF SCREEN (2"I.D.):	10.0
THICKNESS OF GROUT:	1.0
THICKNESS OF SEAL:	1.0
THICKNESS OF SAND PACK:	11.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	4.0										4.0
39:00	3.0										3.0
38:00	2.0										2.0
37:00	1.0										1.0
36:00	0.0										0.0
35:00	1.0									No samples collected. Augered to 13'. Refer to well 69-GW15IW log for lithology.	1.0
34:00	2.0										2.0
33:00	3.0										3.0
32:00	4.0										4.0
31:00	5.0										5.0
30:00	6.0										6.0
29:00	7.0										7.0
28:00	8.0										8.0
27:00	9.0										9.0
26:00	10.0										10.0
25:00	11.0										11.0
24:00	12.0										12.0
23:00	13.0									BOTTOM OF BOREHOLE @ 13.0'	13.0
22:00	14.0									NOTE: 1) Groundwater encountered @ 3.0' during drilling	14.0
21:00	15.0										15.0
20:00	16.0										16.0
19:00	17.0										17.0
18:00	18.0										18.0
17:00	19.0										19.0
16:00	20.0										20.0
15:00	21.0										21.0
14:00	22.0										22.0
13:00	23.0										23.0
12:00	24.0										24.0

WELL INSTALLATION



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 69-GW15IW

SHEET: 1 OF 3

PROJECT NUMBER: 62470-212
PROJECT NAME: SITE 69 - CHEMICAL STORAGE AREA
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARROTT-WOLFF, INC.
RIG TYPE & NUMBER: ATV (TRACK) RIG
DRILLING METHOD: MUD ROTARY
WEATHER: SUNNY, WARM, HUMID
GEOLOGIST: E.J. KLEINKAUF
ENV. SCIENTIST: -
DATE BEGUN: 3/23/95 DATE COMPLETED: 3/24/95

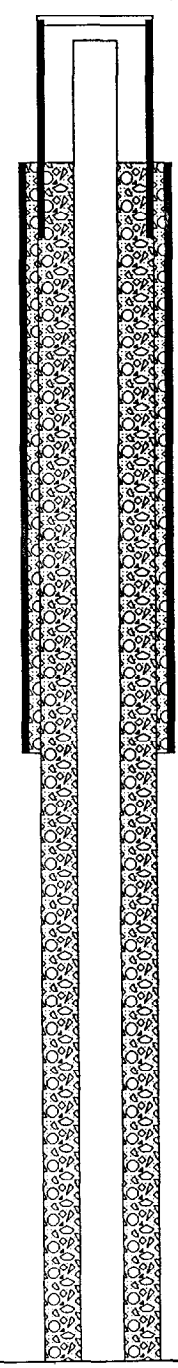
GROUND SURFACE ELEVATION: 35.70' msl
TOP OF CASING ELEVATION: 37.54' msl

WELL DETAILS (FT)

STICKUP:	1.8
OUTER CASING (6"I.D.):	
LENGTH OF RISER (2"I.D.):	45.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	40.0
THICKNESS OF SEAL:	3.0
THICKNESS OF SAND PACK:	17.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE	BLOWS/0.5'	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
39:00	4.0										4.0
38:00	3.0										3.0
37:00	2.0										2.0
36:00	1.0										1.0
35:00	0.0		S-1	SS	1 1 2 2	-	4.0	4.0		SILTY SAND: fine grained, medium to dark brown, moist to wet, very loose/loose	0.0
34:00	1.0										1.0
33:00	2.0		S-2	SS	1 1 4 3	0.2	4.0	4.0			2.0
32:00	3.0										3.0
31:00	4.0		S-3	SS	2 3 5 8	0.5	-	-			4.0
30:00	5.0										5.0
29:00	6.0		S-4	SS	5 8 14 13	2.0	2.0	4.0			6.0
28:00	7.0										7.0
27:00	8.0		S-5	SS	2 1 2 1	2.0	2.0	4.0		SILTY SAND: fine grained, trace/little clay, light green grey, wet, loose/medium dense	8.0
26:00	9.0										9.0
25:00	10.0		S-6	SS	W 0 H 2	1.8	-	-		SILTY CLAY: trace fine grained sand, gray, damp to moist, stiff	10.0
24:00	11.0										11.0
23:00	12.0		S-7	SS	3 2 2 2	0.9	0.0	20		SILTY/SANDY CLAY: fine grained, grey, moist, loose; layered with grey clay zones	12.0
22:00	13.0										13.0
21:00	14.0		S-8	SS	2 1 1 2	0.8	0.0	20			14.0
20:00	15.0										15.0
19:00	16.0		S-9	SS	WOH WOH WOH WOH	0.9	-	-			16.0
18:00	17.0										17.0
17:00	18.0		S-10	SS	WOH WOH 2 1	2.0	-	-		CLAYEY SILT: trace fine grained sand, gray/green, damp to wet, medium dense/dense	18.0
16:00	19.0										19.0
15:00	20.0										20.0
14:00	21.0										21.0
13:00	22.0										22.0
12:00	23.0										23.0
	24.0										24.0

WELL INSTALLATION



BAKER

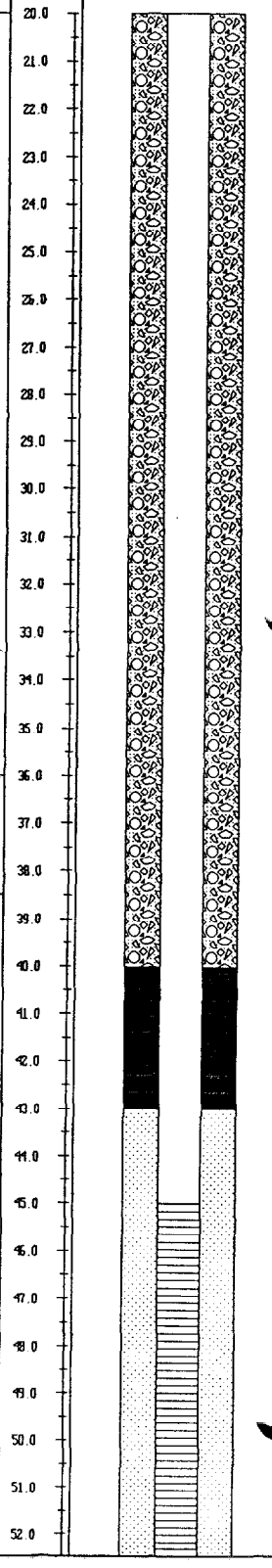
WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 69-GW15IW

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION
	20.0									CLAYEY SILT: trace fine grained sand, grey/green, damp to wet, soft
15:00	21.0									
14:00	22.0									
13:00	23.0									
12:00	24.0									
11:00	25.0									
10:00	26.0		S-11	SS	WOH WOH WOH WOH	2.0	0.0	0.0		
9:00	27.0									
8:00	28.0									
7:00	29.0									
6:00	30.0									
5:00	31.0		S-12	SS	WOH WOH WOH WOH	2.0	0.0	0.0		
4:00	32.0									
3:00	33.0									
2:00	34.0									
1:00	35.0									
0:00	36.0		S-13	SS	WOH WOH WOH WOH	1.75	0.0	0.0		
1:00	37.0									SILT AND SAND: fine grained, trace clay, grey/green, damp to moist, soft
2:00	38.0									
3:00	39.0									SILTY SAND: fine grained, shell and limestone fragments, green and white, moist to wet, dense/very dense
4:00	40.0									
5:00	41.0		S-14	SS	8 28 16 16	1.80	-	-		
6:00	42.0									
7:00	43.0									
8:00	44.0									
9:00	45.0									
10:00	46.0		S-15	SS	8 14 13 16	1.70	-	-		
11:00	47.0									
12:00	48.0									
13:00	49.0									
14:00	50.0									
15:00	51.0		S-16	SS	3 6 8 10	1.80	-	-		
16:00	52.0									

DEPTH

WELL INSTALLATION



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 69-GW15IW

SHEET: 3 OF: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
	50.0										50.0	
15:00	51.0										51.0	
16:00	52.0										52.0	
17:00	53.0										53.0	
18:00	54.0										54.0	
19:00	55.0										55.0	
20:00	56.0		S-17	SS	6 8 10 15	2.0	-	-		SILTY SAND: fine grained, shell and limestone fragments, green and white, damp to wet, dense/very dense	56.0	
21:00	57.0										57.0	
22:00	58.0										58.0	
23:00	59.0										59.0	
24:00	60.0										60.0	
25:00	61.0		S-18	SS	8 25 35 -	2.0	-	-		BOTTOM OF BOREHOLE 60.0' NOTES: 1) Groundwater encountered @ 3.0' during drilling.	61.0	
26:00	62.0										62.0	
27:00	63.0										63.0	
28:00	64.0										64.0	
29:00	65.0										65.0	
30:00	66.0										66.0	
31:00	67.0										67.0	
32:00	68.0										68.0	
33:00	69.0										69.0	
34:00	70.0										70.0	
35:00	71.0										71.0	
36:00	72.0										72.0	
37:00	73.0										73.0	
38:00	74.0										74.0	
39:00	75.0										75.0	
40:00	76.0										76.0	
41:00	77.0										77.0	
42:00	78.0										78.0	
43:00	79.0										79.0	
44:00	80.0										80.0	
45:00	81.0										81.0	
46:00	82.0										82.0	

APPENDIX C.3
SITE 69 BACKGROUND

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-BB-SB01
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/8/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 8 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.0 PS 1.5 PS 0.4 PS	LIGHT BROWN / LIGHT GREY SILTY f SAND, MOIST, LOOSE.	
2							
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-BB-SB01 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69-BB-SB0
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/8/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 8 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.0	0.0 - 0.3' LIGHT GREY SILTY f SAND MOIST, LOOSE, SLIGHTLY ORGANIC	
2							
3						0.3 - 1.0' LIGHT BROWN SILTY f SAND, MOIST, LOOSE	
4							
5							
6							
7							
8							
9							
10							

Match to Sheet 2

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF / W.M. PELKEY
DRILLER: N/A BORING NO.: 69-BB-SB02 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU#4 CAMP LEJEUNE, NC
S.O. NO.: 62470 – 212 BORING NO.: 69-BB-SB 03
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER									
	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/8/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 8 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.0 PS 1.0 PS	0.0–0.5' LIGHT BROWN SILTY f SAND, LITTLE/TRACE CLAY MOIST, LOOSE	
2							
3						0.5–1.0' LIGHT YELLOWISH BROWN/ ORANGE SANDY CLAY/ LITTLE SILT, MOIST	
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF/W.M. PELKEY
DRILLER: N/A BORING NO.: 69-BB-SB03 SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI/FS OU#4 CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-BB-SB 04
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING: —

RIG: HAND AUGER

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIM
SIZE (DIAM.)					1/8/94	0-1'	—	—	—
LENGTH									
TYPE									
HAMMER WT.									
FALL									
STICK UP									

REMARKS: 8 JANUARY 1994

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample HA = HAND AUGER

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Eleva
1	HA 00	—	—	—	0.0 PS 0.4 PS	0.0-0.7' LIGHT BROWN SILTY f SAND SLIGHT CLAY, MOIST, LOOSE	
2						0.7-1.0' LIGHT YELLOWISH BROWN/ ORANGE CLAYEY f SAND, SOME SILT, MOIST, LOOSE	
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: N/A BAKER REP.: E.J. KLEINKAUF/W.M. PELKEY
DRILLER: N/A BORING NO.: 69-BB-SB 04 SHEET 1 OF

APPENDIX D
TEST BORING & WELL LOGS

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212
BORING NO.: 69-GW02DW
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

RIG: Mobile B-47

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		4 1/4" ID		1-9-94	0-6.0	Sunny, cool	6.0	
LENGTH	2.0'		5.0'		1-10-94	6.0-16.0	Sunny, cool		
TYPE	STD		HSA		1-21-94	16.0-50.0			
HAMMER WT.	140#								
FALL	30"								
STICK UP	2 1/2'								

REMARKS: Continuous sampling to 50.0' (bgs). HNu background is .5 ppm. Type II mont. well set 1-21-9

SAMPLE TYPE
S = Split Spoon, A = Auger
T = Shelby Tube, W = Wash
R = Air Rotary, C = Core
D = Denison, P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1 – 2.0	Sample #01 is collected	1.0/2.0 50%	1 3 3 2		BG	SAND, fine to medium grained and SILT w/ organics. Black to yellowish brown to grayish brown, loose to medium dense, damp to wet.	
3 – 4.0	S-2	1.2/2.0 60%	3 4 7 11		BG		
5 – 6.0	Sample #03 is collected	1.5/2.0 75%	4 4 12 11		5.5		
7 – 8.0	S-4	1.6/2.0 80%	4 1 2 2		1.5	SAND, fine to medium grained and SILT w/ trace to little CLAY.	
9 – 10.0	S-5	1.8/2.0 90%	2 1 1 1		18	CLAY, w/ little to some SAND, fine grained, trace silt. Gray to black, very loose, wet.	

Match to Sheet 2

DRILLING CO.: Hardin Huber, Inc
BAKER REP.: S. Moffett / E. Kleinkauf
DRILLER: Pat Callahan
BORING NO.: 69-GW02DW SHEET 1 OF 2

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69-GW02D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
11 / 12.0	S-6	1.7/2.0 85%	1 1 1 1		BG		
13 / 14.0	S-7	1.6/2.0 80%	1 1 1 1		5.8	CLAY w/ trace to little SILT. Gray to black, soft, moist	
15 / 16.0	S-8	1.8/2.0 90%	1 1 1 1		3.1		
17 / 18.0	S-9	24"/24" 100%	1 1 2 2		.7		
19 / 20.0	S-10	24"/24" 100%	2 2 1 3		.7		
21 / 22.0	S-11	24"/24" 100%	2 2 2 2		1.2	SANDY CLAY, fine grained. Medium gray, cohesive, moist	
23 / 24.0	S-12	24"/24" 100%	2 1 2 3		BG		
25 / 26.0	S-13	24"/24" 100%	2 2 3 2		BG		
27 / 28.0	S-14	24"/24" 100%	2 2 3 2		BG		
29 / 30.0	S-15	24"/24" 100%	2 2 2 3		.8		

DRILLING CO.: Hardin Huber Inc BAKER REP.: E. Kleinkauf
DRILLER: Jay Corron BORING NO.: 69-GW02DW SHEET 2 OF 3

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69-GW02DW

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
31 – 32.0	S-16	24"/24" 100%	2 2 3 3		.9	SAND and CLAY w/ little ?, cohesive, moist	
33 – 34.0	S-17	24"/24" 100%	1 2 2 3		.7		
35 – 36.0	S-18	24"/24" 100%	1 1 8 32		.8	LIMESTONE. Green, hard	
37 – 38.0	S-19	24"/24" 100%	52 50/3"		BG	LIMESTONE / MARL w/ CLAY and shell fragments. White, hard	
39 – 40.0	S-20	24"/24" 100%	15 15 27 19		BG	LIMESTONE / MARL and shell fragments. CLAYEY areas increase. Green to white, hard, increase in coarseness.	
41 – 42.0	S-21	24"/24" 100%	21 26 24 26		.7		
43 – 44.0	S-22	24"/24" 100%	6 8 10 17		1.2		
45 – 46.0	S-23	22"/24" 91%	8 9 6 7		BG	SILTY SAND, fine to fine to medium grained w/ Shells and rock fragments. Green, moist	
47 – 48.0	S-24	22"/24" 91%	5 8 12 16		1.1	SILTY SAND, fine to fine to medium grained. Green, loose, moist	
49 – 50.0	S-25	22"/24" 91%	6 8 9 23		BG		
50						TD: 50.0' END of Boring HNU background range .3 to .5 ppm	

DRILLING CO.: Hardin Huber, Inc BAKER REP.: E. Kleinkauf
DRILLER: Jay Corron BORING NO.: 69-GW02DW SHEET 3 OF 3

FIELD WELL CONSTRUCTION LOG

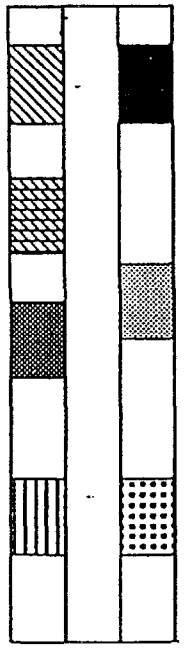
Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41 DATE: 1-21-94
CTO NO.: 212 BORING NO.: 69-GW02 DW
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

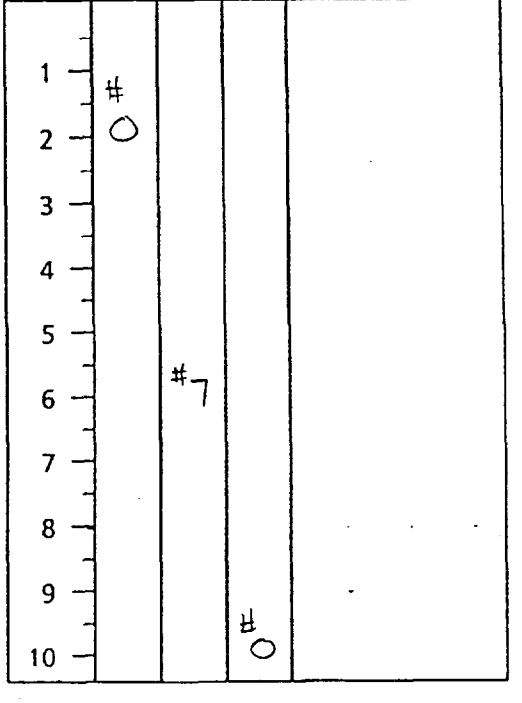
Pay Items			
Item	Quantity	Unit	Remarks
Sand	12 bags		#1 Sand
Bentonite Pellets	1 bucket		
PVC Pipe	52.5'		10' of screen
(1) steel surface protective casing			
(4) bollards and (1) 5x5 cement			
pad			

WELL INFORMATION	DIAM. (INCHES)	TYPE	TOP DEPTH (FT.)	BOTTOM DEPTH (FT.)
Well Casing	2.0"	Schedule 40 PVC	+2.5' (bgs)	40.0' (bgs)
Well Screen	2.0"	Schedule 40 PVC 10 slot	40.0' (bgs)	50.0' (bgs)

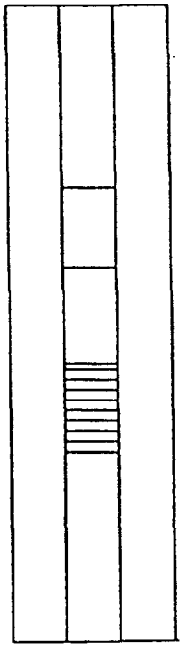
Backfill Key



Well Installation Detail



Well Key



DRILLING CO.: Hardin Huber, Inc BAKER REP.: E. Kleinkauf
DRILLER: Jay Corron BORING NO.: 69-GW02 DW SHEET 1 OF 3

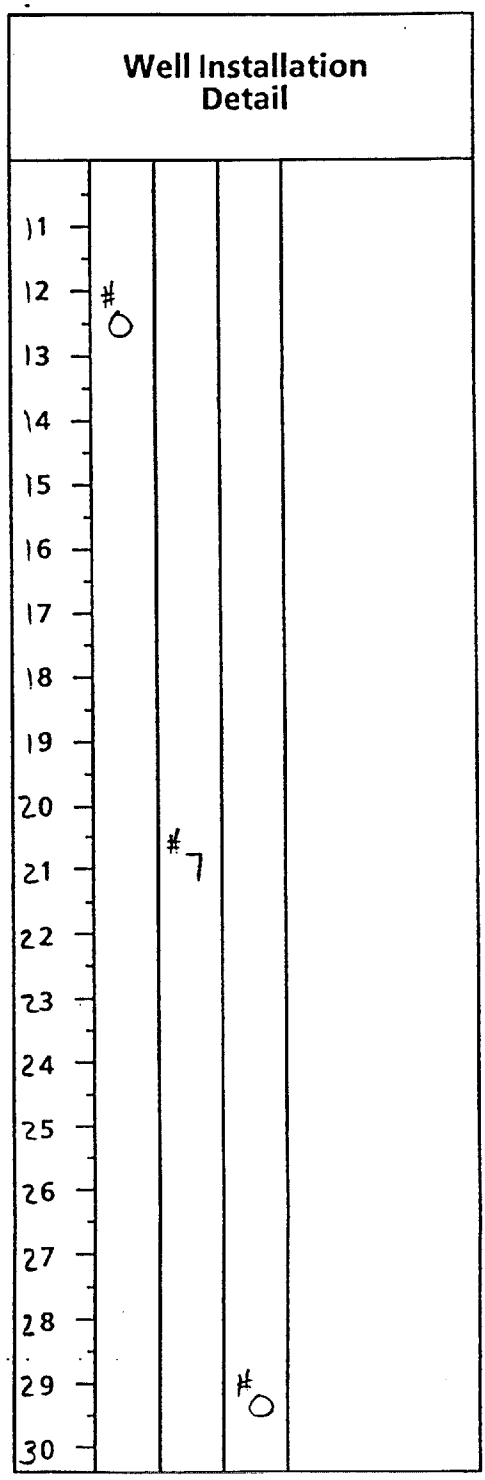
Baker

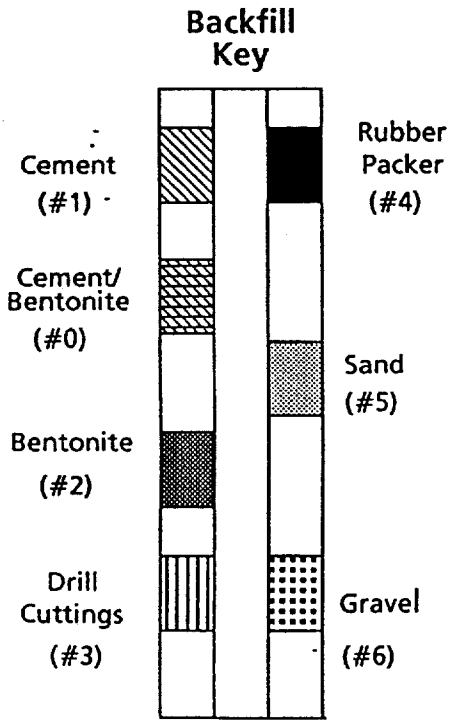
Baker Environmental, Inc

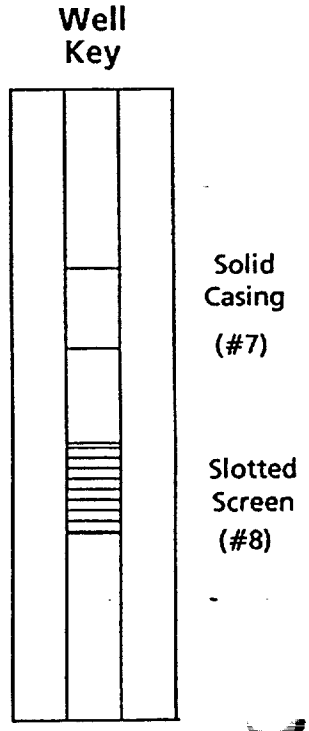
FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74 & 41 DATE: 1-21-94

CTO NO.: 212 BORING NO.: 69-GW020W







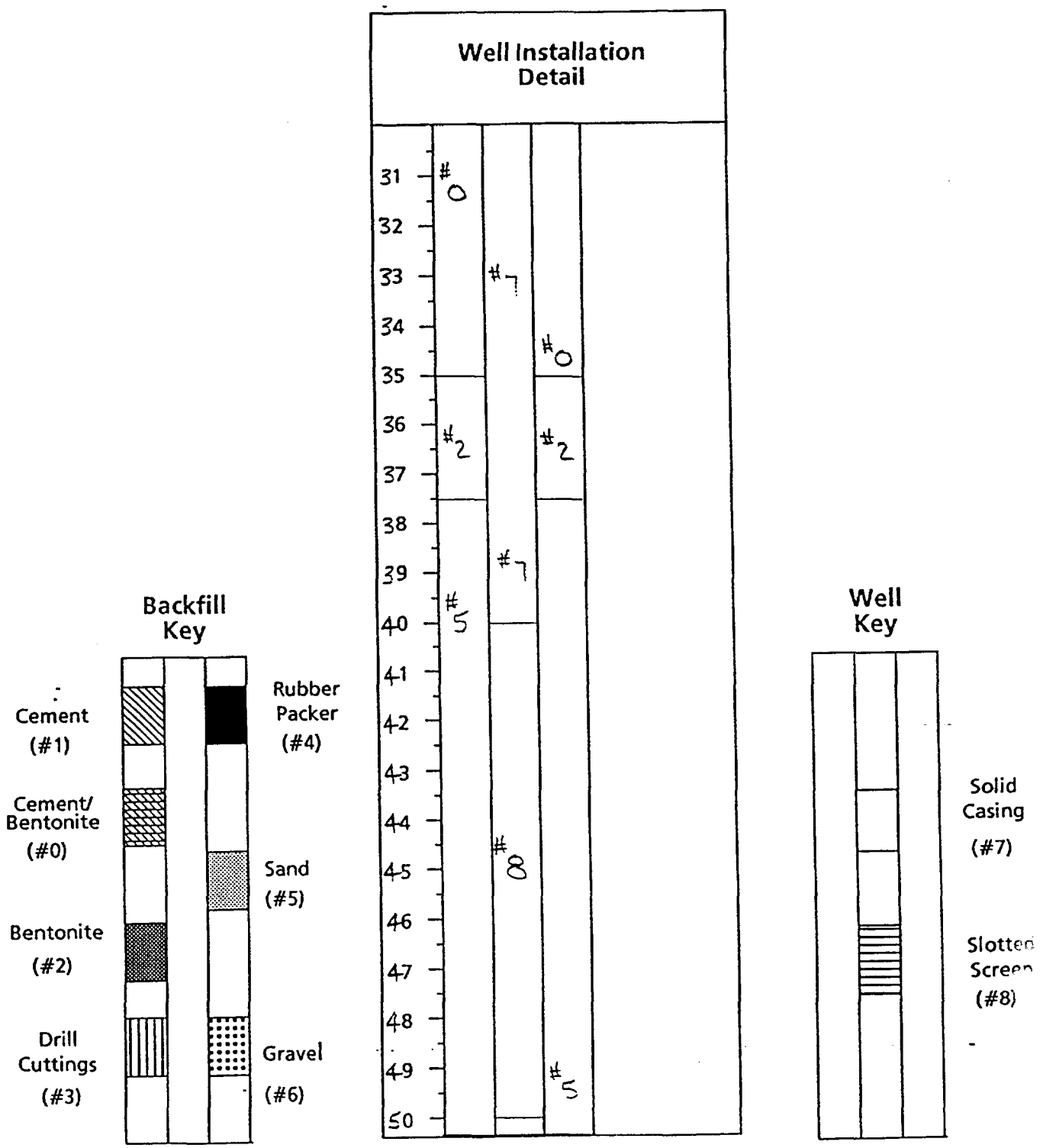
DRILLING CO.: Hardin Huber, Inc BAKER REP.: E. Kleinkauf

DRILLER: Jay Corron BORING NO.: 69-GW020W SHEET 2 OF 3

Baker
Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74, & 41 DATE: 1-21-94
CTO NO.: 212 BORING NO.: 69-GW02DW



DRILLING CO.: Hardin Huber, Inc BAKER REP.: E. Kleinkauf
DRILLER: Jay Corron BORING NO.: 69-GW02DW SHEET 3 OF 3

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74 & 41
S.O. NO.: 212 BORING NO.: 69GW02DD
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING:

RIG: Rig # 48	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID	12" / 8"	3 1/4" ID		5-17-94	0-12.0	Clear, Cool (60's)	6.5	
LENGTH	2.0'	12' / 73'	5.0		5-18-94	12.0-73.0	Clear, Cool (50's)		
TYPE	STD	Steel	HSA		5-19-94	73.0-127.0	Clear, Cool (50's)		
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Continuous sampling to 36.0' (bgs). HNu background range is .2 to .4 ppm

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
1 / 2.0	S-1	1.4/2.0 70%	3 3 3 3		BG	SILTY SAND, fine grained. Dark brown to brown, loose, damp.	
3 / 4.0	S-2	1.1/2.0 55%	9 6 9 11		BG	SAND, fine grained w/ trace silt. Brown to light gray, medium dense, damp. Oxidation streaking present	
5 / 6.0	S-3	1.4/2.0 70%	10 10 10 10		BG		
7 / 8.0	S-4	1.5/2.0 75%	2 1 1 2		BG	SAND, fine to medium grained w/ trace silt. Light brown to gray, very loose, wet to moist	▼
9 / 10.0	S-5	2.0/2.0 100%	2 1 1 2		BG	CLAY w/ little to some SAND, fine grained w/ trace silt. Gray, very loose, moist.	

Match to Sheet 2

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW02DD SHEET 1 OF 3

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212
BORING NO.: 69GW02DD

SAMPLE TYPE
S = Split Spoon, A = Auger
T = Shelby Tube, W = Wash
R = Air Rotary, C = Core
D = Denison, P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
11 – 12.0	S-6	2.0/2.0 100%	1 1 1 1		BG	CLAY w/ trace to little silt Gray to greenish gray, very soft to soft to medium stiff, moist.	
13							
14 – 16.0	S-7	2.0/2.0 100%	WOH/6" 2 3 3		BG		
17 – 18.0	S-8	2.0/2.0 100%	1 2 3 1		BG	SANDY CLAY, fine grained w/ trace silt. Greenish gray, soft to medium stiff, moist	
19 – 20.0	S-9	2.0/2.0 100%	2 2 2 2		BG		
21 – 22.0	S-10	2.0/2.0 100%	1 1 3 2		BG		
23 – 24.0	S-11	2.0/2.0 100%	2 2 2 2		BG		
25 – 26.0	S-12	2.0/2.0 100%	2 2 2 2		BG		
27 – 28.0	S-13	2.0/2.0 100%	2 2 2 2		BG		
29 – 30.0	S-14	2.0/2.0 100%	2 3 4 3		BG		

DRILLING CO.: Hardin-Huber, Inc
DRILLER: Chad Chism
BAKER REP.: J. E. Zimmerman
BORING NO.: 69GW02DD
SHEET 2 OF 7

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW020D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
31	S-15	2.0/2.0 100%	2 1 2 2		BG	SANDY CLAY, fine grained w/ trace silt. Greenish gray soft to medium stiff, moist	
32 32.0							
33	S-16	1.0/2.0 50%	2 2 2 2		BG		
34 34.0							
35	S-17	1.5/2.0 75%	WOH/6" 3 13 22		BG	LIMESTONE. Dark green, medium dense, wet	
36 36.0							
37							
38							
39							
40 40.0							
41	S-18	1.3/2.0 65%	7 16 16 32		BG.	LIMESTONE/MARL w/ shell fragments. Green and white medium dense, wet. Micrite cement is matrix only.	
42 42.0							
43							
44							
45 45.0							
46	S-19	1.3/2.0 65%	7 7 7 7		BG	SILTY SAND, fine to medium w/ trace to some shell material and fragment. Green and white, medium dense, wet.	
47 47.0							
48							
49							
50 50.0							

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW020D SHEET 3 OF 7

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW020D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
51 / 52.0	S-20	1.5/2.0 75%	6 6 7 14		BG	SILTY SAND, fine grained. Green, medium dense, wet.	
55.0 / 57.0	S-21	1.3/2.0 65%	6 9 17 28		BG	SILTY SAND, fine grained w/ trace to little shell fragments (bottom 1/2 of sample only). Green and white, medium dense, wet.	
60.0 / 62.0	S-22	1.6/2.0 80%	9 23 27 35		BG	SILTY SAND, fine grained w/ trace shell material. Green and white, very dense, wet.	
65.0 / 67.0	S-23	1.6/2.0 80%	11 14 26 27		BG	SILTY SAND, fine grained w/ some shell fragments. Green and white, dense, wet.	
70.0							

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW020D SHEET 4 OF 7

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74 & 41
S.O. NO.: 212 BORING NO.: 69GW02DD

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
71 – 72.0	S-24	1.0/2.0 50%	37 51/5"		BG	SAND, fine to medium grained w/ little silt, shell fragments and pieces of FOSSILIFEROUS LIMESTONE Green and white, very dense, wet.	
72 – 75.0							
75 – 77.0	S-25	NR	51/4"		-	NO RECOVERY	
77 – 80.0							
80 – 82.0	S-26	1.0/2.0 50%	17 33 38 44		BG	SAND, fine grained w/ little silt. Greenish gray, very dense, wet.	
82 – 85.0							
85 – 87.0	S-27	1.0/2.0 50%	19 21 51/5"		BG	SAND, fine grained w/ trace silt. Greenish gray, very dense, wet.	
87 – 90.0							

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW02DD SHEET 5 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW02DD

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
91 – 92 (92.0)	S-28	NR	30 51/5"		–	NO RECOVERY	
92 – 95 (95.0)							
95 – 97 (97.0)	S-29	.7/2.0 35%	19 33 51/4"		BG	SAND, fine grained w/ trace silt. Greenish gray, very dense, wet. Faint yellow staining is occasional	
97 – 100 (100.0)							
100 – 102 (102.0)	S-30	NR	33 51/5"		–	NO RECOVERY	
102 – 105 (105.0)							
105 – 107 (107.0)	S-31	.3/2.0 15%	17 51/6"		BG	SAND, fine grained w/ trace silt. Greenish gray, very dense, wet.	
107 – 110 (110.0)							

DRILLING CO.: Hardin-Huber, Inc. BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW02DD SHEET 6 OF 7

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW02DD

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
111 – 112.0	S-32	1.0/2.0 50%	22 31 51/6"		BG	SAND, fine grained w/ trace silt. Greenish gray, very dense, wet	
112 – 115.0							
115 – 117.0	S-33	1.8/2.0 90%	11 17 22 40		BG	SAND, fine grained w/ trace silt. Green, dense, wet.	
117 – 120.0							
120 – 122.0	S-34	1.6/2.0 80%	17 23 25 51/5"		BG	SAND, fine grained w/ trace silt. Green, dense, wet.	
122 – 125.0							
125 – 127.0	S-35	1.8/2.0 90%	19 22 27 40		BG	SAND, fine grained w/ trace silt. Green, dense to very dense, wet.	
127						End of Boring TD: 127.0'	
128							
129							
130							

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW02DD SHEET 2 OF 2

FIELD WELL CONSTRUCTION LOG

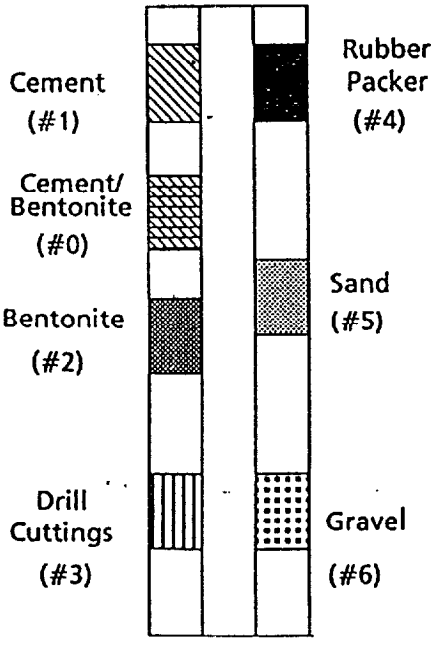
Baker
Baker Environmental, Inc.

PROJECT: Sites 69, 74, & 41 DATE: 5-19-94
CTO NO.: 212 BORING NO.: 69GW02DD
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

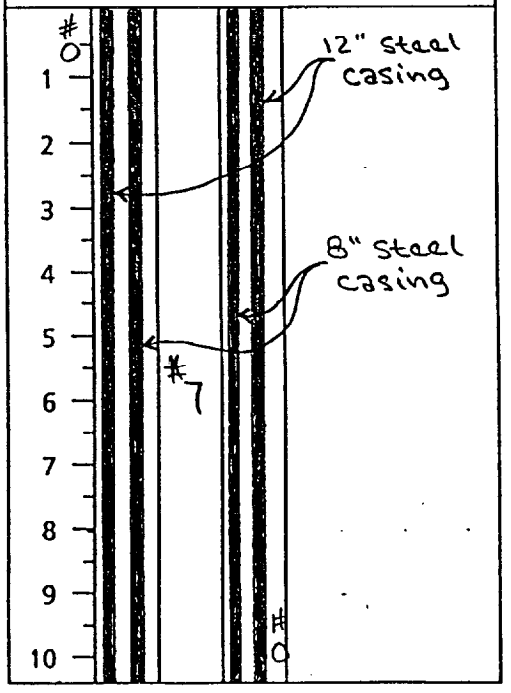
Pay Items			
Item	Quantity	Unit	Remarks
Sand	9.5 bags		#1 sand
Bentonite pellets	2 buckets		
PVC pipe	127.5'		10' of screen
(1) steel surface protective casing			
(4) bollards and (1) 5x5 cement			
pad			

WELL INFORMATION	DIAM. (INCHES)	TYPE	TOP DEPTH (FT.)	BOTTOM DEPTH (FT.)
Well Casing	2.0	Schedule 40 PVC	+2.5'	115.0' (bgs)
Well Screen	2.0	Schedule 40 PVC 10 slot	115.0' (bgs)	125.0' (bgs)

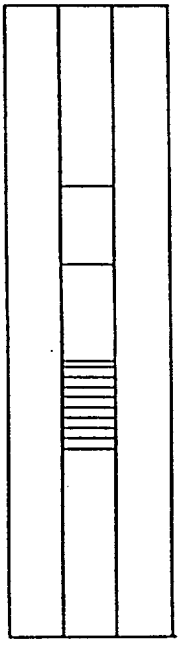
Backfill Key



Well Installation Detail



Well Key



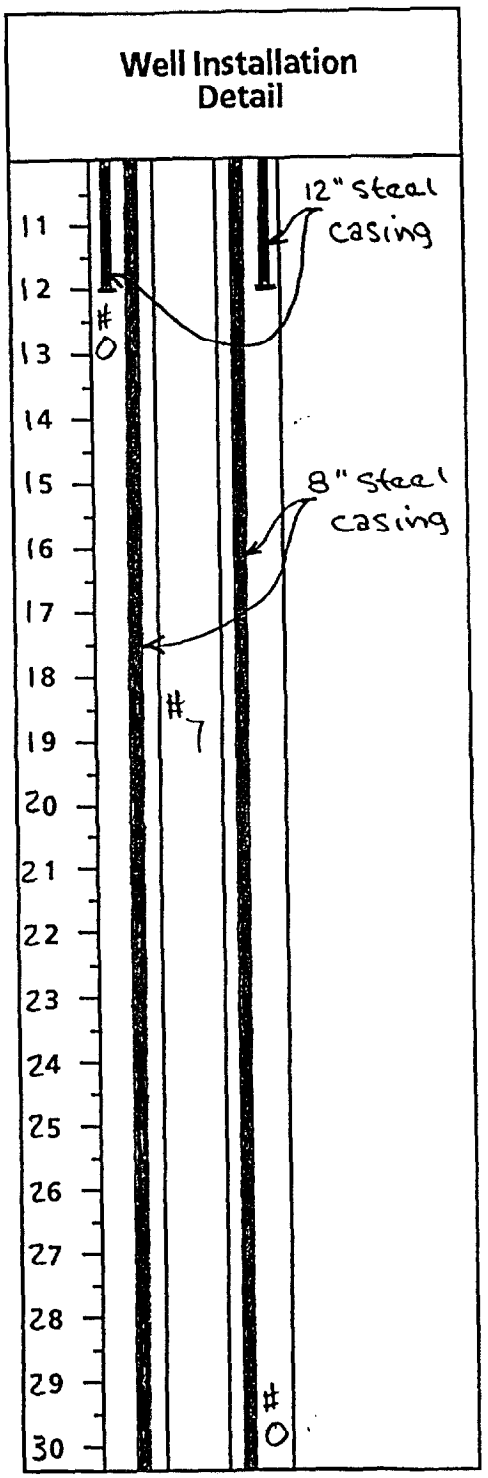
DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW02DD SHEET 1 OF 7

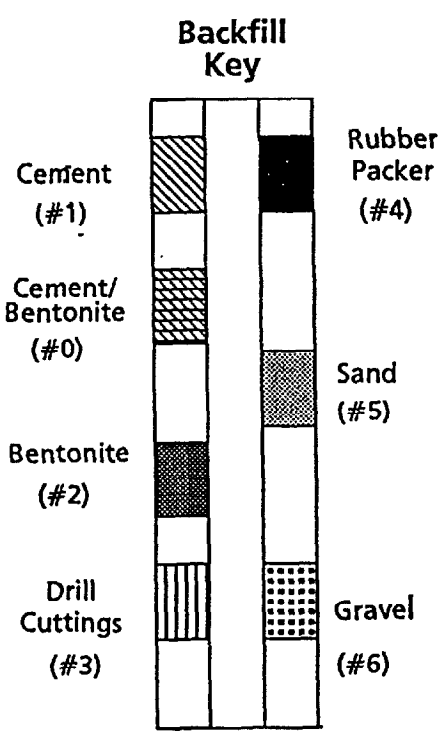
Baker

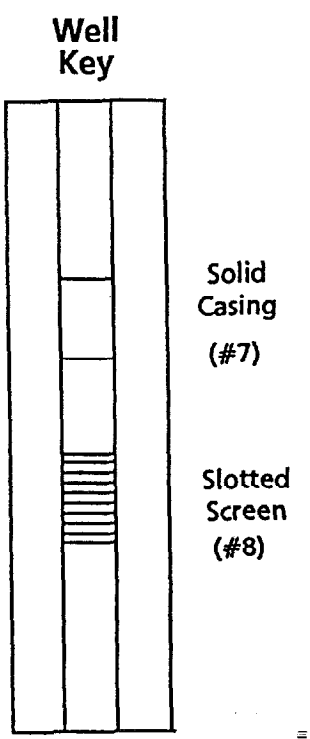
Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212
BORING NO.: 69GW02DD







DRILLING CO.: Hardin-Huber, Inc
DRILLER: Chad Chism

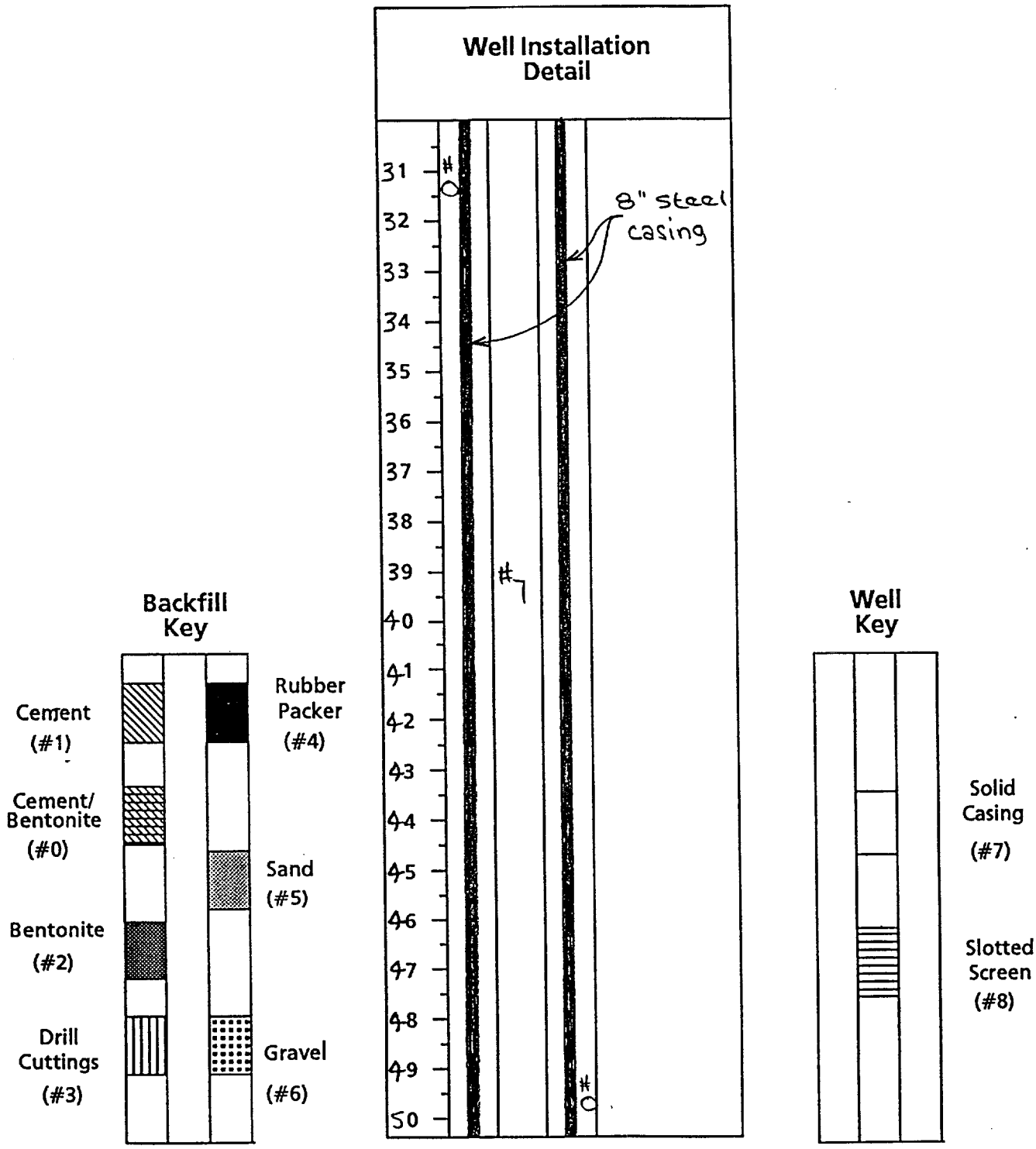
BAKER REP.: J. E. Zimmerman
BORING NO.: 69GW02DD

SHEET 2 OF 2

Baker
Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 696W02DD



DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 696W02DD SHEET 3 OF 7

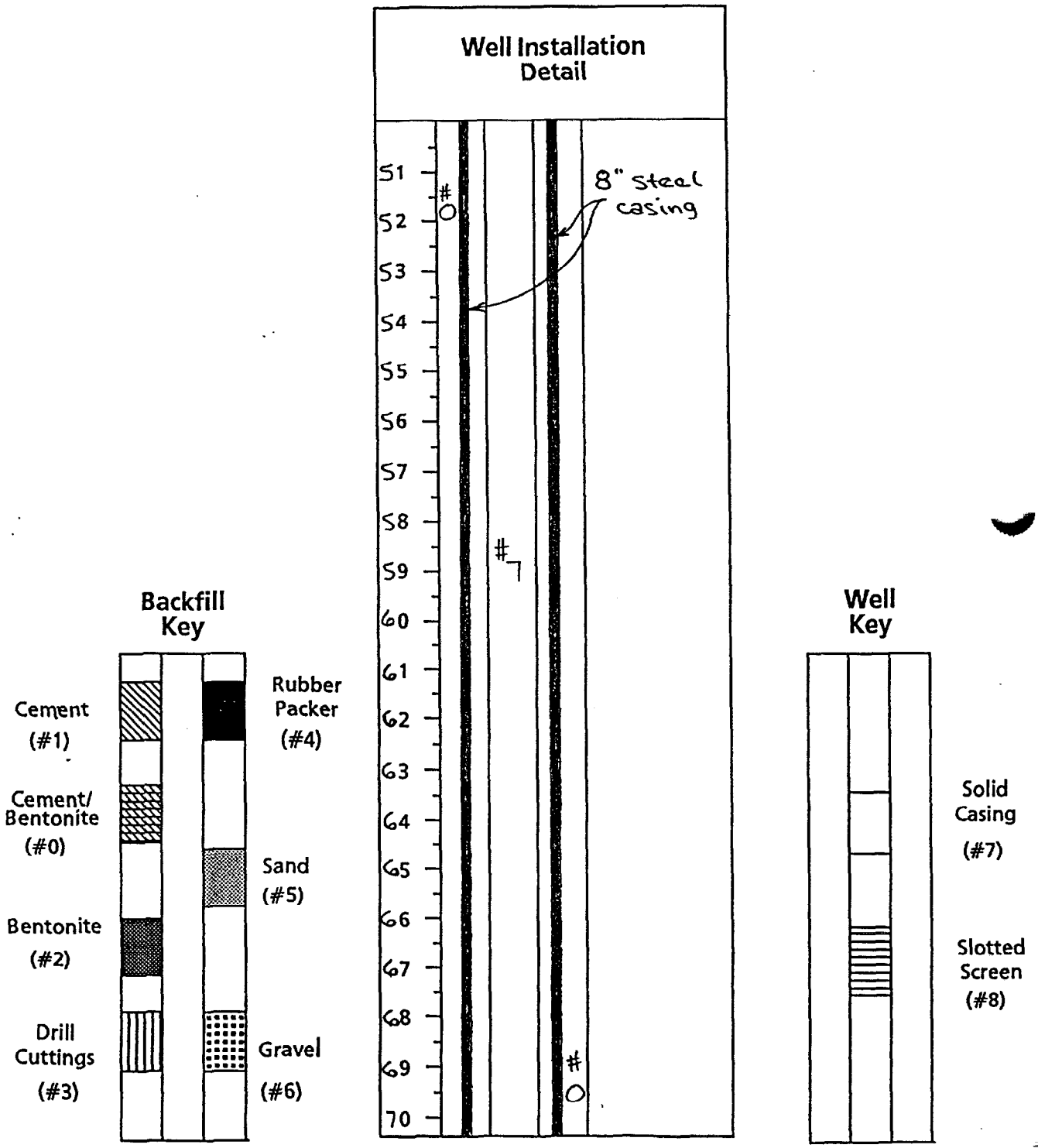
Baker

Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74 & 41

S.O. NO.: 212 BORING NO.: 69GW02DD



DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman

DRILLER: Chad Chism BORING NO.: 69GW02DD SHEET 1 OF 1

Baker

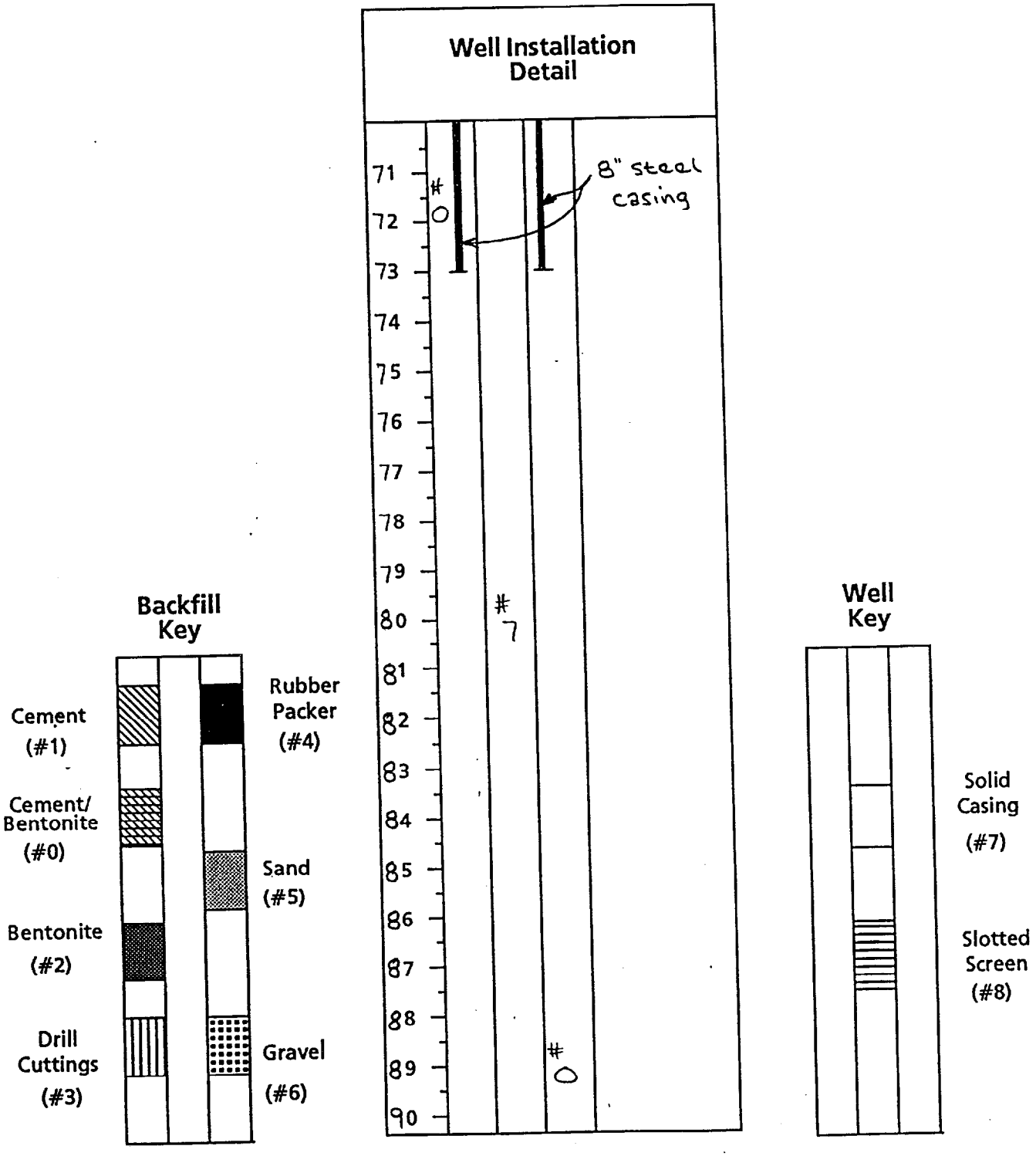
Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74, & 41

S.O. NO.: 212

BORING NO.: 69GW02DD



DRILLING CO.: Hardin-Huber, Inc

DRILLER: Chad Chism

BAKER REP.: J. E. Zimmerman

BORING NO.: 69GW02DD

SHEET 5 OF 7

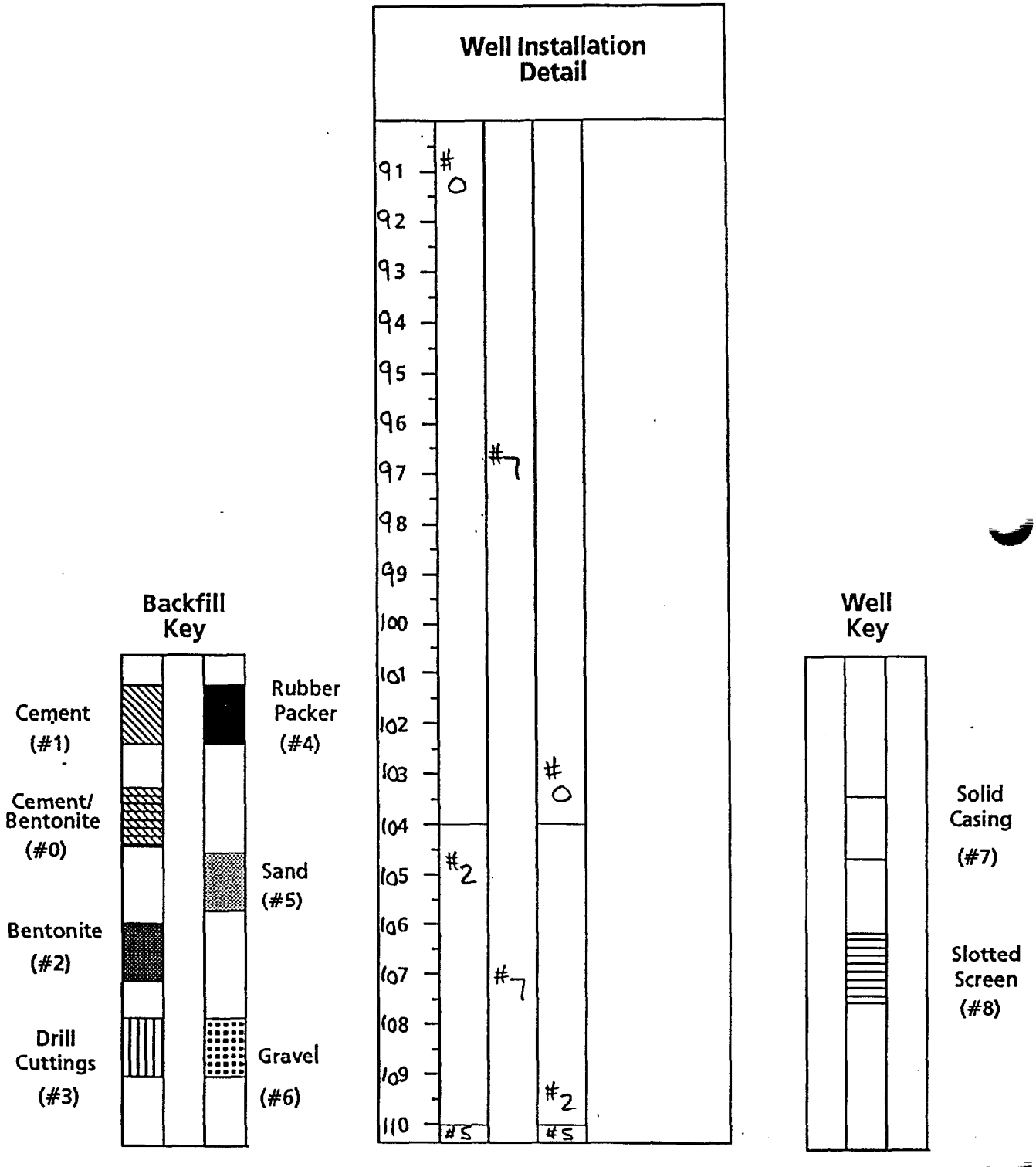
Baker

Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74, & 41

S.O. NO.: 212 BORING NO.: 696W0200



DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman

DRILLER: Chad Chism BORING NO.: 696W0200 SHEET 6 OF 7

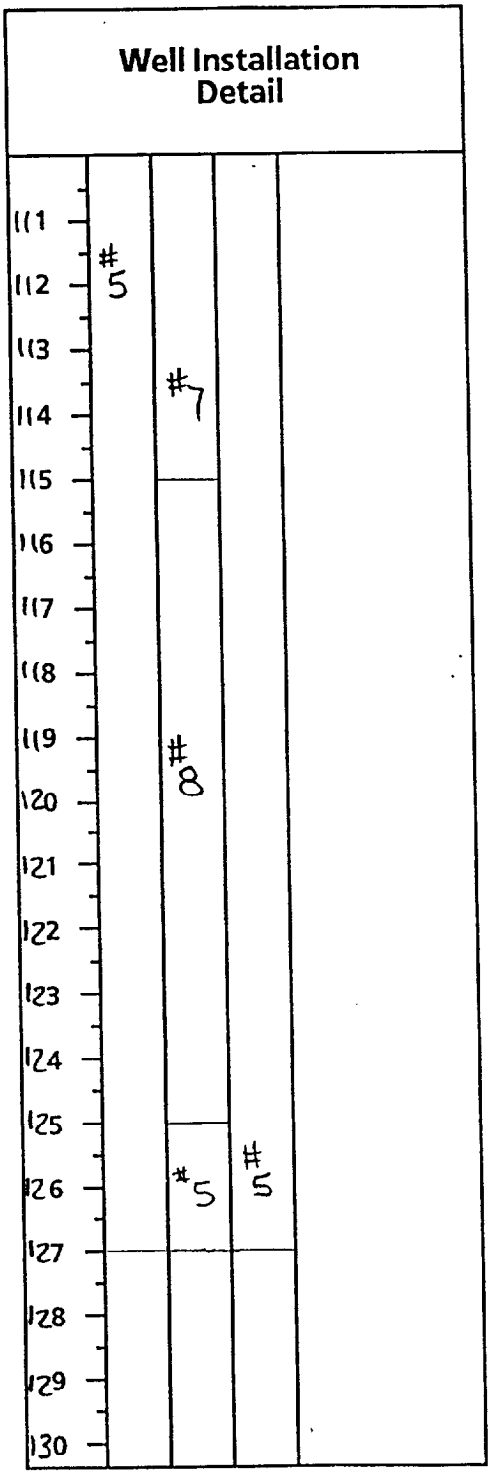
Baker

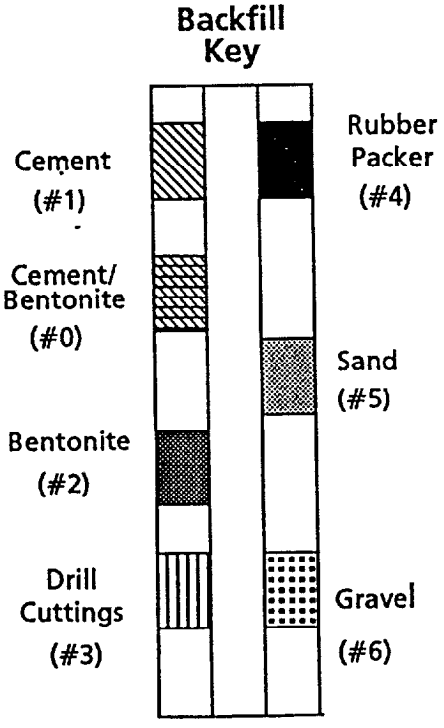
Baker Environmental, Inc

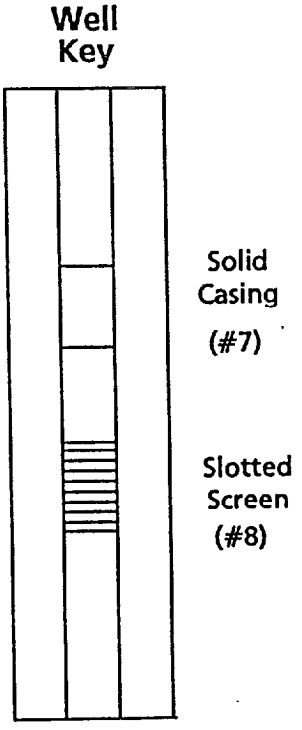
FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74, & 41

S.O. NO.: 212 BORING NO.: 69GW0200







DRILLING CO.: Hardin-Huber, Inc

DRILLER: Chad Chism

BAKER REP.: J. E. Zimmerman

BORING NO.: 69GW0200

SHEET 7 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.:
BORING NO.: 69GW03 I
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

RIG: Rig # 48	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID	10"	3 1/4" ID		5-20-94	0-16.0	Clear, cool (50's)	6.5	
LENGTH	2.0'	17'	5.0'		5-21-94	16.0-62.0	overcast, cool (50's)		
TYPE	STD	Steel	HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Continuous sampling to 36.0' (69S). HNu background range is .1 to .2 ppm

SAMPLE TYPE
S = Split Spoon, A = Auger
T = Shelby Tube, W = Wash
R = Air Rotary, C = Core
D = Denison, P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1 – 2.0	S-1	1.2 / 60%	5 4 4 5		BG	SILTY SAND, fine grained. Gray to brown, loose, damp.	
3 – 4.0	S-2	1.3 / 65%	3 4 3 5		BG	SAND, fine grained w/ trace silt. Brown to light brown to gray, very loose to loose to medium dense, damp to moist to wet.	
5 – 6.0	S-3	1.5 / 75%	4 5 6 6		BG		
7 – 8.0	S-4	1.3 / 65%	7 10 11 7		BG		
9 – 10.0	S-5	1.7 / 85%	1 2 1 3		BG		

Match to Sheet 2

DRILLING CO.: Hardin-Huber, Inc.
DRILLER: Chad Chism
BAKER REP.: J. E. Zimmerman
BORING NO.: 69GW03 I
SHEET 1 OF 4

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212
BORING NO.: 69GW03I

SAMPLE TYPE
S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatic
11 – 12 (12.0)	S-6	1.6/2.0 80%	3 5 4 3		BG	SAND, fine grained w/ trace silt and little CLAY (at bottom only). Gray, loose to medium dense, wet.	
13 – 14 (14.0)	S-7	1.4/2.0 70%	2 3 3 5		BG	CLAY w/ little to some SAND, fine grained w/ trace silt. Gray, loose to medium stiff, moist.	
15 – 16 (16.0)	S-8	2.0/2.0 100%	1 2 1 1		BG	CLAY w/ trace to little silt. Gray to greenish gray, soft to very soft, moist.	
17 – 18 (18.0)							
19 – 20 (20.0)	S-9	2.0/2.0 100%	2 2 1 2		BG		
21 – 22 (21.0)	S-10	.5/2.0 25%	1 1 1 1		BG		
23 – 24 (24.0)	S-11	2.0/2.0 100%	1 1 2 2		BG	SANDY CLAY, fine grained w/ trace silt. Greenish gray, soft to medium stiff, moist	
25 – 26 (26.0)	S-12	2.0/2.0 100%	1 2 2 1		BG		
27 – 28 (28.0)	S-13	2.0/2.0 100%	3 2 2 1		BG		
29 – 30 (30.0)	S-14	2.0/2.0 100%	1 2 2 2		BG		

DRILLING CO.: Hardin - Huber, Inc
DRILLER: Chad Chism
BAKER REP.: J. E. Zimmerman
BORING NO.: 69GW03I

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW03I

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
31 – 32.0	S-15	2.0/2.0 100%	2 2 2 2		BG	SANDY CLAY, fine grained w/ trace silt. Greenish gray to dark green, soft to medium stiff, moist	
33 – 34.0	S-16	2.0/2.0 100%	2 2 2 2		BG		
35 – 36.0	S-17	2.0/2.0 100%	2 2 2 15		BG	LIMESTONE / MARL. Dark green, medium dense, wet	
37 – 40.0							
40 – 42.0	S-18	2.0/2.0 100%	7 8 9 11		BG	Limestone / MARL w/ shell fragments. Green to white medium dense, wet. Micrite cement is matrix only	
43 – 45.0							
45 – 47.0	S-19	1.6/2.0 80%	4 5 7 8		BG	SILTY SAND, fine to medium grained w/ shell material and fragments. Green and white, medium dense, wet.	
48 – 50.0							

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW03I SHEET 3 OF 4

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW03I

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
51 / 52.0	S-20	1.6/2.0 80%	5 6 10 12		BG	SILTY SAND, fine grained. Green, medium dense, wet.	
55.0							
56 / 57.0	S-21	.3/2.0 15%	10 14 15 16		BG	SILTY SAND, fine grained w/ trace to little shell fragments. Green and white, medium dense, wet.	
60.0							
61 / 62.0	S-22	NR	13 29 39 45		–	NO RECOVERY	
3 4 5 6 7 8 9 0						End of Boring TD: 62.0'	

DRILLING CO.: Hardin-Hubes, Inc
DRILLER: Chad Chism
BAKER REP.: J.E. Zimmerman
BORING NO.: 69GW03I SHEET 4 OF 4

FIELD WELL CONSTRUCTION LOG

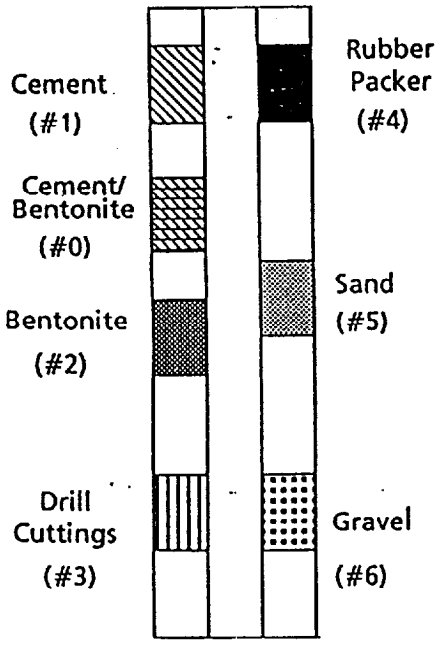
Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41 DATE: 5-21-94
CTO NO.: 212 BORING NO.: 69GW03I
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

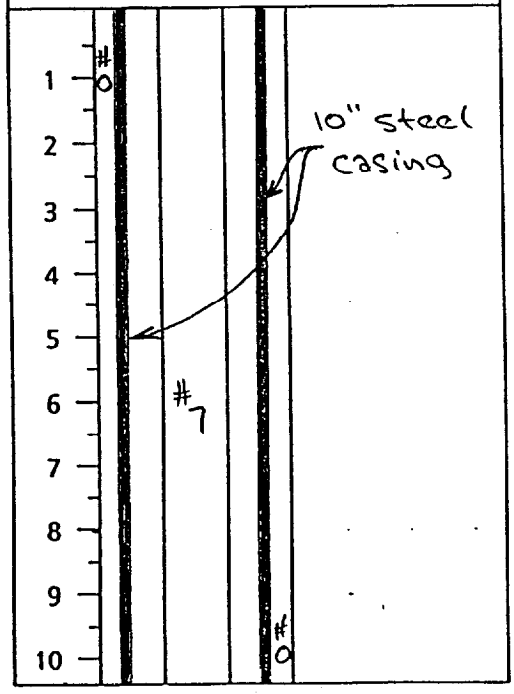
Pay Items			
Item	Quantity	Unit	Remarks
Sand	8 bags		#1 sand
Bentonite pellets	2 buckets		
PVC pipe	62.5'		10' of screen
(1) steel surface protective casing			
(4) bollards and (1) 5x5 cement			
pad			

WELL INFORMATION	DIAM. (INCHES)	TYPE	TOP DEPTH (FT.)	BOTTOM DEPTH (FT.)
Well Casing	2.0	Schedule 40 PVC	+2.5'	50.0' (bgs)
Well Screen	2.0	Schedule 40 PVC 10 slot	50.0' (bgs)	60.0' (bgs)

Backfill Key



Well Installation Detail



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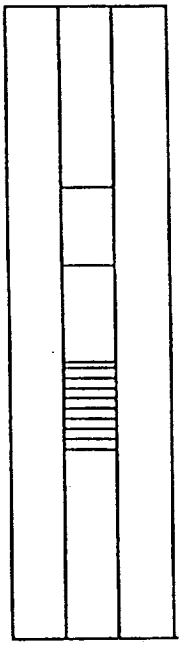


DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW03I SHEET 1 OF 4

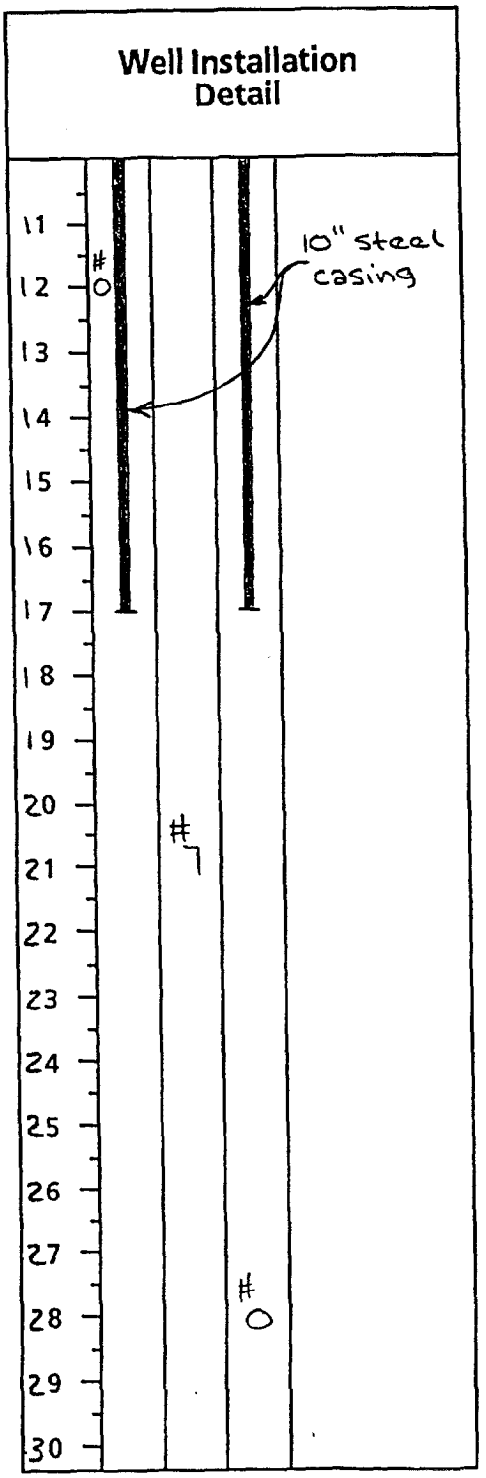
Baker

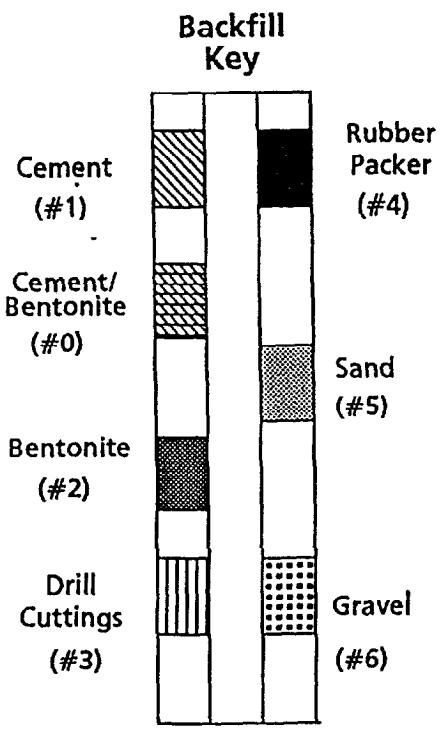
Baker Environmental, Inc

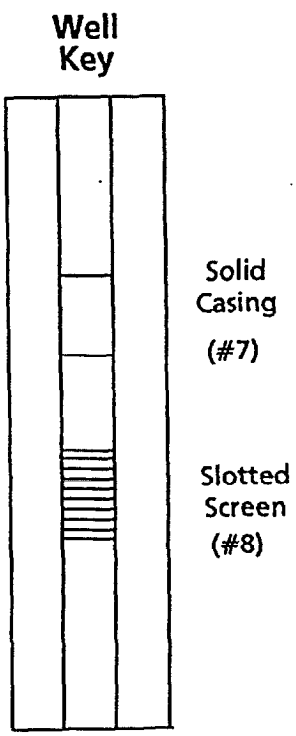
FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74, & 41

S.O. NO.: 212 BORING NO.: 69GW03I







DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman

DRILLER: Chad Chism BORING NO.: 69GW03I SHEET 2 OF 4

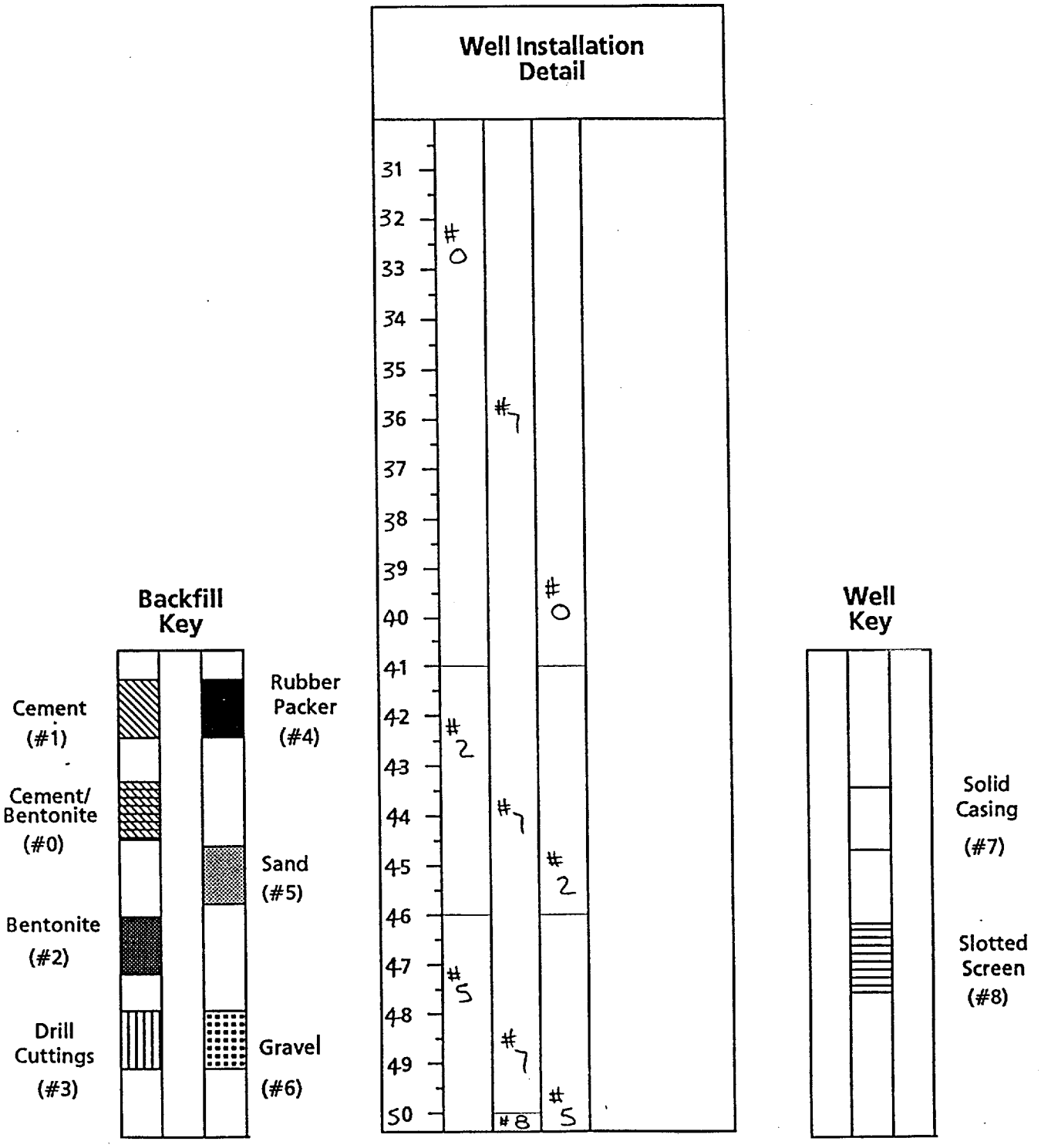
Baker

Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74, & 41

S.O. NO.: 212 BORING NO.: 69GW03I



DRILLING CO.: Hardin-Hubes, Inc BAKER REP.: J.E. Zimmerman

DRILLER: Chad Chism BORING NO.: 69GW03I SHEET 3 OF 4

Baker

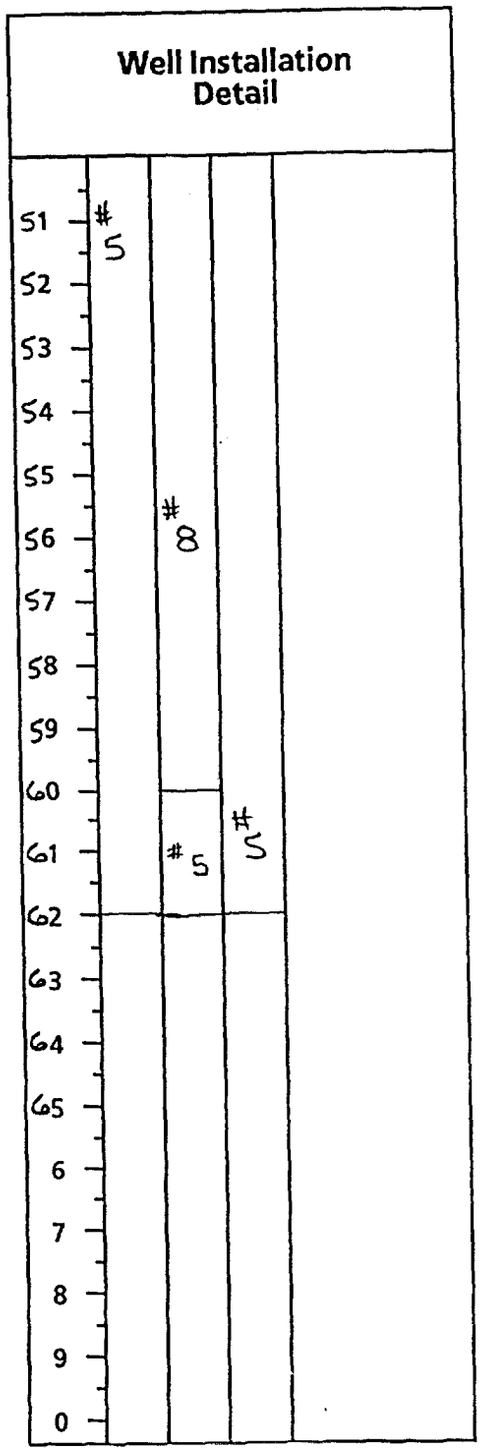
Baker Environmental, Inc

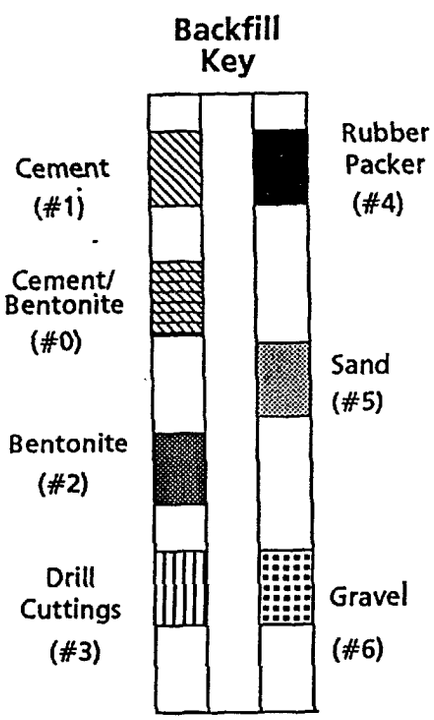
FIELD WELL CONSTRUCTION LOG

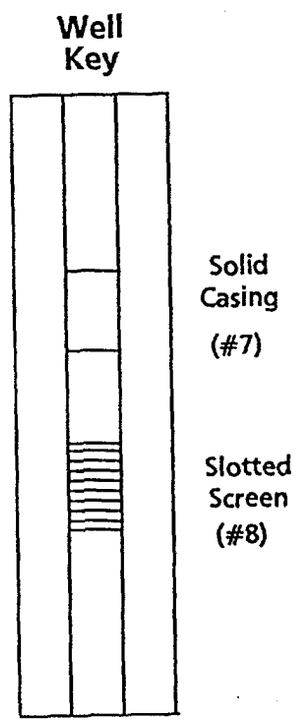
PROJECT: Sites 69, 74, & 41

S.O. NO.: 212

BORING NO.: 69GW03I







DRILLING CO.: Hardin-Hubar, Inc

DRILLER: Chad Chism

BAKER REP.: J. E. Zimmerman

BORING NO.: 69GW03I

SHEET 4 OF 4

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT:
S.O. NO.:
COORDINATES: EAST:
ELEVATION: SURFACE:
BORING NO.: 69-GW09
NORTH:
TOP OF PVC CASING:

RIG: Mobile B-47	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		4¼" ID		1-8-94	0.0 to 21.0	Sunny High 40's		
LENGTH	2.0'		5.0'						
TYPE	Std.		HSA						
HAMMER WT.	140 lbs								
FALL	30"								
STICK UP									

REMARKS: Background (BG) is 0.4 parts per million (ppm)

SAMPLE TYPE
S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	~~Lab. Class.~~ TIME or ~~Pen. Rate~~	PID (ppm)	Visual Description	Elevatic
1	S-1	1.7 85%	2 2 3 4	0926	2.0	Fine to Medium sand and silt, leaves, pine needles and decaying vegetation Black, Damp, loose 0.5' Fine to Medium sand and silt, Brownish black to grayish brown, Damp, loose 1.7'	
2 2.0							
3	S-2 69-GW09-02	1.6 80%	3 4 4 4	0922	BG	Fine to Medium Sand, Trace to Little silt, grayish brown to yellowish brown, Damp to Moist, loose 3.8'	
4 4.0							
5	S-3	1.3 65%	2 4 5 5	1006	2.0	Clay, little to some fine to Medium sand, trace silt Brownish gray, Moist, strong reddish orange mottles loose	
6 6.0							
7	S-4	1.7 85%	2 3 4 4	1022	BG		
8 8.0							
9	S-5 69-GW09-05	1.5 75%	2 3 3 4	1036	BG	9.7'	
10 10.0						Water at approximately 10 feet	Match to Sheet 2

DRILLING CO.: Harlow-Huber, Inc.
DRILLER: P. Callahan
BAKER REP.: S. Moffett
BORING NO.: 69-GW09
SHEET 1 OF 2

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT:
S.O. NO.:
BORING NO.: 69-GW09

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	TIME Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
11 12.0	S-6	1.6 80%	2 2 3 4	1046	3.2	Fine sand and silt, trace to little clay, Brownish gray wet, strong reddish orange mottles, loose Sand content and grain size increases with depth	
13 14.0	S-7	1.4 70%	2 2 3 3	1055	BG		14.0'
15 16.0	S-8	1.8 90%	3 1 1 1	1105	BG	Fine to coarse sand, trace to little fine gravel Trace to little clay, trace silt, mottled greenish blue and dark brown (looks like oxidized copper), wet, very loose	
17 18.0	S-9	1.7 85%	1 1 1 2	1115	BG		17.5'
19 20.0	S-10	1.4 70%	1 1 1 1	1125	BG	Fine to medium sand, little to some silt, trace clay Brownish gray, wet, very loose	
21 21.0	Air					Bottom of Bore hole at 21.0 Feet	

DRILLING CO.: Hardin-Huber Inc
DRILLER: P. Callahan
BAKER REP.: S Moffett
BORING NO.: 69-GW09
SHEET 2 OF 2

FIELD WELL CONSTRUCTION LOG

Baker
Baker Environmental, Inc

PROJECT: _____
S.O. NO.: _____
COORDINATES: EAST: _____
ELEVATION: SURFACE: _____

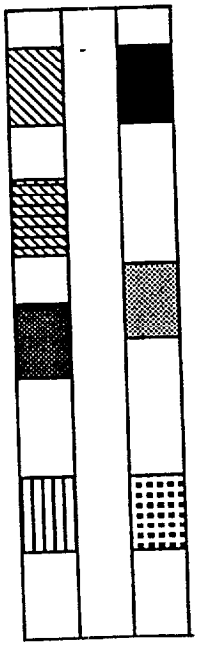
BORING NO.: 69-GW09
NORTH: _____
TOP OF STEEL CASING: _____

Well Development _____

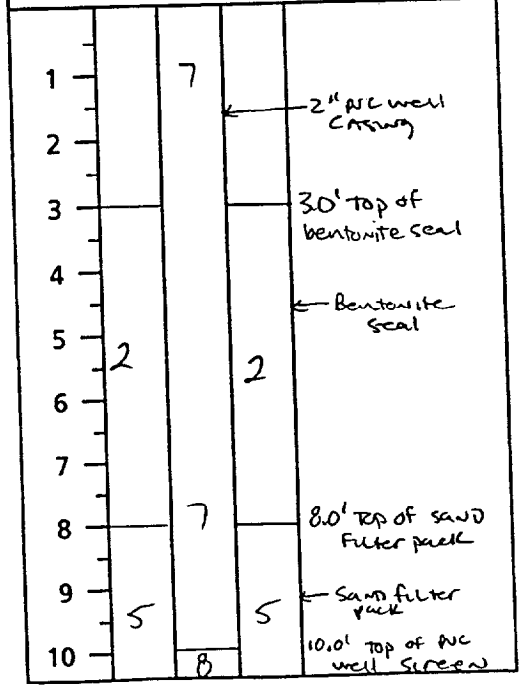
Pay Items			
Item	Quantity	Unit	Remarks
2" PVC well Screen	10	feet	
2" PVC well Casing	13.2	feet	
well point and cap	1	each	
Sand filter pack	8.5	bag	
bentonite pellets	2	pail	

WELL INFORMATION	DIAM. (INCHES)	TYPE	TOP DEPTH (FT.)	BOTTOM DEPTH (FT.)
Well Casing	2	PVC	-3.2	10.0
Well Screen	2	PVC	10.0	20.5

Backfill Key



Well Installation Detail



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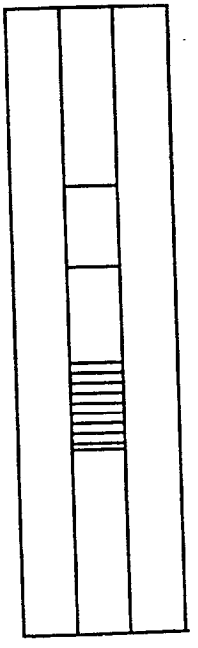


DRILLING CO.: Harron-Huber, Inc
DRILLER: P Callahan

BAKER REP.: S Moffett
BORING NO.: 69-GW09

SHEET 1 OF 2

Baker

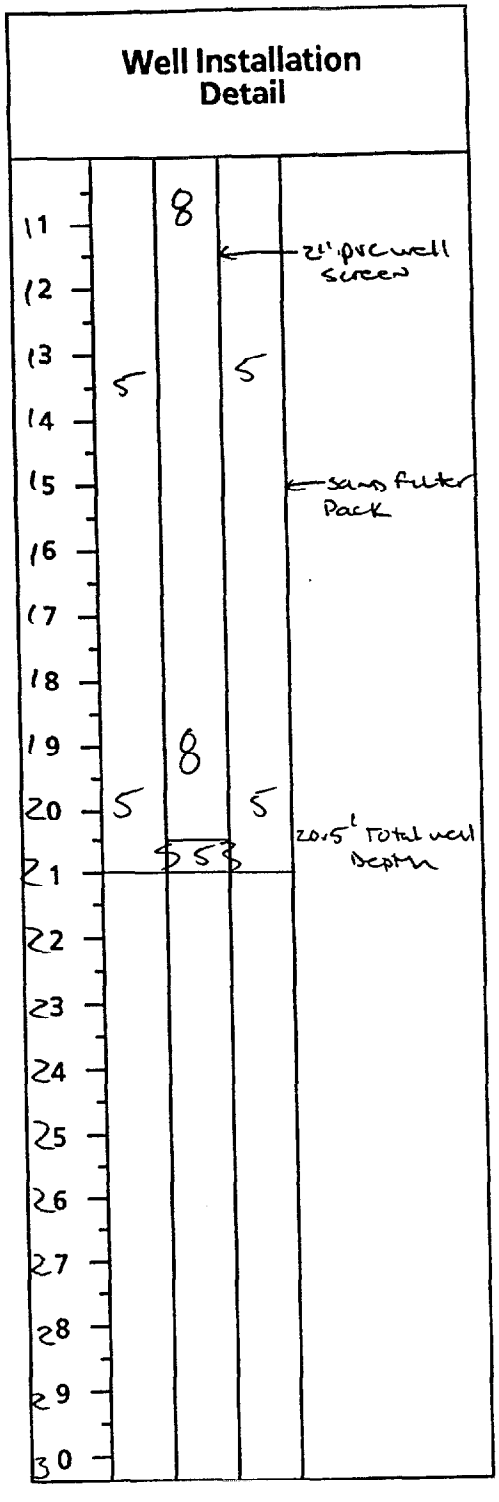
Baker Environmental, Inc

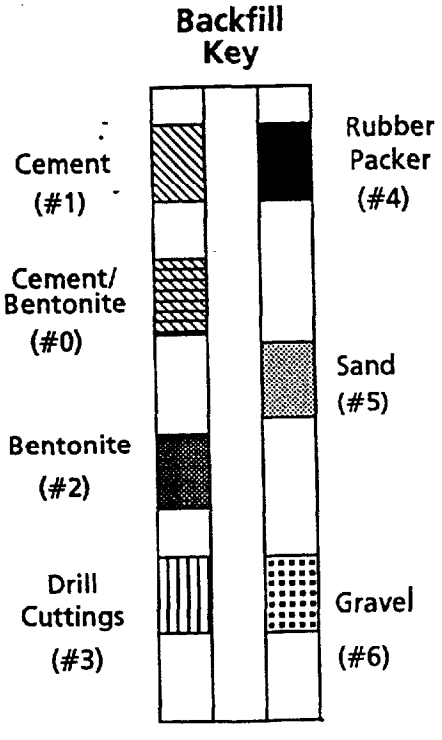
FIELD WELL CONSTRUCTION LOG

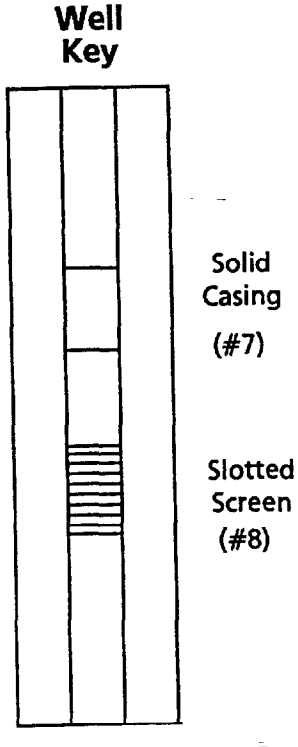
PROJECT:

S.O. NO.:

BORING NO.: 69-GW09







DRILLING CO.: Harron-Noel, Inc

DRILLER: P. Callahan

BAKER REP.: S. Moffett

BORING NO.: 69-GW09

SHEET 2 OF 2

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT:
S.O. NO.:
BORING NO.: 69-GW10
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF PVC CASING:

RIG: Mobile B-47

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		4 1/4" ID		1-9-94	0.0 to 17.0	Sunny low 40's		
LENGTH	2.0		5.0'						
TYPE	Std		HSA						
HAMMER WT.	140 lbs								
FALL	30"								
STICK UP									

REMARKS: Background (BG) is 0.5 parts per million (ppm)

SAMPLE TYPE
S = Split Spoon, A = Auger
T = Shelby Tube, W = Wash
R = Air Rotary, C = Core
D = Denison, P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	~~Lab. Class. or Pen Rate~~ Time	PID (ppm)	Visual Description	Elevati
1 / 2.0	S-1 69-GW10-01	1.5 75%	1 2 2 3	1040	1.9	Fine to medium sand SILT, leaves, pine needles and decaying vegetation in first few inches, yellow brown to grayish brown, DAMP TO wet, loose to medium dense	
3 / 4.0	S-2	1.8 90%	3 4 4 8	1045	BG	Trace clay from 3.5 to 4.0 feet	
5 / 6.0	S-3 69-GW10-03	1.7 85%	4 8 12 13	1103	BG	water at approximately 5.5 feet	
7 / 8.0	S-4	1.5 75%	7 4 5 6	1113	2.0	Black to grayish black at 7.5 feet	
9 / 10.0	S-5	1.3 65%	4 6 6 8	1122	BG		

Match to Sheet 2

DRILLING CO.: Hardin-Huber, Inc.
DRILLER: P. Callahan
BAKER REP.: S. Moffett
BORING NO.: 69-GW10
SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT:
S.O. NO.: BORING NO.: 69-GW-10'

SAMPLE TYPE

S = Split Spoon, A = Auger
T = Shelby Tube, W = Wash
R = Air Rotary, C = Core
D = Denison, P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
11	S-6	1.0 50%	5 5 2 2	1147	BG	Fine to medium sand and silt, grayish black, wet loose to medium dense	
12 (12.0)							
13	S-7	1.8 90%	1 3 1 3	1155	BG	Fine to medium sand and silt, trace to little clay, grayish black, wet, very loose to loose	
14 (14.0)							
15	S-8	1.8 90%	2 2 1 1	1200	BG		
16 (16.0)							
17 (17.0)	A-N						
18						Bottom of Borehole at 17.0 Feet	
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

DRILLING CO.: Hardin-Huber, Inc
DRILLER: P Callahan
BAKER REP.: S. Moffett
BORING NO.: 69-GW10
SHEET 2 OF

Baker

Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT:
S.O. NO.:
BORING NO.: 69-GWW
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF STEEL CASING:

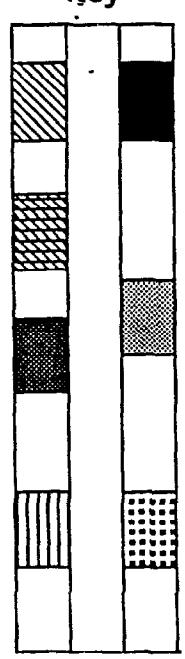
Well Development

Pay Items			
Item	Quantity	Unit	Remarks
2" PVC well Screen	10	Feet	
2" PVC well CASING	10	Feet	
well Point and Cap	1	each	
SAND Filter Pack	5.5	bag	
bentonite pellets	2	pail	

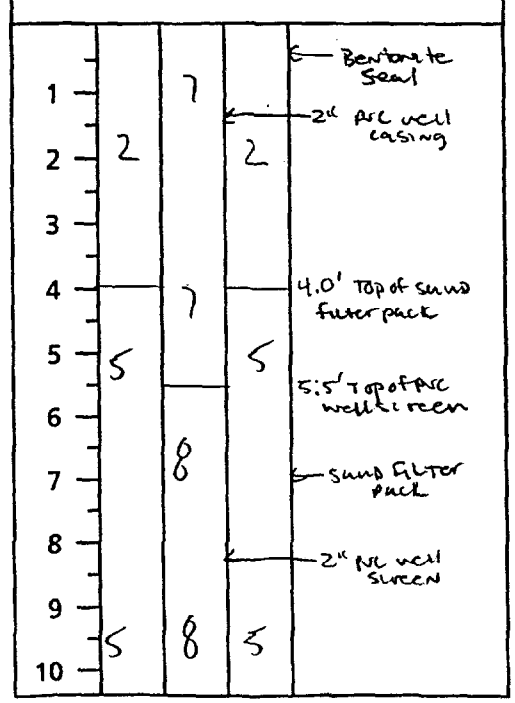
WELL INFORMATION	DIAM. (INCHES)	TYPE	TOP DEPTH (FT.)	BOTTOM DEPTH (FT.)
Well Casing	2	PVC	-4.3	5.5
Well Screen	2	PVC	5.5	16.0

6.0

Backfill Key



Well Installation Detail



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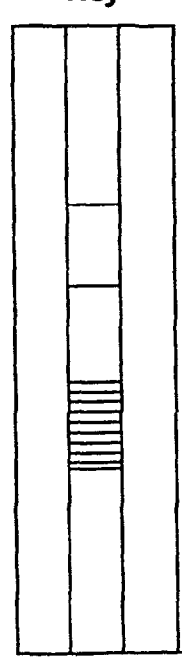


DRILLING CO.: Harlow-Huber Inc
DRILLER: P Callahan
BAKER REP.: S. Moffett
BORING NO.: 69-GWW
SHEET 1 OF 2

Baker

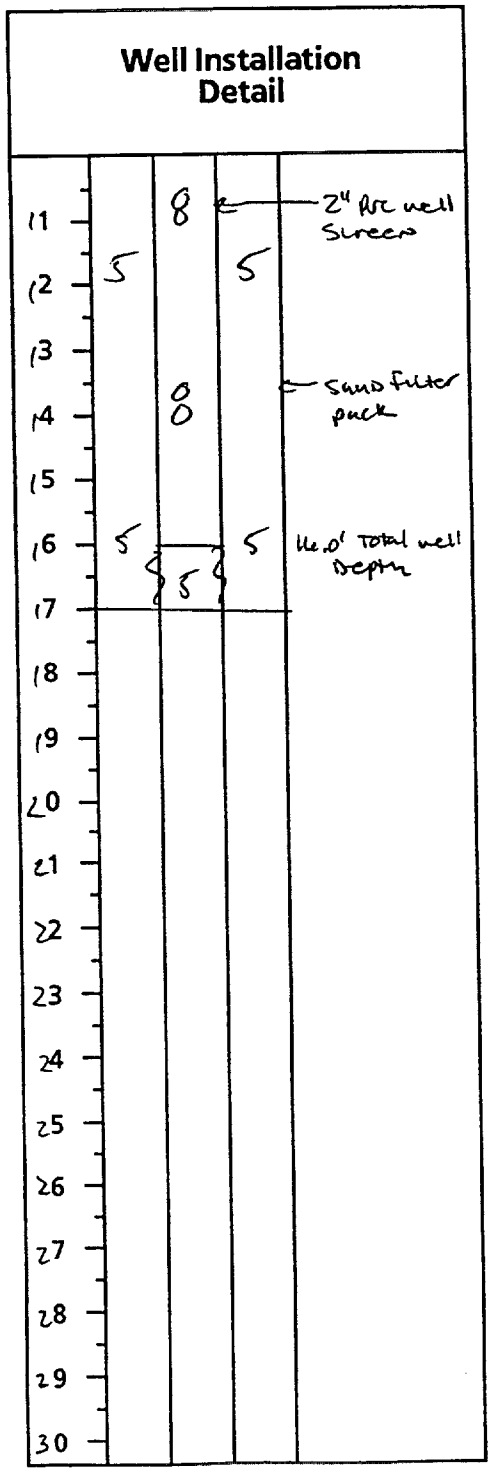
Baker Environmental, Inc

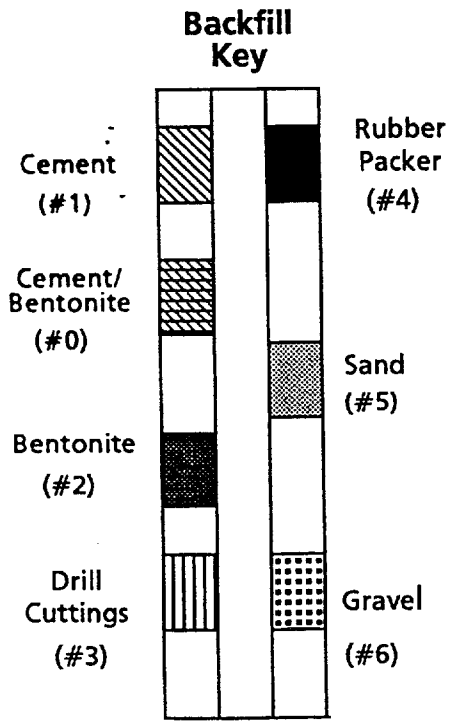
FIELD WELL CONSTRUCTION LOG

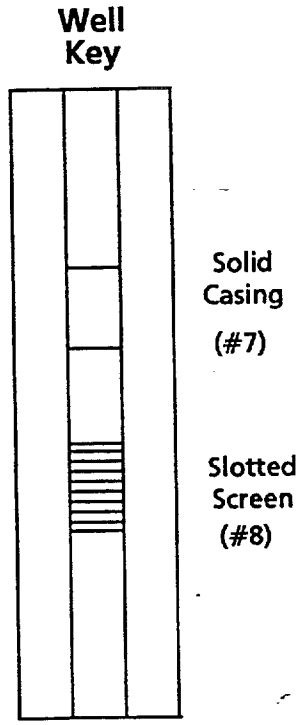
PROJECT:

S.O. NO.:

BORING NO.: 69-GW10







DRILLING CO.: Harrow-Huber, Inc

DRILLER: P. Callahan

BAKER REP.: S. Moffett

BORING NO.: 69-GW10

SHEET 2 OF 2

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT:
S.O. NO.:
COORDINATES: EAST:
ELEVATION: SURFACE:
BORING NO.: 69-GW11
NORTH:
TOP OF PVC CASING:

RIG: Mobile B-47

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		4 1/4" ID		1-7-94	0.0 to 19.0	Sunny low 60's		
LENGTH	2.0'		5.0'						
TYPE	Std.		HSA						
HAMMER WT.	140 lbs								
FALL	30"								
STICK UP									

REMARKS: Background (BG) is 0.5 parts per million (ppm)

SAMPLE TYPE

S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	TIME ~~Lab. Class.~~ or ~~Pen. Rate~~	PID (ppm)	Visual Description	Elevation
1 / 2 (2.0)	S-1	1.3 / 65%	3 2 / 3 3	0925	BG	Leaves, Pine Needles and Decaying Vegetation Place, Damp loose 0.3 Fine to Medium Sand, trace to little silt, grayish Brown to Yellowish Brown, Damp to Moist, loose	
3 / 4 (4.0)	S-2 (69-GW11-02)	1.3 / 65%	5 6 / 6 6	0920	BG		
5 / 6 (6.0)	S-3	0.3 / 15%	3 4 / 5 6	1006	BG	5.0' Clay, little fine to medium sand, trace to little silt, orangish brown, Damp, stiff 6.0'	
7 / 8 (8.0)	S-4 (69-GW11-04)	1.4 / 70%	3 10 / 8 8	1015	5.0' BG.	Fine to medium sand, trace to little silt, grayish brown to yellowish brown, Damp to wet medium dense Water at approximately 7.5 feet	
9 / 10 (10.0)	S-5	1.6 / 80%	3 5 / 5 4	1026	BG Light	9.5' Clay, little to some fine sand, trace silt gray, wet, Areas of orangish staining, loose	Match to Sheet 2

DRILLING CO.: Harrow Huber, Inc.
DRILLER: P. Callahan
BAKER REP.: S. Moffett
BORING NO.: 69-GW11
SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT:
S.O. NO.:
BORING NO.: 69-GW11

SAMPLE TYPE
S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	~~Lab. Class. or Pen. Rate~~ TIME	PID (ppm)	Visual Description	Elevatic
11	S-6	1.5 75%	1 T 3 4	1036	5.0	CLAY, little to some fine sand, trace silt, light gray, wet Areas of orangish staining, loose	
12 / 12.0							
13	S-7	1.8 90%	2 3 3 4	1043	BG		
14 / 14.0							
15	S-8	1.7 85%	4 3 3 4	1335	BG	Becomes A DARK bluish gray color at 15 Feet large areas of orangish staining	
16 / 16.0							
17	S-9	0.9 45%	4 5 5 4	1353	BG		
18 / 18.0							
19 / 19.0	A-N						19.0'
19						BOTTOM of Borehole at 19. Feet	
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

DRILLING CO.: Harding Huber, Inc
DRILLER: P. Callahan
BAKER REP.: S. Moffett
BORING NO.: 69-GW11
SHEET 2 OF

FIELD WELL CONSTRUCTION LOG

Baker
Baker Environmental, Inc

PROJECT:
S.O. NO.:
BORING NO.: 69-GW11
COORDINATES: EAST:
NORTH:
ELEVATION: SURFACE:
TOP OF STEEL CASING:

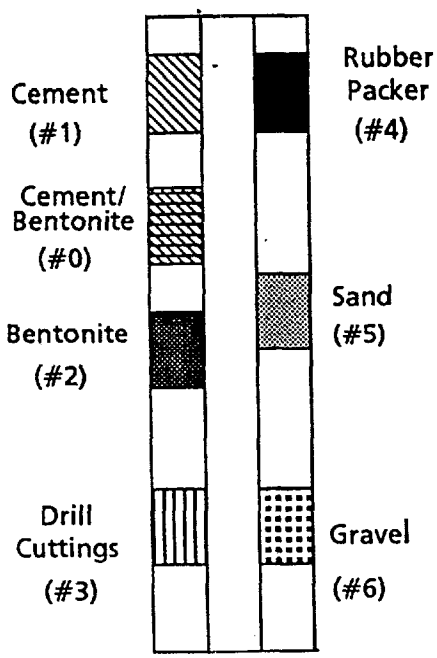
Well Development

Pay Items

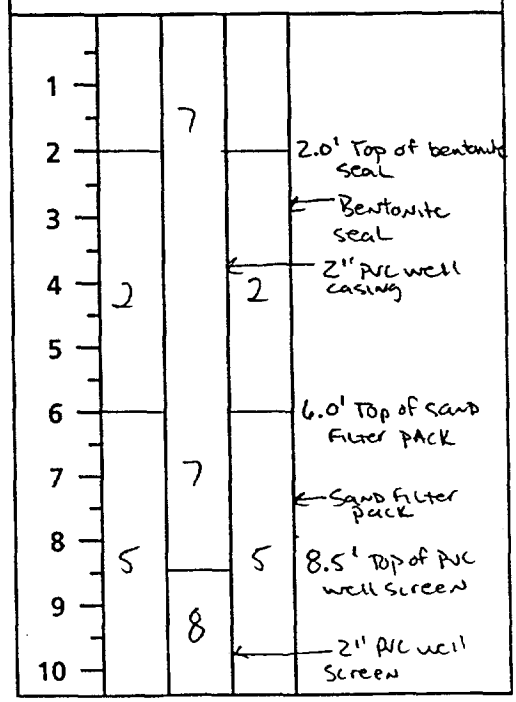
Item	Quantity	Unit	Remarks
2" PVC well screen	10	feet	
2" PVC well casing	10	feet	
well point and cap	1	each	
Sand filter pack	6.5	bag	
Bentonite pellets	1.5	pail	

WELL INFORMATION	DIAM. (INCHES)	TYPE	TOP DEPTH (FT.)	BOTTOM DEPTH (FT.)
Well Casing	2	PVC	-	8.5
Well Screen	2	PVC	8.5	19.0

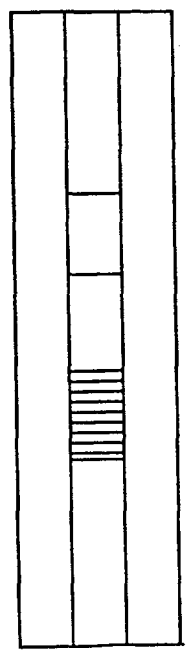
Backfill Key



Well Installation Detail



Well Key



DRILLING CO.: Hardin-Huber, Inc
DRILLER: D. Callahan
BAKER REP.: S. Moffett
BORING NO.: 69-GW11
SHEET 1 OF 2

Baker

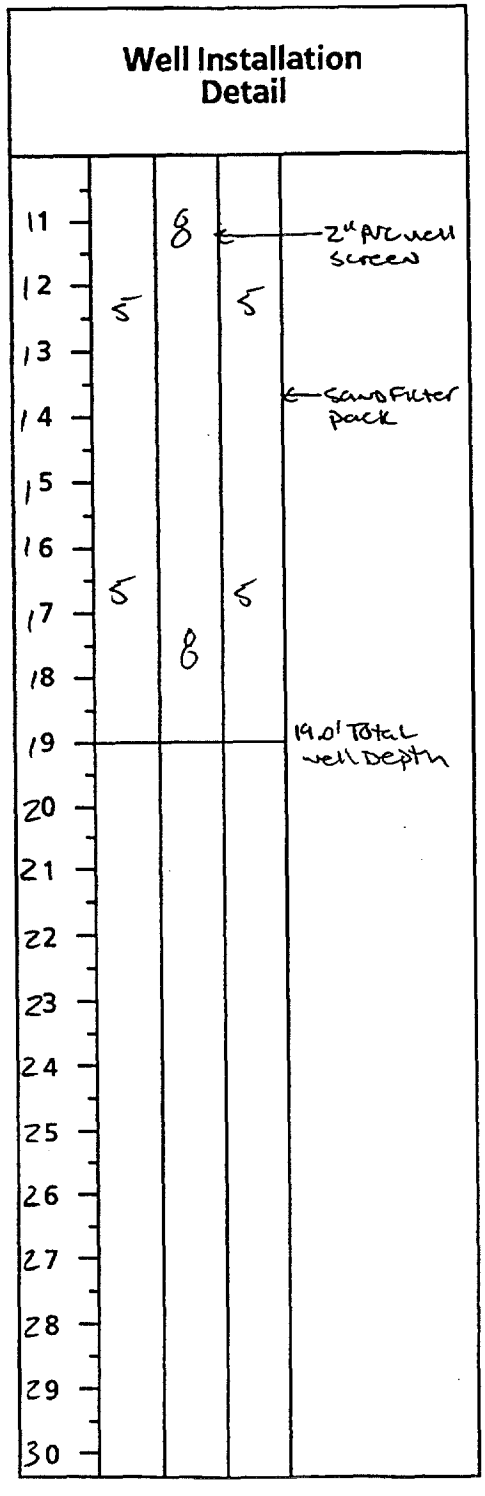
Baker Environmental, Inc

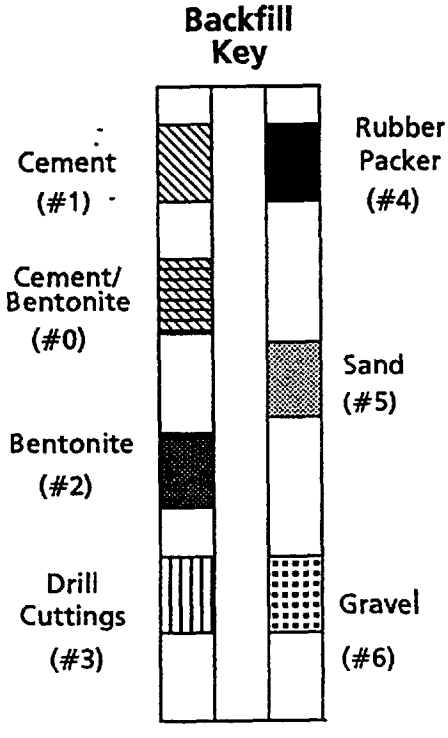
FIELD WELL CONSTRUCTION LOG

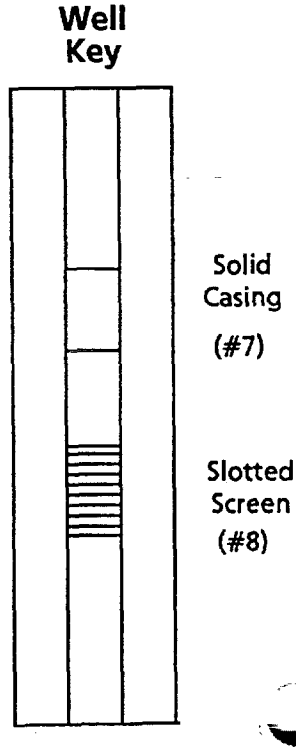
PROJECT:

S.O. NO.:

BORING NO.: 69-GW11







DRILLING CO.: Harden Huber, Inc

DRILLER: P. Callahan

BAKER REP.: S Moffett

BORING NO.: 69-GW11

SHEET 2 OF 2

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT:
S.O. NO.:
COORDINATES: EAST:
ELEVATION: SURFACE:
BORING NO.: 69-GW-12
NORTH:
TOP OF PVC CASING:

RIG: MOBILE B-47

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		4 1/4" ID		1-6-94	0.0 to 13.5	SUNNY, High 30's		
LENGTH	2.0'		5.0'						
TYPE	std		HSA						
HAMMER WT.	140 lbs.								
FALL	30"								
STICK UP									

REMARKS: Back Ground (BG) is 0.3 parts per million (ppm)

SAMPLE TYPE
S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	TIME Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1 / 2 (2.0)	S-1 69-GW12-01	1.5 75%	2 2 3 3	0925	12 / 1.5	Fine to Medium Sand and Silt, Black, Moist to wet, some leaves and decaying vegetation in the first few inches of sample white from 0.6 to 0.8 feet, very loose to loose	
3 / 4 (4.0)	S-2	0.3 15%	1 1 2 3	0950	1.0	TREE ROOT stuck in spoon, poor recovery water at approximately 3.0 feet	
5 / 6 (6.0)	S-3	2.0 100%	2 1 1 1	1010	BG	Fine to Medium Sand and Silt, Trace clay, Black, wet, very loose	4.5
7 / 8 (8.0)	S-4	2.0 100%	1 2 1 1	1025	1.5		7.6'
9 / 10 (10.0)	S-5	1.6 80%	5 3 1 5	1033	BG	Fine to Medium Sand and Silt, Black to grayish brown, wet, loose Silt content decreases with depth	
						Fine to Medium Sand, Trace to little silt, grayish brown wet, loose	

Match to Sheet 2

DRILLING CO.: HARDING HUDER, INC.
DRILLER: P. CALLAHAN
BAKER REP.: S. MOFFETT
BORING NO.: 69-GW12
SHEET 1 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: _____

S.O. NO.: _____ BORING NO.: _____

SAMPLE TYPE

S = Split Spoon, A = Auger
T = Shelby Tube, W = Wash
R = Air Rotary, C = Core
D = Denison, P = Piston
N = No Sample

DEFINITIONS

SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
11	S-6	0.9 45%	4 3 2 2	1040	BG	FINE TO MEDIUM SAND, TRACE TO LITTLE SILT, grayish brown, wet, loose	
12.0							
13	A-N						
13.5							13.5
14						Bottom of Bore hole at 13.5 feet	
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

DRILLING CO.: Harron-Huber, Inc.

