



Post Office Box 10279  
Wilmington, NC 28404-0279  
Telephone: (910) 452-5861  
Fax: (910) 452-7563

June 14, 2004

Commander  
Naval Facilities Engineering Command  
Atlantic Division  
6506 Hampton Blvd., Bldg. A, Room 1306  
Norfolk, VA 23508

Attention: EV32JC, Mr. John D. Conway, P. G.

Re: **FINAL-Letter Report of Findings and Request for "No Further Action"**  
M-167, Diesel Fuel UST  
Camp Johnson  
Marine Corps Base  
Camp Lejeune, North Carolina  
Navy Contract No. N62470-01-D-3009  
Delivery Order No. 0102  
CATLIN Project No. 203-117

Dear Mr. Conway:

The following letter report is submitted to document the recent sampling activities at the above referenced site. CATLIN Engineers and Scientists (CATLIN) was authorized to perform field activities and prepare the letter report by LANTDIV NAVFACENGCOM in accordance with Order for Supplies Contract Number N62470-01-D-3009 and Delivery Order Number 0102. Based on the recent investigation, this site appears to qualify for "Low Risk" classification and "No Further Action" status.

#### **Background and Purpose of Investigation**

The site contained a former 575-gallon diesel fuel underground storage tank (UST). The site location is shown on Figure 1. A *UST Closure Consulting Services* report was prepared by Geosciences, Inc. and submitted March 1995. A *Leaking Underground Storage Tank (LUST) Phase I Limited Site Assessment (LSA) Report* was prepared and submitted by CATLIN on January 20, 2002. No soil samples submitted for laboratory analysis have revealed contaminant concentrations above the lowest MSCCs. Groundwater sample analysis from monitoring well USTM167-MW01 revealed a hydrocarbon fraction greater than the North Carolina Department of Environment and Natural Resources (NCDENR) Interim Groundwater Quality Standard (IGWQS). Based on the level of groundwater contamination, the site is eligible for "No Further Action" status with issuance of a Notice of Residual Petroleum or Land Use Restrictions.

The purpose of this investigation was to complete fieldwork and reporting necessary for obtaining No Further Action status without Land Use Restriction. A groundwater sample was collected from monitoring well USTM167-MW01 and analyzed per Massachusetts Department of Environmental Protection (MADEP) for the presence of volatile petroleum hydrocarbons (VPH) and extractable petroleum hydrocarbons (EPH). The site plan and sample location is illustrated on Figure 2.

### **Field Methods**

On March 2, 2004, CATLIN personnel gauged monitoring well USTM167-MW01 for depth to water, three well volumes were purged from the well and a groundwater sample was collected. New disposable latex gloves were worn and each groundwater sample was poured directly into the appropriately labeled glassware. The groundwater samples were placed on ice in an insulated cooler and transported following chain-of-custody protocol to Paradigm Analytical Laboratories, Inc. in Wilmington, North Carolina (NC Certification Number 481) for analysis per MADEP VPH/EPH. Chain-of-Custody documentation is included with the laboratory report.

### **Results**

VPH and EPH concentrations were not revealed above the 100 µg/L laboratory quantitation limit in the USTM167-MW01 groundwater sample. Laboratory analytical results are attached.

### **Summary and Conclusions**

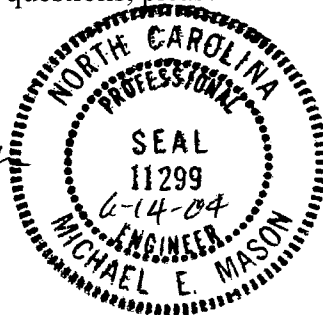
The hydrocarbon fraction above the IGWQS previously detected in the groundwater sample collected from USTM167-MW01 has apparently naturally attenuated below laboratory quantitation limits. The site should qualify for "Low Risk" classification and "No Further Action" status is recommended.

Should you have any further questions, please feel free to contact us at your convenience.

