PHASE I LIMITED SITE ASSESSMENT REPORT

FOR

BUILDING A-10/SA-26
VEHICLE WASH RACK
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

NCDENR UST INCIDENT NO. 22826
LAND USE CLASSIFICATION: PENDING
RISK CLASSIFICATION: PENDING

January 18, 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 Liter
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

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FOR

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NCDENR UST INCIDENT NO. 22826

JANUARY 18, 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-10 project site. CATLIN Engineers and Scientists (CATLIN) was authorized to perform this 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. Figure 1 illustrates the general site location within the local USGS topographic quadrangle map.

Building A-10/SA-26

The area of investigation for the project site is in the vicinity of the former 500 gallon Underground Storage Tank (UST) basin, located approximately 60 feet west-southwest of Building A-10. The former tank was associated with the vehicle wash rack structure, SA-26.

On July 23, 1993, Peele's Pump and Tank Company removed one 500 gallon used oil tank associated with SA-26. Three soil samples were collected upon tank removal at a depth of approximately nine feet below land surface (BLS). Laboratory analysis of the samples indicated the presence of petroleum hydrocarbons as Oil and Grease at a level which was indicative of a release. 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: January 18, 2008
Facility ID: E-002740 **UST Incident Number (if known):** 22826
Site Name: Building A-10/SA-26, Vehicle Wash Rack
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-10, 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: July 23, 1993
Northing: 3,830,168.0 **Easting:** 282,225.3
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 500-gallon used oil UST.

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-10/SA-26 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.

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 900 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 Building A-10 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 Building A10 project site is currently capped by asphalt.

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 area.

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-10/SA-26 project site is located more than 1,500 feet from the nearest primary or secondary 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 approximately 3,000 feet (southeast) of the A-10/SA-26 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 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.

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 located approximately 900 feet west southwest from the A-10/SA-26 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. These utilities are reportedly located above the surficial groundwater table (± 7 feet 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 USTA10-MW01. Fine sands with some silts were observed at the site. A summary of site soils follows:

Building A-10/SA-26 (USTA10-MW01)		
Depth in feet BLS	Soil Description	USCS
0-1	No split spoon sample	
1-2	Black fine sand with some organic silts. Dry.	SM
2-3.5	Olive fine sand with some silts. Dry.	SM
3.5-5	Olive fine sand with some silts. Medium dense.	SM
5-6	Olive fine sand with some silts. Moist.	SM
6-8.5	No split spoon sample.	
8.5-10	Olive fine sand with some silts. Loose and wet.	SM
10-13	No split spoon sample.	
13-14.5	Olive clayey silt. Moderate plasticity. Wet.	SC

The soils described above are consistent with undivided surficial deposits typically encountered within the area Coastal Plain Physiographic Province. A copy of the USTA10-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 USTA10-MW01. Depth to surficial groundwater at well USTA10-MW01 was 4.5 feet below top of casing. Depth to surficial groundwater at the well after 24 hours on November 1, 2007 was 3.6 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 presence of Total Petroleum Hydrocarbons (TPH) as Oil and Grease in closure soil samples. The project site was subsequently transferred to the Installation Restoration Program (IRP) in April 1994 due to its location within IR Site 73 boundaries. 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. A permanent Type II monitoring well (USTA10-MW01) was installed at the location of the former tank basin in order to assess current soil and groundwater conditions. 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-10/SA-26 UST Closure

The tank closure report indicates that there were no signs of leakage from the tank. Soil samples were obtained from a depth of nine feet BLS and analyzed for TPH – Oil and Grease, Metals, and TPH – Diesel. Oil and Grease was reported with a result of 0.14%, and TPH – Diesel was reported as below the Method Detection Limit (BMDL) of 10 parts per million (ppm). All metals were reported as BMDL, with the exception of Cadmium at a concentration of 0.012 ppm.

A-10/SA-26 LSA Investigation

CATLIN personnel installed one Type II monitoring well USTA10-MW01 on October 31, 2007. During the installation of the Type II monitoring well, CATLIN personnel collected one soil sample for laboratory analysis as a part of the LSA investigation. The soil sample was labeled as USTA10-MW01(2-3) and was collected from the 2-3 feet BLS. A duplicate soil sample USTA10-DW01 (3.5-5) was collected from the same representative interval as soil sample USTA10-MW01 and analyzed for Volatile Organic Compounds (VOCs) only. (Note that a mistake was made on the Chain-of-Custody (COC) in the USTA10-DW01 soil sample ID. The interval 3.5-5 was written within the COC, when it should have been 2-3 as indicated on the well log in Appendix A.)

The samples were transported to SGS Environmental Services, Inc. (NC Certification #481) in Wilmington, North Carolina. At the laboratory, soil sample USTA10-MW01 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), Volatile and Extractable Petroleum Hydrocarbons (VPH/EPH) using the Massachusetts Department of

Environmental Protection (MADEP) Methods, and Chromium and Lead using Standard Method 3030C. As previously mentioned, duplicate soil sample USTA10-DW01 (3.5-5) was analyzed for VOCs per EPA Method 8260 (including IPE and MTBE).

A copy of the laboratory analytical report and proper Chain-of-Custody (COC) is provided in Appendix D. Analysis of the soil samples submitted for laboratory analysis can be summarized as follows:

EPA METHOD 8260 + IPE + MTBE

Acetone, a common laboratory contaminant, was the only EPA Method 8260 analyte detected in soil sample USTA10-MW01(2-3) at an estimated concentration of 0.0210 mg/kg. This concentration is well below the Soil–To-Groundwater (STGW) Maximum Soil Contaminant Concentration (MSCC) of 2.8 mg/kg. Acetone and Naphthalene were detected in the duplicate soil sample USTA10-DW01(3.5-5) at concentrations less than the applicable STGW MSCCs. All other 8260 compounds were reported as BMDL.

EPA METHOD 8270 (+ TICs)

Laboratory analysis of soil sample USTA10-MW01(2-3) did not detect any EPA Method 8270 target analytes.

In accordance with the *2001 Guidelines,* EPA Method 8270 sample(s) are also analyzed for the ten (10) largest (peak area) non-target compounds, or Tentatively Identified Compounds (TICs). TICs refer to detected compounds, which are not present in the EPA Method 8270 list of target compounds. Therefore, not all TICs are identified and quantitated using individual standards. TIC listings are prepared using a computerized library search of electron impact mass spectral data and evaluation of the relevant data by a mass spectral data specialist. Quantitation was accomplished by relative peak height of the compound compared to that of the nearest internal standard from the total ion chromatogram. TICs are identified and quantitated only if the peak height is equal to or greater than 10% of that of the nearest internal standard. The quantitation standard provided is an estimate. There are no established MSCCs for any TIC. Laboratory analysis detected one unknown compound in soil sample USTA10-MW01(2-3) with a concentration of 861 µg/kg.

MADEP VPH/EPH

There were no MADEP constituents present in soil sample USTA10-MW01(2-3) above the MDLs.

SM 3030C
Chromium and Lead were detected in soil sample USTA10-MW01(2-3) at concentrations well below the STGW MSCCs. Chromium was detected at 3.59 mg/kg; however, there was also Chromium detected in the laboratory batch blank. Lead was detected in the soil sample at a concentration of 2.62 mg/kg, as compared to the STGW MSCC of 270 mg/kg.

Tables 4A through 4E 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-10/SA-26 UST Closure
Groundwater samples were not collected during tank closure activities.

A-10/SA-26 LSA Investigation
CATLIN personnel installed one Type II monitoring well USTA10-MW01 on October 31, 2007. The groundwater was allowed to equilibrate, and the wells were gauged to determine the depth to water, 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. One groundwater sample was obtained from monitoring well USTA10-MW01. A duplicate sample, labeled USTA10-DW01, was analyzed for only VOCs via Standard Method 6210D. 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 per Standard Method 6210D, EPA Method 625 (+ 10 largest non-target peaks), MADEP VPH/EPH, and Standard Method 3030C.

A copy of the resulting groundwater analytical report and COC is located 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), where established. Analysis of the groundwater samples submitted for laboratory analysis can be summarized as follows:

STANDARD METHOD 6210D
Only 4-Isopropyltoluene was detected at noncompliant concentrations in groundwater sample USTA10-MW01. Since neither a 2L GWQS, nor a GCL has been established for this compound, any detection is considered reportable.

4-Isopropyltoluene, also known as Cymene (or *p*-Cymene), is a naturally occurring Aromatic organic compound with the molecular formula $C_{10}H_{14}$. A

standards comparison can be made with the C_9-C_{22} Aromatic fraction class since both structures are based on the Aromatic Benzene ring. When compared to the C_9-C_{22} Aromatic 2L GWQS of 210 µg/L, the detected 4-Isopropyltoluene estimated concentration (0.150 µg/L) is well below the 2L GWQS. All other 6210D compounds in sample USTA10-MW01 were either less than the 2L GWQS or BMDLs.

Duplicate groundwater sample USTA10-DW01 did not contain any 6210D analytes with concentrations above the 2L GWQSs.

EPA METHOD 625 (+ TICs)

Analysis of the monitoring well USTA10-MW01 groundwater sample revealed Dimethylphthalate at an estimated concentration of 1.70 µg/L. There is no established 2L GWQS or GCL for this compound. Again, since it's structure is based on the Aromatic Benzene ring, the detected concentration can be compared to the C_9-C_{22} Aromatic 2L GWQS of 210 µg/L. The sample concentration is well below the 2L GWQS. As a common phthalate, Dimethylphthalate is used as a plasticizer in solid rocket repellants, plastics, insect repellants, and pesticides, and it is another compound not usually associated with petroleum releases. All other remaining EPA Method 625 compounds were reported as BMDLs.

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. As previously discussed, TICs refer to detected compounds, which are not present in the EPA Method 625 list of target compounds. Not all TICs are identified and quantitated using individual standards, and the quantitation standard provided is an estimate. There are no established 2L GWQS or GCL Standards for any TIC. Laboratory analysis did not detect any TICs in the USTA10-MW01 groundwater sample.

MADEP VPH/EPH

Laboratory analysis did not detect any MADEP constituents in the groundwater sample from monitoring well USTA10-MW01.

SM 3030C

Only Chromium was detected in the groundwater sample from USTA10-MW01 at an estimated concentration of 3.82 µg /L as compared to the 2L GWQS of 50 µg/L. This concentration is well below the established GWQS. Lead was not detected in groundwater sample USTA10-MW01.

Tables 5A through 5E and Figures 4A through 4D 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 site groundwater monitoring well USTA10-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-10/SA-26 FORMER UST

- Soil sample USTA10-MW01(2-3) was analyzed using EPA Method 8260 (including IPE and MTBE), EPA Method 8270 (+ 10 largest non-target peaks), MADEP VPH/EPH, and Standard Method 3030C. Target analytes were either detected at concentrations below applicable STGW MSCCs or reported as BMDLs.

- The monitoring well USTA10-MW01 groundwater sample was analyzed per Standard Method 6210D, EPA Method 625 (+ 10 largest non-target peaks), MADEP VPH/EPH, and Standard Method 3030C. Dimethylphthalate (1.70J µg/L), and 4-Isopropyltoluene (0.150J µg/L) were detected in the groundwater sample. Since these two compounds do not have established 2L GWQSs or GCLs, any detection is reportable. Laboratory analyses revealed that all other analyte concentrations were either below quantitation limits or below applicable 2L GWQS 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.

There were no soil contaminants identified in excess of the most restrictive MSCCs. Two compounds that do not have established 2L GWQSs or GCLs, were detected in groundwater at the site –Dimethylphthalate and 4-Isopropyltoluene. All other target compounds were either detected at concentrations less than the 2L GWQSs or BMDLs. Based on findings of this Phase I LSA, CATLIN believes the site qualifies for No Further Action.

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.

Baker Environmental Inc., *FINAL Remedial Investigation Report, Site 73, Amphibious Vehicle Maintenance Facility, Text, Marine Corps Base Camp Lejeune, North Carolina*, November 7, 1997.

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

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

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

Peele's Pump And Tank Company, *Initial Site Assessment Report, UST Closure by Removal, 1-500 Gallon Used Oil Tank, Building A-10, Camp Lejeune, Jacksonville, North Carolina*, Undated – approximately July 1993.

TABLES

TABLE 1

UST SYSTEM INFORMATION

PHASE I LIMITED SITE ASSESSMENT
BUILDING A-10/SA-26 WASH RACK

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	Used Oil	500	Unknown	(P) 7/23/1993	Yes

TABLE 2

UST OWNER/OPERATOR INFORMATION

PHASE I LIMITED SITE ASSESSMENTS
BUILDING A-10/SA-26 WASH RACK

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 7/23/1993	PSC BOX 20004 Marine Corps Base Camp Lejeune, NC 28542	(910) 451-5068

TABLE 3

WELL CONSTRUCTION INFORMATION

PHASE I LIMITED SITE ASSESSMENT
BUILDING A-10/SA-26 WASH RACK

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. BGS)	**Screened Interval** (x to y ft. BGS)	**Bottom of Well** (ft. BGS)	**Top of Casing Elevation** (ft.)	**Depth to Water from Top of Casing** (ft.)	**Free Product Thickness** (ft.)	**Ground Water Elevation** (ft.)	**Comments**
USTA10-MW01	10/31/2007	11/1/2007	3	3-13	13	Not Measured	3.6	0.00	Not Measured	Monitoring

ft BLS = feet below land surface

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

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

Sample ID	Contaminant of Concern →		Acetone	Naphthalene	All Other 8260 Compounds
	Date Collected	Sample Depth (ft. BLS)			
Residential MSCC (mg/kg)			1,564	313	Varies
Industrial/Commercial MSCC (mg/kg)			40,880	8,176	Varies
Soil to Groundwater MSCC (mg/kg)			2.8	0.58	Varies
USTA10-MW01(2-3)	10/31/2007	2-3	0.0210J	<0.00086	BMDL
USTA10-DW01(3.5-5)	10/31/2007	3.5-5	0.0197J	0.00212J	BMDL

All results in milligram per Kilogram (mg/kg)

BMDL = Below Method Detection Limit

MSCC = Maximum Soil Contaminant Concentrations

ft. BLS = Feet Below Land Surface

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

< = Less than method detection limit

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

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

Sample ID	Contaminant of Concern →		All 8270 Compounds
	Date Collected	Sample Depth (ft. BLS)	
Residential MSCC (mg/Kg) **Industrial/Commercial (mg/Kg)** **STGW MSCC (mg/Kg)**			Varies Varies Varies
USTA10-MW01(2-3)	10/31/2007	2-3	BMDL

All results in milligram per Kilogram (mg/kg)

BMDL = Below Method Detection Limit

MSCC = Maximum Soil Contaminant Concentrations

ft. BLS = Feet Below Land Surface

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

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

Sample ID	Contaminant of Concern →		C_5-C_8 Aliphatics	C_9-C_{12} Aliphatics	C_9-C_{10} Aromatics	C_9-C_{18} Aliphatics	C_{19}-C_{36} Aliphatics	C_{11}-C_{22} Aromatics
	Date Collected	Sample Depth (ft. BLS)						
USTA10-MW01(2-3)	10/31/2007	2-3	<10.0	<10.0	<10.0	<10.0	<10.0	<10.0

All results in milligrams per kilogram (mg/kg)

< = Less than method detection limit

ft. BLS = Feet Below Land Surface

TABLE 4D
SUMMARY OF SOIL LABORATORY RESULTS
MADEP VPH/EPH as compared to NCDENR MSCCs

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

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
Soil to Groundwater MSCC (mg/kg)			72	3300	##	34
USTA10-MW01(2-3)	10/31/2007	2-3	<10.0	<20.0	<10.0	<20.0

All results in milligram per Kilogram (mg/kg)

Health based level > 100%

Considered immobile

MSCC = Maximum Soil Contaminant Concentrations

ft. BLS = Feet Below Land Surface

< = Less than method detection limit

TABLE 4E
SUMMARY OF SOIL LABORATORY RESULTS
STANDARD METHOD 3030C

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

Sample ID	Contaminant of Concern →		Chromium	Lead
	Date Collected	Sample Depth (ft. BLS)		
Residential MSCC (mg/kg)			47	400
Industrial/Commercial MSCC (mg/kg)			1,226	400
Soil to Groundwater MSCC (mg/kg)			27	270
USTA10-MW01(2-3)	10/31/2007	2-3	3.59B	2.62

All results in milligram per Kilogram (mg/kg)

B = Compound also detected in batch blank

BMDL = Below Method Detection Limit

MSCC = Maximum Soil Contaminant Concentrations

ft. BLS = Feet Below Land Surface

TABLE 5A
SUMMARY OF GROUNDWATER LABORATORY RESULTS
STANDARD METHOD 6210D

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

Well ID	Contaminant of Concern →		Bromodichloromethane	n-Butylbenzene	Chloroform	Dibromochloromethane	Isopropylbenzene	4-Isopropyltoluene	Naphthalene	Total Xylenes	All Standard Method 6210D Compounds
	Sample ID	Date Collected									
GCL (µg/L)			NE	6,900	70,000	410	25,000	NE	15,500	87,500	Varies
2L GWQS (µg/L)			0.56	70	70	0.41	70	NE	21	530	Varies
USTA10-MW01	USTA10-MW01	11/1/2007	0.420J	<0.105	0.630	0.270J	0.240J	**0.150J**	0.470J	<0.610J	BMDL
USTA10-MW01	USTA10-DW01	11/1/2007	0.300J	0.210J	0.550	<0.124	0.230J	<0.124	0.530	<0.710J	BMDL

Sample USTA10-DW01 is a duplicate sample from monitoring well USTA10-MW01; analyzed for VOCs only.

