

PHASE I LIMITED SITE ASSESSMENT REPORT

FOR

**BUILDING A-12 FUELING AREA
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA**

**NC DENR UST INCIDENT NO. PENDING
LAND USE CLASSIFICATION: PENDING
RISK CLASSIFICATION: PENDING**

MAY 8, 2008

**CONTRACT NO. N62470-05-D-6200
DELIVERY ORDER NO. 0049
CATLIN PROJECT NO. 207-048**



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LIST OF ACRONYMS

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

Guidelines Vol. I	Groundwater Section Guidelines for Investigation and Remediation of Soil and Groundwater, Volume I, Sources Other Than Petroleum Underground Storage Tanks (May 1998)
Guidelines Vol. II	Groundwater Section Guidelines for Investigation and Remediation of Soil and Groundwater, Volume II, Petroleum Underground Storage Tanks (January 2, 1998)
HDPE	High Density Polyethylene
I/C	Industrial/Commercial
ID	Identification
I&E	Installations and Environment Department
IGWQS	Interim Groundwater Quality Standards
IPE	Isopropyl Ether
LANTDIV	Atlantic Division
LSA	Limited Site Assessment
LUST	Leaking Underground Storage Tank
m-	meta
m	meter
MADEP	Massachusetts Department of Environmental Protection
MCALF	Marine Corps Auxiliary Landing Field
MCAS	Marine Corps Air Station
MCB	Marine Corps Base
MCOLF	Marine Corps Outlying Landing Field
MDL	Method Detection Limit
mg/Kg	Milligrams per Kilogram
mg/L	Milligrams per Litre
MRO	Mooresville Regional Office
MSCC	Maximum Soil Contaminant Concentration
MSL	Mean Sea Level
MTBE	Methyl tertiary butyl ether
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

**PHASE I LIMITED SITE ASSESSMENT REPORT
FOR
BUILDING A-12 FUELING AREA
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA**

NCDENR UST INCIDENT NO. PENDING

May 8, 2008

PURPOSE OF INVESTIGATION

The purpose of this Phase I Limited Site Assessment (LSA) is to provide the necessary information for the North Carolina Department of Environment and Natural Resources (NCDENR) to classify the level of risk to human health and the environment resulting from a suspected petroleum release at the Building A-12 project site. CATLIN Engineers and Scientists (CATLIN) was authorized to perform this Phase I LSA by the NAVFAC Mid-Atlantic in accordance with the Order of Supplies Contract Number N62470-05-D-6200, Delivery Order Number 0049. The project site is located within the Amphibious Vehicle Maintenance Facility in the Courthouse Bay area of Marine Corps Base (MCB) Camp Lejeune, North Carolina. Please refer to Figure 1 for the general site location.

Building A-12, USTs A12-1 and A12-2

The area of investigation for the project site consists of two former Underground Storage Tanks (USTs), located approximately 70 feet south southeast of Building A-1, and the associated transfer piping and dispenser. Former USTs A12-1 and A12-2 were 10,000 gallon tanks used to store diesel and gasoline, respectively. Approximately 110 feet of underground piping was associated with the tanks and ran from the tank basin to a dispenser located at the water's edge as shown on Figure 2.

On December 18, 1992, Jones & Frank removed both tanks from the subsurface. The tank closure report indicates that soil samples were not collected from the final excavation. Groundwater infiltrated the excavation, and free product was reportedly observed at approximately four feet below grade. The report also states that product delivery lines were excavated and removed from the subgrade or rendered non-usable. Site reconnaissance as part of this investigation, however, indicated that the abandoned transfer lines were left in place. Based on the suspected discharge from the UST system at the site, NCDENR requested MCB Camp Lejeune to conduct a Phase I LSA.

This document provides data to fulfill the initial site assessment and risk characterization requirements in accordance with 15A NCAC 2L .0405. Accordingly, this LSA document has been formatted to conform with the Guidelines for Assessment and Corrective Action effective July 1, 2001 (*2001 Guidelines*).

PHASE I LIMITED SITE ASSESSMENT REPORT

A. SITE IDENTIFICATION

DATE OF REPORT: May 8, 2008
Facility ID: E-002740 **UST Incident Number (If known):** Pending
Site Name: Building A-12
Site Location: MCB Camp Lejeune
Nearest City/Town: Jacksonville **County:** Onslow
UST Owner: Commanding Officer – MCB Camp Lejeune
Address: I&E/EMD/EQB
PSC 20004
MCB Camp Lejeune, NC 28542 **Phone:** (910) 451-5068
UST Operator: Same as above
Address: Same as above **Phone:** Same as above
Property Owner: Same as above
Address: Same as above **Phone:** Same as above
Property Occupant: Amphibious Vehicle Maintenance Facility
Address: Building A-12, Courthouse Base **Phone:** _____
Consultant/Contractor: CATLIN Engineers and Scientists
Address: 220 Old Dairy Road, Wilmington, North Carolina 28405 **Phone:** (910) 452-5861
Release Information

Date Discovered: December 18, 1992
Longitude: 382,990.9 **Latitude:** 282,408.0
Estimated Quantity of Release: Unknown
Cause of Release: Unknown
Source of Release (e.g. Piping/UST): UST is suspected.

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

One 10,000-gallon diesel UST, one 10,000-gallon gasoline UST, and associated piping and dispenser.

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
According to I&E/EMD/EQB, MCB Camp Lejeune samples the raw water supply wells on a semi-annual basis. CATLIN has reviewed the latest water supply well sampling data from February and July 2007. The information provided indicates that no water supply well has been contaminated as a result of the release from the Building A-12 source area.
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 is no water supply well located within 1,000 feet of the source area of the release (refer to 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 is no water supply well located within 250 feet of the source area of the release (refer to Figure 1).
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 MCB Camp Lejeune has several locations for potential water supply well locations that are greater than 500 feet from the potential source area (refer to Figures 1A and 1B).
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.

No evidence of vapor accumulations has been 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 data collected during this investigation does not provide evidence to suggest other factors that would cause the discharge or 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 located approximately 135 feet towards the west southwest (see Figure 1).

*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 defined by 42 USC 300h-7(e) have not, as of this time, been designated by the State. However, MCB Camp Lejeune has identified wellhead protection areas on the base. Based on the most recent Wellhead Protection Plan – 2002 Update, the potential 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.

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

The potential source area is located just above an apparent unconfined surficial groundwater aquifer. 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 MCB, Camp Lejeune. Groundwater obtained from the Castle Hayne Aquifer is the raw water source for MCB Camp Lejeune potable water treatment facilities. An estimated 5 feet of Upper Tertiary Confining Unit, 27 feet of Upper Tertiary Aquifer, and 40 feet of Castle Hayne Confining Unit separate the Castle Hayne aquifer from the surficial aquifer. Data regarding hydrogeologic units below the subject site are discussed in greater detail in Section C.5.

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

A review of laboratory analysis results indicates no subject analyte concentrations were detected in excess of applicable GCLs. These findings are discussed in greater detail in Section E of this report.

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.

MCB Camp Lejeune does contain primary and secondary residences; however, they are more than 1,500 feet from the potential 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.

MCB Camp Lejeune does contain above described places of public assembly; however, they are more than 1,500 feet from the potential source 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 project site is located within the Amphibious Vehicle Maintenance Facility in the Courthouse Bay area of MCB Camp Lejeune.

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 A-12 project site is located along Courthouse Road aboard MCB Camp Lejeune which is restricted to base personnel.

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

The area of investigation at the A-12 project site is partly grass, gravel and asphalt driveway.

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?*

MCB Camp Lejeune is not subject to local or county-zoning requirements; however, the project site 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 MCB Camp Lejeune 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 A-12 project site is located more than 1,500 feet from the nearest primary residence.

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?*

The nearest place of public assembly is a recreational sports field, which is approximately 2,200 feet (southeast) of the A-12 site.

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

As previously stated, MCB Camp Lejeune is not subject to local or county-zoning requirements; however, the use of the project site is considered Industrial/Commercial in nature.

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

The Courthouse Bay area of MCB Camp Lejeune is home to the Marine Corps Engineer School and the 2d Assault Amphibian (AA) Battalion. The Amphibious Vehicle Maintenance Facility is occupied by 2d AA Battalion and is their base from which to operate and perform maintenance activities to support their training.

C. RECEPTOR INFORMATION

1. Water Supply Wells

No active potable water wells are located within 1,500 feet of the project site as illustrated on Figure 1.

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. Describe.

Public water is provided to the subject site, 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 MCB Camp Lejeune water supply system. Groundwater obtained from the Castle Hayne Aquifer is the raw water source for the MCB Camp Lejeune potable water treatment facilities.

3. Surface Water

As stated previously, the nearest mapped surface water body is approximately 135 feet southeast of the A-12 project site.

4. Wellhead Protection Areas

As stated previously, MCB Camp Lejeune has identified wellhead protection areas on the base. Based on the most recent Wellhead Protection Plan – 2002 Update, the potential 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 January 23, 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 identified aquifers (seven principal aquifers and four minor aquifers) within the North Carolina Coastal Plain Physiographic Region. The January 23, 2006 program results regarding deep aquifers below the subject site can be summarized as follows:

Hydrogeologic Units	Approximate Depth (feet)
Surficial Aquifer	0-32
Upper Tertiary Confining Unit	32-37
Upper Tertiary Aquifer	37-64
Castle Hayne Confining Unit	64-104
Castle Hayne Aquifer	104-254
Pee Dee Confining Unit	254-+280

6. Subsurface Structures

Numerous underground utilities are present throughout MCB Camp Lejeune. Most of these utilities are reportedly located above the surficial groundwater table ($\pm$ 7 feet Below Land Surface (BLS) and therefore, are not considered potential receptors.

7. Property Owners and Occupants

The subject site is owned and operated by the Commanding Officer – 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 the site groundwater monitoring well USTA12-MW01. Fine sands with some silts were observed at the site. A summary of site soils follows:

Building A-12 (USTA12-MW01)		
Depth in feet BLS	Soil Description	USCS
0-1	Olive fine sand with some silts. Dry.	SM
1-2	Same as above.	SM
2-3.5	Same as above.	SM
3.5-5	Same as above except loose.	SM
5-8.5	No split spoon sample.	
8.5-10	Light gray fine sand with silts. Wet.	SM

The soils described above are consistent with undivided surficial deposits typically encountered within the area Coastal Plain Physiographic Province. A copy of the USTA12-MW01 boring log including organic vapor screening results, monitoring well as-builts, and North Carolina Well Construction Records have been provided in Appendix A.

D.2 Site Hydrogeology

During the October 31, 2007 site visit, CATLIN personnel obtained depth to water data from site monitoring well USTA12-MW01. Depth to surficial groundwater at well USTA12-MW01 was 6.0 feet below top of casing. Depth to surficial groundwater at the well after 24 hours on November 1, 2007 was 3.61 feet below top of casing. Review of the data generated during this investigation, indicates the surficial groundwater encountered below the potential source area is part of an unconfined surficial aquifer. Site monitoring well details and the groundwater gauging data has been summarized on Table 3. The location of the monitoring well has been illustrated on Figure 2.

E. SAMPLING RESULTS

Initially, the 1993 tank closure report indicated the site was a potential area of concern due to the observation of free product in the tank excavation. The project site was subsequently transferred, however, to the Installation Restoration Program (IRP) due to its location within IR Site 73 boundaries in April 1994. Limited soil and groundwater data was collected for the site as part of the various IRP investigations; therefore, more refined soil and groundwater sampling is being conducted to assess the site. During this investigation, CATLIN installed a permanent Type II monitoring well (USTA12-MW01) within the former tank basin in order to assess current soil and groundwater conditions. Soil samples were also obtained from the sidewall of the tank basin (USTA-12 Basin SW), from along the abandoned transfer piping (USTA-12 SB01 through SB11), and at the former dispenser (USTA-12 SB12). All soil and groundwater assessment fieldwork methods were conducted in general accordance with CATLIN's Standard Methods of Investigation. A copy of the CATLIN Standard Methods of Investigation has been provided in Appendix B.

E.1 Soil Sampling

A-12 UST Closure

The tank closure report indicates that soil samples were not collected from the excavation due to the presence of free product at approximately four feet BLS.

A-12 LSA Investigation

CATLIN personnel installed one Type II monitoring well USTA12-MW01 within the former tank basin on October 31, 2007. During the installation of the Type II monitoring well, CATLIN collected one soil sample for laboratory

analysis as part of the LSA investigation. The soil sample was labeled as USTA12-MW01(3.5-5) and was collected from 3.5-5 feet BLS. A duplicate soil sample, USTA12-DW01 (3.5-5), was collected from the same representative interval and analyzed for Volatile Organic Compounds (VOCs) only.

The soil samples collected on October 31st were transported to SGS Environmental Services, Inc. (NC Certification #481) in Wilmington, North Carolina. At the laboratory, soil sample USTA12-MW01 (3.5-5) was analyzed for VOCs using EPA Method 8260 (including IPE and MTBE), Semivolatile Organic Compounds (SVOCs) via EPA Method 8270 (+ 10 largest non-target peaks), and Volatile and Extractable Petroleum Hydrocarbons (VPH/EPH) using the Massachusetts Department of Environmental Protection (MADEP) Methods. Duplicate soil sample USTA12-DW01 was analyzed for VOCs via EPA Method 8260. (Note that subsequent to the October 31, 2007 field visit, CATLIN concluded that tank basin soil sample USTA12-MW01 (3.5-5) and its duplicate were most likely obtained from within the capillary fringe layer, as the 24 hour DTW measurement was 3.61 feet below top of casing. Field personnel obtained the soil sample from the 3.5-5 feet BLS interval during monitoring well installation on October 31, 2007. Field boring classification determined that the 3.5-5 feet BLS interval was dry; however, subsequent gauging of the monitoring well resulted in a shallower depth to water.)

CATLIN personnel collected an additional soil sample, labeled USTA-12 Basin SW, from the sidewall of the former tank basin area on March 5, 2008. The sample was obtained from the 2-3 feet BLS interval, and it was analyzed for Risk Based Corrective Action (RBCA) parameters. Soil samples from along the former transfer line and dispenser island were also collected on March 5, 2008. CATLIN personnel obtained a total of 12 soil samples during the second site visit per sampling guidance outlined in NCDENR's *UST Section Guidelines for Site Checks, Tank Closure, and Initial Response and Abatement* dated March 1, 2007. Samples were generally obtained from the 0 – 2.5 feet BLS interval every ten feet along the former line and at the dispenser. The samples were collected by Direct Push Technology (DPT) and transported to SGS Environmental Services, Inc. for laboratory analysis. The samples were analyzed for Total Petroleum Hydrocarbons (TPH) via EPA Methods 5030 and 3550. MCB Camp Lejeune EMD and NCDENR personnel agreed that the soil sample exhibiting the highest TPH concentration would be further analyzed for RBCA parameters. Copies of the laboratory analytical reports and proper Chain-of-Custodies (COC) have been provided in Appendix D. Tables 4A – 4C compare the detected compounds' concentrations to their established Maximum Soil Contaminant Concentrations (MSCCs). Analysis of the soil samples submitted for laboratory analysis can be summarized as follows:

Tank Basin Area Samples

EPA METHOD 8260 + IPE + MTBE

Three VOCs were detected in the tank basin soil sample USTA12-MW01(3.5-5). Acetone, 2-Butanone (also known as Methyl Ethyl Ketone), and Naphthalene were detected at concentrations of 0.125 mg/kg, 0.0253J mg/kg, and 0.00313J mg/kg, respectively. These concentrations are all less than the lowest MSCC. All other 8260 compounds in soil sample USTA12-MW01(3.5-5) were reported as Below Quantitation Limits (BQL).

Duplicate sample USTA12-DW01(3.5-5) exhibited the same three VOCs as sample USTA12-MW01(3.5-5). The duplicate sample contained Acetone at 0.104 mg/kg, 2-Butanone at 0.0151J mg/kg, and Naphthalene at 0.00313J mg/kg. These three compounds were also detected at concentrations less than the lowest MSCC. All other 8260 compounds in soil sample USTA12-DW01(3.5-5) were reported as BQL.

Laboratory analysis detected three EPA Method 8260 compounds in the sidewall soil sample USTA-12 Basin SW. Acetone was detected at a concentration of 0.0565 mg/kg, which is below the lowest MSCC of 2.8 mg/kg. Methylene Chloride and Toluene were also detected in the sidewall sample at estimated concentrations of 0.00135J mg/kg and 0.00171J mg/kg, respectively. These concentrations are much less than the lowest MSCCs. In addition, these compounds were detected in the associated trip blank at similar levels. The SGS Case Narrative indicates that although the compounds were not detected in the method blank, it is believed their detection is most likely as a laboratory artifact due to their use as common laboratory solvents.

EPA METHOD 8270 (+ TICs)

Laboratory analysis of soil sample USTA12-MW01(3.5-5) detected one 8270 target analyte concentration above the lowest MSCC. Benzo[a]pyrene was detected in the soil sample at an estimated concentration of 0.122J mg/kg, which is above the Soil to Groundwater (STGW) MSCC (0.091 mg/kg) and Residential MSCC (0.088 mg/kg), but below the Industrial/Commercial (I/C) (0.78 mg/kg). Acenaphthene, Benzo[a]anthracene, Benzo[b]fluoranthene, Benzo[k]fluoranthene, Chrysene, Fluoranthene, Fluorene, Phenanthrene, and Pyrene were detected at concentrations less than the lowest MSCCs. All other 8270 target analytes in sample USTA12-MW01(3.5-5) were reported as BQL.

In comparison, laboratory analysis detected many more EPA Method 8270 compounds in soil sample USTA-12 Basin SW. A total of 16 compounds were detected in the sidewall soil sample. Acenaphthene, Anthracene, Benzo[g,h,i]perylene, Benzo[k]fluoranthene, Chrysene, Dibenzofuran, Fluoranthene, Fluorene, Naphthalene, Phenanthrene, and Pyrene were all detected at concentrations less than their lowest MSCCs.

Benzo[a]anthracene was detected at 3.24 mg/kg, which is greater than the STGW and Residential MSCCs and less than the I/C MSCC. Benzo[a]pyrene was detected at a concentration of 1.99 mg/kg, which is greater than all three established MSCCs for this compound. Benzo[b]fluoranthene was present at 2.83 mg/kg, which is greater than the STGW and Residential MSCCs, but below the I/C MSCC. The sample also exhibited Dibenzo[a,h]anthracene at an estimated concentration of 0.293J mg/kg, which is greater than the STGW and Residential MSCCs and less than the I/C MSCC. Finally, Indeno(1,2,3-c,d)pyrene was detected in the sample at 1.13 mg/kg, which is above the lowest (Residential) MSCC, but below the STGW and I/C MSCCs.

In accordance with the *2001 Guidelines* EPA Method 8270 sample(s) are also analyzed for the ten 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. There are no established MSCCs for any TIC. Laboratory analysis detected two unknown compounds in soil sample USTA12-MW01(3.5-5) and eight total compounds in soil sample USTA-12 Basin SW. Three of the eight were unknown, and the remaining five compounds were detected with 91% or greater match probabilities: Perylene, 9-Methyl-Anthracene, 2-Methyl-Anthracene, Benzo[k]fluoranthene, and 2-Phenyl-Naphthalene.

MADEP VPH/EPH

All MADEP constituents were reported as BQL in soil samples USTA12-MW01(3.5-5) and USTA-12 Basin SW.

Fuel Transfer Line and Dispenser Area

EPA METHODS 5030 and 3550 with METHOD 8015 (GC/FID)

CATLIN collected eleven soil samples every ten feet along the abandoned transfer line between the former tank basin and the former dispenser. Samples were labeled USTA-12 SB01 through USTA-12 SB11, followed by the BLS interval from which they were obtained. Samples were generally obtained from the top 2.5 feet of soil. One additional soil sample at the location of the former dispenser was also collected, USTA-12 SB12 (1-2.5'). Table 4D summarizes the details and results of the line and dispenser samples.

Samples were analyzed for Total Petroleum Hydrocarbons (TPH) Gasoline and Diesel Range Organics (GRO/DRO). None of the soil samples exhibited detectable GRO concentrations. All TPH GRO results were reported as BQL.

Soil samples USTA-12 SB03 (0-2.5'), USTA-12 SB04 (0-2.5'), USTA-12 SB05 (0-2.5'), USTA-12 SB06 (1-2.5'), and USTA-12 SB09D (1-2') exhibited TPH-DRO above the NCDENR Action Limit of 10 mg/kg. All other DRO detections were either BQL or less than the NCDENR Action Limit of 10 mg/kg. Of the 12 soil samples, soil sample USTA-12 SB05 (0-2.5') contained the highest DRO concentration at 151 mg/kg. MCB Camp Lejeune EMD and NCDENR staff agreed to analyze only the sample exhibiting the highest TPH concentration for RBCA parameters; therefore, sample USTA-12 SB05 (0-2.5') was further analyzed on March 20, 2008. Results are discussed as follows.

EPA METHOD 8260 + IPE + MTBE

CATLIN obtained a soil sample from the USTA-12 SB05 (0-2.5') location in order to analyze it for RBCA parameters. One soil sample was obtained on March 20, 2008 and labeled SB-05A. The sample was collected from the 0-2.5' BLS interval and sent to SGS for analysis. Three VOCs were detected in soil sample SB-05A. Acetone, 2-Butanone, and Toluene were detected at concentrations of 0.053 mg/kg, 0.00731J mg/kg, and 0.00181J mg/kg, respectively. These concentrations are all less than their lowest MSCCs. All other 8260 compounds in soil sample SB-05A were reported as BQL. In addition, Acetone was detected in the trip blank that accompanied the sample. As a result, SGS indicated that the results for the sample may be slightly elevated.

EPA METHOD 8270 (+ TICs)

Laboratory analysis of soil sample SB-05A detected 13 EPA Method 8270 target analytes. Only three of the compounds, however, were detected at concentrations greater than the lowest MSCC. Benzo[a]anthracene and Benzo[b]fluoranthene were present at 1.02 mg/kg and 1.28 mg/kg, respectively, which are both above the applicable STGW and Residential MSCCs, but below their I/C MSCCs. Benzo[a]pyrene was detected in the soil sample at 1.11 mg/kg, as compared to the STGW MSCC of 0.091 mg/kg, Residential MSCC of 0.088 mg/kg, and I/C MSCC of 0.78 mg/kg. This compound is the only 8270 target analyte present in the sample at concentrations greater than the applicable I/C MSCC. Acenaphthene, Anthracene, Benzo[g,h,i]perylene, Benzo[k]fluoranthene, Chrysene, Fluoranthene, Fluorene, Indeno(1,2,3-c,d)Pyrene, Phenanthrene, and Pyrene were detected at concentrations less than the lowest MSCCs. All other 8270 target analytes in sample SB-05A were reported as BQL.

As previously mentioned, EPA Method 8270 sample(s) are also analyzed for the ten largest (peak area) non-target compounds, TICs as required by the *2001 Guidelines*. Laboratory analysis detected Benzo[a]pyrene and one unknown compound in soil sample SB-05A.

MADEP VPH/EPH

MADEP constituents were detected in soil sample SB-05A. C₅-C₈ Aliphatics were reported as BQL. The C₉-C₁₈ Aliphatics were detected at a concentration of <33.8 mg/kg, which is less than the lowest MSCC of 3,300 mg/kg. A concentration of 152 mg/kg was detected for the C₁₉-C₃₆ Aliphatics, which is also less than the lowest MSCC for this compound. A C₉-C₂₂ Aromatics concentration of <35.4 mg/kg was detected as compared to the STGW MSCC of 34 mg/kg, Residential MSCC of 469 mg/kg, and I/C MSCC of 12,264 mg/kg. The value of the C₉-C₁₈ Aliphatics and C₉-C₂₂ Aromatics concentrations represent the sum of the reported practical quantitation limit of one fraction and the detected concentration of the other fraction.

As noted earlier, Tables 4A through 4D and Figures 3A through 3D summarize the soil laboratory data, as well as depict it in relation to the site map.

E.2 Groundwater Sampling

A-12 UST Closure

Groundwater samples were not collected during tank closure activities.

A-12 LSA Investigation

CATLIN personnel installed one Type II monitoring well USTA12-MW01 on October 31, 2007. The groundwater was allowed to equilibrate and the well was gauged to determine depth to water, the potential free-phase product thickness, and well volume. CATLIN purged a minimum of three well volumes from each monitoring well prior to collecting representative groundwater samples. CATLIN personnel collected one groundwater sample (USTA12-MW01) and one duplicate sample (USTA12-DW01) from monitoring well USTA12-MW01. The groundwater samples were placed directly into laboratory provided glassware, properly labeled, and placed in an iced cooler prior to delivering to the laboratory. A copy of the Sampling Field Data Worksheet has been provided in Appendix C.

Samples were transported to SGS Environmental Services, Inc. (North Carolina Certification #481) in Wilmington, North Carolina where they were analyzed for petroleum contamination. Groundwater sample USTA12-DW01 was analyzed per EPA Method 602, EPA Method 625 (+ 10 largest non-target peaks), and MADEP VPH/EPH. Duplicate sample USTA12-DW01 was analyzed for VOCs only per EPA Method 602.

A copy of the groundwater sample laboratory analytical report and proper COC has been provided in Appendix D. For regulatory compliance, the resulting laboratory analysis data has been compared to established 2L Groundwater Quality Standards (GWQSS) and Gross Contaminant Levels (GCLs). Analysis of the groundwater sample submitted for laboratory analysis can be summarized as follows:

EPA METHOD 602

Both groundwater samples USTA12-MW01 and duplicate USTA12-DW01 did not contain any EPA Method 602 compounds. All target analytes were reported as BQL.

