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August 10, 2004

Commander  
Naval Facilities Engineering Command  
Atlantic Division  
6506 Hampton Blvd., Bldg. A, Room 1306  
Norfolk, VA 23508

Attention: EV32JC Mr. John D. Conway, P.G.

**Re: FINAL Corrective Action Plan  
Rapid Refueler A-B Tanks**  
Marine Corps Air Station  
New River, North Carolina  
Navy Contract No. N62470-01-D-3009  
Delivery Order No. 0096  
CATLIN Project No. 203-110

Dear Mr. Conway:

CATLIN Engineers and Scientists (CATLIN) is pleased to submit the FINAL Corrective Action Plan (CAP) for the above referenced site. We have reviewed the following comments to the Draft document received from Nikki Hall on August 9, 2004 and have made the appropriate revisions to the text.

1. Title page release information date discovered should be 2002, not 2003. Make sure this agrees with dates stated in executive summary and other history paragraphs.

*Acknowledged. Text has been changed accordingly.*

2. Exec summary states CSA date is 2004...should be 2003. Incorrect date also in Source of Area of Concern page 4.

*Acknowledged. Text has been changed accordingly.*

3. D. Summary of Remedial Actions to date - leak appears twice in second sentence. Also, EEI routinely performs AFVR is wells across the site. Please check with them to ensure we indeed have not done AVFR at any of the wells nearby.

*Acknowledged. A telephone conversation with EEI confirmed that periodic AFVR events are conducted in the area and the text has been changed accordingly.*

4. G. Site receptor Info page 9 - underground utilities JP5 line is actually more like 4-5 ft deep.

*Acknowledged. Text has been changed accordingly.*

5. 4d. Reporting - I would rather not have to send anything to NCDENR on a quarterly basis. How about these report be done but submitted as part of the annual report instead of separately.

*Acknowledged. Text has been changed accordingly. Quarterly reports are proposed to be submitted annually.*

CATLIN Engineers and Scientists appreciates the opportunity to continue to provide services to LANTDIV and the MCB on your environmental projects.

Sincerely,



Michael E. Mason, P.E.  
CATLIN Program Manager

Attachments: Final CAP

cc: Ms. Pamela Argilan – Code AQ11B Contracts, Correspondence only  
Commanding General, Attn: Director I&E, EMD, EQB (3 copies)

# CORRECTIVE ACTION PLAN

## RAPID REFUELER A-B TANKS

MARINE CORPS AIR STATION  
NEW RIVER, NORTH CAROLINA

AUGUST 10, 2004

LATITUDE: 34° 42' 44"  
LONGITUDE: 77° 26' 40"

SITE INFORMATION		RELEASE INFORMATION	
NCDENR Incident No.	32004	Date Discovered	October 10, 2002
Facility Identification No.	N/A	Estimated Quantity	Unknown
Risk Classification	Intermediate	Cause of Release	Leak from drain
Site Priority Ranking	N/A	Source of Release	Low point drain valve on pipeline
NCDENR Assigned Land Use	Industrial/Commercial	Size and Contents of System	Six-inch diameter JP-5 Pipeline

CONTRACT NO. N62470-01-D-3009  
DELIVERY ORDER NO. 0096  
CATLIN PROJECT NO. 203-110



Prepared by:

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Prepared for:

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## LIST OF ACRONYMS

2000 Guidelines	Groundwater Section Guidelines for Investigation and Remediation of Soil and Groundwater
2001 Guidelines	Guidelines for Assessment and Corrective Action, North Carolina Underground Storage Tank Section (Effective July 1, 2001)
2L GWQS	NCAC T15A:02L Groundwater Quality Standards
ARO	Asheville Regional Office
AS	Air Sparge
AST	Aboveground Storage Tank
BDL	Below Detection Limit
BN	Base/Neutral (extractables)
BNA	Base/Neutral/Acid (extractables)
BQL	Below Quantitation Limit
BLS	Below Land Surface
BTEX	Benzene, Toluene, Ethylbenzene, Xylenes
CAP	Corrective Action Plan
CATLIN	CATLIN Engineers and Scientists (Formerly RC&A)
CFR	Code of Federal Regulations
Cr	Chromium
CSA	Comprehensive Site Assessment
CNP	Carbon Nitrogen Phosphorous
CPT	Cone Penetrometer Test
DEM	Division of Environmental Management
DIPE	Diisopropyl Ether
DO	Dissolved Oxygen
DOD	Department of Defense
DPT	Direct Push Technology
DWQ	Division of Water Quality
DWM	Division of Waste Management
DTW	Depth to Water
EAD	Environmental Affairs Department
EDB	Ethylene di-bromide
EMD	Environmental Management Division
EPA	Environmental Protection Agency
EPH	Extractable Petroleum Hydrocarbons
EQB	Environmental Quality Branch
Fe	Iron
FID	Flame Ionization Detector
FOD	Foreign Object Debris
FRO	Fayetteville Regional Office
FT	Feet
GCL	Gross Contaminant Level
GIS	Geographic Information System
GPS	Global Positioning System

Guidelines Vol. I	Groundwater Section Guidelines for Investigation and Remediation of Soil and Groundwater, Volume I, Sources Other Than Petroleum Underground Storage Tanks (May 1998)
Guidelines Vol. II	Groundwater Section Guidelines for Investigation and Remediation of Soil and Groundwater, Volume II, Petroleum Underground Storage Tanks (January 2, 1998)
HDPE	High Density Polyethylene
I/C	Industrial/Commercial
ID	Identification
I&E	Installations and Environment Department
IGWQS	Interim Groundwater Quality Standards
IPE	Isopropyl Ether
LANTDIV	Atlantic Division
LSA	Limited Site Assessment
LUST	Leaking Underground Storage Tank
m-	meta
m	meter
MADEP	Massachusetts Department of Environmental Protection
MCALF	Marine Corps Auxiliary Landing Field
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
MCOLF	Marine Corps Outlying Landing Field
MDL	Method Detection Limit
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Litre
MRO	Mooreville Regional Office
MSCC	Maximum Soil Contaminant Concentration
MSL	Mean Sea Level
MTBE	Methyl tertiary butyl ether
µg/Kg	Micrograms per Kilogram
µg/L	Micrograms per Litre
NA	Not Analyzed
N/A	Not Applicable
NC	North Carolina
NCAC	North Carolina Administrative Code
NCDENR	North Carolina Department of Environment and Natural Resources
NCDOC	North Carolina Department of Corrections
NCDOT	North Carolina Department of Transportation
NCSP	North Carolina State Plane
NCSPA	North Carolina State Ports Authority
NE	None Established
NM	Not Measured
NMT	No Measurable Thickness
NS	Not Sampled
o-	ortho
OVA	Organic Vapor Analyzer
p-	para
PAH	Polynuclear Aromatic Hydrocarbons
Pb	Lead
PPB	Parts Per Billion
PPM	Parts Per Million

PID	Photo Ionization Detector
PQL	Practical Quantitation Limit
PVC	Polyvinyl chloride
RBCA	Risk-Based Corrective Action
RCRA	Resource Conservation and Recovery Act
Res	Residential
ROI	Radius of Influence
RRO	Raleigh Regional Office
SOW	Scope of Work
STGW	Soil-to-Groundwater
SVE	Soil Vapor Extraction
SVOC	Semi Volatile Organic Compound
TDHF	Toxicologically Defined Hydrocarbons Fractions
TCLP	Toxicity Characteristic Leaching Procedure
TIC	Tentatively Identified Compound
TKN	Total Kjeldahl Nitrogen
TOC	Top of Casing
TPH	Total Petroleum Hydrocarbons
US	United States
USCS	Unified Soil Classification System
USEPA	United States Environmental Protection Agency
USGS	United States Geological Survey
UST	Underground Storage Tank
VOC	Volatile Organic Compounds
VPH	Volatile Petroleum Hydrocarbons
WaRO	Washington Regional Office
WiRO	Wilmington Regional Office
WSRO	Winston-Salem Regional Office

**CORRECTIVE ACTION PLAN  
RAPID REFUELER  
A-B TANKS AREA**

**A. TITLE PAGE**

DATE OF REPORT: August 10, 2004  
Facility ID: N/A UST Incident Number (if known): 32004  
Site Name: Rapid Refueler A-B Tanks Area  
Site Location: Marine Corps Air Station, New River  
Nearest City/Town: Jacksonville County: Onslow  
Risk Classification: Pending Land Use Classification: Industrial/Commercial

UST Owner: Commanding General - MCB Camp Lejeune  
I&E/EMD/EQB  
Address: PSC Box 20004 Phone: (910) 451-5068  
MCB Camp Lejeune, NC 28542

UST Operator: Same as above Phone: Same as above  
Address: Same as above

Property Owner: Same as above Phone: Same as above  
Address: Same as above

Property Occupant: N/A Phone: Unknown  
Address: N/A

Consultant/Contractor: CATLIN Engineers and Scientists  
Address: 220 Old Dairy Road, Wilmington, North Carolina 28405 Phone: (910) 452-5861

**Release Information**

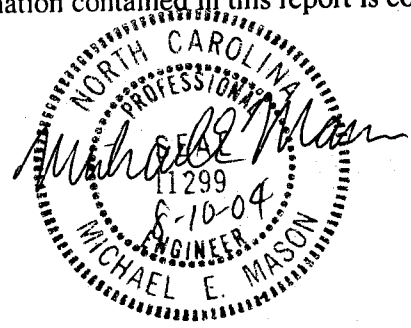
Date Discovered: October 19, 2002  
Longitude: 77° 25' 59" Latitude: 34° 42' 30"

Estimated Quantity of Release: Unknown  
Cause of Release: Unknown

Source of Release (e.g. Piping/UST):  
Leak from low point drain valve in piping transfer system.

**Sizes and contents of UST system(s) from which the release occurred:**  
Eight-inch diameter underground pipeline used to transfer JP-5 from Campbell Street Fuel Farm to the Rapid Refueler facility.

I, Michael E. Mason Professional Engineer Licensed Geologist (circle one) for CATLIN Engineers and Scientists, do certify that the information contained in this report is correct and accurate to the best of my knowledge.



(Please Affix Seal and Signature)

**CORRECTIVE ACTION PLAN  
FOR  
RAPID REFUELER  
A-B TANKS AREA  
MARINE CORPS AIR STATION  
NEW RIVER, NORTH CAROLINA**

**AUGUST 10, 2004**

**B. EXECUTIVE SUMMARY**

On October 10, 2002 a JP-5 leak was detected at the low-point pipeline drain within the Rapid Refueler A-B Tanks fuel distribution pit system. Subsequently, Shaw Environmental and Infrastructure (Shaw) exposed (excavated) and repaired the fuel transfer line. CATLIN prepared a CSA dated August 26, 2003, that showed the site surficial aquifer remains impacted with free phase product (>0.02 feet) at and down gradient of the fuel transfer line leak site. All site soil samples revealed below quantitation limits or compliant concentrations for all EPA Methods 8260B, 8270, MADEP EPH and VPH analytes. All site groundwater samples revealed below quantitation limits or compliant concentrations for all EPA Methods 602 + Xylenes and MTBE, 625, MADEP EPH and VPH analytes. Analysis of the surface water sample from a nearby detention pond revealed below quantitation limits for all EPA Methods 602 + Xylenes and MTBE, 625, MADEP EPH and VPH analytes. Based on the findings of the CSA, the site meets the criteria for Industrial/Commercial land use and an Intermediate Risk Classification.

The primary CAP goal is to contain and recover the site free phase product. This CAP provides conceptual plans for active corrective measures in accordance with NCAC Title 15A, Subchapter 2L, Section .0106(h) and the NCDENR, Division of Water Quality, UST Section 2001 *Guidelines*. The design presented herein is conceptual in nature and may require field adjustment and/or modifications during construction and implementation.

Recommendations are to install a 8-inch diameter sump well in the vicinity of the center of the free phase product plume. The sump well will be secured with a 24-inch wide by 24-inch long aluminum well shield (ground level). Then excavate four trenches extending from the central sump well to the free phase product plume boundary along the plume axis. In order to intercept the site free phase product, each trench will be excavated to depth of approximately nine feet below grade.

For the first year of recovery operations recommendations are to utilize Mobile Multi Phase Extraction (MMPE). The MMPE events are proposed on a monthly basis for one year or until free product is eliminated or if MMPE proves ineffective. At this time, it is recommended that the remediation method be re-evaluated.

Once free phase product has been removed (<0.02' feet) at the site monitoring wells, recommendations are to obtain groundwater samples from the formerly free phase product impacted wells for analysis per EPA Methods 602 + Xylenes and MTBE, 625, MADEP EPH and VPH analytes to assess post-free phase product surficial groundwater quality. An evaluation of the site surficial groundwater quality, at the time, will determine if site conditions warrant further remediation.

**CORRECTIVE ACTION PLAN  
FOR  
RAPID REFUELER  
A-B TANKS AREA  
MARINE CORPS AIR STATION  
NEW RIVER, NORTH CAROLINA**

**AUGUST 10, 2004**

**C. INTRODUCTION**

**1. PURPOSE OF CORRECTIVE ACTION PLAN**

The purpose of this Corrective Action Plan (CAP) is to address petroleum contamination associated with the A-B Tank Area of the Rapid Refueler stations aboard the Marine Corps Air Station, New River, North Carolina. This CAP proposes remediation activities focused on the removal of free-phase JP-5 fuel from the subsurface at the site.

CATLIN Engineers and Scientists (CATLIN) was authorized to perform a CAP at the Rapid Refueler A-B Tank area (Refer to Figures 1 and 2) by the LANTDIV NAVFACENCOM in accordance with the Order of Supplies Contract Number N62470-01-D-3009, Delivery Order Number 0096. The Delivery Order is in response to a Notice of Regulatory Requirements (NORR) from the NCDENR UST Section concerning a review of the site Comprehensive Site Assessment (CSA) dated August 26, 2003. In agreement with the subject site CSA, the NORR, dated September 22, 2003, requested additional assessment work be completed to determine the existence of soil contamination in the source area and additional assessment work be completed to further delineate the identified free product plume. In addition, the NORR requested submittal of this CAP.

**2. SOURCE OF AREA OF CONCERN**

On October 10, 2002 a JP-5 leak was detected at the low-point pipeline drain within the Rapid Refueler A-B Tanks fuel distribution pit system. Subsequently, approved MCAS subcontractor Shaw Environmental and Infrastructure (Shaw) exposed (excavated) and repaired the fuel transfer line. According to information provided to CATLIN by Shaw Project Manager Ronald B. Kenyon in a January 29, 2003 e-mail correspondence, the leak was detected in the concrete containment area for the A-B tanks. The concrete was removed, the line repaired and approximately 100 cubic yards of contaminated soils were excavated and properly disposed. During the line repairs free phase product accumulated in the resulting excavation and was removed with a vacuum truck. In addition a recovery well (RR-16) was installed adjacent to the location of the apparent fuel transfer line leak. (Recovery well RR-16 was later renamed RR-17 due to a nomenclature conflict with a previously installed well.) CATLIN prepared a CSA dated August 26, 2003, that showed the site surficial

aquifer remains impacted with free phase product (>0.02 feet) at and down gradient of the fuel transfer line leak.

### **3. CORRECTIVE ACTION PLAN CLEANUP GOALS**

Based on the findings of the CSA, the site meets the criteria for Industrial/Commercial land use and an Intermediate Risk Classification. As such the site conditions are subject to North Carolina regulatory compliance as follows:

#### **a. SITE SOILS**

For State regulatory compliance, site subsurface soil sample analyses results were compared to the lowest of the Industrial/Commercial or Soil-To-Groundwater MSCCs. As detailed in the CSA, analysis of all site soil samples revealed below quantitation limits or below the lowest MSCCs for all EPA Methods 8260B, 8270, MADEP EPH and VPH analytes.

#### **b. SITE GROUNDWATER**

For State regulatory compliance, site groundwater sample analyses results were compared to applicable GCLs. As detailed in the CSA, analysis of all site groundwater samples revealed below quantitation limits or below GCLs for all EPA Methods 602 + Xylenes and MTBE, 625, MADEP EPH and VPH analytes.

#### **c. SITE FREE PHASE PRODUCT**

The State regulatory requirement for accumulations of free product is measurable thickness greater than one-quarter inch. As detailed in the CSA, the maximum thickness of free product was measured in monitoring well RR-12 at 4.30 feet.

#### **d. SITE SURFACE WATER**

The State requires that the proposed cleanup will prevent a violation of the surface water standards and criteria contained in 15A NCAC 2B. As detailed in the CSA, a manmade detention pond and drainage ditch are located within the area of interest. Surface water samples were obtained from the detention pond on June 16, 2003 for laboratory analysis per EPA Methods 602 + Xylenes and MTBE, 625, MADEP EPH and VPH. Analysis of the detention pond samples revealed below quantitation limits for all EPA Methods 602 + Xylenes and MTBE, 625, MADEP EPH and VPH analytes.

The primary CAP goal is to contain and recover the site free phase product. Once the free phase product has been removed the site groundwater quality will be sampled for remnant fuel contaminants and assessed for Risk Reclassification. This CAP provides conceptual plans for active corrective measures in accordance with NCAC Title 15A,

Subchapter 2L, Section .0106(h) and the NCDENR, Division of Water Quality, UST Section 2001 Guidelines. The design presented herein is conceptual in nature and may require field adjustment and/or modifications during construction and implementation.

**D. SUMMARY OF REMEDIAL ACTIONS TO DATE**

As previously discussed, a leak occurred at a low-point drain in the A-B fuel tank valve pit. The pipeline leak was repaired, effectively removing the source. During the line repair approximately 100 cubic yards of contaminated soils were excavated and disposed. Free phase product that accumulated in the resulting excavation was removed with a vacuum truck. A recovery well (RR-17) was also installed adjacent to the fuel transfer line leak. Since the fuel transfer line repairs, free product is being recovered periodically through AFVR events.

**E. PREVIOUS SITE ENVIRONMENTAL INVESTIGATION REPORTS**

Several site environmental investigation reports, conducted in the vicinity of the subject site, have been prepared and submitted to the NCDENR-WIRO. Information from these reports has been useful in assessing the subject site. These reports have been summarized as follows:

<b>REPORT TITLE</b>	<b>DATE</b>	<b>PREPARED BY</b>
<i>Final Site Assessment Report, The Campbell Street JP-5 Pipeline, New River Marine Corps Air Station, Jacksonville, North Carolina</i>	August 12, 1992	Baker Environmental, Inc.
<i>Final Site Assessment Report, AS-527 and the South End of the Aircraft Direct Refueling Area, Marine Corps Air Station, New River, Jacksonville, North Carolina</i>	January 1993	Baker Environmental, Inc.
<i>Initial Site Assessment (Site Check) Report, UST Closure by Removal Three (3) JP-5 Fuel Tanks, one(1) Oil/Water Separator Tank, C-D Tank Farm Area, Aircraft Rapid Refueler Facility, Marine Corps Air Station, New River, Jacksonville, Onslow County, NC</i>	May 1994	Coastal Environmental Services Company
<i>Leaking Underground Storage Tank Comprehensive Site Assessment, Rapid Refueler, Marine Corps Base, Camp Lejeune, North Carolina</i>	November 1, 1994	Richard Catlin & Associates, Inc.
<i>Leaking Underground Storage Tank Comprehensive Site Assessment USTs AS-511-3, 548, 549 (Rapid Refueler Addendum Report), Marine Corps Air Station, New River, North Carolina</i>	June 5, 1996	Richard Catlin & Associates, Inc.
<i>Leaking Underground Storage Tank Corrective Action Plan, Rapid Refueler, Marine Corps Air Station, New River, North Carolina</i>	April 6, 1998	Richard Catlin & Associates, Inc.
<i>Preliminary Site Assessment, Rapid Refueler C-D Tank Area, Marine Corps Air Station, New River, North Carolina</i>	May 2, 2003	CATLIN Engineers and Scientists
<i>Comprehensive Site Assessment, Rapid Refueler A-B Tanks, Marine Corp Air Station, New River, North Carolina</i>	August 26, 2003	CATLIN Engineers and Scientists
<i>Phase II Limited Site Assessment, Rapid Refueler 2003 Release, Marine Corps Air Station, New River, North Carolina</i>	June 15, 2004	CATLIN Engineers and Scientists

## 1. UPDATED SITE ASSESSMENT DATA

In accordance with the Order of Supplies Contract Number N62470-01-D-3009, Delivery Order Number 0096 and the September 22, 2003 NCDENR NORR correspondence, CATLIN has conducted additional soil and free product assessment activities since submittal of the CSA. To augment the existing site monitoring well field, sixteen temporary monitoring wells (DPT-AB-01 through DPT-AB-16) were installed throughout the area of interest in order to further define the free product plume. Each temporary monitoring well was one inch in diameter and installed with the screen interval intersecting the site surficial groundwater. Additionally, soil samples were collected during installation of four of the temporary wells in order to determine the existence of soil contamination in the source area.

### a. SITE SOILS

As discussed previously, the CAP fieldwork included the collection of four soil samples for laboratory analyses. During the installation of temporary monitoring wells DPT-AB-01 through DPT-AB-04, borehole soil samples (collected at one foot intervals) from the vadose zone were placed in plastic bags and field screened with an OVA. At each borehole, the soil sample exhibiting the highest OVA reading was placed in laboratory glassware, labeled and stored at  $<4^{\circ}$  centigrade. Organic vapor recordings ranged from zero to 650 ppm. The highest reading was identified from the sample collected from three to five feet BLS in soil boring USTAS497-MW04. The results of the screening results assisted in selecting the soil samples for laboratory analysis. All site soil samples submitted to the laboratory for analysis during the CSA investigation exhibited no EPA Methods 8260B, 8270, MADEP EPH and VPH analytes in excess NCDENR STGW MSCCs.

Results of the latest as well as the historical field screening using the OVA are provided in Table 1. Tables 2 through 4 list the latest as well as historic site soil data regarding EPA Methods 8260B, 8270, MADEP EPH and VPH respectively. Figures 3 through 5 illustrate the latest DPT-AB-01 through DPT-AB-04 soil sample data and the historic site soil data regarding EPA Methods 8260B, 8270, MADEP EPH and VPH analyses, respectively. A copy of the laboratory report concerning the DPT-AB-01 through DPT-AB-04 soil samples has been provided in Appendix B.

### b. SITE GROUNDWATER

On May 20, 2004, selected site monitoring wells (RR-12, USTAS497-MW-05, and DPT-AB-01 through DPT-AB-16) were gauged for depth to water table and potential free phase product; however, no additional groundwater analysis was performed. As detailed in the CSA, analysis of all site groundwater samples revealed below quantitation limits or compliant concentrations for all EPA Methods 602 + Xylenes and MTBE, 625, MADEP EPH and VPH analytes.

The latest site groundwater table data has been listed in Table 5. Utilizing the May 20, 2004 surficial water table elevation data in the AutoCAD Land Development program generated the surficial groundwater table contours, shown on Figure 6. A review of Figure 6 indicates a predominant surficial groundwater migration direction to the northeast. The surficial groundwater table high at DPT-AB-15 may indicate groundwater recharge from the nearby detention pond. The migration direction is consistent with the CSA findings. Tables 6 through 8 illustrate the CSA site groundwater sample data regarding EPA Methods 602, 625, MADEP EPH and VPH analyses, respectively.

**c. SITE FREE PHASE PRODUCT**

The May 20, 2004 field data obtained from monitoring and temporary wells has provided additional insight into the extent of the site free phase product plume. Table 5 also lists the latest free phase product data. The estimated horizontal extent of free phase product plume, as of May 20, 2004, has been shown on Figure 7. Figure 8 is a fence diagram plan view and Figure 9 shows the estimated vertical extent of free phase product in relation to the site subsurface fence profile.

**F. PREVIOUS PERMITS/CERTIFICATIONS**

To date, all site fieldwork has not required a permit or certification.

**G. SITE RECEPTOR INFORMATION**

As defined by NCDENR in Section .0102 of T15A NCAC 2L, potential receptors include any human, plant, animal or structure with the potential to be adversely affected by the release or migration of contaminants. Guidance documents issued by the regulatory agency indicate that structures may include items such as subsurface utility lines and basements. Subsurface structures were identified through field observation and information provided by the Camp Lejeune Engineering Office. The location of these structures are summarized in the *Leaking Underground Storage Tank Corrective Action Plan, Rapid Refueler, Marine Corps Air Station, New River, North Carolina*, dated April 6, 1998 prepared by Richard Catlin & Associates, Inc. Additionally, the CSA for the A-B Tanks updated the previous receptor survey information. Receptors noted during previous site reconnaissance can be summarized as follows:

*Non-potable Water Wells within 250 feet of source area*

- No non-potable water wells are located within 250 feet of the source area.

*Potable Water Wells within 1,000 feet of source area*

- No potable water wells are located within 1,000 feet of the source area.

Surface Water within 500 feet of source area

- ±40 feet east – Man made Detention Pond,
- ± 110 feet northeast – Man made Drainage Ditch.

Buildings within 250 feet of source area

- ±50 feet west – Rapid Refueler AS-498 building – slab on grade construction.

Underground Utilities within 250 feet of the source area

- A six-inch diameter JP-5 fuel line runs from the fuel farm to the refueling area. The line is reportedly buried four to five feet below grade.
- Electric - According to a representative at the site, electrical conduits are installed at a depth less than three feet below grade. Due to the complexity and high security nature of the electrical system at the site, electrical conduits are not reflected on the utilities map. Due to their typical shallow depth of installation, these utilities are not expected to be receptors.
- Water - An eight-inch diameter water main lies parallel to the abandoned fuel distribution line of the original refueling system. An extension of this line services the refueling stations. A six-inch diameter main connects a fire hydrant in front of the active Rapid Refueler building to the eight inch main. Water to the Rapid Refueler building itself is supplied by a three-inch diameter service from the six-inch main. These lines are typically installed approximately three feet below grade and are not expected to intersect the water table.
- Miscellaneous-Underground communications and telephone lines are located on-site and are generally installed at a depth of less than two feet BLS; however, their exact locations are not known. Secure communication lines are also located on site, but their exact locations and installation depths are not known. Based on expected burial depths, these lines are not expected to be receptors.