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

BMDL = Below Method Detection Limit

< = Less than method detection limit (MDL)

GCL = Gross Contaminant Level

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

J = Estimated concentration, below calibration range and above MDL

NE = None Established.

Bold results indicate concentrations above 2L GWQS or GCL.

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

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

Well ID	Contaminant of Concern →		Dimethylphthalate	All Other EPA Method 625 Compounds
	Sample ID	Date Collected		
GCL (µg/L)			NE	Varies
2L GWQS (µg/L)			NE	Varies
USTA10-MW01	USTA10-MW01	11/1/2007	**1.70J**	BMDL

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

BMDL = Below Method Detection Limit

GCL = Gross Contaminant Level

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

J = Estimated concentration, below calibration range and above MDL

NE = None Established.

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

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

Well ID	Contaminant of Concern →		C_5-C_8 Aliphatics	C_9-C_{12} Aliphatics	C_9-C_{10} Aromatics	C_9-C_{18} Aliphatics	C_{19}-C_{36} Aliphatics	C_{11}-C_{22} Aromatics
	Sample ID	Date Collected						
USTA10-MW01	USTA10-MW01	11/1/2007	<100	<100	<100	<100	<100	<100

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

< = Less than method detection limit (MDL)

TABLE 5D
SUMMARY OF GROUNDWATER LABORATORY RESULTS
MADEP VPH/EPH as compared to NCDENR 2L GWQS

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

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)			NE	NE	NE	NE
2L GWQS (µg/L)			420	4,200	42,000	210
USTA10-MW01	USTA10-MW01	11/1/2007	<100	<200	<100	<200

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

< = Less than method detection limit (MDL)

GCL = Gross Contaminant Level

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

TABLE 5E
SUMMARY OF GROUNDWATER LABORATORY RESULTS
STANDARD METHOD 3030C

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

Well ID	Contaminant of Concern →		Chromium	Lead
	Sample ID	Date Collected		
GCL (µg/L)			50,000	15,000
2L GWQS (µg/L)			50	15
USTA10-MW01	USTA10-MW01	11/7/2007	3.82JB	<0.617

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

< = Less than method detection limit (MDL)

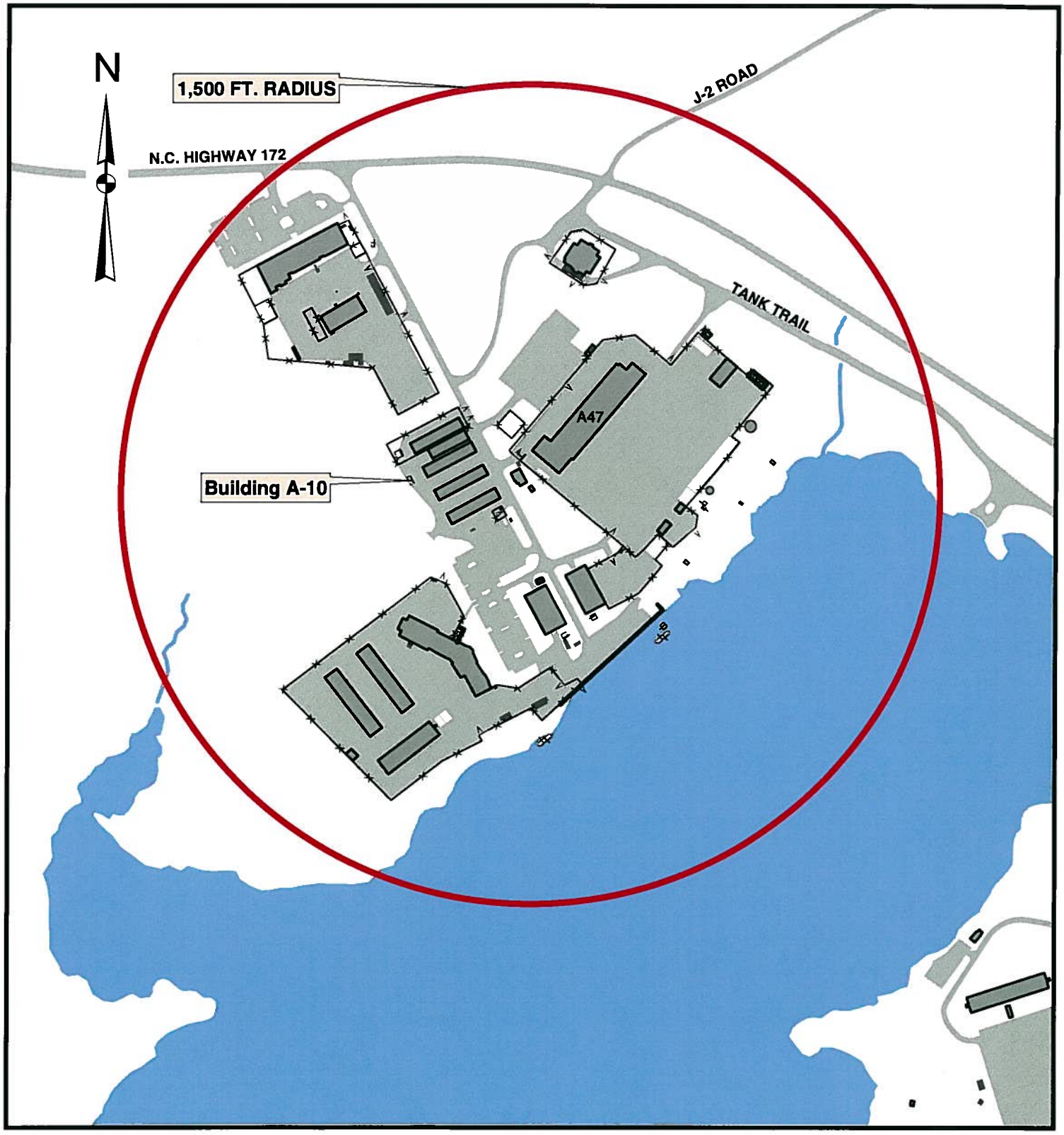
GCL = Gross Contaminant Level

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

J = Estimated concentration, below calibration range and above MDL

B = Compound detected in batch blank.

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-10/SA-26 VEHICLE WASH RACK MARINE CORPS BASE CAMP LEJEUNE, NC		TITLE: 1,500 FT. RADIUS WITH WATER SUPPLY WELL SURVEY AND PLACES OF PUBLIC ASSEMBLY			FIGURE 1
	JOB NO: 207-048	DATE: DEC 2007	SCALE: AS SHOWN	DRAWN BY: KAWS	CHECKED BY: MEM	

PHASE I LIMITED SITE ASSESSMENT FOR BUILDING A-10/SA-26 VEHICLE WASH RACK MARINE CORPS BASE CAMP LEJEUNE, NC

NAVFAC
Naval Facilities Engineering Command

LEGEND

EXISTING	NEW	DESCRIPTION
	⊕	Type II Monitoring Well
⊠		Unknown Well Type
		Buildings and 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.

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SITE PLAN WITH BORING/MONITORING WELL LOCATION

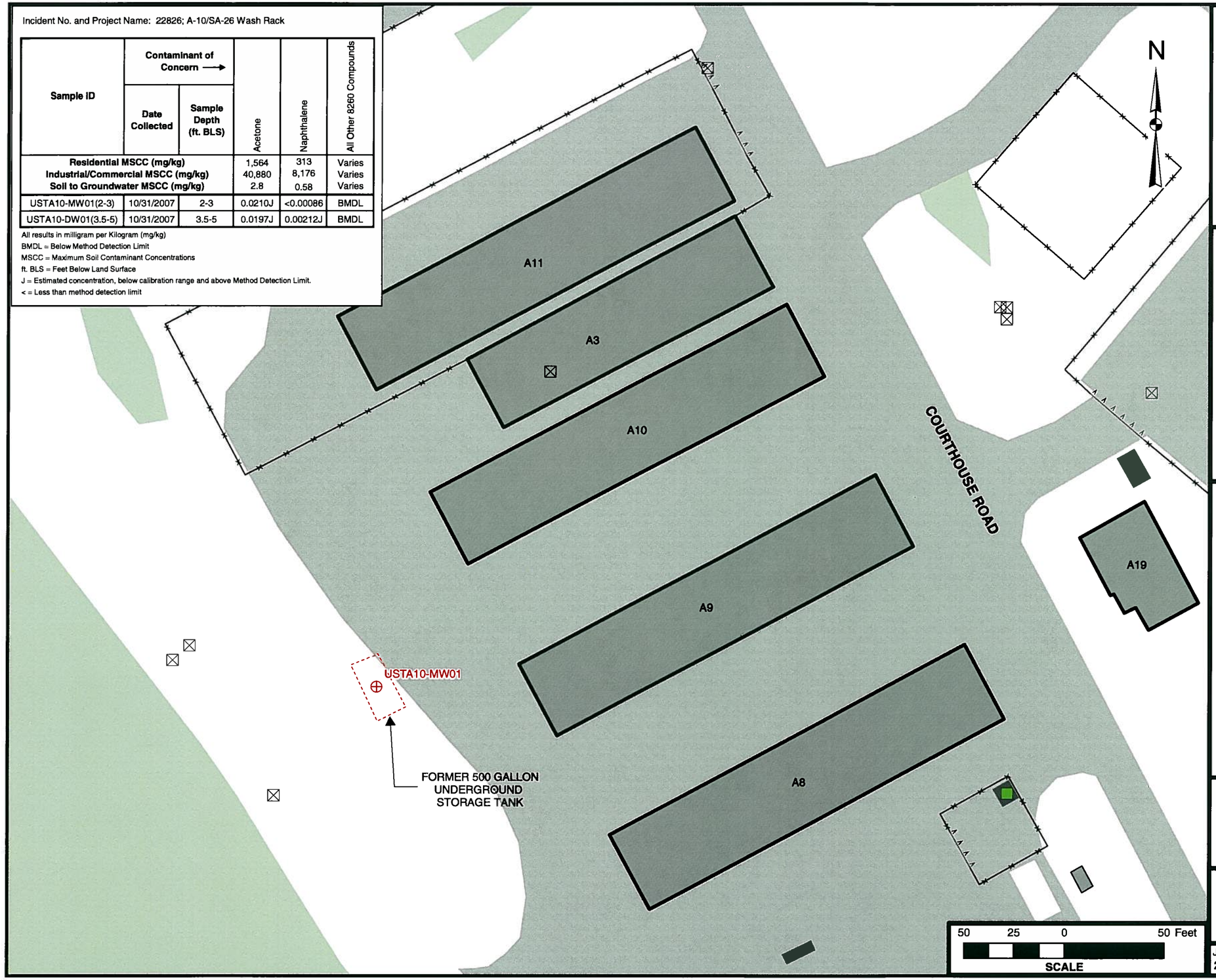
FIGURE 2

Job No.:	Date:	Scale:	Drawn By:	Checked By:
207-048	DEC 2007	AS SHOWN	KAWS	MEM

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

Sample ID	Date Collected	Sample Depth (ft. BLS)	Acetone	Naphthalene	All Other 8260 Compounds
	Contaminant of Concern →				
Residential MSCC (mg/kg)			1,564	313	Varies
Industrial/Commercial MSCC (mg/kg)			40,880	8,176	Varies
Soil to Groundwater MSCC (mg/kg)			2.8	0.58	Varies
USTA10-MW01(2-3)	10/31/2007	2-3	0.0210J	<0.00086	BMDL
USTA10-DW01(3.5-5)	10/31/2007	3.5-5	0.0197J	0.00212J	BMDL

All results in milligram per Kilogram (mg/kg)
BMDL = Below Method Detection Limit
MSCC = Maximum Soil Contaminant Concentrations
ft. BLS = Feet Below Land Surface
J = Estimated concentration, below calibration range and above Method Detection Limit.
< = Less than method detection limit



PHASE I LIMITED SITE ASSESSMENT FOR BUILDING A-10/SA-26 VEHICLE WASH RACK MARINE CORPS BASE CAMP LEJEUNE, NC

NAVFAC
Naval Facilities Engineering Command

LEGEND

EXISTING	NEW	DESCRIPTION
	⊕	Type II Monitoring Well
☒		Unknown Well Type
		Buildings and 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.