EPA METHOD 625 (+ TICS)

Laboratory analysis detected one compound in groundwater sample USTA12-MW01. Acenaphthene was detected at a concentration of 5.70J µg/L, which is well below the 2L GWQS (80 µg/L) and GCL (2,120 µg/L) for this compound. All other remaining EPA Method 625 compounds were reported as BQL.

In accordance with the *2001 Guidelines* EPA Method 625 sample(s) are also analyzed for the ten (10) largest (peak area) non-target compounds, or TICs. TICs refer to detected compounds, which are not present in the EPA Method 625 list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. Laboratory analysis revealed one unknown TIC in the USTA12-MW01 groundwater sample.

MADEP VPH/EPH

Laboratory analysis did not detect any MADEP constituents in groundwater sample USTA12-MW01. All results were reported as BQL.

Tables 5A through 5C and Figures 4A through 4C summarize the groundwater laboratory data, as well as depict it in relation to the site map.

E.3 Free-Phase Product

No measurable thickness of free-phase product was detected in the site groundwater monitoring well USTA12-MW01 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 project sites meet the criteria for Industrial/Commercial Land Use and Low Risk classification.

- No free-phase product was measured at the site groundwater monitoring wells.

A-12 FORMER USTs AND ASSOCIATED APPURTENANCES

- Soils samples were collected from the former tank basin (USTA12-MW01 3.5-5), tank basin sidewall (USTA-12 Basin SW), abandoned transfer line (USTA-12 SB01 through 11), and former dispenser area (USTA-12 SB12) to characterize site soils.
- Soil sample USTA12-MW01(3.5-5) and its duplicate, USTA13-DW01(3.5-5), were taken from the 3.5-5 feet BLS interval. This interval is likely within the capillary fringe, as the 24 hour DTW value was 3.61 feet BLS. It is probable that results from these two soil samples are not representative of vadose zone conditions.
- The tank basin sidewall soil sample, USTA12-Basin SW, was collected from the 2-3 feet BLS interval. Since it was proximate to USTA12-MW01 and was collected above the capillary fringe, sample USTA12-Basin SW is considered to be representative of vadose zone conditions in the tank basin area.
- There were no EPA Method 8260 compounds detected in site soils above the lowest MSCCs.
- EPA Method 8270 compounds are present in soils at the site. Laboratory analysis detected 16 EPA 8270 analytes in site soils; however, only five of those 16 were in excess of their lowest MSCCs. Benzo[a]anthracene and Benzo[b]fluoranthene were detected in the tank basin sidewall and transfer line sample at concentrations greater than their STGW and Residential MSCCs, but below their applicable I/C MSCCs. Benzo[a]pyrene was detected in the former tank basin, tank basin sidewall, and transfer line soil sample. Benzo[a]pyrene was present in the tank sidewall and transfer line sample above the STGW, Residential, and I/C MSCCs. In addition, it was detected in the tank basin sample above the STGW and Residential MSCCs, but below the I/C MSCC. Dibenzo[a,h]anthracene was present in only the tank basin sidewall sample above its STGW and Residential MSCCs, but below its I/C MSCC. Finally, Indeno(1,2,3-c,d)pyrene was present in the tank basin sidewall soil sample above the Residential MSCC, but below the STGW and I/C MSCCs.
- MADEP soil constituents were reported as either BQL or at concentrations less than the lowest MSCC, with one exception. The C₉-C₂₂ Aromatics concentration in transfer line sample SB-05A was <35.4 mg/kg, which is greater than the STGW MSCC, but below the Residential and I/C MSCCs.

- A duplicate soil sample USTA13-DW01(3.5-5) was analyzed for VOCs only using EPA Method 8260 (including IPE and MTBE). All 8260 compound concentrations in USTA12-DW01(3.5-5) were reported as being less than the lowest MSCCs or BQL.
- One groundwater sample was collected from the site from monitoring well USTA12-MW01 and was analyzed per EPA Method 602, EPA Method 625 (+ 10 largest non-target peaks), and MADEP VPH/EPH. Laboratory analyses revealed that all target analyte concentrations were either BQL or below applicable 2L GWQSSs and GCLs.

F.2 Recommendations

Ultimately, NCDENR Division of Waste Management UST Section personnel 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.

One soil compound, Benzo[a]pyrene, was detected in site soils above the established I/C MSCC. The compound was detected in the tank basin sidewall sample and the transfer line sample at concentrations above the I/C MSCC of 0.78 mg/kg. All other 8260, 8270, and MADEP compounds were either BQL or less than the applicable I/C MSCCs.

Groundwater at the site has not been adversely impacted as it did not exhibit any contaminant concentrations above established 2L GWQSSs or GCLs.

CATLIN proposes MCB Camp Lejeune consider two options for addressing soil contamination at the site. The most logical next step for the site would be to conduct a formal Soil Assessment to further delineate soil contaminant boundaries. The former fuel transfer line, however, was found to be abandoned in place. Therefore, a more economical option would be to remove the abandoned line and collect confirmation soil samples to demonstrate the absence or presence of contaminated soils. Petroleum impacted soils could be excavated from the site, to include the tank basin area, as part of the transfer line removal process.

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.

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/framesetnew.php.

Environmental & Regulatory Consultants Inc., *Tank Removal Report, Marine Corps Base, Building A-12, Camp Lejeune, North Carolina*, August 18, 1992. Note date on front page is incorrectly written as 1992. Date throughout report indicates work completed during December 1992; report figure dated August 18, 1993.

TABLES

TABLE 1

UST SYSTEM INFORMATION

**PHASE I LIMITED SITE ASSESSMENT
BUILDING A-12 FUELING AREA**

**MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA**

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)
Unknown	Gasoline	10,000	Unknown	(P) 12/18/1992	Yes
Unknown	Diesel	10,000	Unknown	(P) 12/18/1992	Yes

TABLE 2

UST OWNER/OPERATOR INFORMATION

**PHASE I LIMITED SITE ASSESSMENT
BUILDING A-12 FUELING AREA**

**MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA**

UST ID Number	Name of Owner or Operator	Dates of Ownership/Operation (m/dd/yy) to (m/dd/yy)	Address	Telephone Number
Unknown	Commanding General Marine Corps Base Camp Lejeune, NC	Unknown to 12/18/92	PSC BOX 20004 Marine Corps Base Camp Lejeune, NC 28542	(910) 451-5068

TABLE 3**WELL CONSTRUCTION RECORD****PHASE I LIMITED SITE ASSESSMENT
BUILDING A-12 FUELING AREA****MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA**

Well ID	Date Installed (m/dd/yy)	Date Water Level Measured (m/dd/yy)	Well Casing Depth (ft. BLS)	Screened Interval (x to y ft. BLS)	Bottom of Well (ft. BLS)	Top of Casing Elevation (ft.)	Depth to Water from Top of Casing (ft.)	Free Product Thickness (ft.)	Ground Water Elevation (ft.)	Comments
USTA12-MW01	10/31/2007	11/1/2007	1	1-11	11	Not Measured	4	0.00	Not Measured	Monitoring

ft BLS = feet below land surface

TABLE 4A
SUMMARY OF SOIL LABORATORY RESULTS
EPA METHOD 8260 + IPE + MTBE

Incident Name and No.: Building A-12 Fueling Area; Incident No. PENDING

Sample ID	Contaminant of Concern →		Acetone	2-Butanone	Methylene Chloride	Naphthalene	Toluene	All Other 8260 Compounds
	Date Collected	Sample Depth (ft. BLS)						
Residential MSCC (mg/kg)			1,564	9,385	85	313	3,200	Varies
Industrial/Commercial MSCC (mg/kg)			40,880	245,280	763	8,176	82,000	Varies
Soil to Groundwater MSCC (mg/kg)			2.8	17	0.02	0.58	7.3	Varies
USTA12-MW01(3.5-5)	10/31/2007	3.5-5	0.125	0.0253J	<0.00128	0.00313J	<0.00107	BMDL
USTA12-DW01(3.5-5)	10/31/2007	3.5-5	0.104	0.0151J	<0.00104	0.00252J	<0.00087	BMDL
USTA-12 Basin SW	3/5/2008	2-3	0.0565	<0.00573	0.00135J	<0.00090	0.00171J	BMDL
SB-05A	3/20/2008	0-2.5	0.053	0.00731J	<0.00126	<0.00090	0.00181J	BMDL

USTA12-DW01(3.5-5) is a duplicate sample of USTA12-MW01 (3.5-5).

All results in milligram per Kilogram (mg/kg)

BMDL = Below Method Detection Limit

ft. BLS = Feet Below Land Surface.

MSCC = Maximum Soil Contaminant Concentrations

Bold concentrations exceed the lowest MSCC

J = Estimated concentration, below calibration range and above MDL

TABLE 4B
SUMMARY OF SOIL LABORATORY RESULTS
EPA METHOD 8270 + TICS

Incident Name and No.: Building A-12/ Fueling Area; Incident No. PENDING

Sample ID	Contaminant of Concern →		Acenaphthene	Anthracene	Benzo[a]anthracene	Benzo[a]pyrene	Benzo[b]fluoranthene	Benzo[g,h,i]perylene	Benzo[k]fluoranthene	Chrysene	Dibenzo[a,h]anthracene	Dibenzofuran	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	All Other 8270 Compounds
	Date Collected	Sample Depth (ft. BLS)																	
Residential MSCC (mg/Kg)			940	4,600	0.88	0.088	0.88	469	9	88	0.088	62	620	620	0.88	313	469	469	Varies
Industrial/Commercial (mg/Kg)			24,000	122,000	8	0.78	8	12,264	78	780	0.78	1,635	16,400	16,400	8	8,176	12,264	12,264	Varies
STGW MSCC (mg/Kg)			8.2	1,000	0.34	0.091	1.2	6,700	12	38	0.17	4.7	280	44	3.3	0.58	60	290	Varies
USTA12-MW01(3.5-5)	10/31/2007	3.5-5	0.132J	<0.048	0.099J	0.122J	0.125J	<0.090	0.115J	0.132J	<0.092	<0.060	0.323J	0.112J	<0.084	<0.027	0.261J	0.264J	BMDL
USTA-12 Basin SW	3/5/2008	2-3	0.742	1.23	3.24	1.99	2.83	1.19	1.09	3.13	0.293J	0.297J	7.31	0.607	1.13	0.044J	5.62	6.05	BMDL
SB-05A	3/20/2008	0-2.5	0.210J	0.261J	1.02	1.11	1.28	0.504	0.722	1.09	<0.102	<0.066	2.09	0.160J	0.552	<0.029	1.27	1.72	BMDL

All results in milligram per Kilogram (mg/Kg)

BMDL = Below Method Detection Limit

ft. BLS = Feet Below Land Surface

MSCC = Maximum Soil Contaminant Concentrations

Bold concentrations exceed the lowest MSCC

J = Estimated concentration, below calibration range and above MDL

TABLE 4C
SUMMARY OF SOIL LABORATORY RESULTS
MADEP METHODS VPH/EPH

Incident Name and No.: Building A-12 Fueling Area; Incident No. PENDING

Sample ID	Contaminant of Concern →		C ₅ -C ₈ Aliphatics	C ₉ -C ₁₈ Aliphatics	C ₁₉ -C ₃₆ Aliphatics	C ₉ -C ₂₂ Aromatics
	Date Collected	Sample Depth (ft. BLS)				
Residential MSCC (mg/kg)			939	9,386	93,860	469
Industrial/Commercial MSCC (mg/kg)			24,528	245,280	#	12,264
STGW MSCC (mg/kg)			72	3,300	##	34
USTA12-MW01(3.5-5)	10/31/2007	3.5-5	<10.0	<20.0	<10.0	<20.0
USTA-12 Basin SW	3/5/2008	2-3	<10.0	<20.0	<10.0	<20.0
SB-05A	3/20/2008	0-2.5	<10.0	<33.8*	152	<35.4*

All results in milligrams per kilogram (mg/kg).

Bold results indicate concentrations above lowest MSCC.

= Health based level > 100%

= Considered Immobile

ft. BLS = Feet Below Land Surface.

< = Less than method detection limit

MSCC = Maximum Soil Contaminant Concentration

* = The value represents the sum of the reported practical quantitation limit of one fraction and the detected concentration of the other fraction.

TABLE 4D
SUMMARY OF SOIL LABORATORY RESULTS
EPA METHODS 5030 and 3550 with METHOD 8015 (GC/FID)

Incident Name and No.: Building A-12 Fueling Area; Incident No. PENDING

Sample ID	Contaminant of Concern →		Gasoline Range Organics	Diesel Range Organics
	Date Collected	Sample Depth (ft. BLS)		
NCDENR ACTION LEVEL (mg/kg)			10	10
USTA-12 SB01 (0-2')	3/5/2008	0-2	<5.87	9.62
USTA-12 SB02 (0-2.5')	3/5/2008	0-2.5	<5.86	<6.97
USTA-12 SB03 (0-2.5')	3/5/2008	0-2.5	<6.40	18.8
USTA-12 SB04 (0-2.5')	3/5/2008	0-2.5	<6.90	49.4
USTA-12 SB05 (0-2.5')	3/5/2008	0-2.5	<6.64	151
USTA-12 SB06 (1-2.5')	3/5/2008	1-2.5	<6.21	31.9
USTA-12 SB07 (1-2.5')	3/5/2008	1-2.5	<6.88	<6.75
USTA-12 SB08 (1-2.5')	3/5/2008	1-2.5	<6.25	<7.10
USTA-12 SB09 (1-2')	3/5/2008	1-2	<6.02	6.53
USTA-12 SB09D (1-2')	3/5/2008	1-2	<6.59	10.2
USTA-12 SB10 (0.5-2')	3/5/2008	0.5-2	<6.51	8.14
USTA-12 SB11 (1-2')	3/5/2008	1-2	<6.10	9.34
USTA-12 SB12 (1-2.5')	3/5/2008	1-2.5	<6.33	<6.99

All results in milligrams per kilogram (mg/kg).

ft. BLS = Feet Below Land Surface.

< = Less than method detection limit

Bold results indicate concentrations above NCDENR Action Level.

TABLE 5A
SUMMARY OF GROUNDWATER LABORATORY RESULTS
EPA METHOD 602 + MTBE + Xylenes

Incident Name and No.: Building A-12 Fueling Area; Incident No. PENDING

Well ID	Contaminant of Concern →		All EPA Method 602 Compounds
	Sample ID	Date Collected	
GCL (µg/L) 2L GWQS (µg/L)			Varies Varies
USTA12-MW01	USTA12-MW01	11/1/2007	BMDL

All results in micrograms per liter (µg/L).

BMDL = Below Method Detection Limit

Bold results indicate concentrations above 2L GWQS or GCL

GCL = Gross Contaminant Level

2L GWQS = NCAC T15A:02L Groundwater Quality Standards

TABLE 5B
SUMMARY OF GROUNDWATER LABORATORY RESULTS
EPA METHOD 625 + TICs

Incident Name and No.: Building A-12 Fueling Area; Incident No. PENDING

Well ID	Contaminant of Concern →		Acenaphthene	All Other EPA Method 625 Compounds
	Sample ID	Date Collected		
GCL (µg/L)			2,120	Varies
2L GWQS (µg/L)			80	Varies
USTA12-MW01	USTA12-MW01	11/1/2007	5.70J	BMDL

All results in micrograms per liter (µg/L).

BMDL = Below Method Detection Limit

Bold results indicate concentrations above 2L GWQS or GCL

GCL = Gross Contaminant Level

2L GWQS = NCAC T15A:02L Groundwater Quality Standards

J = Estimated concentration, below calibration range and above MDL

TABLE 5C
SUMMARY OF GROUNDWATER LABORATORY RESULTS
MADEP METHODS VPH/EPH

Incident Name and No.: Building A-12 Fueling Area; Incident No. PENDING

Well ID	Contaminant of Concern →		C ₅ -C ₈ Aliphatics	C ₉ -C ₁₈ Aliphatics	C ₁₉ -C ₃₆ Aliphatics	C ₉ -C ₂₂ Aromatics
	Sample ID	Date Collected				
GCL (µg/L) 2L GWQS (µg/L)			NE 420	NE 4,200	NE 42,000	NE 210
USTA12-MW01	USTA12-MW01	11/1/2007	<100	<200	<100	<200

All results in micrograms per liter (µg/L).

NE = None Established

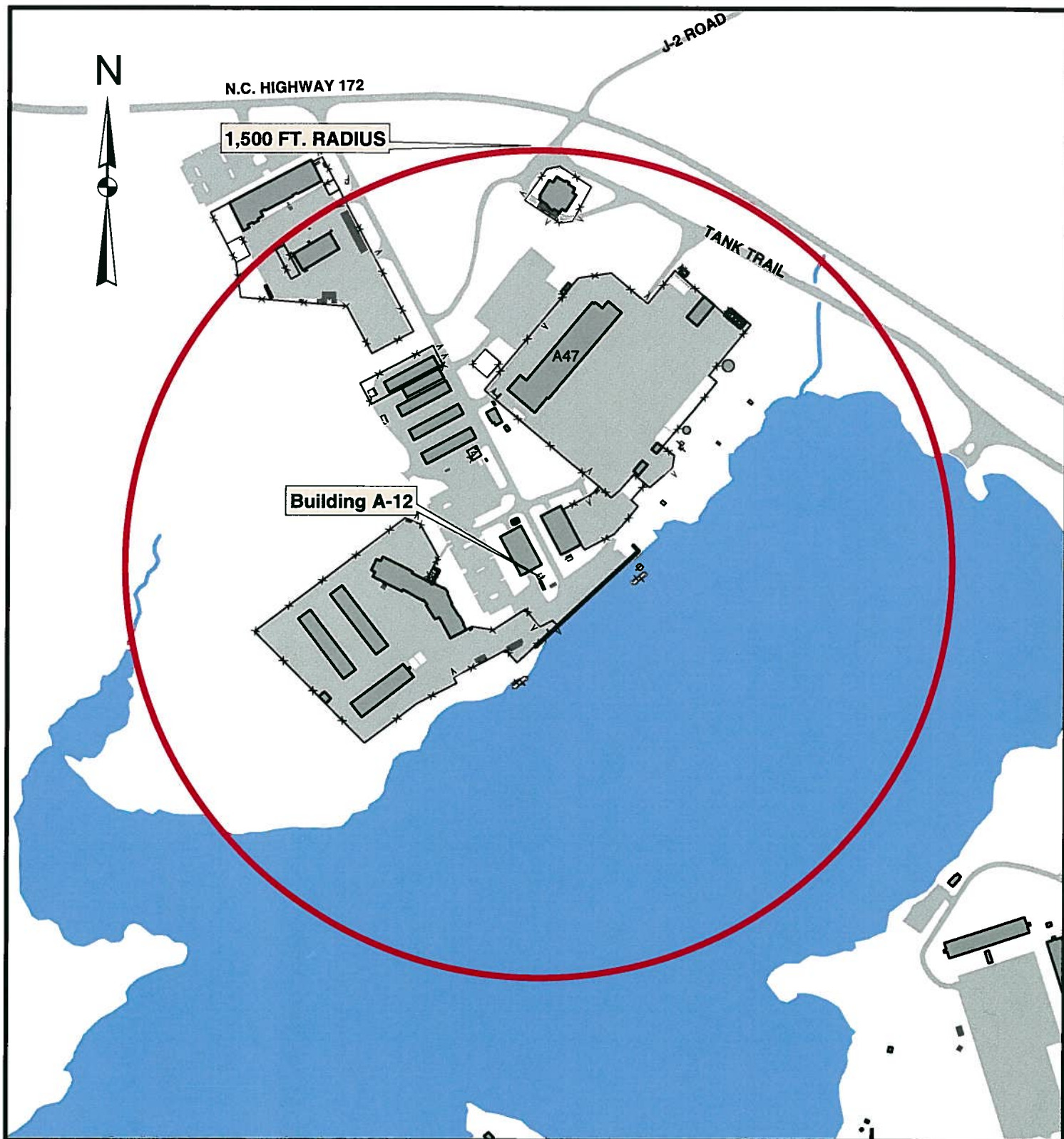
< = Less than method detection limit (MDL)

Bold results indicate concentrations above 2L GWQS or GCL

GCL = Gross Contaminant Level

2L GWQS = NCAC T15A:02L Groundwater Quality Standards

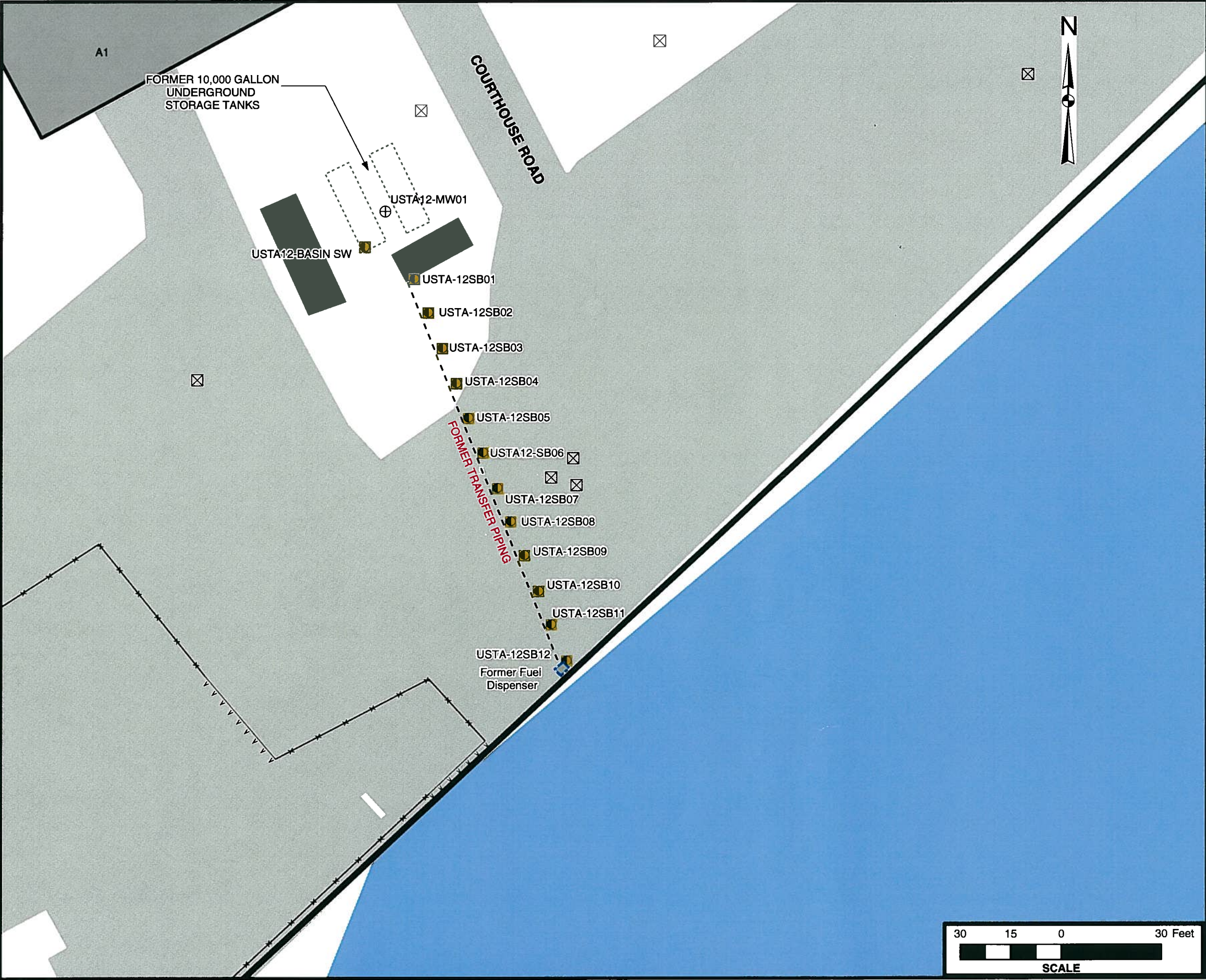
FIGURES



500 250 0 500
Feet

Data Sources: Data Layers provided by MCB Camp Lejeune GIS Office.

 CATLIN Engineers and Scientists WILMINGTON, NC	PROJECT PHASE I LIMITED SITE ASSESSMENT FOR BUILDING A-12 FUELING AREA MARINE CORPS BASE CAMP LEJEUNE, NC			TITLE SITE MAP WITH 1,500 FT. RADIUS WITH WATER SUPPLY WELL SURVEY AND PLACES OF PUBLIC ASSEMBLY		FIGURE
	JOB NO: 207-048	DATE: APRIL 2008	SCALE: AS SHOWN	DRAWN BY: KAWS	CHECKED BY: MEM	1



**WORKPLAN ADDENDUM
BUILDING A-12 FUELING AREA
MCB CAMP LEJEUNE**



LEGEND

EXISTING	DESCRIPTION
	Type II Monitoring Well
	Soil Borings
	Unknown Well Type
	Buildings and Structures
	Demolished Structures
	Oil/Water Separators
	Slabs
	Roads, Driveways and Parking Lots
	Forestland
	Above Ground Storage Tank
	Fence
	Gate

NOTES

MAP ADAPTED FROM CAMP LEJEUNE GIS DATA BASE.



**SITE PLAN WITH BORING/
MONITORING WELL LOCATION**

FIGURE

2

Job No.: 207-048	Date: APRIL 2008	Scale: AS SHOWN	Drawn By: KAWS	Checked By: MEM
----------------------------	----------------------------	---------------------------	--------------------------	---------------------------

WORKPLAN ADDENDUM
BUILDING A-12 FUELING AREA
MCB CAMP LEJEUNE



LEGEND

EXISTING	DESCRIPTION
	Type II Monitoring Well
	Soil Borings
	Unknown Well Type
	Buildings and Structures
	Demolished Structures
	Oil/Water Separators
	Slabs
	Roads, Driveways and Parking Lots
	Forestland
	Above Ground Storage Tank
	Fence
	Gate

NOTES

MAP ADAPTED FROM CAMP LEJEUNE
GIS DATA BASE.



