REPORT OF FINDINGS WITH SITE CLOSURE REQUEST

FOR

SITE TC-912
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

NCDENR UST INCIDENT NO. 15198
RICK CLASSIFICATION: LOW
LAND USE CLASSIFICATION: RESIDENTIAL

NOVEMBER 5, 2007

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

PREPARED BY:

CATLIN ENGINEERS AND SCIENTISTS
P. O. BOX 10279
WILMINGTON, NORTH CAROLINA 28404-0279
(910) 452-5861

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A. SITE IDENTIFICATION

DATE OF REPORT: November 5, 2007
Facility ID: E-002740 UST Incident Number (if known): 15198
Site Name: Site TC-912
Site Location: Marine Corps Base (MCB), Camp Lejeune
Nearest City/Town: Jacksonville County: Onslow
Risk Classification: Low Land Use Classification: Residential

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

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

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

Property Occupant: None
Address: Along "A" Street, MCB Camp Lejeune, NC 28542 Phone: None

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

Release Information

Date Discovered: June 28, 1990
Longitude: 77° 27' 28" W **Latitude:** 34° 43' 47"N
Estimated Quantity of Release: Unknown
Cause of Release: Possible leaking UST(s) and/or associated piping
Source of Release (e.g. Piping/UST):
Possible leaking UST(s) and/or associated piping

Sizes and contents of UST system(s) from which the release occurred:
One 6,000-gallon Regular Gasoline UST; One 6,000-gallon Unleaded Gasoline UST; One 4,000 gallon Unleaded Gasoline UST; One 550-gallon Diesel UST; and One 550 gallon Heating 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. BACKGROUND AND PURPOSE

Former Building TC-912 was located in the Camp Geiger area of Marine Corps Base (MCB) Camp Lejeune, North Carolina. The site location is shown on Figure 1. Former Building TC-912 was a convenience store and fueling station that operated until approximately 1990. The site previously contained one 6,000-gallon capacity regular gasoline underground storage tank (UST), one 6,000-gallon capacity unleaded gasoline UST, one 4,000-gallon unleaded gasoline UST, one 550-gallon used oil UST, and one 550-gallon No.2 heating oil UST. The USTs and associated piping were installed in 1964, deactivated in 1990, and subsequently removed in June 1992 and April 1993. Building TC-912 was demolished in 1999, and the site is generally now covered with grass. Previous investigations at the site are documented in the following reports:

REPORT TITLE	***DATE***	***AUTHOR***
Underground Storage Tank (UST) Site Check, Camp Geiger Mini C Store Service Station, Camp Lejeune, Onslow County, NC	2/18/1992	ATEC Environmental Consultants (ATEC)
Underground Storage Tank Removal Report, Camp Geiger Mini C Store Service Station, Camp Lejeune, Onslow County, NC	9/15/1992	Environmental & Regulatory Consultants, Inc. (ERC)
Initial Site Assessment Report, UST Closure By Removal, 550 Gallon Used Oil Tank, Building TC912	Report Not Dated (Tank Removed 4/1993)	Peele's Pump and Tank Company
Leaking Underground Storage Tank (LUST) Site Assessment Report, Building Mini C Store Service Station, MCAS, Camp Geiger, NC	7/7/1994	Law Engineering, Inc. (LAW)
Addendum to Leaking Underground Storage Tank Site Assessment Report, Building TC-912, Mini C Service Station, MCAS, Camp Geiger, NC	7/7/1994	Law Engineering, Inc.
Corrective Action Plan for the Restoration of Petroleum Contaminated Soil and Groundwater, Building TC-912, Mini C Service Station, MCAS, Camp Geiger, NC	2/23/1996	Law Engineering, Inc.
Annual Monitoring Report, Request for No Further Action Status, Soil and Groundwater Remediation, Building TC-912, Camp Geiger, NC	1/2003	J.A. Jones Environmental Services Company (J.A. Jones)
Soil Assessment Report for Building TC-912, MCB Camp Lejeune, North Carolina	1/4/2005	CATLIN Engineers and Scientists (CATLIN)