DRILLER: P. Callahan

BAKER REP.: S. Moffett

BORING NO.: 69-GW 12

SHEET 2 OF

FIELD WELL CONSTRUCTION LOG

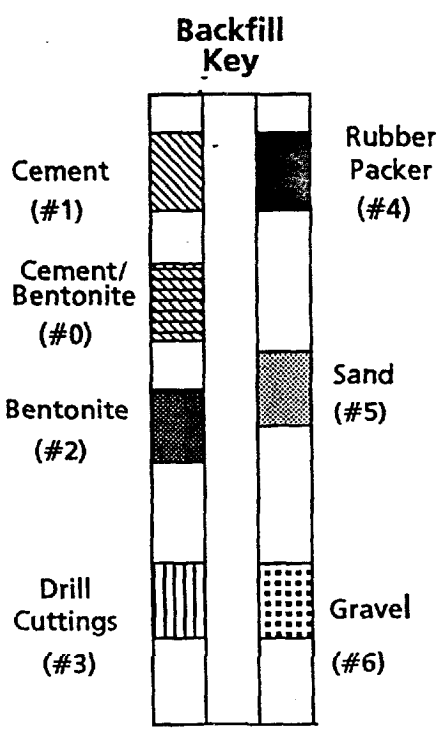
Baker
Baker Environmental, Inc

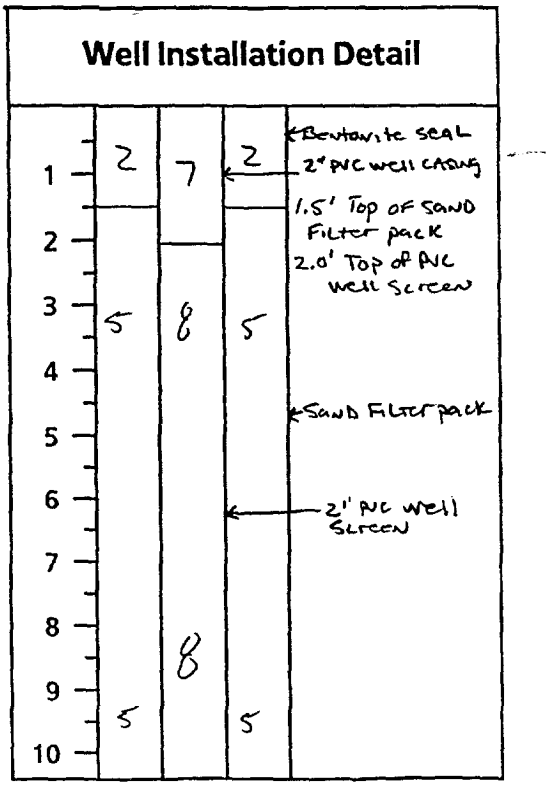
PROJECT: _____
S.O. NO.: _____ BORING NO.: 69-GW12
COORDINATES: EAST: _____ NORTH: _____
ELEVATION: SURFACE: _____ TOP OF STEEL CASING: _____

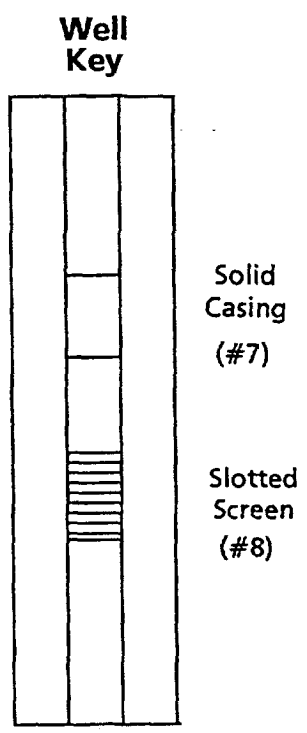
Well Development _____

Pay Items			
Item	Quantity	Unit	Remarks
2" PVC well screen	10	feet	
2" PVC well casing	5.3	feet	
well point and cap	1	each	
sand filter pack	2.5	bag	
bentonite pellets	1.5	pail	

WELL INFORMATION	DIAM. (INCHES)	TYPE	TOP DEPTH (FT.)	BOTTOM DEPTH (FT.)
Well Casing	2	PVC	-2.8	2.0
Well Screen	2	PVC	2.0	12.5







DRILLING CO.: Harden-Huber, Inc. BAKER REP.: S. Moffett
DRILLER: P. Callahan BORING NO.: 69-GW12 SHEET 1 OF 2

Baker

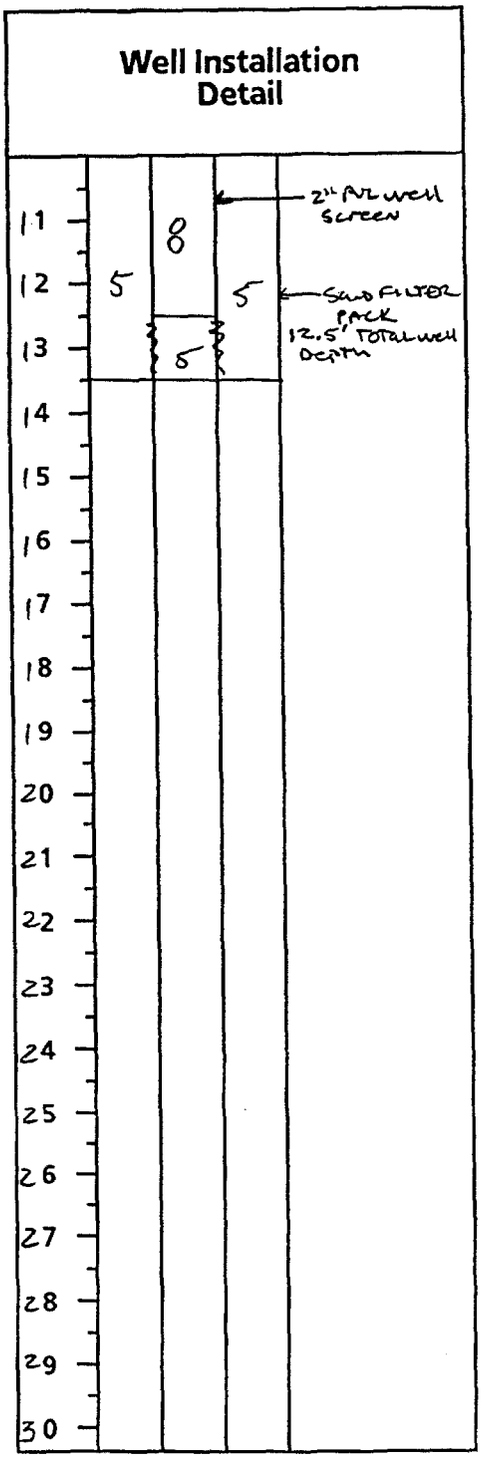
Baker Environmental, Inc

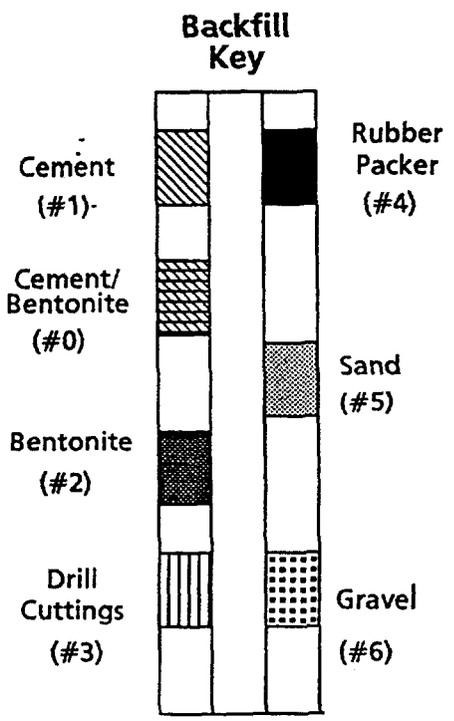
FIELD WELL CONSTRUCTION LOG

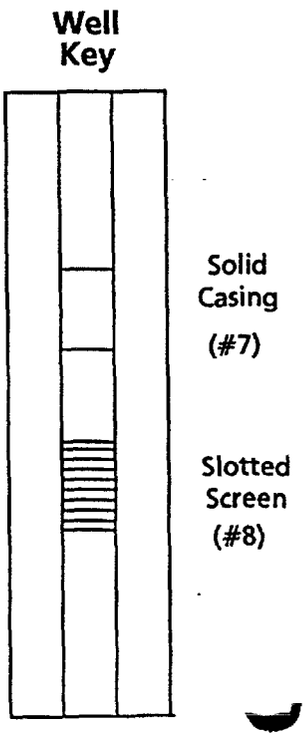
PROJECT:

S.O. NO.:

BORING NO.: 69-GW12







DRILLING CO.: Harbour-Huber, INC

DRILLER: P. Callahan

BAKER REP.: S. Moffett

BORING NO.: 69-GW12

SHEET 2 OF 2

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69-GW12DW
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING:

RIG: Mobile B-47

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		4 1/4" ID		1-8-94	0-20.0	Sunny, Cool	3.0	
LENGTH	2.0'		5.0'		1-22-94	20.0-60.0			
TYPE	STO		HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP	2 1/2'								

REMARKS: Continuous sampling to 6.0' (bgs). Type II monitoring well set 1-22-94

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1 – 2.0	Sample #01 is collected	1.0/2.0 50%	1 1 2 2		7.3	SAND, fine to medium grained and SILT w/ organics. Black to white to gray, very loose to loose, moist to wet.	
3 – 4.0	S-2	1.0/2.0 50%	1 2 2 4		5.5		
5 – 6.0	S-3	.6/2.0 30%	4 2 2 1		BG		
7 – 8.0	S-4	1.4 70%	2 1 2 2		BG	CLAY w/ little to some SAND, fine to medium grained and trace SILT.	
9 – 10.0	S-5	1.6/2.0 80%	1 2 2 2		BG		

Match to Sheet 2

DRILLING CO.: Hardin Huber, Inc BAKER REP.: S. Moffett / E. Kleinkauf
DRILLER: Pat Callahan BORING NO.: 69-GW12DW SHEET 1 OF 4

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41.
S.O. NO.: 212
BORING NO.: 69-GW12DW

SAMPLE TYPE
S = Split Spoon
T = Shelby Tube
R = Air Rotary
D = Denison
A = Auger
W = Wash
C = Core
P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
11 / 12.0	S-6	1.7/2.0 85%	1 1 3 3		BG	Mottled greenish blue and reddish orange, very loose to loose, wet. CLAY and SAND, fine to medium grained w/ trace to little SILT and trace fine gravel. Mottled green/blue/dark brown, loose to medium dense, wet.	
13 / 14.0	S-7	1.3/2.0 65%	2 6 4 7		BG		
15 / 16.0	S-8	1.6/2.0 80%	6 7 8 10		BG	SAND, fine to coarse grained w/ shell fragments and trace CLAY and SILT. Greenish blue, medium dense, wet.	
17 / 18.0	S-9	1.5/2.0 75%	4 7 11 17		BG		
19 / 20.0	S-10	1.4/2.0 70%	4 6 5 7		BG		
21 / 22.0	S-11	18"/24" 75%	5 4 7 8		BG	SILTY SAND, fine to fine to medium grained w/ little CLAY. Green, loose, moist	
23 / 24.0	S-12	24"/24" 100%	4 5 7 12		BG		
25 / 26.0	S-13	24"/24" 100%	5 5 12 21		.6		
27 / 28.0	S-14	22"/24" 91%	6 9 10 16		BG		
29 / 30.0	S-15	24"/24" 100%	4 5 7 10		.7		

DRILLING CO.: Hardin Huber, Inc
DRILLER: Jay Corron
BAKER REP.: E. Kleinkauf
BORING NO.: 69-GW12DW
SHEET 2 OF 4

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69-GW12DW

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
31 – 32.0	S-16	19"/24" 79%	7 15 19 25		BG		
32 – 36.0						No sample from 32' to 34' (bgs). Driller miscalculated depth.	
36 – 38.0	S-17	23"/24" 95%	8 12 25 23		BG	SILTY SAND, fine to fine to medium grained w/ little CLAY. Green, loose, moist	
38 – 40.0	S-18	22"/24" 91%	10 13 22 24		BG		
40 – 42.0	S-19	23"/24" 95%	7 14 23 47		BG	SILTY SAND, fine to fine to medium grained w/ little CLAY and occasional shells. Green, loose, moist	
42 – 44.0	S-20	24"/24" 100%	10 14 20 48		BG		
44.9	S-21	10"/24" 41%	46 50/5"		BG	SILTY LIMESTONE fragments w/ trace CLAY. Light gray to tan, loose, hard, wet	
46.0	S-22				BG		
47 – 50.0						No sampling attempted	

DRILLING CO.: Hardin Huber, Inc BAKER REP.: E. Kleinkauf
DRILLER: Jay Corron BORING NO.: 69-GW12DW SHEET 3 OF 4

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74 & 41
S.O. NO.: 212 BORING NO.: 69-GW12D

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
50.9	S-23	8"/24" 33%	30 50/4"		BG	SILTY SAND, fine to fine to medium grained. Light gray to tan, loose to hard/dense, moist to wet. Slight increase in CLAY from 54' to 56' (bgs)	
52.0							
53.0	S-24	6"/24" 25%	25 50/6"		BG		
54.0							
56.0	S-25	18"/24" 75%	20 23 33 50/5"		BG		
58.0	S-26	19"/24" 79%	23 51 32 35		BG	SILTY SAND, fine grained w/ trace of CLAY. Light green to gray, slightly dense, moist to wet.	
60.0	S-27	17"/24" 70%	17 20 25 31		BG		
						End of Boring TD: 60.0' HNu background range .2 to .5ppm	

DRILLING CO.: Hardin Huber, Inc BAKER REP.: E. Kleinkauf
DRILLER: Jay Corron BORING NO.: 69-GW12DW SHEET 4 OF 4

FIELD WELL CONSTRUCTION LOG

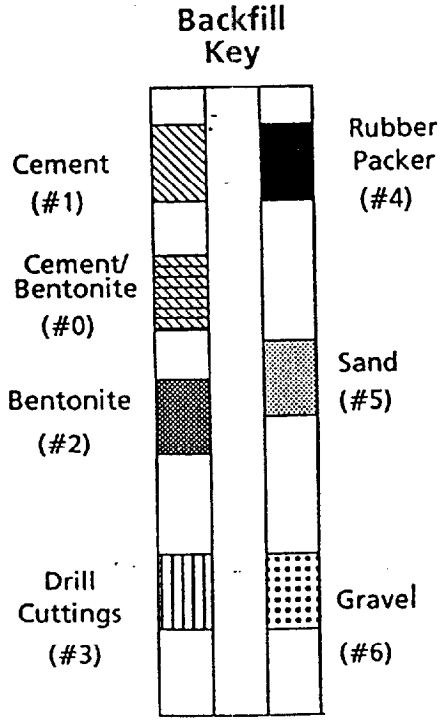
Baker
Baker Environmental, Inc

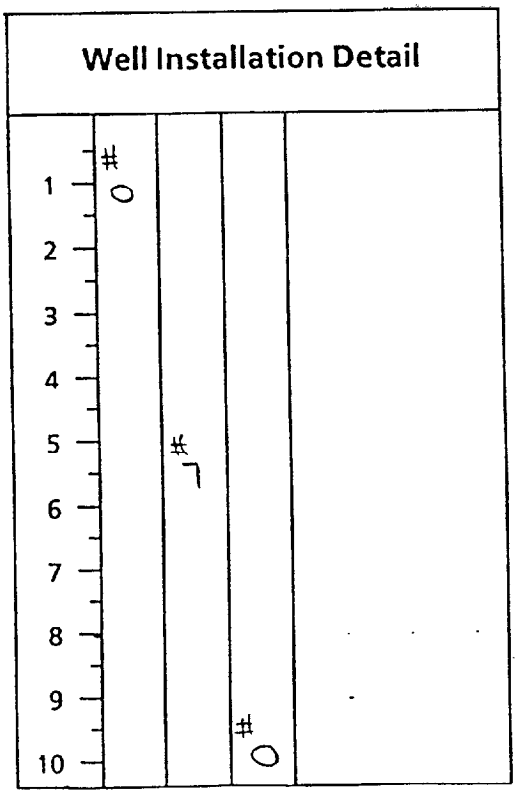
PROJECT: Sites 69, 74, & 41 DATE: 1-22-94
CTO NO.: 212 BORING NO.: 69-GW12DW
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

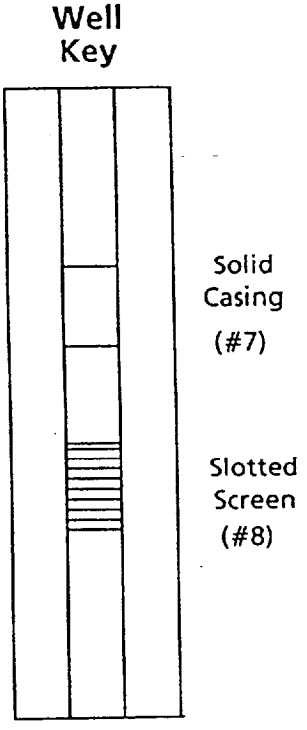
Pay Items

Item	Quantity	Unit	Remarks
Sand	9 bags		#1 Sand
Bentonite Pellets	1 bucket		
PVC Pipe	61.5'		10' of screen
(1) Steel surface protective casing			
(4) bollards and (1) 5x5 cement			
pad			

WELL INFORMATION	DIAM. (INCHES)	TYPE	TOP DEPTH (FT.)	BOTTOM DEPTH (FT.)
Well Casing	2.0"	schedule 40 PVC	+2.5' (bgs)	48.0' (bgs)
Well Screen	2.0"	schedule 40 PVC 10 slot	48.0' (bgs)	58.0' (bgs)





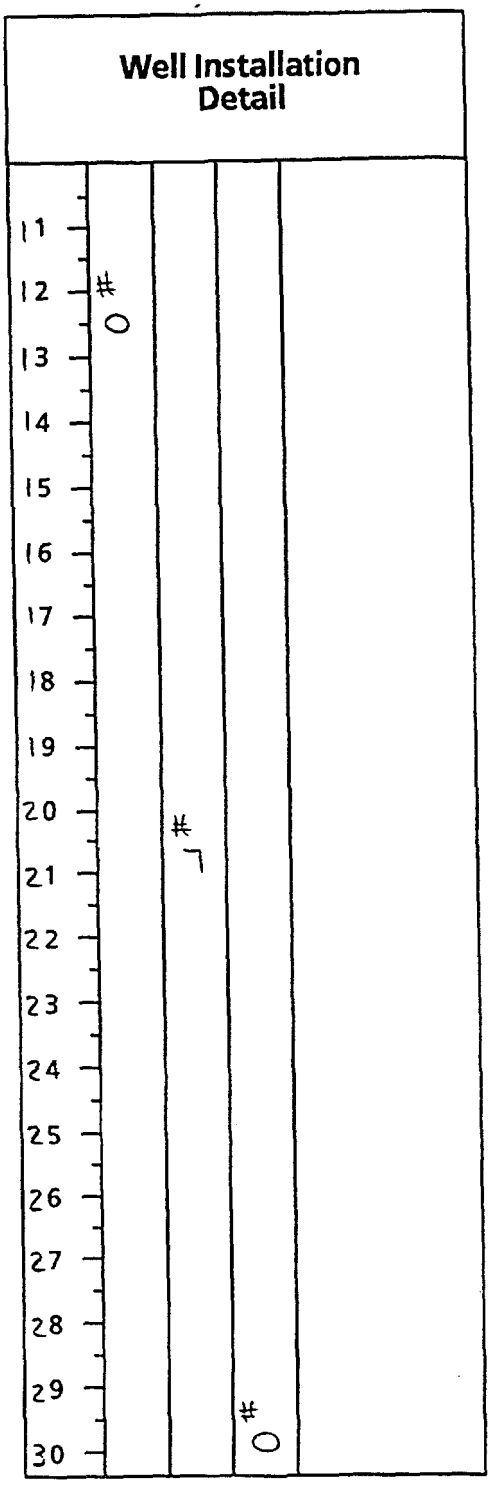


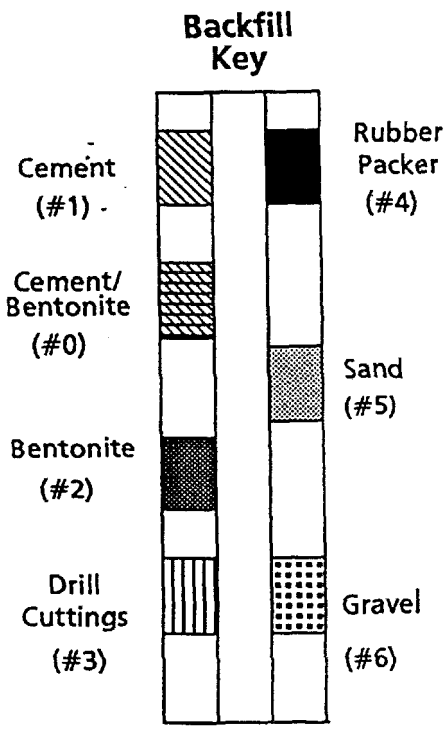
DRILLING CO.: Hardin Huber, Inc BAKER REP.: E. Kleinkauf
DRILLER: Jay Corron BORING NO.: 69-GW12DW SHEET 1 OF 4

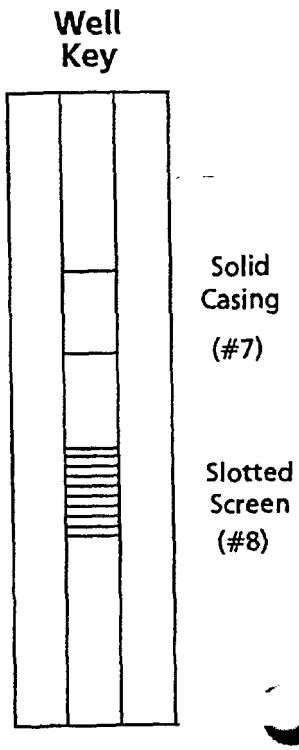
Baker
Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212
BORING NO.: 69-GW12 DW







DRILLING CO.: Hardin Huber, Inc
DRILLER: Jay Corron
BAKER REP.: E. Kleinkauf
BORING NO.: 69-GW12 DW
SHEET 2 OF 4

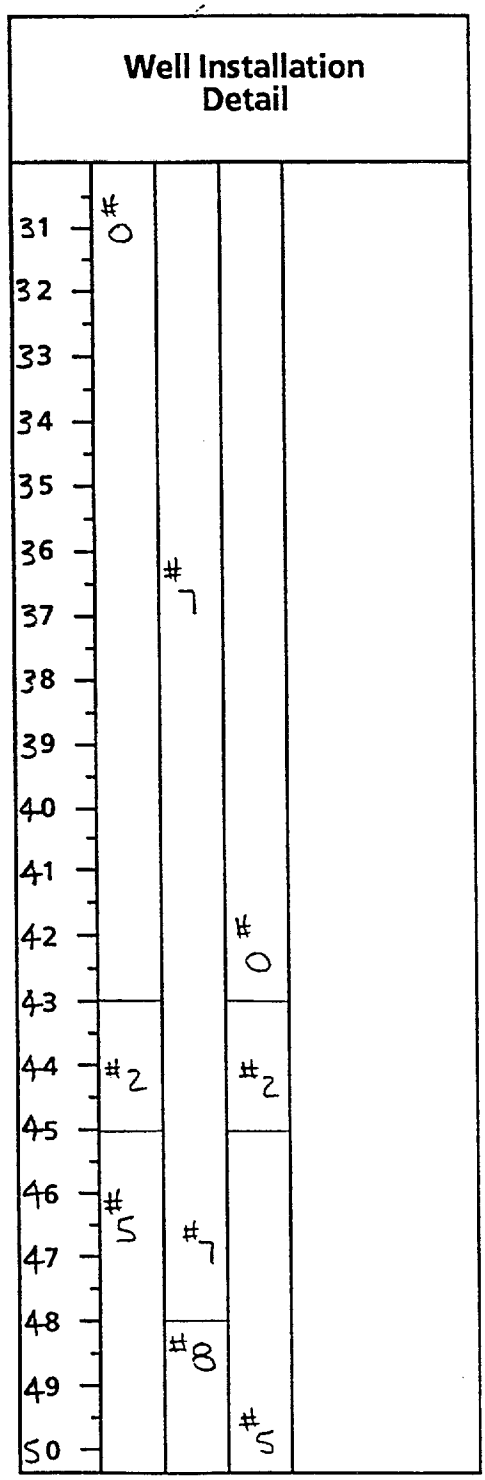
Baker

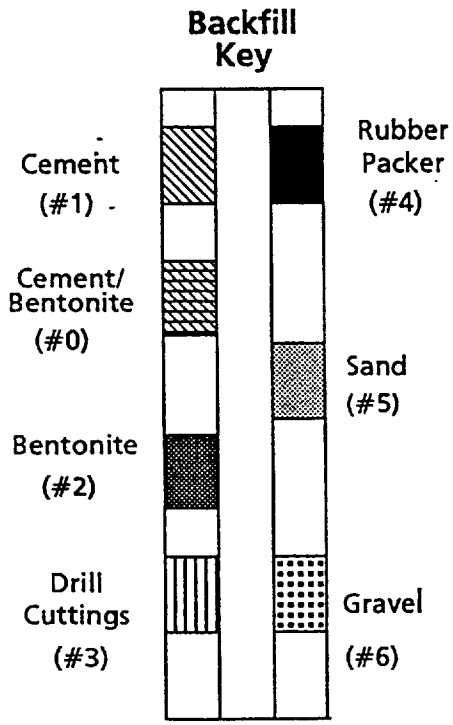
Baker Environmental, Inc

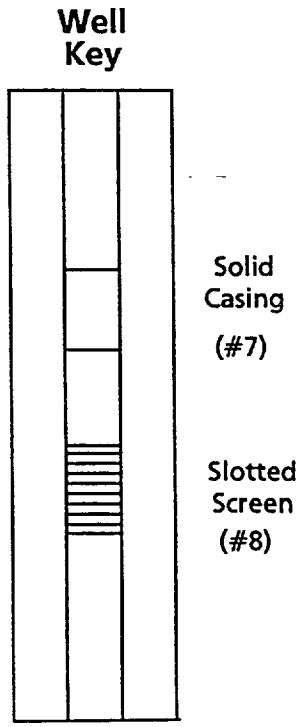
FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74, & 41

S.O. NO.: 212 BORING NO.: 69-GW12DW







DRILLING CO.: Hardin Huber, Inc BAKER REP.: E. Kleinkauf

DRILLER: Jay Corron BORING NO.: 69-GW12DW SHEET 3 OF 4

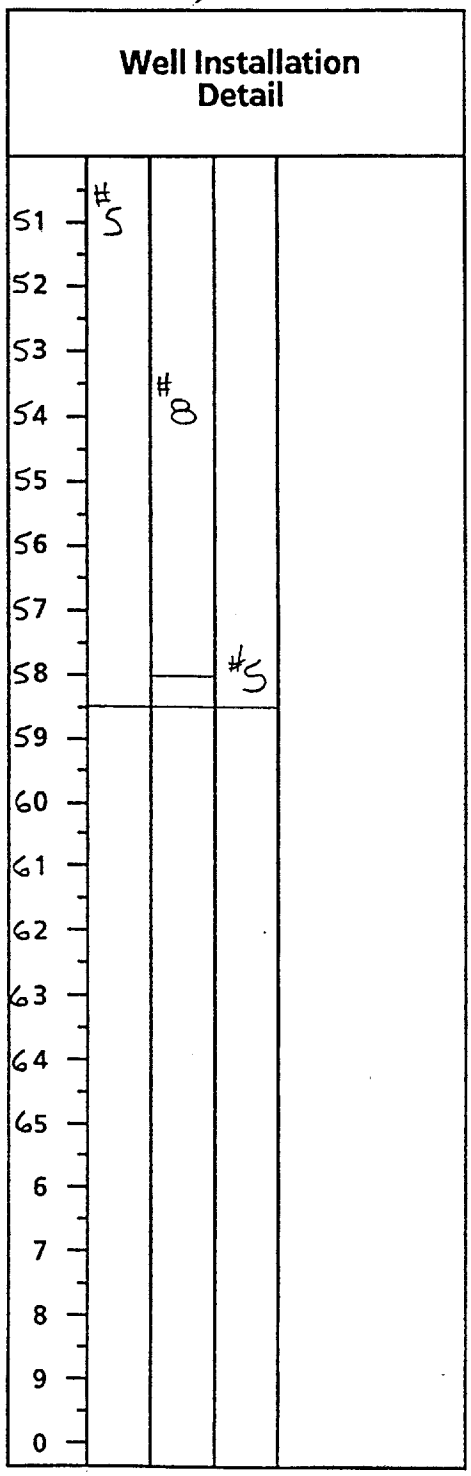
Baker

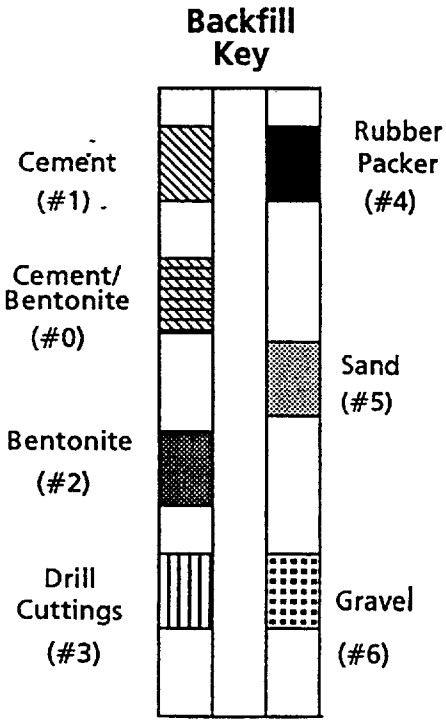
Baker Environmental, Inc

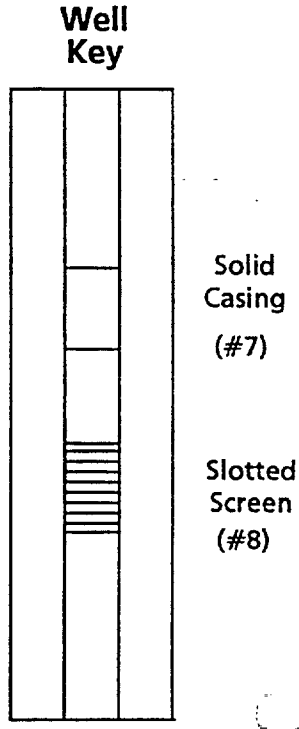
FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74, & 41

S.O. NO.: 212 BORING NO.: 69-GW12DW







DRILLING CO.: Hardin Huber, Inc

DRILLER: Jay Corron

BAKER REP.: E. Kleinkauf

BORING NO.: 69-GW12DW

SHEET 4 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW13
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING:

RIG: Rig #48

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID		3 1/4" ID		5-24-94	0-13.0	Partly cloudy warm, (80's)	6.5	
LENGTH	2.0'		5.0'						
TYPE	STD		HSA						
HAMMER WT.	140*								
FALL	30"								
STICK UP									

REMARKS: Continuous sampling to 13.0' (bgs). HNu background is .3 ppm

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1 – 2.0	S-1	1.2/2.0 60%	1 2 3 4		BG	SILTY SAND, fine grained. Gray to dark brown, loose, damp	
2.0 – 4.0	S-2	1.0/2.0 50%	1 3 3 9		BG	SAND, fine grained w/trace silt. Dark brown to brown, loose to medium dense, damp to moist to wet.	
4.0 – 6.0	S-3	1.0/2.0 50%	3 3 4 5		BG		
6.0 – 8.0	S-4	1.5/2.0 75%	10 12 8 9		BG		
8.0 – 10.0	S-5	1.8/2.0 90%	5 6 7 7		BG	WOOD, dark brown, medium dense, wet.	
						SAND, fine grained w/trace silt. Greenish gray, medium dense, wet	
						WOOD, dark brown, loose, wet	

Match to Sheet 2

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW13 SHEET 1 OF -

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW13

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
						WOOD, dark brown, loose, wet.	
11	S-6	.4/2.0 20%	5 3 2 1		BG	CLAY, w/ little to some SAND, fine grained w/ trace silt. Greenish Gray, soft to medium stiff, moist.	
12.0							
12							
13							
14						End of Boring TD: 13.5'	
15							
16						* original well location abandoned and moved 12.0' due North, Lithologic descriptions are adapted from original well location.	
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW13 SHEET 2 OF 2

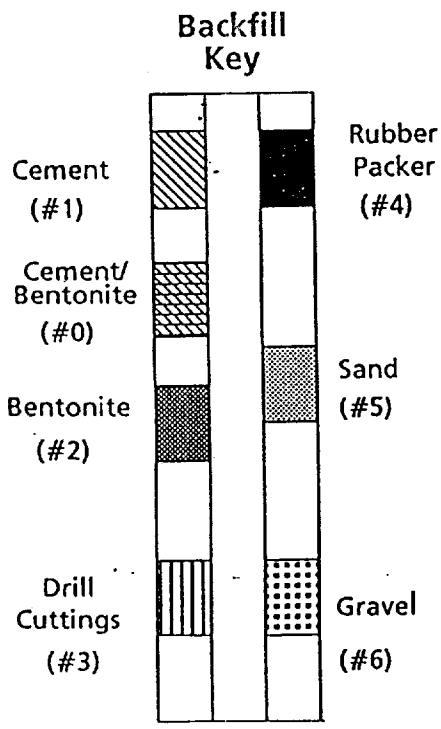
FIELD WELL CONSTRUCTION LOG

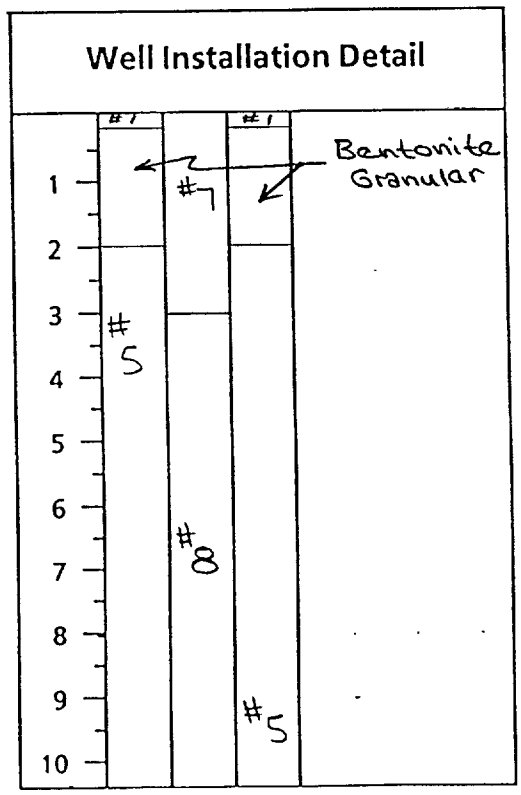
Baker
Baker Environmental, Inc

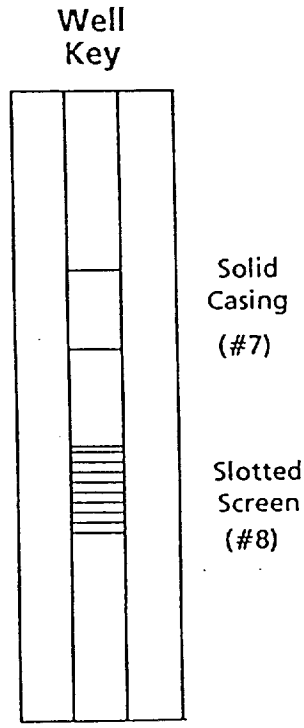
PROJECT: Sites 69, 74, & 41 DATE: 5-24-94
CTO NO.: 212 BORING NO.: 69GW13
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

Pay Items			
Item	Quantity	Unit	Remarks
Sand	10 bags		#1 sand
Bentonite granular	1 bag		
PVC pipe	15.5'		10' of screen
(1) steel surface protective			
casing (4) bollards and (1) 5x5			
cement pad			

WELL INFORMATION	DIAM. (INCHES)	TYPE	TOP DEPTH (FT.)	BOTTOM DEPTH (FT.)
Well Casing	2.0	Schedule 40 PVC	+2.5'	3.0' (bgs)
Well Screen	2.0	Schedule 40 PVC 10 slot	3.0' (bgs)	13.0' (bgs)







DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW13 SHEET 1 OF 2

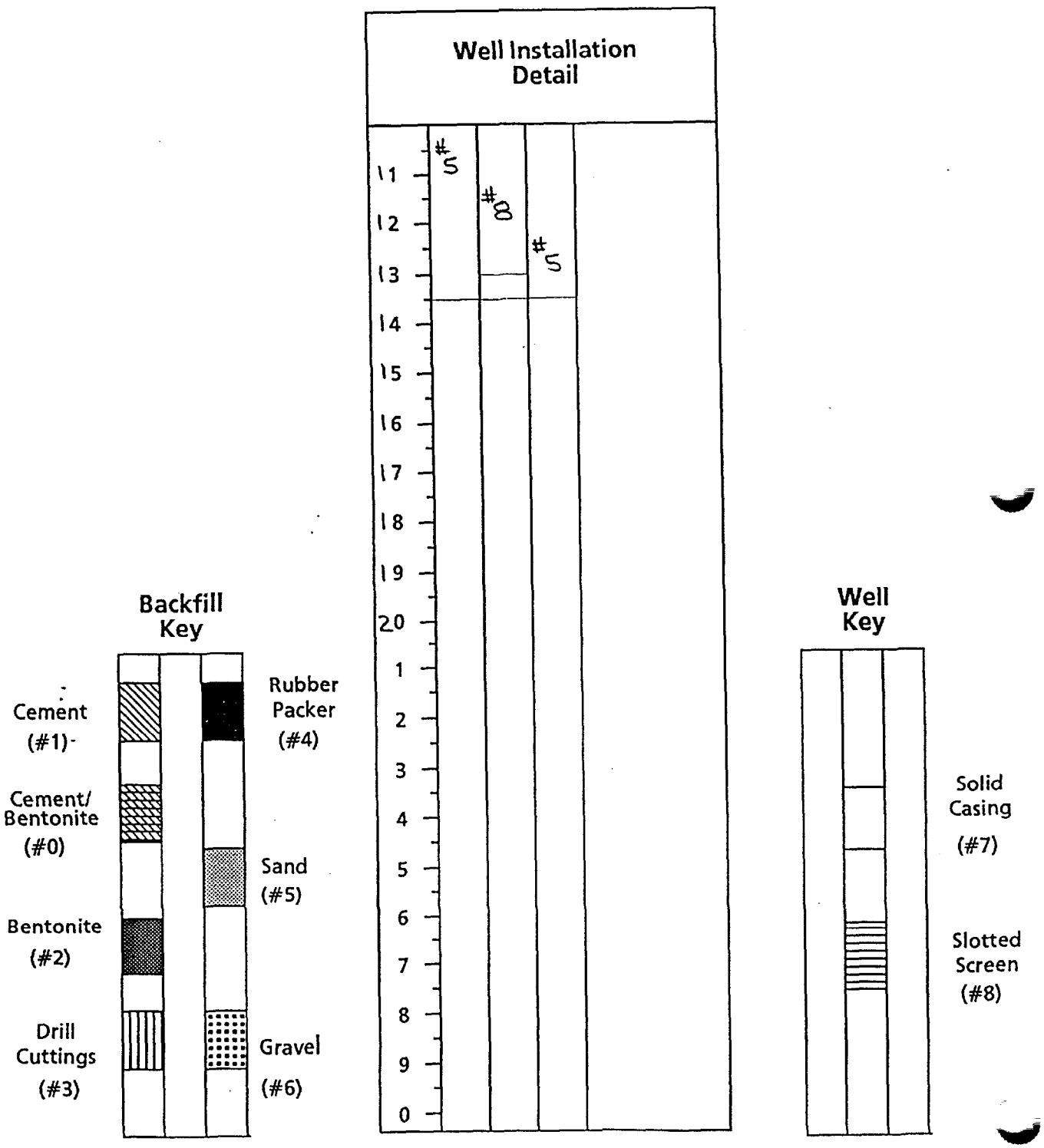
Baker

Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74, & 41.

S.O. NO.: 212 BORING NO.: 69GW13



DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman

DRILLER: Chad Chism BORING NO.: 69GW13 SHEET 2 OF 2

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW13I
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING:

RIG: Rig #48

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID	10"	3 1/4" ID		5-21-94	0-22.0	overcast, cool (50's)	6.5	
LENGTH	2.0	23'	5.0'		5-23-94	22.0-62.0	clear, mild (60's)		
TYPE	STD	Steel	HSA						
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: Continuous sampling to 38.0' (bgs). HNU background is .3 ppm.

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1 – 2.0	S-1	1.0/2.0 50%	3 5 5 6		BG	SILTY SAND, fine grained, Gray to brown, medium dense, damp	
3 – 4.0	S-2	1.2/2.0 60%	4 4 5 6		BG	SAND, fine grained w/ trace silt. Brown to dark brown to greenish gray, very loose to loose to medium dense, damp to moist to wet.	
5 – 6.0	S-3	1.8/2.0 90%	8 6 6 6		BG		
7 – 8.0	S-4	1.7/2.0 85%	5 10 8 8		BG		▼
9 – 10.0	S-5	1.5/2.0 75%	2 9 9 7		BG		

Match to Sheet 2

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW13I SHEET 1 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW13I

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
11 / 12.0	S-6	.6/2.0 30%	.1 1 1 1		BG	SAND, fine grained w/trace silt. Greenish gray, very loose to loose, wet.	
13 / 14.0	S-7	1.8/2.0 90%	WOH/24"		BG	CLAY w/ little to some SAND fine grained w/trace silt. Greenish gray, soft, moist.	
15 / 16.0	S-8	1.1/2.0 55%	5 5 5 5		BG	SAND, fine grained w/trace silt. Gray, medium dense, wet.	
17 / 18.0	S-9	1.8/2.0 90%	1 1 2 3		BG	CLAY w/trace to little silt and trace SAND, fine grained. Greenish gray, soft to medium stiff, moist. Oxidation streaking	
19 / 20.0	S-10	1.7/2.0 85%	1 3 4 3		BG		
21 / 22.0	S-11	1.8/2.0 90%	1 2 3 3		BG		
23 / 24.0	S-12	2.0/2.0 100%	3 3 5 4		BG	SANDY CLAY, fine grained w/ trace silt. Greenish gray, soft to medium stiff, moist	
25 / 26.0	S-13	2.0/2.0 100%	WOH/6" 2 2 3		BG		
27 / 28.0	S-14	2.0/2.0 100%	2 3 3 3		BG		
29 / 30.0	S-15	2.0/2.0 100%	2 2 2 3		BG		

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW13I SHEET 2 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-GW14IW
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING:

RIG: MOBILE

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID								
LENGTH	2.0'								
TYPE	STD								
HAMMER WT.	140#								
FALL	30"								
STICK UP	2 1/2'								

REMARKS:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1	SS S-1	1.4' 70%	3 3 4 4		0.1 (BG)	SILTY SAND: FINE GRAINED, DARK BROWN WOOD	
2						SAND: FINE GRAINED, TRACE SILT, LOOSE BROWN, DAMP	
3	SS S-2	1.5' 75%	3 4 5 6		0.1 (BG)	SAME (MEDIUM DENSE)	
4							
5	SS S-3	1.3' 65%	5 5 5 4		0.1 (BG)	SAND: FINE GRAINED, TRACE SILT, MEDIUM DENSE, LIGHT GRAY, DAMP TO MOIST	
6							
7	SS S-4	1.4' 70%	3 2 2 2		0.1 (BG)	SAND: FINE TO MEDIUM GRAINED, TRACE SILT, LITTLE CLAY (AT BOTTOM) LOOSE TO SOFT, LIGHT BROWN TO GRAY, WET TO MOIST.	
8							▼
9	SS S-5	2.0' 100%	1 2 1 1		0.1 (BG)	CLAY: LITTLE TO SOME FINE GRAINED SAND, TRACE SILT, SOFT TO LOOSE, GRAY, MOIST	
10						Match to Sheet 2	

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14IW SHEET 1 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW13I

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
31 – 32.0	S-16	2.0/2.0 100%	1 1 1 1		BG	SANDY CLAY, fine grained w/ trace silt. Greenish gray soft to medium stiff to hard, moist.	
33 – 34.0	S-17	2.0/2.0 100%	2 3 2 3		BG		
35 – 36.0	S-18	1.8/2.0 90%	3 9 23 23		BG		
37 – 38.0	S-19	1.4/2.0 70%	7 9 18 19		BG	SAND, fine to medium grained w/ trace of coarse gravel well rounded Greenish gray to dark green, medium dense, wet	
39 – 40.0							
41 – 42.0	S-20	1.6/2.0 80%	5 7 11 14		BG	LIMESTONE / MARL w/ shell fragments. Dark green to green to white, medium dense, wet Micrite cement is matrix only	
43 – 45.0							
46 – 47.0	S-21	1.1/2.0 55%	11 11 17 21		BG	SILTY SAND, fine to medium grained w/ shell material and fragments. Green and white, medium dense, wet.	
48 – 50.0							

DRILLING CO.: Hardin - Huber, Inc BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW13I SHEET 3 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: Sites 69, 74, & 41
S.O. NO.: 212 BORING NO.: 69GW13I

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
51 – 52.0	S-22	1.0/2.0 50%	6 7 13 15		BG	SILTY SAND, fine grained w/ trace shell material. Green and white, medium dense, wet.	
52 – 53 – 54 – 55.0							
55 – 57.0	S-23	1.0/2.0 50%	6 6 7 9		BG	SILTY SAND, fine grained w/ trace to little shell fragments. Green and white, medium dense, wet.	
57 – 58 – 59 – 60.0							
60 – 61 – 62.0	S-24	NR	9 14 16 26		–	No RECOVERY	
62 – 3 – 4 – 5 – 6 – 7 – 8 – 9 – 0						End of Boring TD: 62.0'	

DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW13I SHEET 4 OF 4

FIELD WELL CONSTRUCTION LOG

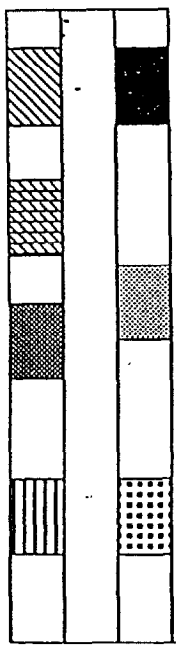
Baker
Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41 DATE: 5-23-
CTO NO.: 212 BORING NO.: 69GW13I
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

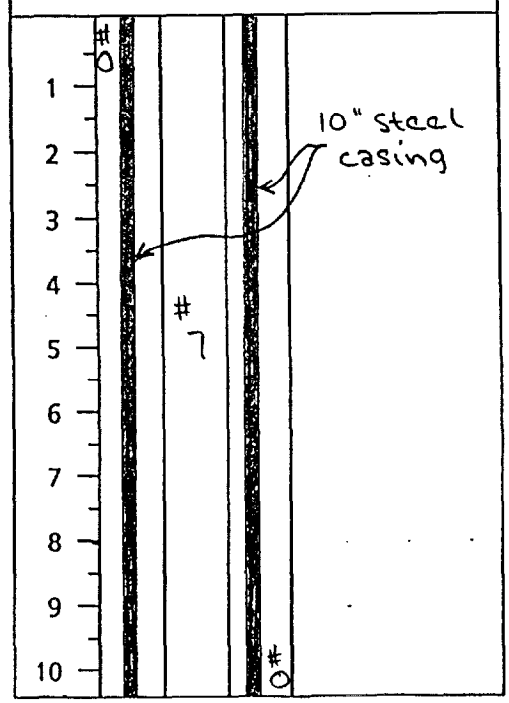
Pay Items			
Item	Quantity	Unit	Remarks
Sand	7 bags		#1 sand
Bentonite pellets	2 buckets		
PVC pipe	62.5'		10' of screen
(1) steel surface protective casing			
(4) bollards and (1) 5x5 cement			
pad			

WELL INFORMATION	DIAM. (INCHES)	TYPE	TOP DEPTH (FT.)	BOTTOM DEPTH (FT.)
Well Casing	2.0	Schedule 40 PVC	+2.5'	50.0' (bgs)
Well Screen	2.0	Schedule 40 PVC 10 Slot	50.0' (bgs)	60.0' (bgs)

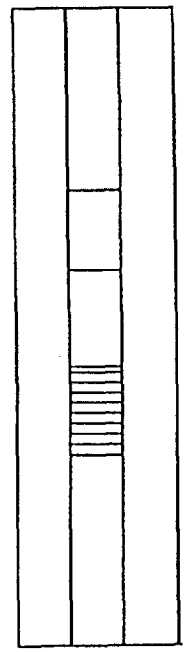
Backfill Key



Well Installation Detail



Well Key



DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J.E. Zimmerman
DRILLER: Chad Chism BORING NO.: 69GW13I SHEET 1 OF 4

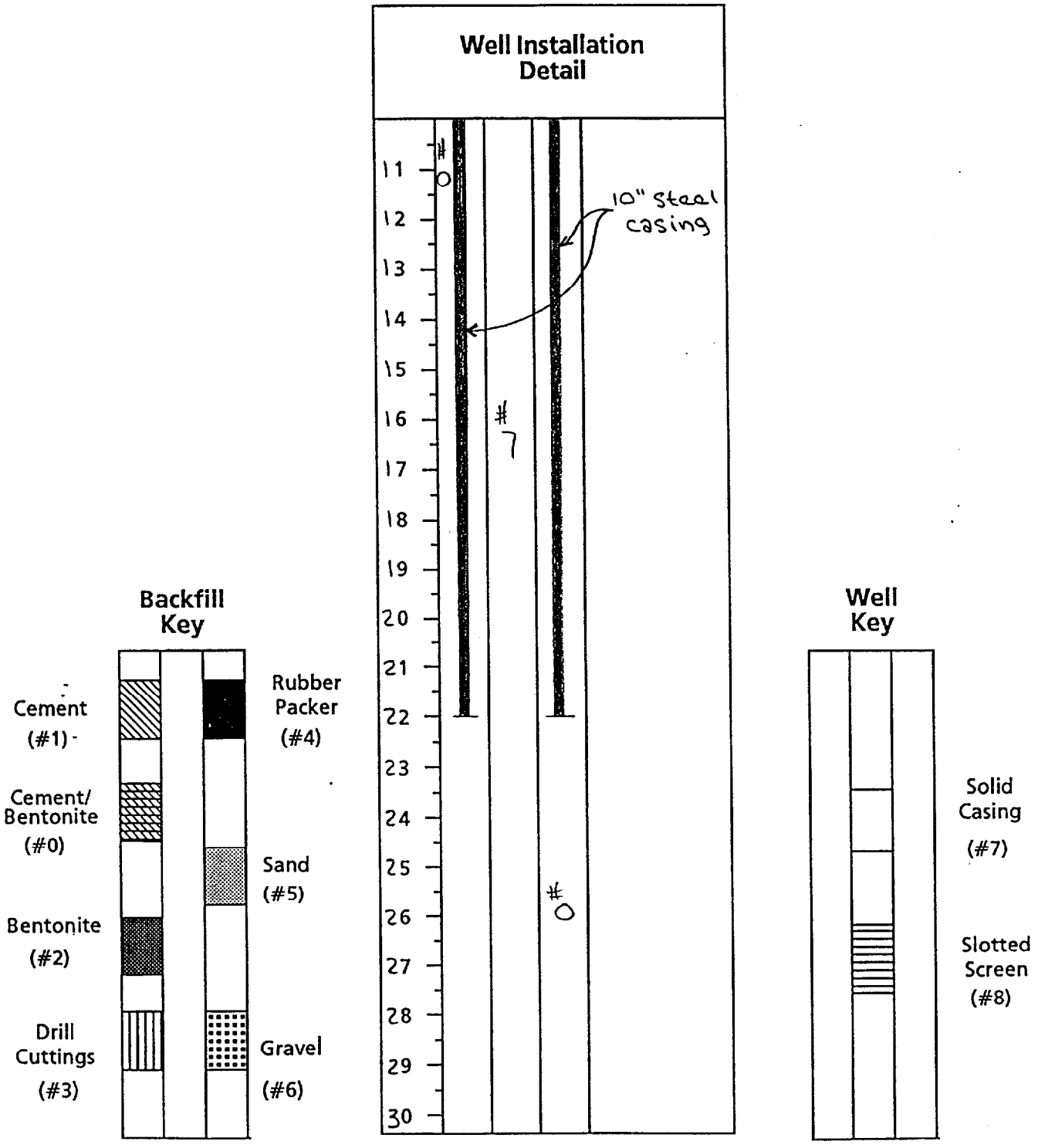
Baker

Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74, & 41

S.O. NO.: 212 BORING NO.: 69GW13I



DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman

DRILLER: Chad Chism BORING NO.: 69GW13I SHEET 2 OF 4

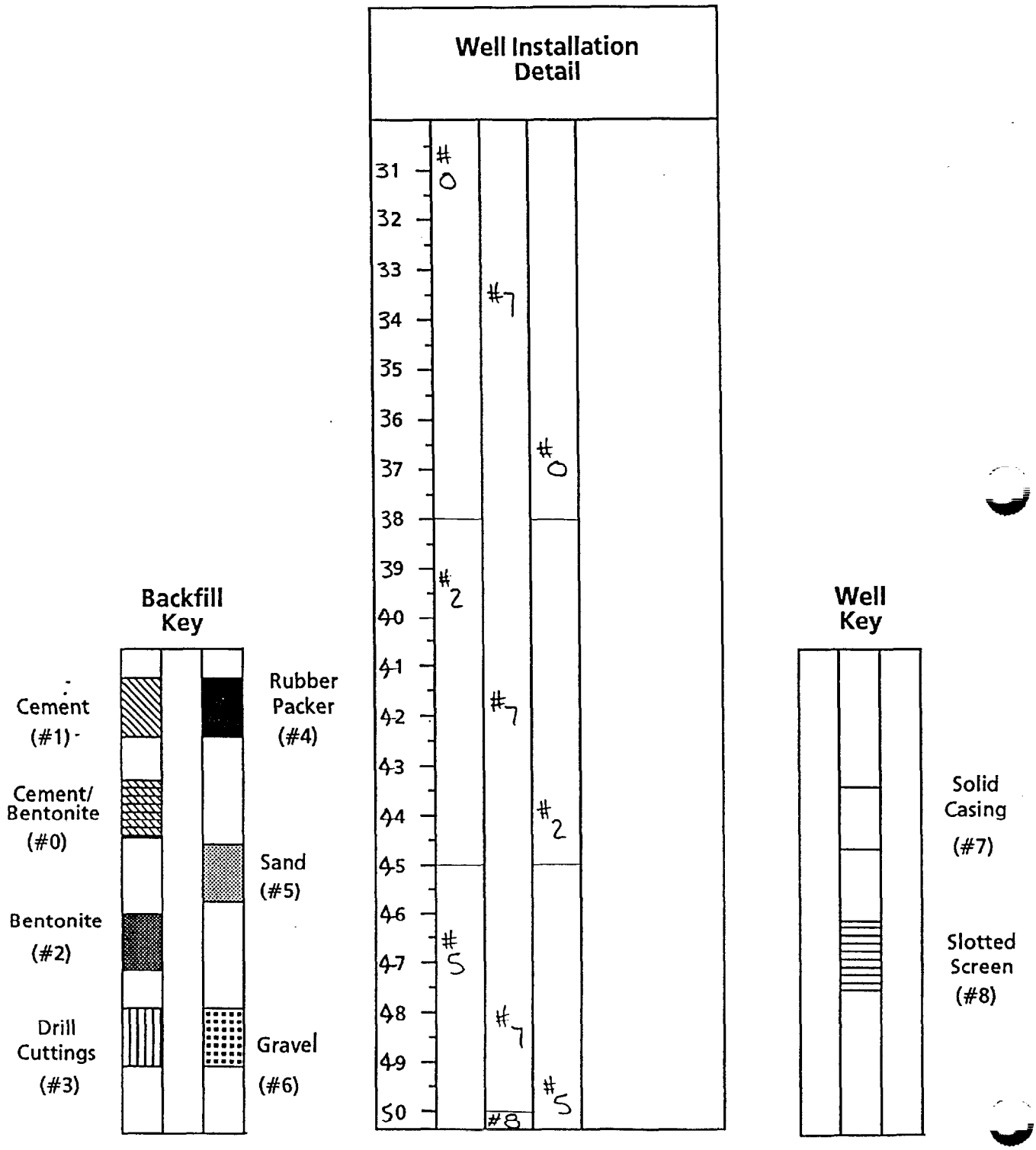
Baker

Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74, & 41

S.O. NO.: 212 BORING NO.: 69GW13I



DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J.E. Zimmerman

DRILLER: Chad Chism BORING NO.: 69GW13I SHEET 3 OF 4

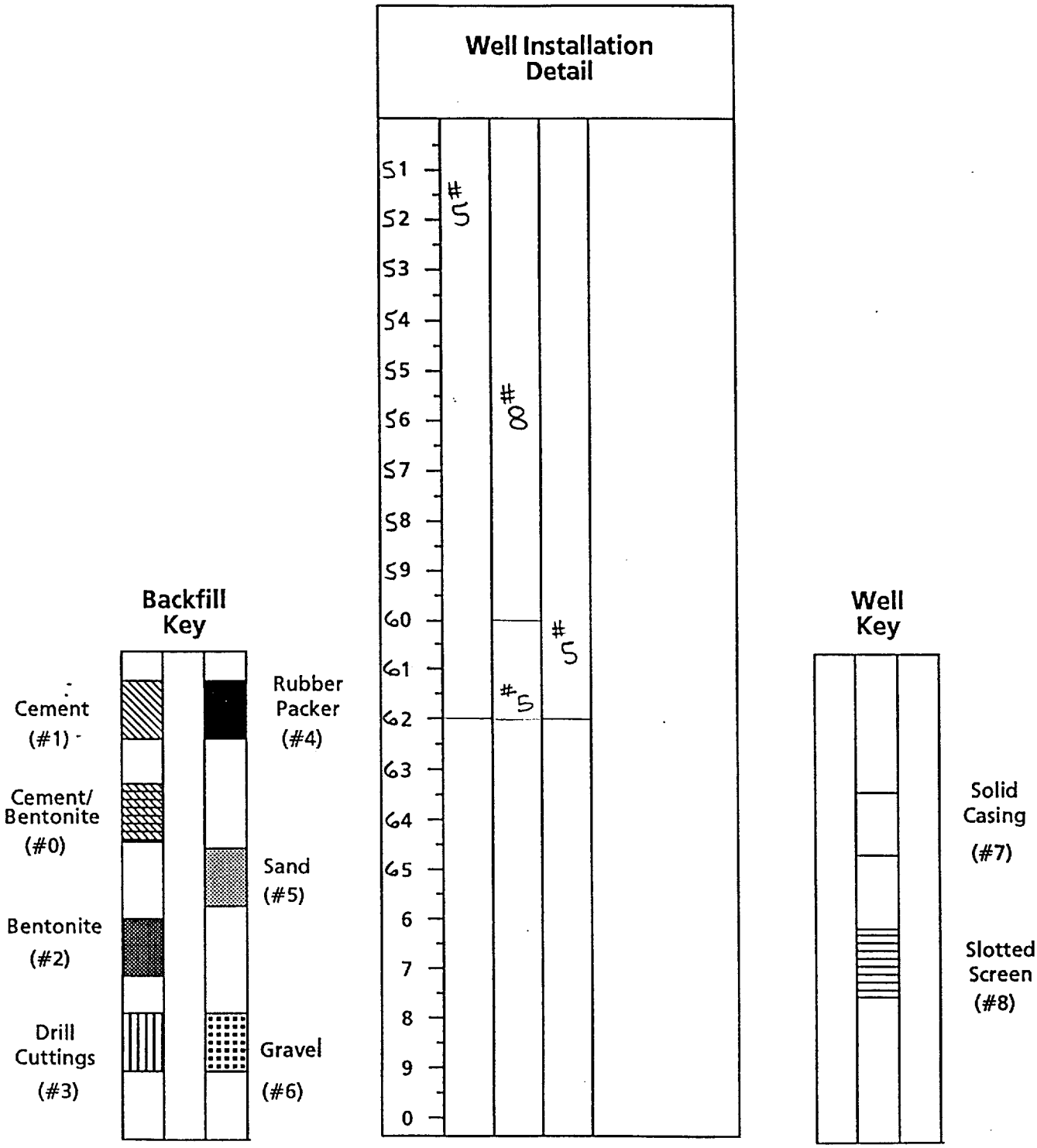
Baker

Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: Sites 69, 74, & 41

S.O. NO.: 212 BORING NO.: 69GW13I



DRILLING CO.: Hardin-Huber, Inc BAKER REP.: J. E. Zimmerman

DRILLER: Chad Chism BORING NO.: 69GW13I SHEET 4 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-GW14
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING:

RIG: MOBILE

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID								
LENGTH	2.0'								
TYPE	STD								
HAMMER WT.	140#								
FALL	30"								
STICK UP	2½'								

REMARKS:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1	SS S-1	1.3' 65%	1 2 2 2		0.1 (BG)	SILTY SAND: FINE GRAINED, DARK BROWN	
2						SAND: FINE GRAINED, TRACE SILT, LOOSE, BROWN, DAMP	
3	SS S-2	1.3' 65%	3 3 4 5		0.1 (BG)	SAND: FINE GRAINED, TRACE SILT, LOOSE, BROWN, MOIST TO WET.	
4							
5	SS S-3	1.8' 90%	4 5 5 6		0.1 (BG)	SAND: FINE GRAINED, TRACE SILT, MEDIUM DENSE, LIGHT GRAY, WET	
6							
7	SS S-4	1.9' 95%	2 2 2 3		0.1 (BG)	SAND: FINE TO MEDIUM GRAINED, TRACE SILT, LITTLE CLAY (AT BOTTOM), LOOSE TO SOFT, LIGHT BROWN / GRAY, WET TO MOIST	
8							
9	SS S-5	2.0' 100%	1 1 1 1		0.1 (BG)	CLAY: LITTLE TO SOME FINE GRAINED SAND, TRACE SILT, SOFT TO LOOSE, GRAY MOIST	
10							

Match to Sheet 2

DRILLING CO.: HARDIN-HUGER, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14 SHEET 1 OF 2

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-GW14

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
11	SS	1.8'	1 2		0.1	CLAY: TRACE TO LITTLE SILT, VERY SOFT, GRAY, MOIST	
	S-6	90%	1 2		(BG)		
12	SS	1.8'	1 1		0.1	SAME	
13	S-7	90%	2 1		(BG)		
14						BOTTOM OF BORING AT 14.0'	
15							
16							
17							
18							
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14 SHEET 2 OF 2

FIELD WELL CONSTRUCTION LOG

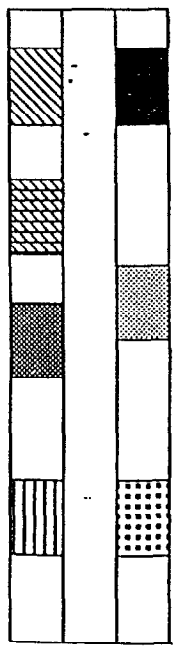
Baker
Baker Environmental, Inc

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE DATE: 12/17/94
CTO NO.: 212 BORING NO.: 69-GW14
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

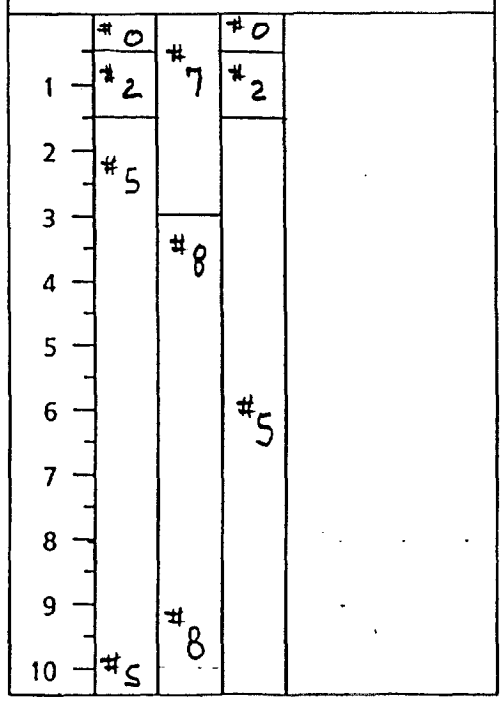
Pay Items			
Item	Quantity	Unit	Remarks

WELL INFORMATION	DIAM. (INCHES)	TYPE	TOP DEPTH (FT.)	BOTTOM DEPTH (FT.)
Well Casing	—	—	—	—
Well Screen	2"	PVC	3.0	13.0

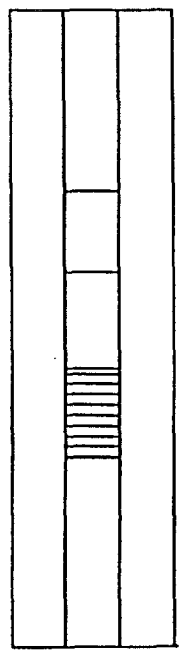
Backfill Key



Well Installation Detail



Well Key



DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14 SHEET 1 OF 2

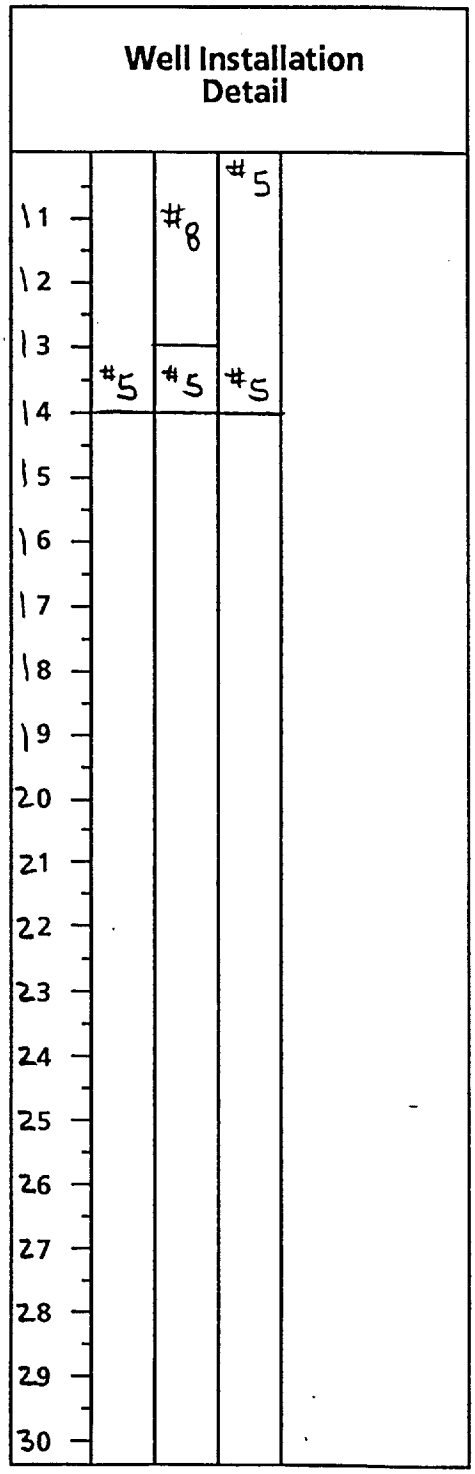
Baker

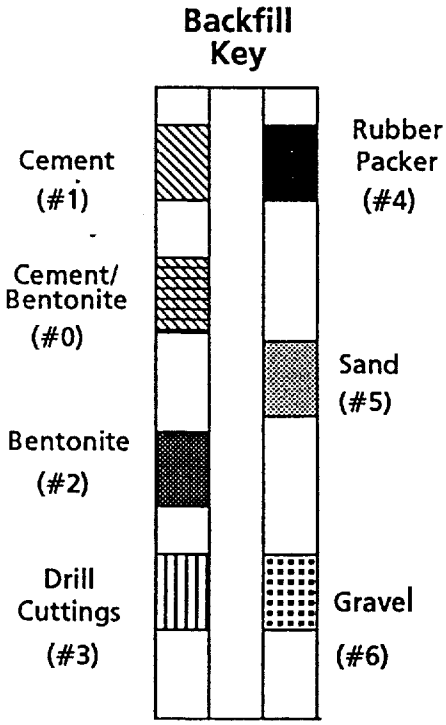
Baker Environmental, Inc.

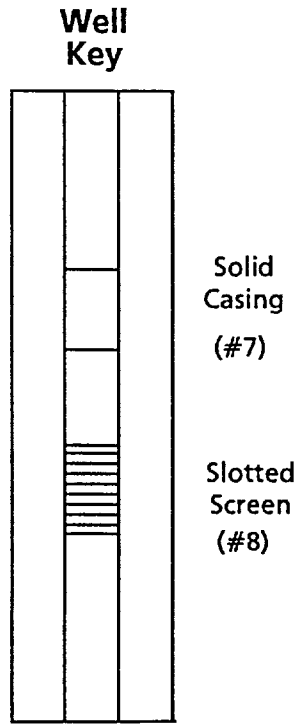
FIELD WELL CONSTRUCTION LOG

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC

S.O. NO.: 62470-212 BORING NO.: 69-GW14







DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J. E. ZIMMERMAN

DRILLER: JAY CORRAN BORING NO.: 69-GW14 SHEET 2 OF 2

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69-GW14 I1

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
	SS	2.0'	1 1		0.1	CLAY: TRACE TO LITTLE SILT, VERY SOFT, GRAY, MOIST	
11	S-6	(100)%	2 2		(BG)		
12						* 6" ϕ CASING (STEEL) SET AT 12' AND GROUTED	
13							
14							
15						NO SAMPLING UNTIL 30.0'	
16							
17							
18						(FROM 69-GW14DW LOG)	
19							
20							
21							
22							
23							
24							
25							
26							
27							
28							
29							
30							

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14 IW SHEET 2 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69-GW14IW

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
31	SS S-7	2.0' 100%	3 3 3 3		0.1 (BG)	SANDY CLAY: FINE GRAINED, TRACE SILT, MEDIUM STIFF, GREENISH GRAY, MOIST	
32							
33							
34							
35	SS S-8	1.0' 50%	7 15 18 22		0.1 (BG)	LIMESTONE/MARL/SHELL FRAGMENTS, MICRITE CEMENT IS MATRIX, DENSE, DARK GREEN/GREEN/WHITE, WET	
36							
37							
38							
39							
40	SS S-9	1.3' 65%	19 15 16 15		0.1 (BG)	SAME	
41							
42							
43							
44							
45	SS S-10	1.8' 90%	6 8 17 20		0.1 (BG)	SILTY SAND: FINE TO MEDIUM GRAINED, TRACE TO SOME SHELL MATERIAL, MEDIUM DENSE, GREEN/WHITE, WET	
46							
47							
48							
49							
50							

DRILLING CO.: HARDIN-HUGER, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14IW SHEET 3 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-GW14 I

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
51	SS S-11	1.8' 90%	8 16 22 25		0.1 (BG)	SILTY SAND: FINE GRAINED, DENSE, GREEN, WET	
52							
53							
54							
55	SS S-12	1.8' 90%	7 23 50/5"		0.1 (BG)	SILTY SAND: FINE GRAINED, TRACE TO LITTLE SHELL FRAGMENTS (BOTTOM 1/2 OF SAMPLE), DENSE, GREEN/WHITE, WET	
56							
57							
58							
59							
60	SS S-13	1.6' 80%	20 40 41 50/3"		0.1 (BG)	SAME	
61							
62						BOTTOM OF BORING AT 62.0'	
63							
64							
65							
66							
67							
68							
69							
70							

DRILLING CO.: HARDIN-HUGGER, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14 I W SHEET 4 OF 4

FIELD WELL CONSTRUCTION LOG

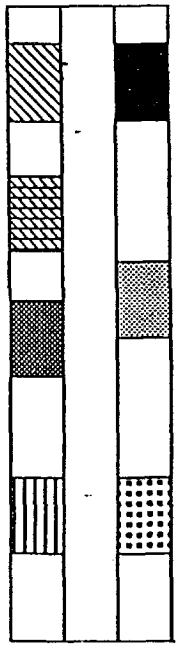
Baker
Baker Environmental, Inc

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE DATE: 12/17/94
CTO NO.: 212 BORING NO.: 69-GW14IW
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

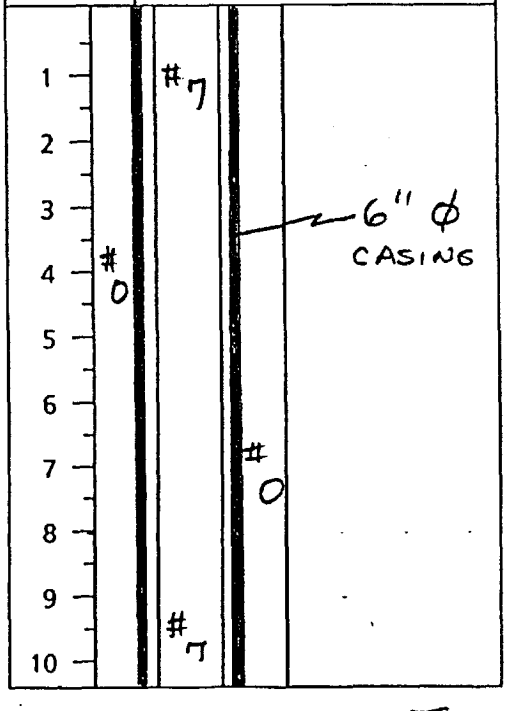
Pay Items			
Item	Quantity	Unit	Remarks

WELL INFORMATION	DIAM. (INCHES)	TYPE	TOP DEPTH (FT.)	BOTTOM DEPTH (FT.)
Well Casing	6"	STEEL	0.0	12.0
Well Screen	2"	PVC	45.0	60.0

Backfill Key



Well Installation Detail



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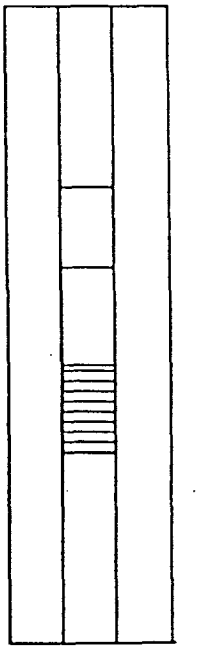


DRILLING CO.: HARDIN-HUGER, INC BAKER REP.: J.E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14IW SHEET 1 OF 4

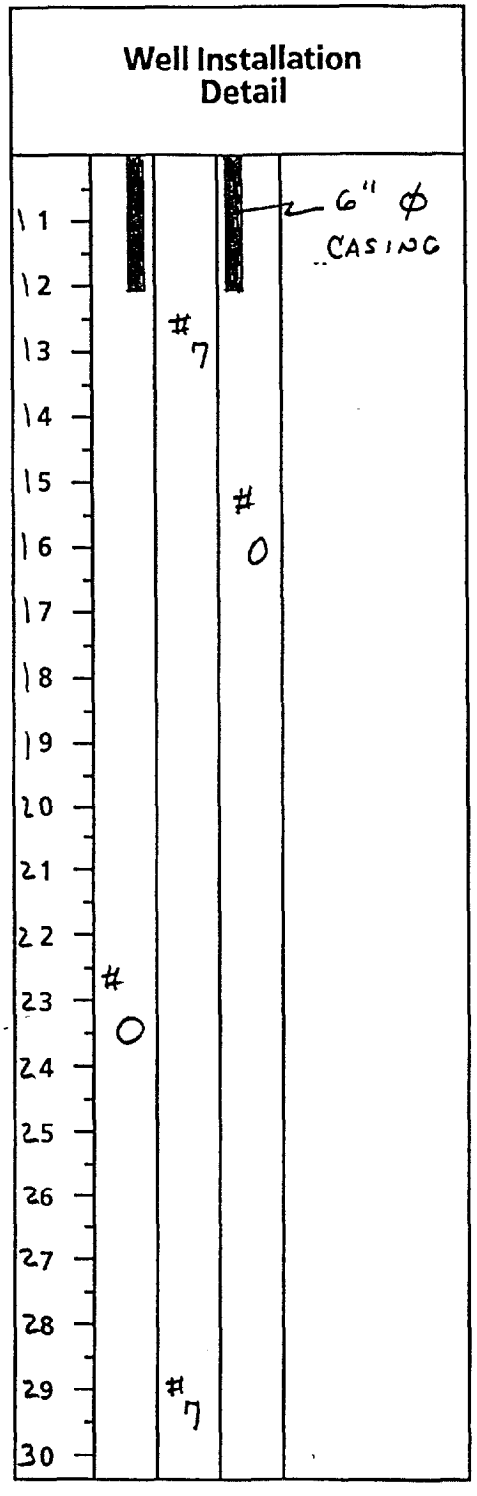
Baker

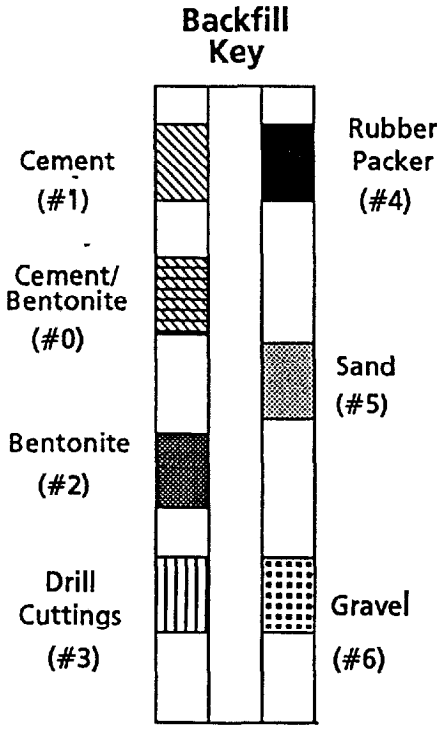
Baker Environmental, Inc

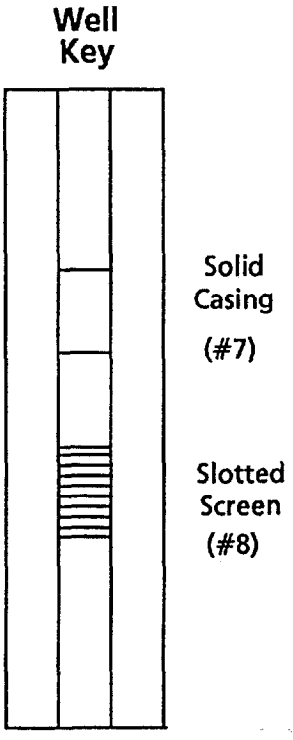
FIELD WELL CONSTRUCTION LOG

PROJECT: RI OU No. 4 MCB Camp Lejeune, NC

S.O. NO.: 62470-212 BORING NO.: 69-GW14IW







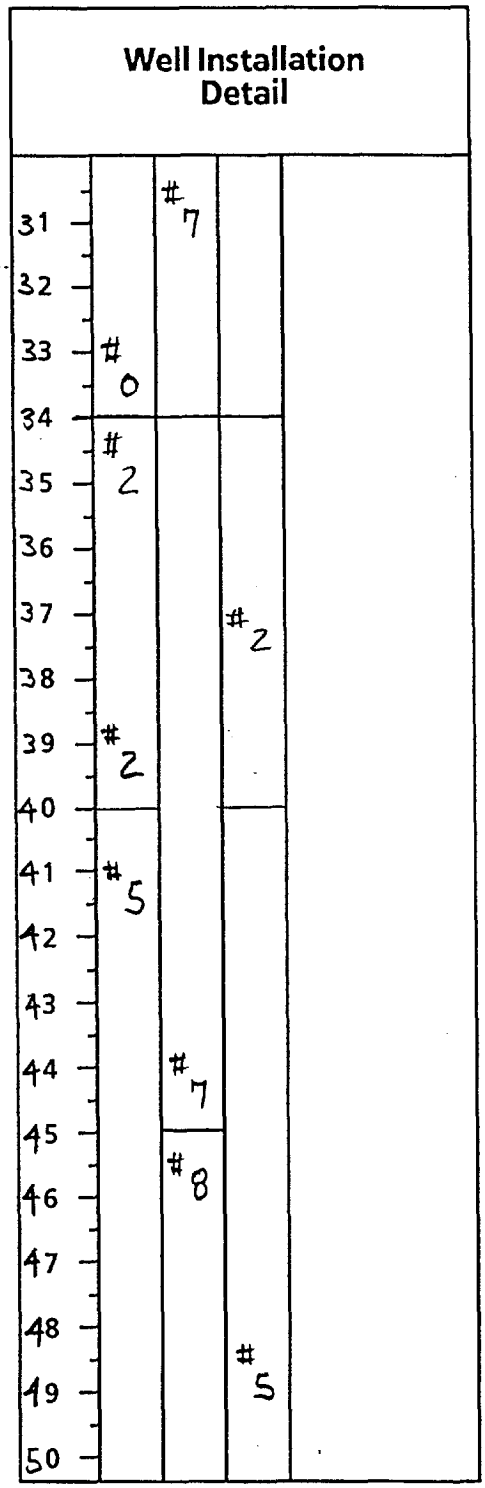
DRILLING CO.: Harding-Hoeber, Inc BAKER REP.: J. E. Zimmerman

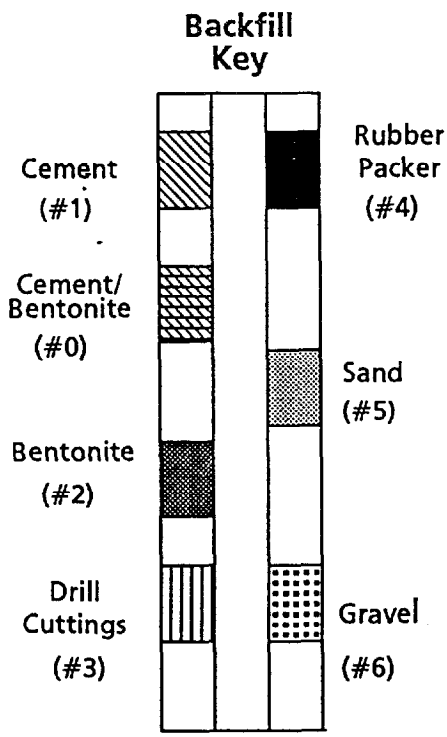
DRILLER: Jay Corran BORING NO.: 69-GW14IW SHEET 2 OF 4

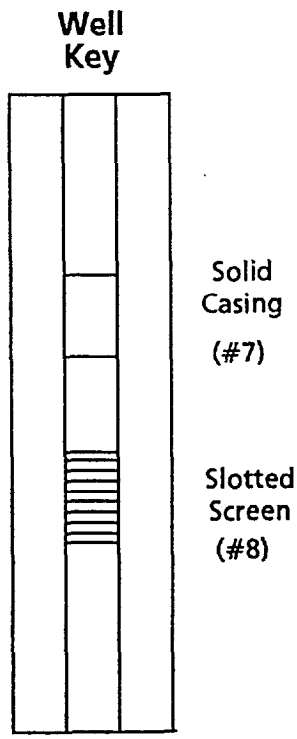
Baker
Baker Environmental, Inc.

FIELD WELL CONSTRUCTION LOG

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-GW14IW







DRILLING CO.: HARDIN-HUGER, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14IW SHEET 3 OF 4

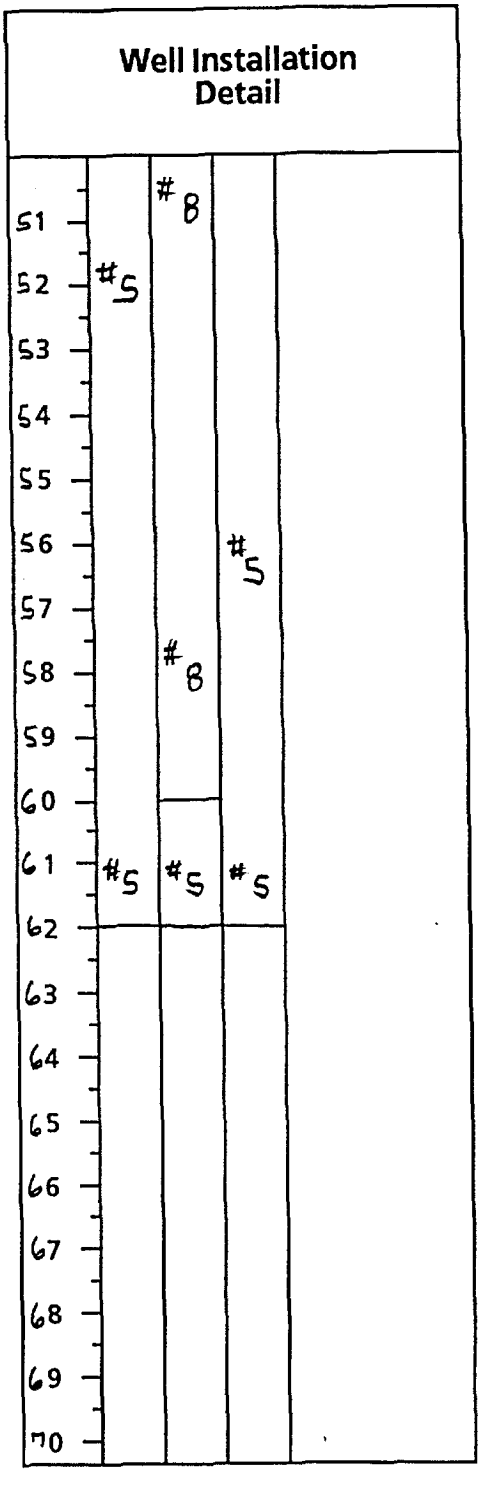
Baker

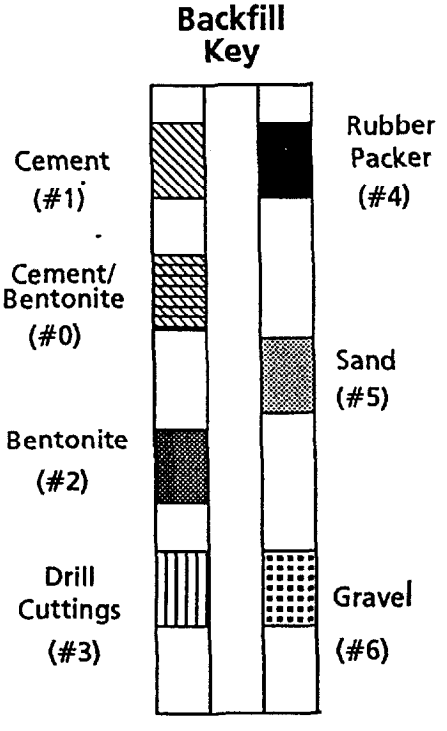
Baker Environmental, Inc

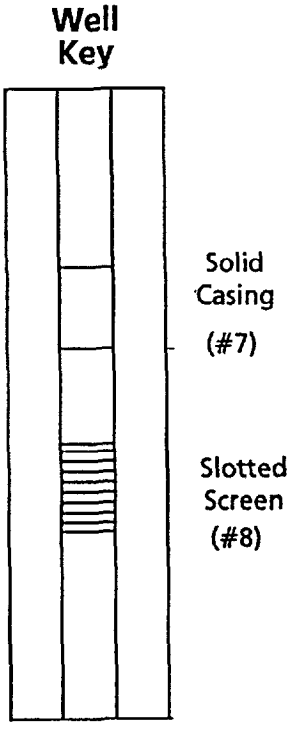
FIELD WELL CONSTRUCTION LOG

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC

S.O. NO.: 62470-212 BORING NO.: 69-GW14IW







DRILLING CO.: HARDIN-HUNER, INC. BAKER REP.: J.E. ZIMMERMAN

DRILLER: JAY CORRAN BORING NO.: 69-GW14IW SHEET 4 OF 4

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI - OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-GW14DW
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF PVC CASING:

RIG: MOBILE

	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	1 3/8" ID								
LENGTH	2.0'								
TYPE	STD								
HAMMER WT.	140#								
FALL	30"								
STICK UP	2 1/2"								

REMARKS:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1, 2, 3, 4						NO SAMPLE	
5, 6	SS S-1	1.4'	6 5 4 4		0.1 (BG)	SAND: FINE GRAINED, TRACE SILT, LOOSE TO MEDIUM DENSE, LIGHT GRAY, DAMP TO MOIST.	
7, 8	SS S-2	1.5 75%	3 2 2 1		0.1 (BG)	SAND: FINE TO MEDIUM GRAINED, TRACE SILT, LITTLE CLAY (AT BOTTOM), LOOSE TO SOFT, LIGHT BROWN TO GRAY, WET TO MOIST	
9, 10	SS S-3	2.0 100%	1/8" 1/8" 1/8"		0.1 (BG)	CLAY: LITTLE TO SOME FINE GRAINED SAND, TRACE SILT, SOFT TO LOOSE, GRAY, MOIST.	

Match to Sheet 2

DRILLING CO.: HARDIN HUBER, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 1 OF 7

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69-GW14DW

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
11	SS S-4	2.0' 100%	3 2 2 2		0.1 (BG)	CLAY: TRACE TO LITTLE SILT, VERY SOFT, GRAY, MOIST	
12						* 10" ϕ CASING (STEEL) SET AT 12.0' AND GROUTED	
13							
14							
15	SS S-5	2.0' 100%	2 2 2 2		0.2 (BG)	CLAY: TRACE TO LITTLE SILT, SOFT TO MEDIUM STIFF, GREENISH GRAY, MOIST	
16							
17							
18							
19							
20	SS S-6	2.0' 100%	3 3 4 4		0.2 (BG)	SANDY CLAY: FINE GRAINED, TRACE SILT, SOFT TO MEDIUM STIFF, GREENISH GRAY, MOIST	
21							
22							
23							
24							
25	SS S-7	2.0' 100%	1 2 2 2		0.2 (BG)	SAME	
26							
27							
28							
29							
30							

DRILLING CO.: HARDIN - HUBER, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 2 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE
S.O. NO.: 62470-212 BORING NO.: 69-GW14DW

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
31	SS S-8	2.0 100%	2 1 2 2		0.2 (BG)	SANDY CLAY: FINE GRAINED, TRACE SILT, SOFT TO MEDIUM STIFF, GREENISH GRAY, MOIST	
32							
33							
34							
35	SS S-9	2.0' 100%	5 16 20 23		0.2 (BG)	LIMESTONE / MARL / SHELL FRAGMENTS THROUGHOUT. MICRITE CEMENT MATRIX, DENSE, DARK GREEN / GREEN / WHITE, WET.	
36							
37							
38							
39							
40	SS S-10	2.0' 100%	9 11 12 11		0.2 (BG)	SAME (MEDIUM DENSE)	
41							
42							
43							
44							
45	SS S-11	1.8'	7 12 14 18		0.2 (BG)	SILTY SAND: FINE TO MEDIUM GRAINED, TRACE TO SOME SHELL FRAGMENTS, MEDIUM DENSE, GREEN / WHITE, WET.	
46							
47							
48							
49							
50							

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 3 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69-GW14DW

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
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DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
51	SS S-12	1.8'	7 18 19 20		0.2 (BG)	SILTY SAND: FINE GRAINED, DENSE, GREEN, WET	
52							
53							
54							
55	SS S-13	1.9'	18 23 24 50/3"		0.2 (BG)	SILTY SAND: FINE GRAINED, TRACE TO LITTLE SHELL FRAGMENTS (BOTTOM 1/2 OF SAMPLE), DENSE, GREEN/WHITE, WET	
56							
57							
58							
59							
60	SS S-14		25 50/4"		0.2 (BG)	SILTY SAND: FINE GRAINED, TRACE SHELL FRAGMENTS, VERY DENSE, GREEN/WHITE, WET.	
61							
62							
63							
64							
65	SS S-15		18 28 50/4"		0.2 (BG)	SILTY SAND: FINE GRAINED, SOME SHELL FRAGMENTS, VERY DENSE, GREEN/WHITE, WET	
66							
67							
68							
69							
70							

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 4 OF 7

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-GW14DW

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
71	SS S-16	1.0' 100%	42 50/4"		0.2 (BG)	SAND: FINE TO MEDIUM GRAINED, LITTLE SILT, SHELL FRAGMENTS AND PIECES OF FRACTURED FOSSILIFEROUS LIMESTONE, VERY DENSE, GREEN/LIGHT GRAY/WHITE, WET	
72							
73						* 6" ϕ CASING (STEEL) SET TO 72' AND GROUTED.	
74							
75	SS S-17	NR	100/5"		—	NO RECOVERY	
76							
77							
78							
79							
80	SS S-18	0.9 98%	35 50/5"		0.3 (BG)	SAND: FINE GRAINED, LITTLE SILT, VERY DENSE, GREENISH GRAY, WET.	
81							
82							
83							
84							
85	SS S-19	0.9 100%	32 50/3"		0.3 (BG)	SAND: FINE GRAINED, TRACE SILT, VERY DENSE, GREENISH GRAY, WET.	
86							
87							
88							
89							
90							

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 5 OF 7

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470-212 BORING NO.: 69-GW14J

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatic
91	SS S-20	NR	38 50/3"		—	NO RECOVERY	
92							
93							
94							
95	SS S-21	0.3' 36%	40 50/4"		0.3 (BG)	SAND: FINE GRAINED, TRACE SILT, VERY DENSE, GREENISH GRAY, WET	
96							
97							
98							
99							
100	SS S-22	1.0' 100%	100/5"		0.3 (BG)	SAME	
101							
102							
103							
104							
105	SS S-23	0.8' 87%	100/7"		0.3 (BG)	SAME	
106							
107							
108							
109							
110							

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 6 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC
S.O. NO.: 62470 - 212 BORING NO.: 69-GW14DW

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
111	SS S-24	1.1' 100%	28 50/5"		0.3 (BG)	SAND; FINE GRAINED, TRACE SILT, VERY DENSE, GREENISH GRAY, WET	
112							
113							
114							
115	SS S-25	1.6' 100%	28 34 50/4"		0.3 (BG)	SAND; FINE GRAINED, TRACE SILT, VERY DENSE, GREEN, WET.	
116							
117							
118							
119							
120	SS S-26	1.6' 100%	32 50/5"		0.2 (BG)	SAME	
121							
122							
123							
124							
125	SS S-27	1.5' 100%	34 50/5"		0.2 (BG)	SAME	
126							
127						BOTTOM OF BORING @ 127.0'	
128							
129							
130							

DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 7 OF 7

FIELD WELL CONSTRUCTION LOG

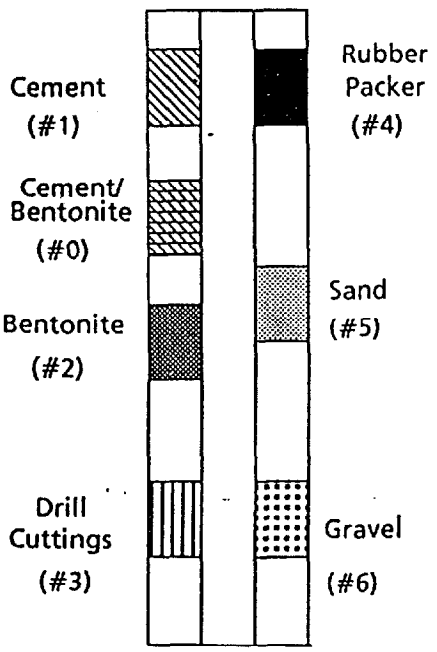
Baker
Baker Environmental, Inc.

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE DATE: 12/16/94
CTO NO.: 212 BORING NO.: 69-GW14DW
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

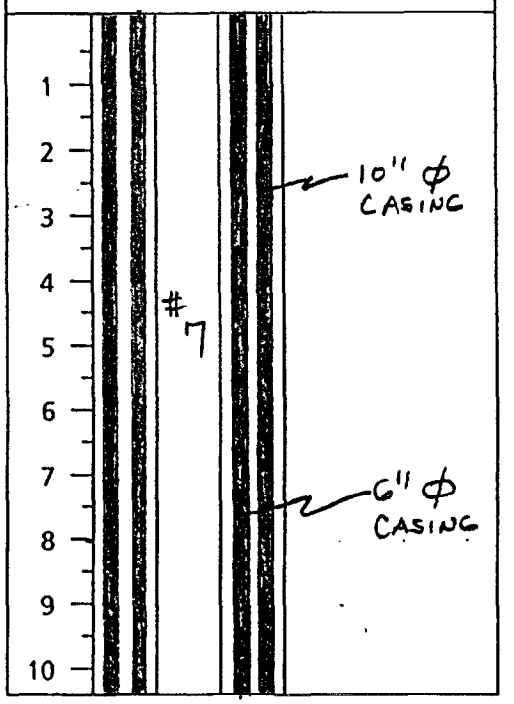
Pay Items			
Item	Quantity	Unit	Remarks

WELL INFORMATION	DIAM. (INCHES)	TYPE	TOP DEPTH (FT.)	BOTTOM DEPTH (FT.)
Well Casing	10"/6"	STEEL	0.0/0.0	12'/75'
Well Screen	2" ID	PVC	110.0'	125'

Backfill Key



Well Installation Detail



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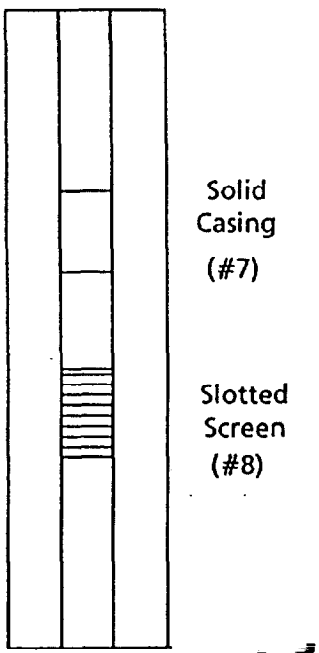


DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 1 OF 1

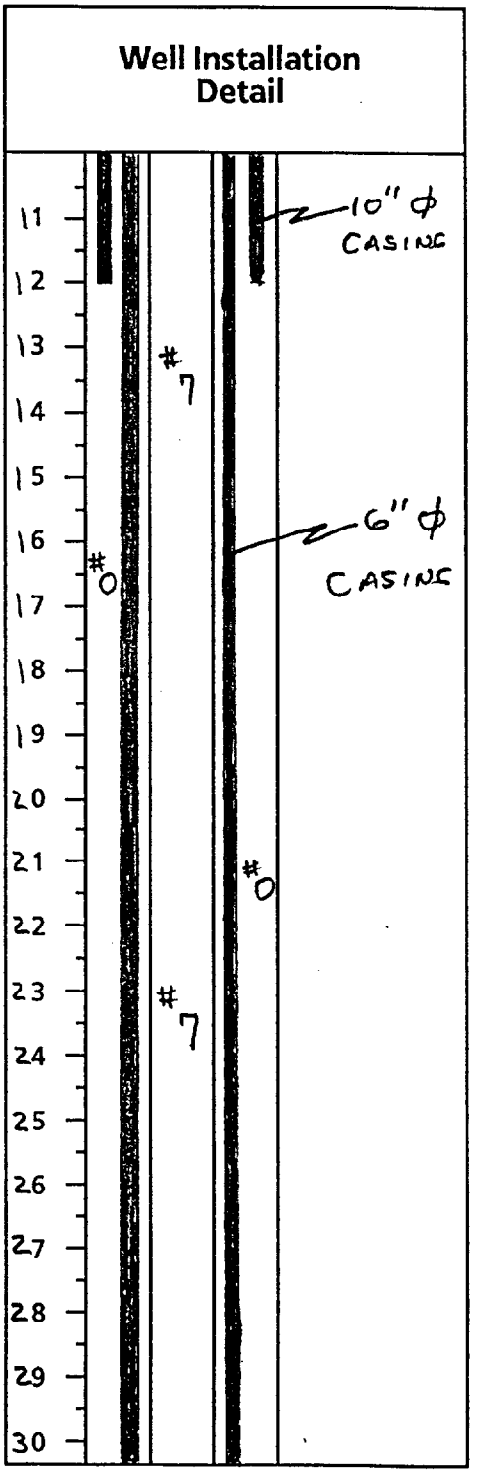
Baker

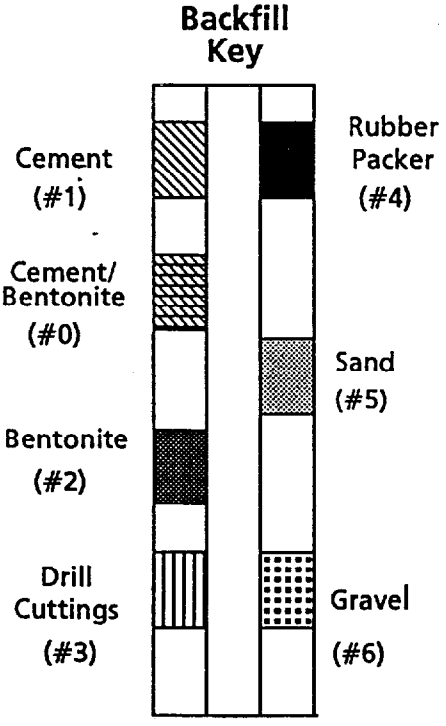
Baker Environmental, Inc

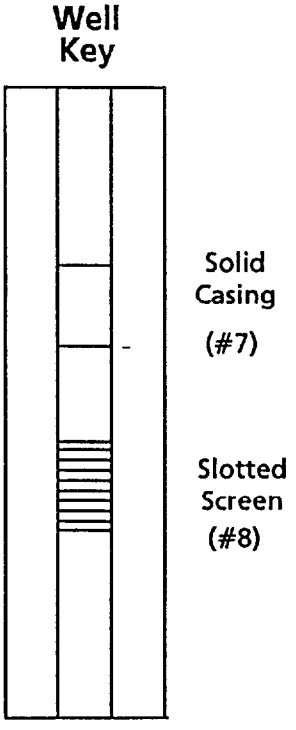
FIELD WELL CONSTRUCTION LOG

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC

S.O. NO.: 62470-212 BORING NO.: 69-GW14DW







DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J.E. ZIMMERMAN

DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 2 OF 7

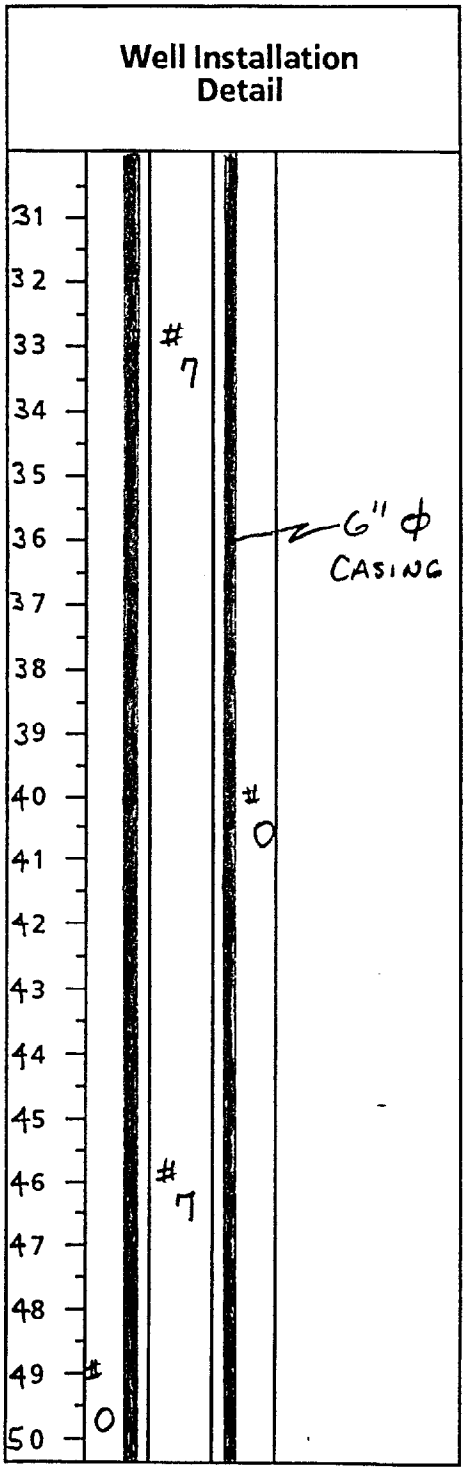
Baker

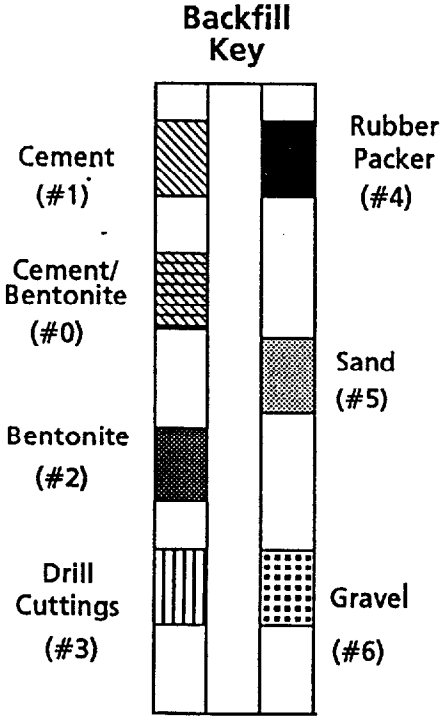
Baker Environmental, Inc

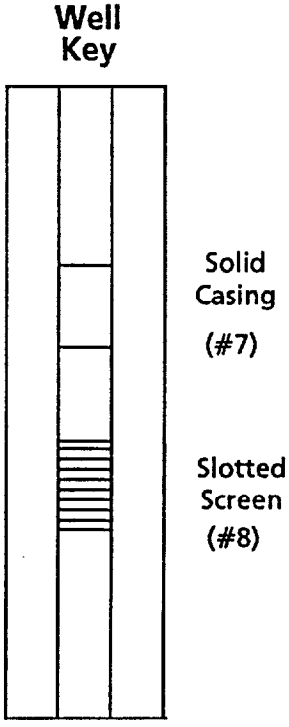
FIELD WELL CONSTRUCTION LOG

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC

S.O. NO.: 62470-212 BORING NO.: 69-GW14DW







DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J. E. ZIMMERMAN

DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 3 OF 7

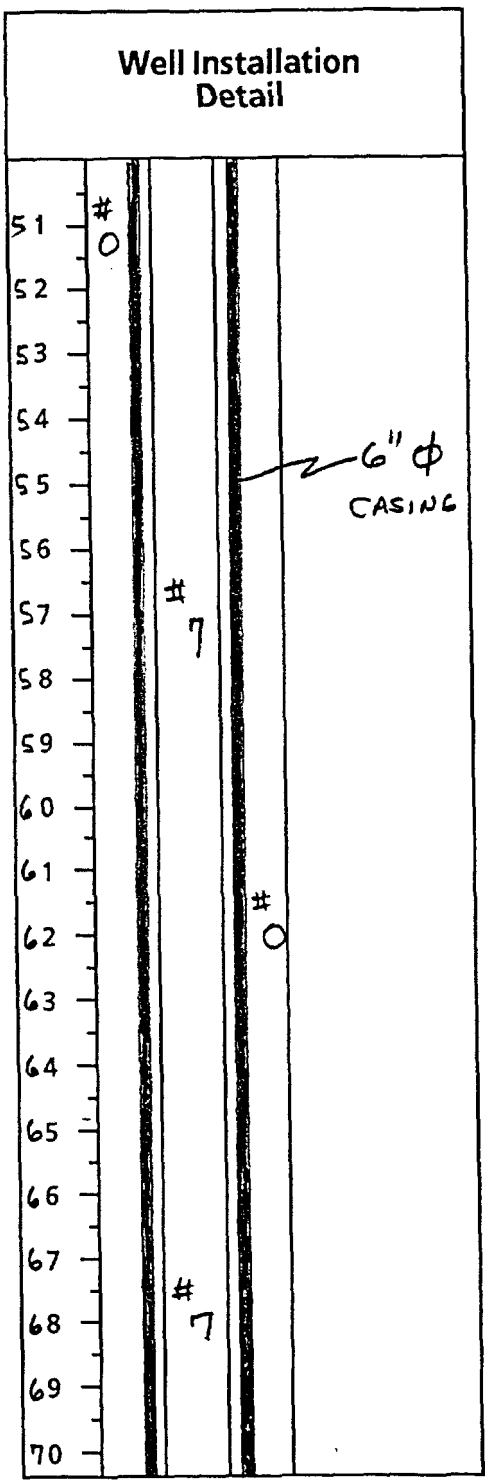
Baker

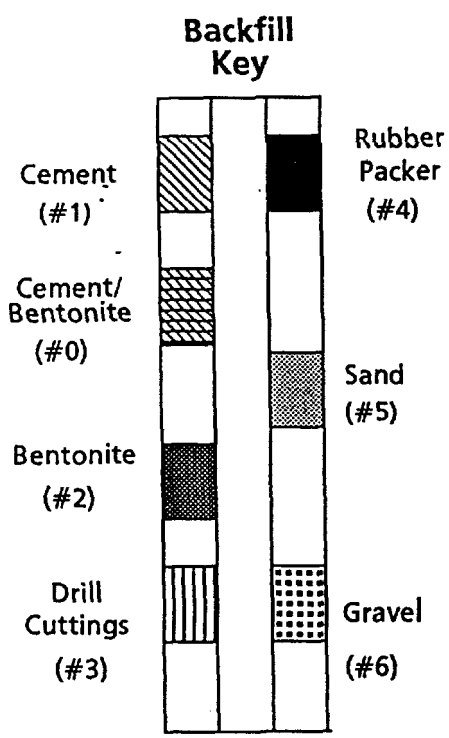
Baker Environmental, Inc.

