

ALPHA ANALYTICAL LABORATORIES

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MA:M-MA086 NH:200301-A CT:PH-0574 ME:MA086 RI:65 NY:11148 NJ:MA935 Army:USACE

CERTIFICATE OF ANALYSIS

Client: ERM-New England Laboratory Job Number: L0413565  
Address: 399 Boylston Street  
6th Floor Date Received: 06-DEC-2004  
Boston, MA 02116  
Attn: Jeremy Picard Date Reported: 13-DEC-2004  
Project Number: 13606 Delivery Method: Alpha  
Site: FORMER RAYTHEON FACILITY

The following questions pertain only to MCP Analytical Methods

An affirmative response to questions A,B,C & D is required for "Presumptive Certainty" status

- A. Were all samples received by the laboratory in a condition consistent with those described on their Chain-of-Custody documentation for the data set? YES
- B. Were all QA/QC procedures required for the specified analytical method(s) included in this report followed, including the requirement to note and discuss in a narrative QC data that did not meet appropriate performance standards or guidelines? YES
- C. Does the analytical data included in this report meet all the requirements for "Presumptive Certainty", as described in section 2.0 of the MADEP document CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"? YES
- D. VPH and EPH methods only: Was the VPH or EPH method run without significant modifications, as specified in Section 11.3? NA

A response to questions E and F is required for "Presumptive Certainty" status

- E. Were all QC performance standards and recommendations for the specified method(s) achieved? YES
- F. Were results for all analyte-list compounds/elements for the specified method(s) reported? NO

Any answers of NO to the above questions are addressed in the case narrative.

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized by: Scott McLean  
This document electronically signed

ALPHA ANALYTICAL LABORATORIES

Laboratory Job Number: L0413565  
Date Reported: 13-DEC-2004

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ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0413565-01	MW-209	WAYLAND
L0413565-02	MW-266 MB	WAYLAND

ALPHA ANALYTICAL LABORATORIES  
NARRATIVE REPORT

Laboratory Job Number: L0413565

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MCP Related Narratives

Report Submission

In reference to question F, at the client's request, the samples were analyzed only for the compounds specified on the chain of custody.

Volatile Organics

L0413565-02 has elevated limits of detection due to the 10x dilution required by the elevated concentrations of target compounds in the sample.

Metals

L0413565-01 was re-analyzed on a 5x dilution in order to quantitate the Sodium within the range of the calibration. The result is reported as a greater than value for the compound that exceeded the calibration on the initial analysis. The re-analysis was performed only for the compound which exceeded the range of the calibration.

Non-MCP Related Narratives

Chloride

The MS % recovery is invalid because the sample concentration is greater than four times the spike amount added.



ALPHA ANALYTICAL LABORATORIES  
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0413565-01  
MW-209

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Volatile Organics by MCP 8260B continued				60 8260B	1207 17:15		SE
p-Chlorotoluene	ND	ug/l	2.5				
Hexachlorobutadiene	ND	ug/l	1.0				
1,2,4-Trichlorobenzene	ND	ug/l	2.5				
Surrogate(s)	Recovery			QC Criteria			
1,2-Dichloroethane-d4	104.	%		70-130			
Toluene-d8	102.	%		70-130			
4-Bromofluorobenzene	102.	%		70-130			
Dibromofluoromethane	99.0	%		70-130			