The results of these investigations are summarized as follows:

UST TC-912-1 failed a tank system check in June 1990, which prompted the UST system at the subject site to be deactivated. A site investigation was conducted by ATEC in August 1991, which indicated soil and groundwater at the subject site had been impacted by petroleum constituents. In June 1992, ERC removed two 6,000-gallon Gasoline USTs, one 4,000-gallon Gasoline UST, and one 550-gallon No. 2 Fuel Oil UST. Two soil samples collected beneath UST TC-912-2 indicated petroleum-impacted soil. Peele's Pump and Tank Company removed the 550 gallon Used Oil tank on the west side of the building in April 1993. One soil sample, analyzed for Oil and Grease, showed no detections above the laboratory detection limit.

Site assessment activities were performed in 1993 and 1994 by LAW to define the extent of soil and dissolved-phase groundwater contamination. Upon completion of the site assessment, LAW developed a Corrective Action Plan (CAP) in 1996, which estimated the horizontal and vertical extent of soil and groundwater petroleum contamination and recommended an Air Sparge/Soil Vapor Extraction (AS/SVE) remediation system.

Construction of the recommended AS/SVE system was completed by J.A. Jones in 1998. The soil and groundwater treatment system operated from April 20, 1998 to April 5, 2001. Subsequent to system shutdown, post-operation monitoring was initiated to facilitate site closure. Analytical data from the last groundwater monitoring event (January 2002) indicated only monitoring well (USTTC912-MW02) had contaminants approaching the groundwater standards. Benzene was detected in this well at a concentration of 1 ug/L which is equal to the 2L Groundwater Quality Standard (GWQS) for this compound.

A request for No Further Action (NFA) was submitted to the North Carolina Department of Environment and Natural Resources (NCDENR) in March 2004. The NCDENR reviewed the NFA request and asked for additional soil data in the vicinity of the former dispenser area at the subject site. As a result, CATLIN completed a Soil Assessment Report (SAR) for the site. Results from the SAR investigation indicated concentrations of four compounds (Benzene, Ethylbenzene, Total Xylenes, and the C_9-C_{22} Aromatic hydrocarbon fractions) above their applicable Soil-to-Groundwater (STGW) Maximum Soil Contaminant Concentrations (MSCCs), but below their Residential MSCCs. All other compounds were either below the laboratory quantitation limits or below any established MSCCs.

The SAR was submitted to NCDENR, and upon review, NCDENR communicated, on February 16, 2005, to MCB Camp Lejeune Environmental Management Division personnel that the site was eligible for NFA with a groundwater Land Use Restriction (LUR).

MCB Camp Lejeune periodically monitors groundwater at the site to assess attenuation of contaminant concentrations. The purpose of the current investigation was to resample groundwater at the site in order to assess current groundwater conditions. Historical data showed that groundwater in the former monitoring well USTTC912-MW02 area contained noncompliant contaminant concentrations. Monitoring well USTTC912-MW02 has been demolished or paved over and was not found, therefore a temporary well was installed and sampled in the vicinity of former well USTTC912-MW02.

C. METHODS

1. Field Methods

All field work was conducted in general accordance with CATLIN's Standard Procedures provided in Appendix A. CATLIN personnel gathered subsurface soil data by Direct Push Technology (DPT) boring advancement using an AMS PowerProbe™ 9600D (PowerProbe) on July 31, 2007. When using the PowerProbe, the borings are advanced to depth by static force and a 90-pound hydraulic percussion hammer. Two and one-quarter inch diameter by four-foot length steel is used as casing. Soil samples are continuously collected in one and one-half inch clear liners. Liners are removed from the casing and then cut in half longitudinally to allow for visual/manual classification by the Unified Soil Classification System (USCS) and organic vapor analysis utilizing a Photo Ionization Detector (PID). A boring log for the USTTC912-DPT01 boring is provided in Appendix B. The boring location is illustrated on Figure 2.

