

**LEAKING UNDERGROUND STORAGE TANK (LUST)
PHASE I LIMITED SITE ASSESSMENT REPORT**

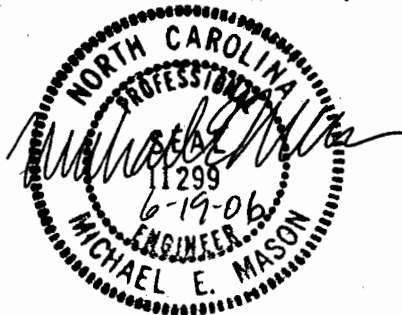
FOR

**RAPID REFUELER 2005 RELEASE
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA**

NCDENR UST INCIDENT NO. PENDING

JUNE 19, 2006

**CONTRACT NO. N62470-05-D-6200
DELIVERY ORDER NO. 0016
CATLIN PROJECT NO. 205-077**



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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
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	Mooresville Regional Office
MSCC	Maximum Soil Contaminant Concentration
MSL	Mean Sea Level
MTBE	Methyl tertiary butyl ether
ug/Kg	Micrograms per Kilogram
ug/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

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PHASE I LIMITED SITE ASSESSMENT REPORT**

FOR

**RAPID REFUELER 2005 RELEASE
MARINE CORPS AIR STATION
NEW RIVER, NORTH CAROLINA**

NCDENR UST INCIDENT NO. PENDING

June 12, 2006

PURPOSE OF INVESTIGATION

The purpose of this Phase I LSA is to provide NCDENR the information necessary to classify the level of risk resulting from a release of JP-5 (jet fuel) at a UST system onto the surrounding ground. CATLIN Engineers and Scientists (CATLIN) was authorized to perform this Phase I Limited Site Assessment (LSA) by the NAVFAC Mid-Atlantic in accordance with the Order of Supplies Contract Number N62470-05-D-6200, Delivery Order Number 0016. The subject site is the location of UST AS-511-3 within Rapid Refueler C-D area aboard MCAS, New River, North Carolina. Figure 1 illustrates the general site location within the local USGS topographic quadrangle map.

The Rapid Refueler site is an active aircraft refueling facility located within the central portion of the New River MCAS airfield and consists of the A-B and C-D tank areas, associated product pipelines, associated buildings, distribution pits and eight fuel stations located on six fuel islands. On September 22, 2005 Rapid Refueler site C-D UST AS-511-3 was accidentally overfilled releasing approximately 700 gallons of JP-5 onto the surrounding ground. Following the September 22, 2005 AS-511-3 JP-5 release, the MCB initiated several initial abatement activities.

Engineering and Environment, Inc. performed initial abatement activities that involved removal and disposal of approximately 200 cubic yards of non-hazardous JP-5 impacted soil from the spill area. Soil samples were obtained from eleven locations across the excavation floor for analysis of TPH-GRO and TPH-DRO concentrations. A review of the resulting laboratory analysis data revealed three remnant areas of concern. Soil samples from RRFS-03-6, RRFS-07-6 and RRFS-08-3 (see Figure 3) exhibited concentrations of TPH-GRO and/or TPH-DRO in excess of North Carolina Action Levels. Since this incident, Shaw Environmental (Shaw) has performed a second excavation removing soils in the vicinity of previous soil samples RRFS-07-6 and RRFS-08-3 and in addition, Shaw removed and disposed UST AS-511-3 and performed an over excavation of the former tank basin. Based on the soil sample results from RRFS-03-06, taken adjacent to the former tank basin, CATLIN was authorized to proceed with this Limited Site Assessment.

As part of the LSA, CATLIN installed one shallow, Type II monitoring well in the former tank basin and obtained a groundwater sample for laboratory analysis. In addition, CATLIN collected confirmatory soil samples from the areas excavated around soil samples RRFS-07-6 and RRFS-08-3 for laboratory analysis

PHASE I LIMITED SITE ASSESSMENT REPORT

A. SITE IDENTIFICATION

DATE OF REPORT: June 12, 2006
Facility ID: N/A **UST Incident Number (if known):** Pending
Site Name: Rapid Refueler 2005 Release
Site Location: Marine Corps Air Station, New River
Nearest City/Town: Jacksonville **County:** Onslow

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

UST Operator: Same as above (see Table 2)
Address: Same as above **Phone:** Same as above
Property Owner: Same as above (see Table 1)
Address: Same as above **Phone:** Same as above

Property Occupant: Unknown
Address: Building AS-511, Rapid Refueler **Phone:** _____
Consultant/Contractor: CATLIN Engineers and Scientists
220 Old Dairy Road
Address: Wilmington, North Carolina 28405 **Phone:** (910) 452-5861

Release Information

Date Discovered: September 22, 2005
Longitude: 77° 26' 47.04" W **Latitude:** 34° 42' 40.55" N
Estimated Quantity of Release: 700 gallons
Cause of Release: Incidental overfilling the subject UST.
Source of Release (e.g. Piping/UST): The source of the release was overfilling of
UST AS-511-3 with approximately 700 gallons of JP-5.

Sizes and contents of UST system(s) from which the release occurred:

One 1,000-gallon, fiberglass UST. UST-511-3 was used to store and transfer JP-5.

I, Michael E. Mason a 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)

B. RISK CHARACTERIZATION

Limited Site Assessment Risk Classification and Land Use Form

Part I - Groundwater/Surface Water/Vapor Impacts

High Risk

1. *Has the release contaminated any water supply well including any used for non-drinking purposes?* YES NO

There was no information provided that indicates a water supply well has been contaminated as a result of the September 22, 2005 UST-511-3 JP-5 release.

2. *Is a water supply well used for drinking water located within 1,000 feet of the source area of the discharge or release?* YES NO

There are no potable water wells located within 1,000 feet of the UST-511-3 source area. The nearest active potable water well is PSWAS- 4150 located approximately 3,000 feet west of the source area. See Figure 1.

3. *Is a water supply well not used for drinking water (e.g., irrigation, washing cars, industrial cooling water, filling swimming pools) located within 250 feet of the source area of the release?* YES NO

There are no water supply wells located within 250 feet of the UST-511-3 source area.

4. *Does groundwater within 500 feet of the source area of the release have the potential for future use (there is no other source of water supply other than the groundwater)?* YES NO

Currently MCAS New River has several areas for potential water supply well locations that are greater than 500 feet from the UST-511-3 source area.

5. *Do vapors from the release pose a threat of explosion because of accumulation of the vapors in a confined space or pose any other serious threat to public health, public safety or the environment?* YES NO
If YES describe.

Buildings within 500 feet of the UST-511-3 source area (AS511, AS512, AS520 and AS522) are slab on grade. No indication of vapor accumulations has been evident or reported.

6. *Are there any other factors that would cause the discharge or release to pose an imminent danger to public health, public safety, or the environment?* YES NO
If YES describe.

A review of the available data does not suggest other factors would cause the release to pose an imminent danger to public health, public safety, or the environment.

Intermediate Risk

7. *Is a surface water body located within 500 feet of the source area of the discharge or release?* YES NO

The nearest mapped surface water body is a tributary to Southwest Creek located approximately 1,900 feet south west of the UST-511-3 source area (see Figure 1). A storm water retention pond is located approximately 1,100 feet east of the source area.

If YES, does the maximum groundwater contaminant concentration exceed the surface water quality standards and criteria found in 15A NCAC 2B.0200 by a factor of 10? YES NO

8. *Is the source area of the discharge or release located within an approved or planned wellhead protection area as defined in 42 USC 300h-7(e)?* YES NO
If YES describe.

Wellhead protection areas on MCAS New River as defined by 42 USC 300h-7(e) have not, as of this time, been designated by the State. However, MCAS New River has identified wellhead protection areas on the base. According to the MCB "Wellhead Protection Plan – 2002 Update", the source area is not located within a proposed wellhead protection area.

9. *Is the release located in the Coastal Plain physiographic region as designated on a map entitled "Geology of North Carolina" published by the Department in 1985?* YES NO

As identified in the Geologic Map of North Carolina (North Carolina Department of Natural Resources and Community Development 1985), the subject site lies within the Coastal Plain Physiographic Province. Figure 2 illustrates the subject site location in reference to the Geologic Map of North Carolina Coastal Plain physiographic province.

If YES, is the source area of the release located in an area in which there is recharge to an unconfined or semi-confined deeper aquifer that is being used or may be used as a source of drinking water? YES NO

If YES describe

While there is the potential for recharge by rainfall to the unconfined surficial aquifer at the Base, the surficial aquifer is not used for water supply aboard MCAS, New River. Groundwater obtained from the Castle Hayne Aquifer is the raw water source for the MCAS, New River potable water treatment facilities. Contamination of the Castle Hayne aquifer is unlikely since an estimated 6 feet of Upper Tertiary Confining Unit, 27 feet of Upper Tertiary Aquifer and 50 feet of Castle Hayne Confining Unit separate the Castle Hayne aquifer from the surficial aquifer.

10. *Do the levels of groundwater contamination for any contaminant exceed the gross contamination levels (GCLs) established by the Department?* YES NO

Surficial groundwater samples from site monitoring well USTAS511-MW09 were analyzed per EPA Method 602 plus Xylenes, EPA Method 625+TICS and MADEP VPH/EPH parameters. The resulting laboratory analysis results indicate that no analytes were detected in concentrations in excess of applicable GCLs

Part II - Land Use

Property Containing Source Area of Release

The questions below pertain to the property containing the source area of the release.

1. *Does the property contain one or more primary or secondary residences (permanent or temporary)?* YES NO
Describe.

MCAS, New River does contain primary and secondary residences; however, they are more than 1,500 feet from the UST-511-3 source area.

2. *Does the property contain a school, daycare center, hospital, playground, park, recreation area, church, nursing home, or other place of public assembly?* YES NO
Describe.

MCAS, New River does contain above described places of public assembly; however, they are more than 1,500 feet from release area.

3. *Does the property contain a commercial (e.g., retail, warehouse, office/business space, etc.) or industrial (e.g., manufacturing, utilities, industrial research and development, chemical/petroleum bulk storage, etc.) enterprise, an inactive commercial or industrial enterprise, or is the land undeveloped?* YES NO
Describe.

The UST-511-3 source area is part of the Rapid Refueler area, an active aircraft refueling facility located within the central portion of the MCAS New River airfield.

4. *Do children visit the property?* YES NO
Explain.

Under normal circumstances children are not expected to visit the property.

- Is access to the property reliably restricted consistent with its use (e.g., by fences, security personnel or both)?* YES NO
Explain.

The MCAS airfield is secured and access is limited to Marine Corps and other authorized personnel.

5. *Do pavement, buildings, or other structures cap the contaminated soil?* YES NO
Describe.

The UST-511-3 source area is within a grass covered area.

If YES, what mechanisms are in place or can be put into place to ensure that the contaminated soil will remain capped in the foreseeable future?

The current site use is not expected to change in the near future.

6. *What is the zoning status of the property?*

The MCAS, New River is not subject to local or county-zoning requirements; however, UST-511-3 is located within an Industrial/Commercial use zone.

7. *Is the use of the property likely to change in the next 20 years?* YES NO
Explain.

The current use of the local MCAS, New River area is not likely to change in the near future.

Property Surrounding Source Area of Release

The questions below pertain to the area within 1,500 feet of the source area of the release (excludes property containing source area of the release): See Figure 1

1. *What is the distance from the source area of the release to the **nearest** primary or secondary residence (permanent or temporary)?*

The nearest primary or secondary residences are located greater than 1,500 feet from the UST-511-3 source area.

2. *What is the distance from the source area of the release to the **nearest** school, daycare center, hospital, playground, park, recreation area, church, nursing home or other place of*

public assembly?

MCAS, New River does contain place(s) of public assembly; however, the nearest such area(s) are greater than 1,500 feet from the UST-511-3 source area.

3. *What is the zoning status of properties in the surrounding area?*

The UST-511-3 source area is located within an Industrial/Commercial land use area.

4. *Briefly characterize the use and activities of the land in the surrounding area.*

UST AS-511-3 source area is located within the Rapid Refueler area, an active aircraft refueling facility in the central portion of the MCAS New River airfield

C. RECEPTOR INFORMATION

1. Water Supply Wells

There are no active potable water wells located within 1,500 feet of the subject site.

2. Public Water Supplies

Are public water supplies available within 1,500 feet of the source area of the release?

YES

NO

If YES, where is the location of the nearest public water lines and the source(s) of the public water supply (indicate on map). Describe.

Public water is provided to Building AS-511, as well as other buildings within 1,500 feet of the potential source area by water mains, which carry treated potable water. Potable water is supplied to the site and surrounding areas by the MCAS, New River water supply system. Groundwater obtained from the Castle Hayne Aquifer is the raw water source for the MCAS, New River potable water treatment facilities.

3. Surface Water

As stated previously, the nearest mapped surface water body is a tributary to Southwest Creek located approximately 1,900 feet southwest of the UST-511-3 source area.

4. Wellhead Protection Areas

According to the MCB "Wellhead Protection Plan – 2002 Update", the UST-511-3 source area is not located within a proposed wellhead protection area.

5. Deep Aquifers in the Coastal Plain Physiographic Region

To determine deep aquifers underlying the subject site, the area was profiled in the "Visual Hydrogeologic Framework" database provided in the NCDENR Division of Water Resources website (VHF website) on May 3, 2006. This is a database of well and soil boring log data from numerous locations across the North Carolina Coastal Plain. The program uses data from the three locations closest to the point of interest to provide a cross-section of commonly identified hydrogeologic units likely to be present below the subject site.

Including the Surficial aquifer there are eleven commonly identified aquifers (seven principal aquifers and four minor aquifers) within the North Carolina Coastal Plain Physiographic Region. The deep aquifers below the subject as follows:

Hydrogeologic Units
Surficial Aquifer
Upper Tertiary Confining Unit
Upper Tertiary Aquifer
Castle Hayne Confining Unit
Castle Hayne Aquifer
Pee Dee Confining Unit

A copy of the visual hydrogeologic framework has been provided in Appendix A.

6. Subsurface Structures

Numerous underground utilities are present throughout MCAS, New River air field. These utilities are reportedly located above the surficial groundwater table (approximately 6.5 feet BLS at USTAS511-MW09) and therefore, are not considered potential receptors.

7. Property Owners and Occupants

The subject site is owned and operated by the Marine Corps Base, Camp Lejeune. Refer to Table 2.

D. SITE GEOLOGY AND HYDROGEOLOGY

D.1 Site Geology

The following site geology description is based on visual description of the soil split spoon samples obtained while installing the borehole for site groundwater monitoring well USTAS511-MW09. The encountered site soils can be summarized as follows:

USTAS511-MW09		
Depth in feet BLS	Soil Description	USCS
0-4	Tan, very fine to fine grained Sand	SP
4-8	Brownish gray, silty, very fine to fine Sand	SM
8-9.5	Brownish gray, very fine sandy Clay	SC
9.5-13	Gray well sorted very fine to fine Sand	SP
13-14	Gray, silty, very fine to fine sands	SM
11-14	Dark gray, highly plastic Clay, trace sands	CH
14-17	Gray, silty, very fine to fine Sand, few silts	SP
Borehole terminated at 17 feet BLS.		

The soils described above are consistent with undivided surficial deposits typically encountered within the area Coastal Plain physiographic province. A copy of the USTAS511-MW09 boring log, monitoring well as-built, and North Carolina Well Construction record have been provided in Appendix B.

D.2 Site Hydrogeology

On April 24, 2006 CATLIN personnel gauged the depth from the top of casing, at monitoring well USTAS511-MW09; the surficial groundwater table was 6.58 feet BLS. Review of the data generated during this investigation, indicates the surficial groundwater encountered below the UST-511-3 source area is part of an unconfined surficial aquifer. Site monitoring well detail and the groundwater gauging data has been summarized on Table 3. The location of the site monitoring well has been illustrated on Figure 3.

E. SAMPLING RESULTS

Following the September 22, 2005 AS511-3 JP-5 release (UST-511-3 source area) MCB initiated several initial abatement efforts. Engineering and Environment, Inc. (EEI) responded to the release and removed and disposed approximately 200 cubic yards of non-hazardous JP-5 impacted soil from the spill area. Soil samples were obtained from eleven locations (see Figure 3) across the excavation floor for analysis of TPH-GRO and TPH-DRO concentrations. The resulting laboratory analysis data revealed three remnant areas of concern. Soil samples from RRFS-03-6, RRFS-07-6 and RRFS-08-3 exhibited concentrations of TPH-GRO and/or TPH-DRO in excess of

North Carolina Action Levels. The details of this excavation event are included in a letter report prepared by EEI dated January 31, 2006.

Since this excavation project, Shaw Environmental (Shaw) has performed a second excavation removing soils in the vicinity of previous soil samples RRFS-07-6 and RRFS-08-3 and in addition, Shaw removed and disposed UST AS-511-3 and performed an over excavation of the former tank basin and obtained confirmatory soil samples. The results of Shaw's soil sampling are included in the Tank Closure Report for UST AS511-3.

Following backfill of the former tank basin, CATLIN installed one Type II, shallow well (UST511-MW09) and obtained a groundwater sample for laboratory analysis per the Risk Based criteria. No soil samples were taken for laboratory analysis during well installation. CATLIN collected two soil samples for laboratory analysis from the RRFS-07-6 and the RRFS-08-3 locations to confirm that the second excavation was successful. All surficial groundwater assessment fieldwork methods were conducted in general accordance with CATLIN's Standard Methods of Investigation and Data Evaluation. A copy of the CATLIN Standard Methods of Investigation has been provided in Appendix C.

E.1 Soil Sampling

The locations of site soil samples [USTAS511-SB01 (3-4') and USTAS511-SB02 (5-6')] obtained for this LSA have been illustrated in Figure 3. In accordance with Table 5 in the *2001 Guidelines* all site soil samples were analyzed for remnant Medium/High Boiling Point Fuels (JP-5) contamination per EPA Methods 8260B + IPE & MTBE, EPA Method 8270 (plus 10 largest non-target peaks) and MADEP VPH/EPH. LSA soil samples were analyzed at SGS Environmental Services, Inc. (N.C. Certification #481) in Wilmington, North Carolina. A copy of the resulting laboratory report and chain of custody documentation has been provided in Appendix D.

For regulatory compliance, the site is located within an Industrial/Commercial - I/C area and will likely be classified by NCDENR as a Low Risk Site. Therefore, site soil quality data for this report has been compared to applicable I/C MSCCs listed in the *2001 Guidelines*. A summary of the site soil sample analysis results as compared to I/C MSCCs are as follows:

EPA Method 8260B/5035 + IPE + MTBE

Analysis of site soil samples, USTAS511-SB01 (3-4') and USTAS511-SB02 (5-6'), obtained for this LSA, revealed all EPA Method 8260B/5035 analytes were either below the method detection limits or below applicable I/C MSCCs. A summary of the soil EPA Method 8260B/5035 analysis has been listed in Table 4A. Figure 4A illustrates the summarized EPA Method 8260B/5035 analytical data on the site plan.

EPA Method 8270 (plus 10 largest non-target peaks)

Analysis of site soil samples revealed all EPA Method 8270 analytes were either below the method detection limits or below applicable I/C MSCCs.

In accordance with the *2001 Guidelines* EPA Method 8270 sample(s) are also analyzed for the ten (10) largest (peak area) non-target compounds, or Tentatively Identified Compounds (TICs). TICs refer to detected compounds, which are not present in the EPA Method 8270 list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared using a computerized library search of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist. Quantitation was accomplished by relative peak height of the compound compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak height is equal to or greater than 10% of that of the nearest internal standard. The quantitation standard provided is an estimate. Laboratory analysis of the USTAS511-SB01 soil sample revealed no library search compounds were detected. Laboratory analysis of the USTAS511-SB02 soil sample revealed either unknown or unknown alkane compounds. A summary of the soil EPA Method 8270 (plus TICs) analysis has been listed in Table 4B. Figure 4B illustrates the summarized EPA Method 8270 analytical data on the site plan.

MADEP VPH/EPH

Analysis of the site soil samples revealed all MADEP VPH/EPH hydrocarbon fractions were either below applicable I/C MSCCs or below method detection limits. MADEP VPH/EPH laboratory analysis results have been summarized in Table 4C. MADEP VPH/EPH laboratory analysis results as compared to NCDENR MSCCs have been summarized in Table 4D. Figure 4C illustrates the MADEP VPH/EPH analytical data on the site plan.

E.2 Groundwater Sampling

CATLIN personnel installed one, Type II, shallow monitoring well USTAS511-MW09 on April 24, 2006. The well was constructed with 10-feet of 0.010-inch slotted, Schedule 40 PVC screen and seven feet of Schedule 40 PVC riser. Following construction, the groundwater in the well was allowed to equilibrate, gauged for depth to water and potential free-phase product thickness and then purged a minimum of three well volumes. Following purging, groundwater samples were collected in glassware provided by the laboratory. All groundwater samples were labeled with the monitoring well identification, sample date, site name, sampler, and placed in an iced cooler. Samples were then delivered to SGS Environmental Services, Inc. (SGS; North Carolina Certification #481) in Wilmington, North Carolina. In accordance with Table 10 of the *2001 Guidelines*, site groundwater samples were analyzed for remnant Medium/High Boiling Point Fuels (JP-5) contamination per EPA Method 602 with Xylenes, EPA Method 625 (+ 10 largest non-target peaks) and MADEP VPH/EPH. A copy of the resulting

groundwater sample laboratory analysis report and chain of custody documentation has been provided in Appendix D.

The site groundwater analysis results have been compared to applicable 2L GWQS and GCLs listed in the *2001 Guidelines*. The USTAS511-MW09 groundwater laboratory sample analysis results are summarized below:

EPA METHOD 602 plus MTBE and Xylenes

Analysis of the monitoring well USTAS511-MW09 groundwater sample per EPA Method 602 plus MTBE and Xylenes revealed that, except for benzene concentrations, all analyte concentrations were either below method detection limits or below applicable 2L GWQS and GCLs. Benzene concentrations were detected at 4.40 ug/L or just over the 2L GWQS of 1 ug/L but below the GCL of 5,000ug/L. A summary of the USTAS511-MW09 groundwater sample EPA Method 602 analysis has been listed in Table 5A. Figure 5A illustrates the summarized EPA Method 602 data in relation to the site plan.

EPA METHOD 625 + TICS

EPA Method 625 analysis of the monitoring well USTAS511-MW09 groundwater sample revealed that, except for naphthalene concentrations, all analyte concentrations were either below method detection limits or below applicable 2L GWQS. Dissolved naphthalene concentrations were detected at 328 ug/L; above the applicable 2L GWQS of 21 ug/L, but below the GCL of 15,500 ug/L.

In accordance with the *2001 Guidelines* EPA Method 625 sample(s) are also analyzed for TICs. Laboratory analysis of the USTAS511-MW09 groundwater samples revealed Ten TICs. The one TIC of concern is 2-Methylnaphthalene (match probability of 97%) concentration at 389 ug/L, the applicable 2L GWQS is 14 ug/L and the GCL is 12,500 ug/L. The EPA Method 625 + TICs laboratory report data has been summarized on Table 5B. Figure 5B shows a summary of the analytical data in relation to the site map.

MADEP VPH/EPH

MADEP VPH/EPH analysis of the monitoring well USTAS511-MW09 groundwater sample revealed hydrocarbon fraction C9-C18 Aliphatics (42,400 ug/L) and C9-C22 Aromatics (6,400 ug/L) concentrations in excess of applicable 2L GWQS; 4,200 and 210 ug/L respectively. Hydrocarbon fraction C5-C8 Aliphatics and C19-C36 Aliphatics concentrations were below method detection limits. MADEP EPH/VPH laboratory report data has been summarized on Table 5C. MADEP EPH/VPH laboratory report data as compared to NCDENR 2L GWQS has been summarized on Table 5D. Figure 5C shows a summary of the laboratory data on the site map.

Groundwater monitoring well USTAS511-MW09 is located within an existing groundwater monitoring well field utilized for groundwater monitoring of previous release(s) that have occurred within the Rapid Refueler area. Recently, the MCB initiated the preparation of a Remedial Action Optimization and Revised Corrective Action Plan report that consolidates the areas of environmental concern within the Rapid Refueler area. This revised RAO & RCAP is currently under preparation. Following the findings of this LSA, groundwater monitoring well USTAS511-MW09 will be included in the Rapid Refueler area annual groundwater sampling plan. This will allow continued monitoring of remnant groundwater contaminants from the UST-511-3 source area as part of a monitoring plan for a larger area of environmental concern.

E.3 Free-Phase Product

No measurable thickness of free-phase product was detected in site groundwater monitoring well USTAS511-MW09 during this Phase I LSA.

F. CONCLUSIONS AND RECOMMENDATIONS

F.1 Conclusions

LSA field and laboratory findings can be summarized as follows:

- Based on the field and laboratory findings of this Phase I LSA, CATLIN concludes that the subject site meets the criteria for Industrial/Commercial (I/C) land use and Low Risk classification.
- The site Phase I LSA soil samples were analyzed per EPA Methods 8260B + IPE & MTBE, EPA Method 8270 (plus 10 largest non-target peaks) and MADEP VPH/EPH. Laboratory analysis of site soil samples revealed that analyte concentrations were either below method detection limits or below applicable I/C MSCCs.
- Site USTAS511-MW09 groundwater samples were analyzed per EPA Method 602 with Xylenes, EPA Method 625 (+ 10 TICs) and MADEP VPH/EPH. Laboratory analyses revealed that all analyte concentrations were below applicable GCLs, except as follows:
 - Dissolved hydrocarbon fraction C9-C18 Aliphatics (42,400 ug/L) and C9-C22 Aromatics (6,400 ug/L) concentrations were detected in excess of applicable 2L GWQS; 4,200 and 210 ug/L respectively. These hydrocarbon fractions have no GCLs.
- No free-phase product was measured at the site groundwater monitoring well.