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

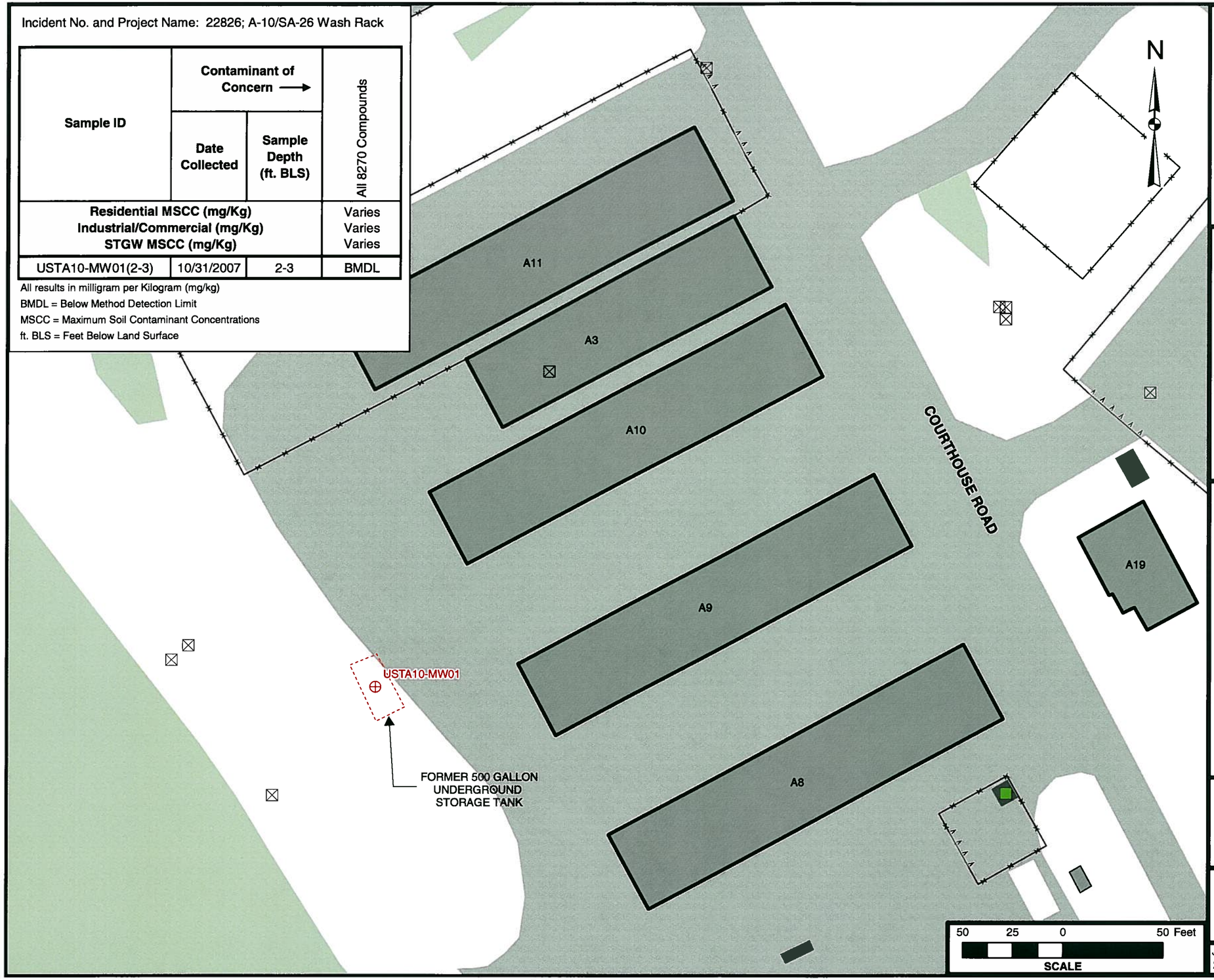
FIGURE 3A

Job No.:	Date:	Scale:	Drawn By:	Checked By:
207-048	DEC 2007	AS SHOWN	KAWS	MEM

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

Sample ID	Contaminant of Concern →		All 8270 Compounds
	Date Collected	Sample Depth (ft. BLS)	
Residential MSCC (mg/Kg) **Industrial/Commercial (mg/Kg)** **STGW MSCC (mg/Kg)**			Varies Varies Varies
USTA10-MW01(2-3)	10/31/2007	2-3	BMDL

All results in milligram per Kilogram (mg/kg)
BMDL = Below Method Detection Limit
MSCC = Maximum Soil Contaminant Concentrations
ft. BLS = Feet Below Land Surface



PHASE I LIMITED SITE ASSESSMENT FOR BUILDING A-10/SA-26 VEHICLE WASH RACK MARINE CORPS BASE CAMP LEJEUNE, NC

NAVFAC Naval Facilities Engineering Command

LEGEND

EXISTING	NEW	DESCRIPTION
	⊕	Type II Monitoring Well
☒		Unknown Well Type
		Buildings and 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.

CATLIN Engineers and Scientists

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

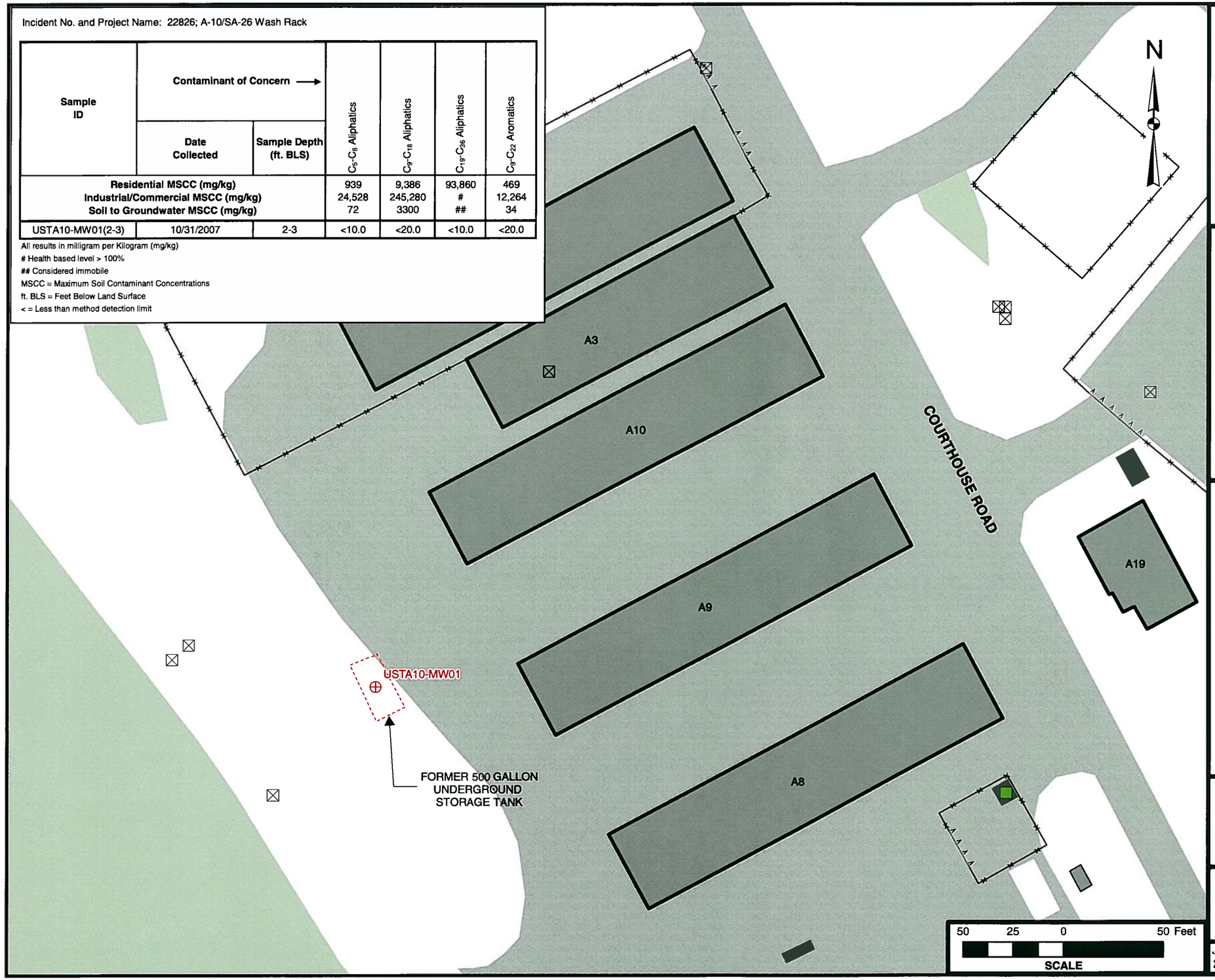
FIGURE 3B

Job No.:	Date:	Scale:	Drawn By:	Checked By:
207-048	DEC 2007	AS SHOWN	KAWS	MEM

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

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
Soil to Groundwater MSCC (mg/kg)			72	3300	##	34
USTA10-MW01(2-3)	10/31/2007	2-3	<10.0	<20.0	<10.0	<20.0

All results in milligram per Kilogram (mg/kg)
Health based level > 100%
Considered immobile
MSCC = Maximum Soil Contaminant Concentrations
ft. BLS = Feet Below Land Surface
< = Less than method detection limit



PHASE I LIMITED SITE ASSESSMENT FOR BUILDING A-10/SA-26 VEHICLE WASH RACK MARINE CORPS BASE CAMP LEJEUNE, NC

NAVFAC
Naval Facilities Engineering Command

LEGEND

EXISTING	NEW	DESCRIPTION
	⊕	Type II Monitoring Well
⊠		Unknown Well Type
		Buildings and 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.

CATLIN
Engineers and Scientists

SITE PLAN WITH SOIL LABORATORY RESULTS - MADEP VPH/EPH

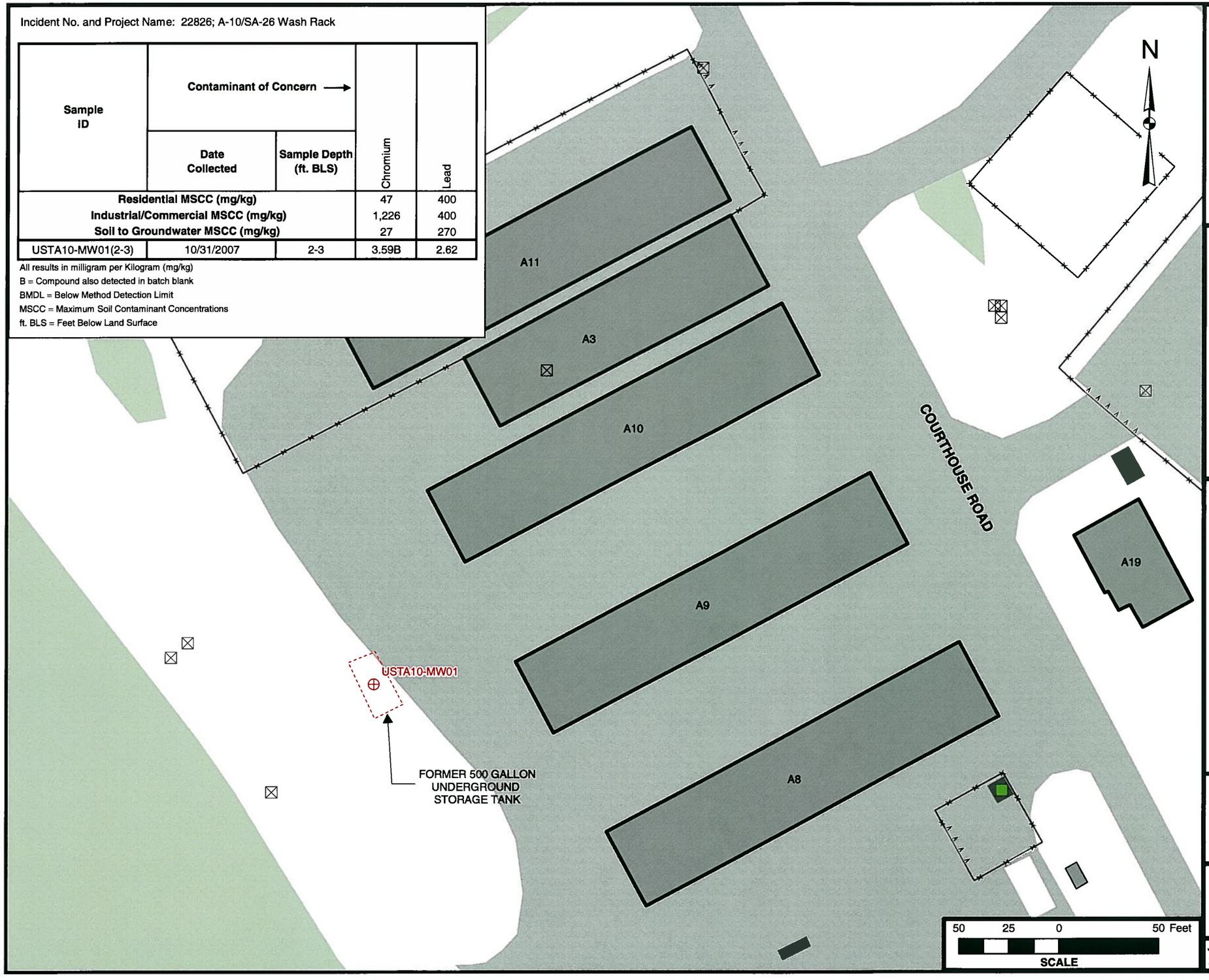
FIGURE 3C

Job No.:	Date:	Scale:	Drawn By:	Checked By:
207-048	DEC 2007	AS SHOWN	KAWS	MEM

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

Sample ID	Contaminant of Concern → Date Collected	Sample Depth (ft. BLS)	Chromium	Lead
Residential MSCC (mg/kg)			47	400
Industrial/Commercial MSCC (mg/kg)			1,226	400
Soil to Groundwater MSCC (mg/kg)			27	270
USTA10-MW01(2-3)	10/31/2007	2-3	3.59B	2.62

All results in milligram per Kilogram (mg/kg)
B = Compound also detected in batch blank
BMDL = Below Method Detection Limit
MSCC = Maximum Soil Contaminant Concentrations
ft. BLS = Feet Below Land Surface



PHASE I LIMITED SITE ASSESSMENT FOR BUILDING A-10/SA-26 VEHICLE WASH RACK MARINE CORPS BASE CAMP LEJEUNE, NC

NAVFAC
Naval Facilities Engineering Command

LEGEND

EXISTING	NEW	DESCRIPTION
	⊕	Type II Monitoring Well
⊠		Unknown Well Type
		Buildings and 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.