Well materials were installed in an attempt to determine accurate water table measurements and facilitate groundwater sampling. The well was constructed with one inch slotted PVC well screen.

The depth to water was measured and a grab groundwater sample was collected. The sample was collected on July 31, 2007 utilizing a peristaltic pump and new polyethylene tubing. The groundwater sample was labeled USTTC912-MW02 (DPT01).

New disposable nitrile gloves were worn during sampling activities. All samples were placed into the appropriately labeled glassware and packed on ice in an insulated cooler for transportation to the laboratory. Sample integrity was maintained by following proper Chain-of-Custody (COC) procedures. A copy of the COC is provided following the laboratory report in Appendix C.

Boreholes were abandoned to the surface using three-eighth inch bentonite chips. Bentonite and water were poured into the borehole simultaneously to facilitate hydration.

2. Analytical Methods

Samples were transported to SGS Environmental Services, Inc. (NC Certification #481) in Wilmington, North Carolina. At the laboratory, the groundwater sample was analyzed per EPA Method 602.

D. RESULTS

Field observations noted during soil boring advancement indicate site geology comprised of dark brown, brown, and gray fine sands from land surface to boring termination at 12 feet Below Land Surface (BLS). A boring log for the soil boring including organic vapor screening results is included in Appendix B. Groundwater depth as measured in the temporary monitoring well USTTC912-DPT01 on July 31, 2007 was approximately 6.3 feet BLS.

Analytical results for the groundwater sample are included in Appendix C (Please note the sample from this site was included on the COC with additional sites. As a result, only the applicable pages from the lab report are included. Page numbers are not consecutive, as multiple sites were sampled during the same event.). The analytical results are summarized as follows.

EPA Method 602

Laboratory analysis of groundwater sample USTTC912-MW02(DPT01) did not reveal detections of any target analytes. All EPA Method 602 compounds were reported as being below Method Detection Limits (MDLs), as indicated in Table 1 and illustrated on Figure 2.

E. CONCLUSIONS AND RECOMMENDATIONS

Groundwater sampling results of this investigation indicate that previously detected groundwater contaminant concentrations have naturally attenuated to below 2L GWQS. CATLIN recommends that no additional groundwater sampling be conducted at the subject site. Based on historical and current sampling data, the TC-912 site is eligible for NFA without LURs. If granted, public notice will be required since site soils exhibit compounds having concentrations above the lowest MSCCs.

F. REFERENCES

ATEC Environmental Consultants, *Underground Storage Tank (UST) Site Check, Camp Geiger Mini C Store Service Station, Camp Lejeune, Onslow County, NC,* February 18, 1992.

CATLIN Engineers and Scientists, *Soil Assessment Report Building TC-912, Marine Corps Base, Camp Lejeune, North Carolina,* January 4, 2005.

Environmental & Regulatory Consultants, Inc., *Underground Storage Tank Removal Report, Camp Geiger Mini C Store Service Station, Camp Lejeune, Onslow County, NC,* September 15, 1992.

J.A. Jones Environmental Services Company, *Annual Monitoring Report, Request for No Further Action Status, Soil and Groundwater Remediation, Building TC-912, Camp Geiger, NC,* January 2003.

LAW Engineering, Inc., *Leaking Underground Storage Tank (LUST) Site Assessment Report, Building Mini C Store Service Station, MCAS, Camp Geiger, NC.* June 7, 1994.

LAW Engineering, Inc., *Addendum Leaking Underground Storage Tank Site Assessment Report, Building TC-912, Mini C Store Service Station, MCAS, Camp Geiger, NC.* June 7, 1994.

LAW Engineering, Inc., *Corrective Action Plan for the Restoration of Petroleum Contaminated Soil and Groundwater, Building TC-912, Mini C Store Service Station, MCAS, Camp Geiger, NC.* February 23, 1996.