F.2 Recommendations

Ultimately, the NCDENR Division of Waste Management UST Section Underground Storage Section personnel will determine the risk classification for the incident at the subject site. Any additional assessment and/or remediation activities would be based on the pending risk classification. The following recommendations are based on CATLIN personnel evaluating site findings in accordance with the 2001 Guidelines.

- Current site soil conditions warrant no additional investigation.
- Groundwater monitoring well USTAS511-MW09 is located within an existing groundwater monitoring well field for other release(s) that have occurred within the Rapid Refueler site. Following the findings of this Phase I LSA, groundwater monitoring well USTAS511-MW09 will be included in the existing Rapid Refueler annual groundwater sampling plan

A copy of this report should be forwarded to the NCDENR at the following address:

North Carolina Department of Environment and Natural Resources
Division of Waste Management
UST Section
Attention: Mr. Bruce Reed
127 Cardinal Drive Extension
Wilmington, North Carolina 28405

G. REFERENCES

AH Environmental Consultants, Wellhead Protection Plan – 2002 Update, Marine Corp Base, Camp Lejeune, North Carolina, August 2002.

Engineering and Environment, Inc., Data Report, Rapid Refueler Release Soil Sampling, Marine Corps Air Station, New River, North Carolina, January 31, 2005.

North Carolina Department of Natural Resources and Community Development. *Geology Map of North Carolina* 1985.

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

North Carolina Department of Environment and Natural Resources (NCDENR), Division of Water Resources, Hydrogeology Framework Database.
http://www.ehnr.state.nc.us/Data_and_Modeling/Ground_Water_Databases/frametstnew.php.

North Carolina Geological Survey Website.
<http://www.geology.enr.state.nc.us/>

TABLES

TABLE 1
SITE HISTORY
UST SYSTEM INFORMATION

Building AS-511

UST ID Number	Product (gasoline, diesel, jet fuel, etc.)	Capacity (gallons)	Date Installed (m/dd/yy)	Date Permanently Closed (P), or Still in Use* (C) (m/dd/yy)	Was Release Associated With UST System? (Yes / No)
AS511-3	JP-5	1,000	January-99	(P) August 29, 2005	Yes

TABLE 2
SITE HISTORY
UST OWNER/OPERATOR INFORMATION

Building AS-511

UST ID Number	Name of Owner or Operator	Dates of Ownership/Operation (m/dd/yy) to (m/dd/yy)	UST usage
USTAS511-3	Commanding Officer Attn: Director I&E/EMD/EQB Camp Lejeune, NC	January 1999 to August 2005	JP-5 Storage
Address		Telephone Number	
PSC Box 20004 Marine Corps Base, Camp Lejeune, NC 28542-0004		910-451-5068	

TABLE 3 WELL CONSTRUCTION INFORMATION

Date: April 2006

Incident Number and Name: Pending/Building AS-511

Well ID	Date Installed (m/dd/yy)	Date Water Level Measured (m/dd/yy)	Well Casing Depth (ft. BGS)	Screened Interval (x to y ft. BGS)	Bottom of Well (ft. BGS)	Top of Casing Elevation (ft.)	Depth to Water from Top of Casing (ft.)	Free Product Thickness (ft.)	Ground Water Elevation (ft.)	Comments
USTAS511-MW09	4/24/2006	4/24/2006	7	7-17	17	22.21	6.58	0.00	15.63	Monitoring

ft BLS = feet below land surface

TABLE 4A SUMMARY OF SOIL LABORATORY RESULTS

Date: April 2006

Incident Number and Name: Pending/Rapid Refueler 2005 Release

Analytical Method: EPA Method 8260B/5035 plus IPE and MTBE

Sample ID	Contaminant of Concern →		Acetone	Naphthalene	Remaining EPA Method 8260 parameters
	Date Collected	Sample Depth (ft. BLS)			
USTAS511-SB01	4/24/2006	3-4'	0.0197 J	<0.00703	BQL
USTAS511-SB02	4/24/2006	5-6'	0.0156 J	0.00682	BQL
Residential MSCC (mg/kg)			1,564	313	Varies
Industrial/Commercial MSCC (mg/kg)			40,880	8,176	Varies
Soil to Groundwater MSCC (mg/kg)			2.8	0.58	Varies

All results in milligrams per Killogram - mg/Kg.

ft. BLS = feet Below Land Surface

BQL - Below Quantitation Limit

J - Estimated concentration, below calibration range and above Method Detection Limit.

TABLE 4B SUMMARY OF SOIL LABORATORY RESULTS

Date: April 2006

Incident Number and Name: Pending/Rapid Refueled 2005 Release

Analytical Method: EPA Method 8270 plus TICS

Sample ID	Contaminant of Concern		EPA Method 8270 Compounds		Top Ten Tentatively Identified Compounds (TICs)									
	Date Collected	Sample Depth (ft. BLS)	2-Methylnaphthalene	Remaining EPA Method 8270 Compounds	Unknown Alkane	Unknown Alkane	Unknown Alkane	Unknown Alkane	Unknown Alkane	Unknown Alkane	Unknown Alkane	Unknown	Unknown Alkane	Unknown
USTAS511-SB01	4/24/2006	3-4'	<0.470	BQL	No library search compounds detected									
USTAS511-SB02	4/24/2006	5-6'	0.259 J	BQL	5.590	3.050	2.700	2.360	1.280	0.930	0.902	0.670	0.662	0.642
Residential MSCC (mg/kg)			63	Varies	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Industrial/Commercial MSCC (mg/kg)			1,635	Varies	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Soil to Groundwater MSCC (mg/kg)			1.7	Varies	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

All results in milligram per Kilogram - mg/Kg.

ft. BLS = feet below land surface

BQL - Below Quantitation Limit

J - Estimated concentration, below calibration range and above Method Detection Limit.

TICS - Refers to the ten detected substances, not included in the standard EPA Method 8270 list, with the highest concentration. TICS are identified and quantitated only if the peak area is equal or greater than 10% of that of the nearest internal standard. Quantitation provided is an estimate.

TABLE 4C SUMMARY OF SOIL LABORATORY RESULTS

Date: April 2006

Incident Number and Name: Pending/Rapid Refueler 2005 Release

Analytical Method: MADEP Method EPH/VPH

Sample ID	Contaminant of Concern →		EPH			VPH		
	Date Collected	Sample Depth (ft. BGS)	C9-C18 Aliphatics	C19-C36 Aliphatics	C11-C22 Aromatics	C5-C8 Aliphatics	C9-C12 Aliphatics	C9-C10 Aromatics
USTAS511-SB01	4/24/2006	3-4'	<10	<10	<10	<10	<10	<10
USTAS511-SB02	4/24/2006	5-6'	97	<10	15	<10	29	34

All results in milligrams per Kilogram - mg/kg.

ft. BLS = feet Below Land Surface

TABLE 4D SUMMARY OF SOIL LABORATORY RESULTS

Date: April 2006

Incident Number and Name: Pending/Rapid Refueler 2005 Release

Analytical Method: MADEP Method VPH/EPH 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. BLS)				
USTAS511-SB01	4/24/2006	3-4'	<10	<20	<10	<20
USTAS511-SB02	4/24/2006	5-6'	<10	126	<10	49
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	3,300	**	34

All results in milligrams per Kilogram - mg/Kg.

ft. BLS = feet Below Land Surface

* - Health based level (>100%)

** - Considered Immobile

TABLE 5A
SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: April 2006

Incident Number/Name: Pending/Building 2005 Release

Analytical Method: EPA Method 602 plus MTBE and Xylenes

Well ID	Contaminant of Concern →		Benzene	Ethylbenzene	Toluene	M/P-Xylene	o-Xylene	Remaining EPA Method 602 plus MTBE compounds
	Sample ID	Date Collected						
2L GWQS GCL			1 5,000	550 84,500	1,000 257,500	530* 87,500*		Varies Varies
USTAS511-MW09	USTAS511-MW09	4/24/2006	4.40	62.0	24.0	153	144	BQL

Concentrations are in micrograms per Liter - ug/L.

* - Total Xylenes limit

Bold figure indicates concentration exceeds applicable 2L GWQS.

TABLE 5B SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: April 2006

Incident Number and Name: Pending/Rapid Refueler 2005 Release

Analytical Method: EPA Method 625 and TICS

Well ID	Contaminant of Concern		EPA Method 625 Compounds				(TICS) Top Ten Tentatively Identified Compounds									
			Acenaphthene	Fluorene	Naphthalene	Remaining 625 Compounds	2-Methylnaphthalene	1-Methylnaphthalene	Alkane, Unknown	Unknown	Ethylmethylbenzene, Isomer of	Alkane, Unknown	Biphenyl	Alkane, Unknown	Unknown	Ethyl/dimethylbenzene, Isomer of
	Sample ID	Date Collected														
2L GWQS GCL			80 2,120	280 950	21 15,500	Varies Varies	14 12,500	NE NE	NE NE	NE NE	NE NE	NE NE	NE NE	NE NE	NE NE	NE NE
USTAS511-MW09	USTAS511-MW09	4/24/2006	2.30 J	5.80 J	328	BQL	389	336	271	99.4	98.6	64.1	56.5	55.5	50.8	49.9

BQL = Below Quantitation Limit

All results in micrograms per Liter - ug/L

TICS - Refers to the ten detected substances, not included in the standard EPA Method 625 list, with the highest concentration. TICS are identified and quantitated only if the peak area is equal or greater than 10% of that of the nearest internal standard. Quantitation provided is an estimate.

NE - Not Established

Bold figure indicates concentration exceeds applicable 2L GWQS.

J - Estimated concentration, below calibration range and above Method Detection Limit.

TABLE 5C SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: April 2006

Incident Number and Name: Pending/Rapid Refueler 2005 Release

Analytical Method: MADEP Method VPH/EPH

Well ID	Hydrocarbon Fraction		VPH			EPH		
			C5-C8 Aliphatics	C9-C12 Aliphatics	C9-C10 Aromatics	C9-C18 Aliphatics	C19-C36 Aliphatics	C11-C22 Aromatics
USTAS511-MW-09	USTAS511-MW-09	4/24/2006	<100	1,400	1,300	41,000	<2,000	5,100

Concentrations are in micrograms per Liter - ug/L

TABLE 5D SUMMARY OF GROUNDWATER LABORATORY RESULTS

Date: April 2006 Incident Number and Name: Pending/Rapid Refueler 2005 Release

Analytical Method: MADEP Method VPH/EPH as compared to NCDENR 2L GWQS

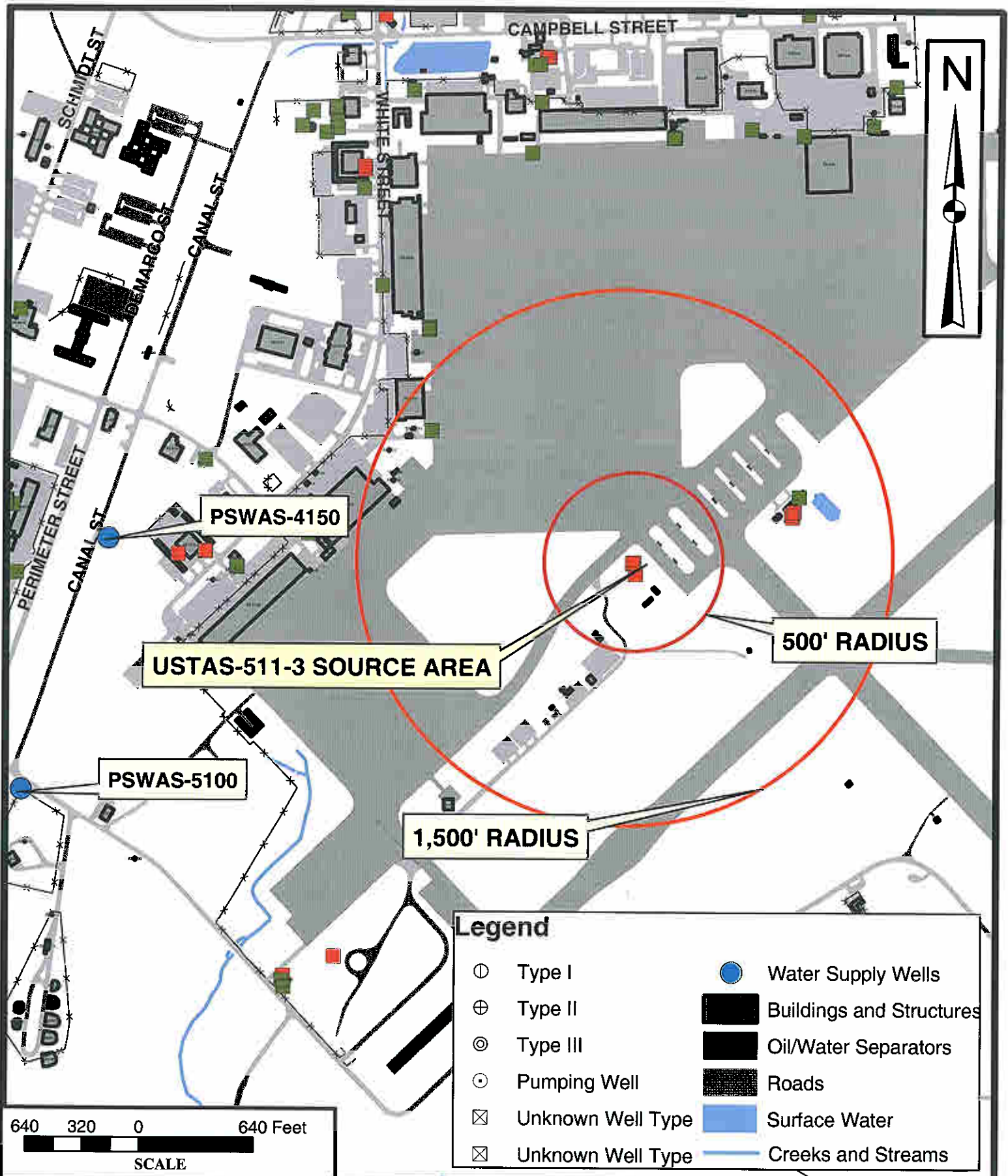
Well ID	Hydrocarbon Fraction of Concern →		C5-C8 Aliphatics	C9-C18 Aliphatics	C19-C36 Aliphatics	C9-C22 Aromatics
	Sample ID	Date Collected				
GCL 2L GWQS			NE 420	NE 4,200	NE 42,000	NE 210
USTAS511-MW-09	USTAS511-MW-09	4/24/2006	<100	42,400	<2,000	6,400

Concentrations are in micrograms per Liter - ug/L

NE - Not Established

Bold figure indicates concentration exceeds applicable 2L GWQS.

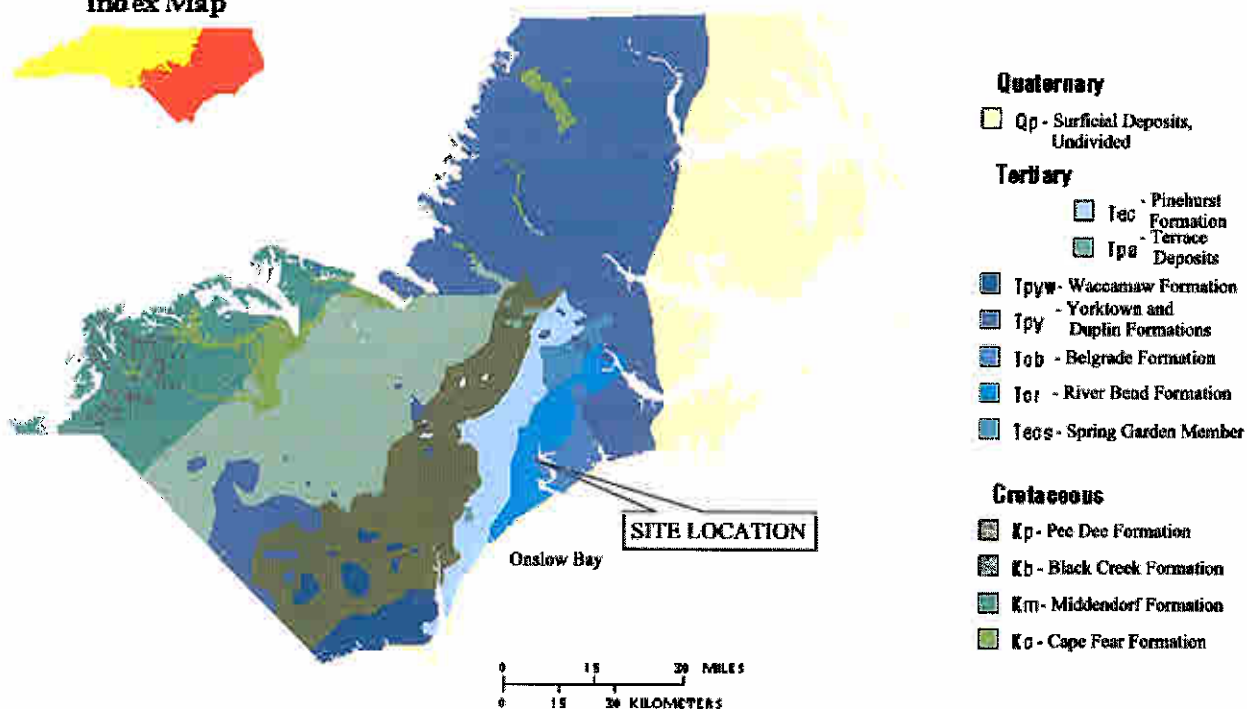
FIGURES





COASTAL PLAIN PHYSIOGRAPHIC PROVINCE

Index Map



Data Source: Adapted from North Carolina Geological Survey Website.

CAELIN
ENGINEERS and SCIENTISTS

Wilmington, North Carolina

PROJECT

RAPID REFUELER 2005 RELEASE
PHASE 1
LIMITED SITE ASSESSMENT
NEW RIVER AIR STATION
NEW RIVER, N.C.

JOB NO. 205-077

DATE MAY 2006

TITLE

**COASTAL PLAIN
PHYSIOGRAPHIC PROVINCE**

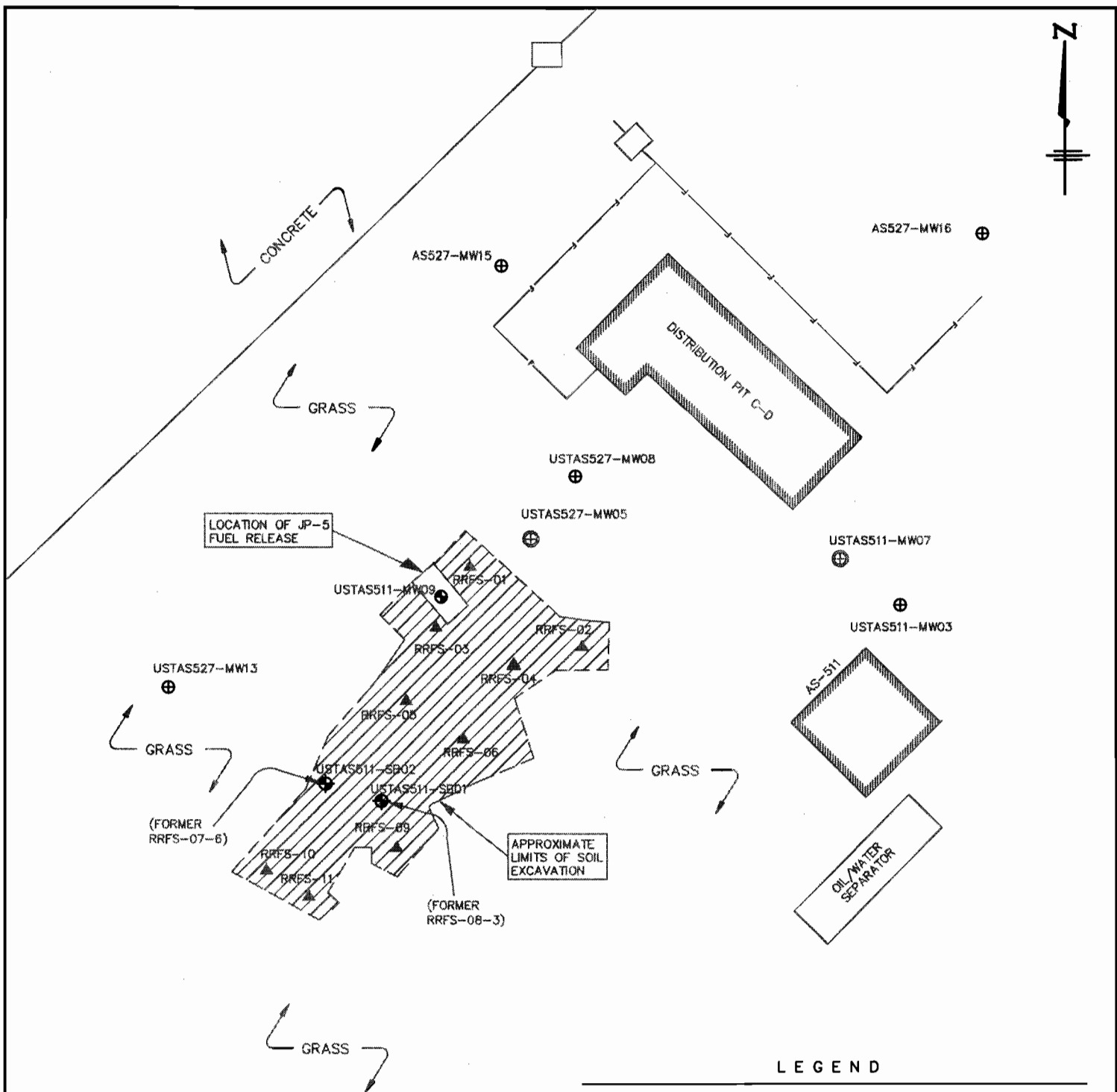
SCALE AS SHOWN

DRAWN BY ST

CHECKED BY MEM

FIGURE

2



SCALE (FEET)

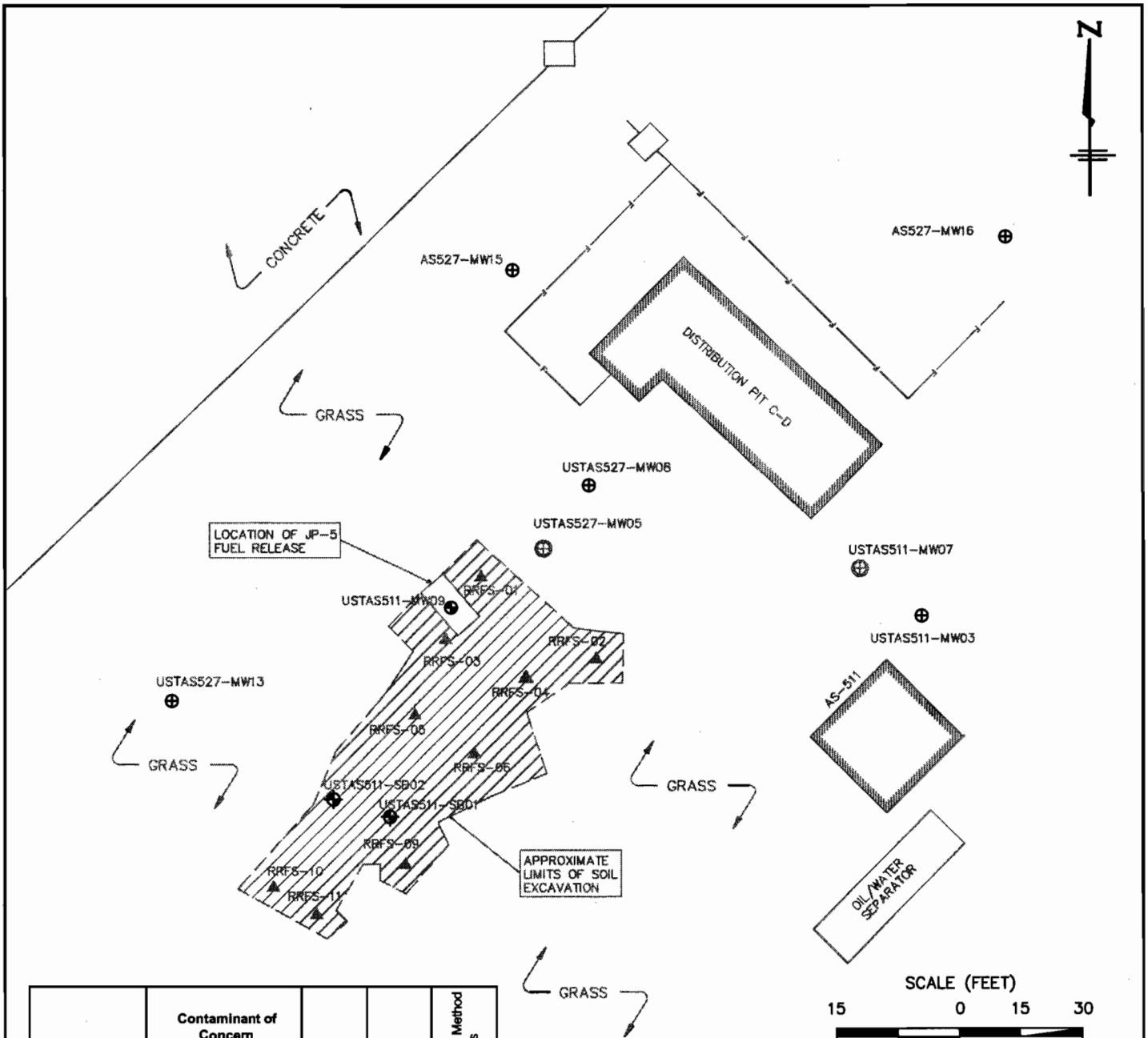
15 0 15 30

MODIFIED FROM SITE MAP BY ENGINEERING & ENVIRONMENTAL, INC.