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Engineers and Scientists

SITE PLAN WITH SOIL LABORATORY RESULTS - STANDARD METHOD 3030C

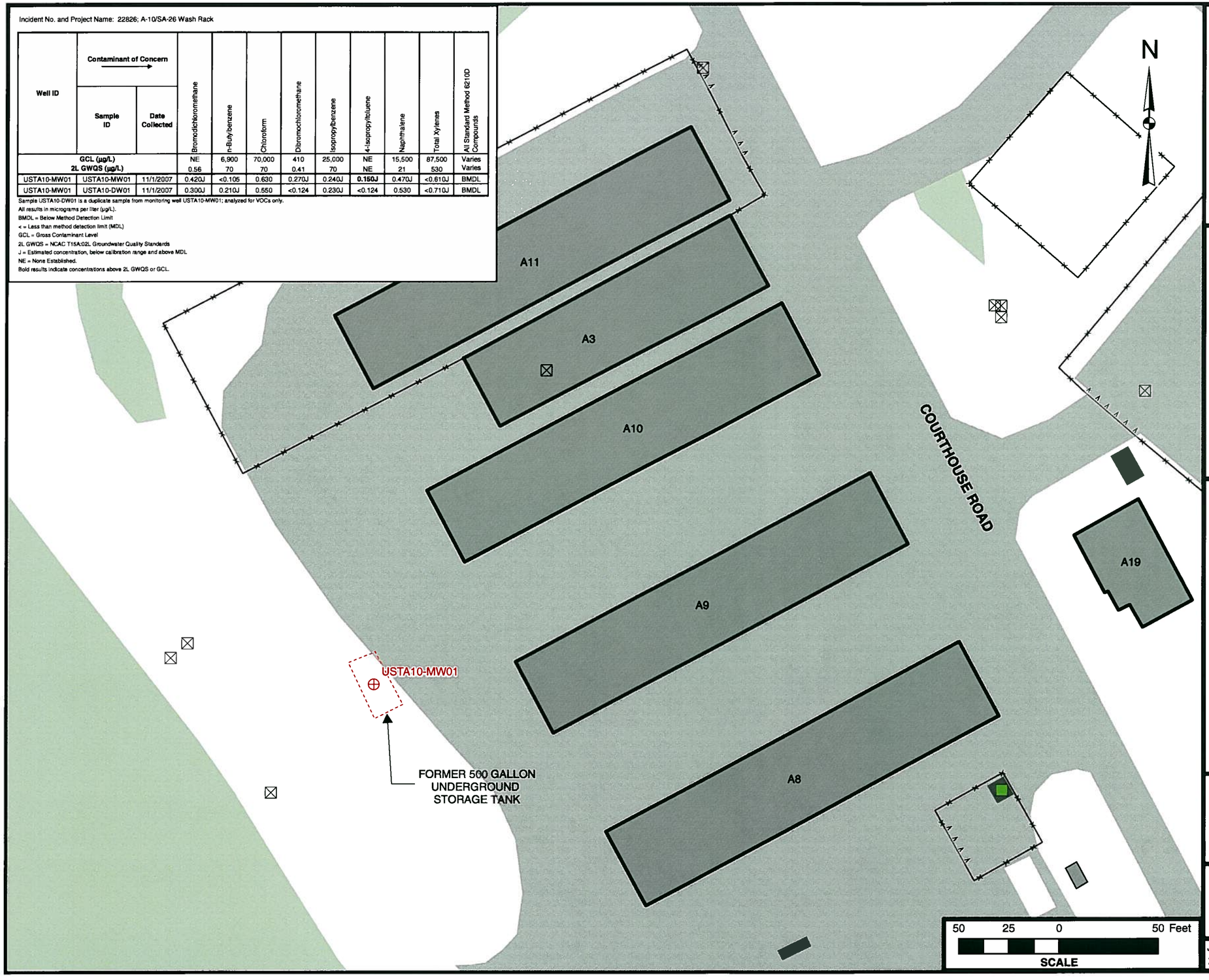
FIGURE 3D

Job No.:	Date:	Scale:	Drawn By:	Checked By:
207-048	DEC 2007	AS SHOWN	KAWS	MEM

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

Well ID	Contaminant of Concern → Sample ID	Date Collected	Bromodichloromethane	n-Butylbenzene	Chloroform	Dibromochloromethane	Isopropylbenzene	4-Isopropyltoluene	Naphthalene	Total Xylenes	All Standard Method 6210D Compounds
GCL (µg/L)			NE	6,900	70,000	410	25,000	NE	15,500	87,500	Varies
2L GWQS (µg/L)			0.56	70	70	0.41	70	NE	21	530	Varies
USTA10-MW01	USTA10-MW01	11/1/2007	0.420J	<0.105	0.630	0.270J	0.240J	**0.150J**	0.470J	<0.610J	BMDL
USTA10-MW01	USTA10-DW01	11/1/2007	0.300J	0.210J	0.550	<0.124	0.230J	<0.124	0.530	<0.710J	BMDL

Sample USTA10-DW01 is a duplicate sample from monitoring well USTA10-MW01; analyzed for VOCs only.
All results in micrograms per liter (µg/L).
BMDL = Below Method Detection Limit
< = Less than method detection limit (MDL)
GCL = Gross Contaminant Level
2L GWQS = NCAC T15A:02L Groundwater Quality Standards
J = Estimated concentration, below calibration range and above MDL
NE = None Established.
Bold results indicate concentrations above 2L GWQS or GCL.



PHASE I LIMITED SITE ASSESSMENT FOR BUILDING A-10/SA-26 VEHICLE WASH RACK MARINE CORPS BASE CAMP LEJEUNE, NC

NAVFAC Naval Facilities Engineering Command

LEGEND

EXISTING	NEW	DESCRIPTION
	⊕	Type II Monitoring Well
⊠		Unknown Well Type
		Buildings and 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.

CATLIN Engineers and Scientists

SITE PLAN WITH GROUNDWATER LABORATORY RESULTS - STANDARD METHOD 6210D

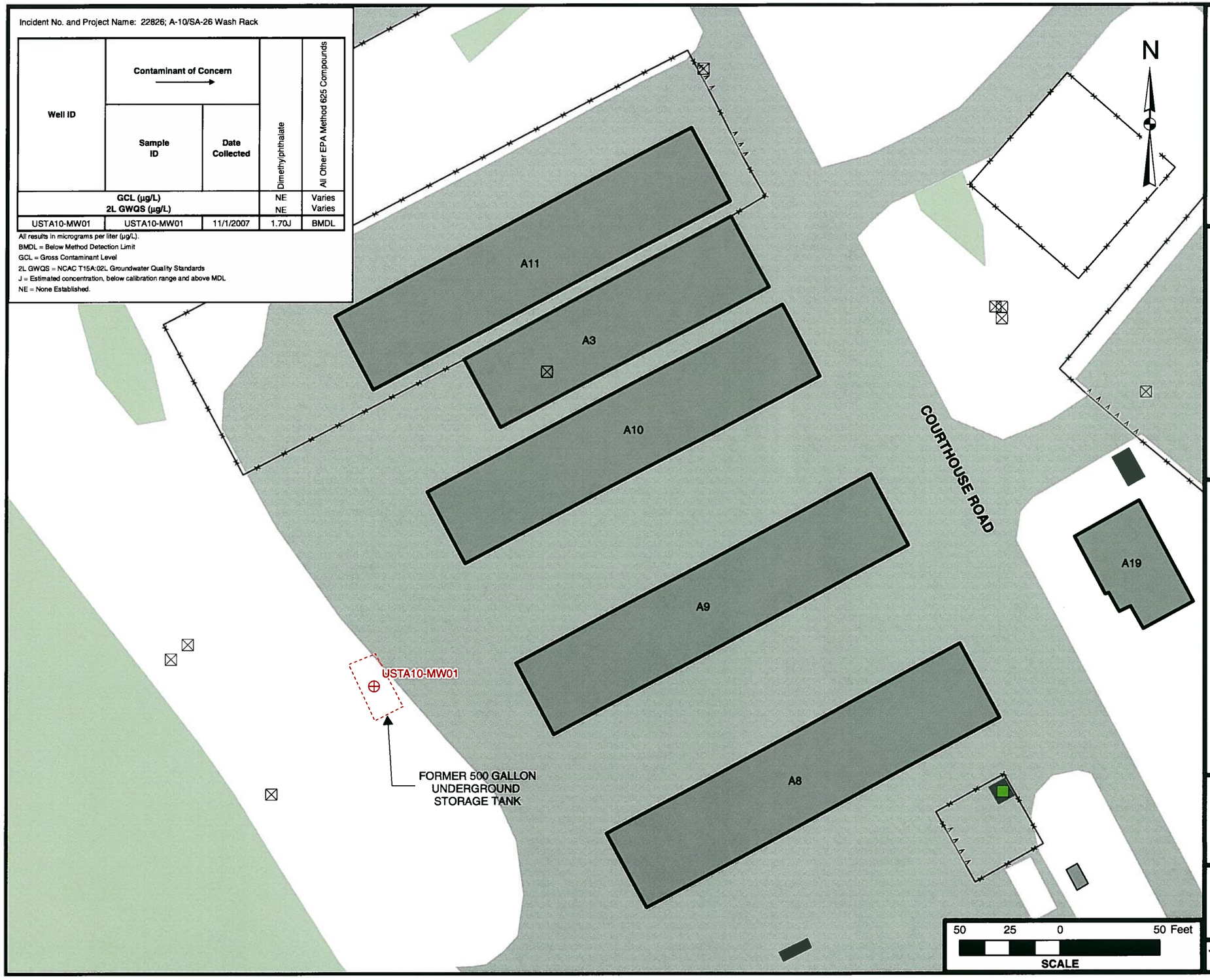
FIGURE 4A

Job No.:	Date:	Scale:	Drawn By:	Checked By:
207-048	DEC 2007	AS SHOWN	KAWS	MEM

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

Well ID	Contaminant of Concern → Sample ID	Date Collected	Dimethylphthalate	All Other EPA Method 625 Compounds
GCL (µg/L)			NE	Varies
2L GWQS (µg/L)			NE	Varies
USTA10-MW01	USTA10-MW01	11/1/2007	1.70J	BMDL

All results in micrograms per liter (µg/L).
BMDL = Below Method Detection Limit
GCL = Gross Contaminant Level
2L GWQS = NCAC T15A:02L Groundwater Quality Standards
J = Estimated concentration, below calibration range and above MDL
NE = None Established.



PHASE I LIMITED SITE ASSESSMENT FOR BUILDING A-10/SA-26 VEHICLE WASH RACK MARINE CORPS BASE CAMP LEJEUNE, NC

NAVFAC Naval Facilities Engineering Command

LEGEND

EXISTING	NEW	DESCRIPTION
	⊕	Type II Monitoring Well
⊠		Unknown Well Type
		Buildings and 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.

CATLIN Engineers and Scientists

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

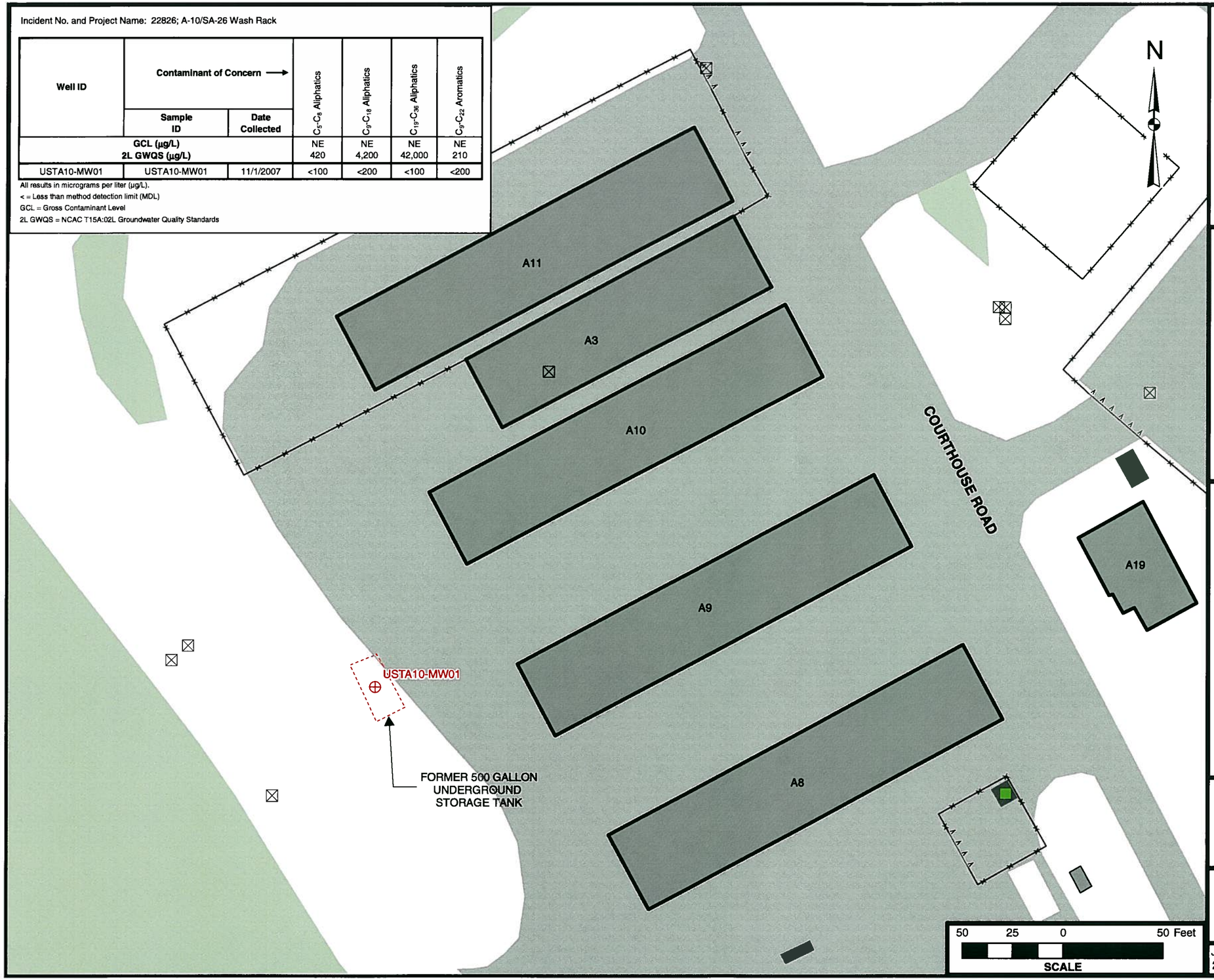
FIGURE 4B

Job No.:	Date:	Scale:	Drawn By:	Checked By:
207-048	DEC 2007	AS SHOWN	KAWS	MEM

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

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)			NE	NE	NE	NE
2L GWQS (µg/L)			420	4,200	42,000	210
USTA10-MW01	USTA10-MW01	11/1/2007	<100	<200	<100	<200

All results in micrograms per liter (µg/L).
< = Less than method detection limit (MDL)
GCL = Gross Contaminant Level
2L GWQS = NCAC T15A:02L Groundwater Quality Standards



PHASE I LIMITED SITE ASSESSMENT FOR BUILDING A-10/SA-26 VEHICLE WASH RACK MARINE CORPS BASE CAMP LEJEUNE, NC

NAVFAC Naval Facilities Engineering Command

LEGEND

EXISTING	NEW	DESCRIPTION
	⊕	Type II Monitoring Well
☒		Unknown Well Type
		Buildings and 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.