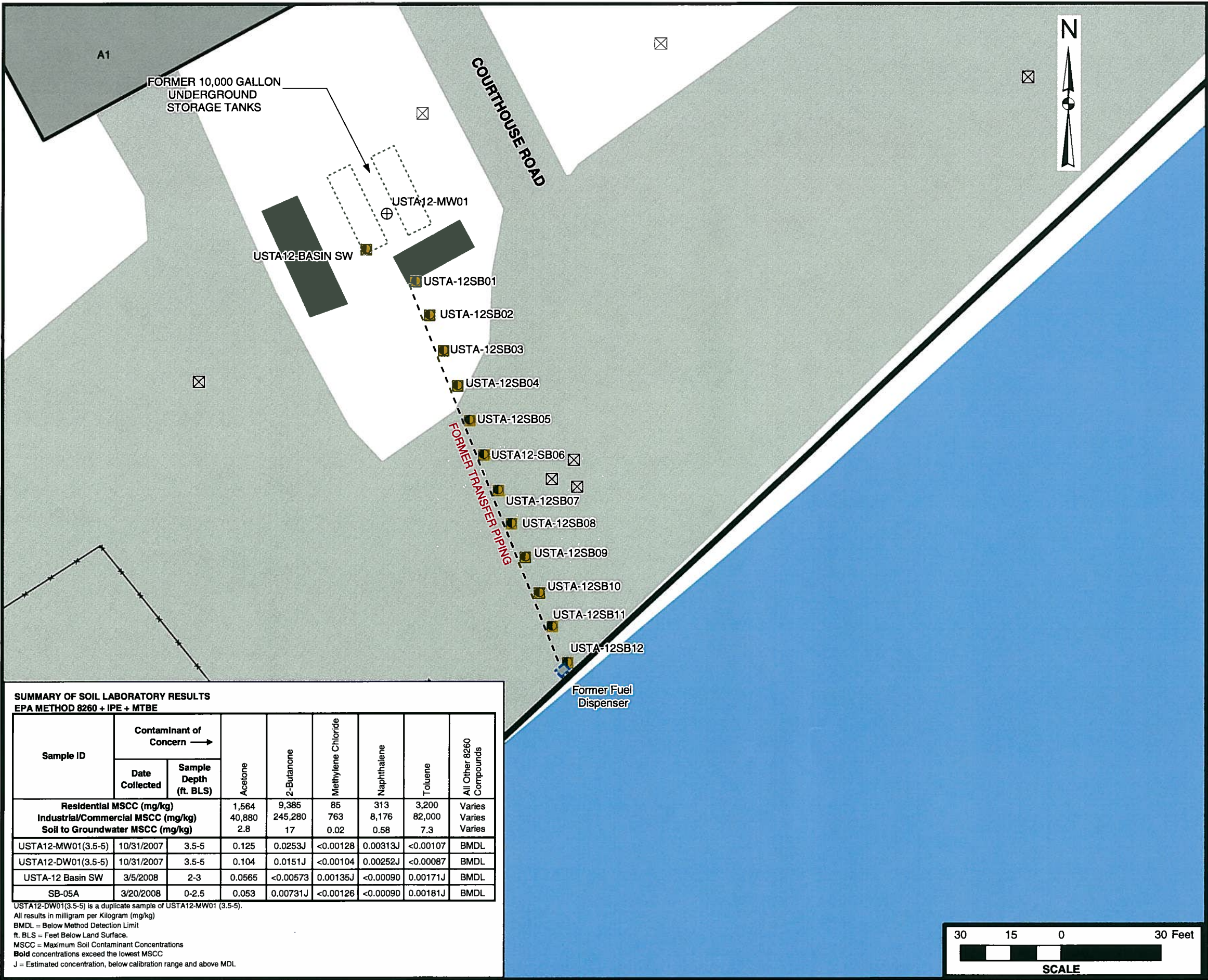
SITE PLAN WITH SOIL
LABORATORY RESULTS -
EPA METHOD 8260 + IPE + MTBE

FIGURE

3A

Job No.:	Date:	Scale:	Drawn By:	Checked By:
207-048	APRIL 2008	AS SHOWN	KAWS	MEM

S:\wpmktg\PROJECT\2007\207-048 Former CERCLA Sites - LSAs\A-12 LSA\FIGURE3A



WORKPLAN ADDENDUM
BUILDING A-12 FUELING AREA
MCB CAMP LEJEUNE



LEGEND

EXISTING	DESCRIPTION
	Type II Monitoring Well
	Soil Borings
	Unknown Well Type
	Buildings and Structures
	Demolished Structures
	Oil/Water Separators
	Slabs
	Roads, Driveways and Parking Lots
	Forestland
	Above Ground Storage Tank
	Fence
	Gate

NOTES

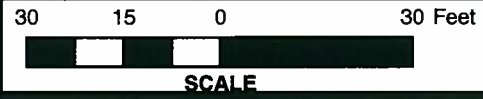
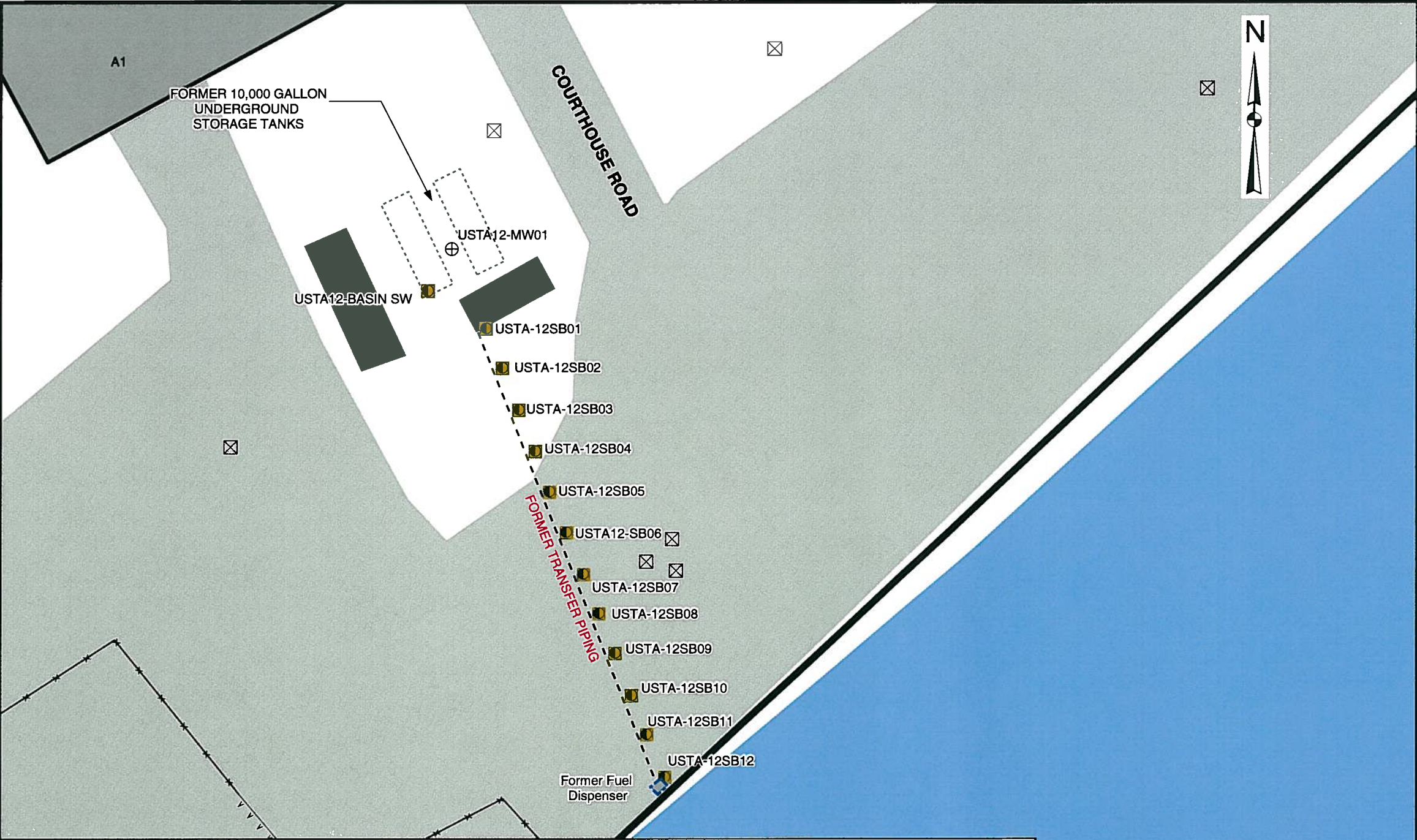
MAP ADAPTED FROM CAMP LEJEUNE
GIS DATA BASE.



SITE PLAN WITH SOIL
LABORATORY RESULTS -
EPA METHOD 8270 + TICS

FIGURE
3B

Job No.:	Date:	Scale:	Drawn By:	Checked By:
207-048	APRIL 2008	AS SHOWN	KAWS	MEM



SUMMARY OF SOIL LABORATORY RESULTS
EPA METHOD 8270 + TICS

Sample ID	Contaminant of Concern		Acenaphthene	Anthracene	Benzo[a]anthracene	Benzo[a]pyrene	Benzo[b]fluoranthene	Benzo[k]fluoranthene	Benzo[e]pyrene	Chrysene	Dibenz[a,h]anthracene	Dibenzofuran	Fluoranthene	Fluorene	Indeno[1,2,3-c,d]pyrene	Naphthalene	Phenanthrene	Pyrene	All Other 8270 Compounds
	Date Collected	Sample Depth (ft. BLS)																	
Residential MSCC (mg/Kg)			940	4,600	0.88	0.088	0.88	469	9	88	0.088	82	620	620	0.88	313	469	469	Varies
Industrial/Commercial (mg/Kg)			24,000	122,000	8	0.78	8	12,264	78	780	0.78	1,635	16,400	16,400	8	8,176	12,264	12,264	Varies
STGW MSCC (mg/Kg)			8.2	1,000	0.34	0.091	1.2	6,700	12	38	0.17	4.7	280	44	3.3	0.58	60	290	Varies
USTA12-MW01(3.5-5)	10/31/2007	3.5-5	0.132J	<0.048	0.099J	0.122J	0.125J	<0.090	0.115J	0.132J	<0.092	<0.060	0.323J	0.112J	<0.084	<0.027	0.261J	0.264J	BMDL
USTA-12 Basin SW	3/5/2008	2-3	0.742	1.23	3.24	1.99	2.83	1.19	1.09	3.13	0.293J	0.297J	7.31	0.607	1.13	0.044J	5.62	6.05	BMDL
SB-05A	3/20/2008	0-2.5	0.210J	0.261J	1.02	1.11	1.28	0.504	0.722	1.09	<0.102	<0.066	2.09	0.160J	0.552	<0.029	1.27	1.72	BMDL

All results in milligram per Kilogram (mg/kg)
BMDL = Below Method Detection Limit
ft. BLS = Feet Below Land Surface
MSCC = Maximum Soil Contaminant Concentrations
Bold concentrations exceed the lowest MSCC
J = Estimated concentration, below calibration range and above MDL

WORKPLAN ADDENDUM
BUILDING A-12 FUELING AREA
MCB CAMP LEJEUNE



LEGEND

EXISTING	DESCRIPTION
	Type II Monitoring Well
	Soil Borings
	Unknown Well Type
	Buildings and Structures
	Demolished Structures
	Oil/Water Separators
	Slabs
	Roads, Driveways and Parking Lots
	Forestland
	Above Ground Storage Tank
	Fence
	Gate

NOTES

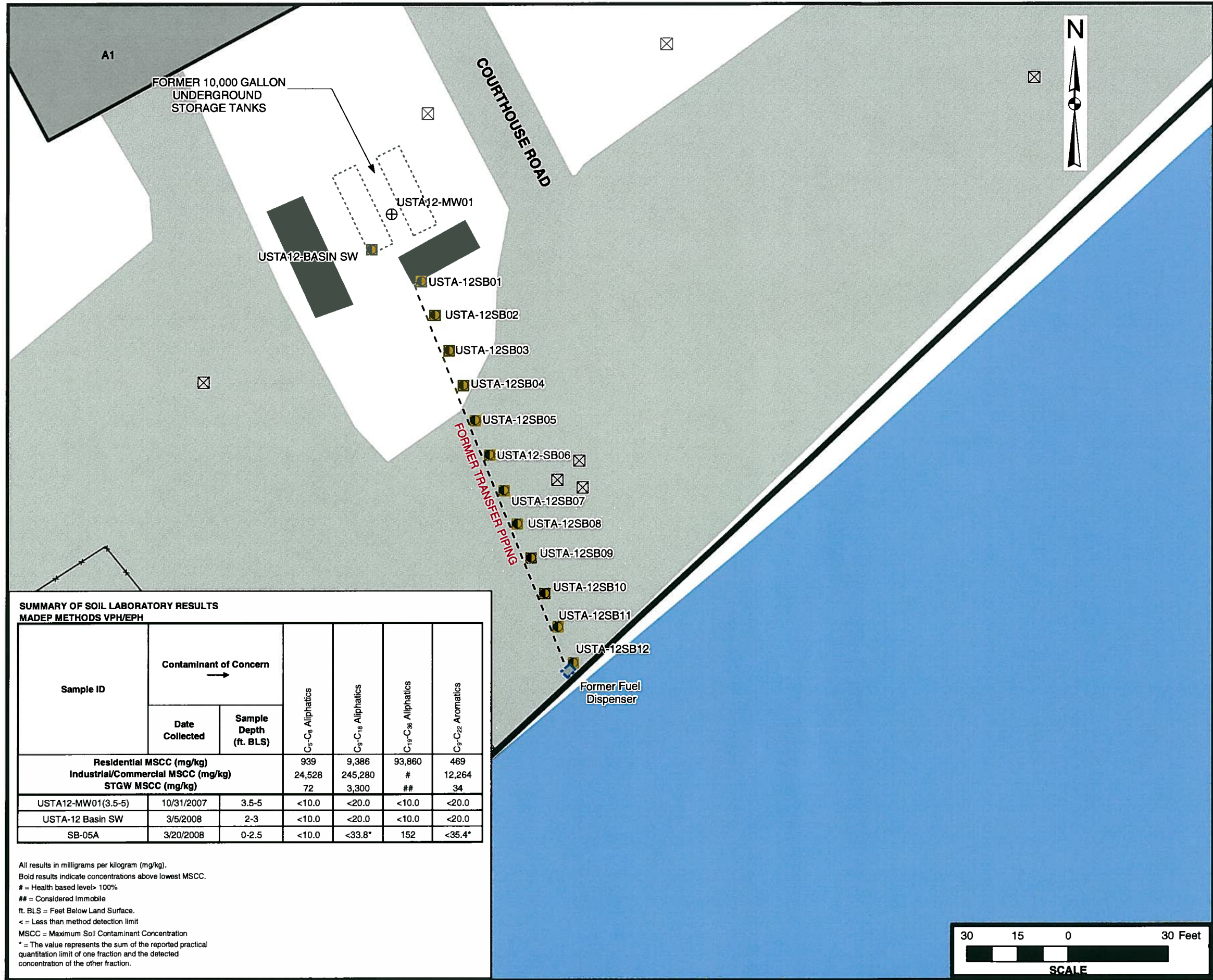
MAP ADAPTED FROM CAMP LEJEUNE
GIS DATA BASE.



SITE PLAN WITH SOIL
LABORATORY RESULTS -
MADEP VPH/EPH

FIGURE
3C

Job No.:	Date:	Scale:	Drawn By:	Checked By:
207-048	APRIL 2008	AS SHOWN	KAWS	MEM



SUMMARY OF SOIL LABORATORY RESULTS MADEP METHODS VPH/EPH						
Sample ID	Contaminant of Concern →		C ₅ -C ₈ Aliphatics	C ₉ -C ₁₈ Aliphatics	C ₁₉ -C ₃₆ Aliphatics	C ₉ -C ₂₂ Aromatics
	Date Collected	Sample Depth (ft. BLS)				
Residential MSCC (mg/kg)			939	9,386	93,860	469
Industrial/Commercial MSCC (mg/kg)			24,528	245,280	#	12,264
STGW MSCC (mg/kg)			72	3,300	##	34
USTA12-MW01(3.5-5)	10/31/2007	3.5-5	<10.0	<20.0	<10.0	<20.0
USTA-12 Basin SW	3/5/2008	2-3	<10.0	<20.0	<10.0	<20.0
SB-05A	3/20/2008	0-2.5	<10.0	<33.8*	152	<35.4*

All results in milligrams per kilogram (mg/kg).
Bold results indicate concentrations above lowest MSCC.
= Health based level > 100%
= Considered Immobile
ft. BLS = Feet Below Land Surface.
< = Less than method detection limit
MSCC = Maximum Soil Contaminant Concentration
* = The value represents the sum of the reported practical quantitation limit of one fraction and the detected concentration of the other fraction.

WORKPLAN ADDENDUM
BUILDING A-12 FUELING AREA
MCB CAMP LEJEUNE



LEGEND

EXISTING	DESCRIPTION
	Type II Monitoring Well
	Soil Borings
	Unknown Well Type
	Buildings and Structures
	Demolished Structures
	Oil/Water Separators
	Slabs
	Roads, Driveways and Parking Lots
	Forestland
	Above Ground Storage Tank
	Fence
	Gate

NOTES

MAP ADAPTED FROM CAMP LEJEUNE
GIS DATA BASE.



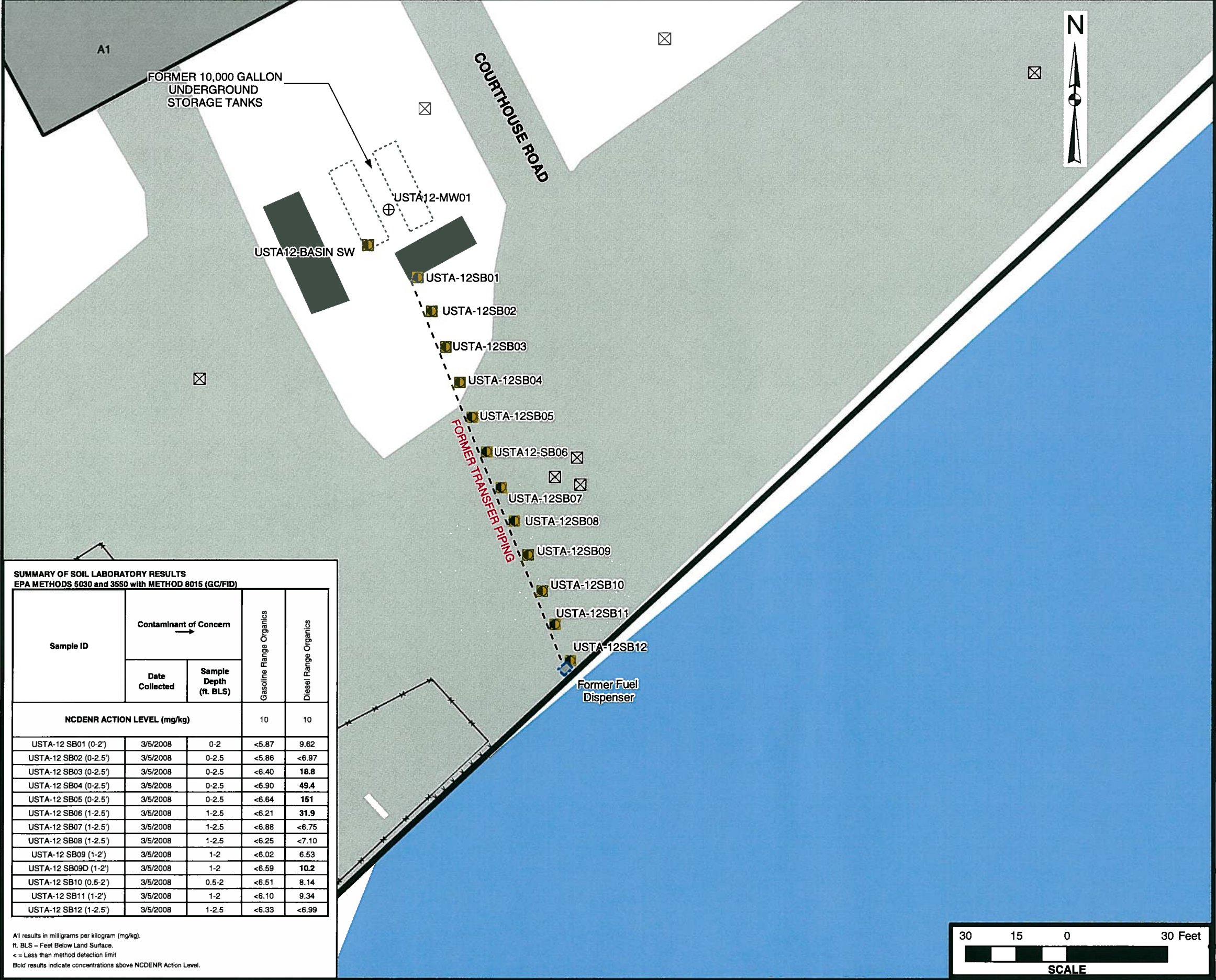
SITE PLAN WITH SOIL
LABORATORY RESULTS -
EPA METHOD 5030/3550

FIGURE

3D

Job No.:	Date:	Scale:	Drawn By:	Checked By:
207-048	APRIL 2008	AS SHOWN	KAWS	MEM

S:\wpmktg\PROJECT\2007\207-048 Former CERCLA Sites - LSAs\A-12 LSA\FIGURE3D



SUMMARY OF SOIL LABORATORY RESULTS EPA METHODS 5030 and 3550 with METHOD 8015 (GC/FID)				
Sample ID	Contaminant of Concern		Gasoline Range Organics	Diesel Range Organics
	Date Collected	Sample Depth (ft. BLS)		
NCDENR ACTION LEVEL (mg/kg)			10	10
USTA-12 SB01 (0-2')	3/5/2008	0-2	<5.87	9.62
USTA-12 SB02 (0-2.5')	3/5/2008	0-2.5	<5.86	<6.97
USTA-12 SB03 (0-2.5')	3/5/2008	0-2.5	<6.40	18.8
USTA-12 SB04 (0-2.5')	3/5/2008	0-2.5	<6.90	49.4
USTA-12 SB05 (0-2.5')	3/5/2008	0-2.5	<6.64	151
USTA-12 SB06 (1-2.5')	3/5/2008	1-2.5	<6.21	31.9
USTA-12 SB07 (1-2.5')	3/5/2008	1-2.5	<6.88	<6.75
USTA-12 SB08 (1-2.5')	3/5/2008	1-2.5	<6.25	<7.10
USTA-12 SB09 (1-2')	3/5/2008	1-2	<6.02	6.53
USTA-12 SB09D (1-2')	3/5/2008	1-2	<6.59	10.2
USTA-12 SB10 (0.5-2')	3/5/2008	0.5-2	<6.51	8.14
USTA-12 SB11 (1-2')	3/5/2008	1-2	<6.10	9.34
USTA-12 SB12 (1-2.5')	3/5/2008	1-2.5	<6.33	<6.99

All results in milligrams per kilogram (mg/kg).
ft. BLS = Feet Below Land Surface.
< = Less than method detection limit.
Bold results indicate concentrations above NCDENR Action Level.

WORKPLAN ADDENDUM
BUILDING A-12 FUELING AREA
MCB CAMP LEJEUNE



LEGEND

EXISTING	DESCRIPTION
	Type II Monitoring Well
	Soil Borings
	Unknown Well Type
	Buildings and Structures
	Demolished Structures
	Oil/Water Separators
	Slabs
	Roads, Driveways and Parking Lots
	Forestland
	Above Ground Storage Tank
	Fence
	Gate

NOTES

MAP ADAPTED FROM CAMP LEJEUNE
GIS DATA BASE.