Wellhead Protection Area

As of July 21, 2004, a wellhead protection program, as defined in 42 USC 300h-7(e), has not been approved by the State. However, in accordance with the same guidelines a Wellhead Protection Plan 2002 was prepared by AH Environmental Consultants. MCB Lejeune has identified proposed wellhead protection areas within the air station; however, the subject site is not located within a proposed wellhead protection area.

Coastal Plain Physiographic Province

The subject site lies within the Coastal Plain Physiographic Province, as identified in the Geologic Map of North Carolina (North Carolina Department of Natural Resources and Community Development 1985). Contamination source areas located within the Coastal Plain Physiographic Province are a concern due to the potential for migration to aquifers, which are or could be used as a potable water source. However, groundwater at site deeper (Type III) monitoring well (MW-06) was sampled on June 10, 2003. Laboratory analyses revealed either compliant (per applicable GCLs or IGWQS) or below quantitation limit concentrations for EPA Methods 602 + Xylenes and MTBE, 625, MADEP EPH and VPH

analytes. In addition there are potable water sources other than the fresh water aquifers below the subject site.

## **H. PROPOSED CORRECTIVE ACTION PLAN**

### **1. CORRECTIVE ACTION PLAN OBJECTIVES**

The objective of this CAP is to propose methods to contain and recover free phase product from the Rapid Refueler A – B Tanks area to meet the site cleanup goal of less than one-quarter inch of measurable free product. Groundwater contamination is presumed to exist at this site due to the presence of free product and is delineated within the monitoring well network at the site. Following removal of free product from the site, an evaluation of site dissolved phase groundwater will be necessary to determine if remedial activities are required.

Based on the laboratory results from soil samples taken at the site, no vadose zone soil contamination has been identified and therefore no remediation of site soils is proposed.

### **2. EVALUATION OF CORRECTIVE ACTION PLAN ALTERNATIVES**

Numerous technologies that address the remediation of free phase product from the subsurface are available. Specific remedial alternatives that were reviewed include; excavation, Aggressive Fluid Vapor Recovery (AFVR), Mobile Multi-Phase Extraction (MMPE), pump and treat utilizing a monitoring/recovery well network, and pump and treat using recovery trenches. Some of these technologies have demonstrated an acceptable level of success when implemented in the field, while others appear to have been ineffective. In certain instances, implementation of any one available remediation technology by itself will not suffice. Therefore, a combination of treatment technologies is at times more effective. Site specific conditions, nature and extent of contamination, together with an analysis of a particular remediation technology's record of success with similar sites, allows the screening of technically feasible alternative technologies. The "best" remedial strategy is the one that can fulfill the established remediation objectives at the least cost.

Due to the high clay content of the underlying soils, the shallow depth to groundwater, and the estimated areal extent of the free phase product, a remediation system consisting of a series of infiltration trenches has been selected as the remedial strategy for the Rapid Refueler A-B site. It is anticipated that the remedial system will consist of four infiltration trenches, installed to roughly two feet below the seasonal low depth to groundwater (approximately nine feet BLS), extending radially from a common extraction well. Slotted pipe will be installed at the bottom of each trench and the trench backfilled with coarse gravel to roughly five feet BLS. The slotted pipes will be connected to the extraction well and free product and groundwater will be pumped from the extraction well. The recovery trench system will be designed and constructed in a way to allow recovery of fluids by either

MMPE, or a traditional pump and treat system. MMPE technology is proposed initially at the site, for the first year, with pump and treat as a back-up should MMPE not provide satisfactory product recovery.

Recovery trenches have been selected rather than vertical recovery wells to help ensure that any areas of increased permeability through which the free phase product may migrate will be intersected. Since the subsurface sediments consist primarily of interbedded layers of sands, silts and clays, it appears that recovery trenches are better suited to address the zones of increased permeability.

### 3. RECOMMENDED CORRECTIVE ACTION PLAN

#### Free Phase Product Collection System

It is recommended that an eight-inch diameter recovery sump well be installed in the vicinity of the center of the free phase product plume. From this sump well, four trenches are proposed extending from the sump well to the free phase product plume boundary along the plume axis as shown on Figure 10.

Each recovery trench will be excavated to depth of approximately nine feet below grade. As a primary conduit, a four-inch diameter slotted, polyethylene pipe will be placed at the bottom of the trench. The trench will be backfilled, to within five feet of the ground surface, with 57 m washed granite stone (or approved equivalent). To prevent sediment infiltration within the backfilled stone, a layer of non-woven geotextile will be placed on top of the washed stone. The remainder of the trench will be back filled to land surface with the screened excavated material (see Figure 11). The disturbed land surface will be seeded with vegetation cover compatible with existing site vegetation.

#### Free Phase Product Recovery System

MMPE events are initially recommended on a monthly basis for one year for recovery of free product from the recovery trench system. A suction line installed within the recovery sump will be routed to a vacuum truck that will extract groundwater, free product and vapors from the trench system. The sump will be sealed around the suction line to allow a vacuum to develop within the trench system. This will lower the water table within the influence of the trench system inducing free product and contaminated groundwater into the trenches to be collected in the recovery sump. The combination of groundwater table drawdown and the induced vacuum should enhance the free product recovery.

The recovered liquids (free product and groundwater) will be stored on site in a tanker truck and periodically transported and disposed in an on-base groundwater treatment system. The MMPE events will be scheduled to last 24 hours per day for five consecutive days.

As a measure of effectiveness, it is recommended that predictive modeling be performed as part of each MMPE event to help gauge the MMPE success and to propose modifications to increase the effectiveness of the recovery efforts. Modeling programs are available to help predict recovery of free product utilizing various recovery scenarios, including vacuum enhanced recovery. Comparison of actual recovery results with the predictive model results will help determine the MMPE effectiveness.

#### **4. MONITORING PLAN**

##### **a. Goals of Monitoring Plan**

The primary goals of the implementation/monitoring plan are to track free product removal progress and to determine the need for additional MMPE events. Additionally, groundwater gauging and sampling of the perimeter monitoring wells is proposed to track plume migration.

##### **b. MMPE Monitoring Activities**

Once the recovery trench system has been installed, MMPE events are recommended on a monthly basis for one year. Each MMPE event is scheduled for a duration of approximately five consecutive days. Monitoring activities proposed as part of each MMPE Event are as follows:

- Prior to each MMPE event, the site monitoring wells should be gauged for depth to groundwater and free product thickness. Monitoring wells USTAS497-MW01 through USTAS497-MW06, RR-11, RR-12 and RR-17 are proposed for gauging.
- During the MMPE event, the following should be gauged and recorded on a daily basis:
  - Vacuum applied to the extraction sump
  - Depth to groundwater and free product thickness in selected monitoring wells
  - Exhaust emissions
  - Amount of fluid removed and percentage of free product
  - Disposal of fluids in on-base treatment system (on a per event basis)
- At the conclusion of each MMPE event, site monitoring wells should be gauged for depth to groundwater and product thickness. Additionally, these wells should be gauged weekly for the following two weeks to check for re-accumulation of product. Based on these gauging events and an evaluation of the effectiveness of the previous MMPE event, the next MMPE event will be authorized.

The MMPE events are proposed on a monthly basis for one year or until free product is eliminated or if MMPE proves ineffective. At this time, it is recommended that the remediation method be re-evaluated.

**c. Groundwater Monitoring Activities**

On a semi-annual basis, it is recommended that site monitoring wells not containing free product be gauged and sampled to track the dissolved phase groundwater contamination. Groundwater samples should be analyzed per EPA Method 602 plus xylenes, 625 plus TICS and MADEP EPH/VPH.

**d. Reporting**

Free Product Recovery Reports are proposed to document MMPE events quarterly but will be submitted on an annual basis as part of the Annual Monitoring Report. The reports shall be prepared in accordance with Appendix B of the 2001 Guidelines for submittal to the NCDENR WiRO to include the following:

- Summary of the latest and historic free phase product and/or groundwater recovery data.
- Summary of the latest and historic groundwater level and free product thickness data.
- Updated site maps illustrating the latest groundwater table and free product data.
- Disposition of the recovered product and/or groundwater.

Annually, a Monitoring Report should be prepared in accordance with Appendix B, Section 11 of the 2001 Guidelines for submittal to the NCDENR WiRO to include the following:

- A brief summary to include a history of site and any additional recovery or assessment activities, which have occurred during the previous monitoring period.
- Evaluate the site groundwater EPA Methods 602 plus xylenes and MTBE, 625, MADEP EPH/VPH analyses data to applicable GCLs or IGWQS.
- Discussion of any remnant surficial groundwater contamination in relation to site receptors.
- The report will include site maps depicting the latest distribution of dissolved volatile organic compounds contaminant plume within the surficial groundwater and surficial water table contours.
- Recommendation section for optimization of site monitoring activities or additional remediation measures.

## **I. LIMITATIONS**

The soil and groundwater samples analyzed as part of this investigation only provide isolated data points and may not represent conditions at every location in the project area. Analyses and conclusions of this report, being based on interpolation between data points at the project area, may not be completely representative of all site conditions. Conclusions and recommendations of this investigation and report are based on the best available data in an effort to comply with current regulatory requirements.

## **J. REFERENCES**

(In addition to the references listed in Section E.)

AH Environmental Consultants, 2002, *Wellhead Protection Plan – 2002 Update*. August 2002.

North Carolina Department of Environment and Natural Resources, *Guidelines for Assessment and Corrective Action, North Carolina Underground Storage Tank Section* (Effective July 1, 2001).

## **TABLES**

**TABLE 1**  
**SUMMARY OF SOIL HEADSPACE SCREENING**

**Rapid Refueler A-B Tanks**

**New River Air Station, NC**

<b>BORING I.D.</b>	<b>Sample Depth (ft.)</b>	<b>OVA READING (ppm)</b>	<b>Sample Selected for Laboratory Analysis</b>
DPT-AB-01	0 - 2	1.7	
	2 - 4	1.8	
	4 - 6	4.9	DPT-AB -01 (4-6')
	6 - 8	2.7	
	8 - 10	39.2	
DPT-AB-02	10 - 12	143.7	
	0 - 2	.9	
	2 - 4	9.6	
	4 - 6	88.4	DPT-AB -02 (4-6')
	6 - 8	116.1	
DPT-AB-03	8 - 10	10.4	
	10 - 12	153.8	
	0 - 2	4.8	
	2 - 4	13.4	
	4 - 6	751	DPT-AB -03 (4-6')
DPT-AB-04	6 - 8	791	
	8 - 10	77.9	
	10 - 12	17.9	
	0 - 2	2.4	
	2 - 4	2.3	
DPT-AB-05	4 - 6	65.3	DPT-AB -04 (4-6')
	6 - 8	71.6	
	8 - 10	6.7	
	10 - 12	1.8	
	0 - 2	9.1	
DPT-AB-06	2 - 4	259.3	
	4 - 6	104.9	
	6 - 8	116.8	
	8 - 10	29.6	
	10 - 12	6.7	
DPT-AB-07	0 - 2	1.1	
	2 - 4	1.6	
	4 - 6	.7	
	6 - 8	2.5	
	8 - 10	7.9	
DPT-AB-07	10 - 12	1.2	
	0 - 2	3.2	

**TABLE 1**  
**SUMMARY OF SOIL HEADSPACE SCREENING**

**Rapid Refueler A-B Tanks**

**New River Air Station, NC**

<b>BORING I.D.</b>	<b>Sample Depth (ft.)</b>	<b>OVA READING (ppm)</b>	<b>Sample Selected for Laboratory Analysis</b>
DPT-AB-07	2 - 4	6.2	
	4 - 6	4.0	
	6 - 8	2.5	
	8 - 10	7.1	
	10 - 12	8.8	
DPT-AB-08	0 - 2	27.8	
	2 - 4	6.3	
	4 - 6	1.6	
	6 - 8	1.4	
	8 - 10	12.8	
DPT-AB-09	10 - 12	1.1	
	0 - 2	5.4	
	2 - 4	304.1	
	4 - 6	199.5	
	6 - 8	715.2	
DPT-AB-10	8 - 10	83.2	
	10 - 12	11.7	
	0 - 2	2.1	
	2 - 4	2.1	
	4 - 6	1238	
DPT-AB-11	6 - 8	3626	
	8 - 10	807.6	
	10 - 12	125.9	
	0 - 2	3.4	
	2 - 4	40.1	
DPT-AB-12	4 - 6	411.2	
	6 - 8	1364	
	8 - 10	1192	
	10 - 12	2123	
	0 - 2	8.2	
DPT-AB-13	2 - 4	881.6	
	4 - 6	417.3	
	6 - 8	1466	
	8 - 10	201.7	
	10 - 12	54.7	
DPT-AB-13	0 - 2	2.9	
	2 - 4	1785	

**TABLE 1**  
**SUMMARY OF SOIL HEADSPACE SCREENING**

**Rapid Refueler A-B Tanks**

**New River Air Station, NC**

<b>BORING I.D.</b>	<b>Sample Depth (ft.)</b>	<b>OVA READING (ppm)</b>	<b>Sample Selected for Laboratory Analysis</b>
DPT-AB-13	4 - 6	907.8	
	6 - 8	187.2	
	8 - 10	42.9	
	10 - 12	3.0	
DPT-AB-14	0 - 2	3.4	
	2 - 4	3.5	
	4 - 6	2.8	
	6 - 8	3.7	
DPT-AB-15	0 - 2	5.8	
	2 - 4	12.6	
	4 - 6	70.3	
	6 - 8	16.0	
DPT-AB-16	0 - 2	1.6	
	2 - 4	5.1	
	4 - 6	264	
	6 - 8	281.8	
UST AS497 -MW01	3 - 5	310	UST AS497- MW01 (3-5')
	8 - 10	120	
	11 - 13	7.2	
UST AS497 -MW02	0 - 2	4.7	
	3 - 5	5.2	UST AS497- MW02 (3-5')
	8 - 10	5.4	
UST AS497 -MW03	12 - 14	11	
	0 - 2		
	3 - 5	2.0	UST AS497- MW03 (3-5')
	8 - 10	8.4	
UST AS497 -MW04	11 - 13	7.1	
	3 - 5	650	UST AS497- MW04 (3-5')
	8 - 10	160	
UST AS497 -MW05	12 - 14	12.4	
	0 - 2	18	
	3 - 5	0	UST AS497- MW05 (3-5')
	8 - 10	26	
UST AS497 -MW06	13 - 15	20	
	0 - 2	NM	UST AS497- MW06 (0-2')
	3 - 5	NM	
	8 - 10	NM	

**TABLE 1**  
**SUMMARY OF SOIL HEADSPACE SCREENING**

**Rapid Refueler A-B Tanks**

**New River Air Station, NC**

<b>BORING I.D.</b>	<b>Sample Depth (ft.)</b>	<b>OVA READING (ppm)</b>	<b>Sample Selected for Laboratory Analysis</b>
UST AS497 -MW06	13 - 15	240	
	18 - 20	15	
	23 - 25	19	
	28 - 30	7.4	
	33 - 35	3.8	
	38 - 40	4.2	
	43 - 45	0	
	48 - 50	0	

**TABLE 2 SUMMARY OF SOIL LABORATORY RESULTS**

Date: February 2004

Incident Number and Name: 32004 - Rapid Refueler Tanks A-B

Facility ID#: N/A

**Analytical Method: EPA Method 8260B/5035**

Sample ID	Contaminant of Concern →		Acetone	n-Butylbenzene	sec-Butylbenzene	Ethylbenzene	Isopropylbenzene	4-Isopropyltoluene	Naphthalene	n-Propyl benzene	1,2,4-Trimethylbenzene
	Date Collected	Sample Depth (ft. BGS)									
<b>Residential MSCC (mg/kg)</b>			1,564	156	156	1,560	1,564	NE	63	156	782
<b>Industrial/Commercial MSCC (mg/kg)</b>			40,880	4,088	4,088	40,000	40,880	NE	1,635	4,088	20,440
<b>Soil to Groundwater MSCC (mg/kg)</b>			3	4	3	0.24	2	NE	0.58	2	8
USTAS497-MW01 (3-5')	6/9/2003	3-5	<0.051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051
USTAS497-MW02 (3-5')	6/9/2003	3-5	<0.055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055
USTAS497-MW03 (3-5')	6/9/2003	3-5	<0.047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047
USTAS497-MW04 (3-5')	6/9/2003	3-5	<0.048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048
USTAS497-MW05 (3-5')	6/9/2003	3-5	<0.048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048
USTAS497-MW06 (0-2')	6/16/2003	0-2	<0.05	<0.005	0.013	<0.005	0.015	<0.005	<0.005	0.021	0.085
USTAS497-MW06 (0-2') Dup.	6/16/2003	0-2	0.066	0.0053	0.013	<0.0049	0.013	<0.0049	<0.0049	0.021	0.094
DPT-AB-01 (4-6')	2/13/2004	4-6	0.056	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047
DPT-AB-01 (4-6') Dup.	2/13/2004	4-6	0.0806	<0.00497	<0.00497	<0.00497	<0.00497	<0.00497	<0.00497	<0.00497	<0.00497
DPT-AB-02 (4-6')	2/13/2004	4-6	<1.16	0.134	0.0559	<0.0462	<0.0462	<0.0462	0.3	0.0573	0.235
DPT-AB-03 (4-6')	2/13/2004	4-6	<0.0532	0.0112	0.0133	0.00934	0.0132	0.00704	0.0629	0.0199	0.0585
DPT-AB-04 (4-6')	2/13/2004	4-6	<0.0555	<0.00555	<0.00555	<0.00555	<0.00555	<0.00555	<0.00555	<0.00555	<0.00555

All results in mg/kg.

NE = None Established

ft. BGS = feet below ground surface

**TABLE 2 SUMMARY OF SOIL LABORATORY RESULTS**

Date: February 2004

Incident Number and Name: 32004 - Rapid Refueler Tanks A-B

Facility ID#: N/A

**Analytical Method: EPA Method 8260B/5035**

Sample ID	Contaminant of Concern →		1,3,5-Trimethylbenzene	All Other Analytes
	Date Collected	Sample Depth (ft. BGS)		
Residential MSCC (mg/kg)			782	Varies
Industrial/Commercial MSCC (mg/kg)			20,440	Varies
Soil to Groundwater MSCC (mg/kg)			7	Varies
USTAS497-MW01 (3-5')	6/9/2003	3-5	<0.0051	BQL
USTAS497-MW02 (3-5')	6/9/2003	3-5	<0.0055	BQL
USTAS497-MW03 (3-5')	6/9/2003	3-5	<0.0047	BQL
USTAS497-MW04 (3-5')	6/9/2003	3-5	<0.0048	BQL
USTAS497-MW05 (3-5')	6/9/2003	3-5	<0.0048	BQL
USTAS497-MW06 (0-2')	6/16/2003	0-2	0.024	BQL
USTAS497-MW06 (0-2') Dup.	6/16/2003	0-2	0.025	BQL
DPT-AB-01 (4-6')	2/13/2004	4-6	<0.0047	BQL
DPT-AB-01 (4-6') Dup.	2/13/2004	4-6	<0.00497	BQL
DPT-AB-02 (4-6')	2/13/2004	4-6	0.0559	BQL
DPT-AB-03 (4-6')	2/13/2004	4-6	0.015	BQL
DPT-AB-04 (4-6')	2/13/2004	4-6	<0.00555	BQL

All results in mg/kg.

NE = None Established

ft. BGS = feet below ground surface

**TABLE 3 SUMMARY OF SOIL LABORATORY RESULTS**

Date: February 2004

Incident Number and Name: 32004 - Rapid Refueler Tanks A-B

Facility ID#: N/A

**Analytical Method: EPA Method 8270**

Sample ID	Contaminant of Concern →		2-Methylnaphthalene	All Other Analytes
	Date Collected	Sample Depth (ft. BGS)		
Residential MSCC (mg/kg)			63	Varies
Industrial/Commercial MSCC (mg/kg)			1,635	Varies
Soil to Groundwater MSCC (mg/kg)			3	Varies
USTAS497-MW01 (3-5')	6/9/2003	3-5	<0.37	BQL
USTAS497-MW02 (3-5')	6/9/2003	3-5	<0.4	BQL
USTAS497-MW03 (3-5')	6/9/2003	3-5	<0.34	BQL
USTAS497-MW04 (3-5')	6/9/2003	3-5	<0.37	BQL
USTAS497-MW05 (3-5')	6/9/2003	3-5	<0.34	BQL
USTAS497-MW06 (0-2')	6/16/2003	0-2	<0.36	BQL
DPT-AB-01 (4-6')	2/13/2004	4-6	<0.368	BQL
DPT-AB-02 (4-6')	2/13/2004	4-6	0.531	BQL
DPT-AB-03 (4-6')	2/13/2004	4-6	<0.451	BQL
DPT-AB-04 (4-6')	2/13/2004	4-6	<0.398	BQL

All results in mg/kg.

ft. BGS = feet below ground surface

**TABLE 4 SUMMARY OF SOIL LABORATORY RESULTS**

Date: February 2004

Incident Number and Name: 32004 - Rapid Refueler Tanks A-B

Facility ID#: N/A

**Analytical Method: MADEP EPH/VPH AS COMPARED TO NCDENR MSCCs**

Sample ID	Contaminant of Concern →		C5-C8 Aliphatics	C9-C18 Aliphatics	C19-C36 Aliphatics	C9-C22 Aromatics
	Date Collected	Sample Depth (ft. BGS)				
Residential MSCC (mg/kg)			939	9,386	93,860	469
Industrial/Commercial MSCC (mg/kg)			24,528	245,280	#	12,264
Soil to Groundwater MSCC (mg/kg)			72	3,255	##	34
USTAS497-MW01 (3-5')	6/9/2003	3-5	<10	<20	<10	<20
USTAS497-MW02 (3-5')	6/9/2003	3-5	<10	<20	<10	<20
USTAS497-MW03 (3-5')	6/9/2003	3-5	<10	<20	<10	<20
USTAS497-MW04 (3-5')	6/9/2003	3-5	<10	<20	<10	<20
USTAS497-MW05 (3-5')	6/9/2003	3-5	<10	<20	<10	<20
USTAS497-MW06 (0-2')	6/16/2003	0-2	<10	<20	<10	<20
DPT-AB-01 (4-6')	2/13/2004	4-6	<10	<20	<10	<20
DPT-AB-02 (4-6')	2/13/2004	4-6	<10	<109	<10	<20
DPT-AB-03 (4-6')	2/13/2004	4-6	<10	<20	<10	<20
DPT-AB-04 (4-6')	2/13/2004	4-6	<10	<20	<10	<20

# Health based level >100%

## Considered immobile

All results in mg/kg.

# TABLE 5

## MONITORING WELL CONSTRUCTION AND WATER LEVEL GAUGING DATA

### Rapid Refueler A-B Tanks

### New River Air Station, NC

WELL IDENTIFICATION	DATE INSTALLED	DATE WATER LEVEL MEASURED	WELL CASING DEPTH (ft. BLS)	SCREEN INTERVAL (ft. BLS)	BOTTOM OF WELL (ft. BLS)	TOP OF CASING ELEV.* (ft.)	DEPTH TO WATER From Top of Casing (ft.)	FREE PRODUCT THICKNESS ** (ft.)	GROUND WATER ELEV. *(ft.)	OUTER CASING DEPTH (ft. BLS) Type III	THIRD CASING DEPTH (ft. BLS) Triple Cased Type III
DPT-AB-01	02/13/04	05/20/04	3.8	3.8 - 13.8	13.8	29.22	8.57	NMT	20.65	-	-
DPT-AB-02	02/13/04	05/20/04	3.9	3.9 - 13.9	13.9	27.23	7.47	NMT	19.76	-	-
DPT-AB-03	02/13/04	05/20/04	3.4	3.4 - 13.4	13.4	29.21	12.08	2.93	19.53	-	-
DPT-AB-04	02/13/04	05/20/04	2.6	2.6 - 12.6	12.6	31.78	10.02	NMT	21.76	-	-
DPT-AB-05	02/13/04	05/20/04	2.0	2.0 - 12.0	12.0	28.35	11.61	2.91	19.13	-	-
DPT-AB-06	02/13/04	05/20/04	2.2	2.2 - 12.2	12.2	27.08	8.59	NMT	18.49	-	-
DPT-AB-07	02/13/04	05/20/04	2.2	2.2 - 12.2	12.2	28.10	9.89	NMT	18.21	-	-
DPT-AB-08	02/13/04	05/20/04	2.3	2.3 - 12.3	12.3	28.29	9.54	NMT	18.75	-	-
DPT-AB-09	02/13/04	05/20/04	2.1	2.1 - 12.1	12.1	29.45	10.03	NMT	19.42	-	-
DPT-AB-10	03/04/04	05/20/04	2.0	2.0 - 12.0	12.0	27.73	9.16	NMT	18.57	-	-
DPT-AB-11	03/04/04	05/20/04	2.7	2.7 - 12.7	12.7	29.72	13.89	4.94	19.88	-	-
DPT-AB-12	03/04/04	05/20/04	1.8	1.8 - 11.8	11.8	30.69	11.22	1.64	20.81	-	-
DPT-AB-13	03/04/04	05/20/04	1.7	1.7 - 11.7	11.7	29.42	10.19	NMT	19.23	-	-
DPT-AB-14	03/04/04	05/20/04	2.9	2.9 - 7.9	7.9	27.34	8.75	NMT	18.59	-	-
DPT-AB-15	03/04/04	05/20/04	3.1	3.1 - 8.1	8.1	25.72	7.48	NMT	18.24	-	-
DPT-AB-16	03/04/04	05/20/04	3.5	3.5 - 8.5	8.5	27.11	9.25	1.42	19.02	-	-
RR-11	05/26/94	03/12/04	4.5	4.5 - 14.5	15.0	21.73	6.29	NMT	15.44	-	-
RR-12	05/26/94	05/20/04	3.5	3.5 - 13.5	14.0	21.73	9.76	4.90	15.99	-	-
RR-14	06/02/94	03/12/04	44.5	44.5 - 49.5	50.0	21.82	5.74	NMT	16.08	39.5	-
RR-15	06/07/03	07/11/03	3.5	3.5 - 32.5	33.0	20.80	6.68	NMT	14.12	-	-

\* Reference Point for Elevation Measurements (TOC of RR-10), Assumed Elevation: (22.48ft.)