Sincerely,

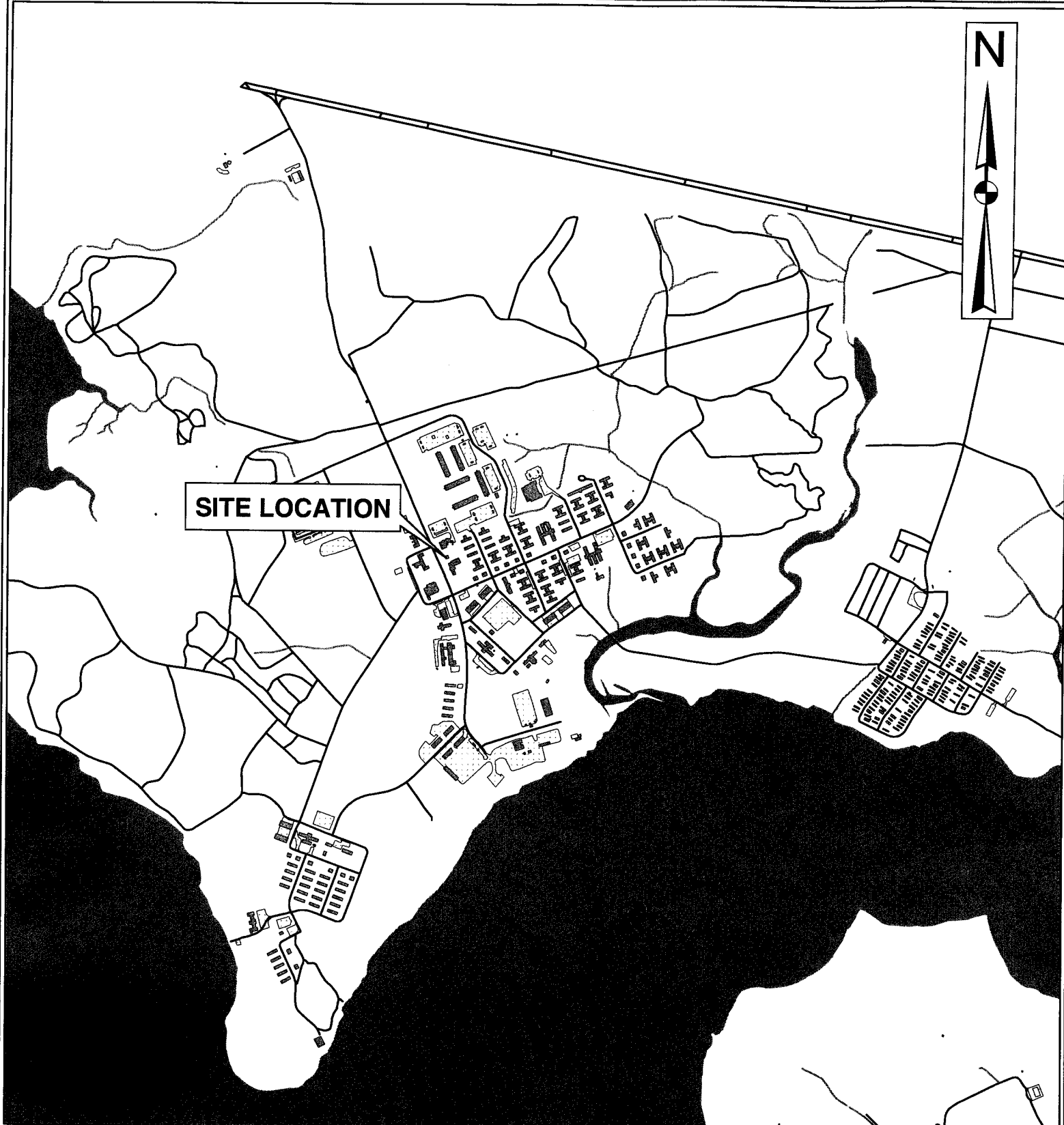


Michael E. Mason, P.E.  
CATLIN Program Manager

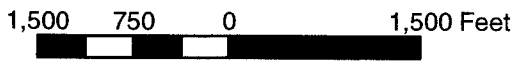


Attachments: Figures 1 and 2, laboratory analytical report

cc: Ms. Pamela Argilan – Code AQ11B Contracts, correspondence only  
Commanding General, Attn: Director I&E, EMD, EQB