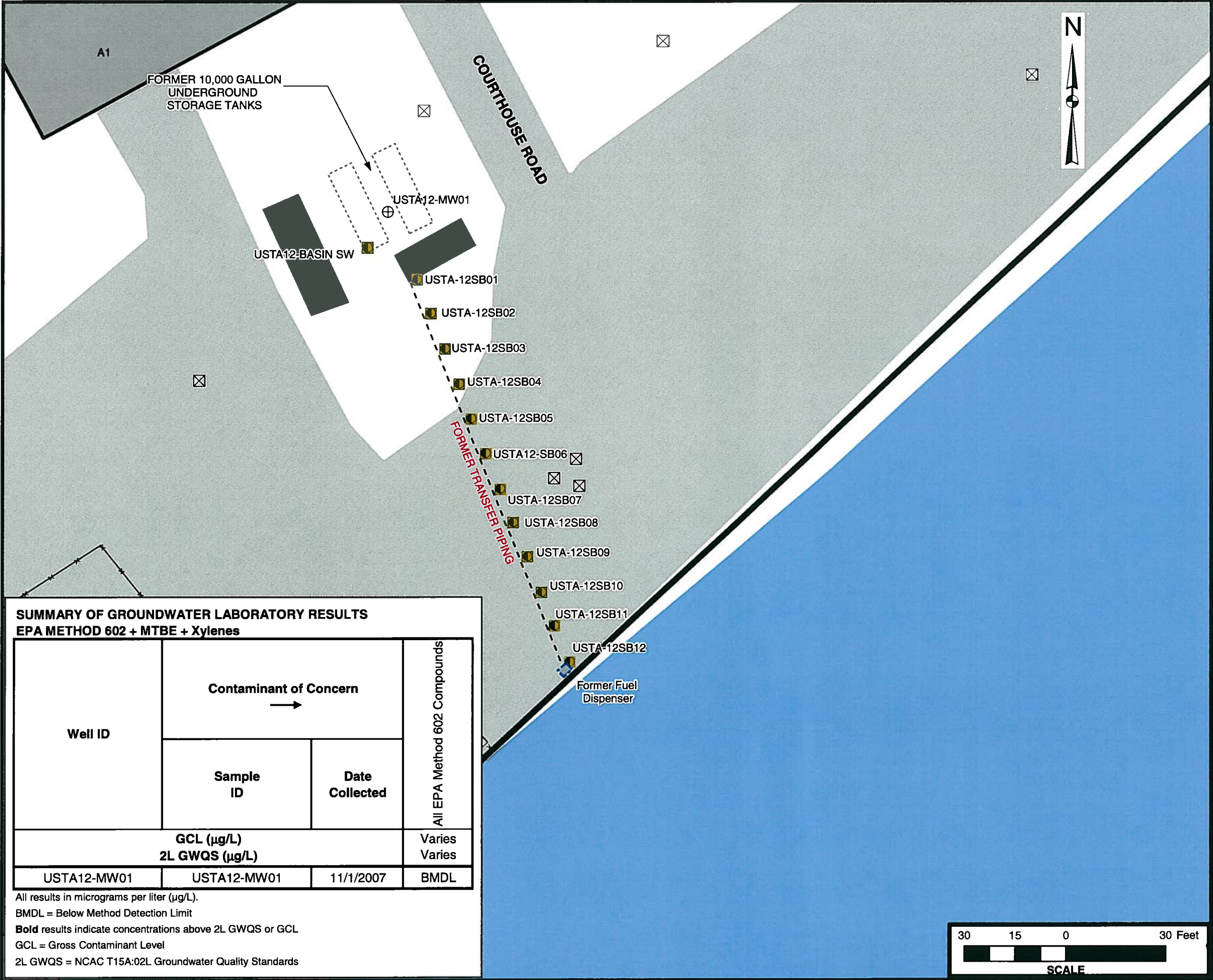
SITE PLAN WITH GROUNDWATER
LABORATORY RESULTS -
EPA METHOD 602 + MTBE + XYLENES

FIGURE

4A

Job No.:	Date:	Scale:	Drawn By:	Checked By:
207-048	APRIL 2008	AS SHOWN	KAWS	MEM

S:\wpmktg\PROJECT\2007\207-048 Former CERCLA Sites - LSAs\A-12 LSA\FIGURE4A



SUMMARY OF GROUNDWATER LABORATORY RESULTS
EPA METHOD 602 + MTBE + Xylenes

Well ID	Contaminant of Concern →		All EPA Method 602 Compounds
	Sample ID	Date Collected	
GCL (µg/L) 2L GWQS (µg/L)			Varies Varies
USTA12-MW01	USTA12-MW01	11/1/2007	BMDL

All results in micrograms per liter (µg/L).
BMDL = Below Method Detection Limit
Bold results indicate concentrations above 2L GWQS or GCL
GCL = Gross Contaminant Level
2L GWQS = NCAC T15A:02L Groundwater Quality Standards

WORKPLAN ADDENDUM
BUILDING A-12 FUELING AREA
MCB CAMP LEJEUNE



LEGEND

EXISTING	DESCRIPTION
	Type II Monitoring Well
	Soil Borings
	Unknown Well Type
	Buildings and Structures
	Demolished Structures
	Oil/Water Separators
	Slabs
	Roads, Driveways and Parking Lots
	Forestland
	Above Ground Storage Tank
	Fence
	Gate

NOTES

MAP ADAPTED FROM CAMP LEJEUNE
GIS DATA BASE.

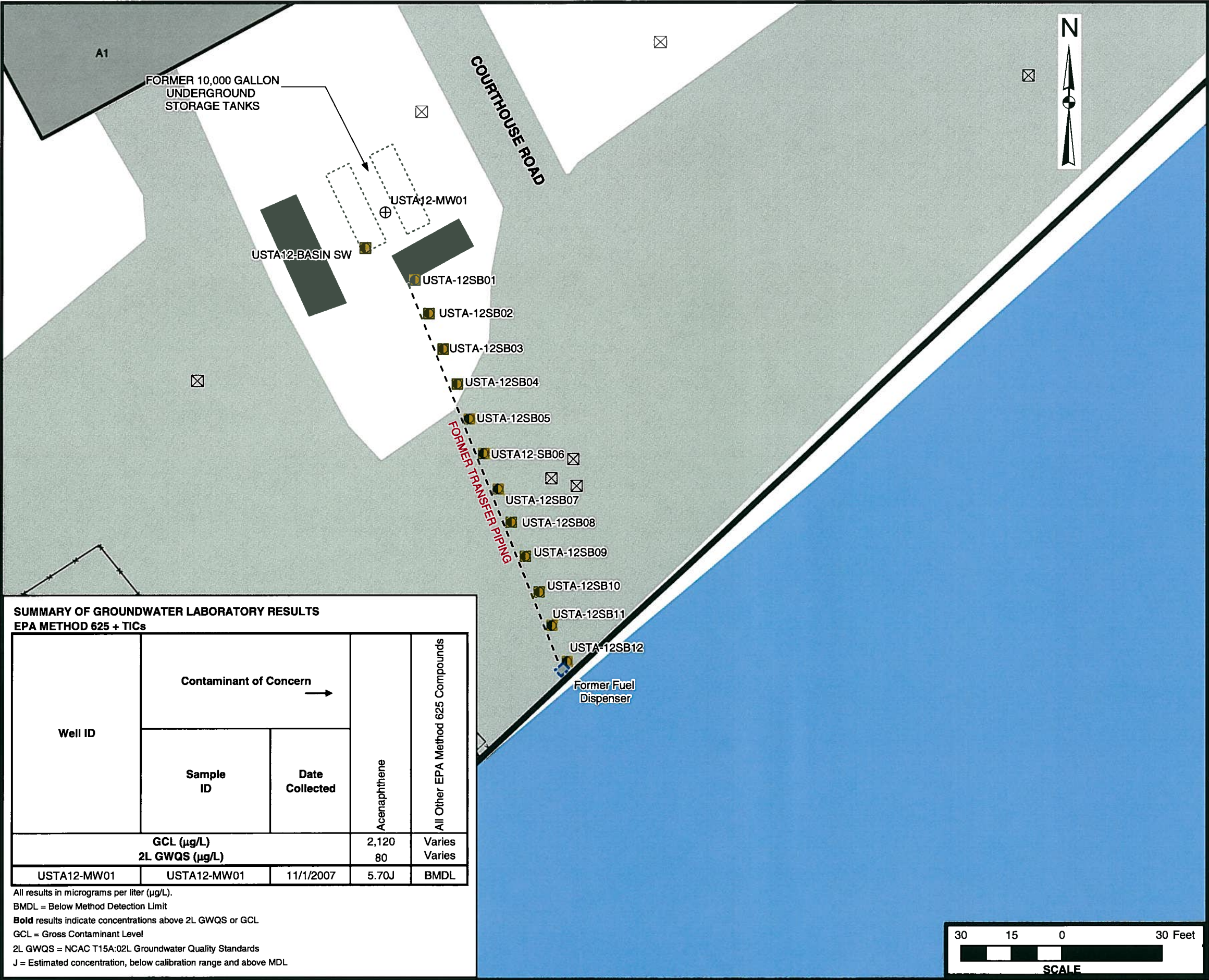


SITE PLAN WITH GROUNDWATER
LABORATORY RESULTS -
EPA METHOD 625 + TICS

FIGURE

4B

Job No.:	Date:	Scale:	Drawn By:	Checked By:
207-048	APRIL 2008	AS SHOWN	KAWS	MEM



SUMMARY OF GROUNDWATER LABORATORY RESULTS
EPA METHOD 625 + TICS

Well ID	Contaminant of Concern →		Acenaphthene	All Other EPA Method 625 Compounds
	Sample ID	Date Collected		
	GCL (µg/L)		2,120	Varies
	2L GWQS (µg/L)		80	Varies
USTA12-MW01	USTA12-MW01	11/1/2007	5.70J	BMDL

All results in micrograms per liter (µg/L).
BMDL = Below Method Detection Limit
Bold results indicate concentrations above 2L GWQS or GCL
GCL = Gross Contaminant Level
2L GWQS = NCAC T15A:02L Groundwater Quality Standards
J = Estimated concentration, below calibration range and above MDL

WORKPLAN ADDENDUM
BUILDING A-12 FUELING AREA
MCB CAMP LEJEUNE



LEGEND

EXISTING	DESCRIPTION
	Type II Monitoring Well
	Soil Borings
	Unknown Well Type
	Buildings and Structures
	Demolished Structures
	Oil/Water Separators
	Slabs
	Roads, Driveways and Parking Lots
	Forestland
	Above Ground Storage Tank
	Fence
	Gate

NOTES

MAP ADAPTED FROM CAMP LEJEUNE
GIS DATA BASE.

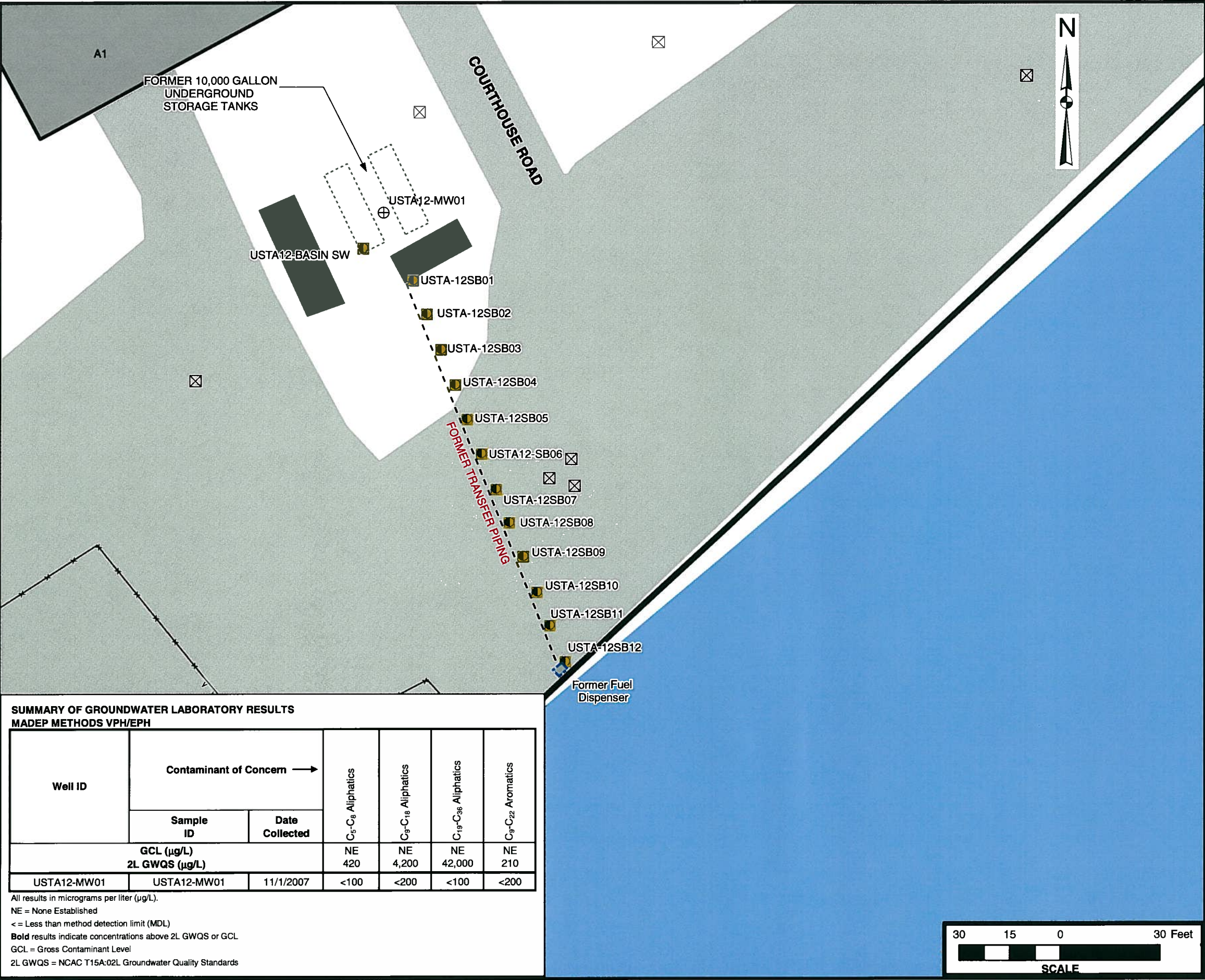


SITE PLAN WITH GROUNDWATER
LABORATORY RESULTS -
MADEP VPH/EPH

FIGURE

4C

Job No.:	Date:	Scale:	Drawn By:	Checked By:
207-048	APRIL 2008	AS SHOWN	KAWS	MEM



SUMMARY OF GROUNDWATER LABORATORY RESULTS
MADEP METHODS VPH/EPH

Well ID	Contaminant of Concern →		C ₅ -C ₈ Aliphatics	C ₉ -C ₁₀ Aliphatics	C ₁₁ -C ₁₄ Aliphatics	C ₁₅ -C ₂₂ Aromatics
	Sample ID	Date Collected				
	GCL (µg/L)		NE	NE	NE	NE
	2L GWQS (µg/L)		420	4,200	42,000	210
USTA12-MW01	USTA12-MW01	11/1/2007	<100	<200	<100	<200

All results in micrograms per liter (µg/L).
NE = None Established
< = Less than method detection limit (MDL)
Bold results indicate concentrations above 2L GWQS or GCL.
GCL = Gross Contaminant Level
2L GWQS = NCAC T15A:02L Groundwater Quality Standards

APPENDICES

APPENDIX A

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



NON RESIDENTIAL WELL CONSTRUCTION RECORD

North Carolina Department of Environment and Natural Resources - Division of Water Quality

WELL CONTRACTOR CERTIFICATION #: 2799

1. WELL CONTRACTOR:

John E. Wood, III

Well Contractor (Individual) Name

CATLIN Engineers and Scientists

Well Contractor Company Name

STREET ADDRESS 220 Old Dairy Road

Wilmington North Carolina 28405

City or Town State Zip Code

(910) - 452-5861

Area code - Phone number

2. WELL INFORMATION

SITE WELL ID #(if applicable): USTA12-MW01

STATE WELL PERMIT #(if applicable): N/A

DWQ or OTHER PERMIT # (if applicable): N/A

WELL USE (Check Applicable Box): Monitoring ☒ Municipal/Public ☐

Industrial/Commercial ☐ Agricultural ☐ Recovery ☐ Injection ☐

Irrigation ☐ Other ☐ (list use):

DATE DRILLED: 10/31/2007

TIME COMPLETED: 13:00 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Camp Lejeune COUNTY: Onslow

Courthouse Rd. MCB Camp Lejeune, NC,

(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING

Slope ☐ Valley ☐ Flat ☒ Ridge ☐ Other: _____

NORTHING: 382,990.9

EASTING: 282,408.0

UTM NAD83 (m)

May be in degrees,
minutes, seconds, or
in a decimal format

Latitude/longitude source: ☒ GPS ☐ Topo. map

(Location of well must be shown on a USGS topo map and
attached to this form if not using a GPS.)

4. FACILITY - is the name of the business where the well is located.

FACILITY ID #(if applicable) N/A

NAME OF FACILITY:

STREET ADDRESS: Courthouse Rd. MCB Camp Lejeune

Camp Lejeune NC
City or Town State Zip Code

CONTACT PERSON: Mr. Andrew Smith

STREET ADDRESS: Attn: I&E/ EMD/ EQB/ PSC Box 20004

Camp Lejeune NC 28542-0004

City or Town State Zip Code

(910)- 451-9017

Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 11

b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒

c. WATER LEVEL Below Top of Casing: 4 FT.

(Use "+" if Above Top of Casing)

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 0 To 1 ft. 2" Sch. 40 PVC

From _____ To _____ ft. " " "

From _____ To _____ ft. " " "

7. GROUT:

Depth Material Method
From 0 To 1 Ft. Portland Cement

From _____ To _____ Ft. " " "

From _____ To _____ Ft. " " "

8. SCREEN:

Depth Diameter Slot Size Material
From 1 To 11 Ft. 2 in. Slot .010 in. PVC

From _____ To _____ Ft. in. in. in.

From _____ To _____ Ft. in. in. in.

9. SAND/GRAVEL PACK:

Depth Size Material
From 1 To 11 Ft. #2 Medium Torpedo Sand

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.

John Wood

SIGNATURE OF CERTIFIED WELL CONTRACTOR

DATE

John E. Wood, III

PRINTED NAME OF PERSON CONSTRUCTING THE WELL

WELL LOG

CATLIN
ENGINEERS and SCIENTISTS
207-048
Wilmington, NC

SHEET 1 OF 1

PROJECT NO.: 207-048 STATE: NC COUNTY: Onslow LOCATION: Camp Lejeune
PROJECT NAME: Former CERCLA Site USTA12 LOGGED BY: Steve Tyler WELL ID: USTA12-MW01
DRILLER: John Wood
NORTHING: 382990.9 EASTING: 282408.0 CREW: Bill Miller
SYSTEM: UTM NAD83 (m) BORING LOCATION: Bldg. A12 T.O.C. ELEV.:
DRILL MACHINE: D-50 METHOD: H.S. Augers 0 HOUR DTW: 6.0 TOTAL DEPTH: 11.0
START DATE: 10/31/07 FINISH DATE: 10/31/07 24 HOUR DTW: 4.0 WELL DEPTH: 11.0

DEPTH	BLOW COUNT				OVA (ppm)	LAB.	U S C S	L O G	DEPTH	SOIL AND ROCK DESCRIPTION	WELL DETAIL
	6in	6in	6in	6in							
0.0									0.0	LAND SURFACE	0.0
1.0	P	U	S	H	NA		SM		1.0	Olive fine SAND w/ some SILTS. Dry.	0.0 1.0 2" Sct. 40 PVC
2.0	P	U	S	H	0		SM		2.0	Same as above	
3.5	P	U	S	H	0		SM		3.5	S.A.A.	
	2	3	3		0.4	(3.5-5)	SM		5.0	S.A.A. except loose.	
8.5									8.5		2" Sct. 010 Sct. 40 PVC
	P	U	S	H	1.2		SM		10.0	Light gray fine SAND w/ SILTS. Wet.	
										Boring Terminated at Depth 11.0 ft Fine SAND w/ SILTS	11.0 11.0

CATLIN BORING LOG 207-048 LEJUNE 1SAS USTA-12.GPJ TEST.GDT 12/1/07



Portland Cement



#2 Medium Sand

APPENDIX B

CATLIN STANDARD METHODS OF INVESTIGATION

CATLIN STANDARD METHODS OF INVESTIGATION

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, isopaths, 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 C

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



Mr. Jason Cook
Richard Catlin & Associates
P.O. Box 10279
Wilmington NC 28404-0279

Report Number: G128-2059

Client Project: USTA 12

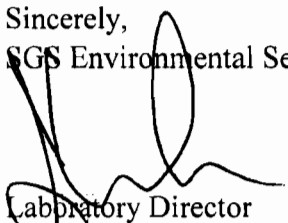
Dear Mr. Cook:

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

Thank you for using SGS Environmental Services for your analytical services. We look forward to working with you again on any additional analytical needs which you may have.

Sincerely,
SGS Environmental Services, Inc.


Laboratory Director
J. Patrick Weaver

11/15/2007
Date



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.

**Results for Semivolatiles
by GCMS 625**

Client Sample ID: USTA12 MW01
Client Project ID: USTA 12
Lab Sample ID: G128-2059-1H
Lab Project ID: G128-2059

Analyzed By: DES
Date Collected: 11/1/2007 12:30
Date Received: 11/1/2007
Date Extracted: 11/6/2007
Matrix: Water

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	5.70	10.0	1.22	1	11/13/2007	J
Acenaphthylene	BQL	10.0	1.12	1	11/13/2007	
Anthracene	BQL	10.0	1.75	1	11/13/2007	
Benzo[a]anthracene	BQL	10.0	1.36	1	11/13/2007	
Benzo[a]pyrene	BQL	10.0	1.27	1	11/13/2007	
Benzo[b]fluoranthene	BQL	10.0	1.43	1	11/13/2007	
Benzo[g,h,i]perylene	BQL	10.0	4.57	1	11/13/2007	
Benzo[k]fluoranthene	BQL	10.0	1.09	1	11/13/2007	
Bis(2-chloroethoxy)methane	BQL	10.0	1.11	1	11/13/2007	
Bis(2-chloroethyl)ether	BQL	10.0	1.09	1	11/13/2007	
Bis(2-chloroisopropyl)ether	BQL	10.0	1.57	1	11/13/2007	
Bis(2-ethylhexyl)phthalate	BQL	10.0	1.33	1	11/13/2007	
4-bromophenyl phenyl ether	BQL	10.0	1.99	1	11/13/2007	
Butylbenzylphthalate	BQL	10.0	1.53	1	11/13/2007	
2-Chloronaphthalene	BQL	10.0	1.25	1	11/13/2007	
2-Chlorophenol	BQL	10.0	4.22	1	11/13/2007	
4-Chloro-3-methylphenol	BQL	10.0	3.26	1	11/13/2007	
4-Chlorophenyl phenyl ether	BQL	10.0	1.42	1	11/13/2007	
Chrysene	BQL	10.0	1.11	1	11/13/2007	
Dibenzo[a,h]anthracene	BQL	10.0	4.87	1	11/13/2007	
Di-n-Butylphthalate	BQL	10.0	1.65	1	11/13/2007	
3,3'-Dichlorobenzidine	BQL	20.0	4.10	1	11/13/2007	
2,4-Dichlorophenol	BQL	10.0	3.75	1	11/13/2007	
Diethylphthalate	BQL	10.0	1.48	1	11/13/2007	
Dimethylphthalate	BQL	10.0	1.04	1	11/13/2007	
2,4-Dimethylphenol	BQL	10.0	9.25	1	11/13/2007	
Di-n-octylphthalate	BQL	10.0	1.16	1	11/13/2007	
4,6-Dinitro-2-methylphenol	BQL	50.0	3.71	1	11/13/2007	
2,4-Dinitrophenol	BQL	50.0	4.20	1	11/13/2007	
2,4-Dinitrotoluene	BQL	10.0	1.52	1	11/13/2007	
2,6-Dinitrotoluene	BQL	10.0	1.41	1	11/13/2007	
Diphenylamine *	BQL	10.0	1.53	1	11/13/2007	
Fluoranthene	BQL	10.0	1.41	1	11/13/2007	
Fluorene	BQL	10.0	1.22	1	11/13/2007	
Hexachlorobenzene	BQL	10.0	1.22	1	11/13/2007	
Hexachlorobutadiene	BQL	10.0	1.58	1	11/13/2007	
Hexachlorocyclopentadiene	BQL	20.0	20.0	1	11/13/2007	
Hexachloroethane	BQL	10.0	1.58	1	11/13/2007	
Indeno(1,2,3-c,d)pyrene	BQL	10.0	4.57	1	11/13/2007	
Isophorone	BQL	10.0	1.27	1	11/13/2007	
Naphthalene	BQL	10.0	1.08	1	11/13/2007	
Nitrobenzene	BQL	10.0	1.32	1	11/13/2007	
2-Nitrophenol	BQL	10.0	3.52	1	11/13/2007	
4-Nitrophenol	BQL	50.0	3.17	1	11/13/2007	
N-Nitrosodi-n-propylamine	BQL	10.0	1.87	1	11/13/2007	
Pentachlorophenol	BQL	50.0	2.83	1	11/13/2007	
Phenanthrene	BQL	10.0	1.38	1	11/13/2007	

**Results for Semivolatiles
by GCMS 625**

Client Sample ID: USTA12 MW01
Client Project ID: USTA 12
Lab Sample ID: G128-2059-1H
Lab Project ID: G128-2059

Analyzed By: DES
Date Collected: 11/1/2007 12:30
Date Received: 11/1/2007
Date Extracted: 11/6/2007
Matrix: Water

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Phenol	BQL	10.0	3.38	1	11/13/2007	
Pyrene	BQL	10.0	2.08	1	11/13/2007	
1,2,4-Trichlorobenzene	BQL	10.0	1.33	1	11/13/2007	
2,4,6-Trichlorophenol	BQL	10.0	2.92	1	11/13/2007	
		Spike Added	Spike Result	Percent Recovered		
2-Fluorobiphenyl		10	7.2	72		
2-Fluorophenol		10	6.6	66		
Nitrobenzene-d5		10	6.9	69		
Phenol-d6		10	7.1	71		
2,4,6-Tribromophenol		10	7.6	76		
4-Terphenyl-d14		10	7.6	76		

Comments:

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

Flags:

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: 

**Results of Library Search for Semivolatile Compounds**
by GCMS

Client Sample ID: USTA12 MW01
Client Project ID: USTA 12
Lab Sample ID: G128-2059-1H
Lab Project ID: G128-2059
Sample Wt/Vol: 500 ML
Dilution: 1

Analyzed By: DES
Date Collected: 11/1/2007 12:30
Date Received: 11/1/2007
Date Extracted: 11/6/2007
Date Analyzed: 11/12/2007
Matrix: Water

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/L)
1	Unknown	12.23			19.2
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: 

**Results for Volatiles**

by GC 602

Client Sample ID: USTA12 MW01

Analyzed By: RSB

Client Project ID: USTA 12

Date Collected: 11/1/2007 12:30

Lab Sample ID: G128-2059-1B

Date Received: 11/1/2007

Lab Project ID: G128-2059

Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.183	1	11/10/2007	
Diisopropyl ether (DIPE)	BQL	1.00	0.229	1	11/10/2007	
Ethylbenzene	BQL	1.00	0.181	1	11/10/2007	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.359	1	11/10/2007	
Toluene	BQL	1.00	0.157	1	11/10/2007	
m/p-Xylene	BQL	2.00	0.481	1	11/10/2007	
o-Xylene	BQL	2.00	0.584	1	11/10/2007	

Surrogate Spike Recoveries

	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	41.0	102

Comments:

All values corrected for dilution.