\*\* If free product is present in a well, ground water elevation was calculated by: [Top of Casing Elevation - Depth to Water] + [Free Product Thickness x (0.82 (for JP-5 fuel))]

ft. BLS = feet below land surface

NMT = No Measurable Thickness

ND = No Data

**TABLE 5**  
**MONITORING WELL CONSTRUCTION AND WATER LEVEL GAUGING DATA**

**Rapid Refueler A-B Tanks**

**New River Air Station, NC**

WELL IDENTIFICATION	DATE INSTALLED	DATE WATER LEVEL MEASURED	WELL CASING DEPTH (ft. BLS)	SCREEN INTERVAL (ft. BLS)	BOTTOM OF WELL (ft. BLS)	TOP OF CASING ELEV.* (ft.)	DEPTH TO WATER From Top of Casing (ft.)	FREE PRODUCT THICKNESS ** (ft.)	GROUND WATER ELEV. *(ft.)	OUTER CASING DEPTH (ft. BLS) Type III	THIRD CASING DEPTH (ft. BLS) Triple Cased Type III
RR-17		07/11/03	4.5	4.5 - 14.5	15.0	21.79	3.00	NMT	18.79	-	-
UST AS497 -MW01	06/09/03	02/24/04	2.5	2.5 - 12.5	13.0	23.46	5.26	NMT	18.20	-	-
UST AS497 -MW02	06/09/03	02/24/04	3.5	3.5 - 13.5	14.0	21.23	6.86	NMT	14.37	-	-
UST AS497 -MW03	06/09/03	02/24/04	2.5	2.5 - 12.5	13.0	23.60	5.54	NMT	18.06	-	-
UST AS497 -MW04	06/09/03	02/24/04	3.5	3.5 - 13.5	14.0	23.23	5.68	NMT	17.55	-	-
UST AS497 -MW05	06/09/03	05/20/04	4.0	4.0 - 14.0	14.0	22.11	9.09	2.27	14.88	-	-
UST AS497 -MW06	06/13/03	07/11/03	44.5	44.5 - 49.5	50.0	23.47	6.80	NMT	16.67	39.0	-

\* Reference Point for Elevation Measurements (TOC of RR-10), Assumed Elevation: (22.48ft.)

\*\* If free product is present in a well, ground water elevation was calculated by: [Top of Casing Elevation - Depth to Water] + [Free Product Thickness x(0.82 (for JP-5 fuel))]

ft. BLS =feet below land surface

NMT = No Measurable Thickness

ND = No Data

**TABLE 6 SUMMARY OF GROUNDWATER LABORATORY RESULTS**

Date: February 2004

Incident Number and Name: 32004 - Rapid Refueler Tanks A-B

Facility ID#: N/A

**Analytical Method: EPA Method 602**

Well ID	Contaminant of Concern →		Benzene	Diisopropyl ether	Ethylbenzene	Methyl-tert-butyl ether	Toluene	Total Xylenes
	Sample ID	Date Collected						
<b>GCL (mg/L)</b> <b>2L GWQS (mg/L)</b>			5,000 1	70,000 70	29,000 29	200,000 200	257,500 1,000	87,500 530
USTAS497-MW01	USTAS497-MW01	6/10/2003	<1	<1	<1	<2	<1	<2
USTAS497-MW02	USTAS497-MW02	6/10/2003	<1	<1	<1	<2	<1	<2
USTAS497-MW03	USTAS497-MW03	6/10/2003	<1	<1	<1	<2	<1	<2
USTAS497-MW04	USTAS497-MW04	6/10/2003	<1	<1	<1	<2	<1	<2
USTAS497-MW05	USTAS497-MW05	6/10/2003	<1	<1	8.6	4.5	<1	26
USTAS497-MW06	USTAS497-MW06	6/16/2003	<1	<1	2.9	<2	<1	7.3
USTAS497-MW06 Dup.	USTAS497-MW06 Dup.	6/16/2003	<1	<1	2.7	<2	<1	7
Pond	Pond	6/16/2003	<1	<1	<1	<2	<1	<2
RR-11	RR-11	6/10/2003	<1	<1	<1	<2	<1	<2
RR-14	RR-14	6/10/2003	<1	<1	<1	<2	<1	<2

All results in µg/L

**TABLE 7 SUMMARY OF GROUNDWATER LABORATORY RESULTS**

Date: February 2004

Incident Number and Name: 32004 - Rapid Refueler Tanks A-B

Facility ID#: N/A

**Analytical Method: EPA Method 625**

Well ID	Contaminant of Concern →		Naphthalene	All Other Analytes
	Sample ID	Date Collected		
GCL (mg/L) 2L GWQS (mg/L)			15,500 21	Varies Varies Varies
USTAS497-MW01	USTAS497-MW01	6/10/2003	<10	BQL
USTAS497-MW02	USTAS497-MW02	6/10/2003	<10	BQL
USTAS497-MW03	USTAS497-MW03	6/10/2003	<10	BQL
USTAS497-MW04	USTAS497-MW04	6/10/2003	<10	BQL
USTAS497-MW05	USTAS497-MW05	6/10/2003	<b>31</b>	BQL
USTAS497-MW06	USTAS497-MW06	6/16/2003	12	BQL
Pond	Pond	6/16/2003	<10	BQL
RR-11	RR-11	6/10/2003	<10	BQL
RR-14	RR-14	6/10/2003	<10	BQL

All results in µg/L.

Bold result indicates concentration greater than the 2L GWQS.

**TABLE 8 SUMMARY OF GROUNDWATER LABORATORY RESULTS**

Date: February 2004

Incident Number and Name: 32004 - Rapid Refueler Tanks A-B

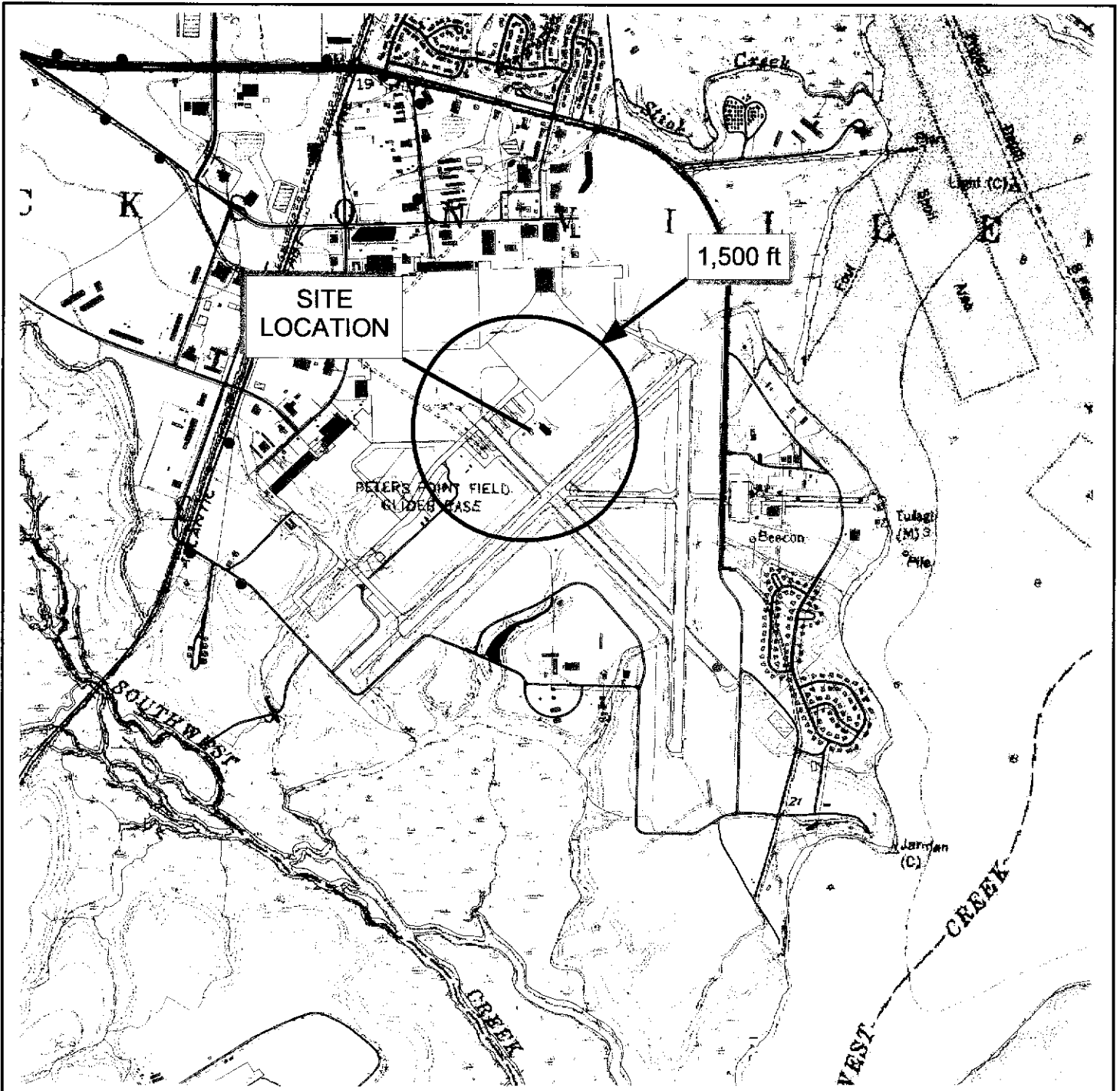
Facility ID#: N/A

**Analytical Method: MADEP EPH/VPH AS COMPARED TO NCDENR IGWQS**

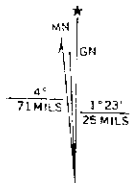
Well ID	Contaminant of Concern →		C5-C8 Aliphatics	C9-C18 Aliphatics	C19-C36 Aliphatics	C9-C22 Aromatics
	Sample ID	Date Collected				
IGWQS(mg/L)			420	4,200	42,000	210
USTAS497-MW01	USTAS497-MW01	6/10/2003	<100	<200	<100	<200
USTAS497-MW02	USTAS497-MW02	6/10/2003	<100	<200	<100	<200
USTAS497-MW03	USTAS497-MW03	6/10/2003	<100	<200	<100	<200
USTAS497-MW04	USTAS497-MW04	6/10/2003	<100	<200	<100	<200
USTAS497-MW05	USTAS497-MW05	6/10/2003	<100	<400	<100	<200
USTAS497-MW06	USTAS497-MW06	6/16/2003	<100	<330	<100	<200
Pond	Pond	6/16/2003	<100	<200	<100	<200
RR-11	RR-11	6/10/2003	<100	<200	<100	<200
RR-14	RR-14	6/10/2003	<100	<200	<100	<200

All results in µg/L.

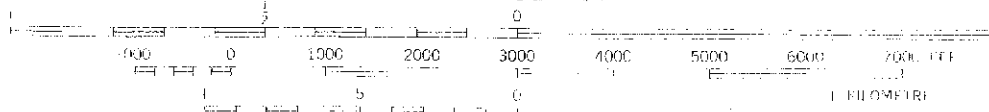
## FIGURES



SCALE 1:24 000



11M GRID AND 1952 MAGNETIC NORTH  
DECLINATION AT CENTER OF SHEET



QUADRANGLE LOCATION

JACKSONVILLE SOUTH, N. C.

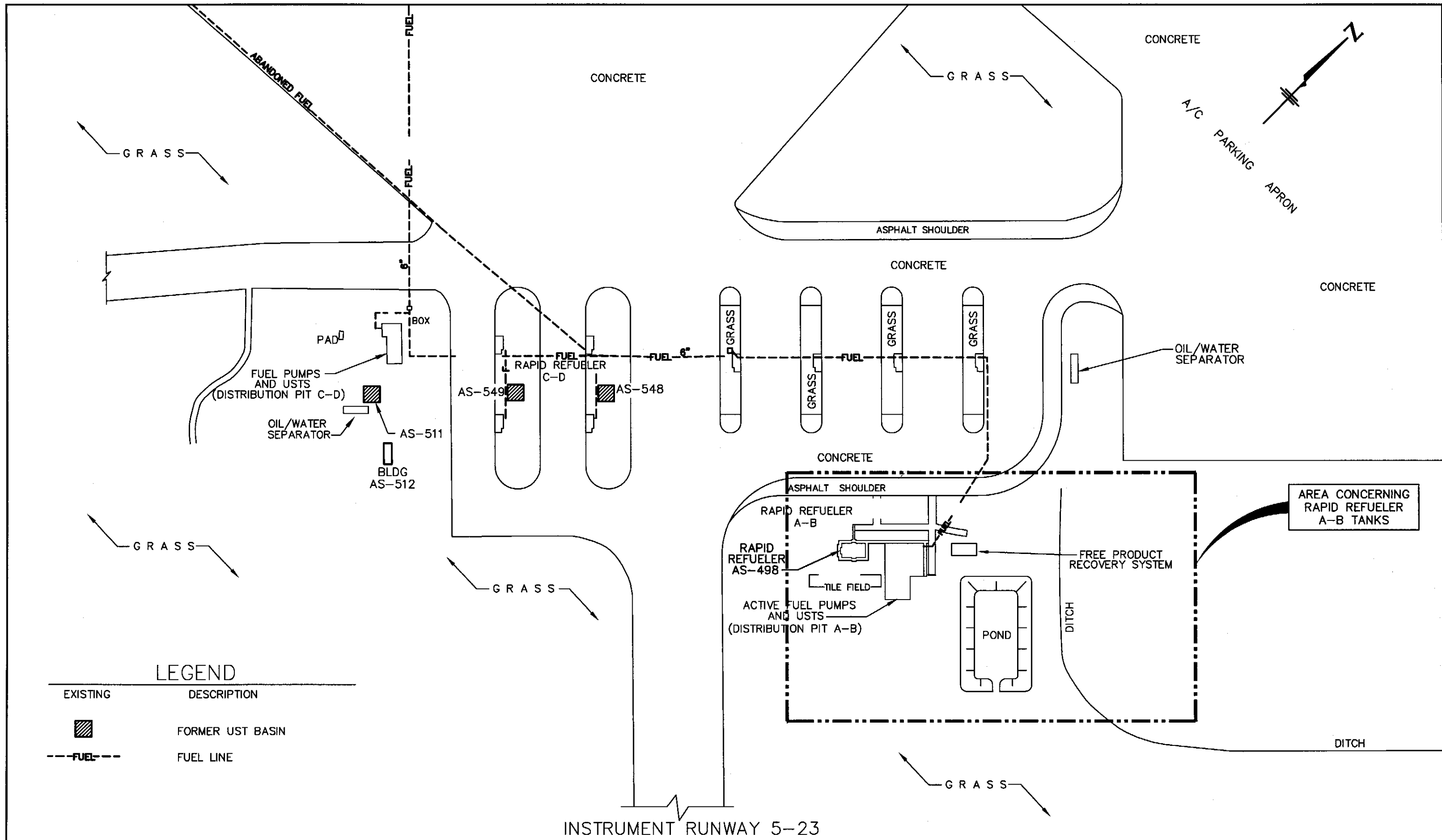
NW/4 NEW RIVER 15' QUADRANGLE

N3437.5—W7722.5/7.5

1952

PHOTOINSPECTED 1971

<p><b>CAELIN</b> ENGINEERS and SCIENTISTS WILMINGTON, NORTH CAROLINA</p>	<p>PROJECT RAPID REFUELER A-B TANKS MARINE CORPS AIR STATION NEW RIVER, N.C.</p>	<p>TITLE GENERAL LOCATION USGS TOPOGRAPHIC QUADRANGLE</p>	<p>FIGURE <b>1</b></p>
	<p>JOB NO: 203-110    DATE: JULY 2004</p>	<p>SCALE: AS SHOWN    DRAWN BY: HCS    CHECKED BY: SVH</p>	

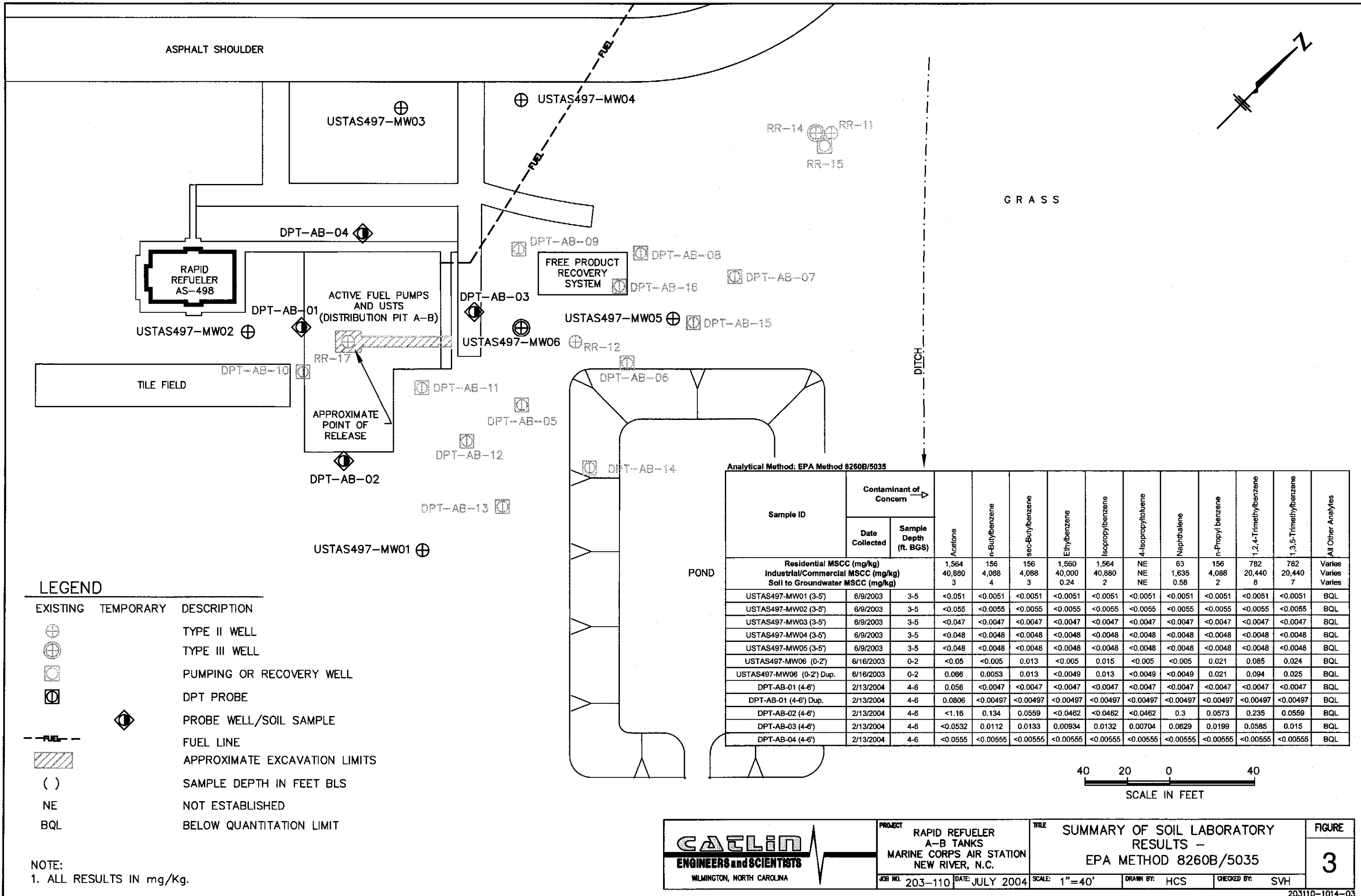


**LEGEND**

EXISTING	DESCRIPTION
	FORMER UST BASIN
	FUEL LINE

NOTE:  
ALL NEW WELLS IDENTIFICATION PREFACED WITH USTAS497-

 <b>ENGINEERS and SCIENTISTS</b> WILMINGTON, NORTH CAROLINA	PROJECT RAPID REFUELER A-B TANKS MARINE CORPS AIR STATION NEW RIVER, N.C.	TITLE RAPID REFUELER SITE MAP	FIGURE 2
	JOB NO. 203-110 DATE: JULY 2004	SCALE: 1"=150'	DRAWN BY: HCS



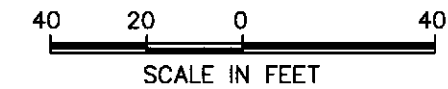
**LEGEND**

EXISTING	TEMPORARY	DESCRIPTION
⊕		TYPE II WELL
⊕		TYPE III WELL
⊕		PUMPING OR RECOVERY WELL
⊕		DPT PROBE
	⊕	PROBE WELL/SOIL SAMPLE
- - FUEL - -		FUEL LINE
▨		APPROXIMATE EXCAVATION LIMITS
( )		SAMPLE DEPTH IN FEET BLS
NE		NOT ESTABLISHED
BQL		BELOW QUANTITATION LIMIT

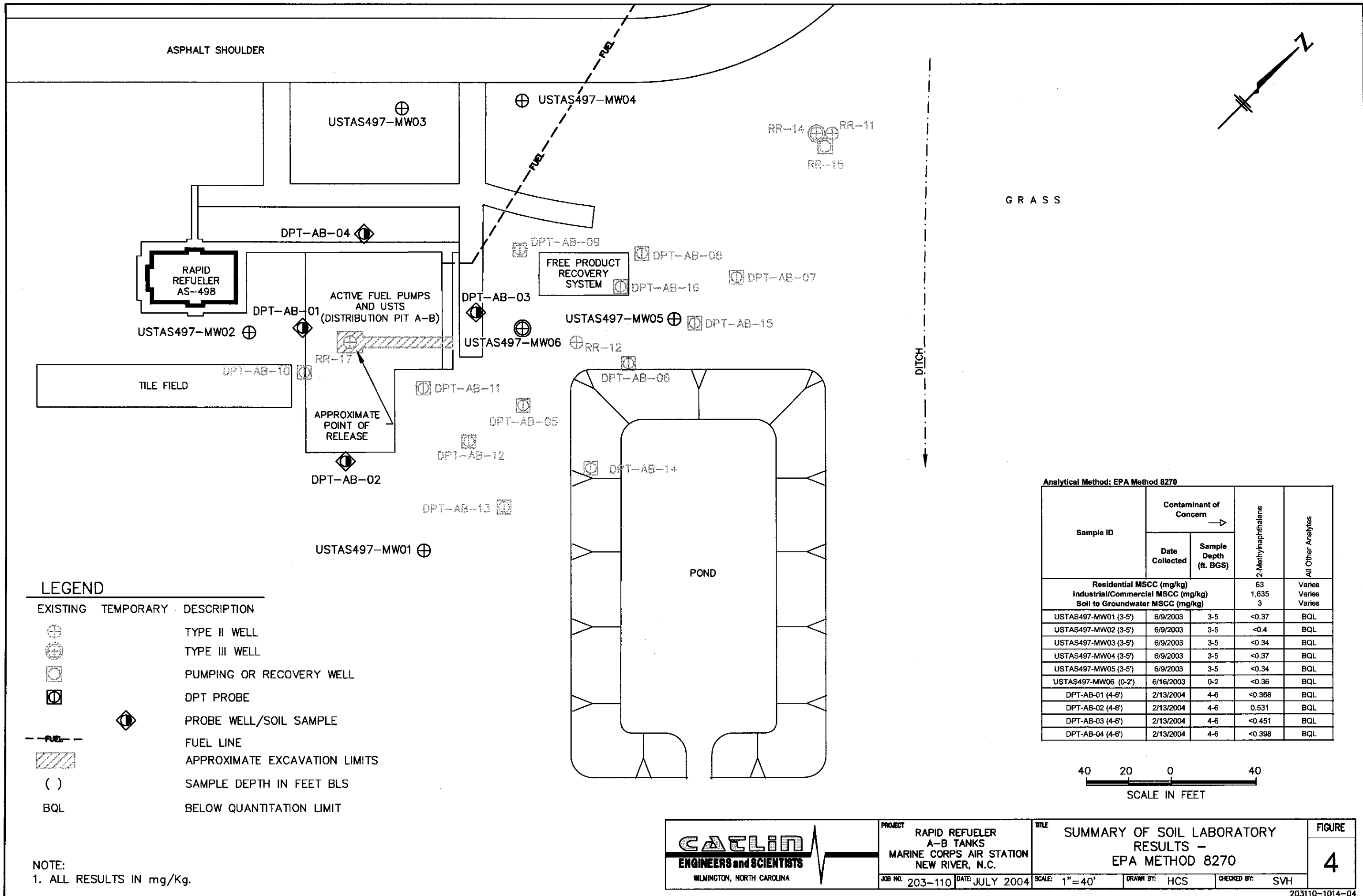
NOTE:  
1. ALL RESULTS IN mg/Kg.

