✓ 04.05- 12/21/94 - 61535

DEPARTMENT OF THE NAVY

ATLANTIC DIVISION, NAVAL FACILITIES ENGINEERING COMMAND

NAVAL STATION, NORFOLK, VIRGINIA

LANTDIV RAC Contract No.
N62470-93-D-3032

N62470-94-B-4833
NAVFAC Specification No.05-94-4833
Appropriation: DERA

SOIL REMEDIATION AT OPERABLE UNIT NO. 10, SITE 35 MARINE CORPS BASE CAMP LEJEUNE, NORTH CAROLINA

Design by:

BAKER ENVIRONMENTAL, INC.
CORAOPOLIS, PENNSYLVANIA

Specification Prepared by:

BAKER ENVIRONMENTAL, INC.

DECEMBER 21, 1994

Specification Approved by:

Specification Branch Head: _____
M.D. Mutter, P.E.

Engineering and Design Division Director: _____
W.H. Crone, P.E.

Environmental Quality Division Director: _____
W.H. Russell, P.E.

Date: January 5, 1995

PROJECT TABLE OF CONTENTS

-- End of Project Table of Contents --

SECTION 01010

GENERAL PARAGRAPHS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

CORPS OF ENGINEERS (COE)

COE EM-385-1-1	1992 Safety and Health Requirements Manual

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 241	1989 Safeguarding Construction, Alteration, and Demolition Operations

1.2 PRECONSTRUCTION SUBMITTALS

Submit the following in accordance with Section C, Part 7.0, of the Basic Contract.

1.2.1 SD-18, Records

a. Work Plan G

1.2.1.1 Work Plan

Within 60 days of issuance of the delivery order, submit a work plan consisting of the following elements.

a. Narrative

Provide a brief description of the project objectives, scheduling, sampling and analysis requirements, decontamination procedures, site work and excavation procedures, construction requirements, and storage, transportation, and removal requirements.

b. Technical Specifications

Provide, in an amendment format, any additions and modifications to the contract specifications required to accurately describe the materials and work procedures envisioned to satisfy the requirements of the delivery order. Contact Code 406, Specifications Branch, Engineering and Design Division, LANTNAVFACENGCOM, (804)444-9906, for availability of guide specification sections for those sections required, but not included in the contract documents.

c. Shop Drawings

Shop drawings shall detail and describe all components of the project not currently indicated on the contract drawings such that the shop drawings and the contract drawings, when taken together, provide a complete representation of the project requirements. Shop drawings shall include; but not be limited to:

1) An Erosion Control Plan in accordance with State and local regulations, consisting of site plans indicating locations of erosion control features during the various states of construction, details of erosion control features, and applicable notes.

2) Civil/structural drawings providing details of site work.

3) Details on drainage requirements (i.e, sumps, check dams, etc.).

d. Environmental Protection Plan

Within 15 days of issue of delivery order, meet with the Navy's Technical Representative (NTR) to discuss environmental protection requirements for the project. After meeting with the NTR, prepare, and submit an Environmental Protection Plan in accordance with Section C, Part 4.0, of the Basic Contract. In addition to items specified in Section C, Part 4.0 of the Basic Contract, the Environmental Protection Plan shall address:

1. Safety Program G

2. Notice of Intent G

The Contractor shall prepare a completed Notice of Intent (NOI) form in accordance with the requirements of the State's general permit for storm water discharges from construction sites. Submit NOI, and the appropriate permit fee to the NTR a minimum of 14 days prior to the start of construction.

The Contractor shall keep a copy of the approved permit on site at the Contractor's trailer at all times.

3. Erosion and Sediment Inspection Reports G

Submit to the NTR once every 7 calendar days and within 24 hours of a storm event that produces 0.5 inches or more of rain.

e. Site Health and Safety Plan

Provide a site specific Site Health and Safety Plan in accordance with Section C, Part 3.0, of the Basic Contract.

f. QC Plan

Provide a QC Plan in accordance with Section C, Part 6.0, of the Basic Contract.

(1) Submittal Register

As part of the QC Plan, submit a completed Submittal Register to document quality control for materials, inspection, and testing in accordance with Section C, Part 7.0 of the Basic Contract. A copy of the Submittal Register is provided in attached at the end of this section.

(2) Testing Laboratory Qualifications

As part of the QC Plan, submit qualifications for each laboratory which will be used in accordance with Section C, Part 6.0, of the Basic Contract.

g. Sampling and Analysis Plan

Provide a Sampling and Analysis Plan describing all sampling and analyses requirements and procedures for the delivery order. The Plan shall contain a field sampling plan and a quality assurance plan.

1.2.2 Forwarding Preconstruction Submittals

Within 60 days of issuance of the delivery order, and before procurement, fabrication, or mobilization, submit to the Architect-Engineer: Baker Environmental, Inc., Airport Office Park, Building 3, 420 Rouser Road, Coraopolis, PA 15108, and to the distribution as directed by the NTR, the preconstruction submittals required in this specification. The Architect-Engineer for this project will review the Work Plan for the NTR to determine compliance of the Contractor's Work Plan with the requirements of the contract documents for this delivery order.

1.2.3 Review Comments

The Contractor's Work Plan will be reviewed. The NTR will compile and coordinate all Government review comments, and forward consolidated review comments to the Contractor. Review comments on the Work Plan shall be resolved, and submittals modified as required. After the modification of the submittals, submit one revised final copy of the Work Plan to the NTR for final review. The Final Work Plan shall be approved by the NTR prior to commencement of any other work associated with this delivery order.

1.3 SUBMITTALS

Submit the following in accordance with Section C, Part 7, of the Basic Contract.

1.3.1 SD-18, Records

a. As-Built Records G

b. Environmental Condition Report

c. Network Analysis Diagram

d. Status Reports

e. QC Meeting Minutes

f. Test Results Summary Report

g. Contractor Production Report

h. QC Report

i. Rework Items List

j. Permits

k. Contractor's Closeout Report

1.3.1.1 As-Built Records

Maintain two sets of full size contract drawings and two sets of full size approved shop drawings marked to show any deviations which have occurred, including buried or concealed construction and utility features revealed during the course of construction. Record horizontal and vertical locations of buried utilities that differ from the contract drawings. Show the size, manufacturer's name, model number, capacity, and electrical power characteristics of the equipment installed. These drawings shall be available for review by the NTR at any time. At the completion of the work, deliver marked sets of the contract drawings to the NTR. Contractor shall incorporate all shop drawing deviations, and deliver one complete set of reproducible sepias of the shop drawings to the NTR.

1.3.1.2 Environmental Condition Report

Prior to starting work, perform a preconstruction survey with the NTR. Take photographs showing existing environmental conditions on and adjacent to the site. Prior to starting work, submit the results of the survey in an Environmental Condition Report to the NTR.

1.3.1.3 Contract Management System (CMS)

The CMS shall be a system able to provide, as a minimum, the activities in sorts or groups as specified in the Basic Contract and any subsequent Delivery Orders.

a. Network Analysis Diagram

Within 30 days of approval of the Contractor's Work Plan, submit a Network Analysis Diagram in accordance with the Basic Contract and any subsequent Delivery Orders.

b. Status Reports

All Status Reports shall comply with the Basic Contract and any subsequent Deliver Orders. Submit a Technical Progress Report, Cost Performance Report, Modification Log, Time-Scaled Logic Diagram, Government Materials Tracking Report, Variance Analysis Report, and Waste Materials Report. Submit the first delivery order Status Report

approximately 30 days after approval of the Contractor's Work Plan. Thereafter, submit Status Reports every 30 days. Status report periods shall be consistent with the invoice reporting periods.

1.3.1.4 QC Meeting Minutes

The QC Representative shall document all QC meetings by delivering copies of the minutes to the NTR within 3 calendar days after each QC meeting. The submittals shall comply with Section C, Part 6.0 of the Basic Contract.

1.3.1.5 Test Results Summary Report

A summary report of all field tests containing both "required" and "actual" results plus "passed" or "failed" for conforming, non-conforming and repeated test results shall be submitted to the NTR at the end of each month in accordance with Section C, Part 6.0 of the Basic Contract. An additional copy of the summary report shall be submitted to the North Carolina Department of Environment, Health, and Natural Resources through the NTR.

1.3.1.6 Contractor Production Report (CPR)

The CPR shall be prepared and submitted daily to the QC Representative in accordance with Section C, Part 6.0, of the Basic Contract.

1.3.1.7 QC Report

The QC Report shall be submitted by the QC Representative to the NTR every day work is performed, material is delivered, direction is pending, or a labor force is present in accordance with Section C, Part 6.0, of the Basic Contract.

1.3.1.8 Rework Items List

The QC Representative shall deliver a copy of the rework items list to the NTR on a monthly basis in accordance with Section C, Part 6.0, of the Basic Contract.

1.3.1.9 Permits

Fifteen days prior to beginning onsite work, submit draft copies of the following permits required for onsite activities:

a. Excavation Permit; from the Public Works Officer, Utilities Division

1.3.1.10 Contractor's Closeout Report

Submit upon completion of the project. This report shall include: Introduction, Summary of Action, Final Health and Safety Report, Summary of Record Documents, Field Changes and Contract Modification, Final Documents, summary of Chemical and Geotechnical Testing, Offsite Disposition of Materials, and QC Summary report.

1.3.2 Forwarding Submittals

As soon as practicable after award of the contract, and before procurement or fabrication, submit, except as specified otherwise, to the NTR, the submittals required in this specification. The Architect-Engineer for this project will review and provide surveillance for the NTR to determine if Contractor-approved submittals comply with the contract requirements, and will review and approve for the NTR those submittals not permitted to be Contractor approved to determine if submittals comply with the contract requirements. At each "Submittal" paragraph in the individual specification sections, a notation "G", following a submittal item, indicates that the Architect-Engineer, acting as agent for the NTR, is the approving authority for that submittal item. One copy of the transmittal form for submittals shall be forwarded to the NTR.

1.4 GENERAL INTENTION

It is the declared and acknowledged intention and meaning to provide and secure contractor services for contaminated soil excavation and off-site soil recycling at Operable Unit No. 10, Site 35, Marine Corps Base, Camp Lejeune, complete and ready for use.

1.5 GENERAL DESCRIPTION

This work includes providing all labor, supervision, tools, materials, equipment and transportation necessary to remove contaminated soils and transfer to an off-site soil recycling facility permitted to accept petroleum contaminated soil from Operable Unit No. 10, Site 35, Camp Geiger Area Fuel Farm, MCB Camp Lejeune, North Carolina. Components of this project include: obtaining the necessary work permits; location of any underground piping or utilities; excavation of contaminated soil in the areas indicated; segregation of clean and contaminated soils excavated; transportation of contaminated soils to an off-site soil recycling facility; backfilling with clean soil; control, collection and disposal of contaminated water and miscellaneous incidental waste; site restoration and other related work.

1.6 DESCRIPTION OF CONTAMINANTS PRESENT

Soil contaminated with petroleum hydrocarbons has been identified at Site 35, Camp Geiger Area Fuel Farm, in three areas within a zone located between the ground surface and the top of the seasonal high shallow groundwater surface. A fourth area of soil contamination, located north of Building G480, has been identified at Site 35 and will be addressed under a separate investigation and possible soil removal action as appropriate. The inorganic constituents arsenic, barium, beryllium, chromium, copper, lead, mercury, nickel, selenium, vanadium, and zinc were detected in one or more samples throughout the Site 35 study area, but concentration of these analytes (except arsenic) fall within base-wide MCB Camp Lejeune background ranges and the range of element concentrations detected in eastern United States soils and surficial materials. No other organic compounds were identified in Site 35 soil as contaminants of concern requiring remediation.

1.7 LOCATION

The work shall be located at the Camp Geiger Area Fuel Farm (Site 35) at MCB, Camp Lejeune, North Carolina approximately as indicated. Contaminated soil shall be transported to an appropriately permitted off-site soil recycling facility subject to the approval of the NTR.

1.8 PROJECT INFORMATION

1.8.1 Drawings, Maps and Specifications

Four sets of contract drawings, maps and specifications will be furnished to the Contractor without charge, except applicable publications incorporated into the technical provisions by reference. Additional sets will be furnished on request at no charge. The work shall conform to the following contract drawings and maps, all of which form a part of these specifications and are available in the office of the NTR.

EFD Dwg No.	NAVFAC Dwg No.	Title	Sheet No.
400173	4300173	Cover Sheet and General Notes	T-1
400174	4300174	Existing Site Plan	C-1
400175	4300175	Excavation Plan	C-2
400176	4300176	Excavation Plan	C-3
400177	4300177	Site Restoration Plan	C-4
400178	4300178	Site Restoration Plan	C-5
400179	4300179	Details	C-6

1.8.2 Reference Report

The following reference reports are available for examination in the office of the NTR and are intended only to show the existing conditions. The reports and drawings are the property of the Government and shall not be used for any purpose other than that intended by the specification.

Reports

A. "Initial Assessment Study of Marine Corps Base, Camp Lejeune, North Carolina", Water and Air research, Inc., dated 1983

B. "Final Site Summary Report, MCB Camp Lejeune", ESE, dated 1990

C "Underground Fuel Investigation and Comprehensive Site Assessment", Law, dated 1992

D. "Addendum Report of Underground Fuel Investigation and Comprehensive Site Assessment", dated 1993

E. "Interim Remedial Action Remedial Investigation/Feasibility Study",

Baker Environmental, dated 1994

1.9 PROJECT SCHEDULE AND TIME CONSTRAINTS

The Contractor shall be required to (a) commence work under this contract within 10 calendar days after the date the Contractor receives the notice to proceed, (b) prosecute the work diligently, and (c) complete the entire work ready for use not later than 75 calendar days after the required notice to proceed. The time stated for completion shall include final cleanup of the premises. The time stated for completion does not include the maintenance period for the seeding of disturbed areas.

1.10 SAFETY PROGRAM

In addition to safety requirements in the Basic Contract, the Contractor shall implement a safety program conforming to the requirements of Federal, state, and local laws, rules and regulations as specifically related to contaminated soil removal and treatment operations. The program shall include, but is not limited to, the following:

a. Occupational Safety and Health Standards

b. COE EM-385-1-1

c. NFPA 241

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 FACILITIES AND SERVICES

3.1.1 Availability of Utilities Services

a. The Government shall supply potable and non-potable water required to perform work to the Contractor. Work shall be coordinated with the Base Utilities Branch (Mr. Carl Baker, 910-451-5024). The Contractor shall provide all piping, hoses, pumps, and connections to transport water to the desired location on site. The Contractor shall also provide a backflow-prevention device and metered connections to the water source. Contractor shall be responsible for payment arrangements with base.

b. The Government shall supply reasonable amounts of temporary power to the Contractor. The Contractor shall provide all equipment and labor. The Contractor shall make connections, including providing meters, and make disconnections.

c. The Contractor shall not operate nor disturb the setting of control devices in the base utilities system, including water, sewer, electrical and steam services. The Government will operate the control devices as required for normal conduct of the work. The Contractor

shall notify the NTR giving two days advance notice when such operation is required.

d. The Contractor shall contact Base Telephone Services in writing to obtain telephone connection and payment information. Cost for telephone connection will be paid by the Contractor. The Contractor shall provide all equipment and labor necessary to connect the telephone service to the site. The Contractor shall make arrangements for connections and disconnections and payments.

3.1.2 Storage in Existing Buildings

Storage in existing buildings will not be allowed.

3.1.3 Open Site Storage Size and Location

The open site available for storage shall be confined to the areas indicated on the contract drawings.

3.1.4 Trailers, Storage, and Temporary Buildings

Locate these where directed. Trailers or storage buildings will be permitted, where space is available subject to the approval of the NTR. The trailers or buildings shall be in good condition, free from visible damage, rust and deterioration, and meet all applicable safety requirements. Trailers shall comply with all appropriate state and local vehicle requirements. Failure of the Contractor to maintain the trailers or storage buildings in good condition will be considered sufficient reason to require their removal. A sign not smaller than 24 inches by 24 inches shall be conspicuously placed on the trailer depicting the company name, business phone number, and emergency phone number. Trailers shall be anchored to resist high winds and must meet applicable state or local standards for anchoring mobile trailers.

3.1.4.1 Storage and Office Trailers

Provide a trailer of sufficient size for an office trailer work area and floor area for the exclusive use of the Contractor's Quality Control Representative. Also provide room in the same trailer for the Quality Control Records. Provide the Quality Control representative with a 4-foot by 8-foot plan table, a standard size office desk and chair, and telephone service. Quality control records shall be filed in the office and available at all times to the Government.

a. Trailers must meet state station requirements and must be in good condition.

b. Trailers shall be lockable and shall be locked when not in use.

c. Trailers shall have a sign in the lower left hand corner of left door of trailer with the following information: company name, address, registration number of trailer or vehicle identification number, location on base, duration of contract or stay on-base, contract number, local on-base phone number, off base phone number of main office, and emergency recall person and phone number.

3.1.5 Cleaning Up

During the progress of the remediation, the work area and adjacent areas shall be kept clean and free from all non-hazardous solid waste, surplus materials, and unneeded construction equipment.

No material or debris shall be allowed to flow or wash into watercourses, ditches, gutters, drains, or pipes.

The Contractor shall remove all temporary buildings and structures built under this contract on or before the completion of the work.

All materials and equipment installed by the Contractor or any subcontractors shall be thoroughly clean, and on completion of the work shall deliver it undamaged and in fresh and new-appearing condition.

The Contractor shall restore or replace, when and as directed by the NTR, any property damaged by the contract work and equipment or by employees. The property shall be restored in a condition at least equal to that existing prior to the beginning of construction operations. Suitable materials, equipment, and methods shall be used for such restoration. The restoration of property shall be done promptly and shall not be left until the end of the contract period.