BQL = Below quantitation limit.

**Results for Volatiles**

by GC 602

Client Sample ID: USTA12 DW01

Analyzed By: RSB

Client Project ID: USTA 12

Date Collected: 11/1/2007 12:10

Lab Sample ID: G128-2059-2B

Date Received: 11/1/2007

Lab Project ID: G128-2059

Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.183	1	11/10/2007	
Diisopropyl ether (DIPE)	BQL	1.00	0.229	1	11/10/2007	
Ethylbenzene	BQL	1.00	0.181	1	11/10/2007	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.359	1	11/10/2007	
Toluene	BQL	1.00	0.157	1	11/10/2007	
m/p-Xylene	BQL	2.00	0.481	1	11/10/2007	
o-Xylene	BQL	2.00	0.584	1	11/10/2007	

Surrogate Spike Recoveries

	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	40.6	102

Comments:

All values corrected for dilution.

BQL = Below quantitation limit.

**VPH (Aliphatics/Aromatics) Laboratory Reporting Form**Client Name: Richard Catlin & AssociatesProject Name: USTA 12

Sample Information	
Sample Identification	USTA12 MW01
Sample Matrix	Water
Collection Option (for Soil)*	NA
Date Collected	11/01/07
Date Received	11/01/07
Date Extracted	11/09/07 04:51 - 11/09/07 04:51
Date Analyzed	11/09/07 04:51 - 11/09/07 04:51
Dry Weight	NA
Dilution Factor	1 - 1

Analytical Results				
Analyte	Result µg/L	Report Limit µg/L	Flags	
C ₅ -C ₈ Aliphatics**	BQL	100		
C ₉ -C ₁₂ Aliphatics**	BQL	100		
C ₉ -C ₁₀ Aromatics**	BQL	100		
		Percent Recovery	Flags	Limits Lower Upper
Surrogate % Recovery - PID		103		70 130
Surrogate % Recovery - FID		95.2		70 130

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

** = Excludes any surrogates or internal standards and are unadjusted for individual analytes.

Lab Info: g128-2059-1d	Lab Info: g128-2059-1d
FID Info: VP110807/046F0101.D	PID Info: VP110807/046R0101.D

Reviewed By: 

**VPH (Aliphatics/Aromatics) Laboratory Reporting Form**Client Name: Richard Catlin & AssociatesProject Name: USTA 12

Sample Information	
Sample Identification	USTA12 MW01 (3.5-5)
Sample Matrix	Soil
Collection Option (for Soil)*	2
Date Collected	10/31/07
Date Received	11/01/07
Date Extracted	11/05/07
Date Analyzed	11/09/07 11:16 - 11/09/07 11:16
Dry Weight	87.3
Dilution Factor	1 - 1

Analytical Results				
Analyte	Result mg/Kg	Report Limit mg/Kg	Flags	
C ₅ -C ₈ Aliphatics**	BQL	10.0		
C ₉ -C ₁₂ Aliphatics**	BQL	10.0		
C ₉ -C ₁₀ Aromatics**	BQL	10.0		
		Percent Recovery	Flags	Limits Lower Upper
Surrogate % Recovery - PID		84.9		70 130
Surrogate % Recovery - FID		80.4		70 130

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

** = Excludes any surrogates or internal standards and are unadjusted for individual analytes.

Lab Info: g128-2059-3e	Lab Info: g128-2059-3e
FID Info: VP110907/007F0101.D	PID Info: VP110907/007R0101.D

Reviewed By: 



Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 11/06/07PID Initial Calibration Date: 11/06/07

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C ₅ -C ₈ Aliphatics	33.1	0.265	105	0.842	100	10
C ₉ -C ₁₂ Aliphatics	30.9	0.247	98.3	0.786	100	10
C ₉ -C ₁₀ Aromatics	27.7	0.222	88.1	0.705	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD if CF r if LR	Method of Quantitation
C ₅ -C ₈ Aliphatics	10	0.8	5.12	Calibration Factor
	250	20		
	500	40		
	750	60		
	1000	80		
C ₉ -C ₁₂ Aliphatics	10	0.8	1.00	Linear Regression
	250	20		
	500	40		
	750	60		
	1000	80		
C ₉ -C ₁₀ Aromatics	10	0.8	20.79	Calibration Factor
	250	20		
	500	40		
	750	60		
	1000	80		

Calibration Check Date: 11/09/07Filename: VP110907/051F0101.d

Calibration Check

Range	Levels		%Difference if CF %Drift if LR	Limits
	(µg/L)	(mg/Kg)		
C ₅ -C ₈ Aliphatics	500	4	-0.3	±25%
C ₉ -C ₁₂ Aliphatics	500	4	12.9	±25%
C ₉ -C ₁₀ Aromatics	500	4	18.1	±25%

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: 11/06/07

PID Initial Calibration Date: 11/06/07

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C ₅ -C ₈ Aliphatics	33.1	0.265	105	0.842	100	10
C ₉ -C ₁₂ Aliphatics	30.9	0.247	98.3	0.786	100	10
C ₉ -C ₁₀ Aromatics	27.7	0.222	88.1	0.705	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD if CF r if LR	Method of Quantitation
C ₅ -C ₈ Aliphatics	10	0.8	5.12	Calibration Factor
	250	20		
	500	40		
	750	60		
	1000	80		
C ₉ -C ₁₂ Aliphatics	10	0.8	1.00	Linear Regression
	250	20		
	500	40		
	750	60		
	1000	80		
C ₉ -C ₁₀ Aromatics	10	0.8	20.79	Calibration Factor
	250	20		
	500	40		
	750	60		
	1000	80		

Calibration Check Date: 11/08/07

Filename: VP110807/037F0101.d

Calibration Check

Range	Levels		%Difference if CF %Drift if LR	Limits
	(µg/L)	(mg/Kg)		
C ₅ -C ₈ Aliphatics	500	4	2.3	±25%
C ₉ -C ₁₂ Aliphatics	500	4	5.2	±25%
C ₉ -C ₁₀ Aromatics	500	4	3.2	±25%

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 (Aliphatics/Aromatics) Laboratory Reporting Form**Client Name: Richard Catlin & AssociatesProject Name: USTA 12

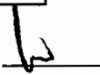
Sample Information	
Sample Identification	USTA12 MW01
Sample Matrix	Water
Date Collected	11/01/07
Date Received	11/01/07
Date Extracted	11/09/07
Date Analyzed	11/15/07 07:34 - 11/15/07 08:03
Dry Weight	NA
Dilution Factor	1 - 1
Initial Volume (mL)	500
Final Volume (mL)	5.0

Analytical Results			
Analytes**	Result µg/L	Report Limit µg/L	Flags
C9-C18 Aliphatics	BQL	100	
C19-C36 Aliphatics	BQL	100	
C11-C22 Aromatics	BQL	100	

Surrogates	Percent Recovery	Flags	Limits	
			Lower	Upper
Aliphatic (chloro-octadecane)	53.5		40	140
Aromatic (ortho-terphenyl)	79.1		40	140
Fractionation 1 (2-bromonaphthalene)	77.3		40	140
Fractionation 2 (2-fluorobiphenyl)	76.8		40	140

** = Excludes any surrogates or internal standards and are unadjusted for individual analytes.

Lab Info: G128-2059-1I	Lab Info: G128-2059-1I
Aliphatic: EP111407/050F4801.D	Aromatic: EP111407/081F4901.D

Reviewed By: 

**EPH (Aliphatics/Aromatics) Laboratory Reporting Form**Client Name: Richard Catlin & AssociatesProject Name: USTA 12

Sample Information	
Sample Identification	USTA12 MW01 (3.5-5)
Sample Matrix	Soil
Date Collected	10/31/07
Date Received	11/01/07
Date Extracted	11/05/07
Date Analyzed	11/08/07 17:45 - 11/08/07 18:14
Dry Weight	87.3
Dilution Factor	1 - 1
Initial weight (g)	14.15
Final Volume (mL)	10.0

Analytical Results			
Analytes**	Result mg/Kg	Report Limit mg/Kg	Flags
C9-C18 Aliphatics	BQL	10.0	
C19-C36 Aliphatics	BQL	10.0	
C11-C22 Aromatics	BQL	10.0	

Surrogates	Percent Recovery	Flags	Limits	
			Lower	Upper
Aliphatic (chloro-octadecane)	74.9		40	140
Aromatic (ortho-terphenyl)	42.6		40	140
Fractionation 1 (2-bromonaphthalene)	41.9		40	140
Fractionation 2 (2-fluorobiphenyl)	42.9		40	140

** = Excludes any surrogates or internal standards and are unadjusted for individual analytes.

Lab Info: G128-2059-3G	Lab Info: G128-2059-3G
Aliphatic: EP110807/017F1501.D	Aromatic: EP110807/018F1601.D

Reviewed By: hw



Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 10/25/07

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(10/17/06) (µg/L)	(10/17/06) (mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C9-C18 Aliphatics	28.1	0.847	89	2.69	100	10
C19-C36 Aliphatics	36.5	1.17	116	3.72	100	10
C11-C22 Aromatics	27.6	9.47	87.8	30.1	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD if CF r if LR	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	400	12.5	16.84	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		
C ₁₉ -C ₃₆ Aliphatics	400	12.5	9.14	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		
C ₁₁ -C ₂₂ Aromatics	400	12.5	2.74	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		

Calibration Check Date: 11/08/07
11/08/07Filenames: ep110807/001f0101.d
ep110807/002f0201.d

Calibration Check

Range	Levels		%Difference if CF %Drift if LR	Limits
	(µg/L)	(mg/Kg)		
C9-C18 Aliphatics	200	6.25	1.1	≤±25%
C19-C36 Aliphatics	200	6.25	2.9	≤±25%
C11-C22 Aromatics	200	6.25	-0.5	≤±25%

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 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 10/25/07

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(10/17/06) (µg/L)	(10/17/06) (mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C9-C18 Aliphatics	28.1	0.847	89	2.69	100	10
C19-C36 Aliphatics	36.5	1.17	116	3.72	100	10
C11-C22 Aromatics	27.6	9.47	87.8	30.1	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD if CF r if LR	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	400	12.5	16.84	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		
C ₁₉ -C ₃₆ Aliphatics	400	12.5	9.14	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		
C ₁₁ -C ₂₂ Aromatics	400	12.5	2.74	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		

Calibration Check Date: 11/08/07
11/09/07

Filenames: ep110807/099f4701.d
ep110807/100f4801.d

Calibration Check

Range	Levels (mg/Kg)	(µg/L)	%Difference if CF %Drift if LR	Limits
C9-C18 Aliphatics	200	6.25	10.7	±25%
C19-C36 Aliphatics	200	6.25	14.0	±25%
C11-C22 Aromatics	200	6.25	3.6	±25%

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 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 10/25/07

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(10/17/06) (µg/L)	(10/17/06) (mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C9-C18 Aliphatics	28.1	0.847	89	2.69	100	10
C19-C36 Aliphatics	36.5	1.17	116	3.72	100	10
C11-C22 Aromatics	27.6	9.47	87.8	30.1	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD if CF r if LR	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	400	12.5	16.84	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		
C ₁₉ -C ₃₆ Aliphatics	400	12.5	9.14	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		
C ₁₁ -C ₂₂ Aromatics	400	12.5	2.74	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		

Calibration Check Date: 11/14/07 Filenames: ep111407/045F4301.d
11/15/07 ep111407/046F4401.d

Calibration Check

Range	Levels (µg/L) (mg/Kg)	%Difference if CF %Drift if LR	Limits
C9-C18 Aliphatics	200 6.25	6.5	±25%
C19-C36 Aliphatics	200 6.25	8.0	±25%
C11-C22 Aromatics	200 6.25	11.9	±25%

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 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 10/25/07

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(10/17/06) (µg/L)	(10/17/06) (mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C9-C18 Aliphatics	28.1	0.847	89	2.69	100	10
C19-C36 Aliphatics	36.5	1.17	116	3.72	100	10
C11-C22 Aromatics	27.6	9.47	87.8	30.1	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD if CF r if LR	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	400	12.5	16.84	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		
C ₁₉ -C ₃₆ Aliphatics	400	12.5	9.14	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		
C ₁₁ -C ₂₂ Aromatics	400	12.5	2.74	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		

Calibration Check Date: 11/14/07
11/15/07

Filenames: ep111407/097F6501.d
ep111407/098F6601.d

Calibration Check

Range	Levels		%Difference if CF %Drift if LR	Limits
	(mg/Kg)	(µg/L)		
C9-C18 Aliphatics	200	6.25	-0.9	±25%
C19-C36 Aliphatics	200	6.25	3.2	±25%
C11-C22 Aromatics	200	6.25	1.3	±25%

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: USTA12 MW01 (3.5-5)

Analyzed By: MJC

Client Project ID: USTA 12

Date Collected: 10-31-2007 13:10

Lab Sample ID G128-2059-3A

Date Received: 11/1/2007

Lab Project ID: G128-2059

Matrix: Soil

Report Basis: Dry Weight

Sample Amount: 5.32 g

%Solids: 87.3

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
Acetone	0.125	0.0537	0.00742	1	11/8/2007	
Benzene	BQL	0.00537	0.00115	1	11/8/2007	
Bromobenzene	BQL	0.00537	0.00111	1	11/8/2007	
Bromochloromethane	BQL	0.00537	0.00185	1	11/8/2007	
Bromodichloromethane	BQL	0.00537	0.00107	1	11/8/2007	
Bromoform	BQL	0.00537	0.00107	1	11/8/2007	
Bromomethane	BQL	0.00537	0.00113	1	11/8/2007	
2-Butanone	0.0253	0.0269	0.00583	1	11/8/2007	J
n-Butylbenzene	BQL	0.00537	0.00103	1	11/8/2007	
sec-Butylbenzene	BQL	0.00537	0.00109	1	11/8/2007	
tert-Butylbenzene	BQL	0.00537	0.00120	1	11/8/2007	
Carbon disulfide	BQL	0.00537	0.00288	1	11/8/2007	
Carbon tetrachloride	BQL	0.00537	0.00110	1	11/8/2007	
Chlorobenzene	BQL	0.00537	0.00128	1	11/8/2007	
Chloroethane	BQL	0.00537	0.00171	1	11/8/2007	
Chloroform	BQL	0.00537	0.00129	1	11/8/2007	
Chloromethane	BQL	0.00537	0.00121	1	11/8/2007	
2-Chlorotoluene	BQL	0.00537	0.00109	1	11/8/2007	
4-Chlorotoluene	BQL	0.00537	0.00134	1	11/8/2007	
Dibromochloromethane	BQL	0.00537	0.00148	1	11/8/2007	
1,2-Dibromo-3-chloropropane	BQL	0.00537	0.00156	1	11/8/2007	
Dibromomethane	BQL	0.00537	0.00162	1	11/8/2007	
1,2-Dibromoethane (EDB)	BQL	0.00537	0.00121	1	11/8/2007	
1,2-Dichlorobenzene	BQL	0.00537	0.00139	1	11/8/2007	
1,3-Dichlorobenzene	BQL	0.00537	0.00138	1	11/8/2007	
1,4-Dichlorobenzene	BQL	0.00537	0.00113	1	11/8/2007	
trans-1,4-Dichloro-2-butene	BQL	0.00537	0.00148	1	11/8/2007	
1,1-Dichloroethane	BQL	0.00537	0.00114	1	11/8/2007	
1,1-Dichloroethene	BQL	0.00537	0.00159	1	11/8/2007	
1,2-Dichloroethane	BQL	0.00537	0.00142	1	11/8/2007	
cis-1,2-Dichloroethene	BQL	0.00537	0.00138	1	11/8/2007	
trans-1,2-dichloroethene	BQL	0.00537	0.00121	1	11/8/2007	
1,2-Dichloropropane	BQL	0.00537	0.00127	1	11/8/2007	
1,3-Dichloropropane	BQL	0.00537	0.00120	1	11/8/2007	
2,2-Dichloropropane	BQL	0.00537	0.00129	1	11/8/2007	
1,1-Dichloropropene	BQL	0.00537	0.00169	1	11/8/2007	
cis-1,3-Dichloropropene	BQL	0.00537	0.00090	1	11/8/2007	
trans-1,3-Dichloropropene	BQL	0.00537	0.00103	1	11/8/2007	
Dichlorodifluoromethane	BQL	0.00537	0.00142	1	11/8/2007	
Diisopropyl ether (DIPE)	BQL	0.00537	0.00121	1	11/8/2007	
Ethylbenzene	BQL	0.00537	0.00093	1	11/8/2007	
Hexachlorobutadiene	BQL	0.00537	0.00105	1	11/8/2007	

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: USTA12 MW01 (3.5-5)

Analyzed By: MJC

Client Project ID: USTA 12

Date Collected: 10-31-2007 13:10

Lab Sample ID G128-2059-3A

Date Received: 11/1/2007

Lab Project ID: G128-2059

Matrix: Soil

Report Basis: Dry Weight

Sample Amount: 5.32 g

%Solids: 87.3

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
2-Hexanone	BQL	0.00537	0.00348	1	11/8/2007	
Iodomethane	BQL	0.00537	0.00116	1	11/8/2007	
Isopropylbenzene	BQL	0.00537	0.00095	1	11/8/2007	
4-Isopropyltoluene	BQL	0.00537	0.00115	1	11/8/2007	
Methylene chloride	BQL	0.0215	0.00128	1	11/8/2007	
4-Methyl-2-pentanone	BQL	0.00537	0.00497	1	11/8/2007	
Methyl-tert-butyl ether (MTBE)	BQL	0.00537	0.00119	1	11/8/2007	
Naphthalene	0.00313	0.00537	0.00091	1	11/8/2007	J
n-Propyl benzene	BQL	0.00537	0.00135	1	11/8/2007	
Styrene	BQL	0.00537	0.00118	1	11/8/2007	
1,1,1,2-Tetrachloroethane	BQL	0.00537	0.00110	1	11/8/2007	
1,1,2,2-Tetrachloroethane	BQL	0.00537	0.00121	1	11/8/2007	
Tetrachloroethene	BQL	0.00537	0.00098	1	11/8/2007	
Toluene	BQL	0.00537	0.00107	1	11/8/2007	
1,2,3-Trichlorobenzene	BQL	0.00537	0.00112	1	11/8/2007	
1,2,4-Trichlorobenzene	BQL	0.00537	0.00111	1	11/8/2007	
Trichloroethene	BQL	0.00537	0.00102	1	11/8/2007	
1,1,1-Trichloroethane	BQL	0.00537	0.00121	1	11/8/2007	
1,1,2-Trichloroethane	BQL	0.00537	0.00176	1	11/8/2007	
Trichlorofluoromethane	BQL	0.00537	0.00111	1	11/8/2007	
1,2,3-Trichloropropane	BQL	0.00537	0.00133	1	11/8/2007	
1,2,4-Trimethylbenzene	BQL	0.00537	0.00135	1	11/8/2007	
1,3,5-Trimethylbenzene	BQL	0.00537	0.00122	1	11/8/2007	
Vinyl chloride	BQL	0.00537	0.00146	1	11/8/2007	
m-,p-Xylene	BQL	0.0107	0.00206	1	11/8/2007	
o-Xylene	BQL	0.00537	0.00104	1	11/8/2007	
		Spike Added	Spike Result	Percent Recovered		
1,2-Dichloroethane-d4		0.05	0.0617	123		
Toluene-d8		0.05	0.048	96		
4-Bromofluorobenzene		0.05	0.0478	96		

Comments:**Flags:**

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: 

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: USTA12 DW01 (3.5-5)

Client Project ID: USTA 12

Lab Sample ID G128-2059-4A

Lab Project ID: G128-2059

Report Basis: Dry Weight

Analyzed By: MJC

Date Collected: 10-31-2007 13:40

Date Received: 11/1/2007

Matrix: Soil

Sample Amount: 5.71 g

%Solids: 100.0

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
Acetone	0.104	0.0438	0.00605	1	11/8/2007	
Benzene	BQL	0.00438	0.00094	1	11/8/2007	
Bromobenzene	BQL	0.00438	0.00090	1	11/8/2007	
Bromochloromethane	BQL	0.00438	0.00151	1	11/8/2007	
Bromodichloromethane	BQL	0.00438	0.00087	1	11/8/2007	
Bromoform	BQL	0.00438	0.00088	1	11/8/2007	
Bromomethane	BQL	0.00438	0.00092	1	11/8/2007	
2-Butanone	0.0151	0.0219	0.00475	1	11/8/2007	J
n-Butylbenzene	BQL	0.00438	0.00084	1	11/8/2007	
sec-Butylbenzene	BQL	0.00438	0.00088	1	11/8/2007	
tert-Butylbenzene	BQL	0.00438	0.00098	1	11/8/2007	
Carbon disulfide	BQL	0.00438	0.00235	1	11/8/2007	
Carbon tetrachloride	BQL	0.00438	0.00089	1	11/8/2007	
Chlorobenzene	BQL	0.00438	0.00104	1	11/8/2007	
Chloroethane	BQL	0.00438	0.00139	1	11/8/2007	
Chloroform	BQL	0.00438	0.00105	1	11/8/2007	
Chloromethane	BQL	0.00438	0.00099	1	11/8/2007	
2-Chlorotoluene	BQL	0.00438	0.00088	1	11/8/2007	
4-Chlorotoluene	BQL	0.00438	0.00109	1	11/8/2007	
Dibromochloromethane	BQL	0.00438	0.00121	1	11/8/2007	
1,2-Dibromo-3-chloropropane	BQL	0.00438	0.00127	1	11/8/2007	
Dibromomethane	BQL	0.00438	0.00132	1	11/8/2007	
1,2-Dibromoethane (EDB)	BQL	0.00438	0.00099	1	11/8/2007	
1,2-Dichlorobenzene	BQL	0.00438	0.00113	1	11/8/2007	
1,3-Dichlorobenzene	BQL	0.00438	0.00112	1	11/8/2007	
1,4-Dichlorobenzene	BQL	0.00438	0.00092	1	11/8/2007	
trans-1,4-Dichloro-2-butene	BQL	0.00438	0.00121	1	11/8/2007	
1,1-Dichloroethane	BQL	0.00438	0.00093	1	11/8/2007	
1,1-Dichloroethene	BQL	0.00438	0.00130	1	11/8/2007	
1,2-Dichloroethane	BQL	0.00438	0.00116	1	11/8/2007	
cis-1,2-Dichloroethene	BQL	0.00438	0.00112	1	11/8/2007	
trans-1,2-dichloroethene	BQL	0.00438	0.00099	1	11/8/2007	
1,2-Dichloropropane	BQL	0.00438	0.00103	1	11/8/2007	
1,3-Dichloropropane	BQL	0.00438	0.00098	1	11/8/2007	
2,2-Dichloropropane	BQL	0.00438	0.00105	1	11/8/2007	
1,1-Dichloropropene	BQL	0.00438	0.00137	1	11/8/2007	
cis-1,3-Dichloropropene	BQL	0.00438	0.00073	1	11/8/2007	
trans-1,3-Dichloropropene	BQL	0.00438	0.00084	1	11/8/2007	
Dichlorodifluoromethane	BQL	0.00438	0.00116	1	11/8/2007	
Diisopropyl ether (DIPE)	BQL	0.00438	0.00099	1	11/8/2007	
Ethylbenzene	BQL	0.00438	0.00076	1	11/8/2007	
Hexachlorobutadiene	BQL	0.00438	0.00085	1	11/8/2007	

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: USTA12 DW01 (3.5-5)
Client Project ID: USTA 12
Lab Sample ID G128-2059-4A
Lab Project ID: G128-2059
Report Basis: Dry Weight

Analyzed By: MJC
Date Collected: 10-31-2007 13:40
Date Received: 11/1/2007
Matrix: Soil
Sample Amount: 5.71 g
%Solids: 100.0

