

**GROUNDWATER SAMPLING
REPORT OF FINDINGS**

FOR

PP-3340
**MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA**

**NC DENR UST INCIDENT NO. 24012
LAND USE CLASSIFICATION: RESIDENTIAL
RISK CLASSIFICATION: LOW**

NOVEMBER 5, 2007

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



PREPARED BY:

**CATLIN ENGINEERS AND SCIENTISTS
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A. SITE IDENTIFICATION

DATE OF REPORT: November 5, 2007
Facility ID: E-002740 UST Incident Number (if known): 24012
Site Name: PP-3340
Land Use Classification: Residential Risk Classification: Low
Site Location: 3340 Jones Street, MCB, Camp Lejeune (See Figure 1)
Nearest City/Town: Jacksonville County: Onslow
UST Owner: Commanding Officer - MCB Camp Lejeune
I&E/EMD/EQB
Address: PSC 20004 Phone: (910) 451-5068
MCB Camp Lejeune, NC 28542
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: Military personnel and family
Address: 3340 Jones Street Phone Unknown
Consultant/Contractor: CATLIN Engineers and Scientists
Address: 220 Old Dairy Road, Wilmington, North Carolina 28405 Phone: (910) 452-5861

Release Information

Date Discovered: September 14, 2001
Longitude: 77.3661 W **Latitude:** 34.6843 N
Estimated Quantity of Release: Unknown
Cause of Release: Unknown
Source of Release (e.g. Piping/UST):
Possible leaking UST and/or associated piping

Sizes and contents of UST system(s) from which the release occurred:
Non-regulated, non-commercial, 285-gallon fuel oil UST used for heating a single-family residence

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

The project is located at Building PP-3340 aboard Marine Corps Base (MCB) Camp Lejeune, North Carolina. Building PP-3340 is located in the Paradise Point Housing Area and was heated using heating oil from a 285-gallon underground storage tank (UST). The former tank was located adjacent to the single family residence and was within several feet of the foundation.

On September 14, 2001, J.A. Jones Environmental Services Company (J.A. Jones) of Charlotte, North Carolina performed UST excavation operations and removed one 285-gallon, non-regulated, non-commercial fuel oil UST from the site (see Figure 2). The fuel oil tank was utilized strictly for heating purposes of the single-family residence. A soil sample was obtained from the base of the tank basin during tank removal. Laboratory analytical results revealed Total Petroleum Hydrocarbon (TPH) concentrations above the North Carolina Department of Environment and Natural Resources (NCDENR) Action Level of 10 mg/Kg. As a result, J.A. Jones performed additional soil excavation within the tank basin and collected risk based confirmation soil samples. Four sidewall soil samples and one soil sample from the bottom of the tank basin were obtained. Soil samples were analyzed for volatiles per EPA Method 8260, semi-volatiles per EPA Method 8270, and volatile and extractable petroleum hydrocarbons (VPH/EPH) via the Massachusetts Department of Environmental Protection (MADEP) Methods. Laboratory analytical results did not reveal any contaminant concentrations in excess of the Residential Maximum Soil Contaminant Concentrations (MSCCs).

In July 2002, CATLIN Engineers and Scientists (CATLIN) conducted field work and sampling required by NCDENR for a Phase I Limited Site Assessment (LSA). One soil sample and one groundwater sample were collected for laboratory analysis from a temporary boring/well. The soil sample was collected from beneath the former product line location. Soil sample results did not reveal any concentrations above the method detection limits, with the exception of minor Toluene concentrations. The groundwater sample collected from the former UST basin area revealed C₉-C₂₂ Aromatic hydrocarbon fractions above the corresponding 2L Groundwater Quality Standard (2L GWQS).

The Phase I LSA report, dated November 29, 2002, concluded the site met criteria to be ranked as Low Risk with Residential Land Use. Based on historical soil and groundwater sample results, the site was eligible for No Further Action (NFA) status with issuance of a groundwater Land Use Restriction (LUR).