CATLIN ENGINEERS and SCIENTISTS WILMINGTON, NORTH CAROLINA	PROJECT RAPID REFUELER 2005 RELEASE LIMITED SITE ASSESSMENT NEW RIVER AIR STATION NEW RIVER, NC		TITLE SITE PLAN WITH TYPE II MONITORING WELL AND SOIL BORING LOCATIONS		FIGURE
	JOB NO: 205-077	DATE: MAY 2006	SCALE: AS SHOWN	DRAWN BY: KAWS	CHECKED BY: MEM

3

205-077-RR-MAY06-3



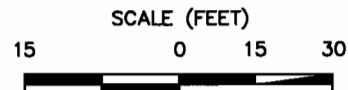
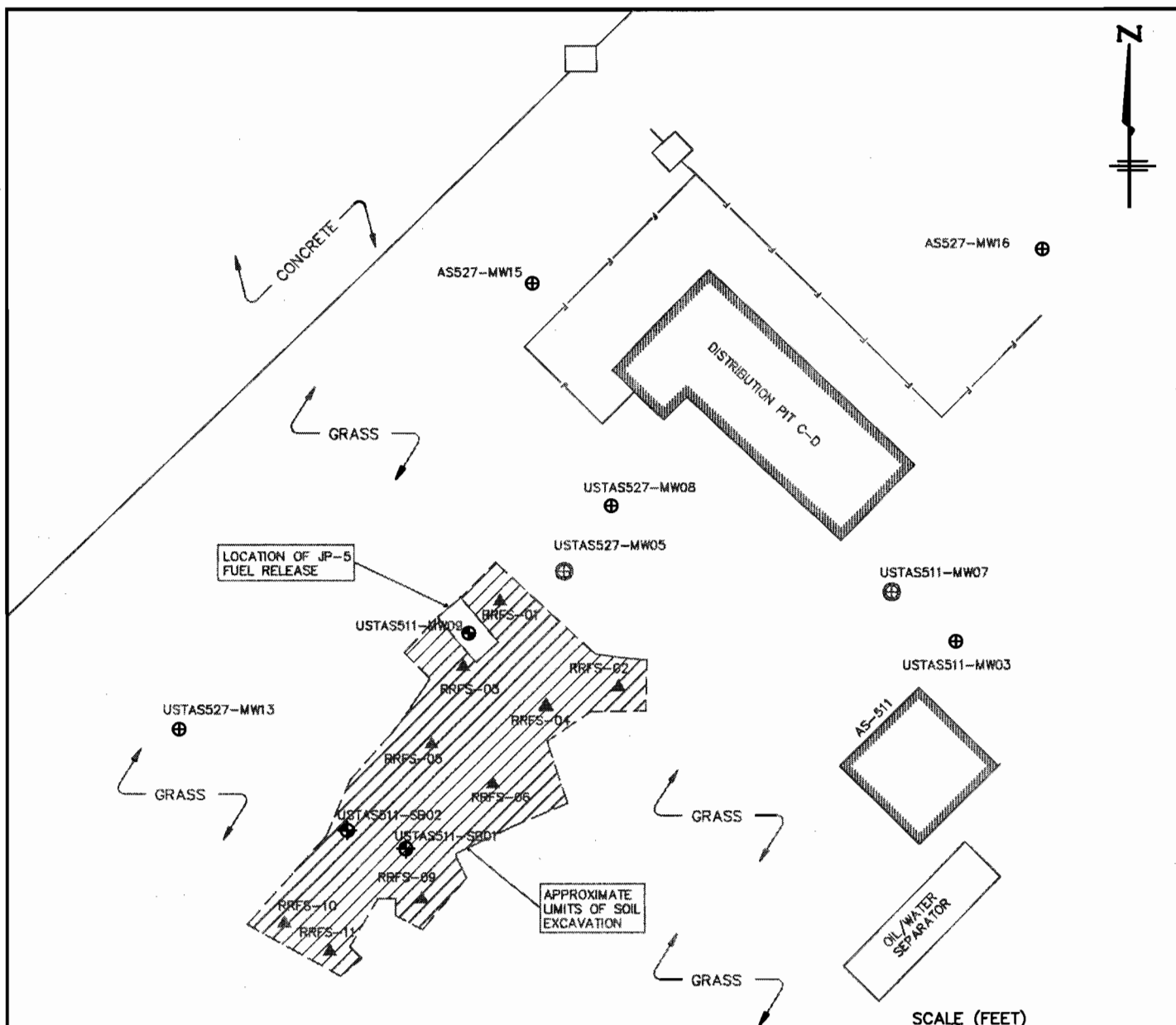
Sample ID	Contaminant of Concern		Acetone	Naphthalene	Remaining EPA Method 8260 parameters
	Date Collected	Sample Depth (ft. BLS)			
USTAS511-SB01	4/24/2006	3-4'	0.0197 J	<0.00703	BQL
USTAS511-SB02	4/24/2006	5-6'	0.0156 J	0.00682	BQL
Residential MSCC (mg/kg)			1,564	313	Varies
Industrial/Commercial MSCC (mg/kg)			40,880	8,176	
Soil to Groundwater MSCC (mg/kg)			2.8	0.58	

All results in milligrams per Kilogram - mg/kg.
ft. BLS = feet Below Land Surface
BQL - Below Quantitation Limit
J - Estimated concentration, below calibration range and above Method Detection Limit.

LEGEND	
EXISTING	NEW

MODIFIED FROM SITE MAP BY ENGINEERING & ENVIRONMENTAL, INC.

 ENGINEERS and SCIENTISTS WILMINGTON, NORTH CAROLINA	PROJECT RAPID REFUELER 2005 RELEASE LIMITED SITE ASSESSMENT NEW RIVER AIR STATION NEW RIVER, NC	TITLE SITE PLAN WITH SOIL ANALYSIS RESULTS - EPA METHOD 8260B PLUS IPE AND MTBE/5035	FIGURE 4A
	JOB NO: 205-077 DATE: MAY 2006	SCALE: AS SHOWN DRAWN BY: KAWS CHECKED BY: MEM	



LEGEND

EXISTING NEW

- BUILDING
- SOIL SAMPLE GRAB LOCATION
- SOIL BORING LOCATION
- TYPE II MONITORING WELL
- TYPE III MONITORING WELL
- FUEL LINE
- PLUME

Sample ID	Contaminant of Concern		EPA Method 8270 Compounds		Top Ten Tentatively Identified Compounds (TICS)									
	Date Collected	Sample Depth (ft. BLS)	2-Methylnaphthalene	Remaining EPA Method 8270 Compounds	Unknown Alkane	Unknown Alkane	Unknown Alkane	Unknown Alkane	Unknown Alkane	Unknown Alkane	Unknown Alkane	Unknown Alkane	Unknown Alkane	Unknown
USTAS511-SB01	4/24/2006	3-4'	<0.470	BQL	No library search compounds detected									
USTAS511-SB02	4/24/2006	5-6'	0.259 J	BQL	5.590	3.050	2.700	2.360	1.280	0.930	0.902	0.870	0.862	0.842
Residential MBCC (mg/kg)			63	Varies	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Industrial/Commercial MBCC (mg/kg)			1,635	Varies	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE
Soil to Groundwater MBCC (mg/kg)			1.7	Varies	NE	NE	NE	NE	NE	NE	NE	NE	NE	NE

All results in milligram per Kilogram - mg/Kg.

ft. BLS = feet land surface

BQL - Below Quantitation Limit

J - Estimated concentration, below calibration range and above Method Detection Limit.

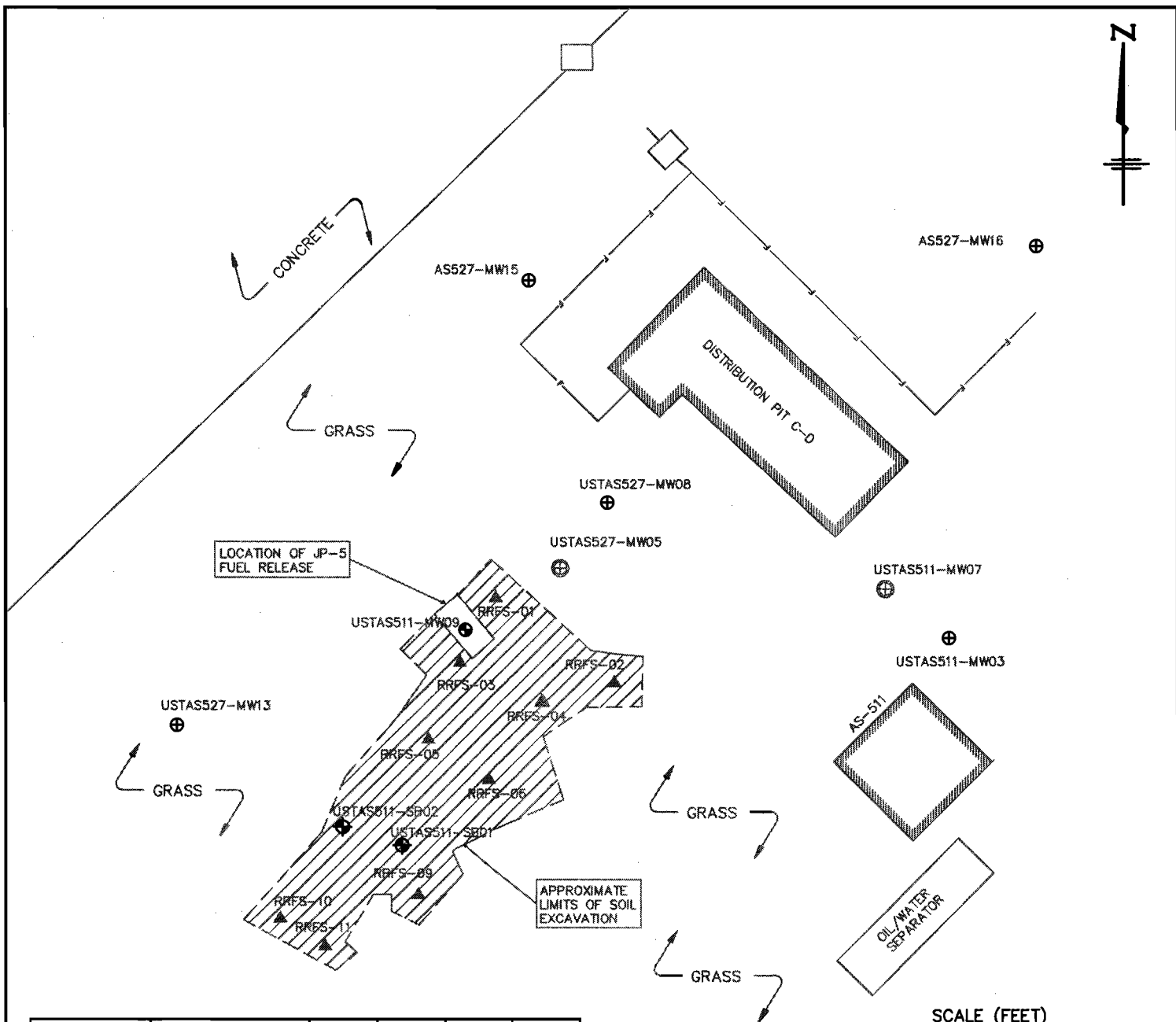
TICS - Refers to the ten detected substances, not included in the standard EPA Method 6255 list, with the highest concentration. TICS are identified and quantitated only if the peak area is equal or greater than 10% of that of the nearest internal standard.

Quantitation provided is an estimate.

MODIFIED FROM SITE MAP BY ENGINEERING & ENVIRONMENTAL, INC.

CAELIN ENGINEERS and SCIENTISTS WILMINGTON, NORTH CAROLINA	PROJECT	TITLE	FIGURE
	RAPID REFUELER 2005 RELEASE LIMITED SITE ASSESSMENT NEW RIVER AIR STATION NEW RIVER, NC	SITE PLAN WITH SOIL ANALYSIS RESULTS - EPA METHOD 8270 PLUS TICS	4B
JOB NO: 205-077	DATE: MAY 2006	SCALE: AS SHOWN	DRAWN BY: KAWS
		CHECKED BY: MEM	

205-077-RR-MAY06-4B



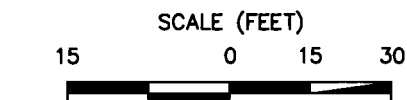
Sample ID	Contaminant of Concern		C5-C8 Aliphatics	C9-C18 Aliphatics	C19-C36 Aliphatics	C9-C22 Aromatics
	Date Collected	Sample Depth (ft. BLS)				
USTAS511-SB01	4/24/2006	3-4'	<10	<20	<10	<20
USTAS511-SB02	4/24/2006	5-6'	<10	126	<10	49
Residential MSCC (mg/kg)			939	9,386	93,860	469
Industrial/Commercial MSCC (mg/kg)			24,528	245,280	*	12,264
Soil to Groundwater MSCC (mg/kg)			72	3,300	**	34

All results in milligrams per Kilogram - mg/kg.

ft. BLS = feet Below Land Surface

* - Health based level (>100%)

** - Considered Immobile



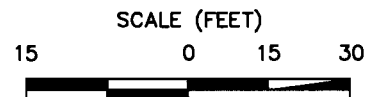
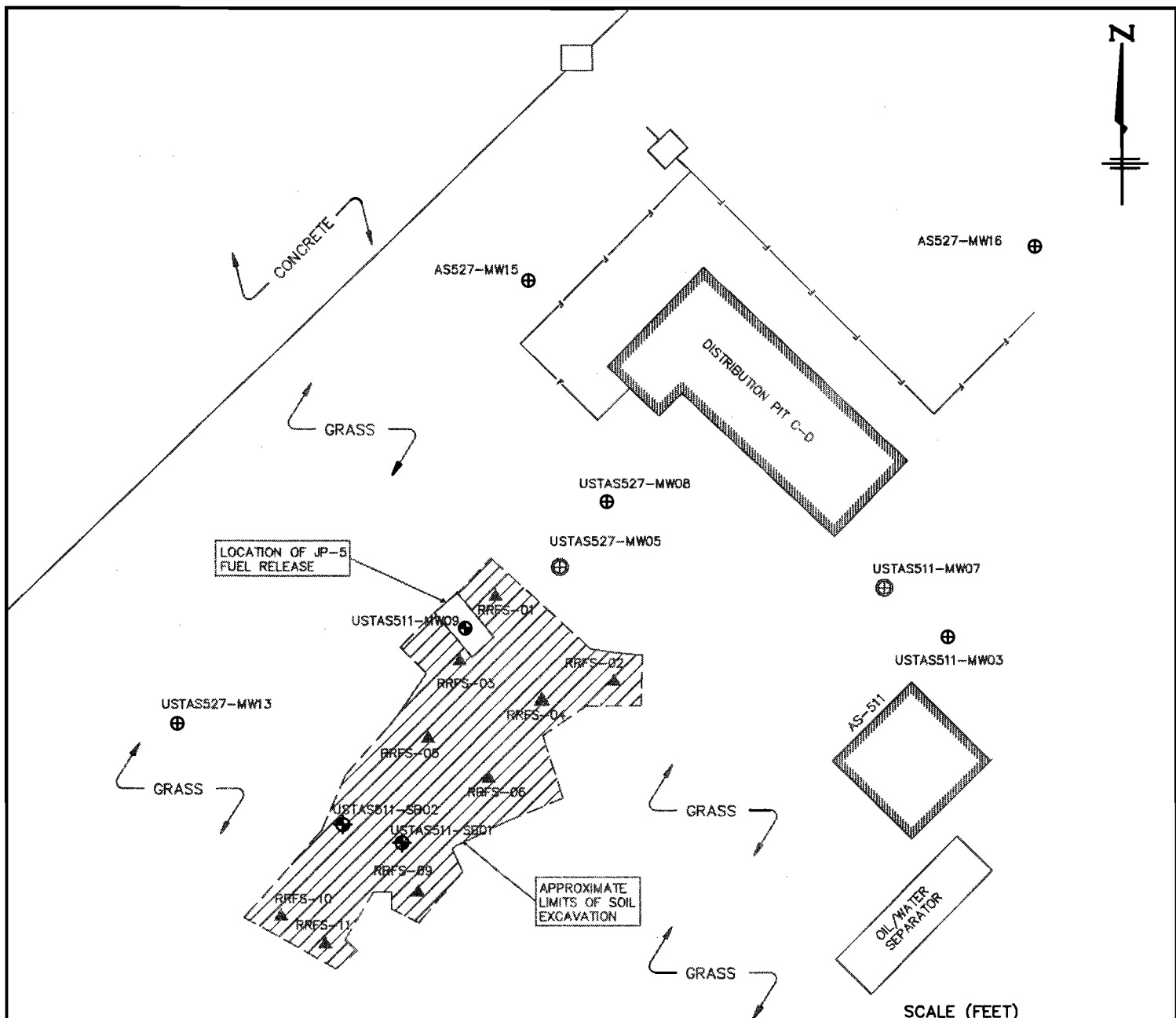
LEGEND

EXISTING	NEW	
		BUILDING
		SOIL SAMPLE GRAB LOCATION
		SOIL BORING LOCATION
		TYPE II MONITORING WELL
		TYPE III MONITORING WELL
		FUEL LINE
		PLUME

MODIFIED FROM SITE MAP BY ENGINEERING & ENVIRONMENTAL, INC.

CATLIN ENGINEERS and SCIENTISTS WILMINGTON, NORTH CAROLINA	PROJECT RAPID REFUELER 2005 RELEASE LIMITED SITE ASSESSMENT NEW RIVER AIR STATION NEW RIVER, NC	TITLE SITE PLAN WITH SOIL ANALYSIS RESULTS - MADEP METHOD VPH/EPH AS COMPARED TO MSCCS		FIGURE 4C
	JOB NO: 205-077	DATE: MAY 2006	SCALE: AS SHOWN	DRAWN BY: KAWS

205-077-RR-MAY06-4C



Well ID	Contaminant of Concern		Benzene	Ethylbenzene	Toluene	M/P-Xylene	o-Xylene	Remaining EPA Method 602 plus MTBE compounds
	Sample ID	Date Collected						
2L GWQS GCL			1 5,000	550 84,500	1,000 257,500	530* 87,500*		Varies Varies
USTAS511-MW09	USTAS511-MW09	4/24/2006	4.40	62.0	24.0	153	144	BQL

Concentrations are in micrograms per Liter - ug/L.

* - Total Xylenes limit

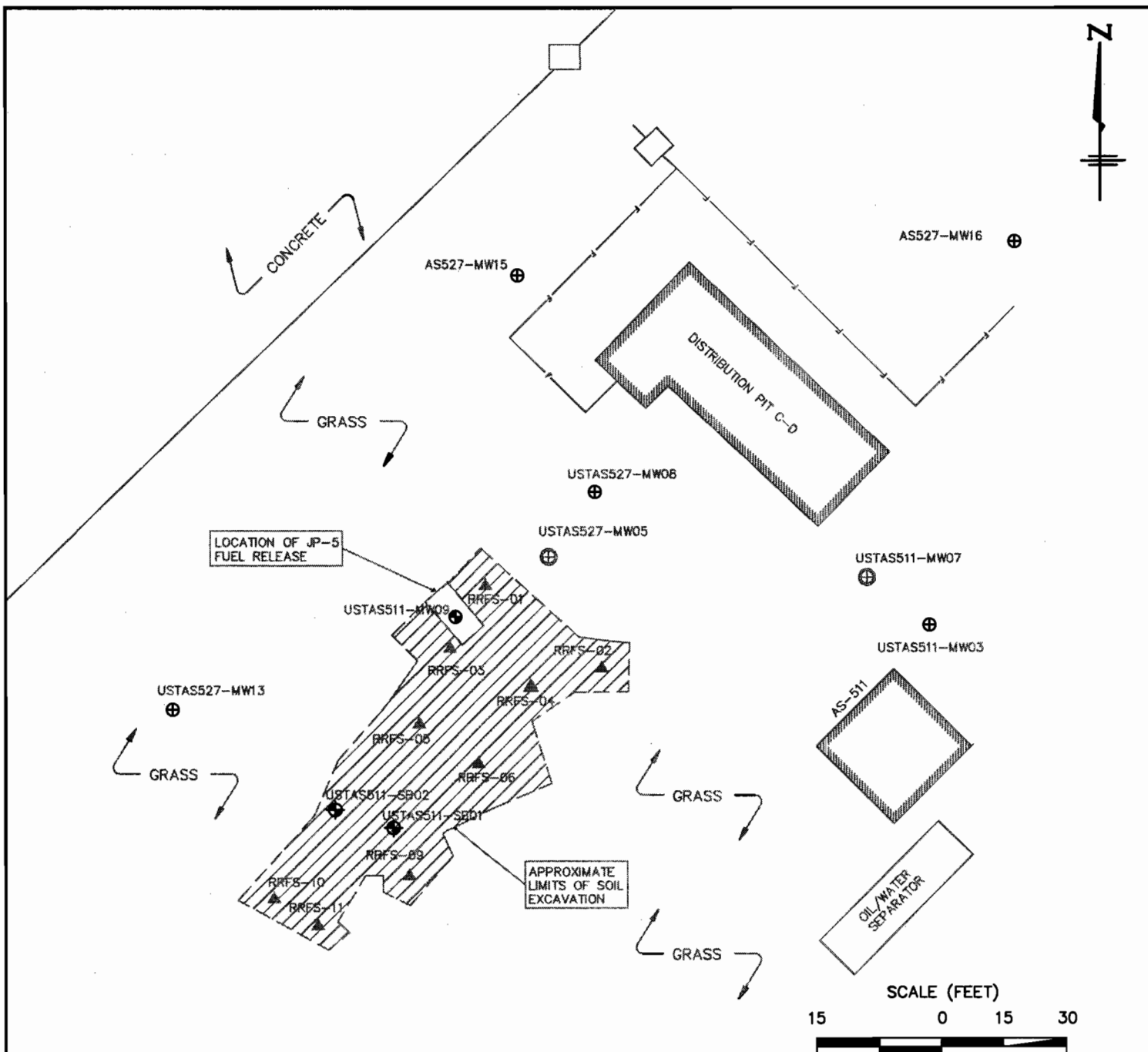
Bold figure indicates concentration exceeds applicable 2L GWQS.

LEGEND	
EXISTING	NEW
	BUILDING
	SOIL SAMPLE GRAB LOCATION
	SOIL BORING LOCATION
	TYPE II MONITORING WELL
	TYPE III MONITORING WELL
	FUEL LINE
	PLUME

MODIFIED FROM SITE MAP BY ENGINEERING & ENVIRONMENTAL, INC.

CATLIN ENGINEERS and SCIENTISTS WILMINGTON, NORTH CAROLINA	PROJECT RAPID REFUELER 2005 RELEASE LIMITED SITE ASSESSMENT NEW RIVER AIR STATION NEW RIVER, NC	TITLE SITE PLAN WITH GROUNDWATER ANALYSIS RESULTS - EPA METHOD 602 PLUS MTBE AND XYLENES			FIGURE
	JOB NO: 205-077 DATE: MAY 2006	SCALE: AS SHOWN DRAWN BY: KAWS	CHECKED BY: MEM		5A

205-077-RR-MAY06-5A



Well ID	Contaminant of Concern		EPA Method 625 Compounds				(TICS) Top Ten Tentatively Identified Compounds							
	Sample ID	Date Collected	Aromatics	Fluorene	Naphthalene	Remaining 625 Compounds	2-Methylnaphthalene	1-Methylnaphthalene	Alkane, Unknown	Unknown	Ethylmethylbenzene, Isomer of	Alkane, Unknown	Biphenyl	Alkane, Unknown
2L GWQ8	GCL		80	280	21	Varies	14	NE	NE	NE	NE	NE	NE	NE
USTAS511-MW08	USTAS511-MW09	4/24/2006	2.30 J	5.80 J	328	BQL	389	336	271	99.4	99.8	64.1	56.5	55.5

BQL = Below Quantitation Limit

TICS - Refers to the ten detected substances, not included in the standard EPA Method 625 list, with the highest concentration. TICS are identified and quantitated only if the peak area is equal or greater than 10% of that of the nearest internal standard. Quantitation provided is an estimate.