CATLIN Engineers and Scientists

SITE PLAN WITH GROUNDWATER LABORATORY RESULTS - MADEP VPH/EPH

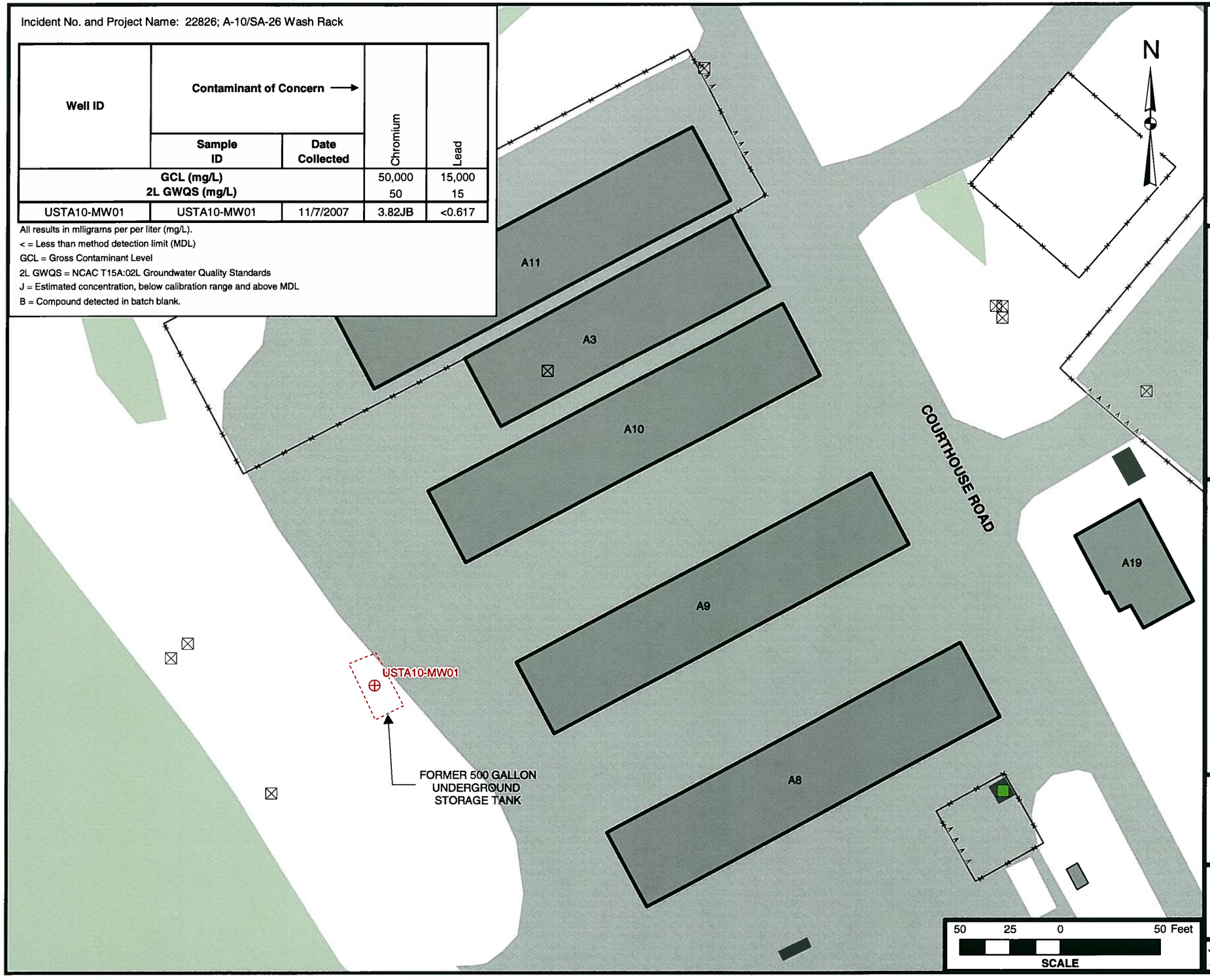
FIGURE 4C

Job No.:	Date:	Scale:	Drawn By:	Checked By:
207-048	DEC 2007	AS SHOWN	KAWS	MEM

Incident No. and Project Name: 22826; A-10/SA-26 Wash Rack

Well ID	Contaminant of Concern →		Chromium	Lead
	Sample ID	Date Collected		
GCL (mg/L)			50,000	15,000
2L GWQS (mg/L)			50	15
USTA10-MW01	USTA10-MW01	11/7/2007	3.82JB	<0.617

All results in milligrams per per liter (mg/L).
< = Less than method detection limit (MDL)
GCL = Gross Contaminant Level
2L GWQS = NCAC T15A:02L Groundwater Quality Standards
J = Estimated concentration, below calibration range and above MDL
B = Compound detected in batch blank.



PHASE I LIMITED SITE ASSESSMENT FOR BUILDING A-10/SA-26 VEHICLE WASH RACK MARINE CORPS BASE CAMP LEJEUNE, NC

NAVFAC Naval Facilities Engineering Command

LEGEND

EXISTING	NEW	DESCRIPTION
	⊕	Type II Monitoring Well
☒		Unknown Well Type
		Buildings and 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.

CATLIN Engineers and Scientists

SITE PLAN WITH GROUNDWATER LABORATORY RESULTS - STANDARD METHOD 3030C

FIGURE 4D

Job No.:	Date:	Scale:	Drawn By:	Checked By:
207-048	DEC 2007	AS SHOWN	KAWS	MEM

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 (City or Town) North Carolina (State) 28405 (Zip Code)

(910) - 452-5861
Area code - Phone number

2. WELL INFORMATION

SITE WELL ID #(if applicable): USTA10-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: 15:30 AM ☐ PM ☒

3. WELL LOCATION:

CITY: Camp Lejuene COUNTY: Onslow
Courthouse Rd. MCB Camp Lejuene, NC,
(Street Name, Numbers, Community, Subdivision, Lot No., Parcel, Zip Code)

TOPOGRAPHIC / LAND SETTING
Slope ☐ Valley ☐ Flat ☒ Ridge ☐ Other: _____

NORTHING: 3,830,168.0
EASTING: 282,225.3
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 Lejuene
Camp Lejuene (City or Town) NC (State) Zip Code
CONTACT PERSON: Mr. Andrew Smith
STREET ADDRESS: Attn: I&E/ EMD/ EQB/ PSC Box 20004
Camp Lejeune (City or Town) NC (State) 28542-0004 (Zip Code)
(910)- 451-9017
Area code - Phone number

5. WELL DETAILS:

a. TOTAL DEPTH: 13
b. DOES WELL REPLACE EXISTING WELL? YES ☐ NO ☒
c. WATER LEVEL Below Top of Casing: 3.6 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 3 ft.	2"	Sch. 40	PVC
From ____	To ____ ft.	"		
From ____	To ____ ft.	"		

7. GROUT:

	Depth	Material	Method
From 0	To 1 Ft.	Portland Cement	Surface Pour
From 1	To 2 Ft.	Bent. Pellets	Surface Pour
From ____	To ____ Ft.		

8. SCREEN:

	Depth	Diameter	Slot Size	Material
From 3	To 13 Ft.	2 in.	Slot .010 in.	PVC
From ____	To ____ Ft.	____ in.	____ in.	
From ____	To ____ Ft.	____ in.	____ in.	

9. SAND/GRAVEL PACK:

	Depth	Size	Material
From 2	To 13 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 — 12-12-07
SIGNATURE OF CERTIFIED WELL CONTRACTOR — DATE

John E. Wood, III
PRINTED NAME OF PERSON CONSTRUCTING THE WELL

Submit the original to the Division of Water Quality within 30 days, Attn: Information Management, 1617 Mail Service Center - Raleigh, NC 27699167, Phone No. (919) 733-7015 ext 568.

Modified from Form GW-1b Rev. 7/05

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
207-048
Wilmington, NC

SHEET 1 OF 1

PROJECT NO.: 207-048	STATE: NC	COUNTY: Onslow	LOCATION: Camp Lejuene		
PROJECT NAME: Former CERCLA Site USTA10		LOGGED BY: Steve Tyler	WELL ID: USTA10-MW01		
		DRILLER: John Wood			
NORTHING: 3830168.0	EASTING: 282225.3	CREW: Bill Miller			
SYSTEM: UTM NAD83 (m)	BORING LOCATION: Bldg. A10		T.O.C. ELEV.:		
DRILL MACHINE: D-50	METHOD: H.S. Augers	0 HOUR DTW: 4.5	TOTAL DEPTH: 14.5		
START DATE: 10/31/07	FINISH DATE: 10/31/07	24 HOUR DTW: 3.6	WELL DEPTH: 13.0		

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	SOIL AND ROCK DESCRIPTION	WELL DETAIL
									0.0 LAND SURFACE	0.0
1.0	P	U	S	H	0.9		SM		1.0 Black fine SAND w/ some organic SILTS. Dry.	0.0 2" Sch. 40 PVC 1.0
2.0	P	U	S	H	1.2	(2-3')	SM		2.0 Olive fine SAND w/ some SILTS. Dry.	2.0 3.0
3.5	3	9	9		1.8		SM		3.5 Same as above except medium dense.	
5.0	P	U	S	H	0.9		SM		5.0 S.A.A. except moist.	
									6.0	
8.0	4	3	2		0		SM		8.5 S.A.A. except loose and wet.	2" Slot 010 Sch 40 PVC
									10.0	
13.0	P	U	S	H	0		SC		13.0 Olive CLAYEY SILT. Moderate plasticity. Wet.	13.0 13.0
									14.5 Boring Terminated at Depth 14.5 ft CLAYEY SILT	

Portland Cement | Bentonite Pellets | #2 Medium Sand

CATLIN BORING LOG 207-048_LEJEUNE_LSAS_USTA-10.GPJ_TEST.GDT 12/11/07

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

SAMPLING FIELD DATA WORKSHEET

CATLIN ENGINEERS and SCIENTISTS
WILMINGTON, NORTH CAROLINA

MONITORING WELL SAMPLING RECORD

CATLIN PROJECT: Former CERCLA Sites
CATLIN PROJECT # : 207-048
CLIENT'S NAME:

LOGGED BY: Johli Davis
DATE: 11/7/2007
DAY: Wednesday
WEATHER: 50's windy / Sunny

WELL NO.	USTA10-MW01	USTA13-MW01			
TIME SAMPLED	1550	1630			
WELL DIAMETER	2	2			
WELL DEPTH - A	~~13~~	~~13~~			
DEPTH TO WATER - B	4.05	4.50			
(A-B) FT. WATER IN WELL - C	8.95	8.50			
GALLONS/FT. - D	0.163	0.163			
(CXD) ONE VOLUME - E	~~1.46~~ 1.45	1.38			
(EX3) THREE VOLUMES - F	~~4.38~~ 4.37	4.15			
VOLUME OF BAILER - G*	0.24	0.24			
(F/G) NO. BAILS REQUIRED - H*	18.20 Bails	17.31 Bails			
NO. BAILS REMOVED - I*	4.65 gallons	4.32 gallons			
VOLUME REMOVED	5 GALLONS	4.5 gallons			
TURBIDITY	no LIGHT YELLOW				
COMMENTS	PUMPED - Low FLOW	PUMPED - Low FLOW			

VOLUMES:
1" WELL = 0.045 GAL/FT.
2" WELL = 0.163 GAL/FT.
4" WELL = 0.661 GAL/FT.
6" WELL = 1.501 GAL/FT.

3' X 1.5" BAILER = 0.24 GAL/BAIL
4' X 1.5" BAILER = 0.37 GAL/BAIL

NOTES: AIR TEMP = _____
TURBIDITY - Indicate clear, slight, moderate or high.
* - An entry of PUMP indicates that bailers were not used to develop/purge the well and that a pump was used to remove the volume indicated.

APPENDIX D

LABORATORY REPORTS
AND
CHAIN-OF-CUSTODY DOCUMENTATION

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

Report Number: G128-2056

Client Project: USTA 10

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 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.

11/15/2007

Laboratory Director
J. Patrick Weaver

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

% soilds = 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.

MI34.030606.3

SGS ENVIRONMENTAL SERVICES, INC.

Results for Volatiles
by GCMS 8260-5035

Client Sample ID: USTA 10 MW01 (2-3)
Client Project ID: USTA 10
Lab Sample ID G128-2056-1A
Lab Project ID: G128-2056
Report Basis: Dry Weight

Analyzed By: MJC
Date Collected: 10-31-2007 14:20
Date Received: 11/1/2007
Matrix: Soil
Sample Amount: 6.05 g
%Solids: 81.4

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
Acetone	**0.0210**	0.0508	0.00701	1	11/8/2007	J
Benzene	BQL	0.00508	0.00109	1	11/8/2007	
Bromobenzene	BQL	0.00508	0.00105	1	11/8/2007	
Bromochloromethane	BQL	0.00508	0.00175	1	11/8/2007	
Bromodichloromethane	BQL	0.00508	0.00101	1	11/8/2007	
Bromoform	BQL	0.00508	0.00102	1	11/8/2007	
Bromomethane	BQL	0.00508	0.00107	1	11/8/2007	
2-Butanone	BQL	0.0254	0.00551	1	11/8/2007	
n-Butylbenzene	BQL	0.00508	0.00097	1	11/8/2007	
sec-Butylbenzene	BQL	0.00508	0.00103	1	11/8/2007	
tert-Butylbenzene	BQL	0.00508	0.00114	1	11/8/2007	
Carbon disulfide	BQL	0.00508	0.00272	1	11/8/2007	
Carbon tetrachloride	BQL	0.00508	0.00104	1	11/8/2007	
Chlorobenzene	BQL	0.00508	0.00121	1	11/8/2007	
Chloroethane	BQL	0.00508	0.00161	1	11/8/2007	
Chloroform	BQL	0.00508	0.00122	1	11/8/2007	
Chloromethane	BQL	0.00508	0.00115	1	11/8/2007	
2-Chlorotoluene	BQL	0.00508	0.00103	1	11/8/2007	
4-Chlorotoluene	BQL	0.00508	0.00127	1	11/8/2007	
Dibromochloromethane	BQL	0.00508	0.00140	1	11/8/2007	
1,2-Dibromo-3-chloropropane	BQL	0.00508	0.00147	1	11/8/2007	
Dibromomethane	BQL	0.00508	0.00153	1	11/8/2007	
1,2-Dibromoethane (EDB)	BQL	0.00508	0.00115	1	11/8/2007	
1,2-Dichlorobenzene	BQL	0.00508	0.00131	1	11/8/2007	
1,3-Dichlorobenzene	BQL	0.00508	0.00130	1	11/8/2007	
1,4-Dichlorobenzene	BQL	0.00508	0.00107	1	11/8/2007	
trans-1,4-Dichloro-2-butene	BQL	0.00508	0.00140	1	11/8/2007	
1,1-Dichloroethane	BQL	0.00508	0.00108	1	11/8/2007	
1,1-Dichloroethene	BQL	0.00508	0.00150	1	11/8/2007	
1,2-Dichloroethane	BQL	0.00508	0.00134	1	11/8/2007	
cis-1,2-Dichloroethene	BQL	0.00508	0.00130	1	11/8/2007	
trans-1,2-dichloroethene	BQL	0.00508	0.00115	1	11/8/2007	
1,2-Dichloropropane	BQL	0.00508	0.00120	1	11/8/2007	
1,3-Dichloropropane	BQL	0.00508	0.00114	1	11/8/2007	
2,2-Dichloropropane	BQL	0.00508	0.00122	1	11/8/2007	
1,1-Dichloropropene	BQL	0.00508	0.00159	1	11/8/2007	
cis-1,3-Dichloropropene	BQL	0.00508	0.00085	1	11/8/2007	
trans-1,3-Dichloropropene	BQL	0.00508	0.00098	1	11/8/2007	
Dichlorodifluoromethane	BQL	0.00508	0.00134	1	11/8/2007	
Diisopropyl ether (DIPE)	BQL	0.00508	0.00115	1	11/8/2007	
Ethylbenzene	BQL	0.00508	0.00088	1	11/8/2007	
Hexachlorobutadiene	BQL	0.00508	0.00099	1	11/8/2007	

Results for Volatiles
by GCMS 8260-5035

Client Sample ID: USTA 10 MW01 (2-3)
Client Project ID: USTA 10
Lab Sample ID G128-2056-1A
Lab Project ID: G128-2056
Report Basis: Dry Weight

Analyzed By: MJC
Date Collected: 10-31-2007 14:20
Date Received: 11/1/2007
Matrix: Soil
Sample Amount: 6.05 g
%Solids: 81.4