Comments: Complete list of References and Glossary of Terms found in Addendum I

**ALPHA ANALYTICAL LABORATORIES  
CERTIFICATE OF ANALYSIS**

MA:M-MA086 NH:200301-A CT:PH-0574 ME:MA086 RI:65 NY:11148 NJ:MA935 Army:USACE

Laboratory Sample Number: L0413565-02	Date Collected: 06-DEC-2004 16:15
Sample Matrix: MW-266 MB	Date Received : 06-DEC-2004
Sample Matrix: WATER	Date Reported : 13-DEC-2004
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Volatile Organics by MCP 8260B				60 8260B	1207 17:51		SE
Methylene chloride	ND	ug/l	50.				
1,1-Dichloroethane	ND	ug/l	7.5				
Chloroform	ND	ug/l	7.5				
Carbon tetrachloride	ND	ug/l	5.0				
1,2-Dichloropropane	ND	ug/l	18.				
Dibromochloromethane	ND	ug/l	5.0				
1,1,2-Trichloroethane	ND	ug/l	7.5				
Tetrachloroethene	50.	ug/l	5.0				
Chlorobenzene	ND	ug/l	5.0				
1,2-Dichloroethane	ND	ug/l	5.0				
1,1,1-Trichloroethane	ND	ug/l	5.0				
Bromodichloromethane	ND	ug/l	5.0				
trans-1,3-Dichloropropene	ND	ug/l	5.0				
cis-1,3-Dichloropropene	ND	ug/l	5.0				
Bromoform	ND	ug/l	20.				
1,1,2,2-Tetrachloroethane	ND	ug/l	5.0				
Chloromethane	ND	ug/l	25.				
Vinyl chloride	23.	ug/l	10.				
Chloroethane	ND	ug/l	10.				
1,1-Dichloroethene	ND	ug/l	5.0				
trans-1,2-Dichloroethene	ND	ug/l	7.5				
Trichloroethene	360	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	25.				
1,3-Dichlorobenzene	ND	ug/l	25.				
1,4-Dichlorobenzene	ND	ug/l	25.				
cis-1,2-Dichloroethene	330	ug/l	5.0				
Dichlorodifluoromethane	ND	ug/l	50.				
1,2-Dibromoethane	ND	ug/l	20.				
1,3-Dichloropropane	ND	ug/l	25.				
1,1,1,2-Tetrachloroethane	ND	ug/l	5.0				
o-Chlorotoluene	ND	ug/l	25.				
p-Chlorotoluene	ND	ug/l	25.				
Hexachlorobutadiene	ND	ug/l	10.				
1,2,4-Trichlorobenzene	ND	ug/l	25.				

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES  
 CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0413565-02  
 MW-266 MB

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Volatile Organics by MCP 8260B continued				60 8260B	1207 17:51		SE
Surrogate(s)	Recovery			QC Criteria			
1,2-Dichloroethane-d4	108.	%		70-130			
Toluene-d8	100.	%		70-130			
4-Bromofluorobenzene	102.	%		70-130			
Dibromofluoromethane	104.	%		70-130			

Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES  
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L0413565

Parameter	Value 1	Value 2	Units	RPD	RPD Limits
Chloride for sample(s) 01 (L0413563-01, WG189151)					
Chloride	49.	46.	mg/l	6	7



ALPHA ANALYTICAL LABORATORIES  
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0413565

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Parameter	% Recovery	QC Criteria
Chloride LCS for sample(s) 01 (WG189151)		
Chloride	90	84-110
Chloride SPIKE for sample(s) 01 (L0413565-01, WG189151)		
Chloride	150	58-140

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ALPHA ANALYTICAL LABORATORIES  
 QUALITY ASSURANCE BATCH LCS/LCSD ANALYSIS

Laboratory Job Number: L0413565

Parameter	LCS %	LCSD %	RPD	RPD Limit	QC Limits
Dissolved Metals by MCP 6000/7000 series for sample(s) 01 (WG188967-2, WG188967)					
Sodium, Dissolved	110	110	0	20	75-125
Volatile Organics by MCP 8260B for sample(s) 01-02 (WG188249-4, WG188249)					
Methylene chloride	99	106	7	25	70-130
1,1-Dichloroethane	108	112	4	25	70-130
Chloroform	101	107	6	25	70-130
Carbon tetrachloride	112	113	1	25	70-130
1,2-Dichloropropane	106	110	4	25	70-130
Dibromochloromethane	103	112	8	25	70-130
1,1,2-Trichloroethane	103	114	10	25	70-130
Tetrachloroethene	107	109	2	25	70-130
Chlorobenzene	107	112	5	25	70-130
Trichlorofluoromethane	96	104	8	25	70-130
1,2-Dichloroethane	106	112	6	25	70-130
1,1,1-Trichloroethane	110	113	3	25	70-130
Bromodichloromethane	104	110	6	25	70-130
trans-1,3-Dichloropropene	107	115	7	25	70-130
cis-1,3-Dichloropropene	106	114	7	25	70-130
1,1-Dichloropropene	105	110	5	25	70-130
Bromoform	107	113	5	50	70-130
1,1,2,2-Tetrachloroethane	104	112	7	25	70-130
Benzene	105	110	5	25	70-130
Toluene	105	111	6	25	70-130
Ethylbenzene	107	112	5	25	70-130
Chloromethane	88	92	4	50	70-130
Bromomethane	103	110	7	50	70-130
Vinyl chloride	98	100	2	25	70-130
Chloroethane	94	98	4	25	70-130
1,1-Dichloroethene	100	103	3	25	70-130
trans-1,2-Dichloroethene	105	110	5	25	70-130
Trichloroethene	106	111	5	25	70-130
1,2-Dichlorobenzene	104	108	4	25	70-130
1,3-Dichlorobenzene	106	109	3	25	70-130
1,4-Dichlorobenzene	108	112	4	25	70-130
Methyl tert butyl ether	105	117	11	25	70-130
p/m-Xylene	108	114	5	25	70-130
o-Xylene	108	113	5	25	70-130
cis-1,2-Dichloroethene	102	104	2	25	70-130
Dibromomethane	109	111	2	25	70-130
1,2,3-Trichloropropane	105	116	10	25	70-130
Styrene	110	117	6	25	70-130
Dichlorodifluoromethane	82	82	0	50	70-130
Acetone	96	111	14	50	70-130
Carbon disulfide	97	101	4	25	70-130
2-Butanone	99	110	11	50	70-130
4-Methyl-2-pentanone	103	108	5	50	70-130
2-Hexanone	101	110	9	50	70-130
Bromochloromethane	100	105	5	25	70-130