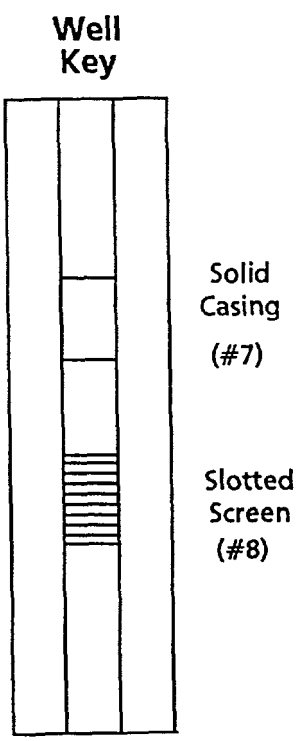
FIELD WELL CONSTRUCTION LOG

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC

S.O. NO.: 62470-212 BORING NO.: 69-GW14DW







DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J. E. ZIMMERMAN

DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 4 OF 7

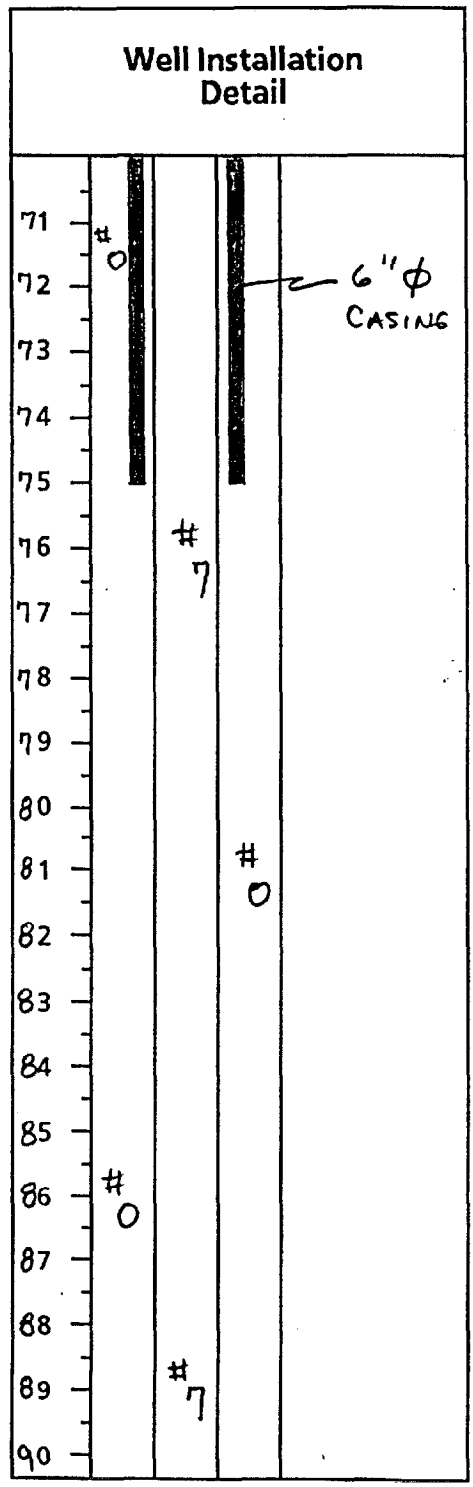
Baker

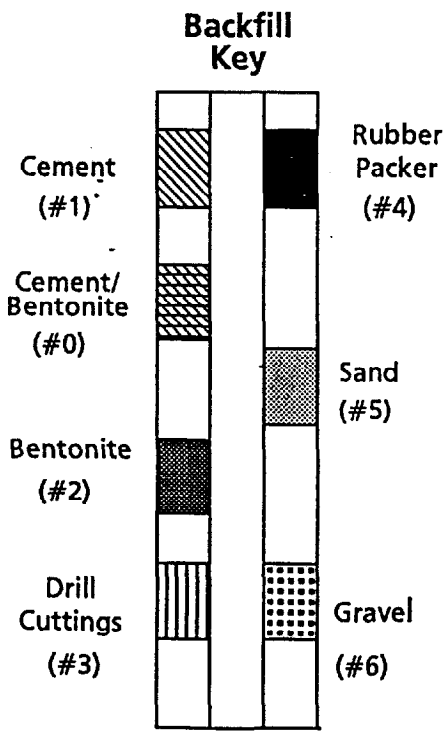
Baker Environmental, Inc.

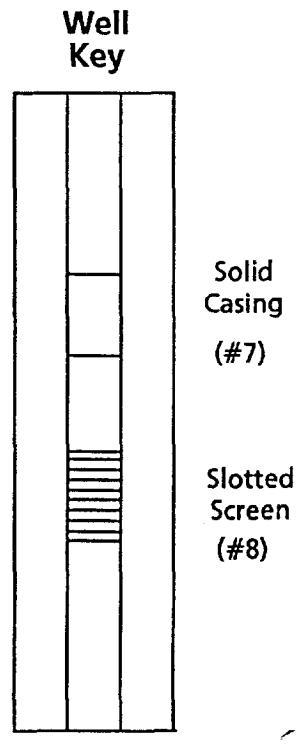
FIELD WELL CONSTRUCTION LOG

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC

S.O. NO.: 62470-212 BORING NO.: 69-GW14DW







DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J.E. ZIMMERMAN

DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 5 OF 7

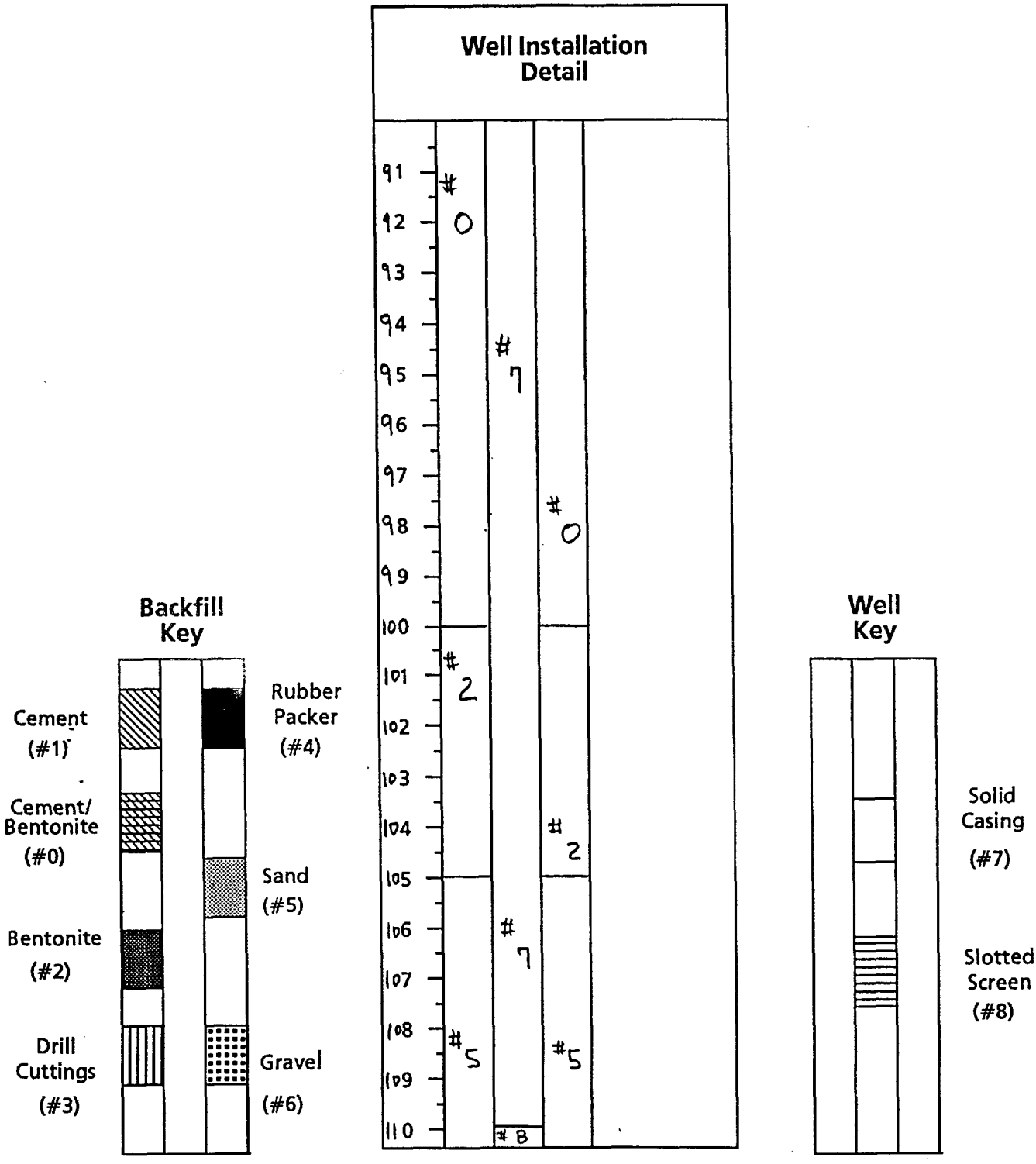
Baker

Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE, NC

S.O. NO.: 62470-212 BORING NO.: 69-GW14DW



DRILLING CO.: HARDIN-HUBER, INC. BAKER REP.: J. E. ZIMMERMAN

DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 6 OF 7

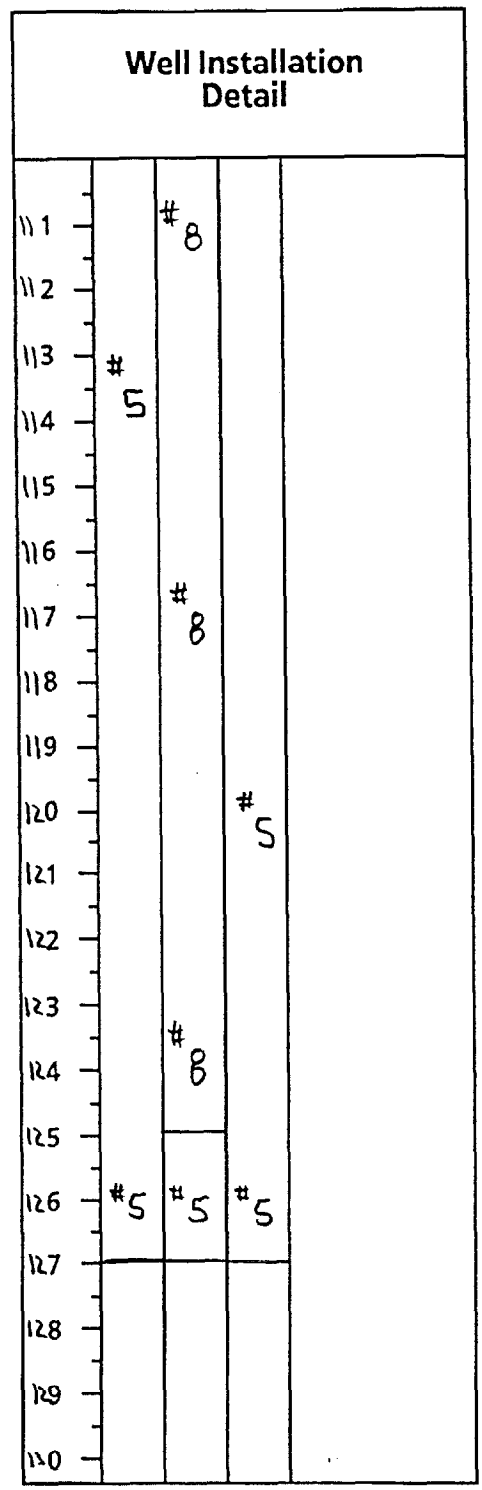
Baker

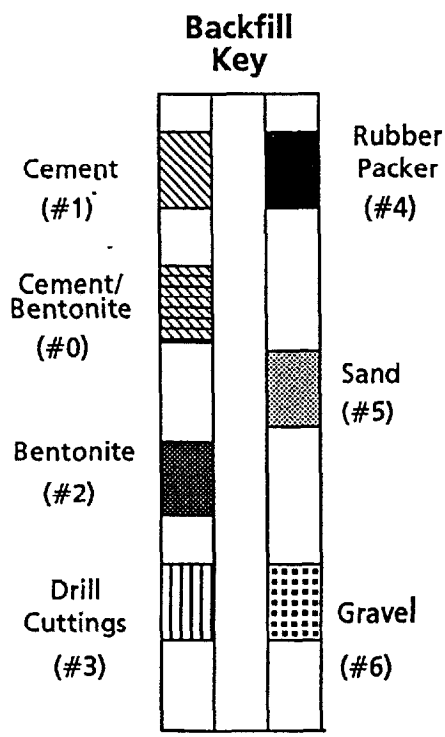
Baker Environmental, Inc

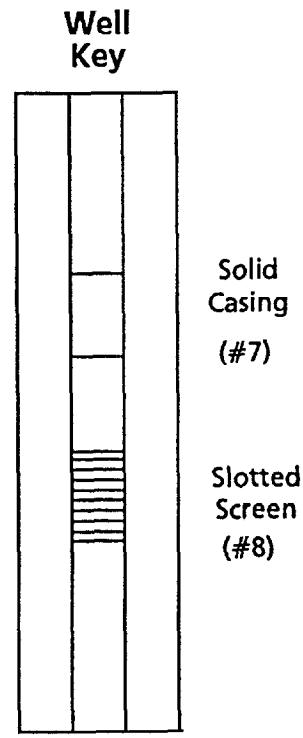
FIELD WELL CONSTRUCTION LOG

PROJECT: RI OU No. 4 MCB CAMP LEJEUNE

S.O. NO.: 62470-212 BORING NO.: 69-GW14DW







DRILLING CO.: HARDIN-HUGER, INC. BAKER REP.: J.E. ZIMMERMAN

DRILLER: JAY CORRAN BORING NO.: 69-GW14DW SHEET 1 OF 1

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 69-GW15

SHEET: 1 OF 1

PROJECT NUMBER: 62470-212
PROJECT NAME: SITE 69 - CHEMICAL STORAGE AREA
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARROTT-WOLFF, INC.
RIG TYPE & NUMBER: ATV (TRACK) RIG
DRILLING METHOD: AUGERS
WEATHER: SUNNY, WARM, HUMID
GEOLOGIST: E.J. KLEINKAUF
ENV. SCIENTIST: -
DATE BEGUN: 3/23/95 DATE COMPLETED: 3/23/95

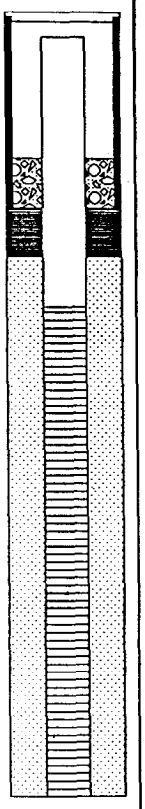
GROUND SURFACE ELEVATION: 35.70' msl
TOP OF PVC CASING ELEVATION: 16.07' msl

WELL DETAILS (FT)

STICKUP:	1.7
LENGTH OF RISER (2"I.D.):	3.0
LENGTH OF SCREEN (2"I.D.):	10.0
THICKNESS OF GROUT:	1.0
THICKNESS OF SEAL:	1.0
THICKNESS OF SAND PACK:	11.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
	4.0										4.0
39.00	3.0										3.0
38.00	2.0										2.0
37.00	1.0										1.0
36.00	0.0										0.0
35.00	1.0									No samples collected. Augered to 13'. Refer to well 69-GW15IW log for lithology.	1.0
34.00	2.0										2.0
33.00	3.0										3.0
32.00	4.0										4.0
31.00	5.0										5.0
30.00	6.0										6.0
29.00	7.0										7.0
28.00	8.0										8.0
27.00	9.0										9.0
26.00	10.0										10.0
25.00	11.0										11.0
24.00	12.0										12.0
23.00	13.0									BOTTOM OF BOREHOLE @ 13.0'	13.0
22.00	14.0									NOTE: 1) Groundwater encountered @ 3.0' during drilling	14.0
21.00	15.0										15.0
20.00	16.0										16.0
19.00	17.0										17.0
18.00	18.0										18.0
17.00	19.0										19.0
16.00	20.0										20.0
15.00	21.0										21.0
14.00	22.0										22.0
13.00	23.0										23.0
12.00	24.0										24.0

WELL INSTALLATION



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 69-GW15IW

SHEET: 1 OF 3

PROJECT NUMBER: 62470-212
PROJECT NAME: SITE 69 - CHEMICAL STORAGE AREA
LOCATION: MCB CAMP LEJEUNE, NC
DRILLING COMPANY: PARROTT-WOLFF, INC.
RIG TYPE & NUMBER: ATV (TRACK) RIG
DRILLING METHOD: MUD ROTARY
WEATHER: SUNNY, WARM, HUMID
GEOLOGIST: E.J. KLEINKAUF
ENV. SCIENTIST: -
DATE BEGUN: 3/23/95 DATE COMPLETED: 3/24/95

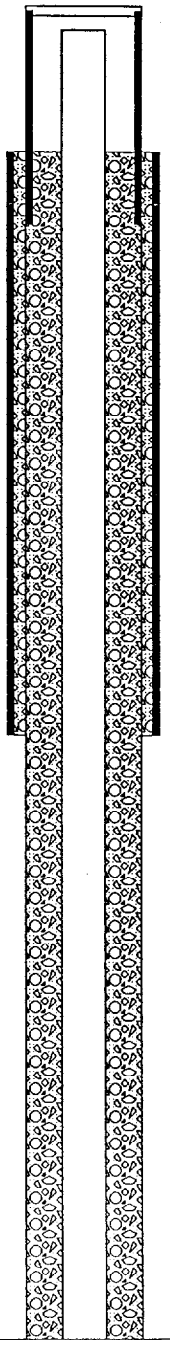
GROUND SURFACE ELEVATION: 35.70' msl
TOP OF CASING ELEVATION: 37.54' msl

WELL DETAILS (FT)

STICKUP:	1.8
OUTER CASING (6"I.D.):	
LENGTH OF RISER (2"I.D.):	45.0
LENGTH OF SCREEN (2"I.D.):	15.0
THICKNESS OF GROUT:	10.0
THICKNESS OF SEAL:	3.0
THICKNESS OF SAND PACK:	17.0

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO.	SAMPLE	BLOWS/0.5'	RECOVERY	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH
35:00	1.0		S-1	SS	1 1 2 2	-	4.0	4.0		SILTY SAND: fine grained, medium to dark brown, moist to wet, very loose/loose	1.0
33:00	3.0		S-2	SS	1 1 4 3	0.2	4.0	4.0			3.0
31:00	5.0		S-3	SS	2 3 5 8	0.5	-	-			5.0
29:00	7.0		S-4	SS	5 8 14 13	2.0	2.0	4.0			7.0
27:00	9.0		S-5	SS	2 1 2 1	2.0	2.0	4.0		SILTY SAND: fine grained, trace/little clay, light green grey, wet, loose/medium dense	9.0
25:00	11.0		S-6	SS	W O H 2	1.8	-	-		SILTY CLAY: trace fine grained sand, gray, damp to moist, stiff	11.0
23:00	13.0		S-7	SS	3 2 2 2	0.9	0.0	20		SILTY/SANDY CLAY: fine grained, grey, moist, loose; layered with grey clay zones	13.0
21:00	15.0		S-8	SS	2 1 1 2	0.8	0.0	20			15.0
19:00	17.0		S-9	SS	WOH WOH WOH WOH	0.9	-	-			17.0
17:00	19.0		S-10	SS	WOH WOH 2 1	2.0	-	-		CLAYEY SILT: trace fine grained sqand, gray/green, damp to wet, medium dense/dense	19.0

WELL INSTALLATION



BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 69-GW15IW

SHEET: 2 OF: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
	20.0									CLAYEY SILT: trace fine grained sand, grey/green, damp to wet, soft	20.0	
15:00	21.0										21.0	
14:00	22.0										22.0	
13:00	23.0										23.0	
12:00	24.0										24.0	
11:00	25.0										25.0	
10:00	26.0		S-11	SS	WOH WOH WOH WOH	2.0	0.0	0.0			26.0	
9:00	27.0										27.0	
8:00	28.0										28.0	
7:00	29.0										29.0	
6:00	30.0										30.0	
5:00	31.0		S-12	SS	WOH WOH WOH WOH	2.0	0.0	0.0			31.0	
4:00	32.0										32.0	
3:00	33.0										33.0	
2:00	34.0										34.0	
1:00	35.0										35.0	
0:00	36.0		S-13	SS	WOH WOH WOH WOH	1.75	0.0	0.0			36.0	
1:00	37.0									SILT AND SAND: fine grained, trace clay, grey/green, damp to moist, soft	37.0	
2:00	38.0										38.0	
3:00	39.0									SILTY SAND: fine grained, shell and limestone fragments, green and white, moist to wet, dense/very dense	39.0	
4:00	40.0										40.0	
5:00	41.0		S-14	SS	8 28 16 16	1.80	-	-			41.0	
6:00	42.0										42.0	
7:00	43.0										43.0	
8:00	44.0										44.0	
9:00	45.0										45.0	
10:00	46.0		S-15	SS	8 14 13 16	1.70	-	-			46.0	
11:00	47.0										47.0	
12:00	48.0										48.0	
13:00	49.0										49.0	
14:00	50.0										50.0	
15:00	51.0		S-16	SS	3 6 8 10	1.80	-	-			51.0	
16:00	52.0										52.0	

BAKER

WELL CONSTRUCTION LOG

BOREHOLE NUMBER: 69-GW15IW

SHEET: 3 OF: 3

ELEVATION	DEPTH	SOIL SAMPLES	SAMPLE NO	SAMPLE METHOD	BLOWS/0.5'	RECOVERY (FT)	PID (PPM) BG	PID (PPM) PS	LITHOLOGY	DESCRIPTION	DEPTH	WELL INSTALLATION
	50.0									SILTY SAND: fine grained, shell and limestone fragments, green and white, damp to wet, dense/very dense	50.0	
15:00	51.0										51.0	
16:00	52.0										52.0	
17:00	53.0										53.0	
18:00	54.0										54.0	
19:00	55.0										55.0	
20:00	56.0		S-17	SS	6 8 10 15	2.0	-	-			56.0	
21:00	57.0										57.0	
22:00	58.0										58.0	
23:00	59.0										59.0	
24:00	60.0									BOTTOM OF BOREHOLE 60.0'	60.0	
25:00	61.0		S-18	SS	8 25 35	2.0	-	-		NOTES: 1) Groundwater encountered @ 3.0' during drilling.	61.0	
26:00	62.0										62.0	
27:00	63.0										63.0	
28:00	64.0										64.0	
29:00	65.0										65.0	
30:00	66.0										66.0	
31:00	67.0										67.0	
32:00	68.0										68.0	
33:00	69.0										69.0	
34:00	70.0										70.0	
35:00	71.0										71.0	
36:00	72.0										72.0	
37:00	73.0										73.0	
38:00	74.0										74.0	
39:00	75.0										75.0	
40:00	76.0										76.0	
41:00	77.0										77.0	
42:00	78.0										78.0	
43:00	79.0										79.0	
44:00	80.0										80.0	
45:00	81.0										81.0	
46:00	82.0										82.0	

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 – REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW02BCH
COORDINATES: EAST: 2472202.4 NORTH: 305119.5
ELEVATION: SURFACE: 34.4' TOP OF PVC CASING: 36.79'

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"								
LENGTH	30"								
TYPE									
HAMMER WT.	140								
FALL	30"								
STICK UP									

REMARKS:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1						REFER TO PREVIOUS LOGS AT LOCATIONS 69-MW02, 69-MW02DW, 69-MW02DD FOR LITHOLOGIC DESCRIPTIONS. THIS WELL LOCATION WAS ONLY SAMPLED BELOW 120'.	
2							
3							
4							
5							
6							
7							
8							
9							
10							

Match to Sheet 2

DRILLING CO.: PARRATT-WOLFF, INC BAKER REP.: J. E. ZIMMERMAN
DRILLER: WILLIAM RICE BORING NO.: 69-MW02BCH SHEET 1 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW02BCH

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
120							
121	S-1	1.3'	7 7 9 8		0.9	OLIVE GREEN FINE SAND TRACE SILT, WET, MEDIUM DENSE.	
122							
123	S-2	1.8'	4 8 15 20		0.9	—SAME—	
124							
125	S-3	1.8'	7 12 18 19		0.9	—SAME—	
126							
127	S-4	2.0'	11 16 20 24		0.9	—SAME—	
128							
129	S-5	2.0'	5 7 14 24		0.9	—SAME—	
130							
131							
132							
133							
134							
135							
136	S-6	1.8'	4 6 10 9		0.9	—SAME—	
137							
138							
139							

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: WILLIAM RICE BORING NO.: 69-MW02BCH SHEET 2 OF 5

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW02BCH

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
140–142	S-7	2.0'	6 7 8 11		0.9	OLIVE GREEN fine SAND, LITTLE/SOME SILT, WET/MOIST, MEDIUM DENSE.	
143–144						OLIVE GREEN FINE SAND, LITTLE SILT, LITTLE CLAY, MOIST, MEDIUM DENSE.	
145–147	S-8	2.0'	4 5 5 6		0.9		
148–149						OLIVE GREEN FINE SAND, SOME SILT, LITTLE/TRACE CLAY, MOIST/WET, MEDIUM DENSE	
150–152	S-9	1.8'	4 6 6 5		0.9		
153–154							
155–157	S-10	1.0'	4 5 7 13		0.9	— SAME —	
158–159							

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: WILLIAM RICE BORING NO.: 69-MW02BCH SHEET 3 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW02BCH

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
160							
161	S-11	0.2'	3 5 5 8		0.9	OLIVE GREEN FINE SAND, LITTLE/SOME SILT, WET, MEDIUM DENSE	
162							
163							
164							
165							
166	S-12	2.0'	5 5 8 12		0.9	— SAME —	
167							
168							
169							
170							
171	S-13	2.0'	5 7 8 13		0.9	— SAME —	
172							
173							
174							
175							
176	S-14	1.8'	7 9 12 14		0.9	— SAME —	
177							
178							
179							

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: WILLIAM NICE BORING NO.: 69-MW02BCH SHEET 4 OF 5

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW02BCH

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
180							
181	X S-15	1.9'	6 7 9 11		0.9	—SAME—	
182							
183							
184						OLIVE GREEN SILTY SAND, FINE GRAINED, MOIST TO DAMP, LOOSE/MEDIUM DENSE	
185							
186	X S-16	1.7'	3 4 5 7		0.9		
187							
188							
189							
190							
191	X S-17	0.5'	4 4 6 8		0.9	—SAME—	
192							
193							
194							
195							
196	X S-18	2.0'	5 6 7 8		0.9	—SAME (TRACE CLAY)—	
197							
198							
199							

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: WILLIAM RICE BORING NO.: 69-MW02BCH SHEET 5 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW02BCH

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
200						OLIVE GREEN FINE SAND, SOME SILT, MOIST/WET, MEDIUM DENSE.	
201	S-19	1.7'	7 8 13 16		0.9		
202							
203							
204						OLIVE GREEN SILTY SAND, FINE GRAINED, TRACE/LITTLE CLAY, DAMP, MEDIUM DENSE TO STIFF	
205							
206	S-20	2.0'	6 7 9 9		0.9		
207							
208							
209						FOSSILIFEROUS LIMESTONE/ CEMENTED SANDSTONE NODULES W/LITTLE SAND (FINE GRAINED), TRACE SILT, WET, VERY DENSE/MEDIUM DENSE LIGHT GRAY/WHITE	
210							
211	S-21	0.1'	50/2"		0.9		
212							
213							
214							
215						— SAME —	
216	S-22	1.8'	11 11 13 18		0.6		
217							
218							
219							

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: WILLIAM RICE BORING NO.: 69-MW02BCH SHEET 6 OF 7

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: SITE 69-REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW02BCH

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
220						LIGHT GRAY/TAN/WHITE FINE SAND, SOME/AND SILT, TRACE CLAY, TRACE FOSSILIFEROUS LIMESTONE, TRACE SHELL MATERIAL, TRACE CEMENTED SANDSTONE NODULES (MICRITE CEMENT), WET, VERY DENSE/MEDIUM DENSE/LOOSE.	
221	S-23	0.8'	7 50/4"		0.6		
222							
223							
224							
225							
226	S-24	1.2'	5 14 11 8		0.6	— SAME —	
227							
228							
229							
230							
231	S-25	0.6'	1 2 2 1		0.6	— SAME —	
232							
233						BORING TERMINATED @ 233'	
234						NOTES:	
235						1) 10" ϕ CASING INSTALLED @ 12'	
236						2) 6" ϕ CASING INSTALLED @ 132'	
237						3) 2" ϕ PVC MONITORING WELL INSTALLED @ 230'	
238							
239							

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: WILLIAM RICE BORING NO.: 69-MW02BCH SHEET 1 OF 1

FIELD WELL CONSTRUCTION LOG

Baker
Baker Environmental, Inc.

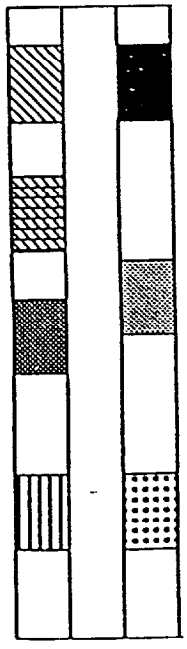
PROJECT: SITE 69 - REMEDIAL INVEST. DATE: 4/18/96
CTO NO.: 62470 - 212 BORING NO.: 69-MW02BCH
COORDINATES: EAST: 2472202.4 NORTH: 305119.5
ELEVATION: SURFACE: 34.4' TOP OF STEEL CASING: 36.79'

Pay Items

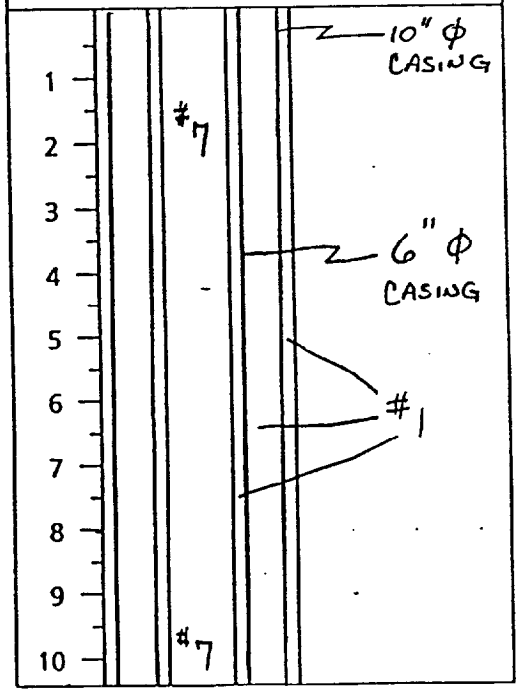
Item	Quantity	Unit	Remarks
10" ϕ STEEL CASING	12	FEET	
6" ϕ STEEL CASING	132	FEET	

WELL INFORMATION	DIAM. (INCHES)	TYPE	TOP DEPTH (FT.)	BOTTOM DEPTH (FT.)
Well Casing	2"	PVC	+2.39	220
Well Screen	2"	PVC	220	230

Backfill Key



Well Installation Detail



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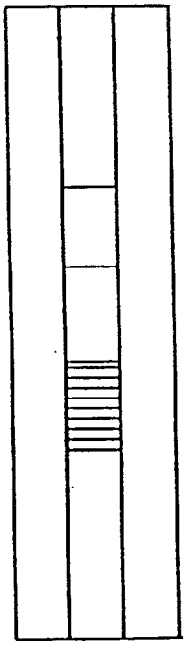


DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: J. E. ZIMMERMAN
DRILLER: WILLIAM RICE BORING NO.: 69-MW02BCH SHEET 1 OF 5

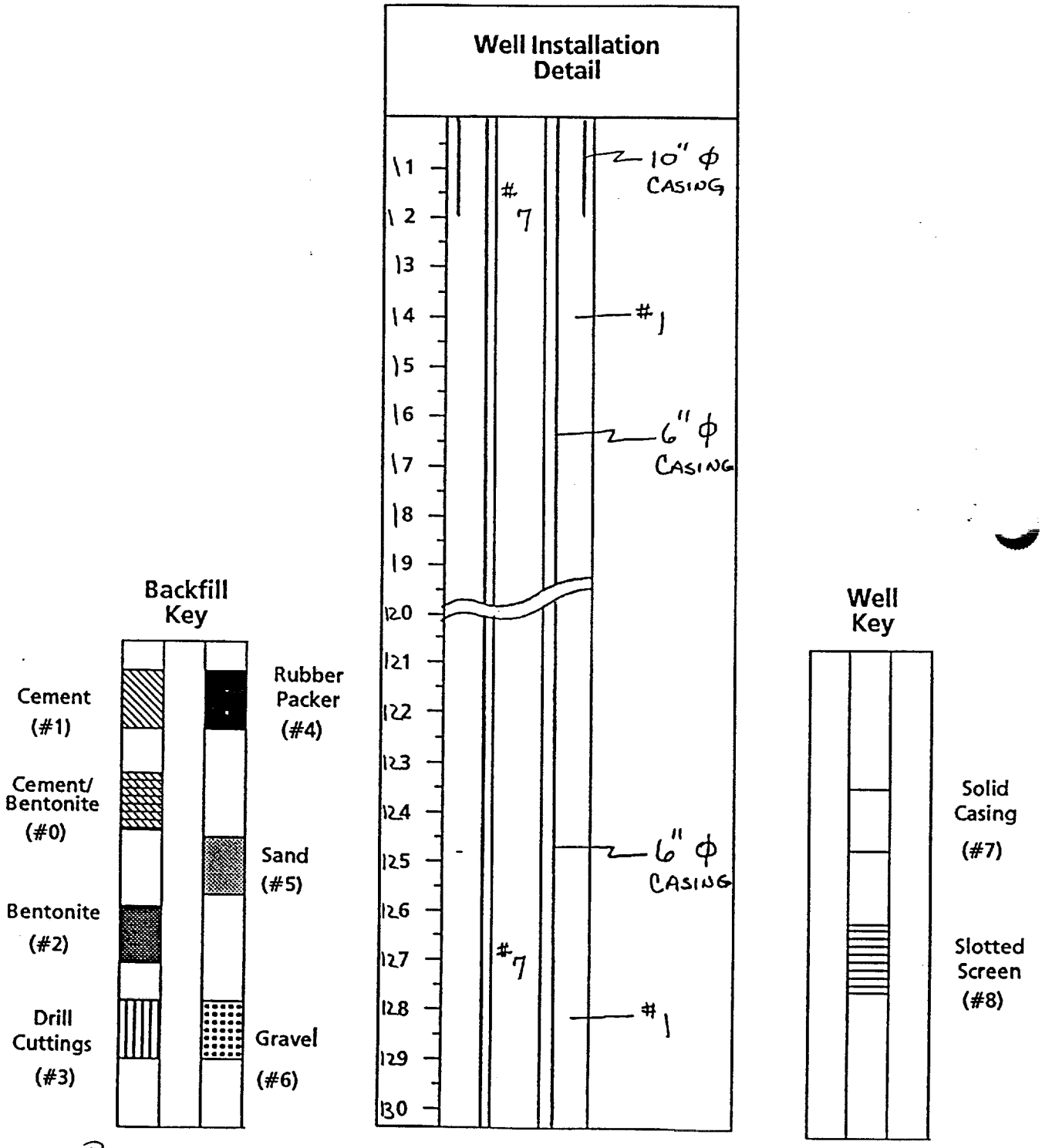
Baker

Baker Environmental, Inc.

FIELD WELL CONSTRUCTION LOG

PROJECT: SITE 69- REMEDIAL INVESTIGATION

S.O. NO.: 62470-212 BORING NO.: 69-MW02BCH



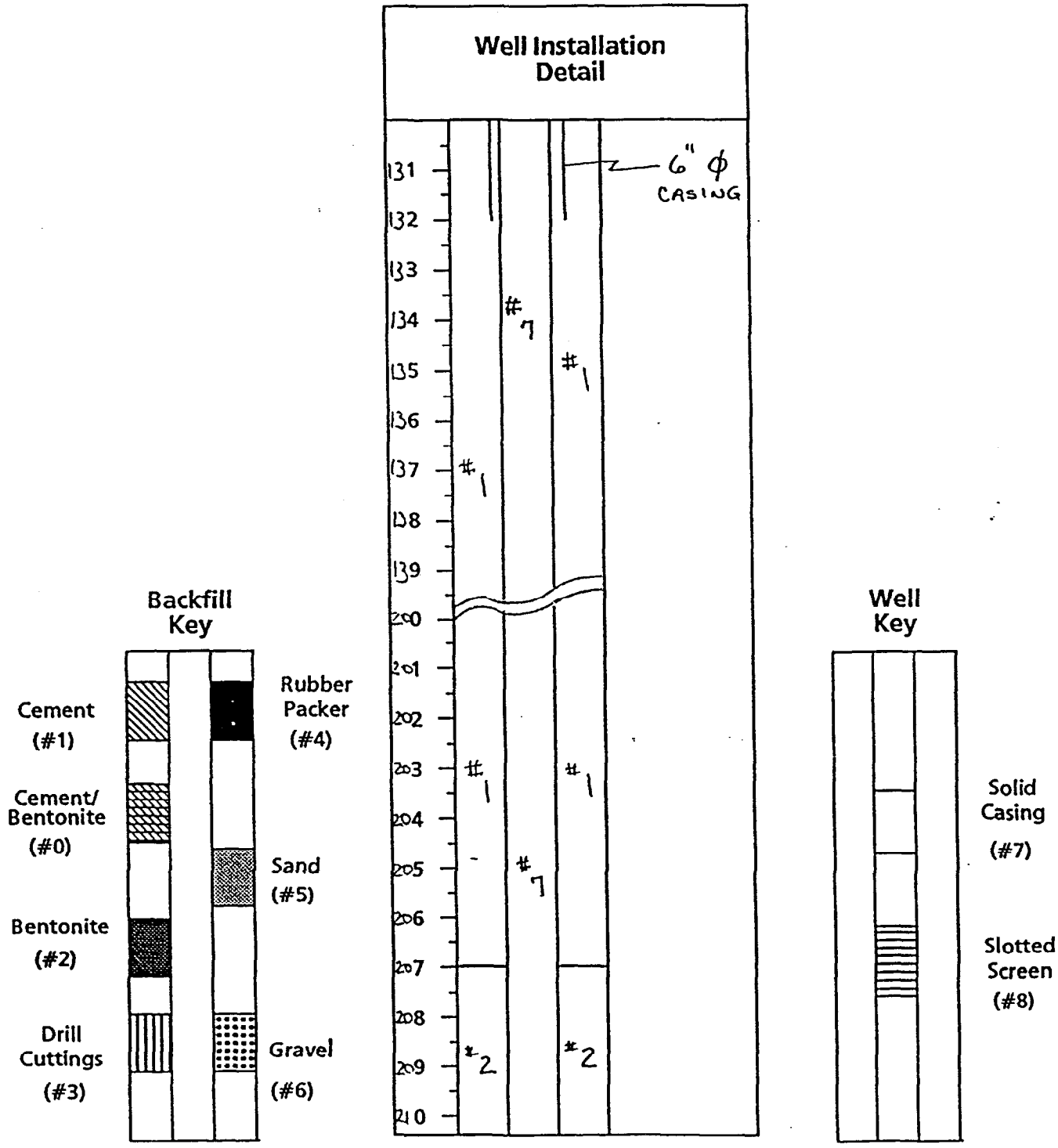
DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: J. E. ZIMMERMAN

DRILLER: WILLIAM RICE BORING NO.: 69-MW02BCH SHEET 2 OF 5

Baker
Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470 - 212 BORING NO.: 69-MW02BCH



DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: J.E. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW02BCH SHEET 3 OF 5

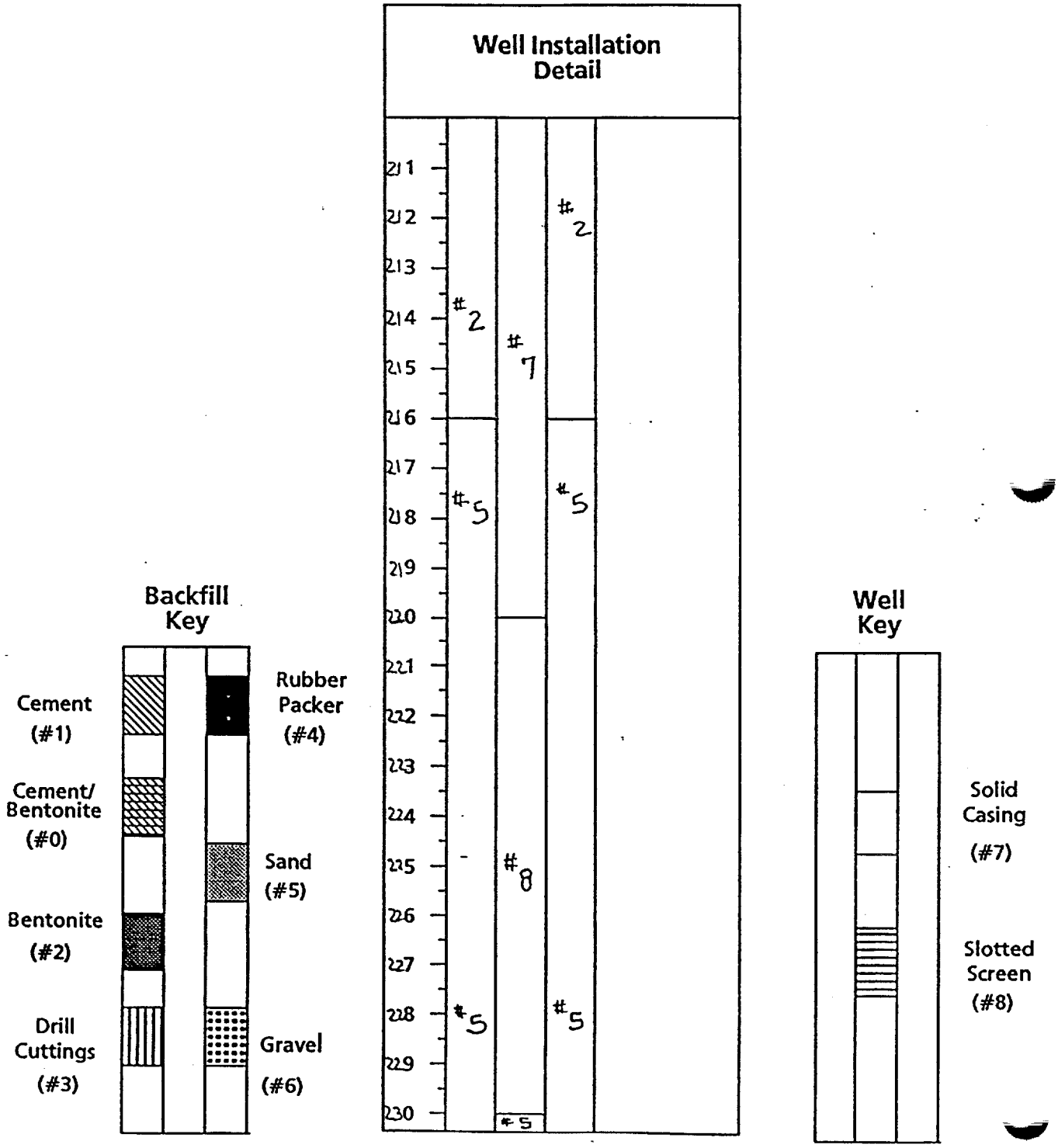
Baker

Baker Environmental, Inc.

FIELD WELL CONSTRUCTION LOG

PROJECT: SITE 69 – REMEDIAL INVESTIGATION

S.O. NO.: 62470-212 BORING NO.: 69-MW02 OCH



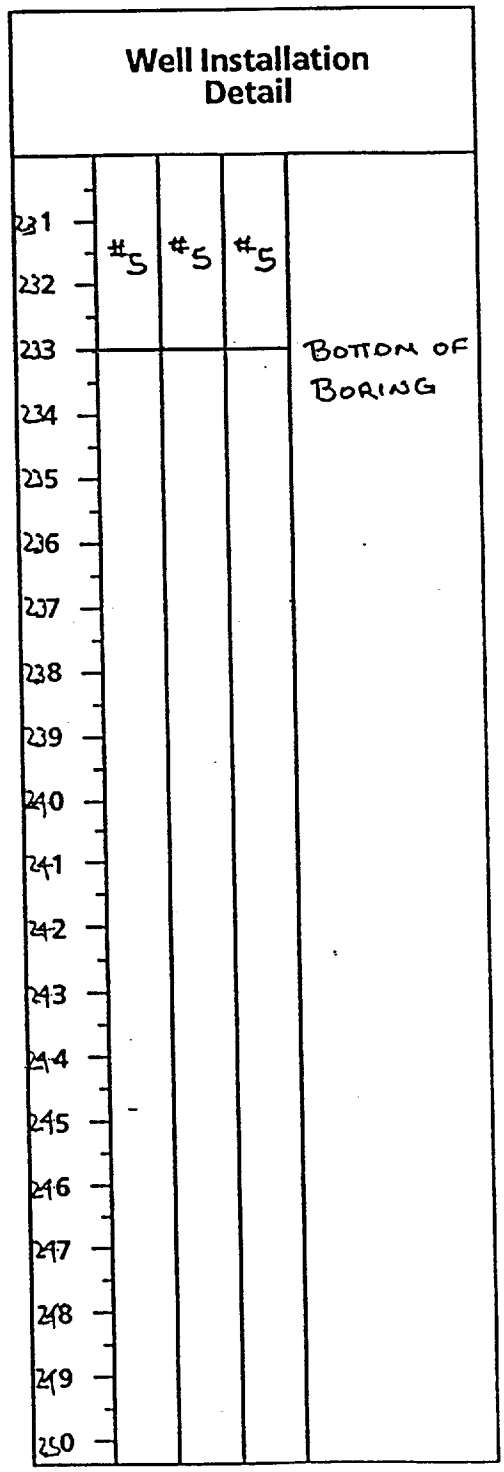
DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: J. E. ZIMMERMAN

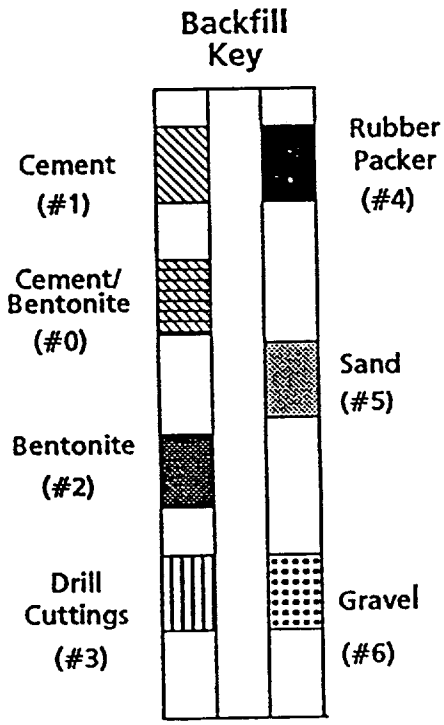
DRILLER: WILLIAM RICE BORING NO.: 69-MW02OCH SHEET 4 OF 5

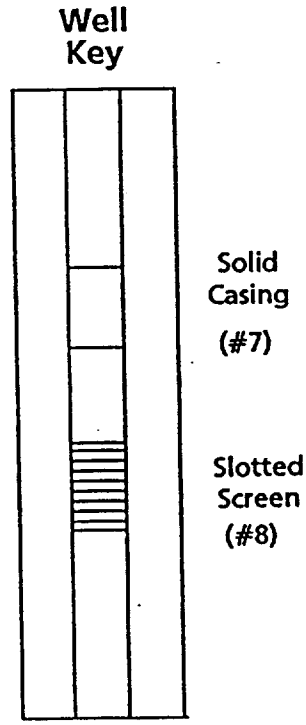
FIELD WELL CONSTRUCTION LOG

Baker
Baker Environmental, Inc.

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW02BCH







DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: J.E. ZIMMERMAN
DRILLER: WILLIAM RICE BORING NO.: 69-MW02BCH SHEET 5 OF 5

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW03 BCH
COORDINATES: EAST: 2472370.3 NORTH: 305203.2
ELEVATION: SURFACE: 36.0' TOP OF PVC CASING: 38.62'

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"								
LENGTH	30"								
TYPE									
HAMMER WT.	140								
FALL	30"								
STICK UP									

REMARKS:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
1						REFER TO PREVIOUS LOGS AT LOCATIONS 69-MW03 AND 69-MW03 IW FOR LITHOLOGIC DESCRIPTIONS. THIS WELL LOCATION WAS ONLY SAMPLED BELOW 120'.	
2							
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: PARRATT-WOLFF, INC BAKER REP.: E. J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW03 BCH SHEET 1 OF 5

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW03 B

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatic
120							
121	S-1	1.0'	4 4 6 8		0	GREENISH GREY FINE SAND, SOME/ LITTLE SILT, WET, LOOSE	
122							
123	S-2	1.3'	10 9 14 22		0	GREENISH GREY FINE SAND, LITTLE/ SOME SILT, TRACE CLAY, WET, MEDIUM DENSE.	
124							
125	S-3	1.3'	5 12 24 37		0	— SAME —	
126							
127	S-4	1.2'	11 12 29 46		0	— SAME —	
128							
129	S-5	1.5'	7 13 25 36		0	— SAME —	
130							
131							
132							
133							
134							
135							
136	S-6	1.0'	4 11 27 39		0	—SAME (MOIST)—	
137							
138							
139							

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E.J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW03 BCH SHEET 2 OF 5

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW03 GCH

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
140							
141	S-7	0.7'	3 6 16 33		0	-SAME-	
142							
143							
144						GREENISH GREY FINE SAND, SOME CLAY, LITTLE SILT, MOIST, MEDIUM DENSE.	
145							
146	S-8	1.3'	2 5 9 13		0		
147							
148							
149						GREENISH GREY CLAY, SOME/ LITTLE SAND, LITTLE SILT, MOIST, STIFF.	
150							
151	S-9	2.0'	5 7 7 8		0		
152							
153							
154							
155							
156	S-10	2.0'	4 5 5 3		0	-SAME-	
157							
158							
159							

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E.J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW03 GCH SHEET 3 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW03BCH

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
160						GREENISH GREY CLAY AND FINE SAND, LITTLE SILT, MOIST, VERY STIFF/MEDIUM DENSE.	
161	S-11	2.0'	5 7 10 26		0		
162							
163							
164						GREENISH GREY FINE SAND, SOME SILT, TRACE CLAY, OCCASIONAL SHELL FRAGMENTS, WET, MEDIUM DENSE.	
165							
166	S-12	2.0'	7 10 12 16		0		
167							
168							
169							
170							
171	S-13	1.9'	13 11 22		0	—SAME (FEWER SHELL FRAGMENTS)—	
172							
173							
174							
175							
176	S-14	1.8'	11 16 18 26		0	—SAME—	
177							
178							
179							

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E.J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW03BCH SHEET 4 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW03BCH

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
180							
181	S-15	1.8'	5 9 13 18		0	-SAME (NO SHELL FRAGMENTS)-	
182							
183							
184						GREENISH GREY FINE SAND, SOME CLAY, LITTLE SILT, MOIST/WET, MEDIUM DENSE	
185							
186	S-16	2.0'	6 8 7 9		0		
187							
188							
189							
190							
191	S-17	2.0'	6 6 10 12		0	— SAME —	
192							
193							
194							
195							
196	S-18	0.8'	6 7 7 7		0	— SAME —	
197							
198							
199							

DRILLING CO.: PARRATT-WOLFF, INC BAKER REP.: E.J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW03BCH SHEET 5 OF

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW03BCH

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
200						GREENISH GREY FINE SAND, SOME SILT, TRACE CLAY, WET, MEDIUM DENSE.	
201	S-19	2.0'	7 12 13 15		0		
202							
203							
204						GREENISH GREY FINE SAND, SOME CLAY, LITTLE SILT, MOIST, MEDIUM DENSE. POSSIBLE FINE ROCK FRAGMENTS OR SHELL FRAGMENTS AT BOTTOM OF SAMPLE.	
205							
206	S-20	0.5'	8 7 8 8		0		
207						ENCOUNTERED HARD MATERIAL @ 207', POSSIBLE LIMESTONE	
208							
209							
210							
211	S-21	—	50/2"		—	TAN/WHITE SILT AND CLAY, SOME/LITTLE FINE TO FINE/MEDIUM SAND, WET, HARD/VERY DENSE POSSIBLE TRACE ROCK FRAGMENTS	
212							
213							
214							
215							
216	S-22	0.75'	4 50/5"				
217							
218							
219							

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E. J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW03BCH SHEET 6 OF 7

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW03BCH

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
220						TAN/WHITE FINE/MEDIUM SAND. SOME SILT, LITTLE CLAY, TRACE ROCK FRAGMENTS, WET, DENSE/VERY DENSE	
221	S-23	1.3'	9 8 26 50/5"		0		
222							
223							
224							
225							
226	S-24	1.6'	4 18 14 13		0	—SAME—	
227							
228							
229							
230						TAN/WHITE/LIGHT GREEN SILT AND CLAY, LITTLE FINE/MEDIUM SAND, TRACE ROCK FRAGMENTS, WET, VERY LOOSE TO MEDIUM DENSE	
231	S-25	1.8'	3 2 3 8		0		
232							
233						BORING TERMINATED @ 233'	
234						NOTES:	
235						1) 10" ϕ CASING INSTALLED @ 12'	
236						2) 6" ϕ CASING INSTALLED @ 133'	
237						3) 2" ϕ PVC MONITORING WELL INSTALLED AT 230'	
238							
239							

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E.J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW03BCH SHEET 7 OF 7

FIELD WELL CONSTRUCTION LOG

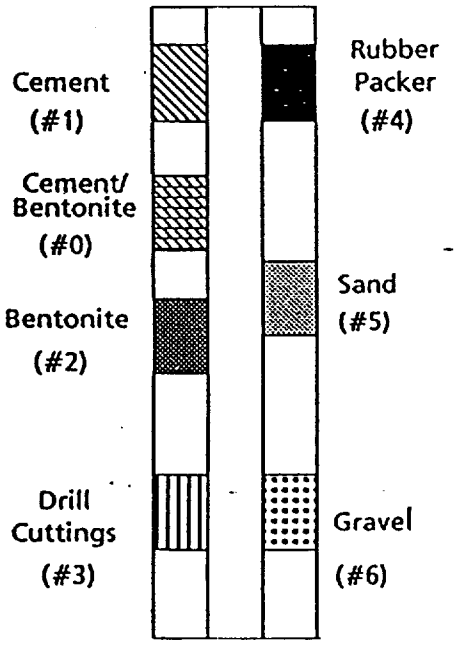
Baker
Baker Environmental, Inc

PROJECT: SITE 69 - REMEDIAL INVEST. DATE: 4/09/96
CTO NO.: 62470-212 BORING NO.: 69-MW03 BCH
COORDINATES: EAST: 2472370.3 NORTH: 305203.2
ELEVATION: SURFACE: 36.0' TOP OF STEEL CASING: 38.52'

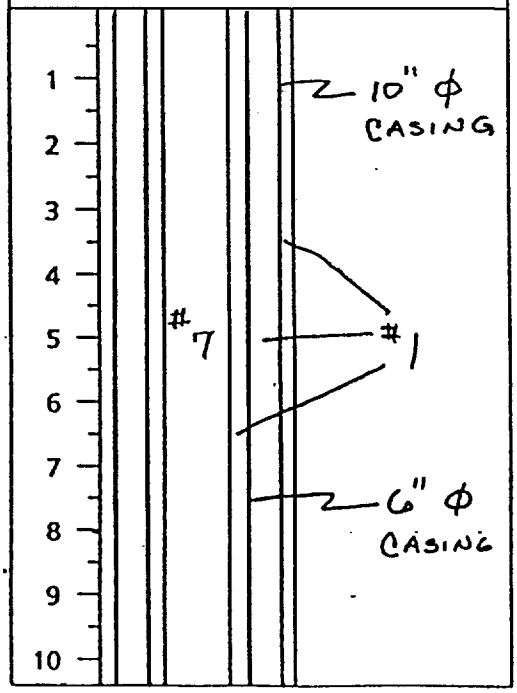
Pay Items			
Item	Quantity	Unit	Remarks
10" ϕ STEEL CASING	12	FEET	
6" ϕ STEEL CASING	133	FEET	

WELL INFORMATION	DIAM. (INCHES)	TYPE	TOP DEPTH (FT.)	BOTTOM DEPTH (FT.)
Well Casing	2"	PVC	+2.52	220
Well Screen	2"	PVC	220	230

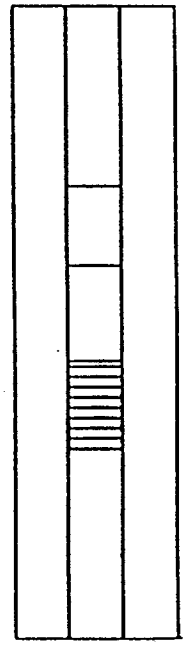
Backfill Key



Well Installation Detail



Well Key



DRILLING CO.: PARRATT-WOLFF, INC BAKER REP.: E.J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW03 BCH SHEET 1 OF 5

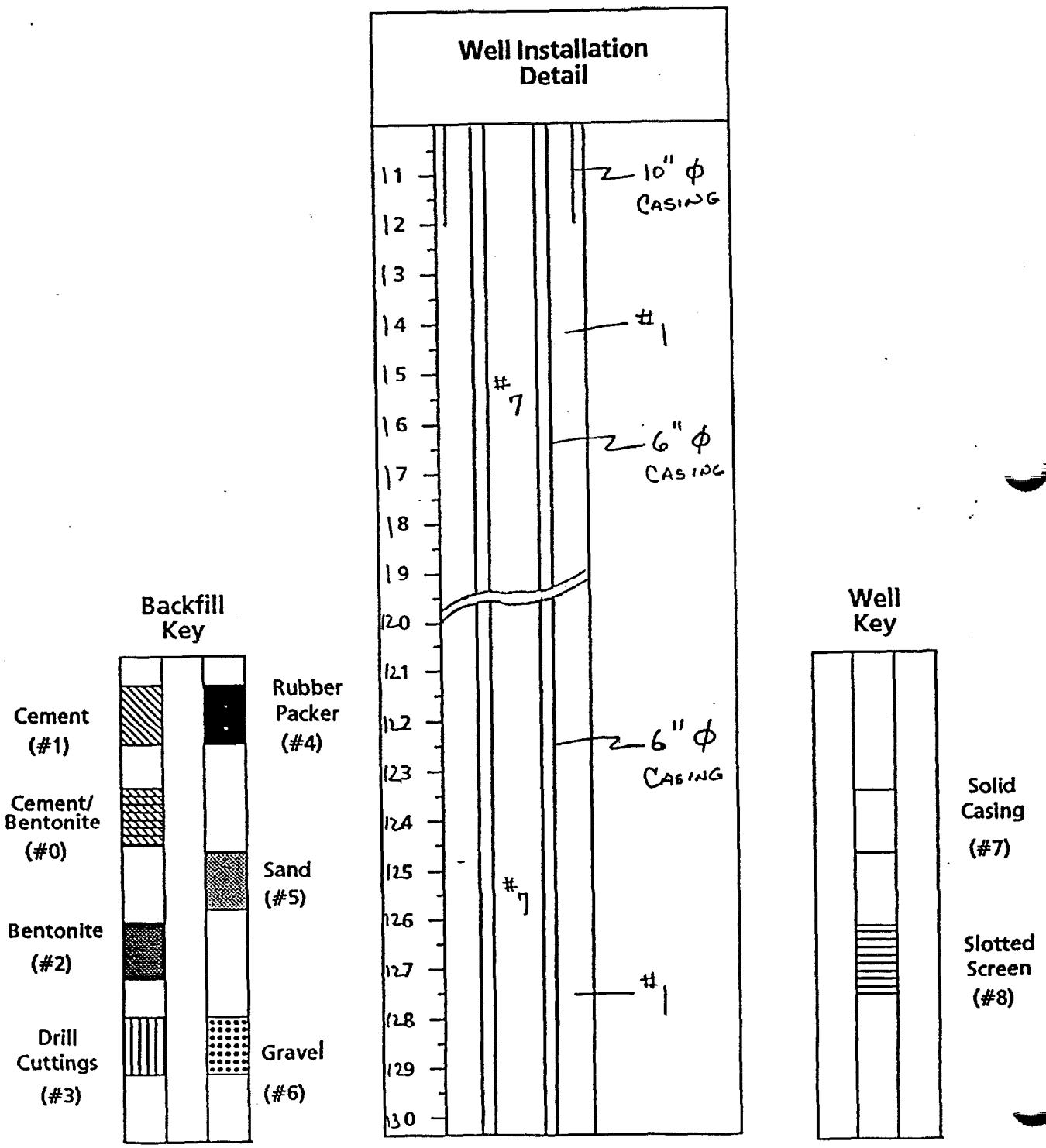
Baker

Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: SITE 69 - REMEDIAL INVESTIGATION

S.O. NO.: 62470-212 BORING NO.: 69-MW03BCH



DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E. J. KLEINKAUF

DRILLER: WILLIAM RICE BORING NO.: 69-MW03BCH SHEET 2 OF 5

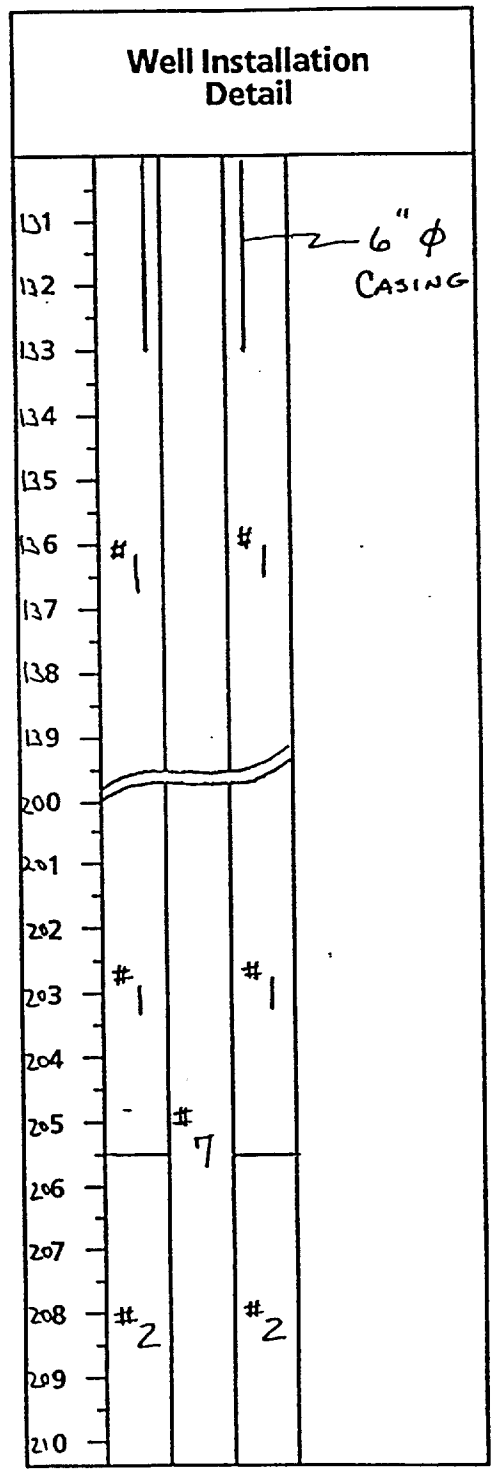
Baker

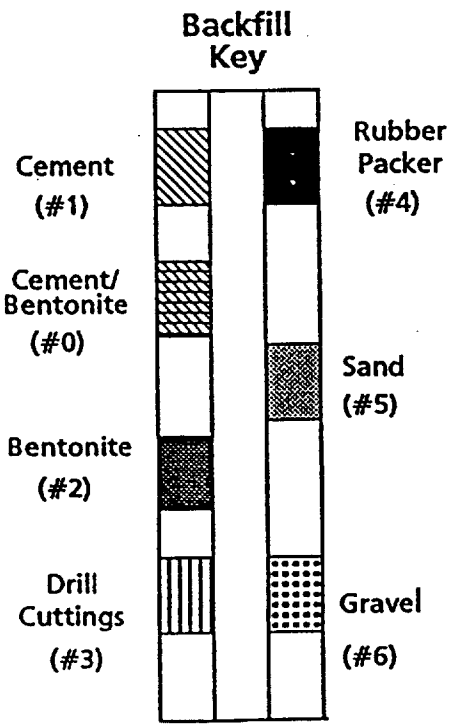
Baker Environmental, Inc

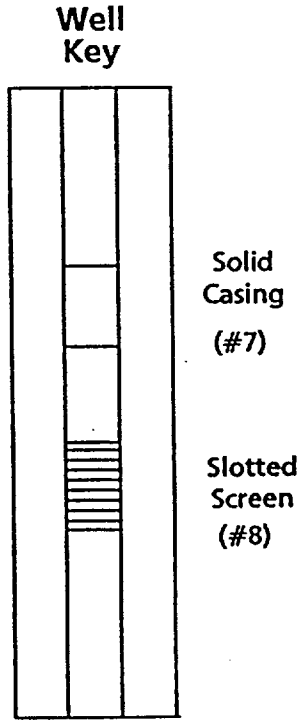
FIELD WELL CONSTRUCTION LOG

PROJECT: SITE 69 - REMEDIAL INVESTIGATION

S.O. NO.: 62470-212 BORING NO.: 69-MW03 BCH







DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E. J. KLEINKAUF

DRILLER: WILLIAM RICE BORING NO.: 69-MW03BCH SHEET 3 OF 5

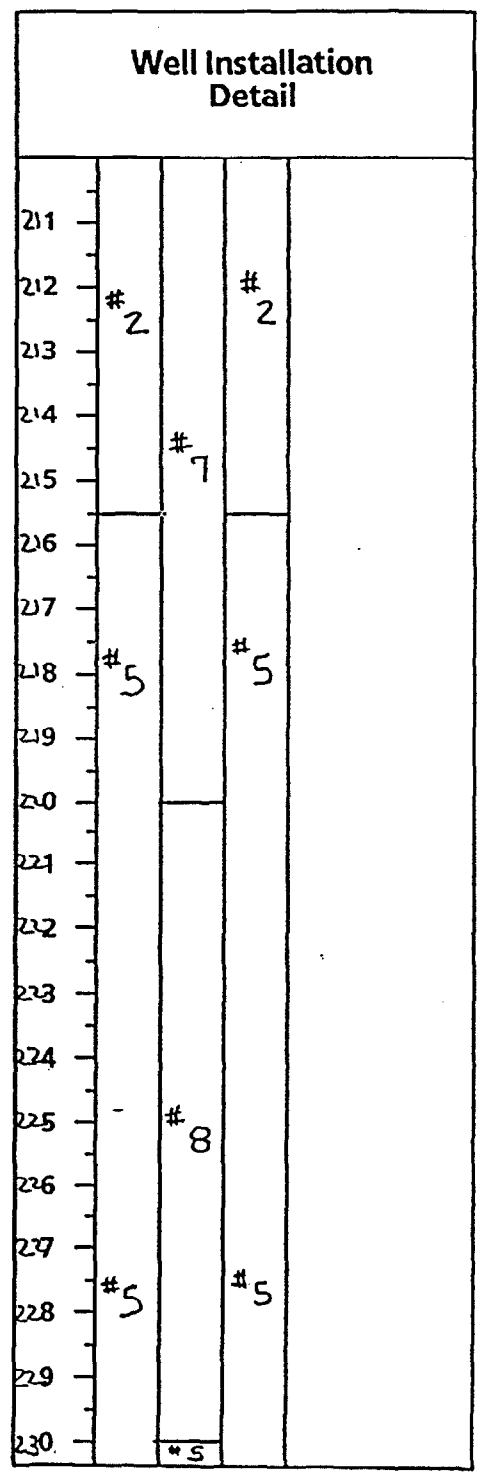
Baker

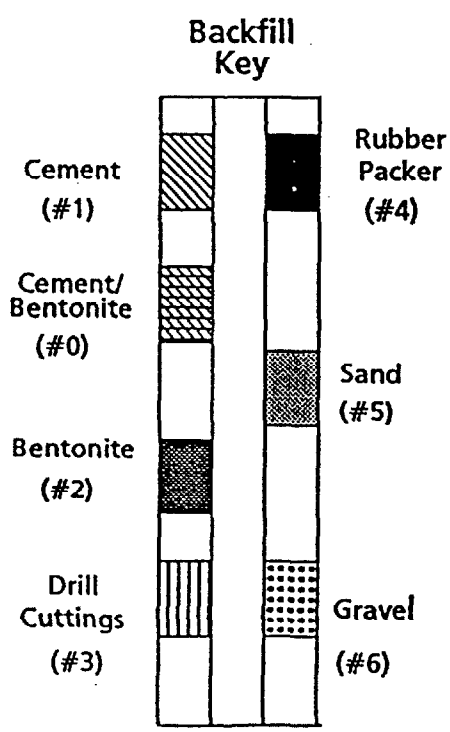
Baker Environmental, Inc.

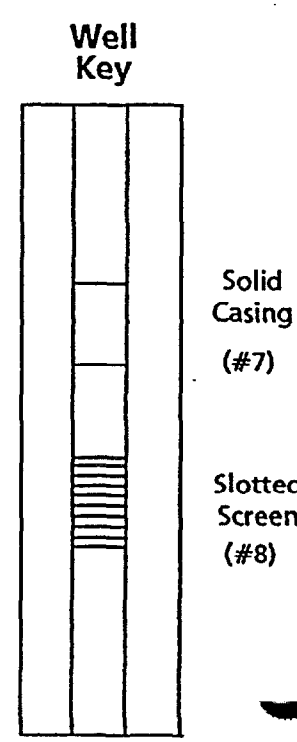
FIELD WELL CONSTRUCTION LOG

PROJECT: SITE 69 - REMEDIAL INVESTIGATION

S.O. NO.: 62470-212 BORING NO.: 69-MW03 BCH







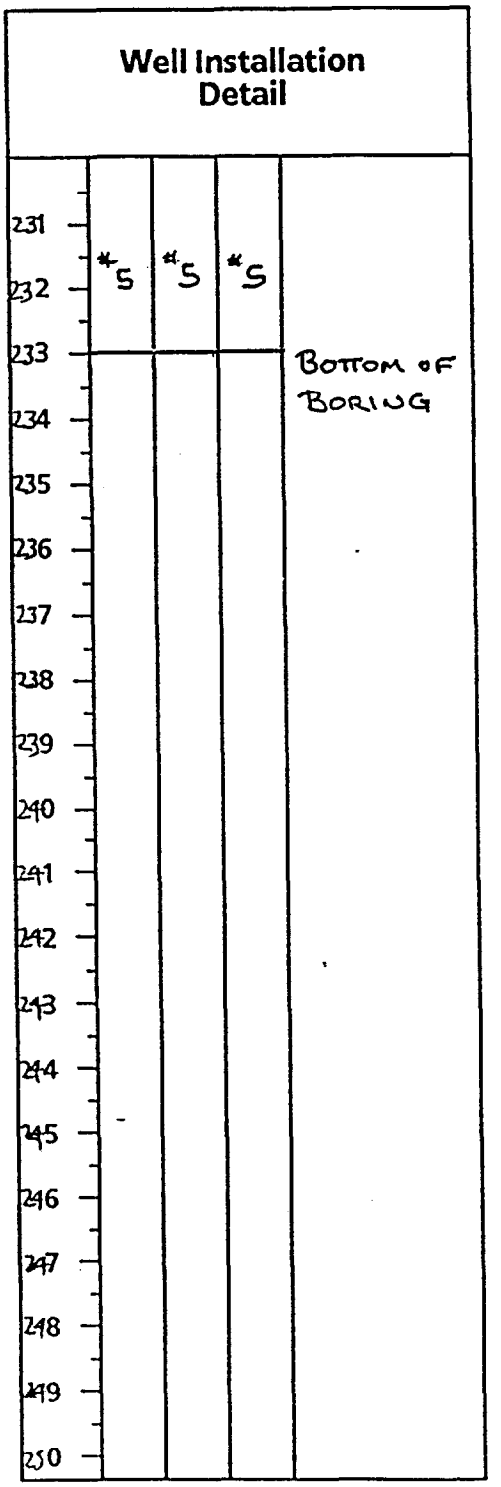
DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E.J. KLEINKAUF

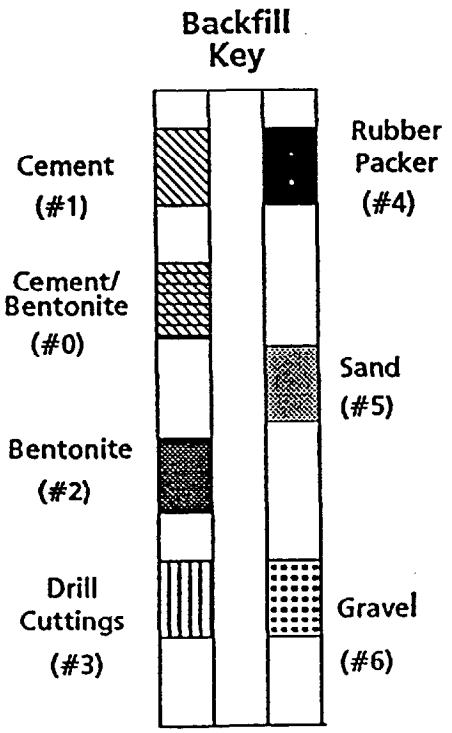
DRILLER: WILLIAM RICE BORING NO.: 69-MW03 BCH SHEET 1 OF 5

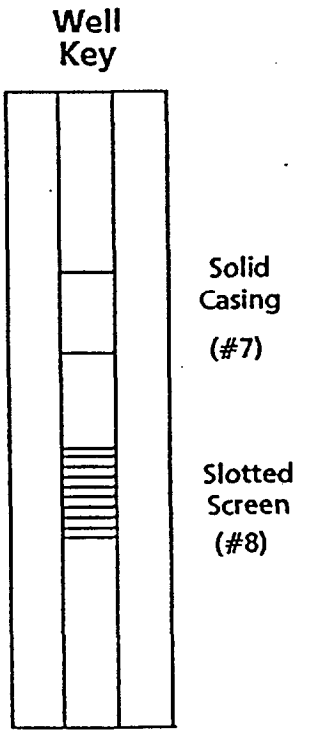
FIELD WELL CONSTRUCTION LOG

Baker
Baker Environmental, Inc

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW03 BCH







DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E.J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW03 BCH SHEET 5 OF 5

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 – REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW15BCH
COORDINATES: EAST: 2472254.9 NORTH: 305268.4
ELEVATION: SURFACE: 36.20' TOP OF PVC CASING: 38.63'

RIG:	SPLIT SPOON	CASING	AUGERS	CORE BARREL	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"								
LENGTH	30'								--
TYPE									
HAMMER WT.	140								
FALL	30"								
STICK UP									

REMARKS:

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
1						REFER TO PREVIOUS LOGS AT LOCATIONS 69-MW15, 69-MW15IW AND 69-MW15DW FOR LITHOLOGIC DESCRIPTIONS. THIS WELL LOCATION WAS ONLY SAMPLED BELOW 120'.	
2							
3							
4							
5							
6							
7							
8							
9							
10						Match to Sheet 2	

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E.J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW15BCH SHEET 1 OF 8

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 – REMEDIAL INVESTIGATION
S.O. NO.: 62470 - 212 BORING NO.: 69-MW15 BC

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatic
120							
121	S-1	1.5'	6 8 11 12		0	GREEN SILTY FINE SAND, MOIST, MEDIUM DENSE	
122							
123	S-2	2.0'	9 14 32 36		0	GREENISH GREY FINE-COARSE SAND, SOME SILT, TRACE SHELL FRAGMENTS, MOIST, DENSE	
124							
125	S-3	2.0'	8 11 16 28		0	GREEN FINE SAND, SOME SILT, MOIST, MEDIUM DENSE	
126							
127	S-4	1.4'	10 14 19 26		0		
128							
129	S-5	2.0'	5 10 16 23		0		
130							
131							
132							
133						GREENISH GREY FINE SAND, LITTLE/SOME SILT, MOIST, MEDIUM DENSE	
134							
135							
136	S-6	2.0'	6 11 12 15		0		
137							
138							
139							

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E. J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW15 BCH SHEET 2 OF 8

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW15BCH

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
140							
141	X S-7	2.0'	6 7 12 14		0	— SAME —	
142							
143							
144						GREENISH GREY CLAY, LITTLE FINE SAND, TRACE SILT, MOIST, MEDIUM STIFF	
145							
146	X S-8	2.0'	4 8 10 10		1		
147							
148							
149							
150							
151	X S-9	2.0'	3 3 5 5		0	—SAME—	
152							
153							
154							
155							
156	X S-10	2.0'	4 5 5 6		0	—SAME (INCREASE IN SAND AND SILT CONTENT)—	
157							
158							
159							

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E.J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW15BCH SHEET 3 OF 8

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470 - 212 BORING NO.: 69-MW15BC

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevati
160						GREENISH GREY FINE SAND, SOME SILT, TRACE CLAY, WET, LOOSE	
161	S-11	1.7'	4 4 5 7		0		
162							
163							
164						GREENISH GREY FINE SAND, SOME SILT, POSSIBLE TRACE CLAY, MOIST/ WET, MEDIUM DENSE	
165							
166	S-12	1.5'	5 7 10 12		1		
167							
168							
169							
170							
171	S-13	1.5'	5 7 9 12		4	-SAME-	
172							
173							
174							
175							
176	S-14	1.8'	6 8 12 14		4	— SAME (TRACE SHELL FRAGMENTS)—	
177							
178							
179							

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E.J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW15BCH SHEET 4 OF

TEST BORING RECORD

Baker
Baker Environmental, Inc

PROJECT: SITE 69 — REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW15BCH

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
180							
181	S-15	1.8'	8 10 10 16		5	— SAME (OCCASIONAL SHELL FRAGMENTS) —	
182							
183							
184						GREENISH GREY FINE SAND, SOME SILT, TRACE/LITTLE CLAY, WET, LOOSE.	
185							
186	S-16	1.8'	4 4 4 10		4		
187							
188							
189							
190							
191	S-17	2.0'	5 4 6 11		1	— SAME —	
192							
193							
194							
195							
196	S-18	1.1'	7 5 7 8		0	— SAME —	
197							
198							
199							

DRILLING CO.: PARRATT - WOLFF, INC BAKER REP.: E. J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW15BCH SHEET 5 OF 8

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW15BC

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevatio
200						GREENISH GREY FINE SAND, SOME SILT, WET, MEDIUM DENSE	
201	X S-19	2.0'	10 10 12 18		0		
202							
203							
204						GREENISH GREY FINE SAND, LITTLE/SOME CLAY, LITTLE SILT, WET, MEDIUM DENSE	
205							
206	X S-20	2.0'	7 7 8 10		0		
207							
208						HARD MATERIAL; NO SAMPLE ATTEMPTED, PROBABLE LIMESTONE	
209							
210							
211	S-21	—	— — — —		—		
212							
213							
214						TAN/WHITE SILT, SOME CLAY, LITTLE FINE/MEDIUM SAND, TRACE LIMESTONE FRAGMENTS, WET, MEDIUM STIFF	
215							
216	X S-22	2.0'	3 3 6 24		0		
217							
218							
219							

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E. J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW15BCH SHEET 6 OF 8

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW15BCH

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevati
220							
221	S-23	1.8'	22 13 16 50/4"		0	— SAME (LESS CLAY) —	
222							
223							
224						TAN/WHITE SILT, SOME FINE-FINE/MEDIUM SAND, TRACE CLAY, WET, VERY STIFF.	
225							
226	S-24	1.8'	11 10 6 7		—		
227							
228							
229						TAN/WHITE FINE/MEDIUM SAND AND/SOME SILT, TRACE CLAY, WET, VERY LOOSE/SOFT.	
230							
231	S-25	1.8'	3 2 2 5		0		
232							
233							
234						TAN/WHITE CLAY, LITTLE/SOME SILT, LITTLE FINE/MEDIUM SAND, TRACE ROCK FRAGMENTS, WET, VERY SOFT / VERY DENSE	
235							
236	S-26	1.7'	2 2 50/5"		0		
237							
238							
239							

DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E.J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW15BCH SHEET 7 OF 8

Baker

Baker Environmental, Inc

TEST BORING RECORD

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470 - 212 BORING NO.: 69-MW15 GCH

SAMPLE TYPE
S = Split Spoon A = Auger
T = Shelby Tube W = Wash
R = Air Rotary C = Core
D = Denison P = Piston
N = No Sample

DEFINITIONS
SPT = Standard Penetration Test (ASTM D-1586) (Blows/0.5')
RQD = Rock Quality Designation (%)
Lab Class. = USCS (ASTM D-2487) or AASHTO (ASTM D-3282)
Lab Moist. = Moisture Content (ASTM D-2216) Dry Weight Basis

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevati
240						TAN/WHITE FINE/COARSE SAND, LITTLE SILT, TRACE CLAY, TRACE CEMENTED ROCK FRAGMENTS, WET, MEDIUM DENSE.	
241	S-27	1.8'		27 15 13 13	0		
242							
243							
244						TAN/WHITE/LIGHT GREEN FINE/MEDIUM SAND, LITTLE SILT, TRACE CLAY, GLAUCONITIC, WET, DENSE/VERY DENSE	
245							
246	S-28	1.3'		31 31 50/5"	0		
247							
248							
249							
250						—SAME (INCREASE IN CLAY)—	
251	S-29	0.7		46 50/4"	0	BORING TERMINATED @ 250.9'	
252							

NOTES:
1) 10" ϕ CASING INSTALLED TO 12'
2) 8" ϕ CASING INSTALLED TO 50'
3) 6" ϕ CASING INSTALLED TO 126'
4) 2" ϕ PVC MONITORING WELL INSTALLED TO 230'.

DRILLING CO.: PARRATT - WOLFF, INC. BAKER REP.: E. J. KLENKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW15 GCH SHEET 8 OF

FIELD WELL CONSTRUCTION LOG

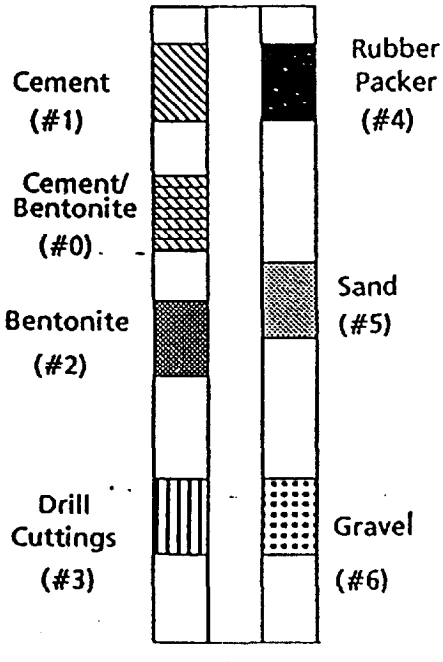
Baker
Baker Environmental, Inc.

PROJECT: SITE 69 - REMEDIAL INVEST. DATE: 4/03/96
CTO NO.: 62470-212 BORING NO.: 69-MW15BCH
COORDINATES: EAST: 2472254.9 NORTH: 305268.4
ELEVATION: SURFACE: 36.12' TOP OF STEEL CASING: 38.63'

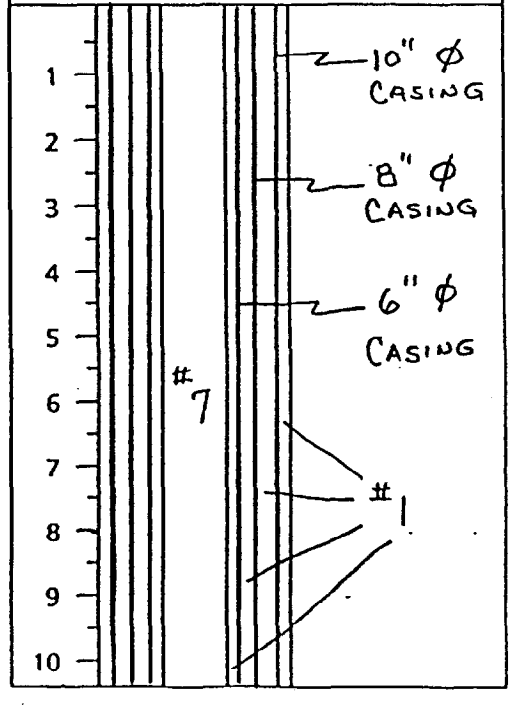
Pay Items			
Item	Quantity	Unit	Remarks
10" ϕ STEEL CASING	12	FT.	
8" ϕ STEEL CASING	50	FT.	
6" ϕ STEEL CASING	126	FT.	

WELL INFORMATION	DIAM. (INCHES)	TYPE	TOP DEPTH (FT.)	BOTTOM DEPTH (FT.)
Well Casing	2	PVC	+2.43	220
Well Screen	2	PVC	220	230

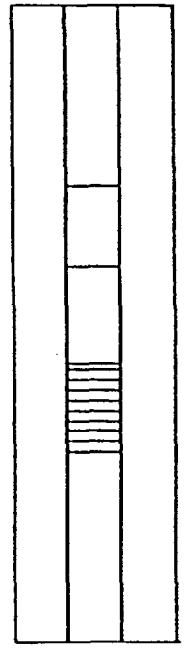
Backfill Key



Well Installation Detail



Well Key

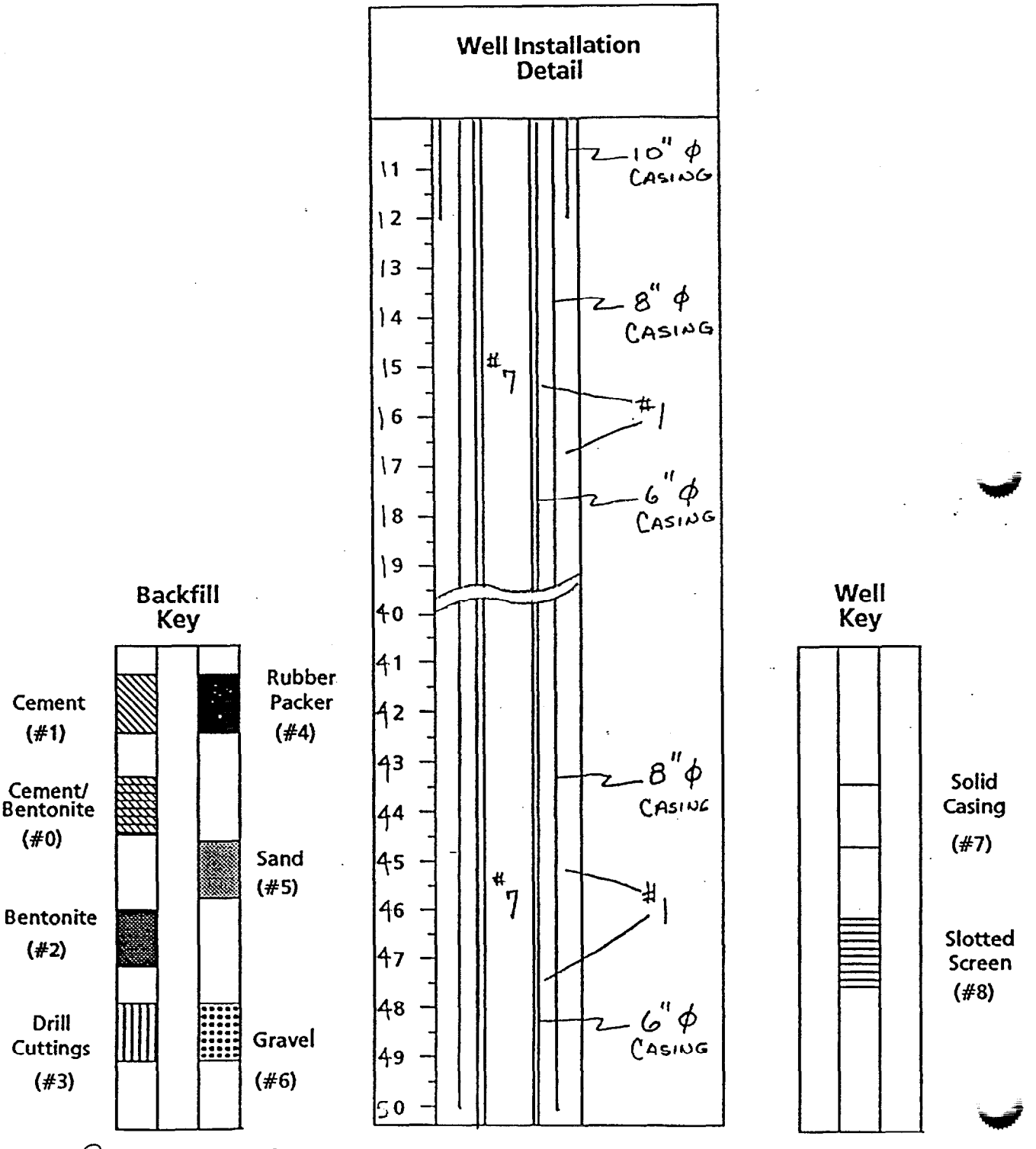


DRILLING CO.: PARRATT - WOLFF, INC. BAKER REP.: E. J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW15BCH SHEET 1 OF 6

Baker
Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW15BCH



DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E.J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW15BCH SHEET 2 OF 6

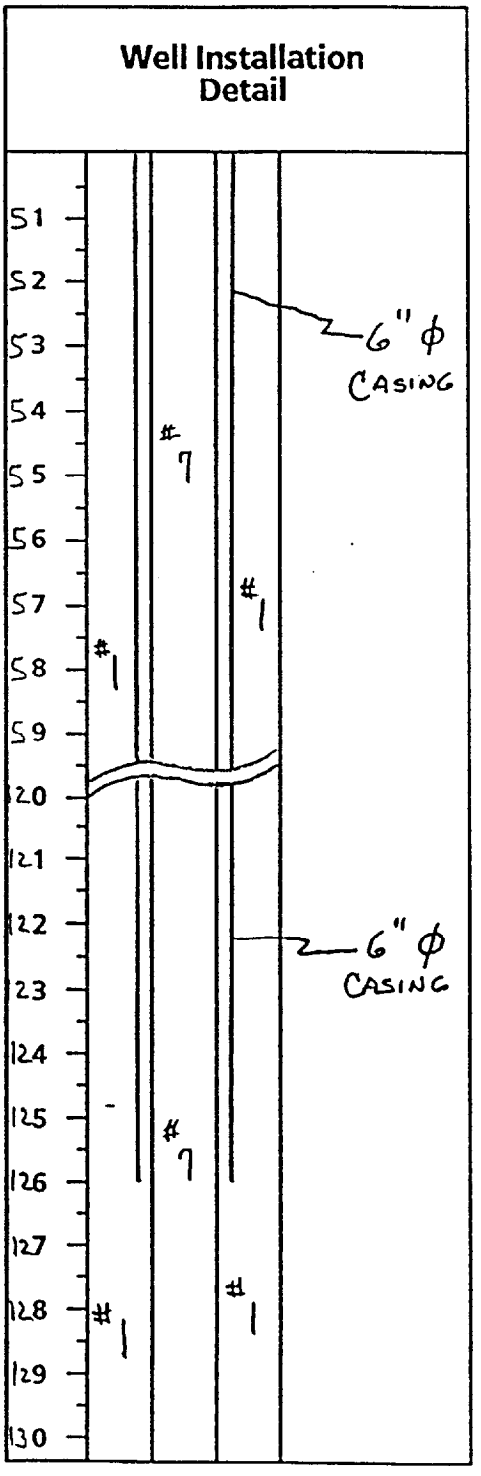
Baker

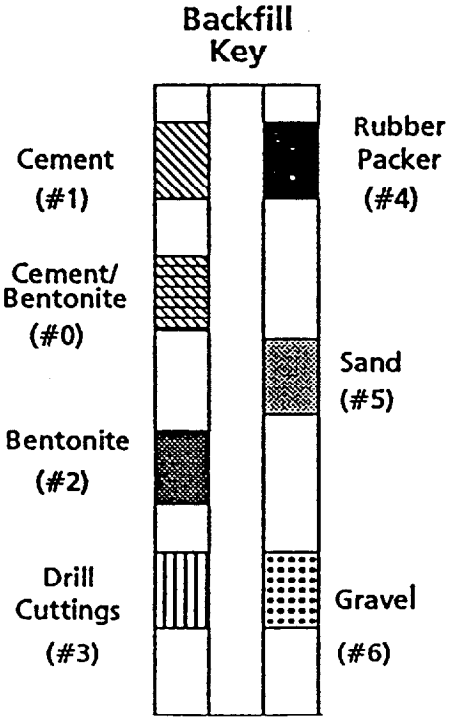
Baker Environmental, Inc.

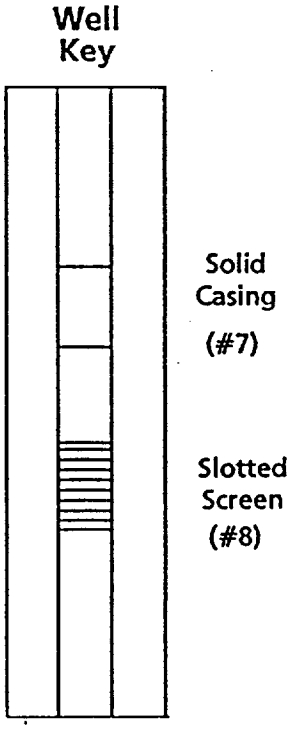
FIELD WELL CONSTRUCTION LOG

PROJECT: SITE 69 - REMEDIAL INVESTIGATION

S.O. NO.: 62470-212 BORING NO.: 69-MW15 BCH







DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E.J. KLEINKAUF

DRILLER: WILLIAM RICE BORING NO.: 69-MW15 BCH SHEET 3 OF 6

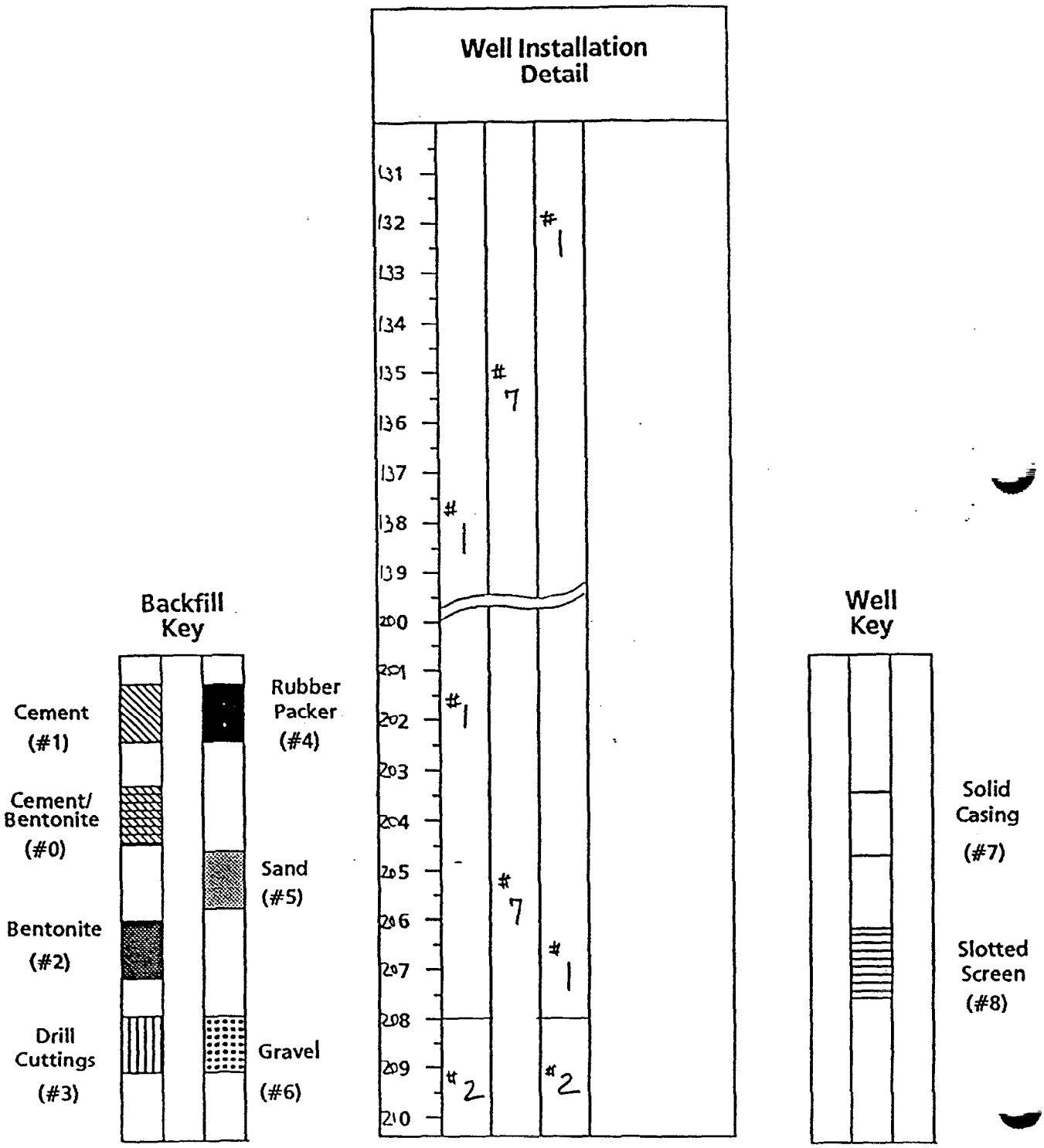
Baker

Baker Environmental, Inc.

FIELD WELL CONSTRUCTION LOG

PROJECT: SITE 69 - REMEDIAL INVESTIGATION

S.O. NO.: 62470-212 BORING NO.: 69-MW15BCH



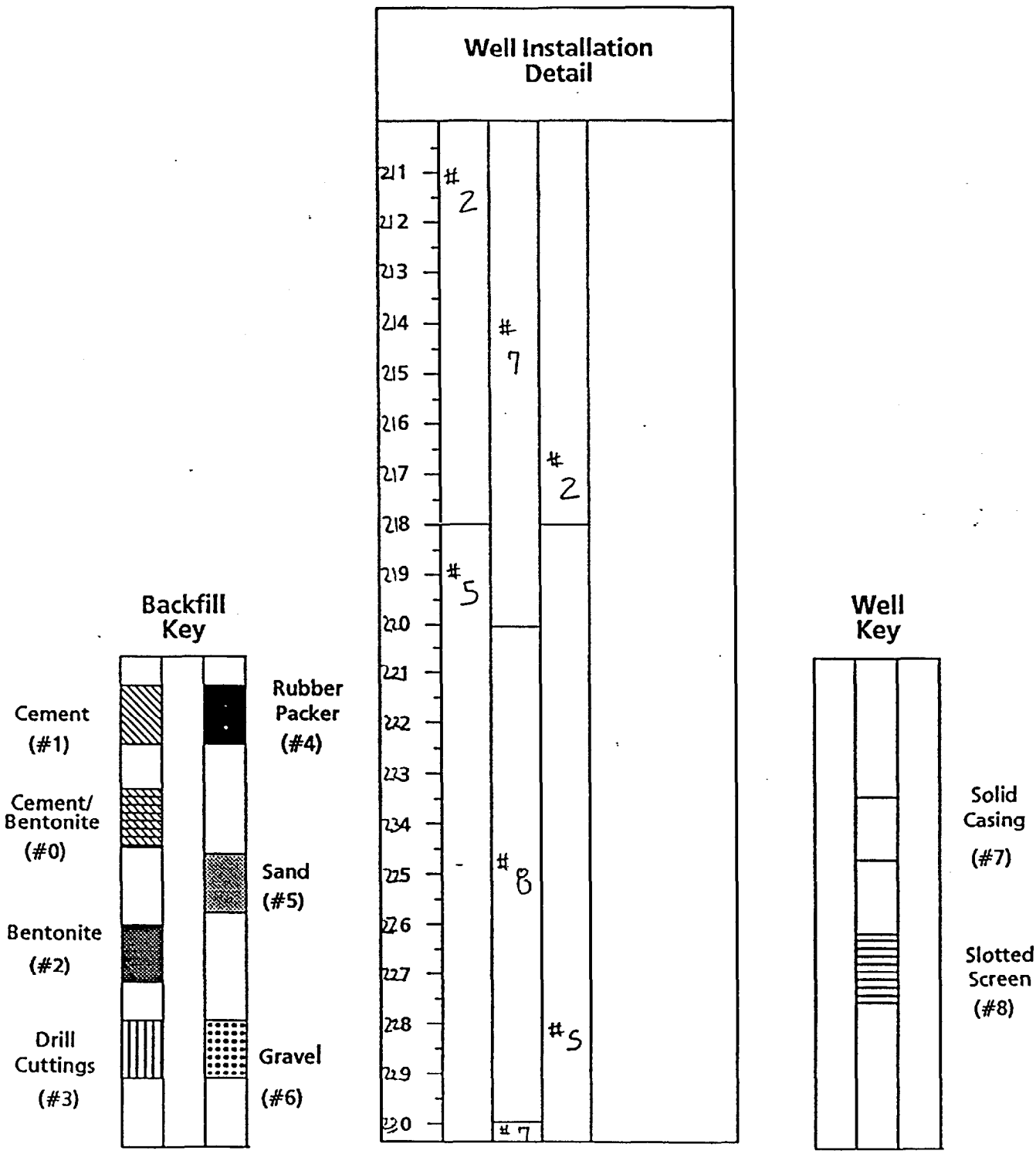
DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E.J. KLEINKAUF

DRILLER: WILLIAM RICE BORING NO.: 69-MW15BCH SHEET 4 OF 6

Baker
Baker Environmental, Inc

FIELD WELL CONSTRUCTION LOG

PROJECT: SITE 69 - REMEDIAL INVESTIGATION
S.O. NO.: 62470-212 BORING NO.: 69-MW15BCH



DRILLING CO.: PARRATT-WOLFF, INC. BAKER REP.: E.J. KLEINKAUF
DRILLER: WILLIAM RICE BORING NO.: 69-MW15BCH SHEET 5 OF 6

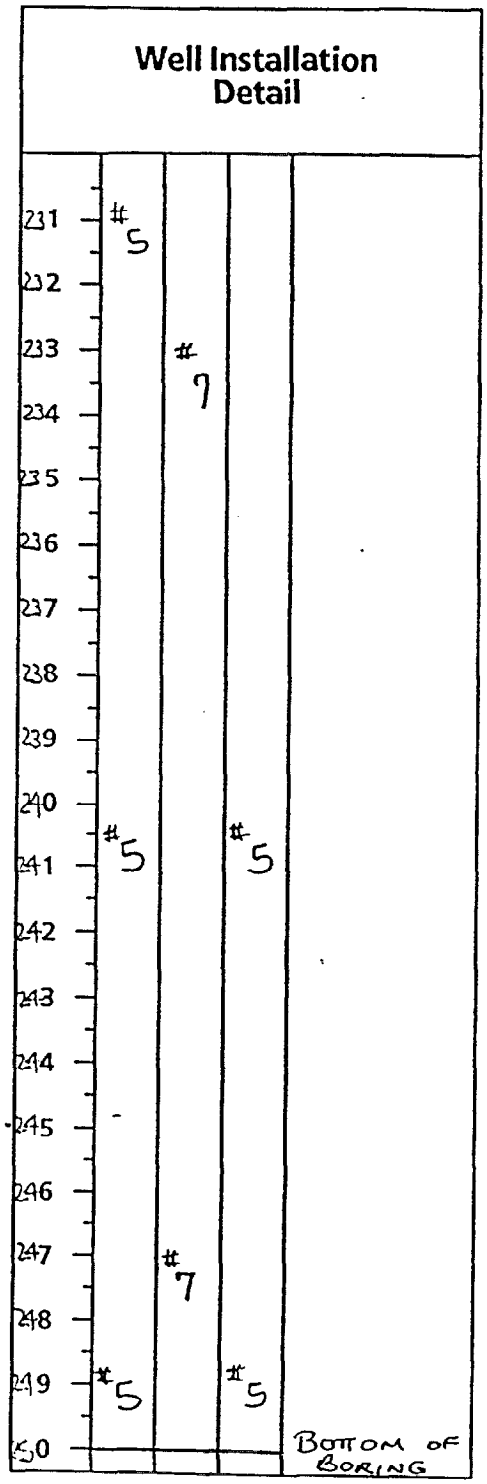
Baker

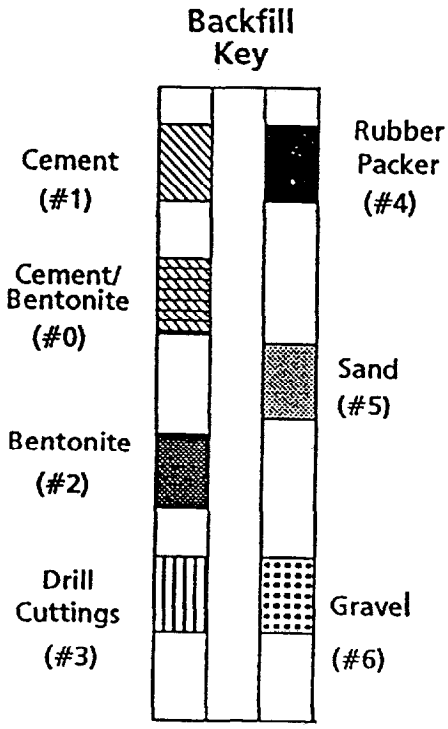
Baker Environmental, Inc.

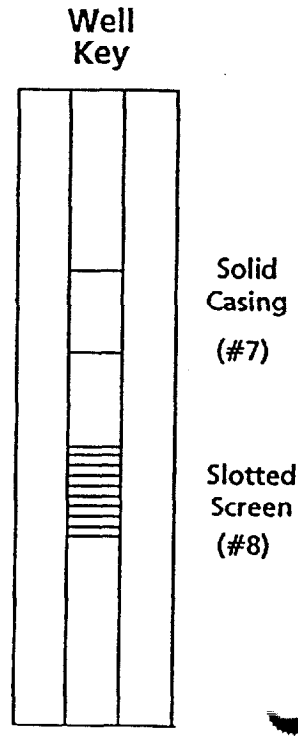
FIELD WELL CONSTRUCTION LOG

PROJECT: SITE 69 - REMEDIAL INVESTIGATION

S.O. NO.: 62470-212 BORING NO.: 69-MW15 BCH







DRILLING CO.: PARRATT - WOLFF, INC. BAKER REP.: E.J. KLEINKAUF

DRILLER: WILLIAM RISE BORING NO.: 69-MW15 BCH SHEET 6 OF 6

APPENDIX E
CHAIN OF CUSTODY FORMS

GP ENVIRONMENTAL SERVICES, INC.

#0001

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 19212

_____ of _____ Pgs.

Project: 19212 - SITES 69, 74, 41
Client: BAKER ENVIRONMENTAL
Send Results To: MATT BARTMAN
Address: 420 ROUSER RD. BLDG 3
CORAOPOLIS PA. 15108
Phone: 412-269-2053

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOA	TCL-SVOA	PEST/PCB	CSM (Deg Products)	TAL-METALS	THIODIGLYCOL					CLIENT COMMENTS
Turnaround Time					Routine										
# of Container															
Container Type					G	G	G	G	G	G					
Preservative Used					NA										
69-CSA-SB18-00	1/6/94	1122	SOIL	ETK	X	X	X	X	X	X					
69-CSA-SB19-00	1/6/94	1142	SOIL	ETK	X	X	X	X	X	X					
69-CSA-SB24	1/6/94	1058	SOIL	ETK	X	X	X	X	X	X					
69-TB-01	1/6/94	1150	Liquid	P.A.M.	X										TRIP BLANK
69-GW12-01	1/6/94	0925	SOIL	SKM RKD	X	X	X		X						
69-RS-01	1/6/94	1240	Liquid	ETK	X	X	X	X	X	X					RINSATE HAND AUGER BUCKET

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Peter A. Mondy	1/6/94 1400				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					Fed-ex 0825847260

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

GP ENVIRONMENTAL SERVICES, INC.

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

_____ of _____ Pgs.

Project: 62470-212 - SITE - 69
Client: BAKER ENVIRONMENTAL
Send Results To: MATT BARTMAN
Address: 420 ROUSER ROAD BLDG 3
CORAOPOLIS, PA 15108
Phone: 412-269-2053

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOA	TCL-SVOA	(TCL) PEST/PCB	CSM (Deg. Prod.)	TAL METALS	THIODIGLYCOL	TAL METALS					CLIENT COMMENTS
Turnaround Time					Routine											
# of Container																
Container Type																
Preservative Used					NA	NA	NA	NA	NA	NA	HNO_3					
69-CSA-SB20-00	1/6/94	1420	SOIL	EJK	X	X	X	X	X	X						
69-CSA-SB21-00	1/6/94	1435	SOIL	EJK	X	X	X	X	X	X						
69-CSA-SB22-00	1/6/94	1455	SOIL	EJK	X	X	X	X	X	X						
69-CSA-SB23-00	1/6/94	1512	SOIL	EJK.	X	X	X	X	X	X						
69-FB-01	1/6/94	1630	LIQUID	SKM/RKP	X	X	X	X		X	X					POTABLE WATER
69-FB-02	1/6/94	1645	LIQUID	PAM	X	X	X	X		X	X					BAKER DECON WATER
69-TB-02	1/7/94	1045	LIQUID	PAM	X											TRIP BLANK

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Peter A. Monday	1/7/94 1300				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					FED-EX 0825847256

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

C.O.C.# 003

GP ENVIRONMENTAL SERVICES, INC.