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
2-Hexanone	BQL	0.00438	0.00284	1	11/8/2007	
Iodomethane	BQL	0.00438	0.00095	1	11/8/2007	
Isopropylbenzene	BQL	0.00438	0.00078	1	11/8/2007	
4-Isopropyltoluene	BQL	0.00438	0.00094	1	11/8/2007	
Methylene chloride	BQL	0.0175	0.00104	1	11/8/2007	
4-Methyl-2-pentanone	BQL	0.00438	0.00405	1	11/8/2007	
Methyl-tert-butyl ether (MTBE)	BQL	0.00438	0.00097	1	11/8/2007	
Naphthalene	0.00252	0.00438	0.00074	1	11/8/2007	J
n-Propyl benzene	BQL	0.00438	0.00110	1	11/8/2007	
Styrene	BQL	0.00438	0.00096	1	11/8/2007	
1,1,1,2-Tetrachloroethane	BQL	0.00438	0.00089	1	11/8/2007	
1,1,2,2-Tetrachloroethane	BQL	0.00438	0.00099	1	11/8/2007	
Tetrachloroethene	BQL	0.00438	0.00080	1	11/8/2007	
Toluene	BQL	0.00438	0.00087	1	11/8/2007	
1,2,3-Trichlorobenzene	BQL	0.00438	0.00091	1	11/8/2007	
1,2,4-Trichlorobenzene	BQL	0.00438	0.00090	1	11/8/2007	
Trichloroethene	BQL	0.00438	0.00084	1	11/8/2007	
1,1,1-Trichloroethane	BQL	0.00438	0.00099	1	11/8/2007	
1,1,2-Trichloroethane	BQL	0.00438	0.00144	1	11/8/2007	
Trichlorofluoromethane	BQL	0.00438	0.00090	1	11/8/2007	
1,2,3-Trichloropropane	BQL	0.00438	0.00109	1	11/8/2007	
1,2,4-Trimethylbenzene	BQL	0.00438	0.00110	1	11/8/2007	
1,3,5-Trimethylbenzene	BQL	0.00438	0.00100	1	11/8/2007	
Vinyl chloride	BQL	0.00438	0.00119	1	11/8/2007	
m-,p-Xylene	BQL	0.00876	0.00168	1	11/8/2007	
o-Xylene	BQL	0.00438	0.00085	1	11/8/2007	
		Spike Added	Spike Result	Percent Recovered		
1,2-Dichloroethane-d4		0.05	0.0614	123		
Toluene-d8		0.05	0.0481	96		
4-Bromofluorobenzene		0.05	0.0509	102		

Comments:**Flags:**

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: 

**Results for Semivolatiles
by GCMS 8270**

Client Sample ID: USTA12 MW01 (3.5-5)
Client Project ID: USTA 12
Lab Sample ID: G128-2059-3H
Lab Project ID: G128-2059
Report Basis: Dry weight

Analyzed By: DES
Date Collected: 10/31/2007 13:10
Date Received: 11/1/2007
Date Extracted: 11/6/2007
Matrix: Soil
% Solids: 87.32

Compound	Result mg/Kg	RL mg/Kg	MDL mg/Kg	Dilution Factor	Date Analyzed	Flag
Acenaphthene	0.132	0.330	0.047	1	11/7/2007	J
Acenaphthylene	BQL	0.330	0.044	1	11/7/2007	
Anthracene	BQL	0.330	0.048	1	11/7/2007	
Benzo[a]anthracene	0.099	0.330	0.057	1	11/7/2007	J
Benzo[a]pyrene	0.122	0.330	0.051	1	11/7/2007	J
Benzo[b]fluoranthene	0.125	0.330	0.058	1	11/7/2007	J
Benzo[g,h,i]perylene	BQL	0.330	0.090	1	11/7/2007	
Benzo[k]fluoranthene	0.115	0.330	0.064	1	11/7/2007	J
Benzoic Acid	BQL	0.660	0.660	1	11/7/2007	
Bis(2-chloroethoxy)methane	BQL	0.330	0.049	1	11/7/2007	
Bis(2-chloroethyl)ether	BQL	0.330	0.040	1	11/7/2007	
Bis(2-chloroisopropyl)ether	BQL	0.330	0.041	1	11/7/2007	
Bis(2-ethylhexyl)phthalate	BQL	0.330	0.044	1	11/7/2007	
4-bromophenyl phenyl ether	BQL	0.330	0.056	1	11/7/2007	
Butylbenzylphthalate	BQL	0.330	0.051	1	11/7/2007	
2-Chloronaphthalene	BQL	0.330	0.052	1	11/7/2007	
2-Chlorophenol	BQL	0.330	0.103	1	11/7/2007	
4-Chloro-3-methylphenol	BQL	0.330	0.103	1	11/7/2007	
4-Chloroaniline	BQL	1.65	0.251	1	11/7/2007	
4-Chlorophenyl phenyl ether	BQL	0.330	0.049	1	11/7/2007	
Chrysene	0.132	0.330	0.036	1	11/7/2007	J
Dibenzo[a,h]anthracene	BQL	0.330	0.092	1	11/7/2007	
Dibenzofuran	BQL	0.330	0.060	1	11/7/2007	
Di-n-Butylphthalate	BQL	0.330	0.039	1	11/7/2007	
1,2-Dichlorobenzene	BQL	0.330	0.037	1	11/7/2007	
1,3-Dichlorobenzene	BQL	0.330	0.036	1	11/7/2007	
1,4-Dichlorobenzene	BQL	0.330	0.037	1	11/7/2007	
3,3'-Dichlorobenzidine	BQL	0.660	0.083	1	11/7/2007	
2,4-Dichlorophenol	BQL	0.330	0.119	1	11/7/2007	
Diethylphthalate	BQL	0.330	0.043	1	11/7/2007	
Dimethylphthalate	BQL	0.330	0.040	1	11/7/2007	
2,4-Dimethylphenol	BQL	0.330	0.236	1	11/7/2007	
Di-n-octylphthalate	BQL	0.330	0.054	1	11/7/2007	
4,6-Dinitro-2-methylphenol	BQL	1.65	0.194	1	11/7/2007	
2,4-Dinitrophenol	BQL	1.65	0.726	1	11/7/2007	
2,4-Dinitrotoluene	BQL	0.330	0.043	1	11/7/2007	
2,6-Dinitrotoluene	BQL	0.330	0.060	1	11/7/2007	
Diphenylamine *	BQL	0.330	0.032	1	11/7/2007	
Fluoranthene	0.323	0.330	0.046	1	11/7/2007	J
Fluorene	0.112	0.330	0.041	1	11/7/2007	J
Hexachlorobenzene	BQL	0.330	0.051	1	11/7/2007	
Hexachlorobutadiene	BQL	0.330	0.053	1	11/7/2007	
Hexachlorocyclopentadiene	BQL	0.660	0.034	1	11/7/2007	
Hexachloroethane	BQL	0.330	0.030	1	11/7/2007	
Indeno(1,2,3-c,d)pyrene	BQL	0.330	0.084	1	11/7/2007	
Isophorone	BQL	0.330	0.049	1	11/7/2007	
2-Methylnaphthalene	BQL	0.330	0.096	1	11/7/2007	

**Results for Semivolatiles
by GCMS 8270**

Client Sample ID: USTA12 MW01 (3.5-5)
Client Project ID: USTA 12
Lab Sample ID: G128-2059-3H
Lab Project ID: G128-2059
Report Basis: Dry weight

Analyzed By: DES
Date Collected: 10/31/2007 13:10
Date Received: 11/1/2007
Date Extracted: 11/6/2007
Matrix: Soil
% Solids: 87.32

Compound	Result mg/Kg	RL mg/Kg	MDL mg/Kg	Dilution Factor	Date Analyzed	Flag
2-Methylphenol	BQL	0.330	0.116	1	11/7/2007	
3- & 4-Methylphenol	BQL	0.330	0.112	1	11/7/2007	
Naphthalene	BQL	0.330	0.027	1	11/7/2007	
2-Nitroaniline	BQL	0.330	0.052	1	11/7/2007	
3-Nitroaniline	BQL	1.65	0.340	1	11/7/2007	
4-Nitroaniline	BQL	1.65	0.102	1	11/7/2007	
Nitrobenzene	BQL	0.330	0.045	1	11/7/2007	
2-Nitrophenol	BQL	0.330	0.102	1	11/7/2007	
4-Nitrophenol	BQL	1.65	0.091	1	11/7/2007	
N-Nitrosodi-n-propylamine	BQL	0.330	0.042	1	11/7/2007	
Pentachlorophenol	BQL	1.65	0.086	1	11/7/2007	
Phenanthrene	0.261	0.330	0.038	1	11/7/2007	J
Phenol	BQL	0.330	0.090	1	11/7/2007	
Pyrene	0.264	0.330	0.063	1	11/7/2007	J
1,2,4-Trichlorobenzene	BQL	0.330	0.041	1	11/7/2007	
2,4,5-Trichlorophenol	BQL	0.330	0.128	1	11/7/2007	
2,4,6-Trichlorophenol	BQL	0.330	0.117	1	11/7/2007	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	7.3	73
2-Fluorophenol	10	7.9	79
Nitrobenzene-d5	10	7.6	76
Phenol-d6	10	7.6	76
2,4,6-Tribromophenol	10	7.4	74
4-Terphenyl-d14	10	8.1	81

Comments:**Flags:**

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: 

**Results of Library Search for Semivolatile Compounds**
by GCMS

Client Sample ID: USTA12 MW01 (3.5-5)

Client Project ID: USTA 12

Lab Sample ID: G128-2059-3H

Lab Project ID: G128-2059

Sample Wt/Vol: 34.72 g

Dilution: 1

Analyzed By: DES

Date Collected: 10/31/2007 13:10

Date Received: 11/1/2007

Date Extracted: 11/6/2007

Date Analyzed: 11/6/2007

Matrix: Soil

% Solids: 87.3

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/KG)
1	Unknown	17.30			700
2	Unknown	11.03			166
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: 



Mr. Jason Cook
Richard Catlin & Associates
P.O. Box 10279
Wilmington NC 28404-0279

Report Number: G128-2144

Client Project: USTA12

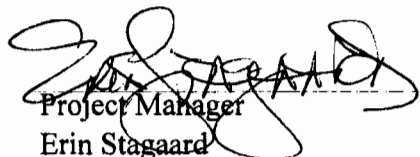
Dear Mr. Cook:

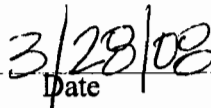
Enclosed are the results of the analytical services performed under the referenced project. The samples are certified to meet the requirements of the National Environmental Laboratory Accreditation Conference Standards. Copies of this report and supporting data will be retained in our files for a period 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 at (910) 350-1903. We will be happy to answer any questions or concerns which you may have.

Thank you for using SGS Environmental Services for your analytical services. We look forward to working with you again on any additional analytical needs which you may have.

Sincerely,
SGS Environmental Services, Inc.


Project Manager
Erin Stagaard


Date



Case Narrative

Catlin Engineers and Scientists

SGS Project: **G128-2144**

Project Name: **USTA12**

SGS Environmental Services Inc.

March 18, 2008

- Fourteen soil samples were accepted into the laboratory on March 7, 2008 for DRO/GRO, 8260, 8270, VPH and EPH analyses with three of the risk based samples on hold. The samples were received in good condition, within temperature and holding time limits.
- All extractions and analyses were completed within holding time limits, with the following quality control exception.
- Referring to the 8260 analysis, Methylene Chloride and Toluene were detected in the associated Trip Blank. The level at which they were detected was below the reporting limit but greater than the method detection limit. Methylene Chloride and Toluene was also detected in sample G128-2144-14A at similar levels. Although these compounds were not detected in the associated method blank, these compounds are common laboratory solvents and their detection is likely a laboratory artifact.

 Date 3.19.08
Data Review

 Date 3/19/08
Secondary Review



Case Narrative

Catlin Engineers and Scientists

SGS Project: **G128-2144**

Project Name: **USTA12**

SGS Environmental Services Inc.

March 28, 2008

- One soil sample was accepted into the laboratory on March 20, 2008 for 8260, 8270, EPH and VPH analyses. The samples were received in good condition, within temperature and holding time limits.
- All extractions and analyses were completed within holding time limits, with the following quality control exceptions.
- Referring to the 8260 analysis, Acetone was detected in the Trip Blank G128-2144-17A. The level at which it was detected was below the reporting limit but greater than the method detection limit. Acetone was detected in sample G128-2144-16 at a level above the reporting limit. The results for sample G128-2144-16 may be slightly elevated due to its detection in the Trip Blank.

Data Review

Date 3-28-08

Secondary Review

Date 3/28/08



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.

**Results for Total Petroleum Hydrocarbons**
by GC/FID 8015

Client Sample ID: USTA-12 SB01 0-2'

Client Project ID: USTA12

Lab Sample ID: G128-2144-1

Lab Project ID: G128-2144

Report Basis: Dry Weight

Analyzed By: DVG

Date Collected: 3/5/2008 14:00

Date Received: 3/7/2008

Matrix: Soil

Solids 92.31

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.87	5035	1	03/13/08
Diesel Range Organics	9.62	6.67	3541	1	03/12/08

Comments:

Flags:

**Results for Total Petroleum Hydrocarbons**
by GC/FID 8015

Client Sample ID: USTA-12 SB02 0-2.5'

Client Project ID: USTA12

Lab Sample ID: G128-2144-2

Lab Project ID: G128-2144

Report Basis: Dry Weight

Analyzed By: DVG

Date Collected: 3/5/2008 14:30

Date Received: 3/7/2008

Matrix: Soil

Solids 89.12

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	5.86	5035	1	03/13/08
Diesel Range Organics	BQL	6.97	3541	1	03/12/08

Comments:

Flags:

**Results for Total Petroleum Hydrocarbons**
by GC/FID 8015

Client Sample ID: USTA-12 SB03 0-2.5'

Client Project ID: USTA12

Lab Sample ID: G128-2144-3

Lab Project ID: G128-2144

Report Basis: Dry Weight

Analyzed By: DVG

Date Collected: 3/5/2008 14:50

Date Received: 3/7/2008

Matrix: Soil

Solids 90.70

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.40	5035	1	03/13/08
Diesel Range Organics	18.8	6.75	3541	1	03/12/08

Comments:

Flags:

**Results for Total Petroleum Hydrocarbons**
by GC/FID 8015

Client Sample ID: USTA-12 SB04 0-2.5'

Client Project ID: USTA12

Lab Sample ID: G128-2144-4

Lab Project ID: G128-2144

Report Basis: Dry Weight

Analyzed By: DVG

Date Collected: 3/5/2008 15:15

Date Received: 3/7/2008

Matrix: Soil

Solids 91.94

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.90	5035	1	03/13/08
Diesel Range Organics	49.4	6.73	3541	1	03/13/08

Comments:

Flags:

Reviewed By: 
TPH

**Results for Total Petroleum Hydrocarbons**
by GC/FID 8015

Client Sample ID: USTA-12 SB05 0-2.5'

Client Project ID: USTA12

Lab Sample ID: G128-2144-5

Lab Project ID: G128-2144

Report Basis: Dry Weight

Analyzed By: DVG

Date Collected: 3/5/2008 15:35

Date Received: 3/7/2008

Matrix: Soil

Solids 89.68

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.64	5035	1	03/13/08
Diesel Range Organics	151	6.87	3541	1	03/12/08

Comments:

Flags:



SGS ENVIRONMENTAL SERVICES, INC.

Results for Total Petroleum Hydrocarbons
by GC/FID 8015

Client Sample ID: USTA-12 SB06 1-2.5'
Client Project ID: USTA12
Lab Sample ID: G128-2144-6
Lab Project ID: G128-2144
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 3/5/2008 15:50
Date Received: 3/7/2008
Matrix: Soil
Solids 86.88

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.21	5035	1	03/13/08
Diesel Range Organics	31.9	7.18	3541	1	03/12/08

Comments:

Flags:

**Results for Total Petroleum Hydrocarbons**
by GC/FID 8015

Client Sample ID: USTA-12 SB07 1-2.5'

Client Project ID: USTA12

Lab Sample ID: G128-2144-7

Lab Project ID: G128-2144

Report Basis: Dry Weight

Analyzed By: DVG

Date Collected: 3/5/2008 16:15

Date Received: 3/7/2008

Matrix: Soil

Solids 86.67

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.88	5035	1	03/13/08
Diesel Range Organics	BQL	6.75	3541	1	03/13/08

Comments:

Flags:

Reviewed By: 

**Results for Total Petroleum Hydrocarbons**
by GC/FID 8015

Client Sample ID: USTA-12 SB08 1-2.5'

Client Project ID: USTA12

Lab Sample ID: G128-2144-8

Lab Project ID: G128-2144

Report Basis: Dry Weight

Analyzed By: DVG

Date Collected: 3/5/2008 16:40

Date Received: 3/7/2008

Matrix: Soil

Solids 85.88

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.25	5035	1	03/13/08
Diesel Range Organics	BQL	7.10	3541	1	03/13/08

Comments:

Flags:

**Results for Total Petroleum Hydrocarbons**
by GC/FID 8015

Client Sample ID: USTA-12 SB09 1-2'
Client Project ID: USTA12
Lab Sample ID: G128-2144-9
Lab Project ID: G128-2144
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 3/5/2008 17:00
Date Received: 3/7/2008
Matrix: Soil
Solids 90.11

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.02	5035	1	03/13/08
Diesel Range Organics	6.53	6.44	3541	1	03/13/08

Comments:

Flags:

**Results for Total Petroleum Hydrocarbons**
by GC/FID 8015

Client Sample ID: USTA-12 SB10 0.5-2'
Client Project ID: USTA12
Lab Sample ID: G128-2144-10
Lab Project ID: G128-2144
Report Basis: Dry Weight

Analyzed By: DVG
Date Collected: 3/5/2008 17:20
Date Received: 3/7/2008
Matrix: Soil
Solids 88.82

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.51	5035	1	03/13/08
Diesel Range Organics	8.14	7.00	3541	1	03/13/08

Comments:

Flags:

**Results for Total Petroleum Hydrocarbons**
by GC/FID 8015

Client Sample ID: USTA-12 SB11 1-2'

Client Project ID: USTA12

Lab Sample ID: G128-2144-11

Lab Project ID: G128-2144

Report Basis: Dry Weight

Analyzed By: DVG

Date Collected: 3/5/2008 17:35

Date Received: 3/7/2008

Matrix: Soil

Solids 88.13

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.10	5035	1	03/13/08
Diesel Range Organics	9.34	6.87	3541	1	03/13/08

Comments:

Flags:

**Results for Total Petroleum Hydrocarbons**
by GC/FID 8015

Client Sample ID: USTA-12 SB12 1-2.5'

Client Project ID: USTA12

Lab Sample ID: G128-2144-12

Lab Project ID: G128-2144

Report Basis: Dry Weight

Analyzed By: DVG

Date Collected: 3/5/2008 17:50

Date Received: 3/7/2008

Matrix: Soil

Solids 88.61

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.33	5035	1	03/13/08
Diesel Range Organics	BQL	6.99	3541	1	03/13/08

Comments:

Flags:

Reviewed By: 

TPH

**Results for Total Petroleum Hydrocarbons**
by GC/FID 8015

Client Sample ID: USTA-12 SB09 D1-2'

Client Project ID: USTA12

Lab Sample ID: G128-2144-13

Lab Project ID: G128-2144

Report Basis: Dry Weight

Analyzed By: DVG

Date Collected: 3/5/2008 18:10

Date Received: 3/7/2008

Matrix: Soil

Solids 88.54

Analyte	Result MG/KG	RL MG/KG	Prep Method	Dilution Factor	Date Analyzed
Gasoline Range Organics	BQL	6.59	5035	1	03/13/08
Diesel Range Organics	10.2	6.86	3541	1	03/13/08

Comments:

Flags:

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: USTA-12 Basin SW
Client Project ID: USTA12
Lab Sample ID: G128-2144-14A
Lab Project ID: G128-2144
Report Basis: Dry Weight

Analyzed By: MJC
Date Collected: 03-05-2008 13:30
Date Received: 3/7/2008
Matrix: Soil
Sample Amount: 5.30 g
%Solids: 89.4

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
Acetone	0.0565	0.0527	0.00729	1	3/11/2008	
Benzene	BQL	0.00527	0.00113	1	3/11/2008	
Bromobenzene	BQL	0.00527	0.00109	1	3/11/2008	
Bromochloromethane	BQL	0.00527	0.00181	1	3/11/2008	
Bromodichloromethane	BQL	0.00527	0.00105	1	3/11/2008	
Bromoform	BQL	0.00527	0.00105	1	3/11/2008	
Bromomethane	BQL	0.00527	0.00111	1	3/11/2008	
2-Butanone	BQL	0.0264	0.00573	1	3/11/2008	
n-Butylbenzene	BQL	0.00527	0.00101	1	3/11/2008	
sec-Butylbenzene	BQL	0.00527	0.00107	1	3/11/2008	
tert-Butylbenzene	BQL	0.00527	0.00118	1	3/11/2008	
Carbon disulfide	BQL	0.00527	0.00283	1	3/11/2008	
Carbon tetrachloride	BQL	0.00527	0.00108	1	3/11/2008	
Chlorobenzene	BQL	0.00527	0.00126	1	3/11/2008	
Chloroethane	BQL	0.00527	0.00168	1	3/11/2008	
Chloroform	BQL	0.00527	0.00127	1	3/11/2008	
Chloromethane	BQL	0.00527	0.00119	1	3/11/2008	
2-Chlorotoluene	BQL	0.00527	0.00107	1	3/11/2008	
4-Chlorotoluene	BQL	0.00527	0.00132	1	3/11/2008	
Dibromochloromethane	BQL	0.00527	0.00146	1	3/11/2008	
1,2-Dibromo-3-chloropropane	BQL	0.00527	0.00153	1	3/11/2008	
Dibromomethane	BQL	0.00527	0.00159	1	3/11/2008	
1,2-Dibromoethane (EDB)	BQL	0.00527	0.00119	1	3/11/2008	
1,2-Dichlorobenzene	BQL	0.00527	0.00136	1	3/11/2008	
1,3-Dichlorobenzene	BQL	0.00527	0.00135	1	3/11/2008	
1,4-Dichlorobenzene	BQL	0.00527	0.00111	1	3/11/2008	
trans-1,4-Dichloro-2-butene	BQL	0.00527	0.00146	1	3/11/2008	
1,1-Dichloroethane	BQL	0.00527	0.00112	1	3/11/2008	
1,1-Dichloroethene	BQL	0.00527	0.00156	1	3/11/2008	
1,2-Dichloroethane	BQL	0.00527	0.00139	1	3/11/2008	
cis-1,2-Dichloroethene	BQL	0.00527	0.00135	1	3/11/2008	
trans-1,2-dichloroethene	BQL	0.00527	0.00119	1	3/11/2008	
1,2-Dichloropropane	BQL	0.00527	0.00124	1	3/11/2008	
1,3-Dichloropropane	BQL	0.00527	0.00118	1	3/11/2008	
2,2-Dichloropropane	BQL	0.00527	0.00127	1	3/11/2008	
1,1-Dichloropropene	BQL	0.00527	0.00166	1	3/11/2008	
cis-1,3-Dichloropropene	BQL	0.00527	0.00088	1	3/11/2008	
trans-1,3-Dichloropropene	BQL	0.00527	0.00102	1	3/11/2008	
Dichlorodifluoromethane	BQL	0.00527	0.00139	1	3/11/2008	
Diisopropyl ether (DIPE)	BQL	0.00527	0.00119	1	3/11/2008	
Ethylbenzene	BQL	0.00527	0.00091	1	3/11/2008	
Hexachlorobutadiene	BQL	0.00527	0.00103	1	3/11/2008	
2-Hexanone	BQL	0.00527	0.00342	1	3/11/2008	
Iodomethane	BQL	0.00527	0.00114	1	3/11/2008	

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: USTA-12 Basin SW
Client Project ID: USTA12
Lab Sample ID G128-2144-14A
Lab Project ID: G128-2144
Report Basis: Dry Weight

Analyzed By: MJC
Date Collected: 03-05-2008 13:30
Date Received: 3/7/2008
Matrix: Soil
Sample Amount: 5.30 g
%Solids: 89.4

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
Isopropylbenzene	BQL	0.00527	0.00094	1	3/11/2008	
4-Isopropyltoluene	BQL	0.00527	0.00113	1	3/11/2008	
Methylene chloride	0.00135	0.0211	0.00126	1	3/11/2008	J
4-Methyl-2-pentanone	BQL	0.00527	0.00488	1	3/11/2008	
Methyl-tert-butyl ether (MTBE)	BQL	0.00527	0.00117	1	3/11/2008	
Naphthalene	BQL	0.00527	0.00090	1	3/11/2008	
n-Propyl benzene	BQL	0.00527	0.00133	1	3/11/2008	
Styrene	BQL	0.00527	0.00116	1	3/11/2008	
1,1,1,2-Tetrachloroethane	BQL	0.00527	0.00108	1	3/11/2008	
1,1,2,2-Tetrachloroethane	BQL	0.00527	0.00119	1	3/11/2008	
Tetrachloroethene	BQL	0.00527	0.00097	1	3/11/2008	
Toluene	0.00171	0.00527	0.00105	1	3/11/2008	J
1,2,3-Trichlorobenzene	BQL	0.00527	0.00110	1	3/11/2008	
1,2,4-Trichlorobenzene	BQL	0.00527	0.00109	1	3/11/2008	
Trichloroethene	BQL	0.00527	0.00101	1	3/11/2008	
1,1,1-Trichloroethane	BQL	0.00527	0.00119	1	3/11/2008	
1,1,2-Trichloroethane	BQL	0.00527	0.00173	1	3/11/2008	
Trichlorofluoromethane	BQL	0.00527	0.00109	1	3/11/2008	
1,2,3-Trichloropropane	BQL	0.00527	0.00131	1	3/11/2008	
1,2,4-Trimethylbenzene	BQL	0.00527	0.00133	1	3/11/2008	
1,3,5-Trimethylbenzene	BQL	0.00527	0.00120	1	3/11/2008	
Vinyl chloride	BQL	0.00527	0.00143	1	3/11/2008	
m-,p-Xylene	BQL	0.0105	0.00203	1	3/11/2008	
o-Xylene	BQL	0.00527	0.00102	1	3/11/2008	

	Spike Added	Spike Result	Percent Recovered
1,2-Dichloroethane-d4	0.05	0.0753	151
Toluene-d8	0.05	0.0501	100
4-Bromofluorobenzene	0.05	0.0403	81

Comments:**Flags:**

BQL = Below Quantitation Limits.