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

Peele's Pump and Tank Company, *Initial Site Assessment Report, UST Closure By Removal, 550 Gallon Used Oil Tank, Building TC912, Camp Geiger, Jacksonville, NC, 1993.*

TABLES

TABLE 1
SUMMARY OF GROUNDWATER LABORATORY RESULTS
EPA METHOD 602

TC-912, MCB Camp Lejeune

Well ID	Contaminant of Concern →		All EPA Method 602 Compounds
	Sample ID	Date Collected	
GCL (µg/L) 2L GWQS (µg/L)			Varies Varies
USTTC912-MW02 (DPT01)	USTTC912-MW02 (DPT01)	7/31/2007	BMDL

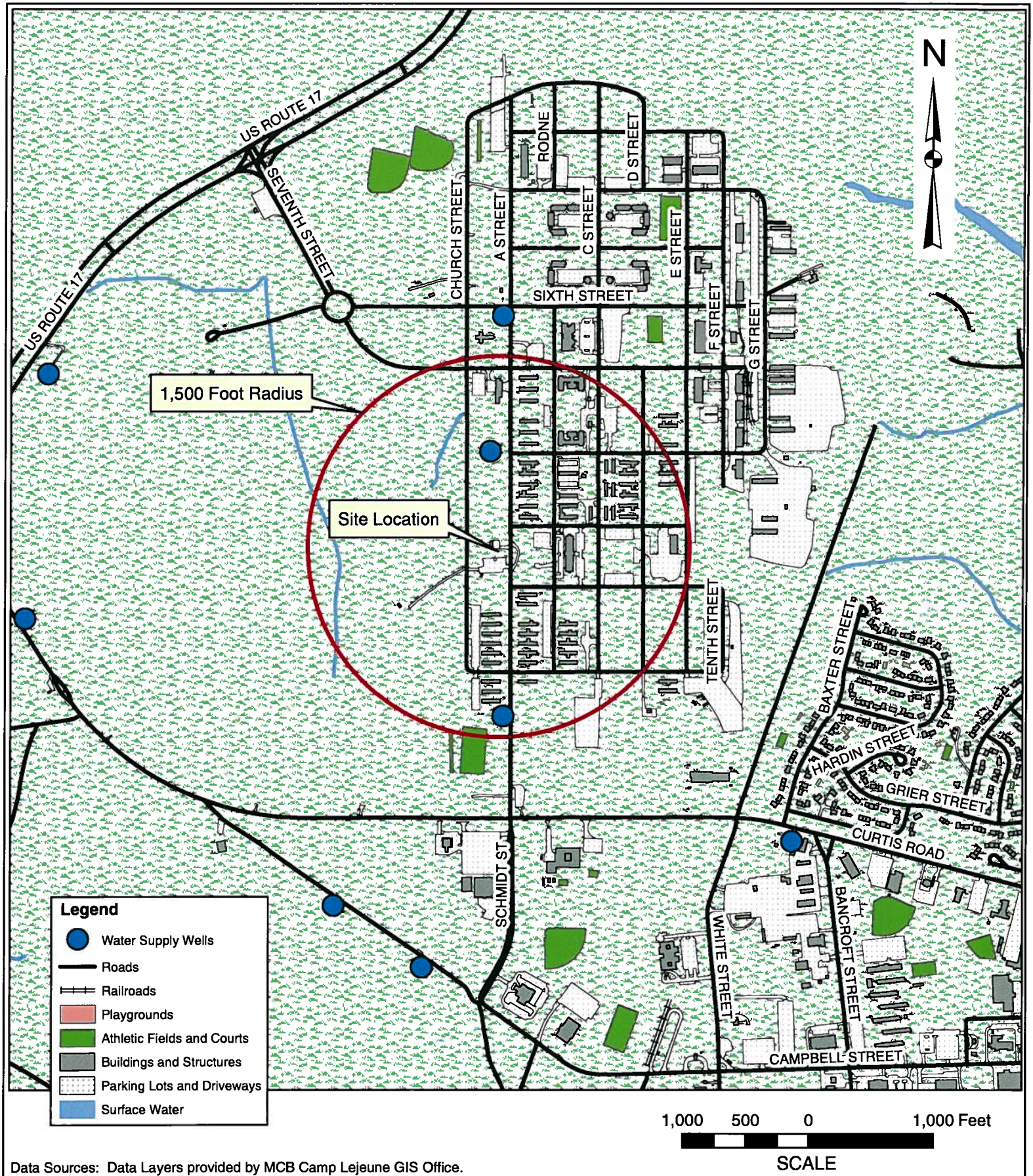
All results in micrograms per liter (µg/L).