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212-6

_____ of _____ Pgs.

Project: 62470-212 - SITE 69
Client: BAKER ENVIRONMENTAL
Send Results To: MATT BARTMAN
Address: 420 ROUSER RD. BLDG 3
CORAOPOLIS, PA 15108
Phone: 412-269-2053

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOA	TCL-SVOA	CSM (Deg. PROD)	TCL-Pest/PCB	THIODIGLYCOL	TAL-METALS HNO3	ADDITIONAL RE-EXTRACT VOL.				CLIENT COMMENTS
69-OS-SW03	1/7/94	1545	LIQUID	SKA/RKA/RWK	X	X	X	X	X	X	X				
69-OS-SW02	1/7/94	1615	LIQUID	SKA/RKA/RWK	X	X	X	X	X	X	X				
69-RS-02	1/7/94	1700	LIQUID	EJK	X	X	X	X	X	X					HOLD - DO NOT ANALYZE
69-TB-03	1/8/94	0930	LIQUID	P.A.M	X										TRIP BLANK

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Peter Monday	1/9/94 1300				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					Fed-ex 0825847245

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:
			PLEASE CONSULT W/ MATT BARTMAN CONCERNING 69-TB-03	

GP ENVIRONMENTAL SERVICES, INC.

C.O.C. # 0004

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

1 of 2 Pgs.

Project: 62470-212 SITE 69
Client: BAKER
Send Results To: MATT BARTMAN.
Address: 420 ROUSER RD. BLDG 3
CORAOPOLIS, PA, 15108.
Phone: 412-269-2053.

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOLATILES	TCL-SVOA.	TCL-PEST/PCB.	CSM(Des. Pollut.)	TAL-METALS	THIODIGLYCOL					CLIENT COMMENTS
Turnaround Time					ROUTINE										
# of Container															
Container Type															
Preservative Used															
69-GW11-02	1/7/94	0920	SOLID	SKM/RKP	X	X	X		X						
69-GW11-04	1/7/94	1015	SOLID	SKM/RKP.	X	X	X		X						
69-CSA-SB01-00	1/7/94	0836	SOLID	ETK	X	X	X	X	X	X					
69-CSA-SB02-00	1/7/94	0815	SOLID	ETK	X	X	X	X	X	X					
69-CSA-SB03-00	1/7/94	0855	SOLID	ETK	X	X	X	X	X	X					
69-CSA-SB03-00D	1/7/94	0855	SOLID	ETK	X	X	X	X	X	X					
69-CSA-SB04-00	1/7/94	0957	SOLID	ETK	X	X	X	X	X	X					
69-CSA-SB06-00	1/7/94	0935	SOLID	ETK	X	X	X	X	X	X					
69-CSA-SB07-00	1/7/94	1025	SOLID	ETK	X	X	X	X	X	X					
69-CSA-SB09-00	1/7/94	1040	SOLID	ETK	X	X	X	X	X	X					
69-OS-SD03-06	1/7/94	1600	SOLID	SKM/RKP/RWK	X	X	X	X	X	X					
69-OS-SD02-06	1/7/94	1630	SOLID	SKM/RKP/RWK	X	X	X	X	X	X					

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Peter A. Marquis	1/8/94 1300				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					Fed-ex 0825847245

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

GP ENVIRONMENTAL SERVICES, INC.

C.O.C.# 004

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

2 of 2 Pgs.

Project: 62470-212 SITE 69.
Client: BAKER ENV.
Send Results To:
Address:
Phone:

Turnaround Time: Routine
# of Container
Container Type
Preservative Used
Type of Analysis

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOA	TCL-SVOA	TCL-PEST/PCB	CSM (Des. Prod.)	TAL-METALS	THIODIGLYCOL					CLIENT COMMENTS
69-CSA-SB05-00	1/7/94	1503	SOLID	EJK	X	X	X	X	X	X					
69-CSA-SB08-00	1/7/94	1521	SOLID	EJK	X	X	X	X	X	X					NOTE - MS/MSD
69-CSA-SB08-00D	1/7/94	1521	SOLID	EJK	X	X	X	X	X	X					
69-CSA-SB10-00	1/7/94	1435	SOLID	EJK	X	X	X	X	X	X					
69-CSA-SB12-00	1/7/94	1515	SOLID	EJK	X	X	X	X	X	X					
69-CSA-SB13-00	1/7/94	1416	SOLID	EJK	X	X	X	X	X	X					
69-TB-04	1/8/94	1100	LIQUID	DAM	X										TRIP BLANK
69-CSA-SB16-00	1/8/94	0835	SOLID	EJK	X	X	X	X	X	X					NOTE - MS/MSD
69-CSA-SB16-00D	1/8/94	0835	SOLID	EJK	X	X	X	X	X	X					

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Peter A. Monahan	1/8/97 1300				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					FED-EX 0825847745

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

GP ENVIRONMENTAL SERVICES, INC.

C.O.C. # 0005

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

Project: 62470-212 SITE 69
Client: BAKER ENV.
Send Results To: MATT BARTMAN
Address: 420 ROUSER RD. BLDG. 3
CORAOPOLIS, PA 15108
Phone: 412/269-2053

Turnaround Time: ROUTINE
# of Container
Container Type
Preservative Used
Type of Analysis

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL VOA	TCL-SVOA	TCL-PEST./PCB	CSM (DEG. PRODS)	TAL METALS	THIODYGLYCOL	TAL-METAL					CLIENT COMMENTS
69-CSA-SB11 00	1/8/94	1030	SOLID	EJK	✓	✓	✓	✓	✓	✓						
69-CSA-SB14 00	1/8/94	1015	SOLID	EJK	✓	✓	✓	✓	✓	✓						
69-CSA-SB17 00	1/8/94	0820	SOLID	EJK	✓	✓	✓	✓	✓	✓						
69-CSA-SB15 00	1/8/94	1000	SOLID	EJK	✓	✓	✓	✓	✓	✓						
69-CSA-SB25 00	1/8/94	0905	SOLID	EJK	✓	✓	✓	✓	✓	✓						
69-OS-SD01-06	1/8/94	1040	SOLID	RWK	✓	✓	✓	✓	✓	✓						MS/MSD
69-OS-SD01D 06	1/8/94	1040	SOLID	RWK	✓	✓	✓	✓	✓	✓						DUPLICATE
69-OS-SD01-06	1/8/94	1040	SOLID	RWK	✓					✓						
69-OS-SW01	1/8/94	0950	WATER	RWK	✓	✓	✓	✓	N/A	✓	✓					EXTRA VOLUME FOR REEXTRACT
69-OS-SD01-06	1/8/94	1040	SOLID	RWK		✓	✓	✓	✓							INCLUDES MS/MSD
69-OS-SW01D	1/8/94	0950	WATER	RWK	✓	✓	✓	✓	N/A	✓	✓					DUPLICATE
69-TB-OS	1/8/94	1150	WATER	PAM	✓											

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Peter Mendrey	1/8/94 1:00				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					0825947245

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:
			~~TAL FOR 69-OS-SD06 ARE~~	

C.O.C. #. 105.

GP ENVIRONMENTAL SERVICES, INC.

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

2 of 2 Pgs.

Project: 62470-212
Client: BAKER
Send Results To:
Address:
Phone:

Turnaround Time: Routine
# of Container:
Container Type:
Preservative Used: NA
Type of Analysis

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOA	TCL-SVOA	TCL-Pesticide	TAL-Metals							CLIENT COMMENTS
69-GW09-02	1/6/94	0925	~~Soil~~ Soil	SKM	X	X	X	X							
69-GW09-05	1/8/94	1035	~~Soil~~ Soil	SKM	X	X	X	X							

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Peter A Monday	1/8/94 1300				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					0825847245

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

C.O.C. # 0006

GP ENVIRONMENTAL SERVICES, INC.

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

Project: 62470-212 SITE 69
Client: BAKER ENVIRONMENTAL INC
Send Results To: MATT PARTMAN
Address:
Phone:

Turnaround Time: Routine
# of Container
Container Type
Preservative Used: HNO_3

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOA	TCL-SVOA	TCL-Pest/PCB	CSM(Des, PRAD)	TAL-METALS	Thio Dyglycol	Extra vol. for re-extract	TAL-METALS			CLIENT COMMENTS
69-DA-SW01	1/8/94	1505	LIQUID	RWK	X	X	X	X	X	X	X				
69-DA-SW02	1/8/94	1540	LIQUID	RWK	X	X	X	X	X	X	X				
69-DA-SD01-06	1/8/94	1520	SOLID	RWK	X	X	X	X		X		X			
69-DA-SD02-06	1/8/94	1600	SOLID	RWK	X	X	X	X		X		X			
69-GW12DW-01	1/8/94	1505	SOLID	SKM/RKP	X	X	X					X			
69-BB-SB01-00	1/8/94	1425	SOLID	ETK	X	X	X	X		X		X			
69-BB-SB02-00	1/8/94	1612	SOLID	ETK	X	X	X	X		X		X			
69-BB-SB03-00	1/8/94	1545	SOLID	ETK	X	X	X	X		X		X			
69-BB-SB04-00	1/8/94	1615	SOLID	ETK	X	X	X	X		X		X			
69-DA-SW04	1/9/94	0826	LIQUID	ETK	X	X	X	X	X	X	X				
69-DA-SW03	1/9/94	0956	LIQUID	ETK	X	X	X	X	X	X	X				
69-DA-SD06-06	1/9/94	0955	SOLID	ETK	X	X	X	X		X		X			

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Peter A. Monday	1/10/94 1300.				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					Fed-ex 0825 8472 34

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

GP ENVIRONMENTAL SERVICES, INC.

C.O.C.#0006

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

2 of 2 Pgs.

Project: 62470-212-SITE 69
Client: BAKER ENVIRONMENTAL INC
Send Results To: MATT BARTMAN.
Address:
Phone:

Turnaround Time	ROUTINE										
# of Container											
Container Type											
Preservative Used											
Type of Analysis	TCL-VOA	TCL-SVOA	TCL-PEST/PCB	CSM (DEF. PROD)	TAL METALS	THIODIGLYCOL					

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOA	TCL-SVOA	TCL-PEST/PCB	CSM (DEF. PROD)	TAL METALS	THIODIGLYCOL					CLIENT COMMENTS
69-DA-SD04-06	11/10/94	0830	SOLID	EJK	X	X	X	X	X	X					
69-TB-06	11/10/94	1025	LIQUID	PAM	X										TRIP BLANK.

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Linda Monday	11/10/94 1300				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					FED-EX 0825847234

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

GP ENVIRONMENTAL SERVICES, INC.

C.O.C. #0007

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

1 of 1 Pgs.

Project: 62470-212
Client: BAKER ENVIRONMENTAL INC.
Send Results To: MATT BARTMAN.
Address:
Phone:

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOA	TCL-SVOA	TCL-PEST/PCB	TAL-METALS		PARTICLE SIZE	ATTERBERG LIMITS				CLIENT COMMENTS
Turnaround Time															
# of Container															
Container Type															
Preservative Used															
Type of Analysis															
69-GW10-01	1/9/94	1040	SOLID	SKM/RKP	X	X	X	X							
69-GW10-03	1/9/94	1102	SOLID	SKM/RKP	X	X	X	X							
69-GW02DW-01	1/9/94	1535	SOLID	SKM/RKP	X	X	X	X							
69-GW02DW-03	1/9/94	1600	SOLID	SKM/RKP	X	X	X	X							
69-GW02DW	1/9/94	1615	SOLID	SKM/RKP						X	X				ENV. PARAMETERS
69-TB-07	1/10/93	1130	LIQUID	RWK	X										TRIP BLANK.

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Peter a Monday	1/10/93 1300				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					FED-EX. 0825847234

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

C.O.C.# 0008

GP ENVIRONMENTAL SERVICES, INC.

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

1 of 1 Pgs.

Project: 62470-212 SITE 69
Client: BAKER
Send Results To: MATT BARTMAN
Address:
Phone:

Turnaround Time: Routine
# of Container
Container Type
Preservative Used
Type of Analysis

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOA	TCL-SVOA	TCL Pest/PCB	TAL METALS	CYANIDE						CLIENT COMMENTS
69-GW02DW-01	11/2/94	0740	solid	PAM	X	X	X	X	X						NOTE-MS/MSD
69-GW02DW-01D	11/2/94	0740	solid	PAM	X	X	X	X	X						
69-TB-08	11/2/94	0800	LIQUID	PAM	X										TRIP BLANK

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Pedro Morales	11/2/94 1300.				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					FED-EX 082584699 1

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

COC# 00009

GP ENVIRONMENTAL SERVICES, INC.

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

1 of 1 Pgs.

Project: 62470-212 SITE 69
Client: BAKER
Send Results To: MATT BARTMAN
Address:
Phone:

Turnaround Time: 7DAY / Routine
# of Container
Container Type
Preservative Used: HNO3 / HNO3 / NaOH
Type of Analysis: *

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOA	TCL-SVOA	TCL-PEST/PCB	CSM (DEG. PROD.)	THIODIGLYCOL	TAL-TOTAL METALS	DISS. METALS	CYANIDE			CLIENT COMMENTS
69-GW12-01	1/20/94	1045	LIQUID	PAM/MDS	X	X	X	X	X	X	X	X			(1.)
69-GW11-01	1/20/94	1215	LIQUID	PAM/MDS	X	X	X	X	X	X	X	X			(1.)
69-GW09-01	1/20/94	1445	LIQUID	PAM/MDS	X	X	X	X	X	X	X	X			(1.)
69-GW10-01	1/20/94	1515	LIQUID	PAM/MDS	X	X	X	X	X	X	X	X			(1.)
69-RS-03	1/21/94	0930	LIQUID	PAM/MDS	X	X	X	X	X	X	X	X			RINSATE - TEFLON FAN
69-TB-09	1/21/94	1100	LIQUID	PAM/MDS	X										TRIP BLANK.

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Patricia Manda	1/21/94 1210				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					FED-EX 0825846910

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:
			(1) VOA - 7DAY TURN, ROUTINE FOR ALL OTHER ANALYSES REQUESTED.	

C.O.C.#001c

GP ENVIRONMENTAL SERVICES, INC.

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

_____ of _____ Pgs.

Project: 62470-212 SITE 69.
Client: BAKER
Send Results To: MATT BARTMAN
Address:
Phone:

Turnaround Time: ROUTINE
# of Container
Container Type
Preservative Used: HNO3 HNO3 NaOH

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOA	TCL-SVOA	TCL-Pest/PCB	CSM(Dex.PROD).	Triodn94/Kol	TAL-Total Metals	Diss. Metals.	CYANIDE			CLIENT COMMENTS
69-GW08-01	1/21/94	1415	LIQUID	ETK/WP	X	X	X	X	X	X	X	X			
69-GW06-01	1/21/94	1525	LIQUID	ETK/WP	X	X	X	X	X	X	X	X			
69-GW05-01	1/21/94	1510	LIQUID	PAM/MDS	X	X	X	X	X	X	X	X			
69-RS-04	1/21/94	1720	LIQUID	PAM/MDS	X	X	X	X	X	X	X	X			RINSATE - HOLD DO NOT ANAL
69-TB-10	1/22/94	0800	LIQUID	PAM/MDS	X										TRIP BLANK.

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Peter a Mendez	1/22/94 1500				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					FED-EX 0825846825

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

GP ENVIRONMENTAL SERVICES, INC.

C.O.C.# 0011

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

1 of 1 Pgs.

Project: 62470-212 SITE 69.
Client: BAKER ENVIRONMENTAL INC.
Send Results To: MAT BARTMAN.
Address:
Phone:

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-SVOA	TCL-Pest/PCB	CSM (Deg. MOD.)	Tri/DP/Glycol	TAL-Total Metals	Diss. Metals	Cyanide	BOD	Standard Plate Count	COD, TKN, Total Phosphorus	TSS, TDS, Alkalinity	CLIENT COMMENTS
Turnaround Time																
# of Container																
Container Type																
Preservative Used										HNO_3	HNO_3	NaOH			H_2SO_4	
69-GW02-01	1/22/94	1350	LIQUID	PAM/MDS	X	X	X	X	X	X	X	X	X	X	X	
69-GW02-01	1/22/94	1350	LIQUID	PAM/MDS	X	X	X	X	X	X	X					NOTE MS/MSD
69-GW02-DD	1/22/94	1350	LIQUID	PAM/MDS	X	X	X	X	X	X	X					
69-GW04-01	1/22/94	1100	LIQUID	PAM/MDS	X	X	X	X	X	X	X					
69-RS-C5	1/22/94	0900	LIQUID	PAM/MDS	X	X	X	X	X	X	X					RINSATE - TRIPLICATE BATS.

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Peter a. Monday	1/24/94 1600				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					FED-EX 0825846792

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

GP ENVIRONMENTAL SERVICES, INC.

C.O.C.# 512

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

1 of 1 Pgs.

Project: 62470-212 SITE 69
Client: BAKER ENVIRONMENTAL INC.
Send Results To: MATT BARTMAN
Address:
Phone:

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOA	TCL-SVOA	TCL-PEST/PCB	CSM (DEG. PROD.)	THIODIGLYCOL	TAL-TOTAL METALS	DISS. METALS	CYANIDE			CLIENT COMMENTS
Turnaround Time															
# of Container															
Container Type															
Preservative Used											HNO3	HNO3	NaOH		
69-GW02-01	1/22/94	1350	LIQUID	PAM/MDS	X										NOTE MS/MSD
69-GW02-01D	1/22/94	1350	LIQUID	PAM/MDS	X										
69-GW04-01	1/22/94	1100	LIQUID	PAM/MDS	X										
69-RS-05	1/23/94	0900	LIQUID	PAM/MDS	X										
69-GW07-01	1/22/94	1000	LIQUID	PAM/MDS	X	X	X	X	X	X	X	X			
69-GW03-01	1/22/94	1530	LIQUID	PAM/MDS	X	X	X	X	X	X	X	X			
69-GW01-01	1/22/94	1630	LIQUID	PAM/MDS	X	X	X	X	X	X	X	X			
69-TB-11	1/23/94	1200	LIQUID	PAM/MDS	X										TRIP BLANK

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Peter A. Monday	1/24/94 1600				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					FED-EX 082584 6792

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

GP ENVIRONMENTAL SERVICES, INC.

C.O.C. # 0013

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

1 of 1 Pgs.

Project: 62470-212 SITE 69
Client: BAKER ENVIRONMENTAL INC.
Send Results To: MAT BARTMAN.
Address:
Phone:

Turnaround Time: * Routine
# of Container
Container Type
Preservative Used: HNO3 HNO3 NaOH
Type of Analysis

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOA	TCL-SVOA	TCL-Pest/PCB	TAL-METALS	Dissolved METALS	CYANIDE	CSM (Reg. Metal)	Thiodiglycol	Gen. Parameters: BOD, Plate Count, TDS, TOS, Total Alkalinity, COD, TKN, Total Phosphorus		CLIENT COMMENTS
69-GW02DW-01	2/17/94	1420	LIQUID	RWK/RKP	X	X	X	X		X	X	X	X		* NOTE MS/MSD
69-GW02DWD-01	2/17/94	1420	LIQUID	RWK/RKP					X						* MS/MSD-AL
69-GW02DW-01D	2/17/94	1420	LIQUID	RWK/RKP	X	X	X	X		X	X	X			
69-GW02DWD-01D	2/17/94	1420	LIQUID	RWK/RKP					X						
69-GW12DW-01	2/18/94	0930	LIQUID	RWK/WMP	X										
69-RS-06	2/18/94	1115	LIQUID	RWK/WMP	X										
69-TB-12	2/18/94	1200	LIQUID	PAM	X										

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Peter a Monaline	2/18/94 1600				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					FED-ex 0825847024

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:
			* NOTE VOA - QUICK TURN - TUST FOR SAMPLE # 69-GW02DW-01 & 69-GW12DW-01	

GP ENVIRONMENTAL SERVICES, INC.

C.O.C.# 0014

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

1 of 1 Pg

Project: 62470-212 SITE 69
Client: BAKER ENVIRONMENTAL INC.
Send Results To: MATT BARTMAN
Address:
Phone:

Turnaround Time: Routine
# of Container
Container Type
Preservative Used: HNO3 HNO3 NaOH
Type of Analysis

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	Tcl-SVOA	Tcl-Pest/PCB	TAL-METALS	Dissolved METALS	CYANIDE	CSM(Des. PROD)	Thiodyglycol				CLIENT COMMENTS
69-GW12DW-01	2/18/94	0930	Liquid	RWK/WMP	X	X	X		X	X	X				
69-GW12DWD-01	2/18/94	0930	Liquid	RWK/WMP				X							
69-RS-06	2/18/94	~~1200~~ 1115	Liquid	RWK/WMP	X	X	X		X	X	X				
69-RSD-06	2/18/94	1115	Liquid	RWK/WMP				X							
212-PB-01	2/18/94	1330	Liquid	~~RWK~~ PAM			X		X						PRESERVATION BLANK

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Peter Mondy	2/18/94 1600				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					Fed-ex 0825847024

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

GP ENVIRONMENTAL SERVICES, INC.

C.O.C.#41027

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

1 of 1 Pgs.

Project: 62470 - 212 Sites 41 & 69.
Client: BAKER ENVIRONMENTAL, INC.
Send Results To: MATT BARTMAN.
Address:
Phone:

Turnaround Time: 7 DAYS
# of Container
Container Type
Preservative Used: HNO_3
Type of Analysis

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOA	TCL-SVOA	TCL-Pest/PCB	TAL-METALS		TCL-PCB	MIREX	CSM (Des Prod.)	Triethylglycol	Full TCLP	RCRA (Reactivity, Corrosivity & Ignitability)	CLIENT COMMENTS
41-RB-01	2/19/94	1600	SOLID	PAM/EJK						X	X	X	X	X	X	
69-RB-01	2/19/94	1350	SOLID	PAM/EJK						X	X	X	X	X	X	
41-TK-01	2/19/94	1630	LIQUID	PAM/EJK	X	X	X	X								
69-TK-01	2/19/94	1410	LIQUID	PAM/EJK	X	X	X	X								
212-DW-01	2/19/94	1400	LIQUID	PAM	X	X	X	X								

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Petra Monday	2/21/94 1600				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					FED EX 0825846921

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:
			NOTE - 7 DAY TURN AROUND	

GP ENVIRONMENTAL SERVICES, INC.

C.O.C. #69025

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

1 of 2 Pgs.

Project: 62470-212
Client: BAKER ENVIRONMENTAL INC.
Send Results To: MATT BARTMAN
Address: 420 ROUSER RD.
CORAOPOLIS PA 15108
Phone: 412-269-6000

Turnaround Time: 14 DAYS

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOA	Semi-VOA	Pest/PCB	TAL-METALS	Dissolved METALS (HNO3 / HNO3)						CLIENT COMMENTS
# of Container															
Container Type															
Preservative Used															
69-GW13I-01	6/6/94	1010	LIQUID	TFT/MGT	X	X	X	X							
69-GW13ID-01	6/6/94	1010	LIQUID						X						
69-GW13-01	6/6/94	1110	LIQUID		X	X	X	X							
69-GW13D-01	6/6/94	1110	LIQUID						X						
69-GW03I-01	6/6/94	1430	LIQUID		X	X	X	X							
69-GW03ID-01	6/6/94	1430	LIQUID						X						
69-RS-15	6/6/94	1920	LIQUID		X	X	X	X							RINSATE - TEFLON BAILER
69-RSD-15	6/6/94	1920	LIQUID						X						
69-GW02DD-01	6/6/94	1630	LIQUID		X	X	X	X							
69-GW02DDD-01	6/6/94	1630	LIQUID						X						
69-TB-15	6/7/94	1030	LIQUID	YAM	X*										NOTE TRIP BLANK PRESERVED HCL.

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Peter a Mondey	6/7/94 1600				

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:
					FED-AIR 0825847186

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:
			* HCL PRESERVED	

GP ENVIRONMENTAL SERVICES, INC.

C.O.C. #69025

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

2 of 2 Pgs

Project:

Client: PARKER

Send Results To:

Address:

Phone:

Turnaround Time: 4 DAYS

# of Container

Container Type

Preservative Used

Type of Analysis: TCL-VOA

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	TCL-VOA										CLIENT COMMENTS
69-GW03DD-01D	6/4/94	1630	LIQUID	TFT/MGT	X										
69-GW02DD-01	6/4/94	1630	LIQUID	/	X										* note (MS/

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
Relinquished By:	Date/Time	Received By:	Date/Time / Shipper:	Airbill No.: Fed-ex 0825847186	
Relinquished By:	Date/Time	Received By:	Lab Comments:		Temp:

C.O.C. # 69C-6.

~~HALLIBURTON NUS Environmental~~ GP ENVIRONMENTAL SERVICES INC.
Corporation and Subsidiaries

CHAIN OF CUSTODY RECORD

PROJECT NO.: 62470-212

SITE NAME: SITE 69 / BAKER

SAMPLERS (SIGNATURE):

STATION NO.	DATE	TIME	COMP	GRAB	STATION LOCATION	NO. OF CONTAINERS	SEMI-VOLS	PEST/PCB	TAL-METALS	DISSOLVED METALS			REMARKS
	6/6/94	1630		X	69-GW02DD-01D	3	X	X	X				
	6/6/94	1630		X	69-GW02DDD-01D	1				X			
	6/6/94	1630		X	69-GW02DD-01	~~3~~ 6 TAL	X	X	X				* note (MS/MSD)
	6/6/94	1630		X	69-GW02DDD-01	2				X			* note (MS/MSD)

RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):	RELINQUISHED BY (SIGNATURE):	DATE / TIME:	RECEIVED BY (SIGNATURE):
Felice a Monday	6/7/94 1600				
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: Fed-ex 0825847186	

NUS 440 REVISED 0891

CHAIN-OF-CUSTODY RECORD

® Microbac Laboratories, Inc.
Mid-Atlantic Division
604 Morris Drive, Newport News, VA 23605
804/825-1000 Fax: 804/825-1200
Air • Fuel • Water • Food • Wastes

LAB USE ONLY

Due Date _____
W/O#: _____
# of Bottles: _____
Special Instructions: _____

Company	BAKER ENVIRONMENTAL, INC.
Contact	Ed KLEINKAUF
Mailing Address	420 ROUSER Rd. AOP Building #3 Coraopolis - PA 15108
Phone & Fax	412-769-6000
Billing Address	SAME
Job Number	62470-212-0000-00530
Purchase Order No.	

Sample ID	Sample Location	Date/Time Collected	Collectors Initials	Matrix	Preservative	Analysis
69GW09	SITE 69	2-21-95 1430	[illegible]		HCl	VOC 601
69GW135		1640				
69FB		1545				
69ER		1700				
TRIP BLANK						

Special Instructions: _____

Possible Hazard Identification: (Please indicate if sample(s) are hazardous materials and/or suspected of containing levels of hazardous substances.)

☒ Nonhazard ☐ Flammable ☐ Skin Irritant ☐ Highly Toxic ☐ Biological ☐ Other _____ Please Specify

Turnaround Time Required: (Rush must be approved by appropriate Manager and is subject to surcharge.)*

Normal_____ ***Rush**_____ 24_____ 48_____ Other 3 days

Sample Disposal: Return to Client_____ or Disposal by Lab_____ (Laboratory reserves the right to return hazardous samples to client)

	Signature	Company	Date/Time
Relinquished By:	[illegible]	BAKER	2-21-95 1800
Received By:			
Relinquished By:			
Received By:			
Relinquished By:			
Received By:			

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CHAIN-OF-CUSTODY RECORD

LAB USE ONLY

Due Date_____
W/O#:_____
# of Bottles:_____
Special Instructions:_____

Company	BAKER ENVIRONMENTAL, INC
Contact	Ed KLEINKAUF
Mailing Address	420 ROUSER RD AOP BLDG 5
	COraopolis, PA 15108
Phone & Fax	412-269-6000
Billing Address	SAME
Job Number	12470-212-0000 -00530
Purchase Order No.	

Sample ID	Sample Location	Date/Time Collected	Collectors Initials	Matrix	Preservative	Analysis
69GW13DW	SITE 69	7-22-95 1025	[illegible]		HCl	601 VOC
69GW11	↓	1150	↓		↓	
69GW12		1605				
69ER2		1155				HOLD
69FB2		1200				HOLD
TRIP BLANK						

Special Instructions:_____

Possible Hazard Identification: (Please indicate if sample(s) are hazardous materials and/or suspected of containing levels of hazardous substances.)

☐ Nonhazard ☐ Flammable ☐ Skin Irritant ☐ Highly Toxic ☐ Biological ☐ Other _____ (Please Specify)

Turnaround Time Required: (Rush must be approved by appropriate Manager and is subject to surcharge.)*

Normal_____ ***Rush**_____ 24_____ 48_____ Other 3 day

Sample Disposal: Return to Client_____ or Disposal by Lab_____ (Laboratory reserves the right to return hazardous samples to client)

	Signature	Company	Date/Time
Relinquished By:	[signature]	BAKER	7-22-95 1800
Received By:			
Relinquished By:			
Received By:			
Relinquished By:			
Received By:			

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CHAIN-OF-CUSTODY RECORD

LAB USE ONLY

Due Date_____
W/O#:_____
# of Bottles:_____
Special Instructions:_____

Company	BAKER ENVIRONMENTAL, INC
Contact	Ed KLEINKAUF
Mailing Address	420 ROUSER Rd AOP Bldg 3
	CORAOPOLIS, PA 15108
Phone & Fax	412-269-6000
Billing Address	SAME
Job Number	62470-212-0000-00550
Purchase Order No.	

Sample ID	Sample Location	Date/Time Collected	Collectors Initials	Matrix	Preservative	Analysis
69GW12DW	SITE 69	2-23-95 0920	JEG		HCl	601 VOC
69FB3	↓	0820	↓		↓	↓
69ER3		0950				
69GW14DW		1225				
69GW14IW		1450				
69GW14IWA		1500				
69GW10	↓	1700	↓		↓	↓
TRIP BLANK	LAB					

Special Instructions: 2-COOLERS SEAL

Possible Hazard Identification: (Please indicate if sample(s) are hazardous materials and/or suspected of containing levels of hazardous substances.)

☐ Nonhazard ☐ Flammable ☐ Skin Irritant ☐ Highly Toxic ☐ Biological ☐ Other _____ Please Specify

Turnaround Time Required: (Rush must be approved by appropriate Manager and is subject to surcharge.)*

Normal_____ *Rush_____ 24_____ 48_____ Other 3 DAY

Sample Disposal: Return to Client_____ or Disposal by Lab_____ (Laboratory reserves the right to return hazardous samples to client)

	Signature	Company	Date/Time
Relinquished By:	[signature]	Baker	2-23-95 1800
Received By:			
Relinquished By:			
Received By:			
Relinquished By:			
Received By:			

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CHAIN-O. USTODY RECORD

LAB USE ONLY

Due Date
W/O#:
# of Bottles:
Special Instructions:

Company	BAKER ENVIRONMENTAL, INC
Contact	Ed KLEINKAUF
Mailing Address	420 ROUSER Rd. ACP BLDG 3
	CORAOPOLIS, 15108
Phone & Fax	412-269-6000
Billing Address	SAME
Job Number	62470-212-0000-00530
Purchase Order No.	

Sample ID	Sample Location	Date/Time Collected	Collectors Initials	Matrix	Preservative	Analysis
69GW 14	SITE 69	2-24-95 1130	[illegible]		HCl	601 VOC
69 FB 4	↓	1035	↓		↓	HOLD
69 ER 4	↓	1145	↓		↓	HOLD
69GW02 DD	↓	1345	↓		↓	↓
69GW 02 DW	↓	1515	↓		↓	↓
69 GW 02	↓	1700	↓		↓	↓
69GW 02A	↓	1715	↓		↓	↓
TRIP BLANK	LAB					

Special Instructions:

Possible Hazard Identification: (Please indicate if sample(s) are hazardous materials and/or suspected of containing levels of hazardous substances.)

☐ Nonhazard ☐ Flammable ☐ Skin Irritant ☐ Highly Toxic ☐ Biological ☐ Other _____ Please Specify

Turnaround Time Required: (Rush must be approved by appropriate Manager and is subject to surcharge.)*

Normal_____ *Rush_____ 24_____ 48_____ Other 30 day

Sample Disposal: Return to Client_____ or Disposal by Lab_____ (Laboratory reserves the right to return hazardous samples to client)

	Signature	Company	Date/Time
Relinquished By:	[signature]	[signature]	2-24-95 1800
Received By:			
Relinquished By:			
Received By:			
Relinquished By:			
Received By:			

Microbac

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CHAIN-OF-CUSTODY RECORD

LAB USE ONLY

Due Date
W/O#:
# of Bottles:
Special Instructions:

Company	BAKER ENVIRONMENTAL, INC
Contact	ED KLEINKAUF
Mailing Address	420 ROUSER Rd AOP BLDG 3
	CORAOPOLIS, PA 15108
Phone & Fax	412-269-6000
Billing Address	SAME
Job Number	62476-212-0000-00530
Purchase Order No.	

Sample ID	Sample Location	Date/Time Collected	Collectors Initials	Matrix	Preservative	Analysis
69GW03DW	SITE 69	2-25-95 0930	MJ		HCl	601 VOC
69 GW3	↓	1113	↓		↓	↓
69 FB5		0750				
69 ER5		1240				
69 GW 4		1235				
69 GW5		1500				
TRIP BLANK						

Special Instructions:

Possible Hazard Identification: (Please indicate if sample(s) are hazardous materials and/or suspected of containing levels of hazardous substances.)

☐ Nonhazard ☐ Flammable ☐ Skin Irritant ☐ Highly Toxic ☐ Biological ☐ Other _____ Please Specify

Turnaround Time Required: (Rush must be approved by appropriate Manager and is subject to surcharge.)*

Normal_____ *Rush_____ 24_____ 48_____ Other 3-1-95

Sample Disposal: Return to Client_____ or Disposal by Lab_____ (Laboratory reserves the right to return hazardous samples to client)

	Signature	Company	Date/Time
Relinquished By:	[signature]	[signature]	2-25-95 1630
Received By:			
Relinquished By:			
Received By:			
Relinquished By:			
Received By:			

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CHAIN-OF-CUSTODY RECORD

LAB USE ONLY

Due Date_____
W/O#:_____
# of Bottles:_____
Special Instructions:_____

Company	BAKER ENVIRONMENTAL, INC
Contact	Ed Kaufman
Mailing Address	420 Rouser Rd AOP Bldg 3 Coraopolis, PA 15108
Phone & Fax	412-269-6000
Billing Address	SAME
Job Number	62470-212-0000-00530
Purchase Order No.	

Sample ID	Sample Location	Date/Time Collected	Collectors Initials	Matrix	Preservative	Analysis
69GW7	Site 69	2-26-95 1042	KG		HCl	601 VOC
69FB6	↓	0905	↓		↓	HOLD
69FR6	↓	1050	↓		↓	HOLD
69GW6	↓	1220	↓		↓	
69GW8	↓	1502	↓		↓	
69GW1	↓	1745	↓		↓	
TRIP BLANK	LAB					

Special Instructions:_____

Possible Hazard Identification: (Please indicate if sample(s) are hazardous materials and/or suspected of containing levels of hazardous substances.)

☐ Nonhazard ☐ Flammable ☐ Skin Irritant ☐ Highly Toxic ☐ Biological ☐ Other _____ Please Specify

Turnaround Time Required: (Rush must be approved by appropriate Manager and is subject to surcharge.)*

Normal____ ***Rush**____ 24____ 48____ Other 3 day

Sample Disposal: Return to Client____ or Disposal by Lab____ (Laboratory reserves the right to return hazardous samples to client)

	Signature	Company	Date/Time
Relinquished By:	[signature]	[illegible]	2-27-95 0900
Received By:	[signature]		
Relinquished By:			
Received By:			
Relinquished By:			
Received By:			

COC #69400

GP ENVIRONMENTAL SERVICES, INC.

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

1 of ____ Pgs.

Project: MCB CAMP LEJEUNE
Client: BAKER ENVIRONMENTAL
Send Results To: EWARD J. KLEINKAUF
Address: 420 ROUSER RD.
CORAOPOLIS, PA 15108
Phone: 412/269-6000

Turnaround Time	14-DAY
# of Container	1
Container Type	G
Preservative Used	—
Type of Analysis	CSM DEGI COMPOUNDS

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	CSM DEGI COMPOUNDS	CLIENT COMMENTS
69-DA-HP01-03	3/21/95	1130	SOIL	EJK	✓	
69-DA-HP06-01	3/21/95	1230	SOIL	EJK	✓	
69-DA-HP07-03	3/21/95	1405	SOIL	EJK	✓	
69-DA-HP09-03	3/21/95	1530	SOIL	EJK	✓	
69-DA-HP08-03	3/21/95	1700	SOIL	EJK	✓	
69-DA-HP03-02	3/22/95	0850	SOIL	EJK	✓	
69-DA-HP04-02	3/22/95	0945	SOIL	EJK	✓	
69-DA-HP02-01	3/22/95	1045	SOIL	EJK	✓	
69-DA-HP02D-01	3/22/95	1045	SOIL	EJK	✓	DUPLICATE
69-DA-HP05-02	3/22/95	1245	SOIL	EJK	✓	

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
E.J. Kleinkauf	3/22/95 2100	FED EX			

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

Quanterra Environmental Services No. 58[illegible]2

COC # 67401

CLIENT CODE _____

QUOTE / SAR NUMBER _____

Chain-of Custody Record

☐ 1) **QUANTERRA, INC.**
4101 SHUFFLE DR. N.W.
NORTH CANTON, OHIO 44720
PHONE (216) 497-9396 FAX (216) 497-0772

☒ 2) **QUANTERRA, INC.**
450 WILLIAM PITT WAY
PITTSBURGH, PA 15238
PHONE (412) 826-5477 FAX (412) 826-5571

☐ 3) **QUANTERRA, INC.**
5910 BRECKENRIDGE PKWY., STE. H
TAMPA, FL 33610
PHONE (813) 621-0784 FAX (813) 623-6021

PROJ. NO. 62470-212

PROJECT NAME/LOCATION: MCB CAMP LEJEUNE SITE 69

SAMPLERS: (Signature) E.J. Kleinhof

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS	PARAMETER: VOAs						REMARKS
	3/21/95	1130		✓	# 69-DA-HP01-03	2	✓						
	3/21/95	1230		✓	69-DA-HP06-01	2	✓						
	3/21/95	1405		✓	69-DA-HP07-03	2	✓						
	3/21/95	1530		✓	69-DA-HP09-03	2	✓						
	3/21/95	1700		✓	69-DA-HP08-03	2	✓						
	3/22/95	0850		✓	69-DA-HP03-02	2	✓						
	3/22/95	0945		✓	69-DA-HP04-02	2	✓						
	3/22/95	1045		✓	69-DA-HP02-01	2	✓						
	3/22/95	1045		✓	69-DA-HP02D-01	2	✓						DUPLICATE
	3/22/95	1245		✓	69-DA-HP05-02	2	✓						

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
E.J. Kleinhof	3/22/95 2100	FED EX			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	

Distribution Original Accompanies Shipment. Copy returned with Report.

FORM 004

Quanterra Environmental Services No. 58854

COC # 69-405

CLIENT CODE _____

QUOTE / SAR NUMBER _____

Chain-of Custody Record

☐ 1) QUANTERRA, INC.
4101 SHUFFLE DR. N.W.
NORTH CANTON, OHIO 44720
PHONE (216) 497-9396 FAX (216) 497-0772

☒ 2) QUANTERRA, INC.
450 WILLIAM PITT WAY
PITTSBURGH, PA 15238
PHONE (412) 826-5477 FAX (412) 826-5571

☐ 3) QUANTERRA, INC.
5910 BRECKENRIDGE PKWY., STE. H
TAMPA, FL 33610
PHONE (813) 621-0784 FAX (813) 623-6021

PROJ. NO. 62490-212

PROJECT NAME/LOCATION: MCB CAMP LEJEUNE SITE 69

SAMPLERS: (Signature) E. J. Kleinhof

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	VOCS						REMARKS
	3/25/95	0726		X	69-GW03IW-04	2	✓						* NOTE: ALL SAMPLES
	3/25/95	0912		X	69-GW03-04	2	✓						ARE FOR 14-DAY ANALYSI
	"	1145		X	69-GW02DD-04	2	✓						
	"	1340		X	69-GW02-04	2	✓						
	"	1522		X	69-GW02DW-04	2	✓						
	3/26/95	0708		X	69-GW13IW-04	2	✓						
	"	0708		X	69-GW13IWD-04	2	✓						DUPLICATE
	"	0840		X	69-GW13-04	2	✓						
	"	1045		X	69-GW14DW-03	2	✓						
	"	1225		X	69-GW14IW-03	2	✓						
	"	1350		X	69-GW14-03	2	✓						
	3/27/95	1115	X	X	69-RGW125IW-01	22	✓						RINSATE BLANK
	"	1740		X	69-GW15-01	2	✓						
	"	1515		X	69-RB31	2	✓						RINSATE
	3/27/95	1000		X	69-TB31	2	✓						TRIP BLANK

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
E. J. Kleinhof	3/27/95 1600	FED EX			
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	
				PAGE 1 of 2	

Distribution Original Accompanies Shipment. Copy returned with Report.

FORM 004

Quanterra Environmental Services No. 58055

COC # 64-405

CLIENT CODE _____

QUOTE / SAR NUMBER _____

Chain-of Custody Record

☐ 1) **QUANTERRA, INC.**
4101 SHUFFLE DR. N.W.
NORTH CANTON, OHIO 44720
PHONE (216) 497-9396 FAX (216) 497-0772

☒ 2) **QUANTERRA, INC.**
450 WILLIAM PITT WAY
PITTSBURGH, PA 15238
PHONE (412) 826-5477 FAX (412) 826-5571

☐ 3) **QUANTERRA, INC.**
5910 BRECKENRIDGE PKWY., STE. H
TAMPA, FL 33610
PHONE (813) 621-0784 FAX (813) 623-6021

PROJ. NO. 62470-212

PROJECT NAME/LOCATION: MCB CAMP LEJEUNE SITE 69

SAMPLERS: (Signature) E. J. Kleinhof

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	TCL VOCs	TCL BNA	METALS	Hg	PEST/PCBs	RCRA CHARACTER.	REMARKS
	3/27/95	0550	X		69-IDW-01	6	✓	✓	✓	✓	✓		IDW SAMPLE OF DEV./PURGE WATER.
	3/27/95	0610	X		69-IDW-02	4	✓				✓	✓	IDW SAMPLE OF DRILL CUTTING + MUD
													[ANALYSES: TCLP VOCs
													TCLP SVOC
													TCLP METALS
													TCLP PEST.
													TCLP HERB.
													TCL PEST/PCB
													RCRA CHARACTERISTI

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
E. J. Kleinhof	3/27/95 1600	FED EX			
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received for Laboratory by: (Signature)	Date / Time	Remarks	

Distribution Original Accompanies Shipment. Copy returned with Report.

FORM 004

COC # 69402

GP ENVIRONMENTAL SERVICES, INC.

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

1 of 1 Pgs.

Project: MCB CAMP LEJEUNE
Client: BAKER ENVIR.
Send Results To: E.J. KLEINKAUF
Address: 420 ROUSER RD.
CORAOPOLIS, PA 15108
Phone: 412/269-4688

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	CSM DEG. COMPOUNDS	THIODIGLYCOL									CLIENT COMMENTS
Turnaround Time					14-DAY	14DAY									
# of Container					1	1									
Container Type					G	G									
Preservative Used					—	—									
69-GW15 IW-01	3/23/95	0845	S	EJK	✓										
69-RB30	3/23/95	1030	W	EJK	✓	✓									RINSATE

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
E.J. Kleinkauf	3/23/95/600	FED EX			

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

Quanterra Environmental Services No. 58 53

COC # 69403

CLIENT CODE _____

QUOTE / SAR NUMBER _____

Chain-of Custody Record

☐ 1) **QUANTERRA, INC.**
4101 SHUFFLE DR. N.W.
NORTH CANTON, OHIO 44720
PHONE (216) 497-9396 FAX (216) 497-0772

☐ 2) **QUANTERRA, INC.**
450 WILLIAM PITT WAY
PITTSBURGH, PA 15238
PHONE (412) 826-5477 FAX (412) 826-5571

☐ 3) **QUANTERRA, INC.**
5910 BRECKENRIDGE PKWY., STE. H
TAMPA, FL 33610
PHONE (813) 621-0784 FAX (813) 623-6021

PROJ. NO. 62470-212

PROJECT NAME/LOCATION: MCB CAMP LEJEUNE.

SAMPLERS: *(Signature)* Edward J. Kleinhof

STA. NO.	DATE	TIME	COMP.	GRAB.	STATION LOCATION	NO. OF CONTAINERS	VOCs						REMARKS
	3/23/95	0845		✓	69-GW15TW-01	2	✓						
	3/23/95	1030		✓	69-RB 30	2	✓						RINSATE BLANK
	3/23/95	1030		✓	69-TB 30	2	✓						TRIP BLANK

Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
E. J. Kleinhof	3/23/95 1600	FED EX			
Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*	Relinquished by: *(Signature)*	Date / Time	Received by: *(Signature)*
Relinquished by: *(Signature)*	Date / Time	Received for Laboratory by: *(Signature)*	Date / Time	Remarks	

Distribution Original Accompanies Shipment. Copy returned with Report.

FORM 004

COC # 69-404

GP ENVIRONMENTAL SERVICES, INC.

202 Perry Parkway
Gaithersburg, Maryland 20877
(301) 926-6802

Contract #/Billing Reference: 62470-212

1 of 1 Pgs.

Project: MCB CAMP LEJEUNE SITE 69
Client: BAKER ENVIRONMENTAL
Send Results To: ED KLEINKAUF
Address: 420 ROUSER RD.
CORAOPOLIS, PA 15108
Phone: 412/269-4688

Sample ID#	Date	Time	Sample Matrix	Sampler's Initials	CSM DEGRAD COMPOUNDS	THIODIGLYCOL									CLIENT COMMENTS
Turnaround Time					14-DAY	14-DAY									
# of Container					1	1									
Container Type					G	G									
Preservative Used					—	—									
69-GW15-01	3/20/95	1740	W	EJK	✓	✓									

Relinquished By:	Date/Time	Received By:	Relinquished By:	Received for Laboratory By:	Date/Time
E.J. Kleinkauf	3/20/95 1600	FED EX			

Relinquished By:	Date/Time	Received By:	Date/Time	Shipper:	Airbill No.:

Relinquished By:	Date/Time	Received By:	Lab Comments:	Temp:

APPENDIX F
WELL DEVELOPMENT RECORDS

Baker

Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Sites 69, 74, & 41

CTO NO.: 212 WELL NO.: 69GW-02DW

DATE: 2-15-94

GEOLOGIST/ENGINEER: J. Zimmerman

TIME START: 1540

TIME FINISH: 1710

WATER LEVEL (FT): 25.08'

TOTAL WELL DEPTH (TD): 49.08'

WELL DIAMETER (INCHES): 2.0"

CALCULATED WELL VOLUME: —

BOREHOLE DIAMETER (INCHES): 8.0"

BOREHOLE VOLUME: (24) (2.611) = 62.66 gal.

AMOUNT OF WATER ADDED DURING DRILLING: None

DEVELOPMENT METHOD: Air Lift

PUMP TYPE: Air Compressor

TOTAL TIME (A): 1 hr. 30 min.

AVERAGE FLOW (GPM)(B): .38 gallons

TOTAL ESTIMATED WITHDRAWAL AxB = 35 gallons

NU/OVA READING: NU background is .5 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (uohms)	TEMP (°C)	COLOR AND TURBIDITY
1545	5 gallons	9.08	18°	390	19°	Greenish Gray / very Silty
1603	10 gallons	8.63	18°	400	18°	Greenish Gray / very Silty
1613	15 gallons	8.66	20°	400	20°	Greenish Gray / very Silty
1625	20 gallons	8.43	19°	400	19°	Greenish Gray / very Silty
1640	25 gallons	8.48	18°	390	18°	Light Gray / Silty
1655	30 gallons	8.35	19°	380	19°	Light Gray / Silty
1710	35 gallons	8.45	18°	390	18°	Light Gray / Silty

OBSERVATIONS/NOTES

Satisfied criteria for well development (pH, specific conductivity and temperature). No elevated HNu readings occured. Point source was drummed water.

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: Sites 69, 74, & 41

CTO NO.: 212 WELL NO.: 69GW02DD

DATE: 5-25-94

GEOLOGIST/ENGINEER: J. E. Zimmerman

TIME START: 0805

TIME FINISH: 0935

INITIAL WATER LEVEL (FT): 32.64

TOTAL WELL DEPTH (TD): 125.0

WELL DIAMETER (INCHES): 2.0

CALCULATED WELL VOLUME: —

BOREHOLE DIAMETER (INCHES): 8.0

BOREHOLE VOLUME: (17)(2.611) = 44.38

AMOUNT OF WATER ADDED DURING DRILLING: None

DEVELOPMENT METHOD: Air Lift

PUMP TYPE: Air Compressor

TOTAL TIME (A): 1 hr 30 min

AVERAGE FLOW (GPM)(B): 2.2 gallons / min

TOTAL ESTIMATED WITHDRAWAL AxB = 200 gallons

HNU/OVA READING: HNu background is .3 ppm.

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0815	40 gallons	11.63	17	1500	17	Gray / very silty
0820	50 gallons	11.49	17	1400	17	Gray / very silty
0825	60 gallons	11.34	17	1500	17	Gray / very silty
0830	70 gallons	11.29	17	1500	17	Gray / very silty
0835	80 gallons	11.08	17	1500	17	Gray / very silty
0840	90 gallons	11.02	17	1400	17	Gray / very silty
0845	100 gallons	10.94	17	1400	17	Gray / very silty
0850	110 gallons	10.62	17	1300	17	Light Gray / silty
0855	120 gallons	10.30	17	1300	17	Light Gray / silty
0900	130 gallons	10.15	17	1300	17	Light Gray / silty
0905	140 gallons	9.96	17	1300	17	Light Gray / little silty
0910	150 gallons	9.80	17	1300	17	Clearing / little silty
0915	160 gallons	9.43	17	1300	17	Clearing / little silty
0920	170 gallons	9.04	17	1300	17	Clear / trace silt
0925	180 gallons	9.04	17	1300	17	Clear / trace silt
0930	190 gallons	9.04	17	1300	17	Clear / trace silt
0935	200 gallons	9.00	17	1300	17	Clear / trace silt

OBSERVATIONS/NOTES satisfied criteria for well development (pH, specific conductivity and temperature). No elevated HNu readings occured. Point source was drummed water.

Baker

Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Sites 69, 74, & 41

CTO NO.: 212 WELL NO.: 69GW03I

DATE: 5-24-94

GEOLOGIST/ENGINEER: J. E. Zimmerman

TIME START: 0800

TIME FINISH: 0935

WATER LEVEL (FT): 30.10

TOTAL WELL DEPTH (TD): 60.0

WELL DIAMETER (INCHES): 2.0

CALCULATED WELL VOLUME: —

BOREHOLE DIAMETER (INCHES): 8.0

BOREHOLE VOLUME: (16.5) (2.611) = 43.0

AMOUNT OF WATER ADDED DURING DRILLING: None

DEVELOPMENT METHOD: Air Lift

PUMP TYPE: Air Compressor

TOTAL TIME (A): 1 hr. 35 min

AVERAGE FLOW (GPM)(B): .6 gallons / min

TOTAL ESTIMATED WITHDRAWAL AxB = 60 gallons

HNU/OVA READING: HNu background is .3 ppm.

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (uohms)	TEMP (°C)	COLOR AND TURBIDITY
0805	5 gallons	9.51	17	360	17	Gray / very silty
0815	10 gallons	9.20	18	1300	18	Gray / very silty
0825	15 gallons	8.90	18	1350	18	Gray / very silty
0835	20 gallons	8.84	19	1340	19	Gray / silty
0850	30 gallons	8.70	19	1350	19	Light Gray / silty
0905	40 gallons	8.64	19	1350	19	Clear / trace silt
0920	50 gallons	8.60	19	1400	19	clear / trace silt
0935	60 gallons	8.60	19	1350	19	Clear / trace silt

OBSERVATIONS/NOTES satisfied criteria for well development (pH, specific conductivity and temperature). No elevated HNu readings occured. Point source was drummed water.

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC

CTO NO.: 212 WELL NO.: 69-GW09

DATE: 11 JANUARY 1994

GEOLOGIST/ENGINEER: E. KLEINKAUF / W. PELKEY

TIME START: 1605 H

TIME FINISH: 1700 H

INITIAL WATER LEVEL (FT): 9.34'

TOTAL WELL DEPTH (TD): 22.16'

WELL DIAMETER (INCHES): 2"

CALCULATED WELL VOLUME: 2.09 GALS

BOREHOLE DIAMETER (INCHES): 8

BOREHOLE VOLUME: V = 12.82' x 2.611 = 33.47 GAL.

AMOUNT OF WATER ADDED DURING DRILLING: N/A

DEVELOPMENT METHOD: CHECK VALVE AND TRASH PUMP

PUMP TYPE: —

TOTAL TIME (A): 55 MINS.

AVERAGE FLOW (GPM)(B): 0.72 gpm

TOTAL ESTIMATED WITHDRAWAL AxB=: 40 GALS.

HNU/OVA READING:

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1612	10 GAL.	7.02	—	200	18.5	TURBID – MEDIUM BROWN
1628	20 GAL	8.50	—	175	19	TURBID – MEDIUM BROWN
1644	30 GAL	7.09	—	165	18.5	TURBID – MEDIUM TO LIGHT BROWN
1700	40 GAL	6.95	—	160	20	SLIGHTLY TURBID – LIGHT BROWN

OBSERVATIONS/NOTES

1. ALL DEPTHS MEASURED FROM MARK ON TOP OF PVC RISER.
2. TOTAL OF 40 GALS. REMOVED.

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC

CTO NO.: 212 WELL NO.: 69-GW10

DATE: 18 JANUARY 1994

GEOLOGIST/ENGINEER: W. PELKEY

TIME START: 1016 H

TIME FINISH: 1145 H

INITIAL WATER LEVEL (FT): 12.78'

TOTAL WELL DEPTH (TD): 18.50'

WELL DIAMETER (INCHES): 2"

CALCULATED WELL VOLUME: 0.93 GALS.

BOREHOLE DIAMETER (INCHES): 8"

BOREHOLE VOLUME: V= 5.72' x 2.611 = 14.93 GAL.

AMOUNT OF WATER ADDED DURING DRILLING: N/A

DEVELOPMENT METHOD: SURGE BLOCK /CHECK VALVE + TRASH PUMP

PUMP TYPE: ——

TOTAL TIME (A): 79 MIN.

AVERAGE FLOW (GPM)(B): 0.06 gpm

TOTAL ESTIMATED WITHDRAWAL AxB=: 5 GALS

HNU/OVA READING: BACKGROUND

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1026	0.5 gal	6.59	8.5	95	—	TURBID – DARK GREY
1055	1 gal	5.96	14	100	—	TURBID – DARK GREY
1110	3 gal	5.78	14	105	—	TURBID – DARK GREY
1130	4 gal	5.72	14	100	—	TURBID – DARK GREY
1145	5 gal	5.91	15	105	—	TURBID – DARK GREY

OBSERVATIONS/NOTES

1. ALL DEPTHS MEASURED FROM MARK ON TOP OF PVC RISER. 2.44' STICKUP ON WELL RISER
2. TOTAL 5 GALS. REMOVED.
3. SLOW RECHARGE.

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: RI/FS OU #4 CAMP LEJEUNE, NC

CTO NO.: 212 WELL NO.: 69 - GW 11

DATE: 11 JANUARY 1994

GEOLOGIST/ENGINEER: E. KLEINKAUF / W. PELKEY

TIME START: 1445 H

TIME FINISH: 1535 H

INITIAL WATER LEVEL (FT): 9.58'

TOTAL WELL DEPTH (TD): 21.68'

WELL DIAMETER (INCHES): 2"

CALCULATED WELL VOLUME: 1.97 GALS

BOREHOLE DIAMETER (INCHES): 8"

BOREHOLE VOLUME: V= 12.1' x 2.611 = 31.59 GAL.

AMOUNT OF WATER ADDED DURING DRILLING: N/A

DEVELOPMENT METHOD: SURGE BLOCK/CHECK VALVE + TRASH PUMP

PUMP TYPE: —

TOTAL TIME (A): 50 MIN.

AVERAGE FLOW (GPM)(B): 0.7 gpm

TOTAL ESTIMATED WITHDRAWAL AxB=: 35 GALS

HNU/OVA READING:

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1450	5 GALS.	6.20	—	83	18	TURBID - LIGHT/MEDIUM GREY
1500	20 GALS	5.93	—	80	17	TURBID - LIGHT/ MEDIUM GREY
1515	30 GALS.	5.95	—	70	18	TURBID - LIGHT/ MEDIUM GREY; SOME CLEARING
1535	35 GALS	5.76	—	70	18	TURBID - LIGHT/MEDIUM GREY; CLEARING

OBSERVATIONS/NOTES

1. ALL DEPTHS MEASURED FROM MARK ON TOP OF PVC RISER
2. GOOD RECHARGE
3. TOTAL OF 35 gals. REMOVED

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: RI/FS OU#4 CAMP LEJEUNE, NC

CTO NO.: 212 WELL NO.: 69-GW12S

DATE: 11 JANUARY 1994

GEOLOGIST/ENGINEER: E. KLEINKAUF / W. PELKEY

TIME START: 1315 H

TIME FINISH: 1415 H

INITIAL WATER LEVEL (FT): 4.68'

TOTAL WELL DEPTH (TD): 15.96'

WELL DIAMETER (INCHES): 2"

CALCULATED WELL VOLUME: 1.84 GALS.

BOREHOLE DIAMETER (INCHES): 8"

BOREHOLE VOLUME: V= 11.28' x 2.611 = 29.45 GALS.

AMOUNT OF WATER ADDED DURING DRILLING: N/A

DEVELOPMENT METHOD: SURGE BLOCK/CHECK VALVE + TRASH PUMP

PUMP TYPE: —

TOTAL TIME (A): 60 MINS.

AVERAGE FLOW (GPM)(B): 0.08 gpm

TOTAL ESTIMATED WITHDRAWAL AxB=: 5 GALS.

HNU/OVA READING:

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1415	5 GAL.	7.82	21	235	17	VERY TURBID - DARK BROWN.

OBSERVATIONS/NOTES

1. ALL DEPTHS MEASURED FROM MARK ON TOP OF PVC RISER.
2. VERY SLOW RECOVERY
3. TOTAL OF 5 GALS. REMOVED
4. WATER CLEARED SLIGHTLY AFTER 5 GALLONS REMOVED.

Baker

Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Sites 69, 74 & 41

CTO NO.: 212 WELL NO.: 69GW-12DW

DATE: 2-16-94

GEOLOGIST/ENGINEER: J. Zimmerman

TIME START: 1355

TIME FINISH: 1535

WATER LEVEL (FT): 4.94'

TOTAL WELL DEPTH (TD): 58.5'

WELL DIAMETER (INCHES): 2.0"

CALCULATED WELL VOLUME: —

BOREHOLE DIAMETER (INCHES): 8.0"

BOREHOLE VOLUME: (49.66)(2.611) = 129.6 gal.

AMOUNT OF WATER ADDED DURING DRILLING: None

DEVELOPMENT METHOD: Air Lift

PUMP TYPE: Air Compressor

TOTAL TIME (A): 1 hr. 40 min

AVERAGE FLOW (GPM)(B): 4 gallons

TOTAL ESTIMATED WITHDRAWAL AxB = 400 gallons

HNU/OVA READING: HNU background is .5 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (uohms)	TEMP (°C)	COLOR AND TURBIDITY
1405	40 gal	6.68	17°	390	17°	Greenish gray / very silty
1415	80 gal	6.81	17°	420	17°	Light gray / silty
1425	120 gal	6.79	17°	410	17°	Light gray / Little silty
1435	160 gal	6.81	17°	440	17°	clear / tr. silt
1445	200 gal	6.84	17°	400	17°	clear / tr. silt
1455	240 gal	6.98	17°	410	17°	clear / tr. silt
1505	280 gal	6.96	17°	380	17°	clear / tr. silt
1515	320 gal	6.97	17°	390	17°	clear / tr. silt
1525	360 gal	6.94	17°	410	17°	clear / tr. silt
1535	400 gal	6.93	17°	400	17°	clear / tr. silt

OBSERVATIONS/NOTES

Satisfied criteria for well development (pH, specific conductivity and temperature). No elevated HNU readings occured. Point source was drummed water.

Baker

Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Sites 69, 74, & 41

CTO NO.: 212 WELL NO.: 69GW13

DATE: 5-25-94

GEOLOGIST/ENGINEER: J.E. Zimmerman

TIME START: 1010

TIME FINISH: 1110

WATER LEVEL (FT): 9.75

TOTAL WELL DEPTH (TD): 13.5

WELL DIAMETER (INCHES): 2.0

CALCULATED WELL VOLUME: —

BOREHOLE DIAMETER (INCHES): 8.0

BOREHOLE VOLUME: (11)(2.611) = 28.72

AMOUNT OF WATER ADDED DURING DRILLING: None

DEVELOPMENT METHOD: Air Lift

PUMP TYPE: Air Compressor

TOTAL TIME (A): 1 hr

AVERAGE FLOW (GPM)(B): .19 gallons/min

TOTAL ESTIMATED WITHDRAWAL AxB = 11.5 gallons

HNU/OVA READING: HNu background is .3 ppm.

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (uohms)	TEMP (°C)	COLOR AND TURBIDITY
1020	1 gallon	4.99	19	1600	19	clear / trace silt
1040	10 gallons	6.21	19	1900	19	clear / trace silt
1100	11 gallons	6.24	19	1900	19	clear / trace silt
1110	11.5 gallons	6.23	19	1900	19	clear / trace silt

OBSERVATIONS/NOTES satisfied criteria for well development (pH, specific conductivity and temperature). No elevated HNu readings occured. Point source was drummed water.

Baker

Baker Environmental, Inc.

FIELD WELL DEVELOPMENT RECORD

PROJECT: Sites 69, 74, & 41

CTO NO.: 212 WELL NO.: 69GW13I

DATE: 5-24-94

GEOLOGIST/ENGINEER: J. E. Zimmerman

TIME START	1025
TIME FINISH	1235
WATER LEVEL (FT)	29.62
TOTAL WELL DEPTH (TD)	60.0
WELL DIAMETER (INCHES)	2.0
CALCULATED WELL VOLUME	—
BOREHOLE DIAMETER (INCHES)	8.0
BOREHOLE VOLUME	(17)(2.611) = 44.38
AMOUNT OF WATER ADDED DURING DRILLING	None
DEVELOPMENT METHOD	Air Lift
PUMP TYPE	Air Compressor
TOTAL TIME (A)	2 hrs
AVERAGE FLOW (GPM)(B)	.87 gallons/min
TOTAL ESTIMATED WITHDRAWAL AxB =	105 gallons
HNU/OVA READING	HNu background is .3 ppm.

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (uohms)	TEMP (°C)	COLOR AND TURBIDITY
1035	10 gallons	10.82	19	1650	19	Gray / very silty
1045	20 gallons	9.93	19	1100	19	Gray / very silty
1055	30 gallons	9.94	19	1100	19	Gray / very silty
1105	40 gallons	9.79	19	1200	19	Gray / silty
1115	50 gallons	9.75	19	1200	19	Gray / silty
1125	60 gallons	9.67	19	1200	19	Light Gray / silty
1135	70 gallons	9.50	19	1200	19	Light Gray / silty
1145	80 gallons	9.46	19	1200	19	Light Gray / silty
1155	90 gallons	9.30	19	1300	19	Light Gray / silty
1205	100 gallons	9.32	19	1300	19	Light Gray / silty
1235	105 gallons	9.30	19	1300	19	Light Gray / silty

OBSERVATIONS/NOTES Satisfied criteria for well development (pH, specific conductivity and temperature). No elevated HNu readings occured. Point source was drummed water.

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: MCB CAMP LEJEUNE, NC

CTO NO.: 212 WELL NO.: 69-GW14

DATE: 18 DECEMBER 1994

GEOLOGIST/ENGINEER: J.E. ZIMMERMAN

TIME START	1015
TIME FINISH	1230
INITIAL WATER LEVEL (FT)	6.90'
TOTAL WELL DEPTH (TD)	14.0'
WELL DIAMETER (INCHES)	2" I.D.
CALCULATED WELL VOLUME	1.2 GALS.
BOREHOLE DIAMETER (INCHES)	8" I.D.
BOREHOLE VOLUME	18.53 gal.
AMOUNT OF WATER ADDED DURING DRILLING	—
DEVELOPMENT METHOD	PUMPING
PUMP TYPE	CENTRIFIGAL
TOTAL TIME (A)	2 HR 15 MIN.
AVERAGE FLOW (GPM)(B)	0.4 GPM
TOTAL ESTIMATED WITHDRAWAL AxB =	55 GALS.
HNU/OVA READING	0.3 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1025	5	5.43	17.0	190	17.0	GRAY, VERY SILTY
1050	10	5.11	17.0	140	17.0	GRAY, VERY SILTY
1110	15	5.96	17.0	140	17.0	GRAY, VERY SILTY
1120	20	5.62	17.0	160	17.0	GRAY, VERY SILTY
1130	25	4.95	17.0	140	17.0	GRAY, VERY SILTY
1140	30	4.90	17.0	140	17.0	BROWN, SOME SILT
1150	35	4.67	17.0	140	17.0	BROWN, SOME SILT
1200	40	4.75	17.0	140	17.0	BROWN, SOME SILT
1210	45	4.65	17.0	140	17.0	BROWN, SOME SILT
1220	50	4.72	17.0	140	17.0	BROWN, SOME SILT
1230	55	4.71	17.0	140	17.0	BROWN, SOME SILT

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: MCB CAMP LEJEUNE, NC

CTO NO.: 212 WELL NO.: 69-GW14IW

DATE: 19 DECEMBER 1994

GEOLOGIST/ENGINEER: J.E. ZIMMERMAN

TIME START: 0835

TIME FINISH: 1045

INITIAL WATER LEVEL (FT): 26.99'

TOTAL WELL DEPTH (TD): 61.0'

WELL DIAMETER (INCHES): 2" I.D.

CALCULATED WELL VOLUME: 5.55 GAL

BOREHOLE DIAMETER (INCHES): 6" I.D.

BOREHOLE VOLUME: 32.31 gal.

AMOUNT OF WATER ADDED DURING DRILLING: ——

DEVELOPMENT METHOD: AIR

PUMP TYPE: ——

TOTAL TIME (A): 2 HR 10 MIN.

AVERAGE FLOW (GPM)(B): 0.42 GPM

TOTAL ESTIMATED WITHDRAWAL AxB=: 55 GALS.

HNU/OVA READING: 0.2 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0845	15	10.58	16.0	500	16.0	GRAY, VERY SILTY
0900	20	10.11	16.0	430	16.0	GRAY, VERY SILTY
0915	25	9.96	16.0	380	16.0	LT. GRAY, SOME SILT
0930	30	9.88	16.0	350	16.0	LT. GRAY, SOME SILT
0945	35	9.86	16.0	340	16.0	CLEARING, LITTLE SILT
1000	40	9.82	16.0	310	16.0	CLEARING, LITTLE SILT
1015	45	9.70	16.0	290	16.0	CLEAR, TR. SILT
1030	50	9.67	16.0	280	16.0	CLEAR, TR. SILT
1045	55	9.65	16.0	280	16.0	CLEAR, TR. SILT

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker
Baker Environmental, Inc

PROJECT: MCB CAMP LEJEUNE, NC.

CTO NO.: 212 WELL NO.: 69-GW14DW

DATE: 19 DECEMBER 1994

GEOLOGIST/ENGINEER: J. E. ZIMMERMAN

TIME START	1100 H
TIME FINISH	1205 H
INITIAL WATER LEVEL (FT)	40.0'
TOTAL WELL DEPTH (TD)	126.0'
WELL DIAMETER (INCHES)	2" I.D.
CALCULATED WELL VOLUME	14.04 GALS.
BOREHOLE DIAMETER (INCHES)	6" I.D.
BOREHOLE VOLUME	32.31 gal.
AMOUNT OF WATER ADDED DURING DRILLING	—
DEVELOPMENT METHOD	AIR
PUMP TYPE	—
TOTAL TIME (A)	1 HR. 5 MIN.
AVERAGE FLOW (GPM)(B)	1.92 GPM
TOTAL ESTIMATED WITHDRAWAL AxB=	125 GALS.
HNU/OVA READING	0.2 ppm

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1110	15	8.55	16.0	490	16.0	GRAY, VERY SILTY
1115	25	8.03	16.0	440	16.0	GRAY, VERY SILTY
1120	35	7.93	16.0	410	16.0	LT. GRAY, SOME SILT
1125	45	7.89	16.0	400	16.0	LT. GRAY, SOME SILT
1130	55	7.88	16.0	390	16.0	LT. GRAY, SOME SILT
1135	65	7.85	16.0	390	16.0	CLEARING, LITTLE SILT
1140	75	7.81	16.0	390	16.0	CLEARING, LITTLE SILT
1145	85	7.78	16.0	390	16.0	CLEAR, TR. SILT
1150	95	7.78	16.0	390	16.0	CLEAR, TR. SILT
1155	105	7.77	16.0	390	16.0	CLEAR, TR. SILT
1200	115	7.76	16.0	390	16.0	CLEAR, TR. SILT
1205	125	7.76	16.0	390	16.0	CLEAR, TR. SILT.

OBSERVATIONS/NOTES

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: MCB CAMP LEJEUNE, NC.

CTO NO.: 212 WELL NO.: 69-GW15

DATE: 25 MARCH 1994

GEOLOGIST/ENGINEER: E.J. KLEINKAUF

TIME START: 1425 H

TIME FINISH: 1520 H

INITIAL WATER LEVEL (FT): 2.95'

TOTAL WELL DEPTH (TD): 13.0'

WELL DIAMETER (INCHES): 2" I.D.

CALCULATED WELL VOLUME: 1.64 GALS

BOREHOLE DIAMETER (INCHES): 8" I.D.

BOREHOLE VOLUME: 28.7 GAL.

AMOUNT OF WATER ADDED DURING DRILLING: —

DEVELOPMENT METHOD: PUMPING

PUMP TYPE: CENTRIFIGAL

TOTAL TIME (A): 55 MIN.

AVERAGE FLOW (GPM)(B): 0.73 GPM

TOTAL ESTIMATED WITHDRAWAL AxB=: 40 GALS

HNU/OVA READING: —

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
1433	2	6.64	17.7	345	18.0	
1502	20	6.81	17.5	350	17.5	
1520	40	6.86	19.0	350	19.5	

OBSERVATIONS/NOTES

* STOPPED PRODUCING @ 42 GALLONS, SLOW RECHARGE.

FIELD WELL DEVELOPMENT RECORD

Baker

Baker Environmental, Inc

PROJECT: MCB CAMP LEJEUNE, NC

CTO NO.: 212 WELL NO.: 69-GW15IW

DATE: 25 MARCH 1994

GEOLOGIST/ENGINEER: E.J. KLEINKAUF

TIME START: 0700 H

TIME FINISH: 1414 H

INITIAL WATER LEVEL (FT): 28.7'

TOTAL WELL DEPTH (TD): 63.0'

WELL DIAMETER (INCHES): 2" I.D.

CALCULATED WELL VOLUME: 5.6 GALS.

BOREHOLE DIAMETER (INCHES): 8" I.D.

BOREHOLE VOLUME: 47 GALS.

AMOUNT OF WATER ADDED DURING DRILLING: —

DEVELOPMENT METHOD: SURGING

PUMP TYPE: —

TOTAL TIME (A): 7HR 14MIN.

AVERAGE FLOW (GPM)(B): 0.61 GPM

TOTAL ESTIMATED WITHDRAWAL AxB=: 265 GALS.

HNU/OVA READING: —

DEVELOPMENT DATA

TIME	CUMULATIVE VOLUME (gallons)	pH	TEMP (°C)	SPEC. COND. (µmhos/cm)	TEMP (°C)	COLOR AND TURBIDITY
0733	20	14.53	16.5	1050	18.0	
0755	40	12.71	16.3	600	16.5	
0813	55	12.81	16.0	575	18.0	
0837	75	11.49	15.7	430	17.0	
0852	90	11.30	15.6	415	17.2	
0920	100	12.19	17.7	420	17.5	
1016	125	10.54	15.8	330	17.5	
1035	150	10.40	17.0	340	17.5	
1101	165	9.49	17.0	380	19.5	
1142	190	11.15	17.9	355	20.0	
1228	230	10.04	19.5	350	22.0	
1302	250	9.69	21.5	345	21.5	
1414	265	10.11	19.2	340	20.5	

OBSERVATIONS/NOTES

4/19/96 WELL DEVELOPMENT RECORD

Well #69GW03BCH

Time	cum vol	pH	Temp	Cond	Temp
0800	0 gal	5.48	19.7	506	18.6
0830	30 gal	6.05	19.3	531	18.7
*0850	50 gal	6.56	21.2	534	18.8
0900	60 gal	6.50	21.7	533	18.8
0930	85 gal	6.88	22.2	533	18.9
*0945	100 gal	6.72	22.1	531	18.8
1000	115 gal	6.58	23.3	533	18.8
1030	145 gal	7.01	22.5	531	18.9
*1035	150 gal	7.01	22.5	531	18.9

Time	visual comment
0800	Light brown/ silty
0830	Clearing/ little silty
*0850	Clear/ tr. silty
0900	clear/ tr. silt
0930	clear/ tr. silt
*0945	clear/ tr. silt
1000	Clear/ tr. silt
1030	Clear/ tr. silt
*1035	Clear/ tr. silt

(*) denotes (1) volume

4/19/96 Well #69GW03BCH

Static water level from top of PVC:
29.78'

Total depth of well:
230.0'

Diameter of well:
2.0"

Calc of borehole volume

Sand pack length: 13.0'

PVC riser above screen to SWL: 190.0'

13.0' X 1.4688 = 19.1 gallons

190.0' X .1632 = 31.0 gallons

19.1 + 31.0 = 50 gallons/volume

50 (3) = 150 gallons

50 (5) = 250 gallons

* 140 gallons of water was removed prior to well development to check air lift system.

110 gallons on 4/17/96

30 gallons on 4/18/96

4/19/96 WELL DEVELOPMENT RECORD

well #69GW15BCH

Time	cum vol	pH	Temp	Cond	Temp
1100	0 gal	9.45	20.2	550	21.0
1130	30 gal	8.27	20.2	439	19.3
*1150	50 gal	7.86	20.2	451	19.4
1200	60 gal	7.80	20.3	456	19.4
1230	90 gal	7.54	20.0	461	19.0
*1240	100 gal	7.58	20.1	463	19.1
1300	120 gal	7.56	20.1	466	19.2
1325	145 gal	7.55	20.0	469	19.0
*1330	150 gal	7.55	20.0	469	19.0

Time	Visual comment
1100	Light brownish gray / v. silty
1130	Light brown / little silty
*1150	clear / tr. silt
1200	clear / tr. silt
1230	clear / tr. silt
*1240	clear / tr. silt
1300	clear / tr. silt
1325	clear / tr. silt
*1330	clear / tr. silt

(*) denotes (1) volume

4/19/96 well #69GW15BCH

Static water level from top of PVC:
30.19'

Total depth of well:
230.0'

Diameter of well:
2.0"

Calc of borehole volume

Sand pack length: 13.0'

PVC riser above screen to SWL: 190.0'

13.0' x 1.4688 = 19.1 gallons

190.0' x .1632 = 31.0 gallons

19.1 + 31.0 = 50 gallons/volume

50 (3) = 150 gallons

50 (5) = 250 gallons

4/20/96 WELL DEVELOPMENT RECORD

well #696W02BCH

Time	cum vol	pH	Temp	Cond	Temp
0845	0 gal	9.01	20.3	609	21.9
0915	30 gal	8.75	19.8	572	20.4
*0940	55 gal	9.48	20.1	578	20.6
1010	85 gal	8.72	19.8	574	20.4
*1035	110 gal	8.66	19.6	577	20.1
1100	135 gal	8.67	19.6	586	20.1
1125	160 gal	8.65	19.6	582	20.1
*1130	165 gal	8.65	19.6	582	20.1

Time	Visual comment
0845	Light brownish gray / v. Silty
0915	Light brown / little Silty
*0940	Clearing / little Silty
1010	Clear / tr. silt
*1035	Clear / tr. Silt
1100	Clear / tr. Silt
1125	Clear / tr. Silt
*1130	Clear / tr. Silt

(*) denotes (1) volume

4/20/96 well #696W02BCH

Static water level from top of PVC:
12.60'

Total depth of well:
230.0'

Diameter of well:
2.0"

Calc of borehole volume

Sand pack length: 14.0'
PVC riser above screen to SWL: 202.0'

14.0' X 1.4688 = 20.0
202.0' X .1632 = 33.0
20 + 33 = 53 gallons/volume
53 (3) = 159 gallons
53 (5) = 265 gallons

m.c.B.C.L.

4/22/96 WELL PURGE RECORD

well #69-GW03DW

Time	cum vol	pH	Cond	Temp	Turbid
0840	0 gal	8.42	293	18.9	.40
0845	1.0 gal	8.13	295	18.6	.11
0850	2.0 gal	7.95	294	18.6	.01
0855	3.0 gal	7.72	299	18.6	.19
0900	4.0 gal	7.69	309	18.6	.26
*0905	5.0 gal	7.77	311	18.6	.28
0910	6.0 gal	7.59	310	18.9	.11
0915	7.0 gal	7.55	308	18.8	.14
0920	8.0 gal	7.33	313	18.8	.44
0925	9.0 gal	7.31	307	18.6	.21
*0930	10.0 gal	7.35	310	18.6	.32
0935	11.0 gal	4.88	312	18.9	.23
0940	12.0 gal	5.34	310	19.2	.11
0945	13.0 gal	5.30	309	19.2	.27
0950	14.0 gal	5.27	310	19.2	.30
*0955	15.0 gal	5.29	311	19.2	.32
1000	16.0 gal	5.30	312	19.2	.36

m.c.B.C.L.

4/22/96 well #69-GW03DW

Static water level from top of PVC:
28.71'

Total depth of well:
60.5'

Diameter of well:
2.0"

Calc of well volume

60.5' - 28.71' = 31.79'

31.79' x .163 = 5.20 gallons

5.20 (3) = 15.6 gallons

5.20 (5) = 26.0 gallons

(8) 4/22/86

1215 BEGAN PUMPING 69-GW150W

PUMPING RATE = .33 GAL/min.

69-GW150W

Time	pH	TEMP	COND/TEMP	TEMP	TURB.
1300	11.26	30.3	674/25°C	23.8	112.8
1344	9.54	32.3	308.7/25°C	23.8	43.9
1435	8.77	35.4	346.9/25°C	24.0	44.8
1457	9.09	36.6.	357/25°C	24.1	53.9

1520 - COLLECTED SAMPLE 69-GW150W-01 FOR VOA'S ONLY/ROUTINE TURB

4/22/86 (4)

ADDT. COMM. PUMP IS SET @ 46' SWL = 32.28 - HAD TO LOWER PUMP DUE TO REDUCTION IN SWL.

COMM.

VOL 1 SLIGHTLY TURBID.

VOL 2

VOL 3.

VOL 3.5

(7) 4/22/86

69-GW0200-

WD = 129.80
SWL = 31.64
WC = 98.16
x .163
16 gal/vol.

Began purging well @ 1609

Time	pH	Temp	cond/Temp	Temp	TURB	comm.
1630	7.36	23.0	602 us/25°C	18.9	23.7	vol 1.
1653	7.49	23.8	576 us/25°C	20.0	3.3	vol 2.
1710	7.42	22.2	566 us/25°C	19.8	1.7	vol 3

1725 - Sampled 69GW0200-04 for VOA - only. Routine turn.

1800 Left site 69 for field trailer
1825 - Arrived at field trailer
1825 - 1900 - offloaded equipment.

1900 - Left base.
1915 - Arrived at hotel

Tom Monday
4/22/86

4/22/86 (8)

Pump set @ 47' below TOC.

Pumping rate = .9 gpm.

(9) 4/23/86

0630 - LEFT HOTEL FOR BASE
0645 - 0700 - LOADED VEHICLES
0725 - ARRIVED AT SITE QQ
0740 - COLLECTED QB-02-0496 FOR VOA ONLY FROM GRUNDFOS PUMP. ROUTINE TURN

0715 69-GW02BCH
WD - 230.00
SWL - 27.24
WC - 202.76
33 GAL/VOL.

Time	pH	Temp	COND/Temp	Temp
0840	9.44	NA.	619 US/25°C	21.3
0918	~~7.85~~ 8.20	NA.	610 US / 25°C	21.2
0956	7.66	NA	610 US / ~~21.5°C~~ 25°C	21.6
1022	7.75	NA	625 US / 25°C	21.7

1040 SAMPLED 69-GW02BCH-01 FOR VOA ONLY - 7-DAY TURN.

1000 COLLECTED 69-IDW-200 FROM THE

4/23/86 (10)

PUMP SET AT 40' BELOW TOC.
SWL - WHILE PUMPING ≈ 34
NOTE RESET PUMP AT 52'.

TURB	COMM.
59.0	VOL-1
16.83	VOL-2
12.91	VOL-3
13.01	VOL-3.5

2 REMAINING ROLL-OFF BOXES

(11) 69-GW03BCH 4/23/96

WD 230.0
SWL 29.56
WC = 200.44
X .163
32.67 gal ≈ 33 gal vol.

Began pumping well @ 1110

Time	pH	Temp	cond/temp	Temp	Turb.	comm.
1148	8.07	23.9	620 us/25°c	26.5	25.9	vol-1.
1221	7.37	25.4	646 us/25°c	26.8	11.41	vol-2.
1254	7.21	24.2	639 us/25°c	22.0	3.09	vol-3

1300 - Sampled 69-GW03BCH-01 for VOA's only 7 day turn.

4/23/96 (12)

Pump is set @ 56' below TOC.

(45) 69-GW15BCH 4/23/86

WD = 230.00
SWL = 29.46
WC = 200.54
X.163
32.68 ≈ 33 GAL/VOL.

1340 BEGAN PURGING WELL.

Time	pH	Temp	COND/Temp	Temp	TURB.	COMM.
1432	7.68	20.1	547 us/25°c	21.0	4.54	VOL. 1
1504	7.81	22.6	561 us/25°c	20.9	2.19	VOL. 2
1535	7.61	23.8	578 us/25°c	21.2	1.84	VOL. 3

1545 SAMPLED 69-GW15BCH-01
FOR VOA'S ONLY & 7 DAY TURD

ALSO DUPLICATE 69-GW15BCH-01D
WAS COLLECTED FOR VOA'S
BUT Routine TURN

1620- LEFT SITE 69 FOR FIELD TRAILER.

1635- 1745- PACKED UP SAMPLES FOR
ENVIRO-SYSTEMS.

4/23/86 (46)

Pump set @ 58' Below TOC

APPENDIX G
INVESTIGATIVE DERIVED WASTE

Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

(412) 269-6000
FAX (412) 269-2002

April 13, 1994

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Building N-26)
Norfolk, Virginia 23511-2699

Attn: Ms. Linda Berry, P.E.
Code 1823

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0212
Sites 41, 69, and 74 IDW Handling and Disposal
MCB Camp Lejeune, North Carolina

Dear Ms. Berry:

This letter report describes a summary of investigative-derived waste (IDW) disposal activities at Sites 41, 69, and 74, Marine Corps Base, Camp Lejeune, North Carolina. The IDW was contained in roll-off boxes, tankers, and 55-gallon drums that were generated during the period of January 3, 1994 through March 3, 1994.

The primary objective was to characterize the contents of the generated wastes. Listed below are the three container types with corresponding media and respective analytical characterization:

Container Type	Estimated Quantity	Media Type	Analytical*
Roll-off boxes, one roll-off per site	30 cubic yards	Soil cuttings and drilling mud slurries	TCL-PCB, mirex, CSM, Full-TCLP, RCRA (corrosivity, ignitability, and reactivity)
Tankers, one tanker per site	2,000 gallons	Well development and purge water	Full TCL-Organics/TAL-Inorganics
55-gallon drums	450 gallons	Decontamination fluids	Full TCL-Organics/TAL-Inorganics

*Note: all requested analytical parameters were chosen for the purpose of determining appropriate handling/disposal requirements.

bcc: APPajak/CF; WDTrimbath/JWMentz/PROG F; RPWattras; Daily File
S.O.#62470-212
Subfile
Initials

In a meeting/conference call conducted on March 16, 1994, between Ms. Katherine Landman, Mr. Tom Morris, Mr. Neal Paul, and myself, it was agreed that all nonhazardous solids could be disposed of on site, and that all liquids generated would be taken off-site by a licensed subcontractor to a TSDF. In addition, it was decided that the hazardous liquid being stored Site 41 would also be disposed off-site.

DISPOSAL

Nonhazardous Wastes

Based on LANTDIV/MCB Camp Lejeune approval, Baker arranged for a subcontractor (Four Seasons Environmental Inc.) to dispose of all of the decontamination fluids, and the tankers at Sites 69 and 74. Copies of the nonhazardous waste manifests are provided in Attachment A. These events took place on March 22, 1994. A second subcontractor (Wills Trucking Inc.) was utilized on March 23, 1994 to dispose of soils contained in the three roll-off boxes. The IDW soil was disposed of within the respective site boundaries.

Hazardous Wastes

The analytical results from the tanker at Site 41 showed a lead concentration of 11.2 ppm. The USEPA regulatory limit for lead is 5 ppm. The tanker of wastewater was classified as a hazardous waste by characteristic for lead, and was given the USEPA Hazardous Waste Identification Number of D008. On March 23, 1994 Four Seasons Environmental Inc. was brought in to remove the wastewater and transport it to a permitted TSDF operated by Laidlaw Environmental Services located in Reidsville, North Carolina. Copies of the hazardous waste manifests are provided in Attachment A.

These events conclude the handling and management of IDW generated during the remedial investigations at Sites 41, 69, and 74. A second round of groundwater samples is scheduled to be collected at Site 41 in late April. During this event, additional IDW will be generated and will need to be properly disposed . Unfortunately, the liquid IDW may be characteristically hazardous due to lead in groundwater. Samples will be collected of the liquid IDW in order to characterize the waste for proper disposal.

If you have any questions, please do not hesitate to call me at (412) 269-2016.

Sincerely,

BAKER ENVIRONMENTAL, INC.

RP Wattras

Raymond P. Wattras
Project Manager

cc: Mr. Neal Paul
Ms. Lee Ann Rapp (w/o attachments)
Ms. Beth Hacic (w/o attachments)

RPW/jc
Attachment A: Nonhazardous and Hazardous Waste Manifests

Attachment A
Nonhazardous and Hazardous Waste Manifests

FOUR SEASONS ENVIRONMENTAL
A GREAT LAKES CHEMICAL CORPORATION COMPANY

№ 3618

P.O. Box 16590 • Greensboro, NC 27416-0590 • (919) 273-2718

NON-HAZARDOUS WASTE MANIFEST

Manifest # F.S.I.S. JOB # Date: 3-22-94

Generator: Phone No.: 919-451-1725

EPA ID No.:

Contact: Neil Paul

Process which generated waste:

I certify that the materials described below are properly described, classified, packaged, marked & labeled, and are in proper condition to be transported in commerce under the applicable regulations of the State, the Environmental Protection Agency and the Department of Transportation. I certify that the waste described below is non-hazardous. I certify that the specific waste was delivered to the carrier named below for legal treatment, storage, or disposal at the site indicated.

Date Signature

Description of material	Circle Form	Quantity	Circle Units	Container	
				No.	Type
	Solid / Liquid / Gas / Sludge		Gallons / Cu. Yds. / Pounds / Tons	1	TT

Transporter: Unit Number(s)

Phone No.:

EPA ID No.:

Vechicle License Tag Number(s) Container:

I certify that the specified material was transferred in a registered (licensed) vehicle to the disposal treatment, storage, or disposal facility named below and was accepted.

Pick-up Driver's Signature Date Delivering Driver's Signature Date

Facility: Phone No.:

Contact:

Handling Method:

I certify that the transporter above delivered the specified material to this TSD facility and was accepted and properly handled in the above manner. We are authorized and qualified by the State of _____ _____ to handle this material.

Date Signature:

COPY 2 - Return to Generator COPY 3 - Transporter Retain COPY 4 - Generator Retai

Please print or type. *(Form designed for use on elite (12-pitch) typewriter.)*

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. | Manifest Document No.

2. Page 1 of

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address

4. Generator's Phone ( )

5. Transporter 1 Company Name | 6. US EPA ID Number

7. Transporter 2 Company Name | 8. US EPA ID Number

9. Designated Facility Name and Site Address | 10. US EPA ID Number

A. State Manifest Document Number

B. State Generator's ID

C. State Transporter's ID

D. Transporter's Phone

E. State Transporter's ID

F. Transporter's Phone

G. State Facility's ID

H. Facility's Phone

GENERATOR

11. US DOT Description *(Including Proper Shipping Name, Hazard Class, and ID Number)*	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	Waste No.
a.					
b.					
c.					
d.					

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present a future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and sele the best waste management method that is available to me and that I can afford.

Printed/Typed Name | Signature | Month Day

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month Day

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month Day

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name | Signature | Month—Day

EPA Form 8700-22 (Rev. 11-88) Previous editions are obsolete.

INSTRUCTIONS ON BACK SHEET

ENVIRONMENTAL SERVICES

Customer Notification And Certification

FORM A

Only Statements with Original Signatures will be Accepted

Generator Name/Location: Camp Lejeune MCB / Camp Lejeune, NC 28542

EPA I.D. Number: NC 6170022580

Waste Profile or ARF Designation: _____

Manifest Number: _____

EPA Hazardous Waste Number(s): D008

Waste Analysis Attached? YES _____ NO _____ X On file at facility. _____

Unrestricted Waste Notification (Category 1)

If you generate a hazardous waste that is not a land disposal restricted waste (the waste has no applicable treatment standards), mark the statement below.

☐ I notify that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that the waste is not restricted as specified in 40 CFR 268, Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA Section 3004(d).

Restricted Waste Notification (Category 2)

If you generate a hazardous waste that is restricted from land disposal (the waste has applicable treatment standards), mark the statement below. **Note:** All appropriate standards must be accounted for. A waste may pass one or more standards and require treatment or be variance for others. In this case, all applicable categories must be checked.

☒ I notify that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that the waste is subject to the treatment standards specified in 40 CFR 268, Subpart D. Waste must be treated to the appropriate regulatory treatment standard, by the appropriate regulatory treatment method; qualifies for a variance as described in Category 3 below; or meets the standard as described under Category 4 below.

☐ For hazardous debris, the waste contains the following contaminants subject to treatment (check all that apply): ____ § 268.45(b) (1)-Toxicity characteristic debris; ____ § 268.45(b) (2)-Debris contaminated with listed waste; ____ § 268.45(b) (3)-Cyanide reactive debris. This hazardous debris is subject to the alternative treatment standards of 40 CFR 268.45.

Corresponding Treatment Standard(s) 268.43(a) Chemical Precipitation

Restricted Waste Variance Notification (Category 3)

If you generate a waste which does not require treatment prior to land disposal because of a variance (including a case-by-case extension under 40 CFR 268.5, a nationwide variance under 40 CFR 268 Subpart C, a no migration petition under 40 CFR 268.6, or other applicable variance), mark the statement below and list the appropriate variance in the space provided.

(3a) Restricted Waste Variance Notification

☐ I notify pursuant to 40 CFR 268.7(a) (3) that I am familiar with the waste through analysis and testing or through knowledge of the waste to support this notification that this waste is subject to a national capacity variance under 40 CFR 268 Subpart C, or a case-by-case extension under 40 CFR 268.5, or an exemption under 40 CFR 268.6.

Applicable Variance (List the variance and give the date the waste is subject to prohibitions)

(3b) Hazardous Debris Extension Notification

☐ For the hazardous debris waste stream accompanying this notification, I notify that I have made the necessary submittals to EPA pursuant to 40 CFR 268.5(g), as described in the May 14, 1993 Federal Register (Vol. 58, No. 92, page 28510) and therefore this hazardous debris shipment qualifies for the one year case-by-case extension.

Applicable Variance Date: May 8, 1994

Restricted Waste Certification (Category 4)

If you generate a hazardous waste that is restricted from land disposal (the waste has applicable treatment standards), a the waste meets the standards as generated, mark the statement below. **Note:** All applicable standards must be accounted for. A waste may pass one or more standards and require treatment or be variance for others. In this case, all applicable categories must be checked.

☐ I certify under penalty of law that I personally examined and am familiar with the waste through analysis and testing or through knowledge of the waste to support this certification that the waste complies with the treatment standards specified in 40 CFR 268, Subpart D and all applicable prohibitions set forth in 40 CFR 268.32 or RCRA Section 3004(d). I believe that the information I submitted is true, accurate, and complete. I am aware that there are significant penalties for submitting a false certification including the possibility of fine and imprisonment.

Applicable Standards Passed (List the appropriate standard(s) for constituents not requiring treatment)

SIGNATURE: Peter A Moseley DATE: 3/23/94

PRINT NAME: PETER A MOSELEY TITLE: ENVIRONMENTAL SCIENTIST

NORTH CAROLINA HAZARDOUS WASTE MANIFEST

Please print or type. (Form designed for use on elite (12-pitch) typewriter.)

Form Approved. OMB No. 2050-0039. Expires 9-

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. NC961170101 Manifest Document No. 245819

2. Page 1 of 1

Information in the shaded area is not required by Federal law.

3. Generator's Name and Mailing Address MCB Camp Lejeune
Attn: Neal Paul
IR Division Building 67
Camp Lejeune, NC 28542

4. Generator's Phone (919) 451 1725

5. Transporter 1 Company Name: Four Seasons Environmental, Inc.
6. US EPA ID Number: NCD991277732

7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
Laidlaw Environmental Services, Inc
708 Watlington Rd
Reidsville, NC 27320
10. US EPA ID Number: NCD000964851

GENERATOR

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol
a. Hazardous Waste Liquid, nos (lead), 9, NA3082, III	1	TT	833	G
b.				
c.				
d.				

15. Special Handling Instructions and Additional Information
Bill to: FSE PO Box 16590
Greensboro, NC 27416
Job # 94-50051 Attn: J. Dishman
HAZ MAT Guide No: 31
24 Hour Phone 910 273 2718

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and the best waste management method that is available to me and that I can afford.

Printed/Typed Name	Signature	Month Day
PETER A MONDAY	Peter A Monday	10 13 21

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day
JOSEPH HUMBLE	Joseph Humble	10 13 21

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month Day

FACILITY

19. Discrepancy Indication Space
Section 1 - MD# 00001

20. Facility Owner or Operator: Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month Day
CONNIE ALBERGAT	Connie Albergat	10 13 21

TOTAL P.03

Baker

Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

(412) 269-6000
FAX (412) 269-2002

May 19, 1994

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Building N-26)
Norfolk, Virginia 23511-2699

Attn: Ms. Linda Berry, P.E.
Engineer-in-Charge
Code 1823

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Orders (CTOs) 0212 and 0231
Sites 41 (CTO 0212), 1, 28, and 30 (CTO 0231)
Recommendations for the Disposal of Investigation Derived Waste
MCB, Camp Lejeune, North Carolina

Dear Ms. Berry:

Baker Environmental, Inc. (Baker) is coordinating the disposal of investigation derived waste (IDW) generated during the second round of groundwater sampling for Site 41, and the field investigations conducted under CTO-0231. In addition, Baker is also taking this opportunity to dispose of small quantities of IDW generated during field investigations associated with CTO-0160, CTO-0177, and CTO-0133.

Table 1 presents a summary of IDW with respect to: (1) site locations; (2) IDW media; (3) estimated quantity; (4) RCRA characterization ; and (5) recommended disposal option.

IDW disposal activities are tentatively scheduled for the week of May 23, 1994 as follows:

- Tuesday, May 24, 1994 - Non-hazardous IDW soils will be disposed of and graded at Storage Lot 203.

- Wednesday, May 25, 1994 - Non-hazardous and hazardous IDW liquids will be removed by a licensed waste hauler to an offsite TSDF.

bcc: APPajak/CF; WDTrimbath/JWMentz/PROG F; RWattras/PJT File; RBonelli/PJT File; Daily File
S.O.# 62470-212 and 231-SRN
Subfile: 8
Initials: RPW

Offsite disposal of liquid IDW will require MCB Camp Lejeune personnel to sign waste profile forms. All non-hazardous liquid IDW can be identified on one waste profile form; however, each liquid IDW that has been characterized as hazardous must have it's own waste profile form. In addition to the waste profile forms, MCB Camp Lejeune personnel are required to sign three waste manifests for the removal, transportation, and final disposal of the non-hazardous and hazardous liquid IDW. Baker will prepare both the waste profile forms and manifests. Costs associated with IDW disposal have been estimated to be $11,053. Although 231 and 212 do not have negotiated tasks for IDW disposal, both CTOs have budgetary funds available to cover IDW disposal costs. Therefore, this additional work will not require additional funding.

If you have any questions, please contact me at (412) 269-2016.

Sincerely,

BAKER ENVIRONMENTAL, INC.

Raymond P. Wattras
Activity Coordinator

RPW/jc

cc: Ms. Katherine Landman
Ms. Lee Anne Rapp
Ms. Beth Hacic
Mr. Neal Paul

TABLE 1
SUMMARY OF IDW AT MCB CAMP LEJEUNE

Site Location	IDW Media	Estimated Quantity	RCRA Characterizations	Recommended Disposal Option
Site 41	Liquids	275 Gallons	Non-Hazardous	Offsite TSDF
Site 41	Liquids	10 Gallons	Hazardous by characteristic for lead (D008)	Offsite TSDF
Site 1	Soils	30 Cubic Yards	Non-Hazardous	Onsite disposal at Lot 203
Site 28	Soils	30 Cubic Yards	Non-Hazardous	Onsite disposal at Lot 203
Sites 1, 28, 30	Liquids	7,000 Gallons	Non-Hazardous	Offsite TSDF
Site 6	Liquids	55 Gallons	Potentially Hazardous (due to volatiles)	Offsite TSDF
Site 35	Soils	.5 Cubic Yard	Non-Hazardous	Onsite disposal at Lot 203
Site 78	Soils	1.8 Cubic Yard	Non-Hazardous	Onsite disposal at Lot 203
Sites 1, 28, 30	Liquids	440 Gallons	Non-Hazardous	Offsite TSDF

Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

(412) 269-6000
FAX (412) 269-2002

June 29, 1994

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Building N-26)
Norfolk, Virginia 23511-2699

Attn: Ms. Linda Berry, P.E.
Code 1823

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0212
Disposal of Investigation Derived Waste at Site 69
MCB, Camp Lejeune, North Carolina

Dear Ms. Berry:

Baker Environmental, Inc. (Baker) is coordinating the disposal of investigation derived waste (IDW) generated during the installation of additional shallow and deep monitoring wells at Site 69. During the installation and sampling of these wells, approximately 440 gallons of development/purge water and 11 cubic yards of soil cuttings were generated and containerized in drums. A composite sample of the liquid IDW was collected and analyzed for full TCL organics and TAL metals (total metals). A composite sample of the solid IDW was also collected and analyzed for full TCLP, flammability, reactivity, and corrosivity.

The liquid IDW exhibited low levels of acetone and di-n-butylphthalate, which are possibly present due to laboratory contamination, and the pesticide beta-BHC (0.310 µg/L). Manganese was detected above North Carolina Water Quality Standards at a concentration of 97 µg/L. The soil IDW did not exhibit RCRA hazardous waste characteristics. All analytical results are attached to this correspondence.

Based on the analytical results, it is recommended that the soil and liquid IDW be disposed of on-site, since the IDW presents little to no risk to human health or further degradation of the environment. This action is consistent with EPA and LANTDIV guidance. Baker will arrange for a subcontractor to dispose the IDW at Site 69. The empty drums will then be stored at Lot 203 for future use.

Baker proposes to conduct the IDW disposal activities during the week of July 11, 1994, pending your verbal approval. Baker estimates two days of site operations to complete the disposal of IDW at Site 69.

bcc: APajak/CF; WTrimbath/JMentz/PRGM F; RWattras; RBonelli(ck); Daily File
S.O. #62470-212-0000-00550
Subfile: 8
Initials: WDT

Baker

If you have any questions, please contact me at (412) 269-2016.

Sincerely,

BAKER ENVIRONMENTAL, INC.