**SITE LOCATION**

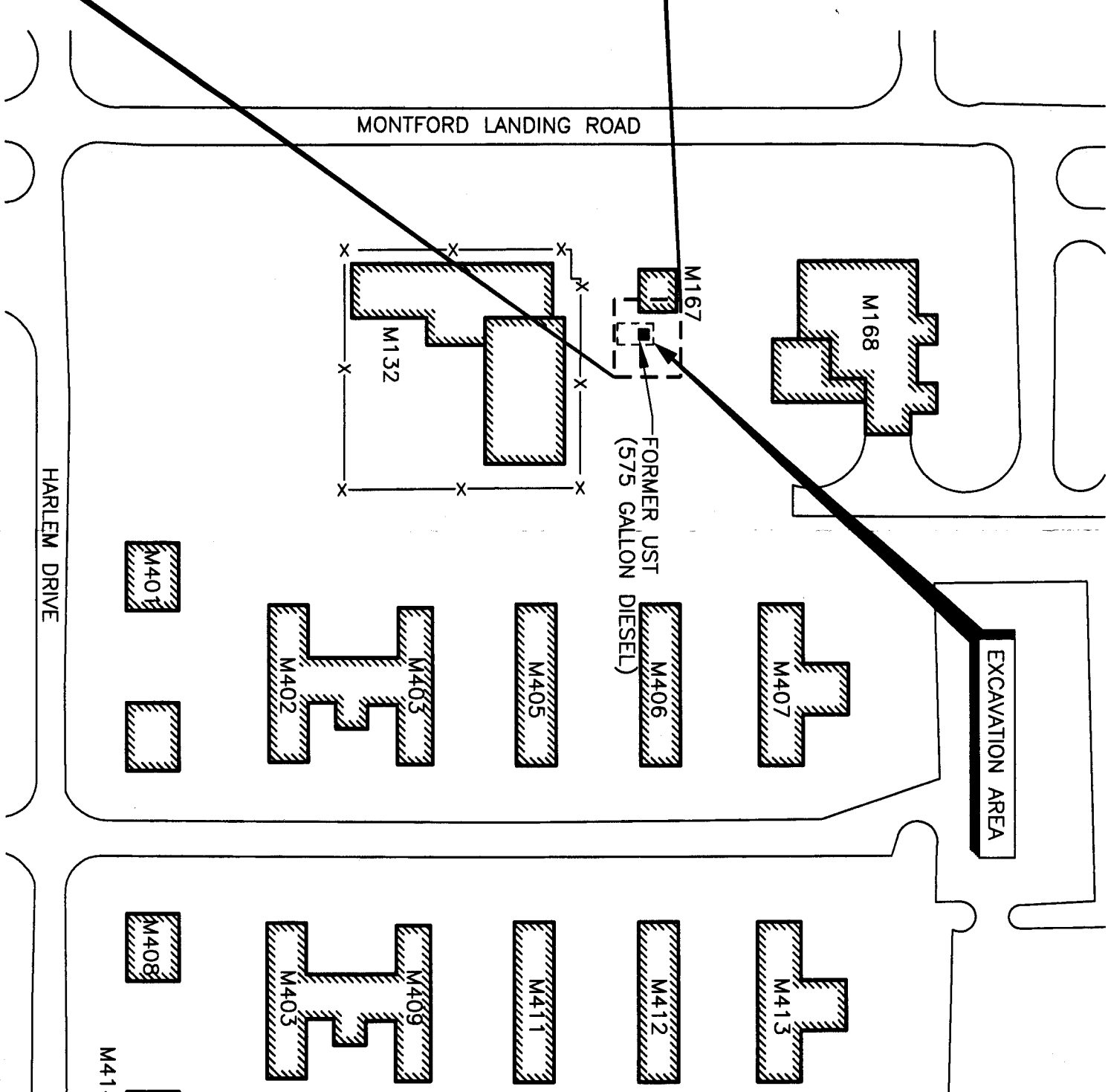