Analytical Method: EPA Method 8260B/5035

Sample ID	Contaminant of Concern		Analytical Method: EPA Method 8260B/5035										
	Date Collected	Sample Depth (ft. BGS)	Acetone	n-Butylbenzene	sec-Butylbenzene	Ethylbenzene	Isopropylbenzene	4-Isopropyltoluene	Naphthalene	n-Propyl benzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	All Other Analytes
Residential MSCC (mg/kg)			1,564	156	156	1,560	1,564	NE	63	156	782	782	Varies
Industrial/Commercial MSCC (mg/kg)			40,880	4,088	4,088	40,000	40,880	NE	1,635	4,088	20,440	20,440	Varies
Soil to Groundwater MSCC (mg/kg)			3	4	3	0.24	2	NE	0.58	2	8	7	Varies
USTAS497-MW01 (3-5')	6/9/2003	3-5	<0.051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	<0.0051	BQL
USTAS497-MW02 (3-5')	6/9/2003	3-5	<0.055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	<0.0055	BQL
USTAS497-MW03 (3-5')	6/9/2003	3-5	<0.047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	BQL
USTAS497-MW04 (3-5')	6/9/2003	3-5	<0.048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	BQL
USTAS497-MW05 (3-5')	6/9/2003	3-5	<0.048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	<0.0048	BQL
USTAS497-MW06 (0-2')	6/16/2003	0-2	<0.05	<0.005	0.013	<0.005	0.015	<0.005	<0.005	0.021	0.085	0.024	BQL
USTAS497-MW06 (0-2') Dup.	6/16/2003	0-2	0.066	0.0053	0.013	<0.0049	0.013	<0.0049	<0.0049	0.021	0.094	0.025	BQL
DPT-AB-01 (4-6')	2/13/2004	4-6	0.056	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	<0.0047	BQL
DPT-AB-01 (4-6') Dup.	2/13/2004	4-6	0.0806	<0.00497	<0.00497	<0.00497	<0.00497	<0.00497	<0.00497	<0.00497	<0.00497	<0.00497	BQL
DPT-AB-02 (4-6')	2/13/2004	4-6	<1.18	0.134	0.0559	<0.0462	<0.0462	<0.0462	0.3	0.0573	0.235	0.0559	BQL
DPT-AB-03 (4-6')	2/13/2004	4-6	<0.0532	0.0112	0.0133	0.00934	0.0132	0.00704	0.0629	0.0199	0.0585	0.015	BQL
DPT-AB-04 (4-6')	2/13/2004	4-6	<0.0555	<0.00555	<0.00555	<0.00555	<0.00555	<0.00555	<0.00555	<0.00555	<0.00555	<0.00555	BQL



<p>WILMINGTON, NORTH CAROLINA</p>	PROJECT: RAPID REFUELER A-B TANKS MARINE CORPS AIR STATION NEW RIVER, N.C.	TITLE: SUMMARY OF SOIL LABORATORY RESULTS - EPA METHOD 8260B/5035		FIGURE: 3
	JOB NO. 203-110 DATE: JULY 2004	SCALE: 1"=40'	DRAWN BY: HCS	CHECKED BY: SVH



**LEGEND**

EXISTING	TEMPORARY	DESCRIPTION
⊕		TYPE II WELL
⊕		TYPE III WELL
⊕		PUMPING OR RECOVERY WELL
⊕		DPT PROBE
	⊕	PROBE WELL/SOIL SAMPLE
- - FUEL - -		FUEL LINE
▨		APPROXIMATE EXCAVATION LIMITS
( )		SAMPLE DEPTH IN FEET BLS
BQL		BELOW QUANTITATION LIMIT

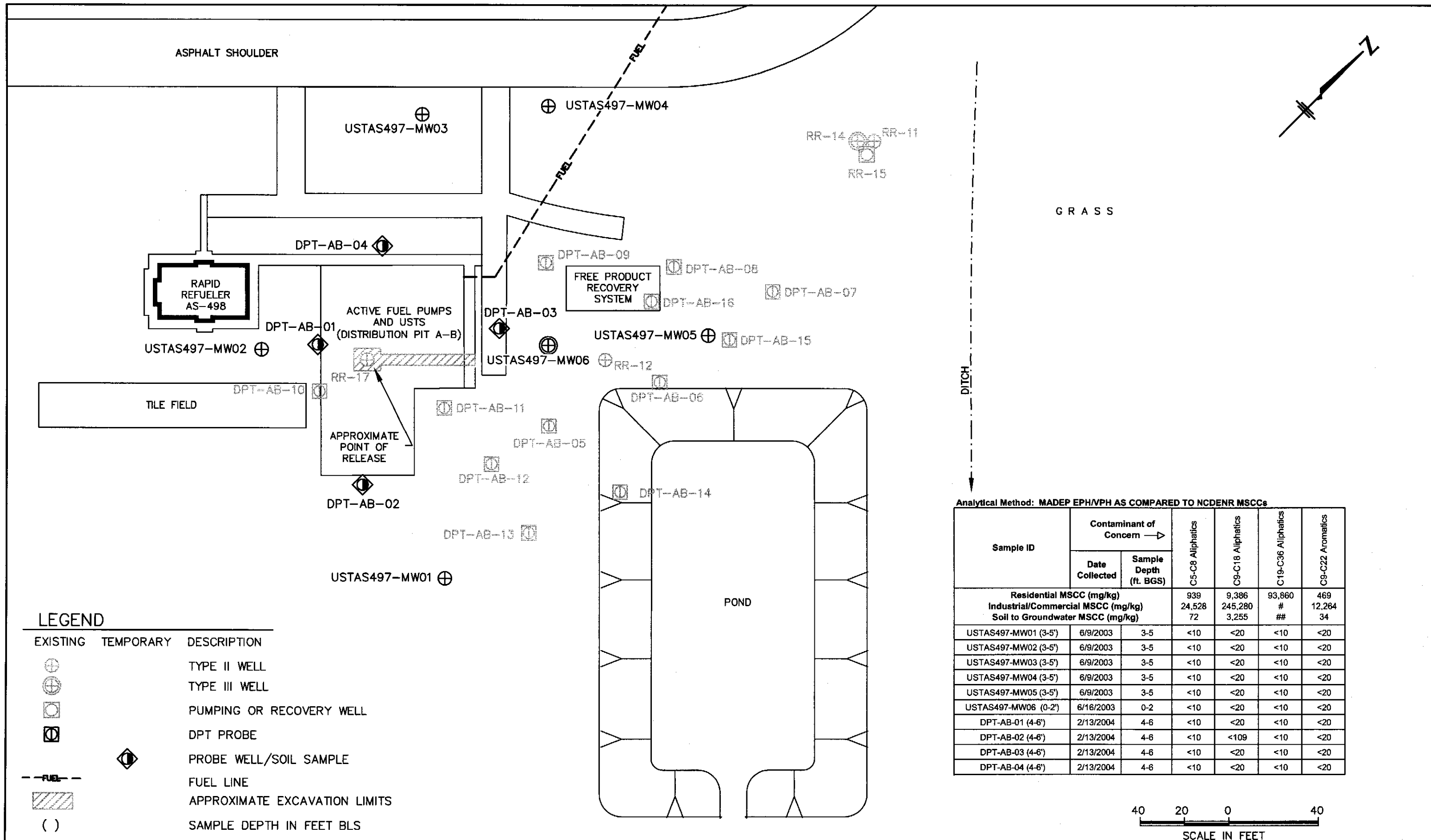
NOTE:  
1. ALL RESULTS IN mg/Kg.

Analytical Method: EPA Method 8270

Sample ID	Contaminant of Concern		2-Methylnaphthalene	All Other Analytes
	Date Collected	Sample Depth (ft. BGS)		
Residential MSCC (mg/kg)			63	Varies
Industrial/Commercial MSCC (mg/kg)			1,635	Varies
Soil to Groundwater MSCC (mg/kg)			3	Varies
USTAS497-MW01 (3-5')	6/9/2003	3-5	<0.37	BQL
USTAS497-MW02 (3-5')	6/9/2003	3-5	<0.4	BQL
USTAS497-MW03 (3-5')	6/9/2003	3-5	<0.34	BQL
USTAS497-MW04 (3-5')	6/9/2003	3-5	<0.37	BQL
USTAS497-MW05 (3-5')	6/9/2003	3-5	<0.34	BQL
USTAS497-MW06 (0-2')	6/16/2003	0-2	<0.36	BQL
DPT-AB-01 (4-6')	2/13/2004	4-6	<0.368	BQL
DPT-AB-02 (4-6')	2/13/2004	4-6	0.531	BQL
DPT-AB-03 (4-6')	2/13/2004	4-6	<0.451	BQL
DPT-AB-04 (4-6')	2/13/2004	4-6	<0.398	BQL

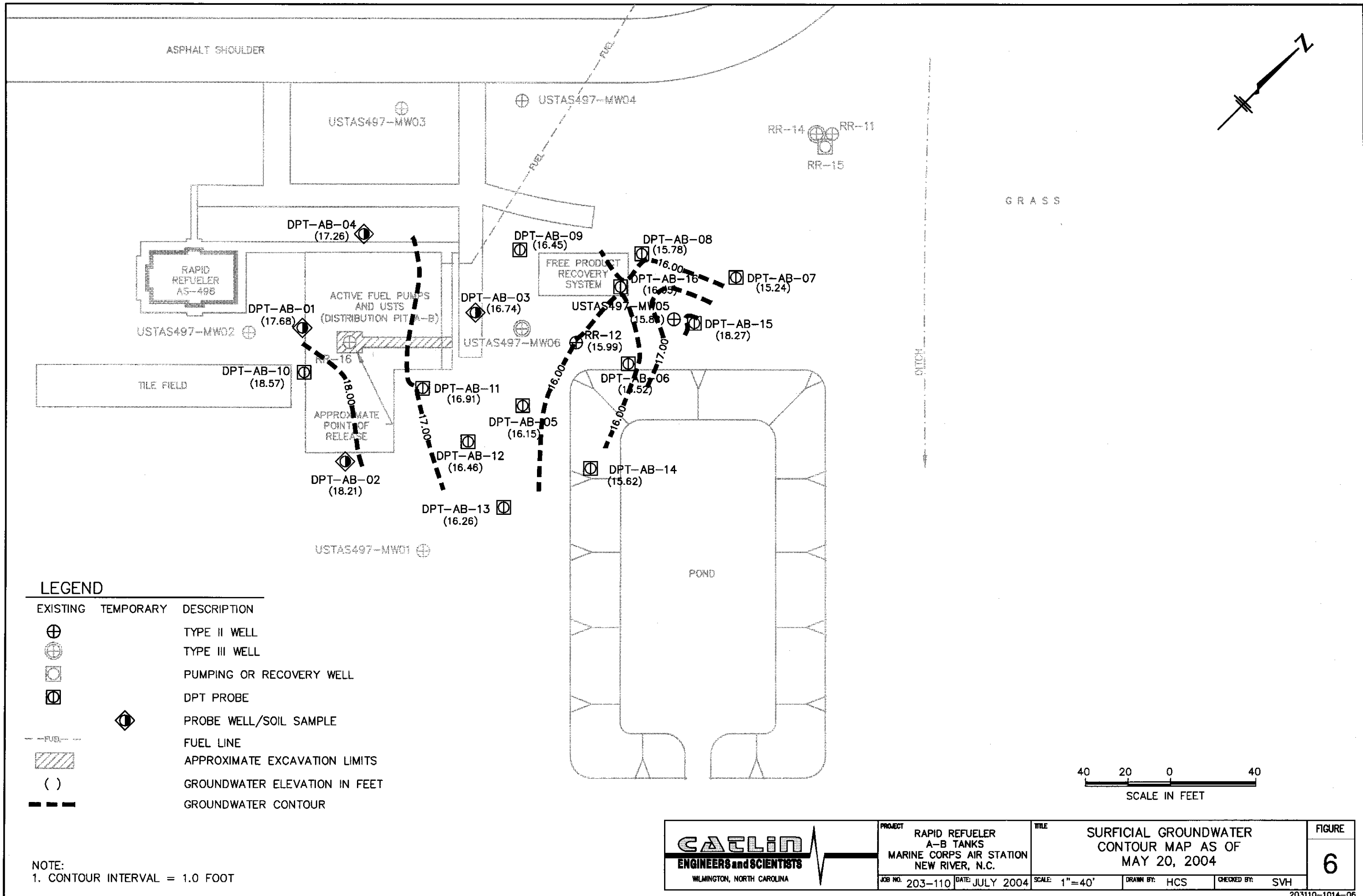


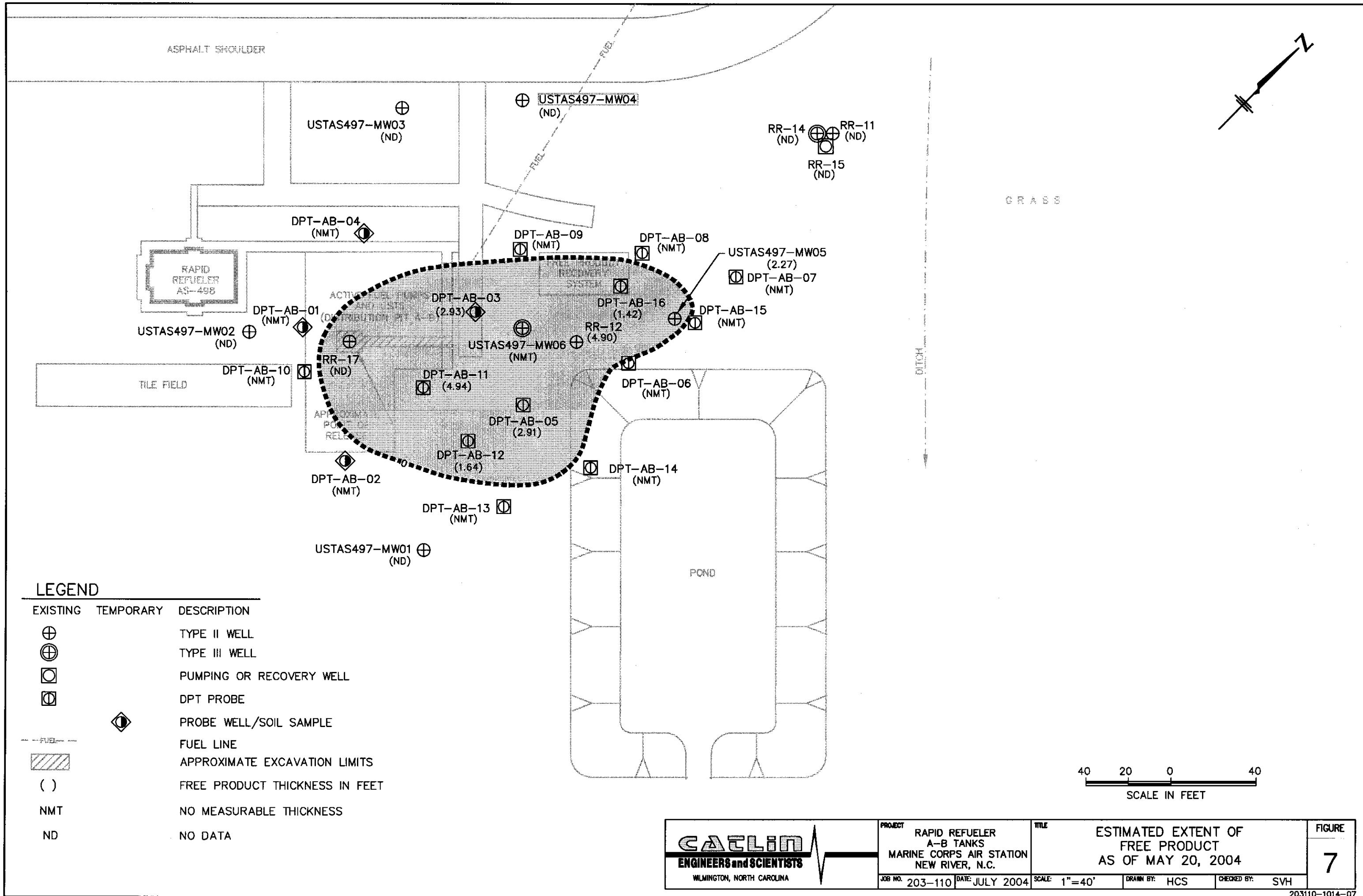
<p>WILMINGTON, NORTH CAROLINA</p>	PROJECT: RAPID REFUELER A-B TANKS MARINE CORPS AIR STATION NEW RIVER, N.C.	TITLE: SUMMARY OF SOIL LABORATORY RESULTS - EPA METHOD 8270		FIGURE: 4
	JOB NO. 203-110 DATE: JULY 2004	SCALE: 1"=40'	DRAWN BY: HCS	



NOTE:  
 1. ALL RESULTS IN mg/Kg.  
 2. # HEALTH BASED LEVEL >100%  
 3. ## CONSIDERED IMMOBILE.

 WILMINGTON, NORTH CAROLINA	PROJECT: RAPID REFUELER A-B TANKS MARINE CORPS AIR STATION NEW RIVER, N.C.	TITLE: SUMMARY OF SOIL LABORATORY RESULTS - MADEP VPH/EPH AS COMPARED TO NCDENR MSCCs	FIGURE: 5
	JOB NO. 203-110 DATE: JULY 2004	SCALE: 1"=40'	DRAWN BY: HCS CHECKED BY: SVH



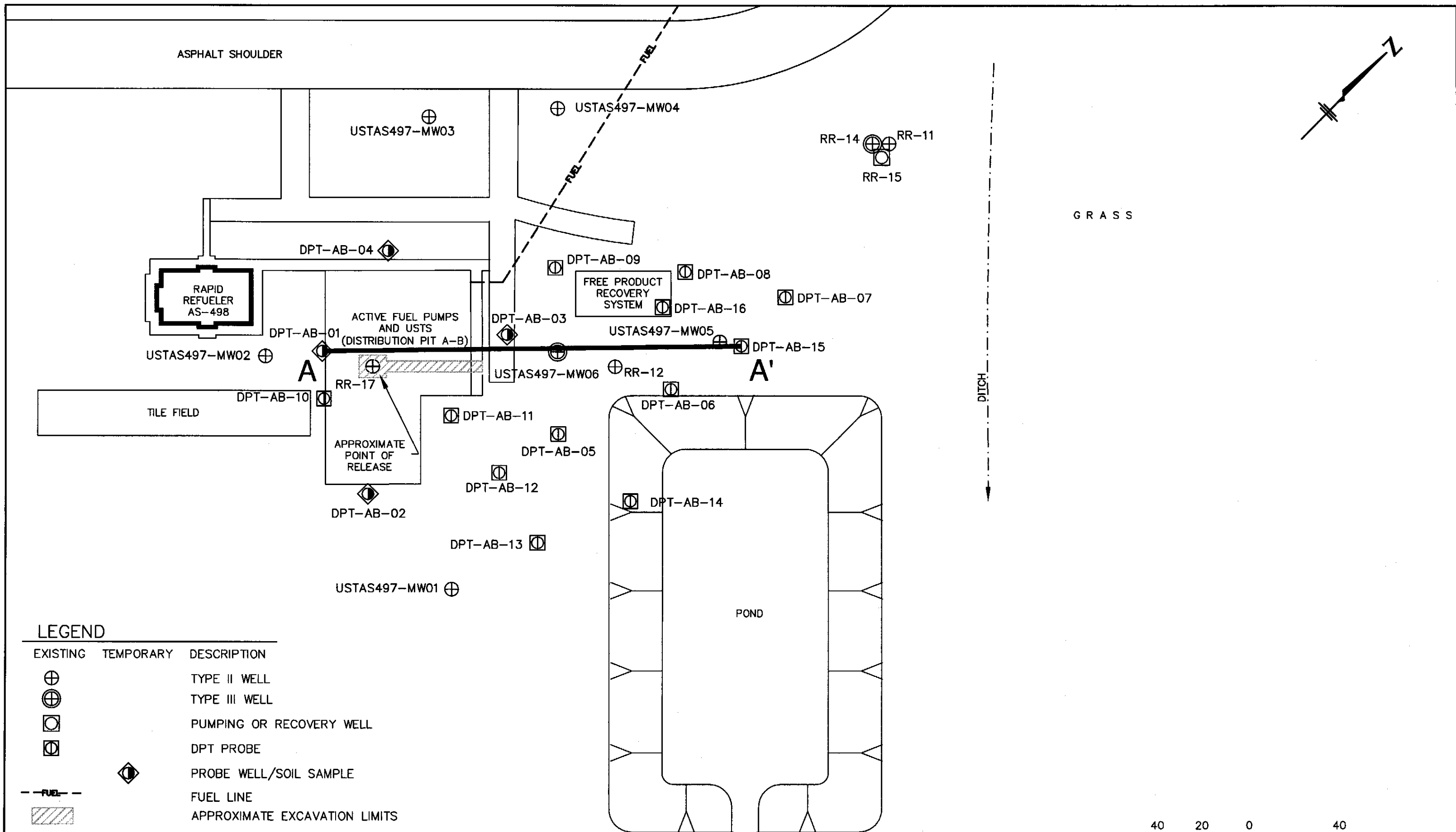


**LEGEND**

EXISTING	TEMPORARY	DESCRIPTION
⊕		TYPE II WELL
⊕		TYPE III WELL
⊖		PUMPING OR RECOVERY WELL
⊖		DPT PROBE
	Ⓢ	PROBE WELL/SOIL SAMPLE
---		FUEL LINE
▨		APPROXIMATE EXCAVATION LIMITS
( )		FREE PRODUCT THICKNESS IN FEET
NMT		NO MEASURABLE THICKNESS
ND		NO DATA

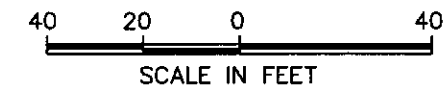


<p><b>CAELIN</b> ENGINEERS and SCIENTISTS WILMINGTON, NORTH CAROLINA</p>	PROJECT RAPID REFUELER A-B TANKS MARINE CORPS AIR STATION NEW RIVER, N.C.	TITLE ESTIMATED EXTENT OF FREE PRODUCT AS OF MAY 20, 2004	FIGURE 7
	JOB NO. 203-110	DATE: JULY 2004	SCALE: 1"=40'

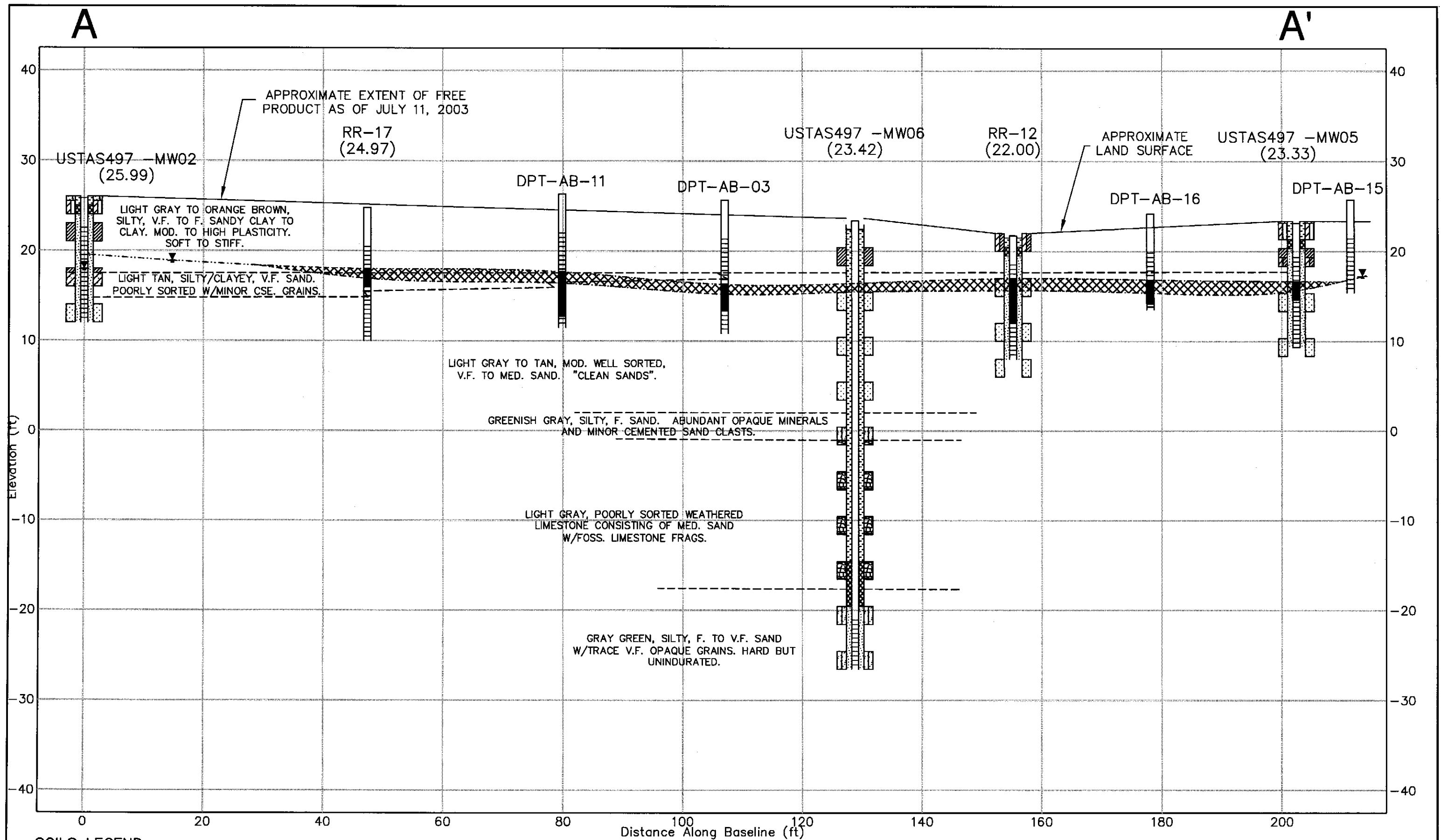


**LEGEND**

EXISTING	TEMPORARY	DESCRIPTION
⊕		TYPE II WELL
⊕		TYPE III WELL
⊗		PUMPING OR RECOVERY WELL
⊗		DPT PROBE
	⬮	PROBE WELL/SOIL SAMPLE
- - FUEL - -		FUEL LINE
	▨	APPROXIMATE EXCAVATION LIMITS



<p>WILMINGTON, NORTH CAROLINA</p>	PROJECT RAPID REFUELER A-B TANKS MARINE CORPS AIR STATION NEW RIVER, N.C.	TITLE FENCE DIAGRAM PLAN VIEW	FIGURE 8
	JOB NO. 203-110	DATE: JULY 2004	SCALE: 1"=40' DRAWN BY: HCS CHECKED BY: SVH



**SOILS LEGEND**

- USCS Low to High Plasticity Clay
- USCS Low Plasticity Silty Clay
- (CH) High Plasticity Clay to Sandy Clay
- (SP) Poorly-graded Sand
- (CH) High Plasticity Clay
- (SM) Silty Sand
- Topsoil
- (SC) Clayey Sand
- Weathered Limestone