MCB Camp Lejeune continues to monitor groundwater at the site to assess attenuation of contaminant concentrations. CATLIN personnel conducted groundwater sampling at the site in November 2004. Results of the investigation were submitted in the *Groundwater Sampling Report of Findings for PP-3340, Marine Corps Base, Camp Lejeune, North Carolina*, May 10, 2005. Noncompliant C₉-C₂₂ Aromatics concentrations were detected above the 2L GWQS, so NFA without a LUR was not achievable at the time.

CATLIN conducted groundwater sampling in July 2007 in order to assess current groundwater conditions at the site.

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 27, 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 USTPP3340-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.

A depth to water (DTW) measurement was recorded and a grab groundwater sample was collected. The sample was collected on July 27, 2007 utilizing a peristaltic pump and new polyethylene tubing. The groundwater sample was labeled USTPP3340-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.

The borehole was 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 for MADEP VPH/EPH.

D. RESULTS

Field observations noted during soil boring advancement indicate site geology to be comprised of fine sands to eight feet Below Land Surface (BLS), with the exception of silty sand from four to six feet BLS. Field classification noted medium sand grading into clay from eight feet BLS to boring termination at 12 feet 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 USTPP3340-DPT01 on July 27, 2007 was approximately 6.9 feet BLS.

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

MADEP VPH/EPH

As indicated in Table 1 and illustrated Figure 2, analytical results from groundwater sample USTPP3340-DPT01 revealed the presence of C₉-C₂₂ Aromatics at a concentration of 1,402 µg/L, which is above the 2L GWQS of 210 µg/L. Laboratory analysis also detected C₉-C₁₈ Aliphatics and C₁₉-C₃₆ Aliphatics concentrations; however, levels were below the applicable 2L GWQSs.

E. CONCLUSIONS AND RECOMMENDATIONS

The C₉-C₂₂ Aromatic concentration previously detected in groundwater at the PP-3340 site has not naturally attenuated to below the 2L GWQS of 210 µg/L. Overall, contaminant levels have decreased slightly since the 2004 sampling event. Current groundwater contaminant concentrations, however, continue to prevent the site from qualifying for NFA without a groundwater LUR. CATLIN recommends resampling groundwater in two years.

F. REFERENCES

CATLIN Engineers and Scientists. *LUST Phase I Limited Site Assessment Report UST PP-3340, MCB Camp Lejeune, NC*, November 29, 2002.

CATLIN Engineers and Scientists. *Groundwater Sampling Report of Findings for PP-3340, MCB Camp Lejeune, NC*, May 10, 2005.

J.A. Jones Environmental Services Company. *Underground Storage Tank Closure Report Marine Corps Base Building CC-3340, MCB Camp Lejeune, NC*, January 23, 2002.

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

TABLES

TABLE 1
SUMMARY OF GROUNDWATER LABORATORY RESULTS
MADEP VPH/EPH

PP-3340, MCB Camp Lejeune

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
USTPP3340-DPT01	USTPP3340-DPT01	7/27/2007	<100	3,627	360	1,402