3.2 RESTRICTIONS ON OPERATIONS

3.2.1 Scheduling

3.2.1.1 General Scheduling Requirements

The Marine Corps Base, Camp Lejeune, North Carolina, will remain in operation during the entire construction period. The Contractor shall schedule the work as to cause the least amount of interference with Base operations. Work schedules shall be subject to the approval of the NTR. Permission to interrupt Base roads shall be requested in writing a minimum of 15 calendar days prior to the desired date of interruption.

3.2.1.2 Regular Work Hours

The regular work hours for the Marine Corps Base, Camp Lejeune, North Carolina, are 0730 to 1530, Monday through Friday.

3.2.1.3 Work Outside Regular Hours

If the Contractor desires to carry on work outside regular hours or on Saturdays, Sundays or holidays, the Contractor shall submit an application to the NTR. The Contractor shall allow ample time to enable satisfactory arrangements to be made by the Government for inspecting the work in progress. At night, the Contractor shall light the different parts of the work in an approved manner.

3.2.2 Security Requirements

Contractor shall comply with general security requirements in accordance with Section C of the Basic Contract. No employee or representative of the Contractor will be admitted to the work site without satisfactory proof of United States citizenship or is specifically authorized admittance to the work site by the NTR.

3.3 ACTIONS REQUIRED OF THE CONTRACTOR

The Contractor shall comply with all requirements stated in Section C, Part 2.0, of the Basic Contract.

3.3.1 Base Permits

Permits are required for, but not necessarily limited to, welding, digging, and burning. Allow 7 calendar days for processing of the application. One copy of all applicable permits shall be posted at the job site.

3.4 PUBLIC RELEASE OF INFORMATION

The Contractor shall comply with all requirements stipulated in Section C, Part 2.0, of the Basic Contract.

3.5 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as defined in Section C of the Basic Contract with additional requirements as follows:

a. Provide 24 hour advance written notice to the NTR of Contractor's intention to dispose of off-base.

b. Disposal at facilities not holding a valid State of North Carolina permit is specifically prohibited. The prohibition also applies to sites where a permit may have been applied for but not yet obtained.

c. Off-base disposal of construction debris outside the parameters of this paragraph at sites without state permits and/or not in accordance with all regulatory requirements shall require the Contractor at his own expense to remove, transport, and relocate the debris to a state approved site. The Contractor shall also be required to pay any fines, penalties, or fee related to the illegal disposal of construction debris.

3.5.1 Radio Transmitter Restrictions

Conform to the restrictions and procedures for the use of radio transmitting equipment, as directed. Do not use transmitters without prior approval.

3.6 REQUIRED INSURANCE

Insurance requirements from Section H of the Basic Contract are enforced in their entirety.

-- End of Section --

SUBMITTAL REGISTER (PART A)

Contract Number: | Project Title: MCB Camp Lejeune OU No. 10, Site 35

SPEC SECTION NO.	SD NO, AND TYPE OF SUBMITTAL MATERIAL OR PRODUCT	SPEC PARA NO.	CLASSIF/ APPR BY NTR *	GOVT OR A/E REVIEWER	TRANS CONTROL NO.	PLANNED SUBMITTAL DATE
(a)	(b)	(c)	(d)	(e)	(f)	(g)
1) 01010	SD-18, Records	1.2.1				
2)	Work Plan	1.2.1.1	G			
3) 01010	SD-18, Records	1.3.1				
4)	As-Built Records	1.3.1.1	G			
5)	Environmental Condition Report	1.3.1.2				
6)	Network Analysis Diagram	1.3.1.3				
7)	Status Reports	1.3.1.3				
8)	Status Reports	1.3.1.3				
9)	QC Meeting Minutes	1.3.1.4				
10)	Test Results Summary Report	1.3.1.5				
11)	Contractor Production Report	1.3.1.6				
12)	QC Report	1.3.1.7				
13)	Rework Items List	1.3.1.8				
14)	Permits	1.3.1.9				
15)	Contractor's Closeout Report	1.3.1.10				
16) 01430	SD-08, Statements	1.2.1				
17)	Sample Log	1.2.1.1				
18) 01430	SD-12, Field Test Reports	1.2.2				
19)	Confirmatory Sample Analyses	1.2.2.1				
20)	Results					

* Navy Notes:
Approved by:
G: NTR
Blank: CQC Manager

Contract Number: | Project Title: MCB Camp Lejeune OU No. 10, Site 35

SPEC SECTION NO.	SD NO, AND TYPE OF SUBMITTAL MATERIAL OR PRODUCT	SPEC PARA NO.	CLASSIF/ APPR BY NTR *	GOVT OR A/E REVIEWER	TRANS CONTROL NO.	PLANNED SUBMITTAL DATE
(a)	(b)	(c)	(d)	(e)	(f)	(g)
1)	Waste Characterization Sample	1.2.2.2				
2)	Analyses Results					
3) 01560	SD-08, Statements	1.3.1				
4)	Class I ODS prohibition	1.4	G			
5)	Safety program	1.6	G			
6)	MSDS	1.6	G			
7)	Health and safety plan	1.6.4	G			
8) 01560	SD-12, Field Test Reports	1.3.2				
9)	Laboratory Analyses	1.3.2.1	G			
10) 01560	SD-18, Records	1.3.3				
11)	Solid waste disposal permit	1.3.3.1				
12)	Disposal permit for hazardous	1.3.3.2	G			
13)	waste					
14) 02220	SD-04, Drawings	1.3.1				
15)	drawings	1.3.1.1				
16) 02220	SD-12, Field Test Reports	1.3.2				
17)	Fill and backfill	3.3				
18)	Density tests	3.7.2.2				
19) 02223	SD-08, Statements	1.2.1				
20)	Waste Shipping Documentation	1.2.1.1				

* Navy Notes:
Approved by:
G: NTR
Blank: CQC Manager

Contract Number: | Project Title: MCB Camp Lejeune OU No. 10, Site 35

SPEC SECTION NO.	SD NO, AND TYPE OF SUBMITTAL MATERIAL OR PRODUCT	SPEC PARA NO.	CLASSIF/ APPR BY NTR *	GOVT OR A/E REVIEWER	TRANS CONTROL NO.	PLANNED SUBMITTAL DATE
(a)	(b)	(c)	(d)	(e)	(f)	(g)
1)	Waste Delivery Documentation	1.2.1.2				
2)	Waste Site Vehicle	1.2.1.3				
3)	Decontamination Verification					
4)	Treatment Site Vehicle	1.2.1.4				
5)	Decontamination Verification					

* Navy Notes:
Approved by:
G: NTR
Blank: CQC Manager

TEST BORING LOG AND WELL CONSTRUCTION LEGEND

SOIL DESCRIPTIONS

GRAIN SIZE IDENTIFICATION

NAME	SIZE LIMITS
Boulder	12" OR MORE
Cobbles	3" - 12"
Coarse Gravel	3/4" - 3"
Fine Gravel	4.76 mm (#4) - 3/4"
Coarse Sand	2 mm (#10) - 4.76 mm (#4)
Medium Sand	0.42 mm (#40) - 2 mm (#10)
Fine Sand	0.074 mm (#200)-0.42 mm (#40)
Silt	0.002 mm-0.074 mm (#200)
Clay	Less than 0.002 mm

RELATIVE DENSITY

NONCOHESIVE SOIL

TERM	SPT (Blows/ft)
Very Loose	BELOW 4
Loose	4-10
Medium Dense	10-30
Dense	30-50
Very Dense	OVER 50

COHESIVE SOILS

TERM	SPT (Blows/ft)
Very Soft	BELOW 2
Soft	2-4
Medium Stiff	4-8
Stiff	8-15
Very Stiff	15-30
Hard	OVER 30

MOISTURE

Dry
Damp
Moist
Wet

DESCRIPTIVE TERMS

Trace	0-10%
Little	10-20%
Some	20-35%
And	35-50%

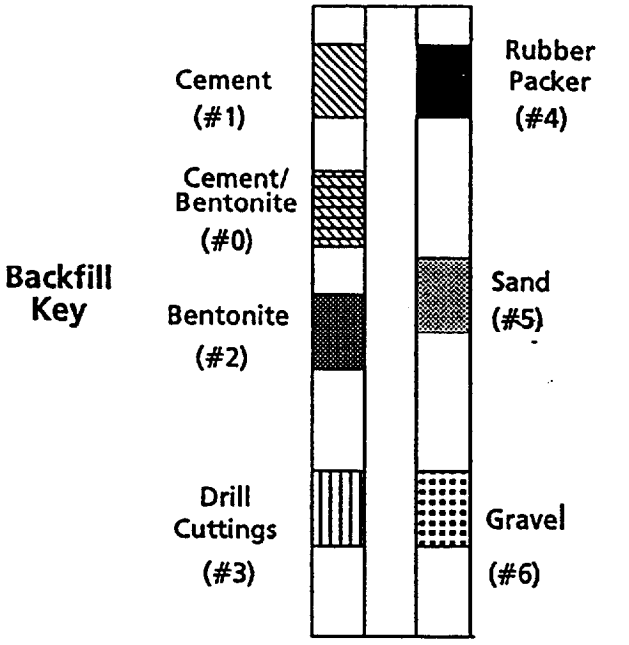
CONTACTS:

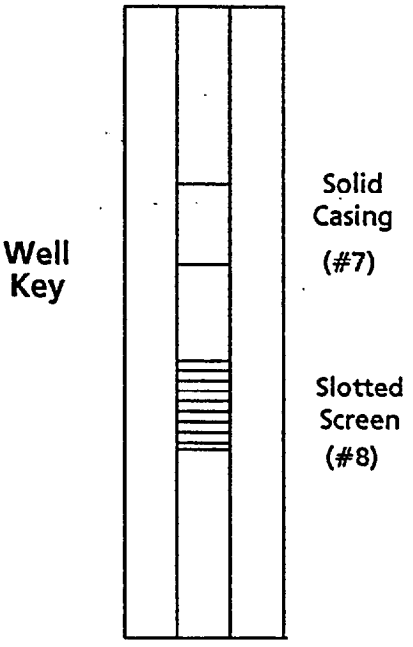
_____ = DEFINITE

_ _ _ _ = INDEFINITE

. . . . . = GRADATIONAL

WELL SYMBOLS AND BACKFILL





SAMPLE TYPE

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

ABBREVIATIONS

HS	=	Hollow Stem
NP	=	Non Plastic
-PL	=	Below the Plastic Limit
PL	=	At the Plastic Limit
+PL	=	Above the Plastic Limit
+LL	=	Above the Liquid Limit
SPT	=	Standard Penetration Test
RQD	=	Rock Quality Designation

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35GWD-1
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"			8"	4-15-94	46.0	OVERCAST, COOL		
LENGTH	2'				4-25-94	7.0'	HOT, HUMID, BREEZY		
TYPE	STD.			ROLLER	4-26-94	14.0'	HOT, BREEZY (85+)		
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS:

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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+2.1	-57.0
Screen	2"	.10 Slot, Schedule 40 PVC	-57.0	-61.0

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Visual Description	Well Installation Detail	Elevation
1	S-1	1.9/2.0 95%	10 11 12 15		SILTY SAND, fine grained, trace roots, dark brown to black, medium dense, damp.		
2					1.9 SAND, fine grained, some silt, light grey, medium dense, damp		
3	S-2	1.5/2.0 75%	12 10 7 9		3.0 SILTY SAND, fine grained, dark brown, medium dense, moist		
4							
5	35-GWDS-03 S-3	2.0/2.0 100%	5 7 10 15		NOTE: Sample collected from 4'-6'.		
6							
7	S-4	2.0/2.0 100%	4 5 8 8		7.0 SAND, Medium grained, well graded, little silt, Medium dense, wet.		
8					NOTE: Groundwater at 7.5 feet.		
9	S-5	1.0/2.0 50%	4 3 5 3		9.5		

Match to Sheet 2

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35GWD-1 SHEET 1 OF 4

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35GWD-1

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	Visual Description	Well Installation Detail	Elevation
11	S-6	1.0/2.0 50%	7 8 5 5		Continued from Sheet 1 SAND, Medium grained, well graded, trace gravel, trace shell fragments, trace silt, light gray, medium dense 12.8 wet 12.0		
13	S-7	1.0/2.0 50%	4 4 4 3		SAND, Coarse grained, well graded, light gray, loose, wet 13.3 13.3		
15	S-8	1.1/2.0 55%	1 1 1 2		SAND, fine grained, poorly graded, trace silt, dark gray, loose to very loose, wet NOTE: 2" silt stringer, trace sand at 15.1'	#10	
17	S-9	1.0/2.0 50%	2 2 1 2		NOTE: Light brown		
18					18.0 18.0		
19	S-10	1.4/2.0 70%	4 5 3 4		SAND and GRAVEL, Coarse grained, light gray, loose, wet	#7 #1	
20					20.5 20.5		
21	S-11	1.0/2.0 50%	1 1 1 WOH		SAND, fine grained, poorly graded, trace silt, dark grey, loose to very loose, wet		
23	S-12	1.5/2.0 75%	2 3 18 34		23.0 23.0 GRAVEL, trace sand, light gray, 23.5 medium dense, wet. 23.5	#1	
25	S-13	1.3/2.0 65%	29 40 29 30		SAND, fine grained, poorly graded, trace gravel, trace silt, light gray, very dense, wet, cemented with calcium carbonate NOTE: Partially Cemented		
27	S-14	1.2/2.0 65%	5 15 21 22		NOTE: Lost Circulation of drilling fluids.	#10	
29	S-15	2.0/2.0 100%	17 25 41 43				
30							

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35GWD-1 SHEET 2 OF 4

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: SITE 35 - CAMP GEIGER AREA FUEL FARM
S.O. NO.: 62470-232 BORING NO.: 35GWD-1

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
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description
31	S-16	2.0/2.0 100%	17 19 15 13			Continued from Sheet 2 SAND, fine grained, poorly graded, trace gravel, trace silt, light gray, dense, wet, partially cemented with calcium carbonate.
33	S-17	2.0/2.0 100%	20 22 20 21			
35	S-18	1.0/2.0 50%	21 30 22 39			NOTE: Very dense
37	S-19	1.0/2.0 50%	9 15 15 21			NOTE: dense
39	S-20	2.0/2.0 100%	9 11 12 14			NOTE: medium dense
41	S-21	1.0/2.0 50%	7 10 10 20			NOTE: dense
43	S-22	1.0/2.0 50%	20 21 25 26			43.7 SAND, fine grained, little clay, trace shell fragments, light gray, dense, wet
45	S-23	2.0/2.0 100%	12 15 17 17			46.0 SAND, fine grained, some silt, trace clay, trace to little shell fragments, greenish gray, dense, wet
46	A.N.					46.0 END OF LOG FOR 4-15-94, SET 6" CASING
47	SHELBY TUBE	1.75/2.0 87.5%	N/A			NOTE: PUSHED SHELBY TUBE FROM 47'-49'. SAMPLE COLLECTED FOR GRAIN SIZE, PERMEABILITY, ATTERBURG LIMITS, ETC.
49	S-25	2.0/2.0	6 5			SAND, fine grained, some silt, trace shell fragments, trace clay, greenish gray, medium dense, moist Match to Sheet

Well Installation Detail	Elevation
#0 #7 #0 #0 #7 #2 #7 #2	

DRILLING CO.: HARDIN HUBER INCORPORATED BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35GWD-1 SHEET 3 OF 4

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: SITE 35 - CAMP GEIGER AREA FUEL FARM
S.O. NO.: 62A7D-232 BORING NO.: 356WD-1

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
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
51	S-25	100%	6 9			Continued from Sheet 3		
52	S-26	1.4/2.0 70%	5 5 6 13					
53						53.0 53.0 END OF BORING FOR 4-25-94		
54	S-27	2.0/2.0 100%	5 9 26 48			SAND, fine grained, some SILT, trace shell fragments, trace clay, greenish gray. dense, moist	#2	#2
55						57.9 57.9 SAND, fine to medium grained, little shell fragments, trace SILT, Gray, very dense, wet.	#7	
56								
57								
58							#5 #8	#5
59								
60								
61	S-28	1.6/2.0 80%	25 30 48 50/3			61.3 61.3 CLAYEY SILT, some shell fragments, trace sand, greenish gray, very stiff, wet 61.8 61.8	#7	
62								
63						SAND AND SILT, trace clay, greenish gray, very stiff, wet, partially Cemented.		
64							#5	
65								
66	S-29	2.0/2.0 100%	10 13 8 50/3				#5	#5
67						67.0 67.0 END OF BORING AT 67.0, SET WELL AT 62.0'		
68								
69								
70						Match to Sheet		

DRILLING CO.: HARDIN HUBER Incorporated BAKER REP.: James Culp
DRILLER: BRIAN Van Deren BORING NO.: 356WD-1 SHEET 4 OF 4

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35GWD-2
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"			8"	4-16-94	46.0	OVERCAST, MUGGY WET		
LENGTH	2'				4-20-94	17.0	Cool, Sunny		
TYPE	STD.			ROLLER					
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS:

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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+2.6	-57.1
Screen	2"	.10 Slot, Schedule 40 PVC	-57.1	-61.0

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Visual Description	Well Installation Detail	Elevation
1	S-1	1.5/2.0 75%	4 5 6 9		SAND, fine grained, trace Roots, trace SILT, brown to light brown, medium dense, damp	#0	
2							
3	S-2	1.1/2.0 55%	4 5 6 9			#0	
4							
5	35-GWD03 S-3	1.1/2.0 55%	7 7 7 7		NOTE: Moist	#7 6" steel Outer Casing	
6					NOTE: Wet, groundwater encountered at 6.0 feet.	#0	
7	S-4	1.3/2.0 65%	6 6 5 7				
8							
9	S-5	1.5/2.0 75%	5 5 6 8			#0	