Analyst: 

Reviewed By: 

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: Trip Blank (Not on COC)

Analyzed By: MJC

Client Project ID: USTA12

Date Collected: 03-05-2008 00:00

Lab Sample ID G128-2144-15A

Date Received: 3/7/2008

Lab Project ID: G128-2144

Matrix: Soil

Report Basis: 0.0

Sample Amount: 5 g

%Solids: 100.0

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
Acetone	BQL	0.0500	0.00691	1	3/11/2008	
Benzene	BQL	0.00500	0.00107	1	3/11/2008	
Bromobenzene	BQL	0.00500	0.00103	1	3/11/2008	
Bromochloromethane	BQL	0.00500	0.00172	1	3/11/2008	
Bromodichloromethane	BQL	0.00500	0.00099	1	3/11/2008	
Bromoform	BQL	0.00500	0.00100	1	3/11/2008	
Bromomethane	BQL	0.00500	0.00105	1	3/11/2008	
2-Butanone	BQL	0.0250	0.00543	1	3/11/2008	
n-Butylbenzene	BQL	0.00500	0.00096	1	3/11/2008	
sec-Butylbenzene	BQL	0.00500	0.00101	1	3/11/2008	
tert-Butylbenzene	BQL	0.00500	0.00112	1	3/11/2008	
Carbon disulfide	BQL	0.00500	0.00268	1	3/11/2008	
Carbon tetrachloride	BQL	0.00500	0.00102	1	3/11/2008	
Chlorobenzene	BQL	0.00500	0.00119	1	3/11/2008	
Chloroethane	BQL	0.00500	0.00159	1	3/11/2008	
Chloroform	BQL	0.00500	0.00120	1	3/11/2008	
Chloromethane	BQL	0.00500	0.00113	1	3/11/2008	
2-Chlorotoluene	BQL	0.00500	0.00101	1	3/11/2008	
4-Chlorotoluene	BQL	0.00500	0.00125	1	3/11/2008	
Dibromochloromethane	BQL	0.00500	0.00138	1	3/11/2008	
1,2-Dibromo-3-chloropropane	BQL	0.00500	0.00145	1	3/11/2008	
Dibromomethane	BQL	0.00500	0.00151	1	3/11/2008	
1,2-Dibromoethane (EDB)	BQL	0.00500	0.00113	1	3/11/2008	
1,2-Dichlorobenzene	BQL	0.00500	0.00129	1	3/11/2008	
1,3-Dichlorobenzene	BQL	0.00500	0.00128	1	3/11/2008	
1,4-Dichlorobenzene	BQL	0.00500	0.00105	1	3/11/2008	
trans-1,4-Dichloro-2-butene	BQL	0.00500	0.00138	1	3/11/2008	
1,1-Dichloroethane	BQL	0.00500	0.00106	1	3/11/2008	
1,1-Dichloroethene	BQL	0.00500	0.00148	1	3/11/2008	
1,2-Dichloroethane	BQL	0.00500	0.00132	1	3/11/2008	
cis-1,2-Dichloroethene	BQL	0.00500	0.00128	1	3/11/2008	
trans-1,2-dichloroethene	BQL	0.00500	0.00113	1	3/11/2008	
1,2-Dichloropropane	BQL	0.00500	0.00118	1	3/11/2008	
1,3-Dichloropropane	BQL	0.00500	0.00112	1	3/11/2008	
2,2-Dichloropropane	BQL	0.00500	0.00120	1	3/11/2008	
1,1-Dichloropropene	BQL	0.00500	0.00157	1	3/11/2008	
cis-1,3-Dichloropropene	BQL	0.00500	0.00083	1	3/11/2008	
trans-1,3-Dichloropropene	BQL	0.00500	0.00096	1	3/11/2008	
Dichlorodifluoromethane	BQL	0.00500	0.00132	1	3/11/2008	
Diisopropyl ether (DIPE)	BQL	0.00500	0.00113	1	3/11/2008	
Ethylbenzene	BQL	0.00500	0.00087	1	3/11/2008	
Hexachlorobutadiene	BQL	0.00500	0.00098	1	3/11/2008	
2-Hexanone	BQL	0.00500	0.00324	1	3/11/2008	
Iodomethane	BQL	0.00500	0.00108	1	3/11/2008	

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: Trip Blank (Not on COC)
Client Project ID: USTA12
Lab Sample ID G128-2144-15A
Lab Project ID: G128-2144
Report Basis: 0.0

Analyzed By: MJC
Date Collected: 03-05-2008 00:00
Date Received: 3/7/2008
Matrix: Soil
Sample Amount: 5 g
%Solids: 100.0

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
Isopropylbenzene	BQL	0.00500	0.00089	1	3/11/2008	
4-Isopropyltoluene	BQL	0.00500	0.00107	1	3/11/2008	
Methylene chloride	0.00470	0.0200	0.00119	1	3/11/2008	J
4-Methyl-2-pentanone	BQL	0.00500	0.00463	1	3/11/2008	
Methyl-tert-butyl ether (MTBE)	BQL	0.00500	0.00111	1	3/11/2008	
Naphthalene	BQL	0.00500	0.00085	1	3/11/2008	
n-Propyl benzene	BQL	0.00500	0.00126	1	3/11/2008	
Styrene	BQL	0.00500	0.00110	1	3/11/2008	
1,1,1,2-Tetrachloroethane	BQL	0.00500	0.00102	1	3/11/2008	
1,1,2,2-Tetrachloroethane	BQL	0.00500	0.00113	1	3/11/2008	
Tetrachloroethene	BQL	0.00500	0.00092	1	3/11/2008	
Toluene	0.00145	0.00500	0.00100	1	3/11/2008	J
1,2,3-Trichlorobenzene	BQL	0.00500	0.00104	1	3/11/2008	
1,2,4-Trichlorobenzene	BQL	0.00500	0.00103	1	3/11/2008	
Trichloroethene	BQL	0.00500	0.00095	1	3/11/2008	
1,1,1-Trichloroethane	BQL	0.00500	0.00113	1	3/11/2008	
1,1,2-Trichloroethane	BQL	0.00500	0.00164	1	3/11/2008	
Trichlorofluoromethane	BQL	0.00500	0.00103	1	3/11/2008	
1,2,3-Trichloropropane	BQL	0.00500	0.00124	1	3/11/2008	
1,2,4-Trimethylbenzene	BQL	0.00500	0.00126	1	3/11/2008	
1,3,5-Trimethylbenzene	BQL	0.00500	0.00114	1	3/11/2008	
Vinyl chloride	BQL	0.00500	0.00136	1	3/11/2008	
m-,p-Xylene	BQL	0.0100	0.00192	1	3/11/2008	
o-Xylene	BQL	0.00500	0.00097	1	3/11/2008	

	Spike Added	Spike Result	Percent Recovered
1,2-Dichloroethane-d4	0.05	0.0558	112
Toluene-d8	0.05	0.0499	100
4-Bromofluorobenzene	0.05	0.0468	94

Comments:**Flags:**

BQL = Below Quantitation Limits.

Analyst: 

Reviewed By: 

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: SB-05A
Client Project ID: USTA12
Lab Sample ID G128-2144-16A
Lab Project ID: G128-2144
Report Basis: Dry Weight

Analyzed By: MJC
Date Collected: 03-20-2008 14:45
Date Received: 3/20/2008
Matrix: Soil
Sample Amount: 5.65 g
%Solids: 83.7

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
Acetone	0.0530	0.0529	0.00731	1	3/27/2008	
Benzene	BQL	0.00529	0.00113	1	3/27/2008	
Bromobenzene	BQL	0.00529	0.00109	1	3/27/2008	
Bromochloromethane	BQL	0.00529	0.00182	1	3/27/2008	
Bromodichloromethane	BQL	0.00529	0.00105	1	3/27/2008	
Bromoform	BQL	0.00529	0.00106	1	3/27/2008	
Bromomethane	BQL	0.00529	0.00111	1	3/27/2008	
2-Butanone	0.00731	0.0264	0.00574	1	3/27/2008	J
n-Butylbenzene	BQL	0.00529	0.00101	1	3/27/2008	
sec-Butylbenzene	BQL	0.00529	0.00107	1	3/27/2008	
tert-Butylbenzene	BQL	0.00529	0.00118	1	3/27/2008	
Carbon disulfide	BQL	0.00529	0.00283	1	3/27/2008	
Carbon tetrachloride	BQL	0.00529	0.00108	1	3/27/2008	
Chlorobenzene	BQL	0.00529	0.00126	1	3/27/2008	
Chloroethane	BQL	0.00529	0.00168	1	3/27/2008	
Chloroform	BQL	0.00529	0.00127	1	3/27/2008	
Chloromethane	BQL	0.00529	0.00120	1	3/27/2008	
2-Chlorotoluene	BQL	0.00529	0.00107	1	3/27/2008	
4-Chlorotoluene	BQL	0.00529	0.00132	1	3/27/2008	
Dibromochloromethane	BQL	0.00529	0.00146	1	3/27/2008	
1,2-Dibromo-3-chloropropane	BQL	0.00529	0.00153	1	3/27/2008	
Dibromomethane	BQL	0.00529	0.00160	1	3/27/2008	
1,2-Dibromoethane (EDB)	BQL	0.00529	0.00120	1	3/27/2008	
1,2-Dichlorobenzene	BQL	0.00529	0.00136	1	3/27/2008	
1,3-Dichlorobenzene	BQL	0.00529	0.00135	1	3/27/2008	
1,4-Dichlorobenzene	BQL	0.00529	0.00111	1	3/27/2008	
trans-1,4-Dichloro-2-butene	BQL	0.00529	0.00146	1	3/27/2008	
1,1-Dichloroethane	BQL	0.00529	0.00112	1	3/27/2008	
1,1-Dichloroethene	BQL	0.00529	0.00157	1	3/27/2008	
1,2-Dichloroethane	BQL	0.00529	0.00140	1	3/27/2008	
cis-1,2-Dichloroethene	BQL	0.00529	0.00135	1	3/27/2008	
trans-1,2-dichloroethene	BQL	0.00529	0.00120	1	3/27/2008	
1,2-Dichloropropane	BQL	0.00529	0.00125	1	3/27/2008	
1,3-Dichloropropane	BQL	0.00529	0.00118	1	3/27/2008	
2,2-Dichloropropane	BQL	0.00529	0.00127	1	3/27/2008	
1,1-Dichloropropene	BQL	0.00529	0.00166	1	3/27/2008	
cis-1,3-Dichloropropene	BQL	0.00529	0.00088	1	3/27/2008	
trans-1,3-Dichloropropene	BQL	0.00529	0.00102	1	3/27/2008	
Dichlorodifluoromethane	BQL	0.00529	0.00140	1	3/27/2008	
Diisopropyl ether (DIPE)	BQL	0.00529	0.00120	1	3/27/2008	
Ethylbenzene	BQL	0.00529	0.00092	1	3/27/2008	
Hexachlorobutadiene	BQL	0.00529	0.00103	1	3/27/2008	
2-Hexanone	BQL	0.00529	0.00343	1	3/27/2008	
Iodomethane	BQL	0.00529	0.00114	1	3/27/2008	

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: SB-05A
Client Project ID: USTA12
Lab Sample ID: G128-2144-16A
Lab Project ID: G128-2144
Report Basis: Dry Weight

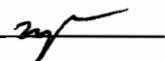
Analyzed By: MJC
Date Collected: 03-20-2008 14:45
Date Received: 3/20/2008
Matrix: Soil
Sample Amount: 5.65 g
%Solids: 83.7

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
Isopropylbenzene	BQL	0.00529	0.00094	1	3/27/2008	
4-Isopropyltoluene	BQL	0.00529	0.00113	1	3/27/2008	
Methylene chloride	BQL	0.0212	0.00126	1	3/27/2008	
4-Methyl-2-pentanone	BQL	0.00529	0.00490	1	3/27/2008	
Methyl-tert-butyl ether (MTBE)	BQL	0.00529	0.00117	1	3/27/2008	
Naphthalene	BQL	0.00529	0.00090	1	3/27/2008	
n-Propyl benzene	BQL	0.00529	0.00133	1	3/27/2008	
Styrene	BQL	0.00529	0.00116	1	3/27/2008	
1,1,1,2-Tetrachloroethane	BQL	0.00529	0.00108	1	3/27/2008	
1,1,2,2-Tetrachloroethane	BQL	0.00529	0.00120	1	3/27/2008	
Tetrachloroethene	BQL	0.00529	0.00097	1	3/27/2008	
Toluene	0.00181	0.00529	0.00105	1	3/27/2008	J
1,2,3-Trichlorobenzene	BQL	0.00529	0.00110	1	3/27/2008	
1,2,4-Trichlorobenzene	BQL	0.00529	0.00109	1	3/27/2008	
Trichloroethene	BQL	0.00529	0.00101	1	3/27/2008	
1,1,1-Trichloroethane	BQL	0.00529	0.00120	1	3/27/2008	
1,1,2-Trichloroethane	BQL	0.00529	0.00173	1	3/27/2008	
Trichlorofluoromethane	BQL	0.00529	0.00109	1	3/27/2008	
1,2,3-Trichloropropane	BQL	0.00529	0.00131	1	3/27/2008	
1,2,4-Trimethylbenzene	BQL	0.00529	0.00133	1	3/27/2008	
1,3,5-Trimethylbenzene	BQL	0.00529	0.00121	1	3/27/2008	
Vinyl chloride	BQL	0.00529	0.00144	1	3/27/2008	
m-,p-Xylene	BQL	0.0106	0.00203	1	3/27/2008	
o-Xylene	BQL	0.00529	0.00102	1	3/27/2008	

	Spike Added	Spike Result	Percent Recovered
1,2-Dichloroethane-d4	0.05	0.0515	103
Toluene-d8	0.05	0.0432	86
4-Bromofluorobenzene	0.05	0.0255	51

Comments:**Flags:**

BQL = Below Quantitation Limits.

Analyst: 

Reviewed By: 

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: Trip Blank (Not on COC)
Client Project ID: USTA12
Lab Sample ID G128-2144-17A
Lab Project ID: G128-2144
Report Basis: 0.0

Analyzed By: MJC
Date Collected: 03-20-2008 00:00
Date Received: 3/20/2008
Matrix: Soil
Sample Amount: 5 g
%Solids: 100.0

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
Acetone	0.00701	0.0500	0.00691	1	3/27/2008	J
Benzene	BQL	0.00500	0.00107	1	3/27/2008	
Bromobenzene	BQL	0.00500	0.00103	1	3/27/2008	
Bromochloromethane	BQL	0.00500	0.00172	1	3/27/2008	
Bromodichloromethane	BQL	0.00500	0.00099	1	3/27/2008	
Bromoform	BQL	0.00500	0.00100	1	3/27/2008	
Bromomethane	BQL	0.00500	0.00105	1	3/27/2008	
2-Butanone	BQL	0.0250	0.00543	1	3/27/2008	
n-Butylbenzene	BQL	0.00500	0.00096	1	3/27/2008	
sec-Butylbenzene	BQL	0.00500	0.00101	1	3/27/2008	
tert-Butylbenzene	BQL	0.00500	0.00112	1	3/27/2008	
Carbon disulfide	BQL	0.00500	0.00268	1	3/27/2008	
Carbon tetrachloride	BQL	0.00500	0.00102	1	3/27/2008	
Chlorobenzene	BQL	0.00500	0.00119	1	3/27/2008	
Chloroethane	BQL	0.00500	0.00159	1	3/27/2008	
Chloroform	BQL	0.00500	0.00120	1	3/27/2008	
Chloromethane	BQL	0.00500	0.00113	1	3/27/2008	
2-Chlorotoluene	BQL	0.00500	0.00101	1	3/27/2008	
4-Chlorotoluene	BQL	0.00500	0.00125	1	3/27/2008	
Dibromochloromethane	BQL	0.00500	0.00138	1	3/27/2008	
1,2-Dibromo-3-chloropropane	BQL	0.00500	0.00145	1	3/27/2008	
Dibromomethane	BQL	0.00500	0.00151	1	3/27/2008	
1,2-Dibromoethane (EDB)	BQL	0.00500	0.00113	1	3/27/2008	
1,2-Dichlorobenzene	BQL	0.00500	0.00129	1	3/27/2008	
1,3-Dichlorobenzene	BQL	0.00500	0.00128	1	3/27/2008	
1,4-Dichlorobenzene	BQL	0.00500	0.00105	1	3/27/2008	
trans-1,4-Dichloro-2-butene	BQL	0.00500	0.00138	1	3/27/2008	
1,1-Dichloroethane	BQL	0.00500	0.00106	1	3/27/2008	
1,1-Dichloroethene	BQL	0.00500	0.00148	1	3/27/2008	
1,2-Dichloroethane	BQL	0.00500	0.00132	1	3/27/2008	
cis-1,2-Dichloroethene	BQL	0.00500	0.00128	1	3/27/2008	
trans-1,2-dichloroethene	BQL	0.00500	0.00113	1	3/27/2008	
1,2-Dichloropropane	BQL	0.00500	0.00118	1	3/27/2008	
1,3-Dichloropropane	BQL	0.00500	0.00112	1	3/27/2008	
2,2-Dichloropropane	BQL	0.00500	0.00120	1	3/27/2008	
1,1-Dichloropropene	BQL	0.00500	0.00157	1	3/27/2008	
cis-1,3-Dichloropropene	BQL	0.00500	0.00083	1	3/27/2008	
trans-1,3-Dichloropropene	BQL	0.00500	0.00096	1	3/27/2008	
Dichlorodifluoromethane	BQL	0.00500	0.00132	1	3/27/2008	
Diisopropyl ether (DIPE)	BQL	0.00500	0.00113	1	3/27/2008	
Ethylbenzene	BQL	0.00500	0.00087	1	3/27/2008	
Hexachlorobutadiene	BQL	0.00500	0.00098	1	3/27/2008	
2-Hexanone	BQL	0.00500	0.00324	1	3/27/2008	
Iodomethane	BQL	0.00500	0.00108	1	3/27/2008	

**Results for Volatiles
by GCMS 8260-5035**

Client Sample ID: Trip Blank (Not on COC)
Client Project ID: USTA12
Lab Sample ID G128-2144-17A
Lab Project ID: G128-2144
Report Basis: 0.0

Analyzed By: MJC
Date Collected: 03-20-2008 00:00
Date Received: 3/20/2008
Matrix: Soil
Sample Amount: 5 g
%Solids: 100.0

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
Isopropylbenzene	BQL	0.00500	0.00089	1	3/27/2008	
4-Isopropyltoluene	BQL	0.00500	0.00107	1	3/27/2008	
Methylene chloride	BQL	0.0200	0.00119	1	3/27/2008	
4-Methyl-2-pentanone	BQL	0.00500	0.00463	1	3/27/2008	
Methyl-tert-butyl ether (MTBE)	BQL	0.00500	0.00111	1	3/27/2008	
Naphthalene	BQL	0.00500	0.00085	1	3/27/2008	
n-Propyl benzene	BQL	0.00500	0.00126	1	3/27/2008	
Styrene	BQL	0.00500	0.00110	1	3/27/2008	
1,1,1,2-Tetrachloroethane	BQL	0.00500	0.00102	1	3/27/2008	
1,1,2,2-Tetrachloroethane	BQL	0.00500	0.00113	1	3/27/2008	
Tetrachloroethene	BQL	0.00500	0.00092	1	3/27/2008	
Toluene	BQL	0.00500	0.00100	1	3/27/2008	
1,2,3-Trichlorobenzene	BQL	0.00500	0.00104	1	3/27/2008	
1,2,4-Trichlorobenzene	BQL	0.00500	0.00103	1	3/27/2008	
Trichloroethene	BQL	0.00500	0.00095	1	3/27/2008	
1,1,1-Trichloroethane	BQL	0.00500	0.00113	1	3/27/2008	
1,1,2-Trichloroethane	BQL	0.00500	0.00164	1	3/27/2008	
Trichlorofluoromethane	BQL	0.00500	0.00103	1	3/27/2008	
1,2,3-Trichloropropane	BQL	0.00500	0.00124	1	3/27/2008	
1,2,4-Trimethylbenzene	BQL	0.00500	0.00126	1	3/27/2008	
1,3,5-Trimethylbenzene	BQL	0.00500	0.00114	1	3/27/2008	
Vinyl chloride	BQL	0.00500	0.00136	1	3/27/2008	
m-,p-Xylene	BQL	0.0100	0.00192	1	3/27/2008	
o-Xylene	BQL	0.00500	0.00097	1	3/27/2008	

	Spike Added	Spike Result	Percent Recovered
1,2-Dichloroethane-d4	0.05	0.0493	99
Toluene-d8	0.05	0.0488	98
4-Bromofluorobenzene	0.05	0.0467	93

Comments:**Flags:**

BQL = Below Quantitation Limits.

Analyst: zy

Reviewed By: all

**Results for Semivolatiles
by GCMS 8270**

Client Sample ID: USTA-12 Basin SW
Client Project ID: USTA12
Lab Sample ID: G128-2144-14H
Lab Project ID: G128-2144
Report Basis: Dry weight

Analyzed By: DCS
Date Collected: 3/5/2008 13:30
Date Received: 3/7/2008
Date Extracted: 3/10/2008
Matrix: Soil
% Solids: 89.43

Compound	Result mg/Kg	RL mg/Kg	MDL mg/Kg	Dilution Factor	Date Analyzed	Flag
Acenaphthene	0.742	0.337	0.048	1	3/11/2008	
Acenaphthylene	BQL	0.337	0.045	1	3/11/2008	
Anthracene	1.23	0.337	0.049	1	3/11/2008	
Benzo[a]anthracene	3.24	0.337	0.058	1	3/11/2008	
Benzo[a]pyrene	1.99	0.337	0.052	1	3/11/2008	
Benzo[b]fluoranthene	2.83	0.337	0.059	1	3/11/2008	
Benzo[g,h,i]perylene	1.19	0.337	0.092	1	3/11/2008	
Benzo[k]fluoranthene	1.09	0.337	0.065	1	3/11/2008	
Benzoic Acid	BQL	0.675	0.675	1	3/11/2008	
Bis(2-chloroethoxy)methane	BQL	0.337	0.050	1	3/11/2008	
Bis(2-chloroethyl)ether	BQL	0.337	0.041	1	3/11/2008	
Bis(2-chloroisopropyl)ether	BQL	0.337	0.042	1	3/11/2008	
Bis(2-ethylhexyl)phthalate	BQL	0.337	0.045	1	3/11/2008	
4-bromophenyl phenyl ether	BQL	0.337	0.057	1	3/11/2008	
Butylbenzylphthalate	BQL	0.337	0.052	1	3/11/2008	
2-Chloronaphthalene	BQL	0.337	0.053	1	3/11/2008	
2-Chlorophenol	BQL	0.337	0.106	1	3/11/2008	
4-Chloro-3-methylphenol	BQL	0.337	0.105	1	3/11/2008	
4-Chloroaniline	BQL	1.69	0.257	1	3/11/2008	
4-Chlorophenyl phenyl ether	BQL	0.337	0.050	1	3/11/2008	
Chrysene	3.13	0.337	0.036	1	3/11/2008	
Dibenzo[a,h]anthracene	0.293	0.337	0.094	1	3/11/2008	J
Dibenzofuran	0.297	0.337	0.061	1	3/11/2008	J
Di-n-Butylphthalate	BQL	0.337	0.040	1	3/11/2008	
1,2-Dichlorobenzene	BQL	0.337	0.037	1	3/11/2008	
1,3-Dichlorobenzene	BQL	0.337	0.037	1	3/11/2008	
1,4-Dichlorobenzene	BQL	0.337	0.038	1	3/11/2008	
3,3'-Dichlorobenzidine	BQL	0.675	0.085	1	3/11/2008	
2,4-Dichlorophenol	BQL	0.337	0.121	1	3/11/2008	
Diethylphthalate	BQL	0.337	0.044	1	3/11/2008	
Dimethylphthalate	BQL	0.337	0.041	1	3/11/2008	
2,4-Dimethylphenol	BQL	0.337	0.241	1	3/11/2008	
Di-n-octylphthalate	BQL	0.337	0.056	1	3/11/2008	
4,6-Dinitro-2-methylphenol	BQL	1.69	0.199	1	3/11/2008	
2,4-Dinitrophenol	BQL	1.69	0.743	1	3/11/2008	
2,4-Dinitrotoluene	BQL	0.337	0.044	1	3/11/2008	
2,6-Dinitrotoluene	BQL	0.337	0.061	1	3/11/2008	
Diphenylamine *	BQL	0.337	0.033	1	3/11/2008	
Fluoranthene	7.31	0.337	0.047	1	3/11/2008	
Fluorene	0.607	0.337	0.042	1	3/11/2008	
Hexachlorobenzene	BQL	0.337	0.052	1	3/11/2008	
Hexachlorobutadiene	BQL	0.337	0.054	1	3/11/2008	
Hexachlorocyclopentadiene	BQL	0.675	0.035	1	3/11/2008	
Hexachloroethane	BQL	0.337	0.030	1	3/11/2008	
Indeno(1,2,3-c,d)pyrene	1.13	0.337	0.086	1	3/11/2008	
Isophorone	BQL	0.337	0.050	1	3/11/2008	
2-Methylnaphthalene	BQL	0.337	0.099	1	3/11/2008	

**Results for Semivolatiles
by GCMS 8270**

Client Sample ID: USTA-12 Basin SW
Client Project ID: USTA12
Lab Sample ID: G128-2144-14H
Lab Project ID: G128-2144
Report Basis: Dry weight

Analyzed By: DCS
Date Collected: 3/5/2008 13:30
Date Received: 3/7/2008
Date Extracted: 3/10/2008
Matrix: Soil
% Solids: 89.43