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

NE = None Established

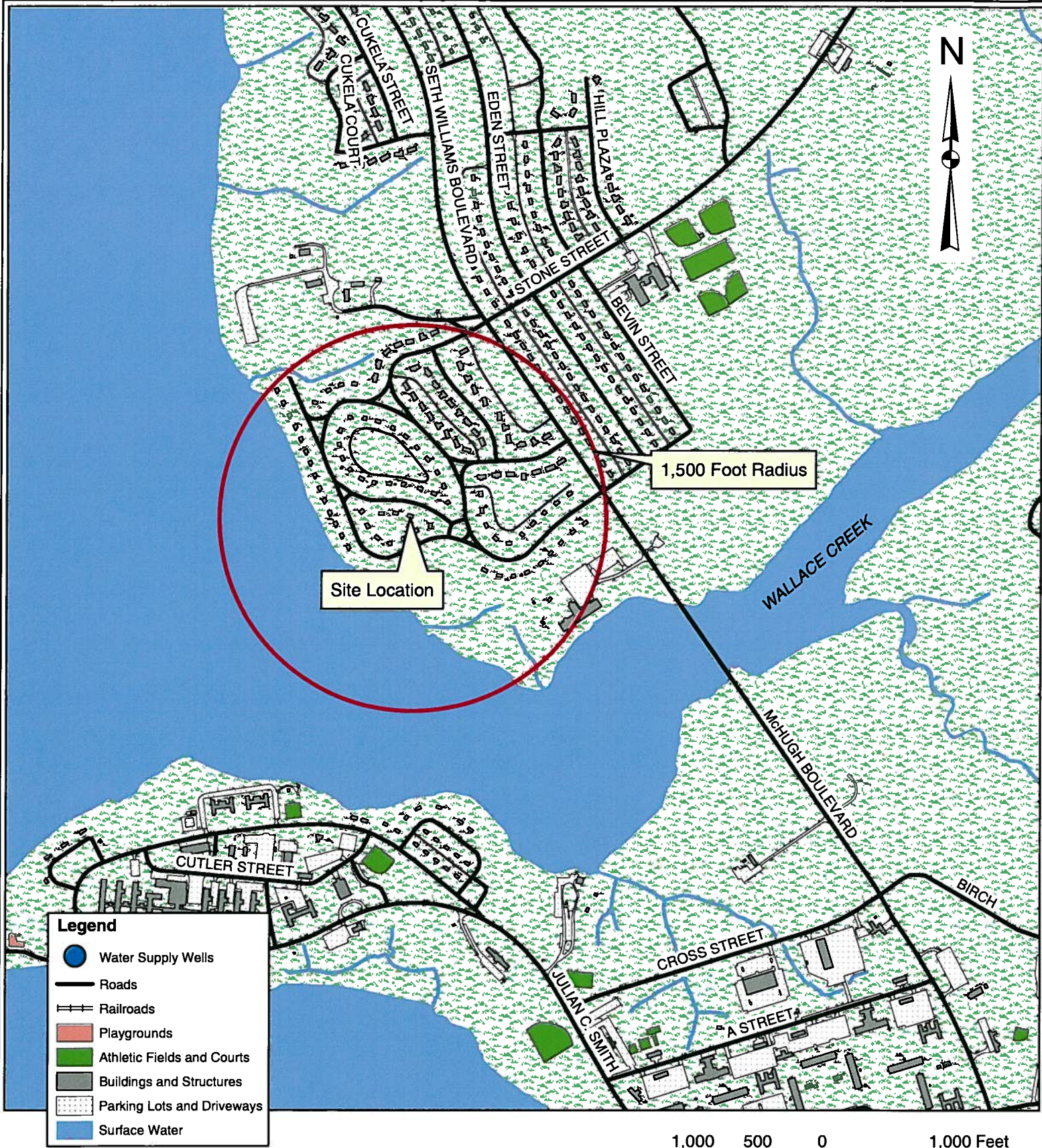
< = Less than MDL

Bold results indicate concentrations above 2L GWQS or GCL


GCL = Gross Contaminant Level

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

FIGURES



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

	PROJECT GROUNDWATER SAMPLING REPORT OF FINDINGS SITE PP-3340 MARINE CORPS BASE CAMP LEJEUNE, NC		TITLE SITE LOCATION MAP		FIGURE 1
	JOB NO. 205-077	DATE OCT 2007	SCALE AS SHOWN	DRAWN BY SAC	CHECKED BY MEM

**GROUNDWATER SAMPLING
REPORT OF FINDINGS
SITE PP-3340
MCB CAMP LEJEUNE, NC**



LEGEND

- DPT Well
- Water Supply Wells
- Above Ground Storage Tank
- Underground Storage Tank
- Railroad Tracks
- FENCE
- GATE
- WALL
- Buildings and Structures
- Demolished Structures
- Oil/Water Separators
- Slabs
- Roads
- Driveways
- Parking Lots
- Surface Water Bodies
- Creeks and Streams
- 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)