Match to Sheet 2

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35GWD-2 SHEET 1 OF 4

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 356WD-2

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	Visual Description	Well Installation Detail	Elevation
11	S-6	0.9/2.0 45%	5 4 5 5		Continued from Sheet 1 11.6 SAND, fine grained, trace silt, gray, Loose, wet	11.0	
12							
13	S-7	1.8/2.0 90%	1 1 2 3		12.6 SAND AND SILT, fine grained, brown (with grey streaks), Loose, wet	12.6	
14					14.0 SAND, fine grained, little silt, trace gravel, reddish brown, Loose, wet.	14.0	
15	S-8	1.8/2.0 90%	3 2 2 3				
16							
17							
18							
19							
20							
21	S-9	1.4/2.0 70%	3 4 5 5		21.0 SAND, fine grained, trace silt, greenish brown, Loose, wet, hydrocarbon odors.	21.0	
22							
23					23.5	23.5	
24							
25					SAND, fine grained, little silt, some shell fragments, gray to grayish brown, Loose, wet, partially cemented, wet, hydrocarbon odors		
26	S-10	.85/2.0 42.5%	2 3 3 5				
27							
28							
29							
30							

#10
#7
#10
#10
#10

6" steel outer casing

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 356WD-2 SHEET 2 OF 4

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

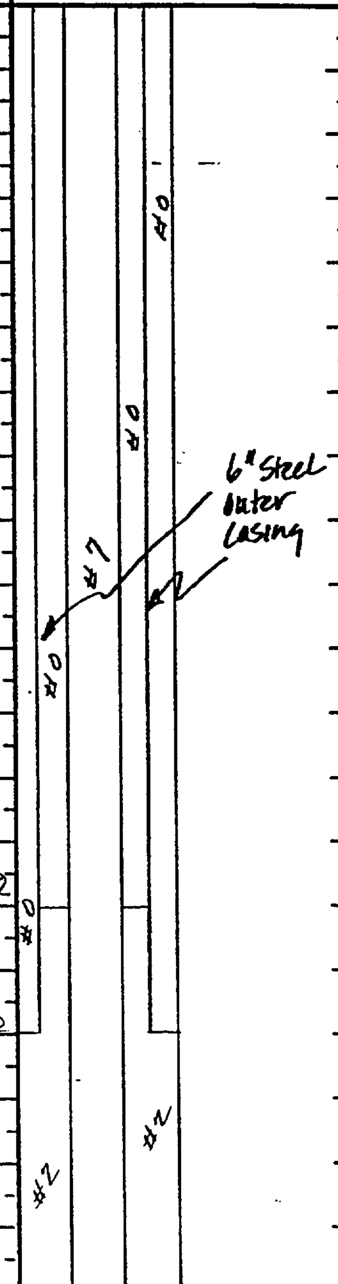
PROJECT: SITE 35 - CAMP GEIGER AREA FUEL FARM
S.O. NO.: 62470-232 BORING NO.: 35GWD-2

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
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Elevation
31, 32	S-11	1.6 / 2.0 80%	18 27 36 20			Continued from Sheet 3 SAND, fine grained, well graded, some shell fragments, trace silt, gray, very dense, wet, partially cemented.	
33, 34, 35	AN						
	S-12	1.4 / 2.0 70%	4 17 22 25				
37, 38, 39, 40	AN						
41, 42	S-13	2.0 / 2.0 100%	9 15 15 17				
43, 44	S-14	2.0 / 2.0 100%	21 25 27 29			NOTE: Little silt, trace clay 43.9 43.9	
45, 46	S-15	1.8 / 2.0 90%	17 15 14 16			SAND, fine grained, some silt, trace shell fragments, trace clay, greenish gray, medium dense, wet. 46.0 46.0	
47, 48	S-16	1.9 / 2.0 95%	6 7 9 16			END OF BORING FOR 4-16-94. - SET 6" CASING	
49, 50	S-17	2.0 / 2.0 100%	3 5 6 9			Match to Sheet	

Well Installation Detail



DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian VanDoren BORING NO.: 35GWD-2 SHEET 3 OF 4

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: SITE 35 - CAMP GEIGER AREA FUEL FARM
S.O. NO.: 62470-232 BORING NO.: 35GWD-2

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
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
51	S-18	2.0/2.0 100%	3 5 7 7			Continued from Sheet 3	#2	
52								
53	S-19	2.0/2.0 100%	6 9 27 45			53.5	#2	
54						SAND, COARSE TO medium grained, SOME shell fragments, trace SILT, Gray, Very dense, Wet.		
55							#7	#5
56								
57	AN							
58								
59							#5 #8	
60						NOTE: PARTIAL CEMENTATION.		
61	S-20	2.0/2.0 100%	41 31 47 45				#7	
62							#5	
63	AN					END OF BORING AT 63.0', SET WELL AT 62'		
64								
65								
66								
67								
68								
69								
70						Match to Sheet		

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Deren
BAKER REP.: James Culp
BORING NO.: 35GWD-2
SHEET 4 OF 4

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35GWD-3
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"			8"	4-17-94	17.0	Cloudy, Hot		
LENGTH	2'				4-18-94	28.0	Sunny, Cool		
TYPE	STD.			ROTARY	4-27-94	22.0	Sunny, Hot breezy		
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC		
Screen	2"	.10 Slot, Schedule 40 PVC		

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1	S-1	1.6/2.0 80%	5 10 7 8			SAND, fine grained, trace silt, trace roots, dark brown, medium dense, damp	#0 #7 #0 #0 6" steel outer casing	
2								
3	35-GWDS-03 S-2	1.6/2.0 80%	3 4 6 6			NOTE: trace clay		
4								
5	35-GWDS-03 S-3	1.8/2.0 90%	2 4 6 8			NOTE: No clay. NOTE: Groundwater encountered at 5.5 feet.		
6								
7	35-GWDS-03 S-4	1.5/2.0 75%	5 11 10 10					
8								
9	S-5	1.8/2.0 90%	4 6 6 7			NOTE: trace gravel, gray	#0	
						Match to Sheet 2		

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35GWD-3 SHEET 1 OF 4

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 356WD-3

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	Visual Description	Well Installation Detail	Elevation
11–12	S-6	1.7/2.0 85%	4 5 6 7		Continued from Sheet 1		
13–14	AN						
15–16	S-7	0.85/2.0 42.5	4 6 5 6		NOTE: Dark red/brown staining at 16.8'	#10 6" Steel outer casing	
17–18							
19–20	AN					#7	
21–22	S-8	2.0/2.0 100%	1 1 1 WOH		NOTE: DARK GREY, LOOSE		
23–24	AN				23.5 (est)	#10	
25–26	S-9	1.5/2.0 75%	27 17 32 35		SAND, fine grained, trace shell fragments, trace silt, light grey, dense to very dense, wet, partially cemented		
27–28							
29–30	AN					#10	

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 356WD-3 SHEET 2 OF 4

TEST BORING AND WELL CONSTRUCTION RECORD

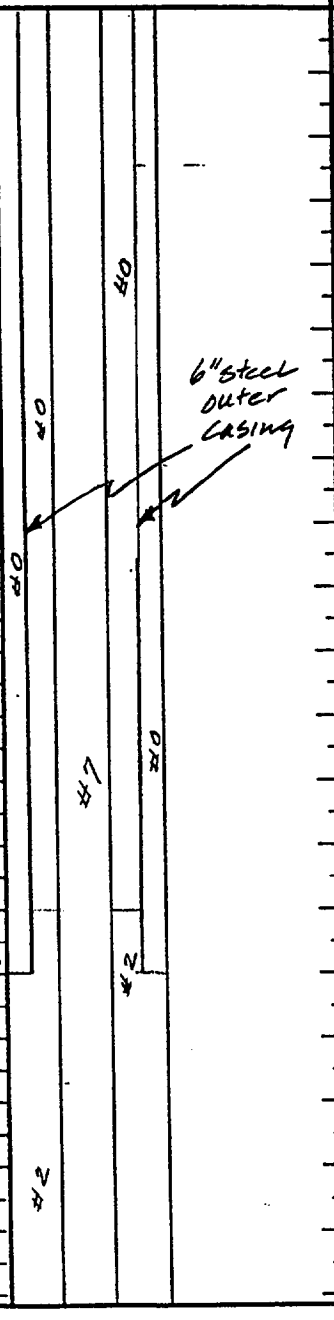
PROJECT: SITE 35 - CAMP GEIGER AREA FUEL FARM
S.O. NO.: 62470-232 BORING NO.: 35GWD-3

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
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description
31	S-10	1.6/2.0 80%	31 32 27 30			Continued from Sheet 3 NOTE: Cementation increasing.
32						
33	A.N.					
34						
35	S-11	1.8/2.0 90%	14 15 13 11			NOTE: Cementation decreasing, increasing silt
37						
38	A.N.					
39						
40						
41	S-12	1.9/2.0 95%	15 18 20 31			
42						
43	S-13	1.9/2.0 95%	20 20 15 20			43.8 43.8 SAND, fine grained, some silt, trace shell fragments, greenish gray, dense, moist 45.0
44						
45	AN					END OF BORING FOR 4-18-94 - SET CASING (6")
46						
47	S-14	1.9/2.0 95%	4 5 7 8			SAND, fine grained, some silt, trace shells, greenish grey, medium dense, wet
48						
	S-15	2.0/2.0 100%	4 6 9 10			Match to Sheet

Well Installation Detail



Elevation

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 356WD-3 SHEET 3 OF 4

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: SITE 35 - CAMP GEIGER AREA FUEL FARM
S.O. NO.: 62470-232 BORING NO.: 35GWD-3

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
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
51	S-16	1.7/2.0 85%	4 4 10 12			Continued from Sheet 3 NOTE: WET		
52								
53	S-17	1.8/2.0 90%	4 5 10 15			NOTE: MOIST	#2	
54								
55	S-18	1.8/2.0 90%	4 5 10 18			NOTE: MOIST	#4	
56						56.3 56.3		
57	S-19	2.0/2.0 100%	9 13 27 50/.1			SAND, fine grained, little shell fragments, trace silt, trace clay, gray, dense, wet, partially cemented		
58								
59	A.N					59.0 59.0 SAND, fine grained, trace shell fragments, trace silt, greenish gray, medium dense, wet., partially cemented	#9	#6
60								
61	S-20	2.0/2.0 100%	12 13 14 25					
62								
63	A.N.					63.5 63.5 SAND, fine grained, poorly graded, some shell fragments, trace silt, gray, very dense, wet	#13	
64								
65							#8	
66	S-21	1.3/2.0 65%	32 35 25 50/.2				#7	
67						66.8 66.8 SILT, some shell fragments, trace sand, trace clay, green, very dense, MOIST 68.0	#5	
68	A.N					END OF BORING AT 68.0', SET WELL AT 67.0'		
69								
70						Match to Sheet		

DRILLING CO.: HARDIN HUBER INCORPORATED BAKER REP.: JAMES CULP
DRILLER: BRIAN VAN DOREN BORING NO.: 35GWD-3 SHEET 4 OF 4

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35GWD-4
COORDINATES: EAST: ______ NORTH: ______
ELEVATION: SURFACE: ______ TOP OF STEEL CASING: ______

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"			8"	4-19-94	42.0	Clear, cool		
LENGTH	2'				4-29-94	13.0	overcast, humid		
TYPE	STD.			ROTARY					
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+1.9	-47.0
Screen	2"	.10 Slot, Schedule 40 PVC	-47.0	-51.0

Depth (Ft.)		Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
0–2		S-1	1.25/2.0 62.5	4 4 4 5			SAND, fine grained, trace silt, trace organic matter, brown, loose, damp NOTE: peat-like organic material	#0	
2–4		S-2	1.3/2.0 65%	3 3 3 2			Note: trace well rounded gravel	#0	
4–6		S-3	N.R./2.0 0%	1 1 1 1			NOTE: NO RECOVERY 6.0' .... 6.0'	6" steel outer casing	
6–8	35-GWDS-04	S-4	1.9/2.0 95%	2 4 4 4			SAND, fine grained, trace silt, light grey, loose, wet, strong hydrocarbon odors. NOTE: @7.8' - Encountered groundwater	#0	
8–10		S-5	1.7/2.0 85%	1 3 3 3				#0	

Match to Sheet 2

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35GWD-4 SHEET 1 OF 4

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 356WD-4

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
12	A.N.							
13								
14								
15						NOTE: STRONG hydrocarbon odors		
16	S-6	1.9/2.0 85%	1 8 24 16					
17						16.7 16.7 SAND, fine grained, trace shell fragments, trace silt, gray; dense, wet, partially cemented.	6" steel outer casing	
18								
19	A.N.							
20								
21	S-7	1.5/2.0 75%	30 20 32 34			NOTE: Light gray		
22								
23								
24	A.N.							
25								
26	S-8	1.4/2.0 70%	35 36 36 20					
27								
28								
29								
30								

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 356WD-4
SHEET 2 OF 4

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: SITE 35 - CAMP GEIGER AREA FUEL FARM
S.O. NO.: 62470-232 BORING NO.: 35GWD-4

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
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
31	S-9	1.4/2.0 70%	26 29 24 29			**Continued from Sheet 2** SAND, fine grained, trace silt, trace shell fragments, light gray very dense, wet		
32								
33	A.N.							
34							6" steel outer casing	
35	S-10	1.8/2.0 90%	21 20 24 21					
37								
38	A.N.					38.5	38.5	
39								
40						SAND, fine grained, little silt, trace clay, greenish gray, medium dense, moist		
41	S-11	1.7/2.0 85%	4 6 6 9					
42						42.0 END OF BORING FOR 4-19-94 - SET 6" CASING.	42.0	
43	A.N.							
44						SAND, fine grained, some silt, trace shell fragments, greenish gray, very		
45	S-12	2.0/2.0 100%	15 21 31 37			44.8 dense, moist SAND, fine grained, some shell fragments, trace silt, gray, very dense, wet, partially cemented with calcium carbonate.	44.8	
46								
47	A.N.					47.0 LIMESTONE FRAGMENTS (GRAVEL-SIZE) GRAY, VERY DENSE, WET.	47.0	
48								
0	S-13	2.0/2.0 100%	24 28 30 31			Match to Sheet		

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35GWD-4
SHEET 3 OF 4

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: SITE 35 - CAMP GEIGER AREA FUEL FARM
S.O. NO.: 62470-232 BORING NO.: 35GWD-4

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
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
51						Continued from Sheet	#8	
52							#7	
53						53.0 53.0	#5	
54	S-14	2.0 2.0 100%	15 16 20 21			SAND, fine grained, some silt, trace shell fragments, greenish gray, dense, moist	#5	
55						55.0 55.0 END OF BORING AT 55.0', SET WELL AT 52.0'		
56								
57								
58								
59								
60								
61								
62								
63								
64								
65								
66								
67								
68								
69								
70						Match to Sheet		

DRILLING CO.: HARDIN HUGER INCORPORATED BAKER REP.: JAMES CULP
DRILLER: BRIAN VAN DOREN BORING NO.: 35GWD-4 SHEET 4 OF 4

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35GWD-5
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

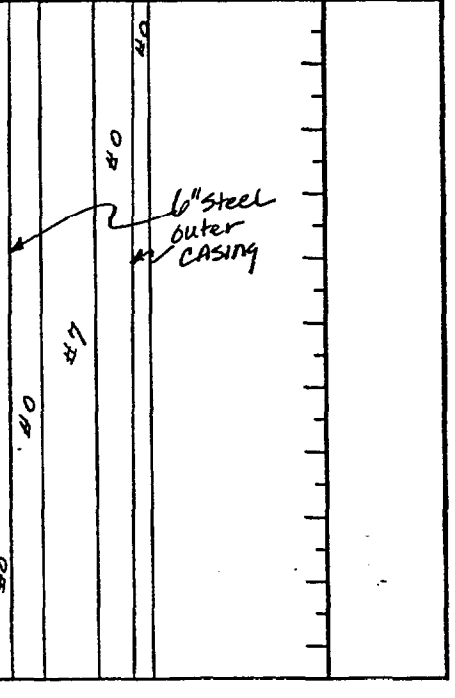
RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"			8"	4-28-94	27.0	Warm, Humid		
LENGTH	2'								
TYPE	STD.			ROTARY					
HAMMER WT.	140#								
FALL	30"								
STICK UP									

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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+2.5	-49.0
Screen	2"	.10 Slot, Schedule 40 PVC	-49.0	-53.0

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Visual Description	Well Installation Detail	Elevation
1	S-1	1.7/2.0 85%	5 6 7 10		SAND, fine grained, some silt, trace roots, dark brown, medium dense, damp		
2					NOTE: @1.0' - Light brown		
3	S-2	1.4/2.0 70%	5 5 5 6		NOTE: Light gray		
4							
5	35-GWDS-03 S-3	1.5/2.0 75%	5 10 5 6		5.5 5.5		
6					CLAY, little silt, brown and gray mottled, medium dense, wet		
7	35-GWDS-03 MS/MSD S-4	1.8/2.0 90%	4 6 8 8		NOTE: Groundwater @ 7.0'		
8							
9	S-5	1.5/2.0 75%	2 2 3 4		9.8 9.8 SILTY SAND, fine grained Match to Sheet 2		



DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35GWD-5 SHEET 1 OF 4

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 356WD-5

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)