Raymond P. Wattras

Raymond P. Wattras
Activity Coordinator

RPW/mp
Attachment

cc: Mr. Neal Paul
Ms. Lee Anne Rapp (w/o attachments)
Ms. Beth Hacic (w/o attachments)

GP Work Order # 9405220

SAMPLE ANALYSIS REPORT

Prepared For:

Baker Environmental, Inc.
420 Rouser Road, Bldg #3
Coraopolis, PA 15108

PRELIMINARY RESULTS

Prepared By:

GP Environmental Services, Inc.
202 Perry Parkway
Gaithersburg, Maryland 20877

FINAL RESULTS

June 09, 1994

Albert Ellis, Laboratory Director

GP ENVIRONMENTAL SERVICES
ANALYTICAL RESULTS

Project: /P

Baker Environmental, Inc.
420 Rouser Road, Bldg #3
Coraopolis, PA 15108
Atten: Mat Bartman

GP ENVIRONMENTAL SERVICES
202 Perry Parkway
Gaithersburg, MD 20877

Atten: Client Services
Phone: (301) 926 6002

Certified by:_____

SAMPLE IDENTIFICATION

GP ID	Client ID
9405220-01A	69-DWCMP
9405220-01B	
9405220-01C	
9405220-01D	
9405220-01E	
9405220-01F	
9405220-01G	
9405220-02A	HOLDING BLANK
9405220-02B	

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

GP ID: 9405220-01A
Client ID: 69-DWCMP
Collected: 02/19/94
Dilution: 1

Matrix: LIQUID
Method: CLP SOW 390
Units: ug/L

Analyst: HY
Analyzed: 06/01/94
Prepared:

VOLATILE TARGET COMPOUNDS

Parameter	Result	Det.Lim.	Qualifier
Chloromethane	BQL	10.0	
Bromomethane	BQL	10.0	
Vinyl chloride	BQL	10.0	
Chloroethane	BQL	10.0	
Methylene chloride	BQL	10.0	
Acetone	5.60	10.0	JB
Carbon Disulfide	BQL	10.0	
1,1-Dichloroethene	BQL	10.0	
1,1-Dichloroethane	BQL	10.0	
1,2-Dichloroethene(total)	BQL	10.0	
Chloroform	BQL	10.0	
1,2-Dichloroethane	BQL	10.0	
2-Butanone	BQL	10.0	
1,1,1-Trichloroethane	BQL	10.0	
Carbon tetrachloride	BQL	10.0	
Bromodichloromethane	BQL	10.0	
1,2-Dichloropropane	BQL	10.0	
cis-1,3-Dichloropropene	BQL	10.0	
Trichloroethene	BQL	10.0	
Dibromochloromethane	BQL	10.0	
1,1,2-Trichloroethane	BQL	10.0	
Benzene	BQL	10.0	
trans-1,3-Dichloropropene	BQL	10.0	
Bromoform	BQL	10.0	
4-Methyl-2-pentanone	BQL	10.0	
2-Hexanone	BQL	10.0	
Tetrachloroethene	BQL	10.0	
1,1,2,2-Tetrachloroethane	BQL	10.0	
Toluene	BQL	10.0	
Chlorobenzene	BQL	10.0	
Ethylbenzene	BQL	10.0	
Styrene	BQL	10.0	
Xylenes (total)	BQL	10.0	

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

GP ID: 9405220-01D
Client ID: 69-DWCMP
Collected: 02/19/94
Dilution: 1

Matrix: LIQUID
Method: CLP SOW 390
Units: ug/L

Analyst: MB
Analyzed: 06/06/94
Prepared: 05/28/94

SEMIVOLATILE TARGET COMPOUNDS

Parameter	Result	Det.Lim.	Qualifier
Phenol	BQL	10.0	
bis(2-Chloroethyl) ether	BQL	10.0	
2-Chlorophenol	BQL	10.0	
1,3-Dichlorobenzene	BQL	10.0	
1,4-Dichlorobenzene	BQL	10.0	
1,2-Dichlorobenzene	BQL	10.0	
2-Methylphenol	BQL	10.0	
2,2'-oxybis-(1-chloropropane)	BQL	10.0	
4-Methylphenol	BQL	10.0	
N-Nitroso-di-n-propylamine	BQL	10.0	
Hexachloroethane	BQL	10.0	
Nitrobenzene	BQL	10.0	
Isophorone	BQL	10.0	
2-Nitrophenol	BQL	10.0	
2,4-Dimethylphenol	BQL	10.0	
bis(2-Chloroethoxy) methane	BQL	10.0	
2,4-Dichlorophenol	BQL	10.0	
1,2,4-Trichlorobenzene	BQL	10.0	
Naphthalene	BQL	10.0	
4-Chloroaniline	BQL	10.0	
Hexachlorobutadiene	BQL	10.0	
4-Chloro-3-methylphenol	BQL	10.0	
2-Methylnaphthalene	BQL	10.0	
Hexachlorocyclopentadiene	BQL	10.0	
2,4,6-Trichlorophenol	BQL	10.0	
2,4,5-Trichlorophenol	BQL	25.0	
2-Chloronaphthalene	BQL	10.0	
2-Nitroaniline	BQL	25.0	
Dimethyl phthalate	BQL	10.0	
Acenaphthylene	BQL	10.0	
2,6-Dinitrotoluene	BQL	10.0	
3-Nitroaniline	BQL	25.0	

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

GP ID: 9405220-01D
Client ID: 69-DWCHP
Collected: 02/19/94
Dilution: 1

Matrix: LIQUID
Method: CLP SOW 390
Units: ug/L

Analyst: MB
Analyzed: 06/06/94
Prepared: 05/28/94

SEMIVOLATILE TARGET COMPOUNDS

Parameter	Result	Det.Lim.	Qualifier
Acenaphthene	BQL	10.0	
2,4-Dinitrophenol	BQL	25.0	
4-Nitrophenol	BQL	25.0	
Dibenzofuran	BQL	10.0	
2,4-Dinitrotoluene	BQL	10.0	
Diethylphthalate	BQL	10.0	
4-Chlorophenyl phenyl ether	BQL	10.0	
Fluorene	BQL	10.0	
4-Nitroaniline	BQL	25.0	
4,6-Dinitro-2-methylphenol	BQL	25.0	
N-nitrosodiphenylamine	BQL	10.0	
4-Bromophenyl-phenylether	BQL	10.0	
Hexachlorobenzene	BQL	10.0	
Pentachlorophenol	BQL	25.0	
Phenanthrene	BQL	10.0	
Anthracene	BQL	10.0	
Carbazole	BQL	10.0	
di-n-Butylphthalate	1.60	10.0	J
Fluoranthene	BQL	10.0	
Pyrene	BQL	10.0	
Butyl benzyl phthalate	BQL	10.0	
3,3'-Dichlorobenzidine	BQL	10.0	
Benzo[a]anthracene	BQL	10.0	
Chrysene	BQL	10.0	
bis(2-Ethylhexyl)phthalate	BQL	10.0	
di-n-Octylphthalate	BQL	10.0	
Benzo[b]fluoranthene	BQL	10.0	
Benzo[k]fluoranthene	BQL	10.0	
Benzo[a]pyrene	BQL	10.0	
Indeno[1,2,3-cd]pyrene	BQL	10.0	
Dibenz[a,h]anthracene	BQL	10.0	
Benzo[g,h,i]perylene	BQL	10.0	

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

GP ID: 9405220-01F
Client ID: 69-DWCMP
Collected: 02/19/94
Dilution: 1

Matrix: LIQUID
Method: SOW 3/90
Units: ug/L

Analyst: TT
Analyzed: 06/09/94
Prepared: 05/28/94

GC TARGET COMPOUNDS

Parameter	Result	Det.Lim.	Qualifier
alpha-BHC	BQL	0.050	
beta-BHC	0.310	0.050	
delta-BHC	BQL	0.050	
Lindane (gamma-BHC)	BQL	0.050	
Heptachlor	BQL	0.050	
Aldrin	BQL	0.050	
Heptachlor epoxide	BQL	0.050	
Endosulfan I	BQL	0.050	
Dieldrin	BQL	0.100	
4,4'-DDE	BQL	0.100	
Endrin	BQL	0.100	
Endosulfan II	BQL	0.100	
4,4'-DDD	BQL	0.100	
Endosulfan sulfate	BQL	0.100	
4,4'-DDT	BQL	0.100	
Methoxychlor	BQL	0.500	
Endrin ketone	BQL	0.100	
Endrin aldehyde	BQL	0.100	
alpha-Chlordane	BQL	0.050	
gamma-Chlordane	BQL	0.050	
Toxaphene	BQL	5.00	
Aroclor 1016	BQL	1.00	
Aroclor 1221	BQL	2.00	
Aroclor 1232	BQL	1.00	
Aroclor 1242	BQL	1.00	
Aroclor 1248	BQL	1.00	
Aroclor 1254	BQL	1.00	
Aroclor 1260	BQL	1.00	

GP ENVIRONMENTAL SERVICES
METALS ANALYSIS RESULTS

GP ID: 9405220-01
Client ID: 69-DWCMP

Matrix: LIQUID
Collected: 02/19/94

Parameter	Method	Result	Det.Lim.	Units	Dil.	Prepared	Analyzed	By
Antimony	MCAWW 204.2	BQL	5.50	ug/L	1	05/31/94	06/01/94	FU
Arsenic	MCAWW 206.2	2.94	2.10	ug/L	1	05/31/94	06/02/94	FU
Lead	MCAWW 239.2	6.34	1.00	ug/L	1	05/31/94	06/02/94	RA
Mercury	MCAWW 245.1	BQL	0.100	ug/L	1	05/31/94	06/02/94	MGP
Potassium	MCAWW 258.1	36.0	0.243	mg/L	1	05/31/94	06/01/94	RA
Selenium	MCAWW 270.2	BQL	1.50	ug/L	1	05/31/94	06/01/94	FU
Silver	MCAWW 272.2	BQL	0.500	ug/L	1	05/31/94	06/01/94	RA
Sodium	MCAWW 273.1	30.0	0.339	mg/L	1	05/31/94	06/01/94	RA
Thallium	MCAWW 279.2	BQL	3.70	ug/L	1	05/31/94	06/01/94	RA
Aluminum	MCAWW 200.7	972.0	112.0	ug/L	1	05/31/94	06/02/94	MB
Barium	MCAWW 200.7	45.4	9.20	ug/L	1	05/31/94	06/02/94	MB
Beryllium	MCAWW 200.7	BQL	0.648	ug/L	1	05/31/94	06/02/94	MB
Calcium	MCAWW 200.7	49600.0	94.2	ug/L	1	05/31/94	06/02/94	MB
Cadmium	MCAWW 200.7	BQL	2.11	ug/L	1	05/31/94	06/02/94	MB
Cobalt	MCAWW 200.7	BQL	13.1	ug/L	1	05/31/94	06/02/94	MB
Chromium	MCAWW 200.7	21.3	7.89	ug/L	1	05/31/94	06/02/94	MB
Copper	MCAWW 200.7	BQL	15.9	ug/L	1	05/31/94	06/02/94	MB
Iron	MCAWW 200.7	7940.0	36.6	ug/L	1	05/31/94	06/02/94	MB
Magnesium	MCAWW 200.7	1900.0	59.1	ug/L	1	05/31/94	06/02/94	MB
Manganese	MCAWW 200.7	97.6	4.14	ug/L	1	05/31/94	06/02/94	MB
Nickel	MCAWW 200.7	BQL	22.3	ug/L	1	05/31/94	06/02/94	MB
Vanadium	MCAWW 200.7	BQL	10.5	ug/L	1	05/31/94	06/02/94	MB
Zinc	MCAWW 200.7	59.3	5.85	ug/L	1	05/31/94	06/02/94	MB

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

GP ID: 9405220-02A
Client ID: HOLDING BLANK
Collected: 02/22/94
Dilution: 1

Matrix: WATER
Method: CLP SOW 390
Units: ug/L

Analyst: HY
Analyzed: 06/01/94
Prepared:

VOLATILE TARGET COMPOUNDS

Parameter	Result	Det.Lim.	Qualifier
Chloromethane	BQL	10.0	
Bromomethane	BQL	10.0	
Vinyl chloride	BQL	10.0	
Chloroethane	BQL	10.0	
Methylene chloride	1.95	10.0	JB
Acetone	BQL	10.0	
Carbon Disulfide	BQL	10.0	
1,1-Dichloroethene	BQL	10.0	
1,1-Dichloroethane	BQL	10.0	
1,2-Dichloroethene(total)	BQL	10.0	
Chloroform	BQL	10.0	
1,2-Dichloroethane	BQL	10.0	
2-Butanone	BQL	10.0	
1,1,1-Trichloroethane	BQL	10.0	
Carbon tetrachloride	BQL	10.0	
Bromodichloromethane	BQL	10.0	
1,2-Dichloropropane	BQL	10.0	
cis-1,3-Dichloropropene	BQL	10.0	
Trichloroethene	BQL	10.0	
Dibromochloromethane	BQL	10.0	
1,1,2-Trichloroethane	BQL	10.0	
Benzene	BQL	10.0	
trans 1,3-Dichloropropene	BQL	10.0	
Bromoform	BQL	10.0	
4-Methyl-2-pentanone	BQL	10.0	
2-Hexanone	BQL	10.0	
Tetrachloroethene	BQL	10.0	
1,1,2,2-Tetrachloroethane	BQL	10.0	
Toluene	BQL	10.0	
Chlorobenzene	BQL	10.0	
Ethylbenzene	BQL	10.0	
Styrene	BQL	10.0	
Xylenes (total)	BQL	10.0	

GP Work Order # 9405219

SAMPLE ANALYSIS REPORT

Prepared For:

Baker Environmental, Inc.
420 Rouser Road, Bldg #3
Coraopolis, PA 15108

PRELIMINARY
RESULTS

Prepared By:

GP Environmental Services, Inc.
202 Perry Parkway
Gaithersburg, Maryland 20877

June 09, 1994

Albert Ellis, Laboratory Director

GP ENVIRONMENTAL SERVICES
ANALYTICAL RESULTS

Project:

Baker Environmental, Inc.
420 Rouser Road, Bldg #3
Coraopolis, PA 15108
Atten: Mat Bartman

GP ENVIRONMENTAL SERVICES
202 Perry Parkway
Gaithersburg, MD 20877

Atten: Client Services
Phone: (301) 926-6802

Certified by:_____

SAMPLE IDENTIFICATION

GP ID	Client ID
9405219-01A	69-DRMCMP
9405219-01B	
9405219-01C	
9405219-01D	
9405219-02A	TCLP BLANK

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

GP ID: 9405219-01A
Client ID: 69-DRMCMP
Collected: 05/25/94
Dilution: 10

Matrix: SOLID
Method: 8240 TCLP
Units: ug/l

Analyst: HY
Analyzed: 06/06/94
Prepared:

VOLATILE TARGET COMPOUNDS

Parameter	Result	Det.Lim.	Qualifier
1,1-Dichloroethene	BQL	100.0	
1,2-Dichloroethane	BQL	100.0	
1,4-Dichlorobenzene	BQL	100.0	
2-Butanone	BQL	100.0	
Benzene	BQL	100.0	
Carbon tetrachloride	BQL	100.0	
Chlorobenzene	BQL	100.0	
Chloroform	BQL	100.0	
Tetrachloroethene	BQL	100.0	
Trichloroethene	BQL	100.0	
Vinyl chloride	BQL	100.0	

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

GP ID: 9405219-01A
Client ID: 69-DRMCMP
Collected: 05/25/94
Dilution: 1

Matrix: SOLID
Method: 8270 TCLP
Units: ug/L

Analyst: IM
Analyzed: 06/06/94
Prepared: 06/02/94

SEMIVOLATILE TARGET COMPOUNDS

Parameter	Result	Det.Lim.	Qualifier
1,4-Dichlorobenzene	BQL	50.0	
2,4,5-Trichlorophenol	BQL	50.0	
2,4,6-Trichlorophenol	BQL	50.0	
2,4-Dinitrotoluene	BQL	50.0	
Hexachlorobenzene	BQL	50.0	
Hexachlorobutadiene	BQL	50.0	
Hexachloroethane	BQL	50.0	
m + p-Cresol	BQL	50.0	
Nitrobenzene	BQL	50.0	
o-Cresol	BQL	50.0	
Pentachlorophenol	BQL	250.0	
Pyridine	BQL	50.0	

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

GP ID: 9405219-01A
Client ID: 69-DRHCHP
Collected: 05/25/94
Dilution: 1

Matrix: SOLID
Method: 8080 TCLP
Units: ug/L

Analyst: PH
Analyzed: 06/09/94
Prepared: 06/02/94

GC TARGET COMPOUNDS

Parameter	Result	Det.Lim.	Qualifier
Chlordane	BQL	0.140	
Endrin	BQL	0.060	
gamma-BHC (Lindane)	BQL	0.040	
Heptachlor	BQL	0.030	
Heptachlor epoxide	BQL	0.830	
Methoxychlor	BQL	1.76	
Toxaphene	BQL	2.40	

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

GP ID: 9405219-01A
Client ID: 69-DRMCMP
Collected: 05/25/94
Dilution: 1

Matrix: SOLID
Method: 8150 TCLP
Units: ug/L

Analyst: PH
Analyzed: 06/03/94
Prepared: 06/02/94

GC TARGET COMPOUNDS

Parameter	Result	Det.Lim.	Qualifier
2,4-D	BQL	60.0	
Silvex	BQL	0.50	

GP ENVIRONMENTAL SERVICES
METALS ANALYSIS RESULTS

GP ID: 9405219-01
Client ID: 69-DRMCMP

Matrix: SOLID
Collected: 05/25/94

Parameter	Method	Result	Det.Lim.	Units	Dil.	Prepared	Analyzed By
TCLP Silver	SW846 6010	BQL	34.8	ug/L	1		06/02/94 MB
TCLP Arsenic	SW846 6010	BQL	93.0	ug/L	1		06/02/94 MB
TCLP Barium	SW846 6010	317.0	110.0	ug/L	1		06/02/94 MB
TCLP Cadmium	SW846 6010	BQL	23.6	ug/L	1		06/02/94 MB
TCLP Chromium	SW846 6010	BQL	20.4	ug/L	1		06/02/94 MB
TCLP Mercury	SW846 7470	BQL	0.100	ug/L	1		06/02/94 MGP
TCLP Lead	SW846 6010	BQL	139.0	ug/L	1		06/02/94 MB
TCLP Selenium	SW846 6010	BQL	165.0	ug/L	1		06/02/94 MB

GP ID: 9405219-02
Client ID: TCLP BLANK

Matrix: EXTRACT
Collected: / /

Parameter	Method	Result	Det.Lim.	Units	Dil.	Prepared	Analyzed By
TCLP Silver	SW846 6010	BQL	34.8	ug/L	1		06/02/94 MB
TCLP Arsenic	SW846 6010	BQL	93.0	ug/L	1		06/02/94 MB
TCLP Barium	SW846 6010	BQL	110.0	ug/L	1		06/02/94 MB
TCLP Cadmium	SW846 6010	BQL	23.6	ug/L	1		06/02/94 MB
TCLP Chromium	SW846 6010	BQL	20.4	ug/L	1		06/02/94 MB
TCLP Mercury	SW846 7470	BQL	0.100	ug/L	1		06/02/94 MGP
TCLP Lead	SW846 6010	BQL	139.0	ug/L	1		06/02/94 MB
TCLP Selenium	SW846 6010	BQL	165.0	ug/L	1		06/02/94 MB

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

GP ID: 9405219-01
Client ID: 69-DRMCMP

Matrix: SOLID
Collected: 05/25/94

Parameter	Method	Result		Det.Lim.	Units	Dil.	Prepared	Analyzed By
Flash point	1010		N	100.0	deg. C			06/08/94 BS

GP ENVIRONMENTAL SERVICES
WET CHEMISTRY ANALYSIS RESULTS

GP ID: 9405219-01
Client ID. 69 DRMCHP

Matrix: SOLID
Collected: 05/25/94

Parameter	Method	Result	Det.Lim.	Units	Dil.	Prepared	Analyzed By
Reactive Cyanide	SW 846 7.3.3	BQL	0.038	mg/Kg	1		06/01/94 JS
pH	SW846 9045	11.4	0.001	pH	1		05/31/94 MG
Reactive Sulfide	SW 846 7.3.4	BQL	7.43	mg/Kg	1		/ / MG
Percent Solids	MCAWW 160.3	67.9		%			06/02/94 VHM

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

GP ID: 9405219-02A
Client ID: TCLP BLANK
Collected: / /
Dilution: 10

Matrix: EXTRACT
Method: 8240 TCLP
Units: ug/L

Analyst: HY
Analyzed: 06/06/94
Prepared:

VOLATILE TARGET COMPOUNDS

Parameter	Result	Det.Lim.	Qualifier
1,1-Dichloroethene	BQL	100.0	
1,2-Dichloroethane	BQL	100.0	
1,4-Dichlorobenzene	BQL	100.0	
2-Butanone	BQL	100.0	
Benzene	BQL	100.0	
Carbon tetrachloride	BQL	100.0	
Chlorobenzene	BQL	100.0	
Chloroform	BQL	100.0	
Tetrachloroethene	BQL	100.0	
Trichloroethene	BQL	100.0	
Vinyl chloride	BQL	100.0	

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

GP ID: 9405219-02A
Client ID: TCLP BLANK
Collected: / /
Dilution: 1

Matrix: EXTRACT
Method: 8270 TCLP
Units: ug/L

Analyst: IM
Analyzed: 06/06/94
Prepared: 06/02/94

SEMIVOLATILE TARGET COMPOUNDS

Parameter	Result	Det.Lim.	Qualifier
1,4-Dichlorobenzene	BQL	50.0	
2,4,5-Trichlorophenol	BQL	50.0	
2,4,6-Trichlorophenol	BQL	50.0	
2,4-Dinitrotoluene	BQL	50.0	
Hexachlorobenzene	BQL	50.0	
Hexachlorobutadiene	BQL	50.0	
Hexachloroethane	BQL	50.0	
m + p-Cresol	BQL	50.0	
Nitrobenzene	BQL	50.0	
o-Cresol	BQL	50.0	
Pentachlorophenol	BQL	250.0	
Pyridine	BQL	50.0	

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

GP ID: 9405219-02A
Client ID: TCLP BLANK
Collected: / /
Dilution: 1

Matrix: EXTRACT
Method: 8080 TCLP
Units: ug/L

Analyst: PH
Analyzed: 06/09/94
Prepared: 06/02/94

GC TARGET COMPOUNDS

Parameter	Result	Det.Lim.	Qualifier
Chlordane	BQL	0.140	
Endrin	BQL	0.060	
gamma-BHC (Lindane)	BQL	0.040	
Heptachlor	BQL	0.030	
Heptachlor epoxide	BQL	0.830	
Methoxychlor	BQL	1.76	
Toxaphene	BQL	2.40	

GP ENVIRONMENTAL SERVICES
ORGANIC ANALYSIS RESULTS

GP ID: 9405219-02A
Client ID: TCLP BLANK
Collected: / /
Dilution: 10

Matrix: EXTRACT
Method: 8150 TCLP
Units: ug/L

Analyst: HY
Analyzed: 06/06/94
Prepared:

GC TARGET COMPOUNDS

Parameter	Result	Det.Lim.	Qualifier
2,4-D			
Silvex			

Baker

Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

(412) 269-6000
FAX (412) 269-2002

July 1, 1994

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Building N-26)
Norfolk, Virginia 23511-2699

Attn: Ms. Linda Berry, P.E.
Navy Technical Representative
Code 1823

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Orders (CTOs) 0212 and 0231
Sites 41 (CTO 0212), 1, 28, and 30 (CTO 0231)
Investigation-Derived Waste (IDW) Disposal
Marine Corps Base (MCB), Camp Lejeune, North Carolina

Dear Ms. Berry:

This letter provides a summary of IDW disposal activities at those sites referenced above within Operable Units (OUs) No. 4 and No. 7, Marine Corps Base, Camp Lejeune, North Carolina. Both liquid and solid IDW were generated during remedial investigation activities. In addition, small quantities of IDW generated during field investigations associated with CTOs 0133, 0160, and 0177 were also disposed. The characterization and disposal of the IDW was performed in accordance with our recommendation letter dated May 19, 1994.

Disposal activities that occurred during the week of May 23, 1994 were:

- Approximately 40 cubic yards of non-hazardous IDW soil from Sites 1 and 28 were transported to Storage Lot 203 and graded onto the surface.
- Approximately two cubic yards of non-hazardous IDW soil from Sites 35 and 78 were graded onto the surface at Storage Lot 203.
- Two 55-gallon drums containing characteristically hazardous waste liquids were transported from Sites 6 and 41 by a licensed waste hauler to an offsite treatment storage and disposal facility (TSDF).
- A total of 6,154 gallons of non-hazardous waste liquids, generated during field investigations at Sites 1, 28, 30, and 41 were transported by a licensed waste hauler to an off-site TSDF.

bcc: APPajak/CF; WDTrimbath/JWMentz/PROG F; RPWattras/PF(212); REBonelli/PF(231); TFTrebilcock; PAMonday(ck); Daily File
S.O. #62470-212 & 231
Subfile 8
Initials VCF

Table 1 provides the source site, actual quantity, and disposal method for each investigation-derived waste streams discussed. Copies of the hazardous and non-hazardous waste manifests associated with these activities are included with this letter as Attachment A.

If you have any questions regarding this submittal, please do not hesitate to contact me at (412) 269-2016.

Sincerely,

BAKER ENVIRONMENTAL, INC.

Raymond P. Wattras
Activity Coordinator

Attachments

RPW/TFT/jc

cc: Ms. Katherine Landman, LANTDIV
Mr. Neal Paul, Activity
Ms. Beth Hacic, LANTDIV (w/o attachments)

TABLE 1
SUMMARY OF IDW AT MCB CAMP LEJEUNE

Site Location	IDW Media	Actual Quantity	RCRA Characterization	Disposal
Site 41	Liquid	250 Gallons	Non-Hazardous	Offsite TSDF
Site 41	Liquid	10 Gallons	Hazardous by lead (D008) characteristic	Offsite TSDF
Site 1	Soil	20 Cubic Yards	Non-Hazardous	Onsite disposal at Lot 203
Site 28	Soil	20 Cubic Yards	Non-Hazardous	Onsite disposal at Lot 203
Sites 1, 28, 30	Liquid	5,464 Gallons	Non-Hazardous	Offsite TSDF
Site 6	Liquid	55 Gallons	Hazardous by trichloroethylene (D040) characteristic	Offsite TSDF
Site 35	Soil	.5 Cubic Yard	Non-Hazardous	Onsite disposal at Lot 203
Site 78	Soil	1.5 Cubic Yard	Non-Hazardous	Onsite disposal at Lot 203
Sites 1, 28, 30	Liquid	440 Gallons	Non-Hazardous	Offsite TSDF

Attachment A
Manifests

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. N C 6 1 7 0 0 2 2 5 8 0 | Manifest Document No. 0 0 8 1 5

2. Page 1 of 1

Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
MCB Camp Lejeune
Atn: Neal Paul
IR Division Bld. 67
CAmp Lejeune, NC 28542

Generator's Phone (919) 451-1725

A. State Manifest Document Number

B. State Generator's ID

5. Transporter 1 Company Name
Four Seasons Environmental, Inc.

6. US EPA ID Number N C D 9 9 1 2 7 7 3 2

C. State Transporter's ID

D. Transporter's Phone 910-273-2718

7. Transporter 2 Company Name

8. US EPA ID Number

E. State Transporter's ID

F. Transporter's Phone

9. Designated Facility Name and Site Address
Laidlaw Environemntal Services, Inc.
208 Watlington Industrial Road
Reidsville, NC 27320

10. US EPA ID Number N C D 0 0 0 6 4 8 4 5 1

G. State Facility's ID

H. Facility's Phone (910) 342-6106

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. ~~Hazardous Waste Liquid, NOS, (lead), 9, NA3082 III~~ Thomas F. Trebilcock 5-25-94	~~0 0 1~~	~~D K~~		~~P~~	~~D008~~
b. ~~Hazardous Waste Liquid, NOS, (tetrachloroethylene), 9, NA3082, III~~ Thomas F. Trebilcock 5-25-94	~~0 0 1~~	~~D M~~		~~P~~	~~D039~~
c. Hazardous Waste Liquid, N.O.S., (Wastewater w/ Lead @11ppm), 9, ~~NA3082~~ NA3082, III	0 0 1	D M	0 0 0 5 0	P	D008
d. Hazardous Waste Liquid, N.O.S., (Wastewater w/ Trichloroehhylene @ 0.5 ppm), 9, NA3082, III	0 0 1	D M	0 9 5 5 0	P	D040

J. Additional Descriptions for Materials Listed Above

K. Handling Codes for Wastes Listed Above

15. Special Handling Instructions and Additional Information
Bill to: FSE
P.O. Box 16590
Greensboro, NC 27410

FSE Job#: 94-50094
24 HR Emergency #: 910-273-2718
HM Guide #: 31

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: JOHN E. RIGGS | Signature | Month Day Year: 10 15 2 15 94

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: Clayton Honeycutt | Signature | Month Day Year: 10 15 2 15 94

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name | Signature | Month Day Year

19. Discrepancy Indication Space

20. Facility Owner or Operator. Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: Randy Lawson | Signature | Month Day Year: 10 15 2 7 94

GENERATOR

TRANSPORTER

FACILITY

EPA Form 8700-22 (Rev. 11-88) Previous editions are obsolete.

INSTRUCTIONS ON BACK SHEET

FOUR SEASONS Environmental
A GREAT LAKES CHEMICAL CORPORATION COMPANY

P.O. Box 16590 • Greensboro, NC 27416-0590 • (919) 273-2718

NON-HAZARDOUS WASTE MANIFEST

Manifest # 00012 F.S.I.S. JOB # 94-50094 Date: May 25, 1994

Generator: MCB Camp Lejeune Phone No.: 919-451-1725

IR Division - Blg. 67 EPA ID No.: NC6170022580

Camp Lejeune, NC 28542 Contact: Neal Paul

Process which generated waste: Groundwater Assessment

I certify that the materials described below are properly described, classified, packaged, marked & labeled, and are in proper condition to be transported in commerce under the applicable regulations of the State, the Environmental Protection Agency and the Department of Transportation. I certify that the waste described below is non-hazardous. I certify that the specific waste was delivered to the carrier named below for legal treatment, storage, or disposal at the site indicated.

Date May 25, 1994 Signature [signature]

Description of material	Circle Form	Quantity	Circle Units	Container No.	Container Type
Non-Regulated Groundwater	Solid (Liquid) Gas Sludge	2908	(Gallons) Cu. Yds. Pounds Tons	1	TT

Transporter: Four Seasons Environmental, Inc. Unit Number(s): 910

3107 S. Elm-Eugene Street Phone No.: 910-273-2718

Greensboro, NC 27406 EPA ID No.: NCD999277732

Vechicle License Tag Number(s): YP-2394 Container: Vac Truck

I certify that the specified material was transferred in a registered (licensed) vehicle to the disposal treatment, storage, or disposal facility named below and was accepted.

Pick-up Driver's Signature	Date	Delivering Driver's Signature	Date
[signature]	5-25-94	[signature]	5-25-94

Facility: Four Seasons Environmental, Inc. Phone No.: 910-273-2718

519 Patton Avenue

Greensboro, NC 27406 Contact: Eric McManus

Handling Method: PT532

I certify that the transporter above delivered the specified material to this TSD facility and was accepted and properly handled in the above manner. We are authorized and qualified by the State of NC to handle this material.

Date 5-26-94 Signature: [signature]

ORIGINAL-Destination Retain COPY 2 - Return to Generator COPY 3 - Transporter Retain COPY 4 - Generator Retain

Four Seasons Environmental
A GREAT LAKES CHEMICAL CORPORATION COMPANY

№ 4083

P.O. Box 16590 • Greensboro, NC 27416-0590 • (919) 273-2718

NON-HAZARDOUS WASTE MANIFEST

Manifest # 00013 F.S.I.S. JOB # 94-50094 Date: May ~~25~~ 26, 1994

Generator: MCB Camp Lejuene Phone No.: 910-451-1725

IR Division - Bldg. 67 EPA ID No.: NC6170022580

Camp Lejeune, NC 28542 Contact: Neal Paul

Process which generated waste: Groudwater assessment

I certify that the materials described below are properly described, classified, packaged, marked & labeled, and are in proper condition to be transported in commerce under the applicable regulations of the State, the Environmental Protection Agency and the Department of Transportation. I certify that the waste described below is non-hazardous. I certify that the specific waste was delivered to the carrier named below for legal treatment, storage, or disposal at the site indicated.

3196 - liquid
50 - sludge

Date MAY 25, 1994 Signature

Description of material	Circle Form	Quantity	Circle Units	Container No.	Container Type
Non-Regulated Groundwater	Solid, Liquid, Gas, Sludge	3246	Gallons, Cu. Yds., Pounds, Tons	1	TT

Transporter: Four Seasons ENvironemntal, Inc. Unit Number(s) BT6 T4

3107 S. Elm-Eugene Phone No.: 910-273-2718

Greensboro, Nc 27406 EPA ID No.: NCD99277732

Vechicle License Tag Number(s) Container:

I certify that the specified material was transferred in a registered (licensed) vehicle to the disposal treatment, storage, or disposal facility named below and was accepted.

Pick-up Driver's Signature Date 5-26-94 Delivering Driver's Signature Date 5-26-94

Facility: Four Seasons EnvironmenAl, Inc. Phone No.: 910-273-2718

519 Patton Avenue

Greensboro, NC 27406 Contact: Erio McManus

Handling Method: PT5041 PT5032

I certify that the transporter above delivered the specified material to this TSD facility and was accepted and properly handled in the above manner. We are authorized and qualified by the State of NC to handle this material.

Date 5-26-94 Signature:

ORIGINAL-Destination Retain COPY 2 - Return to Generator COPY 3 - Transporter Retain COPY 4 - Generator Retain

Baker

Baker Environmental, Inc.
Airport Office Park, Building 3
420 Rouser Road
Coraopolis, Pennsylvania 15108

(412) 269-6000
FAX (412) 269-2002

March 14, 1994

Commander
Atlantic Division
Naval Facilities Engineering Command
1510 Gilbert Street (Bldg. N-26)
Norfolk, Virginia 23511-2699

Attn: Ms. Linda Berry, P.E.
Code 1823

Re: Contract N62470-89-D-4814
Navy CLEAN, District III
Contract Task Order (CTO) 0212
Investigation-Derived Waste Summary and Recommendations

Dear Ms. Berry:

Investigation-derived wastes (IDW) were generated during the recent field investigations at Sites 2, 6, 41, 69, and 74 located at Marine Corps Base (MCB), Camp Lejeune, North Carolina. These IDW included soil cuttings and drilling mud (solids), well development and purge water, and decontamination fluids (liquids). Presently, the solids are being stored in 20 cubic yard capacity roll-off boxes and the liquids are being stored in tanker trucks and steel 55-gallon drums. Table 1 provides a summary of the various IDW and estimated volumes.

Samples were collected from the various IDW streams for laboratory analysis for purposes of determining proper disposal options. For the solids, a single composite sample (composed of three grab samples) from each roll-off box was submitted for Resource Conservation and Recovery Act (RCRA) hazardous waste characteristics (i.e., leachability, corrosivity, reactivity, and ignitability). The liquid IDW samples were analyzed for full Target Compound List (TCL) organics and Target Analyte List (TAL) inorganics in accordance with CLP protocols.

CONCLUSIONS AND RECOMMENDATIONS - SOLID IDW

As shown on Table 2, the soil IDW analytical results were compared to RCRA hazardous waste criteria in order to determine whether any of the IDW are characteristically hazardous. No contaminants were detected at concentrations which exceed the regulatory level as defined by RCRA. Therefore, the soil is not characteristically hazardous.

Based on the analytical results of the IDW solids, several disposal alternatives are available. These alternatives include on-site disposal, off-site disposal in an "industrial"

type landfill (i.e., Subtitle D) or treatment at a licensed TSDF. The most feasible option, however, is to return the solid wastes to the site. This alternative is acceptable (and encouraged) at Superfund sites per U.S. Environmental Protection Agency (EPA) guidelines for the management of IDW. If this option is approved, the soil could be disposed of within the areas where it is presently being stored.

CONCLUSIONS AND RECOMMENDATIONS - LIQUID IDW

Tables 3 and 4 summarize the organic and inorganic contaminants detected in the liquid IDW samples, respectively. All liquid IDW samples exhibited some organics and/or inorganics that exceeded Federal and/or State Drinking Water Standards. Lead levels in sample 41-TK-01 exceeded the EPA regulatory standard for lead and therefore, liquids in the tanker at Site 41 should be disposed as a RCRA hazardous waste. Also, there are 3 gallons of waste that were generated by field screening test kits at Site 6 (Lots 201 and 203). This small quantity of wastes are RCRA hazardous waste by characteristic due to its acidic pH reading (<2 pH). No other contaminants were detected at concentrations above the regulatory level as defined by RCRA (see Table 2) for the remaining liquid IDW samples. Therefore, the liquid IDW from Site 2, Site 6, Site 69, and Site 74 are not characteristically hazardous.

Results of liquid IDW sample analyses have been forwarded to Mr. Thomas Morris, of the Camp Lejeune Environmental Management Division (EMD). Only the liquid IDW from Site 74 (74-TK-01) should be considered for on-base disposal at the HPIA STP. EMD will coordinate with base wastewater treatment plant personnel to determine if the liquid IDW can be treated on base. If the liquid IDW from Site 74 cannot be disposed of at the HPIA STP, then this waste will be disposed of at a TSDF. The remaining liquid IDW will require transport to a licensed off-base TSDF.

IDW DISPOSAL SCHEDULE AND COSTS

Upon receiving direction from LANTDIV and EMD, Baker will coordinate IDW disposal activities. It would be advantageous to dispose of the IDW before March 21, 1994 in order to take full advantage of turning the roll-off boxes and storage tankers over to CTO-0231, which will utilize them for IDW storage at Sites 1, 28, and 30. At present, Baker is planning to begin CTO-0231 operations the week of March 21, 1994.

Transportation and disposal costs associated with IDW were not included in the original budget estimate. Baker is currently obtaining cost estimates to dispose the solid IDW at the originating sites, transport one tanker to the HPIA STP, and to dispose of the remaining liquid IDW at an off-site TSDF.

There will be some cost savings associated with disposing liquid IDW from Site 74 at the HPIA STP. Also, by coordinating the disposal of the four roll-off boxes and two tankers with CTO-0231, Baker is able to provide LANTDIV with a cost savings of $3,800. This will be accomplished by not having to pay mobilization charges incurred by the subcontractor since the equipment is already located at MCB Camp Lejeune.

Baker

If you have any questions, please do not hesitate to contact me at (412) 269-2016.

Sincerely,

BAKER ENVIRONMENTAL, INC.

Raymond P. Wattras

Raymond P. Wattras
Project Manager

RPW/lmn
Attachments

cc: Mr. Neal Paul (MCB Camp Lejeune)
Ms. Lee Anne Rapp (w/o attachment)
Ms. Beth Hacic (w/o attachment)

TABLE 1

SUMMARY OF INVESTIGATION-DERIVED WASTE VOLUMES
MCB, CAMP LEJEUNE, NORTH CAROLINA

Sample Number/ Site Number	Location of IDW	Medium	Group (1)	Quantities	Containment	Estimated Volume
41-RB-01	Site 41	Solids	1	1	Roll-Off Box	10 cubic yards
69-RB-01	Site 69	Solids	1	1	Roll-Off Box	5 cubic yards
74-RB-01	Site 74	Solids	1	1	Roll-Off Box	5 cubic yards
41-TK-01	Site 41	Liquids	3	1	Tanker Truck	1,500 gallons
69-TK-01	Site 69	Liquids	2	12	55-gallon Drums	600 gallons
74-TK-01	Site 74	Liquids	2	1	Tanker Truck	600 gallons
212-DW-01	Sites 41, 69, & 74	Liquids	5	9	55-gallon Drums	450 gallons
HPIA-GW-24-1	Site 6/Lot 203	Liquids	2	1	55-gallon Drum	50 gallons
Site 2	Site 6/Lot 203	Liquids	2	11	55-gallon Drum	550 gallons
Site 6	Site 6/Lot 203	Liquids	5	1	55-gallon Drum	50 gallons
Site 6	Site 6/Lot 203	Liquids	6	1	5-gallon Drum	3 gallons

Notes: (1) Groups are defined by contamination potential and content.
Group 1 - non-hazardous soil
Group 2 - non-contaminated water
Group 3 - contaminated water
Group 4 - excess water pumped from drums containing drilling mud
Group 5 - decontamination fluids
Group 6 - waste fluids from field screening kits

TABLE 2

COMPARISON OF SOIL AND LIQUID IDW ANALYTICAL RESULTS TO RCRA HAZARDOUS WASTE CHARACTERISTIC PARAMETERS

EPA HW No.	Contaminant	Regulatory Level	4-RB-01(1)	69-RB-01(1)	74-RB-01(1)	41-TK-01(2)	69-TK-01(2)	74-TK-01(2)	212-DW-01(2)	HPIA-GW24-1(2)	Site 2(2,5)
D004	Arsenic	5.0	.09U	.09U	.09U	.077	.002U	.012	.0029U	.0097	.023
D005	Barium	100.0	.22	.27	.24	2.00	.030	.255	.062	.078	1.42
D018	Benzene	0.5	.001U	.001U	.004	.001U	.001U	.001U	.500U(4)	.051	U
D006	Cadmium	1.0	.02U	.02U	.02U	.143	.0031U	.005	.0031U	.005U	.007
D019	Carbon tetrachloride	0.5	.001U	.001U	.001U	.001U	.001U	.001U	.5000(4)	.0005U	U
D020	Chlordane	0.03	.0007U	.0007U	.0007U	.0002U	.00006U	.00006U	.00003U	.00002U	U
D021	Chlorobenzene	100.0	.001U	.001U	.001U	.001U	.001U	.001U	.500U(4)	.0005U	U
D022	Chloroform	6.0	.001U	.001U	.001U	.001U	.001U	.001U	500U(4)	.0005U	U
D007	Chromium	5.0	.02U	.02U	.02U	.859	.0091U	.154	.036U	.032	.075
D026	Cresol	200.0	.005U	.005U	.005U	NA	NA	NA	NA	NA	NA
D016	2,4-D	10.0	.006U	.006U	.006U	NA	NA	NA	NA	NA	NA
D027	1,4-Dichlorobenzene	7.5	.001U	.001U	.001U	.041U	.013U	.0014U	.034U	.005U	U
D028	1,2-Dichloroethane	0.5	.001U	.001U	.0038	.001U	.001U	.001U	.500U(4)	.005U	U
D029	1,1-Dichloroethylene	0.7	NA	NA	NA	NA	NA	NA	NA	NA	U
D030	2,4-Dinitrotoluene	0.13	.005U	.005U	.005U	.041U	.013U	.014U	.034U	.005U	U
D012	Endrin	0.02	.0003U	.0003U	.0003U	.0004U	.0001U	.00012U	.00007U	.00005U	U
D031	Heptachlor (and its epoxide)	0.008	.00015U	.00015U	.00015U	.0002U	.00006U	.00006U	.00015	.00002U	U
D032	Hexachlorobenzene	0.13	.005U	.005U	.005U	.041U	.013U	.014U	.034U	.0005U	U
D033	Hexachlorobutadiene	0.5	.005U	.005U	.005U	.041U	.013U	.014U	.034U	.0005U	U
D034	Hexachloroethane	3.0	.005U	.005U	.005U	.041U	.013U	.014U	.034U	.0005U	U
D008	Lead	5.0	.139U	.139U	.139U	11.20(3)	.004	.094	.021	.022	.027
D013	Lindane	0.4	.0002U	.0002U	.0002U	.0002U	.00006U	.00006U	.00003U	.00002U	U
D009	Mercury	0.2	.00015	.00016	.00015	.00019	.0001	.00033	.00013	.0002U	U

TABLE 2 (Continued)

COMPARISON OF SOIL AND LIQUID IDW ANALYTICAL RESULTS TO RCRA HAZARDOUS WASTE CHARACTERISTIC PARAMETERS

EPA HW No.	Contaminant	Regulatory Level	4-RB-01(1)	69-RB-01(1)	74-RB-01(1)	41-TK-01(2)	69-TK-01(2)	74-TK-01(2)	212-DW-01(2)	HPIA-GW24-1(2)	Site 2(2, 5)
D014	Methoxychlor	10.0	.0088U	.0088U	.0088U	.002U	.00005	.0061U	.0003U	.0002U	U
D035	Methyl ethyl ketone	200.0	NA	NA	NA	NA	NA	NA	NA	NA	NA
D036	Nitrobenzene	2.0	.005U	.005U	.005U	.041U	.013U	.014U	.034U	.0005U	U
D037	Pentachlorophenol	100.0	.25U	.25U	.25U	.104U	.034U	.014U	.086U	.012U	U
D038	Pyridine	5.0	.005	.005U	.005U	NA	NA	NA	NA	NA	NA
D010	Selenium	1.0	.165U	.165U	.165U	.016U	.016U	.016U	.0024	.0015	.004
D011	Silver	5.0	.011U	.011U	.011U	.082	.016U	.016U	.0016U	.003	U
D039	Tetrachloroethylene	0.7	NA	NA	NA	NA	NA	NA	NA	NA	U
D015	Toxaphene	0.5	.0012U	.0012U	.012U	.020U	.0006U	.0061U	.0038U	.0025U	U
D040	Trichloroethylene (TCE)	0.5	.001U	.0016	.001U	.001U	.001U	.001U	.500U(4)	.0005U	.005
D041	2,4,5-Trichlorophenol	400.0	.005U	.005U	.005U	.104U	.034U	.035U	.086U	.012U	U
D042	2,4,6-Trichlorophenol	2.0	.005U	.005U	.005U	.041U	.013U	.014U	.0034U	.005U	U
D017	2,4,5-TP (Silvex)	1.0	.0085U	.0085U	.0085U	NA	NA	NA	NA	NA	U
D043	Vinyl Chloride	0.2	.001U	.001U	.001U	.001U	.001U	.001U	.500U(4)	.097	U
D001	Ignitability	FP <120°	>200	>200	>200	NA	NA	NA	NA	NA	NA
D002	Corrosivity	pH ≤2 or ≥12.5	11.0	7.48	5.67	NA	NA	NA	NA	NA	NA
D003	Reactivity Sulfide (mg/kg) Cyanide (mg/kg)	40 CFR 261.23	6.680 0.033U	6.35U 0.032U	6.52U 0.032U	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA

All liquid concentrations expressed as mg/L.

(1) Analyzed for full TCLP and RCRA hazardous waste characteristics.

(2) Samples analyzed for full TCL organics/TAL inorganics per CLP procedure.

(3) Metal fraction analyzed at 200 x dilution

(4) Volatile organic fraction analyzed at 50 x dilution

(5) Positive detections from CTO-0174 (the first round of ground water sampling) are listed. All other contaminants were not detected.

U = Not detected at Contract Required Quantitation Limit (CRQL)

NA = Not Analyzed

J = Estimated concentration

B = [illegible]cted below Contract Required Detection Limit (CRDL)

TABLE 3

ORGANIC CONTAMINANTS DETECTED IN LIQUID INVESTGATION-DERIVED WASTE SAMPLES

Contaminant	Groundwater Criteria		Sample Identification					
	NCWQS	Federal MCL	41-TK1-01	69-TK1-01	74-TK-01	212-DW-01	HPIA-GW24-1	Site 2
Acetone	NE	NE	0.013B	0.138B	0.014B	8.0B	—	—
Bromomethane	NE	NE	—	—	—	—	—	0.001
Vinyl Chloride	0.015	0.002	—	—	—	—	0.097	—
Ethylbenzene	0.029	0.7	—	—	—	—	—	0.190
Xylene	0.4	10	—	—	0.007J	—	0.001	1.80J
Trichloroethene	0.0028	0.005	—	—	—	—	—	0.005
Methylene Chloride	0.005	NE	0.003BJ	0.003J	0.007J	0.399BJ	—	—
1,2-Dichloroethene	0.07	0.07	—	0.010	—	—	3.40	—
1,1-Dichloroethene	NE	NE	—	—	—	—	0.007	—
Toluene	1.0	1.0	—	—	—	—	0.002	—
bis(2-ethylhexyl)phthalate	NE	NE	—	—	—	0.003J	—	0.002J
Di-n-butylphthalate	NE	NE	0.004J	0.002J	0.003J	0.009J	—	—
Diethylphthalate	NE	NE	—	—	—	0.029J	—	—
Di-n-octylphthalate	NE	NE	—	—	—	0.007J	—	—

Concentration expressed in mg/L
Only compounds detected above CRQL are listed.
J = Estimated concentration
B = Detected in lab blank
— = Not detected above CRQL
NE = Not Established
NCWQS = North Carolina Water Quality Standards
MCL = Maximum Contaminant Level (USEPA)

TABLE 3 (continued)

ORGANIC CONTAMINANTS DETECTED IN LIQUID INVESTGATION-DERIVED WASTE SAMPLES

Contaminant	Groundwater Criteria		Sample Identification					
	NCWQS	Federal MCL	41-TK1-01	69-TK1-01	74-TK-01	212-DW-01	HPIA-GW24-1	Site 2
Heptachlor	0.00007	0.0004	--	--	--	0.0001	--	--
Acenaphthene	NE	NE	--	--	0.003J	--	--	0.002J
Naphthalene	NE	NE	--	--	--	--	0.022	0.015
2-Methylnaphthalene	NE	NE	--	--	0.027	--	--	0.017
Aldrin	NE	NE	--	--	--	0.0001	--	--
2.4-Methylphenol	NE	NE	--	--	--	--	--	0.006J
alpha-BHC	NE	NE	--	--	--	0.0003	--	--
4,4'-DDD	NE	NE	--	--	--	0.0006	--	0.004
4,4'-DDE	NE	NE	--	--	0.00001J	--	--	--
4,4'-DDT	NE	NE	--	--	0.00016J	0.0006	--	0.010
Fluorene	NE	NE	--	--	0.003J	--	--	--
Phenanthrene	NE	NE	--	--	0.003J	--	--	--
Endosulfan I	NE	NE	--	--	0.00002J	--	--	--
Endosulfan II	NE	NE	--	0.00002J	--	0.00009	--	--
Methoxychlor	NE	NE	--	0.00005J	--	--	--	--

Concentration expressed in mg/L
Only compounds detected above CRQL are listed.
J = Estimated concentration
B = Detected in lab blank
-- = Not detected above CRQL
NE = Not Established
NCWQS = North Carolina Water Quality Standards
MCL = Maximum Contaminant Level (USEPA)

TABLE 4

INORGANIC CONTAMINANTS DETECTED IN LIQUID INVESTIGATION-DERIVED WASTE SAMPLES

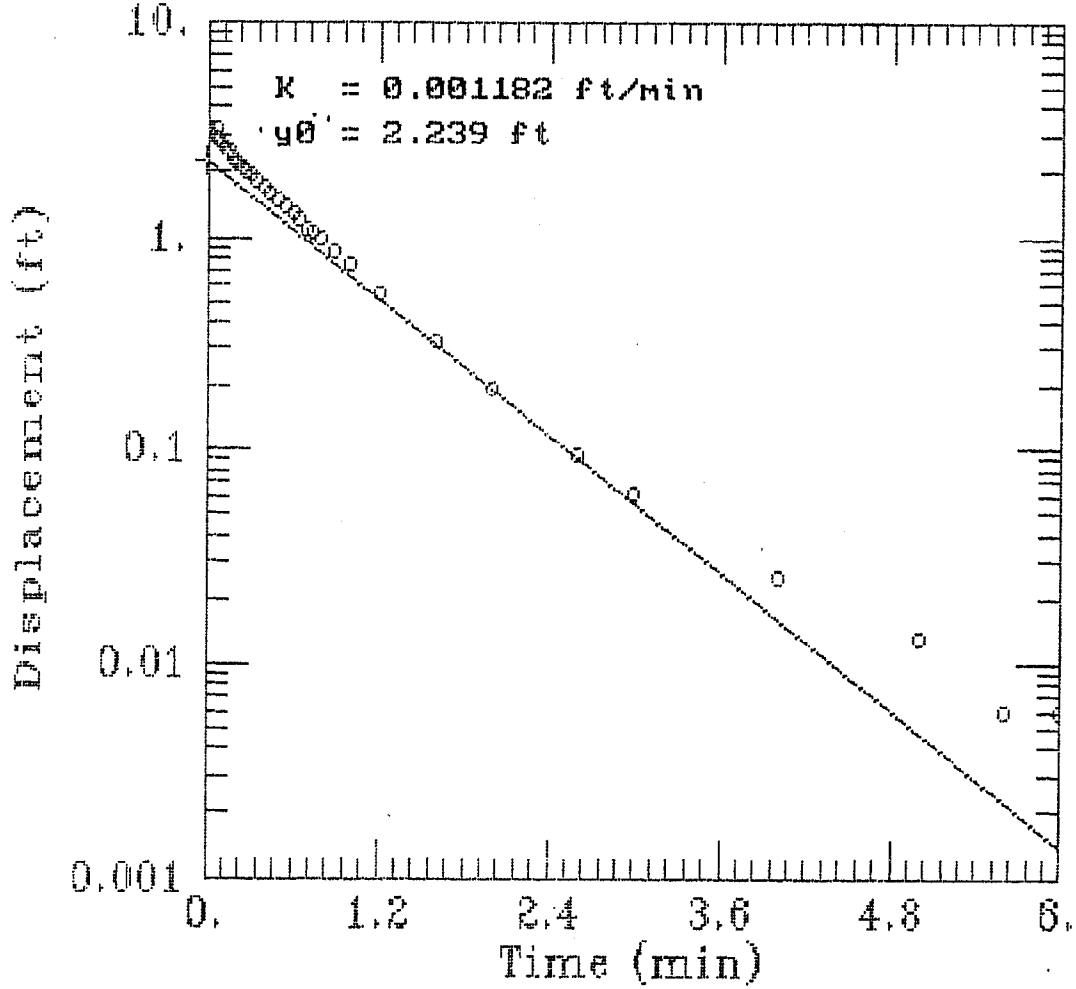
Contaminant	Groundwater Criteria		Sample Identification					
	NCWQS	Federal MCL	41-TK1-01	69-TK1-01	74-TK-01	212-DW-01	HPIA-GW24-1	Site 2
Beryllium	NE	0.004	0.023	0.0007U	0.002	0.001	0.001	0.003
Barium	1.0	2.0	2.00	0.030	0.225	0.062	0.078	1.42
Selenium	0.01	0.05	0.0016U	0.0016U	0.0016U	0.002	0.001	0.004
Aluminum	NE	NE	394.0	2.87	111.00	14.00	25.90	56.30
Arsenic	0.05	0.05	0.077	0.002U	0.012	0.002U	0.009	0.023
Cadmium	0.005	0.005	0.143	0.003U	0.005	0.003U	0.005U	0.007
Calcium	NE	NE	1,740	85.90	23.80	36.80	18.60	450.00
Chromium	0.05	0.1	0.859	0.009	0.154	0.036	0.032	0.075
Copper	1.0	1.3	1.43	0.016U	0.071	0.019	0.014	0.025
Iron	NE	0.3	504	4.62	73.30	17.60	26.40	42.00
Lead	0.05	NE	11.20	0.004	0.094	0.021	0.022	0.027
Magnesium	NE	NE	48.00	3.06	4.03	1.36	3.10	9.98
Manganese	0.05	0.2	3.76	0.098	0.366	0.355	0.084	0.290
Mercury	0.0011	0.002	0.0001	0.0001	0.0003	0.0001	0.0002	NA
Nickel	0.15	0.1	0.648	0.017U	0.080	0.018	0.022	0.025
Potassium	NE	NE	0.0021	0.002	0.004	0.014	2.33	187.0
Sodium	NE	NE	0.0039	0.043	0.007	0.034	8.62	103.0
Vanadium	NE	NE	0.910	0.020	0.114	0.029	0.073	0.086
Zinc	5.0	NE	7.94	0.031	0.362	1.17	0.040	0.146
Cyanide	0.154	0.2	NA	NA	NA	NA	NA	NA
Cobalt	NE	NE	0.111	0.016U	0.056	0.016	0.008	0.012

Concentrations expressed in mg/L.
U = Not detected at CRDL
NE = Not Established
NA = Not Analyzed

NCWQS = North Carolina Groundwater Standards
MCL = Maximum Contaminant Level (USEPA)

APPENDIX H
SITE 69 AQUIFER CHARACTERIZATION DATA

69GW09 RISING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

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A Q T E S O L V   R E S U L T S

Version 1.10

05/16/94 07:46:26

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TEST DESCRIPTION

Data set........... B:69GW09R.DAT
Data set title..... 69GW09 RISING HEAD TEST

Knowns and Constants:

- No. of data points.................. 36
- Radius of well casing............... 0.083
- Radius of well...................... 0.333
- Aquifer saturated thickness......... 14.22
- Well screen length.................. 10
- Static height of water in well...... 14.22
- Log(Re/Rw).......................... 2.789
- A, B, C............................. 0.000, 0.000, 1.970

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.4582E-003	+/-	2.6666E-005
y0 =	3.1619E+000	+/-	2.4711E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:

- Number of residuals............... 36
- Number of estimated parameters.... 2
- Degrees of freedom................ 34
- Residual mean..................... 0.006361
- Residual standard deviation....... 0.05695
- Residual variance................. 0.003244

Model Residuals:

Time	Observed	Calculated	Residual	Weight

0.0833	2.789	2.7863	0.0026681	1
0.0916	2.776	2.7514	0.024556	1
0.1	2.682	2.7166	-0.03458	1
0.1166	2.625	2.649	-0.023976	1
0.125	2.562	2.6154	-0.05341	1
0.15	2.468	2.518	-0.050008	1
0.175	2.367	2.4242	-0.057234	1
0.2	2.279	2.334	-0.054952	1
0.225	2.191	2.247	-0.056032	1
0.25	2.115	2.1633	-0.048349	1
0.275	2.034	2.0828	-0.048783	1
0.3	1.964	2.0052	-0.041217	1
0.35	1.826	1.8586	-0.032644	1
0.4	1.7	1.7228	-0.022784	1
0.4333	1.618	1.6379	-0.019857	1
0.5	1.473	1.4801	-0.0071315	1
0.55	1.373	1.3719	0.0010603	1
0.6	1.278	1.2717	0.0063436	1
0.65	1.196	1.1787	0.017297	1
0.7	1.108	1.0925	0.015455	1
0.75	1.039	1.0127	0.026316	1
0.8	0.97	0.93866	0.031339	1
0.9	0.844	0.80645	0.037549	1
1	0.737	0.69286	0.044137	1
1.2	0.554	0.51143	0.04257	1
1.6	0.328	0.27865	0.049347	1
2	0.195	0.15182	0.043175	1
2.6	0.095	0.06106	0.03394	1
3	0.063	0.033269	0.029731	1
4	0.025	0.0072901	0.01771	1
5	0.013	0.0015974	0.011403	1
5.6	0.006	0.00064246	0.0053575	1
6	0.006	0.00035004	0.00565	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	1.1817E-003
y0 =	2.2386E+000

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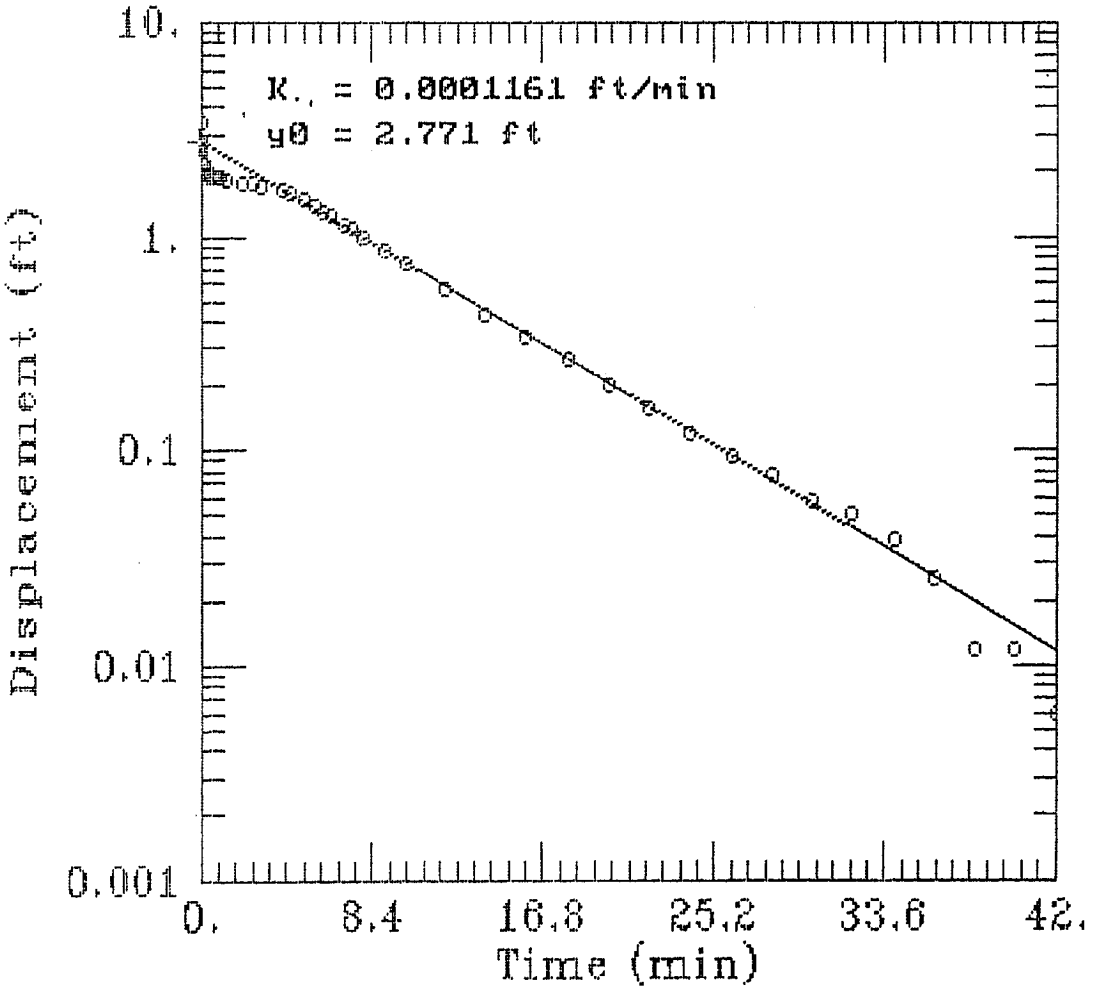
69GW10 RISING HEAD TEST



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A Q T E S O L V R E S U L T S
Version 1.10

05/16/94 07:54:06

==

TEST DESCRIPTION

Data set........... B:69GW10R.DAT
Data set title..... 69GW10 RISING HEAD TEST

Knowns and Constants:
No. of data points.................. 56
Radius of well casing............... 0.083
Radius of well...................... 0.333
Aquifer saturated thickness......... 10.5
Well screen length.................. 10
Static height of water in well...... 10.5
Log(Re/Rw).......................... 2.602
A, B, C............................. 0.000, 0.000, 1.970

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	9.6937E-005	+/-	8.1066E-006
y0 =	2.2832E+000	+/-	5.1481E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 56
Number of estimated parameters.... 2
Degrees of freedom................ 54
Residual mean..................... -0.006081
Residual standard deviation....... 0.2456
Residual variance................. 0.0603

Model Residuals:

Time	Observed	Calculated	Residual	Weight

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
0.0916	2.572	2.2607	0.31128	1
0.1	2.491	2.2587	0.23233	1
0.1166	2.327	2.2546	0.072385	1
0.125	2.258	2.2526	0.0054329	1
0.15	2.139	2.2465	-0.10748	1
0.175	2.063	2.2404	-0.17742	1
0.2	2.025	2.2344	-0.20937	1
0.225	2	2.2283	-0.22833	1
0.25	1.981	2.2223	-0.24132	1
0.275	1.969	2.2163	-0.24731	1
0.3	1.962	2.2103	-0.24833	1
0.35	1.944	2.1984	-0.25441	1
0.4	1.937	2.1866	-0.24955	1
0.4333	1.931	2.1787	-0.24769	1
0.5	1.918	2.163	-0.24503	1
0.55	1.912	2.1514	-0.23936	1
0.6	1.906	2.1398	-0.23376	1
0.7	1.9	2.1167	-0.21674	1
0.8	1.887	2.094	-0.20696	1
0.9	1.881	2.0714	-0.19044	1
1	1.874	2.0492	-0.17515	1
1.2	1.856	2.0053	-0.1493	1
2	1.793	1.8391	-0.046072	1
2.6	1.749	1.7235	0.025491	1
3	1.717	1.6505	0.06647	1
4	1.635	1.4813	0.15368	1
4.4	1.598	1.4186	0.17941	1
5	1.497	1.3295	0.16755	1
5.6	1.371	1.2459	0.12509	1
6	1.302	1.1932	0.10884	1
6.4	1.233	1.1426	0.090367	1
7	1.139	1.0708	0.068167	1
7.4	1.076	1.0255	0.05051	1
8	0.981	0.96105	0.019949	1
9	0.855	0.86252	-0.0075232	1
10	0.749	0.7741	-0.025097	1
12	0.566	0.62351	-0.057512	1
14	0.434	0.50222	-0.06822	1
16	0.333	0.40452	-0.071523	1
18	0.264	0.32583	-0.061831	1
20	0.201	0.26245	-0.061447	1
22	0.157	0.21139	-0.054393	1
24	0.119	0.17027	-0.05127	1
26	0.094	0.13715	-0.043148	1
28	0.075	0.11047	-0.035468	1
30	0.057	0.088979	-0.031979	1
32	0.05	0.07167	-0.02167	1
34	0.038	0.057728	-0.019728	1
36	0.025	0.046498	-0.021498	1
38	0.012	0.037453	-0.025453	1
40	0.012	0.030167	-0.018167	1
42	0.006	0.024299	-0.018299	1

==========

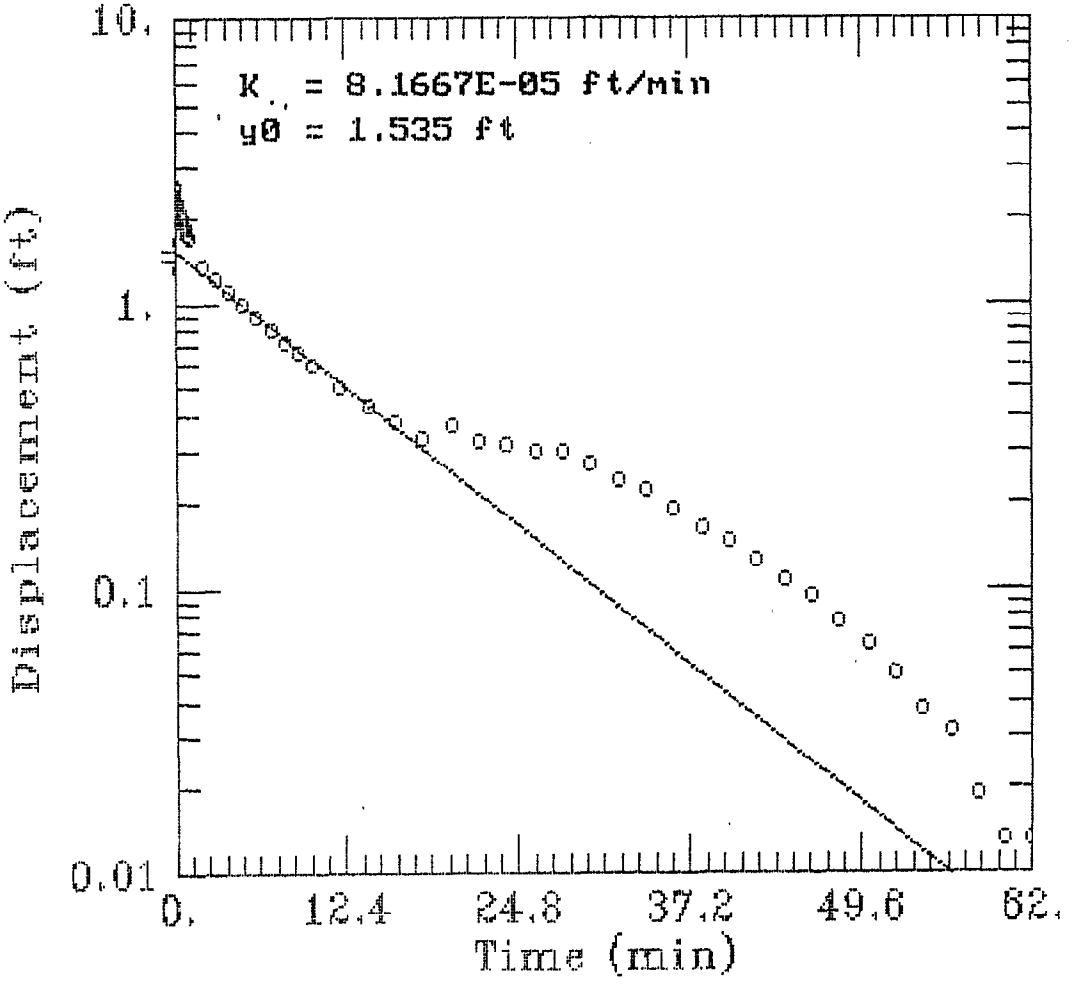
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

Estimate

Z = 1.16107-004

69GW12 RISING HEAD TEST



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A Q T E S O L V   R E S U L T S
Version 1.10

05/16/94 08:02:20

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TEST DESCRIPTION

Data set........... B:69GW12R.DAT
Data set title..... 69GW12 RISING HEAD TEST

Knowns and Constants:
No. of data points.................. 58
Radius of well casing............... 0.083
Radius of well...................... 0.333
Aquifer saturated thickness......... 11.27
Well screen length.................. 10
Static height of water in well...... 11.27
Log(Re/Rw).......................... 2.646
A, B, C............................. 0.000, 0.000, 1.970

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	1.3587E-004	+/-	9.0385E-006
y0 =	2.3151E+000	+/-	3.7492E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 58
Number of estimated parameters.... 2
Degrees of freedom................ 56
Residual mean..................... 0.05511
Residual standard deviation....... 0.1635
Residual variance................. 0.02674

Model Residuals:

Time	Observed	Calculated	Residual	Weight

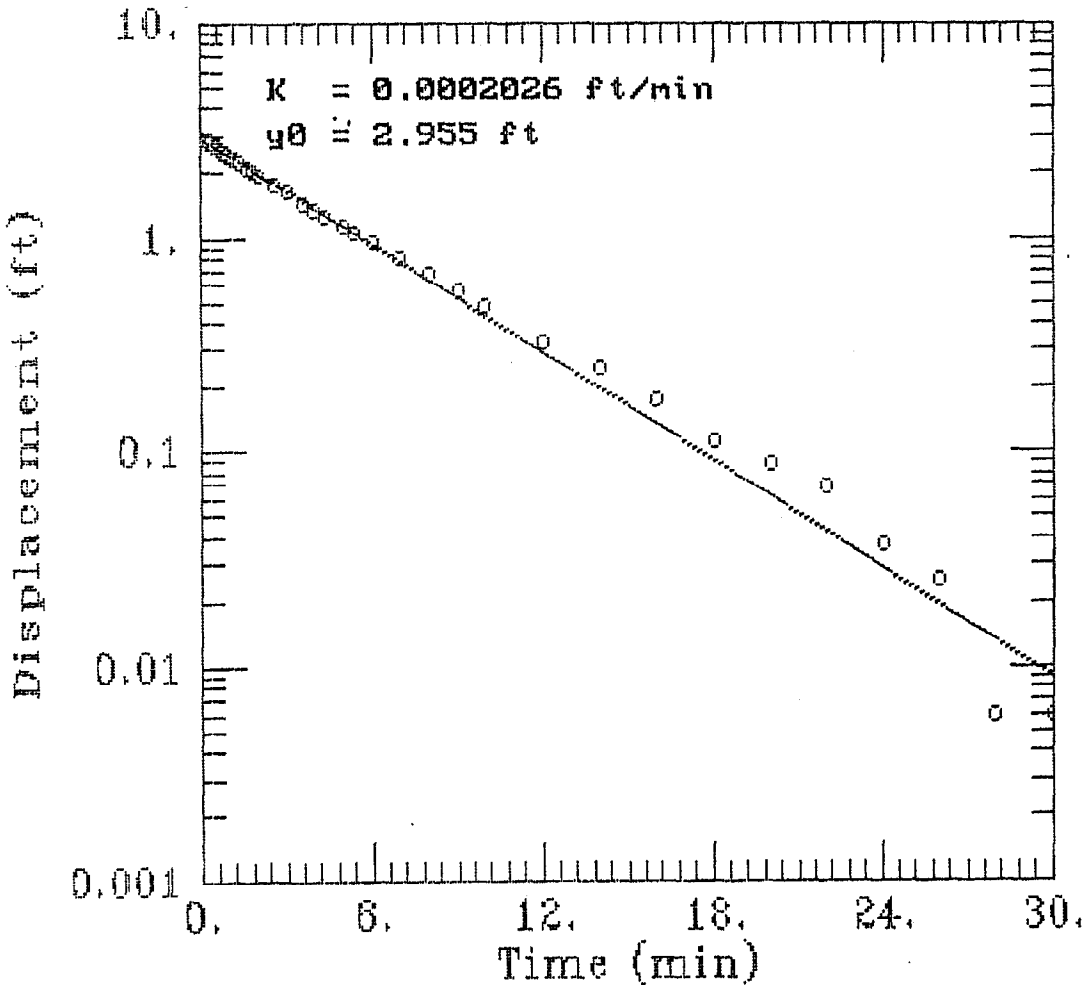
0.075	2.492	2.2894	0.20262	1
0.0833	2.422	2.2865	0.13545	1
0.1	2.404	2.2809	0.12314	1
0.1166	2.378	2.2752	0.10278	1
0.125	2.366	2.2724	0.093624	1
0.15	2.334	2.2639	0.070078	1
0.175	2.303	2.2555	0.047499	1
0.2	2.278	2.2471	0.03089	1
0.225	2.259	2.2388	0.020249	1
0.25	2.24	2.2304	0.0095772	1
0.275	2.221	2.2221	-0.0011256	1
0.3	2.209	2.2139	-0.0048594	1
0.35	2.171	2.1974	-0.026419	1
0.4	2.127	2.1811	-0.054101	1
0.5	2.051	2.1488	-0.097826	1
0.6	1.976	2.117	-0.14103	1
0.7	1.907	2.0857	-0.1787	1
0.8	1.838	2.0548	-0.21684	1
0.9	1.775	2.0244	-0.24944	1
1	1.718	1.9945	-0.27648	1
2	1.353	1.7182	-0.36525	1
3	1.215	1.4803	-0.26528	1
4	1.095	1.2753	-0.18026	1
5	0.995	1.0986	-0.10364	1
6	0.9	0.94648	-0.046483	1
7	0.812	0.8154	-0.0033974	1
8	0.737	0.70247	0.034533	1
9	0.667	0.60518	0.061823	1
10	0.605	0.52136	0.083638	1
12	0.51	0.38695	0.12305	1
14	0.435	0.28719	0.14781	1
16	0.378	0.21315	0.16485	1
18	0.334	0.15819	0.17581	1
20	0.372	0.11741	0.25459	1
22	0.328	0.08714	0.24086	1
24	0.321	0.064674	0.25633	1
26	0.302	0.048	0.254	1
28	0.302	0.035625	0.26637	1
30	0.271	0.026441	0.24456	1
32	0.24	0.019624	0.22038	1
34	0.221	0.014565	0.20644	1
36	0.189	0.01081	0.17819	1
38	0.164	0.0080228	0.15598	1
40	0.145	0.0059544	0.13905	1
42	0.126	0.0044193	0.12158	1
44	0.107	0.0032799	0.10372	1
46	0.095	0.0024343	0.092566	1
48	0.076	0.0018067	0.074193	1
50	0.063	0.0013409	0.061659	1
52	0.051	0.00099521	0.050005	1
54	0.038	0.00073864	0.037261	1
56	0.032	0.00054821	0.031452	1
58	0.019	0.00040687	0.018593	1
60	0.013	0.00030197	0.012698	1
62	0.013	0.00022412	0.012776	1

==========

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

69GW02D RISING HEAD TEST



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A Q T E S O L V   R E S U L T S
Version 1.10

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TEST DESCRIPTION

Data set........... B:69GW02DR.DAT
Data set title..... 69GW02D RISING HEAD TEST

Knowns and Constants:
   No. of data points.................. 40
   Radius of well casing............... 0.083
   Radius of well...................... 0.333
   Aquifer saturated thickness......... 22.1
   Well screen length.................. 10
   Static height of water in well...... 22.1
   Log(Re/Rw).......................... 3.051
   A, B, C............................. 0.000, 0.000, 1.970

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	2.0256E-004	+/-	1.9914E-006
y0 =	2.9546E+000	+/-	1.0133E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
   Number of residuals............... 40
   Number of estimated parameters.... 2
   Degrees of freedom................ 38
   Residual mean..................... 0.005365
   Residual standard deviation....... 0.03096
   Residual variance................. 0.0009585

Model Residuals:

Time	Observed	Calculated	Residual	Weight
0.2333	2.837	2.8247	0.012[illegible]	1

[illegible]	[illegible]	[illegible]	[illegible]	1
0.35	2.812	2.7619	0.050135	1
0.4	2.781	2.7354	0.045627	1
0.5	2.711	2.6831	0.027851	1
0.6	2.642	2.6319	0.010079	1
0.7	2.579	2.5817	-0.0026725	1
0.8	2.523	2.5324	-0.0093829	1
0.9	2.46	2.484	-0.024034	1
1	2.409	2.4366	-0.027609	1
1.2	2.303	2.3445	-0.041457	1
1.4	2.214	2.2558	-0.04179	1
1.6	2.126	2.1705	-0.044477	1
1.8	2.038	2.0884	-0.05039	1
2	1.963	2.0094	-0.046407	1
2.6	1.755	1.7899	-0.034935	1
3	1.629	1.6571	-0.028105	1
3.6	1.453	1.4761	-0.023112	1
4	1.353	1.3666	-0.013571	1
4.4	1.252	1.2652	-0.013159	1
5	1.126	1.127	-0.00097551	1
5.4	1.044	1.0433	0.00065642	1
6	0.944	0.92939	0.014613	1
7	0.799	0.76644	0.032559	1
8	0.673	0.63206	0.040936	1
9	0.56	0.52125	0.038753	1
10	0.472	0.42986	0.042142	1
12	0.327	0.29234	0.034659	1
14	0.245	0.19882	0.046183	1
16	0.176	0.13521	0.040787	1
18	0.113	0.091957	0.021043	1
20	0.088	0.062538	0.025462	1
22	0.069	0.042532	0.026468	1
24	0.037	0.028925	0.0080748	1
26	0.025	0.019672	0.0053284	1
28	0.006	0.013378	-0.0073784	1
30	0.006	0.0090985	-0.0030985	1

==

RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

	Estimate
K =	2.0256E-004
y0 =	2.9546E+000

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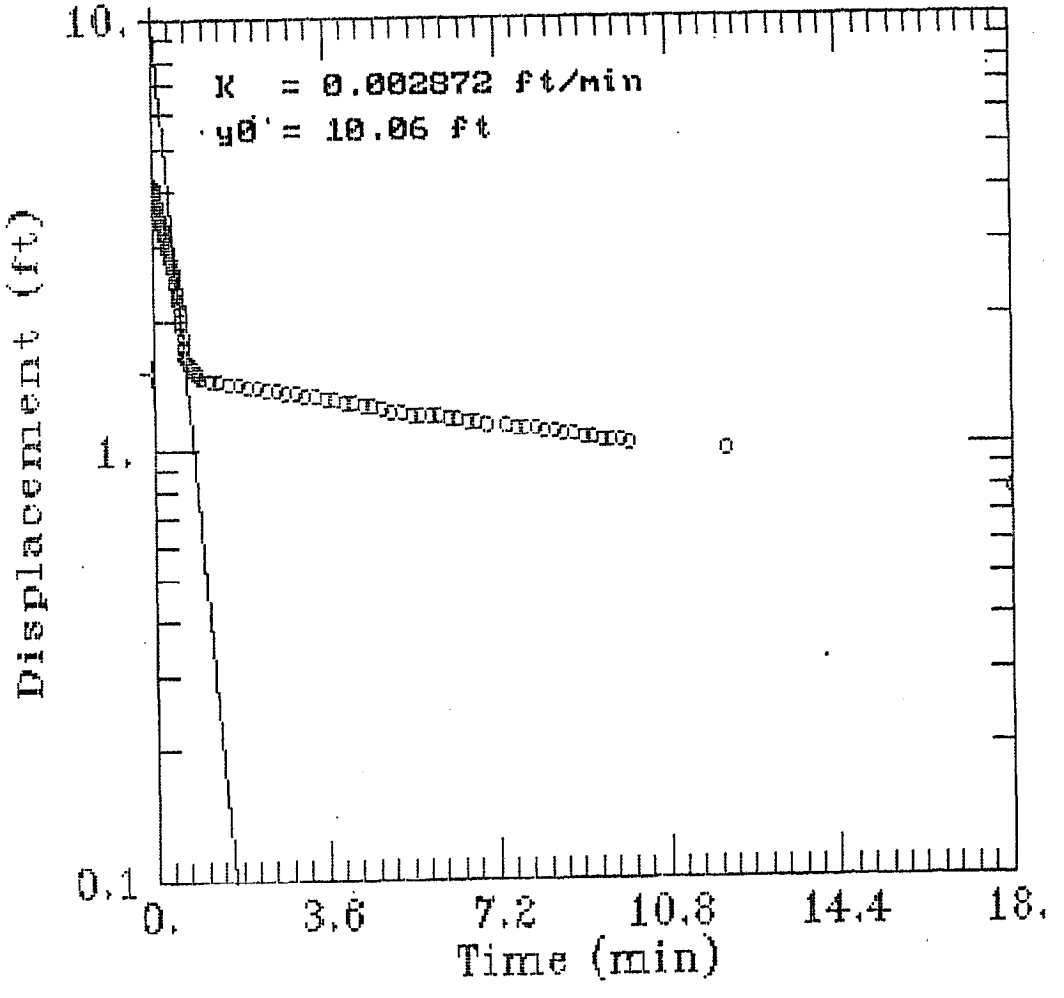
69GW02D FALLING HEAD TEST



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A Q T E S O L V   R E S U L T S
Version 1.10

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TEST DESCRIPTION

Data set........... b:69gw02df.dat
Data set title..... 69GW02D FALLING HEAD TEST

Knowns and Constants:
No. of data points.................. 124
Radius of well casing............... 0.083
Radius of well...................... 0.333
Aquifer saturated thickness......... 22.1
Well screen length.................. 10
Static height of water in well...... 22.1
Log(Re/Rw).......................... 3.051
A, B, C............................. 0.000, 0.000, 1.970

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	2.5592E-004	+/-	2.8930E-005
y0 =	3.0799E+000	+/-	9.4068E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 124
Number of estimated parameters.... 2
Degrees of freedom................ 122
Residual mean..................... 0.07425
Residual standard deviation....... 0.66
Residual variance................. 0.4356

Model Residuals:

Time	Observed	Calculated	Residual	Weight

0.0333	4.13	3.055	1.075	1
0.0416	4.105	3.0489	1.0561	1
0.0583	4.092	3.0365	1.0555	1
0.0666	4.067	3.0303	1.0367	1
0.075	4.055	3.0242	1.0308	1
0.0833	4.03	3.018	1.012	1
0.0916	3.973	3.012	0.96105	1
0.1	3.916	3.0058	0.9102	1
0.1083	3.841	2.9997	0.84127	1
0.1166	3.734	2.9937	0.74033	1
0.125	3.576	2.9876	0.58845	1
0.1333	3.564	2.9815	0.58248	1
0.1416	3.538	2.9755	0.5625	1
0.15	3.52	2.9694	0.55058	1
0.1583	3.501	2.9634	0.53758	1
0.1666	3.482	2.9574	0.52456	1
0.175	3.463	2.9514	0.51161	1
0.1833	3.444	2.9454	0.49857	1
0.1916	3.419	2.9395	0.47951	1
0.2	3.4	2.9335	0.46652	1
0.2083	3.375	2.9276	0.44745	1
0.2166	3.35	2.9216	0.42836	1
0.225	3.324	2.9157	0.40833	1
0.2333	3.299	2.9098	0.38922	1
0.2416	3.274	2.9039	0.37009	1
0.25	3.243	2.898	0.34503	1
0.2583	3.211	2.8921	0.31888	1
0.2666	3.186	2.8863	0.29972	1
0.275	3.154	2.8804	0.27362	1
0.2833	3.117	2.8746	0.24244	1
0.2916	3.085	2.8688	0.21624	1
0.3	3.047	2.8629	0.1841	1
0.3083	3.016	2.8571	0.15888	1
0.3166	2.978	2.8513	0.12665	1
0.325	2.947	2.8455	0.10148	1
0.3333	2.903	2.8398	0.063227	1
0.35	2.859	2.8282	0.030754	1
0.3666	2.821	2.8168	0.0041652	1
0.3833	2.77	2.8054	-0.035401	1
0.4	2.733	2.794	-0.061014	1
0.4166	2.682	2.7827	-0.10074	1
0.4333	2.632	2.7714	-0.13945	1
0.45	2.581	2.7602	-0.1792	1
0.4666	2.531	2.7491	-0.21806	1
0.4833	2.474	2.7379	-0.2639	1
0.5	2.411	2.7268	-0.31579	1
0.5166	2.355	2.7158	-0.36079	1
0.5333	2.285	2.7048	-0.41976	1
0.55	2.223	2.6938	-0.47079	1
0.5666	2.153	2.6829	-0.52992	1
0.5833	2.084	2.672	-0.58803	1
0.6	2.002	2.6612	-0.65918	1
0.6166	1.92	2.6504	-0.73044	1
0.6333	1.832	2.6397	-0.80769	1
0.65	1.744	2.629	-0.88497	1
0.6666	1.643	2.6184	-0.97536	1
0.6833	1.637	2.6077	-0.97074	1
0.7	1.624	2.5972	-0.97315	1
0.7166	1.618	2.5867	-0.96867	1
0.7333	1.605	2.5762	-0.97117	1
0.7666	1.593	2.5554	-0.96237	1
0.7833	1.58	2.545	-0.96499	1

0.8666	1.53	2.4939	-0.96388	1
0.8833	1.523	2.4838	-0.96076	1
0.9	1.511	2.4737	-0.96268	1
0.9166	1.505	2.4637	-0.9587	1
0.9333	1.492	2.4537	-0.9617	1
0.95	1.486	2.4437	-0.95774	1
0.9666	1.473	2.4339	-0.96088	1
0.9833	1.46	2.424	-0.964	1
1	1.454	2.4142	-0.96016	1
1.2	1.442	2.2994	-0.85739	1
1.4	1.429	2.1901	-0.76107	1
1.6	1.423	2.0859	-0.66295	1
1.8	1.41	1.9868	-0.57678	1
2	1.397	1.8923	-0.49532	1
2.2	1.385	1.8024	-0.41736	1
2.4	1.372	1.7167	-0.34467	1
2.6	1.366	1.6351	-0.26905	1
2.8	1.353	1.5573	-0.20432	1
3	1.341	1.4833	-0.14228	1
3.2	1.328	1.4128	-0.084764	1
3.4	1.316	1.3456	-0.029598	1
3.6	1.309	1.2816	0.027374	1
3.8	1.29	1.2207	0.069306	1
4	1.278	1.1627	0.11534	1
4.2	1.271	1.1074	0.16362	1
4.4	1.253	1.0547	0.19826	1
4.6	1.246	1.0046	0.24141	1
4.8	1.227	0.95683	0.27017	1
5	1.215	0.91134	0.30366	1
5.2	1.208	0.86802	0.33998	1
5.4	1.202	0.82675	0.37525	1
5.6	1.196	0.78744	0.40856	1
5.8	1.19	0.75001	0.43999	1
6	1.183	0.71435	0.46865	1
6.2	1.171	0.68039	0.49061	1
6.4	1.164	0.64804	0.51596	1
6.6	1.158	0.61723	0.54077	1
6.8	1.152	0.58789	0.56411	1
7	1.139	0.55994	0.57906	1
7.4	1.127	0.50796	0.61904	1
7.6	1.12	0.48381	0.63619	1
7.8	1.114	0.46081	0.65319	1
8	1.108	0.4389	0.6691	1
8.2	1.095	0.41804	0.67696	1
8.4	1.089	0.39816	0.69084	1
8.6	1.082	0.37923	0.70277	1
8.8	1.07	0.3612	0.7088	1
9	1.064	0.34403	0.71997	1
9.2	1.057	0.32767	0.72933	1
9.4	1.045	0.3121	0.7329	1
9.6	1.038	0.29726	0.74074	1
9.8	1.032	0.28313	0.74887	1
10	1.026	0.26967	0.75633	1
12	0.982	0.16569	0.81631	1
18	0.793	0.038429	0.75457	1

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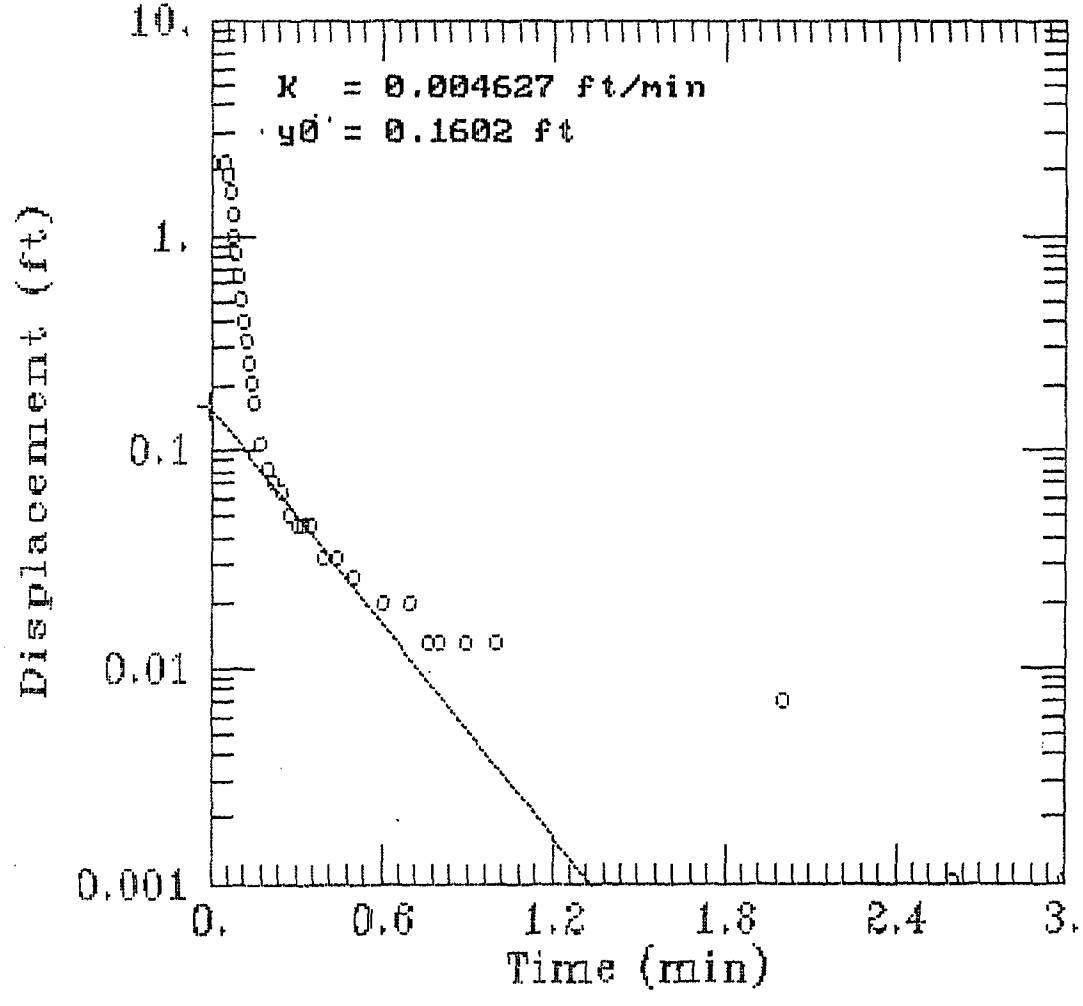
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

69GW12D RISING HEAD TEST



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A Q T E S O L V R E S U L T S
Version 1.10

05/16/94 08:16:50

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TEST DESCRIPTION

Data set........... B:69GW12DR.DAT
Data set title..... 69GW12D RISING HEAD TEST

Knowns and Constants:
- No. of data points.................. 33
- Radius of well casing............... 0.083
- Radius of well...................... 0.333
- Aquifer saturated thickness......... 53.83
- Well screen length.................. 10
- Static height of water in well...... 53.83
- Log(Re/Rw).......................... 3.547
- A, B, C............................. 0.000, 0.000, 1.970

==

ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

==

RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	3.0118E-002	+/-	6.7442E-004
y0 =	7.7611E+000	+/-	2.9137E-001

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
- Number of residuals............... 33
- Number of estimated parameters.... 2
- Degrees of freedom................ 31
- Residual mean..................... 0.01125
- Residual standard deviation....... 0.04012
- Residual variance................. 0.001609

Model Residuals:

Time	Observed	Calculated	Residual	Weight

0.075	1.237	1.2219	0.015004	1
0.0833	0.991	0.99586	-0.0048569	1
0.0916	0.814	0.81161	0.0023934	1
0.1	0.644	0.65982	-0.015817	1
0.1083	0.511	0.53774	-0.02674	1
0.1166	0.404	0.43825	-0.034249	1
0.125	0.322	0.35629	-0.034286	1
0.1333	0.259	0.29037	-0.031367	1
0.1416	0.209	0.23664	-0.027644	1
0.15	0.171	0.19239	-0.021386	1
0.175	0.108	0.10388	0.0041157	1
0.2	0.083	0.056095	0.026905	1
0.225	0.07	0.03029	0.03971	1
0.25	0.064	0.016356	0.047644	1
0.275	0.051	0.0088318	0.042168	1
0.3	0.045	0.004769	0.040231	1
0.325	0.045	0.0025751	0.042425	1
0.35	0.045	0.0013905	0.043609	1
0.4	0.032	0.00040544	0.031595	1
0.45	0.032	0.00011822	0.031882	1
0.5	0.026	3.4469E-005	0.025966	1
0.6	0.02	2.9304E-006	0.019997	1
0.7	0.02	2.4913E-007	0.02	1
0.7666	0.013	4.8248E-008	0.013	1
0.8	0.013	2.118E-008	0.013	1
0.9	0.013	1.8007E-009	0.013	1
1	0.013	1.5309E-010	0.013	1
2	0.007	3.0196E-021	0.007	1
2.6	0.001	1.1402E-027	0.001	1
3	0.001	5.9562E-032	0.001	1

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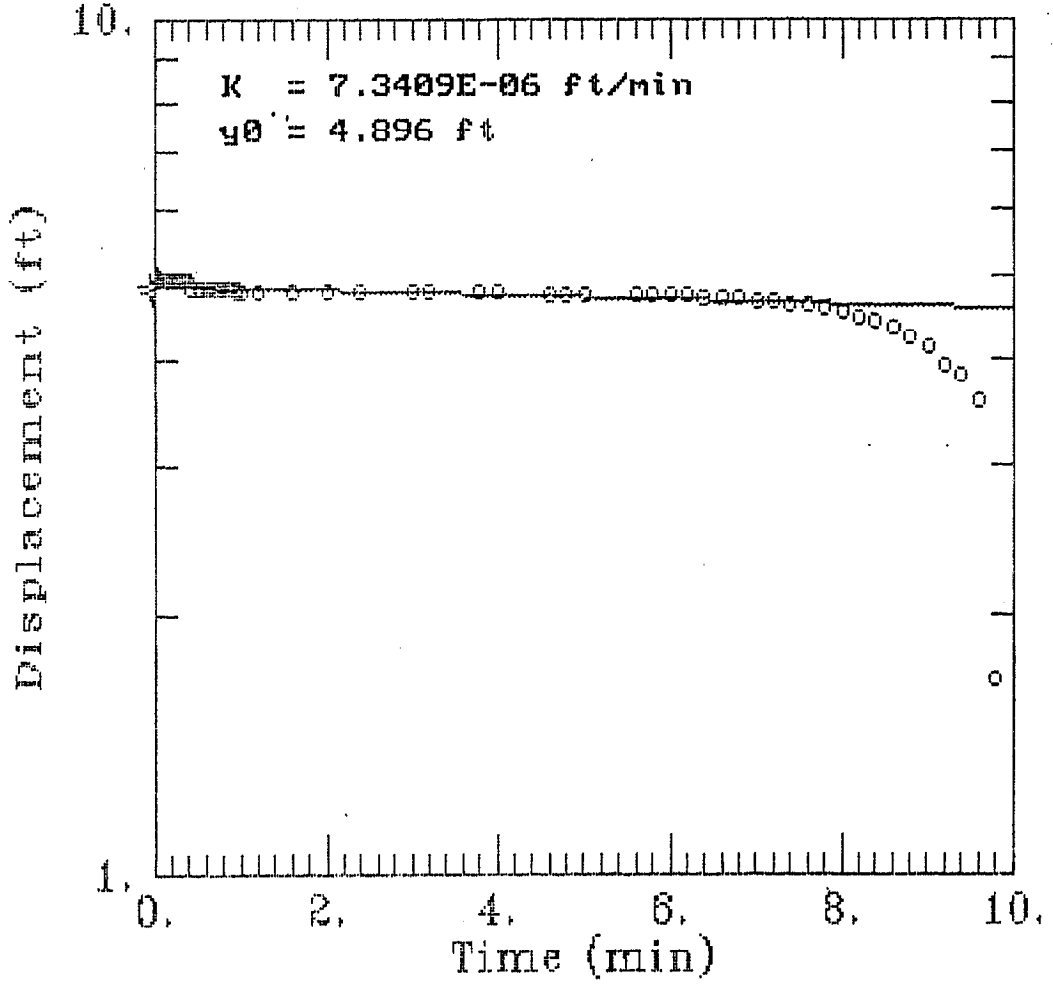
RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

- Estimate
K = 4.6275E-003
y0 = 1.6017E-001

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>>

69GW12D FALLING HEAD TEST



AQTESOLV

GERAGHTY & MILLER, INC.

Modeling Group

<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<<>>

A Q T E S O L V   R E S U L T S
Version 1.10

05/19/94 07:22:51

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TEST DESCRIPTION

Data set........... b:69gw12df.dat
Data set title..... 69GW12D FALLING HEAD TEST

Knowns and Constants:
No. of data points.................. 58
Radius of well casing............... 0.083
Radius of well...................... 0.333
Aquifer saturated thickness......... 53.83
Well screen length.................. 10
Static height of water in well...... 53.83
Log(Re/Rw).......................... 3.547
A, B, C............................. 0.000, 0.000, 1.970

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ANALYTICAL METHOD

Bouwer-Rice (Unconfined Aquifer Slug Test)

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RESULTS FROM STATISTICAL CURVE MATCHING

STATISTICAL MATCH PARAMETER ESTIMATES

	Estimate		Std. Error
K =	2.3234E-005	+/-	3.9861E-006
y0 =	4.9941E+000	+/-	7.6066E-002

ANALYSIS OF MODEL RESIDUALS

residual = calculated - observed
weighted residual = residual * weight

Weighted Residual Statistics:
Number of residuals............... 58
Number of estimated parameters.... 2
Degrees of freedom................ 56
Residual mean..................... -0.0002922
Residual standard deviation....... 0.3813
Residual variance................. 0.1454

Model Residuals:

Time	Observed	Calculated	Residual	Weight

0.125	4.943	4.9822	-0.039218	1
0.15	4.943	4.9799	-0.036851	1
0.175	4.943	4.9775	-0.034484	1
0.225	4.943	4.9728	-0.029754	1
0.275	4.943	4.968	-0.025028	1
0.3	4.943	4.9657	-0.022667	1
0.325	4.943	4.9633	-0.020307	1
0.35	4.943	4.9609	-0.017949	1
0.4	4.943	4.9562	-0.013234	1
0.4333	4.829	4.9531	-0.1241	1
0.5	4.829	4.9468	-0.11782	1
0.55	4.823	4.9421	-0.11912	1
0.6	4.823	4.9374	-0.11442	1
0.65	4.823	4.9327	-0.10973	1
0.7	4.823	4.928	-0.10504	1
0.75	4.823	4.9234	-0.10036	1
0.8	4.816	4.9187	-0.10268	1
0.85	4.816	4.914	-0.098007	1
0.9	4.816	4.9093	-0.093337	1
0.95	4.816	4.9047	-0.088672	1
0.9666	4.81	4.9031	-0.093124	1
1	4.81	4.9	-0.090011	1
1.2	4.81	4.8814	-0.071413	1
1.6	4.804	4.8444	-0.040426	1
2	4.804	4.8077	-0.0037204	1
2.4	4.797	4.7713	0.025707	1
3	4.791	4.7172	0.073832	1
3.2	4.785	4.6993	0.085737	1
3.8	4.785	4.646	0.13905	1
4	4.778	4.6283	0.14968	1
4.6	4.772	4.5758	0.19618	1
4.8	4.772	4.5584	0.21355	1
5	4.766	4.5411	0.22485	1
5.6	4.759	4.4896	0.26937	1
5.8	4.753	4.4726	0.28041	1
6	4.747	4.4556	0.29139	1
6.2	4.74	4.4387	0.3013	1
6.4	4.728	4.4219	0.30615	1
6.6	4.722	4.4051	0.31693	1
6.8	4.709	4.3884	0.32065	1
7	4.69	4.3717	0.31831	1
7.2	4.671	4.3551	0.3159	1
7.4	4.646	4.3386	0.30743	1
7.6	4.627	4.3221	0.3049	1
7.8	4.589	4.3057	0.2833	1
8	4.545	4.2894	0.25565	1
8.2	4.488	4.2731	0.21493	1
8.4	4.425	4.2569	0.16815	1
8.6	4.343	4.2407	0.1023	1
8.8	4.242	4.2246	0.017401	1
9	4.122	4.2086	-0.086564	1
9.2	3.946	4.1926	-0.24659	1
9.4	3.838	4.1767	-0.33868	1
9.6	3.573	4.1608	-0.58782	1
9.8	1.692	4.145	-2.453	1

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RESULTS FROM VISUAL CURVE MATCHING

VISUAL MATCH PARAMETER ESTIMATES

APPENDIX I
SAMPLING SUMMARY

SOIL - SITE 69
CTO-19212

		Analysis Requested										Analysis Received													
DATE SHIPPED	SAMPLE ID	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	CSM	THIODYGLYCOL	MIREX	ORDNANCE	ENG PARAMETERS	CYANIDE	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	CSM	THIODYGLYCOL	MIREX	ORDNANCE	ENG PARAMETERS	CYANIDE	DATE REC'D	TURNAROUND TIME	SDG NO.	COMMENTS
1/6/94	69-CSA-SB18-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	2/8/94	32	1	
1/6/94	69-CSA-SB19-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	2/8/94	32	1	
1/6/94	69-CSA-SB24	x	x	x	x	x	x				x	x	x	x	x	x	x				x	2/8/94	32	1	
1/6/94	69-TB-01	x										x										2/8/94	32	1	Trip Blank
1/6/94	69-GW12-01	x	x	x	x						x	x	x	x	x						x	2/8/94	32	1	
1/6/94	69-RS-01	x	x	x	x	x	x					x	x	x	x	x	x					2/8/94	32	1	Rinsate, Hand Auger Bucket
1/8/94	69-CSA-SB20-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	2/8/94	30	1	
1/8/94	69-CSA-SB21-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	2/8/94	30	1	
1/8/94	69-CSA-SB22-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	2/8/94	30	1	
1/8/94	69-CSA-SB23-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	2/8/94	30	1	
1/8/94	69-FB-01	x	x	x	x	x	x					x	x	x	x	x	x					2/8/94	30	1	Potable Water
1/8/94	69-FB-02	x	x	x	x	x	x					x	x	x	x	x	x					2/8/94	30	1	Baker Decon Water
1/8/94	69-TB-02	x										x										2/8/94	30	1	Trip Blank
1/8/94	69-GW11-02	x	x	x	x						x	x	x	x	x						x	3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-GW11-04	x	x	x	x						x	x	x	x	x						x	3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-CSA-SB01-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-CSA-SB02-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-CSA-SB03-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-CSA-SB03-00D	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-CSA-SB04-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-CSA-SB06-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-CSA-SB07-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-CSA-SB09-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-CSA-SB05-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-CSA-SB08-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/2/94	54	3	MS/MSD (rec 2/21/94 - no pest/pcb)
1/8/94	69-CSA-SB08-00D	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/2/94	54	3	rec 2/21/94 - no pest/pcb

SOIL - SITE 69
CTO-19212

		Analysis Requested										Analysis Received													
DATE SHIPPED	SAMPLE ID	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	CSM	THIODYGLYCOL	MIREX	ORDNANCE	ENG PARAMETERS	CYANIDE	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	CSM	THIODYGLYCOL	MIREX	ORDNANCE	ENG PARAMETERS	CYANIDE	DATE REC'D	TURNAROUND TIME	SDG NO.	COMMENTS
1/8/94	69-CSA-SB10-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-CSA-SB12-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-CSA-SB13-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-TB-04	x										x										3/2/94	54	3	Trip Blank
1/8/94	69-CSA-SB16-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/2/94	54	3	MS/MSD (rec 2/21/94 - no pest/pcb)
1/8/94	69-CSA-SB16-00D	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-CSA-SB11-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/7/94	59	4	rec 2/21/94, no pest/pcb
1/8/94	69-CSA-SB14-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/7/94	59	4	rec 2/21/94, no pest/pcb
1/8/94	69-CSA-SB17-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/7/94	59	4	rec 2/21/94, no pest/pcb
1/8/94	69-CSA-SB15-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/7/94	59	4	rec 2/21/94, no pest/pcb
1/8/94	69-GW09-02	x	x	x	x						x	x	x	x	x						x	3/7/94	59	4	rec 2/21/94, no pest/pcb
1/8/94	69-GW09-05	x	x	x	x						x	x	x	x	x						x	3/7/94	59	4	rec 2/21/94, no pest/pcb
1/8/94	69-CSA-SB25-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/7/94	59	4	rec 2/21/94, no pest/pcb
1/8/94	69-TB-05	x										x										2/17/94	39	2	
1/10/94	69-BB-SB01-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/7/94	57	4	Sample reexract exceeded 7 days. 2-1-94; rec 2-21 no pest/pcb
1/10/94	69-BB-SB02-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/7/94	57	4	rec 2/21/94, no pest/pcb
1/10/94	69-BB-SB03-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/7/94	57	4	Sample reexract exceeded 7 days. 2-1-94; rec 2-21 no pest/pcb
1/10/94	69-BB-SB04-00	x	x	x	x	x	x				x	x	x	x	x	x	x				x	3/7/94	57	4	Sample reexract exceeded 7 days. 2-1-94; rec 2-21 no pest/pcb
1/10/94	69-GW12DW-01	x	x	x	x						x	x	x	x	x						x	3/7/94	57	5	rec 2/23 no pest/pcb
1/10/94	69-GW10-01	x	x	x	x						x	x	x	x	x						x	3/7/94	57	5	rec 2/23 no pest/pcb
1/10/94	69-GW10-03	x	x	x	x						x	x	x	x	x						x	3/7/94	57	5	Sample reexract exceeded 7 days. (2-1-94); rec 2/23 no p/pcb
1/10/94	69-GW02DW-01	x	x	x	x						x	x	x	x	x						x	3/7/94	57	5	Sample reexract exceeded 7 days. (2-1-94) MS/MSD; rec 2/23 no p/p
1/10/94	69-GW02DW-03	x	x	x	x						x	x	x	x	x						x	3/7/94	57	5	rec 2/23, no pest/pcb
1/10/94	69-GW02DW									x										x		2/23/94	43	5	Eng. Parameters - TOC
1/10/94	69-TB-07	x										x										2/23/94	43	5	Trip Blank
1/11/94	69-GW02DW-01D	x	x	x	x						x	x	x	x	x						x	3/7/94	56	5	rec 2/23, no pest/pcb

SOIL - SITE 69
CTO-19212

		Analysis Requested										Analysis Received													
DATE SHIPPED	SAMPLE ID	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	CSM	THIODYGLYCOL	MIREX	ORDNANCE	ENG PARAMETERS	CYANIDE	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	CSM	THIODYGLYCOL	MIREX	ORDNANCE	ENG PARAMETERS	CYANIDE	DATE REC'D	TURNAROUND TIME	SDG NO.	COMMENTS
1/11/94	69-TB-08	x										x										2/23/94	42	5	Trip Blank
																							0		
COUNT		52	46	46	46	35	35	0	0	1	43	52	46	46	46	35	35	0	0	1	43				

GROUNDWATER - SITE 69
CTO-19212

		Analysis Requested												Analysis Received															
DATE SHIPPED	SAMPLE ID	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	CSM	THIODYGLYCOL	MIREX	ORDNANCE	ENG PARAMETERS	CYANIDE	WET CHEMISTRY	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	CSM	THIODYGLYCOL	MIREX	ORDANANCE	ENG PARAMETERS	CYANIDE	WET CHEMISTRY	DATE REC'D	TURNAROUND TIME	SDG NO.	COMMENTS
1/21/94	69-GW12-01	x	x	x	x	x	x	x				x		x	x	x	x	x	x	x				x		3/16/94	55	11	VOA-7 day turn; rec 3/2-no pest/pcb
1/21/94	69-GW11-01	x	x	x	x	x	x	x				x		x	x	x	x	x	x	x				x		3/16/94	55	11	VOA-7 day turn; rec 3/2-no pest/pcb
1/21/94	69-GW09-01	x	x	x	x	x	x	x				x		x	x	x	x	x	x	x				x		3/16/94	55	11	VOA-7 day turn; rec 3/2-no pest/pcb
1/21/94	69-GW10-01	x	x	x	x	x	x	x				x		x	x	x	x	x	x	x				x		3/16/94	55	11	VOA-7 day turn; rec 3/2-no pest/pcb
1/21/94	69-RS-03	x	x	x	x	x	x	x				x		x	x	x	x	x	x	x				x		3/16/94	55	11	Rinsate-teflon bailer;rec 3/2-no pest/pcb
1/21/94	69-TB-09	x												x												3/16/94	55	11	Trip Blank; rec 3/2-no pest/pcb
1/22/94	69-GW08-01	x	x	x	x	x	x	x				x		x	x	x	x	x	x	x				x		3/16/94	54	11	rec 3/2-no pest/pcb
1/22/94	69-GW06-01	x	x	x	x	x	x	x				x		x	x	x	x	x	x	x				x		3/16/94	54	11	rec 3/2-no pest/pcb
1/22/94	69-GW05-01	x	x	x	x	x	x	x				x		x	x	x	x	x	x	x				x		3/16/94	54	11	rec 3/2-no pest/pcb
1/22/94	69-RS-04	x	x	x	x	x	x	x				x															###		Rinsate-HOLD Do not analysis
1/22/94	69-TB-10	x												x												3/2/94	40	11	Trip Blank; rec 3/2-no pest/pcb
1/24/94	69-GW02-01	x	x	x	x	x	x	x			x	x	x	x	x	x	x	x	x	x			x	x		4/15/94	81	13	rec 3/3-noPEST/PCB
1/24/94	69-GW02-01D	x	x	x	x	x	x	x				x		x	x	x	x	x	x	x				x		4/15/94	81	13	rec 3/3-noPEST/PCB
1/24/94	69-GW07-01	x	x	x	x	x	x	x				x		x	x	x	x	x	x	x				x		4/15/94	81	13	rec 3/3-no PEST/PSB
1/24/94	69-GW03-01	x	x	x	x	x	x	x				x		x	x	x	x	x	x	x				x		4/15/94	81	13	rec 3/3-no PEST/PSB
1/24/94	69-GW01-01	x	x	x	x	x	x	x				x		x	x	x	x	x	x	x				x		4/15/94	81	13	rec 3/3-no PEST/PSB
1/24/94	69-TB-11	x												x												3/3/94	39	13	Trip Blank
1/24/94	69-GW04-01	x	x	x	x	x	x	x				x		x	x	x	x	x	x	x				x		4/15/94	81	13	rec 3/3-no PEST/PSB
1/24/94	69-RS-05	x	x	x	x	x	x	x				x		x	x	x	x	x	x	x				x		4/15/94	81	13	Rinsate - Teflon Bailer
2/18/94	69-GW02DW-01	x	x	x	x		x	x			x	x		x	x	x	x		x	x			x	x	x	4/15/94	57	35	MS/MSD ;rec 4/7-no P/PCB
2/18/94	69-GW02DWD-01					x												x								4/7/94	49	35	MS/MSD
2/18/94	69-GW02DW-01D	x	x	x	x		x	x				x		x	x	x	x		x	x				x		4/15/94	49		rec 4/7-no P/PCB
2/18/94	69-GW02DWD-01D					x												x								4/7/94	49		
2/18/94	69-GW12DW-01	x	x	x	x		x	x				x		x	x	x	x		x	x				x		4/15/94	57	35	rec 4/7-no P/PCB
2/18/94	69-GW12DWD-01					x												x								4/7/94	49	35	
2/18/94	69-RS-06	x	x	x	x		x	x				x		x	x	x	x		x	x				x		4/15/94	57	35	rec 4/7-no P/PCB
2/18/94	69-TB-12	x												x												4/7/94	49	35	rec 4/7-no P/PCB

GROUNDWATER - SITE 69
CTO-19212

		Analysis Requested												Analysis Received															
DATE SHIPPED	SAMPLE ID	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	CSM	THIODYGLYCOL	MIREX	ORDNANCE	ENG PARAMETERS	CYANIDE	WET CHEMISTRY	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	TAL METALS (D)	CSM	THIODYGLYCOL	MIREX	ORDANANCE	ENG PARAMETERS	CYANIDE	WET CHEMISTRY	DATE REC'D	TURNAROUND TIME	SDG NO.	COMMENTS
2/18/94	69-RSD-06					x												x								4/7/94	49	35	
2/18/94	212-PB-01				x							x					x							x		4/7/94	49	35	Preservation Blank
																											0		
																											0		
																											0		
																											0		
																											0		
																											0		
																											0		
																											0		
COUNT		24	20	20	21	20	20	20	0	0	2	21	1	23	19	19	20	19	19	19	0	0	2	20	1				

SURFACE WATER - SITE 69
CTO-19212

		Analysis Requested									Analysis Received												
DATE SHIPPED	SAMPLE ID	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	CSM	THIODYGLYCOL	MIREX	ORDNANCE		TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	CSM	THIODYGLYCOL	MIREX	ORDNANCE		DATE REC'D	TURNAROUND TIME	SDG NO.	COMMENTS
1/8/94	69-OS-SW03	x	x	x	x	x	x				x	x	x	x	x	x				2/17/94	39	2	
1/8/94	69-OS-SW02	x	x	x	x	x	x				x	x	x	x	x	x				2/17/94	39	2	
1/8/94	69-RS-02	x	x	x	x	x	x													2/17/94	39	2	Hold - Equip Rinse (DO NOT ANALYSE)
1/8/94	69-TB-03	x									x									2/17/94	39	2	Trip Blank
1/8/94	69-OS-SW01	x	x	x	x	x	x				x	x	x	x	x	x				2/17/94	39	2	
1/8/94	69-OS-SW01	x	x	x	x	x	x				x	x	x	x	x	x				2/17/94	39	2	Duplicate
1/10/94	69-DA-SW01	x	x	x	x	x	x				x	x	x	x	x	x				2/17/94	37	2	
1/10/94	69-DA-SW02	x	x	x	x	x	x				x	x	x	x	x	x				2/17/94	37	2	
1/10/94	69-DA-SW04	x	x	x	x	x	x				x	x	x	x	x	x				2/17/94	37	2	
1/10/94	69-DA-SW03	x	x	x	x	x	x				x	x	x	x	x	x				2/17/94	37	2	
																					0		
																					0		
COUNT		10	9	9	9	9	9	0	0	0	9	8	8	8	8	8	0	0					

SEDIMENT - SITE 69
CTO-19212

		Analysis Requested									Analysis Received												
DATE SHIPPED	SAMPLE ID	TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	CSM	THIODYGLYCOL	MIREX	ORDNANCE		TCL VOA	TCL SVOA	TCL PEST/PCB	TAL METALS	CSM	THIODYGLYCOL	MIREX	ORDNANCE		DATE REC'D	TURNAROUND TIME	SDG NO.	COMMENTS
1/8/94	69-OS-SD03-06	x	x	x	x	x	x				x	x	x	x	x	x				3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-OS-SD02-06	x	x	x	x	x	x				x	x	x	x	x	x				3/2/94	54	3	rec 2/21/94 - no pest/pcb
1/8/94	69-OS-SD01-06	x	x	x	x	x	x				x	x	x	x	x	x				3/7/94	59	4	Includes MS/MSD; rec 2/21, no pest/pcb
1/8/94	69-OS-SD01-06D	x	x	x	x	x	x				x	x	x	x	x	x				3/7/94	59	4	Duplicate; rec 2/21, no pest/pcb
1/10/94	69-DA-SD01-06	x	x	x	x	x	x				x	x	x	x	x	x				3/7/94	57	4	rec 2/21/94 - no pest/pcb
1/10/94	69-DA-SD02-06	x	x	x	x	x	x				x	x	x	x	x	x				3/7/94	57	4	rec 2/21/94 - no pest/pcb
1/10/94	69-DA-SD03-06	x	x	x	x	x	x				x	x	x	x	x	x				3/7/94	57	4	rec 2/21/94 - no pest/pcb
1/10/94	69-DA-SD04-06	x	x	x	x	x	x				x	x	x	x	x	x				3/7/94	57	4	Sample reexract exceeded 7 days 2-1-94; rec 2/21, no pest/psb
1/10/94	69-TB-06	x									x									2/17/94	37	2	Trip Blank
COUNT		9	8	8	8	8	8	0	0	0	9	8	8	8	8	8	0	0					

APPENDIX J
ENGINEERING PARAMETERS SUMMARY

ROUNDWATER ENGINEERING RESULTS
EMEDIAL INVESTIGATION CTO-0212
ICB CAMP LEJEUNE, NORTH CAROLINA

ample Identification	Units	69-GW02-01	69-GW02DW-01	74-GW05-01	41-GW04-01	41-GW04DW-0
lkalinity	mg/l	<1.0	107	<1	136	169
iological Oxygen Demand	mg/l	5.65	<2	3.53	3.57	<2
hemical Oxygen Demand	mg/l	131	23.7	36.7	76.6	11
otal Phosphorus	mg/l	<0.010	0.042	0.02	0.01 U	<0.10
otal Dissolved Solids	mg/l	26	234	60	151	162
otal Kjeldahl Nitrogen	mg/l	3.46	0.445	0.739	5.59	0.184
otal Suspended Solids	mg/l	1950	232	937	540	179
tandard Plate Count	CFU/ml	9980	2.9	30700	132	5.74

lotes:
ıg/l - milligram per liter
CFU/ml -
: - less than
l - nondetected

SOG # 35

GP ENVIRONMENTAL SERVICES
WET CHEMISTRY ANALYSIS RESULTS

GP ID: 9402153-02
Client ID: 69-GW02-DW-01

Matrix: LIQUID
Collected: 02/17/94

Parameter	Method	Result	Det.Lim.	Units	Dil.	Prepared	Analyzed By
Alkalinity	MCAWW 310.1	107.0	1.00	mg/L	1		02/22/94 MG
Biological Oxygen Demand	MCAWW 405.1	BQL	2.00	mg/L	1		02/22/94 JS
Chemical Oxygen Demand	MCAWW 410.4	23.7	3.00	mg/L	1		03/01/94 YS
Phosphorus, Total	MCAWW 365.2	0.042	0.010	mg/L	1		03/07/94 VHM
Total Dissolved Solids	MCAWW 160.1	234.0	10.0	mg/L			02/22/94 JS
Total Kjeldahl Nitrogen	MCAWW 351.3	0.445	0.100	mg/L	1		03/01/94 MPC
Total Suspended Solids	MCAWW 160.2	232.0	5.00	mg/L			02/22/94 JS

GP ENVIRONMENTAL SERVICES
WET CHEMISTRY ANALYSIS RESULTS

GP ID: 9402153-01 Matrix: LIQUID
Client ID: 69-GW02-DW-01 Collected: 02/17/94

Parameter	Method	Result	Det.Lim.	Units	Dil.	Prepared	Analyzed By
STANDARD PLATE COUNT	ASA #9 2D ED	2.90 E5	1.00	CFU/ml	1		02/21/94 SA

GP ENVIRONMENTAL SERVICES
WET CHEMISTRY ANALYSIS RESULTS

GP ID: 9402121-03 Matrix: LIQUID
Client ID: 41-GW04-01 Collected: 02/15/94

Parameter	Method	Result	Det.Lim.	Units	Dil.	Prepared	Analyzed By
Alkalinity	MCAWW 310.1	136.0	1.00	mg/L	1		02/17/94 MG
Biological Oxygen Demand	MCAWW 405.1	3.57	2.00	mg/L	1		02/17/94 YS
Chemical Oxygen Demand	MCAWW 410.4	76.6	3.00	mg/L	1		02/18/94 YS
STANDARD PLATE COUNT	ASA #9 2D ED	132.0	30.0	cfu/ml			02/21/94 YS
Phosphorus, Total	MCAWW 365.2	0.010U	0.010	mg/L	1		03/07/94 VHM
Total Dissolved Solids	MCAWW 160.1	151.0	10.0	mg/L			02/18/94 VM
Total Kjeldahl Nitrogen	MCAWW 351.3	5.59	0.100	mg/L	1		03/01/94 MPC
Total Suspended Solids	MCAWW 160.2	540.0	5.00	mg/L			02/18/94 VM

GP ENVIRONMENTAL SERVICES
WET CHEMISTRY ANALYSIS RESULTS

GP ID: 9402159-01
Client ID: 41-GW04DW-01

Matrix: LIQUID
Collected: 02/19/94

Parameter	Method	Result	Det.Lim.	Units	Dil.	Prepared	Analyzed By
Alkalinity	MCAWW 310.1	169.0	1.00	mg/L	1		02/23/94 MPC
Biological Oxygen Demand	MCAWW 405.1	BQL	2.00	mg/L	1		02/22/94 JS
Chemical Oxygen Demand	MCAWW 410.4	11.0	3.00	mg/L	1		03/01/94 YS
STANDARD PLATE COUNT	ASA #9 2D ED	5.70 E4	1.00	CFU/mL	1		02/22/94 SA
Phosphorus, Total	MCAWW 365.2	BQL	0.010	mg/L	1		03/07/94 VHM
Total Dissolved Solids	MCAWW 160.1	162.0	10.0	mg/L			02/24/94 JS
Total Kjeldahl Nitrogen	MCAWW 351.3	0.184	0.100	mg/L	1		03/01/94 MPC
Total Suspended Solids	MCAWW 160.2	179.0	5.00	mg/L			02/24/94 JS

GP ENVIRONMENTAL SERVICES
WET CHEMISTRY ANALYSIS RESULTS

GP ID: 9402137-01
Client ID: 74-GW05-01

Matrix: LIQUID
Collected: 02/16/94

Parameter	Method	Result	Det.Lim.	Units	Dil.	Prepared	Analyzed By
Alkalinity	MCAWW 310.1	BQL	1.00	mg/L	1		02/22/94 MG
Biological Oxygen Demand	MCAWW 405.1	3.53	2.00	mg/L	1		02/18/94 JS
Chemical Oxygen Demand	MCAWW 410.4	36.7	3.00	mg/L	1		03/01/94 YS
STANDARD PLATE COUNT	ASA #9 2D ED	30700.0	1.00	CFU/ml			02/21/94 SA
Phosphorus, Total	MCAWW 365.2	0.020	0.010	mg/L	1		03/07/94 VHM
Total Dissolved Solids	MCAWW 160.1	60.0	10.0	mg/L			02/18/94 VM
Total Kjeldahl Nitrogen	MCAWW 351.3	0.739	0.100	mg/L	1		03/01/94 MPC
Total Suspended Solids	MCAWW 160.2	937.0	5.00	mg/L			02/18/94 VM

GP Environmental
483.9522.01
February 15, 1994

L A B O R A T O R Y T E S T R E S U L T S

Sample I.D.	%Gravel	%Sand	%Silt	%Clay
9401052 5A 69-GW02DW		80.7	6.9	12.4

	Liquid Limit	Plastic Limit	Plasticity Index
9401052 5A 69-GW02DW	16	NP	NP

LAW ENGINEERING

GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION MATERIALS CONSULTANTS

PROJECT : GP Environmental
PROJECT NUMBER : 483.9522.01
DATE : 3-10-94

LABORATORY TEST RESULTS

Sample I.D.	9402071 01C	9402071 01D	9402~~071~~ 087 02C	9402~~071~~ 087 02D
% SAND	85.2	85.4	80.5	79.4
% SILT	6.3	6.4	5.2	8.4
% CLAY	8.5	8.2	14.3	12.2
USDA CLASS	SAND/ LOAMY SAND	SAND/ LOAMY SAND	LOAMY SAND	LOAMY SAND
LIQUID LIMIT	12	13	15	16
PLASTIC LIMIT	NP	NP	NP	NP
PLASTICITY INDEX	NP	NP	NP	NP

Greg Hamadock
Manager
Laboratory Services

4465 BROOKFIELD CORPORATE DRIVE
CHANTILLY, VA 22021

GP Environmental
483.9522.01
February 15, 1994

LAW ENGINEERING

GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION MATERIALS CONSULTANTS

L A B O R A T O R Y T E S T R E S U L T S

Sample I.D.	%Gravel	%Sand	%Silt	%Clay
9401095:				
SE1E001A	44.0	21.2	20.5	14.3
SE1E001M	24.3	30.2	25.4	20.1
SE1E001S	4.1	45.1	32.0	18.8
SE1E002A	14.4	51.2	21.0	13.4
9401052 5A		80.7	6.9	12.4
9401066 6B		77.9	8.8	13.3

	Liquid Limit	Plastic Limit	Plasticity Index
9401052 5A	16	NP	NP
9401066 6B	16	NP	NP

	Total Density PCF	Dry Density PCF	Moisture %
9401082 3A	121.1	114.1	6.1

Note: Sample contains significant amount petroleum or coal tar distillate.