Compound	Result mg/Kg	RL mg/Kg	MDL mg/Kg	Dilution Factor	Date Analyzed	Flag
2-Methylphenol	BQL	0.337	0.119	1	3/11/2008	
3- & 4-Methylphenol	BQL	0.337	0.114	1	3/11/2008	
Naphthalene	0.044	0.337	0.027	1	3/11/2008	J
2-Nitroaniline	BQL	0.337	0.053	1	3/11/2008	
3-Nitroaniline	BQL	1.69	0.347	1	3/11/2008	
4-Nitroaniline	BQL	1.69	0.104	1	3/11/2008	
Nitrobenzene	BQL	0.337	0.046	1	3/11/2008	
2-Nitrophenol	BQL	0.337	0.105	1	3/11/2008	
4-Nitrophenol	BQL	1.69	0.093	1	3/11/2008	
N-Nitrosodi-n-propylamine	BQL	0.337	0.043	1	3/11/2008	
Pentachlorophenol	BQL	1.69	0.088	1	3/11/2008	
Phenanthrene	5.62	0.337	0.039	1	3/11/2008	
Phenol	BQL	0.337	0.092	1	3/11/2008	
Pyrene	6.05	0.337	0.065	1	3/11/2008	
1,2,4-Trichlorobenzene	BQL	0.337	0.042	1	3/11/2008	
2,4,5-Trichlorophenol	BQL	0.337	0.131	1	3/11/2008	
2,4,6-Trichlorophenol	BQL	0.337	0.120	1	3/11/2008	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	9.2	92
2-Fluorophenol	10	9.2	92
Nitrobenzene-d5	10	9.2	92
Phenol-d6	10	9.1	91
2,4,6-Tribromophenol	10	8.5	85
4-Terphenyl-d14	10	9.5	95

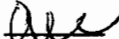
Comments:

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

Flags:

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: 

**Results of Library Search for Semivolatile Compounds**
by GCMS

Client Sample ID: USTA-12 Basin SW
Client Project ID: USTA12
Lab Sample ID: G128-2144-14H
Lab Project ID: G128-2144
Sample Wt/Vol: 33.15 g
Dilution: 1

Analyzed By: DES
Date Collected: 3/5/2008 13:30
Date Received: 3/7/2008
Date Extracted: 3/10/2008
Date Analyzed: 3/11/2008
Matrix: Soil
% Solids: 89.4

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/KG)
1	Perylene	12.92	000198-55-0	93	1800
2	Unknown	9.10			1030
3	Anthracene, 9-methyl-	9.01	000779-02-2	95	583
4	Anthracene, 2-methyl-	8.98	000613-12-7	93	418
5	Benzo[k]fluoranthene	12.68	000207-08-9	91	405
6	Unknown	14.44			377
7	Naphthalene, 2-phenyl-	9.30	000612-94-2	95	334
8	Unknown	13.33			272
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: mc

Results for Semivolatiles
by GCMS 8270

Client Sample ID: SB-05A
Client Project ID: USTA12
Lab Sample ID: G128-2144-16J
Lab Project ID: G128-2144
Report Basis: Dry weight

Analyzed By: DES
Date Collected: 3/20/2008 14:45
Date Received: 3/20/2008
Date Extracted: 3/25/2008
Matrix: Soil
% Solids: 83.67

Compound	Result mg/Kg	RL mg/Kg	MDL mg/Kg	Dilution Factor	Date Analyzed	Flag
Acenaphthene	0.210	0.363	0.052	1	3/28/2008	J
Acenaphthylene	BQL	0.363	0.048	1	3/28/2008	
Anthracene	0.261	0.363	0.053	1	3/28/2008	J
Benzo[a]anthracene	1.02	0.363	0.063	1	3/28/2008	
Benzo[a]pyrene	1.11	0.363	0.056	1	3/28/2008	
Benzo[b]fluoranthene	1.28	0.363	0.064	1	3/28/2008	
Benzo[g,h,i]perylene	0.504	0.363	0.099	1	3/28/2008	
Benzo[k]fluoranthene	0.722	0.363	0.070	1	3/28/2008	
Benzoic Acid	BQL	0.726	0.726	1	3/28/2008	
Bis(2-chloroethoxy)methane	BQL	0.363	0.054	1	3/28/2008	
Bis(2-chloroethyl)ether	BQL	0.363	0.044	1	3/28/2008	
Bis(2-chloroisopropyl)ether	BQL	0.363	0.045	1	3/28/2008	
Bis(2-ethylhexyl)phthalate	BQL	0.363	0.049	1	3/28/2008	
4-bromophenyl phenyl ether	BQL	0.363	0.061	1	3/28/2008	
Butylbenzylphthalate	BQL	0.363	0.056	1	3/28/2008	
2-Chloronaphthalene	BQL	0.363	0.057	1	3/28/2008	
2-Chlorophenol	BQL	0.363	0.114	1	3/28/2008	
4-Chloro-3-methylphenol	BQL	0.363	0.113	1	3/28/2008	
4-Chloroaniline	BQL	1.81	0.276	1	3/28/2008	
4-Chlorophenyl phenyl ether	BQL	0.363	0.053	1	3/28/2008	
Chrysene	1.09	0.363	0.039	1	3/28/2008	
Dibenzo[a,h]anthracene	BQL	0.363	0.102	1	3/28/2008	
Dibenzofuran	BQL	0.363	0.066	1	3/28/2008	
Di-n-Butylphthalate	BQL	0.363	0.043	1	3/28/2008	
1,2-Dichlorobenzene	BQL	0.363	0.040	1	3/28/2008	
1,3-Dichlorobenzene	BQL	0.363	0.040	1	3/28/2008	
1,4-Dichlorobenzene	BQL	0.363	0.041	1	3/28/2008	
3,3'-Dichlorobenzidine	BQL	0.726	0.091	1	3/28/2008	
2,4-Dichlorophenol	BQL	0.363	0.131	1	3/28/2008	
Diethylphthalate	BQL	0.363	0.047	1	3/28/2008	
Dimethylphthalate	BQL	0.363	0.044	1	3/28/2008	
2,4-Dimethylphenol	BQL	0.363	0.259	1	3/28/2008	
Di-n-octylphthalate	BQL	0.363	0.060	1	3/28/2008	
4,6-Dinitro-2-methylphenol	BQL	1.81	0.214	1	3/28/2008	
2,4-Dinitrophenol	BQL	1.81	0.799	1	3/28/2008	
2,4-Dinitrotoluene	BQL	0.363	0.047	1	3/28/2008	
2,6-Dinitrotoluene	BQL	0.363	0.066	1	3/28/2008	
Diphenylamine *	BQL	0.363	0.036	1	3/28/2008	
Fluoranthene	2.09	0.363	0.051	1	3/28/2008	
Fluorene	0.160	0.363	0.045	1	3/28/2008	J
Hexachlorobenzene	BQL	0.363	0.056	1	3/28/2008	
Hexachlorobutadiene	BQL	0.363	0.058	1	3/28/2008	
Hexachlorocyclopentadiene	BQL	0.726	0.037	1	3/28/2008	
Hexachloroethane	BQL	0.363	0.033	1	3/28/2008	
Indeno(1,2,3-c,d)pyrene	0.552	0.363	0.093	1	3/28/2008	
Isophorone	BQL	0.363	0.053	1	3/28/2008	
2-Methylnaphthalene	BQL	0.363	0.106	1	3/28/2008	

**Results for Semivolatiles
by GCMS 8270**

Client Sample ID: SB-05A
Client Project ID: USTA12
Lab Sample ID: G128-2144-16J
Lab Project ID: G128-2144
Report Basis: Dry weight

Analyzed By: DES
Date Collected: 3/20/2008 14:45
Date Received: 3/20/2008
Date Extracted: 3/25/2008
Matrix: Soil
% Solids: 83.67

Compound	Result mg/Kg	RL mg/Kg	MDL mg/Kg	Dilution Factor	Date Analyzed	Flag
2-Methylphenol	BQL	0.363	0.128	1	3/28/2008	
3- & 4-Methylphenol	BQL	0.363	0.123	1	3/28/2008	
Naphthalene	BQL	0.363	0.029	1	3/28/2008	
2-Nitroaniline	BQL	0.363	0.057	1	3/28/2008	
3-Nitroaniline	BQL	1.81	0.374	1	3/28/2008	
4-Nitroaniline	BQL	1.81	0.112	1	3/28/2008	
Nitrobenzene	BQL	0.363	0.049	1	3/28/2008	
2-Nitrophenol	BQL	0.363	0.112	1	3/28/2008	
4-Nitrophenol	BQL	1.81	0.101	1	3/28/2008	
N-Nitrosodi-n-propylamine	BQL	0.363	0.046	1	3/28/2008	
Pentachlorophenol	BQL	1.81	0.095	1	3/28/2008	
Phenanthrene	1.27	0.363	0.041	1	3/28/2008	
Phenol	BQL	0.363	0.099	1	3/28/2008	
Pyrene	1.72	0.363	0.070	1	3/28/2008	
1,2,4-Trichlorobenzene	BQL	0.363	0.045	1	3/28/2008	
2,4,5-Trichlorophenol	BQL	0.363	0.140	1	3/28/2008	
2,4,6-Trichlorophenol	BQL	0.363	0.129	1	3/28/2008	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	9.6	96
2-Fluorophenol	10	7.5	75
Nitrobenzene-d5	10	9.6	96
Phenol-d6	10	11.7	117
2,4,6-Tribromophenol	10	9.2	92
4-Terphenyl-d14	10	8.7	87

Comments:

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

Flags:

BQL = Below Quantitation Limits.

J = Detected below the quantitation limit.

Reviewed By: 

**Results of Library Search for Semivolatile Compounds
by GCMS**

Client Sample ID: SB-05A
Client Project ID: USTA12
Lab Sample ID: G128-2144-16J
Lab Project ID: G128-2144
Sample Wt/Vol: 32.94 g
Dilution: 1

Analyzed By: DES
Date Collected: 3/20/2008 14:45
Date Received: 3/20/2008
Date Extracted: 3/25/2008
Date Analyzed: 3/28/2008
Matrix: Soil
% Solids: 83.7

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/KG)
1	Benzo[e]pyrene	13.22	000192-97-2	95	1290
2	Unknown	9.30			457
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: all

**VPH (Aliphatics/Aromatics) Laboratory Reporting Form**Client Name: Richard Catlin & AssociatesProject Name: USTA12

Sample Information	
Sample Identification	USTA-12 Basin SW
Sample Matrix	Soil
Collection Option (for Soil)*	2
Date Collected	03/05/08
Date Received	03/07/08
Date Extracted	03/10/08
Date Analyzed	03/13/08 22:11 - 03/13/08 22:11
Dry Weight	89.4
Dilution Factor	1 - 1

Analytical Results				
Analyte	Result mg/Kg	Report Limit mg/Kg	Flags	
C ₅ -C ₈ Aliphatics**	BQL	10.0		
C ₉ -C ₁₂ Aliphatics**	BQL	10.0		
C ₉ -C ₁₀ Aromatics**	BQL	10.0		
	Percent Recovery	Flags	Limits	
			Lower	Upper
Surrogate % Recovery - PID	86.5		70	130
Surrogate % Recovery - FID	94.9		70	130

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

** = Excludes any surrogates or internal standards and are unadjusted for individual analytes.

Lab Info: g128-2144-14d	Lab Info: g128-2144-14d
FID Info: VP031308/032F0101.D	PID Info: VP031308/032R0101.D

Reviewed By: 



Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 03/01/08PID Initial Calibration Date: 03/01/08

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C ₅ -C ₈ Aliphatics	33.1	0.265	105	0.842	100	10
C ₉ -C ₁₂ Aliphatics	30.9	0.247	98.3	0.786	100	10
C ₉ -C ₁₀ Aromatics	27.7	0.222	88.1	0.705	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD if CF r if LR	Method of Quantitation
C ₅ -C ₈ Aliphatics	10	0.8	5.43	Calibration Factor
	50	4		
	100	8		
	200	16		
	500	40		
C ₉ -C ₁₂ Aliphatics	10	0.8	1.00	Linear Regression
	50	4		
	100	8		
	200	16		
	500	40		
C ₉ -C ₁₀ Aromatics	10	0.8	15.40	Calibration Factor
	50	4		
	100	8		
	200	16		
	500	40		

Calibration Check Date: 03/13/08Filename: VP031308/002F0101.d

Calibration Check

Range	Levels (mg/Kg)	(µg/L)	%Difference if CF %Drift if LR	Limits
C ₅ -C ₈ Aliphatics	200	1.6	3.0	±25%
C ₉ -C ₁₂ Aliphatics	200	1.6	21.2	±25%
C ₉ -C ₁₀ Aromatics	200	1.6	8.1	±25%

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 & AssociatesProject Name: USTA12

Sample Information	
Sample Identification	SB-05A
Sample Matrix	Soil
Collection Option (for Soil)*	2
Date Collected	03/20/08
Date Received	03/20/08
Date Extracted	03/24/08
Date Analyzed	03/24/08 22:02 - 03/24/08 22:02
Dry Weight	83.7
Dilution Factor	1 - 1

Analytical Results				
Analyte	Result mg/Kg	Report Limit mg/Kg	Flags	
C ₅ -C ₈ Aliphatics**	BQL	10.0		
C ₉ -C ₁₂ Aliphatics**	BQL	10.0		
C ₉ -C ₁₀ Aromatics**	BQL	10.0		
	Percent Recovery	Flags	Limits	
			Lower	Upper
Surrogate % Recovery - PID	94.2		70	130
Surrogate % Recovery - FID	100		70	130

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

** = Excludes any surrogates or internal standards and are unadjusted for individual analytes.

Lab Info: g128-2144-16e	Lab Info: g128-2144-16e
FID Info: VP032408/032F0101.D	PID Info: VP032408/032R0101.D

Reviewed By: alc



Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 03/19/08PID Initial Calibration Date: 03/19/08

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C ₅ -C ₈ Aliphatics	33.1	0.265	105	0.842	100	10
C ₉ -C ₁₂ Aliphatics	30.9	0.247	98.3	0.786	100	10
C ₉ -C ₁₀ Aromatics	27.7	0.222	88.1	0.705	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD if CF r if LR	Method of Quantitation
C ₅ -C ₈ Aliphatics	10	0.8	3.33	Calibration Factor
	50	4		
	100	8		
	200	16		
	500	40		
C ₉ -C ₁₂ Aliphatics	10	0.8	1.00	Linear Regression
	50	4		
	100	8		
	200	16		
	500	40		
C ₉ -C ₁₀ Aromatics	10	0.8	10.92	Calibration Factor
	50	4		
	100	8		
	200	16		
	500	40		

Calibration Check Date: 03/24/08Filename: VP032408/002F0101.d

Calibration Check

Range	Levels (mg/Kg)	(µg/L)	%Difference if CF %Drift if LR	Limits
C ₅ -C ₈ Aliphatics	200	1.6	-0.3	±25%
C ₉ -C ₁₂ Aliphatics	200	1.6	-3.6	±25%
C ₉ -C ₁₀ Aromatics	200	1.6	-2.6	±25%

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 (Aliphatics/Aromatics) Laboratory Reporting Form**Client Name: Richard Catlin & AssociatesProject Name: USTA12

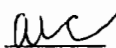
Sample Information	
Sample Identification	USTA-12 Basin SW
Sample Matrix	SOIL
Date Collected	03/05/08
Date Received	03/07/08
Date Extracted	03/10/08
Date Analyzed	03/11/08 20:39 - 03/11/08 20:39
Dry Weight	89.4
Dilution Factor	1 - 1
Initial weight (g)	12.78
Final Volume (mL)	10.0

Analytical Results			
Analytes**	Result mg/Kg	Report Limit mg/Kg	Flags
C9-C18 Aliphatics	BQL	10.0	
C19-C36 Aliphatics	BQL	10.0	
C11-C22 Aromatics	BQL	10.0	

Surrogates	Percent Recovery	Flags	Limits	
			Lower	Upper
Aliphatic (chloro-octadecane)	100		40	140
Aromatic (ortho-terphenyl)	99.0		40	140

** = Excludes any surrogates or internal standards and are unadjusted for individual analytes.

Lab Info: G128-2144-14I	Lab Info: G128-2144-14I
Aliphatic: EP031108/024F2401.D	Aromatic: EP031108/024F2401.D

Reviewed By: 

Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 02/13/08

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(10/17/06) (µg/L)	(10/17/06) (mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C9-C18 Aliphatics	28.1	0.847	89	2.69	100	10
C19-C36 Aliphatics	36.5	1.17	116	3.72	100	10
C11-C22 Aromatics	27.6	9.47	87.8	30.1	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD if CF r if LR	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	400	12.5	10.42	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		
C ₁₉ -C ₃₆ Aliphatics	400	12.5	11.28	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		
C ₁₁ -C ₂₂ Aromatics	400	12.5	6.44	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		

Calibration Check Date: 03/11/08
03/11/08

Filenames: ep031108/001f0101.d
ep031108/002f0201.d

Calibration Check

Range	Levels		%Difference if CF %Drift if LR	Limits
	(µg/L)	(mg/Kg)		
C9-C18 Aliphatics	200	6.25	7.4	±25%
C19-C36 Aliphatics	200	6.25	8.7	±25%
C11-C22 Aromatics	200	6.25	1.1	±25%

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 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 02/13/08

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(10/17/06) (µg/L)	(10/17/06) (mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C9-C18 Aliphatics	28.1	0.847	89	2.69	100	10
C19-C36 Aliphatics	36.5	1.17	116	3.72	100	10
C11-C22 Aromatics	27.6	9.47	87.8	30.1	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD if CF r if LR	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	400	12.5	10.42	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		
C ₁₉ -C ₃₆ Aliphatics	400	12.5	11.28	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		
C ₁₁ -C ₂₂ Aromatics	400	12.5	6.44	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		

Calibration Check Date: 03/11/08 03/12/08

FileNames: ep031108/030f3001.d
ep031108/031f3101.d

Calibration Check

Range	Levels		%Difference if CF %Drift if LR	Limits
	(µg/L)	(mg/Kg)		
C9-C18 Aliphatics	200	6.25	11.6	≤±25%
C19-C36 Aliphatics	200	6.25	13.3	≤±25%
C11-C22 Aromatics	200	6.25	8.0	≤±25%

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 (Aliphatics/Aromatics) Laboratory Reporting Form**Client Name: Richard Catlin & AssociatesProject Name: USTA12

Sample Information	
Sample Identification	SB-05A
Sample Matrix	SOIL
Date Collected	03/20/08
Date Received	03/20/08
Date Extracted	03/21/08
Date Analyzed	03/25/08 17:28 - 03/25/08 17:56
Dry Weight	83.7
Dilution Factor	1 - 1
Initial weight (g)	12.56
Final Volume (mL)	10.0

Analytical Results			
Analytes**	Result mg/Kg	Report Limit mg/Kg	Flags
C9-C18 Aliphatics	23.8	10.0	
C19-C36 Aliphatics	152	10.0	
C11-C22 Aromatics	25.4	10.0	

Surrogates	Percent Recovery	Flags	Limits	
			Lower	Upper
Aliphatic (chloro-octadecane)	81.3		40	140
Aromatic (ortho-terphenyl)	79.4		40	140
Fractionation 1 (2-bromonaphthalene)	94.9		40	140
Fractionation 2 (2-fluorobiphenyl)	92.4		40	140

** = Excludes any surrogates or internal standards and are unadjusted for individual analytes.

Lab Info: G128-2144-16G	Lab Info: G128-2144-16G
Aliphatic: EP032508/007F0301.D	Aromatic: EP032508/008F0401.D

Reviewed By: alc



Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 02/13/08

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(10/17/06) (µg/L)	(10/17/06) (mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C9-C18 Aliphatics	28.1	0.847	89	2.69	100	10
C19-C36 Aliphatics	36.5	1.17	116	3.72	100	10
C11-C22 Aromatics	27.6	9.47	87.8	30.1	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD if CF r if LR	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	400	12.5	10.42	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		
C ₁₉ -C ₃₆ Aliphatics	400	12.5	11.28	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		
C ₁₁ -C ₂₂ Aromatics	400	12.5	6.44	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		

Calibration Check Date: 03/25/08Filenames: ep032508/003f0301.d03/25/08ep032508/004f0401.d

Calibration Check

Range	Levels		%Difference if CF %Drift if LR	Limits
	(µg/L)	(mg/Kg)		
C9-C18 Aliphatics	200	6.25	-6.0	≤±25%
C19-C36 Aliphatics	200	6.25	-0.6	≤±25%
C11-C22 Aromatics	200	6.25	11.0	≤±25%

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 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 02/13/08

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(10/17/06) (µg/L)	(10/17/06) (mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C9-C18 Aliphatics	28.1	0.847	89	2.69	100	10
C19-C36 Aliphatics	36.5	1.17	116	3.72	100	10
C11-C22 Aromatics	27.6	9.47	87.8	30.1	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD if CF r if LR	Method of Quantitation
C ₉ -C ₁₈ Aliphatics	400	12.5	10.42	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		
C ₁₉ -C ₃₆ Aliphatics	400	12.5	11.28	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		
C ₁₁ -C ₂₂ Aromatics	400	12.5	6.44	Calibration Factor
	200	6.25		
	100	3.13		
	50	1.56		
	10	0.313		

Calibration Check Date: 03/26/08
03/26/08

Filenames: ep032608/001f0101.d
ep032608/002f0201.d

Calibration Check

Range	Levels (µg/L)	Levels (mg/Kg)	%Difference if CF %Drift if LR	Limits
C9-C18 Aliphatics	200	6.25	5.1	±25%
C19-C36 Aliphatics	200	6.25	5.6	±25%
C11-C22 Aromatics	200	6.25	8.7	±25%

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

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



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0932

1 CLIENT: CATLIN Eng. & Sci.		SGS Reference: 6128-2144		PAGE 1 OF 1	
CONTACT: MIKE E. MASON		PHONE NO: (910) 452-5861			
PROJECT: USTA12		SITE/PWSID#:			
REPORTS TO: CATLIN ATTN: JASON COOK		E-MAIL:			
INVOICE TO: CATLIN ATTN: SHEILA SMITH		QUOTE #			
		P.O. NUMBER 280226-03			
LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	
1121	USTA-12 SB01 0-2"	3-5-08	1400	Soil	3
1122	USTA-12 SB02 0-2"		1430		3
1123	USTA-12 SB03 0-2.5"		1450		3
1124	USTA-12 SB04 0-2.5"		1515		3
1125	USTA-12 SB05 0-2.5"		1535		3
1126	USTA-12 SB06 1-2.5"		1550		3
1127	USTA-12 SB07 1-2.5"		1615		9
1128	USTA-12 SB08 1-2.5"		1640		9
1129	USTA-12 SB09 1-2"		1700		3
1130	USTA-12 SB10 0.5-2"		1720		9
Collected/Relinquished By: (1) [Signature]		Date	Time	Received By: [Signature]	Date
Relinquished By: (2)		Date	Time	Received By:	Date
Relinquished By: (3)		Date	Time	Received By:	Date
Relinquished By: (4)		Date	Time	Received By:	Date

SGS Reference: 6128-2144		PAGE 1 OF 1			
No	C O N T A I N E R S	SAMPLE TYPE	Preservatives Used	Analysis Required	REMARKS
3		C= COMP G= GRAB			
3					
3					
3					
3					
3					
9					
9					
3					
9					
Shipping Carrier: [Blank]					
Shipping Ticket No: [Blank]					
Special Deliverable Requirements: [Blank]					
Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT					
Special Instructions: DO NOT ANALYZE SAMPLES THAT ARE ON HAND FOR J. COOK ON 3/19/08					
Requested Turnaround Time: [Blank]					
☐ RUSH ☐ STD					

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SGS

SGS ENVIRONMENTAL SERVICES, INC.

1

CLIENT: CATLIN ENG. & SCI.
CONTACT: MINE E. MASON
PROJECT: USTA 12
REPORTS TO: CATLIN ATTN: JASON COON
INVOICE TO: CATLIN ATTN: SHEILA SMITH

PHONE NO.: (910) 452-5861
SITE/PWSID#:
E-MAIL:
FAX NO.: ()
QUOTE #
P.O. NUMBER 280226-43

2

LAB NO. 11
17
17
33, (11)

SAMPLE IDENTIFICATION
USTA-12 SB 11 1'-2'
USTA-12 SB 12 1'-2.5'
USTA-12 SB 09 D 1'-2'
USTA-12 BASIN SW

DATE
3-5-08
↓
↓
3-5-08

TIME
1735
1750
1810
1330

MATRIX
SOIL
↓
↓
SOIL

3

CONTAINERS

Preservatives Used
Analysis Required

EPA 3550
EPA 8260 GC/MS
EPA 8270 BNA
MADRP VPH/EPA

REMARKS
- EDD FORMAT
- PLS. REPORT
LOW RUNS

4

Collected/Relinquished By: (1)
Relinquished By: (2)
Relinquished By: (3)
Relinquished By: (4)

DATE
3-7-08

TIME
1140

RECEIVED BY:
Received By:
Received By:
Received By:

DATE
3/7/2

TIME
1140

SHIPPING CARRIER:
Shipping Ticket No:
Special Deliverable Requirements:
Special Instructions:

SAMPLE RECEIVED COLD? (Circle) YES NO
TEMPERATURE: C: 3.4, 4.24
CHAIN OF CUSTODY SEAL: (Circle)
INTACT BROKEN ABSENT

5

SGS Reference: C28-2144

PAGE 2 OF 2

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

1270 Greenbrier Street Charleston, WV 25311 Tel: (304) 346-0725 Fax: (304) 346-0761

□ 200 W. Potter Drive Anchorage, AK 99518 Tel: (907) 562-2343 Fax: (907) 561-5301
 □ 5500 Business Drive Willmington, NC 28405 Tel: (910) 350-1903 Fax: (910) 350-1557