NE = None Established

Bold results indicate concentration above 2L GWQS or GCL

GCL = Gross Contaminant Level

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

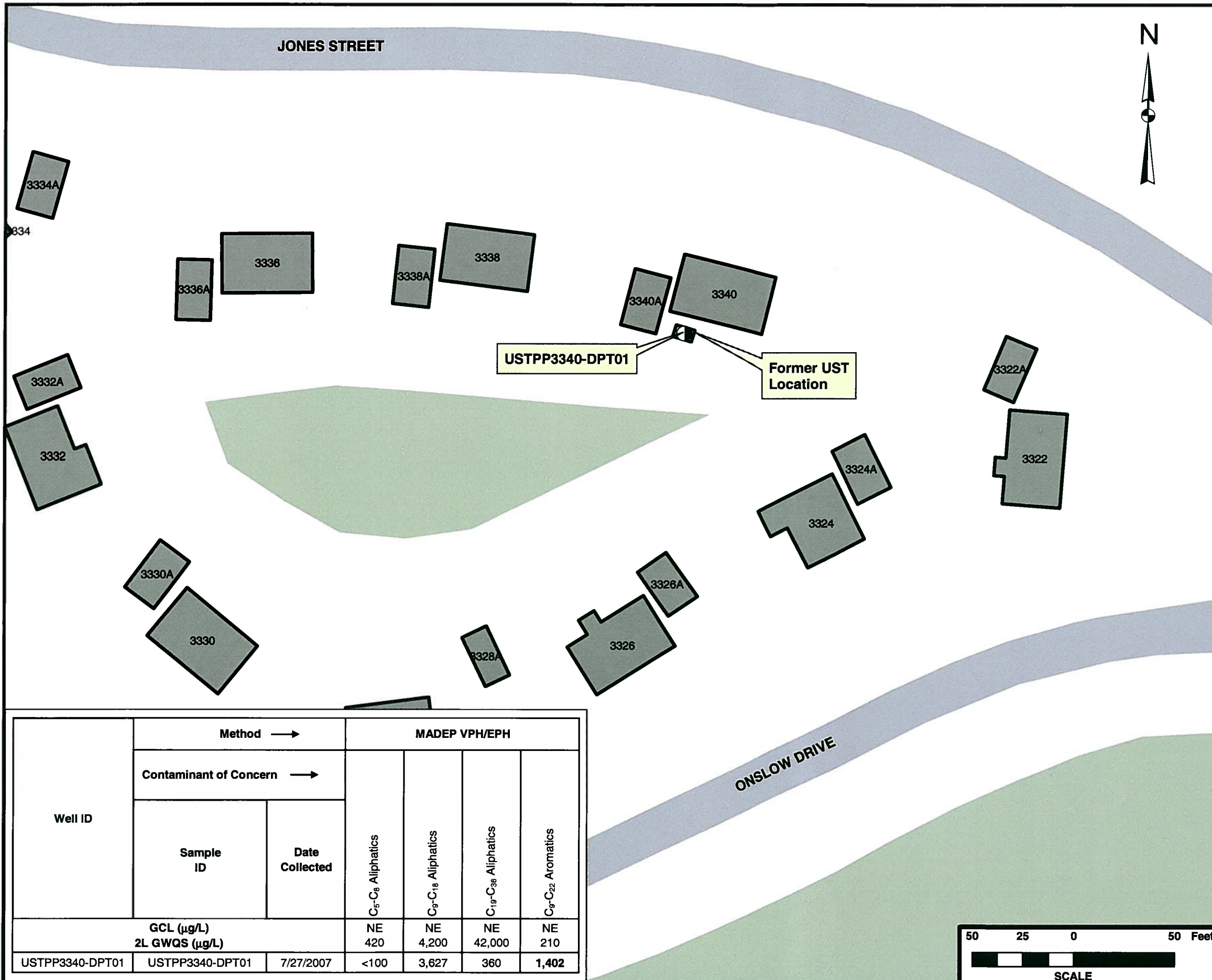


**SITE MAP WITH SUMMARY OF
GROUNDWATER LABORATORY
RESULTS**

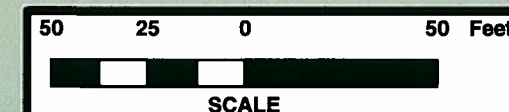
FIGURE

2

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



Well ID	Method →		MADEP VPH/EPH			
	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
USTPP3340-DPT01	USTPP3340-DPT01	7/27/2007	<100	3,627	360	1,402



APPENDICES

APPENDIX A
STANDARD PROCEDURES

CATLIN STANDARD METHODS OF INVESTIGATION

(REVISED APRIL 2002)

1.0 DATA COLLECTION

1.1 BACKGROUND DATA

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

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

1.2 SURVEYS AND POTENTIAL RECEPTOR DATA

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

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

1.2.1 Horizontal Survey

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

1.2.2 Vertical Survey

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

1.3 DRILLING AND MONITORING WELL/PIEZOMETER INSTALLATION

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

1.3.1 Drilling Methods and Subsurface Data Collection

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

Auger Drilling

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

Hand Augering

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

Direct Push

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

Other Methods

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

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

responsible for subsurface contaminant and geologic data collection. Soils are classified in general agreement with the Unified Soils Classification System (USCS).