NE - Not Established

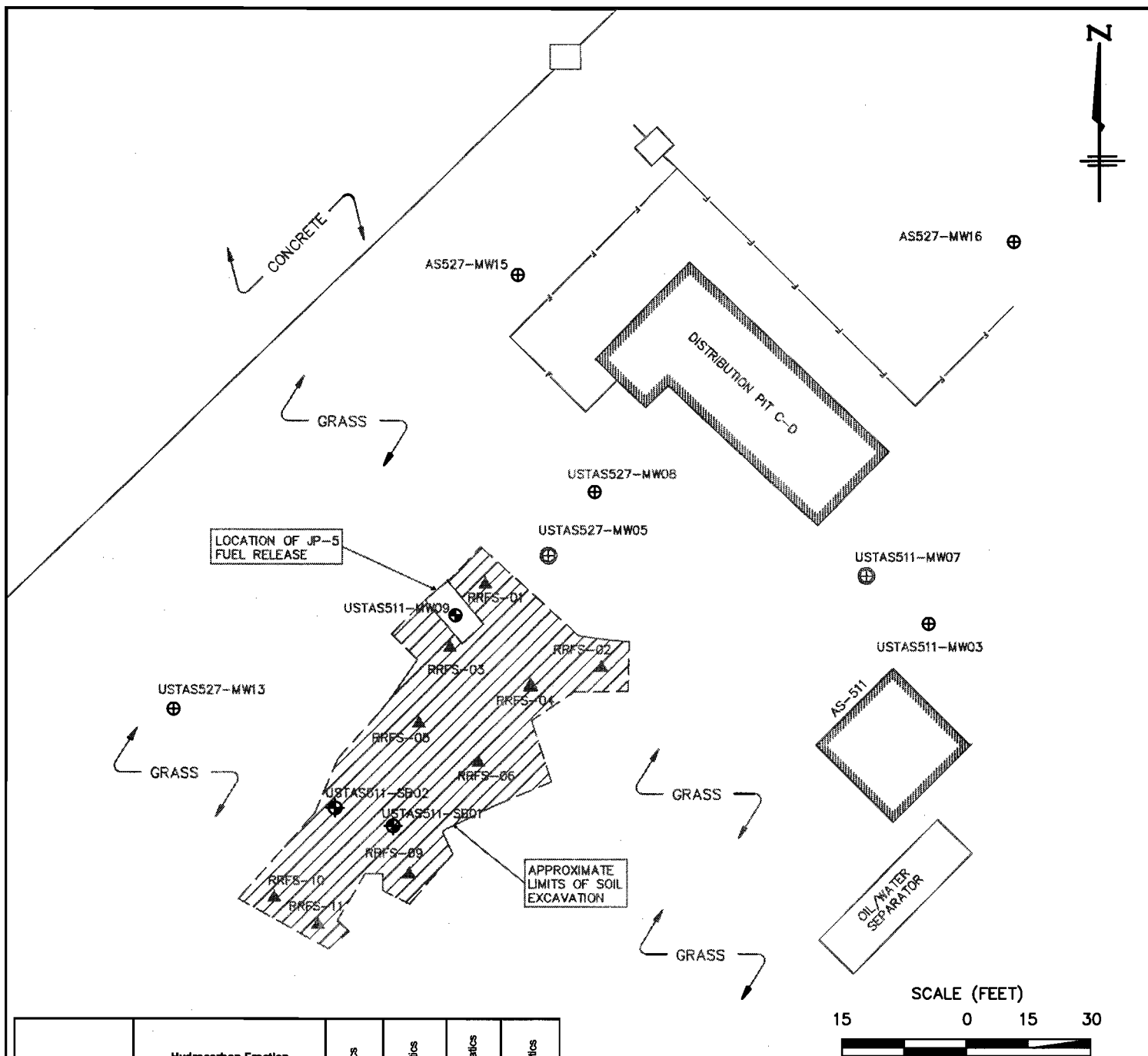
Bold figure indicates concentration exceeds applicable 2L GWQS.

J - Estimated concentration, below calibration range and above Method Detection Limit.

LEGEND	
	EXISTING BUILDING
	NEW BUILDING
	SOIL SAMPLE GRAB LOCATION
	SOIL BORING LOCATION
	TYPE II MONITORING WELL
	TYPE III MONITORING WELL
	FUEL LINE
	PLUME

MODIFIED FROM SITE MAP BY ENGINEERING & ENVIRONMENTAL, INC.

CAELIN ENGINEERS and SCIENTISTS WILMINGTON, NORTH CAROLINA	PROJECT		TITLE		FIGURE	
	RAPID REFUELER 2005 RELEASE LIMITED SITE ASSESSMENT NEW RIVER AIR STATION NEW RIVER, NC		SITE PLAN WITH GROUNDWATER ANALYSIS RESULTS - EPA METHOD 625 PLUS TICS		5B	
JOB NO: 205-077	DATE: MAY 2006	SCALE: AS SHOWN	DRAWN BY: KAWS	CHECKED BY: MEM	205-077-RR-MAY08-5B	



Well ID	Hydrocarbon Fraction of Concern →		C5-C8 Aliphatics	C9-C18 Aliphatics	C19-C36 Aliphatics	C8-C22 Aromatics
	Sample ID	Date Collected				
GCL 2L GWQS			NE 420	NE 4,200	NE 42,000	NE 210
USTAS511-MW-09	USTAS511-MW-09	4/24/2006	<100	42,400	<2,000	8,400

Concentrations are in micrograms per Liter - ug/L.
 NE - Not Established
 Bold figure indicates concentration exceeds applicable 2L GWQS.

LEGEND

EXISTING	NEW	
		BUILDING
		SOIL SAMPLE GRAB LOCATION
		SOIL BORING LOCATION
		TYPE II MONITORING WELL
		TYPE III MONITORING WELL
		FUEL LINE
		PLUME

MODIFIED FROM SITE MAP BY ENGINEERING & ENVIRONMENTAL, INC.

 CATLIN ENGINEERS and SCIENTISTS WILMINGTON, NORTH CAROLINA	PROJECT RAPID REFUELER 2005 RELEASE LIMITED SITE ASSESSMENT NEW RIVER AIR STATION NEW RIVER, NC		TITLE SITE PLAN GROUNDWATER ANALYSIS RESULTS – MADEP METHOD VPH/EPH AS COMPARED TO MCDMER 2LGWQS		FIGURE 5C
	JOB NO: 205-077	DATE: MAY 2006	SCALE: AS SHOWN	DRAWN BY: KAWS	CHECKED BY: MEM

205-077-RR-MAY06-5C

205-077-RR-MAY06-5C

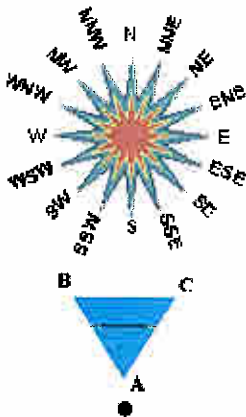
APPENDICES

APPENDIX A

VISUAL HYDROGEOLOGY FRAMEWORK

FrameWork Query Results

- Scroll to bottom half of page for cross-section.
- [Framework Map with borehole locations](#) may be viewed in a separate window.
- The triangle to the right shows the relative position of the three boreholes to one another and the beginning (left) and ending (right) sides of the cross-section line.
- The dot indicates the location of the viewer of the cross-section.



Cross-section line is oriented approximately: **WSW-ENE**
(75.67)

Well of Interest

Location: 34.711409, -77.446536; **Well Depth:** 20 feet; **Screen Depth:** 15 feet;
Land Surface (estimated): 16 feet; [Show Map](#)

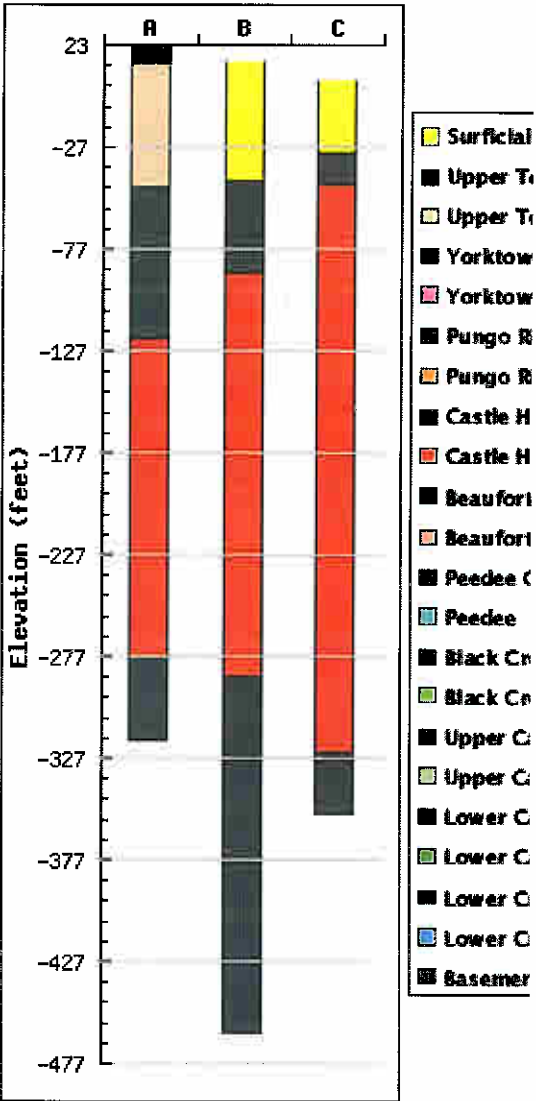
Approximate depths to hydrogeological units (feet):

SURFICIAL
0
• Hydrogeologic unit top depths estimated to well depth. • If estimated land surface elevation is higher than actual then subtract the difference from the estimated depths of units. • If estimated land surface elevation is lower than actual then add the difference to the estimated depths of units.

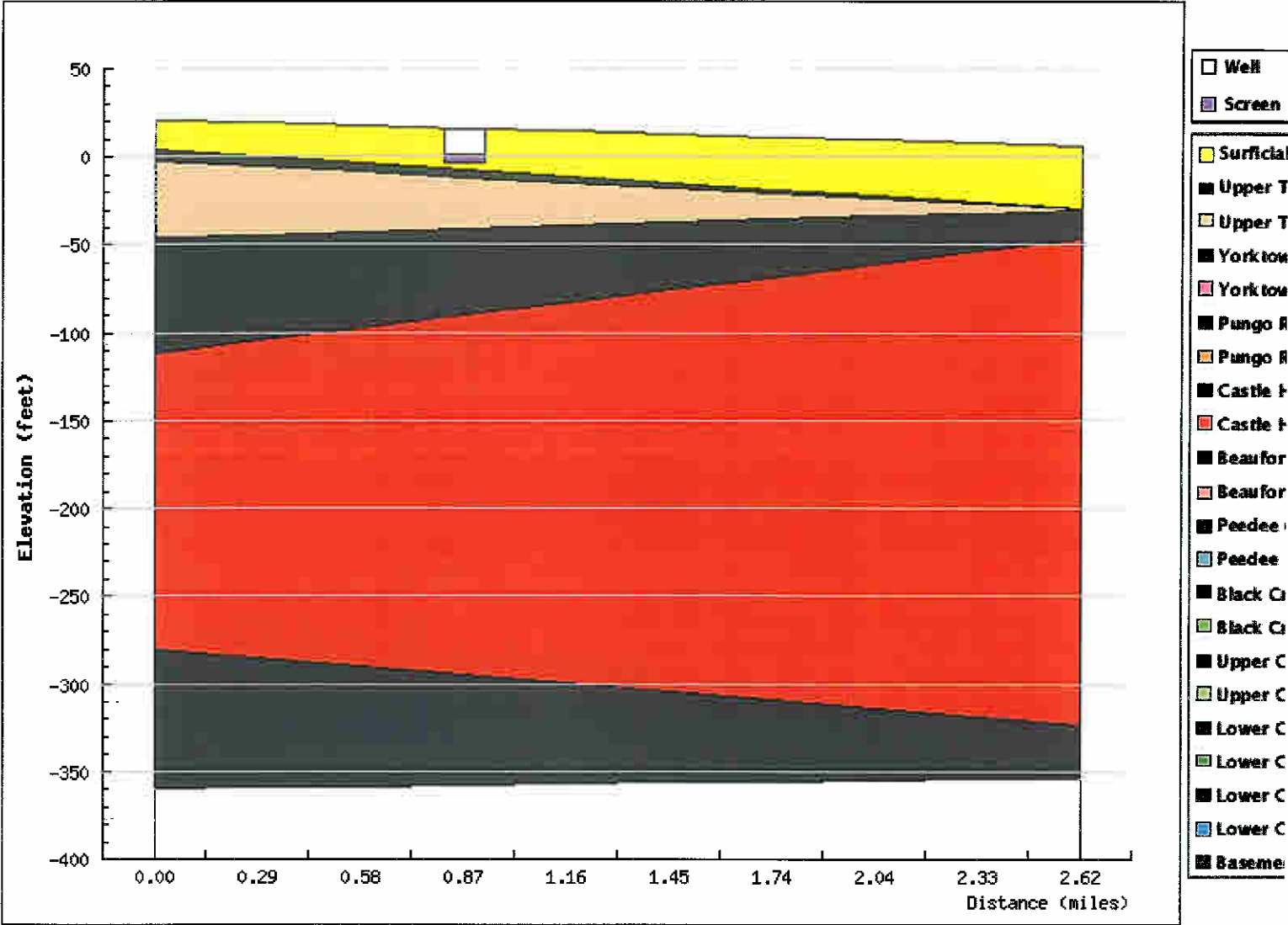
Boreholes

- A:** Alliance Environmental, X 25R; **Land Surface:** 23 feet; **Location:** 34.695555, -77.465; [Geophysical Logs](#), [Hydrogeologic Units](#)
- B:** USMC Camp Lejeune T-15, X 25C; **Land Surface:** 15 feet; **Location:** 34.740278, -77.451944; [Hydrogeologic Units](#)
- C:** U.S. Marine Corps Test Well No. 12, X 24F; **Land Surface:** 6 feet; **Location:** 34.7175, -77.416111; [Hydrogeologic Units](#)

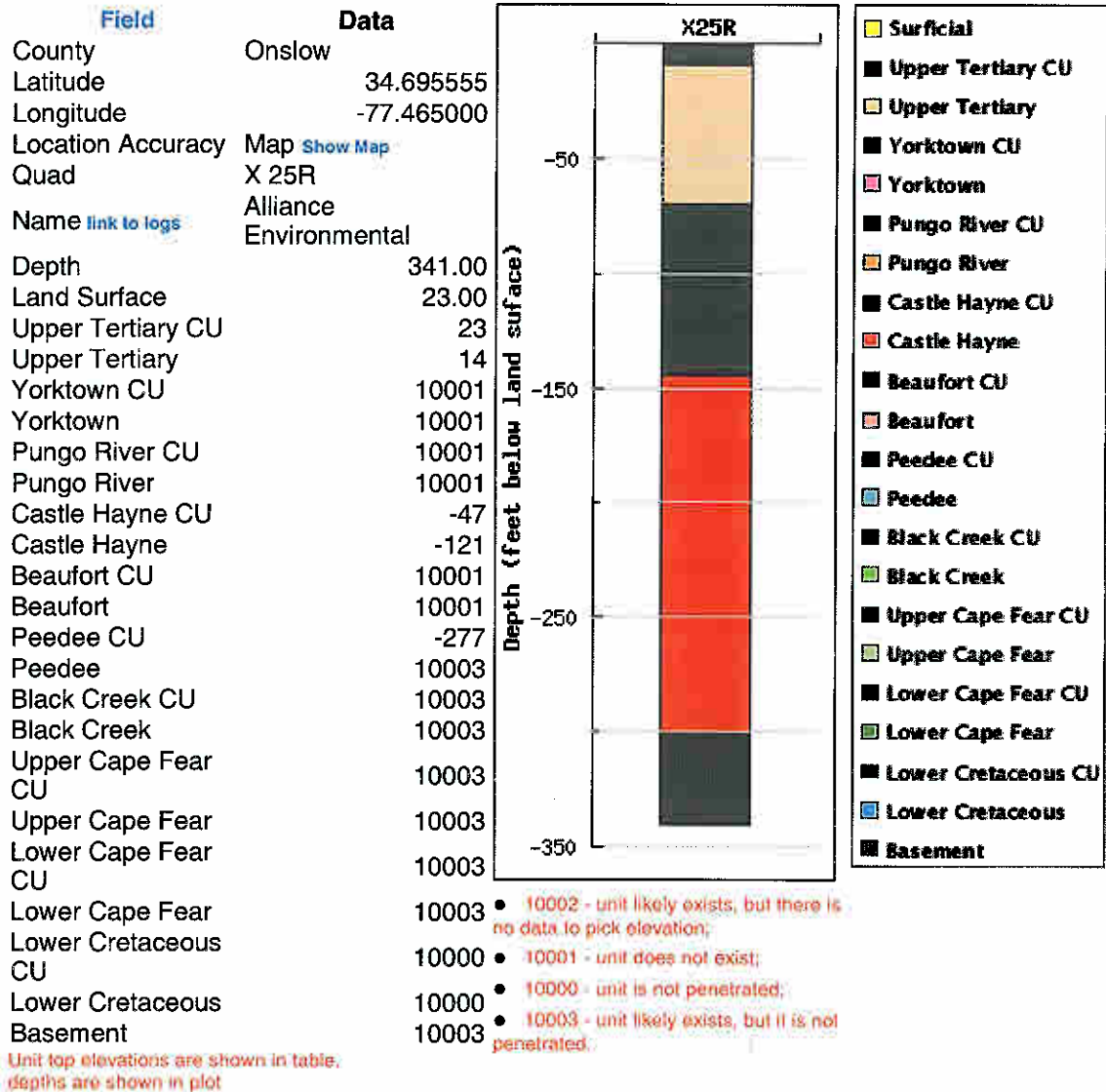
Borehole Hydrogeology



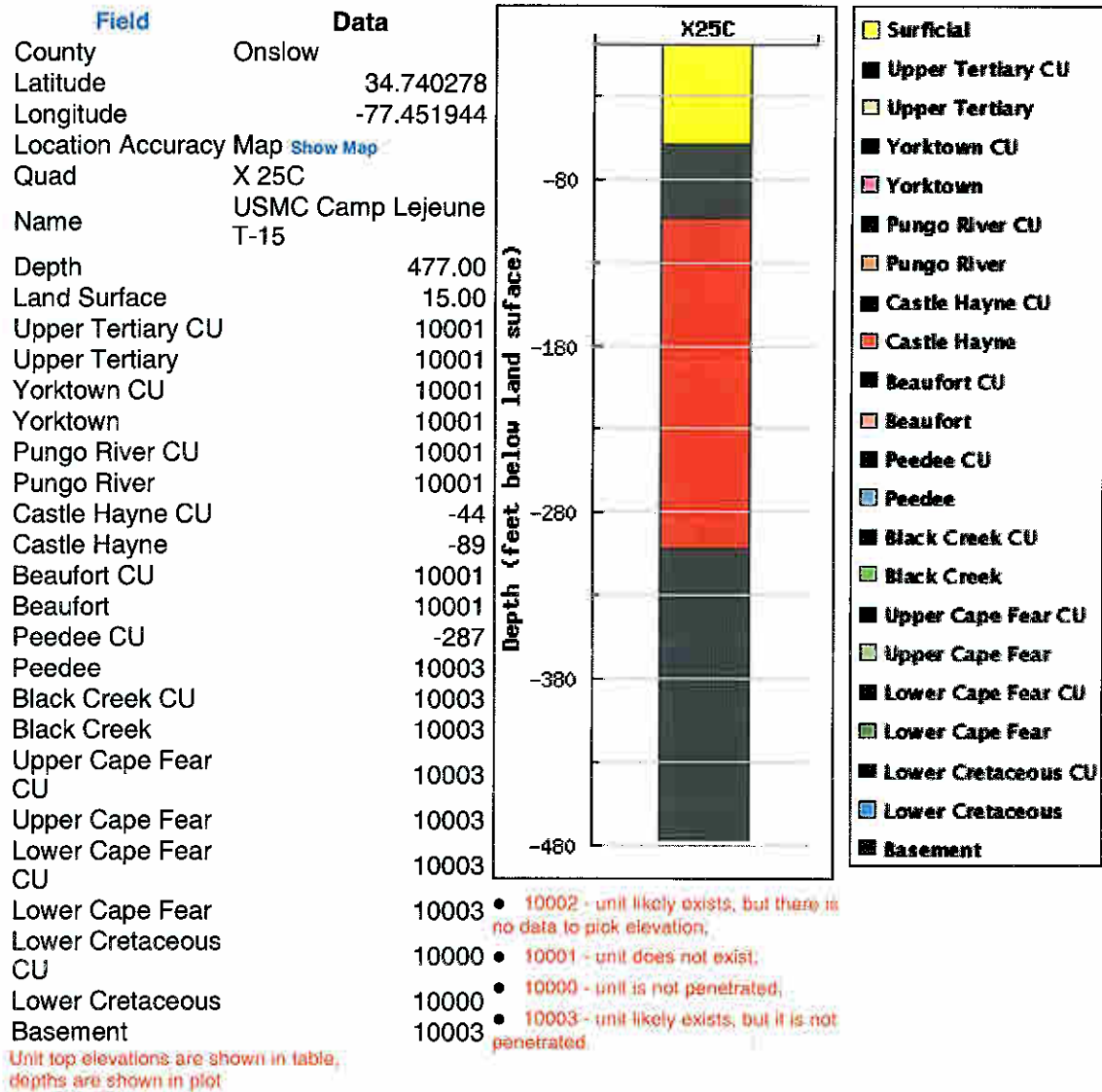
Calculated Cross-Section



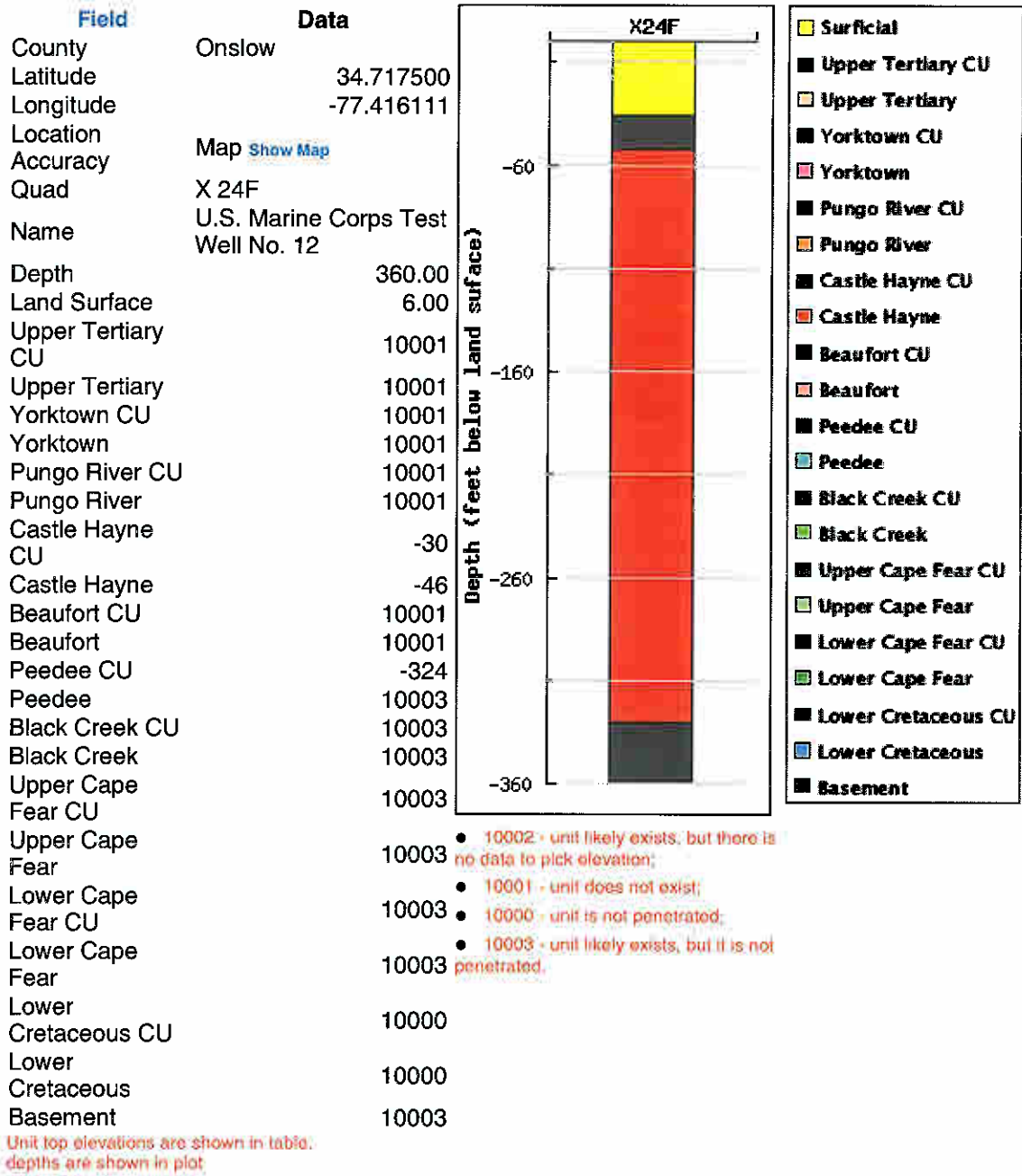
DWR Hydrogeologic Framework Detail for Alliance Environmental



