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CATLIN
ENGINEERS and SCIENTISTS

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May 28, 2003

Commander
Naval Facilities Engineering Command
Atlantic Division
1510 Gilbert Street
Norfolk, Virginia 23511-6287

Attention: EV23JC, Mr. John D. Conway, P.G.

Re: Additional Soil Sampling
Incident Name: **Building PP-3343**
Incident Number: **24013**
Marine Corps Base
Camp Lejeune, North Carolina

Navy Contract No. N62470-01-D-3009
Delivery Order No. 0064
CATLIN Project No. 203-025

Dear Mr. Conway:

As reported by J.A. Jones Environmental Services Company (J.A. Jones) in the *Underground Storage Tank Closure Report Marine Corps Base Building CC-3343, MCB, Camp Lejeune, NC,* dated January 24, 2002, compounds were identified above Residential MSCCs in soil sample CC3343-5 collected from a reported depth of four feet below land surface (BLS) along the eastern sidewall of the former underground storage tank (UST) basin. Concentrations of C_9-C_{22} Aromatics were identified during laboratory analysis at a concentration of 477 mg/kg, which is above the accepted Residential MSCC of 469 mg/kg. A copy of the Soil Sample Analytical Results Table as presented in the UST Closure report is attached. A copy of the site map submitted by J.A. Jones with the UST Closure Report illustrating the soil boring/sample locations has been attached.

As detailed in the document *Leaking Underground Storage Tank (LUST) Phase I Limited Site Assessment Report for UST PP-3343 Marine Corps Base, Camp Lejeune, North Carolina* dated November 29, 2002, CATLIN personnel collected one groundwater sample from within the former UST basin and collected one soil sample from beneath the former distribution line. Laboratory analysis of these samples revealed no concentrations of target compounds above accepted current State standards. Depth to groundwater at the time of the LSA investigation (July 2002) was reported to be approximately four feet BLS. This site has been classified as Low Risk and Residential land use.

A Notice of Regulatory Requirements dated January 9, 2003 issued by NCDENR requested completion of a Soil Assessment Report (SAR). Due to the limited magnitude of the impact identified during the UST removal activities, NCDENR and MCB Camp Lejeune personnel agreed to a limited scope of work consisting of the collection of one soil sample at the location of the former soil boring CC3343-5. CATLIN personnel advanced an additional soil boring, USTPP3343-SB02, at the location of the previous sample CC3343-5 in order to establish compliance with current Residential MSCCs. The soil boring was advanced utilizing hand augering techniques to a depth of four feet BLS on April 15, 2003. The boring could not be advanced to a greater depth due to saturated soils encountered at approximately three feet BLS. A representative sample was collected from a depth of two and one half to three feet BLS and submitted for laboratory analysis per MADEP EPH/VPH. Analysis of the submitted sample revealed no concentrations of target compounds above laboratory method detection limits. Laboratory reports and summaries of the laboratory results are attached. Additionally, due to the relatively high groundwater levels observed in July 2002 and April 2003, samples collected below a depth of three feet BLS do not appear to be representative of true vadose soil conditions. Therefore, CATLIN recommends that the site be considered for No Further Action.

As requested by Nikki Hall with the Camp Lejeune Environmental Quality Branch we are hand delivering a copy of the Final report to the Wilmington Regional Office of the North Carolina Department of Environmental and Natural Resources.

Should you have any questions or need additional information, please feel free to contact us at your convenience.

Sincerely,

Michael E. Mason, P.E.
CATLIN Program Manager

NORTH CAROLINA LICENSED SEAL 1583 GEOLOGIST STEVEN V. HUDSON 5-29-03

Steven V. Hudson, P.G., C.W.D
Project Geologist

Attachments

cc: Mr. Roger R. Marce, Jr. - Code AQ 135 Contracts, (correspondence only)
Commanding General, Attn: Director I&E/EMD/EQB (w/attachments)