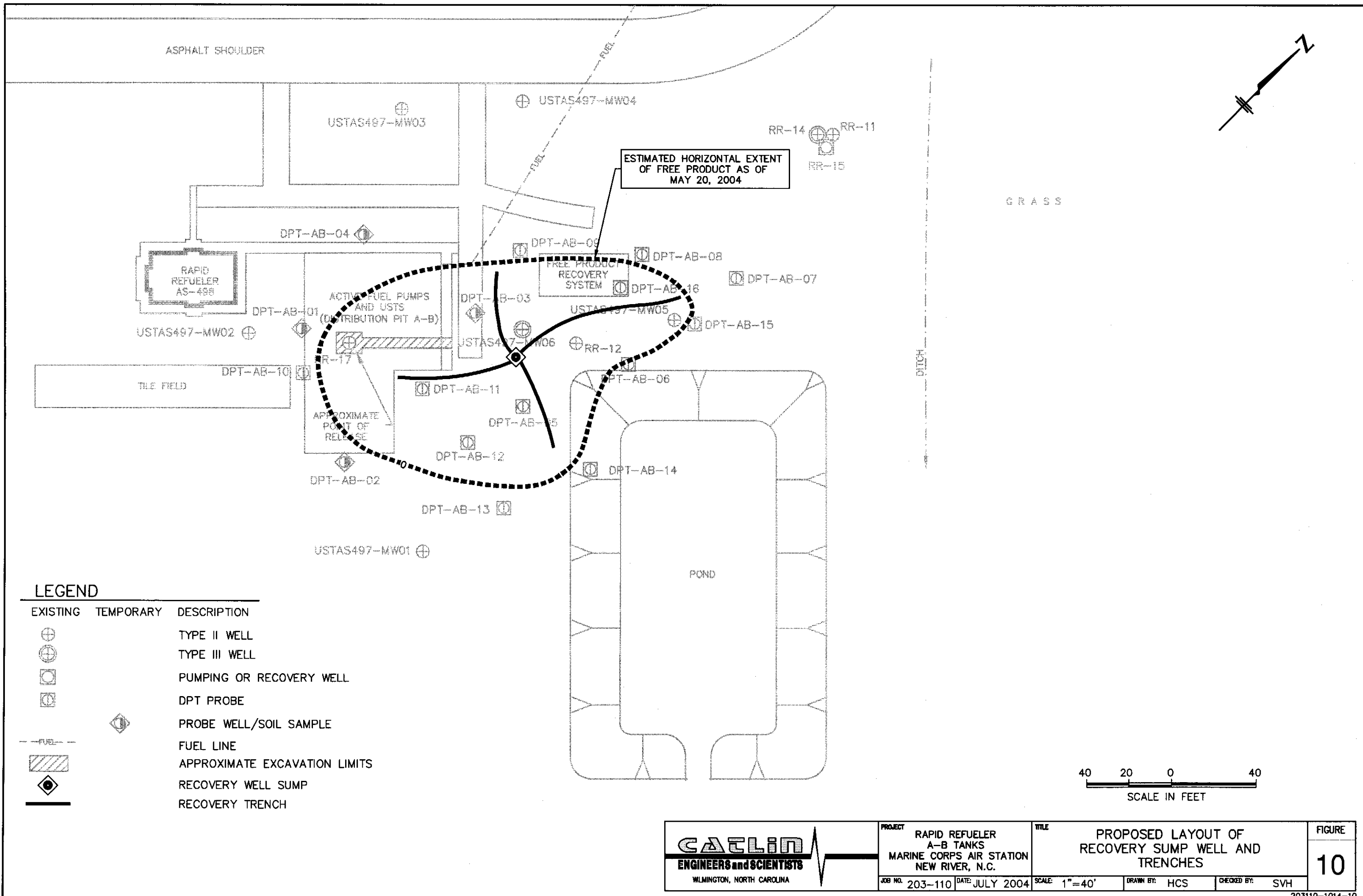
**WELL BACKFILL**

- Portland Cement
- Bentonite Pellets
- #2 Medium Sand symbol"/> #2 Medium Sand

- Groundwater Elevation on May 20, 2004
- TOC Elevation Feet MSL
- ESTIMATED FREE PHASE PRODUCT IN SUBSURFACE SOILS
- FREE PHASE PRODUCT THICKNESS IN THE WELL

<p>WILMINGTON, NORTH CAROLINA</p>	PROJECT	RAPID REFUELER A-B TANKS MARINE CORPS AIR STATION NEW RIVER, N.C.	TITLE	FENCE DIAGRAM A-A'		FIGURE	9		
	JOB NO.	203-110	DATE:	JULY 2004	SCALE:	1" = 40'	DRAWN BY:	HCS	CHECKED BY:

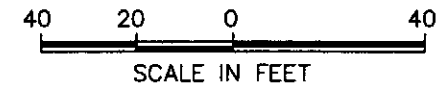
203110-1014-09



ESTIMATED HORIZONTAL EXTENT OF FREE PRODUCT AS OF MAY 20, 2004

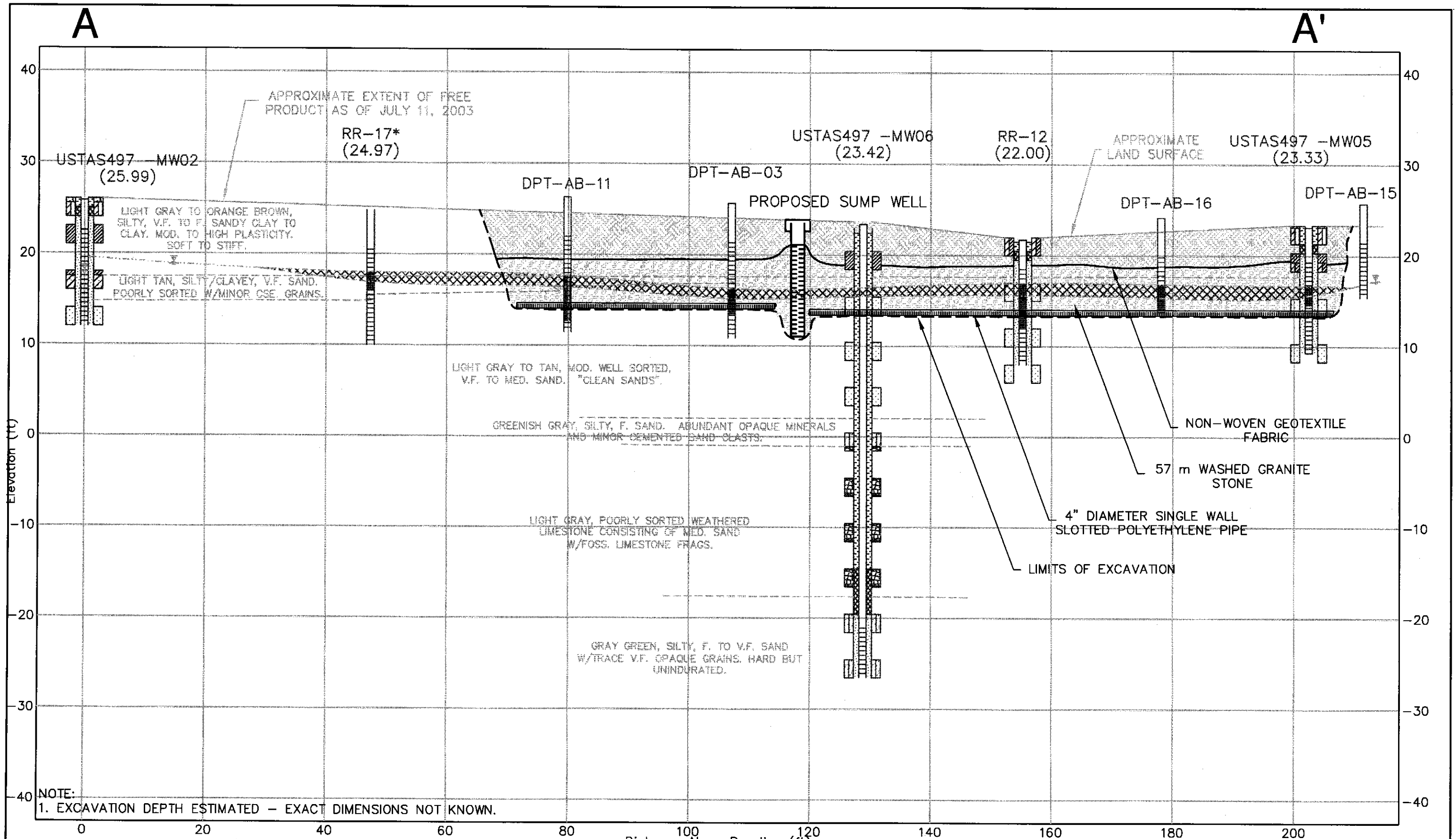
**LEGEND**

EXISTING	TEMPORARY	DESCRIPTION
⊕		TYPE II WELL
⊕		TYPE III WELL
⊕		PUMPING OR RECOVERY WELL
⊕		DPT PROBE
	⊕	PROBE WELL/SOIL SAMPLE
-FUEL-		FUEL LINE
▨		APPROXIMATE EXCAVATION LIMITS
⊕		RECOVERY WELL SUMP
—		RECOVERY TRENCH



<p><b>CAELIN</b> ENGINEERS and SCIENTISTS WILMINGTON, NORTH CAROLINA</p>	<p>PROJECT: RAPID REFUELER A-B TANKS MARINE CORPS AIR STATION NEW RIVER, N.C.</p>	<p>TITLE: PROPOSED LAYOUT OF RECOVERY SUMP WELL AND TRENCHES</p>	<p>FIGURE: 10</p>
	<p>JOB NO. 203-110 DATE: JULY 2004</p>	<p>SCALE: 1"=40'</p>	<p>DRAWN BY: HCS CHECKED BY: SVH</p>

203110-1014-10



**SOILS LEGEND**

- USCS Low to High Plasticity Clay
- USCS Low Plasticity Silty Clay
- (OH) High Plasticity Clay to Sandy Clay
- (SP) Poorly-graded Sand
- Topsoil
- (OH) High Plasticity Clay
- (SM) Silty Sand
- Weathered Limestone
- (SC) Clayey Sand

**WELL BACKFILL**

- Portland Cement
- Bentonite Pellets
- #2 Medium Sand
- Groundwater Elevation on May 20, 2004
- TOC Elevation Feet MSL
- ESTIMATED FREE PHASE PRODUCT IN SUBSURFACE SOILS
- FREE PHASE PRODUCT THICKNESS IN THE WELL

**CAELIN**  
ENGINEERS and SCIENTISTS  
WILMINGTON, NORTH CAROLINA

**PROJECT**  
RAPID REFUELER  
A-B TANKS  
MARINE CORPS AIR  
STATION NEW RIVER, N.C.

**JOB NO.** 203-110 **DATE:** JULY 2004

**TITLE**  
FENCE DIAGRAM A-A'  
WITH PROPOSED RECOVERY WELL  
SUMP AND TRENCHES

**SCALE:** 1"=40' **DRAWN BY:** HCS **CHECKED BY:** SVH

**FIGURE**  
**11**

## **APPENDICES**

**APPENDIX A**  
**BORING LOGS**

# BORING LOG

**CATLIN**  
ENGINEERS and SCIENTISTS  
ENGLISH  
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: Camp Lejeune
PROJECT NAME: Rapid Refueler Tanks A-B		LOGGED BY: Tom Stetler	BORING ID: DPT-AB-01
NORTHING:		DRILLER:	CREW: NA
EASTING:			
SYSTEM:	BORING LOCATION: SW side of fuel pumps		LAND ELEV.: 28.0
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: 7.0	BORING DEPTH: 12.0
START DATE: 2/13/04	FINISH DATE: 2/13/04	24 HOUR DTW:	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	SAMP. TYPE	OVA RESULTS (ppm)					LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION		ELEVATION
			0	1000	2000	3000	4000				DEPTH		
0.0										0.0	LAND SURFACE	28.0	
0.0										0.3	TOPSOIL	27.7	
1.7									SM		Brown to orange brown, silty to clayey, f. to vf. SAND. Poorly sorted. Moist. No HCO.		
2.0									SM		S. A. A.		
4.0									SM		S. A. A.		
4.9		DP					DPT-AB-01 (4-6')		SM		Grayish brown, silty, f. to vf. SAND. Moist. No HCO.		
6.0									SM		S. A. A. Hit something @7' BLS, moved hole 2' away from concrete. Refusal again @7.3' BLS- Moved hole again. Orange in color past 7' BLS.		
8.0									SM		S. A. A.		
10.0									SM		S. A. A.		
12.0									SC/SM		S. A. A. but interlayered with clay-rich horizons up to 5" in thickness.		
12.0											Boring Terminated at Elevation 16.0 ft Temporary well, 1" PVC		

CATLIN ENVIRO. LOG 203-110.GEL TEST.GDT 7/22/04

# BORING LOG

**CATLIN**  
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Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: Camp Lejeune
PROJECT NAME: Rapid Refueler Tanks A-B		LOGGED BY: Tom Stetler	BORING ID: DPT-AB-02
NORTHING:	EASTING:	DRILLER:	CREW: NA
SYSTEM:	BORING LOCATION: SE side of fuel pumps		LAND ELEV.: 26.1
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: 6.5	BORING DEPTH: 12.0
START DATE: 2/13/04	FINISH DATE: 2/13/04	24 HOUR DTW:	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	SAMP. TYPE	OVA RESULTS (ppm)					LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION		
			0	1000	2000	3000	4000				DEPTH	ELEVATION	
0.0										0.0	LAND SURFACE	26.13	
										0.0	TOPSOIL. Grass, organic debris	25.6	
										0.5			
2.0			▲9						SM		Brown to orange-brown, moderately to poorly sorted, silty to clayey, vf. SAND. Moist. No HCO.		
			▲9.6										
4.0										4.0		22.1	
		DP	▲88.4				DPT-AB-02 (4-6')	SC			Dark brown to greenish-brown, clayey, f. to vf. SAND. S. A. A. but larger clay component. Moist. Strong HCO.		
6.0										6.0		20.1	
									SP		Light gray, f to vf. SAND. Well sorted. Relatively clean, moist. Strong HCO.		
			▲116.1							7.0			19.1
									SM		Dark brown, silty, f. to vf. SAND. Similar to above, but pronounced color change. Minor silt. Moist. Strong HCO.		
										8.0			18.1
8.0													
			▲10.4										
									SM		Light gray-green to dark brown, silty, f. to vf. SAND. Minor clay-rich layering (up to 2" in thickness). Moist. Strong HCO.		
			▲153.8										
10.0													
12.0										12.0	Boring Terminated at Elevation 14.1 ft Temporary well, 1" PVC		14.1

CATLIN ENVRO. LOG 203-110.GEL TEST.GDT 7/22/04

# BORING LOG

**CATLIN**  
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Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: Camp Lejeune
PROJECT NAME: Rapid Refueler Tanks A-B		LOGGED BY: Tom Stetler	BORING ID: DPT-AB-03
NORTHING:	EASTING:	CREW: NA	
SYSTEM:	BORING LOCATION: NE side of fuel pumps		LAND ELEV.: 27.6
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: 6.8	BORING DEPTH: 12.0
START DATE: 2/13/04	FINISH DATE: 2/13/04	24 HOUR DTW:	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	SAMP. TYPE	OVA RESULTS (ppm)					LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION		ELEVATION
			0	1000	2000	3000	4000				DEPTH		
0.0										0.0	LAND SURFACE	27.61	
										0.9	TOPSOIL, grass	27.3	
										0.3			
			▲4.8						SC/ SM		Dark brown, silty to clayey, f. to vf. SAND. Poorly sorted. Moist. No HCO.		
2.0										2.5		25.1	
			▲13.4						SM		S. A. A. but smaller clay component.		
										3.5		24.1	
4.0													
		DP	▲751				DPT-AB -03 (4-6')		CL		Orange-brown to gray, vf. sandy to silty CLAY. Stiff. Moist. Slight HCO.		
6.0										6.5		21.1	
			▲791						SC/ SM		Dark gray, clayey f. to vf. SAND. Minor Fe-oxide staining. Saturated. Strong HCO.		
8.0										8.0		19.6	
			▲77.9						SP		Dark orange-brown, Fe-oxide stained, f. to vf. SAND. Well sorted. Strong HCO.		
10.0										10.0		17.6	
			▲17.9						SP		S. A. A. but light gray in color. F. to vf. SAND. Clean, well sorted. Saturated. Slight HCO.		
12.0										12.0		15.6	
											Boring Terminated at Elevation 15.6 ft Temporary well, 1" PVC		

CATLIN ENVIRO. LOG 203-110.GPI TEST.GDT 7/22/04

# BORING LOG

**CATLIN**  
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SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: Camp Lejeune
PROJECT NAME: Rapid Refueler Tanks A-B		LOGGED BY: Tom Stetler	BORING ID: DPT-AB-04
NORTHING:	EASTING:	CREW: NA	
SYSTEM:	BORING LOCATION: NW side of fuel pumps		LAND ELEV.: 29.3
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: 7.3	BORING DEPTH: 12.0
START DATE: 2/13/04	FINISH DATE: 2/13/04	24 HOUR DTW:	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	SAMP. TYPE	OVA RESULTS (ppm)					LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	
			0	1000	2000	3000	4000				DEPTH	ELEVATION
0.0										0.0	LAND SURFACE	29.33
										0.0	TOPSOIL, grass, organic debris.	29.1
										0.2		
2.0									SM		Dark brown to brown, silty to clayey, f. to vf. SAND. Poorly sorted. Moist. No HCO.	
4.0										4.0		25.3
6.0		DP					DPT-AB-04 (4-6')		CL		Brown, vf. sandy to silty CLAY. Minor brown to gray mottling. Stiff. Moist. No HCO.	23.3
8.0												
10.0												
12.0										12.0	Boring Terminated at Elevation 17.3 ft Temporary well, 1" PVC	17.3

CATLIN ENVIRO. LOG 203-110.GBL TEST.GDT 7/22/04

# BORING LOG

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SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: Camp Lejeune
PROJECT NAME: Rapid Refueler Tanks A-B		LOGGED BY: Tom Stetler	BORING ID: DPT-AB-05
NORTHING:	EASTING:	CREW: NA	
SYSTEM:	BORING LOCATION: Grass SE of MW-06		LAND ELEV.: 25.4
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: 5.2	BORING DEPTH: 12.0
START DATE: 2/13/04	FINISH DATE: 2/13/04	24 HOUR DTW:	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	SAMP. TYPE	OVA RESULTS (ppm) 0 1000 2000 3000 4000	LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	
							DEPTH	ELEVATION
0.0							0.0	LAND SURFACE 25.35
							0.0	TOPSOIL 25.1
							0.3	
		▲9.1			SM		1.5	Light gray-brown to orange, silty to clayey, vf. SAND. Moist. No HCO. 23.9
2.0								
		▲259.3			CL		4.0	Light gray-brown to orange-brown, silty clay. Stiff. Gray to orange-brown mottling. Moist. No HCO. 21.4
4.0								
		▲104.9			SC		5.5	Tan to orange-brown, Fe-oxide stained, silty to clayey, vf. SAND. Minor coarse, well rounded sand grains. Strong HCO. 19.9
6.0								
		▲116.8			SP		8.0	Light gray, f. to vf. SAND. Minor well rounded, coarse sand grains. Saturated @7' BLS. Strong HCO. 17.4
8.0								
		▲29.6			SP		10.0	S. A. A. but orange-brown in color. No coarse grains- well sorted. Saturated. Slight HCO. 15.4
10.0								
		▲6.7			SP		12.0	S. A. A. but light gray in color. Saturated. Slight HCO. 13.4
12.0								Boring Terminated at Elevation 13.4 ft Temporary well, 1" PVC

CATLIN/ENVIRO. LOG 203-110.GEL TEST/GDT 7/22/04

# BORING LOG

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SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: Camp Lejeune
PROJECT NAME: Rapid Refueler Tanks A-B		LOGGED BY: Tom Stetler	BORING ID: DPT-AB-06
NORTHING:	EASTING:	DRILLER:	CREW: NA
SYSTEM:	BORING LOCATION: Near pond.		LAND ELEV.: 24.3
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: 4.4	BORING DEPTH: 12.0
START DATE: 2/13/04	FINISH DATE: 2/13/04	24 HOUR DTW:	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	SAMP. TYPE	OVA RESULTS (ppm)					LAB.	U S C S	L O G	DEPTH	SOIL AND ROCK DESCRIPTION	ELEVATION
			0	1000	2000	3000	4000						
0.0										0.0	LAND SURFACE	24.28	
										0.0	TOPSOIL	23.8	
										0.5			
										2.5		21.8	
2.0			▲1.1						SM		Dark brown, very poorly sorted, silty to clayey, f. to vf. SAND. High clay component. Moist. No HCO.		
										5.5		18.8	
4.0			▲1.6						SC		Light brown to orange-brown, clayey, f. to vf. SAND. Minor coarse, well rounded sand grains. Fe-oxide stained layering, mottling. Moist. No HCO?		
										8.0		16.3	
6.0			▲2.5						SP		Light gray, well sorted, f. to vf. SAND. Minor opaque mineral grains. Moist. Slight HCO?		
										10.0		14.3	
8.0			▲7.9						SP		S. A. A. Saturated @ 8' BLS. Orange-gray in color.		
										12.0		12.3	
10.0			▲1.2						SP		S. A. A. Light gray in color.		
12.0											Boring Terminated at Elevation 12.3 ft Temporary well, 1" PVC		

CATLIN ENVIRO. LOG 203-110.GP.L TEST.GDT 7/22/04

# BORING LOG

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SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: Camp Lejeune
PROJECT NAME: Rapid Refueler Tanks A-B		LOGGED BY: Tom Stetler	BORING ID: DPT-AB-07
		DRILLER:	
NORTHING:	EASTING:	CREW: NA	
SYSTEM:	BORING LOCATION: N of MW-05		LAND ELEV.: 25.3
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: 6.2	BORING DEPTH: 12.0
START DATE: 2/13/04	FINISH DATE: 2/13/04	24 HOUR DTW:	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	SAMP. TYPE	OVA RESULTS (ppm)					LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	
			0	1000	2000	3000	4000				DEPTH	ELEVATION
0.0										0.0	LAND SURFACE	25.3
0.0										0.2	TOPSOIL	25.1
										0.2		
									SM		Brown, silty to clayey, f. to vf. SAND. Poorly sorted. Moist.	
2.0										2.0		23.3
									SC-SM		S. A. A. but pronounced change in color to dark brown. Moist. No HCO. Slightly higher clay component, and grades downward into more clay-rich material.	
4.0										4.0		21.3
									CL		Dark brown, silty to vf. sandy CLAY. Stiff. Soft. Moist. No HCO.	
6.0										7.0		18.3
									SP		Light gray to orange-brown, well sorted, f. to vf. SAND. Minor coarse-grained sand between 7-8' BLS. Minor opaque mineral grains. Saturated. No HCO.	
8.0												
									SP		S. A. A. Light gray in color. Saturated. No HCO. Minor gray-green clay-rich lenses ~1 cm in length.	
10.0										10.0		15.3
									SP			
12.0										12.0		13.3
											Boring Terminated at Elevation 13.3 ft Temporary well, 1" PVC	

CATLIN ENVIRO. LOG 203-110.GPI TEST.GDT 7/22/04

# BORING LOG

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Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: Camp Lejeune
PROJECT NAME: Rapid Refueler Tanks A-B		LOGGED BY: Tom Stetler	BORING ID: DPT-AB-08
NORTHING:	EASTING:	DRILLER:	CREW: NA
SYSTEM:	BORING LOCATION: Near recovery system		LAND ELEV.: 25.6
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: 6.0	BORING DEPTH: 12.0
START DATE: 2/13/04	FINISH DATE: 2/13/04	24 HOUR DTW:	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	SAMP. TYPE	OVA RESULTS (ppm)					LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	
			0	1000	2000	3000	4000				DEPTH	ELEVATION
0.0										0.0	LAND SURFACE	25.59
										0.0	TOPSOIL	25.4
										0.2		
			▲27.8									
2.0								SM			Dark brown to orange-brown (to gray), silty, f. to vf. SAND. Minor clay-rich layering up to 2" in thickness. Gray to orange-brown mottling. Moist. No HCO.	
			▲6.3									
4.0										4.0		21.6
								SP			Gray, f. to vf. SAND. Well sorted. Moist. No HCO.	
			▲1.6							5.0		20.6
6.0								SC			Gray to dark orange-brown, Fe-oxide stained, clayey, f. to vf. SAND. Minor orange to gray mottling. Moist. No HCO.	
			▲1.4									
										7.5		18.1
8.0												
			▲12.8					SP			Gray to gray-green, well sorted, f. to vf. SAND. Minor vf. opaque mineral grains. Saturated. No HCO.	
			▲1.1									
12.0										12.0		13.6
											Boring Terminated at Elevation 13.6 ft Temporary well, 1" PVC	

CATLIN ENVIRO. LOG 203-110.GP.L TEST.GDT 7/22/04

# BORING LOG

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SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: Camp Lejeune
PROJECT NAME: Rapid Refueler Tanks A-B		LOGGED BY: Tom Stetler	BORING ID: DPT-AB-09
NORTHING:	EASTING:	DRILLER:	CREW: NA
SYSTEM:	BORING LOCATION: Near recovery system		LAND ELEV.: 26.5
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: 6.6	BORING DEPTH: 12.0
START DATE: 2/13/04	FINISH DATE: 2/13/04	24 HOUR DTW:	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	SAMP. TYPE	OVA RESULTS (ppm)					LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION		ELEVATION
			0	1000	2000	3000	4000				DEPTH		
0.0										0.0	LAND SURFACE	26.50	
0.0										0.0			
2.0			▲5.4						SM		Dark brown, silty f. to vf. SAND. Moist. No HCO.	24.5	
4.0			▲304.1						SM		S. A. A. but strong HCO.		
6.0			▲199.5							5.5		21.0	
8.0			▲715.2						SC/ SM		Dark brown, silty to clayey, f. to vf. SAND. Minor gray to orange-brown mottling. Saturated @ 7' BLS. Strong HCO.	18.0	
10.0			▲83.2						SP		Light gray-green, f. to vf. SAND. Well sorted, clean. Minor opaque mineral grains. Saturated. Slight HCO.	16.5	
12.0			▲11.7						SP		S. A. A. but light gray in color. Saturated.	14.5	
											Boring Terminated at Elevation 14.5 ft Temporary well, 1" PVC		