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	Visual Description	Well Installation Detail	Elevation
11					**Continued from Sheet 1**		
12	A.N.				trace clay, brown and gray mottled, loose, wet		
13					12.5 (est) — — — — 12.5		
14							
15							
16	S-6	2.0 / 2.0 100%	2 2 3 3		CLAY, trace silt, gray, medium stiff, wet. NOTE: gray sand stringer ≈ 2". Set 8" casing because drilling fluids were not recirculating.	6" Steel outer casing	
17							
18					18.0 (est) — — — — 18.0		
19	AN					#1	
20							
21	S-7	2.0 / 2.0 100%	2 2 3 5		SILT, some clay, trace wood fragments, dark brown, medium stiff, wet	#0	
22							
23							
24	AN				24.0 (est) — — — — 24.0		
25						#0	
26	S-8	1.0 / 2.0 50%	2 2 3 4		SAND, fine to medium grained, trace silt, reddish brown, loose, wet		
27							
28					END OF BORING FOR 4-28-94	#0	
29					NOTE: TRACE SHELL FRAGMENTS, PARTIALLY CEMENTED WITH CALCIUM CARBONATE.		
30							

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 356WD-5
SHEET 2 OF 4

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: SITE 35 - CAMP GEIGER AREA FUEL FARM
S.O. NO.: 62470-232 BORING NO.: 356WD-5

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
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
31	S-9	1.8/2.0 90%	15 12 12 13			Continued from Sheet 2 30.8 SAND, fine grained, poorly graded, little shell fragments, trace SILT, gray, medium dense, wet, partially cemented with calcium carbonate.	#0 #0 #0 #0 6" STEEL OUTER CASING	
32								
33	A.N.							
34								
35	S-10	1.9/2.0 95%	5 5 9 7			35.0 35.0 SAND, fine grained, some SILT, trace shell fragments, greenish gray, medium dense, wet		
37						37.0 37.0 END OF BORING FOR 4-29-94 - SET 6" CASING		
38	A.N.							
39								
40						SAND, fine grained, trace shell fragments, trace silt, greenish gray, medium dense, moist.		
41	S-11	2.0/2.0 100%	4 7 10 12				#2 #7 #2	
42								
43	S-12	2.0/2.0 100%	4 7 7 8			NOTE: little silt, wet		
44								
45	S-13	2.0/2.0 100%	8 12 29 36			45.0 45.0 SAND, fine grained, some shell fragments, trace silt, gray Dense, wet.	#5 #6	
46								
47								
48						48.0 (est) 48.0 LIMESTONE FRAGMENTS, some shell fragments, trace sand, gray, dense, wet	#8	
						Match to Sheet		

DRILLING CO.: HARDIN HUBER INCORPORATED BAKER REP.: JAMES CULP
DRILLER: Brian Van Doren BORING NO.: 356WD-5 SHEET 3 OF 4

Baker
Baker Environmental, Inc

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: SITE 35 - CAMP GEIGER AREA FUEL FARM
S.O. NO.: 62470-232 BORING NO.: 356WD-5

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
PID = Photoionization Detector

Depth (Ft.)	Sample Type and No.	Samp. Rec. (Ft. & %)	SPT or RQD	Lab. Class. or Pen. Rate	PID (ppm)	Visual Description	Well Installation Detail	Elevation
51	S-14	2.0 / 2.0 100%	24 45 44 30			Continued from Sheet 3 50.5 SAND, fine grained, little shell fragments, gray, very dense, wet, partially cemented with calcium carbonate..	#5 #8 #7 #5 #5	
52								
53	A.N.							
54								
55								
56						56.5		
57						SAND, fine grained, some silt, little shell fragments, greenish gray, very dense, wet 57.0		
58						END OF BORING AT 57.0'; SET WELL AT 54.0'		
59								
60								
61								
62								
63								
64								
65								
66								
67								
68								
69								
70						Match to Sheet		

DRILLING CO.: HARDIN-HUBER INCORPORATED
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 356WD-5
SHEET 4 OF 4

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-26B
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"			8"	5-13-94	42.0	SUNNY, COOL		
LENGTH	2'								
TYPE	STD.			ROTARY					
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	-.35	-37.3
Screen	2"	.10 Slot, Schedule 40 PVC	-37.3	-41.25

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1	S-1	2.0/2.0 100%	5 10 10 8			0.3 ASPHALT 0.3 SAND, fine grained, trace silt, brown, medium dense, dry	#0	
2								
3	S-2	1.2/2.0 60%	5 11 12 14			NOTE: GRAY		
4								
5	S-3	1.1/2.0 55%	2 4 6 10				#1	
6								
7	35-MW26B-04 S-4	1.1/2.0 55%	6 10 12 14			NOTE: Medium grained at 7.3 FEET NOTE: GROUNDWATER AT 7.7 FEET		
8								
9	S-5	1.0/2.0 50%	4 5 4 4			9.0 9.0 SILT, some sand, trace clay, orange, loose, moist to wet.	#0	
10						Match to Sheet 2		

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-26B SHEET 1 OF 3

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-26B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
12	A.N.					12.5(est) 12.5		
13								
14								
15						SAND, fine grained, trace silt, brown, loose, wet		
16	S-6	1.6/2.0 80%	2 2 3 2			NOTE: @ 16.7' - orange in color with gray clay balls.		
17								
18	A.N.							
19						19.5(est) 19.5		
20						SAND, fine grained, little shell fragments, little silt, trace gravel, grey, dense, wet, partially cemented with calcium carbonate. 21.3		
21	S-7	1.9/2.0 95%	15 25 10 15					
22						SILT, little shell fragments, trace sand, light brown, dense, moist		
23	A.N.							
24								
25						NOTE: Some shell fragments, partially cemented with calcium carbonate, becoming gray.		
26	S-8	2.0/2.0 100%	15 30 20 35					
27								
28								
29								
30								

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-26B SHEET 2 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-26B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
31	S-9	2.0/2.0 100%	20 32 22 28			Continued from Sheet 2 SAND, fine grained, some shell fragments, trace silt, gray and brown, partially cemented with calcium carbonate.	#2	
32								
33	A.N.					NOTE: gray	#1	
34								
35	S-10	2.0/2.0 100%	10 12 14 12			NOTE: gray		
37							#5	
38	A.N.							
39						39.5 (est) 39.5	#8	
40	S-11	2.0/2.0 100%	12 13 18 16			SILT, some sand, little shell fragments, trace clay, greenish gray, dense, moist to wet		
41						42.0 42.0	#7	
42						END OF BORING AT 42.0 FEET; WELL SET AT 42.0 FEET.		
43								
44								
45								
46								
47								
48								

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-26B SHEET 3 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-29B
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill

	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"			8"	4-26-94	46.0	Hot, breezy		
LENGTH	2'								
TYPE	STD.			ROTARY					
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+1.8	-40.0
Screen	2"	.10 Slot, Schedule 40 PVC	-40.0	-44.0

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Visual Description	Well Installation Detail	Elevation
1	AN						
2	S-1	1.3/2.0 65%	5 5 7 8		SILT, little sand, trace gravel, dark brown, medium dense, damp.	#0	
3					3.0 3.0 SILT, trace clay, trace sand, light brown and gray, medium dense, moist.		
4							
5	S-2	2.0/2.0 100%	3 3 5 9		5.3 5.3 SAND, medium to fine grained, trace silt, light gray, medium dense, wet	#7	
6							
7	35-MW-29S-03 S-3	2.0/2.0 100%	5 6 9 15		Note: Groundwater encountered at 8.0'		
8							
9	S-4	2.0/2.0 100%	5 6 7 9		Note: SAND is fine grained.	#0	
10					Match to Sheet 2		

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-29B SHEET 1 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-29B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
12						12.5 (est) ---------- 12.5		
13								
14								
15						SILT, trace sand, black, loose, wet, UNIDENTIFYABLE ODOR TO THE SOILS. 16.1		
16	S-5	2.0/2.0 100%	A A 5 6			Sand, fine grained, trace silt, black, medium dense, wet, same odor as above.		
17								
18	AN							
19								
20								
21	S-6	1.5/2.0 75%	1 1 1 1					
22								
23	AN							
24								
25						25.1 ---------- 25.1		
26	S-7	2.0/2.0 100%	11 13 24 38			SAND, fine grained, well graded, trace SILT, gray, dense, wet, partially cemented with Calcium Carbonate. 25.9		
27								
28						SILT, trace sand, gray, dense, moist		
29								
30								

#10 #7 #0

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-29B

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-29B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
30–32	S-8	1.5 / 2.0, 75%	18, 22, 27, 25			Continued from Sheet 2. SAND, fine grained, trace shell fragments, trace silt, gray, very dense, wet, partially cemented with calcium carbonate.	#0	
32–35	A.N.						#0	
35–37	S-9	1.3 / 2.0, 65%	8, 13, 11, 15			NOTE: CAVING @ 36.0'	#2	
37–40	A.N.						#7, #5	
40–42	S-10	2.0 / 2.0, 100%	8, 10, 15, 16				#5	
42–44	S-11	2.0 / 2.0, 100%	12, 20, 25, 26				#5, #8	
44–46	S-12	2.0 / 2.0, 100%	10, 11, 12, 11			44.6 — SAND, fine grained, some silt, trace shell fragments, greenish gray, medium dense, moist. 46.0. END OF BORING @ 46.0 FEET.	#9, #5	
47–50								

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-29B

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-29A
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"		6.25" ID		4-27-94	17	Hot, Breezy		
LENGTH	2'		5'						
TYPE	STD.		H.S.A.						
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+2.0	-7.05
Screen	2"	.10 Slot, Schedule 40 PVC	-7.05	-16.0

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1						SEE BORING LOG FOR 35MW-29B FOR SOIL INFORMATION	#0 #2 #7 #8	
2								
3								
4								
5								
6								
7								
8								
9								
10						Match to Sheet 2		

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-29A SHEET 1 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-29A

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet	#5 #8 #6 #7 #6	
12								
13								
14						SEE BORING LOG FOR 35MW-29B FOR SOIL INFORMATION.		
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-29A SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-30B
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"			8"	5-11-94	44.0	Cool, Sunny		
LENGTH	2'								
TYPE	STD.			ROTARY					
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+2.0	-37.25
Screen	2"	.10 Slot, Schedule 40 PVC	-37.25	-41.25

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1	S-1	1.8/2.0 90%	2 3 3 4			SILT, Some Roots, trace Sand, dark brown, loose, damp NOTE: Root content decreasing	#0	
2						2.0 / 2.0		
3	S-2	1.7/2.0 85%	2 3 4 4			SILT, little sand, trace clay, brown, loose, damp		
4						3.9 / 3.9		
5	S-3	2.0/2.0 100%	2 2 3 3			SILTY CLAY, trace sand, brown, medium stiff, damp 4.9 / SAND, fine grained, little silt, dark gray, loose, wet	#1	
6								
7	35-MW30B5-04 S-4	1.5/2.0 75%	5 8 12 10			NOTE: Trace silt, light brown, medium dense 7.8 /		
8						SAND, midium grained, trace silt, light brown, Medium dense, Moist. NOTE: Groundwater at 9.8 FEET.	#0	
10	S-5	0.6/2.0 30%	3 4 10 13			Match to Sheet 2		

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-30B SHEET 1 OF 3

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-30B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
12						12.5 (est) 12.5		
13								
14								
15						SAND, fine grained, trace silt, gray, loose, wet		
16	S-6	1.7/2.0 85%	2 3 3 5				40	
17								
18								
19								
20							47	
21	S-7	1.4/2.0 70%	1 WOH WOH WOH			NOTE: Olive color		
22								
23						23.5 (est) 23.5		
24								
25						SILT, Little Clay, trace sand, grayish white, dense, wet 26.2	40	
26	S-8	2.0/2.0 100%	8 10 22 26			SAND, fine to medium grained, some shell fragments, trace silt, light gray, dense, wet, partially cemented with Calcium carbonate.		
27								
28								
29								
30								

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-30B SHEET 2 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-30B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
31	S-9	1.2/2.0 60%	22 24 24 23			Continued from Sheet 2	#2 #2	
32								
33	AN					33.5 (est) 33.5	#7	
34								
35	S-10	1.2/2.0 60%	18 22 26 19			GRAVEL, (Cemented Sand, QUARTZ PEBBLES and limestone fragments) SOME Shell fragments, gray, very dense, wet	#5	
37								
38	AN						#5	
39								
40							#8	
41	S-11	1.9/2.0 95%	20 22 24 22					
42						41.9 41.5	#7	
43	S-12	2.0/2.0 100%	5 8 10 12			SAND fine grained, some silt, greenish gray, medium dense, moist	#5	
44						44.0 44.0	#3 #3 #3	
45						END OF BORING AT 44.0 FEET; SET WELL AT 42.0 FEET.		
46								
47								
48								
50								

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-30B SHEET 3 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-30A
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill

	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"		6.25" ID		5-11-94	17.0	Cool, Sunny		
LENGTH	2'		5'						
TYPE	STD.		H.S.A.						
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+2.0	-6.25
Screen	2"	.10 Slot, Schedule 40 PVC	-6.25	-15.25

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1						SEE BORING LOG FOR 35MW-30B FOR SOIL INFORMATION.	#0 #0 #1 #2 #2 #3 #5 #8	
2								
3								
4								
5								
6								
7								
8								
10						Match to Sheet 2		

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-30A SHEET 1 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-30A

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11–30						Continued from Sheet 1 SEE BORING LOG FOR 35MW-32B FOR SOIL INFORMATION.	#5 #8 #5 #7 #5	

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-30A
SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-31B
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"			8"	4-30-94	47.0	Hot, Humid		
LENGTH	2'								
TYPE	STD.			ROTARY					
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+2.1	-37.0
Screen	2"	.10 Slot, Schedule 40 PVC	-37.0	-41.0

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1	S-1	1.3/2.0 65%	10 10 9 6			SAND, fine grained, little silt, trace roots, light brown, medium dense, dry	#0	
2						1.7		
3	S-2	1.5/2.0 75%	2 2 3 2			SILTY SAND, trace roots, dark brown, loose, dry		
4						3.0 SILT, trace sand, trace clay, trace roots, light brown, loose, moist to damp 4.0		
5	35-MW35-03/35-MW40-03D S-3	1.4/2.0 70%	5 5 3 2			SILT, some clay, light brown, medium stiff to stiff, moist. NOTE: Groundwater encountered at 5.9 FEET	#7	
6						6.0		
7	S-4	1.7/2.0 85%	4 5 6 9			SAND, fine grained, trace silt, light brown, medium dense, wet		
8						NOTE: MEDIUM grained @ 8.0 FEET.	#0	
9	S-5	0.8/2.0 40%	5 5 4 6					
10						Match to Sheet 2		

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-31B SHEET 1 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-31B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
12	A.N.					12.5		
13								
14								
15								
16	S-6	1.9/2.0 95%	13 12 9 7			SAND, fine grained, trace SILT, trace clay, gray, medium dense, wet		
17								
18						18.0 (est) 18.0		
19	A.N.							
20								
21	S-7	0.3/2.0 15%	1 1 1 1			Sand, fine grained, trace silt, reddish gray, loose, wet, iron staining.		
22								
23								
24	A.N.					24.0 (est) 24.0		
25								
26	S-8	1.1/2.0 55%	12/20 2 1			Sand, fine grained, trace silt, gray, medium dense becoming loose, wet, partially cemented with calcium carbonate.		
27								
28								
29								
30								

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-31B SHEET 2 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-31B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
31	S-9	1.6/2.0 80%	11 25 15 18			Continued from Sheet SAND, fine grained, little shell fragments, gray, dense, wet, partially cemented with calcium carbonate.	#0 #0	
32								
33	A.N.						#2 #7 #2	
34								
35	S-10	1.4/2.0 70%	15 22 16 18				#5	
37								
38							#8	
39								
40							#5	
41	S-11	2.0/2.0 100%	18 23 24 30				#7	
42							#5	
43						43.5 (est) 43.5		
44							#3	
45						SAND, fine grained, some silt, greenish gray, medium dense, moist	#3 #3	
46	S-12	2.0/2.0 100%	5 5 10 12					
47						47.0 47.0 END OF BORING AT 47.0 FEET		
48								
50								

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-31B SHEET 3 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-31A
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"		6.25" ID		1-30-94	14.0	Hot, Humid		
LENGTH	2'		5'						
TYPE	STD.		H.S.A.						
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+2.1	-3.05
Screen	2"	.10 Slot, Schedule 40 PVC	-3.05	-12.0

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1						SEE BORING LOG FOR 35MW-31B FOR SOIL INFORMATION	#D, #2, #7, #D, #2, #5, #8, #5	
2								
3								
4								
5								
6								
7								
8								
9						Match to Sheet 2		

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-31A SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-31A

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1	#6	
12							#5 #5	
13							#7	
14							#5	
15								
16								
17						SEE BORING LOG FOR		
18						35MW-31B FOR SOIL INFORMATION		
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-31A SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-32B
COORDINATES: EAST: 2465339.4700 NORTH: 362926.5520
ELEVATION: SURFACE: 16.1 TOP OF STEEL CASING: 18.75

RIG: R35-Mobile Drill	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"			8"	5-14-94	44.0	Sunny, Cool		
LENGTH	2'								
TYPE	STD.			ROTARY					
HAMMER WT.	140#								
FALL	30"								
STICK UP									

REMARKS: ALL WELL CONSTRUCTION DETAILS ARE BASED ON FIELD MEASUREMENTS

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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+2.65	-37.3
Screen	2"	.10 Slot, Schedule 40 PVC	-37.3	-41.25