ALPHA ANALYTICAL LABORATORIES  
 QUALITY ASSURANCE BATCH LCS/LCSD ANALYSIS

Laboratory Job Number: L0413565

Continued

Parameter	LCS %	LCSD %	RPD	RPD Limit	QC Limits
Volatile Organics by MCP 8260B for sample(s) 01-02 (WG188249-4, WG188249)					
Tetrahydrofuran	97	114	16	25	70-130
2,2-Dichloropropane	106	111	5	25	70-130
1,2-Dibromoethane	109	113	4	25	70-130
1,3-Dichloropropane	104	113	8	25	70-130
1,1,1,2-Tetrachloroethane	110	118	7	25	70-130
Bromobenzene	109	110	1	25	70-130
n-Butylbenzene	108	111	3	25	70-130
sec-Butylbenzene	107	108	1	25	70-130
tert-Butylbenzene	108	110	2	25	70-130
o-Chlorotoluene	107	108	1	25	70-130
p-Chlorotoluene	105	108	3	25	70-130
1,2-Dibromo-3-chloropropane	104	122	16	50	70-130
Hexachlorobutadiene	106	105	1	25	70-130
Isopropylbenzene	109	112	3	25	70-130
p-Isopropyltoluene	108	108	0	25	70-130
Naphthalene	111	124	11	25	70-130
n-Propylbenzene	108	109	1	25	70-130
1,2,3-Trichlorobenzene	106	118	11	25	70-130
1,2,4-Trichlorobenzene	107	115	7	25	70-130
1,3,5-Trimethylbenzene	107	109	2	25	70-130
1,2,4-Trimethylbenzene	108	109	1	25	70-130
Ethyl ether	103	108	5	25	70-130
Isopropyl Ether	100	105	5	25	70-130
Ethyl-Tert-Butyl-Ether	102	112	9	25	70-130
Tertiary-Amyl Methyl Ether	104	113	8	25	70-130
1,4-Dioxane	104	110	6	50	70-130
Surrogate (s)					
1,2-Dichloroethane-d4	102	105	3		70-130
Toluene-d8	99	101	2		70-130
4-Bromofluorobenzene	100	100	0		70-130
Dibromofluoromethane	101	101	0		70-130

ALPHA ANALYTICAL LABORATORIES  
 QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0413565

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Blank Analysis for sample(s) 01 (WG189151-1)							
Chloride	ND	mg/l	1.0	1 9251		1211 13:56	ED
Blank Analysis for sample(s) 01 (WG188967-1)							
Dissolved Metals by MCP 6000/7000 series 60 6010B							
Sodium, Dissolved	ND	mg/l	2.0	60 6010B		1209 14:00 1210 15:25	RW
Blank Analysis for sample(s) 01-02 (WG188249-6)							
Volatile Organics by MCP 8260B 60 8260B 1207 13:39 SE							
Methylene chloride	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.75				
Chloroform	ND	ug/l	0.75				
Carbon tetrachloride	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	1.8				
Dibromochloromethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.75				
Tetrachloroethene	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	2.5				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
Bromodichloromethane	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
1,1-Dichloropropene	ND	ug/l	2.5				
Bromoform	ND	ug/l	2.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Benzene	ND	ug/l	0.50				
Toluene	ND	ug/l	0.75				
Ethylbenzene	ND	ug/l	0.50				
Chloromethane	ND	ug/l	2.5				
Bromomethane	ND	ug/l	1.0				
Vinyl chloride	ND	ug/l	1.0				
Chloroethane	ND	ug/l	1.0				
1,1-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.75				
Trichloroethene	ND	ug/l	0.50				
1,2-Dichlorobenzene	ND	ug/l	2.5				
1,3-Dichlorobenzene	ND	ug/l	2.5				
1,4-Dichlorobenzene	ND	ug/l	2.5				
Methyl tert butyl ether	ND	ug/l	1.0				
p/m-Xylene	ND	ug/l	0.50				
o-Xylene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
Dibromomethane	ND	ug/l	5.0				
1,2,3-Trichloropropane	ND	ug/l	5.0				
Styrene	ND	ug/l	0.50				