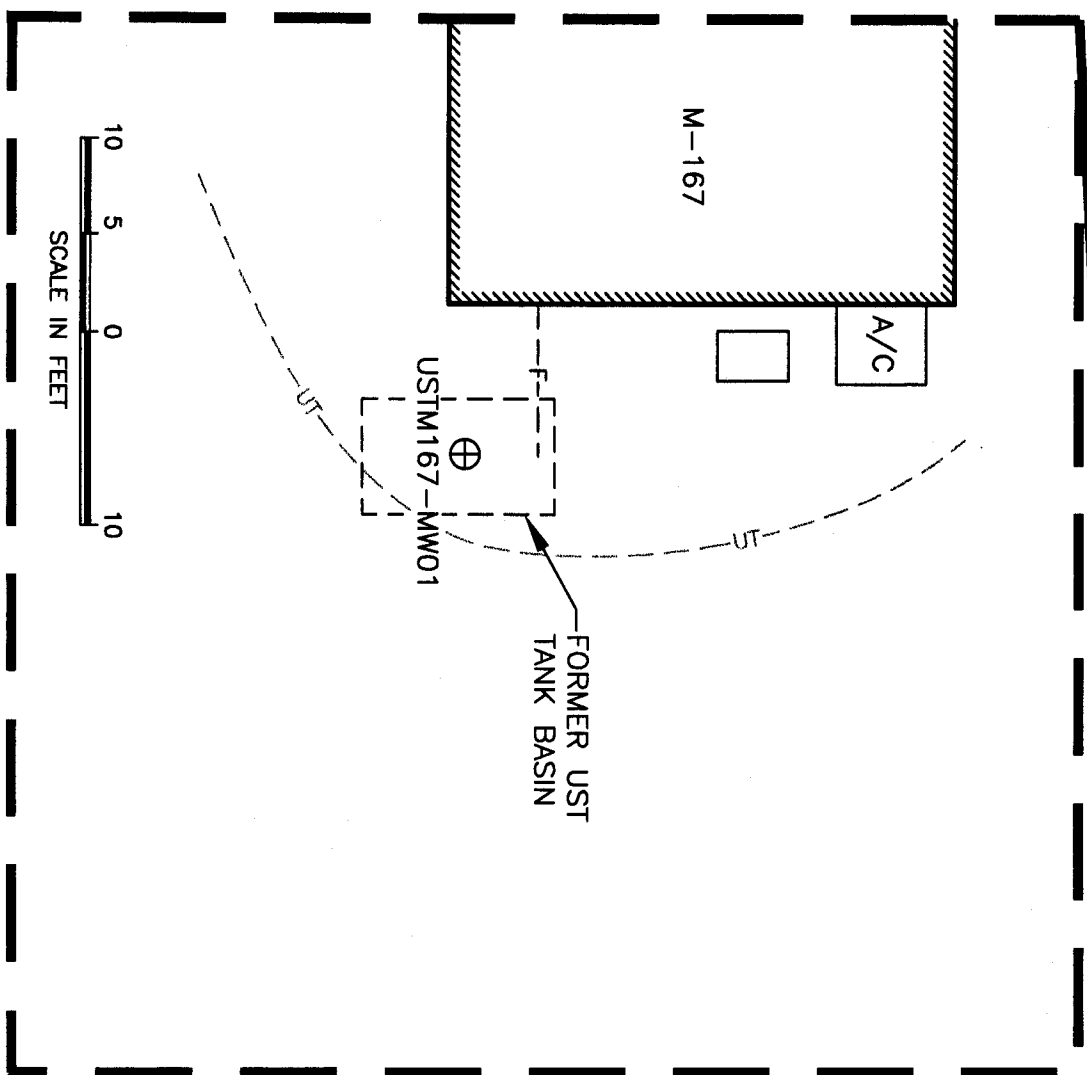
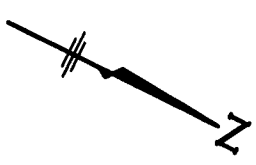