Greg Hamadock
Manager
Laboratory Services

68002

4465 BROOKFIELD CORPORATE DR

APPENDIX K
FIELD DUPLICATE SUMMARY

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
CHEMICAL STORAGE AREA SURFACE SOIL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-CSA-SB03-00	69-CSA-SB03-00D	69-CSA-SB08-00	69-CSA-SB08-00D	69-CSA-SB16-00	69-CSA-SB16-00D
Laboratory Sample ID:		9401041-05A	9401041-06A	9401041-14A	9401041-15A	9401041-20A	9401041-21A
Date Sampled:		01/07/94	01/07/94	01/07/94	01/07/94	01/08/94	01/08/94
Percent Solids		92.7	92.8	91.3	90.6	91.4	92.0
SEMIVOLATILES							
1,2-Dichlorobenzene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
1,2,4-Trichlorobenzene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
1,3-Dichlorobenzene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
1,4-Dichlorobenzene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
2-Chloronaphthalene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
2-Chlorophenol	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
2-Methylnaphthalene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
2-Methylphenol	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
2-Nitroaniline	UG/KG	864.0 U	880.0 U	889.0 U	889.0 U	880.0 U	880.0 U
2-Nitrophenol	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
2,2'-oxybis-(1-chloropropane)	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
2,4-Dichlorophenol	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
2,4-Dimethylphenol	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
2,4-Dinitrophenol	UG/KG	864.0 U	880.0 U	889.0 U	889.0 U	880.0 U	880.0 U
2,4-Dinitrotoluene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
2,4,5-Trichlorophenol	UG/KG	864.0 U	880.0 U	889.0 U	889.0 U	880.0 U	880.0 U
2,4,6-Trichlorophenol	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
2,6-Dinitrotoluene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
3-Nitroaniline	UG/KG	864.0 U	880.0 U	889.0 U	889.0 U	880.0 U	880.0 U
3,3'-Dichlorobenzidine	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
4-Bromophenyl-phenylether	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
4-Chloro-3-methylphenol	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
4-Chloroaniline	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
4-Chlorophenyl phenyl ether	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
4-Methylphenol	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
4-Nitroaniline	UG/KG	864.0 U	880.0 U	889.0 U	889.0 U	880.0 U	880.0 U
4-Nitrophenol	UG/KG	864.0 U	880.0 U	889.0 U	889.0 U	880.0 U	880.0 U
4,6-Dinitro-2-methylphenol	UG/KG	864.0 U	880.0 U	889.0 U	889.0 U	880.0 U	880.0 U
Acenaphthene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Acenaphthylene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Anthracene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Benzo[a]anthracene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Benzo[a]pyrene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
CHEMICAL STORAGE AREA SURFACE SOIL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-CSA-SB03-00	69-CSA-SB03-00D	69-CSA-SB08-00	69-CSA-SB08-00D	69-CSA-SB16-00	69-CSA-SB16-00D
Laboratory Sample ID:		9401041-05A	9401041-06A	9401041-14A	9401041-15A	9401041-20A	9401041-21A
Date Sampled:		01/07/94	01/07/94	01/07/94	01/07/94	01/08/94	01/08/94
Percent Solids		92.7	92.8	91.3	90.6	91.4	92.0
SEMIVOLATILES Cont.							
Benzo[b]fluoranthene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Benzo[g,h,i]perylene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Benzo[k]fluoranthene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
bis(2-Chloroethoxy) methane	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
bis(2-Chloroethyl) ether	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
bis(2-Ethylhexyl)phthalate	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Butyl benzyl phthalate	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Carbazole	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Chrysene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Dibenzofuran	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Dibenz[a,h]anthracene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Diethylphthalate	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Dimethyl phthalate	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
di-n-Butylphthalate	UG/KG	51.0 J	130.0 J	37.0 J	210.0 J	160.0 J	200.0 J
di-n-Octylphthalate	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Fluoranthene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Fluorene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Hexachlorobenzene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Hexachlorobutadiene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Hexachlorocyclopentadiene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Hexachloroethane	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Indeno[1,2,3-cd]pyrene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Isophorone	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Naphthalene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Nitrobenzene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
N-Nitroso-di-n-propylamine	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
N-nitrosodiphenylamine	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Pentachlorophenol	UG/KG	864.0 U	880.0 U	889.0 U	889.0 U	880.0 U	880.0 U
Phenanthrene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Phenol	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Pyrene	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
CHEMICAL STORAGE AREA SURFACE SOIL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-CSA-SB03-00	69-CSA-SB03-00D	69-CSA-SB08-00	69-CSA-SB08-00D	69-CSA-SB16-00	69-CSA-SB16-00D
Laboratory Sample ID:		9401041-05A	9401041-06A	9401041-14A	9401041-15A	9401041-20A	9401041-21A
Date Sampled:		01/07/94	01/07/94	01/07/94	01/07/94	01/08/94	01/08/94
Percent Solids		92.7	92.8	91.3	90.6	91.4	92.0
VOLATILES							
Chloromethane	UG/KG	10.8 UJ	10.8 UJ	11.0 U	11.0 U	11.0 U	10.9 U
Bromomethane	UG/KG	10.8 UJ	10.8 UJ	11.0 U	11.0 U	11.0 U	10.9 U
Vinyl chloride	UG/KG	10.8 UJ	10.8 UJ	11.0 U	11.0 U	11.0 U	10.9 U
Chloroethane	UG/KG	10.8 UJ	10.8 UJ	11.0 U	11.0 U	11.0 U	10.9 U
Methylene chloride	UG/KG	9.0 J	8.0 J	11.00 U	12.0	8.00 J	48.0
Acetone	UG/KG	11.0 UJ	17.0 J	107.0 U	11.00 U	11.00 U	11.00 U
Carbon Disulfide	UG/KG	10.8 UJ	10.8 UJ	11.0 U	11.0 U	11.0 U	10.9 U
1,1-Dichloroethene	UG/KG	10.8 UJ	10.8 UJ	11.0 U	11.0 U	11.0 U	10.9 U
1,1-Dichloroethane	UG/KG	10.8 UJ	10.8 UJ	11.0 U	11.0 U	11.0 U	10.9 U
1,2-Dichloroethene(total)	UG/KG	10.8 UJ	10.8 UJ	11.0 U	11.0 U	11.0 U	10.9 U
Chloroform	UG/KG	10.8 UJ	10.8 UJ	11.0 U	11.0 U	11.0 U	10.9 U
1,2-Dichloroethane	UG/KG	10.8 UJ	10.8 UJ	11.0 U	11.0 U	11.0 U	10.9 U
2-Butanone	UG/KG	10.8 UJ	10.8 UJ	11.0 UJ	11.0 U	11.0 U	10.9 U
1,1,1-Trichloroethane	UG/KG	10.8 U	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
Carbon tetrachloride	UG/KG	10.8 U	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
Bromodichloromethane	UG/KG	10.8 U	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
1,2-Dichloropropane	UG/KG	10.8 U	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
cis-1,3-Dichloropropene	UG/KG	10.8 U	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
Trichloroethene	UG/KG	10.8 U	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
Dibromochloromethane	UG/KG	10.8 U	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
1,1,2-Trichloroethane	UG/KG	10.8 U	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
Benzene	UG/KG	10.8 U	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
trans-1,3-Dichloropropene	UG/KG	10.8 U	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
Bromoform	UG/KG	10.8 U	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
4-Methyl-2-pentanone	UG/KG	10.8 UJ	10.8 U	10.0 J	11.0 U	2.00 J	10.9 U
2-Hexanone	UG/KG	10.8 UJ	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
Tetrachloroethene	UG/KG	10.8 UJ	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
1,1,2,2-Tetrachloroethane	UG/KG	10.8 UJ	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
Toluene	UG/KG	10.8 UJ	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
Chlorobenzene	UG/KG	10.8 UJ	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
Ethylbenzene	UG/KG	10.8 UJ	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
Styrene	UG/KG	10.8 UJ	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U
Xylenes (total)	UG/KG	10.8 UJ	10.8 U	11.0 U	11.0 U	11.0 U	10.9 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
CHEMICAL STORAGE AREA SURFACE SOIL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-CSA-SB03-00	69-CSA-SB03-00D	69-CSA-SB08-00	69-CSA-SB08-00D	69-CSA-SB16-00	69-CSA-SB16-00D
Laboratory Sample ID:		9401041-05A	9401041-06A	9401041-14A	9401041-15A	9401041-20A	9401041-21A
Date Sampled:		01/07/94	01/07/94	01/07/94	01/07/94	01/08/94	01/08/94
Percent Solids		92.7	92.8	91.3	90.6	91.4	92.0
PESTICIDE/PCBS							
alpha-BHC	UG/KG	1.83 UJ	1.82 UJ	1.87 UJ	1.87 UJ	1.87 UJ	1.85 UJ
beta-BHC	UG/KG	1.83 UJ	1.82 UJ	1.87 UJ	1.87 UJ	1.87 UJ	1.85 UJ
delta-BHC	UG/KG	1.83 UJ	1.82 UJ	1.87 UJ	1.87 UJ	1.87 UJ	1.85 UJ
Lindane (gamma-BHC)	UG/KG	1.83 UJ	1.82 UJ	1.87 UJ	1.87 UJ	1.87 UJ	1.85 UJ
Heptachlor	UG/KG	1.83 UJ	1.82 UJ	1.87 UJ	1.87 UJ	1.87 UJ	1.85 UJ
Aldrin	UG/KG	1.83 UJ	1.82 UJ	1.87 UJ	1.87 UJ	1.87 UJ	1.85 UJ
Heptachlor epoxide	UG/KG	1.83 UJ	1.82 UJ	1.87 UJ	1.87 UJ	1.87 UJ	1.85 UJ
Endosulfan I	UG/KG	1.83 UJ	1.82 UJ	1.87 UJ	1.87 UJ	1.87 UJ	1.85 UJ
Dieldrin	UG/KG	3.55 UJ	3.53 UJ	3.63 UJ	3.63 UJ	3.63 UJ	3.59 UJ
4,4'-DDE	UG/KG	3.55 UJ	3.53 UJ	3.63 UJ	3.63 UJ	3.63 UJ	3.59 UJ
Endrin	UG/KG	3.55 UJ	3.53 UJ	3.63 UJ	3.63 UJ	3.63 UJ	3.59 UJ
Endosulfan II	UG/KG	3.55 UJ	3.53 UJ	3.63 UJ	3.63 UJ	3.63 UJ	3.59 UJ
4,4'-DDD	UG/KG	3.55 UJ	3.53 UJ	3.63 UJ	3.63 UJ	3.63 UJ	3.59 UJ
Endosulfan sulfate	UG/KG	3.55 UJ	3.53 UJ	3.63 UJ	3.63 UJ	3.63 UJ	3.59 UJ
4,4'-DDT	UG/KG	3.55 UJ	3.53 UJ	3.63 UJ	3.63 UJ	3.63 UJ	3.59 UJ
Methoxychlor	UG/KG	18.3 UJ	18.2 UJ	18.7 UJ	18.7 UJ	18.7 UJ	18.5 UJ
Endrin ketone	UG/KG	3.55 UJ	3.53 UJ	3.63 UJ	3.63 UJ	3.63 UJ	3.59 UJ
Endrin aldehyde	UG/KG	3.55 UJ	3.53 UJ	3.63 UJ	3.63 UJ	3.63 UJ	3.59 UJ
alpha-Chlordane	UG/KG	1.83 UJ	1.82 UJ	1.87 UJ	1.87 UJ	1.87 UJ	1.85 UJ
gamma-Chlordane	UG/KG	1.83 UJ	1.82 UJ	1.87 UJ	1.87 UJ	1.87 UJ	1.85 UJ
Toxaphene	UG/KG	183.0 UJ	182.0 UJ	187.0 UJ	187.0 UJ	187.0 UJ	185.0 UJ
Aroclor 1016	UG/KG	35.5 UJ	35.3 UJ	36.3 UJ	36.3 UJ	36.3 UJ	35.9 UJ
Aroclor 1221	UG/KG	72.0 UJ	71.7 UJ	73.6 UJ	73.6 UJ	73.6 UJ	72.8 UJ
Aroclor 1232	UG/KG	35.5 UJ	35.3 UJ	36.3 UJ	36.3 UJ	36.3 UJ	35.9 UJ
Aroclor 1242	UG/KG	35.5 UJ	35.3 UJ	36.3 UJ	36.3 UJ	36.3 UJ	35.9 UJ
Aroclor 1248	UG/KG	35.5 UJ	35.3 UJ	36.3 UJ	36.3 UJ	36.3 UJ	35.9 UJ
Aroclor 1254	UG/KG	35.5 UJ	35.3 UJ	36.3 UJ	36.3 UJ	36.3 UJ	35.9 UJ
Aroclor 1260	UG/KG	35.5 UJ	35.3 UJ	36.3 UJ	36.3 UJ	36.3 UJ	35.9 UJ

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
CHEMICAL STORAGE AREA SURFACE SOIL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-CSA-SB03-00	69-CSA-SB03-00D	69-CSA-SB08-00	69-CSA-SB08-00D	69-CSA-SB16-00	69-CSA-SB16-00D
Laboratory Sample ID:		9401041-05A	9401041-06A	9401041-14A	9401041-15A	9401041-20A	9401041-21A
Date Sampled:		01/07/94	01/07/94	01/07/94	01/07/94	01/08/94	01/08/94
Percent Solids		92.7	92.8	91.3	90.6	91.4	92.0
CHEMICAL SURETY							
Acetophenone	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Chloroacetophenone	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
Hydroxyacetophenone	UG/KG	1780.0 U	1820.0 U	120.0 J	1830.0 U	1820.0 U	1820.0 U
Bis(2'-chloroethyl)disulfide	UG/KG	1780.0 U	1820.0 U	1830.0 U	1830.0 U	1820.0 U	1820.0 U
Bis(2'-chloroethyl)trisulfide	UG/KG	1780.0 U	1820.0 U	1830.0 U	1830.0 U	1820.0 U	1820.0 U
1,4-Dithiane	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
1,4-Oxathiane	UG/KG	356.0 U	363.0 U	367.0 U	367.0 U	363.0 U	363.0 U
THIODIGLYCOL							
Thiodiglycol	MG/KG	6.75 U	6.75 U	6.89 U	6.89 U	6.81 U	6.81 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
CHEMICAL STORAGE AREA SURFACE SOIL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
TAL INORGANICS

Client Sample ID:		69-CSA-SB03-00	69-CSA-SB03-00D	69-CSA-SB06-00	69-CSA-SB06-00D	69-CSA-SB16-00	69-CSA-SB16-00D
Laboratory Sample ID:		9401041-05A	9401041-06A	9401041-14A	9401041-15A	9401041-20A	9401041-21A
Date Sampled:		01/07/94	01/07/94	01/07/94	01/07/94	01/08/94	01/08/94
Percent Solids		92.7	92.8	91.3	90.6	91.4	92.0
	UNITS						
Aluminum	MG/KG	2270.0	2340.0	1330.0	1190.0	2630.0	2660.0
Antimony	MG/KG	1.70 U	1.70 U	1.70 U	1.70 U	1.70 U	1.70 U
Arsenic	MG/KG	0.630 U	0.620 U	0.640 U	0.640 U	0.630 U	0.630 U
Barium	MG/KG	4.30	3.40	3.00 U	3.00 U	3.00	3.80
Beryllium	MG/KG	0.280 U	0.280 U	0.280 U	0.290 U	0.280 U	0.280 U
Cadmium	MG/KG	0.520 U	0.520 U	0.530 U	0.530 U	0.530 U	0.520 U
Calcium	MG/KG	27.0 U	32.4	27.4 U	27.6 U	27.4 U	33.5
Chromium	MG/KG	1.60	2.10	1.70	1.60 U	2.00	2.00
Cobalt	MG/KG	4.20 U	4.20 U	4.20 U	4.30 U	4.20 U	4.20 U
Copper	MG/KG	3.50 U	3.50 U	3.50 U	3.60 U	3.50 U	3.50 U
Iron	MG/KG	1200.0	1280.0	622.0	504.0	1340.0	1490.0
Lead	MG/KG	1.10 J	1.20 J	2.30 J	2.50 J	1.60 J	1.80 J
Magnesium	MG/KG	54.8	60.5	22.7	23.7	57.2	63.3
Manganese	MG/KG	4.80	4.60	2.90	2.20	4.70	5.20
Mercury	MG/KG	0.050 U	0.050 U	0.050 U	0.060 U	0.050 U	0.050 U
Nickel	MG/KG	2.90 U	2.90 U	3.00 U	3.00 U	3.00 U	3.00 U
Potassium	MG/KG	64.7 U	64.7 U	65.7 U	66.2 U	65.6 U	66.6
Selenium	MG/KG	0.540 UJ	0.540 UJ	0.550 UJ	0.550 UJ	0.550 UJ	0.540 UJ
Silver	MG/KG	0.090 UJ	0.090 UJ	0.090 UJ	0.090 UJ	0.090 UJ	0.090 UJ
Sodium	MG/KG	41.0 UJ	40.9 UJ	41.6 UJ	41.9 UJ	41.6 UJ	41.3 UJ
Thallium	MG/KG	0.990 U	0.990 U	1.00 U	1.00 U	1.00 U	1.00 U
Vanadium	MG/KG	3.60 U	3.60 U	3.60 U	3.70 U	3.60 U	3.60 U
Zinc	MG/KG	2.40 U	2.70 U	3.80 U	2.40 U	3.50 U	3.30 U
Total Cyanide	MG/KG	1.10 UJ	1.10 UJ	1.10 UJ	1.10 UJ	1.10 UJ	1.10 UJ

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 14 (SITE 69)
CHEMICAL STORAGE AREA SUBSURFACE SOIL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-GW02DW-01	69-GW02DW-01D	69-DA-HP02-01	69-DA-HP02D-01
Laboratory Sample ID:		9401052-03A	9401081-02A	9503186-08	9503186-09
Date Sampled:		01/09/94	01/10/94	03/22/95	03/22/95
Depth:				2-4'	2-4'
Percent Solids		89.6	88.9	80.3	80.4
	UNITS				
SEMIVOLATILES					
1,2-Dichlorobenzene	UG/KG	366.0 U	370.0 U	NA	NA
1,2,4-Trichlorobenzene	UG/KG	366.0 U	370.0 U	NA	NA
1,3-Dichlorobenzene	UG/KG	366.0 U	370.0 U	NA	NA
1,4-Dichlorobenzene	UG/KG	366.0 U	370.0 U	NA	NA
2-Chloronaphthalene	UG/KG	366.0 U	370.0 U	NA	NA
2-Chlorophenol	UG/KG	366.0 U	370.0 U	NA	NA
2-Methylnaphthalene	UG/KG	366.0 U	370.0 U	NA	NA
2-Methylphenol	UG/KG	366.0 U	370.0 U	NA	NA
2-Nitroaniline	UG/KG	888.0 U	898.0 U	NA	NA
2-Nitrophenol	UG/KG	366.0 U	370.0 U	NA	NA
2,2'-oxybis-(1-chloropropane)	UG/KG	366.0 U	370.0 U	NA	NA
2,4-Dichlorophenol	UG/KG	366.0 U	370.0 U	NA	NA
2,4-Dimethylphenol	UG/KG	366.0 U	370.0 U	NA	NA
2,4-Dinitrophenol	UG/KG	888.0 U	898.0 U	NA	NA
2,4-Dinitrotoluene	UG/KG	366.0 U	370.0 U	NA	NA
2,4,5-Trichlorophenol	UG/KG	888.0 U	898.0 U	NA	NA
2,4,6-Trichlorophenol	UG/KG	366.0 U	370.0 U	NA	NA
2,6-Dinitrotoluene	UG/KG	366.0 U	370.0 U	NA	NA
3-Nitroaniline	UG/KG	888.0 U	898.0 U	NA	NA
3,3'-Dichlorobenzidine	UG/KG	366.0 U	370.0 U	NA	NA
4-Bromophenyl-phenylether	UG/KG	366.0 U	370.0 U	NA	NA
4-Chloro-3-methylphenol	UG/KG	366.0 U	370.0 U	NA	NA
4-Chloroaniline	UG/KG	366.0 U	370.0 U	NA	NA
4-Chlorophenyl phenyl ether	UG/KG	366.0 U	370.0 U	NA	NA
4-Methylphenol	UG/KG	366.0 U	370.0 U	NA	NA
4-Nitroaniline	UG/KG	888.0 U	898.0 U	NA	NA
4-Nitrophenol	UG/KG	888.0 U	898.0 U	NA	NA
4,6-Dinitro-2-methylphenol	UG/KG	888.0 U	898.0 U	NA	NA
Acenaphthene	UG/KG	366.0 U	370.0 U	NA	NA
Acenaphthylene	UG/KG	366.0 U	370.0 U	NA	NA
Anthracene	UG/KG	366.0 U	370.0 U	NA	NA
Benzo[a]anthracene	UG/KG	366.0 U	370.0 U	NA	NA
Benzo[a]pyrene	UG/KG	366.0 U	370.0 U	NA	NA

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 14 (SITE 69)
CHEMICAL STORAGE AREA SUBSURFACE SOIL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-GW02DW-01	69-GW02DW-01D	69-DA-HP02-01	69-DA-HP02D-01
Laboratory Sample ID:		9401052-03A	9401081-02A	9503186-08	9503186-09
Date Sampled:		01/09/94	01/10/94	03/22/95	03/22/95
Depth:				2-4'	2-4'
Percent Solids		89.6	88.9	80.3	80.4
	UNITS				
SEMIVOLATILES Cont.					
Benzo[b]fluoranthene	UG/KG	366.0 U	370.0 U	NA	NA
Benzo[g,h,i]perylene	UG/KG	366.0 U	370.0 U	NA	NA
Benzo[k]fluoranthene	UG/KG	366.0 U	370.0 U	NA	NA
bis(2-Chloroethoxy) methane	UG/KG	366.0 U	370.0 U	NA	NA
bis(2-Chloroethyl) ether	UG/KG	366.0 U	370.0 U	NA	NA
bis(2-Ethylhexyl)phthalate	UG/KG	366.0 U	370.0 U	NA	NA
Butyl benzyl phthalate	UG/KG	366.0 U	370.0 U	NA	NA
Carbazole	UG/KG	366.0 U	370.0 U	NA	NA
Chrysene	UG/KG	366.0 U	370.0 U	NA	NA
Dibenzofuran	UG/KG	366.0 U	370.0 U	NA	NA
Dibenz[a,h]anthracene	UG/KG	366.0 U	370.0 U	NA	NA
Diethylphthalate	UG/KG	366.0 U	370.0 U	NA	NA
Dimethyl phthalate	UG/KG	366.0 U	370.0 U	NA	NA
di-n-Butylphthalate	UG/KG	366.0 U	370.0 U	NA	NA
di-n-Octylphthalate	UG/KG	366.0 U	370.0 U	NA	NA
Fluoranthene	UG/KG	366.0 U	370.0 U	NA	NA
Fluorene	UG/KG	366.0 U	370.0 U	NA	NA
Hexachlorobenzene	UG/KG	366.0 U	370.0 U	NA	NA
Hexachlorobutadiene	UG/KG	366.0 U	370.0 U	NA	NA
Hexachlorocyclopentadiene	UG/KG	366.0 U	370.0 U	NA	NA
Hexachloroethane	UG/KG	366.0 U	370.0 U	NA	NA
Indeno[1,2,3-cd]pyrene	UG/KG	366.0 U	370.0 U	NA	NA
Isophorone	UG/KG	366.0 U	370.0 U	NA	NA
Naphthalene	UG/KG	366.0 U	370.0 U	NA	NA
Nitrobenzene	UG/KG	366.0 U	370.0 U	NA	NA
N-Nitroso-di-n-propylamine	UG/KG	366.0 U	370.0 U	NA	NA
N-nitrosodiphenylamine	UG/KG	366.0 U	370.0 U	NA	NA
Pentachlorophenol	UG/KG	888.0 U	898.0 U	NA	NA
Phenanthrene	UG/KG	366.0 U	370.0 U	NA	NA
Phenol	UG/KG	366.0 U	370.0 U	NA	NA
Pyrene	UG/KG	366.0 U	370.0 U	NA	NA

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 14 (SITE 69)
CHEMICAL STORAGE AREA SUBSURFACE SOIL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-GW02DW-01	69-GW02DW-01D	69-DA-HP02-01	69-DA-HP02D-01
Laboratory Sample ID:		9401052-03A	9401081-02A	9503186-08	9503186-09
Date Sampled:		01/09/94	01/10/94	03/22/95	03/22/95
Depth:				2-4'	2-4'
Percent Solids		89.6	88.9	80.3	80.4
	UNITS				
VOLATILES					
Chloromethane	UG/KG	11.1 UJ	11.2 U	14 U	14 U
Bromomethane	UG/KG	11.1 UJ	11.2 U	14 U	14 U
Vinyl chloride	UG/KG	11.1 UJ	11.2 U	14 U	14 U
Chloroethane	UG/KG	11.1 UJ	11.2 U	14 U	14 U
Methylene chloride	UG/KG	15.0 J	11.5	14 U	14 U
Acetone	UG/KG	15000.0 J	4.00 J	14 U	14 U
Carbon Disulfide	UG/KG	11.1 UJ	11.2 U	14 U	14 U
1,1-Dichloroethene	UG/KG	11.1 UJ	11.2 U	14 U	14 U
1,1-Dichloroethane	UG/KG	11.1 UJ	11.2 U	14 U	14 U
1,2-Dichloroethene(total)	UG/KG	11.1 UJ	11.2 U	14 U	14 U
Chloroform	UG/KG	11.1 UJ	11.2 U	14 U	14 U
1,2-Dichloroethane	UG/KG	11.1 UJ	11.2 U	14 U	14 U
2-Butanone	UG/KG	11.1 UJ	11.2 U	14 U	14 U
1,1,1-Trichloroethane	UG/KG	11.1 UJ	11.2 U	14 U	14 U
Carbon tetrachloride	UG/KG	11.1 UJ	11.2 U	14 U	14 U
Bromodichloromethane	UG/KG	11.1 UJ	11.2 U	14 U	14 U
1,2-Dichloropropane	UG/KG	11.1 UJ	11.2 U	14 U	14 U
cis-1,3-Dichloropropene	UG/KG	11.1 UJ	11.2 U	14 U	14 U
Trichloroethene	UG/KG	11.1 UJ	11.2 U	14 U	14 U
Dibromochloromethane	UG/KG	11.1 UJ	11.2 U	14 U	14 U
1,1,2-Trichloroethane	UG/KG	11.1 UJ	11.2 U	14 U	3 J
Benzene	UG/KG	11.1 UJ	11.2 U	14 U	14 U
trans-1,3-Dichloropropene	UG/KG	11.1 UJ	11.2 U	14 U	14 U
Bromoform	UG/KG	11.1 UJ	11.2 U	14 U	14 U
4-Methyl-2-pentanone	UG/KG	11.1 UJ	2.00 J	14 U	14 U
2-Hexanone	UG/KG	11.1 UJ	11.2 U	14 U	14 U
Tetrachloroethene	UG/KG	11.1 UJ	11.2 U	14 U	14 U
1,1,2,2-Tetrachloroethane	UG/KG	11.1 UJ	11.2 U	14 U	14 U
Toluene	UG/KG	11.1 UJ	11.2 U	14 U	14 U
Chlorobenzene	UG/KG	11.1 UJ	11.2 U	14 U	14 U
Ethylbenzene	UG/KG	11.1 UJ	11.2 U	14 U	14 U
Styrene	UG/KG	11.1 UJ	11.2 U	14 U	14 U
Xylenes (total)	UG/KG	11.1 UJ	11.2 U	14 U	14 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 14 (SITE 69)
CHEMICAL STORAGE AREA SUBSURFACE SOIL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-GW02DW-01	69-GW02DW-01D	69-DA-HP02-01	69-DA-HP02D-01
Laboratory Sample ID:		9401052-03A	9401081-02A	9503186-08	9503186-09
Date Sampled:		01/09/94	01/10/94	03/22/95	03/22/95
Depth:				2-4'	2-4'
Percent Solids		89.6	88.9	80.3	80.4
	UNITS				
PESTICIDE/PCBS					
alpha-BHC	UG/KG	1.89 UJ	1.91 UJ	NA	NA
beta-BHC	UG/KG	1.89 UJ	1.91 UJ	NA	NA
delta-BHC	UG/KG	1.89 UJ	1.91 UJ	NA	NA
Lindane (gamma-BHC)	UG/KG	1.89 UJ	1.91 UJ	NA	NA
Heptachlor	UG/KG	1.89 UJ	1.91 UJ	NA	NA
Aldrin	UG/KG	1.89 UJ	1.91 UJ	NA	NA
Heptachlor epoxide	UG/KG	1.89 UJ	1.91 UJ	NA	NA
Endosulfan I	UG/KG	1.89 UJ	1.91 UJ	NA	NA
Dieldrin	UG/KG	3.67 UJ	3.71 UJ	NA	NA
4,4'-DDE	UG/KG	3.67 UJ	3.71 UJ	NA	NA
Endrin	UG/KG	1.20 J	3.71 UJ	NA	NA
Endosulfan II	UG/KG	3.67 UJ	3.71 UJ	NA	NA
4,4'-DDD	UG/KG	3.67 UJ	3.71 UJ	NA	NA
Endosulfan sulfate	UG/KG	3.67 UJ	3.71 UJ	NA	NA
4,4'-DDT	UG/KG	1.60 J	3.71 UJ	NA	NA
Methoxychlor	UG/KG	18.9 UJ	19.1 UJ	NA	NA
Endrin ketone	UG/KG	3.67 UJ	3.71 UJ	NA	NA
Endrin aldehyde	UG/KG	3.67 UJ	3.71 UJ	NA	NA
alpha-Chlordane	UG/KG	1.89 UJ	1.91 UJ	NA	NA
gamma-Chlordane	UG/KG	1.89 UJ	1.91 UJ	NA	NA
Toxaphene	UG/KG	189.0 UJ	191.0 UJ	NA	NA
Aroclor 1016	UG/KG	36.7 UJ	37.1 UJ	NA	NA
Aroclor 1221	UG/KG	74.4 UJ	75.3 UJ	NA	NA
Aroclor 1232	UG/KG	36.7 UJ	37.1 UJ	NA	NA
Aroclor 1242	UG/KG	36.7 UJ	37.1 UJ	NA	NA
Aroclor 1248	UG/KG	36.7 UJ	37.1 UJ	NA	NA
Aroclor 1254	UG/KG	36.7 UJ	37.1 UJ	NA	NA
Aroclor 1260	UG/KG	36.7 UJ	37.1 UJ	NA	NA

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
CHEMICAL STORAGE AREA SUBSURFACE SOIL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
TAL INORGANICS

Client Sample ID:		69-GW02DW-01	69-GW02DW-01
Laboratory Sample ID:		9401052-03A	9401081-02A
Date Sampled:		01/09/94	01/10/94
Percent Solids		89.6	88.9
	UNITS		
Aluminum	MG/KG	1610.0	2290.0
Antimony	MG/KG	1.76 U	1.78 U
Arsenic	MG/KG	0.647 UJ	0.652 U
Barium	MG/KG	6.80	3.78
Beryllium	MG/KG	0.288 U	0.290 U
Cadmium	MG/KG	0.524 U	0.529 U
Calcium	MG/KG	170.0	57.1
Chromium	MG/KG	1.76	2.09
Cobalt	MG/KG	4.33 U	4.36 U
Copper	MG/KG	3.62 U	3.64 U
Iron	MG/KG	1100.0	1490.0
Lead	MG/KG	4.63	2.84
Magnesium	MG/KG	52.8	49.3
Manganese	MG/KG	2.52	2.05
Mercury	MG/KG	0.086 U	0.085 U
Nickel	MG/KG	3.04 U	3.06 U
Potassium	MG/KG	67.0 UJ	112.0 J
Selenium	MG/KG	0.565 UJ	0.569 UJ
Silver	MG/KG	0.089 UJ	0.090 UJ
Sodium	MG/KG	42.4 U	47.4
Thallium	MG/KG	1.03 U	1.03 U
Vanadium	MG/KG	3.70 U	3.73 U
Zinc	MG/KG	4.22 U	6.87 U
Total Cyanide	MG/KG	1.12 UJ	1.12 UJ

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
GROUNDWATER
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-GW02-01	69-GW02-01D	69-GW02-DW-01	69-GW02DW-01D
Laboratory Sample ID:		9401128-01A	9401128-02A	9402153-01	9402153-04
Date Sampled:		01/22/94	01/22/94		
	UNITS				
SEMIVOLATILES					
1,2-Dichlorobenzene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
1,2,4-Trichlorobenzene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
1,3-Dichlorobenzene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
1,4-Dichlorobenzene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
2-Chloronaphthalene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
2-Chlorophenol	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
2-Methylnaphthalene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
2-Methylphenol	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
2-Nitroaniline	UG/L	42.5 U	50.0 U	33.3 U	27.8 U
2-Nitrophenol	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
2,2'-oxybis-(1-chloropropane)	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
2,4-Dichlorophenol	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
2,4-Dimethylphenol	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
2,4-Dinitrophenol	UG/L	42.5 UJ	50.0 U	33.3 U	27.8 U
2,4-Dinitrotoluene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
2,4,5-Trichlorophenol	UG/L	42.5 U	50.0 U	33.3 U	27.8 U
2,4,6-Trichlorophenol	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
2,6-Dinitrotoluene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
3-Nitroaniline	UG/L	42.5 U	50.0 U	33.3 UJ	27.8 U
3,3'-Dichlorobenzidine	UG/L	17.0 U	20.00 U	13.3 U	11.1 U
4-Bromophenyl-phenylether	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
4-Chloro-3-methylphenol	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
4-Chloroaniline	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
4-Chlorophenyl phenyl ether	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
4-Methylphenol	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
4-Nitroaniline	UG/L	42.5 U	50.0 U	33.3 U	27.8 U
4-Nitrophenol	UG/L	42.5 U	50.0 U	33.3 U	27.8 U
4,6-Dinitro-2-methylphenol	UG/L	42.5 U	50.0 U	33.3 U	27.8 U
Acenaphthene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Acenaphthylene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Anthracene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Benzo[a]anthracene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Benzo[a]pyrene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
GROUNDWATER
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-GW02-01	69-GW02-01D	69-GW02-DW-01	69-GW02DW-01D
Laboratory Sample ID:		9401128-01A	9401128-02A	9402153-01	9402153-04
Date Sampled:		01/22/94	01/22/94		
	UNITS				
SEMIVOLATILES Cont.					
Benzo[b]fluoranthene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Benzo[g,h,i]perylene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Benzo[k]fluoranthene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
bis(2-Chloroethoxy) methane	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
bis(2-Chloroethyl) ether	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
bis(2-Ethylhexyl)phthalate	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Butyl benzyl phthalate	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Carbazole	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Chrysene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Dibenzofuran	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Dibenz[a,h]anthracene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Diethylphthalate	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Dimethyl phthalate	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
di-n-Butylphthalate	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
di-n-Octylphthalate	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Fluoranthene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Fluorene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Hexachlorobenzene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Hexachlorobutadiene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Hexachlorocyclopentadiene	UG/L	17.0 UJ	20.0 U	13.3 U	11.1 U
Hexachloroethane	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Indeno[1,2,3-cd]pyrene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Isophorone	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Naphthalene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Nitrobenzene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
N-Nitroso-di-n-propylamine	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
N-nitrosodiphenylamine	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Pentachlorophenol	UG/L	42.5 U	50.0 U	33.3 U	27.8 U
Phenanthrene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Phenol	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Pyrene	UG/L	17.0 U	20.0 U	13.3 U	11.1 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
GROUNDWATER
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-GW02-01	69-GW02-01D	69-GW02-DW-01	69-GW02DW-01D
Laboratory Sample ID:		9401128-01A	9401128-02A	9402153-01	9402153-04
Date Sampled:		01/22/94	01/22/94		
	UNITS				
VOLATILES					
Chloromethane	UG/L	10.0 U	10.0 U	10 U	10 U
Bromomethane	UG/L	10.0 U	10.0 U	10 U	10 U
Vinyl chloride	UG/L	31.0 J	21.0 J	8.37 J	7.48 J
Chloroethane	UG/L	10.0 U	10.0 U	10 U	10 U
Methylene chloride	UG/L	10.00 U	10.00 U	10 U	10 U
Acetone	UG/L	10.00 UJ	10.00 UJ	180	195 J
Carbon Disulfide	UG/L	10.0 U	10.0 U	10 U	10 U
1,1-Dichloroethene	UG/L	10.0 U	10.0 U	10 U	10 U
1,1-Dichloroethane	UG/L	10.0 U	10.0 U	10 U	10 U
1,2-Dichloroethene(total)	UG/L	2400.0	2200.0	788	752
Chloroform	UG/L	10.0 U	10.0 U	10 U	10 U
1,2-Dichloroethane	UG/L	10.0 U	10.0 U	10 U	10 U
2-Butanone	UG/L	10.0 U	10.0 U	10 U	10 U
1,1,1-Trichloroethane	UG/L	10.0 U	10.0 U	10 U	10 U
Carbon tetrachloride	UG/L	10.0 U	10.0 U	10 U	10 U
Bromodichloromethane	UG/L	10.0 U	10.0 U	10 U	10 U
1,2-Dichloropropane	UG/L	10.0 U	10.0 U	10 U	10 U
cis-1,3-Dichloropropene	UG/L	10.0 U	10.0 U	10 U	10 U
Trichloroethene	UG/L	23.0 J	19.0 J	29.4	27.9 J
Dibromochloromethane	UG/L	10.0 U	10.0 U	10 U	10 U
1,1,2-Trichloroethane	UG/L	10.0 U	10.0 U	10 U	10 U
Benzene	UG/L	10.0 U	10.0 U	10 U	10 U
trans-1,3-Dichloropropene	UG/L	10.0 U	10.0 U	10 U	10 U
Bromoform	UG/L	10.0 U	10.0 U	10 U	10 U
4-Methyl-2-pentanone	UG/L	10.0 U	10.0 U	10 U	10 U
2-Hexanone	UG/L	10.0 U	10.0 U	10 U	10 U
Tetrachloroethene	UG/L	1.00 J	1.00 J	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	22.0 J	20.0 J	10 U	10 U
Toluene	UG/L	1.00 J	1.00 J	10 U	10 U
Chlorobenzene	UG/L	10.0 U	10.0 U	10 U	10 U
Ethylbenzene	UG/L	10.0 U	10.0 U	10 U	10 U
Styrene	UG/L	10.0 U	10.0 U	10 U	10 U
Xylenes (total)	UG/L	10.0 U	10.0 U	10 U	10 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
GROUNDWATER
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-GW02-01	69-GW02-01D	69-GW02-DW-01	69-GW02DW-01D
Laboratory Sample ID:		9401128-01A	9401128-02A	9402153-01	9402153-04
Date Sampled:		01/22/94	01/22/94		
	UNITS				
PESTICIDE/PCBS					
alpha-BHC	UG/L	0.050 UJ	0.050 UJ	0.061 UJ	0.061 UJ
beta-BHC	UG/L	0.050 UJ	0.050 UJ	0.061 UJ	0.061 UJ
delta-BHC	UG/L	0.050 UJ	0.050 UJ	0.061 UJ	0.061 UJ
Lindane (gamma-BHC)	UG/L	0.050 UJ	0.050 UJ	0.061 UJ	0.061 UJ
Heptachlor	UG/L	0.050 UJ	0.050 UJ	0.06 UJ	0.061 UJ
Aldrin	UG/L	0.050 UJ	0.050 UJ	0.061 UJ	0.061 UJ
Heptachlor epoxide	UG/L	0.050 UJ	0.050 UJ	0.061 UJ	0.061 UJ
Endosulfan I	UG/L	0.050 UJ	0.050 UJ	0.061 UJ	0.061 UJ
Dieldrin	UG/L	0.100 UJ	0.100 UJ	0.122 UJ	0.122 UJ
4,4'-DDE	UG/L	0.100 UJ	0.100 UJ	0.122 UJ	0.122 UJ
Endrin	UG/L	0.100 UJ	0.100 UJ	0.122 UJ	0.122 UJ
Endosulfan II	UG/L	0.100 UJ	0.100 UJ	0.122 UJ	0.122 UJ
4,4'-DDD	UG/L	0.100 UJ	0.100 UJ	0.122 UJ	0.122 UJ
Endosulfan sulfate	UG/L	0.100 UJ	0.100 UJ	0.122 UJ	0.122 UJ
4,4'-DDT	UG/L	0.100 UJ	0.100 UJ	0.122 UJ	0.122 UJ
Methoxychlor	UG/L	0.500 UJ	0.500 UJ	0.61 UJ	0.02 J
Endrin ketone	UG/L	0.100 UJ	0.100 UJ	0.122 UJ	0.122 UJ
Endrin aldehyde	UG/L	0.100 UJ	0.100 UJ	0.122 UJ	0.122 UJ
alpha-Chlordane	UG/L	0.050 UJ	0.050 UJ	0.061 UJ	0.061 UJ
gamma-Chlordane	UG/L	0.050 UJ	0.050 UJ	0.061 UJ	0.061 UJ
Toxaphene	UG/L	5.00 UJ	5.00 UJ	6.1 UJ	6.1 UJ
Aroclor 1016	UG/L	1.00 UJ	1.00 UJ	1.22 UJ	1.22 UJ
Aroclor 1221	UG/L	2.00 UJ	2.00 UJ	2.44 UJ	2.44 UJ
Aroclor 1232	UG/L	1.00 UJ	1.00 UJ	1.22 UJ	1.22 UJ
Aroclor 1242	UG/L	1.00 UJ	1.00 UJ	1.22 UJ	1.22 UJ
Aroclor 1248	UG/L	1.00 UJ	1.00 UJ	1.22 UJ	1.22 UJ
Aroclor 1254	UG/L	1.00 UJ	1.00 UJ	1.22 UJ	1.22 UJ
Aroclor 1260	UG/L	1.00 UJ	1.00 UJ	1.22 UJ	1.22 UJ

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
GROUNDWATER
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-GW02-01	69-GW02-01D	69-GW02-DW-01	69-GW02DW-01D
Laboratory Sample ID:		9401128-01A	9401128-02A	9402153-01	9402153-04
Date Sampled:		01/22/94	01/22/94		
	UNITS				
CHEMICAL SURETY					
Acetophenone	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Chloroacetophenone	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
Hydroxyacetophenone	UG/L	85.0 U	100.0 U	66.6 U	55.6 U
Bis(2'-chloroethyl)disulfide	UG/L	85.0 U	100.0 U	66.6 U	55.6 U
Bis(2'-chloroethyl)trisulfide	UG/L	85.0 U	100.0 U	66.6 U	55.6 U
1,4-Dithiane	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
1,4-Oxathiane	UG/L	17.0 U	20.0 U	13.3 U	11.1 U
THIODIGLYCOL					
Thiodiglycol	UG/L	25.0 UJ	25.0 UJ	25 U	25 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 14 (SITE 69)
GROUNDWATER
MCB CAMP LEJEUNE, NORTH CAROLINA
· REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-GW13IW-04	69-GW13IWD-04
Laboratory Sample ID:		C5C280034006	C5C280034007
Date Sampled:		03/26/95	03/26/95
Percent Solids		NA	NA
	UNITS		
VOLATILES			
Chloromethane	UG/L	10 U	10 U
Bromomethane	UG/L	10 U	10 U
Vinyl Chloride	UG/L	10 U	10 U
Chloroethane	UG/L	10 U	10 U
Methylene chloride	UG/L	10 U	10 U
Acetone	UG/L	10 U	10 U
Carbon disulfide	UG/L	10 U	10 U
1,1-Dichloroethene	UG/L	10 U	10 U
1,1-Dichloroethane	UG/L	10 U	10 U
1,2-Dichloroethene (total)	UG/L	11	11
Chloroform	UG/L	10 U	10 U
1,2-Dichloroethane	UG/L	10 U	10 U
Methyl ethyl ketone	UG/L	10 U	10 U
1,1,1-Trichloroethane	UG/L	10 U	10 U
Carbon tetrachloride	UG/L	10 U	10 U
Bromodichloromethane	UG/L	10 U	10 U
1,2-Dichloropropane	UG/L	10 U	10 U
cis-1,3-Dichloropropene	UG/L	10 U	10 U
Trichloroethene	UG/L	10 U	10 U
Dibromochloromethane	UG/L	10 U	10 U
1,1,2-Trichloroethane	UG/L	10 U	10 U
Benzene	UG/L	10 U	10 U
trans-1,3-Dichloropropene	UG/L	10 U	10 U
Bromoform	UG/L	10 U	10 U
4-Methyl-2-Pentanone	UG/L	10 R	10 U
2-Hexanone	UG/L	10 U	10 U
Tetrachloroethene	UG/L	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U
Toluene	UG/L	10 U	10 U
Chlorobenzene	UG/L	10 U	10 U
Ethylbenzene	UG/L	10 U	10 U
Styrene	UG/L	10 U	10 U
Xylene (total)	UG/L	10 U	10 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
GROUNDWATER
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
TAL TOTAL METALS

Client Sample ID:		69-GW02-01	69-GW02-01D	69-GW02-DW-01	69-GW02DW-01D
Laboratory Sample ID:		9401128-01A	9401128-02A	9402153-01	9402153-04
Date Sampled:		01/22/94	01/22/94		
	UNITS				
Aluminum	UG/L	17500.0 J	11400.0 J	3030	3230 J
Antimony	UG/L	7.90 UJ	7.90 UJ	7.6 U	7.6 U
Arsenic	UG/L	2.90 UJ	2.90 UJ	2.2 U	3.79 J
Barium	UG/L	50.1	40.5	42.3	39.5
Beryllium	UG/L	1.29 U	1.29 U	0.76 U	0.76 U
Cadmium	UG/L	2.35 U	2.35 U	3.19 U	3.19 U
Calcium	UG/L	8690.0 J	8990.0 J	59300	59300
Chromium	UG/L	35.0	22.5	8.31 U	8.31 U
Cobalt	UG/L	19.4 U	19.4 U	16 U	16 U
Copper	UG/L	16.2 U	16.2 U	16.3 U	16.3 U
Iron	UG/L	71900.0 J	76400.0 J	5820	6520
Lead	UG/L	12.3	9.58	3.1	4.14 U
Magnesium	UG/L	1930.0	1680.0	2590	2640
Manganese	UG/L	102.0	105.0	53.7	55.7
Mercury	UG/L	0.100 U	0.100 U	0.174	0.164 U
Nickel	UG/L	13.6 U	14.6	28.8 U	28.8 U
Potassium	UG/L	1510.00 J	833.000 J	1850	2040
Selenium	UG/L	2.53 UJ	2.53 UJ	1.6 U	1.6 UJ
Silver	UG/L	0.400 UJ	0.400 UJ	1.6 U	1.6 U
Sodium	UG/L	14100.0	14400.0	33000	35000
Thallium	UG/L	4.60 UJ	4.60 U	3 U	3 U
Vanadium	UG/L	175.0	168.0	20.4 U	20.4 U
Zinc	UG/L	71.3 J	46.4 UJ	31.1	31.1 U
Total Cyanide	UG/L	5.00 U	5.00 U	5 U	5 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
GROUNDWATER
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
TAL DISSOLVED METALS

Client Sample ID:		69-GW02-01	69-GW02-01D	69-GW02DWD-01	69-GW02DWD-01D
Laboratory Sample ID:		9401129-01A	9401129-02A	9402153-03	9402153-05
Date Sampled:		01/22/94	01/22/94		
	UNITS				
Aluminum	UG/L	1070.0 J	957.0 J	139 UJ	139 UJ
Antimony	UG/L	9.40 J	12.40 J	7.6 U	7.6 U
Arsenic	UG/L	2.90 UJ	2.90 UJ	2.2 U	2.2 U
Barium	UG/L	22.5	22.9	19.8	19.3
Beryllium	UG/L	1.29 U	1.29 U	0.76 U	0.76 U
Cadmium	UG/L	2.35 U	2.35 U	3.19 U	3.19 U
Calcium	UG/L	9570.0 J	9610.0 J	37600	37900
Chromium	UG/L	7.35 U	7.35 U	8.31 U	8.31 U
Cobalt	UG/L	19.4 U	19.4 U	16 U	16 U
Copper	UG/L	16.2 U	16.2 U	16.3 U	16.3 U
Iron	UG/L	2920.0 J	2580.0 J	54.9 U	54.9 U
Lead	UG/L	1.00 U	1.00 U	1 U	1 U
Magnesium	UG/L	1180.0	1090.0	2130	2110
Manganese	UG/L	83.6	81.2	11.5	9.47
Mercury	UG/L	0.100 U	0.100 U	0.146 U	0.163 U
Nickel	UG/L	13.6 U	13.6 U	28.8 U	28.8 U
Potassium	UG/L	397.000 J	300.000 UJ	1670	2260
Selenium	UG/L	2.53 UJ	2.53 UJ	1.6 UJ	1.6 UJ
Silver	UG/L	0.400 UJ	0.400 UJ	1.6 U	1.6 U
Sodium	UG/L	15000.0	15200.0	34700	39800
Thallium	UG/L	4.60 U	4.60 U	3 U	3 U
Vanadium	UG/L	16.6 U	16.6 U	20.4 U	20.4 U
Zinc	UG/L	14.5 UJ	10.5 UJ	10.6 U	10.6 U
Total Cyanide	UG/L	N/A	N/A	N/A	N/A

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 14 (SITE 69)
GROUNDWATER ROUND TWO
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		60GW02	69GW02DD	69GW02A	69GW14IW	69GW14IWA
Laboratory Sample ID:		NA	NA	NA	NA	NA
Date Sampled:		02/24/95	02/24/95	02/24/95	02/23/95	02/23/95
Percent Solids		NA	NA	NA	NA	NA
	UNITS					
PURGEABLE HALOCARBONS 601						
Bromodichloromethane	ug/L	5 U	5 U	5 U	5 U	5 U
Bromoform	ug/L	5 U	5 U	5 U	5 U	5 U
Bromomethane	ug/L	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride	ug/L	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	ug/L	5 U	5 U	5 U	5 U	5 U
Chloroethane	ug/L	5 U	5 U	5 U	5 U	5 U
2-Chlorovinyl ether	ug/L	5 U	5 U	5 U	5 U	5 U
Chloroform	ug/L	5 U	5 U	5 U	5 U	5 U
Chloromethane	ug/L	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	ug/L	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	ug/L	5 U	5 U	5 U	5 U	5 U
1,3-Dichlorobenzene	ug/L	5 U	5 U	5 U	5 U	5 U
1,4-Dichlorobenzene	ug/L	5 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	ug/L	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	ug/L	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	ug/L	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	ug/L	5 U	5 U	5 U	5 U	5 U
trans-1,2-Dichloroethene	ug/L	230	5 U	120	5 U	5 U
1,2-Dichloropropane	ug/L	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene	ug/L	5 U	5 U	5 U	5 U	5 U
trans-1,3-Dichloropropene	ug/L	5 U	5 U	5 U	5 U	5 U
Methylene Chloride	ug/L	5 U	5 U	5 U	5 U	5 U
1,1,2,2,-Tetrachloroethane	ug/L	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	ug/L	5 U	5 U	5 U	5 U	5 U
Trichloroethene	ug/L	10	5 U	5	5 U	5 U
1,1,1-Trichloroethane	ug/L	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	ug/L	5 U	5 U	5 U	5 U	5 U
Trichlorofluoromethane	ug/L	5 U	5 U	5 U	5 U	5 U
Vinyl Chloride	ug/L	5	5 U	5 U	5 U	5 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
ONSITE AND DRAINAGE AREA SURFACE WATER
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-0S-SW01	69-0S-SW01D
Laboratory Sample ID:		9401042-01A	9401042-02A
Date Sampled:		01/08/94	01/07/94
	UNITS		
SEMIVOLATILES			
1,2-Dichlorobenzene	UG/L	10.4 U	10.4 U
1,2,4-Trichlorobenzene	UG/L	10.4 U	10.4 U
1,3-Dichlorobenzene	UG/L	10.4 U	10.4 U
1,4-Dichlorobenzene	UG/L	10.4 U	10.4 U
2-Chloronaphthalene	UG/L	10.4 U	10.4 U
2-Chlorophenol	UG/L	10.4 U	10.4 U
2-Methylnaphthalene	UG/L	10.4 U	10.4 U
2-Methylphenol	UG/L	10.4 U	4.00 J
2-Nitroaniline	UG/L	26.0 U	26.0 U
2-Nitrophenol	UG/L	10.4 U	10.4 U
2,2'-oxybis-(1-chloropropane)	UG/L	10.4 U	10.4 U
2,4-Dichlorophenol	UG/L	10.4 U	10.4 U
2,4-Dimethylphenol	UG/L	10.4 U	10.4 U
2,4-Dinitrophenol	UG/L	26.0 U	26.0 U
2,4-Dinitrotoluene	UG/L	10.4 U	10.4 U
2,4,5-Trichlorophenol	UG/L	26.0 U	26.0 U
2,4,6-Trichlorophenol	UG/L	10.4 U	10.4 U
2,6-Dinitrotoluene	UG/L	10.4 U	10.4 U
3-Nitroaniline	UG/L	26.0 U	26.0 U
3,3'-Dichlorobenzidine	UG/L	10.4 UJ	10.4 UJ
4-Bromophenyl-phenylether	UG/L	10.4 U	10.4 U
4-Chloro-3-methylphenol	UG/L	10.4 U	10.4 U
4-Chloroaniline	UG/L	10.4 U	10.4 U
4-Chlorophenyl phenyl ether	UG/L	10.4 U	10.4 U
4-Methylphenol	UG/L	10.4 U	10.4 U
4-Nitroaniline	UG/L	26.0 U	26.0 U
4-Nitrophenol	UG/L	26.0 U	26.0 U
4,6-Dinitro-2-methylphenol	UG/L	26.0 U	26.0 U
Acenaphthene	UG/L	10.4 U	10.4 U
Acenaphthylene	UG/L	10.4 U	10.4 U
Anthracene	UG/L	10.4 U	10.4 U
Benzo[a]anthracene	UG/L	10.4 U	10.4 U
Benzo[a]pyrene	UG/L	10.4 U	10.4 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
ONSITE AND DRAINAGE AREA SURFACE WATER
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-0S-SW01	69-0S-SW01D
Laboratory Sample ID:		9401042-01A	9401042-02A
Date Sampled:		01/08/94	01/07/94
	UNITS		
SEMIVOLATILES Cont.			
Benzo[b]fluoranthene	UG/L	10.4 U	10.4 U
Benzo[g,h,i]perylene	UG/L	10.4 U	10.4 U
Benzo[k]fluoranthene	UG/L	10.4 U	10.4 U
bis(2-Chloroethoxy) methane	UG/L	10.4 U	10.4 U
bis(2-Chloroethyl) ether	UG/L	10.4 U	11.0
bis(2-Ethylhexyl)phthalate	UG/L	10.4 U	10.4 U
Butyl benzyl phthalate	UG/L	10.4 U	10.4 U
Carbazole	UG/L	10.4 U	10.4 U
Chrysene	UG/L	10.4 U	10.4 U
Dibenzofuran	UG/L	10.4 U	10.4 U
Dibenz[a,h]anthracene	UG/L	10.4 U	10.4 U
Diethylphthalate	UG/L	10.4 U	10.4 U
Dimethyl phthalate	UG/L	10.4 U	10.4 U
di-n-Butylphthalate	UG/L	10.4 U	10.4 U
di-n-Octylphthalate	UG/L	10.4 U	10.4 U
Fluoranthene	UG/L	10.4 U	10.4 U
Fluorene	UG/L	10.4 U	10.4 U
Hexachlorobenzene	UG/L	10.4 U	10.4 U
Hexachlorobutadiene	UG/L	10.4 U	10.4 U
Hexachlorocyclopentadiene	UG/L	10.4 U	10.4 U
Hexachloroethane	UG/L	10.4 U	10.4 U
Indeno[1,2,3-cd]pyrene	UG/L	10.4 U	10.4 U
Isophorone	UG/L	10.4 U	10.4 U
Naphthalene	UG/L	10.4 U	10.4 U
Nitrobenzene	UG/L	10.4 U	10.4 U
N-Nitroso-di-n-propylamine	UG/L	10.4 U	10.4 U
N-nitrosodiphenylamine	UG/L	10.4 UJ	10.4 UJ
Pentachlorophenol	UG/L	26.0 U	26.0 U
Phenanthrene	UG/L	10.4 U	10.4 U
Phenol	UG/L	10.4 U	10.4 U
Pyrene	UG/L	10.4 U	10.4 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
ONSITE AND DRAINAGE AREA SURFACE WATER
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-0S-SW01	69-0S-SW01D
Laboratory Sample ID:		9401042-01A	9401042-02A
Date Sampled:		01/08/94	01/07/94
	UNITS		
VOLATILES			
Chloromethane	UG/L	10.0 U	10.0 U
Bromomethane	UG/L	10.0 U	10.0 U
Vinyl chloride	UG/L	8.00 J	7.00 J
Chloroethane	UG/L	10.0 U	10.0 U
Methylene chloride	UG/L	10.00 U	10.00 U
Acetone	UG/L	10.00 U	10.00 U
Carbon Disulfide	UG/L	10.0 U	10.0 U
1,1-Dichloroethene	UG/L	10.0 U	10.0 U
1,1-Dichloroethane	UG/L	10.0 U	10.0 U
1,2-Dichloroethene(total)	UG/L	55.0	49.0
Chloroform	UG/L	2.00 J	1.00 J
1,2-Dichloroethane	UG/L	10.0 U	10.0 U
2-Butanone	UG/L	10.0 U	10.0 U
1,1,1-Trichloroethane	UG/L	10.0 U	10.0 U
Carbon tetrachloride	UG/L	10.0 U	10.0 U
Bromodichloromethane	UG/L	10.0 U	10.0 U
1,2-Dichloropropane	UG/L	10.0 U	10.0 U
cis-1,3-Dichloropropene	UG/L	10.0 U	10.0 U
Trichloroethene	UG/L	4.00 J	3.00 J
Dibromochloromethane	UG/L	10.0 U	10.0 U
1,1,2-Trichloroethane	UG/L	10.0 U	10.0 U
Benzene	UG/L	10.0 U	10.0 U
trans-1,3-Dichloropropene	UG/L	10.0 U	10.0 U
Bromoform	UG/L	10.0 U	10.0 U
4-Methyl-2-pentanone	UG/L	10.0 U	10.0 U
2-Hexanone	UG/L	10.0 U	10.0 U
Tetrachloroethene	UG/L	10.0 U	10.0 U
1,1,2,2-Tetrachloroethane	UG/L	10.0 U	10.0 U
Toluene	UG/L	10.0 U	10.0 U
Chlorobenzene	UG/L	10.0 U	10.0 U
Ethylbenzene	UG/L	10.0 U	10.0 U
Styrene	UG/L	10.0 U	10.0 U
Xylenes (total)	UG/L	10.0 U	10.0 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
ONSITE AND DRAINAGE AREA SURFACE WATER
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-0S-SW01	69-0S-SW01D
Laboratory Sample ID:		9401042-01A	9401042-02A
Date Sampled:		01/08/94	01/07/94
	UNITS		
PESTICIDE/PCBS			
alpha-BHC	UG/L	0.052 UJ	0.050 UJ
beta-BHC	UG/L	0.052 UJ	0.050 UJ
delta-BHC	UG/L	0.052 UJ	0.050 UJ
Lindane (gamma-BHC)	UG/L	0.052 UJ	0.050 UJ
Heptachlor	UG/L	0.052 UJ	0.050 UJ
Aldrin	UG/L	0.052 UJ	0.050 UJ
Heptachlor epoxide	UG/L	0.052 UJ	0.050 UJ
Endosulfan I	UG/L	0.052 UJ	0.050 UJ
Dieldrin	UG/L	0.104 UJ	0.100 UJ
4,4'-DDE	UG/L	0.104 UJ	0.100 UJ
Endrin	UG/L	0.104 UJ	0.100 UJ
Endosulfan II	UG/L	0.104 UJ	0.100 UJ
4,4'-DDD	UG/L	0.104 UJ	0.100 UJ
Endosulfan sulfate	UG/L	0.104 UJ	0.100 UJ
4,4'-DDT	UG/L	0.104 UJ	0.100 UJ
Methoxychlor	UG/L	0.521 UJ	0.500 UJ
Endrin ketone	UG/L	0.104 UJ	0.100 UJ
Endrin aldehyde	UG/L	0.104 UJ	0.100 UJ
alpha-Chlordane	UG/L	0.052 UJ	0.050 UJ
gamma-Chlordane	UG/L	0.052 UJ	0.050 UJ
Toxaphene	UG/L	5.21 UJ	5.00 UJ
Aroclor 1016	UG/L	1.04 UJ	1.00 UJ
Aroclor 1221	UG/L	2.08 UJ	2.00 UJ
Aroclor 1232	UG/L	1.04 UJ	1.00 UJ
Aroclor 1242	UG/L	1.04 UJ	1.00 UJ
Aroclor 1248	UG/L	1.04 UJ	1.00 UJ
Aroclor 1254	UG/L	1.04 UJ	1.00 UJ
Aroclor 1260	UG/L	1.04 UJ	1.00 UJ

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
ONSITE AND DRAINAGE AREA SURFACE WATER
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-0S-SW01	69-0S-SW01D
Laboratory Sample ID:		9401042-01A	9401042-02A
Date Sampled:		01/08/94	01/07/94
	UNITS		
CHEMICAL SURETY			
Acetophenone	UG/L	10.4 U	10.4 U
Chloroacetophenone	UG/L	10.4 U	10.4 U
Hydroxyacetophenone	UG/L	52.0 U	52.0 U
Bis(2'-chloroethyl)disulfide	UG/L	52.0 U	52.0 U
Bis(2'-chloroethyl)trisulfide	UG/L	52.0 U	52.0 U
1,4-Dithiane	UG/L	10.4 U	10.4 U
1,4-Oxathiane	UG/L	10.4 U	10.4 U
THIODIGLYCOL			
Thiodiglycol	UG/L	25.0 UJ	25.0 UJ

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
ONSITE AND DRAINAGE AREA SURFACE WATER
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
TAL METALS

Client Sample ID:		69-0S-SW01	69-0S-SW01D
Laboratory Sample ID:		9401042-01A	9401042-02A
Date Sampled:		01/08/94	01/07/94
	UNITS		
Aluminum	UG/L	972.0	957.0
Antimony	UG/L	7.90 U	7.90 U
Arsenic	UG/L	2.90 U	2.90 U
Barium	UG/L	45.1	46.1
Beryllium	UG/L	1.30 U	1.30 U
Cadmium	UG/L	2.40 U	2.40 U
Calcium	UG/L	5770.0	5720.0
Chromium	UG/L	7.20 U	7.20 U
Cobalt	UG/L	19.4 U	19.4 U
Copper	UG/L	16.2 U	16.2 U
Iron	UG/L	1910.0	1970.0
Lead	UG/L	1.00 U	1.20
Magnesium	UG/L	1460.0	1470.0
Manganese	UG/L	339.0	339.0
Mercury	UG/L	0.200 U	0.200 U
Nickel	UG/L	13.6 U	13.6 U
Potassium	UG/L	365.0	365.0
Selenium	UG/L	2.50 U	2.50 U
Silver	UG/L	0.400 UJ	0.400 UJ
Sodium	UG/L	6440.0	6530.0
Thallium	UG/L	4.60 U	4.60 U
Vanadium	UG/L	16.6 U	16.6 U
Zinc	UG/L	4370.0	4190.0

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
ONSITE AND DRAINAGE AREA SEDIMENT
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-0S-SD01-06	69-0S-SD01-06D
Laboratory Sample ID:		9401043-06A	9401043-07A
Date Sampled:			
Percent Solids		48.2	51.5
SEMIVOLATILES			
1,2-Dichlorobenzene	UG/KG	3440 U	634 U
1,2,4-Trichlorobenzene	UG/KG	3440 U	634 U
1,3-Dichlorobenzene	UG/KG	3440 U	634 U
1,4-Dichlorobenzene	UG/KG	3440 U	634 U
2-Chloronaphthalene	UG/KG	3440 U	634 U
2-Chlorophenol	UG/KG	3440 U	634 U
2-Methylnaphthalene	UG/KG	3440 U	634 U
2-Methylphenol	UG/KG	3440 U	634 U
2-Nitroaniline	UG/KG	8340 U	1540 U
2-Nitrophenol	UG/KG	3440 U	634 U
2,2'-oxybis-(1-chloropropane)	UG/KG	3440 U	634 U
2,4-Dichlorophenol	UG/KG	3440 U	634 U
2,4-Dimethylphenol	UG/KG	3440 U	634 U
2,4-Dinitrophenol	UG/KG	8340 U	1540 U
2,4-Dinitrotoluene	UG/KG	3440 U	634 U
2,4,5-Trichlorophenol	UG/KG	8340 U	1540 U
2,4,6-Trichlorophenol	UG/KG	3440 U	634 U
2,6-Dinitrotoluene	UG/KG	3440 U	634 U
3-Nitroaniline	UG/KG	8340 U	1540 U
3,3'-Dichlorobenzidine	UG/KG	3440 U	634 UJ
4-Bromophenyl-phenylether	UG/KG	3440 U	634 U
4-Chloro-3-methylphenol	UG/KG	3440 U	634 U
4-Chloroaniline	UG/KG	3440 U	634 U
4-Chlorophenyl phenyl ether	UG/KG	3440 U	634 U
4-Methylphenol	UG/KG	3440 U	634 U
4-Nitroaniline	UG/KG	8340 U	1540 U
4-Nitrophenol	UG/KG	8340 U	1540 U
4,6-Dinitro-2-methylphenol	UG/KG	8340 U	1540 U
Acenaphthene	UG/KG	3440 U	634 U
Acenaphthylene	UG/KG	3440 U	634 U
Anthracene	UG/KG	3440 U	634 U
Benzo[a]anthracene	UG/KG	3440 U	634 U
Benzo[a]pyrene	UG/KG	3440 U	634 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
ONSITE AND DRAINAGE AREA SEDIMENT
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-0S-SD01-06	69-0S-SD01-06D
Laboratory Sample ID:		9401043-06A	9401043-07A
Date Sampled:			
Percent Solids		48.2	51.5
SEMIVOLATILES Cont.			
Benzo[b]fluoranthene	UG/KG	3440 U	634 U
Benzo[g,h,i]perylene	UG/KG	3440 U	634 U
Benzo[k]fluoranthene	UG/KG	3440 U	634 U
bis(2-Chloroethoxy) methane	UG/KG	3440 U	634 U
bis(2-Chloroethyl) ether	UG/KG	3440 U	634 U
bis(2-Ethylhexyl)phthalate	UG/KG	3440 U	634 U
Butyl benzyl phthalate	UG/KG	3440 U	634 U
Carbazole	UG/KG	3440 U	634 U
Chrysene	UG/KG	3440 U	634 U
Dibenzofuran	UG/KG	3440 U	634 U
Dibenz[a,h]anthracene	UG/KG	3440 U	634 U
Diethylphthalate	UG/KG	3440 U	634 U
Dimethyl phthalate	UG/KG	3440 U	634 U
di-n-Butylphthalate	UG/KG	3440 U	140 J
di-n-Octylphthalate	UG/KG	3440 U	634 U
Fluoranthene	UG/KG	3440 U	634 U
Fluorene	UG/KG	3440 U	634 U
Hexachlorobenzene	UG/KG	3440 U	634 U
Hexachlorobutadiene	UG/KG	3440 U	634 U
Hexachlorocyclopentadiene	UG/KG	3440 U	634 U
Hexachloroethane	UG/KG	3440 U	634 U
Indeno[1,2,3-cd]pyrene	UG/KG	3440 U	634 U
Isophorone	UG/KG	3440 U	634 U
Naphthalene	UG/KG	3440 U	634 U
Nitrobenzene	UG/KG	3440 U	634 U
N-Nitroso-di-n-propylamine	UG/KG	3440 U	634 U
N-nitrosodiphenylamine	UG/KG	3440 U	634 UJ
Pentachlorophenol	UG/KG	8340 U	1540 U
Phenanthrene	UG/KG	3440 U	634 U
Phenol	UG/KG	3440 U	634 U
Pyrene	UG/KG	3440 U	634 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
ONSITE AND DRAINAGE AREA SEDIMENT
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-0S-SD01-06	69-0S-SD01-06D
Laboratory Sample ID:		9401043-06A	9401043-07A
Date Sampled:			
Percent Solids		48.2	51.5
VOLATILES			
Chloromethane	UG/KG	21 U	19 U
Bromomethane	UG/KG	21 U	19 U
Vinyl chloride	UG/KG	21 U	19 U
Chloroethane	UG/KG	21 U	19 U
Methylene chloride	UG/KG	8 J	8 J
Acetone	UG/KG	9 J	19 U
Carbon Disulfide	UG/KG	21 U	19 U
1,1-Dichloroethene	UG/KG	21 U	19 U
1,1-Dichloroethane	UG/KG	21 U	19 U
1,2-Dichloroethene(total)	UG/KG	9 J	5 J
Chloroform	UG/KG	21 U	19 U
1,2-Dichloroethane	UG/KG	21 U	19 U
2-Butanone	UG/KG	21 U	19 U
1,1,1-Trichloroethane	UG/KG	21 U	19 U
Carbon tetrachloride	UG/KG	21 U	19 U
Bromodichloromethane	UG/KG	21 U	19 U
1,2-Dichloropropane	UG/KG	21 U	19 U
cis-1,3-Dichloropropene	UG/KG	21 U	19 U
Trichloroethene	UG/KG	21 U	19 U
Dibromochloromethane	UG/KG	21 U	19 U
1,1,2-Trichloroethane	UG/KG	21 U	19 U
Benzene	UG/KG	21 U	19 U
trans-1,3-Dichloropropene	UG/KG	21 U	19 U
Bromoform	UG/KG	21 U	19 U
4-Methyl-2-pentanone	UG/KG	21 U	19 U
2-Hexanone	UG/KG	21 U	19 U
Tetrachloroethene	UG/KG	21 U	19 U
1,1,2,2-Tetrachloroethane	UG/KG	21 U	19 U
Toluene	UG/KG	21 U	19 U
Chlorobenzene	UG/KG	21 U	19 U
Ethylbenzene	UG/KG	21 U	19 U
Styrene	UG/KG	21 U	19 U
Xylenes (total)	UG/KG	21 U	19 U

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
ONSITE AND DRAINAGE AREA SEDIMENT
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-0S-SD01-06	69-0S-SD01-06D
Laboratory Sample ID:		9401043-06A	9401043-07A
Date Sampled:			
Percent Solids		48.2	51.5
PESTICIDE/PCBS			
alpha-BHC	UG/KG	2.01 UJ	2.02 UJ
beta-BHC	UG/KG	2.01 UJ	2.02 UJ
delta-BHC	UG/KG	2.01 UJ	2.02 UJ
Lindane (gamma-BHC)	UG/KG	2.01 UJ	2.02 UJ
Heptachlor	UG/KG	2.01 UJ	2.02 UJ
Aldrin	UG/KG	2.01 UJ	2.02 UJ
Heptachlor epoxide	UG/KG	2.01 UJ	2.02 UJ
Endosulfan I	UG/KG	2.01 UJ	2.02 UJ
Dieldrin	UG/KG	3.89 UJ	3.93 UJ
4,4'-DDE	UG/KG	3.89 UJ	3.93 UJ
Endrin	UG/KG	3.89 UJ	3.93 UJ
Endosulfan II	UG/KG	3.89 UJ	3.93 UJ
4,4'-DDD	UG/KG	3.89 UJ	3.93 UJ
Endosulfan sulfate	UG/KG	3.89 UJ	3.93 UJ
4,4'-DDT	UG/KG	3.89 UJ	3.93 UJ
Methoxychlor	UG/KG	20.1 UJ	20.2 UJ
Endrin ketone	UG/KG	3.89 UJ	3.93 UJ
Endrin aldehyde	UG/KG	3.89 UJ	3.93 UJ
alpha-Chlordane	UG/KG	2.01 UJ	2.02 UJ
gamma-Chlordane	UG/KG	2 01 UJ	2.02 UJ
Toxaphene	UG/KG	201 UJ	202 UJ
Aroclor 1016	UG/KG	38.9 UJ	39.3 UJ
Aroclor 1221	UG/KG	79.1 UJ	79.7 UJ
Aroclor 1232	UG/KG	38.9 UJ	39.3 UJ
Aroclor 1242	UG/KG	38.9 UJ	39.3 UJ
Aroclor 1248	UG/KG	38.9 UJ	39.3 UJ
Aroclor 1254	UG/KG	79 J	125 J
Aroclor 1260	UG/KG	38.9 UJ	39.3 UJ

DUPLICATE SAMPLE SUMMARY
OPERABLE UNIT NO. 4 (SITE 69)
ONSITE AND DRAINAGE AREA SEDIMENT
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-0S-SD01-06	69-0S-SD01-06D
Laboratory Sample ID:		9401043-06A	9401043-07A
Date Sampled:			
Percent Solids		48.2	51.5
CHEMICAL SURETY			
Acetophenone	UG/KG	3440 U	634 U
Chloroacetophenone	UG/KG	3440 U	634 U
Hydroxyacetophenone	UG/KG	17200 U	3170 U
Bis(2'-chloroethyl)disulfide	UG/KG	17200 U	3170 U
Bis(2'-chloroethyl)trisulfide	UG/KG	17200 U	3170 U
1,4-Dithiane	UG/KG	3440 U	634 U
1,4-Oxathiane	UG/KG	3440 U	634 U
THIODIGLYCOL			
Thiodiglycol	MG/KG	12.9 U	12.1 U

APPENDIX L
QUALITY ASSURANCE/QUALITY CONTROL SUMMARY

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		41-RS-07	41-RS-09	41-RS-11	41-RS-13	69-TB-01	69-TB-02
Laboratory Sample ID:		9402081-04	9402118-01	9402131-03A	9402161-05A	9401025-04A	9401036-07A
Date Sampled:	UNITS	02/07/94	02/15/94	02/16/94	02/20/94	01/06/94	01/06/94
SEMIVOLATILES Cont.							
Benzo[b]fluoranthene	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Benzo[g,h,i]perylene	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Benzo[k]fluoranthene	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
bis(2-Chloroethoxy) methane	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
bis(2-Chloroethyl) ether	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
bis(2-Ethylhexyl)phthalate	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Butyl benzyl phthalate	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Carbazole	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Chrysene	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Dibenzofuran	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Dibenz[a,h]anthracene	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Diethylphthalate	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Dimethyl phthalate	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
di-n-Butylphthalate	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
di-n-Octylphthalate	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Fluoranthene	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Fluorene	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Hexachlorobenzene	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Hexachlorobutadiene	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Hexachlorocyclopentadiene	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Hexachloroethane	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Indeno[1,2,3-cd]pyrene	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Isophorone	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Naphthalene	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Nitrobenzene	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
N-Nitroso-di-n-propylamine	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
N-nitrosodiphenylamine	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Pentachlorophenol	UG/L	31.2 U	27.5 U	30.0 U	27.8 U	N/A	N/A
Phenanthrene	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Phenol	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A
Pyrene	UG/L	12.5 U	11.0 U	12.0 U	11.1 U	N/A	N/A

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		41-RS-07	41-RS-09	41-RS-11	41-RS-13	69-TB-01	69-TB-02
Laboratory Sample ID:		9402081-04	9402118-01	9402131-03A	9402161-05A	9401025-04A	9401036-07A
Date Sampled:		02/07/94	02/15/94	02/16/94	02/20/94	01/06/94	01/06/94
	UNITS						
VOLATILES							
Chloromethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Bromomethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Vinyl chloride	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Chloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Methylene chloride	UG/L	8.00 J	10.0 U	10.00 U	3.51 J	10.0 U	10.0 U
Acetone	UG/L	10.0 U	10.0 U	2.00 J	10.00 UJ	10.0 U	10.0 U
Carbon Disulfide	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1-Dichloroethene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1-Dichloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,2-Dichloroethene(total)	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Chloroform	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,2-Dichloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
2-Butanone	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1,1-Trichloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Carbon tetrachloride	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Bromodichloromethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,2-Dichloropropane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
cis-1,3-Dichloropropene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Trichloroethene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Dibromochloromethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1,2-Trichloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Benzene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
trans-1,3-Dichloropropene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Bromoform	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
4-Methyl-2-pentanone	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
2-Hexanone	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Tetrachloroethene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1,2,2-Tetrachloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Toluene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Chlorobenzene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Ethylbenzene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Styrene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Xylenes (total)	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		41-RS-07	41-RS-09	41-RS-11	41-RS-13	69-TB-01	69-TB-02
Laboratory Sample ID:		9402081-04	9402118-01	9402131-03A	9402161-05A	9401025-04A	9401036-07A
Date Sampled:		02/07/94	02/15/94	02/16/94	02/20/94	01/06/94	01/06/94
	UNITS						
PESTICIDE/PCBS							
alpha-BHC	UG/L	0.055 UJ	0.056 UJ	0.059 UJ	0.056 UJ	N/A	N/A
beta-BHC	UG/L	0.055 UJ	0.056 U	0.059 UJ	0.056 UJ	N/A	N/A
delta-BHC	UG/L	0.055 UJ	0.056 UJ	0.059 UJ	0.056 UJ	N/A	N/A
Lindane (gamma-BHC)	UG/L	0.055 UJ	0.056 U	0.059 UJ	0.056 UJ	N/A	N/A
Heptachlor	UG/L	0.055 UJ	0.020 J	0.030 J	0.056 UJ	N/A	N/A
Aldrin	UG/L	0.055 UJ	0.056 U	0.059 UJ	0.056 UJ	N/A	N/A
Heptachlor epoxide	UG/L	0.055 UJ	0.056 U	0.059 UJ	0.056 UJ	N/A	N/A
Endosulfan I	UG/L	0.055 UJ	0.056 U	0.059 UJ	0.056 UJ	N/A	N/A
Dieldrin	UG/L	0.110 UJ	0.111 U	0.118 UJ	0.111 UJ	N/A	N/A
4,4'-DDE	UG/L	0.110 UJ	0.111 U	0.118 UJ	0.111 UJ	N/A	N/A
Endrin	UG/L	0.110 UJ	0.111 U	0.118 UJ	0.111 UJ	N/A	N/A
Endosulfan II	UG/L	0.110 UJ	0.111 U	0.118 UJ	0.111 UJ	N/A	N/A
4,4'-DDD	UG/L	0.110 UJ	0.111 U	0.118 UJ	0.111 UJ	N/A	N/A
Endosulfan sulfate	UG/L	0.110 UJ	0.111 U	0.118 UJ	0.111 UJ	N/A	N/A
4,4'-DDT	UG/L	0.110 UJ	0.111 U	0.118 UJ	0.111 UJ	N/A	N/A
Methoxychlor	UG/L	0.550 UJ	0.556 U	0.588 UJ	0.556 UJ	N/A	N/A
Endrin ketone	UG/L	0.110 UJ	0.111 U	0.118 UJ	0.111 UJ	N/A	N/A
Endrin aldehyde	UG/L	0.110 UJ	0.111 U	0.118 UJ	0.111 UJ	N/A	N/A
alpha-Chlordane	UG/L	0.055 UJ	0.056 U	0.059 UJ	0.056 UJ	N/A	N/A
gamma-Chlordane	UG/L	0.055 UJ	0.056 U	0.059 UJ	0.056 UJ	N/A	N/A
Toxaphene	UG/L	5.50 UJ	5.56 U	5.88 UJ	5.56 UJ	N/A	N/A
Aroclor 1016	UG/L	1.10 UJ	1.11 U	1.18 UJ	1.11 UJ	N/A	N/A
Aroclor 1221	UG/L	2.20 UJ	2.22 U	2.35 UJ	2.22 UJ	N/A	N/A
Aroclor 1232	UG/L	1.10 UJ	1.11 U	1.18 UJ	1.11 UJ	N/A	N/A
Aroclor 1242	UG/L	1.10 UJ	1.11 U	1.18 UJ	1.11 UJ	N/A	N/A
Aroclor 1248	UG/L	1.10 UJ	1.11 U	1.18 UJ	1.11 UJ	N/A	N/A
Aroclor 1254	UG/L	1.10 UJ	1.11 U	1.18 UJ	1.11 UJ	N/A	N/A
Aroclor 1260	UG/L	1.10 UJ	1.11 U	1.18 UJ	1.11 UJ	N/A	N/A

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		41-RS-07	41-RS-09	41-RS-11	41-RS-13	69-TB-01	69-TB-02
Laboratory Sample ID:		9402081-04	9402118-01	9402131-03A	9402161-05A	9401025-04A	9401036-07A
Date Sampled:		02/07/94	02/15/94	02/16/94	02/20/94	01/06/94	01/06/94
	UNITS						
CHEMICAL SURETY							
Acetophenone	UG/L	N/A	11.0 U	N/A	11.1 U	N/A	N/A
Chloroacetophenone	UG/L	N/A	11.0 U	N/A	11.1 U	N/A	N/A
Hydroxyacetophenone	UG/L	N/A	55.0 U	N/A	55.6 U	N/A	N/A
Bis(2'-chloroethyl)disulfide	UG/L	N/A	55.0 U	N/A	55.6 U	N/A	N/A
Bis(2'-chloroethyl)trisulfide	UG/L	N/A	55.0 U	N/A	55.6 U	N/A	N/A
1,4-Dithiane	UG/L	N/A	11.0 U	N/A	11.1 U	N/A	N/A
1,4-Oxathiane	UG/L	N/A	11.0 U	N/A	11.1 U	N/A	N/A
THIODIGLYCOL							
Thiodiglycol	UG/L	N/A	25.0 U	N/A	25.0 U	N/A	N/A
ORDNANCE							
1,3,5-Trinitrobenzene	UG/L	N/A	0.500 U	N/A	0.500 U	N/A	N/A
1,3-Dinitrobenzene	UG/L	N/A	0.500 U	N/A	0.500 U	N/A	N/A
2,4,6-Trinitrotoluene	UG/L	N/A	0.500 U	N/A	0.500 U	N/A	N/A
2,4-Dinitrotoluene	UG/L	N/A	0.500 U	N/A	0.500 U	N/A	N/A
2,6-Dinitrotoluene	UG/L	N/A	0.500 U	N/A	0.500 U	N/A	N/A
2-Amino-4,6-dinitrotoluene	UG/L	N/A	0.030 U	N/A	0.030 U	N/A	N/A
2-Nitrotoluene	UG/L	N/A	0.500 U	N/A	0.500 U	N/A	N/A
3-Nitrotoluene	UG/L	N/A	0.500 U	N/A	0.500 U	N/A	N/A
4-Amino-2,6-dinitrotoluene	UG/L	N/A	0.020 U	N/A	0.020 U	N/A	N/A
4-Nitrotoluene	UG/L	N/A	0.500 U	N/A	0.500 U	N/A	N/A
HMX	UG/L	N/A	1.25 U	N/A	1.25 U	N/A	N/A
Nitrobenzene	UG/L	N/A	0.500 U	N/A	0.500 U	N/A	N/A
RDX	UG/L	N/A	0.500 U	N/A	0.500 U	N/A	N/A
Tetryl	UG/L	N/A	0.500 UJ	N/A	0.500 U	N/A	N/A
MIREX							
Mirex	UG/L	62.0 UJ	55.0 U	N/A	55.6 U	N/A	N/A

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-TB-03	69-TB-05	69-TB-06	69-TB-07	69-TB-08	69-TB-09
Laboratory Sample ID:		9401040-04A	9401042-04A	9401053-05A	9401052-06A	9401081-03A	9401117-06A
Date Sampled:		01/08/94	01/08/94	01/10/94	01/10/94	01/11/94	01/21/94
	UNITS						
SEMIVOLATILES							
1,2-Dichlorobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
1,2,4-Trichlorobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
1,3-Dichlorobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
1,4-Dichlorobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Chloronaphthalene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Chlorophenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Methylnaphthalene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Methylphenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Nitroaniline	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Nitrophenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,2'-oxybis-(1-chloropropane)	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dichlorophenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dimethylphenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dinitrophenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4,5-Trichlorophenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4,6-Trichlorophenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,6-Dinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
3-Nitroaniline	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Bromophenyl-phenylether	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Chloro-3-methylphenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Chloroaniline	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Chlorophenyl phenyl ether	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Methylphenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Nitroaniline	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Nitrophenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4,6-Dinitro-2-methylphenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Acenaphthene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Acenaphthylene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Anthracene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Benzo[a]anthracene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Benzo[a]pyrene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-TB-03	69-TB-05	69-TB-06	69-TB-07	69-TB-08	69-TB-09
Laboratory Sample ID:		9401040-04A	9401042-04A	9401053-05A	9401052-06A	9401081-03A	9401117-06A
Date Sampled:		01/08/94	01/08/94	01/10/94	01/10/94	01/11/94	01/21/94
	UNITS						
SEMIVOLATILES Cont.							
Benzo[b]fluoranthene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Benzo[g,h,i]perylene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Benzo[k]fluoranthene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
bis(2-Chloroethoxy) methane	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
bis(2-Chloroethyl) ether	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
bis(2-Ethylhexyl)phthalate	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Butyl benzyl phthalate	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Carbazole	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Chrysene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Dibenzofuran	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Dibenz[a,h]anthracene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Diethylphthalate	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Dimethyl phthalate	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
di-n-Butylphthalate	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
di-n-Octylphthalate	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Fluoranthene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Fluorene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Hexachlorobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Hexachlorobutadiene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Hexachlorocyclopentadiene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Hexachloroethane	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Indeno[1,2,3-cd]pyrene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Isophorone	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Naphthalene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
N-Nitroso-di-n-propylamine	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
N-nitrosodiphenylamine	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Pentachlorophenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Phenanthrene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Phenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Pyrene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-TB-03	69-TB-05	69-TB-06	69-TB-07	69-TB-08	69-TB-09
Laboratory Sample ID:		9401040-04A	9401042-04A	9401053-05A	9401052-06A	9401081-03A	9401117-06A
Date Sampled:		01/08/94	01/08/94	01/10/94	01/10/94	01/11/94	01/21/94
	UNITS						
VOLATILES							
Chloromethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Bromomethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Vinyl chloride	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Chloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Methylene chloride	UG/L	10.00 U	10.00 U	1.00 J	10.0 U	11.0 U	10.00 U
Acetone	UG/L	10.0 U	10.00 U	10.0 U	10.0 U	14.0 U	19.0 J
Carbon Disulfide	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1-Dichloroethene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1-Dichloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,2-Dichloroethene(total)	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Chloroform	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,2-Dichloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
2-Butanone	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1,1-Trichloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Carbon tetrachloride	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Bromodichloromethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,2-Dichloropropane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
cis-1,3-Dichloropropene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Trichloroethene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Dibromochloromethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1,2-Trichloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Benzene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
trans-1,3-Dichloropropene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Bromoform	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
4-Methyl-2-pentanone	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
2-Hexanone	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Tetrachloroethene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1,2,2-Tetrachloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Toluene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Chlorobenzene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Ethylbenzene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Styrene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Xylenes (total)	UG/L	10.0 U	10.0 U	4.00 J	10.0 U	10.0 U	10.0 U

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-TB-03	69-TB-05	69-TB-06	69-TB-07	69-TB-08	69-TB-09
Laboratory Sample ID:		9401040-04A	9401042-04A	9401053-05A	9401052-06A	9401081-03A	9401117-06A
Date Sampled:		01/08/94	01/08/94	01/10/94	01/10/94	01/11/94	01/21/94
	UNITS						
PESTICIDE/PCBS							
alpha-BHC	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
beta-BHC	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
delta-BHC	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Lindane (gamma-BHC)	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Heptachlor	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Aldrin	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Heptachlor epoxide	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Endosulfan I	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Dieldrin	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4,4'-DDE	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Endrin	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Endosulfan II	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4,4'-DDD	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Endosulfan sulfate	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4,4'-DDT	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Methoxychlor	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Endrin ketone	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Endrin aldehyde	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
alpha-Chlordane	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
gamma-Chlordane	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Toxaphene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1016	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1221	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1232	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1242	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1248	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1254	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Aroclor 1260	UG/L	N/A	N/A	N/A	N/A	N/A	N/A

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-TB-03	69-TB-05	69-TB-06	69-TB-07	69-TB-08	69-TB-09
Laboratory Sample ID:		9401040-04A	9401042-04A	9401053-05A	9401052-06A	9401081-03A	9401117-06A
Date Sampled:		01/08/94	01/08/94	01/10/94	01/10/94	01/11/94	01/21/94
	UNITS						
CHEMICAL SURETY							
Acetophenone	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Chloroacetophenone	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Hydroxyacetophenone	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Bis(2'-chloroethyl)disulfide	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Bis(2'-chloroethyl)trisulfide	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
1,4-Dithiane	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
1,4-Oxathiane	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
THIODIGLYCOL							
Thiodiglycol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
ORDNANCE							
1,3,5-Trinitrobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
1,3-Dinitrobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4,6-Trinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,6-Dinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Amino-4,6-dinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Nitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
3-Nitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Amino-2,6-dinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Nitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
HMX	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
RDX	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Tetryl	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
MIREX							
Mirex	UG/L	N/A	N/A	N/A	N/A	N/A	N/A

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-TB-10	69-TB-11	69-TB-12	69-RS-01	69-RS-03	69-RS-05
Laboratory Sample ID:		9401118-05A	9401130-08A	9402153-08	9401025-06A	9401117-05A	9401128-04A
Date Sampled:		01/22/94	01/23/94	02/18/94	01/06/94	01/21/94	01/23/94
	UNITS						
SEMIVOLATILES							
1,2-Dichlorobenzene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
1,2,4-Trichlorobenzene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
1,3-Dichlorobenzene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
1,4-Dichlorobenzene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
2-Chloronaphthalene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
2-Chlorophenol	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
2-Methylnaphthalene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
2-Methylphenol	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
2-Nitroaniline	UG/L	N/A	N/A	N/A	25.0 U	27.8 U	27.5 U
2-Nitrophenol	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
2,2'-oxybis-(1-chloropropane)	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
2,4-Dichlorophenol	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
2,4-Dimethylphenol	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
2,4-Dinitrophenol	UG/L	N/A	N/A	N/A	25.0 U	27.8 U	27.5 UJ
2,4-Dinitrotoluene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
2,4,5-Trichlorophenol	UG/L	N/A	N/A	N/A	25.0 U	27.8 U	27.5 U
2,4,6-Trichlorophenol	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
2,6-Dinitrotoluene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
3-Nitroaniline	UG/L	N/A	N/A	N/A	25.0 U	27.8 U	27.5 U
3,3'-Dichlorobenzidine	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
4-Bromophenyl-phenylether	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
4-Chloro-3-methylphenol	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
4-Chloroaniline	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
4-Chlorophenyl phenyl ether	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
4-Methylphenol	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
4-Nitroaniline	UG/L	N/A	N/A	N/A	25.0 U	27.8 U	27.5 U
4-Nitrophenol	UG/L	N/A	N/A	N/A	25.0 U	27.8 U	27.5 U
4,6-Dinitro-2-methylphenol	UG/L	N/A	N/A	N/A	25.0 U	27.8 U	27.5 U
Acenaphthene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Acenaphthylene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Anthracene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Benzo[a]anthracene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Benzo[a]pyrene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-TB-10	69-TB-11	69-TB-12	69-RS-01	69-RS-03	69-RS-05
Laboratory Sample ID:		9401118-05A	9401130-08A	9402153-08	9401025-06A	9401117-05A	9401128-04A
Date Sampled:		01/22/94	01/23/94	02/18/94	01/06/94	01/21/94	01/23/94
	UNITS						
SEMIVOLATILES Cont.							
Benzo[b]fluoranthene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Benzo[g,h,i]perylene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Benzo[k]fluoranthene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
bis(2-Chloroethoxy) methane	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
bis(2-Chloroethyl) ether	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
bis(2-Ethylhexyl)phthalate	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Butyl benzyl phthalate	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Carbazole	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Chrysene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Dibenzofuran	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Dibenz[a,h]anthracene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Diethylphthalate	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Dimethyl phthalate	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
di-n-Butylphthalate	UG/L	N/A	N/A	N/A	10.0 U	1.00 J	1.00 J
di-n-Octylphthalate	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Fluoranthene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Fluorene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Hexachlorobenzene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Hexachlorobutadiene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Hexachlorocyclopentadiene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 UJ
Hexachloroethane	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Indeno[1,2,3-cd]pyrene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Isophorone	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Naphthalene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Nitrobenzene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
N-Nitroso-di-n-propylamine	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
N-nitrosodiphenylamine	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Pentachlorophenol	UG/L	N/A	N/A	N/A	25.0 U	27.8 U	27.5 U
Phenanthrene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Phenol	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Pyrene	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-TB-10	69-TB-11	69-TB-12	69-RS-01	69-RS-03	69-RS-05
Laboratory Sample ID:		9401118-05A	9401130-08A	9402153-08	9401025-06A	9401117-05A	9401128-04A
Date Sampled:		01/22/94	01/23/94	02/18/94	01/06/94	01/21/94	01/23/94
	UNITS						
VOLATILES							
Chloromethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Bromomethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Vinyl chloride	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Chloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Methylene chloride	UG/L	10.00 U	10.00 U	10.00 U	10.0 U	10.00 U	16.0 U
Acetone	UG/L	10.00 U	10.00 U	10.0 U	10.0 U	190.0 J	10.00 U
Carbon Disulfide	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1-Dichloroethene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1-Dichloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,2-Dichloroethene(total)	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Chloroform	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,2-Dichloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
2-Butanone	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1,1-Trichloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Carbon tetrachloride	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Bromodichloromethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,2-Dichloropropane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
cis-1,3-Dichloropropene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Trichloroethene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Dibromochloromethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1,2-Trichloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Benzene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
trans-1,3-Dichloropropene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Bromoform	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
4-Methyl-2-pentanone	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
2-Hexanone	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Tetrachloroethene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1,2,2-Tetrachloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Toluene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Chlorobenzene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Ethylbenzene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Styrene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Xylenes (total)	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-TB-10	69-TB-11	69-TB-12	69-RS-01	69-RS-03	69-RS-05
Laboratory Sample ID:		9401118-05A	9401130-08A	9402153-08	9401025-06A	9401117-05A	9401128-04A
Date Sampled:		01/22/94	01/23/94	02/18/94	01/06/94	01/21/94	01/23/94
	UNITS						
PESTICIDE/PCBS							
alpha-BHC	UG/L	N/A	N/A	N/A	0.058 U	0.055 UJ	0.050 U
beta-BHC	UG/L	N/A	N/A	N/A	0.058 U	0.055 U	0.050 U
delta-BHC	UG/L	N/A	N/A	N/A	0.058 UJ	0.055 UJ	0.050 U
Lindane (gamma-BHC)	UG/L	N/A	N/A	N/A	0.058 U	0.055 U	0.050 U
Heptachlor	UG/L	N/A	N/A	N/A	0.058 U	0.055 U	0.010 J
Aldrin	UG/L	N/A	N/A	N/A	0.058 U	0.055 U	0.050 U
Heptachlor epoxide	UG/L	N/A	N/A	N/A	0.058 U	0.055 U	0.050 U
Endosulfan I	UG/L	N/A	N/A	N/A	0.058 U	0.055 U	0.050 U
Dieldrin	UG/L	N/A	N/A	N/A	0.116 U	0.110 U	0.100 U
4,4'-DDE	UG/L	N/A	N/A	N/A	0.116 U	0.110 U	0.100 U
Endrin	UG/L	N/A	N/A	N/A	0.116 U	0.110 U	0.100 U
Endosulfan II	UG/L	N/A	N/A	N/A	0.116 U	0.110 U	0.100 U
4,4'-DDD	UG/L	N/A	N/A	N/A	0.116 U	0.110 U	0.100 U
Endosulfan sulfate	UG/L	N/A	N/A	N/A	0.116 U	0.110 U	0.100 U
4,4'-DDT	UG/L	N/A	N/A	N/A	0.116 U	0.110 U	0.100 U
Methoxychlor	UG/L	N/A	N/A	N/A	0.580 U	0.550 U	0.500 U
Endrin ketone	UG/L	N/A	N/A	N/A	0.116 UJ	0.110 U	0.100 U
Endrin aldehyde	UG/L	N/A	N/A	N/A	0.116 U	0.110 U	0.100 U
alpha-Chlordane	UG/L	N/A	N/A	N/A	0.058 UJ	0.055 U	0.050 U
gamma-Chlordane	UG/L	N/A	N/A	N/A	0.058 U	0.055 U	0.050 U
Toxaphene	UG/L	N/A	N/A	N/A	5.80 U	5.50 U	5.00 U
Aroclor 1016	UG/L	N/A	N/A	N/A	1.16 U	1.10 U	1.00 U
Aroclor 1221	UG/L	N/A	N/A	N/A	2.32 U	2.20 U	2.00 U
Aroclor 1232	UG/L	N/A	N/A	N/A	1.16 U	1.10 U	1.00 U
Aroclor 1242	UG/L	N/A	N/A	N/A	1.16 U	1.10 U	1.00 U
Aroclor 1248	UG/L	N/A	N/A	N/A	1.16 U	1.10 U	1.00 U
Aroclor 1254	UG/L	N/A	N/A	N/A	1.16 U	1.10 U	1.00 U
Aroclor 1260	UG/L	N/A	N/A	N/A	1.16 U	1.10 U	1.00 U

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-TB-10	69-TB-11	69-TB-12	69-RS-01	69-RS-03	69-RS-05
Laboratory Sample ID:		9401118-05A	9401130-08A	9402153-08	9401025-06A	9401117-05A	9401128-04A
Date Sampled:		01/22/94	01/23/94	02/18/94	01/06/94	01/21/94	01/23/94
	UNITS						
CHEMICAL SURETY							
Acetophenone	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Chloroacetophenone	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
Hydroxyacetophenone	UG/L	N/A	N/A	N/A	50.0 U	55.5 U	55.0 U
Bis(2'-chloroethyl)disulfide	UG/L	N/A	N/A	N/A	50.0 U	55.5 U	55.0 U
Bis(2'-chloroethyl)trisulfide	UG/L	N/A	N/A	N/A	50.0 U	55.5 U	55.0 U
1,4-Dithiane	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
1,4-Oxathiane	UG/L	N/A	N/A	N/A	10.0 U	11.1 U	11.0 U
THIODIGLYCOL							
Thiodiglycol	UG/L	N/A	N/A	N/A	25.0 U	25.0 U	25.0 U
ORDNANCE							
1,3,5-Trinitrobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
1,3-Dinitrobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4,6-Trinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,6-Dinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Amino-4,6-dinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Nitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
3-Nitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Amino-2,6-dinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Nitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
HMX	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
RDX	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Tetryl	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
MIREX							
Mirex	UG/L	N/A	N/A	N/A	N/A	N/A	N/A

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-RS-06	69-FB-01	69-FB-02	74-TB-01	74-TB-02	74-TB-03
Laboratory Sample ID:		9402150-03	9401036-05A	9401036-06A	9401066-03	9401079-01	9401101-05
Date Sampled:		02/18/94	01/06/94	01/06/94	01/11/94	01/12/94	01/18/94
	UNITS						
SEMIVOLATILES							
1,2-Dichlorobenzene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
1,2,4-Trichlorobenzene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
1,3-Dichlorobenzene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
1,4-Dichlorobenzene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
2-Chloronaphthalene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
2-Chlorophenol	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
2-Methylnaphthalene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
2-Methylphenol	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
2-Nitroaniline	UG/L	25.8 U	25.0 U	25.0 U	N/A	N/A	N/A
2-Nitrophenol	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
2,2'-oxybis-(1-chloropropane)	UG/L	10.3 UJ	10.0 U	10.0 U	N/A	N/A	N/A
2,4-Dichlorophenol	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
2,4-Dimethylphenol	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
2,4-Dinitrophenol	UG/L	25.8 U	25.0 U	25.0 U	N/A	N/A	N/A
2,4-Dinitrotoluene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
2,4,5-Trichlorophenol	UG/L	25.8 U	25.0 U	25.0 U	N/A	N/A	N/A
2,4,6-Trichlorophenol	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
2,6-Dinitrotoluene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
3-Nitroaniline	UG/L	25.8 U	25.0 U	25.0 U	N/A	N/A	N/A
3,3'-Dichlorobenzidine	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
4-Bromophenyl-phenylether	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
4-Chloro-3-methylphenol	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
4-Chloroaniline	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
4-Chlorophenyl phenyl ether	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
4-Methylphenol	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
4-Nitroaniline	UG/L	25.8 R	25.0 U	25.0 U	N/A	N/A	N/A
4-Nitrophenol	UG/L	25.8 U	25.0 U	25.0 U	N/A	N/A	N/A
4,6-Dinitro-2-methylphenol	UG/L	25.8 U	25.0 U	25.0 U	N/A	N/A	N/A
Acenaphthene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Acenaphthylene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Anthracene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Benzo[a]anthracene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Benzo[a]pyrene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-RS-06	69-FB-01	69-FB-02	74-TB-01	74-TB-02	74-TB-03
Laboratory Sample ID:		9402150-03	9401036-05A	9401036-06A	9401066-03	9401079-01	9401101-05
Date Sampled:		02/18/94	01/06/94	01/06/94	01/11/94	01/12/94	01/18/94
	UNITS						
SEMIVOLATILES Cont.							
Benzo[b]fluoranthene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Benzo[g,h,i]perylene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Benzo[k]fluoranthene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
bis(2-Chloroethoxy) methane	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
bis(2-Chloroethyl) ether	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
bis(2-Ethylhexyl)phthalate	UG/L	10.3 U	4.00 J	10.0 U	N/A	N/A	N/A
Butyl benzyl phthalate	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Carbazole	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Chrysene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Dibenzofuran	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Dibenz[a,h]anthracene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Diethylphthalate	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Dimethyl phthalate	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
di-n-Butylphthalate	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
di-n-Octylphthalate	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Fluoranthene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Fluorene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Hexachlorobenzene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Hexachlorobutadiene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Hexachlorocyclopentadiene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Hexachloroethane	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Indeno[1,2,3-cd]pyrene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Isophorone	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Naphthalene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Nitrobenzene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
N-Nitroso-di-n-propylamine	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
N-nitrosodiphenylamine	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Pentachlorophenol	UG/L	25.8 U	25.0 U	25.0 U	N/A	N/A	N/A
Phenanthrene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Phenol	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Pyrene	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-RS-06	69-FB-01	69-FB-02	74-TB-01	74-TB-02	74-TB-03
Laboratory Sample ID:		9402150-03	9401036-05A	9401036-06A	9401066-03	9401079-01	9401101-05
Date Sampled:		02/18/94	01/06/94	01/06/94	01/11/94	01/12/94	01/18/94
	UNITS						
VOLATILES							
Chloromethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Bromomethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Vinyl chloride	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Chloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Methylene chloride	UG/L	10.00 U	10.0 U	10.0 U	1.00 J	4.00 J	10.00 U
Acetone	UG/L	10.00 U	10.0 U	10.0 U	10.0 U	10.0 U	10.00 U
Carbon Disulfide	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1-Dichloroethene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1-Dichloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,2-Dichloroethene(total)	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Chloroform	UG/L	10.0 U	10.0 J	10.0 U	10.0 U	10.0 U	10.0 U
1,2-Dichloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
2-Butanone	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1,1-Trichloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Carbon tetrachloride	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Bromodichloromethane	UG/L	10.0 U	4.00 J	10.0 U	10.0 U	10.0 U	10.0 U
1,2-Dichloropropane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
cis-1,3-Dichloropropene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Trichloroethene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Dibromochloromethane	UG/L	10.0 U	2.00 J	10.0 U	10.0 U	10.0 U	10.0 U
1,1,2-Trichloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Benzene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
trans-1,3-Dichloropropene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Bromoform	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
4-Methyl-2-pentanone	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
2-Hexanone	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Tetrachloroethene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
1,1,2,2-Tetrachloroethane	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Toluene	UG/L	10.0 U	1.00 J	10.0 U	10.0 U	10.0 U	10.0 U
Chlorobenzene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Ethylbenzene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Styrene	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U
Xylenes (total)	UG/L	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U	10.0 U

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-RS-06	69-FB-01	69-FB-02	74-TB-01	74-TB-02	74-TB-03
Laboratory Sample ID:		9402150-03	9401036-05A	9401036-06A	9401066-03	9401079-01	9401101-05
Date Sampled:		02/18/94	01/06/94	01/06/94	01/11/94	01/12/94	01/18/94
	UNITS						
PESTICIDE/PCBS							
alpha-BHC	UG/L	0.054 UJ	0.050 U	0.056 U	N/A	N/A	N/A
beta-BHC	UG/L	0.054 UJ	0.050 U	0.056 U	N/A	N/A	N/A
delta-BHC	UG/L	0.054 U	0.050 UJ	0.056 UJ	N/A	N/A	N/A
Lindane (gamma-BHC)	UG/L	0.054 U	0.050 U	0.056 U	N/A	N/A	N/A
Heptachlor	UG/L	0.020 J	0.050 U	0.056 U	N/A	N/A	N/A
Aldrin	UG/L	0.054 U	0.050 U	0.056 U	N/A	N/A	N/A
Heptachlor epoxide	UG/L	0.054 U	0.050 U	0.056 U	N/A	N/A	N/A
Endosulfan I	UG/L	0.054 U	0.050 U	0.056 U	N/A	N/A	N/A
Dieldrin	UG/L	0.109 U	0.101 U	0.113 U	N/A	N/A	N/A
4,4'-DDE	UG/L	0.109 U	0.101 U	0.113 U	N/A	N/A	N/A
Endrin	UG/L	0.109 U	0.101 U	0.113 U	N/A	N/A	N/A
Endosulfan II	UG/L	0.109 U	0.101 U	0.113 U	N/A	N/A	N/A
4,4'-DDD	UG/L	0.109 U	0.101 U	0.113 U	N/A	N/A	N/A
Endosulfan sulfate	UG/L	0.109 U	0.101 U	0.113 U	N/A	N/A	N/A
4,4'-DDT	UG/L	0.109 U	0.101 U	0.113 U	N/A	N/A	N/A
Methoxychlor	UG/L	0.543 UJ	0.505 U	0.565 U	N/A	N/A	N/A
Endrin ketone	UG/L	0.109 U	0.101 UJ	0.113 UJ	N/A	N/A	N/A
Endrin aldehyde	UG/L	0.109 U	0.101 U	0.113 U	N/A	N/A	N/A
alpha-Chlordane	UG/L	0.054 U	0.050 UJ	0.056 UJ	N/A	N/A	N/A
gamma-Chlordane	UG/L	0.054 U	0.050 U	0.056 U	N/A	N/A	N/A
Toxaphene	UG/L	5.43 U	5.05 U	5.65 U	N/A	N/A	N/A
Aroclor 1016	UG/L	1.09 U	1.01 U	1.13 U	N/A	N/A	N/A
Aroclor 1221	UG/L	2.17 U	2.02 U	2.26 U	N/A	N/A	N/A
Aroclor 1232	UG/L	1.09 U	1.01 U	1.13 U	N/A	N/A	N/A
Aroclor 1242	UG/L	1.09 U	1.01 U	1.13 U	N/A	N/A	N/A
Aroclor 1248	UG/L	1.09 U	1.01 U	1.13 U	N/A	N/A	N/A
Aroclor 1254	UG/L	1.09 U	1.01 U	1.13 U	N/A	N/A	N/A
Aroclor 1260	UG/L	1.09 U	1.01 U	1.13 U	N/A	N/A	N/A