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
2-Hexanone	BQL	0.00508	0.00329	1	11/8/2007	
Iodomethane	BQL	0.00508	0.00110	1	11/8/2007	
Isopropylbenzene	BQL	0.00508	0.00090	1	11/8/2007	
4-Isopropyltoluene	BQL	0.00508	0.00109	1	11/8/2007	
Methylene chloride	BQL	0.0203	0.00121	1	11/8/2007	
4-Methyl-2-pentanone	BQL	0.00508	0.00470	1	11/8/2007	
Methyl-tert-butyl ether (MTBE)	BQL	0.00508	0.00113	1	11/8/2007	
Naphthalene	BQL	0.00508	0.00086	1	11/8/2007	
n-Propyl benzene	BQL	0.00508	0.00128	1	11/8/2007	
Styrene	BQL	0.00508	0.00112	1	11/8/2007	
1,1,1,2-Tetrachloroethane	BQL	0.00508	0.00104	1	11/8/2007	
1,1,2,2-Tetrachloroethane	BQL	0.00508	0.00115	1	11/8/2007	
Tetrachloroethene	BQL	0.00508	0.00093	1	11/8/2007	
Toluene	BQL	0.00508	0.00101	1	11/8/2007	
1,2,3-Trichlorobenzene	BQL	0.00508	0.00106	1	11/8/2007	
1,2,4-Trichlorobenzene	BQL	0.00508	0.00105	1	11/8/2007	
Trichloroethene	BQL	0.00508	0.00097	1	11/8/2007	
1,1,1-Trichloroethane	BQL	0.00508	0.00115	1	11/8/2007	
1,1,2-Trichloroethane	BQL	0.00508	0.00166	1	11/8/2007	
Trichlorofluoromethane	BQL	0.00508	0.00105	1	11/8/2007	
1,2,3-Trichloropropane	BQL	0.00508	0.00126	1	11/8/2007	
1,2,4-Trimethylbenzene	BQL	0.00508	0.00128	1	11/8/2007	
1,3,5-Trimethylbenzene	BQL	0.00508	0.00116	1	11/8/2007	
Vinyl chloride	BQL	0.00508	0.00138	1	11/8/2007	
m-,p-Xylene	BQL	0.0102	0.00195	1	11/8/2007	
o-Xylene	BQL	0.00508	0.00098	1	11/8/2007	

	Spike Added	Spike Result	Percent Recovered
1,2-Dichloroethane-d4	0.05	0.0595	119
Toluene-d8	0.05	0.0493	99
4-Bromofluorobenzene	0.05	0.0503	101

Comments:

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

Reviewed By: 

Results for Volatiles
by GCMS 8260-5035

Client Sample ID: USTA 10 DW01 (3.5-5)
Client Project ID: USTA 10
Lab Sample ID G128-2056-2A
Lab Project ID: G128-2056
Report Basis: Dry Weight

Analyzed By: MJC
Date Collected: 10-31-2007 14:45
Date Received: 11/1/2007
Matrix: Soil
Sample Amount: 6.28 g
%Solids: 100.0

Report Name Compound	Result MG/KG	Quantitation Limit MG/KG	MDL MG/KG	Dilution Factor	Date Analyzed	Flag
Acetone	**0.0197**	0.0398	0.00550	1	11/8/2007	J
Benzene	BQL	0.00398	0.00085	1	11/8/2007	
Bromobenzene	BQL	0.00398	0.00082	1	11/8/2007	
Bromochloromethane	BQL	0.00398	0.00137	1	11/8/2007	
Bromodichloromethane	BQL	0.00398	0.00079	1	11/8/2007	
Bromoform	BQL	0.00398	0.00080	1	11/8/2007	
Bromomethane	BQL	0.00398	0.00084	1	11/8/2007	
2-Butanone	BQL	0.0199	0.00432	1	11/8/2007	
n-Butylbenzene	BQL	0.00398	0.00076	1	11/8/2007	
sec-Butylbenzene	BQL	0.00398	0.00080	1	11/8/2007	
tert-Butylbenzene	BQL	0.00398	0.00089	1	11/8/2007	
Carbon disulfide	BQL	0.00398	0.00213	1	11/8/2007	
Carbon tetrachloride	BQL	0.00398	0.00081	1	11/8/2007	
Chlorobenzene	BQL	0.00398	0.00095	1	11/8/2007	
Chloroethane	BQL	0.00398	0.00127	1	11/8/2007	
Chloroform	BQL	0.00398	0.00096	1	11/8/2007	
Chloromethane	BQL	0.00398	0.00090	1	11/8/2007	
2-Chlorotoluene	BQL	0.00398	0.00080	1	11/8/2007	
4-Chlorotoluene	BQL	0.00398	0.00100	1	11/8/2007	
Dibromochloromethane	BQL	0.00398	0.00110	1	11/8/2007	
1,2-Dibromo-3-chloropropane	BQL	0.00398	0.00115	1	11/8/2007	
Dibromomethane	BQL	0.00398	0.00120	1	11/8/2007	
1,2-Dibromoethane (EDB)	BQL	0.00398	0.00090	1	11/8/2007	
1,2-Dichlorobenzene	BQL	0.00398	0.00103	1	11/8/2007	
1,3-Dichlorobenzene	BQL	0.00398	0.00102	1	11/8/2007	
1,4-Dichlorobenzene	BQL	0.00398	0.00084	1	11/8/2007	
trans-1,4-Dichloro-2-butene	BQL	0.00398	0.00110	1	11/8/2007	
1,1-Dichloroethane	BQL	0.00398	0.00084	1	11/8/2007	
1,1-Dichloroethene	BQL	0.00398	0.00118	1	11/8/2007	
1,2-Dichloroethane	BQL	0.00398	0.00105	1	11/8/2007	
cis-1,2-Dichloroethene	BQL	0.00398	0.00102	1	11/8/2007	
trans-1,2-dichloroethene	BQL	0.00398	0.00090	1	11/8/2007	
1,2-Dichloropropane	BQL	0.00398	0.00094	1	11/8/2007	
1,3-Dichloropropane	BQL	0.00398	0.00089	1	11/8/2007	
2,2-Dichloropropane	BQL	0.00398	0.00096	1	11/8/2007	
1,1-Dichloropropene	BQL	0.00398	0.00125	1	11/8/2007	
cis-1,3-Dichloropropene	BQL	0.00398	0.00066	1	11/8/2007	
trans-1,3-Dichloropropene	BQL	0.00398	0.00077	1	11/8/2007	
Dichlorodifluoromethane	BQL	0.00398	0.00105	1	11/8/2007	
Diisopropyl ether (DIPE)	BQL	0.00398	0.00090	1	11/8/2007	
Ethylbenzene	BQL	0.00398	0.00069	1	11/8/2007	
Hexachlorobutadiene	BQL	0.00398	0.00078	1	11/8/2007	

Results for Volatiles
by GCMS 8260-5035

Client Sample ID: USTA 10 DW01 (3.5-5)
Client Project ID: USTA 10
Lab Sample ID G128-2056-2A
Lab Project ID: G128-2056
Report Basis: Dry Weight

Analyzed By: MJC
Date Collected: 10-31-2007 14:45
Date Received: 11/1/2007
Matrix: Soil
Sample Amount: 6.28 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	0.00398	0.00258	1	11/8/2007	
Iodomethane	BQL	0.00398	0.00086	1	11/8/2007	
Isopropylbenzene	BQL	0.00398	0.00071	1	11/8/2007	
4-Isopropyltoluene	BQL	0.00398	0.00085	1	11/8/2007	
Methylene chloride	BQL	0.0159	0.00095	1	11/8/2007	
4-Methyl-2-pentanone	BQL	0.00398	0.00369	1	11/8/2007	
Methyl-tert-butyl ether (MTBE)	BQL	0.00398	0.00088	1	11/8/2007	
Naphthalene	**0.00212**	0.00398	0.00068	1	11/8/2007	J
n-Propyl benzene	BQL	0.00398	0.00100	1	11/8/2007	
Styrene	BQL	0.00398	0.00088	1	11/8/2007	
1,1,1,2-Tetrachloroethane	BQL	0.00398	0.00081	1	11/8/2007	
1,1,2,2-Tetrachloroethane	BQL	0.00398	0.00090	1	11/8/2007	
Tetrachloroethene	BQL	0.00398	0.00073	1	11/8/2007	
Toluene	BQL	0.00398	0.00079	1	11/8/2007	
1,2,3-Trichlorobenzene	BQL	0.00398	0.00083	1	11/8/2007	
1,2,4-Trichlorobenzene	BQL	0.00398	0.00082	1	11/8/2007	
Trichloroethene	BQL	0.00398	0.00076	1	11/8/2007	
1,1,1-Trichloroethane	BQL	0.00398	0.00090	1	11/8/2007	
1,1,2-Trichloroethane	BQL	0.00398	0.00131	1	11/8/2007	
Trichlorofluoromethane	BQL	0.00398	0.00082	1	11/8/2007	
1,2,3-Trichloropropane	BQL	0.00398	0.00099	1	11/8/2007	
1,2,4-Trimethylbenzene	BQL	0.00398	0.00100	1	11/8/2007	
1,3,5-Trimethylbenzene	BQL	0.00398	0.00091	1	11/8/2007	
Vinyl chloride	BQL	0.00398	0.00108	1	11/8/2007	
m-,p-Xylene	BQL	0.00796	0.00153	1	11/8/2007	
o-Xylene	BQL	0.00398	0.00077	1	11/8/2007	

	Spike Added	Spike Result	Percent Recovered
1,2-Dichloroethane-d4	0.05	0.0579	116
Toluene-d8	0.05	0.0486	97
4-Bromofluorobenzene	0.05	0.052	104

Comments:

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

Reviewed By:

SGS ENVIRONMENTAL SERVICES, INC.

Results for Semivolatiles
by GCMS 8270

Client Sample ID: USTA 10 MW01 (2-3)
Client Project ID: USTA 10
Lab Sample ID: G128-2056-1J
Lab Project ID: G128-2056
Report Basis: Dry weight

Analyzed By: DES
Date Collected: 10/31/2007 14:20
Date Received: 11/1/2007
Date Extracted: 11/6/2007
Matrix: Soil
% Solids: 81.41

Compound	Result mg/Kg	RL mg/Kg	MDL mg/Kg	Dilution Factor	Date Analyzed	Flag
Acenaphthene	BQL	0.359	0.051	1	11/6/2007	
Acenaphthylene	BQL	0.359	0.048	1	11/6/2007	
Anthracene	BQL	0.359	0.052	1	11/6/2007	
Benzo[a]anthracene	BQL	0.359	0.062	1	11/6/2007	
Benzo[a]pyrene	BQL	0.359	0.055	1	11/6/2007	
Benzo[b]fluoranthene	BQL	0.359	0.063	1	11/6/2007	
Benzo[g,h,i]perylene	BQL	0.359	0.098	1	11/6/2007	
Benzo[k]fluoranthene	BQL	0.359	0.069	1	11/6/2007	
Benzoic Acid	BQL	0.718	0.718	1	11/6/2007	
Bis(2-chloroethoxy)methane	BQL	0.359	0.054	1	11/6/2007	
Bis(2-chloroethyl)ether	BQL	0.359	0.043	1	11/6/2007	
Bis(2-chloroisopropyl)ether	BQL	0.359	0.045	1	11/6/2007	
Bis(2-ethylhexyl)phthalate	BQL	0.359	0.048	1	11/6/2007	
4-bromophenyl phenyl ether	BQL	0.359	0.061	1	11/6/2007	
Butylbenzylphthalate	BQL	0.359	0.055	1	11/6/2007	
2-Chloronaphthalene	BQL	0.359	0.056	1	11/6/2007	
2-Chlorophenol	BQL	0.359	0.112	1	11/6/2007	
4-Chloro-3-methylphenol	BQL	0.359	0.112	1	11/6/2007	
4-Chloroaniline	BQL	1.79	0.274	1	11/6/2007	
4-Chlorophenyl phenyl ether	BQL	0.359	0.053	1	11/6/2007	
Chrysene	BQL	0.359	0.039	1	11/6/2007	
Dibenzo[a,h]anthracene	BQL	0.359	0.101	1	11/6/2007	
Dibenzofuran	BQL	0.359	0.065	1	11/6/2007	
Di-n-Butylphthalate	BQL	0.359	0.043	1	11/6/2007	
1,2-Dichlorobenzene	BQL	0.359	0.040	1	11/6/2007	
1,3-Dichlorobenzene	BQL	0.359	0.039	1	11/6/2007	
1,4-Dichlorobenzene	BQL	0.359	0.041	1	11/6/2007	
3,3'-Dichlorobenzidine	BQL	0.718	0.091	1	11/6/2007	
2,4-Dichlorophenol	BQL	0.359	0.129	1	11/6/2007	
Diethylphthalate	BQL	0.359	0.046	1	11/6/2007	
Dimethylphthalate	BQL	0.359	0.043	1	11/6/2007	
2,4-Dimethylphenol	BQL	0.359	0.257	1	11/6/2007	
Di-n-octylphthalate	BQL	0.359	0.059	1	11/6/2007	
4,6-Dinitro-2-methylphenol	BQL	1.79	0.211	1	11/6/2007	
2,4-Dinitrophenol	BQL	1.79	0.790	1	11/6/2007	
2,4-Dinitrotoluene	BQL	0.359	0.047	1	11/6/2007	
2,6-Dinitrotoluene	BQL	0.359	0.065	1	11/6/2007	
Diphenylamine *	BQL	0.359	0.035	1	11/6/2007	
Fluoranthene	BQL	0.359	0.050	1	11/6/2007	
Fluorene	BQL	0.359	0.045	1	11/6/2007	
Hexachlorobenzene	BQL	0.359	0.055	1	11/6/2007	
Hexachlorobutadiene	BQL	0.359	0.057	1	11/6/2007	
Hexachlorocyclopentadiene	BQL	0.718	0.037	1	11/6/2007	
Hexachloroethane	BQL	0.359	0.032	1	11/6/2007	
Indeno(1,2,3-c,d)pyrene	BQL	0.359	0.092	1	11/6/2007	
Isophorone	BQL	0.359	0.053	1	11/6/2007	
2-Methylnaphthalene	BQL	0.359	0.105	1	11/6/2007	

Results for Semivolatiles
by GCMS 8270

Client Sample ID: USTA 10 MW01 (2-3)
Client Project ID: USTA 10
Lab Sample ID: G128-2056-1J
Lab Project ID: G128-2056
Report Basis: Dry weight

Analyzed By: DES
Date Collected: 10/31/2007 14:20
Date Received: 11/1/2007
Date Extracted: 11/6/2007
Matrix: Soil
% Solids: 81.41

Compound	Result mg/Kg	RL mg/Kg	MDL mg/Kg	Dilution Factor	Date Analyzed	Flag
2-Methylphenol	BQL	0.359	0.126	1	11/6/2007	
3- & 4-Methylphenol	BQL	0.359	0.122	1	11/6/2007	
Naphthalene	BQL	0.359	0.029	1	11/6/2007	
2-Nitroaniline	BQL	0.359	0.056	1	11/6/2007	
3-Nitroaniline	BQL	1.79	0.370	1	11/6/2007	
4-Nitroaniline	BQL	1.79	0.111	1	11/6/2007	
Nitrobenzene	BQL	0.359	0.049	1	11/6/2007	
2-Nitrophenol	BQL	0.359	0.111	1	11/6/2007	
4-Nitrophenol	BQL	1.79	0.099	1	11/6/2007	
N-Nitrosodi-n-propylamine	BQL	0.359	0.046	1	11/6/2007	
Pentachlorophenol	BQL	1.79	0.094	1	11/6/2007	
Phenanthrene	BQL	0.359	0.041	1	11/6/2007	
Phenol	BQL	0.359	0.098	1	11/6/2007	
Pyrene	BQL	0.359	0.069	1	11/6/2007	
1,2,4-Trichlorobenzene	BQL	0.359	0.045	1	11/6/2007	
2,4,5-Trichlorophenol	BQL	0.359	0.139	1	11/6/2007	
2,4,6-Trichlorophenol	BQL	0.359	0.128	1	11/6/2007	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	8	80
2-Fluorophenol	10	7.8	78
Nitrobenzene-d5	10	8.1	81
Phenol-d6	10	8.2	82
2,4,6-Tribromophenol	10	7	70
4-Terphenyl-d14	10	8.7	87

Comments:

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

Reviewed By: 

SGS ENVIRONMENTAL SERVICES, INC.