SCALE

	PROJECT <b>BUILDING M-167          MARINE CORPS BASE          CAMP LEJEUNE, NC</b>		TITLE <b>SITE VICINITY MAP</b>		<b>FIGURE</b>
	JOB NO. 203-117	DATE MAY 2004	SCALE AS SHOWN	DRAWN BY SAC	CHECKED BY BA

LEGEND

- EXISTING BUILDING
- DESCRIPTION
- ⊕ TYPE II WELL
- UT --- UNDERGROUND TELEPHONE
- F --- FORMER FUEL LINE (APPROXIMATE LOCATION)



NOTE:  
1. MAP ADAPTED FROM CAMP LEJEUNE DATA BASE

		<b>PROJECT</b> M-167 CAMP JOHNSON MARINE CORPS BASE CAMP LEJEUNE, N.C.		<b>TITLE</b> SITE PLAN		<b>FIGURE</b> 2	
JOB NO. 203-117	DATE: MAY 2004	SCALE: 1"=100'	DRAWN BY: HCS	CHECKED BY: MEM	20317-002		

**PARADIGM ANALYTICAL LABORATORIES, INC.**

5500 Business Drive  
Wilmington, North Carolina 28405  
(910) 350-1903  
Fax (910) 350-1557

M-167

Mr. Ben Ashba  
Richard Catlin & Associates  
P.O. Box 10279  
Wilmington NC 28404-0279

Report Number: G128-1272

Client Project: 7 funded site closures, Camp Lejeune

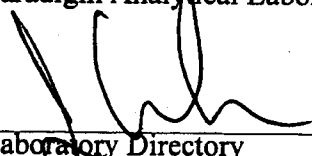
Dear Mr. Ashba:

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 Paradigm at (910) 350-1903. 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 Directory  
J. Patrick Weaver

3/23/04  
\_\_\_\_\_  
Date

**EPH (Aliphatics/Aromatics) Results**

by MDEP-EPH

Client Name: Richard Catlin & Associates

Project Name: 7 funded site closures, Camp Lejeune

Sample Information and Analytical Results	
Sample Identification	USTM167-MW01
Sample Matrix	Water
Date Collected	03/02/04
Date Received	03/03/04
Date Extracted	03/09/04
Date Analyzed	03/10/04
Dry Weight	
Dilution Factor	1
C <sub>9</sub> -C <sub>18</sub> Aliphatics*	< 100 (µg/L)
C <sub>19</sub> -C <sub>36</sub> Aliphatics*	< 100 (µg/L)
C <sub>11</sub> -C <sub>22</sub> Aromatics*	< 100 (µg/L)
Aliphatic Surrogate % Recovery	61
Aromatic Surrogate % Recovery	87

**Comments:**

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

Lab info: G128-1268-7D

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Attachment 3

EPH Laboratory Reporting Form

Calibration and QA/QC Information

Initial Calibration Date: 02/17/04

Calibration Ranges and Limits

Range	MDL (mg/Kg)		ML (mg/Kg)		RL (mg/Kg)	
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.1	0.8	0.3	2.6	100	10
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.1	1.6	0.3	5	100	10
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.2	2.1	0.6	6.7	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.06	1	0.87	Linear Regression
	0.15	2.5		
	0.3	5		
	0.6	10		
	1.2	20		
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.08	1.33	24.6	Calibration Factor
	0.2	3.33		
	0.4	6.67		
	0.8	13.3		
	1.6	26.7		
C <sub>11</sub> -C <sub>22</sub> Aromatics	0.17	2.83	3.7	Calibration Factor
	0.425	7.08		
	0.85	14.2		
	1.7	28.3		
	3.4	56.7		

Calibration Check Date: 03/10/04

Calibration Check

Range	Levels		RPD
	(µg/mL)	(mg/Kg)	
C <sub>9</sub> -C <sub>18</sub> Aliphatics	0.6	10	18.8
C <sub>19</sub> -C <sub>36</sub> Aliphatics	0.8	13.3	-7.5
C <sub>11</sub> -C <sub>22</sub> Aromatics	1.7	28.3	-10.5

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

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

**VPH (Aliphatics/Aromatics) Laboratory Reporting Form**

Client Name: Richard Catlin & Associates

Project Name: 7 funded site closures, Camp Lejeune

Sample Information and Analytical Results	
Sample Identification	USTM167-MW01
Sample Matrix	Water
Collection Option (for Soil)*	
Date Collected	03/02/04
Date Received	03/03/04
Date Extracted	03/04/04
Date Analyzed	03/04/04
Dry Weight	
Dilution Factor	1
C <sub>5</sub> -C <sub>8</sub> Aliphatics**	< 100 (µg/L)
C <sub>9</sub> -C <sub>12</sub> Aliphatics**	< 100 (µg/L)
C <sub>9</sub> -C <sub>10</sub> Aromatics**	< 100 (µg/L)
Surrogate % Recovery - PID	96
Surrogate % Recovery - FID	100

\* = 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.