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1	S-1	2.0/2.0 100%	20 30 34 15			SILTY SAND, LITTLE gravel, light brown, very dense, dry (FILL MATERIAL)		
2						1.8		14.3
3	S-2	1.8/2.0 90%	7 9 9 10			SILT, some sand, trace gravel, light brown, medium dense, moist	#0	
4						3.7		12.4
5	S-3	1.4/2.0 70%	2 2 3 4			SAND, fine grained, little silt, trace gravel, light brown, loose, moist to wet	#7	
6						NOTE: GROUNDWATER ENCOUNTERED AT 5.7 FEET. 6.4		9.7
7	S-4	1.2/2.0 60%	1 2 3 3			SAND, fine grained, trace silt, trace clay, gray, loose, wet	#0	
8						NOTE: CLAY CONTENT DECREASES AT 7.0 FEET		
9	S-6	1.5/2.0 75%	1 2 3 3			NOTE: CLAY CONTENT INCREASES @ 9.3 FEET		
10						Match to Sheet 2		

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-32B SHEET 1 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-32B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
12						12.5 (est) 12.5		
13	A.N.							
14							#7	
15						SAND, fine grained, trace silt, olive, medium dense, wet		
16	S-6	1.5/2.0 75%	6 9 11 14			NOTE: dark gray @ 16.0 feet	#0	
17								
18								
19	A.N.							
20								
21	S-7	2.0/2.0 100%	1 1 2 2					
22							#0	
23	A.N.							
24								
25								
26						NOTE: We skipped the 25 to 27 foot interval because of a loss of drilling fluids 26.0 (est) 26.0		
27						SAND, fine grained, some shell fragments, trace silt, gray, dense, wet, partially cemented with calcium carbonate.		
28								
29							#2	#2
30								

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-32B SHEET 2 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-32B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
31	S-8	1.9/2.0 95%	20 22 22 24			Continued from Sheet 2	#2 #7 #2	
32								
33	A.N.							
34								
35	S-9	2.0/2.0 100%	25 27 27 28					
37								
38	A.N.						#5 #5	
39							#8	
40	S-10	2.0/2.0 100%	18 20 22 22			NOTE: Trace clay from 41.3 feet to 41.6 feet, silt content increasing		
41							#7	
42	S-11	2.0/2.0 100%	8 10 10 11			42.0 42.0 SAND, fine grained, some shell fragments	#5 #3 #3 #3	
43								
44						END OF BORING AT 44.0 FEET, SET WELL AT 42.0		
45								
46								
47								
48								
50								

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-32B
SHEET 3 OF 3

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-32A
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"		6.25" ID		5-14-94	15.0	Sunny, cool		
LENGTH	2'		5'						
TYPE	STD.		H.S.A.						
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+2.8	-4.25
Screen	2"	.10 Slot, Schedule 40 PVC	-4.25	-13.25

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1						SEE BORING LOG FOR 35MW-32B FOR SOIL INFORMATION	#0 #2 #7 #5 #8 #0 #2 #5	
2								
3								
4								
5								
6								
7								
8								
9						Match to Sheet 2		

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-32A SHEET 1 OF 2

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-32A

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
12							#5 #8 #5	
13								
14							#7	
15							#5	
16						SEE BORING LOG FOR 35MW-32B FOR SOIL INFORMATION		
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-32A
SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-33B
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"			8"	5-11-94	27.0	Cool, Sunny		
LENGTH	2'								
TYPE	STD.			ROTARY					
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	-0.35	-39.0
Screen	2"	.10 Slot, Schedule 40 PVC	-39.0	-43.0

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1	A.N.					0.5 ASPHALT 0.5		
2						SAND, fine grained, trace gravel, trace silt, brown, medium dense, dry		
3	S-2	1.3/2.0 65%	4 5 7 7			3.5 SAND, very fine grained, trace silt, gray, medium dense, dry 3.5	#0	
4								
5	S-3	1.3/2.0 65%	5 6 8 8			NOTE: damp		
6							#7	
7	S-4	1.3/2.0 65%	7 7 7 5					
8						8.7		
9	35-MW33B5-05 S-5	1.3/2.0 65%	4 4 5 5			CLAY, some silt, trace sand, gray and brown, medium STIFF, MOIST 9.2	#0	
						SAND, fine grained, Match to Sheet 2		

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-33B SHEET 1 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-33B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1 trace silt, brown, medium dense, moist.		
12								
13								
14								
15							#0	
16	S-7	1.6/2.0 80%	5 5 7 2			NOTE: Orange at 16.4 FEET.		
17								
18								
19							#1	
20						NOTE: Light Brown at 20.0 FEET.		
21	S-8	1.0/2.0 50%	1 WOH WOH WOH			NOTE: Olive color at 21.0 FEET.		
22								
23						23.0 (est) 23.0		
24								
25						SAND, fine grained, some shell fragments, trace silt, gray, medium dense, wet, partially cemented with calcium carbonate.	#0	
26	S-9	1.8/2.0 90%	5 9 16 20					
27						27.0		
28						END OF BORING FOR 5-11-94.		
29								
30								

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-33B
SHEET 2 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-33B

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	Lab. Moist %	Visual Description
31	S-10	1.25/2.0 62.5	18 25 32 22			Continued from Sheet 2 SAND, fine grained, little shell fragments, trace silt, gray, very dense, wet, partially cemented with calcium carbonate
32						
33	A.N.					
34						
35	S-11	0.9/2.0 45%	22 25 35 50/.5			NOTE: Mudstone fragments observed in spoils
37						
38	A.N.					
39						
40	S-12	1.7/2.0 85%	15 22 24 22			NOTE: Some shell fragments, little silt
41.3						GRAVEL, (cemented sand), some shell fragments, gray, very dense,
42						
42.5	S-13	2.0/2.0 100%	15 22 24 24			WET
43						SILTY SAND, fine grained, trace shell fragments, gray, very dense, moist
43.7						SILT, some sand, trace shell fragments, greenish gray, dense, moist
44						
44.0						END OF BORING AT 44.0 FEET; SET WELL AT 44.0 FEET.
45						
46						
47						
48						
50						

Well Installation Detail: #2, #7, #5, #2, #8, #7

Elevation

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-33B
SHEET 3 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-33A
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"		6.25" ID		5-12-94	15.0	Sunny, cool, breezy		
LENGTH	2'		5'						
TYPE	STD.		H.S.A.						
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	-0.35	-4.25
Screen	2"	.10 Slot, Schedule 40 PVC	-4.25	-13.25

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1						SEE BORING LOGS FOR 35MW-33B FOR SOIL INFORMATION.	#0 #2 #7 #5 #8	#0 #2 #5
2								
3								
4								
5								
6								
7								
8								

Match to Sheet 2

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-33A SHEET 1 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-33A

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
12							#5 #8 #5	
13								
14						SEE BORING LOG FOR 35MW-33B FOR SOIL INFORMATION.	#7	
15							#6	
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-33A
SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-34B
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"			8"	5-10-94	42.0	Cool, overcast		
LENGTH	2'								
TYPE	STD.			ROTARY					
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+1.9	-36.25
Screen	2"	.10 Slot, Schedule 40 PVC	-36.25	-40.25

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1	S-1	2.0 / 2.0 100%	4 6 6 5			0.3 TOPSOIL 0.3 SILTY SAND, trace roots, brown, medium dense, damp 1.2 SILT, little sand, trace clay, brown, medium dense, damp 1.5	#0	
2								
3	S-2	0.4 / 2.0 20%	4 5 5 3			SAND, fine grained, little silt, trace gravel, brown, medium dense, damp 4.0		
4						SILTY SAND, brown, loose, moist		
5	35-MW34B-03 S-3	1.7 / 2.0 85%	1 1 2 2			5.3 Clay, some silt, trace sand, brown and gray, stiff, moist	#7	
6								
7	S-4	2.0 / 2.0 100%	1 2 9 14			7.2 SAND, medium grained, poorly graded, trace silt, dark gray turning brown, medium dense, wet		
8							#0	
9	S-5	0.9 / 2.0 40%	3 3 2 1			NOTE: Groundwater encountered at 7.5 feet.		

Match to Sheet 2

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-34B SHEET 1 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-34B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
12						12.5 (est) 12.5		
13	A.N.							
14								
15		2.0 / 2.0	1 2			CLAYEY SILT, trace sand, trace root material, gray, medium stiff, wet		
16		100%	3 3					
17								
18						18.5 (est) 18.5		
19	A.N.					PEAT, some wood fragments, dark brown, medium dense, wet		
20								
21		2.0 / 2.0	4 5					
22		100%	7 9					
23								
24	A.N.							
25						25.4 25.4		
26		2.0 / 2.0	2 2			Sand, fine grained, trace silt, gray, loose, wet		
27		100%	3 3			26.7 26.7 SILT, trace sand, dark gray, loose, wet		
28								
29						29.0 (est) 29.0		
30								

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-34B
SHEET 2 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-34B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
31	S-9	1.9/2.0 95%	28 25 26 30			Continued from Sheet 2 SAND, fine grained, some shell fragments, trace silt, grayish white, very dense, wet, partially cemented with calcium carbonate.	#2	
32							#2	
33	A.N.						#5	
34							#7	
35								
	S-10	1.6/2.0 80%	15 17 16 15				#5	
37							#8	
38	A.N.							
39								
40						40.5		
41	S-11	1.9/2.0 95%	16 18 18 19			SAND, fine grained, some silt, trace shell fragments, greenish gray, dense, moist	#7	
42						42.0 END OF BORING AT 42.0 FEET; SET WELL AT 41.0 FEET	#5	
43								
44								
45								
46								
47								
48								
50								

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-34B
SHEET 3 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-34A
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"		6.25" I.D.		5-10-94	15.0	Cool, overcast		
LENGTH	2'		5'						
TYPE	STD.		H.S.A.						
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC		
Screen	2"	.10 Slot, Schedule 40 PVC		

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1						SEE BORING LOG FOR 35MW-34B FOR SOIL INFORMATION	#0 #7 #0	
2								
3							#2 #2	
4								
5							#5	
6								
7							#8	
8								
9							#5	

Match to Sheet 2

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-34A SHEET 1 OF 2

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-34A

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1	#5 #8 #5	
12								
13						SEE BORING LOG FOR 35MW-34B FOR SOIL INFORMATION	#7	
14							#5	
15								
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-34A
SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-35B
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"			8"	5-3-94	42.0	HOT, BREEZY, SUNNY		
LENGTH	2'								
TYPE	STD.			ROTARY					
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC		
Screen	2"	.10 Slot, Schedule 40 PVC		

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1	S-1	1.3/2.0 65%	5 9 13 15			0.25 TOPSOIL 0.25 SAND, fine grained, trace silt, gray, medium dense, damp 0.7		
2						SILT, little sand, light brown, medium dense, damp 2.2		
3	35-MW35BS-02 S-2	1.6/2.0 80%	5 6 6 7			Sand, fine grained, trace silt, light brown, medium dense to loose, damp		
4								
5	S-3	1.2/2.0 60%	4 5 4 4			NOTE: AT 5.0' - gray in color.		
6						5.7 SILTY SAND, fine grained, light brown, loose, moist 6.0		
7	S-4	2.0/2.0 100%	5 5 10 12			CLAY, trace silt, brown and gray, stiff, wet NOTE: GROUNDWATER AT 5.8 FEET NOTE: SAND STRINGER AT 7.8 FEET. (±0.2 FEET THICK)		
8								
9	S-5	2.0/2.0 100%	10 12 11 12			NOTE: SAND STRINGER AT 8.6 FEET (±1.3 FEET THICK) AND AT 9.4 FEET (±0.2 FEET THICK). NOTE: CLAY is becoming more gray.		

Match to Sheet 2

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-35B SHEET 1 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-35B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
12	A.N.							
13						13.0 (est) 13.0		
14								
15						SILT, trace clay, trace wood and root fragments, dark gray, soft, damp	#0	
16	S-6	2.0/2.0	WOH/1/1					
17		100%						
18	A.N.						#1	
19								
20						20.3 20.5		
21	S-7	2.0/2.0	9/8/10/15			SAND, fine to medium-grained, little shell fragments, trace silt, gray, medium dense, wet, partially cemented with calcium carbonate	#0	
22		100%						
23	A.N.							
24								
25						NOTE: Shell fragments increasing		
26	S-8	2.0/2.0	9/15/21/23				#2	
27		100%						
28							#2	
29								
30						30.0 (est) 30.0		

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-35B SHEET 2 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-35B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
31	N					Continued from Sheet 3 DID NOT SAMPLE - LOST RECIRCULATION OF DRILLING fluids	#2 #2	
32						LIMESTONE FRAGMENTS, some shell fragments, trace sand, gray, dense, wet		
33	A.N.						#7	
34						34.0 (est) 34.0 SAND, fine grained, little shell fragments, gray, dense, wet, partially cemented with calcium carbonate.		
35	S-9	2.0/2.0 100%	11 19 21 22				#5 #8	#5
37								
38	A.N.							
39								
40						40.0 40.0	#7 #5	
41	S-10	2.0/2.0 100%	4 4 5 6			Sand, fine grained, little silt, trace shell fragments, greenish gray, loose, moist		
42						42.0 42.0 END OF BORING AT 42.0 FEET, SET WELL AT 40.0 FEET	#3 #3 #3	
43								
44								
45								
46								
47								
48								
50								

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-35B SHEET 3 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-35A
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"		6.25" ID		5-3-94	15.0	HOT, BREEZY SUNNY		
LENGTH	2'		5'						
TYPE	STD.		H.S.A.						
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+1.9	-4.25
Screen	2"	.10 Slot, Schedule 40 PVC	-4.25	-13.25

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1						SEE BORING LOG FOR 35MW-35B FOR SOIL INFORMATION	#0 #2 #5 #8 #1 #0 #2 #5	
2								
3								
4								
5								
6								
7								
8								
9								
10						Match to Sheet 2		

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-35A SHEET 1 OF 2

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-35A

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1	#5 #8	
12								
13							#5	
14							#7	
15						SEE BORING LOG FOR 35MW-35B FOR SOIL INFORMATION.	#5	
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-35A
SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-36B
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"			8"	5-4-94	42.0	WET, COOL, 70's		
LENGTH	2'								
TYPE	STD.			ROTARY					
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+2.0	-34.20
Screen	2"	.10 Slot, Schedule 40 PVC	-34.20	-38.26

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1	S-1	2.0/2.0 100%	9 11 12 10			0.75 TOPSOIL 0.75 SILT, little sand, trace clay, light brown, medium dense, dry 1.25	#0	
2						SAND, fine grained, trace silt, light brown, medium dense, dry 2.0		
3	S-2	1.0/2.0 50%	3 3 3 4			SILT, trace sand, dark gray, loose, moist to damp 3.0		
4						SAND, fine grained, trace silt, light brown, loose, damp, gray streaking		
5	35-MW36B-03 S-3	0.75/2.0 37.5%	3 4 3 3				#7	
6								
7	S-4	1.0/2.0 50%	1 1 1 1			NOTE: Groundwater at 7.5 FEET.		
8								
9	S-5	1.8/2.0 90%	1 2 2 2			8.8 8.8 SILT, trace sand, trace clay, dark gray, loose, wet 9.2	#0	
						Match to Sheet 2		

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-36B SHEET 1 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-36B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1 CLAY, little silt, Grey and brown, soft, wet, stained soils at 8.9 FEET, hydrocarbon odors observed		
12								
13	A.N.							
14								
15						15.3	15.3	
16	S-6	2.0/2.0 100%	4 5 5 8			SAND, fine grained, trace silt, gray, medium dense, wet		
17								
18								
19	A.N.							
20								
21	S-7	1.7/2.0 85%	5 7 7 9					
22								
23						23.5	23.5	
24	A.N.					SAND, fine grained, trace Shell fragments, trace Silt, [illegible] medium dense, wet [illegible] gray		
25								
26	S-8	2.0/2.0 100%	1 3 8 20					
27						26.7	26.7	
28						SAND, fine grained, some Shell fragments, gray, loose, wet, partially cemented Calcium Carbonate.		
29								
30								

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-36B
SHEET 2 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-36B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
31	S-9	2.0 / 2.0 100%	18 22 26 28			Continued from Sheet 2 SAND, fine grained, some shell fragments, gray, dense, wet, partially cemented with calcium carbonate.	#2 #2	
32							#7 #5	
33	A.N.							
34								
35	S-10	2.0 / 2.0 100%	19 22 22 20				#5 #8	
37								
38	A.N.							
39						39.0 (est) 39.0	#7 #5	
40						SAND, fine grained, some silt, trace shell fragments, greenish gray, dense, moist		
41	S-11	2.0 / 2.0 100%	9 18 18 20				#3 #3 #3	
42						42.0 42.0 END OF BORING AT 42.0 FEET; SET WELL AT 39.0 FEET.		
43								
44								
45								
46								
47								
48								
50								

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-36B
SHEET 3 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-36A
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"		6.25"		5-9-94	16.0	BRIGHT, SUNNY BREEZY, HOT		
LENGTH	2'		5'						
TYPE	STD.		H.S.A.						
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+2.0	-3.25
Screen	2"	.10 Slot, Schedule 40 PVC	-3.25	-12.25

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1						SEE BORING LOG FOR 35MW-36B FOR SOIL INFORMATION	#0 #2 #7 #0 #2 #5 #5 #8	
2								
3								
4								
5								
6								
7								
8								

Match to Sheet 2

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-36A SHEET 1 OF 2

Baker

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-36A

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1	#5 #8 #5 #7 #5	
12								
13								
14								
15						SEE BORING LOG FOR 35MW-36B FOR SOIL INFORMATION		
16								
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-36A
SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-37B
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"			8"	5-15-94	45.0	WARM, SUNNY		
LENGTH	2'								
TYPE	STD.			ROTARY					
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+1.95	-39.0
Screen	2"	.10 Slot, Schedule 40 PVC	-39.0	-43.0