CATLIN/ENVIRO. LOG 203-110.GPJ TEST.GDT 7/22/04

# BORING LOG

**CATLIN**  
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Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: Camp Lejeune
PROJECT NAME: Rapid Refueler Tanks A-B		LOGGED BY: Tom Stetler	BORING ID: DPT-AB-10
NORTHING:	EASTING:	CREW: NA	
SYSTEM:	BORING LOCATION: SW side of fuel pumps		LAND ELEV.: NM
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: 5.2	BORING DEPTH: 12.0
START DATE: 3/4/04	FINISH DATE: 3/4/04	24 HOUR DTW:	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	SAMP. TYPE	OVA RESULTS (ppm) 0 1000 2000 3000 4000	LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	
							DEPTH	ELEVATION
0.0							0.0	LAND SURFACE
0.0							0.0	TOPSOIL
0.5							0.5	
2.1		▲2.1						
2.0					SM			Light reddish-brown, silty, f. to vf. SAND. Minor clay. Dry. No HCO.
2.1		▲2.1						
4.0							4.0	
4.0					SC/SM			S. A. A. Dark brown, silty, f. to vf. SAND. Minor clay. Saturated @~4' BLS.
4.1		▲1238						
6.0							6.0	
6.0					SP			Light gray, f. to vf. SAND. Minor vf. opaque mineral grains. Well sorted. Saturated. No HCO. Grades downward into a darker, gray-green color, higher clay content.
6.1		▲3626						
8.0							8.0	
8.0		▲807.6			SC			Dark gray-green, clayey to silty, f. to vf. SAND. Strong HCO. Moist. Soft.
10.0							10.0	
10.0		▲125.9			SM			Grades downward into more of a silty, f. to vf. SAND. Moist. Soft. Strong HCO.
12.0							12.0	Boring Terminated at Depth 12.0 ft Temporary well, 1" PVC

CATLIN ENVIRO. LOG 203-110.GP.L TEST.GDT 7/22/04

# BORING LOG

**CATLIN**  
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Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.:	203-110	STATE:	NC	COUNTY:	Onslow	LOCATION:	Camp Lejeune
PROJECT NAME:	Rapid Refueler Tanks A-B			LOGGED BY:	Tom Stetler		BORING ID:
				DRILLER:			<b>DPT-AB-11</b>
NORTHING:		EASTING:		CREW:	NA		
SYSTEM:		BORING LOCATION: Inside corner of fuel pump pit.				LAND ELEV.:	27.5
DRILL MACHINE:	Power Probe	METHOD:	Direct Push	0 HOUR DTW:	6.4	BORING DEPTH:	12.0
START DATE:	3/4/04	FINISH DATE:	3/4/04	24 HOUR DTW:		ROCK DEPTH:	--

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	SAMP. TYPE	OVA RESULTS (ppm)					LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	
			0	1000	2000	3000	4000				DEPTH	ELEVATION
										0.0	LAND SURFACE	27.46
0.0										0.0	TOPSOIL	27.2
										0.3		
										3.4	Dark brown to reddish brown, silty to clayey, f. to vf. SAND. Moderate to poor sorting. Dry. No HCO.	
2.0									SM	2.0		25.5
										40.1	S. A. A. Dark brown to gray-green, silty to clayey, f. to vf. SAND. Minor clay-rich layering up to 2" in thickness. Moist. No HCO.	
4.0									SM	4.0		23.5
										411.2	Light gray-green, f. to vf. SAND. Minor clay-rich layering (~1" in thickness). Moist. Slight HCO.	
6.0									SP	6.0		21.5
										1364	Dark gray-green, clayey to silty, f. to vf. SAND. Strong HCO. Saturated?	
8.0									SC	8.0		19.5
										1192	Strong HCO. Product visible in sample. Iron oxide staining. Light brown to orange-brown, silty, f. to vf. SAND. Well sorted. Saturated.	
10.0									SP/ SM	10.0		17.5
										2123	S. A. A. Strong HCO.	
12.0									SP	12.0		15.5
											Boring Terminated at Elevation 15.5 ft Temporary well, 1" PVC	

CATLIN ENVIRO. LOG-203-110.GPJ TEST.GDI 7/22/04

# BORING LOG

**CATLIN**  
ENGINEERS and SCIENTISTS  
ENGLISH  
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: Camp Lejeune
PROJECT NAME: Rapid Refueler Tanks A-B		LOGGED BY: Tom Stetler	BORING ID: DPT-AB-12
NORTHING:		DRILLER:	CREW: NA
EASTING:			
SYSTEM:	BORING LOCATION: N of MW-01		LAND ELEV.: 27.5
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: 5.3	BORING DEPTH: 12.0
START DATE: 3/4/04	FINISH DATE: 3/4/04	24 HOUR DTW:	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	SAMP. TYPE	OVA RESULTS (ppm)					LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION		ELEVATION
			0	1000	2000	3000	4000				DEPTH		
0.0										0.0	LAND SURFACE	27.50	
0.0										0.0	TOPSOIL	27.2	
										0.3			
			▲8.2					SM		2.0	Brown to orange-brown, silty, f. to vf. SAND. High percentage of fines. Dry. No HCO.	25.5	
2.0													
			▲881.6					SC		4.0	Orange-brown, stiff, soft, silty to vf. sandy CLAY. Minor gray to orange-brown mottling. Slight HCO. Moist.	23.5	
4.0													
			▲417.3					SC		6.0	Very poorly sorted. Light brown to orange-tan mottled, silty to clayey, vf. SAND. Minor pebble-sized quartz clasts. Strong HCO- Product is visible in sample.	21.5	
6.0													
			▲1466					SP		8.0	Dark orange-brown to gray, f. to vf. SAND. Well sorted. Saturated. Product is visible in sample.	19.5	
8.0													
			▲201.7					SP		10.0	S. A. A. but light brown in color. Saturated. Strong HCO.	17.5	
10.0													
			▲54.7					SP		12.0	S. A. A. but light gray in color. Only slight HCO?	15.5	
12.0													
											Boring Terminated at Elevation 15.5 ft Temporary well, 1" PVC		

CATLIN ENVIRO. LOG 203-110.GEL TEST.GDT 7/22/04

# BORING LOG

**CATLIN**  
ENGINEERS and SCIENTISTS  
ENGLISH  
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.:	203-110	STATE:	NC	COUNTY:	Onslow	LOCATION:	Camp Lejeune	
PROJECT NAME:	Rapid Refueler Tanks A-B			LOGGED BY:	Tom Stetler		BORING ID:	
				DRILLER:			<b>DPT-AB-13</b>	
NORTHING:		EASTING:		CREW:	NA			
SYSTEM:		BORING LOCATION:	N of MW-01				LAND ELEV.:	26.1
DRILL MACHINE:	Power Probe	METHOD:	Direct Push	0 HOUR DTW:	5.3	BORING DEPTH:	12.0	
START DATE:	3/4/04	FINISH DATE:	3/4/04	24 HOUR DTW:		ROCK DEPTH:	--	

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	SAMP. TYPE	OVA RESULTS (ppm) 0 1000 2000 3000 4000	LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION		
							DEPTH	ELEVATION	
0.0							0.0	LAND SURFACE	26.07
0.0							0.0	TOPSOIL	
							0.6		25.5
2.0			▲2.9		SM		2.0	Dark brown to light brown, silty to clayey, f. to vf. SAND. Dry. No HCO.	24.1
4.0			▲1785		CL		4.5	Light gray to orange-tan, stiff, silty CLAY. Minor vf. sand. Mottled reddish-brown to light gray. Moist. No HCO.	21.6
6.0			▲907.8		SP/SC		6.0	In gradational contact with above. Light gray, f. to vf. SAND. Minor pebble-sized, well rounded quartz clasts between 5-6' BLS. Moist. No HCO.	20.1
8.0			▲187.2		SP		8.0	Clean, orange-brown, f. to vf. SAND. Fe-oxide stained. Saturated. No HCO.	18.1
10.0			▲42.9		SP		10.0	Clean, light gray to tan, f. to vf. SAND. Thin, gray to tan banding (1 cm in thickness). Saturated. No HCO.	16.1
12.0			▲3.0		SP		12.0	S. A. A.	14.1
								Boring Terminated at Elevation 14.1 ft Temporary well, 1" PVC	

CATLIN ENVIRO. LOG 203-110.GPJ TEST.GDT 7/22/04

# BORING LOG

**CATLIN**  
ENGINEERS and SCIENTISTS  
ENGLISH  
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: Camp Lejeune
PROJECT NAME: Rapid Refueler Tanks A-B		LOGGED BY: Tom Stetler	BORING ID: DPT-AB-14
NORTHING:	EASTING:	DRILLER:	CREW: NA
SYSTEM:	BORING LOCATION: Near pond.		LAND ELEV.: 25.2
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: 4.9	BORING DEPTH: 8.0
START DATE: 3/4/04	FINISH DATE: 3/4/04	24 HOUR DTW:	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	SAMP. TYPE	OVA RESULTS (ppm) 0 1000 2000 3000 4000	LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	
							DEPTH	ELEVATION
0.0							0.0	LAND SURFACE 25.22
							0.0	TOPSOIL. Dark brown. Moist.
							0.5	24.7
2.0		▲3.4			CL			Light gray to orange-tan, mottled, vf. sandy to silty CLAY. Stiff. Moist. Minor plant fragments parallel to layering. No HCO.
							3.5	21.7
4.0		▲2.8			SC			Very poorly sorted, clayey to silty, light orange brown, f. to vf. SAND. Fe-oxide stained. Slight HCO @~4-5' BLS? Minor well rounded, pebble-sized quartz clasts (up to 1 cm in diameter). Saturated.
6.0							7.0	18.2
8.0		▲3.7			SP		8.0	17.2
								Boring Terminated at Elevation 17.2 ft Temporary well, 1" PVC

CATLIN\WURO.LOG 203-110.GPJ TEST LOG 7/22/04

# BORING LOG

**CATLIN**

ENGINEERS and SCIENTISTS  
ENGLISH  
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: Camp Lejeune
PROJECT NAME: Rapid Refueler Tanks A-B		LOGGED BY: Tom Stetler	BORING ID: DPT-AB-15
NORTHING:	EASTING:	DRILLER:	CREW: NA
SYSTEM:	BORING LOCATION: Near pond.		LAND ELEV.: 23.8
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: 4.1	BORING DEPTH: 8.0
START DATE: 3/4/04	FINISH DATE: 3/4/04	24 HOUR DTW:	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	SAMP. TYPE	OVA RESULTS (ppm)				LAB.	U S C S	L O G	SOIL AND ROCK	
			0	1000	2000	3000				4000	DEPTH
0.0									0.0	LAND SURFACE	23.77
0.0									0.0	TOPSOIL	23.5
									0.3		
		▲5.8					SM			Light brown, silty to clayey, f. to vf. SAND. Stiff. Moderately well sorted. Dry. No HCO.	
2.0									2.0		21.8
		▲12.6					CL		3.0	Light gray to orange-brown, mottled, silty to vf. sandy CLAY. Stiff. Moist. No HCO.	20.8
4.0											
		▲70.3					SC			Light orange-brown, clayey to silty, f. to vf. SAND. High clay content. Minor pebble-sized, coarse, well rounded quartz grains widely interspersed within sandy matrix. Saturated. Strong HCO.	
6.0									6.0		17.8
		▲16.0					SP			Light gray, very well sorted, f. to vf. SAND. Saturated. Slight(?) HCO.	
8.0									8.0		15.8
										Boring Terminated at Elevation 15.8 ft Temporary well, 1" PVC	

CATLIN ENVIRO. LOG 203-110.GP.LTEST.GDT. 7/22/04

# BORING LOG

**CAELIN**  
ENGINEERS and SCIENTISTS  
ENGLISH  
Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 203-110	STATE: NC	COUNTY: Onslow	LOCATION: Camp Lejeune
PROJECT NAME: Rapid Refueler Tanks A-B		LOGGED BY: Tom Stetler	BORING ID: DPT-AB-16
		DRILLER:	
NORTHING:	EASTING:	CREW: NA	
SYSTEM:	BORING LOCATION: Behind recovery system.		LAND ELEV.: 25.6
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: 5.6	BORING DEPTH: 8.0
START DATE: 3/4/04	FINISH DATE: 3/4/04	24 HOUR DTW:	ROCK DEPTH: --

DEPTH	BLOW COUNT 0.5 0.5 0.5 0.5	SAMP. TYPE	OVA RESULTS (ppm)					LAB.	U S C S	L O G	SOIL AND ROCK DESCRIPTION	
			0	1000	2000	3000	4000				DEPTH	ELEVATION
0.0										0.0	LAND SURFACE	25.56
0.0										0.0	TOPSOIL	25.4
0.2										0.2		
1.6							SM			2.0	Dark brown to orange-brown, poorly sorted, silty to clayey, f. to vf. SAND. Moist/dry. No HCO.	23.6
2.0										3.5	Light gray to orange-brown, mottled, vf. sandy to silty CLAY. Stiff. Slight HCO? Plant fragments parallel to layering.	22.1
5.1							CL			6.0	Interlayered orange-brown, clay-rich, and gray sand-rich horizons (up to 3" in thickness). Clayey to silty f. to vf. SAND. Strong HCO. Moist. Well rounded, pebble-sized quartz clasts.	19.6
264							SC			8.0	Well sorted, light gray to orange-brown, f. to vf. SAND. Saturated. Slight HCO.	17.6
281.8							SP					
8.0											Boring Terminated at Elevation 17.6 ft Temporary well, 1" PVC	

CAELIN ENVIRO. LOG 203-110 GPL TEST GDT 7/22/04

**APPENDIX B**

**LABORATORY REPORTS AND CHAIN-OF-CUSTODY**

**FILE COPY****PARADIGM ANALYTICAL LABORATORIES, INC.**

5500 Business Drive  
Wilmington, North Carolina 28405  
(910) 350-1903  
Fax (910) 350-1557

Mr. Steve Hudson  
Richard Catlin & Associates  
P.O. Box 10279  
Wilmington NC 28404-0279

Report Number: G128-1264

Client Project: Rapid Refueler A-B

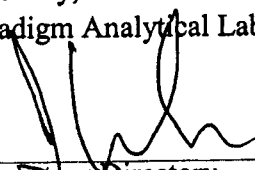
Dear Mr. Hudson:

Enclosed are the results of the analytical services performed under the referenced project. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period of five years in the event they are required for future reference. Any samples submitted to our laboratory will be retained for a maximum of thirty (30) days from the date of this report unless other arrangements are requested.

If there are any questions about the report or the services performed during this project, please call Paradigm at (910) 350-1903. We will be happy to answer any questions or concerns which you may have.

Thank you for using Paradigm Analytical Labs for your analytical services. We look forward to working with you again on any additional analytical needs which you may have.

Sincerely,  
Paradigm Analytical Laboratories, Inc.

  
\_\_\_\_\_  
Laboratory Directory  
J. Patrick Weaver

2/27/04  
\_\_\_\_\_  
Date

**EPH (Aliphatics/Aromatics) Results**

by MDEP-EPH

Client Name: Richard Catlin & Associates

Project Name: Rapid Refueler A-B

Sample Information and Analytical Results	
Sample Identification	DPT-AB-01 (4-6')
Sample Matrix	Soil
Date Collected	02/13/04
Date Received	02/16/04
Date Extracted	02/16/04
Date Analyzed	02/19/04
Dry Weight	85.1
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>19</sub> -C <sub>36</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>11</sub> -C <sub>22</sub> Aromatics*	< 10 (mg/Kg)
Aliphatic Surrogate % Recovery	98
Aromatic Surrogate % Recovery	96

**Comments:**

\* = Excludes any surrogates or internal standards.  
 Sample did not require fractionation.

Lab info: G128-1264-1A : 10335

Reviewed By: 

**EPH (Aliphatics/Aromatics) Results**

by MDEP-EPH

Client Name: Richard Catlin & Associates

Project Name: Rapid Refueler A-B

Sample Information and Analytical Results	
Sample Identification	DPT-AB-02 (4-6')
Sample Matrix	Soil
Date Collected	02/13/04
Date Received	02/16/04
Date Extracted	02/16/04
Date Analyzed	02/20/04
Dry Weight	83.6
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>19</sub> -C <sub>36</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>11</sub> -C <sub>22</sub> Aromatics*	< 10 (mg/Kg)
Aliphatic Surrogate % Recovery	89
Aromatic Surrogate % Recovery	89
Fractionation Surrogate 1 % Recovery	68

**Comments:**

\* = Excludes any surrogates or internal standards.

Lab info: G128-1264-3B : 10358

Reviewed By: 

**EPH (Aliphatics/Aromatics) Results**

by MDEP-EPH

Client Name: Richard Catlin & Associates

Project Name: Rapid Refueler A-B

Sample Information and Analytical Results	
Sample Identification	DPT-AB-03 (4-6')
Sample Matrix	Soil
Date Collected	02/13/04
Date Received	02/16/04
Date Extracted	02/16/04
Date Analyzed	02/18/04
Dry Weight	77.2
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>19</sub> -C <sub>36</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>11</sub> -C <sub>22</sub> Aromatics*	< 10 (mg/Kg)
Aliphatic Surrogate % Recovery	99
Aromatic Surrogate % Recovery	93

**Comments:**

\* = Excludes any surrogates or internal standards.

Sample did not require fractionation.

Lab info: G128-1264-4B : 10351

Reviewed By: 

**EPH (Aliphatics/Aromatics) Results**

by MDEP-EPH

Client Name: Richard Catlin & Associates

Project Name: Rapid Refueler A-B

Sample Information and Analytical Results	
Sample Identification	DPT-AB-04 (4-6')
Sample Matrix	Soil
Date Collected	02/13/04
Date Received	02/16/04
Date Extracted	02/16/04
Date Analyzed	02/18/04
Dry Weight	80.8
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>19</sub> -C <sub>36</sub> Aliphatics*	< 10 (mg/Kg)
C <sub>11</sub> -C <sub>22</sub> Aromatics*	< 10 (mg/Kg)
Aliphatic Surrogate % Recovery	99
Aromatic Surrogate % Recovery	95

**Comments:**

\* = Excludes any surrogates or internal standards.  
 Sample did not require fractionation.

Lab info: G128-1264-5A : 10364

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 02/17/04

**Calibration Ranges and Limits**

Range	MDL (µg/L) (mg/Kg)		ML (µg/L) (mg/Kg)		RL (µg/L) (mg/Kg)	
	C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	0.8	0.3	2.6	100
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1.6	0.3	5	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.1	0.6	6.7	100	10

**Calibration Concentration Levels**

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	0.87	Linear Regression
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	24.6	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.17	2.83	3.7	Calibration Factor
	0.425	7.08		
	0.85	14.2		
	1.7	28.3		
	3.4	56.7		

Calibration Check Date: 02/17/04

**Calibration Check**

Range	Levels		RPD
	(µg/mL)	(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	10.2
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	13.6
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.7	28.3	2.6

MDL = Method Detection Limit  
ML = Minimum Limit  
RL = Reportable Limit

RPD = Relative Percent Difference  
%RSD = Percent Relative Standard Deviation  
CCC = Correlation Coefficient of Curve

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 02/17/04

**Calibration Ranges and Limits**

Range	MDL (µg/L) (mg/Kg)		ML (µg/L) (mg/Kg)		RL (µg/L) (mg/Kg)	
	C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	0.8	0.3	2.6	100
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1.6	0.3	5	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.1	0.6	6.7	100	10

**Calibration Concentration Levels**

Range	Levels (µg/L) (mg/Kg)		%RSD or CCC	Method of Quantitation
	C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06		
0.15		2.5		
0.3		5		
0.6		10		
1.2		20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	24.6	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.17	2.83	3.7	Calibration Factor
	0.425	7.08		
	0.85	14.2		
	1.7	28.3		
	3.4	56.7		

Calibration Check Date: 02/19/04

**Calibration Check**

Range	Levels (µg/mL) (mg/Kg)		RPD
	C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	12.4
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.7	28.3	2.8

MDL = Method Detection Limit  
ML = Minimum Limit  
RL = Reportable Limit

RPD = Relative Percent Difference  
%RSD = Percent Relative Standard Deviation  
CCC = Correlation Coefficient of Curve

PARADIGM ANALYTICAL LABORATORIES, INC.

Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 02/17/04

Calibration Ranges and Limits

Range	MDL (µg/L)		ML (µg/L)		RL (µg/L)	
	(mg/Kg)		(mg/Kg)		(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	0.8	0.3	2.6	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1.6	0.3	5	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.1	0.6	6.7	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	0.87	Linear Regression
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	24.6	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.17	2.83	3.7	Calibration Factor
	0.425	7.08		
	0.85	14.2		
	1.7	28.3		
	3.4	56.7		

Calibration Check Date: 02/20/04

Calibration Check

Range	Levels		RPD
	(µg/mL)	(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	10.9
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	3.8
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.7	28.3	-6.2

MDL = Method Detection Limit  
 ML = Minimum Limit  
 RL = Reportable Limit

RPD = Relative Percent Difference  
 %RSD = Percent Relative Standard Deviation  
 CCC = Correlation Coefficient of Curve

**VPH (Aliphatics/Aromatics) Laboratory Reporting Form**

Client Name: Richard Catlin & Associates

Project Name: Rapid Refueler A-B

Sample Information and Analytical Results	
Sample Identification	DPT-AB-01 (4-6')
Sample Matrix	Soil
Collection Option (for Soil)*	0
Date Collected	02/13/04
Date Received	02/16/04
Date Extracted	02/13/04
Date Analyzed	02/17/04
Dry Weight	85
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>9</sub> -C <sub>10</sub> Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	120
Surrogate % Recovery - FID	140

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

Lab Info: G128-1264-1E

Reviewed By: 

**VPH (Aliphatics/Aromatics) Laboratory Reporting Form**

Client Name: Richard Catlin & Associates

Project Name: Rapid Refueler A-B

Sample Information and Analytical Results	
Sample Identification	DPT-AB-02 (4-6')
Sample Matrix	Soil
Collection Option (for Soil)*	0
Date Collected	02/13/04
Date Received	02/16/04
Date Extracted	02/13/04
Date Analyzed	02/17/04
Dry Weight	84
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	99 (mg/Kg)
C <sub>9</sub> -C <sub>10</sub> Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	150***
Surrogate % Recovery - FID	440***

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

\*\*\*= High surrogate recovery due to matrix interference

Lab Info: G128-1264-3F

Reviewed By: 

**VPH (Aliphatics/Aromatics) Laboratory Reporting Form**

Client Name: Richard Catlin & Associates

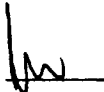
Project Name: Rapid Refueler A-B

Sample Information and Analytical Results	
Sample Identification	DPT-AB-03 (4-6')
Sample Matrix	Soil
Collection Option (for Soil)*	0
Date Collected	02/13/04
Date Received	02/16/04
Date Extracted	02/13/04
Date Analyzed	02/18/04
Dry Weight	77
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>9</sub> -C <sub>10</sub> Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	110
Surrogate % Recovery - FID	130

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

Lab Info: G128-1264-4F

Reviewed By: 

**VPH (Aliphatics/Aromatics) Laboratory Reporting Form**

Client Name: Richard Catlin & Associates

Project Name: Rapid Refueler A-B

Sample Information and Analytical Results	
Sample Identification	DPT-AB-04 (4-6')
Sample Matrix	Soil
Collection Option (for Soil)*	0
Date Collected	02/13/04
Date Received	02/16/04
Date Extracted	02/13/04
Date Analyzed	02/18/04
Dry Weight	81
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	< 10 (mg/Kg)
C <sub>9</sub> -C <sub>10</sub> Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	90
Surrogate % Recovery - FID	110

\* = Option 1 = Established fill line on vial, Option 2 = Sampling Device/Brand, or Option 3 = Field weight of soil.

\*\* = Excludes any surrogates or internal standards.