DWR Hydrogeologic Framework Detail for USMC Camp Lejeune T-15

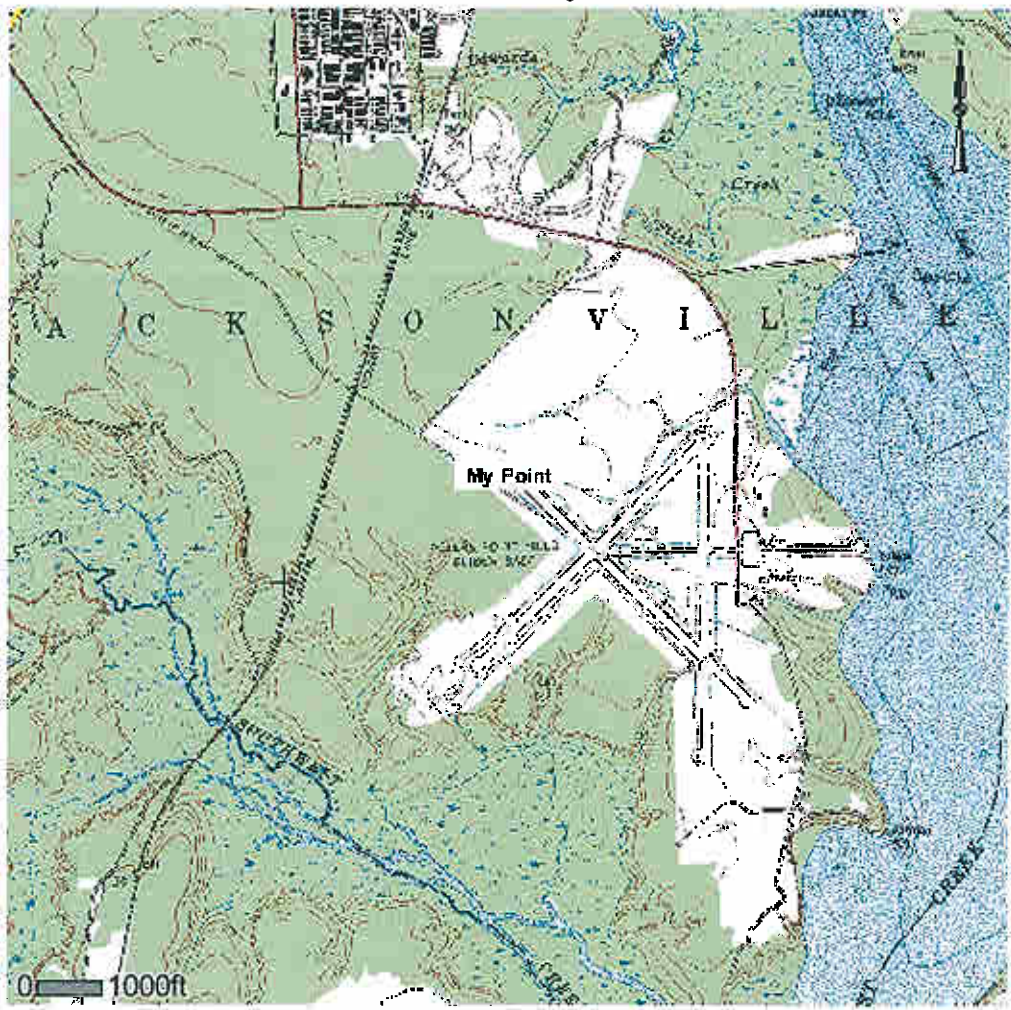


DWR Hydrogeologic Framework Detail for U.S. Marine Corps Test Well No. 12



Map for The Map Location

Location of My Point



1:36,001

Jacksonville South
7.5-minute Quadrangle

NC SPCS E: 751892.5, N:107763.6 meters (NAD83)
Long: -77.4465362 W, Lat: 34.7114092 N (NAD83)



Index map

Search



Last Modified: 04.10.2006

APPENDIX B

BORING LOGS, MONITORING WELL AS-BUILTS, AND NORTH CAROLINA NON RESIDENTIAL WELL CONSTRUCTION RECORDS

CATLIN BORING LOG 205-077 AS-4159 RAPID REFUELER GP.J TEST GDT 05/01/06

BORING LOG

CATLIN
ENGINEERS and SCIENTISTS

Wilmington, North Carolina

SHEET 1 OF 1

PROJECT NO.: 205-077	STATE: NC	COUNTY: Onslow	LOCATION: New River
PROJECT NAME: Rapid Refueler Phase I LSA		LOGGED BY: Tom Stetler	BORING ID: USTAS511-SB02
NORTHING: 353283.4		EASTING: 2466889.5	DRILLER:
SYSTEM: NCSP NAD 83 (USft)		BORING LOCATION: In excavated area SW of basin	LAND ELEV.:
DRILL MACHINE: Hand Auger	METHOD: Hand Auger	0 HOUR DTW: NE	BORING DEPTH: 7.0
START DATE: 02/24/06	FINISH DATE: 02/24/06	24 HOUR DTW: NM	ROCK DEPTH: ---

DEPTH	BLOW COUNT				BLOWS PER FOOT						LAB.	U S C S	L O G	DEPTH	SOIL AND ROCK DESCRIPTION
	6in	6in	6in	6in	0	20	40	60	80	100					
0.0														0.0	LAND SURFACE
1.0															
2.0															
3.0															
4.0															
5.0														5.0	
6.0											UST AS511- SB02 (5-6)	CH		6.0	Gray, high plasticity CLAY w/ f. sand. Moist. Slight HCO.
												SC		7.0	Dark gray, CLAYEY f. to vf. SAND. High plasticity. Moist. Slight HCO.
															Boring Terminated at Depth 7.0 ft

CATLIN BORING LOG 205-077 AS-4159 RAPID REFUELER GP1 TEST GDT 05/01/06

 Portland Cement  Bentonite Pellets  #2 Medium Sand



d. TOP OF CASING IS 0 FT. Above Land Surface*
 * Top of casing terminated at/or below land surface requires
 a variance in accordance with 15A NCAC 2C.0118

e. YIELD (gpm): N/A METHOD OF TEST: N/A

f. DISINFECTION: Type N/A Amount: N/A

g. WATER ZONES (depth):
 From _____ To _____ From _____ To _____
 From _____ To _____ From _____ To _____
 From _____ To _____ From _____ To _____

6. CASING:

Depth	Diameter	Thickness/ Weight	Material
From <u>0</u> To <u>7</u> ft.	<u>2</u>	<u>Sch. 40</u>	<u>PVC</u>
From _____ To _____ ft.	_____	_____	_____
From _____ To _____ ft.	_____	_____	_____

7. GROUT:

Depth	Material	Method
From <u>0</u> To <u>1</u> Ft.	<u>Portland Cement</u>	<u>Surface Pour</u>
From <u>1</u> To <u>5</u> Ft.	<u>Bent. Pellets</u>	<u>Surface Pour</u>
From _____ To _____ Ft.	_____	_____

8. SCREEN:

Depth	Diameter	Slot Size	Material
From <u>7</u> To <u>17</u> Ft.	<u>2</u> in.	<u>.010</u> in.	<u>PVC</u>
From _____ To _____ Ft.	_____ in.	_____ in.	_____
From _____ To _____ Ft.	_____ in.	_____ in.	_____

9. SAND/GRAVEL PACK:

Depth	Size	Material
From <u>5</u> To <u>17</u> Ft.	<u>#2 Medium</u>	<u>Torpedo Sand</u>
From _____ To _____ Ft.	_____	_____
From _____ To _____ Ft.	_____	_____

10. DRILLING LOG

From To	Formation Description
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____
_____	_____

SEE ATTACHED

11. REMARKS:

I DO HEREBY CERTIFY THAT THIS WELL WAS CONSTRUCTED IN ACCORDANCE WITH
 15A NCAC 2C, WELL CONSTRUCTION STANDARDS, AND THAT A COPY OF THIS
 RECORD HAS BEEN PROVIDED TO THE WELL OWNER.

Bobbie Fowler 5-10-06
 SIGNATURE OF CERTIFIED WELL CONTRACTOR DATE
 Bobbie Fowler
 PRINTED NAME OF PERSON CONSTRUCTING THE WELL

APPENDIX C

CATLIN STANDARD METHODS OF INVESTIGATION

CATLIN STANDARD METHODS OF INVESTIGATION

(REVISED APRIL 2002)

1.0 DATA COLLECTION

1.1 BACKGROUND DATA

Background data and history information relevant to the site investigation is generated through numerous sources. These sources may include, but are not limited to, the following:

- Conversations with the client and regulatory officials involved with the incident.
- Review of pertinent regulatory correspondence.
- Review of previous and existing reports and other technical data.
- Review of available historical records.

1.2 SURVEYS AND POTENTIAL RECEPTOR DATA

Physical survey and potential receptor data are collected in accordance with the intended level of investigation. In general, the purpose is to collect sufficient information for site assessment and corrective action planning.

Individual receptors are identified and evaluated in the context of their potential for contaminant impact. Potential receptors of contamination can include surface water bodies, groundwater supply wells, wellhead protection areas, and subsurface building structures.

1.2.1 Horizontal Survey

Horizontal survey data are generated using either accepted general field surveying techniques, or existing survey maps; or by using a combination of existing data and field generated information. The survey area generally extends to a point at least 50 feet beyond suspected plume boundaries. A receptor scale survey of a larger area surrounding a site will be made if appropriate and necessary.

1.2.2 Vertical Survey

A vertical survey is conducted at the site typically within an accuracy of 0.01 foot. The datum plane is generally assumed unless otherwise noted. Assumed temporary benchmarks (TBM) are selected near ground level. The vertical survey includes such points as top of all well casings, selected ground shots, important utility inverts, utility

fluid levels, important surface water levels, and other items determined to be significant.

1.3 DRILLING AND MONITORING WELL/PIEZOMETER INSTALLATION

Necessary permits are applied for and obtained in accordance with federal, state, and local requirements prior to drilling or well construction activities. Additionally, the well locations are scanned for underground utilities prior to conducting intrusive subsurface activities. Wells are installed under applicable licensing requirements, and are designed and constructed in accordance with accepted standards and practices. Any wells purposely installed at off-site locations are permitted through appropriate right-of-entry agreements with all necessary property owners and/or their agents.

1.3.1 Drilling Methods and Subsurface Data Collection

Drilling is accomplished utilizing one or more of the following methods:

Auger Drilling

Auger drilling is the preferred, most often used method of subsurface investigation and is accomplished using a vehicle or trailer mounted drill rig. Continuous flight auger types used vary upon the site and situation; ranging from the 4-inch outside diameter solid stem to the 12-inch outside diameter hollow stem. Auger type is selected based upon appropriateness and/or site-specific requirements.

Hand Augering

Hand augering is utilized when economically and scientifically feasible, or when no other method is suitable. Hand augers typically produce three-inch diameter holes and are generally limited to depths of less than 15 feet.

Direct Push

Direct push methods of subsurface investigation are used generally for soil screening purposes or collection of groundwater samples where permanent wells are not viable.

Other Methods

Other drilling methods, such as mud and air rotary, rock coring, cable tool, and large bucket augering are used when site conditions or project requirements dictate.

Regardless of the drilling method used, the drill rig(s) and all drilling tools are thoroughly cleaned between boreholes to prevent cross introduction of contaminants. Split spoon samples are collected and field-described at intervals of five feet or less, and cuttings are continuously monitored for organic vapors. Drill cuttings are containerized for off-site disposal or are spread on the ground surface in proximity to the well or boring in accordance with North Carolina Department of Environment and Natural Resources (NCDENR) requirements. A geologist or engineer, trained in using visual/manual techniques, is always present during drilling and is responsible for subsurface contaminant and geologic data collection. Soils are classified in general agreement with the Unified Soils Classification System (USCS).

1.3.2 Hydropunch Installation

Hydropunch penetrometers (Hydropunches) are used to delineate the spatial extent of dissolved and free phase plumes. Soil borings are advanced to the appropriate depth and then the Hydropunch is advanced through the soil boring into undisturbed material. Groundwater samples are collected by pulling back on the body of the Hydropunch and allowing the groundwater to enter the screened portion of the sample chamber. Samples are retrieved using a decontaminated Teflon bailer or peristaltic pump.

1.3.3 Well Installation

Wells are typically constructed of threaded PVC casing and screen. No glues or cements are used in joining PVC components. Well diameter, slot sizes, and protective covers vary depending upon site-specific conditions or situation-specific requirements.

1.3.4 Well Development

Wells are developed by over-pumping or surging using appropriate pumps, blocks, or bailers. Through development, unwanted fine materials are removed from the natural formation surrounding the well. Well development will be performed no sooner than 24-hours after grouting is completed for the Type III wells. Water generated during development is containerized and properly disposed or is discharged onto the ground in proximity of the well in accordance with NCDENR requirements.

1.4 HYDROGEOLOGIC DATA COLLECTION

Data used to help characterize hydrogeologic conditions at a site are obtained through various procedures including, but not necessarily limited to, those described below:

1.4.1 Regional Geology

Information pertaining to the regional geologic framework is compiled from existing publications, maps, and scientific papers.

1.4.2 Site Geology

Shallow site geology is generally determined from field descriptions and borehole samples. Interpretations with regard to hydrogeologically important contacts, zones, fractures, faults, cleavage, and facies changes are made when possible.

1.4.3 Groundwater Occurrence and Characteristics

Groundwater data is obtained utilizing a number of methods and procedures, not limited to the general list below:

Well Water Levels

After well development, wells are allowed to stabilize for a minimum of 24 hours prior to measuring. Water level and free product thickness (where applicable) measurements are performed using an electronic interface probe or steel tape with water/product finding pastes.

The specific gravity of any accumulated product is determined and used to calculate true hydraulic grade from measured water levels. This information is combined with vertical survey data to determine relative potentiometric surface elevations for all wells.

Aquifer Testing

Various aquifer tests may be used to make determinations of hydraulic conductivity. Slug or pumping tests are often used to characterize site hydrogeologic conditions and to develop remedial action alternatives utilizing appropriate pumping technologies.

Other Methods

Other methods may be deemed appropriate for determining various groundwater characteristics. These other methods may include nested well configurations and/or clustered piezometer installations; sieve or pipette analysis; fracture trace analysis; computer modeling; and geophysical logging.

1.5 PETROLEUM HYDROCARBON DATA COLLECTION

1.5.1 Collection Methods

Petroleum hydrocarbon data is obtained through various methods including, but not limited to, the following:

Field Analysis

- Direct thickness measurement of phase separated components using tapes and/or probes.
- Manual vapor analysis using a photoionization detector (PID) or flame ionization detector (FID).
- Detectable odor and visual observation.

Laboratory Analysis

- Laboratory analysis of phase-separated products.
- Laboratory vapor, soil, and groundwater analysis using appropriate EPA Methods.

1.5.2 Field Sampling

Field sampling procedures are performed in accordance with recommended protocol, accepted industry standards, and under appropriate chain-of-custody procedures. Generally, sampling procedures are as follows:

Product Samples

Product samples are obtained using clean equipment and containers. Each is shipped to the analytical laboratory in protective containers.

Vapor Samples

PID/FID readings are measured from soil sample headspace using containerized samples that have been brought to ambient temperature.

Carbon tubes are utilized in conjunction with a laboratory-calibrated vacuum pump to obtain vapor samples. The carbon tubes are sealed and refrigerated for shipment to the analytical laboratory (This method is known as the Carbon Adsorption Method).

Soil Samples

Soil samples are immediately packed into clean containers, and refrigerated for shipment to the analytical laboratory.

Groundwater Samples

Groundwater samples are collected in accordance with the following procedures:

- Creeks/Lakes/Etc.

Grab samples are obtained.

- Domestic Wells

Wells are pumped for a time sufficient to completely purge the well and any pressure or holding tanks prior to sampling.

- Monitoring Wells

Water level measurements are made and well volumes calculated for each well.

Three well volumes are removed from each well using a thoroughly cleaned Teflon bailer or appropriate purging pump. If it is not possible to remove three volumes, due to very low yields, a minimum of one volume is removed prior to obtaining a sample.

Where analysis for metals is required, wells are typically sampled utilizing low flow techniques, which reduce turbidity and the potential for matrix interference.

Samples are collected and containerized in a manner that minimizes agitation and contact with the air.

Sampling records are field prepared.

Samples are labeled and proper chain of custody documents are maintained.

Samples are promptly protectively packed, refrigerated, and shipped to the analytical laboratory for analysis.

2.0 DATA EVALUATION

Data obtained as a result of the site investigation is compiled and evaluated and a report is prepared for client review and distribution to the appropriate agencies. Generally, specific data are evaluated as follows:

- Background data are evaluated in context with the suspected or confirmed problem.
- Survey data are utilized to develop site maps and to evaluate contaminant receptors.
- Well construction records are compiled and presented as part of the report. As-built information is used in combination with other data to evaluate subsurface conditions and monitoring well screen settings as they relate to the investigation.
- Subsurface drilling logs are used to develop geologic cross-sections, fence diagrams, isopachs, structure contours, or other constructions. Regional geologic data are used to obtain an overall framework.
- Hydrogeologic data are used to develop contour maps, flow nets and other constructions. The data is also used to calculate various hydrogeologic parameters that describe aquifer characteristics.
- Hydrocarbon data are utilized to develop various plume geometry and isoconcentration maps.
- All data are compiled and utilized for making specific recommendations with regard to remedial action alternatives.

APPENDIX D

LABORATORY REPORTS AND CHAIN-OF-CUSTODY DOCUMENTATION



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

Report Number: G128-1759

Client Project: Rapid Refueler 2005 Release Phase 1 LSA

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 SGS/Paradigm at (910) 350-1903. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS/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,
SGS/Paradigm Analytical Laboratories, Inc.



Laboratory Director
J. Patrick Weaver

5/11/2006

Date



Results for Volatiles
by GC 602

Client Sample ID: USTAS511-MW09

Analyzed By: MJC

Client Project ID: Rapid Refueler 2005 Release Phase Date Collected: 4/24/2006 14:30

Lab Sample ID: G128-1759-1A

Date Received: 4/25/2006

Lab Project ID: G128-1759

Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	4.40	4.00	1.26	4	5/2/2006	
Diisopropyl ether (DIPE)	BQL	4.00	1.18	4	5/2/2006	
Ethylbenzene	62.0	4.00	1.2	4	5/2/2006	
Methyl-tert butyl ether (MTBE)	BQL	8.00	2.35	4	5/2/2006	
Toluene	24.0	4.00	1.21	4	5/2/2006	
m/p-Xylene	153	8.00	2.43	4	5/2/2006	
o-Xylene	144	8.00	2.38	4	5/2/2006	

Surrogate Spike Recoveries

	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	41.4	103

Comments:

All values corrected for dilution.
BQL = Below quantitation limit.

Reviewed By: JW
GC_LIMS_v2.0



Results for Volatiles
by GC 602

Client Sample ID: Method Blank

Analyzed By: MJC

Client Project ID:

Date Collected:

Lab Sample ID: VBLK5050106B

Date Received:

Lab Project ID:

Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.316	1	5/2/2006	
Diisopropyl ether (DIPE)	BQL	1.00	0.294	1	5/2/2006	
Ethylbenzene	BQL	1.00	0.299	1	5/2/2006	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.588	1	5/2/2006	
Toluene	BQL	1.00	0.302	1	5/2/2006	
m/p-Xylene	BQL	2.00	0.608	1	5/2/2006	
o-Xylene	BQL	2.00	0.596	1	5/2/2006	

Surrogate Spike Recoveries

	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	41.1	103

Comments:

All values corrected for dilution.
BQL = Below quantitation limit.

Reviewed By: BW
GC_LIMS_v2.0



Results for QC Check / Laboratory Control Spike

Method: 601 Spike[ppb] : 10

Filename : 050106/123B

Compound	ppb	Q(%)	QC Limits		P _s (%)	LCS Limits	
			Lower	Upper		Lower	Upper
Bromodichloromethane	9.5	94.6	76.0	124.0	95	42	172
Bromoform	8.9	89.3	73.5	126.5	89	13	159
Bromomethane	8.0	79.9	58.5	141.5	80	D	144
Carbon tetrachloride	9.5	95.3	68.5	131.5	95	43	143
Chlorobenzene	9.1	91.4	72.0	128.0	91	38	150
Chloroethane	8.2	82.4	77.0	123.0	82	46	137
Chloroform	9.5	94.7	75.0	125.0	95	49	133
Chloromethane	9.4	93.9	59.5	140.5	94	D	193
Dibromochloromethane	9.0	90.3	65.5	134.5	90	24	191
1,2-Dibromoethane	9.2	92.1	13.6	186.4	92	D	206
1,2-Dichlorobenzene	8.3	82.6	70.0	130.0	83	D	208
1,3-Dichlorobenzene	8.4	84.3	49.5	150.5	84	7	187
1,4-Dichlorobenzene	8.4	83.8	69.5	130.5	84	42	143
1,1-Dichloroethane	9.5	94.8	84.0	116.0	95	47	132
1,2-Dichloroethane	9.4	94.4	71.5	128.5	94	51	147
1,1-Dichloroethene	8.0	80.0	63.0	137.0	80	28	167
cis-1,2-Dichloroethene	9.1	90.7	34.4	180.6	91	19	181
trans-1,2-Dichloroethene	9.4	93.8	64.0	136.0	94	38	155
1,2-Dichloropropane	8.4	84.0	74.0	126.0	84	44	156
cis-1,3-Dichloropropene	9.0	90.4	64.0	136.0	90	22	178
trans-1,3-Dichloropropene	9.0	90.3	64.0	136.0	90	22	178
Methylene Chloride	9.5	94.9	77.5	122.5	95	25	162
1,1,2,2-Tetrachloroethane	17.4	87.2	49.0	181.0	87	8	184
Tetrachloroethene	18.4	92.0	70.0	130.0	92	26	162
1,1,1-Trichloroethane	9.4	94.1	71.0	129.0	94	41	138
1,1,2-Trichloroethane	8.0	80.3	78.5	121.5	80	39	136
Trichloroethene	9.5	95.2	77.0	123.0	95	35	146
Trichlorofluoromethane	8.2	82.2	66.5	133.5	82	21	156
Vinyl Chloride	7.4	73.7	68.5	131.5	74	28	163

Method: 602 Spike[ppb] : 10

Filename : 050106/023F

Compound	ppb	Q(%)	QC Limits		P _s (%)	LCS Limits	
			Lower	Upper		Lower	Upper
Benzene	10.1	101.4	77.0	123.0	101	39	150
Chlorobenzene	10.1	101.0	80.5	119.5	101	55	135
1,2-Dichlorobenzene	9.1	90.9	68.0	132.0	91	37	154
1,3-Dichlorobenzene	18.6	93.2	72.5	127.5	93	50	141
1,4-Dichlorobenzene	9.2	92.1	69.5	130.5	92	42	143
Diisopropyl ether	10.4	104.5	43.1	156.9	104	30	170
Ethylbenzene	10.1	100.7	63.0	137.0	101	32	160
MTBE	20.5	102.3	46.8	153.2	102	35	165
Toluene	10.3	102.9	77.5	127.0	103	46	148
m,p-Xylene	19.7	98.3	11.2	188.8	98	D	239
o-Xylene	9.5	94.7	47.6	152.4	95	36	164

Flags :

- + = out of QC limits.
- = lab generated limits.
- D = Detected



Results for MS-MSD

Method: 601 Spike[ppb]: 10

Sample: 050106/139B
MS: 050106/141B
MSD: 050106/141B

Compound	µg/L			%REC		Limits	
	Sam.	MS	MSD	MS	MSD	Lower	Upper
Bromodichloromethane	ND	10.7	10.4	99	96	42	172
Bromoform	ND	9.2	9.0	91	90	13	159
Bromomethane	ND	7.3	7.5	73	75	D	144
Carbon tetrachloride	ND	20.4	19.8	102	99	43	143
Chlorobenzene	ND	9.6	9.5	96	95	38	150
Chloroethane	ND	8.1	7.9	81	79	46	137
Chloroform	ND	10.7	10.3	101	97	49	133
Chloromethane	ND	8.1	7.7	80	77	D	193
Dibromochloromethane	ND	9.8	9.8	92	92	24	191
1,2-Dibromoethane	ND	9.4	9.4	94	94	D	206
1,2-Dichlorobenzene	ND	9.6	8.9	96	89	D	208
1,3-Dichlorobenzene	ND	9.7	9.0	97	90	7	187
1,4-Dichlorobenzene	ND	9.7	9.0	97	90	42	143
1,1-Dichloroethane	ND	10.3	9.8	103	98	47	132
1,2-Dichloroethane	ND	10.0	9.6	100	96	51	147
1,1-Dichloroethene	ND	8.6	8.3	86	82	28	167
cis-1,2-Dichloroethene	ND	17.8	16.8	178	168	19	181
trans-1,2-Dichloroethene	ND	10.2	9.9	102	99	38	155
1,2-Dichloropropane	ND	8.8	8.7	88	86	44	156
cis-1,3-Dichloropropene	ND	9.1	8.9	91	89	22	178
trans-1,3-Dichloropropene	ND	8.9	8.8	89	88	22	178
Methylene Chloride	ND	9.8	9.6	97	96	25	162
1,1,2,2-Tetrachloroethane	ND	18.7	18.1	94	90	8	184
Tetrachloroethane	ND	9.8	9.8	98	98	26	162
1,1,1-Trichloroethane	ND	10.3	9.8	103	98	41	138
1,1,2-Trichloroethane	ND	8.2	8.2	78	77	39	136
Trichloroethene	ND	10.2	9.8	102	98	35	146
Trichlorofluoromethane	ND	8.4	8.2	84	82	21	156
Vinyl Chloride	ND	7.2	7.2	72	71	28	163