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1	S-1	1.0/2.0 50%	6 9 11 7			SILT, Some root material, little sand, dark brown, medium dense, dry	#0	
2						2.3 2.3		
3	S-2	1.5/2.0 75%	2 3 3 3			SILT, trace sand, trace clay, light brown, loose, moist. NOTE: SAND APPEARS CONCENTRATED IN LOCALIZED ZONES.		
4								
5	35-MW37B-03 S-3	2.0/2.0 100%	2 3 6 9			5.5 5.5 SAND, medium grained, trace SILT, brown, medium dense, MOIST	#7	
6								
7	S-4	1.5/2.0 100%	4 9 10 12			NOTE: GROUNDWATER ENCOUNTERED AT 7.5 feet.	#0	
8								
	S-5	1.7/2.0 85%	4 6 9 12			9.6 9.6 SAND, fine grained, Match to Sheet 2		
10								

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-37B SHEET 1 OF 3

Baker
Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-37B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11	S-6	1.3/2.0 65%	5 4 2 2			Continued from Sheet 1 Well graded, trace silt, brown, loose, wet	#0	
12								
13	A.N.					13.0 - - - - - - - - 13.0		
14								
15	S-7	1.8/2.0 90%	2 2 3 3			SAND, coarse grained, trace silt, light brown, loose, wet 15.3 15.3		
16						SAND, fine to medium grained, well graded, trace silt, dark gray, loose, wet. 16.2		
17								
18	A.N.					SAND, fine grained, little silt, dark gray, loose, wet	#7	
19						18.5 (est) - - - - - 18.5		
20	S-8	1.8/2.0 90%	1 WOH 1 WOH			SAND, fine grained, trace silt, Olive, very loose, wet		
21								
22								
23								
24								
25						NOTE: Skipped the 25'-27' interval because we feared losing drilling fluid recirculation.	#0	
26						26.0 (est) - - - - - - 26.0		
27						SAND, fine grained, some shell fragments, trace silt, gray, dense, wet, partially cemented with calcium carbonate.		
28								
29								
30								

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-37B SHEET 2 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-37B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
31	S-9	1.7/2.0 85%	18 22 23 20			Continued from Sheet 2 NOTE: Little Shell Fragments	#0 #0	
32								
33	AN						#2 #2	
34							#7	
35								
36	S-10	1.9/2.0 95%	15 18 22 21					
37								
38	AN							
39							#5	
40								
41	S-11	2.0/2.0 100%	9 11 15 22			41.7 41.7	#8	
42						SILTY SAND, fine grained, trace Shell fragments, greenish Gray; dense, Moist	#5	
43	S-12	2.0/2.0 100%	12 18 20 18				#7	
44							#5	
45						45.0 45.0 END OF BORING AT 45.0 FEET; SET WELL AT 44.0 FEET.		
46								
47								
48								
50								

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-37B SHEET 3 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-37A
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"		6.25" ID		5-15-94	16.0	warm, sunny		
LENGTH	2'		5'						
TYPE	STD.		H.S.A.						
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+1.85	-5.2
Screen	2"	.10 Slot, Schedule 40 PVC	-5.2	-14.0

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1						SEE BORING LOG FOR 35MW-37B FOR SOIL INFORMATION.	#0 #0	
2								
3							#2 #7 #2	
4								
5							#5	
6								
7							#8	
8							#5	
10						Match to Sheet 2		

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-37A SHEET 1 OF 2

Baker Environmental, Inc.

TEST BORING AND WELL CONSTRUCTION RECORD

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-37A

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
12								
13							#5 #8 #5	
14						SEE BORING LOG FOR 35 MW-37B FOR SOIL INFORMATION		
15							#7	
16							#5	
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-37A SHEET 2 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-38B
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"			8"	5-16-94	45.0	Hot, Sunny, Muggy		
LENGTH	2'								
TYPE	STD.			ROTARY					
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+1.5	-39.0
Screen	2"	.10 Slot, Schedule 40 PVC	-39.0	-43.0

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1	S-1	1.9/2.0 95%	4 7 9 7			SILTY SAND, trace roots, dark brown, medium dense, dry 1.0		
2						SILT trace sand, dark brown, medium dense, damp.		
3	S-2	1.7/2.0 85%	4 7 6 6			2.7 2.7 SAND, Medium grained, little Silt, brown, medium dense, damp.	#0	
4								
5	35-MW38BS-03 S-3	1.6/2.0 80%	5 7 10 12			NOTE: Trace Silt at 4.0 FEET. NOTE: Gray at 5.7 feet.	#7	
6								
7	S-4	1.8/2.0 90%	4 6 6 7			NOTE: Groundwater encountered at 7.0 FEET.		
8							#0	
	S-5	1.9/2.0 95%	1 3 3 4			NOTE: Fine grained at 9.8 FEET.		
10						Match to Sheet 2		

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-38B SHEET 1 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-38B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
12	A.N.					12.5 (est) — — — 12.5		
13								
14								
15						SAND, fine grained, trace silt, light green, loose, wet	#0	
16	S-6	1.4/2.0 70%	1, 1, 2, 3					
17								
18	A.N.							
19							#7	
20								
21	S-7	1.6/2.0 80%	3, 4, 4, 6					
22								
23	A.N.							
24								
25							#0	
26	S-8	2.0/2.0 100%	4, 6, 12, 18			25.9 25.9 SILTY Clay, Some Shell fragments; gray, very stiff, moist, Calcium Carbonate (marl). 27.8		
27								
28	S-9	2.0/2.0 100%	12, 12, 14, 18			GRAVEL, (Lime stone fragments), Little Clay, trace silt, gray, dense, wet		
29								
30	A.N.							

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-38B SHEET 2 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-38B

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
31						Continued from Sheet	#0	#0
						31.5		
32							#2	#2
33								
34								
35						SAND, fine grained, trace silt, gray, medium dense, wet partially cemented with Calcium carbonate.		
	S-16	2.0 / 2.0 100%	10 12 12 14				#7	#5
37								
38								
39								
40							#5	
41	S-11	2.0 / 2.0 100%	8 12 10 16				#8	
42								
43	S-12	2.0 / 2.0 100%	9 17 8 6			43.3 SAND, fine grained, some silt, greenish gray, medium dense, moist.	#7	
44							#5	
45	A.N.					45.0 END OF BORING AT 45.0 FEET		
46								
47								
48								
50								

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-38B
SHEET 3 OF 3

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-38A
COORDINATES: EAST: NORTH:
ELEVATION: SURFACE: TOP OF STEEL CASING:

RIG: R35-Mobile Drill									
	SPLIT SPOON	CASING	AUGERS	BIT SIZE	DATE	PROGRESS (FT)	WEATHER	WATER DEPTH (FT)	TIME
SIZE (DIAM.)	2"		6.25" ID		5-16-94	16.0	Hot, Sunny Muggy		
LENGTH	2'		5'						
TYPE	STD.		H.S.A.						
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

WELL INFORMATION	DIAM	TYPE	TOP DEPTH (FT)	BOTTOM DEPTH (FT)
Riser Pipe	2"	Schedule 40, PVC	+1.7	-5.25
Screen	2"	.10 Slot, Schedule 40 PVC	-5.25	-14.25

Depth (Ft.)	Sample Type and No.	Samp. Rec. Ft. & %	SPT or RQD	Lab. Class. or Pen. Rate	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
1						SEE BORING LOG FOR 35MW-38B FOR SOIL INFORMATION	#0 #2 #7 #5 #8	
2								
3								
4								
5								
6								
7								
8								

Match to Sheet 2

DRILLING CO.: Hardin Huber Incorporated BAKER REP.: James Culp
DRILLER: Brian Van Doren BORING NO.: 35MW-38A SHEET 1 OF 2

TEST BORING AND WELL CONSTRUCTION RECORD

Baker Environmental, Inc.

PROJECT: Site 35 - Camp Geiger Area Fuel Farm
S.O. NO.: 62470-232 BORING NO.: 35MW-38A

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	Lab. Moist %	Visual Description	Well Installation Detail	Elevation
11						Continued from Sheet 1		
12								
13							#5 #8 #5	
14						SEE BORING LOG FOR 35MW-38B FOR SOIL INFORMATION.		
15							#7	
16							#5	
17								
18								
19								
20								
21								
22								
23								
24								
25								
26								
27								
28								
29								
30								

DRILLING CO.: Hardin Huber Incorporated
DRILLER: Brian Van Doren
BAKER REP.: James Culp
BORING NO.: 35MW-38A.
SHEET 2 OF 2

SECTION 01430

WASTE SAMPLING REQUIREMENTS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA)

EPA/540/P-91/008	Compendium of ERT Waste Sampling Procedures, 1991
EPA SW-846	Test Methods for Evaluating Solid Wastes (Nov. 1986)

NAVAL ENERGY AND ENVIRONMENTAL SUPPORT ACTIVITY (NEESA)

NEESA 20.2-047B	Sampling and Chemical Analysis Quality Assurance Requirements for the Navy Installation Restoration Program (June 1988)

1.2 SUBMITTALS

Submit the following in accordance with Section C, Part 7.0, of the Basic Contract.

1.2.1 SD-08, Statements

a. Sample Log

1.2.1.1 Sample Log

Provide a detailed summary of all of the confirmatory and waste characterization samples collected. The Sample Log should include the type of sample collected, the location of the sample, the analyses performed, and the location of the analyses results.

1.2.2 SD-12, Field Test Reports

a. Confirmatory Sample Analyses Results

b. Waste Characterization Sample Analyses Results

1.2.2.1 Confirmatory Sample Analyses Results

Provide the results of all confirmatory analyses results in a neat and organized manner.

1.2.2.2 Waste Characterization Sample Analyses Results

Provide the results of all waste characterization sample analyses results in a neat and organized manner.

1.3 DEFINITIONS

1.3.1 Confirmation Sampling

Confirmation sampling shall include all sampling conducted in the open excavations during the post-removal stage to confirm the removal of all contaminated soil.

1.3.2 Waste Characterization Sampling

Waste characterization sampling shall include all sampling of the excavated soils to characterize the soils for disposal or reuse as backfill material. The sampling of liquid waste shall also be included under this definition.

1.4 DESCRIPTION OF WORK

Collect and analyze environmental samples from the excavated areas after contaminated soil has been removed to confirm the removal of all contaminated soil.

1.5 QUALITY ASSURANCE

1.5.1 Waste Sampling

Adhere to all sample acquisition, handling, custody documentation, decontamination, and quality assurance/quality control (QA/QC) requirements and procedures as required by federal, state and local regulations.

1.5.2 Analytical Laboratory

The Contractor shall be solely responsible for the execution and accuracy of the waste stream analyses. The Contractor shall use a NEESA-certified laboratory for all soil and waste analyses. All analytical standard methods shall meet, at a minimum, NEESA 20.2-047B QA/QC Level C requirements for confirmation sampling and Level C requirements for waste characterization sampling and shall also be in accordance with federal, local and state regulations.

1.5.3 Data Validation

An independent firm shall be subcontracted for data validation. Samples collected shall be evaluated using Level C quality control. Data review procedures specified by NEESA 20.2-047B and the Functional Guidelines established by EPA Region IV shall be followed to ensure that raw data are not altered and that an audit trail is developed for those data which require reduction. Specific Quality Assurance/Quality Control (QA/QC) procedures shall be included in the Sampling and Analysis Plan indicated in Section 01010. Data validation results shall be provided in the Contractor's Closeout Report as indicated in Section 01010, "General

Paragraphs."

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 GENERAL

Supply all personnel, equipment, and facilities to collect and analyze the environmental samples required to characterize the wastes.

3.1.1 Sample Acquisition

Sampling procedures shall be consistent with NEESA 20.2-047B Guidelines.

After the excavation has been completed:

a. Visually inspect the area for stained or discolored soil.

b. Field screen the area using rapid immunoassay in-field screening tests for petroleum fuels.

c. If no stained or discolored soil is visible, and the in-field screen test results are below 100 ppm, collect one confirmation sample for any portion of or every 50 linear feet of each sidewall of the excavation.

d. Place the sample in an appropriate sample container for shipment for off-site confirmation analyses.

e. If stained soils are visible, or if in-field screen test results are greater than 100 ppm, or if contamination is suspected, notify the NTR.

3.1.1.1 Confirmation Samples

Confirmation samples shall be collected from the walls of the open excavations. One sample for every 50 linear feet or fraction thereof of soil along each wall of the excavation shall be collected and analyzed for TPH by ENSYS Rapid Immunoassay In-Field Screening Test (PETRO RIS Soil Test System - EPA Proposed Method 4030) and by EPA Methods 5030/8015 and 3550/8015.

The ENSYS in-field screening tests will be used primarily as a guidance for the Contractor in determining when the limits of excavation have been encountered (i.e., if ENSYS test results are positive, continue excavating; if the results are negative, stop excavating and collect a confirmation sample for laboratory analysis for TPH by EPA Methods 5030/8015 and 3550/8015 to verify excavation limits). The ENSYS tests will also be used to aid in the segregation of contaminated versus clean soils at the soil staging area.

3.1.1.2 Waste Characterization Samples

Waste characterization samples shall be collected for the purposes of determining handling, transportation, and disposal requirements and for determining personal and environmental protection and monitoring requirements.

Characterization samples shall be collected from both potentially clean (uncontaminated) and potentially contaminated soils excavated by the contractor. One thoroughly mixed composite sample shall be collected for every 200 cubic yards or fraction thereof of potentially clean soils. This single sample shall be comprised of a mixture of six randomly chosen primary samples of approximately equal size. The frequency of sampling of the potentially contaminated soils shall be as required by the off-site soil recycling facility.

The composite sample shall consist of six grab samples representative of the material being sampled. The grab samples shall be thoroughly mixed to obtain a relatively homogeneous mixture.

The characterization samples for all excavated soil shall be analyzed for the following parameters:

* TPH - EPA Method 5030/8015
* TPH - EPA Method 3550/8015
* TCLP Metals - EPA Methods 7060, 7080, 7130, 7190, 7420, 7470, 7741, 7760
* TCLP VOAs - EPA Method 8240
* TCLP SVOAs - EPA Method 8270
* RCRA Hazardous Waste Characteristics - (i.e., ignitability, corrosivity, and reactivity)

If the results of the above analysis indicate that the excavated soil is uncontaminated (i.e., TPH levels determined via EPA Method 5030/8015 are less than 40 mg/kg; TPH levels determined via EPA Method 3550/8015 are less than 160 mg/kg; and TCLP limits as per 40 CFR 261.24 are not exceeded), the portion of the excavated soil represented by the above analysis may be used as backfill. Excavated soil targeted for reuse as backfill shall adhere to the physical requirements for backfill identified in the Specifications.

In addition to the above analysis, the Contractor shall be responsible for performing any additional analyses required by the off-site soil recycling facility. These additional analyses shall be identified in the Contractor's Sampling and Analysis Plan.

3.1.1.3 Incidental Waste Samples

Collect samples from incidental wastes generated by the Contractor during normal construction activities (except general refuse) to determine applicable transportation and disposal requirements. Also included under this category is all water generated during the remedial action including, but not limited to, water from decontamination of personnel and equipment, existing surface water impounded near Area B, and rainfall and surface water runoff accumulated in the open excavations. Analyze incidental

waste samples for the following parameters:

* TCLP Metals - EPA Methods 7060, 7080, 7130, 7190, 7420, 7470, 7741,7760
* TCLP VOAs - EPA Method 8240
* TCLP SVOAs - EPA Method 8270

3.1.2 Sample Handling

Sampling, sample handling, and sampling containers must be consistent with the chemicals expected, the matrix of the sample, and planned analytical procedures. Precleaned glass sample containers with teflon lids are required.

The Contractor shall describe in the Sampling and Analysis Plan strict chain-of-custody procedures to be used during collection, transport, and analysis of all samples.

3.1.3 Sampling Documentation

Maintain a sample log containing, at a minimum, the following information:

a. Date and Time of Sampling

b. Sample Locations

c. Sample Matrix

d. Sample Identification Number

e. QA/QC Sample Identification

f. Analyses to be Performed

g. Type and Number of Sample Containers

h. Signatures of Individuals Performing Sampling

-- End of Section --

SECTION 01560

TEMPORARY CONTROLS

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

CODE OF FEDERAL REGULATIONS (CFR)

29 CFR 1910	Occupational Safety and Health Standards
29 CFR 1910.120	Hazardous Waste Operations and Emergency
29 CFR 1926	Safety and Health Regulations for Construction
40 CFR 261	Identification and Listing of Hazardous Waste
40 CFR 262	Generators of Hazardous Waste
40 CFR 263	Transporters of Hazardous Waste
40 CFR 264	Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
40 CFR 300	National Oil and Hazardous Substances Pollution Contingency Plan
49 CFR 178	Shipping Container Specification

CORPS OF ENGINEERS (COE)

COE EM-385-1-1	1992 Safety and Health Requirements Manual

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 241	1993 Safeguarding Construction, Alteration, and Demolition Operations

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT)

NCDOT RS	1990 Roads and Structures

MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD)

MUTCD	1988 Edition of MUTCD, Revision 3, September 1993 - Part IV Standards and Guides for Traffic Control for Street and Highway

1.2 DEFINITIONS

1.2.1 Sediment

Soil and other debris that have eroded and have been transported by runoff water or wind.

1.2.2 Solid Waste

Rubbish, refuse, debris, garbage, and other discarded solid materials, except hazardous waste as defined in paragraph entitled "Hazardous Waste," resulting from industrial, commercial, and agricultural operations and from community activities.

1.2.3 Rubbish

Combustible and noncombustible wastes such as paper, boxes, glass, crockery, metal, lumber, cans, and bones.