203-025_final soil ltr

TABLE 1 SUMMARY OF SOIL LABORATORY RESULTS

Date: April 2003 Incident Number and Name: 24013 - PP-3343 Facility ID#: N/A

Analytical Method: MADEP EPH/VPH

Sample ID	Contaminant of Concern →		C5-C8 Aliphatics	C9-C12 Aliphatics	C9-C10 Aromatics	C9-C18 Aliphatics	C19-C36 Aliphatics	C11-C22 Aromatics
	Date Collected	Sample Depth (ft. BGS)						
USTPP3343-SB02	4/15/03	2.5 - 3.0	<10	<10	<10	<10	<10	<10

All results in mg/kg.

ft. BGS = feet below ground surface

TABLE 2 SUMMARY OF SOIL LABORATORY RESULTS

Date: April 2003 Incident Number and Name: 24013 - PP-3343 Facility ID#: N/A

Analytical Method: MADEP VPH/EPH AS COMPARED TO NCDENR MSCCs

Sample ID	Contaminant of Concern →		C5-C8 Aliphatics	C9-C18 Aliphatics	C19-C36 Aliphatics	C9-C22 Aromatics
	Date Collected	Sample Depth (ft. BGS)				
Residential MSCC (mg/kg)			939	9,386	93,860	469
Industrial/Commercial MSCC (mg/kg)			24,528	245,280	#	12,264
Soil to Groundwater MSCC (mg/kg)			72	3,255	##	34
USTPP3343-SB02	4/15/03	2.5 - 3.0	<10	<20	<10	<20

Health based level >100%
Considered immobile
All results in mg/kg.

203-025

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PARADIGM ANALYTICAL LABORATORIES, INC.
2627 Northchase Parkway S.E.
Wilmington, North Carolina 28405
(910) 350-1903
Fax (910) 350-1557

April 25, 2003

Mr. Mike E. Mason
Richard Catlin & Associates
P.O. Box 10279
Wilmington, NC 28404-0279

Report Number: G128-1103

Client Project ID: PP-3343

Dear Mr. Mason,

Enclosed are the results of the analytical services performed under the referenced project. 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 for assistance. We will be happy to answer any questions or concerns which you may have.

Thank you for using 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,

Paradigm Analytical Laboratories, Inc.

Laboratory Director
J. Patrick Weaver

EPH (Aliphatics/Aromatics) Results

by MDEP-EPH

Client Name: Richard Catlin & Associates

Project Name: PP-3343

Sample Information and Analytical Results	
Sample Identification	USTPP3343-SB02
Sample Matrix	Soil
Date Collected	04/15/03
Date Received	04/15/03
Date Extracted	04/16/03
Date Analyzed	04/17/03
Dry Weight	87.5
Dilution Factor	1
C_9-C_{18} Aliphatics*	< 10 (mg/Kg)
C_{19}-C_{36} Aliphatics*	< 10 (mg/Kg)
C_{11}-C_{22} Aromatics*	< 10 (mg/Kg)
Aliphatic Surrogate % Recovery	70
Aromatic Surrogate % Recovery	70

Comments:

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

Lab info: G128-1103-69151

Reviewed By:

PARADIGM ANALYTICAL LABORATORIES, INC.

Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 03/19/03

Calibration Ranges and Limits

Range	MDL (µg/L)	MDL (mg/Kg)	ML (µg/L)	ML (mg/Kg)	RL (µg/L)	RL (mg/Kg)
C_9-C_{18} Aliphatics	0.1	0.8	0.3	2.6	100	10
C_{19}-C_{36} Aliphatics	0.1	1.6	0.3	5	100	10
C_{11}-C_{22} Aromatics	0.2	2.1	0.6	6.7	100	10

Calibration Concentration Levels

Range	Levels (µg/L)	Levels (mg/Kg)	%RSD or CCC	Method of Quantitation
C_9-C_{18} Aliphatics	0.06	1	5.00	Calibration Factor
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C_{19}-C_{36} Aliphatics	0.08	1.33	2.4	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C_{11}-C_{22} Aromatics	0.17	2.83	1.3	Calibration Factor
	0.425	7.08		
	0.85	14.2		
	1.7	28.3		
	3.4	56.7		

Calibration Check Date: 04/17/03

Calibration Check

Range	Levels (µg/mL)	Levels (mg/Kg)	RPD
C_9-C_{18} Aliphatics	0.6	10	-23.4
C_{19}-C_{36} Aliphatics	0.8	13.3	-11.4
C_{11}-C_{22} Aromatics	1.7	28.3	-14.9