BMDL = Below Method Detection Limit

GCL = Gross Contaminant Level

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

FIGURES



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

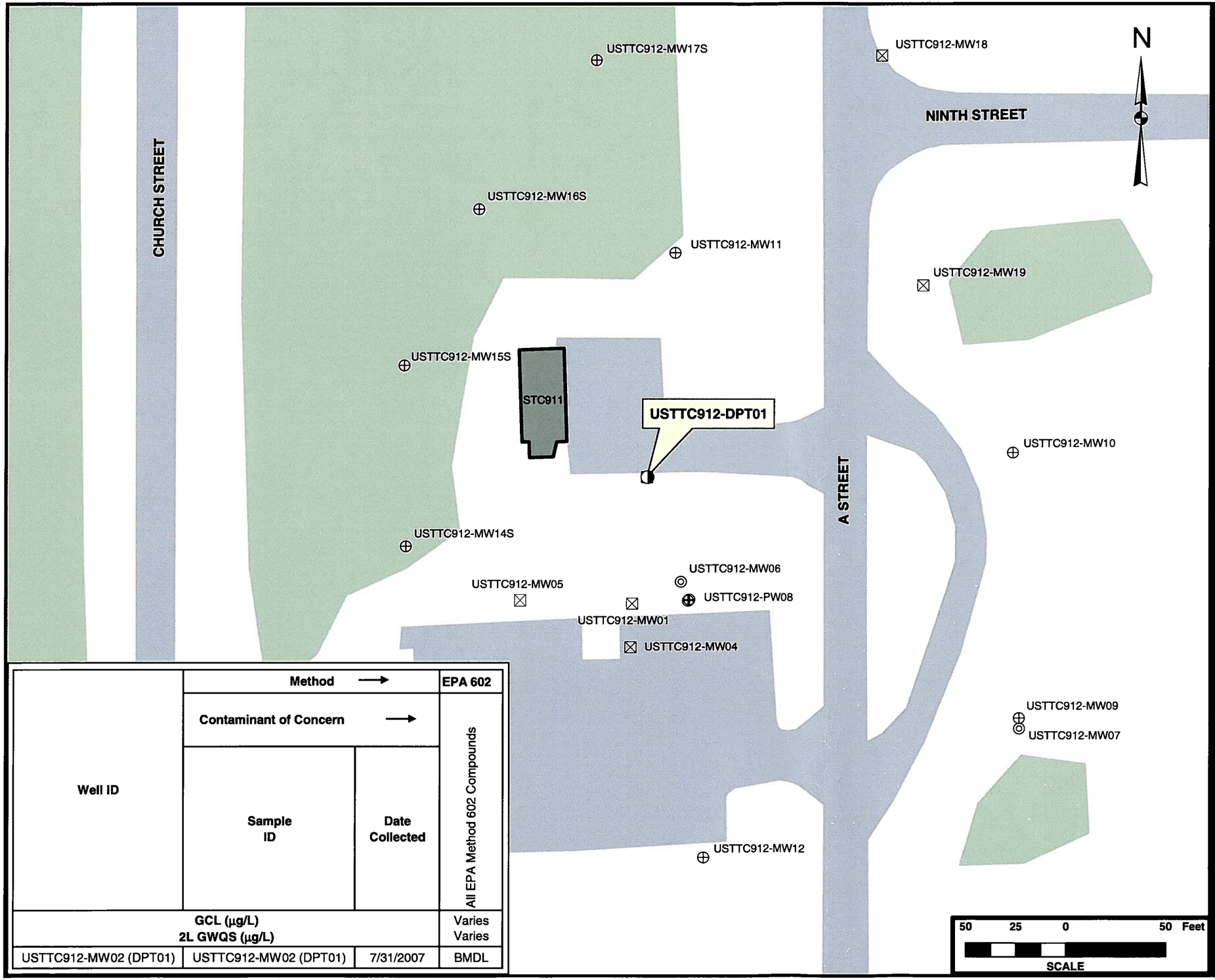
CATLIN ENGINEERS and SCIENTISTS

PROJECT	TITLE	FIGURE
REPORT OF FINDINGS WITH SITE CLOSURE REQUEST SITE TC-912 MARINE CORPS BASE CAMP LEJEUNE, NC	SITE LOCATION MAP	1

JOB NO.	DATE	SCALE	DRAWN BY	CHECKED BY
205-077	OCT 2007	AS SHOWN	SAC	MEM

REPORT OF FINDINGS WITH SITE CLOSURE REQUEST SITE TC-912 MCB CAMP LEJEUNE, NC

NAVFAC Naval Facilities Engineering Command



LEGEND

- DPT Well
- **Existing Monitoring Wells**
  - Type I
  - Type II
  - Type III
  - Pumping Well
  - Unknown Well Type
- Water Supply Wells
- Above Ground Storage Tank
- Underground Storage Tank
- Railroad Tracks
- **Walls and Fences**
  - FENCE
  - GATE
  - WALL
- Buildings and Structures
- Demolished Structures
- Oil/Water Separators
- Slabs
- Roads
- Driveways
- Parking Lots
- Surface Water Bodies
- Creeks and Streams
- **Vegetation Cover**
  - Forestland
  - Scrubland
  - Wetland
- **Airfield Pavement**
  - HELIPAD
  - RAMP
  - RUNWAY
  - SHLDR_OVERRUN
  - TAXIWAY

NOTES

GIS data layers provided by the MCB Camp Lejeune GIS Department.