1.2.4 Debris

Combustible and noncombustible wastes such as ashes and waste materials resulting from construction or maintenance and repair work, leaves, and tree trimmings.

1.2.5 Chemical Wastes

This includes salts, acids, alkalies, herbicides, pesticides, and organic chemicals.

1.2.6 Garbage

Refuse and scraps resulting from preparation, cooking, dispensing, and consumption of food.

1.2.7 Hazardous Waste

Hazardous substances as defined in 40 CFR 261 or as defined by applicable state and local regulations.

1.2.8 Oily Waste

Petroleum products and bituminous materials.

1.2.9 Class I Ozone Depleting Substance (ODS)

Class I ODS is defined in Section 602(a) of The Clean Air Act and includes the following chemicals:

chlorofluorocarbon-11 (CFC-11)	chlorofluorocarbon-213 (CFC-213)
chlorofluorocarbon-12 (CFC-12)	chlorofluorocarbon-214 (CFC-214)
chlorofluorocarbon-13 (CFC-13)	chlorofluorocarbon-215 (CFC-215)

chlorofluorocarbon-111 (CFC-111)	chlorofluorocarbon-216 (CFC-216)
chlorofluorocarbon-112 (CFC-112)	chlorofluorocarbon-217 (CFC-217)
chlorofluorocarbon-113 (CFC-113)	halon-1211
chlorofluorocarbon-114 (CFC-114)	halon-1301
chlorofluorocarbon-115 (CFC-115)	halon-2402
chlorofluorocarbon-211 (CFC-211)	carbon tetrachloride
chlorofluorocarbon-212 (CFC-212)	methyl chloroform

1.2.10 Industrial Hygienist

An Industrial Hygienist must be certified by the American Board of Industrial Hygiene.

1.3 SUBMITTALS

Submit the following in accordance with Section C, Part 4.0 of the Basic Contract.

1.3.1 SD-08, Statements

a. Class I ODS prohibition G

b. Safety program G

c. MSDS G

g. Health and safety plan G

1.3.2 SD-12, Field Test Reports

a. Laboratory Analyses G

1.3.2.1 Laboratory Analyses

Submit a copy of approved Laboratory Analyses of materials collected as a result of excavation of soil contaminated with petroleum hydrocarbons before disposing of soil at an approved disposal facility.

1.3.3 SD-18, Records

a. Solid waste disposal permit

b. Disposal permit for hazardous waste G

1.3.3.1 Solid Waste Disposal Permit

Submit one copy of a state and local permit or license showing such agencies' approval of the disposal plan.

1.3.3.2 Disposal Permit for Hazardous Waste

Submit a copy of the applicable EPA and state permits, manifests, or licenses for transportation, treatment, storage, and disposal of hazardous waste by permitted facilities.

1.4 CLASS I ODS PROHIBITION

Class I ODS as defined and identified herein shall not be used in the performance of this contract, nor be provided as part of the equipment. This prohibition shall be considered to prevail over any other provision, specification, drawing, or referenced documents.

1.5 ENVIRONMENTAL PROTECTION REQUIREMENTS

Provide and maintain, during the life of the contract, environmental protection as defined. Plan for and provide environmental protective measures to control pollution that develops during normal construction practice. Plan for and provide environmental protective measures required to correct conditions that develop during the construction of permanent or temporary environmental features associated with the project. Comply with Federal, state, and local regulations pertaining to the environment, including but not limited to water, air, and noise pollution.

1.6 SAFETY PROGRAM

COE EM-385-1-1. Submit safety program, including Accident Prevention Plan, for review and approval 15 calendar days prior to start of work at job site. Conform to the requirements of Federal, state and local laws, rules, and regulations. Work can not proceed until the Safety Program has been approved. The program shall include:

a. 29 CFR 1910.

b. 29 CFR 1926.

c. 29 CFR 1926-SUBPART V, tagout and lockout procedures.

d. COE EM-385-1-1.

e. Contract Clause "FAR 52.236-1, Accident Prevention." In this clause, the date of COE EM-385-1-1 should be 1 October 1992.

f. Contract Clause "FAR 52.223-3, Hazardous Material Identification and Material Safety Data."

g. MSDS, supply Material Safety Data Sheet for all hazardous materials brought on-site.

h. NFPA 241.

1.6.1 Safety Plan Including Accident Prevention

1.6.1.1 Hazardous Material Use

With respect to hazardous materials, safety program shall include provisions to deal with hazardous materials, pursuant to the Contract Clause "FAR 52.223-3, Hazardous Material Identification and Material Safety Data." In addition to FAR 52.223-3, the plan shall consist of:

a. An index of hazardous materials to be introduced to the site;

b. Plans for protecting personnel and property during the transport, storage and use of the materials;

c. Procedures for spill response and disposal;

d. Material Safety Data Sheets for materials listed in the index of the plan and not required in the technical section of the specification. Post Material Safety Data Sheets at the worksite where the products will be used.

e. Approved labelling system to identify contents on all containers on site;

f. Personnel training plan.

Each hazardous material must receive approval prior to bringing onto the job site or prior to any other use in conjunction with this contract. Allow a minimum of 10 working days for processing of the request for use of a hazardous material.

1.6.1.2 Hazardous Material Exclusions

Notwithstanding any other hazardous material permitted used in this contract, radioactive materials or instruments capable of producing ionizing radiation as well as materials which contain asbestos, mercury, or polychlorinated biphenyls are prohibited. Exceptions to the use of any of the above excluded materials may be considered by the NTR upon written request by the Contractor.

1.6.2 Unforeseen Hazardous Material

All known hazardous materials are indicated on the drawings. If additional material that is not indicated on the drawings is encountered that may be dangerous to human health upon disturbance during construction operations, stop that portion of work and notify the NTR immediately. Intent is to identify all hazardous materials including, but not limited to, PCBs, lead paint, fuel products, and friable and nonfriable asbestos. Within 14 calendar days the Government will determine if the material is hazardous. If the material is not hazardous or poses no danger, the Government will direct the Contractor to proceed without change. If the material is hazardous and handling of the material is necessary to accomplish the work, the Government will issue a modification pursuant to "FAR 52.243-4, Changes" and "FAR 52.236-2, Differing Site Conditions."

1.6.3 Station Permits

Permits are required for, but are not necessarily limited to, welding, digging, and burning. Allow 14 calendar days for processing of the application.

1.6.4 Health and Safety Plan (HASP)

COE EM-385-1-1. Perform a Hazard Analysis, and submit a detailed job-specific HASP for the work procedures to be used in the removal,

demolition, and disposal of materials. A certified industrial hygienist shall prepare, sign, and seal the plan. The industrial hygienist shall be retained by the Contractor for the duration of the contract. Prior to beginning the work, obtain approval of the plan and meet with the NTR to discuss work procedures and safety precautions. The HASP shall include:

a. Location, size, and details of control areas.

b. Location and details of decontamination systems.

c. Interface of trades involved in the construction.

d. Sequencing of work.

e. Disposal plan.

f. Sampling protocols and testing labs.

g. Protective equipment.

h. Detailed description of method of controlling pollution.

i. Evidence of compliance with 29 CFR 1910.120 and other Federal, state or local requirements.

PART 2 PRODUCTS

2.1 SAFETY FENCING

Safety fencing shall be orange, high density, ultra violet stabilized polyethylene, at least four feet in height, as indicated.

2.2 SAFETY DRUMS

Safety drums shall be made of orange ultra violet stabilized plastic impact resistant material meeting the requirements of North Carolina Standard Specifications for Roads and Structures and the Manual on Uniform Traffic Control Devices (MUTCD). Drums shall be a minimum of 36 inches in height and have at least 18 inches minimum width. Each drum shall have a minimum of two orange and two white stripes. Safety drums shall have closed tops that will not allow collection of water or debris.

PART 3 EXECUTION

3.1 PROTECTION OF NATURAL RESOURCES

Preserve the natural resources within the project boundaries and outside the limits of permanent work. Restore to an equivalent or improved condition upon completion of work. Confine construction activities to within the limits of the work indicated or specified.

3.1.1 Land Resources

Except in areas to be cleared, do not remove, cut, deface, injure, or destroy trees or shrubs without the NTR's permission. Do not fasten or attach ropes, cables, or guys to existing nearby trees for anchorages unless authorized by the NTR. Where such use of attach ropes, cables, or guys is authorized, the Contractor shall be responsible for any resultant damage.

3.1.1.1 Protection

Protect existing trees which are to remain and which may be injured, bruised, defaced, or otherwise damaged by construction operations. Remove displaced rocks from uncleared areas. By approved excavation, remove trees with 30 percent or more of their root systems destroyed.

3.1.1.2 Replacement

Remove trees and other landscape features scarred or damaged by equipment operations, and replace with equivalent, undamaged trees and landscape features. Obtain NTR's approval before replacement.

3.1.2 Water Resources

3.1.2.1 Oily Wastes

Prevent oily or other hazardous substances from entering the ground, drainage areas, or local bodies of water. Surround all temporary fuel oil or petroleum storage tanks with a temporary earth berm of sufficient size and strength to contain the contents of the tanks in the event of leakage or spillage.

3.1.3 Fish and Wildlife Resources

Do not disturb fish and wildlife. Do not alter water flows or otherwise significantly disturb the native habitat adjacent to the project and critical to the survival of fish and wildlife, except as indicated or specified.

3.2 HISTORICAL AND ARCHAEOLOGICAL RESOURCES

Carefully protect in-place and report immediately to the NTR historical and archaeological items or human skeletal remains discovered in the course of work. Stop work in the immediate area of the discovery until directed by the NTR to resume work.

3.3 EROSION AND SEDIMENT CONTROL MEASURES

3.3.1 Burnoff

Burnoff of the ground cover is not permitted.

3.3.2 Borrow Pit Areas

Manage and control borrow pit areas to prevent sediment from entering nearby streams or lakes. Restore areas, including those outside the borrow pit, disturbed by borrow and haul operations. Restoration includes grading, replacement of topsoil, and establishment of a permanent vegetative cover. Uniformly grade side slopes of borrow pit to not more than a slope of 1 part vertical to 2 parts horizontal. Uniformly grade the bottom of the borrow pits to provide a flat bottom and drain by outfall ditches or other suitable means. Stockpile topsoil remove during the borrow pit operation, and use as part of restoring the borrow pit area.

3.3.3 Protection of Erodible Soils

Immediately finish the earthwork brought to a final grade, as indicated or specified. Immediately protect the side slopes and back slopes upon completion of rough grading. Plan and conduct earthwork to minimize the duration of exposure of unprotected soils.

3.3.4 Temporary Protection of Erodible Soils

Use the following methods to prevent erosion and control sedimentation:

3.3.4.1 Mechanical Retardation and Control of Runoff

Mechanically retard and control the rate of runoff from the construction site. This includes construction of diversion ditches, benches, berms, and use of silt fences and strawbales to retard and divert runoff to protected drainage courses.

3.3.4.2 Vegetation and Mulch

Provide temporary protection on sides and back slopes as soon as rough grading is completed or sufficient soil is exposed to require erosion protection. Protect slopes by accelerated growth of permanent vegetation, temporary vegetation, mulching, or netting. Stabilize slopes by hydroseeding, anchoring mulch in place, covering with anchored netting, sodding, or such combination of these and other methods necessary for effective erosion control.

a. Seeding: Provide new seeding where ground is disturbed. Include topsoil or nutriment during the seeding operation necessary to establish a suitable stand of grass. The seeding operation shall be as specified in Section 02220, "General Excavation, Filling, and Backfilling".

3.4 PUBLIC SAFETY MEASURES

3.4.1 Safety Fencing

Safety fencing shall be installed around excavation Areas A, B and C as indicated.

3.4.2 Safety Drums

Safety drums shall be installed along Third Street and F Street in front of the safety fence that encompasses the Area A excavation.

3.5 CONTROL AND DISPOSAL OF SOLID WASTES

Pick up solid wastes, and place in covered containers which are regularly emptied. Do not prepare or cook food on the project site. Prevent contamination of the site or other areas when handling and disposing of wastes. At project completion, leave the areas clean.

3.5.1 Disposal of Rubbish and Debris

Dispose of rubbish and debris in accordance with the requirements specified below:

3.5.1.1 Removal From Government Property

Remove and dispose rubbish and debris from Government property.

3.5.2 Garbage Disposal

Place garbage in approved containers, and move to a pickup point or disposal area, where directed.

3.6 CONTROL AND DISPOSAL OF HAZARDOUS WASTE

3.6.1 Hazardous Waste Generation

Handle generated hazardous waste in accordance with 40 CFR 262.

3.6.2 Hazardous Waste Disposal

Dispose of hazardous waste in accordance with 40 CFR 263, 40 CFR 264, and 40 CFR 265.

3.6.3 Hazardous Waste Storage

Store hazardous waste in containers in accordance with 49 CFR 178. Hazardous waste shall be identified in accordance with 40 CFR 261 and 40 CFR 262.

3.6.4 Spills of Oil and Hazardous Materials

Take precautions to prevent spills of oil and hazardous material. In the event of a spill, immediately notify the NTR. Spill response shall be in accordance with 40 CFR 300 and applicable state regulations.

3.7 DUST CONTROL

Keep dust down at all times, including during nonworking periods. Sprinkle or treat, with dust suppressants, the soil at the site, haul roads, and other areas disturbed by operations. Dry power brooming will not be permitted. Instead, use vacuuming, wet mopping, wet sweeping, or wet power

brooming. Air blowing will be permitted only for cleaning nonparticulate debris such as steel reinforcing bars. Only wet cutting will be permitted for cutting concrete blocks, concrete, and bituminous concrete. Do not unnecessarily shake bags of cement, concrete mortar, or plaster.

3.8 NOISE

Make the maximum use of low-noise emission products, as certified by the EPA. Blasting or use of explosives will not be permitted without written permission from the NTR, and then only during the designated times.

3.9 FIRE PROTECTION

3.9.1 Compliance

COE EM-385-1-1, NFPA 241, and activity fire regulations. Obtain approval from the activity Fire Chief prior to commencement of hot work operations.

3.9.2 Notification of Fire

Post the activity fire poster in conspicuous locations and at telephones in construction shacks.

3.10 QUARANTINE FOR IMPORTED FIRE ANT (4/82)

Onslow, Jones, and Cartaret Counties and portions of Duplin and Craven Counties have been declared a generally infested area by the United States Department of Agriculture (USDA) for the imported fire ant. Compliance with the quarantine regulations established by this authority as set forth in USDA Quarantine No. 81 dated 9 October 1970, and USDA Publication 301.81-2A of 23 July 1976, is required for operations hereunder. Pertinent requirements of the quarantine for materials originating on the Camp Lejeune reservation, the Marine Corps Air Station (Helicopter), New River and the Marine Corps Air Station, Cherry Point, which are to be transported outside Onslow County or adjacent suppression areas, include the following:

a. Certification is required for the following articles and they shall not be moved from the reservation to any point outside Onslow County and adjacent designated areas unless accompanied by a valid inspection certificate issued by an Officer of the Plant Protection and Quarantine Program of the U.S. Department of Agriculture.

(1) Bulk Soil,

(2) Used mechanized soil-moving equipment. (Used mechanized soil-moving equipment is exempt if cleaned of loose noncompacted soil).

(3) Other products, articles, or means of conveyances, if it is determined by an inspector that they present a hazard of transporting spread of the imported fire ant and the person in possession thereof has been so notified.

b. Authorization for movement of equipment outside the imported fire

and regulated area shall be obtained from USDA, APHIS, PPQ, Box 83, Goldsboro, North Carolina, 27530, Attn: Mr. Haywood Cox, telephone (919) 735-1941. Requests for inspection shall be made sufficiently in advance of the date of movement to permit arrangements for the services of authorized inspectors. The equipment shall be prepared and assembled so that it may be readily inspected. Soil on or attached to equipment, supplies, and materials shall be removed by washing with water or such other means as necessary to accomplish complete removal. Resulting spoil shall be wasted as necessary and as directed.

-- End of Section --

SECTION 02102

CLEARING AND GRUBBING

PART 1 GENERAL

1.1 REFERENCES

Not used.

1.2 SUBMITTALS

Submit the following in accordance with Section C, Part 7.0, of the Basic Contract.

1.3 DELIVERY, STORAGE, AND HANDLING

Deliver materials to, store at the site, and handle in a manner which will maintain the materials in their original manufactured or fabricated condition until ready for use.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PROTECTION

3.1.1 Roads and Walks

Keep roads and walks free of dirt and debris at all times.

3.1.2 Trees, Shrubs, and Existing Facilities

Protection shall be in accordance with Section C, of the Basic Contract.

3.1.3 Utility Lines

Protect existing utility lines that are indicated or made known to the Contractor to remain from damage. Notify the NTR immediately of damage to or an encounter with an unknown existing utility line. The Contractor shall be responsible for the repairs of damage to existing utility lines that are indicated or made known to the Contractor prior to start of clearing and grubbing operations. When utility lines which are to be removed are encountered within the area of operations, the Contractor shall notify the NTR in ample time to minimize interruption of the service. Refer to Section 01010, "General Paragraphs," and Section 01560, "Temporary Controls," for additional utility protection.

3.2 CLEARING

Shall consist of the felling, trimming, and cutting of trees into sections and the satisfactory disposal of the trees and other vegetation only as necessary during excavation, including downed timber, snags, brush, and

rubbish occurring within the areas to be cleared. Cut off flush with or below the original ground surface trees, stumps, roots, brush, and other vegetation in areas to be cleared.

3.3 TREE REMOVAL

Trees suitable for use a board lumber (tree trunks greater than six inches in diameter, less the tops and roots) will be removed from the site by the Government prior to the commencement of work. Remove other trees and stumps and grub roots as necessary to complete work. The Contractor shall flag all trees that are to be removed and obtain approval for their removal from the NTR prior to the beginning of work.