1.3.2 Hydropunch Installation

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

1.3.3 Well Installation

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

1.3.4 Well Development

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

1.4 HYDROGEOLOGIC DATA COLLECTION

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

1.4.1 Regional Geology

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

1.4.2 Site Geology

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

1.4.3 Groundwater Occurrence and Characteristics

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

Well Water Levels

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

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

Aquifer Testing

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

Other Methods

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

1.5 PETROLEUM HYDROCARBON DATA COLLECTION

1.5.1 Collection Methods

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

Field Analysis

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

Laboratory Analysis

- Laboratory analysis of phase-separated products.

- Laboratory vapor, soil, and groundwater analysis using appropriate EPA Methods.

1.5.2 Field Sampling

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

Product Samples

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

Vapor Samples

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

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

Soil Samples

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

Groundwater Samples

Groundwater samples are collected in accordance with the following procedures:

- Creeks/Lakes/Etc.

Grab samples are obtained.

- Domestic Wells

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

- Monitoring Wells

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

Three well volumes are removed from each well using a thoroughly cleaned Teflon bailer or appropriate purging pump. If it is not possible to

remove three volumes, due to very low yields, a minimum of one volume is removed prior to obtaining a sample.

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

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

Sampling records are field prepared.

Samples are labeled and proper Chain-of-Custody documents are maintained.

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

2.0 DATA EVALUATION

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

- Background data are evaluated in context with the suspected or confirmed problem.
- Survey data are utilized to develop site maps and to evaluate contaminant receptors.
- Well construction records are compiled and presented as part of the report. As-built information is used in combination with other data to evaluate subsurface conditions and monitoring well screen settings as they relate to the investigation.
- Subsurface drilling logs are used to develop geologic cross-sections, fence diagrams, 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:	USTPP3340-DPT01	
				DRILLER:	Bobbie D. Fowler			
NORTHING:	3840581.9	EASTING:	283211.6	CREW:	T Stetler	T.O.C. ELEV.:		
SYSTEM:	UTM NAD83 (m)		BORING LOCATION:			House # 3340 backyard		
DRILL MACHINE:	Power Probe		METHOD:	Direct Push	0 HOUR DTW:	6.9	TOTAL DEPTH:	12.0
START DATE:	7/27/07		FINISH DATE:	7/27/07	24 HOUR DTW:	NM	WELL DEPTH:	10.0

DEPTH	BLOW COUNT				OVA (ppm)	LAB.	U S C S	L O G	DEPTH	SOIL AND ROCK DESCRIPTION	WELL DETAIL
	6in	6in	6in	6in							
0.0									0.0	LAND SURFACE	0.0
2.0					0.0		SP		2.0	Grass/organics. Brown fine SAND. Uniform Loose. Moist.	
4.0					0.0		SP		4.0	S.A.A.	1" Sch. 40 PVC
6.0					5.0		SM		6.0	Brown SILTY SAND. Moist.	5.0
8.0					3.3		SP		8.0	Brown fine SAND. Uniform. Wet.	1" Slet. 0.10 Sch. 40 PVC
10.0					437.0		SP/ CL		10.0	Brown medium SAND grading into black CLAY. High Plasticity. Soft. Saturated.	10.0
12.0					NM		CL		12.0	Black to dark brown CLAY w/ high plasticity. Soft.	
										Boring Terminated at Depth 12.0 ft Dark CLAY w/ high plasticity.	