Results of Library Search for Semivolatile Compounds

by GCMS

Client Sample ID: USTA 10 MW01 (2-3)
Client Project ID: USTA 10
Lab Sample ID: G128-2056-1J
Lab Project ID: G128-2056
Sample Wt/Vol: 34.22 g
Dilution: 1

Analyzed By: DES
Date Collected: 10/31/2007 14:20
Date Received: 11/1/2007
Date Extracted: 11/6/2007
Date Analyzed: 11/6/2007
Matrix: Soil
% Solids: 81.4

No.	Compound	Retention Time	CAS#	Match Probability	Result (ug/KG)
1	Unknown	17.32			861
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 Metals

Client Sample ID:	USTA 10 MW01 (2-3)	Analyzed By:	AEC
Client Project ID:	USTA 10	Date Collected:	10/31/2007 14:20
Lab Sample ID:	G128-2056-1	Date Received:	11/1/2007
Lab Project ID:	G128-2056	Matrix:	SOIL
Batch ID:	9596	Solids	81.41
Report Basis:	Dry		

Metals	Result	RL	MDL	DF	Units	Method	Date Analyzed	Flags
Chromium	**3.59**	1.10	0.121	1	MG/KG	6010B	11/7/2007	B
Lead	**2.62**	1.10	0.704	1	MG/KG	6010B	11/7/2007	

Comments
BQL = Below Quantitation Limits
DF = Dilution Factor
J = Between MDL and RL
B= Amount in Prep Blank > MDL

Reviewed By:
METALS.XLS

Results for Metals

Client Sample ID:	USTA10 MW01	Analyzed By:	AEC
Client Project ID:	USTA 10	Date Collected:	11/7/2007 15:50
Lab Sample ID:	G128-2056-3H	Date Received:	11/8/2007
Lab Project ID:	G128-2056	Matrix:	WATER
Batch ID:	9649		

Metals	Result	RL	MDL	DF	Units	Method	Date Analyzed	Flags
Chromium	**0.00382**	0.00500	0.000812	25	MG/L	6020	11/13/2007	JB
Lead	BQL	0.00500	0.000617	25	MG/L	6020	11/13/2007	

Comments
BQL = Below Quantitation Limits
DF = Dilution Factor
J = Between MDL and RL
B= Amount in Prep Blank > MDL
Samples Prepared by 3030C

Reviewed By:
METALS.XLS

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Richard Catlin & Associates

Project Name: USTA 10

Sample Information	
Sample Identification	USTA 10 MW01 (2-3)
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	11/08/07 21:09 - 11/08/07 21:09
Dry Weight	81.4
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	Limits Upper
Surrogate % Recovery - PID	88.1		70	130
Surrogate % Recovery - FID	82.2		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: g128-2056-1d	Lab Info: g128-2056-1d
FID Info: VP110807/029F0101.D	PID Info: VP110807/029R0101.D

Reviewed By:

VPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Richard Catlin & Associates

Project Name: USTA 10

Sample Information	
Sample Identification	USTA10 MW01
Sample Matrix	Water
Collection Option (for Soil)*	NA
Date Collected	11/01/07
Date Received	11/01/07
Date Extracted	11/09/07 05:17 - 11/09/07 05:17
Date Analyzed	11/09/07 05:17 - 11/09/07 05:17
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	Limits Upper
Surrogate % Recovery - PID	109		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: g128-2056-3b	Lab Info: g128-2056-3b
FID Info: VP110807/047F0101.D	PID Info: VP110807/047R0101.D

Reviewed By:

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 (µg/L)	MDL (mg/Kg)	ML (µg/L)	ML (mg/Kg)	RL (µg/L)	RL (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 (µg/L)	Levels (mg/Kg)	%Difference if CF %Drift if LR	Limits
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

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 (µg/L)	MDL (mg/Kg)	ML (µg/L)	ML (mg/Kg)	RL (µg/L)	RL (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: VP110807/004F0101.d

Calibration Check

Range	Levels (µg/L)	Levels (mg/Kg)	%Difference if CF %Drift if LR	Limits
C_5-C_8 Aliphatics	500	4	5.3	±25%
C_9-C_{12} Aliphatics	500	4	16.0	±25%
C_9-C_{10} Aromatics	500	4	18.0	±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 & Associates

Project Name: USTA 10

Sample Information	
Sample Identification	USTA 10 MW01 (2-3)
Sample Matrix	Soil
Date Collected	10/31/07
Date Received	11/01/07
Date Extracted	11/05/07
Date Analyzed	11/06/07 12:54 - 11/06/07 12:54
Dry Weight	81.4
Dilution Factor	1 - 1
Initial weight (g)	12.34
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)	97.6		40	140
Aromatic (ortho-terphenyl)	97.7		40	140

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

Lab Info: G128-2056-1I	Lab Info: G128-2056-1I
Aliphatic: EP110607/009F0701.D	Aromatic: EP110607/009F0701.D

Reviewed By:

EPH (Aliphatics/Aromatics) Laboratory Reporting Form

Client Name: Richard Catlin & Associates

Project Name: USTA 10

Sample Information	
Sample Identification	USTA10 MW01
Sample Matrix	Water
Date Collected	11/01/07
Date Received	11/01/07
Date Extracted	11/05/07
Date Analyzed	11/08/07 06:48 - 11/08/07 07:16
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)	67.3		40	140
Aromatic (ortho-terphenyl)	52.6		40	140
Fractionation 1 (2-bromonaphthalene)	59.8		40	140
Fractionation 2 (2-fluorobiphenyl)	61.1		40	140

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

Lab Info: G128-2056-3L	Lab Info: G128-2056-3L
Aliphatic: EP110707/046F3101.D	Aromatic: EP110707/047F3201.D

Reviewed By: 

Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 10/25/07

Calibration Ranges and Limits

Range	MDL (10/2006) (µg/L)	ML (µg/L)	RL (µg/L)	RL (mg/Kg)
C_9-C_{18} Aliphatics	28.10	89.4	100	10
C_{19}-C_{36} Aliphatics	36.50	116	100	10
C_{11}-C_{22} Aromatics	27.60	87.8	100	10

Calibration Concentration Levels

Range	Levels (µg/mL)	%RSD or CCC	Method of Quantitation
C_9-C_{18} Aliphatics	6	16.80	Calibration Factor
	30		
	60		
	120		
	240		
C_{19}-C_{36} Aliphatics	8	9.1	Calibration Factor
	40		
	80		
	160		
	320		
C_{11}-C_{22} Aromatics	17	2.7	Calibration Factor
	85		
	170		
	340		
	680		

Calibration Check Date: 11/06/07

Calibration Check

Range	Levels (µg/mL)	RPD
C_9-C_{18} Aliphatics	120	9.3
C_{19}-C_{36} Aliphatics	160	3.7
C_{11}-C_{22} Aromatics	340	4.5

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 (10/17/06) (µg/L)	MDL (10/17/06) (mg/Kg)	ML (µg/L)	ML (mg/Kg)	RL (µg/L)	RL (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: 11/07/07, 11/07/07

Filenames: ep110707/001f0101.d, ep110707/002f0201.d

Calibration Check

Range	Levels (µg/L)	Levels (mg/Kg)	%Difference if CF %Drift if LR	Limits
C9-C18 Aliphatics	200	6.25	2.7	≤±25%
C19-C36 Aliphatics	200	6.25	5.3	≤±25%
C11-C22 Aromatics	200	6.25	-0.9	≤±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 (10/17/06) (µg/L)	MDL (10/17/06) (mg/Kg)	ML (µg/L)	ML (mg/Kg)	RL (µg/L)	RL (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: 11/07/07, 11/07/07 Filenames: ep110707/001f0101.d, ep110707/002f0201.d

Calibration Check

Range	Levels (µg/L)	Levels (mg/Kg)	%Difference if CF %Drift if LR	Limits
C9-C18 Aliphatics	200	6.25	2.7	≤±25%
C19-C36 Aliphatics	200	6.25	5.3	≤±25%
C11-C22 Aromatics	200	6.25	-0.9	≤±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 (10/17/06) (µg/L)	MDL (10/17/06) (mg/Kg)	ML (µg/L)	ML (mg/Kg)	RL (µg/L)	RL (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
11/08/07

Filenames: ep110807/001f0101.d
ep110807/002f0201.d

Calibration Check

Range	Levels (µg/L)	Levels (mg/Kg)	%Difference if CF %Drift if LR	Limits
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

SGS ENVIRONMENTAL SERVICES, INC.

Results for Volatiles
by GCMS 6210D

Client Sample ID: USTA10 MW01
Client Project ID: USTA 10
Lab Sample ID: G128-2056-3A
Lab Project ID: G128-2056

Analyzed By: MJC
Date Collected: 11/1/2007 13:20
Date Received: 11/1/2007
Matrix: Water
Sample Amount: 5 mL

Compound	Result UG/L	Quantitation Limit UG/L	MDL UG/L	Dilution Factor	Date Analyzed	Flag
Benzene	BQL	0.500	0.0800	1	11/13/2007	
Bromobenzene	BQL	0.500	0.143	1	11/13/2007	
Bromochloromethane	BQL	0.500	0.261	1	11/13/2007	
Bromodichloromethane	**0.420**	0.500	0.146	1	11/13/2007	J
Bromoform	BQL	0.500	0.275	1	11/13/2007	
Bromomethane	BQL	0.500	0.261	1	11/13/2007	
n-Butylbenzene	BQL	0.500	0.105	1	11/13/2007	
sec-Butylbenzene	BQL	0.500	0.117	1	11/13/2007	
tert-Butylbenzene	BQL	0.500	0.128	1	11/13/2007	
Carbon tetrachloride	BQL	0.500	0.102	1	11/13/2007	
Chlorobenzene	BQL	0.500	0.0720	1	11/13/2007	
Chloroethane	BQL	0.500	0.568	1	11/13/2007	
Chloroform	**0.630**	0.500	0.121	1	11/13/2007	
Chloromethane	BQL	0.500	0.206	1	11/13/2007	
2-Chlorotoluene	BQL	0.500	0.110	1	11/13/2007	
4-Chlorotoluene	BQL	0.500	0.107	1	11/13/2007	
Dibromochloromethane	**0.270**	0.500	0.124	1	11/13/2007	J
1,2-Dibromo-3-chloropropane	BQL	5.00	0.900	1	11/13/2007	
Dibromomethane	BQL	0.500	0.199	1	11/13/2007	
1,2-Dibromoethane (EDB)	BQL	0.500	0.120	1	11/13/2007	
1,2-Dichlorobenzene	BQL	0.500	0.116	1	11/13/2007	
1,3-Dichlorobenzene	BQL	0.500	0.173	1	11/13/2007	
1,4-Dichlorobenzene	BQL	0.500	0.157	1	11/13/2007	
1,1-Dichloroethane	BQL	0.500	0.0880	1	11/13/2007	
1,1-Dichloroethene	BQL	0.500	0.204	1	11/13/2007	
1,2-Dichloroethane	BQL	0.500	0.132	1	11/13/2007	
cis-1,2-Dichloroethene	BQL	0.500	0.0350	1	11/13/2007	
trans-1,2-dichloroethene	BQL	0.500	0.158	1	11/13/2007	
1,2-Dichloropropane	BQL	0.500	0.0960	1	11/13/2007	
1,3-Dichloropropane	BQL	0.500	0.162	1	11/13/2007	
2,2-Dichloropropane	BQL	0.500	0.181	1	11/13/2007	
1,1-Dichloropropene	BQL	0.500	0.121	1	11/13/2007	
Dichlorodifluoromethane	BQL	5.00	0.254	1	11/13/2007	
Diisopropyl ether (DIPE)	BQL	0.500	0.0850	1	11/13/2007	
Ethylbenzene	BQL	0.500	0.111	1	11/13/2007	
Hexachlorobutadiene	BQL	0.500	0.229	1	11/13/2007	
Isopropylbenzene	**0.240**	0.500	0.127	1	11/13/2007	J
4-Isopropyltoluene	**0.150**	0.500	0.124	1	11/13/2007	J
Methylene chloride	BQL	5.00	0.199	1	11/13/2007	
Methyl-tert-butyl ether (MTBE)	BQL	0.500	0.138	1	11/13/2007	
Naphthalene	**0.470**	0.500	0.173	1	11/13/2007	J
n-Propyl benzene	BQL	0.500	0.120	1	11/13/2007	

SGS ENVIRONMENTAL SERVICES, INC.

Results for Volatiles
by GCMS 6210D

Client Sample ID: USTA10 MW01
Client Project ID: USTA 10
Lab Sample ID: G128-2056-3A
Lab Project ID: G128-2056

Analyzed By: MJC
Date Collected: 11/1/2007 13:20
Date Received: 11/1/2007
Matrix: Water
Sample Amount: 5 mL

Compound	Result UG/L	Quantitation Limit UG/L	MDL UG/L	Dilution Factor	Date Analyzed	Flag
Styrene	BQL	0.500	0.109	1	11/13/2007	
1,1,1,2-Tetrachloroethane	BQL	0.500	0.125	1	11/13/2007	
1,1,2,2-Tetrachloroethane	BQL	0.500	0.187	1	11/13/2007	
Tetrachloroethene	BQL	0.500	0.112	1	11/13/2007	
Toluene	BQL	0.500	0.0910	1	11/13/2007	
1,2,3-Trichlorobenzene	BQL	0.500	0.176	1	11/13/2007	
1,2,4-Trichlorobenzene	BQL	0.500	0.0720	1	11/13/2007	
Trichloroethene	BQL	0.500	0.0870	1	11/13/2007	
1,1,1-Trichloroethane	BQL	0.500	0.111	1	11/13/2007	
1,1,2-Trichloroethane	BQL	0.500	0.175	1	11/13/2007	
Trichlorofluoromethane	BQL	0.500	0.247	1	11/13/2007	
1,2,3-Trichloropropane	BQL	0.500	0.203	1	11/13/2007	
1,2,4-Trimethylbenzene	BQL	0.500	0.121	1	11/13/2007	
1,3,5-Trimethylbenzene	BQL	0.500	0.106	1	11/13/2007	
Vinyl chloride	BQL	0.500	0.305	1	11/13/2007	
m-,p-Xylene	**0.500**	1.00	0.215	1	11/13/2007	J
o-Xylene	BQL	0.500	0.110	1	11/13/2007	

	Spike Added	Spike Result	Percent Recovered
1,2-Dichloroethane-d4	10	10.7	107
Toluene-d8	10	9.92	99
4-Bromofluorobenzene	10	10.2	102

Comments:

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

Reviewed By:

SGS ENVIRONMENTAL SERVICES, INC.