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		69-RS-06	69-FB-01	69-FB-02	74-TB-01	74-TB-02	74-TB-03
Laboratory Sample ID:		9402150-03	9401036-05A	9401036-06A	9401066-03	9401079-01	9401101-05
Date Sampled:		02/18/94	01/06/94	01/06/94	01/11/94	01/12/94	01/18/94
	UNITS						
CHEMICAL SURETY							
Acetophenone	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Chloroacetophenone	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
Hydroxyacetophenone	UG/L	51.6 U	50.0 U	50.0 U	N/A	N/A	N/A
Bis(2'-chloroethyl)disulfide	UG/L	51.6 U	50.0 U	50.0 U	N/A	N/A	N/A
Bis(2'-chloroethyl)trisulfide	UG/L	51.6 U	50.0 U	50.0 U	N/A	N/A	N/A
1,4-Dithiane	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
1,4-Oxathiane	UG/L	10.3 U	10.0 U	10.0 U	N/A	N/A	N/A
THIODIGLYCOL							
Thiodiglycol	UG/L	25.0 U	25.0 U	25.0 U	N/A	N/A	N/A
ORDNANCE							
1,3,5-Trinitrobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
1,3-Dinitrobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4,6-Trinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,6-Dinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Amino-4,6-dinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Nitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
3-Nitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Amino-2,6-dinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Nitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
HMX	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Nitrobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
RDX	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Tetryl	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
MIREX							
Mirex	UG/L	N/A	N/A	N/A	N/A	N/A	N/A

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		74-TB-04	74-TB-05	74-TB-06	74-TB-07	74-TB-08	74-TB-09
Laboratory Sample ID:		9401109-07	9401108-17	9401116-18A	9401121-14A	9401138-18	9401136-04
Date Sampled:		01/19/94	01/20/94	01/21/94	01/22/94	01/24/94	01/24/94
	UNITS						
SEMIVOLATILES							
1,2-Dichlorobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
1,2,4-Trichlorobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
1,3-Dichlorobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
1,4-Dichlorobenzene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Chloronaphthalene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Chlorophenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Methylnaphthalene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Methylphenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Nitroaniline	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2-Nitrophenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,2'-oxybis-(1-chloropropane)	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dichlorophenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dimethylphenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dinitrophenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4-Dinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4,5-Trichlorophenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,4,6-Trichlorophenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
2,6-Dinitrotoluene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
3-Nitroaniline	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
3,3'-Dichlorobenzidine	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Bromophenyl-phenylether	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Chloro-3-methylphenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Chloroaniline	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Chlorophenyl phenyl ether	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Methylphenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Nitroaniline	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4-Nitrophenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
4,6-Dinitro-2-methylphenol	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Acenaphthene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Acenaphthylene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Anthracene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Benzo[a]anthracene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A
Benzo[a]pyrene	UG/L	N/A	N/A	N/A	N/A	N/A	N/A

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID:		74-RS-08	74-RS-09	74-RS-11
Laboratory Sample ID:		9401148-20A	9402132-03	9402179-01
Date Sampled:		01/25/94	02/16/94	02/21/94
	UNITS			
CHEMICAL SURETY				
Acetophenone	UG/L	11.0 U	11.1 U	N/A
Chloroacetophenone	UG/L	11.0 U	11.1 U	N/A
Hydroxyacetophenone	UG/L	55.0 U	55.5 U	N/A
Bis(2'-chloroethyl)disulfide	UG/L	55.0 U	55.5 U	N/A
Bis(2'-chloroethyl)trisulfide	UG/L	55.0 U	55.5 U	N/A
1,4-Dithiane	UG/L	11.0 U	11.1 U	N/A
1,4-Oxathiane	UG/L	11.0 U	11.1 U	N/A
THIODIGLYCOL				
Thiodiglycol	UG/L	25.0 U	25.0 U	N/A
ORDNANCE				
1,3,5-Trinitrobenzene	UG/L	N/A	N/A	N/A
1,3-Dinitrobenzene	UG/L	N/A	N/A	N/A
2,4,6-Trinitrotoluene	UG/L	N/A	N/A	N/A
2,4-Dinitrotoluene	UG/L	N/A	N/A	N/A
2,6-Dinitrotoluene	UG/L	N/A	N/A	N/A
2-Amino-4,6-dinitrotoluene	UG/L	N/A	N/A	N/A
2-Nitrotoluene	UG/L	N/A	N/A	N/A
3-Nitrotoluene	UG/L	N/A	N/A	N/A
4-Amino-2,6-dinitrotoluene	UG/L	N/A	N/A	N/A
4-Nitrotoluene	UG/L	N/A	N/A	N/A
HMX	UG/L	N/A	N/A	N/A
Nitrobenzene	UG/L	N/A	N/A	N/A
RDX	UG/L	N/A	N/A	N/A
Tetryl	UG/L	N/A	N/A	N/A
MIREX				
Mirex	UG/L	N/A	N/A	N/A

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
SEMIVOLATILES							
1,2-Dichlorobenzene	UG/L	10 U	12.5 U	ND	ND		0/20
1,2,4-Trichlorobenzene	UG/L	10 U	12.5 U	ND	ND		0/20
1,3-Dichlorobenzene	UG/L	10 U	12.5 U	ND	ND		0/20
1,4-Dichlorobenzene	UG/L	10 U	12.5 U	ND	ND		0/20
2-Chloronaphthalene	UG/L	10 U	12.5 U	ND	ND		0/20
2-Chlorophenol	UG/L	10 U	12.5 U	ND	ND		0/20
2-Methylnaphthalene	UG/L	10 U	12.5 U	ND	ND		0/20
2-Methylphenol	UG/L	10 U	12.5 U	ND	ND		0/20
2-Nitroaniline	UG/L	25 U	31.2 U	ND	ND		0/20
2-Nitrophenol	UG/L	10 U	12.5 U	ND	ND		0/20
2,2'-oxybis-(1-chloropropane)	UG/L	10 U	12.5 U	ND	ND		0/20
2,4-Dichlorophenol	UG/L	10 U	12.5 U	ND	ND		0/20
2,4-Dimethylphenol	UG/L	10 U	12.5 U	ND	ND		0/20
2,4-Dinitrophenol	UG/L	25 U	31.2 U	ND	ND		0/20
2,4-Dinitrotoluene	UG/L	10 U	12.5 U	ND	ND		0/20
2,4,5-Trichlorophenol	UG/L	25 U	31.2 U	ND	ND		0/20
2,4,6-Trichlorophenol	UG/L	10 U	12.5 U	ND	ND		0/20
2,6-Dinitrotoluene	UG/L	10 U	12.5 U	ND	ND		0/20
3-Nitroaniline	UG/L	25 U	31.2 U	ND	ND		0/20
3,3'-Dichlorobenzidine	UG/L	10 U	12.5 U	ND	ND		0/20
4-Bromophenyl-phenylether	UG/L	10 U	12.5 U	ND	ND		0/20
4-Chloro-3-methylphenol	UG/L	10 U	12.5 U	ND	ND		0/20
4-Chloroaniline	UG/L	10 U	12.5 U	ND	ND		0/20
4-Chlorophenyl phenyl ether	UG/L	10 U	12.5 U	ND	ND		0/20
4-Methylphenol	UG/L	10 U	12.5 U	ND	ND		0/20
4-Nitroaniline	UG/L	25 U	31.2 U	25.8 R	25.8 R	69-RS-06	1/20
4-Nitrophenol	UG/L	25 U	31.2 U	ND	ND		0/20
4,6-Dinitro-2-methylphenol	UG/L	25 U	31.2 U	ND	ND		0/20
Acenaphthene	UG/L	10 U	12.5 U	ND	ND		0/20
Acenaphthylene	UG/L	10 U	12.5 U	ND	ND		0/20
Anthracene	UG/L	10 U	12.5 U	ND	ND		0/20
Benzo[a]anthracene	UG/L	10 U	12.5 U	ND	ND		0/20
Benzo[a]pyrene	UG/L	10 U	12.5 U	ND	ND		0/20

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
SEMIVOLATILES Cont.							
Benzo[b]fluoranthene	UG/L	10 U	12.5 U	ND	ND		0/20
Benzo[g,h,i]perylene	UG/L	10 U	12.5 U	ND	ND		0/20
Benzo[k]fluoranthene	UG/L	10 U	12.5 U	ND	ND		0/20
bis(2-Chloroethoxy) methane	UG/L	10 U	12.5 U	ND	ND		0/20
bis(2-Chloroethyl) ether	UG/L	10 U	12.5 U	ND	ND		0/20
bis(2-Ethylhexyl)phthalate	UG/L	10 U	12.5 U	4 J	4 J	69-FB-01	1/20
Butyl benzyl phthalate	UG/L	10 U	12.5 U	ND	ND		0/20
Carbazole	UG/L	10 U	12.5 U	ND	ND		0/20
Chrysene	UG/L	10 U	12.5 U	ND	ND		0/20
Dibenzofuran	UG/L	10 U	12.5 U	ND	ND		0/20
Dibenz[a,h]anthracene	UG/L	10 U	12.5 U	ND	ND		0/20
Diethylphthalate	UG/L	10 U	12.5 U	ND	ND		0/20
Dimethyl phthalate	UG/L	10 U	12.5 U	ND	ND		0/20
di-n-Butylphthalate	UG/L	10 U	12.5 U	1 J	2 J	74-RS-03	3/20
di-n-Octylphthalate	UG/L	10 U	12.5 U	ND	ND		0/20
Fluoranthene	UG/L	10 U	12.5 U	ND	ND		0/20
Fluorene	UG/L	10 U	12.5 U	ND	ND		0/20
Hexachlorobenzene	UG/L	10 U	12.5 U	ND	ND		0/20
Hexachlorobutadiene	UG/L	10 U	12.5 U	ND	ND		0/20
Hexachlorocyclopentadiene	UG/L	10 U	12.5 U	ND	ND		0/20
Hexachloroethane	UG/L	10 U	12.5 U	ND	ND		0/20
Indeno[1,2,3-cd]pyrene	UG/L	10 U	12.5 U	ND	ND		0/20
Isophorone	UG/L	10 U	12.5 U	ND	ND		0/20
Naphthalene	UG/L	10 U	12.5 U	ND	ND		0/20
Nitrobenzene	UG/L	10 U	12.5 U	ND	ND		0/20
N-Nitroso-di-n-propylamine	UG/L	10 U	12.5 U	ND	ND		0/20
N-nitrosodiphenylamine	UG/L	10 U	12.5 U	ND	ND		0/20
Pentachlorophenol	UG/L	25 U	31.2 U	ND	ND		0/20
Phenanthrene	UG/L	10 U	12.5 U	ND	ND		0/20
Phenol	UG/L	10 U	12.5 U	ND	ND		0/20
Pyrene	UG/L	10 U	12.5 U	ND	ND		0/20

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
VOLATILES							
Chloromethane	UG/L	10 U	10 U	ND	ND		0/63
Bromomethane	UG/L	10 U	10 U	ND	ND		0/63
Vinyl chloride	UG/L	10 U	10 U	ND	ND		0/63
Chloroethane	UG/L	10 U	10 U	ND	ND		0/63
Methylene chloride	UG/L	10 U	16 U	1 J	8 J	74-RS-11	18/63
Acetone	UG/L	10 U	21 U	2 J	190 J	69-RS-03	7/63
Carbon Disulfide	UG/L	10 U	10 U	ND	ND		0/63
1,1-Dichloroethene	UG/L	10 U	10 U	ND	ND		0/63
1,1-Dichloroethane	UG/L	10 U	10 U	ND	ND		0/63
1,2-Dichloroethene(total)	UG/L	10 U	10 U	ND	ND		0/63
Chloroform	UG/L	10 U	10 U	10 J	10 J	74-RS-11	1/63
1,2-Dichloroethane	UG/L	10 U	10 U	ND	ND		0/63
2-Butanone	UG/L	10 U	10 U	ND	ND		0/63
1,1,1-Trichloroethane	UG/L	10 U	10 U	ND	ND		0/63
Carbon tetrachloride	UG/L	10 U	10 U	ND	ND		0/63
Bromodichloromethane	UG/L	10 U	10 U	4 J	4 J	69-FB-01	1/63
1,2-Dichloropropane	UG/L	10 U	10 U	ND	ND		0/63
cis-1,3-Dichloropropene	UG/L	10 U	10 U	ND	ND		0/63
Trichloroethene	UG/L	10 U	10 U	ND	ND		0/63
Dibromochloromethane	UG/L	10 U	10 U	2 J	2 J	69-FB-01	1/63
1,1,2-Trichloroethane	UG/L	10 U	10 U	ND	ND		0/63
Benzene	UG/L	10 U	10 U	ND	ND		0/63
trans-1,3-Dichloropropene	UG/L	10 U	10 U	ND	ND		0/63
Bromoform	UG/L	10 U	10 U	ND	ND		0/63
4-Methyl-2-pentanone	UG/L	10 U	10 U	ND	ND		0/63
2-Hexanone	UG/L	10 U	10 U	ND	ND		0/63
Tetrachloroethene	UG/L	10 U	10 U	ND	ND		0/63
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	ND	ND		0/63
Toluene	UG/L	10 U	10 U	1 J	1 J	69-FB-01	1/63
Chlorobenzene	UG/L	10 U	10 U	ND	ND		0/63
Ethylbenzene	UG/L	10 U	10 U	ND	ND		0/63
Styrene	UG/L	10 U	10 U	ND	ND		0/63
Xylenes (total)	UG/L	10 U	10 U	4 J	4 J	69-TB-06	1/63

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
CHEMICAL SURETY							
Acetophenone	UG/L	10 U	12 U	ND	ND		0/15
Chloroacetophenone	UG/L	10 U	12 U	ND	ND		0/15
Hydroxyacetophenone	UG/L	50 U	60 U	ND	ND		0/15
Bis(2'-chloroethyl)disulfide	UG/L	50 U	60 U	ND	ND		0/15
Bis(2'-chloroethyl)trisulfide	UG/L	50 U	60 U	ND	ND		0/15
1,4-Dithiane	UG/L	10 U	12 U	ND	ND		0/15
1,4-Oxathiane	UG/L	10 U	12 U	ND	ND		0/15
THIODIGLYCOL							
Thiodiglycol	UG/L	25 U	25 U	ND	ND		0/15
ORDNANCE							
1,3,5-Trinitrobenzene	UG/L	0.5 U	0.5 U	ND	ND		0/4
1,3-Dinitrobenzene	UG/L	0.5 U	0.5 U	ND	ND		0/4
2,4,6-Trinitrotoluene	UG/L	0.5 U	0.5 U	ND	ND		0/4
2,4-Dinitrotoluene	UG/L	0.5 U	0.5 U	ND	ND		0/4
2,6-Dinitrotoluene	UG/L	0.5 U	0.5 U	ND	ND		0/4
2-Amino-4,6-dinitrotoluene	UG/L	0.03 U	0.03 U	ND	ND		0/4
2-Nitrotoluene	UG/L	0.5 U	0.5 U	ND	ND		0/4
3-Nitrotoluene	UG/L	0.5 U	0.5 U	ND	ND		0/4
4-Amino-2,6-dinitrotoluene	UG/L	0.02 U	0.02 U	ND	ND		0/4
4-Nitrotoluene	UG/L	0.5 U	0.5 U	ND	ND		0/4
HMX	UG/L	1.25 U	1.25 U	ND	ND		0/4
Nitrobenzene	UG/L	0.5 U	0.5 U	ND	ND		0/4
RDX	UG/L	0.5 U	0.5 U	ND	ND		0/4
Tetryl	UG/L	0.5 U	0.5 U	ND	ND		0/4
MIREX							
Mirex	UG/L	11.2 U	62 UJ	ND	ND		0/6

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
PESTICIDE/PCBS							
alpha-BHC	UG/L	0.05 UJ	0.065 UJ	ND	ND		0/20
beta-BHC	UG/L	0.05 UJ	0.065 UJ	ND	ND		0/20
delta-BHC	UG/L	0.05 UJ	0.065 UJ	ND	ND		0/20
Lindane (gamma-BHC)	UG/L	0.05 UJ	0.065 UJ	ND	ND		0/20
Heptachlor	UG/L	0.01 UJ	0.06 U	0.01 J	0.03 J	41-RS-11	4/20
Aldrin	UG/L	0.05 UJ	0.065 UJ	ND	ND		0/20
Heptachlor epoxide	UG/L	0.05 UJ	0.065 UJ	ND	ND		0/20
Endosulfan I	UG/L	0.05 UJ	0.065 UJ	ND	ND		0/20
Dieldrin	UG/L	0.1 UJ	0.13 UJ	ND	ND		0/20
4,4'-DDE	UG/L	0.1 UJ	0.13 UJ	ND	ND		0/20
Endrin	UG/L	0.1 UJ	0.13 UJ	ND	ND		0/20
Endosulfan II	UG/L	0.1 UJ	0.13 UJ	ND	ND		0/20
4,4'-DDD	UG/L	0.1 UJ	0.13 UJ	ND	ND		0/20
Endosulfan sulfate	UG/L	0.1 UJ	0.13 UJ	ND	ND		0/20
4,4'-DDT	UG/L	0.1 UJ	0.13 UJ	ND	ND		0/20
Methoxychlor	UG/L	0.5 UJ	0.65 UJ	ND	ND		0/20
Endrin ketone	UG/L	0.1 UJ	0.13 UJ	ND	ND		0/20
Endrin aldehyde	UG/L	0.1 UJ	0.13 UJ	ND	ND		0/20
alpha-Chlordane	UG/L	0.05 UJ	0.065 UJ	ND	ND		0/20
gamma-Chlordane	UG/L	0.05 UJ	0.065 UJ	ND	ND		0/20
Toxaphene	UG/L	5 UJ	6.5 UJ	ND	ND		0/20
Aroclor 1016	UG/L	1 UJ	1.3 UJ	ND	ND		0/20
Aroclor 1221	UG/L	2 UJ	2.6 UJ	ND	ND		0/20
Aroclor 1232	UG/L	1 UJ	1.3 UJ	ND	ND		0/20
Aroclor 1242	UG/L	1 UJ	1.3 UJ	ND	ND		0/20
Aroclor 1248	UG/L	1 UJ	1.3 UJ	ND	ND		0/20
Aroclor 1254	UG/L	1 UJ	1.3 UJ	ND	ND		0/20
Aroclor 1260	UG/L	1 UJ	1.3 UJ	ND	ND		0/20

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
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MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
TAL TOTAL METALS

Client Sample ID:		41-RS-01	41-RS-03	41-RS-05	41-RS-07	41-RS-09	41-RS-11
Laboratory Sample ID:		9402021-04	9402057-01	9402071-02	9402081-04	9402118-01	9402131-03A
Date Sampled:		02/01/94	02/03/94	02/05/94	02/07/94	02/15/94	02/16/94
	UNITS						
Aluminum	UG/L	139.0 U	139.0 UJ	139.0 U	139.0 U	139.0 UJ	139.0 U
Antimony	UG/L	7.90 U	7.60 UJ	7.90 U	7.60 U	7.60 UJ	7.60 U
Arsenic	UG/L	2.90 U	2.20 UJ	2.90 U	2.90 U	2.20 UJ	2.90 U
Barium	UG/L	12.4 U	12.4 U	12.4 U	12.4 U	12.4 U	12.4 U
Beryllium	UG/L	0.800 U	0.760 U	0.760 U	0.760 U	0.760 U	0.760 U
Cadmium	UG/L	3.20	3.19 U	3.19 U	3.19 U	3.19 U	3.19 U
Calcium	UG/L	249.0 U	149.0 U	149.0 U	149.0 U	149.0 U	149.0 U
Chromium	UG/L	8.30 U	8.31 UJ	8.31 U	8.31 U	8.31 UJ	8.31 U
Cobalt	UG/L	16.0 U	16.0 U	16.0 U	16.0 U	16.0 U	16.0 U
Copper	UG/L	16.3 U	16.3 U	16.3 U	16.3 U	16.3 U	16.3 U
Iron	UG/L	56.0	54.9 UJ	54.9 U	54.9 U	54.9 UJ	54.9 U
Lead	UG/L	1.05	1.00 UJ	1.00 U	1.00 U	1.00 UJ	1.00 U
Magnesium	UG/L	71.4 U	71.9 U	71.4 U	71.9 U	71.9 U	71.9 U
Manganese	UG/L	7.10 U	7.08 U	7.08 U	7.08 U	7.08 U	7.08 U
Mercury	UG/L	0.100 U	0.135 U	0.100 U	0.159 U	0.178 U	0.100 U
Nickel	UG/L	28.8 U	28.8 UJ	28.8 U	17.4 U	28.8 UJ	28.8 U
Potassium	UG/L	763 U	763 U	500 U	763 U	763 U	763.000 U
Selenium	UG/L	2.53 U	1.60 U	2.53 U	1.60 UJ	1.60 U	1.60 U
Silver	UG/L	0.400 U	1.60 U	1.60 U	1.60 U	1.60 U	1.60 U
Sodium	UG/L	186 U	368 U	271	368 U	368 U	368.000 U
Thallium	UG/L	4.60 U	3.00 U	4.60 U	3.00 U	3.00 U	3.00 U
Vanadium	UG/L	20.4 U	20.4 UJ	20.4 U	20.4 U	20.4 UJ	20.4 U
Zinc	UG/L	16.6 U	19.1 J	14.4 U	11.3	15.0 J	11.6 U
Total Cyanide	UG/L	5.00 U	5.00 U	N/A	N/A	5.00 U	N/A

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
TAL TOTAL METALS

Client Sample ID:		41-RS-13	69-RS-01	69-RS-03	69-RS-03	69-RS-05	69-RS-05
Laboratory Sample ID:		9402161-05A	9401025-06A	9401117-05A	9401119-05A	9401128-04A	9401129-04A
Date Sampled:		02/20/94	01/06/94	01/21/94	01/21/94	01/23/94	01/23/94
	UNITS						
Aluminum	UG/L	139.0 U	119.0 U	119.0 U	119.0 U	119.0 UJ	119.0 UJ
Antimony	UG/L	7.60 U	7.90 U	7.90 R	14.1 J	7.90 UJ	9.40 J
Arsenic	UG/L	2.20 UJ	2.90 U	2.90 U	2.90 U	2.90 UJ	2.90 UJ
Barium	UG/L	16.8 U	13.7 U	13.7 U	13.7 U	13.7 U	13.7 U
Beryllium	UG/L	3.21 U	1.30 U	1.29 U	1.29 U	1.29 U	1.29 U
Cadmium	UG/L	4.20 U	2.40 U	2.35 U	2.35 U	2.35 U	2.35 U
Calcium	UG/L	441.0 U	262.0	268.0	125.0 U	125.0 U	125.0 U
Chromium	UG/L	9.60 U	7.20 UJ	7.35 U	7.35 U	7.35 U	7.35 U
Cobalt	UG/L	31.2 U	19.4 U	19.4 U	19.4 U	19.4 U	19.4 U
Copper	UG/L	23.9 U	16.2 U	16.2 U	16.2 U	16.2 U	16.2 U
Iron	UG/L	72.3 J	96.5	52.5 U	52.5 U	52.5 U	52.5 U
Lead	UG/L	1.00 U	1.00 U	1.00 UJ	1.00 UJ	1.00 U	1.00 U
Magnesium	UG/L	71.4 U	59.1 U	59.1 U	59.1 U	59.1 U	59.1 U
Manganese	UG/L	14.4 U	5.30 U	5.25 U	5.25 U	5.25 U	5.25 U
Mercury	UG/L	0.155 U	0.120 U	0.063 U	0.063 U	0.100 U	0.100 U
Nickel	UG/L	31.2 U	13.6 U	13.6 U	13.6 U	13.6 U	13.6 U
Potassium	UG/L	763.000 U	300.0 U	500.0 U	500.0 U	300.000 UJ	300.000 UJ
Selenium	UG/L	1.60 UJ	2.50 UJ	3.22 J	2.53 UJ	2.92 J	2.53 UJ
Silver	UG/L	1.60 R	0.400 UJ	0.400 U	0.400 U	0.400 UJ	0.400 UJ
Sodium	UG/L	368.000 U	190.0 U	190.0 U	190.0 U	189.000 UJ	368.000 U
Thallium	UG/L	3.00 U	4.60 U	4.60 U	4.60 U	4.60 U	4.60 U
Vanadium	UG/L	20.4 U	16.6 U	16.6 U	16.6 U	16.6 U	16.6 U
Zinc	UG/L	15.8 U	14.4 U	8.80 U	7.02 U	18.5	7.02 UJ
Total Cyanide	UG/L	5.00 U	N/A	5.00 U	N/A	5.00 U	N/A

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
TAL TOTAL METALS

Client Sample ID:		69-RS-06	69-FB-01	69-FB-02	74-RS-01	74-RS-03	74-RS-05
Laboratory Sample ID:		9402150-03	9401036-05A	9401036-06A	9401079-02	9401109-08	9401116-17A
Date Sampled:		02/18/94	01/06/94	01/06/94	01/11/94	01/19/94	01/21/94
	UNITS						
Aluminum	UG/L	139.0 UJ	120.0	119.0 U	119.0 U	119.0 U	N/A
Antimony	UG/L	7.60 U	7.90 U	7.90 U	7.90 U	7.90 U	N/A
Arsenic	UG/L	2.20 U	2.90 U	2.90 U	2.90 U	2.90 U	N/A
Barium	UG/L	12.4 U	13.7	13.7 U	13.7 U	13.7 U	N/A
Beryllium	UG/L	0.760 U	1.30 U	1.30 U	1.29 U	1.29 U	N/A
Cadmium	UG/L	3.19 U	2.40 U	2.40 U	2.35 U	2.35 U	N/A
Calcium	UG/L	149.0 U	30300.0	144.0	242.0 U	308.0 U	N/A
Chromium	UG/L	8.31 U	7.20 UJ	7.20 UJ	9.42	7.35 U	N/A
Cobalt	UG/L	16.0 U	19.4 U	19.4 U	19.4 U	19.4 U	N/A
Copper	UG/L	16.3 U	16.2 U	16.2 U	16.2 U	16.2 U	N/A
Iron	UG/L	54.9 U	4240.0	52.5 U	112.0	52.5 U	N/A
Lead	UG/L	1.00 U	2.80 J	1.00 U	1.00 U	1.00 U	N/A
Magnesium	UG/L	71.4 U	2880.0	59.1 U	110.0	59.1 U	N/A
Manganese	UG/L	7.08 U	30.1	5.30 U	5.25 U	5.25 U	N/A
Mercury	UG/L	0.152 U	0.120 U	0.120 U	0.113 U	0.100 U	N/A
Nickel	UG/L	28.8 U	13.6 U	13.6 U	13.6 U	13.6 U	N/A
Potassium	UG/L	763 U	1550.0	300.0 U	500 U	763 U	N/A
Selenium	UG/L	1.60 UJ	2.50 UJ	2.50 UJ	2.53 UJ	4.08	N/A
Silver	UG/L	1.60 U	0.400 UJ	0.400 UJ	0.40 UJ	0.400 UJ	N/A
Sodium	UG/L	368 U	50400.0	190.0 U	525	359 U	N/A
Thallium	UG/L	3.00 U	4.60 UJ	4.60 U	4.60 U	4.60 U	N/A
Vanadium	UG/L	20.4 U	16.6 U	16.6 U	16.6 U	16.6 U	N/A
Zinc	UG/L	10.9 U	80.0	16.2 U	42.8 U	10.4 U	N/A
Total Cyanide	UG/L	5.00 U	N/A	N/A	N/A	5.00 U	5.00 U

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
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MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
TAL TOTAL METALS

Client Sample ID:		74-RS-07	74-RS-08	74-RS-09	74-RS-11
Laboratory Sample ID:		9401138-13	9401148-20A	9402132-03	9402179-01
Date Sampled:		01/23/94	01/25/94	02/16/94	02/21/94
	UNITS				
Aluminum	UG/L	119.0 U	119.0 U	139.0 UJ	139.0 U
Antimony	UG/L	7.90 U	7.90 U	7.60 UJ	7.60 U
Arsenic	UG/L	2.90 U	2.90 U	2.20 U	2.20 U
Barium	UG/L	13.7 U	13.7 U	12.4 U	12.4 U
Beryllium	UG/L	1.29 U	1.29 U	0.760 U	0.760 U
Cadmium	UG/L	2.35 U	2.35 U	3.19 U	3.19 U
Calcium	UG/L	152.0 U	224.0 U	149.0 U	149.0 U
Chromium	UG/L	7.20 U	7.35 U	8.31 U	8.31 U
Cobalt	UG/L	19.4 U	19.4 U	16.0 U	16.0 U
Copper	UG/L	16.2 U	16.2 U	16.3 U	16.3 U
Iron	UG/L	52.5 U	52.5 U	54.9 R	64.9
Lead	UG/L	1.00 UJ	1.00 U	1.00 U	1.00 U
Magnesium	UG/L	59.1 U	59.1 U	71.9 U	71.9 U
Manganese	UG/L	5.25 U	5.25 U	7.08 U	7.08 U
Mercury	UG/L	0.100 U	0.100 U	0.166 U	0.105
Nickel	UG/L	13.6 U	13.6 U	28.8 U	28.8 U
Potassium	UG/L	763 U	300.000 U	763 U	763 U
Selenium	UG/L	2.53 U	2.53 UJ	1.60 UJ	1.60 U
Silver	UG/L	0.400 UJ	0.400 UJ	1.60 U	1.60 U
Sodium	UG/L	307	186.000 U	368 U	368 U
Thallium	UG/L	4.60 U	4.60 U	3.00 U	3.00 U
Vanadium	UG/L	16.6 U	16.6 U	20.4 U	20.4 U
Zinc	UG/L	8.32 U	10.9	11.5 UR	16.4 U
Total Cyanide	UG/L	5.00 U	5.00 U	5.00 U	5.00 U

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
TAL TOTAL METALS

Client Sample ID: Laboratory Sample ID: Date Sampled:	UNITS	MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
Aluminum	UG/L	119 U	139 U	120	120	69-FB-01	1/21
Antimony	UG/L	7.6 UJ	7.9 U	7.9 R	14.1 J	69-RS-03	3/21
Arsenic	UG/L	2.2 UJ	2.9 U	ND	ND		0/21
Barium	UG/L	12.4 U	16.8 U	13.7	13.7	74-RS-08	1/21
Beryllium	UG/L	0.76 U	3.21 U	ND	ND		0/21
Cadmium	UG/L	2.35 U	4.2 U	3.2	3.2	41-RS-01	1/21
Calcium	UG/L	125 U	441 U	144	30300	69-FB-01	4/21
Chromium	UG/L	7.2 UJ	9.6 U	9.42	9.42	74-RS-01	1/21
Cobalt	UG/L	16 U	31.2 U	ND	ND		0/21
Copper	UG/L	16.2 U	23.9 U	ND	ND		0/21
Iron	UG/L	52.5 U	54.9 UJ	54.9 R	4240	69-FB-01	7/21
Lead	UG/L	1 UJ	1 UJ	1.05	2.8 J	69-FB-01	2/21
Magnesium	UG/L	59.1 U	71.9 U	110	2880	69-FB-01	2/21
Manganese	UG/L	5.25 U	14.4 U	30.1	30.1	69-FB-01	1/21
Mercury	UG/L	0.063 U	0.178 U	0.105	0.105	74-RS-11	1/21
Nickel	UG/L	13.6 U	31.2 U	ND	ND		0/21
Potassium	UG/L	300 U	763 U	1550	1550	69-FB-01	1/21
Selenium	UG/L	1.6 U	2.53 U	2.92 J	4.08	74-RS-03	3/21
Silver	UG/L	0.4 U	1.6 U	1.6 R	1.6 R	74-RS-11	1/21
Sodium	UG/L	186 U	368 U	271	50400	69-FB-01	4/21
Thallium	UG/L	3 U	4.6 U	ND	ND		0/21
Vanadium	UG/L	16.6 U	20.4 U	ND	ND		0/21
Zinc	UG/L	7.02 U	42.8 U	10.9	80	69-FB-01	6/21
Total Cyanide	UG/L	5 U	5 U	ND	ND		0/13

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
TAL DISSOLVED METALS

Client Sample ID:		41-RSD-09	41-RSD-13	69-RSD-06	74-RSD-09
Laboratory Sample ID:		9402118-02	9402161-06A	9402150-04	9402132-04
Date Sampled:		02/15/94	02/20/94	02/18/94	02/16/94
	UNITS				
Aluminum	UG/L	139.0 U	139.0 U	139.0 UJ	139.0 UJ
Antimony	UG/L	7.60 U	17.0	8.89	9.49 J
Arsenic	UG/L	2.20 U	2.20 U	2.20 U	2.20 U
Barium	UG/L	12.4 U	16.8 U	12.4 U	12.4 U
Beryllium	UG/L	0.760 U	3.21 U	0.760 U	0.760 U
Cadmium	UG/L	3.19 U	4.20 U	3.19 U	3.19 U
Calcium	UG/L	149.0 U	441.0 U	149.0 U	149.0 U
Chromium	UG/L	8.31 U	9.60 U	8.31 U	8.31 U
Cobalt	UG/L	16.0 U	31.2 U	16.0 U	16.0 U
Copper	UG/L	16.3 U	23.9 U	16.3 U	16.3 U
Iron	UG/L	54.9 U	71.1 U	54.9 U	54.9 R
Lead	UG/L	1.00 U	1.00 U	1.00 U	1.00 U
Magnesium	UG/L	71.9 U	71.4 U	71.4 U	71.9 U
Manganese	UG/L	7.08 U	14.4 U	7.08 U	7.08 U
Mercury	UG/L	0.131 U	0.144 U	0.165 U	0.172 U
Nickel	UG/L	28.8 U	31.2 U	28.8 U	28.8 U
Potassium	UG/L	763 U	763.000 U	763 U	763 U
Selenium	UG/L	1.60 U	1.60 UJ	1.60 UJ	1.60 UJ
Silver	UG/L	1.60 U	1.60 R	1.60 U	1.60 U
Sodium	UG/L	368 U	368.000 U	414	368 U
Thallium	UG/L	3.00 U	3.00 U	3.00 U	3.00 U
Vanadium	UG/L	20.4 U	20.4 U	20.4 U	20.4 U
Zinc	UG/L	10.6 U	15.8 U	10.6 U	11.2 UR

DATA AND FREQUENCY SUMMARY
OPERABLE UNIT NO. 4 (SITES 41,69, AND 74)
QUALITY ASSURANCE / QUALITY CONTROL
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
TAL DISSOLVED METALS

Client Sample ID: Laboratory Sample ID: Date Sampled:		MINIMUM NONDETECTED	MAXIMUM NONDETECTED	MINIMUM DETECTED	MAXIMUM DETECTED	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
	UNITS						
Aluminum	UG/L	139 U	139 U	ND	ND		0/4
Antimony	UG/L	7.6 U	7.6 U	8.89	17	41-RSD-13	3/4
Arsenic	UG/L	2.2 U	2.2 U	ND	ND		0/4
Barium	UG/L	12.4 U	16.8 U	ND	ND		0/4
Beryllium	UG/L	0.76 U	3.21 U	ND	ND		0/4
Cadmium	UG/L	3.19 U	4.2 U	ND	ND		0/4
Calcium	UG/L	149 U	441 U	ND	ND		0/4
Chromium	UG/L	8.31 U	9.6 U	ND	ND		0/4
Cobalt	UG/L	16 U	31.2 U	ND	ND		0/4
Copper	UG/L	16.3 U	23.9 U	ND	ND		0/4
Iron	UG/L	54.9 U	71.1 U	54.9 R	54.9 R	74-RSD-09	1/4
Lead	UG/L	1 U	1 U	ND	ND		0/4
Magnesium	UG/L	71.4 U	71.9 U	ND	ND		0/4
Manganese	UG/L	7.08 U	14.4 U	ND	ND		0/4
Mercury	UG/L	0.131 U	0.172 U	ND	ND		0/4
Nickel	UG/L	28.8 U	31.2 U	ND	ND		0/4
Potassium	UG/L	763 U	763 U	ND	ND		0/4
Selenium	UG/L	1.6 U	1.6 U	ND	ND		0/4
Silver	UG/L	1.6 U	1.6 U	1.6 R	1.6 R	74-RSD-09	1/4
Sodium	UG/L	368 U	368 U	414	414	69-RSD-06	1/4
Thallium	UG/L	3 U	3 U	ND	ND		0/4
Vanadium	UG/L	20.4 U	20.4 U	ND	ND		0/4
Zinc	UG/L	10.6 U	15.8 U	ND	ND		0/4

QA/QC SAMPLE SUMMARY
OPERABLE UNIT NO. 14 (SITE 69)
ROUND TWO GROUNDWATER
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Sample No.:		69FB	69ER	Trip Blank	Trip Blank	Trip Blank	69FB3
Depth:		Field Blank	Equipment Rinsate	Trip Blank	Trip Blank	Trip Blank	Field Blank
Date Sampled:		02/21/95	02/21/95	02/21/95	02/22/95	02/24/95	02/23/95
Lab ID:		NA	NA	NA	NA	NA	NA
	UNITS						
PURGEABLE HALOCARBONS 601							
Bromodichloromethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
2-Chlorovinyl ether	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichlorobenzene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,4-Dichlorobenzene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
trans-1,2-Dichloroethene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
trans-1,3-Dichloropropene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Methylene Chloride	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2,-Tetrachloroethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,1,1-Trichloroethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Trichlorofluoromethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl Chloride	UG/L	5 U	5 U	5 U	5 U	5 U	5 U

QA/QC SAMPLE SUMMARY
OPERABLE UNIT NO. 14 (SITE 69)
ROUND TWO GROUNDWATER
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Sample No.:		69ER3	Trip Blank	69FB5	69ER5	Trip Blank	Trip Blank
Depth:		Equipment Rinsate	Trip Blank	Field Blank	Equipment Rinsate	Trip Blank	Trip Blank
Date Sampled:		02/23/95	02/23/95	02/25/95	02/25/95	02/25/95	02/26/95
Lab ID:		NA	NA	NA	NA	NA	NA
	UNITS						
PURGEABLE HALOCARBONS 601							
Bromodichloromethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Bromomethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Carbon Tetrachloride	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Chloroethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
2-Chlorovinyl ether	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Chloromethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichlorobenzene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,3-Dichlorobenzene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,4-Dichlorobenzene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Dichlorodifluoromethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
trans-1,2-Dichloroethene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
trans-1,3-Dichloropropene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Methylene Chloride	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2,2,-Tetrachloroethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Tetrachloroethene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,1,1-Trichloroethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Trichlorofluoromethane	UG/L	5 U	5 U	5 U	5 U	5 U	5 U
Vinyl Chloride	UG/L	5 U	5 U	5 U	5 U	5 U	5 U

QA/QC SAMPLE SUMMARY
OPERABLE UNIT NO. 14 (SITE 69)
GROUNDWATER
MCB CAMP LEJEUNE, NORTH CAROLINA
REMEDIAL INVESTIGATION - CTO-0212
ORGANICS

Sample No.:		69-RB30	69-RB31	69-RB32	69-TB30	69-TB31
Depth:		Rinsate Blank	Rinsate Blank	Rinsate Blank	Trip Blank	Trip Blank
Date Sampled:		03/23/95	03/26/95	03/27/95	03/23/95	03/27/95
Lab ID:		NA	NA	NA	NA	NA
	UNITS					
VOLATILES						
Chloromethane	UG/L	10 U	10 U	10 U	10 U	10 U
Bromomethane	UG/L	10 U	10 U	10 U	10 U	10 U
Vinyl Chloride	UG/L	10 U	10 U	10 U	10 U	10 U
Chloroethane	UG/L	10 U	10 U	10 U	10 U	10 U
Methylene chloride	UG/L	10 U	10 U	10 U	10 U	10 U
Acetone	UG/L	10 UJ	10 U	10 U	10 UJ	10 U
Carbon disulfide	UG/L	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethene	UG/L	10 U	10 U	10 U	10 U	10 U
1,1-Dichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethene (total)	UG/L	10 U	10 U	10 U	10 U	10 U
Chloroform	UG/L	10 U	10 U	10 U	10 U	10 U
1,2-Dichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U
Methyl ethyl ketone	UG/L	10 R	10 U	10 U	10 R	10 U
1,1,1-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U
Carbon tetrachloride	UG/L	10 U	10 U	10 U	10 U	10 U
Bromodichloromethane	UG/L	10 U	10 U	10 U	10 U	10 U
1,2-Dichloropropane	UG/L	10 U	10 U	10 U	10 U	10 U
cis-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U
Trichloroethene	UG/L	10 U	10 U	10 U	10 U	10 U
Dibromochloromethane	UG/L	10 U	10 U	10 U	10 U	10 U
1,1,2-Trichloroethane	UG/L	10 U	10 U	10 U	10 U	10 U
Benzene	UG/L	10 U	10 U	10 U	10 U	10 U
trans-1,3-Dichloropropene	UG/L	10 U	10 U	10 U	10 U	10 U
Bromoform	UG/L	10 U	10 U	10 U	10 U	10 U
4-Methyl-2-Pentanone	UG/L	10 R	10 R	10 R	10 R	10 R
2-Hexanone	UG/L	10 R	10 U	10 U	10 R	10 U
Tetrachloroethene	UG/L	10 U	10 U	10 U	10 U	10 U
1,1,2,2-Tetrachloroethane	UG/L	10 U	10 U	10 U	10 U	10 U
Toluene	UG/L	10 U	10 U	10 U	10 U	10 U
Chlorobenzene	UG/L	10 U	10 U	10 U	10 U	10 U
Ethylbenzene	UG/L	10 U	10 U	10 U	10 U	10 U
Styrene	UG/L	10 U	10 U	10 U	10 U	10 U
Xylene (total)	UG/L	10 U	10 U	10 U	10 U	10 U

SITE 69
QA/QC SAMPLE SUMMARY
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA
ORGANICS

Sample No:		69-EC-TB-01	69-EC1-ER-13	69-EC1-FB-02	69-EC1-TB-13	69-NR-ER-10	69-NR-TB-11
Depth:		TRIP BLANK	RINSE BLANK	FIELD BLANK	TRIP BLANK	RINSE BLANK	TRIP BLANK
Date Sampled:		08/20/92	9/16/92	9/16/92	9/16/92	9/15/92	9/15/92
Lab Id:		00424-07	00517-19	00517-20	00517-23	00513-06	00513-07
Parameter	Units						
PESTCIDE/PCBS							
ALPHA-BHC	UG/L		0.05 UJ	0.05 UJ		0.05 UJ	
BETA-BHC	UG/L		0.05 UJ	0.05 UJ		0.05 UJ	
DELTA-BHC	UG/L		0.05 UJ	0.05 UJ		0.05 UJ	
GAMMA-BHC(LINDANE)	UG/L		0.05 UJ	0.05 UJ		0.05 UJ	
HEPTACHLOR	UG/L		0.05 UJ	0.05 UJ		0.05 UJ	
ALDRIN	UG/L		0.05 UJ	0.05 UJ		0.05 UJ	
HEPTACHLOR EPOXIDE	UG/L		0.05 UJ	0.05 UJ		0.05 UJ	
ENDOSULFAN I	UG/L		0.05 UJ	0.05 UJ		0.05 UJ	
DIELDRIN	UG/L		0.1 UJ	0.1 UJ		0.1 UJ	
4,4'-DDE	UG/L		0.1 UJ	0.1 UJ		0.1 UJ	
ENDRIN	UG/L		0.1 UJ	0.1 UJ		0.1 UJ	
ENDOSULFAN II	UG/L		0.1 UJ	0.1 UJ		0.1 UJ	
4,4'-DDD	UG/L		0.1 UJ	0.1 UJ		0.1 UJ	
ENDOSULFAN SULFATE	UG/L		0.1 UJ	0.1 UJ		0.1 UJ	
4,4'-DDT	UG/L		0.1 UJ	0.1 UJ		0.1 UJ	
METHOXYCHLOR	UG/L		0.5 UJ	0.5 UJ		0.5 UJ	
ENDRIN KETONE	UG/L		0.1 UJ	0.1 UJ		0.1 UJ	
ENDRIN ALDEHYDE	UG/L		0.1 UJ	0.1 UJ		0.1 UJ	
ALPHA CHLORDANE	UG/L		0.05 UJ	0.05 UJ		0.05 UJ	
GAMMA CHLORDANE	UG/L		0.05 UJ	0.05 UJ		0.05 UJ	
TOXAPHENE	UG/L		5 UJ	5 UJ		5 UJ	
PCB-1016	UG/L		1 UJ	1 UJ		1 UJ	
PCB-1221	UG/L		2 UJ	2 UJ		2 UJ	
PCB-1232	UG/L		1 UJ	1 UJ		1 UJ	
PCB-1242	UG/L		1 UJ	1 UJ		1 UJ	
PCB-1248	UG/L		1 UJ	1 UJ		1 UJ	
PCB-1254	UG/L		1 UJ	1 UJ		1 UJ	
PCB-1260	UG/L		1 UJ	1 UJ		1 UJ	
VOLATILES							
CHLOROMETHANE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
BROMOMETHANE	UG/L	10 U	10 UJ	10 UJ	10 U	10 U	10 U
VINYL CHLORIDE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROETHANE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
METHYLENE CHLORIDE	UG/L	6 J	7 J	5 J	7 J	8 J	7 J
ACETONE	UG/L	10 U	10 U	30	10 U	10 U	10 U
CARBON DISULFIDE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHENE	UG/L	10 UJ	10 U	10 U	10 U	10 U	10 U
1,1-DICHLOROETHANE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROFORM	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROETHANE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-BUTANONE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U

SITE 69
QA/QC SAMPLE SUMMARY
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA
ORGANICS

Sample No:		69-EC-TB-01	69-EC1-ER-13	69-EC1-FB-02	69-EC1-TB-13	69-NR-ER-10	69-NR-TB-11
Depth:		TRIP BLANK	RINSE BLANK	FIELD BLANK	TRIP BLANK	RINSE BLANK	TRIP BLANK
Date Sampled:		08/20/92	9/16/92	9/16/92	9/16/92	9/15/92	9/15/92
Lab Id:		00424-07	00517-19	00517-20	00517-23	00513-06	00513-07
Parameter	Units						
VOLATILES Cont.							
1,1,1-TRICHLOROETHANE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
CARBON TETRACHLORIDE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
BROMODICHLOROMETHANE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,2-DICHLOROPROPANE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
CIS-1,3-DICHLOROPROPENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
TRICHLOROETHENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
DIBROMOCHLOROMETHANE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2-TRICHLOROETHANE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
BENZENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
BROMOFORM	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
4-METHYL-2-PENTANONE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
2-HEXANONE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
TETRACHLOROETHENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	UG/L	10 U	10 U	10 U	10 UJ	10 U	10 U
TOLUENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
CHLOROBENZENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
ETHYLBENZENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
STYRENE	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
TOTAL XYLENES	UG/L	10 U	10 U	10 U	10 U	10 U	10 U
SEMIVOLATILES							
PHENOL	UG/L		10 U	10 U		10 U	
BIS(2-CHLOROETHYL) ETHER	UG/L		10 U	10 U		10 U	
2-CHLOROPHENOL	UG/L		10 U	10 U		10 U	
1,3-DICHLOROBENZENE	UG/L		10 U	10 U		10 U	
1,4-DICHLOROBENZENE	UG/L		10 U	10 U		10 U	
1,2-DICHLOROBENZENE	UG/L		10 U	10 U		10 U	
2-METHYLPHENOL	UG/L		10 U	10 U		10 U	
2,2'-OXYBIS (1-CHLOROPROPANE)	UG/L		10 U	10 U		10 U	
4-METHYLPHENOL	UG/L		10 U	10 U		10 U	
N-NITROSODI-N-PROPYLAMINE	UG/L		10 U	10 U		10 U	
HEXACHLOROETHANE	UG/L		10 U	10 U		10 U	
NITROBENZENE	UG/L		10 U	10 U		10 U	
ISOPHORONE	UG/L		10 U	10 U		10 U	
2-NITROPHENOL	UG/L		10 U	10 U		10 U	
2,4-DIMETHYLPHENOL	UG/L		10 U	10 U		10 U	
BIS(2-CHLOROETHOXY) METHANE	UG/L		10 U	10 U		10 U	
2,4-DICHLOROPHENOL	UG/L		10 U	10 U		10 U	
1,2,4-TRICHLOROBENZENE	UG/L		10 U	10 U		10 U	
NAPHTHALENE	UG/L		10 U	10 U		10 U	
4-CHLORANILINE	UG/L		10 U	10 U		10 U	
HEXACHLOROBUTADIENE	UG/L		10 U	10 U		10 U	

SITE 69
QA/QC SAMPLE SUMMARY
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA
ORGANICS

Sample No:		69-EC-TB-01	69-EC1-ER-13	69-EC1-FB-02	69-EC1-TB-13	69-NR-ER-10	69-NR-TB-11
Depth:		TRIP BLANK	RINSE BLANK	FIELD BLANK	TRIP BLANK	RINSE BLANK	TRIP BLANK
Date Sampled:		08/20/92	9/16/92	9/16/92	9/16/92	9/15/92	9/15/92
Lab Id:		00424-07	00517-19	00517-20	00517-23	00513-06	00513-07
Parameter	Units						
SEMIVOLATILES Cont.							
4-CHLORO-3-METHYLPHENOL	UG/L		10 U	10 U		10 U	
2-METHYLNAPHTHALENE	UG/L		10 U	10 U		10 U	
HEXACHLOROCYCLOPENTADIENE	UG/L		10 U	10 U		10 U	
2,4,6-TRICHLOROPHENOL	UG/L		10 U	10 U		10 U	
2,4,5-TRICHLOROPHENOL	UG/L		25 U	25 U		25 U	
2-CHLORONAPHTHALENE	UG/L		10 U	10 U		10 U	
2-NITROANILINE	UG/L		25 U	25 U		25 U	
DIMETHYL PHTHALATE	UG/L		10 U	10 U		10 U	
ACENAPHTHYLENE	UG/L		10 U	10 U		10 U	
2,6-DINITROTOLUENE	UG/L		10 U	10 U		10 U	
3-NITROANILINE	UG/L		25 U	25 U		25 U	
ACENAPHTHENE	UG/L		10 U	10 U		10 U	
2,4-DINITROPHENOL	UG/L		25 U	25 U		25 U	
4-NITROPHENOL	UG/L		25 U	25 U		25 U	
DIBENZOFURAN	UG/L		10 U	10 U		10 U	
2,4-DINITROTOLUENE	UG/L		10 U	10 U		10 U	
DIETHYL PHTHALATE	UG/L		10 U	10 U		10 U	
4-CHLOROPHENYL PHENYL ETHER	UG/L		10 U	10 U		10 U	
FLUORENE	UG/L		10 UJ	10 UJ		10 UJ	
4-NITROANILINE	UG/L		25 U	25 U		25 U	
4,6-DINITRO-2-METHYLPHENOL	UG/L		25 U	25 U		25 U	
N-NITRISODIPHENYLAMINE	UG/L		10 U	10 U		10 U	
4-BROMOPHENYL PHENYL ETHER	UG/L		10 U	10 U		10 U	
HEXACHLOROBENZENE	UG/L		10 U	10 U		10 U	
PENTACHLOROPHENOL	UG/L		25 U	25 U		25 U	
PHENANTHRENE	UG/L		10 U	10 U		10 U	
ANTHRACENE	UG/L		10 U	10 U		10 U	
DI-N-BUTYL PHTHALATE	UG/L		10 U	10 U		10 UJ	
FLUORANTHENE	UG/L		10 U	10 U		10 U	
CARBAZOLE	UG/L		10 U	10 U		10 U	
PYRENE	UG/L		10 U	10 U		10 U	
BUTYL BENZYL PHTHALATE	UG/L		10 U	10 U		10 U	
3,3-DICHLOROBENZIDINE	UG/L		10 U	10 U		10 U	
BENZO(A)ANTHRACENE	UG/L		10 U	10 U		10 U	
CHRYSENE	UG/L		10 U	10 U		10 U	
BIS(2-ETHYLHEXYL)PHTHALATE	UG/L		10 U	10 U		10 U	
DI-N-OCTYL PHTHALATE	UG/L		10 UJ	10 UJ		10 U	
BENZO(B)FLUORANTHENE	UG/L		10 U	10 U		10 U	
BENZO(K)FLUORANTHENE	UG/L		10 U	10 U		10 U	
BENZO(A)PYRENE	UG/L		10 U	10 U		10 U	
INDENO(1,2,3-CD) PYRENE	UG/L		10 U	10 U		10 U	
DIBENZ(A,H)ANTHRACENE	UG/L		10 U	10 U		10 U	
BENZO(G,H,I)PERYLENE	UG/L		10 U	10 U		10 U	

SITE 69
QA/QC SAMPLE SUMMARY
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA
ORGANICS

Sample No:		69-UT-TB-02	69-UT2-SW-ER
Depth:		TRIP BLANK	RINSE BLANK
Date Sampled:		8/20/92	8/20/92
Lab Id:		00425-09	00425-03
Parameter	Units		
PESTCIDE/PCBS			
ALPHA-BHC	UG/L		0.084 U
BETA-BHC	UG/L		0.084 U
DELTA-BHC	UG/L		0.084 U
GAMMA-BHC(LINDANE)	UG/L		0.084 U
HEPTACHLOR	UG/L		0.084 U
ALDRIN	UG/L		0.084 U
HEPTACHLOR EPOXIDE	UG/L		0.084 U
ENDOSULFAN I	UG/L		0.084 U
DIELDRIN	UG/L		0.17 U
4,4'-DDE	UG/L		0.17 U
ENDRIN	UG/L		0.17 U
ENDOSULFAN II	UG/L		0.17 U
4,4'-DDD	UG/L		0.17 U
ENDOSULFAN SULFATE	UG/L		0.17 U
4,4'-DDT	UG/L		0.17 U
METHOXYCHLOR	UG/L		0.84 U
ENDRIN KETONE	UG/L		0.17 U
ENDRIN ALDEHYDE	UG/L		0.17 U
ALPHA CHLORDANE	UG/L		0.084 U
GAMMA CHLORDANE	UG/L		0.084 U
TOXAPHENE	UG/L		8.4 U
PCB-1016	UG/L		1.7 U
PCB-1221	UG/L		3.3 U
PCB-1232	UG/L		1.7 U
PCB-1242	UG/L		1.7 U
PCB-1248	UG/L		1.7 U
PCB-1254	UG/L		1.7 U
PCB-1260	UG/L		1.7 U
VOLATILES			
CHLOROMETHANE	UG/L	10 U	10 U
BROMOMETHANE	UG/L	10 U	10 U
VINYL CHLORIDE	UG/L	10 U	10 U
CHLOROETHANE	UG/L	10 U	10 U
METHYLENE CHLORIDE	UG/L	6	6 J
ACETONE	UG/L	10 U	48
CARBON DISULFIDE	UG/L	10 U	10 U
1,1-DICHLOROETHENE	UG/L	10 UJ	10 UJ
1,1-DICHLOROETHANE	UG/L	10 U	10 U
1,2-DICHLOROETHENE	UG/L	10 U	10 U
CHLOROFORM	UG/L	10 U	10 U
1,2-DICHLOROETHANE	UG/L	10 U	10 U
2-BUTANONE	UG/L	10 U	10 U

SITE 69
QA/QC SAMPLE SUMMARY
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA
ORGANICS

Sample No:		69-UT-TB-02	69-UT2-SW-ER
Depth:		TRIP BLANK	RINSE BLANK
Date Sampled:		8/20/92	8/20/92
Lab Id:		00425-09	00425-03
Parameter	Units		
VOLATILES Cont.			
1,1,1-TRICHLOROETHANE	UG/L	10 U	2 J
CARBON TETRACHLORIDE	UG/L	10 U	10 U
BROMODICHLOROMETHANE	UG/L	10 U	10 U
1,2-DICHLOROPROPANE	UG/L	10 U	10 U
CIS-1,3-DICHLOROPROPENE	UG/L	10 U	10 U
TRICHLOROETHENE	UG/L	10 U	10 U
DIBROMOCHLOROMETHANE	UG/L	10 U	10 U
1,1,2-TRICHLOROETHANE	UG/L	10 U	10 U
BENZENE	UG/L	10 U	10 U
TRANS-1,3-DICHLOROPROPENE	UG/L	10 U	10 U
BROMOFORM	UG/L	10 U	10 U
4-METHYL-2-PENTANONE	UG/L	10 U	10 U
2-HEXANONE	UG/L	10 U	10 U
TETRACHLOROETHENE	UG/L	10 U	10 U
1,1,2,2-TETRACHLOROETHANE	UG/L	10 U	10 U
TOLUENE	UG/L	10 U	10 U
CHLOROBENZENE	UG/L	10 U	10 U
ETHYLBENZENE	UG/L	10 U	10 U
STYRENE	UG/L	10 U	10 U
TOTAL XYLENES	UG/L	10 U	10 U
SEMIVOLATILES			
PHENOL	UG/L		10 U
BIS(2-CHLOROETHYL) ETHER	UG/L		10 U
2-CHLOROPHENOL	UG/L		10 U
1,3-DICHLOROBENZENE	UG/L		10 U
1,4-DICHLOROBENZENE	UG/L		10 U
1,2-DICHLOROBENZENE	UG/L		10 U
2-METHYLPHENOL	UG/L		10 U
2,2'-OXYBIS (1-CHLOROPROPANE)	UG/L		10 U
4-METHYLPHENOL	UG/L		10 U
N-NITROSODI-N-PROPYLAMINE	UG/L		10 U
HEXACHLOROETHANE	UG/L		10 U
NITROBENZENE	UG/L		10 U
ISOPHORONE	UG/L		10 U
2-NITROPHENOL	UG/L		10 U
2,4-DIMETHYLPHENOL	UG/L		10 U
BIS(2-CHLOROETHOXY) METHANE	UG/L		10 U
2,4-DICHLOROPHENOL	UG/L		10 U
1,2,4-TRICHLOROBENZENE	UG/L		10 U
NAPHTHALENE	UG/L		10 U
4-CHLORANILINE	UG/L		10 U
HEXACHLOROBUTADIENE	UG/L		10 U

SITE 69
QA/QC SAMPLE SUMMARY
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA
ORGANICS

Sample No:		69-UT-TB-02	69-UT2-SW-ER
Depth:		TRIP BLANK	RINSE BLANK
Date Sampled:		8/20/92	8/20/92
Lab Id:		00425-09	00425-03
Parameter	Units		
SEMIVOLATILES Cont.			
4-CHLORO-3-METHYLPHENOL	UG/L		10 U
2-METHYLNAPHTHALENE	UG/L		10 U
HEXACHLOROCYCLOPENTADIENE	UG/L		10 U
2,4,6-TRICHLOROPHENOL	UG/L		10 U
2,4,5-TRICHLOROPHENOL	UG/L		25 U
2-CHLORONAPHTHALENE	UG/L		10 U
2-NITROANILINE	UG/L		25 U
DIMETHYL PHTHALATE	UG/L		10 U
ACENAPHTHYLENE	UG/L		10 U
2,6-DINITROTOLUENE	UG/L		10 U
3-NITROANILINE	UG/L		25 U
ACENAPHTHENE	UG/L		10 U
2,4-DINITROPHENOL	UG/L		25 U
4-NITROPHENOL	UG/L		25 U
DIBENZOFURAN	UG/L		10 U
2,4-DINITROTOLUENE	UG/L		10 U
DIETHYL PHTHALATE	UG/L		10 U
4-CHLOROPHENYL PHENYL ETHER	UG/L		10 U
FLUORENE	UG/L		10 U
4-NITROANILINE	UG/L		25 U
4,6-DINITRO-2-METHYLPHENOL	UG/L		25 U
N-NITRISODIPHENYLAMINE	UG/L		10 U
4-BROMOPHENYL PHENYL ETHER	UG/L		10 U
HEXACHLOROBENZENE	UG/L		10 U
PENTACHLOROPHENOL	UG/L		25 UJ
PHENANTHRENE	UG/L		10 U
ANTHRACENE	UG/L		10 U
DI-N-BUTYL PHTHALATE	UG/L		10 U
FLUORANTHENE	UG/L		10 U
CARBAZOLE	UG/L		10 U
PYRENE	UG/L		10 U
BUTYL BENZYL PHTHALATE	UG/L		10 U
3,3-DICHLOROBENZIDINE	UG/L		10 U
BENZO(A)ANTHRACENE	UG/L		10 U
CHRYSENE	UG/L		10 U
BIS(2-ETHYLHEXYL)PHTHALATE	UG/L		10 U
DI-N-OCTYL PHTHALATE	UG/L		10 U
BENZO(B)FLUORANTHENE	UG/L		10 U
BENZO(K)FLUORANTHENE	UG/L		10 U
BENZO(A)PYRENE	UG/L		10 U
INDENO(1,2,3-CD) PYRENE	UG/L		10 U
DIBENZ(A,H)ANTHRACENE	UG/L		10 U
BENZO(G,H,I)PERYLENE	UG/L		10 U

SITE 69
QA/QC SAMPLE SUMMARY
REMEDIAL INVESTIGATION CTO-0133
MCB CAMP LEJEUNE, NORTH CAROLINA
TOTAL METALS

Sample No:		69-EC1-ER-13	69-EC1-FB-02	69-NR-ER-10	69-UT2-SW-ER
Depth:		RINSE BLANK	FIELD BLANK	RINSE BLANK	RINSE BLANK
Date Sampled:		9/16/92	9/16/92	9/15/92	8/21/92
Lab Id:		00517-19	00517-20	00513-06	00425-03
Parameter	Units				
ALUMINUM	UG/L	25.9 B	15.7 B	62 B	14 U
ANTIMONY	UG/L	14 U	14 U	14 U	14 UJ
ARSENIC	UG/L	3 U	3 U	3 U	3 U
BARIUM	UG/L	0.42 JB	0.59 JB	1.1 B	1 U
BERYLLIUM	UG/L	0.3 UJ	0.3 UJ	0.3 U	1 U
CADMIUM	UG/L	1.9 U	1.9 U	1.9 U	2 U
CALCIUM	UG/L	93.6 B	113 B	110 B	80.1 B
CHROMIUM	UG/L	3.6 U	3.6 U	3.6 U	4.9 B
COBALT	UG/L	2 U	4.4 JB	2 U	2 U
COPPER	UG/L	1.9 U	1.9 U	3.6 B	2 U
CYANIDE	UG/L	10 U	10 U	10 U	10 U
IRON	UG/L	34 B	23.1 B	31 B	84.1 B
LEAD	UG/L	1.4 B	1 U	2.6 B	2.1 B
MAGNESIUM	UG/L	12.2 U	20 B	18 B	23.6 B
MANGANESE	UG/L	0.96 B	1.4 B	0.6 U	1.3 JB
MERCURY	UG/L	0.06 B	0.07 B	0.04 U	0.2 U
NICKEL	UG/L	7.9 UJ	7.9 UJ	7.9 U	8 U
POTASSIUM	UG/L	64 U	64 U	64 U	600 JB
SELENIUM	UG/L	5 U	5 U	5 U	5 U
SILVER	UG/L	5.2 JB	4.2 JB	3.9 B	3.1 B
SODIUM	UG/L	268 JB	154 JB	350 B	199 JB
THALLIUM	UG/L	2 U	2 U	2 U	2 UJ
VANADIUM	UG/L	1.8 U	1.8 U	1.8 U	2 U
ZINC	UG/L	2 B	3.4 B	16.5 B	12.7 B

APPENDIX M
BAKER DRAFT EVALUATION OF METALS IN GROUNDWATER

DRAFT

EVALUATION OF METALS IN GROUNDWATER

MARINE CORPS BASE, CAMP LEJEUNE, NORTH CAROLINA

CONTRACT TASK ORDER 0177

JUNE 3, 1994

Prepared for:

DEPARTMENT OF THE NAVY
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NAVAL FACILITIES
ENGINEERING COMMAND
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1 Site Location Map
2 Positive Detections Above Applicable Federal and State Standards for Total and Filtered Inorganic Analytes in Groundwater-Site 2
3 Positive Detections of Total Metals Above Federal MCLs and NCWQS in Shallow Wells-Site 78
4 Positive Detections of Total Metals Above Federal MCLs and NCWQS in Intermediate Wells-Site 78
5 Positive Detections of Total Metals Above Federal MCLs and NCWQS in Deep Wells-Site 78

TABLES

1 Summary of Total Metals in Shallow Wells
2 Comparison of Repeat Sampling in Shallow Wells
3 Summary of Dissolved Metals in Shallow Wells
4 Summary of Total Metals in Upgradient Wells
5 Comparison of Inorganic Subsurface Soil Concentrations in "Clean" and "Contaminated" Wells
6 Total Metals in Deep Monitoring Wells
7 Summary of Field Parameters in Shallow, Deep, and Supply Wells

1.0 INTRODUCTION

Numerous groundwater investigations have been conducted at Marine Corps Base (MCB), Camp Lejeune under the Department of the Navy (DON) Installation Restoration Program (IRP). These studies have identified elevated levels of total metals in shallow groundwater at almost every site. The degree of contamination, based on dissolved metals analysis of groundwater samples, is limited. It is believed that the presence of elevated metals are not always related to past disposal activities for several reasons, which is the basis of this study.

Currently, Records of Decision (ROD) are being prepared for Operable Units No. 1 (Sites 21, 24, and 78) and No. 5 (Site 2). Both RODs are proposing to not remediate shallow groundwater which contains elevated levels of total metals above State groundwater standards (i.e., North Carolina Water Quality Standards) and/or Federal drinking water standards (i.e., Maximum Contaminant Levels). Specifically, remediation of shallow groundwater due to elevated total metals is not cost effective, or practical, due to the following: (1) the shallow aquifer is not used for potable supply; (2) the source of metals in groundwater cannot be correlated with soil data or previous disposal practices; (3) the extent of shallow groundwater contamination (based on total metals analysis) is widespread and in many cases undefinable, since there are no apparent contaminant plumes or patterns associated with the metals; and (4) deep groundwater, which is the source of potable water, is not significantly contaminated with metals above the standards.

2.0 STUDY OBJECTIVES

The DON/Marine Corps initiated a study on inorganics in groundwater throughout MCB Camp Lejeune to assess whether total metals in groundwater are related to disposal practices or to other factors. The overall goal of this study is to provide information that would be used in consideration of not remediating shallow groundwater at Operable Units No. 1 and No. 5, and possibly other operable units where total metals are elevated without cause. The following study objectives were identified:

(1) Determine whether the elevated total metals detected in the shallow aquifer are related to past disposal practices, well construction factors, sampling techniques, or suspended particulates in the samples;

(2) Determine whether total metals in shallow groundwater are elevated throughout the region or MCB Camp Lejeune;

(3) Determine whether there is a correlation between elevated total metals in groundwater and metals in soil; and

(4) Determine whether the concentrations of total metals (i.e., low versus high) is related to shallow and deep aquifer characteristics.

3.0 SCOPE OF WORK

Groundwater and soil data from a total of 21 sites were compiled as part of the overall study. Three of the 21 sites are located outside the boundary of the base. These sites include the ABC Cleaners Superfund Site, located along Route 24 in Jacksonville, and two sites located along Highway 17 (Off-site Properties No. 1 and No. 2). The two sites along Route 17 were investigated by the DON/Marine Corps as part of a real estate survey. The other 18 sites are located throughout various portions of MCB Camp Lejeune (see Figure 1).

Information from studies conducted by Baker and other consultants were obtained to evaluate metal concentrations in groundwater. The study focused on 14 metals of potential concern to human health and the environment. Some of the information was collected under the IR Program whereas other information was obtained during other investigations (e.g., ABC Cleaners RI/FS). The following data tables were then prepared to determine why total metals are generally elevated in shallow groundwater.

Table 1 - Total Metal Concentrations in Shallow Groundwater by Site

Table 2 - Summary of Repeat Sampling of Shallow Wells (Sites 2 and 78)

Table 3 - Dissolved Metal Concentrations in Shallow Groundwater by Site

Table 4 - Summary of Total Metal Concentrations in Upgradient Wells

Table 5 - Comparison of Subsurface Metal Concentrations in Uncontaminated and Contaminated Wells

Table 6 - Total Metal Concentrations in Deep Groundwater by Site

Table 7 - Summary of Field Parameters in Shallow Monitoring Wells, Deep Monitoring Wells, and Supply Wells

The tables are presented at the end of this report.

4.0 DATA ANALYSIS

The following discussion represents an analysis of the information contained in each of the previously mentioned tables.

Table 1 (Total Metal Concentrations in Shallow Groundwater)

All of the sites had at least one (and in most cases several) metal which exceeded either State water quality standards or Federal drinking water standards. The most frequently detected metals included chromium, lead, and manganese, which were detected at almost every site above drinking water standards. Other frequently detected metals which exceeded drinking water standards included arsenic, beryllium, cadmium, and nickel.

An analysis of the data from Table 1 indicates that elevated total metals are present in shallow groundwater at every site, including the three sites which are located off base. The two sites which did not exhibit significant contamination include the ABC Cleaners site (only chromium exceeded the standards) and Site 48 (only manganese exceeded the standards).

Total metals detected in shallow groundwater at Site 2 exceeded State and/or Federal standards in seven of the 11 shallow monitoring wells. Manganese was the most frequently detected metal (7/11). Lead (3/11), chromium (2/11), and cadmium (1/11) were also detected above the standards,, but less frequently (see Figure 2).

With the exception of Wells 78GW03 and 78GW19, total metals were detected at Site 78 (Hadnot Point Industrial Area) above Federal MCLs or NCWQS in every shallow well (see Figure 3). The extent of elevated total metals in groundwater is widespread, encompassing approximately one square mile (or approximately 660 acres) in total area. The distribution and concentration of total metals in shallow groundwater makes it virtually impossible to identify or illustrate contaminant plumes (see Figure 3).

An analysis of the total metals results indicates the following pattern. Samples exhibiting elevated levels of lead, chromium, or other contaminants of concern, also exhibited elevated levels of other metals such as aluminum, antimony, iron, and zinc. Samples which did not exhibit elevated levels of lead, chromium, or manganese also did not exhibit elevated levels of other metals. This pattern indicates that the elevated total metals are not limited to one or

two contaminants, which would be the case if a lead or chromium plume in the groundwater truly existed. In other words, if a site is impacted by a particular metal due to disposal activities (say chromium for example), then other metals such as aluminum, lead, or zinc should not be consistently elevated as in the case of samples collected from the shallow aquifer at MCB Camp Lejeune. This point is depicted in the data summary tables provided in Appendix A for Sites 2 and 78. These tables were taken from the Remedial Investigation Reports for Operable Units No. 1 and No. 5. As an example, note that sample numbers 78-MW08, 78-MW10, 78-MW11, and 78-MW12 all had elevated levels of total metals when compared to samples 78-MW09-2 and 78-MW09-3. It is clear that most of the metal concentrations in a particular sample follow a consistent pattern throughout.

Table 2 (Comparison of Repeat Sampling of Shallow Wells

Five wells from Sites 2 and 78 were randomly chosen to evaluate total metals concentrations between sampling rounds. The comparison was limited to only chromium, lead, and manganese since these contaminants were frequently detected throughout MCB Camp Lejeune. In several cases, metal concentrations were significantly different between the sampling rounds. If the shallow aquifer was impacted due to former disposal activities, a contaminant plume would be present and concentrations would not significantly deviate. The deviation in metal concentrations may indicate that sampling results are biased due to suspended particulates in the samples.

Table 3 (Dissolved Metal Concentration in Shallow Groundwater by Site)

The data base for Table 3 was limited to 12 sites since many of the previous investigations (i.e., prior to Navy CLEAN) did not analyze for dissolved metals. Nevertheless, an analysis of the 12 sites revealed that elevated levels of dissolved metals in groundwater is limited. Manganese was the most frequently detected metal above drinking water standards (10 of 12 sites exhibited elevated levels). Lead was detected at only one site (Site 21) above drinking water standards. Chromium was also detected at only one site (Site 78) above drinking water standards. No other metal was detected above the standards.

Literature searches have indicated that manganese is a naturally occurring metal in North Carolina. Therefore, the presence of manganese may not be attributable to site-related activities (Greenhorne & O'Mara, 1992).

An analysis of the data from Table 3 clearly shows a significant reduction in metal concentrations when compared to Table 1 (total metals in shallow groundwater). One possible reason for this reduction is that suspended solids or particles are not being introduced into the analysis of the sample due to filtering. A second possibility is that the metals are not significantly present in a dissolved state in shallow groundwater due to the species of metals under site conditions. It should be noted that calcium and sodium did not exhibit such a pattern since the salts of these metals are more soluble in water. For example, the concentrations of total calcium and total sodium versus dissolved calcium and dissolved sodium are similar and are not affected by the removal of the particulates during filtering. The fact that these salts do not exhibit the pattern that the other metals show supports the possibility that total metal concentrations are influenced by particulates in the sample.

Table 4 (Total Metals in Upgradient Shallow Wells)

The data base for Table 4 consists of groundwater results from 14 upgradient shallow monitoring wells (i.e., one well per site). These wells were installed to determine baseline groundwater quality to which on-site groundwater conditions could be compared. In some cases, the upgradient wells were located in areas where other base activities may have influenced groundwater quality.

The analysis of this data shows that manganese was the most frequently detected metal above Federal or State standards in upgradient shallow wells. Manganese was detected in 7 of the 14 upgradient wells above drinking water standards. Chromium and lead were also frequently detected above drinking water standards in upgradient (background) wells. These contaminants were detected in 6 of the 14 upgradient wells. At Site 2, samples collected from an upgradient well (2GW9) exhibited elevated levels of chromium (83µ/l), lead (27.2µ/l) and manganese (747µ/l). At Site 78, samples collected from upgradient wells 96W4 and 78GW26 did not exhibit elevated levels of total metals. The concentration range for metals detected above NC WQS and/of Federal MCLs in upgradient wells is provided below:

- beryllium (ND-46.5 µ/l)
- cadmium (ND-10 µ/l)
- chromium (ND-198 µ/l)
- lead (ND-78.8 µ/l)
- manganese (ND-747 µ/l)
- mercury (ND-1.6J µ/l)

Based on the above range representing upgradient wells, none of the on-site wells at Site 2 exhibited total metals above the maximum background concentrations. However, at Site 78, lead and chromium were detected above the maximum background in several on-site wells.

An analysis of the data from Table 4 indicates that shallow groundwater upgradient of some sites contains total metals above drinking water standards. A comparison of Table 4 data against Table 1 data indicates that shallow groundwater samples from upgradient wells are less contaminated than samples collected from on-site monitoring wells. However, it should be noted that the data base for Table 4 consists of only 14 wells whereas the data base for Table 1 consists of over 130 wells. Therefore, to assume that upgradient groundwater quality is better than on-site groundwater quality may not be justified due to the different data bases.

Table 5 (Comparison of Subsurface Metal Concentrations in Uncontaminated and Contaminated Wells)

The purpose of this table is to determine whether metal concentrations in soils correlate with the elevated levels of metals in shallow groundwater.

To evaluate this, metals in subsurface soils, representing an area of groundwater contamination, were compared to metals in subsurface soil in areas which did not exhibit groundwater contamination. If the elevated total metals in shallow groundwater are present due to former disposal activities, subsurface metals in soil representing an area of groundwater contamination would be expected to be elevated or higher than metals in subsurface soil representing a non-contaminated area. This evaluation assumes that the well exhibiting elevated total metals is within a source area and that the soil sample is representative of soil impacted by metal contamination.

As shown on Table 5, there is no clear pattern or correlation which indicates that elevated total metals are due to soil contamination. Note that in many cases, the concentration of metals which represent "non-contaminated" areas are greater than the metals which represent "contaminated" areas. Also note that the metals in subsurface soil are within or close to background subsurface metal concentrations. Therefore, this supports the possibility that in many cases at MCB Camp Lejeune, the elevated total metals in shallow groundwater cannot be attributable to a source or to past disposal practices.

Table 6 (Total Metals in Deep Monitoring Wells)

Table 6 presents total metal concentrations in deep groundwater for each site. The data base is limited to only 8 sites. Metal concentrations in supply wells were also included for comparison purposes.

As shown on Table 6, total metals in deep groundwater are below drinking water standards with a few exceptions. Arsenic and cadmium were detected above the standards in one deep monitoring well at Site 78 (see Figure 4). Manganese was detected in deep groundwater at three sites and a few of the supply wells. Lead was detected in one supply well at 16 µ/l, which is slightly above the drinking water standard of 15 µ/l.

Elevated total metals are not widespread in deep groundwater for two possible reasons. First, most metals are not very mobile in the environment. Second, deep groundwater samples may not have significant amounts of suspended particulates due to different geologic conditions. Soils in the deeper aquifer are more compacted and consist primarily of calcareous sands, clays, and limestone fragments. Soils in the shallow aquifer are loosely compacted and consist primarily of fine-grained sands, silts, and clays. This classification may support the possibility that suspended solids are collected during sampling, thereby influencing the analysis for total metals.

Table 7 (Summary of Field Parameters in Shallow, Deep, and Supply Wells)

Table 7 provides a range of pH and specific conductivity values representative of shallow and deep groundwater. In general, lower pH values were noted more often in shallow wells than in deep wells (including the supply wells). This condition may influence the leachability and speciation of metals in groundwater.

Deep groundwater usually exhibited higher specific conductivity values. High specific conductivity values are representative of high dissolved conditions. The fact that deep groundwater generally exhibited higher specific conductivity values indicates that most of the metals, if present, are in a dissolved state. The high specific conductivity values could also indicate less suspended particulates due to the geologic conditions of the deep aquifer. The lower specific conductivity values observed in shallow wells indicates that the metals in the shallow aquifer are not in a dissolved state. This also supports the possibility that suspended particulates in the shallow aquifer are influencing the analysis of total metals.

5.0 ANALYSIS OF THE STUDY OBJECTIVES

Each of the objectives identified for this study are analyzed below based on the information collected.

Objective No. 1 (Determine whether the elevated total metals in the shallow aquifer are related to past disposal practices, well construction factors, sampling techniques, or suspended particulates in the samples)

Based on the analysis of information provided in Tables 1 through 7 and Appendix A, it appears that suspended particulates in groundwater samples could influence the concentration of total metals in groundwater. Well construction factors and sampling techniques are probably not a significant factor since the data base is representative of data obtained by Baker, ESE (Site 28 and 30), Roy F. Weston (ABC Cleaners), and Halliburton NUS (Site 7). No particular pattern was noted between sites which Baker obtained the samples versus sites in which other consultants obtained the data. Sampling methods were also considered. For Sites 63 and 65 for example, samples were collected with a bailer. At Sites 2 and 78, samples were collected with a low flow pump. All four sites exhibited elevated levels of total metals in groundwater samples. In addition, due to the fact that deep groundwater quality is not significantly impacted with metals indicates that well construction or sampling techniques are probably not factors related to elevated total metals in groundwater.

With respect to past disposal practices, Table 5 clearly shows that soil concentrations do not correlate with elevated total metals in groundwater. Based on this analysis, and on many of the sites previously investigated, the source of total metals in groundwater cannot be attributable to soil contamination or disposal practices in many cases. This is based on both the history of the site as well as the analytical soil results. In some cases, total metals were detected at elevated levels even when the site history did not correlate with the contaminants found. For example, Sites 2 and 21 have a history of pesticide storage and handling, and there are no known disposal areas (i.e., buried debris) within the site boundary. Nevertheless, both of these sites exhibited several metals above drinking water standards that would not be expected to be present at high concentrations based on the historical use of the site. These metals included lead, chromium, beryllium, cadmium, and manganese.

Objective No. 2 (Determine whether total metals in shallow groundwater are elevated throughout the region or MCB Camp Lejeune)

Based on groundwater data obtained from both upgradient wells and off base wells, total metals were detected above drinking water standards in shallow groundwater in areas that would not be influenced by former disposal activities at the sites. Given that some of the upgradient wells are contaminated, it is apparent that total metals in shallow groundwater are elevated in certain areas of the base outside of the influence of site-related disposal activities. However, it is unknown whether the shallow aquifer upgradient of the sites is contaminated due to other base-related activities or whether the levels in groundwater samples are also elevated due to the influence of suspended fines in the samples.

Objective No. 3 (Determine whether there is a correlation between elevated total metals in groundwater and metals in soil)

An evaluation of the data presented in Table 5 shows that metals in soil samples collected in areas of groundwater contamination are not elevated when compared to metals in soil samples collected in areas that did not exhibit groundwater contamination. This supports the possibility that in many cases, elevated levels of total metals in shallow groundwater are not related to the disposal history at the site. As previously mentioned, sites which did not exhibit soil contamination (when compared to background soil levels) or did not have a history of disposal indicative of metals contamination still exhibited elevated levels of total metals in groundwater. Since there is no apparent correlation between metals in soil and total metals in groundwater, then the possibility exists that the elevated total metals in groundwater are biased high due to suspended particulates.

Objective No. 4 (Determine whether the concentrations of total metals in groundwater is related to shallow and deep aquifer characteristics)

There is some evidence that the geologic conditions of the shallow and deep aquifers influence the amount of total metals detected in groundwater samples. The fact that the deep aquifer generally exhibited higher specific conductivity values indicates that there is more dissolved constituents in the deep aquifer when compared to the shallow aquifer. This was evident when comparing Table 1 (total metals in shallow groundwater) to Table 6 (total metals in deep groundwater). Table 6 did not indicate significant levels of total metals in deep groundwater throughout MCB Camp Lejeune.

The geologic conditions of the shallow aquifer would tend to result in samples that may contain suspended particulates. The suspended particulates could influence the total metals concentrations in the samples.

6.0 CONCLUSIONS

1. Elevated levels of total metals in the shallow aquifer are probably influenced to some degree by the geologic conditions of the site.

2. There is no correlation between metal levels in soil and total metals in groundwater. Therefore, elevated total metals in groundwater cannot be attributable to soil contamination of past disposal practices.

3. Elevated levels of total metals in the shallow aquifer may be biased high due to suspended particulates in the samples.

4. Dissolved metals in groundwater were generally below Federal MCLs and NC WQS and therefore, do not present a significant problem at MCB Camp Lejeune.

5. Total and dissolved metal concentrations in the Castle Hayne aquifer were generally below drinking water standards and therefore, do not present a significant problem at MCB Camp Lejeune.

6. The presence of manganese in shallow and deep groundwater may be due to naturally occurring geologic conditions.

7.0 RECOMMENDATIONS

1. Remediation of total metals in the shallow aquifer at Operable Units 1 and 5 is not recommended based on the following:

   - Elevated metals in groundwater at both operable units does not appear to be related to soil contamination or past disposal practices;
   - The distribution of total metals in groundwater is not characteristic of a plume that would be present due to a source of contamination;
   - Remediation of total metals would not be practical from an engineering or cost standpoint; and
   - Currently, there is no human or environmental exposure to shallow groundwater.

2. Additional background wells should be installed at all sites in order to provide a baseline for comparing on-site groundwater quality.

Tables

TABLE 1
TOTAL METALS BY SITE
SHALLOW MONITORING WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

Site Number Units	NCWQS ug/L	FEDERAL MCL ug/L	Site 1 ug/L	Site 2 ug/L	Site 6 ug/L	Site 7 ug/L	Site 9 ug/L	Site 21 ug/L	Site 24 ug/L	Site 28 ug/L	Site 30 ug/L	Site 41 ug/L	Site 43 ug/L	Site 44 ug/L
Arsenic	50	50	7.2 - 57.4	2.2 - 23.6	ND - 23.3	ND - 43.4J	ND	ND - 101	ND - 116J	5.4 - 13J	6.4 - 12J	2.4 - 36.3	ND - 23.4	ND - 570
Barium	2000	2000	335 - 833	46 - 1420	ND - 1020	427 - 641	ND - 1060	ND - 647	ND - 1120	78.8 - 576	60.1 - 396	55.2 - 999	220 - 745	315 - 3180
Beryllium	NE	4	2.7 J - 43.4	1 - 3	ND - 7.5	ND - 10.3J	ND	ND - 8	ND - 19	ND - 1.2J	ND - 2.4	0.80 - 42.8	1.5 - 4.2	1.4 - 36.6
Cadmium	5	5	ND - 12.9	7	ND	ND	ND	ND	ND - 12	3.3J - 17.3J	ND - 10.7J	3.2 - 110	ND - 6.9	ND - 32
Calcium	NA	NA	8850 - 726000	5710 - 450000	5430 - 64900	5050 - 51300	16100 - 90700	6130J - 63000J	ND - 151000	20200 - 160000	1730 - 11900	8750 - 828000	10300 - 91900	2430 - 191000
Chromium	50	100	172 - 627	11 - 117	ND - 201	47.8 - 220	ND - 214	ND - 348J	19 - 316	9.0J - 140	42.8 - 106J	10.5 - 244	161 - 249	126 - 895
Copper	1000	1300	44.6 - 117	3 - 23	ND - 175	17.7 - 36.4	ND - 39.7	ND - 84	ND - 52	18.8J - 75.4	15.8 - 42.5	16.3 - 1030	64.2 - 104	28.6 - 313
Lead	15	15	40.8J - 176J	2.7 - 44.8	ND - 200	23 - 37.3	ND - 127	ND - 2000J	5.1 - 89	20.3J - 234J	7.7J - 115J	4.8 - 9340	16.5 - 28.8	15.8 - 508
Manganese	50	50 (1)	125 - 1720	21 - 190	ND - 362	56.9 - 220	ND - 91.3	59 - 276J	29 - 518	82.2 - 304	78.5 - 578	56.6 - 2110	72.6 - 297	88 - 1730
Mercury	1.1	2	ND - 1.2J	ND	ND - .46	0.2 - 0.36	ND - 1.4	ND - 2.4J	ND - 3.2	ND - 1.4J	0.88J - 0.9J	0.13 - 0.92	ND - 0.24	ND - 1.1
Nickel	100	100	28.5 - 426	ND	ND - 41.9	ND	ND	ND - 123	ND - 140	ND - 59.8	17.1J - 52.6J	28.8 - 137	20.5 - 143	21.9 - 486
Sodium	NA	NA	9090 - 19000	ND - 103000	1110 - 68700	7040 - 156000	1390 - 4170	7950 - 15700	5230 - 19200	9480 - 74700	5320 - 8100	2080 - 40200	9160 - 22100	4060 - 12600
Vanadium	NE	NE	214 - 640	9 - 184	ND - 330	37.8 - 423	ND - 175	ND - 419	ND - 408	6.1 - 164	57 - 101	20.4 - 244	122 - 233	184 - 759
Zinc	2100	5000 (1)	ND - 1110	6 - 146	ND - 1620	83.6 - 133	ND - 118	27J - 487J	20 - 650	ND	79.2 - 104	25.7 - 5180	19 J - 661J	87.3 - 2800J

Site Number Units	Site 48 ug/L	Site 63 ug/L	Site 65 ug/L	Site 69 ug/L	Site 78 ug/L	Site 82 ug/L	ABC Cleaners ug/L	Offsite Property #1 ug/L	Offsite Property #2 ug/L
Arsenic	ND	ND - 23.4	ND - 308	2.9 - 29.0	ND - 405J	ND - 67.8	ND - 12	10.3 - 160	ND
Barium	18 - 51.3	56.1 - 5410	105 - 638	46.5 - 850	ND - 1250	ND - 540	35 - 220	ND - 468	ND
Beryllium	ND	ND - 3.1	ND	1.3 - 10.6	ND - 19	ND	NA	ND - 8.5	ND
Cadmium	2.2 - 3.3	ND	ND	2.4 - 11.4	ND - 21	ND	NA	ND	ND
Calcium	30600 - 115000	2830 - 24300	33300 - 181000	2010 - 38700	ND - 642000	6580 - 60800	790 - 16000	ND - 22800	ND - 5200
Chromium	5.8 - 17.5	4.4 - 134	50.1 - 364	15.1 - 159	ND - 858J	ND - 174	ND - 57	52.8 - 636	ND - 94
Copper	3.1 - 13.5	10.7 - 126	28.2 - 127	16.2 - 70.8	ND - 699	ND - 29.3	ND - 89	ND - 140	ND
Lead	ND	4.3 J - 369	19.1 - 132	7.8 - 188	ND - 360J	ND - 89	ND - 10	12.3 - 345	6.3 - 62.3
Manganese	38.1 - 585	50.3 - 1020	56.2 - 474	13.0 - 912	26 - 714	26.9 - 283	4 - 44	56 - 973	ND - 60.1
Mercury	0.04 - 0.09	ND - 0.20	ND - 0.29	0.10 - 0.94	ND - 1.5	ND - 0.66	NA	ND	ND
Nickel	ND	19.8 - 54.2	19.4 - 84.3	13.6 - 99.8	ND - 234	ND - 34.6	ND - 77	40.2 - 380	ND
Sodium	5750 - 8760	3150 - 7100	3850 - 11700	4790 - 41300	ND - 42500	5670 - 36500	5800 - 33000	ND - 9390	ND - 7630
Vanadium	3.4 - 12.8	7.9 - 163	59.8 - 433	17.3 - 210	ND - 1700	ND - 256	ND - 45	70 - 739	ND - 64.7
Zinc	ND - 30.3	58.5J - 1110J	148J - 406J	36.2 - 12100	6J - 967J	ND - 204	14 - 220	ND - 736	ND - 40.8

NOTES:
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NE - Not established.
NA - Not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 2
COMPARISON OF REPEAT SAMPLING OF SHALLOW WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

Well	2GW01		2GW03		2GW06		2GW08		2GW09	
Date	5/1993	3/1994	5/1993	3/1994	5/1993	3/1994	5/1993	3/1994	5/1993	3/1994
Chromium	18	ND	11	ND	15	ND	ND	ND	25	83
Lead	15.5 J	ND	3.5 J	ND	6.7 J	ND	ND	3.4	27.2 J	23.6
Manganese	55	47	21	ND	79	140	53	415	290	747

Well	78GW05		78GW08		78GW15		78GW16		78GW19	
Date	1/1991	4/1994	1/1991	4/1994	1/1991	4/1994	1/1991	4/1994	1/1991	4/1994
Chromium	ND	17 J	91.8	491 J	21.4	215 J	209	353 J	13.8	ND
Lead	13.6	13.1 J	54.1	131 J	16.6	53	100	224	31.7	8.3
Manganese	162	161 J	46.5	213 J	18.3	115	98.3	150	79	26

NOTES:
J - Value is estimated..
ND - Not detected.

TABLE 3
DISSOLVED METALS BY SITE
SHALLOW MONITORING WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

Site Number Units	NCWQS ug/L	FEDERAL MCL ug/L	Site 1 ug/L	Site 2 ug/L	Site 6 ug/L	Site 7 ug/L	Site 9 ug/L	Site 21 ug/L	Site 24 ug/L	Site 28 ug/L	Site 30 ug/L	Site 41 ug/L	Site 43 ug/L	Site 44 ug/L
Arsenic	50	50	NA	2.2 - 7.1	ND	NA	ND	ND - 10.6	ND - 16.3	NA	NA	2.2 - 4.7	NA	NA
Barium	2000	2000	NA	25 - 149	ND	NA	ND	ND	ND	NA	NA	12.4 - 451	NA	NA
Beryllium	NE	4	NA	1	ND	NA	ND	ND	ND	NA	NA	0.80 - 3.2	NA	NA
Cadmium	5	5	NA	ND	ND	NA	ND	ND - 5	ND	NA	NA	3.2 - 4.2	NA	NA
Calcium	NA	NA	NA	5800 - 441000	6230 - 57400	NA	15800 - 82400	35900	ND - 113000	NA	NA	4710 - 138000	NA	NA
Chromium	50	100	NA	10	ND	NA	ND	ND	ND	NA	NA	8.3 - 9.6	NA	NA
Copper	1000	1300	NA	2 - 9	ND	NA	ND	ND	ND	NA	NA	16.3 - 23.9	NA	NA
Lead	15	15	NA	2.1	ND	NA	ND	ND - 94	ND	NA	NA	1.0	NA	NA
Manganese	50	50 (1)	NA	17 - 129	ND - 92.7	NA	ND	40 - 134	ND - 320	NA	NA	7.1 - 521	NA	NA
Mercury	1.1	2	NA	ND	ND	NA	ND	ND	ND - 0.5	NA	NA	0.13 - 0.20	NA	NA
Nickel	100	100	NA	ND	ND	NA	ND	ND	ND - 57	NA	NA	28.8 - 31.2	NA	NA
Sodium	NA	NA	NA	ND - 103000	1420 - 70500	NA	1280 - 3860	16200	ND - 183000	NA	NA	2500 - 34200	NA	NA
Vanadium	NE	NE	NA	43	ND	NA	ND	ND	ND	NA	NA	20.4	NA	NA
Zinc	2100	5000 (1)	NA	8 - 35	ND - 350	NA	ND	6B - 50	ND - 437	NA	NA	10.6 - 125	NA	NA

Site Number Units	Site 48 ug/L	Site 63 ug/L	Site 65 ug/L	Site 69 ug/L	Site 78 ug/L	Site 82 ug/L	ABC Cleaners ug/L	Offsite Property #1 ug/L	Offsite Property #2 ug/L
Arsenic	ND	NA	NA	2.9	ND - 21.6	ND	NA	ND - 18.8	ND
Barium	16.8 - 27.6	NA	NA	13.7 - 35.8	ND	ND	NA	ND	ND
Beryllium	ND	NA	NA	1.3	ND	ND	NA	ND	ND
Cadmium	ND - 3.1	NA	NA	2.4	ND	ND	NA	ND	ND
Calcium	72600 - 80700	NA	NA	764 - 10600	ND - 296000	15200 - 58500	NA	ND - 7710	ND
Chromium	ND	NA	NA	7.2	ND - 59	ND	NA	ND - 30.0	ND
Copper	2.6 - 7.6	NA	NA	16.2	ND - 121	ND	NA	ND - 10.7	ND
Lead	ND	NA	NA	1	ND - 17.2	ND	NA	ND - 15.8	ND
Manganese	39.7 - 539	NA	NA	8.5 - 139	ND - 152	21 - 127	NA	ND - 63.8	ND - 21.3
Mercury	0.05 - 0.09	NA	NA	0.1	ND - 0.6	ND	NA	ND	ND
Nickel	ND	NA	NA	13.6	ND	ND	NA	ND	ND
Sodium	6430 - 8920	NA	NA	5170 - 41100	ND - 42200	5980 - 36000	NA	ND - 9540	ND - 6750
Vanadium	ND	NA	NA	16.6	ND	ND	NA	ND	ND
Zinc	ND	NA	NA	7.0 - 7670	ND - 58	ND - 119	NA	ND - 468	ND - 222

NOTES:
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NE - Not established.
NA - Not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 4
SUMMARY OF TOTAL METALS IN UPGRADIENT WELLS
SHALLOW MONITORING WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

			Upgradient of Site 1	Upgradient of Site 2	Upgradient of Site 6	Upgradient of Site 7	Upgradient of Site 9	Upgradient of Sites 21 and 78	Upgradient of Site 24	Upgradient of Site 28	Upgradient of Site 30	Upgradient of Site 41	Upgradient of Site 43	Upgradient of Site 44
Well Number	NCWQS	FEDERAL MCL	1GW06	2GW09	6BP6S	7GW03	9GW4S	78GW26	24GW07	28GW04		41GW05		
Units	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L	ug/L		ug/L		
Arsenic	50	50	17.8 J	12.9	ND	ND	ND	ND	3.7 J	7.4 J	No Upgradient Well Sites	13.1	No Upgradient Well Sites	No Upgradient Well Sites
Barium	2000	2000	548	328	257	428	71.3	ND	ND	576		55.7		
Beryllium	NE	4	3.2 J	3	ND	ND	ND	ND	ND	9.3 J		1.6		
Cadmium	5	5	ND	ND	ND	ND	ND	not reported	ND	3.3 J		10		
Chromium	50	100	193	75	198	124	ND	13	37	122		54.4		
Copper	1000	1300	64.8	25	35.6	36.4	ND	ND	ND	20.7 J		27		
Lead	15	15	78.8 J	27.2	64.4	30.3 J	ND	9	11.4	22.4 J		23.7		
Manganese	50	50 (1)	202	747	84.5	56.9 J	ND	ND	39	206		203		
Mercury	1.1	2	1.6 J	ND	ND	0.36	ND	ND	ND	ND		0.16		
Nickel	100	100	51.6	ND	ND	ND	ND	ND	ND	59.8		38		
Vanadium	NE	NE	214	86	209	152	ND	149	64	85.3		38.1		
Zinc	2100	5000 (1)	ND	103	56.6	86.4 J	ND	68.1	41	ND		173		

	Upgradient of Site 48	Upgradient of Site 63	Upgradient of Site 65	Upgradient of Site 69	Upgradient of Site 78	Upgradient of Site 82	Upgradient of ABC Cleaners	Upgradient of Offsite Property #1	Upgradient of Offsite Property #2
Well Number	48GW1			69GW07	9GW04	6MW3S	MW-S01		
Units	ug/L			ug/L	ug/L	ug/L	ug/L		
Arsenic	ND	No Upgradient Well Sites	No Upgradient Well Sites	2.9	ND	ND	ND	No Upgradient Well Sites	No Upgradient Well Sites
Barium	29.4 J			46.5	ND	ND	35		
Beryllium	ND			1.3	ND	ND	NA		
Cadmium	2.5 J			2.4	ND	ND	NA		
Chromium	ND			15.8	ND	ND	ND		
Copper	ND			16.2	ND	ND	ND		
Lead	ND			7.8	ND	ND	3		
Manganese	70.6			13	ND	ND	10		
Mercury	ND			0.1	ND	ND	NA		
Nickel	ND			13.6	ND	ND	ND		
Vanadium	3.4 J			17.3	ND	ND	9		
Zinc	ND			36.2	ND	ND	23		

NOTES:
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NE - Not established.
NA - Not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 5
COMPARISON OF INORGANIC SUBSURFACE SOIL CONCENTRATIONS IN "CLEAN" AND "CONTAMINATED" WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

	Camp Lejeune Background Subsurface Soil Data	Site 1		Site 2		Site 6		Site 7		Site 9		Site 21	
		"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Well Number		–	–	2GW07	2GW09	6GW18	6GW15	7GW03	7GW02	9GW5	9GW1	21GW03	21GW02
Soil Sample Number		–	–	2-GW07-01	2 - GW09-02	6-GW18-0303	6-GW15-03	GW03-002	GW02-7595	9-GW5-03	9-SB35-03	21-GW03	21-GW02
Arsenic	0.03 - 0.47	NA	NA	1.7 J	ND	ND	ND	1.5	ND	ND	ND	ND	0.55 J
Barium	2 - 11	NA	NA	12.5 J	ND	ND	ND	6.6	71	ND	ND	ND	4.4 J
Beryllium	0.03 - 0.23	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Cadmium	0.17 - 1.2	NA	NA	ND	ND	ND	ND	1.3	4.5	ND	ND	ND	ND
Chromium	2 - 9	NA	NA	10.9 J	4.6	ND	3.6	5.2	6	ND	2.6 J	15.2	3.2 J
Copper	0.47 - 2	NA	NA	0.97 J	ND	ND	ND	ND	ND	ND	ND	ND	ND
Lead	1 - 12	NA	NA	8 J	4.3	3.3 J	3.2	2.5	34.4	1.6	8.3	7.1	6.9 J
Manganese	0.40 - 8	NA	NA	4.3 J	4.1	ND	1.8 B	3	11.4	ND	3.7 J	9.8	3.4 J
Mercury	0.01 - 0.11	NA	NA	0.3 J	ND	ND	ND	10.13	0.48	ND	ND	ND	ND
Nickel	0.70 - 5.0	NA	NA	ND	ND	ND	ND	3.4	11.8	ND	ND	ND	ND
Vanadium	0.75 - 13	NA	NA	13.8 J	ND	ND	2.9 B	5.5	4.5	ND	ND	15.5	4.4 J
Zinc	0.40 - 12	NA	NA	ND	ND	ND	ND	1.3	ND	ND	6.1 J	5.7	3 J

NOTES:
Shaded area indicates inorganic which exceeded a MCL and/or NCWQS in groundwater sample.
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NA - No available wells to compare OR compound was not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 5
COMPARISON OF INORGANIC SUBSURFACE SOIL CONCENTRATIONS IN "CLEAN" AND "CONTAMINATED" WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

	Site 24		Site 28		Site 30		Site 41		Site 43		Site 44	
	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Well Number	24GW10	24GW02	--	--	--	--	41GW04	41-GW11	43GW01	43GW02	44GW02	44GW01
Soil Sample Number	24-GW10	24-BDA-SB09	--	--	--	--	41-GW04-DW	41-GW11-01	43-GW01-00	43-GW02-00	44-GW02-035	--
Arsenic	ND	ND	NA	NA	NA	NA	0.51	1.6	ND	ND	ND	1.7
Barium	ND	ND	NA	NA	NA	NA	9.4	22.6	ND	ND	ND	17.9
Beryllium	ND	ND	NA	NA	NA	NA	0.18	0.18	ND	ND	ND	ND
Cadmium	ND	ND	NA	NA	NA	NA	0.73	0.73	8.3	ND	ND	ND
Chromium	11.2	9 J	NA	NA	NA	NA	3.6	11.2	8.3	6.7	5.6 J	10 J
Copper	ND	ND	NA	NA	NA	NA	3.7	22.5	3.4	ND	6.2 J	25.4 J
Lead	4.6 J	6.2 J	NA	NA	NA	NA	4.8	110	9.8	6.1	5.5	10.7
Manganese	4.7	8.4 J	NA	NA	NA	NA	5.7	75.9	31.2	10.2	3.5	20.4
Mercury	ND	ND	NA	NA	NA	NA	0.06	0.31	ND	ND	ND	ND
Nickel	ND	ND	NA	NA	NA	NA	6.6	6.6	7.6	7.1	3.1	5.4
Vanadium	18.4	10	NA	NA	NA	NA	6.8	9.3	7.2	5.8	5	14.7
Zinc	ND	7.8	NA	NA	NA	NA	7.7	130	20.1	3	3.2	34.9

NOTES:
Shaded area indicates inorganic which exceeded a MCL and/or NCWQS in groundwater sample.
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NA - No available wells to compare OR compound was not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 5
COMPARISON OF INORGANIC SUBSURFACE SOIL CONCENTRATIONS IN "CLEAN" AND "CONTAMINATED" WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

	Site 48		Site 63		Site 65		Site 69		Site 78		Site 82	
	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Well Number	48-GW01	48-GW03	63MW03	63MW02	65MW03	65MW02	69-GW11	69-GW03	78GW34	78GW24-1	6-GW28	82MW3
Soil Sample Number	48-GW1A-01	48-C3-03	63-MW03-04	63-MW02-06	65-MW03-11	65-MW02-06	69-GW11-04	69-CSA-SB23-00	78-GW34	78-B903-SB03	6-GW28-09	6-GW27D-06
Arsenic	1.3	0.77 J	ND	ND	ND	10	0.68	0.63	ND	ND	0.31	15.9
Barium	21.1	15	ND	ND	3.4	6.8	5.6	3	ND	ND	ND	ND
Beryllium	0.2	0.19	ND	ND	ND	ND	0.3	0.28	ND	ND	ND	ND
Cadmium	1.4	1.8 J	ND	ND	NA	NA	0.56	0.52	ND	ND	ND	ND
Chromium	18.2	18.6	7.7	ND	3.9	5.7	6.8	1.7	18.5	9.7	2.6	3
Copper	3.5	3.8	ND	ND	1.5	3.1	3.8	3.5	3.4 B	ND	ND	ND
Lead	32.3	14.3	4.2	2.6	1.7	3.7	4.3	1.1	4.5 J	2.6 J	2.7	4.3
Manganese	41.1	7	4.9	18.8	3.5	6.9	4	1.2	9.2	ND	ND	ND
Mercury	ND	ND	ND	ND	NA	NA	0.06	0.05	ND	ND	ND	ND
Nickel	2.2	1.9 J	ND	ND	ND	ND	3.2	3	ND	ND	ND	ND
Vanadium	28.3	20.8 J	ND	ND	4.4	3	4.4	3.6	18.7	19.2	ND	ND
Zinc	ND	ND	ND	ND	2.7	5	3.2	1.5	7.9	ND	ND	ND

NOTES:
Shaded area indicates inorganic which exceeded a MCL and/or NCWQS in groundwater sample.
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NA - No available wells to compare OR compound was not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 5
COMPARISON OF INORGANIC SUBSURFACE SOIL CONCENTRATIONS IN "CLEAN" AND "CONTAMINATED" WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

	ABC Cleaners		Offsite Property #1		Offsite Property #2	
	"Clean"	"Contaminated"	"Clean"	"Contaminated"	"Clean"	"Contaminated"
Units	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Well Number	--	--	--	--	--	--
Soil Sample Number	--	--	--	--	--	--
Arsenic	NA	NA	NA	NA	NA	NA
Barium	NA	NA	NA	NA	NA	NA
Beryllium	NA	NA	NA	NA	NA	NA
Cadmium	NA	NA	NA	NA	NA	NA
Chromium	NA	NA	NA	NA	NA	NA
Copper	NA	NA	NA	NA	NA	NA
Lead	NA	NA	NA	NA	NA	NA
Manganese	NA	NA	NA	NA	NA	NA
Mercury	NA	NA	NA	NA	NA	NA
Nickel	NA	NA	NA	NA	NA	NA
Vanadium	NA	NA	NA	NA	NA	NA
Zinc	NA	NA	NA	NA	NA	NA

NOTES:
Shaded area indicates inorganic which exceeded a MCL and/or NCWQS in groundwater sample.
J - Value is estimated.
JB - Value is estimated below the CRDL, but greater than the IDL.
NA - No available wells to compare OR compound was not analyzed.
ND - Not detected.
NCWQS - North Carolina Water Quality Standard
MCL - Maximum Contaminant Level
(1) - Secondary MCL

TABLE 6
TOTAL METALS BY SITE
DEEP MONITORING WELLS
MCB, CAMP LEJEUNE, NORTH CAROLINA

	Site 1	Site 2	Site 6	Site 7	Site 9	Site 21	Site 24	Site 28	Site 30	Site 41	Site 43	Site 44	Site 48	Site 63	Site 65	Site 69	Site 78	Site 82	ABC Cleaners	Base Supply Wells (1)
Arsenic	No Deep Wells	ND	ND	No Deep Wells	ND	No Deep Wells	No Deep Wells	No Deep Wells	No Deep Wells	2.2 - 9.6	No Deep Wells	No Deep Wells	No Deep Wells	No Deep Wells	No Deep Wells	2.2 - 3.5	2 - 118 J	ND	ND - 14	ND
Barium		1420	ND		ND					22.6 - 186						42.3 - 58.0	ND - 547	ND	4 - 36	ND
Beryllium		ND	ND		ND					3.2						0.80 - 0.89	ND	ND	NA	NA
Cadmium		ND	ND		ND					4.2 - 4.7						3.2	ND - 21	ND	NA	ND
Chromium		16	ND		ND					9.6 - 40.5						8.3 - 20.7	ND - 10	ND	ND - 32	ND
Copper		ND	ND		ND					23.9						16.3	ND	ND	ND - 41	ND - 130
Lead		ND	ND		ND					1.0 - 11.1						3.1 - 6.8	ND	ND	ND - 10	ND - 16
Manganese		ND	ND - 33.5		ND					16.9 - 101						33.7 - 114	ND - 591	ND - 21.6	ND - 45	10 - 120
Mercury		ND	ND		ND					0.15 - 0.17						0.16 - 0.17	ND - 0.3	ND	NA	ND
Nickel		ND	ND		ND					31.2						28.8	ND	ND	ND - 14	NA
Vanadium		ND	ND		ND					20.4 - 49.8						20.4	ND - 24 J	ND	ND - 15	NA
Zinc		ND	ND		ND					17.8 - 83.8						31.1 - 48.7	ND - 181 J	ND	58 - 390	ND - 120

NOTES:
J - Value is estimated..
NA - Not analyzed.
ND - Not detected.
(1) - Range is based on 67 supply wells located throughout MCB, Camp Lejeune, NC.

TABLE 7
SUMMARY OF FIELD PARAMETERS IN SHALLOW, DEEP, AND SUPPLY WELLS MCB, CAMP LEJEUNE, NORTH CAROLINA

	Shallow Wells		Deep Wells		Supply Wells	
	Range (1)	Average Maximum	Range (2)	Average Maximum	Range (3)	Average Maximum
pH (standard units)	4.5 - 7.28	6.08	7.52 - 11.34	8.88	6.91 - 7.45	7.32
Specific Conductivity (micromhos/cm)	40 - 580	267	149 - 525	350	212 - 511	353

(1) - Based on data from 11 sites.
(2) - Based on data from 6 sites.
(3) - Based on data from 9 supply wells.