Method: 602 Spike[ppb]: 10

Sample: 050106/039F
MS: 050106/040F
MSD: 050106/041F

Compound	µg/L			%REC		Limits	
	Sam.	MS	MSD	MS	MSD	Lower	Upper
Benzene	1.1	11.9	11.8	108	107	39	150
Chlorobenzene	ND	10.8	10.7	108	107	55	135
1,2-Dichlorobenzene	5.2	10.6	10.3	54	51	37	154
1,3-Dichlorobenzene	3.6	25.2	23.6	108	100	50	141
1,4-Dichlorobenzene	ND	8.1	7.4	81	74	42	143
Diisopropyl ether	ND	10.6	10.6	106	106	30	170
Ethylbenzene	15.5	27.1	26.5	116	110	32	160
MTBE	ND	22.0	21.6	109	107	35	165
Toluene	6.0	17.2	17.0	112	110	48	148
m,p-Xylene	38.3	60.7	58.5	112	101	D	239
o-Xylene	35.9	57.0	54.8	105	95	36	164

Flags:

- + = out of QC limits.
- = lab generated limits.
- D = Detected
- ND = None Detected



Results for Semivolatiles
by GCMS 625

Client Sample ID: USTAS511-MW09
Client Project ID: Rapid Refueler 2005 Release Phase 1 LSA
Lab Sample ID: G128-1759-1H
Lab Project ID: G128-1759

Analyzed By: MRC
Date Collected: 4/24/2006 14:30
Date Received: 4/25/2006
Date Extracted: 4/26/2006
Matrix: Water

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	2.30	10.0	1.22	1	4/28/2006	J
Acenaphthylene	BQL	10.0	1.12	1	4/28/2006	
Anthracene	BQL	10.0	1.75	1	4/28/2006	
Benzo[a]anthracene	BQL	10.0	1.36	1	4/28/2006	
Benzo[a]pyrene	BQL	10.0	1.27	1	4/28/2006	
Benzo[b]fluoranthene	BQL	10.0	1.43	1	4/28/2006	
Benzo[g,h,i]perylene	BQL	10.0	4.57	1	4/28/2006	
Benzo[k]fluoranthene	BQL	10.0	1.09	1	4/28/2006	
Bis(2-chloroethoxy)methane	BQL	10.0	1.11	1	4/28/2006	
Bis(2-chloroethyl)ether	BQL	10.0	1.09	1	4/28/2006	
Bis(2-chloroisopropyl)ether	BQL	10.0	1.57	1	4/28/2006	
Bis(2-ethylhexyl)phthalate	BQL	10.0	1.33	1	4/28/2006	
4-bromophenyl phenyl ether	BQL	10.0	1.99	1	4/28/2006	
Butylbenzylphthalate	BQL	10.0	1.53	1	4/28/2006	
2-Chloronaphthalene	BQL	10.0	1.25	1	4/28/2006	
2-Chlorophenol	BQL	10.0	4.22	1	4/28/2006	
4-Chloro-3-methylphenol	BQL	10.0	3.26	1	4/28/2006	
4-Chlorophenyl phenyl ether	BQL	10.0	1.42	1	4/28/2006	
Chrysene	BQL	10.0	1.11	1	4/28/2006	
Dibenzo[a,h]anthracene	BQL	10.0	4.87	1	4/28/2006	
Di-n-Butylphthalate	BQL	10.0	1.65	1	4/28/2006	
1,2-Dichlorobenzene	BQL	10.0	1.25	1	4/28/2006	
1,3-Dichlorobenzene	BQL	10.0	1.24	1	4/28/2006	
1,4-Dichlorobenzene	BQL	10.0	1.20	1	4/28/2006	
3,3'-Dichlorobenzidine	BQL	20.0	4.10	1	4/28/2006	
2,4-Dichlorophenol	BQL	10.0	3.75	1	4/28/2006	
Diethylphthalate	BQL	10.0	1.48	1	4/28/2006	
Dimethylphthalate	BQL	10.0	1.04	1	4/28/2006	
2,4-Dimethylphenol	BQL	10.0	9.25	1	4/28/2006	
Di-n-octylphthalate	BQL	10.0	1.16	1	4/28/2006	
4,6-Dinitro-2-methylphenol	BQL	50.0	3.71	1	4/28/2006	
2,4-Dinitrophenol	BQL	50.0	4.20	1	4/28/2006	
2,4-Dinitrotoluene	BQL	10.0	1.52	1	4/28/2006	
2,6-Dinitrotoluene	BQL	10.0	1.41	1	4/28/2006	
Diphenylamine *	BQL	10.0	1.53	1	4/28/2006	
Fluoranthene	BQL	10.0	1.41	1	4/28/2006	
Fluorene	5.80	10.0	1.22	1	4/28/2006	J
Hexachlorobenzene	BQL	10.0	1.22	1	4/28/2006	
Hexachlorobutadiene	BQL	10.0	1.58	1	4/28/2006	
Hexachlorocyclopentadiene	BQL	20.0	20.0	1	4/28/2006	
Hexachloroethane	BQL	10.0	1.58	1	4/28/2006	
Indeno(1,2,3-c,d)pyrene	BQL	10.0	4.57	1	4/28/2006	
Isophorone	BQL	10.0	1.27	1	4/28/2006	
Naphthalene	328	10.0	1.08	1	4/28/2006	



Results for Semivolatiles
by GCMS 625

Client Sample ID: USTAS511-MW09
Client Project ID: Rapid Refueler 2005 Release Phase 1 LSA
Lab Sample ID: G128-1759-1H
Lab Project ID: G128-1759

Analyzed By: MRC
Date Collected: 4/24/2006 14:30
Date Received: 4/25/2006
Date Extracted: 4/26/2006
Matrix: Water

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Nitrobenzene	BQL	10.0	1.32	1	4/28/2006	
2-Nitrophenol	BQL	10.0	3.52	1	4/28/2006	
4-Nitrophenol	BQL	50.0	3.17	1	4/28/2006	
N-Nitrosodi-n-propylamine	BQL	10.0	1.87	1	4/28/2006	
Pentachlorophenol	BQL	50.0	2.83	1	4/28/2006	
Phenanthrene	BQL	10.0	1.38	1	4/28/2006	
Phenol	BQL	10.0	3.38	1	4/28/2006	
Pyrene	BQL	10.0	2.08	1	4/28/2006	
1,2,4-Trichlorobenzene	BQL	10.0	1.33	1	4/28/2006	
2,4,6-Trichlorophenol	BQL	10.0	2.92	1	4/28/2006	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	6.5	65
2-Fluorophenol	10	7.4	74
Nitrobenzene-d5	10	7.9	79
Phenol-d6	10	7	70
2,4,6-Tribromophenol	10	12.5	125
4-Terphenyl-d14	10	4.3	43

Comments:

* N-Nitrosodiphenylamine is reported as the breakdown product Diphenylamine.

Flags:

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: ew



Results of Library Search for Semivolatile Compounds
by GCMS

Client Sample ID: USTAS511-MW09

Analyzed By: MRC

Client Project ID: Rapid Refueler 2005 Release Phase 1

Date Collected: 4/24/2006 14:30

Lab Sample ID: G128-1759-1H

Date Received: 4/25/2006

Lab Project ID: G128-1759

Date Extracted: 4/26/2006

Sample Wt/Vol: 500 ML

Date Analyzed: 4/28/2006

Dilution: 1

Matrix: Water

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/L)
1	2-Methylnaphthalene	10.39	000091-57-6	97	389
2	1-Methylnaphthalene	10.55	000090-12-0	93	336
3	Alkane, Unknown	7.10			271
4	Unknown	7.54			99.4
5	Ethylmethylbenzene, Isomer of	6.65			98.6
6	Alkane, Unknown	11.20			64.1
7	Biphenyl	11.12	000092-52-4	95	56.5
8	Alkane, Unknown	5.84			55.5
9	Unknown	6.27			50.8
10	Ethylidimethylbenzene, Isomer of	8.05			49.9

Comment:

Tentatively Identified Compound (TIC) refers to substances which are not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist.

Quantitation is accomplished by relative peak area of the compound compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is equal to or greater than 10% of that of the nearest internal standard. Quantitation provided is an estimate.

Reviewed by: SN



Results for Volatiles
by GCMS 8260-5035

Client Sample ID: USTAS511-SB01(3-4)

Client Project ID: Rapid Refueler 2005 Release Phase 1 LSA

Lab Sample ID G128-1759-2B

Lab Project ID: G128-1759

Report Basis: Dry Weight

Analyzed By: JTF

Date Collected: 04-24-2006 13:35

Date Received: 4/25/2006

Matrix: Soil

%Solids: 65.7

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
Acetone	0.0197	0.0703	0.00414	1	5/5/2006	J
Benzene	BQL	0.00703	0.00401	1	5/5/2006	
Bromobenzene	BQL	0.00703	0.00346	1	5/5/2006	
Bromochloromethane	BQL	0.00703	0.00411	1	5/5/2006	
Bromodichloromethane	BQL	0.00703	0.00400	1	5/5/2006	
Bromoform	BQL	0.00703	0.00340	1	5/5/2006	
Bromomethane	BQL	0.00703	0.00589	1	5/5/2006	
2-Butanone	BQL	0.0352	0.00405	1	5/5/2006	
n-Butylbenzene	BQL	0.00703	0.00471	1	5/5/2006	
sec-Butylbenzene	BQL	0.00703	0.00492	1	5/5/2006	
tert-Butylbenzene	BQL	0.00703	0.00488	1	5/5/2006	
Carbon disulfide	BQL	0.00703	0.00370	1	5/5/2006	
Carbon tetrachloride	BQL	0.00703	0.00487	1	5/5/2006	
Chlorobenzene	BQL	0.00703	0.00353	1	5/5/2006	
Chloroethane	BQL	0.00703	0.00442	1	5/5/2006	
Chloroform	BQL	0.00703	0.00353	1	5/5/2006	
Chloromethane	BQL	0.00703	0.00339	1	5/5/2006	
2-Chlorotoluene	BQL	0.00703	0.00419	1	5/5/2006	
4-Chlorotoluene	BQL	0.00703	0.00391	1	5/5/2006	
Dibromochloromethane	BQL	0.00703	0.00315	1	5/5/2006	
1,2-Dibromo-3-chloropropane	BQL	0.00703	0.0149	1	5/5/2006	
Dibromomethane	BQL	0.00703	0.00422	1	5/5/2006	
1,2-Dibromoethane (EDB)	BQL	0.00703	0.00328	1	5/5/2006	
1,2-Dichlorobenzene	BQL	0.00703	0.00339	1	5/5/2006	
1,3-Dichlorobenzene	BQL	0.00703	0.00329	1	5/5/2006	
1,4-Dichlorobenzene	BQL	0.00703	0.00346	1	5/5/2006	
trans-1,4-Dichloro-2-butene	BQL	0.00703	0.0151	1	5/5/2006	
1,1-Dichloroethane	BQL	0.00703	0.00405	1	5/5/2006	
1,1-Dichloroethene	BQL	0.00703	0.00542	1	5/5/2006	
1,2-Dichloroethane	BQL	0.00703	0.00404	1	5/5/2006	
cis-1,2-Dichloroethene	BQL	0.00703	0.00346	1	5/5/2006	
trans-1,2-dichloroethene	BQL	0.00703	0.00457	1	5/5/2006	
1,2-Dichloropropane	BQL	0.00703	0.00360	1	5/5/2006	
1,3-Dichloropropane	BQL	0.00703	0.00322	1	5/5/2006	
2,2-Dichloropropane	BQL	0.00703	0.00447	1	5/5/2006	
1,1-Dichloropropene	BQL	0.00703	0.00508	1	5/5/2006	
cis-1,3-Dichloropropene	BQL	0.00703	0.00391	1	5/5/2006	
trans-1,3-Dichloropropene	BQL	0.00703	0.00398	1	5/5/2006	
Dichlorodifluoromethane	BQL	0.00703	0.00525	1	5/5/2006	
Diisopropyl ether (DIPE)	BQL	0.00703	0.00333	1	5/5/2006	
Ethylbenzene	BQL	0.00703	0.00428	1	5/5/2006	
Hexachlorobutadiene	BQL	0.00703	0.00556	1	5/5/2006	



Results for Volatiles
by GCMS 8260-5035

Client Sample ID: USTAS511-SB01(3-4)
Client Project ID: Rapid Refueler 2005 Release Phase 1 LSA
Lab Sample ID G128-1759-2B
Lab Project ID: G128-1759
Report Basis: Dry Weight

Analyzed By: JTF
Date Collected: 04-24-2006 13:35
Date Received: 4/25/2006
Matrix: Soil
%Solids: 65.7

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
2-Hexanone	BQL	0.00703	0.00307	1	5/5/2006	
Iodomethane	BQL	0.00703	0.00654	1	5/5/2006	
Isopropylbenzene	BQL	0.00703	0.00453	1	5/5/2006	
4-Isopropyltoluene	BQL	0.00703	0.00478	1	5/5/2006	
Methylene chloride	BQL	0.0281	0.00402	1	5/5/2006	
4-Methyl-2-pentanone	BQL	0.00703	0.00325	1	5/5/2006	
Methyl-tert-butyl ether (MTBE)	BQL	0.00703	0.00357	1	5/5/2006	
Naphthalene	BQL	0.00703	0.00283	1	5/5/2006	
n-Propyl benzene	BQL	0.00703	0.00452	1	5/5/2006	
Styrene	BQL	0.00703	0.00504	1	5/5/2006	
1,1,1,2-Tetrachloroethane	BQL	0.00703	0.00383	1	5/5/2006	
1,1,2,2-Tetrachloroethane	BQL	0.00703	0.00346	1	5/5/2006	
Tetrachloroethene	BQL	0.00703	0.00443	1	5/5/2006	
Toluene	BQL	0.00703	0.00416	1	5/5/2006	
1,2,3-Trichlorobenzene	BQL	0.00703	0.00308	1	5/5/2006	
1,2,4-Trichlorobenzene	BQL	0.00703	0.00315	1	5/5/2006	
Trichloroethene	BQL	0.00703	0.00439	1	5/5/2006	
1,1,1-Trichloroethane	BQL	0.00703	0.00485	1	5/5/2006	
1,1,2-Trichloroethane	BQL	0.00703	0.00363	1	5/5/2006	
Trichlorofluoromethane	BQL	0.00703	0.00581	1	5/5/2006	
1,2,3-Trichloropropane	BQL	0.00703	0.00373	1	5/5/2006	
1,2,4-Trimethylbenzene	BQL	0.00703	0.00394	1	5/5/2006	
1,3,5-Trimethylbenzene	BQL	0.00703	0.00419	1	5/5/2006	
Vinyl chloride	BQL	0.00703	0.00464	1	5/5/2006	
m-,p-Xylene	BQL	0.0141	0.00798	1	5/5/2006	
o-Xylene	BQL	0.00703	0.00394	1	5/5/2006	

	Spike Added	Spike Result	Percent Recovered
4-Bromofluorobenzene	0.05	0.0526	105
1,2-Dichloroethane-d4	0.05	0.0747	149
Toluene-d8	0.05	0.0495	99

Comments:

Flags:

BQL = Below Quantitation Limits.
J = Detected below the quantitation limit.

Reviewed By:



Results for Volatiles
by GCMS 8260-5035

Client Sample ID: USTAS511-SB02(5-6)

Client Project ID: Rapid Refueler 2005 Release Phase 1 LSA

Lab Sample ID G128-1759-3A

Lab Project ID: G128-1759

Report Basis: Dry Weight

Analyzed By: JTF

Date Collected: 04-24-2006 14:10

Date Received: 4/25/2006

Matrix: Soil

%Solids: 79.8

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
Acetone	0.0156	0.0477	0.00281	1	5/5/2006	J
Benzene	BQL	0.00477	0.00272	1	5/5/2006	
Bromobenzene	BQL	0.00477	0.00235	1	5/5/2006	
Bromochloromethane	BQL	0.00477	0.00279	1	5/5/2006	
Bromodichloromethane	BQL	0.00477	0.00271	1	5/5/2006	
Bromoform	BQL	0.00477	0.00231	1	5/5/2006	
Bromomethane	BQL	0.00477	0.00400	1	5/5/2006	
2-Butanone	BQL	0.0239	0.00275	1	5/5/2006	
n-Butylbenzene	BQL	0.00477	0.00320	1	5/5/2006	
sec-Butylbenzene	BQL	0.00477	0.00334	1	5/5/2006	
tert-Butylbenzene	BQL	0.00477	0.00331	1	5/5/2006	
Carbon disulfide	BQL	0.00477	0.00251	1	5/5/2006	
Carbon tetrachloride	BQL	0.00477	0.00330	1	5/5/2006	
Chlorobenzene	BQL	0.00477	0.00239	1	5/5/2006	
Chloroethane	BQL	0.00477	0.00300	1	5/5/2006	
Chloroform	BQL	0.00477	0.00239	1	5/5/2006	
Chloromethane	BQL	0.00477	0.00230	1	5/5/2006	
2-Chlorotoluene	BQL	0.00477	0.00284	1	5/5/2006	
4-Chlorotoluene	BQL	0.00477	0.00265	1	5/5/2006	
Dibromochloromethane	BQL	0.00477	0.00214	1	5/5/2006	
1,2-Dibromo-3-chloropropane	BQL	0.00477	0.0101	1	5/5/2006	
Dibromomethane	BQL	0.00477	0.00286	1	5/5/2006	
1,2-Dibromoethane (EDB)	BQL	0.00477	0.00222	1	5/5/2006	
1,2-Dichlorobenzene	BQL	0.00477	0.00230	1	5/5/2006	
1,3-Dichlorobenzene	BQL	0.00477	0.00223	1	5/5/2006	
1,4-Dichlorobenzene	BQL	0.00477	0.00235	1	5/5/2006	
trans-1,4-Dichloro-2-butene	BQL	0.00477	0.0102	1	5/5/2006	
1,1-Dichloroethane	BQL	0.00477	0.00275	1	5/5/2006	
1,1-Dichloroethene	BQL	0.00477	0.00367	1	5/5/2006	
1,2-Dichloroethane	BQL	0.00477	0.00274	1	5/5/2006	
cis-1,2-Dichloroethene	BQL	0.00477	0.00235	1	5/5/2006	
trans-1,2-dichloroethene	BQL	0.00477	0.00310	1	5/5/2006	
1,2-Dichloropropane	BQL	0.00477	0.00244	1	5/5/2006	
1,3-Dichloropropane	BQL	0.00477	0.00219	1	5/5/2006	
2,2-Dichloropropane	BQL	0.00477	0.00303	1	5/5/2006	
1,1-Dichloropropene	BQL	0.00477	0.00344	1	5/5/2006	
cis-1,3-Dichloropropene	BQL	0.00477	0.00265	1	5/5/2006	
trans-1,3-Dichloropropene	BQL	0.00477	0.00270	1	5/5/2006	
Dichlorodifluoromethane	BQL	0.00477	0.00356	1	5/5/2006	
Diisopropyl ether (DIPE)	BQL	0.00477	0.00226	1	5/5/2006	
Ethylbenzene	BQL	0.00477	0.00290	1	5/5/2006	
Hexachlorobutadiene	BQL	0.00477	0.00377	1	5/5/2006	



Results for Volatiles
by GCMS 8260-5035

Client Sample ID: USTAS511-SB02(5-6)
Client Project ID: Rapid Refueler 2005 Release Phase 1 LSA
Lab Sample ID G128-1759-3A
Lab Project ID: G128-1759
Report Basis: Dry Weight

Analyzed By: JTF
Date Collected: 04-24-2006 14:10
Date Received: 4/25/2006
Matrix: Soil
%Solids: 79.8

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
2-Hexanone	BQL	0.00477	0.00208	1	5/5/2006	
Iodomethane	BQL	0.00477	0.00444	1	5/5/2006	
Isopropylbenzene	BQL	0.00477	0.00307	1	5/5/2006	
4-Isopropyltoluene	BQL	0.00477	0.00324	1	5/5/2006	
Methylene chloride	BQL	0.0191	0.00273	1	5/5/2006	
4-Methyl-2-pentanone	BQL	0.00477	0.00220	1	5/5/2006	
Methyl-tert-butyl ether (MTBE)	BQL	0.00477	0.00242	1	5/5/2006	
Naphthalene	0.00682	0.00477	0.00192	1	5/5/2006	
n-Propyl benzene	BQL	0.00477	0.00306	1	5/5/2006	
Styrene	BQL	0.00477	0.00342	1	5/5/2006	
1,1,1,2-Tetrachloroethane	BQL	0.00477	0.00260	1	5/5/2006	
1,1,2,2-Tetrachloroethane	BQL	0.00477	0.00235	1	5/5/2006	
Tetrachloroethene	BQL	0.00477	0.00301	1	5/5/2006	
Toluene	BQL	0.00477	0.00282	1	5/5/2006	
1,2,3-Trichlorobenzene	BQL	0.00477	0.00209	1	5/5/2006	
1,2,4-Trichlorobenzene	BQL	0.00477	0.00214	1	5/5/2006	
Trichloroethene	BQL	0.00477	0.00298	1	5/5/2006	
1,1,1-Trichloroethane	BQL	0.00477	0.00329	1	5/5/2006	
1,1,2-Trichloroethane	BQL	0.00477	0.00246	1	5/5/2006	
Trichlorofluoromethane	BQL	0.00477	0.00394	1	5/5/2006	
1,2,3-Trichloropropane	BQL	0.00477	0.00253	1	5/5/2006	
1,2,4-Trimethylbenzene	BQL	0.00477	0.00267	1	5/5/2006	
1,3,5-Trimethylbenzene	BQL	0.00477	0.00284	1	5/5/2006	
Vinyl chloride	BQL	0.00477	0.00315	1	5/5/2006	
m-,p-Xylene	BQL	0.00954	0.00541	1	5/5/2006	
o-Xylene	BQL	0.00477	0.00267	1	5/5/2006	
		Spike Added	Spike Result	Percent Recovered		
4-Bromofluorobenzene		0.05	0.0504	101		
1,2-Dichloroethane-d4		0.05	0.0757	151		
Toluene-d8		0.05	0.05	100		

Comments:

Flags:

BQL = Below Quantitation Limits.
J = Detected below the quantitation limit.

Reviewed By:



Results for Volatiles
by GCMS 8260-5035

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID VBLK3050506B
Lab Project ID:
Report Basis: Dry Weight

Analyzed By: JTF
Date Collected:
Date Received:
Matrix: Soil
%Solids: 100.0

Report Name Compound	Result UG/KG	Quantitation Limit UG/KG	MDL UG/KG	Dilution Factor	Date Analyzed	Flag
Acetone	BQL	50.0	2.94	1	5/5/2006	
Benzene	BQL	5.00	2.85	1	5/5/2006	
Bromobenzene	BQL	5.00	2.46	1	5/5/2006	
Bromochloromethane	BQL	5.00	2.92	1	5/5/2006	
Bromodichloromethane	BQL	5.00	2.84	1	5/5/2006	
Bromoform	BQL	5.00	2.42	1	5/5/2006	
Bromomethane	BQL	5.00	4.19	1	5/5/2006	
2-Butanone	BQL	25.0	2.88	1	5/5/2006	
n-Butylbenzene	BQL	5.00	3.35	1	5/5/2006	
sec-Butylbenzene	BQL	5.00	3.50	1	5/5/2006	
tert-Butylbenzene	BQL	5.00	3.47	1	5/5/2006	
Carbon disulfide	BQL	5.00	2.63	1	5/5/2006	
Carbon tetrachloride	BQL	5.00	3.46	1	5/5/2006	
Chlorobenzene	BQL	5.00	2.51	1	5/5/2006	
Chloroethane	BQL	5.00	3.14	1	5/5/2006	
Chloroform	BQL	5.00	2.51	1	5/5/2006	
Chloromethane	BQL	5.00	2.41	1	5/5/2006	
2-Chlorotoluene	BQL	5.00	2.98	1	5/5/2006	
4-Chlorotoluene	BQL	5.00	2.78	1	5/5/2006	
Dibromochloromethane	BQL	5.00	2.24	1	5/5/2006	
1,2-Dibromo-3-chloropropane	BQL	5.00	10.6	1	5/5/2006	
Dibromomethane	BQL	5.00	3.00	1	5/5/2006	
1,2-Dibromoethane (EDB)	BQL	5.00	2.33	1	5/5/2006	
1,2-Dichlorobenzene	BQL	5.00	2.41	1	5/5/2006	
1,3-Dichlorobenzene	BQL	5.00	2.34	1	5/5/2006	
1,4-Dichlorobenzene	BQL	5.00	2.46	1	5/5/2006	
trans-1,4-Dichloro-2-butene	BQL	5.00	10.7	1	5/5/2006	
1,1-Dichloroethane	BQL	5.00	2.88	1	5/5/2006	
1,1-Dichloroethene	BQL	5.00	3.85	1	5/5/2006	
1,2-Dichloroethane	BQL	5.00	2.87	1	5/5/2006	
cis-1,2-Dichloroethene	BQL	5.00	2.46	1	5/5/2006	
trans-1,2-dichloroethene	BQL	5.00	3.25	1	5/5/2006	
1,2-Dichloropropane	BQL	5.00	2.56	1	5/5/2006	
1,3-Dichloropropane	BQL	5.00	2.29	1	5/5/2006	
2,2-Dichloropropane	BQL	5.00	3.18	1	5/5/2006	
1,1-Dichloropropene	BQL	5.00	3.61	1	5/5/2006	
cis-1,3-Dichloropropene	BQL	5.00	2.78	1	5/5/2006	
trans-1,3-Dichloropropene	BQL	5.00	2.83	1	5/5/2006	
Dichlorodifluoromethane	BQL	5.00	3.73	1	5/5/2006	
Diisopropyl ether (DIPE)	BQL	5.00	2.37	1	5/5/2006	
Ethylbenzene	BQL	5.00	3.04	1	5/5/2006	
Hexachlorobutadiene	BQL	5.00	3.95	1	5/5/2006	



Results for Volatiles
by GCMS 8260-5035

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID VBLK3050506B
Lab Project ID:
Report Basis: Dry Weight

Analyzed By: JTF
Date Collected:
Date Received:
Matrix: Soil
%Solids: 100.0

Report Name Compound	Result UG/KG	Quantitation Limit UG/KG	MDL UG/KG	Dilution Factor	Date Analyzed	Flag
2-Hexanone	BQL	5.00	2.18	1	5/5/2006	
Iodomethane	BQL	5.00	4.65	1	5/5/2006	
Isopropylbenzene	BQL	5.00	3.22	1	5/5/2006	
4-Isopropyltoluene	BQL	5.00	3.40	1	5/5/2006	
Methylene chloride	BQL	20.0	2.86	1	5/5/2006	
4-Methyl-2-pentanone	BQL	5.00	2.31	1	5/5/2006	
Methyl-tert-butyl ether (MTBE)	BQL	5.00	2.54	1	5/5/2006	
Naphthalene	BQL	5.00	2.01	1	5/5/2006	
n-Propyl benzene	BQL	5.00	3.21	1	5/5/2006	
Styrene	BQL	5.00	3.58	1	5/5/2006	
1,1,1,2-Tetrachloroethane	BQL	5.00	2.72	1	5/5/2006	
1,1,2,2-Tetrachloroethane	BQL	5.00	2.46	1	5/5/2006	
Tetrachloroethene	BQL	5.00	3.15	1	5/5/2006	
Toluene	BQL	5.00	2.96	1	5/5/2006	
1,2,3-Trichlorobenzene	BQL	5.00	2.19	1	5/5/2006	
1,2,4-Trichlorobenzene	BQL	5.00	2.24	1	5/5/2006	
Trichloroethene	BQL	5.00	3.12	1	5/5/2006	
1,1,1-Trichloroethane	BQL	5.00	3.45	1	5/5/2006	
1,1,2-Trichloroethane	BQL	5.00	2.58	1	5/5/2006	
Trichlorofluoromethane	BQL	5.00	4.13	1	5/5/2006	
1,2,3-Trichloropropane	BQL	5.00	2.65	1	5/5/2006	
1,2,4-Trimethylbenzene	BQL	5.00	2.80	1	5/5/2006	
1,3,5-Trimethylbenzene	BQL	5.00	2.98	1	5/5/2006	
Vinyl chloride	BQL	5.00	3.30	1	5/5/2006	
m-,p-Xylene	BQL	10.0	5.67	1	5/5/2006	
o-Xylene	BQL	5.00	2.80	1	5/5/2006	

	Spike Added	Spike Result	Percent Recovered
4-Bromofluorobenzene	50	54.1	108
1,2-Dichloroethane-d4	50	59.3	119
Toluene-d8	50	48.6	97

Comments:

Flags:

BQL = Below Quantitation Limits.