Lab Info: G128-1268-7A

Reviewed By: 

PARADIGM ANALYTICAL LABORATORIES, INC.

Attachment 2

VPH Laboratory Reporting Form

Calibration and QA/QC Information

FID Initial Calibration Date: 03/02/04 PID Initial Calibration Date: 03/02/04

Calibration Ranges and Limits

Range	MDL		ML		RL	
	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)	(µg/L)	(mg/Kg)
C <sub>5</sub> -C <sub>8</sub> Aliphatics	9.3	0.41	29.4	1.3	100	10
C <sub>9</sub> -C <sub>12</sub> Aliphatics	7.9	0.3	25.2	0.97	100	10
C <sub>9</sub> -C <sub>10</sub> Aromatics	0.5	0.04	1.5	0.14	100	10

Calibration Concentration Levels

Range	Levels		%RSD or CCC	Method of Quantitation
	(µg/L)	(mg/Kg)		
C <sub>5</sub> -C <sub>8</sub> Aliphatics	20	2	4.7	Calibration Factor
	80	8		
	200	20		
	800	80		
	2000	200		
C <sub>9</sub> -C <sub>12</sub> Aliphatics	15	1.5	14.3	Calibration Factor
	60	6		
	150	15		
	600	60		
	1500	150		
C <sub>9</sub> -C <sub>10</sub> Aromatics	32.5	3.25	0.998	Linear Regression
	130	13		
	325	32.5		
	1300	130		
	3250	325		

Calibration Check Date: 03/04/04

Calibration Check

Range	Levels		RPD
	(µg/L)	(mg/Kg)	
C <sub>5</sub> -C <sub>8</sub> Aliphatics	200	20	-4.8
C <sub>9</sub> -C <sub>12</sub> Aliphatics	150	15	-4.0
C <sub>9</sub> -C <sub>10</sub> Aromatics	325	32.5	-1.6

MDL = Method Detection Limit

ML = Minimum Limit

RL = Reportable Limit

RPD = Relative Percent Difference

%RSD = Percent Relative Standard Deviation

CCC = Correlation Coefficient of Curve

List of Reporting Abbreviations  
and Data Qualifiers

B = Compound also detected in batch blank

BQL = Below Quantitation Limit

DF = Dilution Factor

Dup = Duplicate

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.

PARADIGM ANALYTICAL LABORATORIES, INC.  
 5500 Business Drive, Wilmington, NC 28405  
 Phone: (910)-350-1903 FAX: (910)-350-1557

Chain-of-Custody Record & Analytical Request

COC# 41594

Page 1 of 1

Client: Cattlin Project ID: 7 funded site closures, Camp Wayne Date: 3-3-04  
 Address: 220 Old Dairy Rd. Contact: Ben Ashba Turnaround: Standard  
 Address: Wilmington NC 28405 Phone: 910-452-5861 Job Number: 203-117  
 Quote #: DOD 101 Fax: 910-452-7563 P.O. Number: 240115-1

Report To: Ben Ashba @ Cattlin

Invoice To: Sheila @ Cattlin

Sample ID	Depth	Time	Matrix	IC	HCl	Methanol	EPA 601	MADP EPH	MADP VPH	Notes
ST24-MW01	3-1	1:15p	GW	✓	✓		✓			
ST1323-MW01	3-1	11:56a	GW	✓	✓		✓	✓		
ST1323-MW02	3-1	12:05	GW	✓	✓		✓	✓		
STA 3-605-MW01	3-2	10:45a	GW	✓	✓		✓			
ST31-SB05 (T)	3-2	2:45p	soil	✓		✓		✓		
ST31-MW01	3-2	2:30p	GW	✓	✓		✓			
STM167-MW01	3-2	12:55	GW	✓	✓		✓	✓		
STP3363-SB02 (T)	3-2	1:50p	soil	✓		✓	✓	✓		

Tom Stee 3-3 2:30pm  
 Sheila Ashba 3/3/04 0950  
 a-sep 482  
 NC  SC  Other   
 SEE REVERSE FOR TERMS AND CONDITIONS  
 ORIGINAL