CATLIN BORING LOG 205-077 LEJUENE LUR SITES G.P.L. TEST G.D.T. 8/20/07

 Bentonite Pellets

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: G128-1993

Client Project: Lejuene LUR Sites

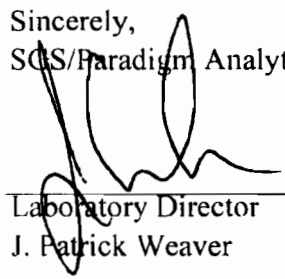
Dear Mr. Chasteen:

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 be retained for a maximum of thirty (30) days from the date of this report unless other arrangements are requested.

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

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

Sincerely,
SGS/Paradigm Analytical Laboratories, Inc.


Laboratory Director
J. Patrick Weaver


Date



List of Reporting Abbreviations and Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantitation Limit (RL or MDL)

DF = Dilution Factor

Dup = Duplicate

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

E = Estimated concentration, exceeds calibration range.

J = Estimated concentration, below calibration range and above MDL

LCS(D) = Laboratory Control Spike (Duplicate)

MDL = Method Detection Limit

MS(D) = Matrix Spike (Duplicate)

PQL = Practical Quantitation Limit

RL = Reporting Limit

RPD = Relative Percent Difference

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

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

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

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

% Rec = Percent Recovery

% solids = Percent Solids

Special Notes:

- 1) Metals and mercury samples are digested with a hot block, see the standard operating procedure document for details.
- 2) Uncertainty for all reported data is less than or equal to 30 percent.

**EPH (Aliphatics/Aromatics) Results**

by MDEP-EPH

Client Name: Richard Catlin & AssociatesProject Name: Lejuene LUR Sites

Sample Information and Analytical Results	
Sample Identification	USTPP3340-DPT01
Sample Matrix	Water
Date Collected	07/27/07
Date Received	07/27/07
Date Extracted	07/31/07
Date Analyzed	08/03/07
Dry Weight	
Dilution Factor	1:1
C ₉ -C ₁₈ Aliphatics*	3500 (ug/L)
C ₁₉ -C ₃₆ Aliphatics*	360 (ug/L)
C ₁₁ -C ₂₂ Aromatics*	1300 (ug/L)
Aliphatic Surrogate % Recovery	55
Aromatic Surrogate % Recovery	77
Fractionation Surrogate 1 % Recovery	70

Comments:

* = Excludes any surrogates or internal standards.

Lab info: G128-1993-7D

Reviewed By: 



CHAIN OF CUSTODY RECORD
SGS Environmental Services Inc.

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

www.us.sgs.com

078473

1 CLIENT: **Cattin**

CONTACT: **Shane Chasteen** PHONE NO: (910) 452.5861

PROJECT: **Lejuene LUR sites** SITE/PWSID#: **205-077**

REPORTS TO: **Shane Chasteen** E-MAIL: _____

INVOICE TO: **sheila Smith** QUOTE # **D00101**

FAX NO.: () _____

P.O. NUMBER **270726-1**

SGS Reference: _____

PAGE 2 OF 2

2

LAB NO.	SAMPLE IDENTIFICATION	DATE	TIME	MATRIX	No CONTAINERS	SAMPLE TYPE	Preservatives Used	HCl	-	Mech	HCl					REMARKS
	USTPP3354-DPTC2	7/24/07	1230	S	3	G	302 (add H ₂ O)									* Results in Summary & Lejuene EDD format
	Duplicate	7/27/07	1100	W	5	G										

5

Collected/Relinquished By: (1) *Justin Peters* Date: 7/27/07 Time: 1600

Relinquished By: (2) _____ Date: _____ Time: _____

Relinquished By: (3) _____ Date: _____ Time: _____

Relinquished By: (4) _____ Date: _____ Time: _____

Received By: *Justin Peters* Date: 7/27/07 Time: 1600

Received By: _____ Date: _____ Time: _____

Received By: _____ Date: _____ Time: _____

Received By: _____ Date: _____ Time: _____

Shipping Carrier: _____

Shipping Ticket No: _____

Special Deliverable Requirements: _____

Special Instructions: _____

Requested Turnaround Time: RUSH _____ STD

Samples Received Cold? (Circle) YES NO

Temperature (C): 21.5, 21.6, 21.9

Chain of Custody Seal: (Circle) INTACT BROKEN **ABSENT**

Date Needed _____



N.C. CERTIFICATION #481