Reviewed By:



**Results for Laboratory Control Spike (LCS)
by GC/MS 8260/5035**

Lab Sample ID: lcs3050506a

Analyst: JTF

Batch ID: 3050506

Date Analyzed: 5 May 2006 12:48 pm

Matrix: Soil

compound	Spiked (µg/Kg)	Amount recovered	LCS (%)	Limits	
				Lower (%)	Upper (%)
benzene	100	95.13	95.1	77.6	122
chlorobenzene	100	90.30	90.3	75.3	125
1,1-dichloroethene	100	117.08	117.1	78.5	121
toluene	100	95.83	95.8	75.7	124
trichloroethene	100	96.04	96.0	60.8	139

Comments: Concentration values are on column amount.

Flags: * = Out of limits.

NA = Not applicable

NS = Not spiked

Reviewed by: gnd



**Results for LCS/LCSD
by GC/MS 8260/5035**

Client Project ID: Batch QC
Lab Sample ID: lcs3050506a
Batch ID: 3050506

Date Analyzed: 5 May 2006 12:48 pm
Matrix: Soil
Analyzed By: JTF

Compound		Recovered LCS %	Recovered LCSD %	Limits		RPD %	RPD Limit %
				Lower %	Upper %		
benzene		95.1	94.0	77.6	122	1.2	30
chlorobenzene		90.3	90.2	75.3	125	0.1	30
1,1-dichloroethene		117.1	116.5	78.5	121	0.5	30
toluene		95.8	93.8	75.7	124	2.2	30
trichloroethene		96.0	95.5	60.8	139	0.6	30

Comments:

Concentrations are on column amounts.
Concentration Units: ug/L

Flags:

* = Out of limits.
NA = Not applicable
BQL = Below quantitation limit.

Reviewed By: JTF



Results for Semivolatiles
by GCMS 8270

Client Sample ID: USTAS511-SB01(3-4)
Client Project ID: Rapid Refueler 2005 Release Phase 1 LSA
Lab Sample ID: G128-1759-2G
Lab Project ID: G128-1759
Report Basis: Dry weight

Analyzed By: MRC
Date Collected: 4/24/2006 13:35
Date Received: 4/25/2006
Date Extracted: 4/27/2006
Matrix: Soil
% Solids: 65.7

Compound	Result mg/Kg	RL mg/Kg	MDL mg/Kg	Dilution Factor	Date Analyzed	Flag
Acenaphthene	BQL	0.470	0.067	1	4/28/2006	
Acenaphthylene	BQL	0.470	0.063	1	4/28/2006	
Anthracene	BQL	0.470	0.068	1	4/28/2006	
Benzo[a]anthracene	BQL	0.470	0.081	1	4/28/2006	
Benzo[a]pyrene	BQL	0.470	0.072	1	4/28/2006	
Benzo[b]fluoranthene	BQL	0.470	0.082	1	4/28/2006	
Benzo[g,h,i]perylene	BQL	0.470	0.128	1	4/28/2006	
Benzo[k]fluoranthene	BQL	0.470	0.091	1	4/28/2006	
Benzoic Acid	BQL	0.941	0.941	1	4/28/2006	
Bis(2-chloroethoxy)methane	BQL	0.470	0.070	1	4/28/2006	
Bis(2-chloroethyl)ether	BQL	0.470	0.057	1	4/28/2006	
Bis(2-chloroisopropyl)ether	BQL	0.470	0.059	1	4/28/2006	
Bis(2-ethylhexyl)phthalate	BQL	0.470	0.063	1	4/28/2006	
4-bromophenyl phenyl ether	BQL	0.470	0.080	1	4/28/2006	
Butylbenzylphthalate	BQL	0.470	0.072	1	4/28/2006	
2-Chloronaphthalene	BQL	0.470	0.074	1	4/28/2006	
2-Chlorophenol	BQL	0.470	0.147	1	4/28/2006	
4-Chloro-3-methylphenol	BQL	0.470	0.147	1	4/28/2006	
4-Chloroaniline	BQL	2.35	0.358	1	4/28/2006	
4-Chlorophenyl phenyl ether	BQL	0.470	0.069	1	4/28/2006	
Chrysene	BQL	0.470	0.051	1	4/28/2006	
Dibenzo[a,h]anthracene	BQL	0.470	0.132	1	4/28/2006	
Dibenzofuran	BQL	0.470	0.086	1	4/28/2006	
Di-n-Butylphthalate	BQL	0.470	0.056	1	4/28/2006	
1,2-Dichlorobenzene	BQL	0.470	0.052	1	4/28/2006	
1,3-Dichlorobenzene	BQL	0.470	0.051	1	4/28/2006	
1,4-Dichlorobenzene	BQL	0.470	0.053	1	4/28/2006	
3,3'-Dichlorobenzidine	BQL	0.941	0.119	1	4/28/2006	
2,4-Dichlorophenol	BQL	0.470	0.169	1	4/28/2006	
Diethylphthalate	BQL	0.470	0.061	1	4/28/2006	
Dimethylphthalate	BQL	0.470	0.057	1	4/28/2006	
2,4-Dimethylphenol	BQL	0.470	0.336	1	4/28/2006	
Di-n-octylphthalate	BQL	0.470	0.078	1	4/28/2006	
4,6-Dinitro-2-methylphenol	BQL	2.35	0.277	1	4/28/2006	
2,4-Dinitrophenol	BQL	2.35	1.04	1	4/28/2006	
2,4-Dinitrotoluene	BQL	0.470	0.061	1	4/28/2006	
2,6-Dinitrotoluene	BQL	0.470	0.086	1	4/28/2006	
Diphenylamine *	BQL	0.470	0.046	1	4/28/2006	
Fluoranthene	BQL	0.470	0.066	1	4/28/2006	
Fluorene	BQL	0.470	0.058	1	4/28/2006	
Hexachlorobenzene	BQL	0.470	0.072	1	4/28/2006	
Hexachlorobutadiene	BQL	0.470	0.075	1	4/28/2006	
Hexachlorocyclopentadiene	BQL	0.941	0.048	1	4/28/2006	
Hexachloroethane	BQL	0.470	0.042	1	4/28/2006	



Results for Semivolatiles
by GCMS 8270

Client Sample ID: USTAS511-SB01(3-4)
Client Project ID: Rapid Refueler 2005 Release Phase 1 LSA
Lab Sample ID: G128-1759-2G
Lab Project ID: G128-1759
Report Basis: Dry weight

Analyzed By: MRC
Date Collected: 4/24/2006 13:35
Date Received: 4/25/2006
Date Extracted: 4/27/2006
Matrix: Soil
% Solids: 65.7

Compound	Result mg/Kg	RL mg/Kg	MDL mg/Kg	Dilution Factor	Date Analyzed	Flag
Indeno(1,2,3-c,d)pyrene	BQL	0.470	0.120	1	4/28/2006	
Isophorone	BQL	0.470	0.069	1	4/28/2006	
2-Methylnaphthalene	BQL	0.470	0.137	1	4/28/2006	
2-Methylphenol	BQL	0.470	0.166	1	4/28/2006	
3- & 4-Methylphenol	BQL	0.470	0.159	1	4/28/2006	
Naphthalene	BQL	0.470	0.038	1	4/28/2006	
2-Nitroaniline	BQL	0.470	0.074	1	4/28/2006	
3-Nitroaniline	BQL	2.35	0.484	1	4/28/2006	
4-Nitroaniline	BQL	2.35	0.145	1	4/28/2006	
Nitrobenzene	BQL	0.470	0.064	1	4/28/2006	
2-Nitrophenol	BQL	0.470	0.146	1	4/28/2006	
4-Nitrophenol	BQL	2.35	0.130	1	4/28/2006	
N-Nitrosodi-n-propylamine	BQL	0.470	0.060	1	4/28/2006	
Pentachlorophenol	BQL	2.35	0.123	1	4/28/2006	
Phenanthrene	BQL	0.470	0.054	1	4/28/2006	
Phenol	BQL	0.470	0.129	1	4/28/2006	
Pyrene	BQL	0.470	0.090	1	4/28/2006	
1,2,4-Trichlorobenzene	BQL	0.470	0.059	1	4/28/2006	
2,4,5-Trichlorophenol	BQL	0.470	0.182	1	4/28/2006	
2,4,6-Trichlorophenol	BQL	0.470	0.167	1	4/28/2006	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	9.1	91
2-Fluorophenol	10	8.8	88
Nitrobenzene-d5	10	9	90
Phenol-d6	10	8.3	83
2,4,6-Tribromophenol	10	8.6	86
4-Terphenyl-d14	10	9.5	95

Comments:

* N-Nitrosodiphenylamine is reported as the breakdown product Diphenylamine.

Flags:

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: PJP



Results of Library Search for Semivolatile Compounds
by GCMS

Client Sample ID: USTAS511-SB01(3-4)

Analyzed By: MRC

Client Project ID: Rapid Refueler 2005 Release Phase 1

Date Collected: 4/24/2006 13:35

Lab Sample ID: G128-1759-2G

Date Received: 4/25/2006

Lab Project ID: G128-1759

Date Extracted: 4/27/2006

Sample Wt/Vol: 32.36 g

Date Analyzed: 4/28/2006

Dilution: 1

Matrix: Soil

% Solids: 65.7

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/KG)
1	No library search compounds detected.				
2					
3					
4					
5					
6					
7					
8					
9					
10					

Comment:

Tentatively Identified Compound (TIC) refers to substances which are not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist.

Quantitation is accomplished by relative peak area of the compound compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is equal to or greater than 10% of that of the nearest internal standard. Quantitation provided is an estimate.

Reviewed by: ey



Results for Semivolatiles
by GCMS 8270

Client Sample ID: USTAS511-SB02(5-6)
Client Project ID: Rapid Refueler 2005 Release Phase 1 LSA
Lab Sample ID: G128-1759-3G
Lab Project ID: G128-1759
Report Basis: Dry weight

Analyzed By: MRC
Date Collected: 4/24/2006 14:10
Date Received: 4/25/2006
Date Extracted: 4/27/2006
Matrix: Soil
% Solids: 79.76

Compound	Result mg/Kg	RL mg/Kg	MDL mg/Kg	Dilution Factor	Date Analyzed	Flag
Acenaphthene	BQL	0.387	0.055	1	4/28/2006	
Acenaphthylene	BQL	0.387	0.052	1	4/28/2006	
Anthracene	BQL	0.387	0.056	1	4/28/2006	
Benzo[a]anthracene	BQL	0.387	0.067	1	4/28/2006	
Benzo[a]pyrene	BQL	0.387	0.059	1	4/28/2006	
Benzo[b]fluoranthene	BQL	0.387	0.068	1	4/28/2006	
Benzo[g,h,i]perylene	BQL	0.387	0.105	1	4/28/2006	
Benzo[k]fluoranthene	BQL	0.387	0.075	1	4/28/2006	
Benzoic Acid	BQL	0.774	0.774	1	4/28/2006	
Bis(2-chloroethoxy)methane	BQL	0.387	0.058	1	4/28/2006	
Bis(2-chloroethyl)ether	BQL	0.387	0.047	1	4/28/2006	
Bis(2-chloroisopropyl)ether	BQL	0.387	0.048	1	4/28/2006	
Bis(2-ethylhexyl)phthalate	BQL	0.387	0.052	1	4/28/2006	
4-bromophenyl phenyl ether	BQL	0.387	0.065	1	4/28/2006	
Butylbenzylphthalate	BQL	0.387	0.060	1	4/28/2006	
2-Chloronaphthalene	BQL	0.387	0.061	1	4/28/2006	
2-Chlorophenol	BQL	0.387	0.121	1	4/28/2006	
4-Chloro-3-methylphenol	BQL	0.387	0.121	1	4/28/2006	
4-Chloroaniline	BQL	1.93	0.295	1	4/28/2006	
4-Chlorophenyl phenyl ether	BQL	0.387	0.057	1	4/28/2006	
Chrysene	BQL	0.387	0.042	1	4/28/2006	
Dibenzo[a,h]anthracene	BQL	0.387	0.108	1	4/28/2006	
Dibenzofuran	BQL	0.387	0.070	1	4/28/2006	
Di-n-Butylphthalate	BQL	0.387	0.046	1	4/28/2006	
1,2-Dichlorobenzene	BQL	0.387	0.043	1	4/28/2006	
1,3-Dichlorobenzene	BQL	0.387	0.042	1	4/28/2006	
1,4-Dichlorobenzene	BQL	0.387	0.044	1	4/28/2006	
3,3'-Dichlorobenzidine	BQL	0.774	0.098	1	4/28/2006	
2,4-Dichlorophenol	BQL	0.387	0.139	1	4/28/2006	
Diethylphthalate	BQL	0.387	0.050	1	4/28/2006	
Dimethylphthalate	BQL	0.387	0.047	1	4/28/2006	
2,4-Dimethylphenol	BQL	0.387	0.277	1	4/28/2006	
Di-n-octylphthalate	BQL	0.387	0.064	1	4/28/2006	
4,6-Dinitro-2-methylphenol	BQL	1.93	0.228	1	4/28/2006	
2,4-Dinitrophenol	BQL	1.93	0.852	1	4/28/2006	
2,4-Dinitrotoluene	BQL	0.387	0.050	1	4/28/2006	
2,6-Dinitrotoluene	BQL	0.387	0.070	1	4/28/2006	
Diphenylamine *	BQL	0.387	0.038	1	4/28/2006	
Fluoranthene	BQL	0.387	0.054	1	4/28/2006	
Fluorene	BQL	0.387	0.048	1	4/28/2006	
Hexachlorobenzene	BQL	0.387	0.060	1	4/28/2006	
Hexachlorobutadiene	BQL	0.387	0.062	1	4/28/2006	
Hexachlorocyclopentadiene	BQL	0.774	0.040	1	4/28/2006	
Hexachloroethane	BQL	0.387	0.035	1	4/28/2006	



Results for Semivolatiles
by GCMS 8270

Client Sample ID: USTAS511-SB02(5-6)
Client Project ID: Rapid Refueler 2005 Release Phase 1 LSA
Lab Sample ID: G128-1759-3G
Lab Project ID: G128-1759
Report Basis: Dry weight

Analyzed By: MRC
Date Collected: 4/24/2006 14:10
Date Received: 4/25/2006
Date Extracted: 4/27/2006
Matrix: Soil
% Solids: 79.76

Compound	Result mg/Kg	RL mg/Kg	MDL mg/Kg	Dilution Factor	Date Analyzed	Flag
Indeno(1,2,3-c,d)pyrene	BQL	0.387	0.099	1	4/28/2006	
Isophorone	BQL	0.387	0.057	1	4/28/2006	
2-Methylnaphthalene	0.259	0.387	0.113	1	4/28/2006	J
2-Methylphenol	BQL	0.387	0.136	1	4/28/2006	
3- & 4-Methylphenol	BQL	0.387	0.131	1	4/28/2006	
Naphthalene	BQL	0.387	0.031	1	4/28/2006	
2-Nitroaniline	BQL	0.387	0.061	1	4/28/2006	
3-Nitroaniline	BQL	1.93	0.398	1	4/28/2006	
4-Nitroaniline	BQL	1.93	0.119	1	4/28/2006	
Nitrobenzene	BQL	0.387	0.052	1	4/28/2006	
2-Nitrophenol	BQL	0.387	0.120	1	4/28/2006	
4-Nitrophenol	BQL	1.93	0.107	1	4/28/2006	
N-Nitrosodi-n-propylamine	BQL	0.387	0.049	1	4/28/2006	
Pentachlorophenol	BQL	1.93	0.101	1	4/28/2006	
Phenanthrene	BQL	0.387	0.044	1	4/28/2006	
Phenol	BQL	0.387	0.106	1	4/28/2006	
Pyrene	BQL	0.387	0.074	1	4/28/2006	
1,2,4-Trichlorobenzene	BQL	0.387	0.048	1	4/28/2006	
2,4,5-Trichlorophenol	BQL	0.387	0.150	1	4/28/2006	
2,4,6-Trichlorophenol	BQL	0.387	0.138	1	4/28/2006	
		Spike Added	Spike Result	Percent Recovered		
2-Fluorobiphenyl		10	9.4	94		
2-Fluorophenol		10	9.2	92		
Nitrobenzene-d5		10	9	90		
Phenol-d6		10	8.9	89		
2,4,6-Tribromophenol		10	7.9	79		
4-Terphenyl-d14		10	9.2	92		

Comments:

* N-Nitrosodiphenylamine is reported as the breakdown product Diphenylamine.

Flags:

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: enl



Results of Library Search for Semivolatile Compounds
by GCMS

Client Sample ID: USTAS511-SB02(5-6)

Analyzed By: MRC

Client Project ID: Rapid Refueler 2005 Release Phase 1

Date Collected: 4/24/2006 14:10

Lab Sample ID: G128-1759-3G

Date Received: 4/25/2006

Lab Project ID: G128-1759

Date Extracted: 4/27/2006

Sample Wt/Vol: 32.41 g

Date Analyzed: 4/28/2006

Dilution: 1

Matrix: Soil

% Solids: 79.8

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/KG)
1	Alkane, Unknown	10.23			5590
2	Alkane, Unknown	8.20			3050
3	Alkane, Unknown	9.96			2700
4	Alkane, Unknown	11.15			2360
5	Alkane, Unknown	9.38			1280
6	Alkane, Unknown	11.66			930
7	Alkane, Unknown	9.88			902
8	Unknown	8.95			670
9	Alkane, Unknown	8.88			662
10	Unknown	10.70			642

Comment:

Tentatively Identified Compound (TIC) refers to substances which are not present in the list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared utilizing a computerized library search of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist.

Quantitation is accomplished by relative peak area of the compound compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak area is equal to or greater than 10% of that of the nearest internal standard. Quantitation provided is an estimate.

Reviewed by: *lv*



Results for Semivolatiles
by GCMS 625

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: PB5018
Lab Project ID:

Analyzed By: MRC
Date Collected:
Date Received:
Date Extracted: 4/26/2006
Matrix: WATER

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	BQL	10.0	1.22	1	4/27/2006	
Acenaphthylene	BQL	10.0	1.12	1	4/27/2006	
Anthracene	BQL	10.0	1.75	1	4/27/2006	
Benzo[a]anthracene	BQL	10.0	1.36	1	4/27/2006	
Benzo[a]pyrene	BQL	10.0	1.27	1	4/27/2006	
Benzo[b]fluoranthene	BQL	10.0	1.43	1	4/27/2006	
Benzo[g,h,i]perylene	BQL	10.0	4.57	1	4/27/2006	
Benzo[k]fluoranthene	BQL	10.0	1.09	1	4/27/2006	
Bis(2-chloroethoxy)methane	BQL	10.0	1.11	1	4/27/2006	
Bis(2-chloroethyl)ether	BQL	10.0	1.09	1	4/27/2006	
Bis(2-chloroisopropyl)ether	BQL	10.0	1.57	1	4/27/2006	
Bis(2-ethylhexyl)phthalate	BQL	10.0	1.33	1	4/27/2006	
4-bromophenyl phenyl ether	BQL	10.0	1.99	1	4/27/2006	
Butylbenzylphthalate	BQL	10.0	1.53	1	4/27/2006	
2-Chloronaphthalene	BQL	10.0	1.25	1	4/27/2006	
2-Chlorophenol	BQL	10.0	4.22	1	4/27/2006	
4-Chloro-3-methylphenol	BQL	10.0	3.26	1	4/27/2006	
4-Chlorophenyl phenyl ether	BQL	10.0	1.42	1	4/27/2006	
Chrysene	BQL	10.0	1.11	1	4/27/2006	
Dibenzo[a,h]anthracene	BQL	10.0	4.87	1	4/27/2006	
Di-n-Butylphthalate	BQL	10.0	1.65	1	4/27/2006	
1,2-Dichlorobenzene	BQL	10.0	1.25	1	4/27/2006	
1,3-Dichlorobenzene	BQL	10.0	1.24	1	4/27/2006	
1,4-Dichlorobenzene	BQL	10.0	1.20	1	4/27/2006	
3,3'-Dichlorobenzidine	BQL	20.0	4.10	1	4/27/2006	
2,4-Dichlorophenol	BQL	10.0	3.75	1	4/27/2006	
Diethylphthalate	BQL	10.0	1.48	1	4/27/2006	
Dimethylphthalate	BQL	10.0	1.04	1	4/27/2006	
2,4-Dimethylphenol	BQL	10.0	9.25	1	4/27/2006	
Di-n-octylphthalate	BQL	10.0	1.16	1	4/27/2006	
4,6-Dinitro-2-methylphenol	BQL	50.0	3.71	1	4/27/2006	
2,4-Dinitrophenol	BQL	50.0	4.20	1	4/27/2006	
2,4-Dinitrotoluene	BQL	10.0	1.52	1	4/27/2006	
2,6-Dinitrotoluene	BQL	10.0	1.41	1	4/27/2006	
Diphenylamine *	BQL	10.0	1.53	1	4/27/2006	
Fluoranthene	BQL	10.0	1.41	1	4/27/2006	
Fluorene	BQL	10.0	1.22	1	4/27/2006	
Hexachlorobenzene	BQL	10.0	1.22	1	4/27/2006	
Hexachlorobutadiene	BQL	10.0	1.58	1	4/27/2006	
Hexachlorocyclopentadiene	BQL	20.0	20.0	1	4/27/2006	
Hexachloroethane	BQL	10.0	1.58	1	4/27/2006	
Indeno(1,2,3-c,d)pyrene	BQL	10.0	4.57	1	4/27/2006	
Isophorone	BQL	10.0	1.27	1	4/27/2006	
Naphthalene	BQL	10.0	1.08	1	4/27/2006	



Results for Semivolatiles
by GCMS 625

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: PB5018
Lab Project ID:

Analyzed By: MRC
Date Collected:
Date Received:
Date Extracted: 4/26/2006
Matrix: WATER

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Nitrobenzene	BQL	10.0	1.32	1	4/27/2006	
2-Nitrophenol	BQL	10.0	3.52	1	4/27/2006	
4-Nitrophenol	BQL	50.0	3.17	1	4/27/2006	
N-Nitrosodi-n-propylamine	BQL	10.0	1.87	1	4/27/2006	
Pentachlorophenol	BQL	50.0	2.83	1	4/27/2006	
Phenanthrene	BQL	10.0	1.38	1	4/27/2006	
Phenol	BQL	10.0	3.38	1	4/27/2006	
Pyrene	BQL	10.0	2.08	1	4/27/2006	
1,2,4-Trichlorobenzene	BQL	10.0	1.33	1	4/27/2006	
2,4,6-Trichlorophenol	BQL	10.0	2.92	1	4/27/2006	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	7.6	76
2-Fluorophenol	10	7.7	78
Nitrobenzene-d5	10	7.8	78
Phenol-d6	10	7.7	78
2,4,6-Tribromophenol	10	6.8	68
4-Terphenyl-d14	10	9.2	92

Comments:

* N-Nitrosodiphenylamine is reported as the breakdown product Diphenylamine.