ALPHA ANALYTICAL LABORATORIES  
 QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0413565

Continued

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Blank Analysis for sample(s) 01-02 (WG188249-6)							
Volatile Organics by MCP 8260B continued				60 8260B	1207 13:39 SE		
Dichlorodifluoromethane	ND	ug/l	5.0				
Acetone	ND	ug/l	5.0				
Carbon disulfide	ND	ug/l	5.0				
2-Butanone	ND	ug/l	5.0				
4-Methyl-2-pentanone	ND	ug/l	5.0				
2-Hexanone	ND	ug/l	5.0				
Bromochloromethane	ND	ug/l	2.5				
Tetrahydrofuran	ND	ug/l	10.				
2,2-Dichloropropane	ND	ug/l	2.5				
1,2-Dibromoethane	ND	ug/l	2.0				
1,3-Dichloropropane	ND	ug/l	2.5				
1,1,1,2-Tetrachloroethane	ND	ug/l	0.50				
Bromobenzene	ND	ug/l	2.5				
n-Butylbenzene	ND	ug/l	0.50				
sec-Butylbenzene	ND	ug/l	0.50				
tert-Butylbenzene	ND	ug/l	2.5				
o-Chlorotoluene	ND	ug/l	2.5				
p-Chlorotoluene	ND	ug/l	2.5				
1,2-Dibromo-3-chloropropane	ND	ug/l	2.5				
Hexachlorobutadiene	ND	ug/l	1.0				
Isopropylbenzene	ND	ug/l	0.50				
p-Isopropyltoluene	ND	ug/l	0.50				
Naphthalene	ND	ug/l	2.5				
n-Propylbenzene	ND	ug/l	0.50				
1,2,3-Trichlorobenzene	ND	ug/l	2.5				
1,2,4-Trichlorobenzene	ND	ug/l	2.5				
1,3,5-Trimethylbenzene	ND	ug/l	2.5				
1,2,4-Trimethylbenzene	ND	ug/l	2.5				
Ethyl ether	ND	ug/l	2.5				
Isopropyl Ether	ND	ug/l	2.0				
Ethyl-Tert-Butyl-Ether	ND	ug/l	2.0				
Tertiary-Amyl Methyl Ether	ND	ug/l	2.0				
1,4-Dioxane	ND	ug/l	250				
Surrogate (s)	Recovery			QC Criteria			
1,2-Dichloroethane-d4	103.	%		70-130			
Toluene-d8	100.	%		70-130			
4-Bromofluorobenzene	101.	%		70-130			
Dibromofluoromethane	100.	%		70-130			

**ALPHA ANALYTICAL LABORATORIES**  
**ADDENDUM I**

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**REFERENCES**

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997.
  
60. Quality Assurance and Quality Control Requirements and Performance Standards for SW-846 Methods. MADEP BWSC. WSC-CAM-IIA (Revision 4), WSC-CAM-V C (Revision 2), WSC-CAM-IIIA (Revision 5). May 2004.

**GLOSSARY OF TERMS AND SYMBOLS**

REF Reference number in which test method may be found.  
METHOD Method number by which analysis was performed.  
ID Initials of the analyst.  
ND Not detected in comparison to the reported detection limit.

ug/cart Micrograms per Cartridge.

**LIMITATION OF LIABILITIES**

Alpha Analytical, Inc. performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical, Inc., shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical, Inc. be held liable for any incidental consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical, Inc.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding times and splitting of samples in the field.

ALPHA ANALYTICAL LABORATORIES  
LOGIN SPECIFIC INFORMATION

Laboratory Job Number: L0413565

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Were project specific reporting limits specified? YES

Cooler Information

Cooler	Custody Seal
A	Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp	Pres	Seal	Analysis
L0413565-01A	Vial HCl preserved	A	N/A	1.8 C	Y	Absent	MCP-8260-04
L0413565-01B	Vial HCl preserved	A	N/A	1.8 C	Y	Absent	MCP-8260-04
L0413565-01C	Plastic 250ml unpreserved	A	=7	1.8 C	Y	Absent	CL-9251
L0413565-01D	Plastic 250ml HNO3 preserved	A	<2	1.8 C	Y	Absent	MCP-NA-6010S
L0413565-02A	Vial HCl preserved	A	N/A	1.8 C	Y	Absent	MCP-8260-04
L0413565-02B	Vial HCl preserved	A	N/A	1.8 C	Y	Absent	MCP-8260-04

Container Comments

Container ID	Comments
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