Lab Info: G128-1264-5F

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 12/23/03 PID Initial Calibration Date: 12/23/03

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C <sub>5</sub> -C <sub>8</sub> Aliphatics	9.3	0.41	29.4	1.3	100	10
C <sub>9</sub> -C <sub>12</sub> Aliphatics	7.9	0.3	25.2	0.97	100	10
C <sub>9</sub> -C <sub>10</sub> Aromatics	0.5	0.04	1.5	0.14	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>5</sub> -C <sub>8</sub> Aliphatics	20	2	16.8	Calibration Factor
	80	8		
	200	20		
	800	80		
	2000	200		
C <sub>9</sub> -C <sub>12</sub> Aliphatics	15	1.5	15	Calibration Factor
	60	6		
	150	15		
	600	60		
	1500	150		
C <sub>9</sub> -C <sub>10</sub> Aromatics	32.5	3.25	15.1	Calibration Factor
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Calibration Check Date: 02/17/04

Calibration Check

Range	Levels		RPD
	(µg/L)	(mg/Kg)	
C <sub>5</sub> -C <sub>8</sub> Aliphatics	200	20	-18.6
C <sub>9</sub> -C <sub>12</sub> Aliphatics	150	15	-6.7
C <sub>9</sub> -C <sub>10</sub> Aromatics	325	32.5	0.4

MDL = Method Detection Limit  
ML = Minimum Limit  
RL = Reportable Limit

RPD = Relative Percent Difference  
%RSD = Percent Relative Standard Deviation  
CCC = Correlation Coefficient of Curve

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles  
by GCMS 8260/5035

Client Sample ID: DPT-AB-01 (4-6')  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID G128-1264-1B  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: JTF  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 85.1

Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
Acetone	0.0560	0.0470	1	02-17-2004
Benzene	BQL	0.00470	1	02-17-2004
Bromobenzene	BQL	0.00470	1	02-17-2004
Bromochloromethane	BQL	0.00470	1	02-17-2004
Bromodichloromethane	BQL	0.00470	1	02-17-2004
Bromoform	BQL	0.00470	1	02-17-2004
Bromomethane	BQL	0.00470	1	02-17-2004
2-Butanone	BQL	0.0235	1	02-17-2004
n-Butylbenzene	BQL	0.00470	1	02-17-2004
sec-Butylbenzene	BQL	0.00470	1	02-17-2004
tert-Butylbenzene	BQL	0.00470	1	02-17-2004
Carbon disulfide	BQL	0.00470	1	02-17-2004
Carbon tetrachloride	BQL	0.00470	1	02-17-2004
Chlorobenzene	BQL	0.00470	1	02-17-2004
Chloroethane	BQL	0.00470	1	02-17-2004
Chloroform	BQL	0.00470	1	02-17-2004
Chloromethane	BQL	0.00470	1	02-17-2004
2-Chlorotoluene	BQL	0.00470	1	02-17-2004
4-Chlorotoluene	BQL	0.00470	1	02-17-2004
Dibromochloromethane	BQL	0.00470	1	02-17-2004
1,2-Dibromo-3-chloropropane	BQL	0.00470	1	02-17-2004
Dibromomethane	BQL	0.00470	1	02-17-2004
1,2-Dibromoethane (EDB)	BQL	0.00470	1	02-17-2004
1,2-Dichlorobenzene	BQL	0.00470	1	02-17-2004
1,3-Dichlorobenzene	BQL	0.00470	1	02-17-2004
1,4-Dichlorobenzene	BQL	0.00470	1	02-17-2004
trans-1,4-Dichloro-2-butene	BQL	0.00470	1	02-17-2004
1,1-Dichloroethane	BQL	0.00470	1	02-17-2004
1,1-Dichloroethene	BQL	0.00470	1	02-17-2004
1,2-Dichloroethane	BQL	0.00470	1	02-17-2004
cis-1,2-Dichloroethene	BQL	0.00470	1	02-17-2004
trans-1,2-dichloroethene	BQL	0.00470	1	02-17-2004
1,2-Dichloropropane	BQL	0.00470	1	02-17-2004
1,3-Dichloropropane	BQL	0.00470	1	02-17-2004
2,2-Dichloropropane	BQL	0.00470	1	02-17-2004
1,1-Dichloropropene	BQL	0.00470	1	02-17-2004
cis-1,3-Dichloropropene	BQL	0.00470	1	02-17-2004
trans-1,3-Dichloropropene	BQL	0.00470	1	02-17-2004
Dichlorodifluoromethane	BQL	0.00470	1	02-17-2004
Diisopropyl ether (DIPE)	BQL	0.00470	1	02-17-2004
Ethylbenzene	BQL	0.00470	1	02-17-2004
Hexachlorobutadiene	BQL	0.00470	1	02-17-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles  
by GCMS 8260/5035

Client Sample ID: DPT-AB-01 (4-6')  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID G128-1264-1B  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: JTF  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 85.1

Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
2-Hexanone	BQL	0.00470	1	02-17-2004
Iodomethane	BQL	0.00470	1	02-17-2004
Isopropylbenzene	BQL	0.00470	1	02-17-2004
4-Isopropyltoluene	BQL	0.00470	1	02-17-2004
Methylene chloride	BQL	0.0188	1	02-17-2004
4-Methyl-2-pentanone	BQL	0.00470	1	02-17-2004
Methyl-tert-butyl ether (MTBE)	BQL	0.00470	1	02-17-2004
Naphthalene	BQL	0.00470	1	02-17-2004
n-Propyl benzene	BQL	0.00470	1	02-17-2004
Styrene	BQL	0.00470	1	02-17-2004
1,1,1,2-Tetrachloroethane	BQL	0.00470	1	02-17-2004
1,1,2,2-Tetrachloroethane	BQL	0.00470	1	02-17-2004
Tetrachloroethene	BQL	0.00470	1	02-17-2004
Toluene	BQL	0.00470	1	02-17-2004
1,2,3-Trichlorobenzene	BQL	0.00470	1	02-17-2004
1,2,4-Trichlorobenzene	BQL	0.00470	1	02-17-2004
Trichloroethene	BQL	0.00470	1	02-17-2004
1,1,1-Trichloroethane	BQL	0.00470	1	02-17-2004
1,1,2-Trichloroethane	BQL	0.00470	1	02-17-2004
Trichlorofluoromethane	BQL	0.00470	1	02-17-2004
1,2,3-Trichloropropane	BQL	0.00470	1	02-17-2004
1,2,4-Trimethylbenzene	BQL	0.00470	1	02-17-2004
1,3,5-Trimethylbenzene	BQL	0.00470	1	02-17-2004
Vinyl chloride	BQL	0.00470	1	02-17-2004
m-,p-Xylene	BQL	0.00940	1	02-17-2004
o-Xylene	BQL	0.00470	1	02-17-2004

	Spike Added	Spike Result	Percent Recovered
4-Bromofluorobenzene	0.05	0.047	94
1,2-Dichloroethane-d4	0.05	0.0696	139
Toluene-d8	0.05	0.0536	107

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles  
by GCMS 8260/5035

Client Sample ID: DPT-AB-01 (4-6') Dup.  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID G128-1264-2B  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: JTF  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 86.0

Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
Acetone	0.0806	0.0497	1	02-19-2004
Benzene	BQL	0.00497	1	02-19-2004
Bromobenzene	BQL	0.00497	1	02-19-2004
Bromochloromethane	BQL	0.00497	1	02-19-2004
Bromodichloromethane	BQL	0.00497	1	02-19-2004
Bromoform	BQL	0.00497	1	02-19-2004
Bromomethane	BQL	0.00497	1	02-19-2004
2-Butanone	BQL	0.0249	1	02-19-2004
n-Butylbenzene	BQL	0.00497	1	02-19-2004
sec-Butylbenzene	BQL	0.00497	1	02-19-2004
tert-Butylbenzene	BQL	0.00497	1	02-19-2004
Carbon disulfide	BQL	0.00497	1	02-19-2004
Carbon tetrachloride	BQL	0.00497	1	02-19-2004
Chlorobenzene	BQL	0.00497	1	02-19-2004
Chloroethane	BQL	0.00497	1	02-19-2004
Chloroform	BQL	0.00497	1	02-19-2004
Chloromethane	BQL	0.00497	1	02-19-2004
2-Chlorotoluene	BQL	0.00497	1	02-19-2004
4-Chlorotoluene	BQL	0.00497	1	02-19-2004
Dibromochloromethane	BQL	0.00497	1	02-19-2004
1,2-Dibromo-3-chloropropane	BQL	0.00497	1	02-19-2004
Dibromomethane	BQL	0.00497	1	02-19-2004
1,2-Dibromoethane (EDB)	BQL	0.00497	1	02-19-2004
1,2-Dichlorobenzene	BQL	0.00497	1	02-19-2004
1,3-Dichlorobenzene	BQL	0.00497	1	02-19-2004
1,4-Dichlorobenzene	BQL	0.00497	1	02-19-2004
trans-1,4-Dichloro-2-butene	BQL	0.00497	1	02-19-2004
1,1-Dichloroethane	BQL	0.00497	1	02-19-2004
1,1-Dichloroethene	BQL	0.00497	1	02-19-2004
1,2-Dichloroethane	BQL	0.00497	1	02-19-2004
cis-1,2-Dichloroethene	BQL	0.00497	1	02-19-2004
trans-1,2-dichloroethene	BQL	0.00497	1	02-19-2004
1,2-Dichloropropane	BQL	0.00497	1	02-19-2004
1,3-Dichloropropane	BQL	0.00497	1	02-19-2004
2,2-Dichloropropane	BQL	0.00497	1	02-19-2004
1,1-Dichloropropene	BQL	0.00497	1	02-19-2004
cis-1,3-Dichloropropene	BQL	0.00497	1	02-19-2004
trans-1,3-Dichloropropene	BQL	0.00497	1	02-19-2004
Dichlorodifluoromethane	BQL	0.00497	1	02-19-2004
Diisopropyl ether (DIPE)	BQL	0.00497	1	02-19-2004
Ethylbenzene	BQL	0.00497	1	02-19-2004
Hexachlorobutadiene	BQL	0.00497	1	02-19-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles  
by GCMS 8260/5035

Client Sample ID: DPT-AB-01 (4-6') Dup.  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID G128-1264-2B  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: JTF  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 86.0

Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
2-Hexanone	BQL	0.00497	1	02-19-2004
Iodomethane	BQL	0.00497	1	02-19-2004
Isopropylbenzene	BQL	0.00497	1	02-19-2004
4-Isopropyltoluene	BQL	0.00497	1	02-19-2004
Methylene chloride	BQL	0.0199	1	02-19-2004
4-Methyl-2-pentanone	BQL	0.00497	1	02-19-2004
Methyl-tert-butyl ether (MTBE)	BQL	0.00497	1	02-19-2004
Naphthalene	BQL	0.00497	1	02-19-2004
n-Propyl benzene	BQL	0.00497	1	02-19-2004
Styrene	BQL	0.00497	1	02-19-2004
1,1,1,2-Tetrachloroethane	BQL	0.00497	1	02-19-2004
1,1,2,2-Tetrachloroethane	BQL	0.00497	1	02-19-2004
Tetrachloroethene	BQL	0.00497	1	02-19-2004
Toluene	BQL	0.00497	1	02-19-2004
1,2,3-Trichlorobenzene	BQL	0.00497	1	02-19-2004
1,2,4-Trichlorobenzene	BQL	0.00497	1	02-19-2004
Trichloroethene	BQL	0.00497	1	02-19-2004
1,1,1-Trichloroethane	BQL	0.00497	1	02-19-2004
1,1,2-Trichloroethane	BQL	0.00497	1	02-19-2004
Trichlorofluoromethane	BQL	0.00497	1	02-19-2004
1,2,3-Trichloropropane	BQL	0.00497	1	02-19-2004
1,2,4-Trimethylbenzene	BQL	0.00497	1	02-19-2004
1,3,5-Trimethylbenzene	BQL	0.00497	1	02-19-2004
Vinyl chloride	BQL	0.00497	1	02-19-2004
m,p-Xylene	BQL	0.00994	1	02-19-2004
o-Xylene	BQL	0.00497	1	02-19-2004

	Spike Added	Spike Result	Percent Recovered
4-Bromofluorobenzene	0.05	0.0462	92
1,2-Dichloroethane-d4	0.05	0.0731	146
Toluene-d8	0.05	0.0519	104

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles  
by GCMS 8260

Client Sample ID: DPT-AB-02 (4-6')  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID: G128-1264-3F  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: JTF  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 83.6

Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
Acetone	BQL	1.16	50	02-17-2004
Benzene	BQL	0.0462	50	02-17-2004
Bromobenzene	BQL	0.0462	50	02-17-2004
Bromochloromethane	BQL	0.0462	50	02-17-2004
Bromodichloromethane	BQL	0.0462	50	02-17-2004
Bromoform	BQL	0.0462	50	02-17-2004
Bromomethane	BQL	0.0462	50	02-17-2004
2-Butanone	BQL	1.16	50	02-17-2004
n-Butylbenzene	0.134	0.0462	50	02-17-2004
sec-Butylbenzene	0.0559	0.0462	50	02-17-2004
tert-Butylbenzene	BQL	0.0462	50	02-17-2004
Carbon disulfide	BQL	0.0462	50	02-17-2004
Carbon tetrachloride	BQL	0.0462	50	02-17-2004
Chlorobenzene	BQL	0.0462	50	02-17-2004
Chloroethane	BQL	0.0462	50	02-17-2004
2-Chloroethyl vinyl ether	BQL	0.231	50	02-17-2004
Chloroform	BQL	0.0462	50	02-17-2004
Chloromethane	BQL	0.0462	50	02-17-2004
2-Chlorotoluene	BQL	0.0462	50	02-17-2004
4-Chlorotoluene	BQL	0.0462	50	02-17-2004
Dibromochloromethane	BQL	0.0462	50	02-17-2004
1,2-Dibromo-3-chloropropane	BQL	0.231	50	02-17-2004
Dibromomethane	BQL	0.0462	50	02-17-2004
1,2-Dibromoethane (EDB)	BQL	0.0462	50	02-17-2004
1,2-Dichlorobenzene	BQL	0.0462	50	02-17-2004
1,3-Dichlorobenzene	BQL	0.0462	50	02-17-2004
1,4-Dichlorobenzene	BQL	0.0462	50	02-17-2004
trans-1,4-Dichloro-2-butene	BQL	0.231	50	02-17-2004
1,1-Dichloroethane	BQL	0.0462	50	02-17-2004
1,1-Dichloroethene	BQL	0.0462	50	02-17-2004
1,2-Dichloroethane	BQL	0.0462	50	02-17-2004
cis-1,2-Dichloroethene	BQL	0.0462	50	02-17-2004
trans-1,2-dichloroethene	BQL	0.0462	50	02-17-2004
1,2-Dichloropropane	BQL	0.0462	50	02-17-2004
1,3-Dichloropropane	BQL	0.0462	50	02-17-2004
2,2-Dichloropropane	BQL	0.0462	50	02-17-2004
1,1-Dichloropropene	BQL	0.0462	50	02-17-2004
cis-1,3-Dichloropropene	BQL	0.0462	50	02-17-2004
trans-1,3-Dichloropropene	BQL	0.0462	50	02-17-2004
Dichlorodifluoromethane	BQL	0.231	50	02-17-2004
Diisopropyl ether (DIPE)	BQL	0.0462	50	02-17-2004
Ethylbenzene	BQL	0.0462	50	02-17-2004
Hexachlorobutadiene	BQL	0.0462	50	02-17-2004
2-Hexanone	BQL	0.231	50	02-17-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles  
by GCMS 8260

Client Sample ID: DPT-AB-02 (4-6')  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID: G128-1264-3F  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: JTF  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 83.6

Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
Iodomethane	BQL	0.0462	50	02-17-2004
Isopropylbenzene	BQL	0.0462	50	02-17-2004
4-Isopropyltoluene	BQL	0.0462	50	02-17-2004
Methylene chloride	BQL	0.231	50	02-17-2004
4-Methyl-2-pentanone	BQL	0.231	50	02-17-2004
Methyl-tert-butyl ether (MTBE)	BQL	0.0462	50	02-17-2004
Naphthalene	0.300	0.0462	50	02-17-2004
n-Propyl benzene	0.0573	0.0462	50	02-17-2004
Styrene	BQL	0.0462	50	02-17-2004
1,1,1,2-Tetrachloroethane	BQL	0.0462	50	02-17-2004
1,1,2,2-Tetrachloroethane	BQL	0.0462	50	02-17-2004
Tetrachloroethene	BQL	0.0462	50	02-17-2004
Toluene	BQL	0.0462	50	02-17-2004
1,2,3-Trichlorobenzene	BQL	0.0462	50	02-17-2004
1,2,4-Trichlorobenzene	BQL	0.0462	50	02-17-2004
Trichloroethene	BQL	0.0462	50	02-17-2004
1,1,1-Trichloroethane	BQL	0.0462	50	02-17-2004
1,1,2-Trichloroethane	BQL	0.0462	50	02-17-2004
Trichlorofluoromethane	BQL	0.0462	50	02-17-2004
1,2,3-Trichloropropane	BQL	0.0462	50	02-17-2004
1,2,4-Trimethylbenzene	0.235	0.0462	50	02-17-2004
1,3,5-Trimethylbenzene	0.0559	0.0462	50	02-17-2004
Vinyl chloride	BQL	0.0462	50	02-17-2004
m-,p-Xylene	BQL	0.0924	50	02-17-2004
o-Xylene	BQL	0.0462	50	02-17-2004

	Spike Added	Spike Result	Percent Recovered
4-Bromofluorobenzene	0.01	0.0108	108
1,2-Dichloroethane-d4	0.01	0.0101	101
Toluene-d8	0.01	0.00992	99

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles  
by GCMS 8260/5035

Client Sample ID: DPT-AB-03 (4-6")  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID G128-1264-4C  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: JTF  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 77.2

Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
Acetone	BQL	0.0532	1	02-17-2004
Benzene	BQL	0.00532	1	02-17-2004
Bromobenzene	BQL	0.00532	1	02-17-2004
Bromochloromethane	BQL	0.00532	1	02-17-2004
Bromodichloromethane	BQL	0.00532	1	02-17-2004
Bromoform	BQL	0.00532	1	02-17-2004
Bromomethane	BQL	0.00532	1	02-17-2004
2-Butanone	BQL	0.0266	1	02-17-2004
n-Butylbenzene	0.0112	0.00532	1	02-17-2004
sec-Butylbenzene	0.0133	0.00532	1	02-17-2004
tert-Butylbenzene	BQL	0.00532	1	02-17-2004
Carbon disulfide	BQL	0.00532	1	02-17-2004
Carbon tetrachloride	BQL	0.00532	1	02-17-2004
Chlorobenzene	BQL	0.00532	1	02-17-2004
Chloroethane	BQL	0.00532	1	02-17-2004
Chloroform	BQL	0.00532	1	02-17-2004
Chloromethane	BQL	0.00532	1	02-17-2004
2-Chlorotoluene	BQL	0.00532	1	02-17-2004
4-Chlorotoluene	BQL	0.00532	1	02-17-2004
Dibromochloromethane	BQL	0.00532	1	02-17-2004
1,2-Dibromo-3-chloropropane	BQL	0.00532	1	02-17-2004
Dibromomethane	BQL	0.00532	1	02-17-2004
1,2-Dibromoethane (EDB)	BQL	0.00532	1	02-17-2004
1,2-Dichlorobenzene	BQL	0.00532	1	02-17-2004
1,3-Dichlorobenzene	BQL	0.00532	1	02-17-2004
1,4-Dichlorobenzene	BQL	0.00532	1	02-17-2004
trans-1,4-Dichloro-2-butene	BQL	0.00532	1	02-17-2004
1,1-Dichloroethane	BQL	0.00532	1	02-17-2004
1,1-Dichloroethene	BQL	0.00532	1	02-17-2004
1,2-Dichloroethane	BQL	0.00532	1	02-17-2004
cis-1,2-Dichloroethene	BQL	0.00532	1	02-17-2004
trans-1,2-dichloroethene	BQL	0.00532	1	02-17-2004
1,2-Dichloropropane	BQL	0.00532	1	02-17-2004
1,3-Dichloropropane	BQL	0.00532	1	02-17-2004
2,2-Dichloropropane	BQL	0.00532	1	02-17-2004
1,1-Dichloropropene	BQL	0.00532	1	02-17-2004
cis-1,3-Dichloropropene	BQL	0.00532	1	02-17-2004
trans-1,3-Dichloropropene	BQL	0.00532	1	02-17-2004
Dichlorodifluoromethane	BQL	0.00532	1	02-17-2004
Diisopropyl ether (DIPE)	BQL	0.00532	1	02-17-2004
Ethylbenzene	0.00934	0.00532	1	02-17-2004
Hexachlorobutadiene	BQL	0.00532	1	02-17-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles  
by GCMS 8260/5035

Client Sample ID: DPT-AB-03 (4-6')  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID G128-1264-4C  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: JTF  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 77.2

Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
2-Hexanone	BQL	0.00532	1	02-17-2004
Iodomethane	BQL	0.00532	1	02-17-2004
Isopropylbenzene	0.0132	0.00532	1	02-17-2004
4-Isopropyltoluene	0.00704	0.00532	1	02-17-2004
Methylene chloride	BQL	0.0213	1	02-17-2004
4-Methyl-2-pentanone	BQL	0.00532	1	02-17-2004
Methyl-tert-butyl ether (MTBE)	BQL	0.00532	1	02-17-2004
Naphthalene	0.0629	0.00532	1	02-17-2004
n-Propyl benzene	0.0199	0.00532	1	02-17-2004
Styrene	BQL	0.00532	1	02-17-2004
1,1,1,2-Tetrachloroethane	BQL	0.00532	1	02-17-2004
1,1,2,2-Tetrachloroethane	BQL	0.00532	1	02-17-2004
Tetrachloroethene	BQL	0.00532	1	02-17-2004
Toluene	BQL	0.00532	1	02-17-2004
1,2,3-Trichlorobenzene	BQL	0.00532	1	02-17-2004
1,2,4-Trichlorobenzene	BQL	0.00532	1	02-17-2004
Trichloroethene	BQL	0.00532	1	02-17-2004
1,1,1-Trichloroethane	BQL	0.00532	1	02-17-2004
1,1,2-Trichloroethane	BQL	0.00532	1	02-17-2004
Trichlorofluoromethane	BQL	0.00532	1	02-17-2004
1,2,3-Trichloropropane	BQL	0.00532	1	02-17-2004
1,2,4-Trimethylbenzene	0.0585	0.00532	1	02-17-2004
1,3,5-Trimethylbenzene	0.0150	0.00532	1	02-17-2004
Vinyl chloride	BQL	0.00532	1	02-17-2004
m-,p-Xylene	BQL	0.0106	1	02-17-2004
o-Xylene	BQL	0.00532	1	02-17-2004

	Spike Added	Spike Result	Percent Recovered
4-Bromofluorobenzene	0.05	0.0491	98
1,2-Dichloroethane-d4	0.05	0.0708	142
Toluene-d8	0.05	0.0531	106

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles  
by GCMS 8260/5035

Client Sample ID: DPT-AB-04 (4-6')  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID G128-1264-5C  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: JTF  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 80.8

Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
Acetone	BQL	0.0555	1	02-17-2004
Benzene	BQL	0.00555	1	02-17-2004
Bromobenzene	BQL	0.00555	1	02-17-2004
Bromochloromethane	BQL	0.00555	1	02-17-2004
Bromodichloromethane	BQL	0.00555	1	02-17-2004
Bromoform	BQL	0.00555	1	02-17-2004
Bromomethane	BQL	0.00555	1	02-17-2004
2-Butanone	BQL	0.0278	1	02-17-2004
n-Butylbenzene	BQL	0.00555	1	02-17-2004
sec-Butylbenzene	BQL	0.00555	1	02-17-2004
tert-Butylbenzene	BQL	0.00555	1	02-17-2004
Carbon disulfide	BQL	0.00555	1	02-17-2004
Carbon tetrachloride	BQL	0.00555	1	02-17-2004
Chlorobenzene	BQL	0.00555	1	02-17-2004
Chloroethane	BQL	0.00555	1	02-17-2004
Chloroform	BQL	0.00555	1	02-17-2004
Chloromethane	BQL	0.00555	1	02-17-2004
2-Chlorotoluene	BQL	0.00555	1	02-17-2004
4-Chlorotoluene	BQL	0.00555	1	02-17-2004
Dibromochloromethane	BQL	0.00555	1	02-17-2004
1,2-Dibromo-3-chloropropane	BQL	0.00555	1	02-17-2004
Dibromomethane	BQL	0.00555	1	02-17-2004
1,2-Dibromoethane (EDB)	BQL	0.00555	1	02-17-2004
1,2-Dichlorobenzene	BQL	0.00555	1	02-17-2004
1,3-Dichlorobenzene	BQL	0.00555	1	02-17-2004
1,4-Dichlorobenzene	BQL	0.00555	1	02-17-2004
trans-1,4-Dichloro-2-butene	BQL	0.00555	1	02-17-2004
1,1-Dichloroethane	BQL	0.00555	1	02-17-2004
1,1-Dichloroethene	BQL	0.00555	1	02-17-2004
1,2-Dichloroethane	BQL	0.00555	1	02-17-2004
cis-1,2-Dichloroethene	BQL	0.00555	1	02-17-2004
trans-1,2-dichloroethene	BQL	0.00555	1	02-17-2004
1,2-Dichloropropane	BQL	0.00555	1	02-17-2004
1,3-Dichloropropane	BQL	0.00555	1	02-17-2004
2,2-Dichloropropane	BQL	0.00555	1	02-17-2004
1,1-Dichloropropene	BQL	0.00555	1	02-17-2004
cis-1,3-Dichloropropene	BQL	0.00555	1	02-17-2004
trans-1,3-Dichloropropene	BQL	0.00555	1	02-17-2004
Dichlorodifluoromethane	BQL	0.00555	1	02-17-2004
Diisopropyl ether (DIPE)	BQL	0.00555	1	02-17-2004
Ethylbenzene	BQL	0.00555	1	02-17-2004
Hexachlorobutadiene	BQL	0.00555	1	02-17-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Volatiles  
by GCMS 8260/5035

Client Sample ID: DPT-AB-04 (4-6')  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID G128-1264-5C  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: JTF  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 80.8


Compound	Result MG/KG	Quantitation Limit MG/KG	Dilution Factor	Date Analyzed
2-Hexanone	BQL	0.00555	1	02-17-2004
Iodomethane	BQL	0.00555	1	02-17-2004
Isopropylbenzene	BQL	0.00555	1	02-17-2004
4-Isopropyltoluene	BQL	0.00555	1	02-17-2004
Methylene chloride	BQL	0.0222	1	02-17-2004
4-Methyl-2-pentanone	BQL	0.00555	1	02-17-2004
Methyl-tert-butyl ether (MTBE)	BQL	0.00555	1	02-17-2004
Naphthalene	BQL	0.00555	1	02-17-2004
n-Propyl benzene	BQL	0.00555	1	02-17-2004
Styrene	BQL	0.00555	1	02-17-2004
1,1,1,2-Tetrachloroethane	BQL	0.00555	1	02-17-2004
1,1,2,2-Tetrachloroethane	BQL	0.00555	1	02-17-2004
Tetrachloroethene	BQL	0.00555	1	02-17-2004
Toluene	BQL	0.00555	1	02-17-2004
1,2,3-Trichlorobenzene	BQL	0.00555	1	02-17-2004
1,2,4-Trichlorobenzene	BQL	0.00555	1	02-17-2004
Trichloroethene	BQL	0.00555	1	02-17-2004
1,1,1-Trichloroethane	BQL	0.00555	1	02-17-2004
1,1,2-Trichloroethane	BQL	0.00555	1	02-17-2004
Trichlorofluoromethane	BQL	0.00555	1	02-17-2004
1,2,3-Trichloropropane	BQL	0.00555	1	02-17-2004
1,2,4-Trimethylbenzene	BQL	0.00555	1	02-17-2004
1,3,5-Trimethylbenzene	BQL	0.00555	1	02-17-2004
Vinyl chloride	BQL	0.00555	1	02-17-2004
m-,p-Xylene	BQL	0.0111	1	02-17-2004
o-Xylene	BQL	0.00555	1	02-17-2004