Flags:

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By:



**Results For Matrix Spike / Matrix Spike Duplicate and Laboratory Control Standard (MS/MSD/LCS)
by GCMS**

Client Sample ID: Batch QC

Client Project ID:

Lab Sample ID: Batch-5018-MS/MSD/LCS

Lab Project ID:

Matrix: WATER

Prep Method: 3520

Date Collected:

Date Received:

Date Extracted: 04/26/06

Date Analyzed: 04/28/06

Analyzed By: MRC

Dilution: 1

	Sample Amount (µg/L)	MS Spike (µg/L)	MS Conc. (µg/L)	MS Spike % Rec.	MSD Spike (µg/L)	MSD Conc. (µg/L)	MSD Conc. % Rec.	RPD	QC Limits	
									RPD	% Rec.
Acenaphthylene	BQL	222	181	81.4	222	187	84.3	3.50	30	62.0-119
4-Chloro-3-methylphenol	BQL	222	175	78.7	222	174	78.2	0.637	30	67.0-109
2-Chlorophenol	BQL	222	157	70.6	222	170	76.3	7.76	30	59.0-95.0
1,4-Dichlorobenzene	BQL	222	103	46.3	222	122	55.0	17.2	30	29.0-86.0
2,4-Dinitrotoluene	BQL	222	187	84.1	222	190	85.5	1.65	30	63.0-103
N-Nitrosodi-n-propylamine	BQL	222	183	82.4	222	180	80.9	1.84	30	67.0-107
4-Nitrophenol	BQL	222	174	78.4	222	174	78.2	0.255	30	49.0-146
Pentachlorophenol	BQL	222	157	70.8	222	162	73.1	3.20	30	43.0-106
Phenol	BQL	222	167	75.2	222	175	78.7	4.55	30	61.0-100
Pyrene	BQL	222	213	95.9	222	217	97.7	1.86	30	41.0-123
1,2,4-Trichlorobenzene	BQL	222	152	68.4	222	162	72.8	6.23	30	41.0-96.0

	Spiked Amount (µg/L)	LCS Conc. (µg/L)	LCS Spike %	QC Limits % Rec.
Acenaphthylene	100	78.1	78.1	72.9-127
4-Chloro-3-methylphenol	100	79.8	79.8	61.6-113
2-Chlorophenol	100	73.2	73.2	52.3-104
1,4-Dichlorobenzene	100	43.7	43.7	27.3-85.0
2,4-Dinitrotoluene	100	82.8	82.8	66.5-117
N-Nitrosodi-n-propylamine	100	78.1	78.1	54.4-119
4-Nitrophenol	100	76.9	76.9	32.4-150
Pentachlorophenol	100	65.9	65.9	23.9-115
Phenol	100	76.0	76.0	54.5-106
Pyrene	100	88.6	88.6	63.5-126
1,2,4-Trichlorobenzene	100	57.4	57.4	49.1-98.5

Comments:

Concentrations reflect the spiked sample amounts.

Flags:

* = Out of limits.

NA = Not applicable.

Reviewed By: 27/



Results for Semivolatiles
by GCMS 8270

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: PB5024
Lab Project ID:
Report Basis: Dry Weight

Analyzed By: MRC
Date Collected:
Date Received:
Date Extracted: 4/27/2006
Matrix: SOIL
% Solids: 100

Compound	Result ug/Kg	RL ug/Kg	MDL ug/Kg	Dilution Factor	Date Analyzed	Flag
Acenaphthene	BQL	313	44.7	1	4/28/2006	
Acenaphthylene	BQL	313	41.6	1	4/28/2006	
Anthracene	BQL	313	45.3	1	4/28/2006	
Benzo[a]anthracene	BQL	313	54.1	1	4/28/2006	
Benzo[a]pyrene	BQL	313	47.8	1	4/28/2006	
Benzo[b]fluoranthene	BQL	313	54.7	1	4/28/2006	
Benzo[g,h,i]perylene	BQL	313	85.0	1	4/28/2006	
Benzo[k]fluoranthene	BQL	313	60.3	1	4/28/2006	
Benzoic Acid	BQL	625	625	1	4/28/2006	
Bis(2-chloroethoxy)methane	BQL	313	46.6	1	4/28/2006	
Bis(2-chloroethyl)ether	BQL	313	37.8	1	4/28/2006	
Bis(2-chloroisopropyl)ether	BQL	313	39.1	1	4/28/2006	
Bis(2-ethylhexyl)phthalate	BQL	313	41.9	1	4/28/2006	
4-bromophenyl phenyl ether	BQL	313	52.8	1	4/28/2006	
Butylbenzylphthalate	BQL	313	48.1	1	4/28/2006	
2-Chloronaphthalene	BQL	313	49.1	1	4/28/2006	
2-Chlorophenol	BQL	313	97.8	1	4/28/2006	
4-Chloro-3-methylphenol	BQL	313	97.5	1	4/28/2006	
4-Chloroaniline	BQL	1560	238	1	4/28/2006	
4-Chlorophenyl phenyl ether	BQL	313	45.9	1	4/28/2006	
Chrysene	BQL	313	33.8	1	4/28/2006	
Dibenzo[a,h]anthracene	BQL	313	87.5	1	4/28/2006	
Dibenzofuran	BQL	313	56.9	1	4/28/2006	
Di-n-Butylphthalate	BQL	313	37.2	1	4/28/2006	
1,2-Dichlorobenzene	BQL	313	34.7	1	4/28/2006	
1,3-Dichlorobenzene	BQL	313	34.1	1	4/28/2006	
1,4-Dichlorobenzene	BQL	313	35.3	1	4/28/2006	
3,3'-Dichlorobenzidine	BQL	625	78.8	1	4/28/2006	
2,4-Dichlorophenol	BQL	313	113	1	4/28/2006	
Diethylphthalate	BQL	313	40.3	1	4/28/2006	
Dimethylphthalate	BQL	313	37.8	1	4/28/2006	
2,4-Dimethylphenol	BQL	313	223	1	4/28/2006	
Di-n-octylphthalate	BQL	313	51.6	1	4/28/2006	
4,6-Dinitro-2-methylphenol	BQL	1560	184	1	4/28/2006	
2,4-Dinitrophenol	BQL	1560	688	1	4/28/2006	
2,4-Dinitrotoluene	BQL	313	40.6	1	4/28/2006	
2,6-Dinitrotoluene	BQL	313	56.9	1	4/28/2006	
Diphenylamine *	BQL	313	30.6	1	4/28/2006	
Fluoranthene	BQL	313	43.7	1	4/28/2006	
Fluorene	BQL	313	38.8	1	4/28/2006	
Hexachlorobenzene	BQL	313	48.1	1	4/28/2006	
Hexachlorobutadiene	BQL	313	50.0	1	4/28/2006	
Hexachlorocyclopentadiene	BQL	625	32.2	1	4/28/2006	
Hexachloroethane	BQL	313	28.1	1	4/28/2006	



Results for Semivolatiles
by GCMS 8270

Client Sample ID: Method Blank
Client Project ID:
Lab Sample ID: PB5024
Lab Project ID:
Report Basis: Dry Weight

Analyzed By: MRC
Date Collected:
Date Received:
Date Extracted: 4/27/2006
Matrix: SOIL
% Solids: 100

Compound	Result ug/Kg	RL ug/Kg	MDL ug/Kg	Dilution Factor	Date Analyzed	Flag
Indeno(1,2,3-c,d)pyrene	BQL	313	80.0	1	4/28/2006	
Isophorone	BQL	313	45.9	1	4/28/2006	
2-Methylnaphthalene	BQL	313	91.2	1	4/28/2006	
2-Methylphenol	BQL	313	110	1	4/28/2006	
3- & 4-Methylphenol	BQL	313	106	1	4/28/2006	
Naphthalene	BQL	313	25.3	1	4/28/2006	
2-Nitroaniline	BQL	313	49.1	1	4/28/2006	
3-Nitroaniline	BQL	1560	322	1	4/28/2006	
4-Nitroaniline	BQL	1560	96.3	1	4/28/2006	
Nitrobenzene	BQL	313	42.2	1	4/28/2006	
2-Nitrophenol	BQL	313	96.9	1	4/28/2006	
4-Nitrophenol	BQL	1560	86.6	1	4/28/2006	
N-Nitrosodi-n-propylamine	BQL	313	39.7	1	4/28/2006	
Pentachlorophenol	BQL	1560	81.6	1	4/28/2006	
Phenanthrene	BQL	313	35.6	1	4/28/2006	
Phenol	BQL	313	85.6	1	4/28/2006	
Pyrene	BQL	313	60.0	1	4/28/2006	
1,2,4-Trichlorobenzene	BQL	313	39.1	1	4/28/2006	
2,4,5-Trichlorophenol	BQL	313	121	1	4/28/2006	
2,4,6-Trichlorophenol	BQL	313	111	1	4/28/2006	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	10	100
2-Fluorophenol	10	9.4	94
Nitrobenzene-d5	10	9.7	97
Phenol-d6	10	8.6	86
2,4,6-Tribromophenol	10	9.1	91
4-Terphenyl-d14	10	10.5	105

Comments:

* N-Nitrosodiphenylamine is reported as the breakdown product Diphenylamine.

Flags:

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: PM



Results For Matrix Spike / Matrix Spike Duplicate and Laboratory Control Standard (MS/MSD/LCS)
by GCMS

Client Sample ID: Batch QC

Date Collected:

Client Project ID:

Date Received:

Lab Sample ID: Batch-5024-MS/MSD/LCS

Date Extracted: 04/27/06

Lab Project ID:

Date Analyzed: 04/28/06

Matrix: SOIL

Analyzed By: MRC

Prep Method: 3540

Dilution: 1

	Sample Amount (µg/kg)	MS Spike (µg/kg)	MS Conc. (µg/kg)	MS Spike % Rec.	MSD Spike (µg/kg)	MSD Conc. (µg/kg)	MSD Conc. % Rec.	RPD	QC Limits	
									RPD	% Rec.
Acenaphthylene	BQL	3300	3600	109	3300	3530	107.0	1.94	30	73.0-140
4-Chloro-3-methylphenol	BQL	3300	3370	102	3300	3270	99.1	3.08	30	80.0-115
2-Chlorophenol	BQL	3300	2990	90.6	3300	2980	90.3	0.332	30	77.1-111
1,4-Dichlorobenzene	BQL	3300	3240	98.1	3300	3200	97.0	1.13	30	70.6-117
2,4-Dinitrotoluene	BQL	3300	3370	102	3300	3330	101.0	1.38	30	67.6-136
N-Nitrosodi-n-propylamine	BQL	3300	3650	111	3300	3620	110.0	0.726	30	74.3-133
4-Nitrophenol	BQL	3300	2620	79.5	3300	2570	78.0	1.90	30	56.8-133
Pentachlorophenol	BQL	3300	2380	72.0	3300	2330	70.6	1.96	30	29.2-108
Phenol	BQL	3300	3040	92.0	3300	3020	91.5	0.545	30	71.2-120
Pyrene	BQL	3300	3620	110	3300	3560	108.0	1.56	30	68.5-140
1,2,4-Trichlorobenzene	BQL	3300	3250	98.4	3300	3150	95.4	3.10	30	68.9-119

	Spiked Amount (µg/kg)	LCS Conc. (µg/kg)	LCS Spike %	QC Limits % Rec.
Acenaphthylene	3125	3320	106	80.9-143
4-Chloro-3-methylphenol	3125	3100	99.2	83.9-124
2-Chlorophenol	3125	2780	89.0	80.3-119
1,4-Dichlorobenzene	3125	3010	96.3	76.3-118
2,4-Dinitrotoluene	3125	3100	99.3	80.6-126
N-Nitrosodi-n-propylamine	3125	3410	109	80.3-131
4-Nitrophenol	3125	2140	68.6	60.0-145
Pentachlorophenol	3125	2070	66.4	36.4-114
Phenol	3125	2830	90.6	74.3-117
Pyrene	3125	3270	105	74.7-141
1,2,4-Trichlorobenzene	3125	2980	95.3	74.1-120

Comments:

Concentrations reflect the spiked sample amounts.

Flags:

* = Out of limits.

NA = Not applicable.

Reviewed By: end



EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Richard Catlin & Associates

Project Name: Rapid Refueler 2005 Release Phase 1 LSA

Sample Information and Analytical Results	
Sample Identification	USTAS511-MW09
Sample Matrix	Water
Date Collected	04/24/06
Date Received	04/25/06
Date Extracted	04/26/06
Date Analyzed	05/15/06
Dry Weight	
Dilution Factor	20:1
C ₉ -C ₁₈ Aliphatics*	41000 (ug/L)
C ₁₉ -C ₃₈ Aliphatics*	< 2000 (ug/L)
C ₁₁ -C ₂₂ Aromatics*	5100 (ug/L)
Aliphatic Surrogate % Recovery	NA
Aromatic Surrogate % Recovery	41
Fractionation Surrogate 1 % Recovery	95

Comments:

* = Excludes any surrogates or internal standards.

NA = Non-applicable, surrogate diluted out.

Lab info: G128-1759-11

Reviewed By: W



EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Richard Catlin & Associates

Project Name: Rapid Refueler 2005 Release Phase 1 LSA

Sample Information and Analytical Results	
Sample Identification	USTAS511-SB01(3-4)
Sample Matrix	Soil
Date Collected	04/24/06
Date Received	04/25/06
Date Extracted	04/28/06
Date Analyzed	05/01/06
Dry Weight	65.7
Dilution Factor	1
C ₉ -C ₁₈ Aliphatics*	< 10 (mg/Kg)
C ₁₉ -C ₃₆ Aliphatics*	< 10 (mg/Kg)
C ₁₁ -C ₂₂ Aromatics*	< 10 (mg/Kg)
Aliphatic Surrogate % Recovery	97
Aromatic Surrogate % Recovery	63

Comments:

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

Lab Info: G128-1759-2H

Reviewed By: lw



EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Richard Catlin & Associates

Project Name: Rapid Refueler 2005 Release Phase 1 LSA

Sample Information and Analytical Results	
Sample Identification	USTAS511-SB02(5-6)
Sample Matrix	Soil
Date Collected	04/24/06
Date Received	04/25/06
Date Extracted	04/28/06
Date Analyzed	05/12/06
Dry Weight	79.8
Dilution Factor	1:1
C ₉ -C ₁₈ Aliphatics*	97 (mg/Kg)
C ₁₉ -C ₃₆ Aliphatics*	< 10 (mg/Kg)
C ₁₁ -C ₂₂ Aromatics*	15 (mg/Kg)
Aliphatic Surrogate % Recovery	96
Aromatic Surrogate % Recovery	66
Fractionation Surrogate 1 % Recovery	94

Comments:

* = Excludes any surrogates or internal standards.

Lab Info: G128-1759-3H

Reviewed By: 



EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 04/19/06

Calibration Ranges and Limits

Range	MDL (2/2004) (µg/L)	ML (µg/L)	RL (µg/L)	RL (mg/Kg)
C ₉ -C ₁₈ Aliphatics	3.84	12.2	100	10
C ₁₉ -C ₃₈ Aliphatics	0.57	1.8	100	10
C ₁₁ -C ₂₂ Aromatics	4.54	14.4	100	10

Calibration Concentration Levels

Range	Levels (µg/mL)	%RSD or CCC	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	6	13.30	Calibration Factor
	30		
	60		
	120		
	240		
C ₁₉ -C ₃₈ Aliphatics	8	10.1	Calibration Factor
	40		
	80		
	160		
	320		
C ₁₁ -C ₂₂ Aromatics	17	4.5	Calibration Factor
	85		
	170		
	340		
	680		

Calibration Check Date: 05/01/06

Calibration Check

Range	Levels (µg/mL)	RPD
C ₉ -C ₁₈ Aliphatics	120	-6.7
C ₁₉ -C ₃₈ Aliphatics	160	-11.1
C ₁₁ -C ₂₂ Aromatics	340	-12.4

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve



EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 04/19/06

Calibration Ranges and Limits

Range	MDL (2/2004) (µg/L)	ML (µg/L)	RL (µg/L)	RL (mg/Kg)
C ₉ -C ₁₈ Aliphatics	3.84	12.2	100	10
C ₁₉ -C ₃₈ Aliphatics	0.57	1.8	100	10
C ₁₁ -C ₂₂ Aromatics	4.54	14.4	100	10

Calibration Concentration Levels

Range	Levels (µg/mL)	%RSD or CCC	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	6	13.30	Calibration Factor
	30		
	60		
	120		
	240		
C ₁₉ -C ₃₈ Aliphatics	8	10.1	Calibration Factor
	40		
	80		
	160		
	320		
C ₁₁ -C ₂₂ Aromatics	17	4.5	Calibration Factor
	85		
	170		
	340		
	680		

Calibration Check Date: 05/15/06

Calibration Check

Range	Levels (µg/mL)	RPD
C ₉ -C ₁₈ Aliphatics	120	-0.4
C ₁₉ -C ₃₈ Aliphatics	160	-10.7
C ₁₁ -C ₂₂ Aromatics	340	-13.9

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: 04/19/06

Calibration Ranges and Limits

Range	MDL (2/2004) (µg/L)	ML (µg/L)	RL (µg/L) (mg/Kg)	
C ₉ -C ₁₈ Aliphatics	3.84	12.2	100	10
C ₁₉ -C ₃₆ Aliphatics	0.57	1.8	100	10
C ₁₁ -C ₂₂ Aromatics	4.54	14.4	100	10

Calibration Concentration Levels

Range	Levels (µg/mL)	%RSD or CCC	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	6	13.30	Calibration Factor
	30		
	60		
	120		
	240		
C ₁₉ -C ₃₆ Aliphatics	8	10.1	Calibration Factor
	40		
	80		
	160		
	320		
C ₁₁ -C ₂₂ Aromatics	17	4.5	Calibration Factor
	85		
	170		
	340		
	680		

Calibration Check Date: 05/11/06

Calibration Check

Range	Levels (µg/mL)	RPD
C ₉ -C ₁₈ Aliphatics	120	7.2
C ₁₉ -C ₃₆ Aliphatics	160	-5.9
C ₁₁ -C ₂₂ Aromatics	340	-5.8

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve



EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 04/19/06

Calibration Ranges and Limits

Range	MDL (2/2004) (µg/L)	ML (µg/L)	RL (µg/L)	RL (mg/Kg)
C ₉ -C ₁₈ Aliphatics	3.84	12.2	100	10
C ₁₉ -C ₃₆ Aliphatics	0.57	1.8	100	10
C ₁₁ -C ₂₂ Aromatics	4.54	14.4	100	10

Calibration Concentration Levels

Range	Levels (µg/mL)	%RSD or CCC	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	6	13.30	Calibration Factor
	30		
	60		
	120		
	240		
C ₁₉ -C ₃₆ Aliphatics	8	10.1	Calibration Factor
	40		
	80		
	160		
	320		
C ₁₁ -C ₂₂ Aromatics	17	4.5	Calibration Factor
	85		
	170		
	340		
	680		

Calibration Check Date: 05/12/06

Calibration Check

Range	Levels (µg/mL)	RPD
C ₉ -C ₁₈ Aliphatics	120	6.8
C ₁₉ -C ₃₆ Aliphatics	160	-1.7
C ₁₁ -C ₂₂ Aromatics	340	-5.3

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 2005 Release Phase 1 LSA

Sample Information and Analytical Results	
Sample Identification	USTAS511-MW09
Sample Matrix	Water
Collection Option (for Soil)*	
Date Collected	04/24/06
Date Received	04/25/06
Date Extracted	05/02/06
Date Analyzed	05/02/06
Dry Weight	
Dilution Factor	1
C ₅ -C ₈ Aliphatics**	< 100 (µg/L)
C ₉ -C ₁₂ Aliphatics**	1400 (µg/L)
C ₈ -C ₁₀ Aromatics**	1300 (µg/L)
Surrogate % Recovery - PID	100
Surrogate % Recovery - FID	120

* = 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: g128-1759-1d

Reviewed By: ES



VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Richard Catlin & Associates

Project Name: Rapid Refueler 2005 Release Phase 1 LSA

Sample Information and Analytical Results	
Sample Identification	USTAS511-SB01(3-4)
Sample Matrix	Soil
Collection Option (for Soil)*	2
Date Collected	04/24/06
Date Received	04/25/06
Date Extracted	04/24/06
Date Analyzed	05/08/06
Dry Weight	66
Dilution Factor	1
C ₅ -C ₈ Aliphatics**	< 10 (mg/Kg)
C ₉ -C ₁₂ Aliphatics**	< 10 (mg/Kg)
C ₉ -C ₁₀ Aromatics**	< 10 (mg/Kg)
Surrogate % Recovery - PID	99
Surrogate % Recovery - FID	98

* = 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: g128-1759-2d

Reviewed By: *EC*



VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Richard Catlin & Associates

Project Name: Rapid Refueler 2005 Release Phase 1 LSA

Sample Information and Analytical Results	
Sample Identification	USTAS511-SB02(5-6)
Sample Matrix	Soil
Collection Option (for Soil)*	2
Date Collected	04/24/06
Date Received	04/25/06
Date Extracted	04/24/06
Date Analyzed	05/08/06
Dry Weight	80
Dilution Factor	1
C ₅ -C ₈ Aliphatics**	< 10 (mg/Kg)
C ₉ -C ₁₂ Aliphatics**	29 (mg/Kg)
C ₉ -C ₁₀ Aromatics**	34 (mg/Kg)
Surrogate % Recovery - PID	95
Surrogate % Recovery - FID	100

* = 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: g128-1759-3d

Reviewed By: pyl



Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 02/11/06

PID Initial Calibration Date: 02/11/06

Calibration Ranges and Limits

Range	MDL (07/15/2004) (µg/L)	ML (µg/L)	RL (µg/L) (mg/Kg)	
C ₅ -C ₈ Aliphatics	4.4	14	100	10
C ₉ -C ₁₂ Aliphatics	3.4	11	100	10
C ₉ -C ₁₀ Aromatics	0.13	0.41	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	%RSD or CCC	Method of Quantitation
C ₅ -C ₈ Aliphatics	40	10.8	Calibration Factor
	1000		
	2000		
	3000		
	4000		
C ₉ -C ₁₂ Aliphatics	10	0.99	Linear Regression
	250		
	500		
	750		
	1000		
C ₉ -C ₁₀ Aromatics	10	19.30	Calibration Factor
	250		
	500		
	750		
	1000		

Calibration Check Date: 05/01/06

Calibration Check

Range	Levels (µg/L) (mg/Kg)		RPD
C ₅ -C ₈ Aliphatics	2000	200	12.3
C ₉ -C ₁₂ Aliphatics	500	50	-15.3
C ₉ -C ₁₀ Aromatics	500	50	19.2

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

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



Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 05/04/06

PID Initial Calibration Date: 05/04/06

Calibration Ranges and Limits

Range	MDL (07/15/2004) (µg/L)	ML (µg/L)	RL (µg/L) (mg/Kg)
C ₅ -C ₈ Aliphatics	4.4	14	100 10
C ₉ -C ₁₂ Aliphatics	3.4	11	100 10
C ₉ -C ₁₀ Aromatics	0.13	0.41	100 10

Calibration Concentration Levels

Range	Levels (µg/L)	%RSD or CCC	Method of Quantitation
C ₅ -C ₈ Aliphatics	40	18.2	Calibration Factor
	1000		
	2000		
	3000		
	4000		
C ₉ -C ₁₂ Aliphatics	10	0.99	Linear Regression
	250		
	500		
	750		
	1000		
C ₉ -C ₁₀ Aromatics	10	18.50	Calibration Factor
	250		
	500		
	750		
	1000		

Calibration Check Date: 05/07/06

Calibration Check

Range	Levels (mg/Kg) (µg/L)	RPD
C ₅ -C ₈ Aliphatics	2000 200	-10.3
C ₉ -C ₁₂ Aliphatics	500 50	-9.3
C ₉ -C ₁₀ Aromatics	500 50	-1.4

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

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



List of Reporting Abbreviations and Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantitation Limit (RL or MDL)

DF = Dilution Factor

Dup = Duplicate

D = Detected, but RPD is > 40% between results in dual column method.

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.



Locations Nationwide

- Alaska
- Louisiana
- New Jersey
- West Virginia
- Hawaii
- Maryland
- North Carolina

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 □ 6600 Business Drive Wilmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

□ 1258 Greenbrier Street Charleston, WV 25311 Tel: (304) 346-0725 Fax: (304) 346-0761

White - Retained by Lab
Yellow - Returned with Report
Pink - Retained by Sampler

APPENDIX E

SAMPLING FIELD DATA WORKSHEET

SAMPLING FIELD DATA WORKSHEET

**BUILDING AS-511
MARINE CORP BASE
CAMP LEJEUNE, NORTH CAROLINA**

<i>Well No.</i>	<i>Date</i>	<i>Time Sampled</i>	<i>Diameter (in.)</i>	<i>Well Depth (feet)</i>	<i>DTW (feet)</i>	<i>Feet of Water in Well</i>	<i>Gal/Foot</i>	<i>One Volume (gals.)</i>	<i>Three Volumes (gals.)</i>	<i>Volume of Bailer (gals.)</i>	<i>No. Bails Required</i>	<i>No. Bails Taken</i>
USTAS511-MW09	4/24/2006	1430	2	17	6.58	10.42	0.163	1.70	5.10	0.24	21.23	24