All results in micrograms per liter (ug/L)

BMDL = Below Method Detection Limit

GCL = Gross Contaminant Level

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

Well ID	Method →	EPA 602
	Contaminant of Concern →	All EPA Method 602 Compounds
	Sample ID / Date Collected	
GCL (µg/L) / 2L GWQS (µg/L)		Varies / Varies
USTTC912-MW02 (DPT01)	USTTC912-MW02 (DPT01) 7/31/2007	BMDL

CATLIN ENGINEERS and SCIENTISTS

SITE MAP WITH SUMMARY OF GROUNDWATER LABORATORY RESULTS

FIGURE 2

Job No.:	Date:	Scale:	Drawn By:	Checked By:
205-077	OCT 2007	AS SHOWN	SAC	MEM

APPENDICES

APPENDIX A

STANDARD PROCEDURES

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 B

BORING LOG

WELL LOG

CATLIN ENGINEERS and SCIENTISTS
205-077
Wilmington, NC

SHEET 1 OF 1

PROJECT NO.: 205-077	STATE: NC	COUNTY: Onslow	LOCATION: Jacksonville
PROJECT NAME: Lejuene LUR Sites	LOGGED BY: J Heter		WELL ID: USTTC912-DPT01
	DRILLER: William J. Miller		
NORTHING: 3845873.1	EASTING: 275002.0	CREW:	
SYSTEM: UTM NAD83 (m)	BORING LOCATION: Camp Geiger near Bld STC912		T.O.C. ELEV.:
DRILL MACHINE: Power Probe	METHOD: Direct Push	0 HOUR DTW: 6.3	TOTAL DEPTH: 12.0
START DATE: 7/31/07	FINISH DATE: 7/31/07	24 HOUR DTW: NM	WELL DEPTH: 10.0