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

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

ARADIGM ANALYTICAL LABORATORIES, INC.
527 Northchase Parkway SE, Wilmington, NC 28405
Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of Custody Record & Analytical Request

COC# 371[illegible]
Page 1 of 1

Client: Catlin Eng. & Sci. | Project ID: DP-3343 | Date: 4-15-03 | Report To: Mike E. Mason
Address: 220 Old Dairy Rd. | Contact: Mike E. Mason | Turnaround: Standard
Address: Wilmington NC 28405 | Phone: 452-5861 | Job Number: ~~203-046~~ 203-025
Quote #: DOD 101 | Fax: 452-7563 | P.O. Number: 230[illegible]-6 | Invoice To: Sheila

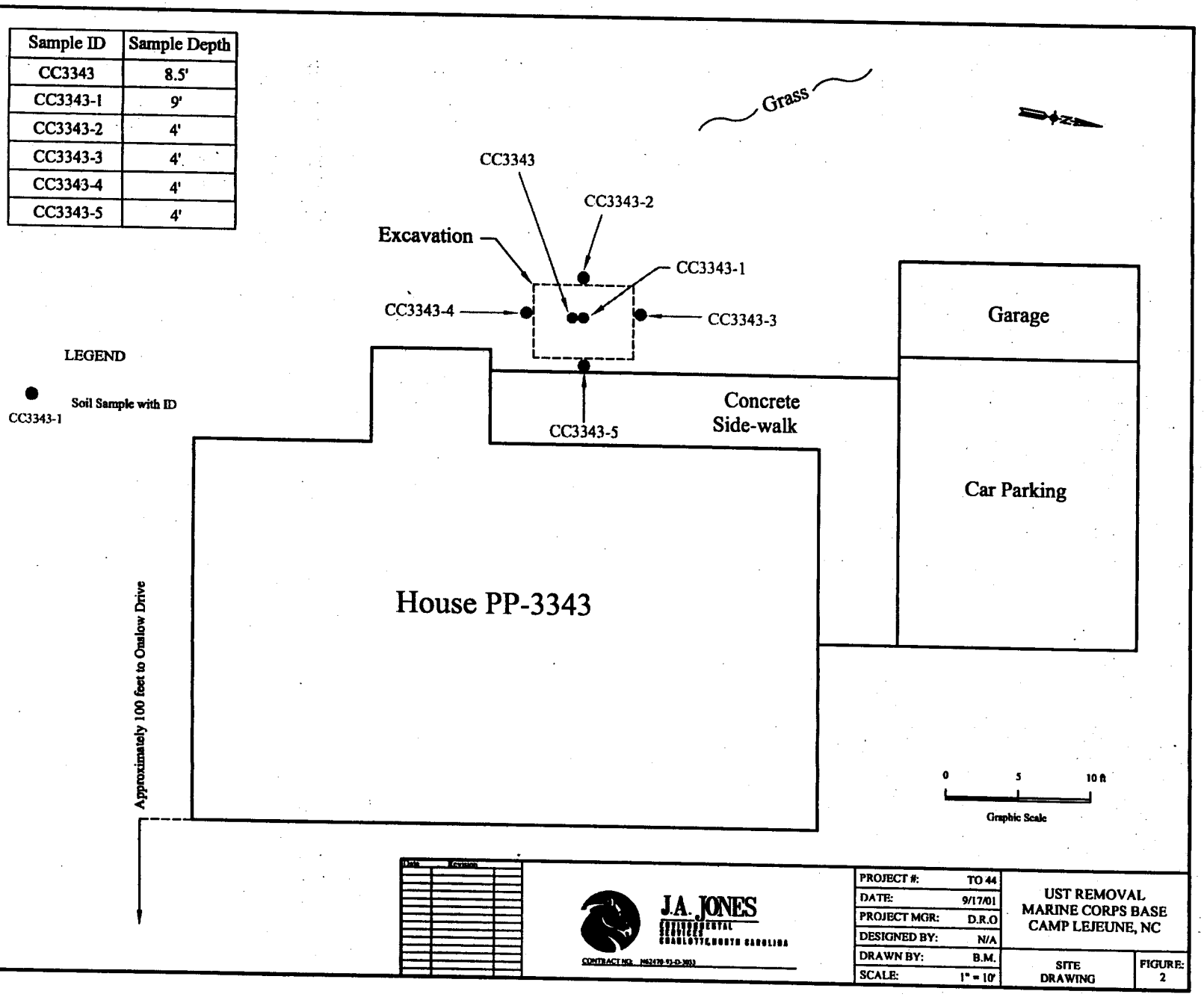
Sample ID	Date	Time	Matrix	Preservatives: MeOH	Analyses: VOA	Analyses: 624	Comments: Please specify any special reporting requirements
							G128-1103
SDP3343-SB02	4/15/03	1200	S	1	1	1	Camp Lejeune EDD Format
							Summary EDD Format