Results for Volatiles
by GCMS 6210D

Client Sample ID: USTA10 DW01
Client Project ID: USTA 10
Lab Sample ID: G128-2056-4A
Lab Project ID: G128-2056

Analyzed By: MJC
Date Collected: 11/1/2007 13:00
Date Received: 11/1/2007
Matrix: Water
Sample Amount: 5 mL

Compound	Result UG/L	Quantitation Limit UG/L	MDL UG/L	Dilution Factor	Date Analyzed	Flag
Benzene	BQL	0.500	0.0800	1	11/13/2007	
Bromobenzene	BQL	0.500	0.143	1	11/13/2007	
Bromochloromethane	BQL	0.500	0.261	1	11/13/2007	
Bromodichloromethane	**0.300**	0.500	0.146	1	11/13/2007	J
Bromoform	BQL	0.500	0.275	1	11/13/2007	
Bromomethane	BQL	0.500	0.261	1	11/13/2007	
n-Butylbenzene	**0.210**	0.500	0.105	1	11/13/2007	J
sec-Butylbenzene	BQL	0.500	0.117	1	11/13/2007	
tert-Butylbenzene	BQL	0.500	0.128	1	11/13/2007	
Carbon tetrachloride	BQL	0.500	0.102	1	11/13/2007	
Chlorobenzene	BQL	0.500	0.0720	1	11/13/2007	
Chloroethane	BQL	0.500	0.568	1	11/13/2007	
Chloroform	**0.550**	0.500	0.121	1	11/13/2007	
Chloromethane	BQL	0.500	0.206	1	11/13/2007	
2-Chlorotoluene	BQL	0.500	0.110	1	11/13/2007	
4-Chlorotoluene	BQL	0.500	0.107	1	11/13/2007	
Dibromochloromethane	BQL	0.500	0.124	1	11/13/2007	
1,2-Dibromo-3-chloropropane	BQL	5.00	0.900	1	11/13/2007	
Dibromomethane	BQL	0.500	0.199	1	11/13/2007	
1,2-Dibromoethane (EDB)	BQL	0.500	0.120	1	11/13/2007	
1,2-Dichlorobenzene	BQL	0.500	0.116	1	11/13/2007	
1,3-Dichlorobenzene	BQL	0.500	0.173	1	11/13/2007	
1,4-Dichlorobenzene	BQL	0.500	0.157	1	11/13/2007	
1,1-Dichloroethane	BQL	0.500	0.0880	1	11/13/2007	
1,1-Dichloroethene	BQL	0.500	0.204	1	11/13/2007	
1,2-Dichloroethane	BQL	0.500	0.132	1	11/13/2007	
cis-1,2-Dichloroethene	BQL	0.500	0.0350	1	11/13/2007	
trans-1,2-dichloroethene	BQL	0.500	0.158	1	11/13/2007	
1,2-Dichloropropane	BQL	0.500	0.0960	1	11/13/2007	
1,3-Dichloropropane	BQL	0.500	0.162	1	11/13/2007	
2,2-Dichloropropane	BQL	0.500	0.181	1	11/13/2007	
1,1-Dichloropropene	BQL	0.500	0.121	1	11/13/2007	
Dichlorodifluoromethane	BQL	5.00	0.254	1	11/13/2007	
Diisopropyl ether (DIPE)	BQL	0.500	0.0850	1	11/13/2007	
Ethylbenzene	BQL	0.500	0.111	1	11/13/2007	
Hexachlorobutadiene	BQL	0.500	0.229	1	11/13/2007	
Isopropylbenzene	**0.230**	0.500	0.127	1	11/13/2007	J
4-Isopropyltoluene	BQL	0.500	0.124	1	11/13/2007	
Methylene chloride	BQL	5.00	0.199	1	11/13/2007	
Methyl-tert-butyl ether (MTBE)	BQL	0.500	0.138	1	11/13/2007	
Naphthalene	**0.530**	0.500	0.173	1	11/13/2007	
n-Propyl benzene	BQL	0.500	0.120	1	11/13/2007	

Results for Volatiles
by GCMS 6210D

Client Sample ID: USTA10 DW01
Client Project ID: USTA 10
Lab Sample ID: G128-2056-4A
Lab Project ID: G128-2056

Analyzed By: MJC
Date Collected: 11/1/2007 13:00
Date Received: 11/1/2007
Matrix: Water
Sample Amount: 5 mL

Compound	Result UG/L	Quantitation Limit UG/L	MDL UG/L	Dilution Factor	Date Analyzed	Flag
Styrene	BQL	0.500	0.109	1	11/13/2007	
1,1,1,2-Tetrachloroethane	BQL	0.500	0.125	1	11/13/2007	
1,1,2,2-Tetrachloroethane	BQL	0.500	0.187	1	11/13/2007	
Tetrachloroethene	BQL	0.500	0.112	1	11/13/2007	
Toluene	BQL	0.500	0.0910	1	11/13/2007	
1,2,3-Trichlorobenzene	BQL	0.500	0.176	1	11/13/2007	
1,2,4-Trichlorobenzene	BQL	0.500	0.0720	1	11/13/2007	
Trichloroethene	BQL	0.500	0.0870	1	11/13/2007	
1,1,1-Trichloroethane	BQL	0.500	0.111	1	11/13/2007	
1,1,2-Trichloroethane	BQL	0.500	0.175	1	11/13/2007	
Trichlorofluoromethane	BQL	0.500	0.247	1	11/13/2007	
1,2,3-Trichloropropane	BQL	0.500	0.203	1	11/13/2007	
1,2,4-Trimethylbenzene	BQL	0.500	0.121	1	11/13/2007	
1,3,5-Trimethylbenzene	BQL	0.500	0.106	1	11/13/2007	
Vinyl chloride	BQL	0.500	0.305	1	11/13/2007	
m-,p-Xylene	**0.600**	1.00	0.215	1	11/13/2007	J
o-Xylene	BQL	0.500	0.110	1	11/13/2007	

	Spike Added	Spike Result	Percent Recovered
1,2-Dichloroethane-d4	10	10.7	107
Toluene-d8	10	9.96	100
4-Bromofluorobenzene	10	9.55	96

Comments:

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

Reviewed By: 

SGS ENVIRONMENTAL SERVICES, INC.

Results for Semivolatiles
by GCMS 625

Client Sample ID: USTA10 MW01
Client Project ID: USTA 10
Lab Sample ID: G128-2056-3M
Lab Project ID: G128-2056

Analyzed By: DES
Date Collected: 11/1/2007 13:20
Date Received: 11/1/2007
Date Extracted: 11/5/2007
Matrix: Water

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Acenaphthene	BQL	10.0	1.22	1	11/6/2007	
Acenaphthylene	BQL	10.0	1.12	1	11/6/2007	
Anthracene	BQL	10.0	1.75	1	11/6/2007	
Benzo[a]anthracene	BQL	10.0	1.36	1	11/6/2007	
Benzo[a]pyrene	BQL	10.0	1.27	1	11/6/2007	
Benzo[b]fluoranthene	BQL	10.0	1.43	1	11/6/2007	
Benzo[g,h,i]perylene	BQL	10.0	4.57	1	11/6/2007	
Benzo[k]fluoranthene	BQL	10.0	1.09	1	11/6/2007	
Bis(2-chloroethoxy)methane	BQL	10.0	1.11	1	11/6/2007	
Bis(2-chloroethyl)ether	BQL	10.0	1.09	1	11/6/2007	
Bis(2-chloroisopropyl)ether	BQL	10.0	1.57	1	11/6/2007	
Bis(2-ethylhexyl)phthalate	BQL	10.0	1.33	1	11/6/2007	
4-bromophenyl phenyl ether	BQL	10.0	1.99	1	11/6/2007	
Butylbenzylphthalate	BQL	10.0	1.53	1	11/6/2007	
2-Chloronaphthalene	BQL	10.0	1.25	1	11/6/2007	
2-Chlorophenol	BQL	10.0	4.22	1	11/6/2007	
4-Chloro-3-methylphenol	BQL	10.0	3.26	1	11/6/2007	
4-Chlorophenyl phenyl ether	BQL	10.0	1.42	1	11/6/2007	
Chrysene	BQL	10.0	1.11	1	11/6/2007	
Dibenzo[a,h]anthracene	BQL	10.0	4.87	1	11/6/2007	
Di-n-Butylphthalate	BQL	10.0	1.65	1	11/6/2007	
3,3'-Dichlorobenzidine	BQL	20.0	4.10	1	11/6/2007	
2,4-Dichlorophenol	BQL	10.0	3.75	1	11/6/2007	
Diethylphthalate	BQL	10.0	1.48	1	11/6/2007	
Dimethylphthalate	**1.70**	10.0	1.04	1	11/6/2007	J
2,4-Dimethylphenol	BQL	10.0	9.25	1	11/6/2007	
Di-n-octylphthalate	BQL	10.0	1.16	1	11/6/2007	
4,6-Dinitro-2-methylphenol	BQL	50.0	3.71	1	11/6/2007	
2,4-Dinitrophenol	BQL	50.0	4.20	1	11/6/2007	
2,4-Dinitrotoluene	BQL	10.0	1.52	1	11/6/2007	
2,6-Dinitrotoluene	BQL	10.0	1.41	1	11/6/2007	
Diphenylamine *	BQL	10.0	1.53	1	11/6/2007	
Fluoranthene	BQL	10.0	1.41	1	11/6/2007	
Fluorene	BQL	10.0	1.22	1	11/6/2007	
Hexachlorobenzene	BQL	10.0	1.22	1	11/6/2007	
Hexachlorobutadiene	BQL	10.0	1.58	1	11/6/2007	
Hexachlorocyclopentadiene	BQL	20.0	20.0	1	11/6/2007	
Hexachloroethane	BQL	10.0	1.58	1	11/6/2007	
Indeno(1,2,3-c,d)pyrene	BQL	10.0	4.57	1	11/6/2007	
Isophorone	BQL	10.0	1.27	1	11/6/2007	
Naphthalene	BQL	10.0	1.08	1	11/6/2007	
Nitrobenzene	BQL	10.0	1.32	1	11/6/2007	
2-Nitrophenol	BQL	10.0	3.52	1	11/6/2007	
4-Nitrophenol	BQL	50.0	3.17	1	11/6/2007	
N-Nitrosodi-n-propylamine	BQL	10.0	1.87	1	11/6/2007	
Pentachlorophenol	BQL	50.0	2.83	1	11/6/2007	
Phenanthrene	BQL	10.0	1.38	1	11/6/2007	

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Results for Semivolatiles
by GCMS 625

Client Sample ID: USTA10 MW01
Client Project ID: USTA 10
Lab Sample ID: G128-2056-3M
Lab Project ID: G128-2056

Analyzed By: DES
Date Collected: 11/1/2007 13:20
Date Received: 11/1/2007
Date Extracted: 11/5/2007
Matrix: Water

Compound	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flag
Phenol	BQL	10.0	3.38	1	11/6/2007	
Pyrene	BQL	10.0	2.08	1	11/6/2007	
1,2,4-Trichlorobenzene	BQL	10.0	1.33	1	11/6/2007	
2,4,6-Trichlorophenol	BQL	10.0	2.92	1	11/6/2007	

	Spike Added	Spike Result	Percent Recovered
2-Fluorobiphenyl	10	7.9	79
2-Fluorophenol	10	7.7	77
Nitrobenzene-d5	10	8.5	85
Phenol-d6	10	8.2	82
2,4,6-Tribromophenol	10	7.2	72
4-Terphenyl-d14	10	9	90

Comments:

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

Reviewed By: 

SGS ENVIRONMENTAL SERVICES, INC.

Results of Library Search for Semivolatile Compounds

by GCMS

Client Sample ID: USTA10 MW01
Client Project ID: USTA 10
Lab Sample ID: G128-2056-3M
Lab Project ID: G128-2056
Sample Wt/Vol: 500 ML
Dilution: 1

Analyzed By: DES
Date Collected: 11/1/2007 13:20
Date Received: 11/1/2007
Date Extracted: 11/5/2007
Date Analyzed: 11/6/2007
Matrix: Water

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

Comment:

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

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

Reviewed by: 

SGS

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(1) CLIENT: Catlin Engr & Sci

CONTACT: Jason Cook PHONE NO:( )

PROJECT: USTA 10 SITE/PWSID# :

REPORTS TO: Catlin : Att Jason Cook E-MAIL: FAX NO.:( )

INVOICE TO: Catlin : Sheila Smith QUOTE # DOD101 PER J. COOK 333 11/12/07

P.O. NUMBER 271101-01

SGS Reference: G128-2056 PAGE 1 OF 1

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE (C=COMP G=GRAB)	Preservatives Used	Analysis Required (3)	REMARKS
	USTA10 MW01 (2-3')	10-31-07	1420	Soil	7			EPA 8260 + IPE(NTBE) ✓; EPA 8270 BUA + TICS ✓; EPA 6010 B/3015 METALS CC/LEAD ✓; MADEP VPH/EPH ✓; EPA 6010 ✓; EPA 625 + TICS 333 ✓; EPA 6010 B/3015 METALS CC/LEAD ✓; MADEP VPH/EPH ✓	
NO SOLID	USTA10 DW01 (3.5-5')	10-31-07	1445	Soil	4			✓ → REPORT AS RECEIVED	PER J. COOK 333 11/7
	USTA10 MW01	11-1-07	1320	GW	8			✓ ✓ 4 ✓	
	USTA10 DW01	11-1-07	1300	GW	3			✓ 4 DW only	
									ADD VOA LOW RLNS / TICS FOR 625 PER J. COOK ON 11/6/07 333

(5)

Collected/Relinquished By:(1)	Date	Time	Received By:	Date	Time
[signature]	11-1-07	1700			
Relinquished By:(2)	Date	Time	Received By:	Date	Time
Relinquished By: (3)	Date	Time	Received By:	Date	Time
Relinquished By: (4)	Date	Time	Received By: [signature]	11-1-07	1710

(4)

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) YES NO

Temperature ∫C: H T 6.0°C on ice

Special Deliverable Requirements: SUMMARY ONLY 333

Chain of Custody Seal: (Circle) INTACT BROKEN ABSENT

Special Instructions:

Requested Turnaround Time:

☐ RUSH _____ Date Needed ☐ STD

N.C. CERTIFICATION #481

SGS ENVIRONMENTAL SERVICES, INC.

❑ 200 W. Potter Drive **Anchorage, AK 99518** Tel: (907) 562-2343 Fax: (907) 561-5301
❑ 5500 Business Drive **Wilmington, NC 28405** Tel: (910) 350-1903 Fax: (910) 350-1557
❑ 1270 Greenbrier Street **Charleston, WV 25311** Tel: (304) 346-0725 Fax: (304) 346-0761

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

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(1)

CLIENT: CATLIN

CONTACT: JASON COOK PHONE NO:(910) 452-5861

PROJECT: FORMER CERCLA SITES SITE/PWSID# :

REPORTS TO: JASON COOK E-MAIL:

FAX NO.:(910) 452-7563

INVOICE TO: SHEILA@CATLIN QUOTE # DOD101

P.O. NUMBER 271108-2

SGS Reference: 6128-2060

PAGE 1 OF 1

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE C=COMP G=GRAB	Preservatives Used: HNO3	Analysis Required (3): 6010B/3030C METALS, CHROMIUM UNFILTERED	REMARKS
	USTAIC-MW01	11/7/07	1550	GW	1	G		X	
	~~USTAIS-MW02~~	11/7/07	1630	GW	1	G		X	

(5)

Collected/Relinquished By:(1)	Date	Time	Received By:
Julie Davis	11/8/07	1435	Julie Johnson
Relinquished By: (2)	Date	Time	Received By:
Relinquished By: (3)	Date	Time	Received By:
Relinquished By: (4)	Date	Time	Received By:

(4)

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) YES NO

Temperature IC: 4.8°C T

Special Deliverable Requirements:

Chain of Custody Seal: (Circle)

INTACT BROKEN ABSENT

Requested Turnaround Time and Special Instructions:

STANDARD

N.C. CERTIFICATION #481

SGS ENVIRONMENTAL SERVICES, INC.

200 W. Potter Drive **Anchorage, AK 99518** Tel: (907) 562-2343 Fax: (907) 561-5301
5500 Business Drive **Wilmington, NC 28405** Tel: (910) 350-1903 Fax: (910) 350-1557
1270 Greenbrier Street **Charleston, WV 25311** Tel: (304) 346-0725 Fax: (304) 346-0761

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