DEPTH	BLOW COUNT 6in	6in	6in	6in	OVA (ppm)	LAB.	USCS	LOG	DEPTH	SOIL AND ROCK DESCRIPTION	WELL DETAIL
									0.0	LAND SURFACE	0.0
0.0					0.0		SP		2.0	Grass/organics. Dark brown fine SAND. Stiff. Dense. Dry.	0.0
2.0					0.0		SP		4.0	Brown fine SAND. Uniform Loose. Moist.	1" Sch. 40 PVC
4.0					1.0		SP		6.0	Gray fine SAND. Uniform. Loose. Moist.	5.0
6.0					3.4		SP		8.0	Brown fine SAND. Uniform Loose. Saturated @ 7.5'	1" Slot .010 Sch. 40 PVC
8.0					3.5		SP		10.0	Light gray fine SAND. Uniform. Loose. Saturated.	10.0
10.0					19.9		SP		12.0	S.A.A.	10.0
										Boring Terminated at Depth 12.0 ft Fine SAND.	

Bentonite Pellets

CATLIN BORING LOG 205-077 LEJUENE LUR SITES.GPJ TEST.GDT 8/20/07

APPENDIX C

LABORATORY ANALYTICAL REPORT AND CHAIN OF CUSTODY DOCUMENTATION

Mr. Shane Chasteen
Richard Catlin & Associates
P.O. Box 10279
Wilmington NC 28404-0279

Report Number: G128-1996

Client Project: Lejuene LUR Sites

Dear Mr. Chasteen:

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

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

Sincerely,
SGS/Paradigm Analytical Laboratories, Inc.

Laboratory Director — Date: 8/8/2007
J. Patrick Weaver

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.

Results for Volatiles

by GC 602

Client Sample ID: USTTC912-MW02 (DPT01)
Client Project ID: Lejuene LUR Sites
Lab Sample ID: G128-1996-4A
Lab Project ID: G128-1996

Analyzed By: RSB
Date Collected: 7/31/2007 13:30
Date Received: 7/31/2007
Matrix: Water

Analyte	Result ug/L	RL ug/L	MDL ug/L	Dilution Factor	Date Analyzed	Flags
Benzene	BQL	1.00	0.183	1	8/4/2007	
Diisopropyl ether (DIPE)	BQL	1.00	0.229	1	8/4/2007	
Ethylbenzene	BQL	1.00	0.181	1	8/4/2007	
Methyl-tert butyl ether (MTBE)	BQL	2.00	0.359	1	8/4/2007	
Toluene	BQL	1.00	0.157	1	8/4/2007	
m/p-Xylene	BQL	2.00	0.481	1	8/4/2007	
o-Xylene	BQL	2.00	0.584	1	8/4/2007	

Surrogate Spike Recoveries	Spike Added	Spike Result	Percent Recovery
Trifluorotoluene	40	42.1	105

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

Reviewed By:

SGS

CHAIN OF CUSTODY RECORD
SGS Environmental Services Inc.

Locations Nationwide
- Alaska
- Ohio
- New Jersey
- West Virginia
- Hawaii
- Maryland
- North Carolina

www.us.sgs.com

0784

SGS

(1)

CLIENT: Catlin

CONTACT: Shane Chasteen PHONE NO:(910) 452.5861

PROJECT: Lejeune LUR sites SITE/PWSID#: 205-077

REPORTS TO: Shane Chasteen E-MAIL: FAX NO.:( )

INVOICE TO: Sheila Smith QUOTE # DOD 101 P.O. NUMBER 270726-1

SGS Reference: G128-1996

PAGE 3 OF 3

(2)

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE C=COMP G=GRAB	Preservatives Used	HCl	HCl	HCl							REMARKS
							Analysis Required (3)	EPH	VPH	602							
	USTH30-DPT01	7/31/07	1000	W	3	C		1	2								* Results in
	USTT3165-DPT01		1115		3			1	2								Summary &
	USTT3233-DPT01		1345		3					3							Lejeune EDD
	USTTC912-MW02(DPT01)		1330		3					3							format

(5)

Collected/Relinquished By:(1)	Date	Time	Received By:	Date	Time
Justin Hall	7/31/07	1600		7/31/07	1600
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:	Date	Time

(4)

Shipping Carrier:

Shipping Ticket No:

Samples Received Cold? (Circle) YES NO

Temperature °C: 4-5°C

Special Deliverable Requirements:

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