	Spike Added	Spike Result	Percent Recovered
4-Bromofluorobenzene	0.05	0.048	96
1,2-Dichloroethane-d4	0.05	0.0707	141
Toluene-d8	0.05	0.0531	106

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles  
by GCMS 8270

Client Sample ID: DPT-AB-01 (4-6')  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID: G128-1264-1A  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: MRC  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 85.1

Compound	Result mg/Kg	Quantitation Limit mg/Kg	Dilution Factor	Date Analyzed
Acenaphthene	BQL	0.368	1	02-25-2004
Acenaphthylene	BQL	0.368	1	02-25-2004
Anthracene	BQL	0.368	1	02-25-2004
Benzo[a]anthracene	BQL	0.368	1	02-25-2004
Benzo[a]pyrene	BQL	0.368	1	02-25-2004
Benzo[b]fluoranthene	BQL	0.368	1	02-25-2004
Benzo[g,h,i]perylene	BQL	0.368	1	02-25-2004
Benzo[k]fluoranthene	BQL	0.368	1	02-25-2004
Benzoic Acid	BQL	0.735	1	02-25-2004
Bis(2-chloroethoxy)methane	BQL	0.368	1	02-25-2004
Bis(2-chloroethyl)ether	BQL	0.368	1	02-25-2004
Bis(2-chloroisopropyl)ether	BQL	0.368	1	02-25-2004
Bis(2-ethylhexyl)phthalate	BQL	0.368	1	02-25-2004
4-bromophenyl phenyl ether	BQL	0.368	1	02-25-2004
Butylbenzylphthalate	BQL	0.368	1	02-25-2004
2-Chloronaphthalene	BQL	0.368	1	02-25-2004
2-Chlorophenol	BQL	0.368	1	02-25-2004
4-Chloro-3-methylphenol	BQL	0.368	1	02-25-2004
4-Chloroaniline	BQL	1.84	1	02-25-2004
4-Chlorophenyl phenyl ether	BQL	0.368	1	02-25-2004
Chrysene	BQL	0.368	1	02-25-2004
Dibenzo[a,h]anthracene	BQL	0.368	1	02-25-2004
Dibenzofuran	BQL	0.368	1	02-25-2004
Di-n-Butylphthalate	BQL	0.368	1	02-25-2004
1,2-Dichlorobenzene	BQL	0.368	1	02-25-2004
1,3-Dichlorobenzene	BQL	0.368	1	02-25-2004
1,4-Dichlorobenzene	BQL	0.368	1	02-25-2004
3,3'-Dichlorobenzidine	BQL	0.735	1	02-25-2004
2,4-Dichlorophenol	BQL	0.368	1	02-25-2004
Diethylphthalate	BQL	0.368	1	02-25-2004
Dimethylphthalate	BQL	0.368	1	02-25-2004
2,4-Dimethylphenol	BQL	0.368	1	02-25-2004
4,6-Dinitro-2-methylphenol	BQL	1.84	1	02-25-2004
2,4-Dinitrophenol	BQL	1.84	1	02-25-2004
2,4-Dinitrotoluene	BQL	0.368	1	02-25-2004
2,6-Dinitrotoluene	BQL	0.368	1	02-25-2004
Di-n-octylphthalate	BQL	0.368	1	02-25-2004
Fluoranthene	BQL	0.368	1	02-25-2004
Fluorene	BQL	0.368	1	02-25-2004
Hexachlorobenzene	BQL	0.368	1	02-25-2004
Hexachlorobutadiene	BQL	0.368	1	02-25-2004
Hexachlorocyclopentadiene	BQL	0.735	1	02-25-2004

Results for Semivolatiles  
by GCMS 8270

Client Sample ID: DPT-AB-01 (4-6')  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID: G128-1264-1A  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: MRC  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 85.1

Compound	Result mg/Kg	Quantitation Limit mg/Kg	Dilution Factor	Date Analyzed
Hexachloroethane	BQL	0.368	1	02-25-2004
Indeno(1,2,3-c,d)pyrene	BQL	0.368	1	02-25-2004
Isophorone	BQL	0.368	1	02-25-2004
2-Methylnaphthalene	BQL	0.368	1	02-25-2004
2-Methylphenol	BQL	0.368	1	02-25-2004
3- & 4-Methylphenol	BQL	0.368	1	02-25-2004
2-Nitroaniline	BQL	0.368	1	02-25-2004
3-Nitroaniline	BQL	1.84	1	02-25-2004
4-Nitroaniline	BQL	1.84	1	02-25-2004
2-Nitrophenol	BQL	0.368	1	02-25-2004
4-Nitrophenol	BQL	1.84	1	02-25-2004
N-Nitrosodiphenylamine	BQL	0.368	1	02-25-2004
N-Nitrosodi-n-propylamine	BQL	0.368	1	02-25-2004
Naphthalene	BQL	0.368	1	02-25-2004
Nitrobenzene	BQL	0.368	1	02-25-2004
Pentachlorophenol	BQL	1.84	1	02-25-2004
Phenanthrene	BQL	0.368	1	02-25-2004
Phenol	BQL	0.368	1	02-25-2004
Pyrene	BQL	0.368	1	02-25-2004
1,2,4-Trichlorobenzene	BQL	0.368	1	02-25-2004
2,4,5-Trichlorophenol	BQL	0.368	1	02-25-2004
2,4,6-Trichlorophenol	BQL	0.368	1	02-25-2004

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	6.9	69
2-Fluorophenol	10	7	70
Nitrobenzene-d5	10	6.1	61
Phenol-d6	10	6.4	64
2,4,6-Tribromophenol	10	5.9	59
4-Terphenyl-d14	10	8.9	89

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles  
by GCMS 8270

Client Sample ID: DPT-AB-02 (4-6')  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID: G128-1264-3B  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: MRC  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 83.6

Compound	Result mg/Kg	Quantitation Limit mg/Kg	Dilution Factor	Date Analyzed
Acenaphthene	BQL	0.377	1	02-25-2004
Acenaphthylene	BQL	0.377	1	02-25-2004
Anthracene	BQL	0.377	1	02-25-2004
Benzo[a]anthracene	BQL	0.377	1	02-25-2004
Benzo[a]pyrene	BQL	0.377	1	02-25-2004
Benzo[b]fluoranthene	BQL	0.377	1	02-25-2004
Benzo[g,h,i]perylene	BQL	0.377	1	02-25-2004
Benzo[k]fluoranthene	BQL	0.377	1	02-25-2004
Benzoic Acid	BQL	0.753	1	02-25-2004
Bis(2-chloroethoxy)methane	BQL	0.377	1	02-25-2004
Bis(2-chloroethyl)ether	BQL	0.377	1	02-25-2004
Bis(2-chloroisopropyl)ether	BQL	0.377	1	02-25-2004
Bis(2-ethylhexyl)phthalate	BQL	0.377	1	02-25-2004
4-bromophenyl phenyl ether	BQL	0.377	1	02-25-2004
Butylbenzylphthalate	BQL	0.377	1	02-25-2004
2-Chloronaphthalene	BQL	0.377	1	02-25-2004
2-Chlorophenol	BQL	0.377	1	02-25-2004
4-Chloro-3-methylphenol	BQL	0.377	1	02-25-2004
4-Chloroaniline	BQL	1.88	1	02-25-2004
4-Chlorophenyl phenyl ether	BQL	0.377	1	02-25-2004
Chrysene	BQL	0.377	1	02-25-2004
Dibenzo[a,h]anthracene	BQL	0.377	1	02-25-2004
Dibenzofuran	BQL	0.377	1	02-25-2004
Di-n-Butylphthalate	BQL	0.377	1	02-25-2004
1,2-Dichlorobenzene	BQL	0.377	1	02-25-2004
1,3-Dichlorobenzene	BQL	0.377	1	02-25-2004
1,4-Dichlorobenzene	BQL	0.377	1	02-25-2004
3,3'-Dichlorobenzidine	BQL	0.753	1	02-25-2004
2,4-Dichlorophenol	BQL	0.377	1	02-25-2004
Diethylphthalate	BQL	0.377	1	02-25-2004
Dimethylphthalate	BQL	0.377	1	02-25-2004
2,4-Dimethylphenol	BQL	0.377	1	02-25-2004
4,6-Dinitro-2-methylphenol	BQL	1.88	1	02-25-2004
2,4-Dinitrophenol	BQL	1.88	1	02-25-2004
2,4-Dinitrotoluene	BQL	0.377	1	02-25-2004
2,6-Dinitrotoluene	BQL	0.377	1	02-25-2004
Di-n-octylphthalate	BQL	0.377	1	02-25-2004
Fluoranthene	BQL	0.377	1	02-25-2004
Fluorene	BQL	0.377	1	02-25-2004
Hexachlorobenzene	BQL	0.377	1	02-25-2004
Hexachlorobutadiene	BQL	0.377	1	02-25-2004
Hexachlorocyclopentadiene	BQL	0.753	1	02-25-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles  
by GCMS 8270

Client Sample ID: DPT-AB-02 (4-6')  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID: G128-1264-3B  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: MRC  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 83.6

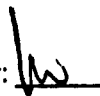
Compound	Result mg/Kg	Quantitation Limit mg/Kg	Dilution Factor	Date Analyzed
Hexachloroethane	BQL	0.377	1	02-25-2004
Indeno(1,2,3-c,d)pyrene	BQL	0.377	1	02-25-2004
Isophorone	BQL	0.377	1	02-25-2004
2-Methylnaphthalene	0.531	0.377	1	02-25-2004
2-Methylphenol	BQL	0.377	1	02-25-2004
3- & 4-Methylphenol	BQL	0.377	1	02-25-2004
2-Nitroaniline	BQL	0.377	1	02-25-2004
3-Nitroaniline	BQL	1.88	1	02-25-2004
4-Nitroaniline	BQL	1.88	1	02-25-2004
2-Nitrophenol	BQL	0.377	1	02-25-2004
4-Nitrophenol	BQL	1.88	1	02-25-2004
N-Nitrosodiphenylamine	BQL	0.377	1	02-25-2004
N-Nitrosodi-n-propylamine	BQL	0.377	1	02-25-2004
Naphthalene	BQL	0.377	1	02-25-2004
Nitrobenzene	BQL	0.377	1	02-25-2004
Pentachlorophenol	BQL	1.88	1	02-25-2004
Phenanthrene	BQL	0.377	1	02-25-2004
Phenol	BQL	0.377	1	02-25-2004
Pyrene	BQL	0.377	1	02-25-2004
1,2,4-Trichlorobenzene	BQL	0.377	1	02-25-2004
2,4,5-Trichlorophenol	BQL	0.377	1	02-25-2004
2,4,6-Trichlorophenol	BQL	0.377	1	02-25-2004

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	7.1	71
2-Fluorophenol	10	7.8	78
Nitrobenzene-d5	10	6.7	67
Phenol-d6	10	6.9	69
2,4,6-Tribromophenol	10	6.6	66
4-Terphenyl-d14	10	9.2	92

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles  
by GCMS 8270

Client Sample ID: DPT-AB-03 (4-6')  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID: G128-1264-4B  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: MRC  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 77.2

Compound	Result mg/Kg	Quantitation Limit mg/Kg	Dilution Factor	Date Analyzed
Acenaphthene	BQL	0.451	1	02-25-2004
Acenaphthylene	BQL	0.451	1	02-25-2004
Anthracene	BQL	0.451	1	02-25-2004
Benzo[a]anthracene	BQL	0.451	1	02-25-2004
Benzo[a]pyrene	BQL	0.451	1	02-25-2004
Benzo[b]fluoranthene	BQL	0.451	1	02-25-2004
Benzo[g,h,i]perylene	BQL	0.451	1	02-25-2004
Benzo[k]fluoranthene	BQL	0.451	1	02-25-2004
Benzoic Acid	BQL	0.902	1	02-25-2004
Bis(2-chloroethoxy)methane	BQL	0.451	1	02-25-2004
Bis(2-chloroethyl)ether	BQL	0.451	1	02-25-2004
Bis(2-chloroisopropyl)ether	BQL	0.451	1	02-25-2004
Bis(2-ethylhexyl)phthalate	BQL	0.451	1	02-25-2004
4-bromophenyl phenyl ether	BQL	0.451	1	02-25-2004
Butylbenzylphthalate	BQL	0.451	1	02-25-2004
2-Chloronaphthalene	BQL	0.451	1	02-25-2004
2-Chlorophenol	BQL	0.451	1	02-25-2004
4-Chloro-3-methylphenol	BQL	0.451	1	02-25-2004
4-Chloroaniline	BQL	2.26	1	02-25-2004
4-Chlorophenyl phenyl ether	BQL	0.451	1	02-25-2004
Chrysene	BQL	0.451	1	02-25-2004
Dibenzo[a,h]anthracene	BQL	0.451	1	02-25-2004
Dibenzofuran	BQL	0.451	1	02-25-2004
Di-n-Butylphthalate	BQL	0.451	1	02-25-2004
1,2-Dichlorobenzene	BQL	0.451	1	02-25-2004
1,3-Dichlorobenzene	BQL	0.451	1	02-25-2004
1,4-Dichlorobenzene	BQL	0.451	1	02-25-2004
3,3'-Dichlorobenzidine	BQL	0.902	1	02-25-2004
2,4-Dichlorophenol	BQL	0.451	1	02-25-2004
Diethylphthalate	BQL	0.451	1	02-25-2004
Dimethylphthalate	BQL	0.451	1	02-25-2004
2,4-Dimethylphenol	BQL	0.451	1	02-25-2004
4,6-Dinitro-2-methylphenol	BQL	2.26	1	02-25-2004
2,4-Dinitrophenol	BQL	2.26	1	02-25-2004
2,4-Dinitrotoluene	BQL	0.451	1	02-25-2004
2,6-Dinitrotoluene	BQL	0.451	1	02-25-2004
Di-n-octylphthalate	BQL	0.451	1	02-25-2004
Fluoranthene	BQL	0.451	1	02-25-2004
Fluorene	BQL	0.451	1	02-25-2004
Hexachlorobenzene	BQL	0.451	1	02-25-2004
Hexachlorobutadiene	BQL	0.451	1	02-25-2004
Hexachlorocyclopentadiene	BQL	0.902	1	02-25-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles  
by GCMS 8270

Client Sample ID: DPT-AB-03 (4-6')  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID: G128-1264-4B  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: MRC  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 77.2

Compound	Result mg/Kg	Quantitation Limit mg/Kg	Dilution Factor	Date Analyzed
Hexachloroethane	BQL	0.451	1	02-25-2004
Indeno(1,2,3-c,d)pyrene	BQL	0.451	1	02-25-2004
Isophorone	BQL	0.451	1	02-25-2004
2-Methylnaphthalene	BQL	0.451	1	02-25-2004
2-Methylphenol	BQL	0.451	1	02-25-2004
3- & 4-Methylphenol	BQL	0.451	1	02-25-2004
2-Nitroaniline	BQL	0.451	1	02-25-2004
3-Nitroaniline	BQL	2.26	1	02-25-2004
4-Nitroaniline	BQL	2.26	1	02-25-2004
2-Nitrophenol	BQL	0.451	1	02-25-2004
4-Nitrophenol	BQL	2.26	1	02-25-2004
N-Nitrosodiphenylamine	BQL	0.451	1	02-25-2004
N-Nitrosodi-n-propylamine	BQL	0.451	1	02-25-2004
Naphthalene	BQL	0.451	1	02-25-2004
Nitrobenzene	BQL	0.451	1	02-25-2004
Pentachlorophenol	BQL	2.26	1	02-25-2004
Phenanthrene	BQL	0.451	1	02-25-2004
Phenol	BQL	0.451	1	02-25-2004
Pyrene	BQL	0.451	1	02-25-2004
1,2,4-Trichlorobenzene	BQL	0.451	1	02-25-2004
2,4,5-Trichlorophenol	BQL	0.451	1	02-25-2004
2,4,6-Trichlorophenol	BQL	0.451	1	02-25-2004

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	7.9	79
2-Fluorophenol	10	8.4	84
Nitrobenzene-d5	10	7.4	74
Phenol-d6	10	7.4	74
2,4,6-Tribromophenol	10	7.1	71
4-Terphenyl-d14	10	10.6	106

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles  
by GCMS 8270

Client Sample ID: DPT-AB-04 (4-6')  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID: G128-1264-5A  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: MRC  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 80.8

Compound	Result mg/Kg	Quantitation Limit mg/Kg	Dilution Factor	Date Analyzed
Acenaphthene	BQL	0.398	1	02-25-2004
Acenaphthylene	BQL	0.398	1	02-25-2004
Anthracene	BQL	0.398	1	02-25-2004
Benzo[a]anthracene	BQL	0.398	1	02-25-2004
Benzo[a]pyrene	BQL	0.398	1	02-25-2004
Benzo[b]fluoranthene	BQL	0.398	1	02-25-2004
Benzo[g,h,i]perylene	BQL	0.398	1	02-25-2004
Benzo[k]fluoranthene	BQL	0.398	1	02-25-2004
Benzoic Acid	BQL	0.796	1	02-25-2004
Bis(2-chloroethoxy)methane	BQL	0.398	1	02-25-2004
Bis(2-chloroethyl)ether	BQL	0.398	1	02-25-2004
Bis(2-chloroisopropyl)ether	BQL	0.398	1	02-25-2004
Bis(2-ethylhexyl)phthalate	BQL	0.398	1	02-25-2004
4-bromophenyl phenyl ether	BQL	0.398	1	02-25-2004
Butylbenzylphthalate	BQL	0.398	1	02-25-2004
2-Chloronaphthalene	BQL	0.398	1	02-25-2004
2-Chlorophenol	BQL	0.398	1	02-25-2004
4-Chloro-3-methylphenol	BQL	0.398	1	02-25-2004
4-Chloroaniline	BQL	1.99	1	02-25-2004
4-Chlorophenyl phenyl ether	BQL	0.398	1	02-25-2004
Chrysene	BQL	0.398	1	02-25-2004
Dibenzo[a,h]anthracene	BQL	0.398	1	02-25-2004
Dibenzofuran	BQL	0.398	1	02-25-2004
Di-n-Butylphthalate	BQL	0.398	1	02-25-2004
1,2-Dichlorobenzene	BQL	0.398	1	02-25-2004
1,3-Dichlorobenzene	BQL	0.398	1	02-25-2004
1,4-Dichlorobenzene	BQL	0.398	1	02-25-2004
3,3'-Dichlorobenzidine	BQL	0.796	1	02-25-2004
2,4-Dichlorophenol	BQL	0.398	1	02-25-2004
Diethylphthalate	BQL	0.398	1	02-25-2004
Dimethylphthalate	BQL	0.398	1	02-25-2004
2,4-Dimethylphenol	BQL	0.398	1	02-25-2004
4,6-Dinitro-2-methylphenol	BQL	1.99	1	02-25-2004
2,4-Dinitrophenol	BQL	1.99	1	02-25-2004
2,4-Dinitrotoluene	BQL	0.398	1	02-25-2004
2,6-Dinitrotoluene	BQL	0.398	1	02-25-2004
Di-n-octylphthalate	BQL	0.398	1	02-25-2004
Fluoranthene	BQL	0.398	1	02-25-2004
Fluorene	BQL	0.398	1	02-25-2004
Hexachlorobenzene	BQL	0.398	1	02-25-2004
Hexachlorobutadiene	BQL	0.398	1	02-25-2004
Hexachlorocyclopentadiene	BQL	0.796	1	02-25-2004

PARADIGM ANALYTICAL LABORATORIES, INC.

Results for Semivolatiles  
by GCMS 8270

Client Sample ID: DPT-AB-04 (4-6')  
Client Project ID: Rapid Refueler A-B  
Lab Sample ID: G128-1264-5A  
Lab Project ID: G128-1264  
Report Basis: Dry Weight

Analyzed By: MRC  
Date Collected: 02-13-2004  
Date Received: 02-16-2004  
Matrix: Soil  
%Solids: 80.8

Compound	Result mg/Kg	Quantitation Limit mg/Kg	Dilution Factor	Date Analyzed
Hexachloroethane	BQL	0.398	1	02-25-2004
Indeno(1,2,3-c,d)pyrene	BQL	0.398	1	02-25-2004
Isophorone	BQL	0.398	1	02-25-2004
2-Methylnaphthalene	BQL	0.398	1	02-25-2004
2-Methylphenol	BQL	0.398	1	02-25-2004
3- & 4-Methylphenol	BQL	0.398	1	02-25-2004
2-Nitroaniline	BQL	0.398	1	02-25-2004
3-Nitroaniline	BQL	1.99	1	02-25-2004
4-Nitroaniline	BQL	1.99	1	02-25-2004
2-Nitrophenol	BQL	0.398	1	02-25-2004
4-Nitrophenol	BQL	1.99	1	02-25-2004
N-Nitrosodiphenylamine	BQL	0.398	1	02-25-2004
N-Nitrosodi-n-propylamine	BQL	0.398	1	02-25-2004
Naphthalene	BQL	0.398	1	02-25-2004
Nitrobenzene	BQL	0.398	1	02-25-2004
Pentachlorophenol	BQL	1.99	1	02-25-2004
Phenanthrene	BQL	0.398	1	02-25-2004
Phenol	BQL	0.398	1	02-25-2004
Pyrene	BQL	0.398	1	02-25-2004
1,2,4-Trichlorobenzene	BQL	0.398	1	02-25-2004
2,4,5-Trichlorophenol	BQL	0.398	1	02-25-2004
2,4,6-Trichlorophenol	BQL	0.398	1	02-25-2004

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	7.7	77
2-Fluorophenol	10	8.2	82
Nitrobenzene-d5	10	7	70
Phenol-d6	10	7.4	74
2,4,6-Tribromophenol	10	6.6	66
4-Terphenyl-d14	10	9.9	99

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By: 

List of Reporting Abbreviations  
and Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantitation Limit

DF = Dilution Factor

Dup = Duplicate

E = Estimated concentration, exceeds calibration range.

J = Estimated concentration, below calibration range and above MDL

LCS(D) = Laboratory Control Spike (Duplicate)

MDL = Method Detection Limit

MS(D) = Matrix Spike (Duplicate)

PQL = Practical Quantitation Limit

RL = Reporting Limit

RPD = Relative Percent Difference

mg/kg = milligram per kilogram, ppm, parts per million

ug/kg = micrograms per kilogram, ppb, parts per billion

mg/L = milligram per liter, ppm, parts per million

ug/L = micrograms per liter, ppb, parts per billion

% Rec = Percent Recovery

% solids = Percent Solids

Special Notes:

1) Metals and mercury samples are digested with a hot block, see the standard operating procedure document for details.

2) Uncertainty for all reported data is less than or equal to 30 percent.

PARADIGM ANALYTICAL LABORATORIES, INC.  
 5500 Business Drive, Wilmington, NC 28405  
 Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC# 34152

Page 1 of 1

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Client: Cattlin Project ID: Rapid Refractor A-B Date: 2-16-04 Report To: Steve Hudson @ Cattlin  
 Address: 220 Old Dairy Rd. Contact: Steve Hudson Turnaround: Standard  
 Address: Wilmington NC 28405 Phone: 910-452-5861 Job Number: 203-110  
 Quote #: DOD 101 Fax: 910-452-7563 P.O. Number: 231126-1 Invoice To: Sheila @ Cattlin

Sample ID	Lot	Time	Ice	Meth	Sol. B.	EPH	VPH	B260/5035	0L78	Notes
DPT-AB-01 (4-6)	2-13	10:45	✓	✓	✓	✓	✓	✓	✓	
DPT-AB-01 (4-6) Dup.	2-13	11:45	✓	✓	✓	✓	✓	✓	✓	
DPT-AB-02 (4-6)	2-13	12:15	✓	✓	✓	✓	✓	✓	✓	
DPT-AB-03 (4-6)	2-13	12:35	✓	✓	✓	✓	✓	✓	✓	
DPT-AB-04 (4-6)	2-13	13:00	✓	✓	✓	✓	✓	✓	✓	
leisure end Summary EDD format G128-126Y										

Time 8:25 2-16 9:25 7/15/04 09:25 on ice  
 Signature John J. Hudson 4:20  
 NC  SC  Other   
 SEE REVERSE FOR TERMS AND CONDITIONS

ORIGINAL

N.C. Certification #481 S.C. Certification #99029

**PARADIGM ANALYTICAL LABORATORIES, INC.**

5500 Business Drive, Wilmington, NC 28405  
 Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC# 34152

Page 1 of 1

Client: Catlin Project ID: Rapid Refresher A-B Date: 2-16-04 Report To: Steve Hudson @ Catlin  
 Address: 220 Old Dairy Rd. Contact: Steve Hudson Turnaround: standard  
 Address: Wilmington, NC 28405 Phone: 910-452-5861 Job Number: 203-110  
 Quote #: POD 101 Fax: 910-452-7563 P.O. Number: 231126-1 Invoice To: Shella @ Catlin

Sample ID	Date	Time	Matrix	Preservatives			Analyses				Comments: Please specify any special reporting requirements	
				Ice	Moth	Salt	VPH	8260/5035	9270			
DPT-AB-01(4-6)	2-13	11:45	S	✓	✓	✓	✓	✓	✓			
DPT-AB-01(4-6)D	2-13	11:45	S	✓	✓	✓	✓	✓	✓			Labware and Summary
DPT-AB-02(4-6)	2-13	12:35	S	✓	✓	✓	✓	✓	✓			FDD format
DPT-AB-03(4-6)	2-13	12:35	S	✓	✓	✓	✓	✓	✓			
DPT-AB-04(4-6)	2-13	13:00	S	✓	✓	✓	✓	✓	✓			

Relinquished By	Date	Time	Received By	Date	Time	Temperature	State Certification Requested
<u>Tom Stitt</u>	<u>2-16</u>	<u>9:25</u>	<u>Shella Hudson</u>	<u>2/16/04</u>	<u>09:25</u>	<u>on top</u>	NC <input checked="" type="checkbox"/> SC <input type="checkbox"/> Other <input type="checkbox"/>

SEE REVERSE FOR TERMS AND CONDITIONS