Figures

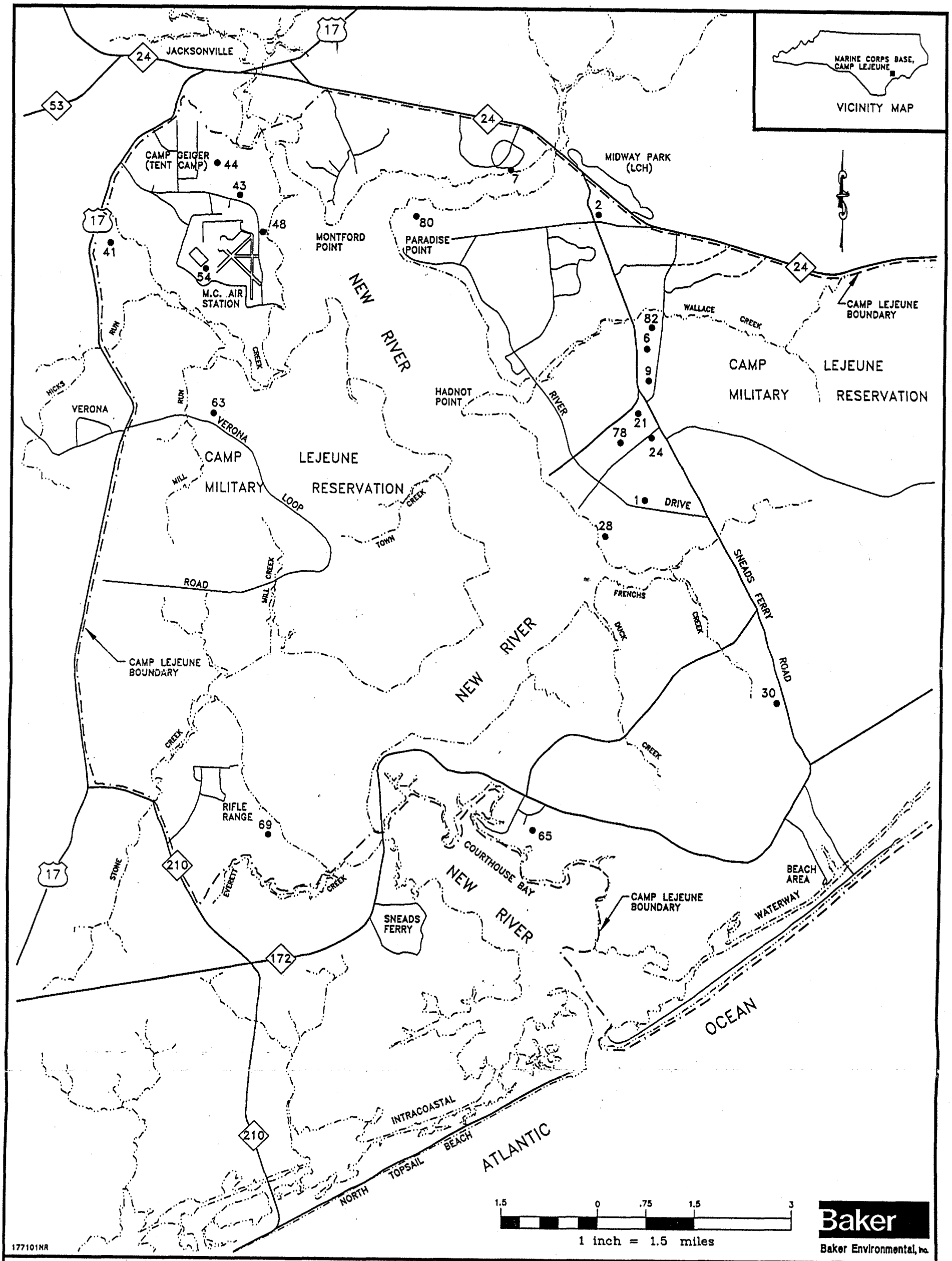
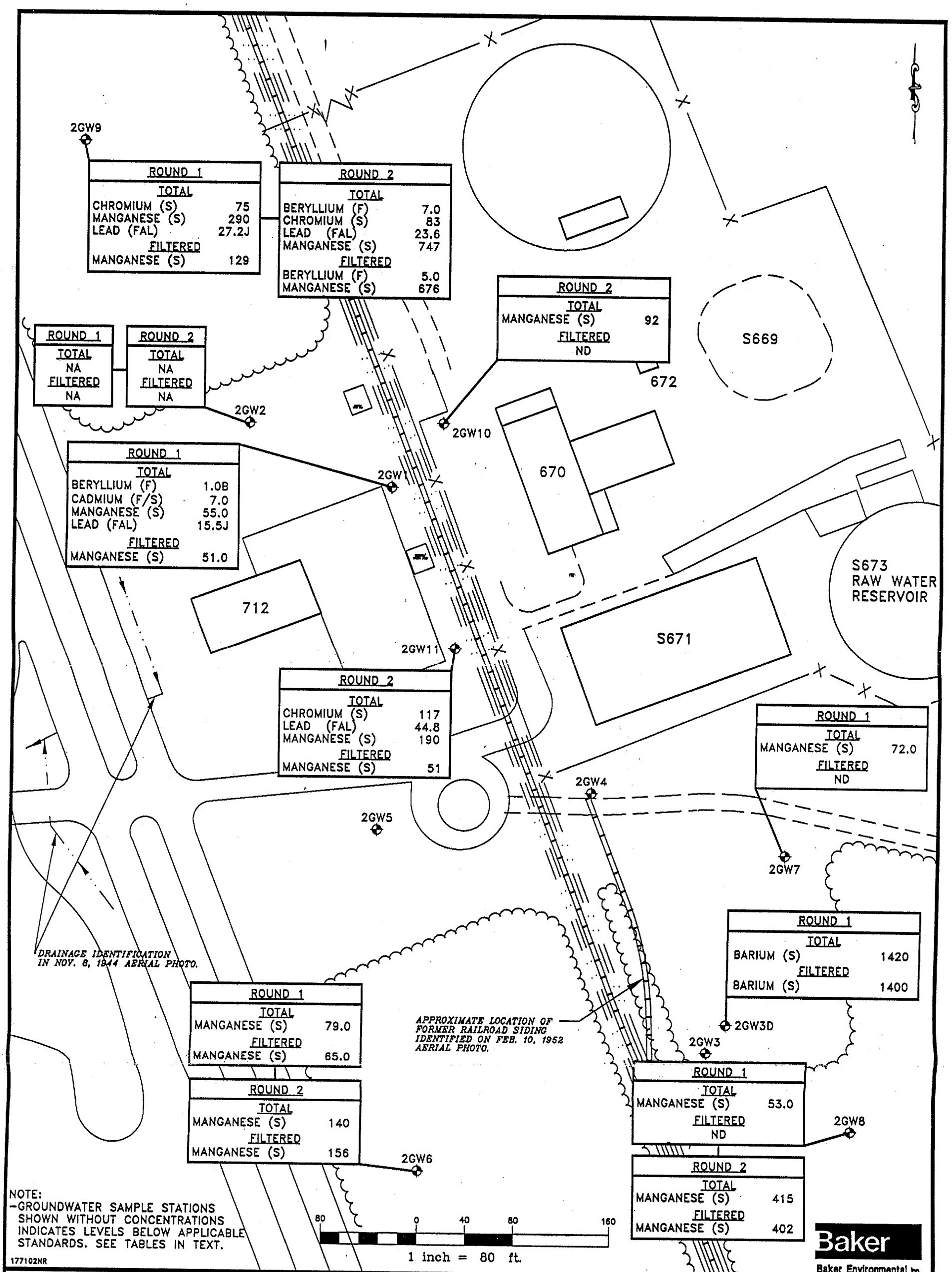


FIGURE 1
SITE LOCATION MAP
INORGANIC GROUNDWATER STUDY

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

01762WB1Z

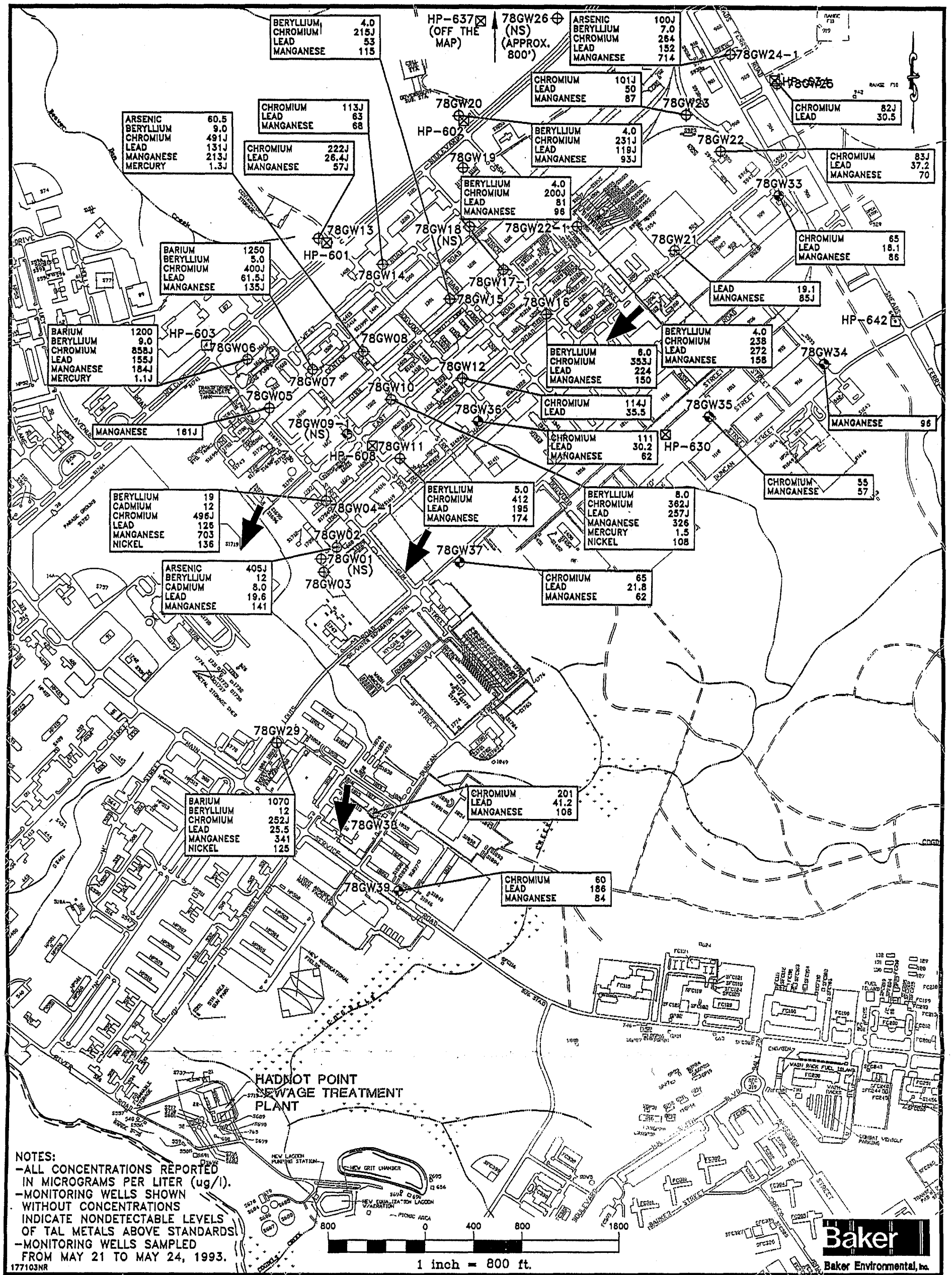


LEGEND

2GW1	GROUNDWATER WELL
(F)	EXCEEDS FEDERAL STANDARD
(S)	EXCEEDS STATE STANDARD
(FAL)	FEDERAL ACTION LEVEL
ND	NOT DETECTED ABOVE APPLICABLE STANDARDS
NA	NOT ANALYZED
J	ESTIMATED CONCENTRATIONS

CONCENTRATIONS EXPRESSED IN ug/l(ppb)
SOURCE: LANTDIV, FEB. 1992

FIGURE 2
POSITIVE DETECTIONS ABOVE APPLICABLE FEDERAL AND STATE STANDARDS FOR TOTAL AND FILTERED INORGANIC ANALYTES IN GROUNDWATER
SITE 2
REMEDIAL INVESTIGATION CTO-0174
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



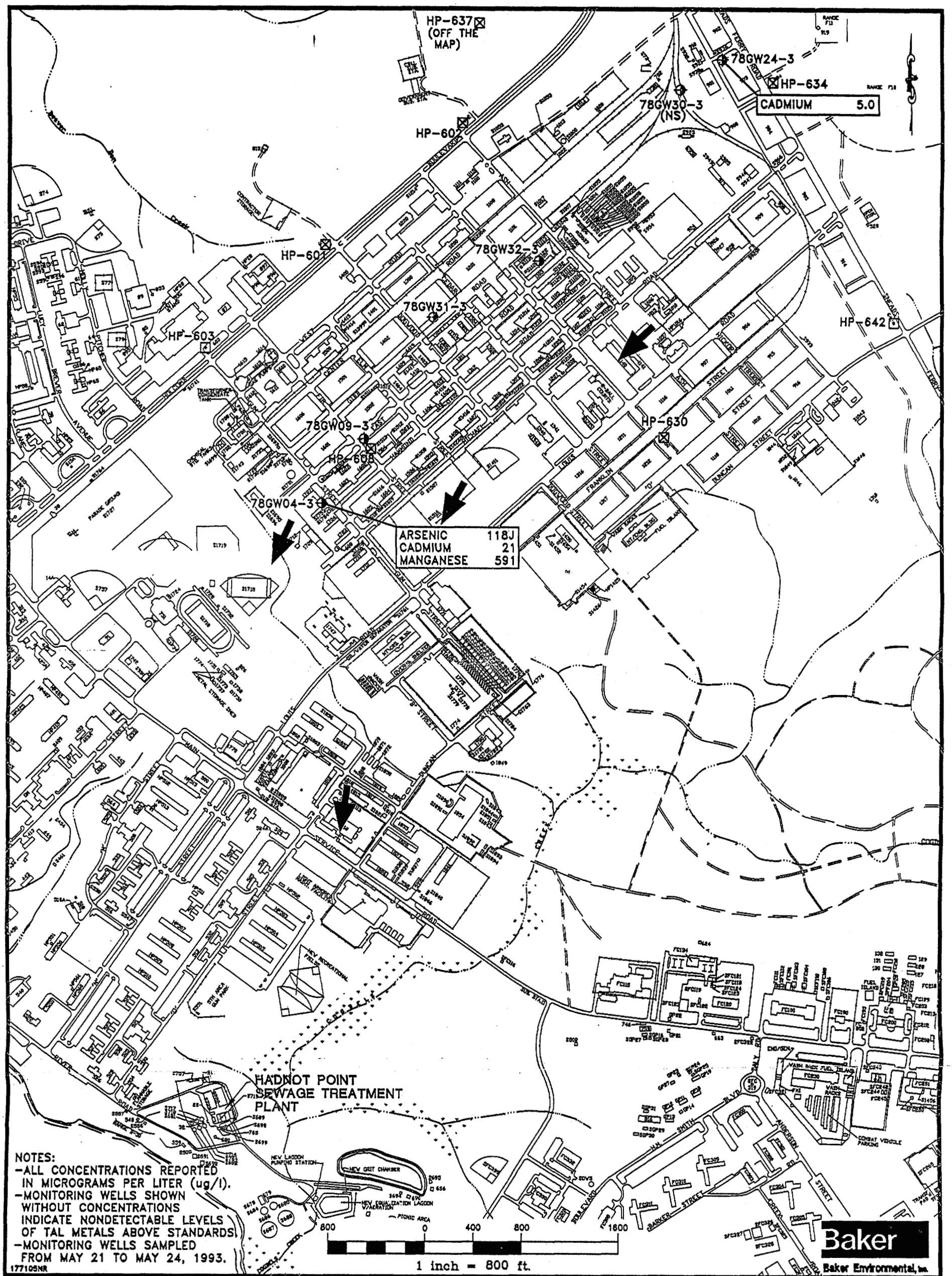
NOTES:
- ALL CONCENTRATIONS REPORTED IN MICROGRAMS PER LITER (ug/l).
- MONITORING WELLS SHOWN WITHOUT CONCENTRATIONS INDICATE NONDETECTABLE LEVELS OF TAL METALS ABOVE STANDARDS.
- MONITORING WELLS SAMPLED FROM MAY 21 TO MAY 24, 1993.

LEGEND

78GW02	EXISTING SHALLOW MONITORING WELL INSTALLED BY ESE, 1984-1991
78GW33	SHALLOW MONITORING WELL INSTALLED BY BAKER ENVIRONMENTAL, INC., 1993
→	APPROXIMATE DIRECTION OF GROUNDWATER FLOW
(NS)	NOT SAMPLED FOR TAL METALS
HP-603	WATER SUPPLY WELL (ACTIVE)-NOT SAMPLED
HP-601	WATER SUPPLY WELL (INACTIVE)-NOT SAMPLED

SOURCE: LANTDIV, FEBRUARY 1992

FIGURE 3
POSITIVE DETECTIONS OF TAL METALS ABOVE FEDERAL MCLs AND/OR NCWQS IN SHALLOW WELLS
SITE 78
REMEDIAL INVESTIGATION CTO-0177
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



LEGEND

78GW04-3 EXISTING DEEP MONITORING WELL INSTALLED BY ESE, 1991

APPROXIMATE DIRECTION OF GROUNDWATER FLOW

(NS) NOT SAMPLED FOR TAL METALS

HP-603 WATER SUPPLY WELL (ACTIVE)-NOT SAMPLED

HP-601 WATER SUPPLY WELL (INACTIVE)-NOT SAMPLED

SOURCE: LANTDIV, FEBRUARY 1992

FIGURE 4
POSITIVE DETECTIONS OF TAL METALS ABOVE FEDERAL MCLs AND/OR NCWQS IN DEEP WELLS
SITE 78
REMEDIAL INVESTIGATION CTO-0177
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

Appendix A
Data Summary Tables for Sites 2 and 78

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

	MINIMUM NONDETECTED UG/L	MAXIMUM NONDETECTED UG/L	MINIMUM DETECTED UG/L	MAXIMUM DETECTED UG/L	LOCATION OF MAXIMUM DETECTED	FREQUENCY OF DETECTION
ALUMINUM	NA	NA	68 J	542000 J	78-GW06-01	59 / 59
ANTIMONY	3 U	20 U	3.3 B	169 J	78-GW02-01	7 / 33
ARSENIC	2 U	10 U	2.3 J	405 J	78-GW02-01	44 / 48
BARIUM	NA	NA	17 B	1250	78-GW07-01	59 / 59
BERYLLIUM	1 U	4 U	1 B	19	24-GW02-01	52 / 59
CADMIUM	5 U	25 U	5	21	78-GW04-3-01	9 / 59
CALCIUM	NA	NA	2420 B	642000	78-GW04-1-01	59 / 59
CHROMIUM	10 U	50 U	10	858 J	78-GW06-01	46 / 59
COBALT	8 U	8 U	8 B	170	78-GW22-2-01	25 / 59
COPPER	2 U	2 U	3 B	699	78-GW39-01	58 / 59
IRON	NA	NA	32 B	523000	78-GW04-3-01	59 / 59
LEAD	1.8 U	4.9 U	2.9 B	2000 J	21-GW0B-01	50 / 59
MAGNESIUM	NA	NA	88 B	37100	24-GW03-01	59 / 59
MANGANESE	2 U	2 U	2 B	714	78-GW24-1-01	57 / 59
MERCURY	0.2 U	0.2 U	0.23 J	3.2	24-GW06-01	24 / 52
NICKEL	20 U	20 U	20 B	234	78-GW22-2-01	31 / 59
POTASSIUM	NA	NA	982 B	67300	78-GW32-3-01	59 / 59
SELENIUM	1 U	5 U	1.1 J	99.5 J	78-GW32-2-01	41 / 54
SILVER	3 U	15 U	5 J	5 J	78-GW09-3-01	1 / 59
SODIUM	NA	NA	2450 B	42500	78-GW32-3-01	59 / 59
THALLIUM	1 U	1 U	1 B	7.3 J	78-GW32-2-01	16 / 59
VANADIUM	4 U	4 U	4 J	1700	78-GW08-01	55 / 59
ZINC	6 U	6 U	6 J	967 J	78-GW22-2-01	57 / 59
CYANIDE	10 U	10 U	ND	ND	ND	0 / 54

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	21-GW01-01	21-GW02-01	21-GW03-01	21-GW04-01	21-GW0A-01	21-GW0B-01
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM	4910 J	319000 J	4820 J	20100 J	16900 J	118000 J
ANTIMONY	7 UJ	7 U	7 U	7 U	7 R	7 U
ARSENIC	15	10	2 U	11.8	45.2 J	30.4
BARIUM	32 B	647	51 B	119 B	100 B	386
BERYLLIUM	1 B	5	1 B	1 B	1 B	6
CADMIUM	5 U	10 U	5 U	5 U	5 U	10 U
CALCIUM	63000 J	24100 J	6130 J	21700 J	23800	6250 J
CHROMIUM	10 UJ	348 J	10 UJ	33 J	21 J	192 J
COBALT	8 U	18 B	8 U	10 B	8 U	36 B
COPPER	4 B	79	7 B	28	24 B	38
IRON	9920 J	122000 J	13400 J	24900 J	38900 J	72900 J
LEAD	1.8 UJ	214 J	4.9 UJ	33 J	29	2000 J
MAGNESIUM	5070	15400	4550 B	5490	4850 B	11600
MANGANESE	64 J	179 J	134 J	193 J	59	276 J
MERCURY	0.2 R	2.4 J	0.2 R	0.2 R	0.2 U	0.2 R
NICKEL	20 U	86	20 U	20 U	20 U	60
POTASSIUM	2390 B	10500	2240 B	3800 B	2360 B	9520
SELENIUM	1 U	11 J	1 U	1 U	1 UJ	3.7 J
SILVER	3 U	3 U	3 U	3 U	3 UJ	3 U
SODIUM	15700	12600	7950	14400	12600	14400
THALLIUM	1 U	1 UJ	1 U	1 UJ	1 UJ	1 U
VANADIUM	30 B	281	11 B	42 B	48 B	243
ZINC	65 J	136 J	27 J	57 J	41 J	175 J
CYANIDE	10 U	10 U	10 U	10 U	10 U	10 U

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	21-GW0C-01	24-GW01-01	24-GW02-01	24-GW03-01	24-GW04-01	24-GW06-01
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM	209000 J	262000	93700	50200	58900	19800
ANTIMONY	7 U	3 U	3 UJ	3 U	4.6 B	3.5 B
ARSENIC	101	10 UJ	2.3 J	4.7 J	116 J	10.1 J
BARIUM	467	380	1120	480	290	159 B
BERYLLIUM	8	3 B	19	5	2 B	9
CADMIUM	10 U	5 U	12	5 U	5 U	5
CALCIUM	35200 J	4120 B	2420 B	124000	65600	151000
CHROMIUM	291 J	296	316	110	153	78
COBALT	60	8 U	41 B	66	8 U	35 B
COPPER	84	49	52	22 B	31	15 B
IRON	106000 J	58600	395000	16300	70500	69500
LEAD	92.5 J	89	17.9	21.6	23.6	7.4
MAGNESIUM	16300	12200	7240	37100	7690	4320 B
MANGANESE	273 J	117	518	393	66	431
MERCURY	0.23 J	0.23	2.6	0.2 U	0.2 U	3.2
NICKEL	123	38 B	140	85	20 U	93
POTASSIUM	11800	12000	7550	15400	6130	3370 B
SELENIUM	4.3 B	1.3 J	1.1 J	16.2 J	4.3 J	1 UJ
SILVER	3 U	3 UJ	15 UJ	3 UJ	3 UJ	3 UJ
SODIUM	15200	6030	11600	19200	5230	7280
THALLIUM	1 U	1 U	1 U	2.4 B	1 U	1 B
VANADIUM	419	304	408	92	202	83
ZINC	487 J	118	461	650	80	489
CYANIDE	10 U					

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	24-GW07-01	24-GW08-01	24-GW09-01	24-GW10-01	78-GW02-01	78-GW03-01
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM	36000	61100	12800	23300	29200 J	23900 J
ANTIMONY	3 U	3 U	3.3 B	5.7 B	169 J	38.5 J
ARSENIC	3.7 J	8 J	4.3 J	2.5 J	405 J	5.7 J
BARIUM	85 B	112 B	164 B	59 B	109 B	36 B
BERYLLIUM	1 B	2 B	1 B	1 U	12	2 B
CADMIUM	5 U	5 U	5 U	5 U	8	5 U
CALCIUM	4960 B	27000	9530	3820 B	37000	32900
CHROMIUM	37	85	19	21	18 J	10 UJ
COBALT	8 U	8 U	11 B	8 U	8 U	8 U
COPPER	19 B	24 B	11 B	13 B	20 B	8 B
IRON	13700	27500	13100	7010	427000 J	5020 J
LEAD	11.4	23.8	5.1	7.3	19.6	3.4
MAGNESIUM	2670 B	5050	7630	1760 B	3650 B	2210 B
MANGANESE	39	47	180	29	141	27
MERCURY	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	20 U	20 U	20 U	20 U
POTASSIUM	3870 B	5580	4280 B	2620 B	2770 B	1320 B
SELENIUM	2.1 J	1.9 J	2.6 J	1 UJ	19.8 J	2.4 J
SILVER	3 UJ	3 UJ	3 UJ	3 UJ	15 UJ	3 UJ
SODIUM	6520	6550	6010	6650	5120	4270 B
THALLIUM	1 U	1 U	1 U	1 U	1 UJ	1 UJ
VANADIUM	64	129	26 B	34 B	1660	50
ZINC	41	47	50	20	58 J	12 J
CYANIDE	10 U	10 U	10 U	10 U	10 U	10 U

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	78-GW04-1-01	78-GW04-2-01	78-GW04-3-01	78-GW05-01	78-GW06-01	78-GW07-01
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM	297000 J	286	115 B	23000 J	542000 J	207000 J
ANTIMONY	7 R	7 R	7 R	7 U	7 U	7 U
ARSENIC	18.6 J	2 R	118 J	5.2 J	26 B	16.2
BARIUM	728	519	547	54 B	1200	1250
BERYLLIUM	19	1 B	1 B	2 B	9	5
CADMIUM	12	5 U	21	5 U	5 U	5 U
CALCIUM	642000	170000	105000	90200 J	7180 J	18700 J
CHROMIUM	496 J	10 U	50 U	17 J	858 J	400 J
COBALT	28 B	8 U	8 U	8 U	11 B	20 B
COPPER	87	4 B	7 B	8 B	127	53
IRON	267000 J	32 B	523000	14900 J	142000 J	96700 J
LEAD	126	2 U	2 U	13.1 J	155 J	61.5 J
MAGNESIUM	25500	88 B	3210 B	12700	24000	20000
MANGANESE	703	51	591	161 J	184 J	135 J
MERCURY	0.75	0.2 U	0.3	0.2 R	1.1 J	0.44 J
NICKEL	136	20 B	20 U	20 U	86	54
POTASSIUM	18800	21800	11300	4770 B	25600	13200
SELENIUM	9 J	1 R	1 R	6.4	5.5 B	9.1
SILVER	6 UJ	3 U	15 U	3 U	3 U	3 U
SODIUM	8870	11500	9290	23900	5090	9260
THALLIUM	1.2 J	1 U	1 U	1 UJ	1.1 B	1 UJ
VANADIUM	591	4 UJ	24 J	28 B	811	406
ZINC	373 J	7 J	79 J	32 J	223 J	158 J
CYANIDE	10 U	10 U	10 U	10 U	10 U	10 U

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SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	78-GW08-01	78-GW09-2-01	78-GW09-3-01	78-GW10-01	78-GW11-01	78-GW12-01
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM	483000 J	68 J	2710 J	404000 J	332000	108000 J
ANTIMONY	7 U	7 R	7 R	7 R	7 R	7 R
ARSENIC	60.5	2 R	2 R	43 J	10 R	9.6 J
BARIUM	740	27 B	41 B	582	631	155 B
BERYLLIUM	9	1 U	1 B	8	5	2 B
CADMIUM	25 U	5 U	5 U	10 U	25 U	10 U
CALCIUM	28200 J	114000	99100	54400	9130	31200
CHROMIUM	491 J	10 UJ	10 UJ	362 J	412	114 J
COBALT	29 B	8 U	8 U	31 B	8 U	8 U
COPPER	86	4 B	4 B	91	84	30
IRON	138000 J	955 J	99 J	157000 J	120000	26400 J
LEAD	131 J	2 U	2 U	257	195	35.5
MAGNESIUM	18500	2550 B	249 B	17400	15400	7220
MANGANESE	213 J	19	2 U	326	174	47
MERCURY	1.3 J	0.2 U	0.2 U	1.5	0.75	0.2 U
NICKEL	89	20 U	20 U	108	79	20 U
POTASSIUM	14700	1220 B	7820	15800	13000	6090
SELENIUM	25.3	1 UJ	1 UJ	18 J	12 J	3.6 J
SILVER	3 U	3 UJ	5 J	3 UJ	3 U	3 UJ
SODIUM	4710 B	5820	7280	3340 B	3490 B	5420
THALLIUM	1.3 J	1 UJ	1 UJ	1 UJ	1 U	1 UJ
VANADIUM	1700	4 U	9 B	499	526	145
ZINC	200 J	11 J	181 J	217 J	120 J	64 J
CYANIDE	10 U	10 U	10 U	10 U	10 U	10 U

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SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	78-GW13-01	78-GW14-01	78-GW15-01	78-GW16-01	78-GW17-1-01	78-GW17-2-01
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM	61800 J	103000 J	205000 J	341000 J	168000 J	541 J
ANTIMONY	7 U	7 R	7 R	7 R	7 R	7 R
ARSENIC	38.3	18.4 J	4 R	19 J	11.6 J	2 R
BARIUM	236	321	469	511	261	57 B
BERYLLIUM	3 B	1 B	4 B	6	4 B	1 B
CADMIUM	5 U	10 U	5 U	5 U	10 U	5 U
CALCIUM	4040 J	5300	29100	62700	86900	144000
CHROMIUM	222 J	113 J	215 J	353 J	200 J	10 UJ
COBALT	20 B	8 U	9 B	13 B	9 B	8 U
COPPER	18 B	33	49	80	40	5 B
IRON	61800 J	49600 J	43300 J	80900 J	48700 J	2120 J
LEAD	26.4 J	63	53	224	81	5.9
MAGNESIUM	11800	10600	13400	10800	9940	2570 B
MANGANESE	57 J	68	115	150	96	33
MERCURY	0.3 J	0.38	0.2 U	0.38	0.2 U	0.2 U
NICKEL	40	34 B	29 B	61	30 B	20 U
POTASSIUM	8210	6460	12000	14000	11600	1630 B
SELENIUM	4.7 B	12.4 J	2.1 J	14.5 J	5 UJ	1 UJ
SILVER	3 U	3 UJ	3 UJ	3 UJ	3 UJ	3 UJ
SODIUM	15000	15400	6410	4120 B	3180 B	9480
THALLIUM	1 U	1 UJ	1 J	1.4 J	1 J	1 UJ
VANADIUM	158	122	248	371	289	4 U
ZINC	96 J	51 J	116 J	157 J	98 J	6 UJ
CYANIDE	10 U	10 U	10 U	10 U	10 U	10 U

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SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	78-GW19-01	78-GW20-01	78-GW21-01	78-GW22-01	78-GW22-1-01	78-GW22-2-01
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM	4110 J	149000 J	23800 J	78900 J	257000	190000 J
ANTIMONY	7 R	7 U	7 U	14 J	7 R	7 UJ
ARSENIC	3.1 J	30.3	6.3 J	10 J	59.5 J	75.6
BARIUM	101 B	430	382	107 B	411	471
BERYLLIUM	1 B	4 B	2 B	1 B	4 B	12
CADMIUM	5 U	5 U	5 U	10 U	25 U	6
CALCIUM	3700 B	5450 J	32900 J	90100	44500	118000 J
CHROMIUM	10 UJ	231 J	22 J	83 J	238	389 J
COBALT	8 U	35 B	10 B	8 U	8 U	170
COPPER	3 B	61	11 B	34	54	92
IRON	8500 J	101000 J	26400 J	27600 J	62300	140000 J
LEAD	8.3	119 J	19.1 J	37.2	272	360 J
MAGNESIUM	5740	13100	9110	5500	12000	13000
MANGANESE	26	93 J	85 J	70	158	348 J
MERCURY	0.2 U	0.37 J	0.2 R	0.3	0.45	0.2 R
NICKEL	20 U	75	20 U	21 B	99	234
POTASSIUM	2130 B	9100	4100 B	6180	12000	10200
SELENIUM	1 UJ	4.2 B	1.1 B	4.2 J	7.5 J	45
SILVER	3 UJ	3 U	3 U	3 UJ	3 U	3 U
SODIUM	24000	11900	9480	12100	9910	8230
THALLIUM	1 UJ	1.8 B	1 U	1.7 J	1 U	3 B
VANADIUM	9 B	236	86	114	269	547
ZINC	6 J	250 J	108 J	50 J	150 J	967 J
CYANIDE	10 U	10 U	10 U	10 U	10 U	10 U

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	78-GW23-01	78-GW24-1-01	78-GW24-2-01	78-GW24-3-01	78-GW25-01	78-GW29-01
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM	111000 J	160000	1340	304	101000 J	78800 J
ANTIMONY	7 R	7 R	7 R	7 R	7 R	7 R
ARSENIC	7.6 J	100 J	2 R	2 R	11.4 J	19 J
BARIUM	230	396	34 B	17 B	119 B	1070
BERYLLIUM	2 B	7	1 B	1 U	2 B	12
CADMIUM	5 U	5 U	5	5	5 U	5 U
CALCIUM	10800	34400	107000	73400	37800	41600
CHROMIUM	101 J	264	10	10 U	82 J	252 J
COBALT	8 B	39 B	8 U	8 U	8 U	17 B
COPPER	25	71	6 B	5 B	26	34
IRON	30800 J	159000	2320	2370	26300 J	125000 J
LEAD	50	152	3.3	2.9 B	30.5	25.5
MAGNESIUM	7110	11600	1740 B	1500 B	4500 B	21900
MANGANESE	87	714	21	41	33	341
MERCURY	0.3	0.75	0.2 U	0.2 U	0.2 U	0.2 U
NICKEL	42	91	20 U	20 U	20 U	125
POTASSIUM	5450	9090	1050 B	982 B	4950 B	11600
SELENIUM	4.4 J	17.6 J	1 R	1 R	1.6 J	2.5 J
SILVER	3 UJ	3 U	3 U	3 U	3 UJ	3 UJ
SODIUM	7450	10800	8350	7050	16400	21200
THALLIUM	1.7 J	1.5 B	1 U	1 U	1.3 J	1 UJ
VANADIUM	108	436	4 J	4 UJ	144	183
ZINC	67 J	291 J	11 J	16 J	34 J	330 J
CYANIDE	10 U	10 U	10 U	10 U	10 U	10 U

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	78-GW31-2-01	78-GW31-3-01	78-GW32-2-01	78-GW32-3-01	78-GW33-01	78-GW34-01
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM	110 B	1200	112000 J	539 J	78200	6870
ANTIMONY	7 R	7 R	7 R	7 R	3 U	3 U
ARSENIC	2 R	2 R	21.6 J	2 R	5.6 J	4.4 J
BARIUM	17 B	415	476	42 B	162 B	173 B
BERYLLIUM	1 B	1 B	10	1 B	1 B	1 U
CADMIUM	5 U	5 U	10	5 U	5 U	5 U
CALCIUM	77600	308000	94600	5440	64800	10400
CHROMIUM	10 U	21	215 J	10 UJ	65	10 U
COBALT	8 U	8 U	84	8 U	8 U	8 U
COPPER	3 B	5 B	87	2 U	20 B	11 B
IRON	280	72 B	98500 J	112 J	14900	7250
LEAD	2 U	2 U	146	2 U	18.1	5.5
MAGNESIUM	2200 B	151 B	13700	319 B	7290	2880 B
MANGANESE	8 B	2 B	328	2 U	86	96
MERCURY	0.3	0.2 U	0.3	0.2 U	0.2 U	0.2 U
NICKEL	20 U	20 U	166	20 U	20 B	20 U
POTASSIUM	1640 B	61600	8460	67300	6900	2620 B
SELENIUM	1 R	1.7 J	99.5 J	1 UJ	12.8 J	1 UJ
SILVER	3 U	3 U	3 UJ	3 UJ	3 UJ	3 UJ
SODIUM	10400	26100	7510	42500	7030	4070 B
THALLIUM	1 U	1 UJ	7.3 J	1.3 J	1 U	1 U
VANADIUM	4 J	10 J	462	5 B	74	15 B
ZINC	23 J	10 J	826 J	6 UJ	37	59
CYANIDE	10 U	10 U	10 U	10 U	10 U	10 U

OPERABLE UNIT NO. 1 - SITES 21, 24, 78
SHALLOW, INTERMEDIATE AND DEEP MONITORING WELLS
GROUNDWATER DATA AND FREQUENCY SUMMARY
REMEDIAL INVESTIGATION CTO - 19177
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	78-GW35-01	78-GW36-01	78-GW37-01	78-GW38-01	78-GW39-01
UNITS	UG/L	UG/L	UG/L	UG/L	UG/L
ALUMINUM	47100	120000	73500	102000	60000
ANTIMONY	3 U	20 U	3 U	20 U	20 U
ARSENIC	2 UJ	3.1 J	4 J	33.6 J	4 UJ
BARIUM	261	152 B	123 B	420	256
BERYLLIUM	1 B	2 U	2 B	4 U	1 U
CADMIUM	5 U	5 U	5 U	25 U	5 U
CALCIUM	7480	35400	10100	62200	16800
CHROMIUM	55	111	65	201	60
COBALT	8 U	8 U	8 U	8 U	10 B
COPPER	15 B	29	22 B	110	699
IRON	11800	21200	18800	67500	28800
LEAD	13.2	30.2	21.8	41.2	186
MAGNESIUM	5680	5740	4600 B	17500	14300
MANGANESE	57	62	62	106	84
MERCURY	0.2 U	0.3	0.2 U	0.2 U	0.52
NICKEL	20 U	24 B	20 U	32 B	32 B
POTASSIUM	6150	5820	5990	8180	3840 B
SELENIUM	3.5 J	1.7 J	1.1 J	1.3 J	4.3 J
SILVER	3 UJ	3 UJ	3 UJ	3 UJ	3 UJ
SODIUM	10300	2450 B	7270	10300	19500
THALLIUM	1 U	1 U	1 U	1 U	1 U
VANADIUM	59	98	106	235	67
ZINC	30	57	58	134	138
CYANIDE	10 U	10 U	10 U	10 U	10 U

OPERABLE UNIT NO. 5 - SITE 2
SHALLOW AND DEEP MONITORING WELLS
GROUNDWATER STATISTICAL SUMMARY
REMEDIAL INVESTIGATION CTO - 19174
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	2-GW01-01	2-GW02-01	2-GW03-01	2-GW03DW-01	2-GW04-01	2-GW05-01
UNITS	UG/L		UG/L	UG/L	UG/L	UG/L
ALUMINUM	36000		5200	269	16800	4050
ANTIMONY	10 U		10 U	3.5 U	10 U	10 U
ARSENIC	21.2		2.5 B	1 UJ	23.6	2.2 B
BARIUM	52 B		46 B	1420	95 B	100 B
BERYLLIUM	1 B		0.5 U	0.5 U	2 B	0.5 U
CADMIUM	7		2.5 U	2.5 U	2.5 U	2.5 U
CALCIUM	23700		8460	450000	11100	21000
CHROMIUM	18		11	16	5 U	5 U
COBALT	10 B		4 U	4 U	4 U	4 U
COPPER	10 B		4 B	8 B	5 B	3 B
IRON	10300		7190	127	28100	12700
LEAD	15.5 L		3.5 J	1.1 UJ	2.7 J	0.5 UJ
MAGNESIUM	5660		1600 B	75 B	1920 B	4800 B
MANGANESE	55		21	2 U	21	46
MERCURY	0.1 U		0.1 U	0.1 U	0.1 U	0.1 U
NICKEL	10 U		10 U	10 U	10 U	10 U
POTASSIUM	2560 B		1030 B	187000	1210 B	2130 B
SELENIUM	4.2 B		0.5 U	0.5 U	0.5 U	0.5 U
SILVER	1.5 U		1.5 U	1.5 U	1.5 U	1.5 U
SODIUM	4040 B		5490	103000	5560	10100
THALLIUM	0.5 U		0.5 U	0.5 UJ	0.5 U	0.5 U
VANADIUM	72		10 B	2 U	89	9 B
ZINC	146		13 B	9 B	16 B	6 B
CYANIDE	5 U		5 U	5 U	5 U	5 U

OPERABLE UNIT NO. 5 - SITE 2
SHALLOW AND DEEP MONITORING WELLS
GROUNDWATER STATISTICAL SUMMARY
REMEDIAL INVESTIGATION CTO - 19174
MCB CAMP LEJEUNE, NORTH CAROLINA
TAL METALS AND CYANIDE

SAMPLE NO.	2-GW06-01	2-GW07-01	2-GW08-01	2-GW09-01
UNITS	UG/L	UG/L	UG/L	UG/L
ALUMINUM	13600	8550	6380	56300
ANTIMONY	10 U	10 U	3.5 UJ	10 U
ARSENIC	5.4 B	5.7 B	9.2 B	12.9
BARIUM	173 B	98 B	98 B	328
BERYLLIUM	0.5 U	0.5 U	0.5 U	3 B
CADMIUM	2.5 U	2.5 U	2.5 U	2.5 U
CALCIUM	7940	9350	5710	22100
CHROMIUM	15	15	5 U	75
COBALT	12 B	4 U	4 U	10 B
COPPER	5 B	7 B	6 B	25
IRON	11700	12500	9150	42000
LEAD	6.7 J	8.3 J	1.8 UJ	27.2 J
MAGNESIUM	4120 B	3620 B	2020 B	9980
MANGANESE	79	72	53	290
MERCURY	0.1 U	0.1 U	0.1 U	0.1 U
NICKEL	10 U	10 U	10 U	25 B
POTASSIUM	2570 B	1940 B	1550 B	6610
SELENIUM	0.5 U	0.5 U	0.5 U	0.5 U
SILVER	1.5 U	1.5 U	1.5 U	1.5 U
SODIUM	21900	8180	11800	18300
THALLIUM	0.5 U	0.5 U	0.5 U	0.5 U
VANADIUM	15 B	18 B	12 B	86
ZINC	26	22	27	103
CYANIDE	5 U	5 U	5 U	5 U

OPERABLE UNIT NO. 5 - SITE 2
SHALLOW AND DEEP MONITORING WELLS
GROUNDWATER STATISTICAL SUMMARY
REMEDIAL INVESTIGATION CTO - 19174
MCB CAMP LEJEUNE, NORTH CAROLINA
DISSOLVED METALS

SAMPLE NO.	2-GW01D-01	2-GW02D-01	2-GW03D-01	2-GW03DWD-01	2-GW04D-01	2-GW05D-01
UNITS	UG/L		UG/L	UG/L	UG/L	UG/L
ALUMINUM	1930		66 B	89 B	60 B	1990
ANTIMONY	10 U		10 U	3.5 UJ	10 U	10 U
ARSENIC	2.2 B		1 U	1 UJ	6.1 B	1 U
BARIUM	42 B		25 B	1400	64 B	98 B
BERYLLIUM	1 B		0.5 U	0.5 U	0.5 U	1 B
CADMIUM	2.5 U		2.5 U	2.5 U	2.5 U	2.5 U
CALCIUM	24400		7100	441000	11300	21800
CHROMIUM	5 U		5 U	11	5 U	5 U
COBALT	4 U		4 U	4 U	4 U	4 U
COPPER	4 B		2 B	6 B	9 B	4 B
IRON	2560		2170	10 U	2720	7400
LEAD	2.1 J		0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
MAGNESIUM	5220		1030 B	26 B	1840 B	4900 B
MANGANESE	51		4.5 U	1 U	17	46
MERCURY	0.1 U		0.1 U	0.1 U	0.1 U	0.1 U
NICKEL	10 U		10 U	10 U	10 U	10 U
POTASSIUM	2140 B		589 B	188000	1130 B	2170 B
SELENIUM	0.5 U		0.5 U	0.5 U	0.5 U	0.5 U
SILVER	1.5 U		1.5 U	1.5 U	1.5 U	1.5 U
SODIUM	3590 B		5400	103000	5710	9970
THALLIUM	0.5 U		0.5 U	0.5 U	0.5 U	0.5 U
VANADIUM	2 U		2 U	2 U	2 U	2 U
ZINC	28		3 U	3 U	8 B	9 B
CYANIDE						

OPERABLE UNIT NO. 5 - SITE 2
SHALLOW AND DEEP MONITORING WELLS
GROUNDWATER STATISTICAL SUMMARY
REMEDIAL INVESTIGATION CTO - 19174
MCB CAMP LEJEUNE, NORTH CAROLINA
DISSOLVED METALS

SAMPLE NO.	2-GW06D-01	2-GW07D-01	2-GW08D-01	2-GW09D-01
UNITS	UG/L	UG/L	UG/L	UG/L
ALUMINUM	149 B	43 B	95 B	1230
ANTIMONY	10 U	10 U	3.5 U	10 U
ARSENIC	2.9 B	1 U	7.1 B	1 U
BARIUM	126 B	49 B	62 B	149 B
BERYLLIUM	0.5 U	0.5 U	0.5 U	1 B
CADMIUM	2.5 U	2.5 U	2.5 U	2.5 U
CALCIUM	8080	9590	5800	20800
CHROMIUM	5 U	5 U	5 U	10
COBALT	10 B	8 B	4 U	14 B
COPPER	2 B	5 B	4 B	5 B
IRON	7070	4660	6180	7040
LEAD	0.5 UJ	0.5 UJ	0.5 UJ	0.5 UJ
MAGNESIUM	3610 B	3060 B	1730 B	6890
MANGANESE	65	48	40	129
MERCURY	0.1 U	0.1 U	0.1 U	0.1 U
NICKEL	10 U	10 U	10 U	10 U
POTASSIUM	1970 B	1490 B	1150 B	2790
SELENIUM	0.5 U	0.5 U	0.5 U	0.5 U
SILVER	1.5 U	1.5 U	1.5 U	1.5 U
SODIUM	22600	8720	12100	17200
THALLIUM	0.5 U	0.5 U	0.5 U	0.5 U
VANADIUM	2 U	2 U	2 U	2 U
ZINC	12 B	13 B	19 B	35
CYANIDE				

Table H-1. Comparison of Target Analyte Screening Values (SVs) with Detection and Quantitation Limits of Current Analytical Methods[a]

		Methods									
		Puget Sound Protocols[c]		National Study of Chemical Residues in Fish[d]		EMSL[e]	National Contaminant Biomonitoring Program[f]		California OEHHA[g]	State of California, Dept. of Fish and Game Environmental Services Division[h]	EPA 301(h) Monitoring Program[i]
Target Analyte	SV[b]	LOD[j]	PQL[k]	MLD[l]	TQL[m]	MDL[n]	LOD[o]	LOQ[p]	MDL[q]	LOD[r]	Detection Limits[s]
Metals											
Cadmium	10 ppm	0.01 ppm	N/R	N/I	N/I	0.02 ppm	0.005-0.046 ppm	N/R	N/I	0.01-0.1 ppm	0.01 ppm (GFAA); 0.4 ppm (ICP)
Mercury	0.6 ppm	0.01 ppm	N/R	1.3 ppb (LOD)[t]	N/R	0.1 ppm	0.01-0.05 ppm	N/R	0.050 ppm	0.02 ppm	0.01 ppm (CVAA)
Selenium	50 ppm	N/I	N/I	N/I	N/I	0.6 ppm	0.017-0.15 ppm	N/R	N/I	0.05 ppm	0.02 ppm (GFAA)
Organochlorine Pesticides						N/I					0.1-5 ppb[u]
Chlordane (total)	80 ppb										
cis-Chlordane		1-5 ppb	20 ppb	N/R	2.5 ppb		<1.5 ppb	2-15 ppb	3-5 ppb	5 ppb	
trans-Chlordane		N/I	N/I	N/R	2.5 ppb		<1.5 ppb	2-15 ppb	2-5 ppb	5 ppb	
cis-Nonachlor		N/I	N/I	N/R	2.5 ppb		<1.5 ppb	2-15 ppb	N/I	5 ppb	
trans-Nonachlor		N/I	N/I	N/R	2.5 ppb		<1.5 ppb	2-15 ppb	4-7 ppb	5 ppb	
Oxychlordane		N/I	N/I	N/R	2.5 ppb		<1.5 ppb	2-15 ppb	N/I	5 ppb	
DDT (total)	300 ppb								38 ppb		
4,4'-DDT		0.1-2 ppb	4 ppb	N/I	N/I		<1.5 ppb	2-15 ppb	7-13 ppb	10 ppb	
2,4'-DDT		0.1-2 ppb	4 ppb	N/I	N/I		<1.5 ppb	2-15 ppb	5-6 ppb	10 ppb	
4,4'-DDD		0.1-2 ppb	4 ppb	N/I	N/I		<1.5 ppb	2-15 ppb	5-6 ppb	10 ppb	
2,4'-DDD		0.1-2 ppb	4 ppb	N/I	N/I		<1.5 ppb	2-15 ppb	3-5 ppb	10 ppb	
4,4'-DDE		0.1-2 ppb	4 ppb	N/R	2.5 ppb		<1.5 ppb	2-15 ppb	15-38 ppb	5 ppb	
2,4'-DDE		0.1-2 ppb	4 ppb	N/I	N/I		<1.5 ppb	2-15 ppb	6-10 ppb	10 ppb	
Dicofol	10,000 ppb	N/I	N/I	N/R	2.5 ppb		N/I	N/I	N/I	100 ppb	
Dieldrin	7 ppb	0.1-2 ppb	4 ppb	N/R	2.5 ppb		<1.5 ppb	2-15 ppb	N/I	5 ppb	
Endosulfan (total)	20,000 ppb										
Endosulfan I		N/I	N/I	N/I	N/I		N/I	N/I	N/I	5 ppb	
Endosulfan II		N/I	N/I	N/I	N/I		N/I	N/I	N/I	70 ppb	
Endrin	3,000 ppb	N/I	N/I	N/R	2.5 ppb		<1-5 ppb	2-15 ppb	N/I	15 ppb	
Heptachlor epoxide	10 ppb	N/I	N/I	N/R	2.5 ppb		<1-5 ppb	2-15 ppb	N/I	N/I	
Hexachlorobenzene	70 ppb	0.1-2 ppb	4 ppb	N/R	2.5 ppb		<1-5 ppb	2-15 ppb	N/I	N/R	
Lindane	80 ppb	0.1-2 ppb	4 ppb	N/R	2.5 ppb		<1-5 ppb	2-15 ppb	N/I	2 ppb	
Mirex	2,000 ppb	N/I	N/I	N/R	2.5 ppb		<1-5 ppb	2-15 ppb	N/I	N/I	
Toxaphene	100 ppb	3-15 ppb	60 ppb	N/I	N/I		60 ppb	153 ppb	N/I	100 ppb	

See notes and references at end of table.

(continued)

Table H-1 (continued)

Target Analyte	SV[b]	Methods: Puget Sound Protocols[c] LOD[j]	Puget Sound Protocols[c] PQL[k]	National Study of Chemical Residues in Fish[d] MLD[l]	National Study of Chemical Residues in Fish[d] TQL[m]	EMSL[e] MDL[n]	National Contaminant Biomonitoring Program[f] LOD[o]	National Contaminant Biomonitoring Program[f] LOQ[p]	California OEHHA[g] MDL[q]	State of California, Dept. of Fish and Game Environmental Services Division[h] LOD[r]	EPA 301(h) Monitoring Program[i] Detection Limits[s]
Organophoshate Pesticides						N/I					1-15 ppb
Carbophenothion	1,000 ppb	N/I	N/I	N/I	N/I		N/I	N/I	N/I	N/I	
Chlorpyrifos	30,000 ppb	N/I	N/I	N/R	2.5 ppb		N/I	N/I	N/I	10 ppb	
Diazinon	900 ppb	N/I	N/I	N/I	N/I		N/I	N/I	N/I	50 ppb	
Disulfoton	500 ppb	N/I	N/I	N/I	N/I		N/I	N/I	N/I	N/I	
Ethion	5,000 ppb	N/I	N/I	N/I	N/I		N/I	N/I	N/I	20 ppb	
Terbufos	10,000 ppb	N/I	N/I	N/I	N/I		N/I	N/I	N/I	N/I	
Chlorophenoxy Herbicides											
Oxyfluorfen	800 ppb	N/I	N/I	N/I	N/I	N/I	N/I	N/I	N/I	N/I	N/I
PCBs (total Aroclors)	10 ppb	(1-5 ppb)[v]	(20 ppb)[v]	N/R	(1.25-6.25 ppb)[w]				50 ppb		20 ppb
Aroclor 1242		N/I	N/I	N/I	N/I		N/R	N/R	N/I	N/I	
Aroclor 1248		N/I	N/I	N/I	N/I		62 ppb	167 ppb	N/I	50 ppb	
Aroclor 1254		N/I	N/I	N/I	N/I		41 ppb	111 ppb	50 ppb	50 ppb	
Aroclor 1260		N/I	N/I	N/I	N/I		61 ppb	155 ppb	50 ppb	50 ppb	
Dioxins/dibenzo-furans (total)[x]	0.7 ppt	N/I	N/I	N/I		N/I	N/I	N/I	N/I	N/I	N/I
TCDD/TCDF				1 ppt	N/R						
PeCDD/PeCDF				2 ppt	N/R						
HxCDD/HxCDF				4 ppt	N/R						
HpCDD/HpCDF				10 ppt	N/R						
OCDD/OCDF				N/I	N/I						

CVAA = Cold vapor atomic absorption spectrophotometry.
GFAA = Graphite furnace atomic absorption spectrophotometry.
ICP = Inductively coupled plasma atomic emission spectrometry.
N/I = Target analyte not included in monitoring program or recommended methods.
N/R = Not reported.
PCBs = Polychlorinated biphenyls.

(continued)

Table H-1 (continued)

[a] All values for SVs, detection limits, and quantitation limits are given in units of weight of analyte per wet weight of edible fish/shellfish tissue.

[b] From Table 5-2. Except for mercury, SVs are for general adult population using oral RfDs or SFs available in the EPA IRIS database and assuming a consumption rate (CR) = 6.5 g/d, average body weight (BW) = 70 kg, lifetime (70-yr) exposure, and for carcinogens a risk level (RL) = 10^{-5}. The IRIS RfD for methylmercury was lowered by a factor of 5 to calculate the recommended SV = 0.6 ppm in order to account for a possible fivefold increase in fetal sensitivity to methylmercury exposure (WHO, 1990). This approach is deemed to be most prudent as an interim measure until the current reevaluation of the methylmercury RfD is completed (IRIS, 1993). **Note:** Increasing CR, decreasing BW and/or using an RL $<10^{-5}$ will decrease the SV. *Program managers must ensure that detection and quantitation limits of analytical methods are sufficient to allow reliable quantitation of target analytes at or below selected SVs.* If analytical methodology is not sensitive enough to reliably quantitate target analytes at or below selected SVs (e.g., PCBs, dioxins/dibenzofurans), the program managers must determine appropriate fish consumption guidance based on lowest detectable concentrations, or provide justification for adjusting SVs to values at or above achievable method detection or quantitation limits.

[c] Puget Sound Estuary Program (1990a,b). Analysis of cadmium and lead by GFAA. Analysis of mercury by CVAA. Analysis of organochlorine pesticides and PCBs by gas chromatography/electron capture detection (GC/ECD). Analysis of PAHs by gas chromatography/mass spectrometry (GC/MS). Inorganic protocols based on U.S. EPA SW-846 methods (U.S. EPA, 1986b) and U.S. EPA Contract Laboratory Methods (U.S. EPA, 1987a). Organic protocols based on Krahn et al. (1988), U.S. EPA (1984, 1986b, 1988, 1989d), Horwitz et al. (1980), NUS (1985), MacLeod et al. (1985), and Brown et al. (1985), on a series of Puget Sound Estuary Program Workshops, and on a national QA Workshop sponsored by the National Oceanic and Atmospheric Administration (NOAA) and National Institute of Standards and Technology (NIST).

[d] National Study of Chemical Residues in Fish (U.S. EPA, 1992a, 1992b). Analysis of mercury by CVAA (U.S. EPA, 1989a). Analysis of organochlorine pesticides and PCBs by GC/MS (U.S. EPA, 1989c). *Analysis of dioxins/dibenzofurans by high-resolution gas chromatography/high-resolution mass spectrometry (HRGC/HRMS) (U.S. EPA, 1989b).*

[e] U.S. EPA (1991). Analysis of cadmium, lead, and selenium by ICP. Analysis of mercury by CVAA.

[f] U.S. Fish and Wildlife Service National Contaminant Biomonitoring Program (Schmitt and Brumbaugh, 1990; Schmitt et al., 1990). Analysis of cadmium and lead by GFAA. Analysis of mercury by CVAA. Analysis of selenium by hydride generation atomic absorption (HAA). Analysis of organochlorine pesticides and PCBs by GC/ECD.

[g] Pollock et al. (1991). Composited fish samples extracted and analyzed for organics by GC/ECD using FDA Method PAM 211.1 in the *Pesticide Analytical Manual*–Vol. I (U.S. FDA, 1978). This method has been validated in interlaboratory studies and is an official method of the Association of Official Analytical Chemists (AOAC) for DDT, chlordane, and PCBs in fish. Mercury was determined using the AOAC flameless atomic absorption method (Williams, 1984).

[h] California Department of Fish and Game. (1990). Metals methods based in part on EPA SW-846 methods (U.S. EPA, 1986b). Analysis of cadmium and lead by flame AA and GFAA. Analysis of mercury by CVAA. Analysis of selenium by hydride generation AA. Organics methods based on FDA methods (U.S. FDA, 1975) and EPA 301(h) methods (U.S. EPA, 1986a). Analysis of organochlorine and organophosphate pesticides and PCBs by GC/ECD. Analysis of PAHs by gas chromatography/flame ionization detection (GC/FID).

[i] U.S. EPA (1985, 1986, 1987b). Analysis of cadmium and lead by GFAA or ICP. Analysis of selenium by GFAA. Analysis of mercury by CVAA. Analysis of organochlorine pesticides and PCBs by GC/ECD. Analysis of organophosphate pesticides by GC/phosphorus specific flame photometric or alkali flame ionization detection. Analysis of PAHs by GC/MS. Extract cleanup (e.g., removal of polar interferences by alumina column chromatography) assumed.

[j] LOD = Limit of detection. Method detection limit as defined in 40 CFR 136 using a minimum of three replicates.

(continued)

Table H-1 (continued)

[k] PQL = Practical quantitation limit. Defined in the Puget Sound Estuary Program as the minimum concentration of an analyte required to be measured and allowed to be reported without qualification as an estimated quantity for samples without substantial interferences. Based on the lowest concentration of the initial calibration curve (C, in µg/mL), the amount of sample typically analyzed (W, in g), and the final extract volume (V, in mL):

$$\text{PQL } (\mu g/g;ppm) = \frac{C\,(\mu g/mL)\cdot V(mL)}{W(g)}$$

[l] MLD = Minimum level of detection. Concentration predicted from ratio of baseline noise area to labeled internal standard plus three times the standard error of the estimate from the weighted initial calibration curve.

[m] TQL = Target quantitation limit. Specific detection limits were not determined for individual samples, so were operationally set at zero.

[n] MDL = Method detection limit. Minimum concentration of an analyte that can be identified, measured, and reported with 99 percent confidence that the analyte concentration is greater than zero. Determined according to the procedure in 40 CFR 136 using seven replicates.

[o] LOD (for metals) = $3(S_b^2 - S_s^2)$, where S_b^2 and S_s^2 are variances of concentrations measured for procedural blanks and a low-level sample, respectively. LOD (for pesticides) = Mean method blank plus three times the standard deviation. Determined according to Keith et al. (1983).

[p] LOQ = Limit of quantitation. Mean method blank plus 10 times the standard deviation. Determined according to Keith et al. (1983).

[q] MDL = Method detection limit. Determined according to procedure in 49 CFR 209.

[r] LOD = Limit of detection. The lowest concentration that is statistically different from a blank. Determined according to the IUPAC method in Long and Winefordner (1983).

[s] From U.S. EPA (1985). Based on detection levels normally achieved in methods commonly used for tissue analyses in environmental laboratories. These detection limits are generally between the instrument detection limit (IDL) and method detection limit (MDL) (see Section 8.3.3.3) and are based on the expertise and best professional judgment of experienced analysts. Detection limits for metals based on 5 g (wet weight) of muscle tissue digested and diluted to 50 mL. Detection limits for organics based on 25 g (wet weight) of muscle tissue extracted, concentrated to 0.5 mL after gel permeation chromatography cleanup, and 1 µL injected. Bonded, fused silica capillary GC columns, which provide better resolution than packed columns, are assumed for analysis of semivolatile compounds.

[t] LOD = Limit of detection. No procedure given for determining the LOD.

[u] The higher detection limits are appropriate for pesticides such as mirex, the DDTs, and endosulfans. Compounds such as lindane and hexachlorobenzene can be detected at the lower limits. Toxaphene (a mixture) may require a higher detection limit than the other organochlorine pesticides.

[v] Aroclors not determined. Values given are for individual mono- through decachlorobiphenyls.

[w] Aroclors not determined. PCBs reported by total congener at the following levels of chlorination (TQLS in parentheses): 1-3 (1.25 ppb); 4-6 (2.5 ppb); 7-8 (3.75 ppb); 9-10 (6.25 ppb).

(continued)

Table H-1 (continued)

[x] Detection and quantitation limits obtained from a survey of 10 laboratories with expertise in dioxin/dibenzofuran analyses by HRGC/HRMS ranged from 0.04-10 ppt and 0.2-100 ppt, respectively.

References:

Brown, D.W., A.J. Friedman, and W.D. MacLeod, Jr. 1985. *Quality Assurance Guidelines for Chemical Analysis of Aquatic Environmental Samples.* Prepared for Seattle District, U.S. Army Corps of Engineers, Seattle, Washington. National Analytical Facility, National Oceanographic and Atmospheric Administration, Seattle, WA.

California Department of Fish and Game. 1990. *Laboratory Quality Assurance Program Plan.* Environmental Services Division, Sacramento, CA.

Horwitz, W., L. Kamps, and K. Boyer. 1980. Quality assurance in the analysis of foods for trace costituents. *Anal. Chem.* 63:1344-1354.

IRIS (Integrated Risk Information System). 1993. U.S. Environmental Protection Agency, Duluth, MN.

Keith, L.H., W. Crommett, J. Deegan, Jr., R.A. Libby, J.K. Taylor, and G. Wentler. 1983. Principles of environmental analysis. *Analyt. Chem.* 55:1426-1435.

Krahn, M.M., C.A. Wigren, R.W. Pearce, L.K. Moore, R.G. Bogar, W.D. MacLeod, Jr., S.L. Chan, and D.W. Brown. 1988. Standard Analytical Procedures for the NOAA National Analytical Facility. New HPLC Cleanup and Revised Extraction Procedures for Organic Contaminants. NOAA Tech. Memo NMFS F/NWC-153. National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Northwest and Alaska Fisheries Center, Seattle, WA. 52 pp.

Long, G.L., and J.L. Winefordner. 1983. Limit of detection. A closer look at the IUPAC definition. *Anal. Chem.* 55(7):712A-724A.

MacLeod W., Jr., D. Brown, A. Friedman, O. Maynes, and R. Pierce. 1985. *Standard Analytical Procedures of the NOAA National Analytical Facility, 1984-85, Extractable Toxic Organic Compounds.* NOAA Technical Memorandum NMFS F/NWC-64. Prepared for the National Status and Trends Program, National Oceanic and Atmospheric Administration, U.S. Department of Commerce, Rockville, MD.

NUS. 1985. Laboratory data validation functional guidelines for evaluating organics analysis. Technical Directive Document No. HQ-8410-01. Prepared by the U.S. EPA Data Validation Workgroup for U.S. EPA Hazardous Site Control Division, Washington, DC.

Puget Sound Estuary Program. 1990a (revised). Recommended guidelines for measuring organic compounds in Puget Sound sediments and tissue samples. In: *Recommended Protocols and Guidelines for Measuring Selected Environmental Variables in Puget Sound.* Prepared by PTI Environmental Services, Bellevue, WA. Region 10, U.S. Environmental Protection Agency, Seattle, WA. (Looseleaf)

Puget Sound Estuary Program. 1990b (revised). Recommended protocols for measuring metals in Puget Sound water, sediment, and tissue samples. In: *Recommended Protocols and Guidelines for Measuring Selected Environmental Variables in Puget Sound.* Prepared by PTI Environmental Services, Bellevue, WA. Region 10, U.S. Environmental Protection Agency, Seattle, WA. (Looseleaf)

Schmitt, C.J., and W.G. Brumbaugh. 1990. National Contaminant Biomonitoring Program: Concentrations of arsenic, cadmium, copper, lead, mercury, selenium, and zinc in U.S. freshwater fish, 1978-1984. *Arch. Environ. Contam. Toxicol.* 19:731-747.

(continued)

Table H-1 (continued)

Schmitt, C.J., J.L. Zajicek, and P.H. Peterman. 1990. National Contaminant Biomonitoring Program: Residues of organochlorine chemicals in U.S. freshwater fish, 1976-1984. *Arch. Environ. Contam. Toxicol.* 19:748-781.

U.S. EPA (U.S. Environmental Protection Agency). 1984 (revised January 1985). *Contract Laboratory Program Statement of Work for Organics Analysis, Multi-Media, Multi-Concentration.* IFB WA 85-T176, T177, T178. Washington, DC.

U.S. EPA (U.S. Environmental Protection Agency). 1985. *Bioaccumulation Monitoring Guidance: 3. Recommended Analytical Detection Limits.* EPA-503/6-90-001. Office of Marine and Estuarine Protection, Washington, DC.

U.S. EPA (U.S. Environmental Protection Agency). 1986a. *Bioaccumulation Monitoring Guidance: 4. Analytical Methods for U.S. EPA Priority Pollutants and 301(h) Pesticides in Tissues from Marine and Estuarine Organisms.* EPA-503/6-90-002. Office of Marine and Estuarine Protection, Washington, DC.

U.S. EPA (U.S. Environmental Protection Agency). 1986b. *Test Methods for the Evaluation of Solid Waste, Physical/Chemical Methods.* SW-846; 3rd Edition (with 1990 updates). Office of Solid Waste and Emergency Response, Washington, DC.

U.S. EPA (U.S. Environmental Protection Agency). 1987a. *Contract Laboratory Program Statement of Work, Inorganic Analysis, Multi-media, Multi-concentration.* SOW No. 87 (Revised December 1987). Washington, DC.

U.S. EPA (U.S. Environmental Protection Agency). 1987b. *Quality Assurance/Quality Control (QA/QC) for 301(h) Monitoring Programs: Guidance on Field and Laboratory Methods.* EPA-430/9-86-004. Office of Marine and Estuarine Protection, Washington, DC.

U.S. EPA (U.S. Environmental Protection Agency). 1988. *Laboratory Data Validation Functional Guidelines for Evaluating Organics Analysis.* EPA R-582-5-5-01. U.S. EPA Sample Management Office, Alexandria, VA.

U.S. EPA (U.S. Environmental Protection Agency). 1989a. *Analytical Procedures and Quality Assurance Plan for the Determination of Mercury in Fish.* Draft. Environmental Research Laboratory, Duluth MN.

U.S. EPA (U.S. Environmental Protection Agency). 1989b. *Analytical Procedures and Quality Assurance Plan for the Determination of PCDD/PCDF in Fish.* Draft. Environmental Research Laboratory, Duluth MN.

U.S. EPA (U.S. Environmental Protection Agency). 1989c. *Analytical Procedures and Quality Assurance Plan for the Determination of Xenobiotic Chemical Contaminants in Fish.* EPA-600/3-90-023. Environmental Research Laboratory, Duluth, NM.

U.S. EPA (U.S. Environmental Protection Agency). 1989d. *Method 1624: Volatile Organic Compounds by Isotope Dilution GC/MS. Method 1625: Semivolatile Organic Compounds by Isotope Dilution GC/MS.* Office of Water Regulations and Standards, Industrial Technology Division, Washington, DC. 75 pp.

U.S. EPA (U.S. Environmental Protection Agency). 1991. *Methods for the Determination of Metals in Environmental Samples.* EPA-600/4-91/010. Environmental Monitoring Systems Laboratory, Office of Research and Development, Cincinnati, OH.

U.S. EPA (U.S. Environmental Protection Agency). 1992a. *National Study of Chemical Residues in Fish.* Volume I. EPA-823/R-92-008a. Office of Science and Technology, Washington, DC.

(continued)

Table H-1 (continued)

U.S. EPA (U.S. Environmental Protection Agency). 1992b. *National Study of Chemical Residues in Fish.* Volume II. EPA-823/R-92-008b. Office of Science and Technology, Washington, DC.

U.S. FDA (U.S. Food and Drug Administration). 1975. *Pesticide Analytical Manual, Volume I, Methods Which Detect Multiple Residues.* Section 2.3.2. Rockville, MD.

U.S. FDA (U.S. Food and Drug Administration). 1978. *Pesticide Analytical Manual, Volumes I and II.* Report No. FDA/ACA/79/76-3. U.S. Department of Health and Human Services, Washington, DC.

WHO (World Health Organization). 1990. *Environmental Health Criteria 101: Methyl mercury.* World Health Organization, Geneva, Switzerland.

Williams, S. (ed.). 1984. *Official Methods of Analysis of the Association of Official Analytical Chemists.* Fourteenth edition. The Association of Official Analytical Chemists, Inc., Arlington, VA.

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LEGEND

Abbreviations column descriptions are:

MCLG - Maximum Contaminant Level Goal. A non-enforceable concentration of a drinking water contaminant that is protective of adverse human health effects and allows an adequate margin of safety.

MCL - Maximum Contaminant Level. Maximum permissible level of a contaminant in water which is delivered to any user of a public water system.

RfD - Reference Dose. An estimate of a daily exposure to the human population that is likely to be without appreciable risk of deleterious effects over a lifetime.

DWEL - Drinking Water Equivalent Level. A lifetime exposure concentration protective of adverse, non-cancer health effects, that assumes all of the exposure to a contaminant is from a drinking water source.

(*) The codes for the Status Reg and Status HA columns are as follows:

F - final
D - draft
L - listed for regulation
P - proposed
T - tentative

Other codes found in the table include the following:

NA - not applicable
PS - performance standard 0.5 NTU - 1.0 NTU
TT - treatment technique

** - No more than 5% of the samples per month may be positive. For systems collecting fewer than 40 samples/month, no more than 1 sample per month may be positive.

*** - guidance

- Large discrepancies between Lifetime and Longer-term HA values may occur because of the Agency's conservative policies, especially with regard to carcinogenicity, relative source contribution, and less than lifetime exposures in chronic toxicity testing. These factors can result in a cumulative UF (uncertainty factor) of 10 to 1000 when calculating a Lifetime HA.

The scheme for categorizing chemicals according to their carcinogenic potential is as follows:

Group A: Human carcinogen

Sufficient evidence in epidemiologic studies to support causal association between exposure and cancer

Group B: Probable human carcinogen

Limited evidence in epidemiologic studies (Group B1) *and/or* sufficient evidence from animal studies (Group B2)

Group C: Possible human carcinogen

Limited evidence from animal studies *and* inadequate or no data in humans

Group D: Not classifiable

Inadequate or no human and animal evidence of carcinogenicity

Group E: No evidence of carcinogenicity for humans

No evidence of carcinogenicity in at least two adequate animal tests in different species *or* in adequate epidemiologic and animal studies

Drinking Water Standards and Health Advisories

Chemicals	Standards			Status HA	Health Advisories								Cancer Group
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
ORGANICS													
Acenaphthene	-	-	-	-	-	-	-	-	0.06	-	-	-	-
Acifluorfen	T	zero	-	F	2	2	0.1	0.4	0.013	0.4	-	0.1	B2
Acrylamide	F	zero	TT	F	0.2	0.2	0.01	0.04	0.001	0.04	-	0.001	B2
Acrylonitrile	T	zero	-	D	-	-	-	-	-	-	-	0.006	B1*
Adipate (diethylhexyl)	F	0.4	0.4	-	20	20	20	60	0.6	20	0.4	3	C
Alachlor	F	zero	0.002	F	0.4	0.1	-	-	0.01	0.4	-	0.04	B2
Aldicarb	D	0.007	0.007	D	-	-	-	-	0.001	0.035	0.007	-	D
Aldicarb sulfone	D	0.007	0.007	D	-	-	-	-	0.001	0.035	0.007	-	D
Aldicarb sulfoxide	D	0.007	0.007	D	-	-	-	-	0.001	0.035	0.007	-	D
Aldrin	-	-	-	D	0.0003	0.0003	0.0003	0.0003	0.00003	0.001	-	0.0002	B2
Ametryn	-	-	-	F	9	9	0.9	3	0.009	0.3	0.06	-	D
Ammonium sulfamate	-	-	-	F	20	20	20	80	0.28	8	2	-	D
Anthracene (PAH)	-	-	-	-	-	-	-	-	0.3	-	-	-	D
Atrazine	F	0.003	0.003	F	0.1	0.1	0.05	0.2	0.035	0.2*	0.003*	-	C
Baygon	-	-	-	F	0.04	0.04	0.04	0.1	0.004	0.1	0.003	-	C
Bentazon	T	0.02	-	F	0.3	0.3	0.3	0.9	0.0025	0.09	0.02	-	D
Benz(a)anthracene (PAH)	P	zero	0.0001	-	-	-	-	-	-	-	-	-	B2
Benzene	F	zero	0.005	F	0.2	0.2	-	-	-	-	-	0.1	A
Benzo(a)pyrene (PAH)	F	zero	0.0002	-	-	-	-	-	-	-	-	-	B2*
Benzo(b)fluoranthene (PAH)	P	zero	0.0002	-	-	-	-	-	-	-	-	-	B2
Benzo(g,h,i)perylene (PAH)	-	-	-	-	-	-	-	-	-	-	-	-	D
Benzo(k)fluoranthene (PAH)	P	zero	0.0002	-	-	-	-	-	-	-	-	-	B2
bis-2-Chloroisopropyl ether	-	-	-	F	4	4	4	13	0.04	1	0.3	-	D
Bromacil	L	-	-	F	5	5	3	9	0.13	5	0.09	-	C
Bromobenzene	L	-	-	D	-	-	-	-	-	-	-	-	-

* Under review.

NOTE: Anthracene and Benzo(g,h,i)perylene — not proposed in Phase V.

NOTE: Changes from the last version are noted in Italic and Bold Face print.

Drinking Water Standards and Health Advisories

Chemicals	Standards			Status HA	Health Advisories								Cancer Group
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
Bromochloroacetonitrile	L	-	-	D	-	-	-	-	-	-	-	-	-
Bromochloromethane	-	-	-	F	50	1	1	5	0.013	0.5	0.09	-	-
Bromodichloromethane (THM)	T	zero	*0.1*/0.08⁺*	D	7	7	4	13	0.02	0.7	-	0.06	B2
Bromoform (THM)	T	zero	*0.1*/0.08⁺*	D	5	2	2	6	0.02	0.7	-	0.4	B2
Bromomethane	T	-	-	F	0.1	0.1	0.1	0.5	0.001	0.04	0.01	-	D
Butyl benzyl phthalate (PAE)	P	zero	0.1	-	-	-	-	-	0.2	6	-	-	C
Butylate	-	-	-	F	2	2	1	4	0.05	2	0.35	-	D
Butylbenzene n-	-	-	-	D	-	-	-	-	-	-	-	-	-
Butylbenzene sec-	-	-	-	D	-	-	-	-	-	-	-	-	-
Butylbenzene tert-	-	-	-	D	-	-	-	-	-	-	-	-	-
Carbaryl	-	-	-	F	1	1	1	1	0.1	4	0.7	-	D
Carbofuran	F	0.04	0.04	F	0.05	0.05	0.05	0.2	0.005	0.2	0.04	-	E
Carbon tetrachloride	F	zero	0.005	F	4	0.2	0.07	0.3	0.0007	0.03	-	0.03	B2
Carboxin	-	-	-	F	1	1	1	4	0.1	4	0.7	-	D
Chloral hydrate	T	*0.04*	*0.06⁺⁺*	D	7	1.4	0.2	0.6	0.0002	0.07	0.06	-	C
Chloramben	-	-	-	F	3	3	0.2	0.5	0.015	0.5	0.1	-	D
Chlordane	F	zero	0.002	F	0.06	0.06	-	-	0.00006	0.002	-	0.003	B2
Chlorodibromomethane (THM)	T	*0.06*	*0.1*/0.08⁺*	D	7	7	2	8	0.02	0.7	0.06	-	C
Chloroethane	L	-	-	D	-	-	-	-	-	-	-	-	-
Chloroform (THM)	T	zero	0.1*/0.08⁺	D	4	4	0.1	0.4	0.01	0.4	-	0.6	B2
Chloromethane	L	-	-	F	9	0.4	0.4	1	0.004	0.1	0.003	-	C
Chlorophenol (2-)	-	-	-	D	0.05	0.05	0.05	0.2	0.005	0.2	0.04	-	D
p-Chlorophenyl methyl sulfide/sulfone/sulfoxide	-	-	-	**	-	-	-	-	-	-	-	-	D
Chloropicrin	L	-	-	-	-	-	-	-	-	-	-	-	-
Chlorothalonil	-	-	-	F	0.2	0.2	0.2	0.5	0.015	0.5	-	0.15	B2
Chlorotoluene o-	L	-	-	F	2	2	2	7	0.02	0.7	0.1	-	D
Chlorotoluene p-	L	-	-	F	2	2	2	7	0.02	0.7	0.1	-	D
Chlorpyrifos	-	-	-	F	0.03	0.03	0.03	0.1	0.003	0.1	0.02	-	D
Chrysene (PAH)	P	zero	0.0002	-	-	-	-	-	-	-	-	-	B2
Cyanazine	T	0.001	-	D	0.1	0.1	0.02	0.07	0.002	0.07	0.001	-	C

* Current MCL *⁺ Total for all THMs combined cannot exceed the 0.08 level* ⁺⁺ Total for all haloacetic acids cannot exceed 0.06 level.

** A[illegible] will not be developed due to insufficient data; a "Database Deficie[illegible] Report has been published.

Drinking Water Standards and Health Advisories

Chemicals	Standards			Status HA	Health Advisories								Cancer Group
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
Cyanogen chloride	L	-	-	-	-	-	-	-	-	-	-	-	-
Cymene p-	-	-	-	D	-	-	-	-	-	-	-	-	-
2,4-D	F	0.07	0.07	F	1	0.3	0.1	0.4	0.01	0.4	0.07	-	D
DCPA (Dacthal)	L	-	-	F	80	80	5	20	0.5	20	4	-	D
Dalapon	F	0.2	0.2	F	3	3	0.3	0.9	0.026	0.9	0.2	-	D
Di(2-ethylhexyl)adipate	F	0.4	0.4	-	20	20	20	60	0.6	20	0.4	3	C
Diazinon	-	-	-	F	0.02	0.02	0.005	0.02	0.00009	0.003	0.0006	-	E
Dibenz(a,h)anthracene (PAH)	P	zero	0.0003	-	-	-	-	-	-	-	-	-	B2
Dibromoacetonitrile	L	-	-	D	2	2	2	8	0.02	0.8	0.02	-	C
Dibromochloropropane (DBCP)	F	zero	0.0002	F	0.2	0.05	-	-	-	-	-	0.003	B2
Dibromomethane	L	-	-	-	-	-	-	-	-	-	-	-	D
Dibutyl phthalate (PAE)	-	-	-	-	-	-	-	-	0.1	4	-	-	D
Dicamba	L	-	-	F	0.3	0.3	0.3	1	0.03	1	0.2	-	D
Dichloroacetaldehyde	L	-	-	D	-	-	-	-	-	-	-	-	-
Dichloroacetic acid	T	zero	*0.06***	D	1	1	1	4	*0.004*	0.1	-	-	B2
Dichloroacetonitrile	L	-	-	D	1	1	0.8	3	0.008	0.3	0.006	-	C
Dichlorobenzene o-	F	0.6	0.6	F	9	9	9	30	0.09	3	0.6	-	D
Dichlorobenzene m- *	F	0.6	0.6	F	9	9	9	30	0.09	3	0.6	-	D
Dichlorobenzene p-	F	0.075	0.075	F	10	10	10	40	0.1	4	0.075	-	C
Dichlorodifluoromethane	L	-	-	F	40	40	9	30	0.2	5	1	-	D
Dichloroethane (1,1-)	L	-	-	D	-	-	-	-	-	-	-	-	-
Dichloroethane (1,2-)	F	zero	0.005	F	0.7	0.7	0.7	2.6	-	-	-	0.04	B2
Dichloroethylene (1,1-)	F	0.007	0.007	F	2	1	1	4	0.009	0.4	0.007	-	C
Dichloroethylene (cis-1,2-)	F	0.07	0.07	F	4	3	3	11	0.01	0.4	0.07	-	D
Dichloroethylene (trans-1,2-)	F	0.1	0.1	F	20	2	2	6	0.02	0.6	0.1	-	D
Dichloromethane	F	zero	0.005	F	10	2	-	-	0.06	2	-	0.5	B2
Dichlorophenol (2,4-)	-	-	-	D	0.03	0.03	0.03	0.1	0.003	0.1	0.02	-	D
Dichloropropane (1,1-)	-	-	-	D	-	-	-	-	-	-	-	-	-
Dichloropropane (1,2-)	F	zero	0.005	F	-	0.09	-	-	-	-	-	0.05	B2
Dichloropropane (1,3-)	L	-	-	D	-	-	-	-	-	-	-	-	-

* The values for m-dichlorobenzene are based on data for o-dichlorobenzene.

** Total for all haloacetic acids cannot exceed 0.06 level.

Drinking Water Standards and Health Advisories

Chemicals	Standards			Status HA	Health Advisories								Cancer Group
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
Dichloropropane (2,2-)	L	-	-	D	-	-	-	-	-	-	-	-	-
Dichloropropene (1,1-)	L	-	-	D	-	-	-	-	-	-	-	-	-
Dichloropropene (1,3-)	T	zero	-	F	0.03	0.03	0.03	0.09	0.0003	0.01	-	0.02	B2
Dieldrin	-	-	-	F	0.0005	0.0005	0.0005	0.002	0.00005	0.002	-	0.0002	B2
Diethyl phthalate (PAE)	-	-	-	D	-	-	-	-	0.8	30	5	-	D
Diethylene glycol dinitrate	-	-	-	**	-	-	-	-	-	-	-	-	-
Diethylhexyl phthalate (PAE)	F	zero	0.006	D	-	-	-	-	0.02	0.7	-	0.3	B2*
Diisopropyl methylphosphonate	-	-	-	F	8	8	8	30	0.08	3	0.6	-	D
Dimethrin	-	-	-	F	10	10	10	40	0.3	10	2	-	D
Dimethyl methylphosphonate	-	-	-	F	2	2	2	6	0.2	7	0.1	0.7	C
Dimethyl phthalate (PAE)	-	-	-	-	-	-	-	-	-	-	-	-	D
1,3-Dinitrobenzene	-	-	-	F	0.04	0.04	0.04	0.14	0.0001	0.005	0.001	-	D
Dinitrotoluene (2,4-)	L	-	-	F	0.50	0.50	0.30	1	0.002	0.1	-	-	-
Dinitrotoluene (2,6-)	L	-	-	F	0.40	0.40	0.40	1	0.001	0.04	-	-	-
tg 2,6 & 2,4 dinitrotoluene ***	-	-	-	-	-	-	-	-	-	-	-	0.005	B2
Dinoseb	F	0.007	0.007	F	0.3	0.3	0.01	0.04	0.001	0.04	0.007	-	D
Dioxane p-	-	-	-	F	4	0.4	-	-	-	-	-	0.7	B2
Diphenamid	-	-	-	F	0.3	0.3	0.3	1	0.03	1	0.2	-	D
Diphenylamine	-	-	-	F	1	1	0.3	1	0.03	1	0.2		D
Diquat	F	0.02	0.02	-	-	-	-	-	0.0022	0.08	0.02	-	D
Disulfoton	-	-	-	F	0.01	0.01	0.003	0.009	0.00004	0.001	0.0003	-	E
Dithiane (1,4-)	-	-	-	F	0.4	0.4	0.4	1	0.01	0.4	0.08	-	D
Diuron	-	-	-	F	1	1	0.3	0.9	0.002	0.07	0.01	-	D
Endothall	F	0.1	0.1	F	0.8	0.8	0.2	0.2	0.02	0.7	0.1	-	D
Endrin	F	0.002	0.002	F	0.02	0.02	0.003	0.01	0.0003	0.01	0.002	-	D
Epichlorohydrin	F	zero	TT	F	0.1	0.1	0.07	0.07	0.002	0.07	-	0.4	B2
Ethylbenzene	F	0.7	0.7	F	30	3	1	3	0.1	3	0.7	-	D
Ethylene dibromide (EDB)	F	zero	0.00005	F	0.008	0.008	-	-	-	-	-	0.00004	B2
Ethylene glycol	-	-	-	F	20	6	6	20	2	40	7	-	D
ETU	L	-	-	F	0.3	0.3	0.1	0.4	0.00008	0.003	-	0.03	B2
Fenamiphos	-	-	-	F	0.009	0.009	0.005	0.02	0.00025	0.009	0.002	-	D

* Under review. ** A HA will not be developed due to insufficient data; a "Database Deficiency Report" has been published.

*** tg technical grade

Drinking Water Standards and Health Advisories

Chemicals	Standards			Status HA	Health Advisories								Cancer Group
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
Fluometron	-	-	-	F	2	2	2	5	0.013	0.4	0.09		D
Fluorene (PAH)	-	-	-	-	-	-	-	-	0.04	-	-	-	D
Fluorotrichloromethane	L	-	-	F	7	7	3	10	0.3	10	2	-	D
Fog Oil	-	-	-	D	-	-	-	-	-	-	-	-	-
Fonofos	-	-	-	F	0.02	0.02	0.02	0.07	0.002	0.07	0.01	-	D
Formaldehyde	-	-	-	D	10	5	5	20	0.15	5	1	-	B1
Gasoline, unleaded (benzene)	-	-	-	D	-	-	-	-	-	-	0.005	-	-
Glyphosate	F	0.7	0.7	F	20	20	1	1	0.1	4	0.7	-	E
Heptachlor	F	zero	0.0004	F	0.01	0.01	0.005	0.005	0.0005	0.02	-	0.0008	B2
Heptachlor epoxide	F	zero	0.0002	F	0.01	-	0.0001	0.0001	1E-5	0.0004	-	0.0004	B2
Hexachlorobenzene	F	zero	0.001	F	0.05	0.05	0.05	0.2	0.0008	0.03	-	0.002	B2
Hexachlorobutadiene	T	0.001	-	F	0.3	0.3	0.1	0.4	0.002	0.07	0.001	-	C
Hexachlorocyclopentadiene	F	0.05	0.05	-	-	-	-	-	0.007	0.2	-	-	D
Hexachloroethane	L	-	-	F	5	5	0.1	0.5	0.001	0.04	0.001	-	C
Hexane (n-)	-	-	-	F	10	4	4	10	-	-	-	-	D
Hexazinone	-	-	-	F	3	3	3	9	0.033	1	0.2	-	D
HMX	-	-	-	F	5	5	5	20	0.05	2	0.4	-	D
Indeno(1,2,3,-c,d)pyrene (PAH)	P	zero	0.0004	D	-	-	-	-	-	-	-	-	B2
Isophorone	L	-	-	F	15	15	15	15	0.2	7	0.1	4	C
Isopropyl methylphosphonate	-	-	-	D	30	30	30	100	0.1	4.0	0.7	-	D
Isopropylbenzene	-	-	-	D	-	-	-	-	-	-	-	-	-
Lindane	F	0.0002	0.0002	F	1	1	0.03	0.1	0.0003	0.01	0.0002	-	C
Malathion	-	-	-	F	0.2	0.2	0.2	0.8	0.02	0.8	0.2	-	D
Maleic hydrazide	-	-	-	F	10	10	5	20	0.5	20	4	-	D
MCPA	-	-	-	F	0.1	0.1	0.1	0.4	0.0015	0.05	0.01	-	E
Methomyl	L	-	-	F	0.3	0.3	0.3	0.3	0.025	0.9	0.2	-	D
Methoxychlor	F	0.04	0.04	F	0.05	0.05	0.05	0.2	0.005	0.2	0.04	-	D
Methyl ethyl ketone	-	-	-	F	-	-	-	-	-	-	-	-	*
Methyl parathion	-	-	-	F	0.3	0.3	0.03	0.1	0.00025	0.009	0.002	-	D

* Under review.

Drinking Water Standards and Health Advisories

Chemicals	Standards			Status HA	Health Advisories								Cancer Group
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
Methyl tert butyl ether	L	-	-	D	3	3	0.5	2	0.005	0.2	0.04	-	D
Metolachlor	L	-	-	F	2	2	2	5	0.15	5	0.1	-	C
Metribuzin	L	-	-	F	5	5	0.3	0.9	0.025	0.9	0.2	-	D
Monochloroacetic acid	L	-	-	D	-	-	-	-	-	-	-	-	-
Monochlorobenzene	F	0.1	0.1	F	2	2	2	7	0.02	0.7	0.1	-	D
Naphthalene	-	-	-	F	0.5	0.5	0.4	1	0.004	0.1	0.02	-	D
Nitrocellulose (non-toxic)	-	-	-	F	-	-	-	-	-	-	-	-	-
Nitroguanidine	-	-	-	F	10	10	10	40	0.1	4	0.7	-	D
Nitrophenol p-	-	-	-	F	0.8	0.8	0.8	3	0.008	0.3	0.06	-	D
Oxamyl (Vydate)	F	0.2	0.2	F	0.2	0.2	0.2	0.9	0.025	0.9	0.2	-	E
Paraquat	-	-	-	F	0.1	0.1	0.05	0.2	0.0045	0.2	0.03	-	E
Pentachloroethane	-	-	-	D	-	-	-	-	-	-	-	-	-
Pentachlorophenol	F	zero	0.001	F	1	0.3	0.3	1	0.03	1	-	0.03	B2
Phenanthrene (PAH)	-	-	-	-	-	-	-	-	-	-	-	-	-
Phenol	-	-	-	D	6	6	6	20	0.6	20	4	-	D
Picloram	F	0.5	0.5	F	20	20	0.7	2	0.07	2	0.5	-	D
Polychlorinated biphenyls (PCBs)	F	zero	0.0005	P	-	-	-	-	-	-	-	0.0005	B2
Prometon	L	-	-	F	0.2	0.2	0.2	0.5	0.015*	0.5*	0.1*	-	D
Pronamide	-	-	-	F	0.8	0.8	0.8	3	0.075	3	0.05	-	C
Propachlor	-	-	-	F	0.5	0.5	0.1	0.5	0.013	0.5	0.09	-	D
Propazine	-	-	-	F	1	1	0.5	2	0.02	0.7	0.01	-	C
Propham	-	-	-	F	5	5	5	20	0.02	0.6	0.1	-	D
Propylbenzene n-	-	-	-	D	-	-	-	-	-	-	-	-	-
Pyrene (PAH)	-	-	-	-	-	-	-	-	0.03	-	-	-	D
RDX	-	-	-	F	0.1	0.1	0.1	0.4	0.003	0.1	0.002	0.03	C
Simazine	F	0.004	0.004	F	0.07	0.07	0.07	0.07	0.005	0.2	0.004	-	C
Styrene	F	0.1	0.1	F	20	2	2	7	0.2	7	0.1	-	C
2,4,5-T	L	-	-	F	0.8	0.8	0.8	1	0.01	0.35	0.07	-	D
2,3,7,8-TCDD (Dioxin)	F	zero	3E-08	F	1E-06	1E-07	1E-08	4E-08	1E-09	4E-08	-	2E-08	B2

* Under review. NOTE: Phenanthrene — not proposed.

Drinking Water Standards and Health Advisories

Chemicals	Standards			Status HA	Health Advisories								Cancer Group
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
Tebuthiuron	-	-	-	F	3	3	0.7	2	0.07	2	0.5	-	D
Terbacil	-	-	-	F	0.3	0.3	0.3	0.9	0.013	0.4	0.09	-	E
Terbufos	-	-	-	F	0.005	0.005	0.001	0.005	0.00013	0.005	0.0009	-	D
Tetrachloroethane (1,1,1,2-)	L	-	-	F	2	2	0.9	3	0.03	1	0.07	0.1	C
Tetrachloroethane (1,1,2,2-)	L	-	-	D	-	-	-	-	-	-	-	-	-
Tetrachloroethylene	F	zero	0.005	F	2	2	1	5	0.01	0.5	-	0.07	-
Tetranitromethane	-	-	-	**	-	-	-	-	-	-	-	-	-
Toluene	F	1	1	F	20	2	2	7	0.2	7	1	-	D
Toxaphene	F	zero	0.003	F	0.5	0.04	-	-	0.1	0.0035	-	0.003	B2
2,4,5-TP	F	0.05	0.05	F	0.2	0.2	0.07	0.3	0.0075	0.3	0.05	-	D
1,1,2-Trichloro-1,2,2-trifluoroethane	-	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroacetic acid	T	*0.3*	*0.06***	D	4	4	4	13	0.1	4.0	0.3	-	C
Trichloroacetonitrile	L	-	-	D	0.05	0.05	-	-	-	-	-	-	-
Trichlorobenzene (1,2,4-)	F	0.07	0.07	F	0.1	0.1	0.1	0.5	0.01	0.4	0.07	-	D
Trichlorobenzene (1,3,5-)	-	-	-	F	0.6	0.6	0.6	2	0.006	0.2	0.04	-	D
Trichloroethane (1,1,1-)	F	0.2	0.2	F	100	40	40	100	0.035	1	0.2	-	D
Trichloroethane (1,1,2-)	F	0.003	0.005	F	0.6	0.4	0.4	1	0.004	0.1	0.003	-	C
Trichloroethanol (2,2,2-)	L	-	-	-	-	-	-	-	-	-	-	-	-
Trichloroethylene	F	zero	0.005	F	-	-	-	-	-	0.3	-	0.3	B2
Trichlorophenol (2,4,6-)	L	-	-	D	-	-	-	-	-	-	-	0.3	B2
Trichloropropane (1,1,1-)	-	-	-	D	-	-	-	-	-	-	-	-	-
Trichloropropane (1,2,3-)	L	-	-	F	0.6	0.6	0.6	2	0.006	0.2	0.04	-	B2
Trifluralin	L	-	-	F	0.08	0.08	0.08	0.3	0.0075	0.3	0.005	0.5	C
Trimethylbenzene (1,2,4-)	-	-	-	D	-	-	-	-	-	-	-	-	-
Trimethylbenzene (1,3,5-)	-	-	-	D	-	-	-	-	-	-	-	-	-
Trinitroglycerol	-	-	-	F	0.005	0.005	0.005	0.005	-	-	0.005	-	-
Trinitrotoluene	-	-	-	F	0.02	0.02	0.02	0.02	0.0005	0.02	0.002	0.1	C
Vinyl chloride	F	zero	0.002	F	3	3	0.01	0.05	-	-	-	0.0015	A
Xylenes	F	10	10	F	40	40	40	100	2	60	10	-	D

** A HA will not be developed due to insufficient data; a "Database Deficiency Report" has been published.

** Total for all haloacetic acids cannot exceed 0.06 level.

Drinking Water Standards and Health Advisories

Chemicals	Standards				Health Advisories								
					10-kg Child			70-kg Adult					Cancer Group
	Status Reg.	MCLG (mg/l)	MCL (mg/l)	Status HA	One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
INORGANICS													
Aluminum	L	-	-	D	-	-	-	-	-	-	-	-	-
Ammonia	-	-	-	D	-	-	-	-	-	-	30	-	D
Antimony	F	0.006	0.006	F	0.01	0.01	0.01	0.015	0.0004	0.01	0.003	-	D
Arsenic	*	-	0.05	D	-	-	-	-	-	-	-	0.002	A
Asbestos (fibers/l >10μm length)	F	7 MFL	7 MFL	-	-	-	-	-	-	-	-	700 MFL	A
Barium	F	2	2	F	-	-	-	-	0.07	2	2	-	D
Beryllium	F	0.004	0.004	D	30	30	4	20	0.005	0.2	-	0.0008	B2
Boron	L	-	-	D	4	0.9	0.9	3	0.09	3	0.6	*	D
Bromate	*L*	*zero*	*0.01*	-	-	-	-	-	-	-	-	-	-
Cadmium	F	0.005	0.005	F	0.04	0.04	0.005	0.02	0.0005	0.02	0.005	-	D
Chloramine	T	*4****	*4*	D	1	1	1	1	0.1	3.3	*3/4****	-	-
Chlorate	L	-	-	D	-	-	-	-	-	-	-	-	-
Chlorine	T	4	*4*	D	-	-	-	-	0.08	-	-	-	D
Chlorine dioxide	T	*0.3*	*0.8*	D	-	-	-	-	*0.01*	*0.35*	*0.3*	-	D
Chlorite	L	*0.08*	*1*	D	-	-	-	-	*0.003*	*0.1*	*0.08*	-	D
Chromium (total)	F	0.1	0.1	F	1	1	0.2	0.8	0.005	0.2	0.1	-	D
Copper	F	1.3	TT**	-	-	-	-	-	-	-	-	-	D
Cyanide	P	0.2	0.2	F	0.2	0.2	0.2	0.8	0.022	0.8	0.2	-	D
Fluoride*	F	4	4	-	-	-	-	-	0.12	-	-	-	-
Hypochlorite	T	*4*[1]	-	-	-	-	-	-	-	-	-	-	-
Hypochlorous acid	T	*4*[1]	-	-	-	-	-	-	-	-	-	-	-
Lead (at tap)	F	zero	TT**	-	-	-	-	-	-	-	-	-	B2
Manganese	L	-	-	D	-	-	-	-	0.14/ 0.005	-	-	-	-
Mercury (inorganic)	F	0.002	0.002	F	-	-	-	0.002	0.0003	0.01	0.002	-	D
Molybdenum	L	-	-	D	-	0.08	0.01	0.05	0.005	0.2	0.04	-	D
Nickel	F	0.1	0.1	F	1	1	0.5	1.7	0.02	0.6	0.1	-	D
Nitrate (as N)	F	10	10	F	-	10*	-	-	1.6	-	-	-	*

der review. ** Copper — action level 1.3 mg/L; Lead - action level 0.015 mg/L. *** Measured as free chlorine. [1] Regulated as chlorine.

Drinking Water Standards and Health Advisories

Chemicals	Standards			Status HA	Health Advisories								Cance Grou
					10-kg Child			70-kg Adult					
	Status Reg.	MCLG (mg/l)	MCL (mg/l)		One-day (mg/l)	Ten-day (mg/l)	Longer-term (mg/l)	Longer-term (mg/l)	RfD (mg/kg/day)	DWEL (mg/l)	Lifetime (mg/l)	mg/l at 10^{-4} Cancer Risk	
Nitrite (as N)	F	1	1	F	-	1*	-	-	0.16*	-	-	-	*
Nitrate + Nitrite (both as N)	F	10	10	F	-	-	-	-	-	-	-	-	*
Selenium	F	0.05	0.05	-	-	-	-	-	0.005	-	-	-	-
Silver	-	-	-	D	0.2	0.2	0.2	0.2	0.005	0.2	0.1	-	D
Sodium	-	-	-	D	-	-	-	-	-	20***	-	-	-
Strontium	L	-	-	D	25	25	25	90	0.6*	90	17	-	D
Sulfate	P	**	**	-	-	-	-	-	-	-	-	-	-
Thallium	F	0.0005	0.002	F	0.007	0.007	0.007	0.02	0.00007	0.002	0.0004	-	-
Vanadium	L	-	-	D	-	-	-	-	-	-	-	-	D
White phosphorous	-	-	-	F	-	-	-	-	0.00002	0.0005	0.0001		D
Zinc	L	-	-	F	6	6	3	12	0.3	11	2	-	D
Zinc chloride (measured as Zinc)	L	-	-	F	6	6	3	12	0.3	11	2	-	D
RADIONUCLIDES													
Beta particle and photon activity (formerly man-made radionuclides)	P	zero	4 mrem	-	-	-	-	-	-	-	-	4 mrem/y	A
Gross alpha particle activity	P	zero	15 pCi/L	-	-	-	-	-	-	-	-	15 pCi/L	A
Radium 226	P	zero	20 pCi/L	-	-	-	-	-	-	-	-	20 pCi/L	A
Radium 228	P	zero	20 pCi/L	-	-	-	-	-	-	-	-	20 pCi/L	A
Radon	P	zero	300 pCi/L	-	-	-	-	-	-	-	-	150 pCi/L	A
Uranium	P	zero	20 μg/L	-	-	-	-	-	0.003	-	-	*	A

* Under review.
** Deferred.
*** Guidance.

Secondary Maximum Contaminant Levels

Chemicals	Status	SMCLs (mg/L)
Aluminum	F	0.05 to 0.2
Chloride	F	250
Color	F	15 color units
Copper	F	1.0
Corrosivity	F	non-corrosive
Fluoride*	F	2.0
Foaming agents	F	0.5
Iron	F	0.3
Manganese	F	0.05
Odor	F	3 threshold odor numbers
pH	F	6.5 – 8.5
Silver	F	0.1
Sulfate	F	250
Total dissolved solids (TDS)	F	500
Zinc	F	5

Status Codes: P – proposed, F – final

* Under review.

Microbiology

	Status	MCLG	MCL
Cryptosporidium	L	-	-
Giardia lamblia	F	zero	TT
Legionella	F[β]	zero	TT
Standard Plate Count	F[β]	NA	TT
Total Coliforms (after 12/31/90)	F	zero	**
Turbidity (after 12/31/90)	F	NA	PS
Viruses	F[β]	zero	TT

Key: PS, TT, F, defined as previously stated.

[β] Final for systems using surface water; also being considered for regulation under groundwater disinfection rule.

APPENDIX N
COPC SELECTION WORKSHEET

Site 69

Chemical Storage Area Surface Soil

CONTAMINANT	RANGE	95%	UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	RBC	ARAR	COPC
bis(2-ethylhexyl)phthalate	43J-48J	364.8	215.3	4/25	40								
di-n-butyl phthalate	36J-260J	188.7	187.5	23/25	20								
Methylene Chloride	5J-105	31.4	27.8	15/25	80								
Acetone	31J-340J	91.7	123.6	5/25	1900								
T-1,2-Dichloroethene	4J	11.5	5.7	1/25									
2-Butanone	10.9J	11.6	6.2	1/25									
1,1,1-Trichloroethene	2J	11.6	6.0	1/25									
Trichloroethene	3J	11.5	5.8	1/25									
4-methyl-2-pentanone	1J-12J	11.2	8.0	6/25									
Tetrachloroethene	2J	11.6	6.0	1/25									
beta-BHC	11J	3.0	1.5	1/25									
4,4-DDE	4.8J	4.1	2.2	1/25									
Endosulfan II	3.4J	4.0	2.1	1/25									
4,4-DDT	13.3J	4.9	2.7	1/25									
Aroclor-1260	94J	44.2	24.3	1/25									
Acetophenone	51J	385.3	202.6	1/25									
Hydroxyacetophenone	120-160	1901.4	1162.3	2/25									
Total Xylenes	5J	11.5	5.7	1/25	20								
Barium	3.-6.8	3.7	4.0	17/25 out		17.5							
Chromium	1.6-3.6	2.2	2.4	18/25 out		4.973							
Lead	1.1J-12.5	3.3	3.0	25/25 out		37.09							
Manganese	1.3-15.5	4.7	5.6	27/25 out		16.838							
Selenium	1.1	0.38	0.36	1/25		0.674							
Vanadium	3.9-5.3	2.6	2.5	3/25 out		6.76							
Zinc	1.5-66	8.9	4.3	12/25 out		13.35							
Cyanide	1.1-2.3	1.3	1.4	12/25 out		2.9							

SITE 69

CHEMICAL STORAGE AREA SUBSURFACE SOIL

CONTAMINANT	RANGE	95% UCL		FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	RBC	ARAR	COPC
bis(2-ethylhexyl)phthalate	5.3J	218.7	268.7	1/10	43								
Diethylphthalate	2(0)J	228.9	280.9	1/10									
Di-n-butylphthalate	58J-120J	171.9	215.2	5/10	20								
Methylene Chloride	6J-58	29.9	40.9	7/10	80								
Acetone	13J-9700	1868.7	*	9/10	1900								
1,1,1-trichloroethane	2J	6.3	7.3	1/10									
Ethylbenzene	2J	6.5	7.7	2/10									
4,4'-DDE	1.2J	2.1	2.3	1/10									
Endrin	1.2J	2.2	2.3	1/10									
4,4'-DDD	5.7J	3.1	3.1	1/10									
4,4'-DDT	1.6J	2.2	2.3	1/10									
Aluminum	8[illegible]	4135.3	6709.1	10/10		8946.3							
Arsenic	1.15-2.1	1.16	1.23	2/10		0.6							
Barium	3.8-14.6	8.1	12.3	7/10		11.9							
Cadmium	0.74	.41	.41	1/1[illegible]		1.0							
Calcium	29.1-6[illegible]	232.2	441.4	8/10									
Chromium	1.76-17.7	7.5	13.8	8/10 R		8.7							X
Cobalt	.5.1	[illegible]	2.5	1/10		1.6							
Iron	[illegible]	[illegible]	[illegible]	10/10									
Lead	1.[illegible]6	4.3	4.7	10/10 O		9.1							
Magnesium	[illegible]	225.0	3[illegible].0	10/[illegible]									
Manganese	1.6-[illegible].9	[illegible].1	28.5	10/10 R		6.2							X
Mercury	.0[illegible]	.041	.046	2/10 O		0.1							
Nickel	3.1-5.9	2.9	3.1	3/10 O		4.0							
Potassium	1[illegible]	2[illegible]	2[illegible].0	3/10									

* - Number [illegible]

SITE 69

CHEMICAL STORAGE AREA SUBSURFACE SOIL (CONT'D)

CONTAMINANT	RANGE	95% UCL		FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	RBC	ARAR	COPC
SILVER	.43-1	.16	.14	1/10									
[illegible]	130	[illegible]	[illegible]	1/10									
[illegible]	[illegible]	[illegible]	16.8	4/10		10.1							
[illegible]	1.2-2.6	1.5	1.7	3/10		0.9							
[illegible]	[illegible]	.21	.21	1/10		0.2							
ZINC	3.4-[illegible]	[illegible]	5.9	3/10		5.6							

Site 69 Groundwater

CONTAMINANT	RANGE	95% UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	RBC	ARAR	COPC
1,4-Dichlorobenzene	2J		1/12									
Vinyl Chloride	31J		1/12									
Carbon Disulfide	1J		1/12									
1,1-Dichloroethene	U		1/12									
Total 1,2-Dichloroethene	23-2400	8989	4/12									
Trichloroethene	1J-23J	10.1	2/12									
Benzene	1J		1/12									
Tetrachloroethene	U		1/12									
1,1,2,2-Tetrachloroethane	1J-22J	10.2	3/12									
Toluene	1J-4J	6.4	2/12									
Chlorobenzene	25J		1/12									
alpha-BHC	0.056		1/12									
delta-BHC	2.3		1/12									
Antimony	8.5-9J		1/6									
Arsenic	2.94-19.9	18.2	6/12									
Barium	27.6-850	496	12/12									
Beryllium	2.1-10.6	4.9	9/12									
Cadmium	3.12-11.4	4.9	3/12									
Chromium	15.1-139	123	10/12									
Cobalt	25.9	13	1/12									
Copper	6.5-10.8	24	3/12									
Lead	4.9-106	200	11/12									
Manganese	13-912	745	12/12									
Mercury	0.08-0.96	0.5	6/12									
Nickel	16.7-99.8	34	4/12									

CONTAMINANT	RANGE	95% UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	RBC	ARAR	COPC
Selenium	3.01-5.38	3.2	3/12									
Vanadium	17.2-210	270	10/12									
Zinc	52.1-9120	13653	10/12									

SITE 69

ONSITE AND DRAINAGE AREA SURFACE WATER

CONTAMINANT	RANGE	95% UCL		FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	RBC	ARAR	COPC
[illegible]	11	7.1	16.5	1/7	20								
Vinyl Chloride	[illegible]	6.3	6.3	1/7									
Acetone	[illegible]-41	[illegible]	7.1	2/7	1900								
[illegible]	13-[illegible]	21.0	49.2	2/7									
Chloroform	2.1	5.4	6.4	1/7									
Trichloroethene	4.1	5.1	5.2	1/7									
Toluene	1.1	5.8	11.8	2/7	10								
Ethylbenzene	1.1	5.5	9.0	1/7									
Xylene (total)	1.0	7.1	7.2	1/7	20								
Arsenic	[illegible]	14.9	44.3	2/7									
Barium	45.1-[illegible]	232.7	474.2	7/7									
Beryllium	1.6-6	3.0	4.8	2/7									
Chromium	[illegible]	12.1	15.3	1/7									
Copper	22.9-[illegible]	25.2	38.3	3/7									
Iron	3.8-85.8	51.9	9446.0	6/7									
Manganese	72.1-[illegible]	396.0	396.4	7/7									
Mercury	.43	.29	.26	1/7									
Nickel	17.8	11.4	11.7	1/7									
Vanadium	22.3-29	18.2	22.3	2/7									
Zinc	[illegible]	2512.3	8806.7	7/7									

Site 69

Everett Creek Surface Water

CONTAMINANT	RANGE	95% UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	RBC	ARAR	COPC
No Organics												
Barium	10.4 - 22.2	37.67	3/3									
Copper	2.6	4.72	1/3									
Lead	1.4 - 2.3	23.65	?									
Manganese	14.3 - 32.5	56.75	3/3									

Site 69

Unnamed Tributary Surface Water

CONTAMINANT	RANGE	95% UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	RBC	ARAR	COPC
NO ORGANICS												
Barium	15.2-23	27.94	3/3									
Cadmium	3	9.94	1/3									
Cobalt	8	2066.74	1/3									
Copper	7	83.13	1/3									
Lead	2	15.38	1/3									
Manganese	9-17.7	33.08	3/3									
Vanadium	4.2-10	2861.66	2/3									
Zinc	18	604.68	1/3									

Site 69
New River Surface Water

CONTAMINANT	RANGE	95% UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	RBC	ARAR	COPC
NO ORGANICS												
Barium	11.7 - 15.2	17.51	3/3									
Manganese	19.2 - 21.7	23.83	3/3									
Thallium	11.3	27.03	1/3									

Site 69

Everett Creek Sediment

CONTAMINANT	RANGE	95% UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	RBC	ARAR	COPC
4,4-DDE	6.6		1/5									
Methylene Chloride	1200		1/5	80								
Acetone	240-4600		2/5	1900								
Carbon Disulfide	35		1/5									
2-Butanone	5300		1/5									
Bis(2-ethylhexyl) phthalate	85-130		2/5	40								
Arsenic	4.4-5.3	7.45	3/5									
Barium	13-26.4	199.83	3/5									
Beryllium	0.13-0.96	1.79	5/5									
Cadmium	0.52-5.2	7.07	5/5									
Chromium	3.6-43.8	73.95	5/5									
Cobalt	1.3-7	20.56	4/5									
Copper	6.5-16.2	94.51	3/5									
Lead	7.5-30.8	125.39	4/5									
Manganese	4.1-85.9	395.44	5/5									
Mercury	0.17	0.81	1/5									
Vanadium	7.2-48.8	60.04	5/5									
Zinc	31.8-62	489.28	3/5									

Site 69

Unnamed Tributary Sediment

CONTAMINANT	RANGE	95% UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	RBC	ARAR	COPC
4,4'-DDE	10-250	101741	3/5									
4,4'-DDD	14-250	4662	3/5									
PCB-1260	366	509	1/5									
Acetone	39-65	146.37	3/5	1906								
Carbon Disulfide	18-88	141.91	4/5									
Toluene	2	66.13	1/5	10								
Diethyl Phthalate	500	1103.47	1/5									
Bis(2-ethylhexyl)phthalate	52-81	3555.86	2/5	40								
Benzo(a)pyrene	290-2500	2357.37	2/5									
Arsenic	4.7-7.1	39.36	4/5									
Barium	14.2-23.1	35.97	2/5									
Beryllium	0.52-0.61	1.16	2/5									
Cadmium	1.8-2.1	4.19	3/5									
Chromium	3.3-22.4	32.76	3/5									
Cobalt	1.4-2.1	2.11	2/5									
Copper	7.2-24.1	153.38	4/5									
Lead	1-34.1	281.28	5/5									
Manganese	2.9-69.3	264.15	5/5									
Vanadium	25.9-41.7	219.36	4/5									
Zinc	22.4-24.6	107.71	2/5									

Site 69

New River Sediment

CONTAMINANT	RANGE	95% UCL	FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	RBC	ARAR	COPC
Acetone	22-120	192.4	3/5	1900								
Bis(2-ethylhexyl) phthalate	47-92	333.2	2/5	40								
Arsenic	1.6-5.6	9.68	4/5									
Barium	4.6-12.5	6.43	3/5									
Beryllium	0.24-0.37	0.62	4/5									
Cadmium	0.53-1.2	4.36	3/5									
Chromium	6.2-17.7	14	5/5									
Cobalt	0.58-1.2	1.5	5/5									
Copper	1.6-2.5	3.3	3/5									
Lead	3.6-6	6.49	5/5									
Manganese	13.6-28.9	36.53	5/5									
Vanadium	10.3-35.3	31.94	5/5									
Zinc	7-10.7	13.01	3/5									

SITE 69

ECOLOGICAL SAMPLES

CONTAMINANT	RANGE	95% UCL		FREQUENCY	BLANK	BACKGROUND	HISTORY	ANTHROPOGENIC	NUTRIENT	TOXICITY	RBC	ARAR	COPC
4,4' DDE	[illegible]	[illegible]	16.6	19/20									
Endrin	[illegible]	8.5	2.0	1/20									
4,4' DDD	[illegible]	35.0	6.5	14/20									
[illegible]	[illegible]	75.8	19.4	1/20									
[illegible]	[illegible]	[illegible]	[illegible]	1/20									
[illegible]	[illegible]	15.3	14.5	13/19	80								
[illegible]	[illegible]	33.8	163.7	19/19	1900								
2 [illegible]	[illegible]	12.4	14.4	8/19									
[illegible]	[illegible]	18.9	11.6	9/19									
2 [illegible]	16-78	10.0	11.1	3/19									
[illegible]	[illegible]	8.2	8.9	8/19	10								
2 Methyl [illegible]	[illegible]	44.8	36.4	1/19									
Di-n-[illegible]	120.1	21.9	32.1	1/19									
Beryllium	.0038-.018	[illegible]	.005	8/19									
[illegible]	.118-.22	[illegible]	.086	3/19									
[illegible]	.128-.51	[illegible]	.352	10/19									
[illegible]	.03-.15	[illegible]	.0810	1/19									
[illegible]	9.9-312	90.100	49.854	15/19									

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