Relinquished By	Date	Time	Received By	Date	Time	Temperature
[signature]	4/15/03	1400	[signature]	4/15/03	1400	Ambient
						9.4°C
						Cooler

State Certification Requested
NC ____ SC ____ Other ____

SEE REVERSE FOR TERMS AND CONDITIONS

Sample ID	Sample Depth
CC3343	8.5'
CC3343-1	9'
CC3343-2	4'
CC3343-3	4'
CC3343-4	4'
CC3343-5	4'



PROJECT #:	TO 44
DATE:	9/17/01
PROJECT MGR:	D.R.O
DESIGNED BY:	N/A
DRAWN BY:	B.M.
SCALE:	1" = 10'

UST REMOVAL
MARINE CORPS BASE
CAMP LEJEUNE, NC

SITE DRAWING

FIGURE: 2

Table 2 SOIL SAMPLES ANALYTICAL RESULTS

(10/22/01 Sampling Event)

SAMPLE ID	DATE	SAMPLE DEPTH	COMPOUND CONCENTRATION (in ppm)																				
			C9-C22 Aromatics	C5-C8 Aliphatics	C9-C18 Aliphatics	C19-C36 Aliphatics	Carbon disulfide	Acenaphthene	Dibenzofuran	Fluorene	N-Butylbenzene	Sec-Butylbenzene	Ethylbenzene	Isopropylbenzene	4-Isopropyltoluene	Naphthalene	N-Propylbenzene	1,2,4-Trimethylbenzene	1,3,5-Trimethylbenzene	1-Methylnaphthalene	2-Methylnaphthalene	Phenanthrene	Pyrene	Total Xylenes
CC3343-1	10/22/01	9'	270	41	1180	62				1.9	2.6	1.4	0.45	0.52	1.1	7.3	1.2	10	3.5		26	3.6		1.1
CC3343-2	10/22/01	4'																						
CC3343-3	10/22/01	4'					0.0074																	
CC3343-4	10/22/01	4'	166		500	32		0.33		0.65	0.16				0.071	0.73			0.12	1.9	4.9	1.1	0.38	
CC3343-5	10/22/01	4'	**477**		3255	14			1.5	2.9	1.9	1.3	0.49		2.2	9.8	0.91	15		15	35	5.4		
Residential Soil Cleanup Level	--		469	939	9386	93860	1564	940	62	620	156	156	1560	1564	n/e	63	156	782	782	n/e	63	469	469	32000
Soil-to-Water Maximum Soil Contaminant Concentration	--		34	72	3255		4	8	4.7	44	4	3	0.24	2	n/e	0.58	2	8	7	n/e	3	60	286	5

Note:

1. Only those compounds whose concentration is above Method Detection Limit are listed
2. A no-entry-cell indicates compound concentration Below Method Detection Limit
3. n/e ----- Not established yet by NCDENR
4. Bold indicates compound concentration above Residential Soil Cleanup Level

TABLES

Table 1 Soil Sample Analytical Results (8/24/01 Sampling Event)

Sample ID	Sample Date	Sample Depth (ft bls)	TPH-GRO (Mg/Kg)	TPH-DRO (Mg/Kg)
CC-3343	9/17/01	8.5	510	8,400