3.4 PRUNING

Prune individual trees as necessary. Trim trees designated by the NTR to be left standing within the cleared areas of dead branches 1 1/2-inches or more in diameter; and trim branches to heights and in a manner approved by the NTR. Neatly cut limbs and branches to be trimmed close to the bole of the tree or main branches.

3.5 GRUBBING

Remove and dispose of roots larger than 3 inches in diameter, matted roots, and stumps from the grubbing areas. Fill depressions made by grubbing with suitable material and compact in accordance with the requirements specified in Section 02220, "General Excavation, Filling and Backfilling," to make the new surface conform with the existing adjacent surface of the ground.

3.6 DISPOSAL OF CLEARED AND GRUBBED MATERIALS

3.6.1 Nonsaleable Materials

Remove from the project site and dispose of off station timber, scrub, vegetation, and debris considered as nonsaleable. Burning will not be permitted. The Contractor shall transport tree tops and roots remaining on site after the Government has removed trees suitable for use as board lumber to the wood chipper located at the MCB Camp Lejeune sanitary landfill.

-- End of Section --

SECTION 02220

GENERAL EXCAVATION, FILLING, AND BACKFILLING

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)

ASTM D 698	1991 Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft (600 kN-m/m))
ASTM D 1140	1992 Amount of Material in Soils Finer Than the No. 200 (75-Micrometer) Sieve
ASTM D 1556	1990 Density and Unit Weight of Soil in Place by the Sand-Cone Method
ASTM D 1557	1991 Laboratory Compaction Characteristics of Soil Using Modified Effort (56,000 ft-lbf/ft (2,700 kN-m/m))
ASTM D 2487	1992 Classification of Soils for Engineering Purposes
ASTM D 2922	1991 Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
ASTM D 3017	1988 Water Content of Soil and Rock in Place by Nuclear Methods (Shallow Depth)
ASTM D 4318	1984 Liquid Limit, Plastic Limit, and Plasticity Index of Soils

COMMERCIAL ITEM DESCRIPTIONS (CID)

CID A-A-1909	Fertilizer

CORPS OF ENGINEERS (COE)

COE EM-385-1-1	1992 *Safety and Health Requirements* Manual

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION (NCDOT)

1991 Criteria for Acceptance of Borrow Material

1990 Standard Specifications for Roads and Structures

1.2 DEFINITIONS

1.2.1 Hard Materials

Weathered rock, dense consolidated deposits, or conglomerate materials which are not included in the definition of "rock" but which usually require the use of heavy excavation equipment, ripper teeth, or jack hammers for removal.

1.2.2 Cohesive Materials

Materials ASTM D 2487 classified as GC, SC, ML, CL, MH, and CH. Materials classified as GM and SM will be identified as cohesive only when the fines have a plasticity index greater than zero.

1.2.3 Cohesionless Materials

Materials ASTM D 2487 classified as GW, GP, SW, and SP. Materials classified as GM and SM will be identified as cohesionless only when the fines have a plasticity index of zero.

1.2.4 Contaminated Soils

Materials having concentrations of Total Petroleum Hydrocarbons (TPH), in parts per million (ppm), greater than:

40 ppm as determined by EPA Method 5030/8015
and
160 ppm as determined by EPA Method 3550/8015

1.3 SUBMITTALS

Submit the following in accordance with Section C, Part 7.0 of the Basic Contract.

1.3.1 SD-04, Drawings

a. Supporting system drawings

1.3.1.1 Required Drawings

Submit drawings and calculations by a registered professional engineer. Drawings shall include material sizes and types, arrangement of members, and the sequence and method of installation and removal.

1.3.2 SD-12, Field Test Reports

a. Fill and backfill test

b. Density tests

1.4 DELIVERY, STORAGE, AND HANDLING

Perform in a manner to prevent contamination or segregation of materials.

PART 2 PRODUCTS

2.1 SOIL MATERIALS

Free of debris, roots, wood, scrap material, vegetation, refuse, soft unsound particles, and frozen, deleterious, or objectionable materials. Unless specified otherwise, the maximum particle diameter shall be one-half the lift thickness at the intended location.

2.1.1 Common Fill

Approved, unclassified soil material with the characteristics required to compact to the soil density specified for the intended location. Common fill shall consist of uncontaminated material removed from the excavation areas or material obtained from the base borrow pit.

2.1.2 Topsoil

Natural, friable soil representative of productive, well-drained soils in the area, free of subsoil, stumps, rocks larger than one inch diameter, brush, weeds, toxic substances, and other material detrimental to plant growth. Amend topsoil pH range to obtain a pH of 5.5 to 7.

2.2 BORROW AND BACKFILL MATERIAL

The Contractor shall obtain borrow material from a Government furnished source located at MCB Camp Lejeune. The Contractor shall be responsible for excavating and loading the borrow material at the source and for transportation to the site. All borrow and backfill materials shall meet the requirements of the "North Carolina Department of Transportation Division of Highways Criteria for Acceptance of Borrow Material" dated January 01, 1991. All borrow and backfill material required to accomplish the work under these Contract Documents are subject to the following requirements:

a. Only natural earth materials may be used as borrow material.

b. Only suitable materials shall be used in the construction of backfills, i.e., no frozen material, roots, sod, or other objectionable material.

c. Borrow and backfill soils have an acceptable Plasticity Index (P.I.) of equal to or less than 15. Soils with a P.I. in the range of 16 to 20 shall be acceptable, but are not to be used in the top two feet of backfill. Soils with a P.I. of greater than 20 are not acceptable.

d. Borrow and backfill soils may be rejected if the pH level is less than 5.5 or if the organic content is greater than four percent.

e. Certification that the borrow and backfill material conforms to the specification requirements along with copies of the test results from a qualified commercial testing laboratory shall be submitted to the NTR for approval at least 10 days before the material is required for use. The Contractor shall obtain a single composite

sample of the borrow material for testing to ensure compliance with the physical requirements of these specifications. The Contractor shall also obtain a single composite sample of the excavated uncontaminated soil for testing to ensure compliance with the physical requirements of the specifications prior to being utilized as backfill. Sampling of the borrow and backfill material shall be based on an inspection of the source by the NTR and/or the certified test results submitted by the Contractor or the NTR at the NTR's discretion. No borrow material shall be delivered to the site until the material tests have been tentatively accepted in writing by the NTR. Final acceptance shall be based on tests made on samples of material taken from the completed and compacted course.

PART 3 EXECUTION

3.1 PROTECTION

3.1.1 Protection Systems

Provide shoring, bracing, cribbing, underpinning, and sheeting in accordance with COE EM-385-1-1, except that banks may he sloped only when approved by the NTR. Provide additional supporting systems as necessary.

3.1.2 Site Drainage

Provide for the collection and disposal of surface water encountered during construction. Dewatering shall not be allowed unless approved by the NTR.

3.1.2.1 Surface Drainage

So that construction operations progress successfully, completely drain construction site to maintain dry soils. When unsuitable working platforms for equipment operation and unsuitable soil support for subsequent construction features develop, remove unsuitable soil and provide new soil material as specified herein.

3.1.3 Underground Utilities

The Contractor shall physically verify the location and elevation of any existing utilities prior to starting construction. The Contractor shall contact the Public Works Department for assistance in locating existing utilities. The Contractor shall scan the construction site with electromagnetic and sonic equipment and mark the surface of the ground where existing underground utilities are discovered.

3.1.4 Machinery and Equipment

Movement of construction machinery and equipment over pipes during construction shall be at the Contractor's risk. Repair, or remove and provide new pipe for existing or newly installed pipe that has been displaced or damaged.

3.2 EXCAVATION OF CONTAMINATED MATERIAL

3.2.1 General

Excavate to contours, elevation, and dimensions indicated. Reuse excavated materials that meet the specified requirements for the material type required at the intended location. Keep excavations free from water. Excavate soil disturbed or weakened by Contractor's operations, soils softened or made unsuitable for subsequent construction due to exposure to weather. Refill with common fill material and compact as specified in the following sections. Unless specified otherwise, refill excavations cut below indicated depth with common fill material.

3.2.2 Limits of Excavation

a. The Contractor shall excavate all contaminated soil as indicated or as specified.

b. Upon excavating the areas to the depths indicated, the Contractor shall conduct an analysis of the excavation consisting of the following:

   1. Visual inspection for stained or discolored soil;

   2. Field screening using rapid immunoassay in-field screening tests for petroleum fuels;

   3. Confirmation sampling as described in Section 01430, "Waste Sampling Requirements," Part 3.1.1.1.

c. Contaminated soils removed during the excavation shall be transported as described in Section 02223, "Transportation of Contaminated Material".

d. Backfilling of excavated areas shall begin only after the approval of the NTR, based on the results of confirmation sampling conducted in accordance with Section 01430, "Waste Sampling Requirements".

e. The Contractor and the NTR shall work together to coordinate excavation, sampling, and analyses to minimize downtime. The Contractor shall schedule work to minimize downtime.

3.2.3 Loading of Excavated Materials

Contaminated materials shall be loaded into covered containers or vehicles designed to transport such materials without spillage. Care shall be taken during loading operations to minimize the potential for spillage, tracking, or other means of deposition of contaminated materials outside the work area. Contaminated materials which become spilled on roads, streets, or other areas outside the limits of excavation during the loading operation shall be immediately reported to the NTR, and immediately cleaned up to the satisfaction of the NTR.

3.2.4 Control of Dust

Dust control measures shall be in accordance with Section C, paragraph 4.0 of the Basic Contract. Keep dust down at all times, including nonworking periods. Sprinkle or treat the soil at the site, haul roads, and other areas disturbed by operations with dust suppressants such as water. Dry brooming shall not be permitted.

3.2.5 Method of Measurement

a. the contaminated soil shall be disposed at an off-site soil recycling facility and shall be separated from the clean soil which shall be reused as backfill. The quantity of work done under this paragraph shall be measured in cubic yards of "Excavation" which shall be the actual volume of the contaminated and clean soil as determined based on the number and volume of hauling vehicles used to transport the soil from the excavations to the soil staging area.

3.3 FILLING AND BACKFILLING

Fill and backfill to contours, elevations, and dimensions indicated. Compact each lift before placing overlaying lift.

3.3.1 Common Fill Placement

Provide for general site. An initial lift of backfill should be placed in a uniform distributed depth not greater than that necessary to support the equipment while placing subsequent lifts. All subsequent lifts should not exceed 10 inches in depth, loose measurement. Contractor shall compact areas not accessible to rollers or compactors with mechanical hand tampers. Aerate material excessively moistened by rain to a satisfactory moisture content. Finish to a smooth surface by blading, rolling with a smooth roller, or both.

3.3.2 Method of Measurement

a. the quantity of work done under this paragraph shall be measured in cubic yards of "Replacement of Soil and Site Restoration" which shall consist of the volume of backfill actually placed back into the excavations at the site as specified herein. The volume of backfill shall be determined based on the number and volume of hauling vehicles used to deliver the material to the excavations.

3.4 COMPACTION

Backfill placed at a depth equal to or greater than four feet below the original ground surface shall be compacted to 90 percent of the maximum density as determined by ASTM D 1557. Backfill compaction of greater than or equal to 95 percent shall be obtained within four feet of the original ground surface. Determine in-place density of existing subgrade; if required density exists, no compaction of existing subgrade will be required. Density requirements specified herein are for cohesionless materials. When cohesive materials are encountered or used, density requirements may be reduced by 5 percent.

3.5 FINISH OPERATIONS

3.5.1 Grading

Finish grades as indicated within one-tenth of one foot. Grade areas to drain water away from structures. For existing grades that will remain but which were disturbed by Contractor's operations, grade as directed.

3.5.2 Protection of Surfaces

Protect newly graded areas from traffic, erosion, and settlements that may occur. Repair or reestablish damaged grades, elevations, or slopes.

3.5.3 Seed

Scarify existing subgrade. Seed shall match existing vegetation. Provide seed at 5 pounds per 1000 square feet. Provide CID A-A-1909, Type I, Class 2, 10-10-10 analysis fertilizer at 25 pounds per 1000 square feet. Provide mulch and water to establish an acceptable stand of grass.

3.6 DISPOSITION OF SURPLUS MATERIAL

Remove from Government property surplus or other soil material not required or suitable for filling or backfilling, and brush, refuse, stumps, roots, and timber.

3.7 FIELD QUALITY CONTROL

3.7.1 Sampling

Take the number and size of samples required to perform the following tests.

3.7.2 Testing

Perform one of each of the following tests for each material used. Provide additional tests for each source change.

3.7.2.1 Borrow Material Certification

Geotechnical testing of the borrow material shall be performed to determine Plasticity Index, gradation, AASHTO classification, and Modified Proctor value.

3.7.2.2 Density Tests

Test density in accordance with ASTM D 1556, or ASTM D 2922 and ASTM D 3017. When ASTM D 2922 and ASTM D 3017 density tests are used, verify density test results by performing an ASTM D 1556 density test at a location already ASTM D 2922 and ASTM D 3017 tested as specified herein. Perform an ASTM D 1556 density test at the start of the job, and for every 10 ASTM D 2922 and ASTM D 3017 density tests thereafter. Test each lift at randomly selected locations every 2000 square feet of existing grade in fill areas.

-- End of Section --

SECTION 02223

TRANSPORTATION OF CONTAMINATED MATERIAL

PART 1 GENERAL

1.1 REFERENCES

The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

CODE OF FEDERAL REGULATIONS

40 CFR Part 261	Identification and Listing of Hazardous Waste
40 CFR Part 262	Standards Applicable to Generators of Hazardous Waste
40 CFR Part 761	Polychlorinated Biphenyls (PCBs) Manufacturing, Processing, Distribution in Commerce, and Use Prohibitions
49 CFR Parts 100 to 180	Transportation

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (USEPA)

SW-846	(1986) Test Methods for Evaluating Solid Waste (Physical/Chemical Methods)

1.2 SUBMITTALS

Submit the following in accordance with Section C, Part 7.0, of the Basic Contract.

1.2.1 SD-08, Statements

The Contractor shall provide the NTR with the following decontamination, transportation and soil treatment documentation:

a. Waste Shipping Documentation

b. Waste Delivery Documentation

c. Waste Site Vehicle Decontamination Verification

d. Treatment Site Vehicle Decontamination Verification

1.2.1.1 Waste Shipping Documentation

Copies of manifests and other documentation required for shipment of waste materials within 24 hours after removal of waste from the site. All manifest documentation shall conform with 40 CFR 261 and 40 CFR 262. Manifest documentation shall be signed by the NTR. Manifesting is not

required if the TPH contaminated soil does not meet the characteristics of a hazardous waste, as defined in 40 CFR 261.

1.2.1.2 Waste Delivery Documentation

Verification that the wastes were actually delivered to the proposed treatment site, within 7 days of waste removal from MCB Camp Lejeune.

1.2.1.3 Waste Site Vehicle Decontamination Verification

Verification that all vehicles and containers were decontaminated prior to leaving the work site, were properly operating, and were covered, within 24 hours after removal of waste from the site.

1.2.1.4 Treatment Site Vehicle Decontamination Verification

Verification that all vehicles and containers were decontaminated prior to leaving the treatment site, within 7 days of the date of service.

1.3 DEFINITIONS

The following definitions shall apply, in addition to the definitions for the various waste types described in the Basic Contract.

1.3.1 Incidental Waste

Incidental waste shall include all materials which become contaminated with wastes as defined in the Basic Contract as a result of Contractor activity at the site after the commencement of contract work.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 GENERAL

3.1.1 Materials and Equipment

The Contractor shall furnish all labor, materials, and equipment necessary to transport contaminated soils in accordance with applicable Federal, State, and local requirements.

3.1.2 Records

The Contractor shall originate, use, and maintain the waste shipment records/manifests required by the Resource Conservation and Recovery Act (RCRA) and the U.S. Department of Transportation, as necessary.

3.1.3 Temporary Storage of Contaminated Materials

The Contractor shall schedule and control the work such as to minimize the quantity and duration of on-site contaminated material storage. All contaminated materials stored on-site shall be stored in covered containers

or vehicles designed to contain such materials without spillage. Any damage or contamination caused by contaminated materials storage shall be repaired or removed to the satisfaction of the NTR.

3.1.4 Transportation

The Contractor shall be solely responsible for complying with all federal, state, and local requirements for transporting hazardous materials through the applicable jurisdictions and shall bear all responsibility and cost for any noncompliance. In addition to those requirements, the Contractor shall do the following:

a. Inspect and document all vehicles and containers for proper operation and covering.

b. Inspect all vehicles and containers for proper markings, manifest documents, and other requirements for waste shipment.

c. Perform and document decontamination procedures prior to leaving the worksite and again before leaving the treatment site.

3.1.5 Treatment - Incidental Wastes

All incidental waste materials classified as hazardous under RCRA (40CFR Part 261) that are removed from the site shall be disposed of in a RCRA hazardous waste treatment/disposal facility permitted to accept such materials. Other materials shall be disposed of at the base landfill facility or other disposal facility as directed by the NTR.

3.1.6 Treatment - Contaminated Soil

All TPH contaminated soil removed from the site shall be transported to an off-site soil recycling facility.

3.1.7 Sampling and Analysis Requirements for Disposal

The Contractor shall conduct sampling and analysis in accordance with an approved Sampling and Analysis Plan. The Sampling and Analysis Plan shall provide a proposed plan for sampling and analyses in the event that drums or potentially off-spec soil is encountered.

3.1.8 Method of Measurement

The quantity of work done under this Section shall be measured in tons of soil removed from the site as determined by the weigh scales at the approved off-site soil recycling facility.

-- End of Section --