

Appendix E
Groundwater Velocity Calculations

General

The MODFLOW grid used to simulate the pilot injections has 5 layers, consistent with those presented in Figure 4 of the RAM Plan. There are 93 rows, with row widths ranging from 44 ft at the upgradient boundary to 3.2 ft in the vicinity of the MW-33 pilot study area. There are 66 columns, with column widths ranging from 40 ft at the southeastern boundary to 4.4 ft in the vicinity of the MW-33 pilot study area.

The hydraulic conductivities per layer are as follows:

Layer	Approximate Thickness (ft)	K_h (cm/s)	K_v (cm/s)
1 (sand)	10	1×10^{-3}	2×10^{-4}
1 (sand)	10	1×10^{-3}	2×10^{-4}
2 (silt)	15	1×10^{-5}	2×10^{-6}
3 (sand)	8	6×10^{-2}	1.2×10^{-2}
4 (till/bedrock)	10	2×10^{-3}	4×10^{-4}

The only exceptions are a zone in the vicinity of MW-47 in layer 1, which has been assigned the higher conductivity of layer 3, and a smaller zone in the vicinity of the MW-33 pilot study area, which has a hydraulic conductivity of 2×10^{-2} cm/s and a K_h/K_v of 5, like all the other units.

The boundary conditions are a constant head boundary northwest of MW-43 (set at 125 ft) and a constant head boundary at the river (114 ft).

The injection took place at a rate of 250 gallons per hour, for 5 hours per day on October 6 and October 7.

Steady State Heads and Gradients

Steady state heads for key wells are shown below.

Well	Obs. Heads (feet)		Calc. Heads (feet)	Difference between Calculated Observed (ft)	Squared Difference
	After Injection	Before Injection			
MW-47S	113.66	114.15	114.27	0.36	0.13
HA-104	113.87	115.89	114.22	-0.66	0.43
MW-116	113.94	114.45	114.49	0.30	0.09
MW-33S	113.98	114.45	114.52	0.30	0.09
MW-113	114.00	114.52	114.54	0.28	0.08
MW-114	113.97	-	114.54	0.57	0.33
MW-112	114.09	114.60	114.56	0.22	0.05
MW-111	114.08	114.59	114.56	0.23	0.05
MW-110	114.01	114.51	114.59	0.33	0.11
MW-109	114.12	114.60	114.59	0.23	0.05
MW-108	114.16	112.31	114.69	0.53	0.28
MW-107	114.52	114.89	114.69	-0.02	0.00
MW-37	117.33	118.73	119.21	1.18	1.39
Sum of Squared Differences					3.08

The discrepancies between measured and observed values are within the measurement error of the groundwater elevation measurements, as indicated by the difference between pre-injection and post-injection water levels.

The following table shows the ability of the model to predict observed hydraulic gradients. For the most part, MODFLOW was able to predict the observed head differences within 25%. The key exception in MW-111/MW-112, which appears to be in a lower-hydraulic conductivity zone than the other wells, since the gradient between this well couplet and all other wells is under predicted by the model.

Well Pairs	Elevation Difference (ft)			Discrepancy
	Model	Pre- Injection	Post- Injection	
MW-108-MW-116	0.200	0.070	0.400	-15%
MW-108-MW-114	0.149	0.000	0.355	-16%
MW-108-MW-110	0.095	-0.035	0.275	-21%
MW-108-MW-112	0.127	-0.075	0.255	41%
MW-108-MW-33S	0.170	0.070	0.360	-21%
MW-112-MW-116	0.072	0.145	0.145	-50%
MW-112-MW-114	0.021	0.075	0.100	-76%
MW-112-MW-110	0.032	-0.040	-0.020	-206%
MW-112-MW-33S	0.042	0.145	0.105	-66%
MW-110-MW-116	0.104	0.145	0.125	-23%
MW-110/MW-114	0.053	0.035	0.080	-7%
MW-110-MW-33S	0.074	0.105	0.085	-22%
MW-114-MW-116	0.051	0.070	0.045	-11%
MW-114-MW-33S	0.021	0.070	0.005	-44%

Transient Heads

All of the wells screened in the upper sand, including MW-33S, showed a decrease in piezometric head on the order of 0.5 ft during the month following the permanganate injection. The injection increased the piezometric surface, measured two days after the injection, by 0.1 ft to 0.2 ft. The model was able to mimic this behavior for all wells.

Fluoride Tracer

The total porosity of the sand was set to 0.25, and the effective porosity for transport was set to 0.20. The calibrated MODFLOW flow system yielded an average groundwater flow velocity in the injection area of approximately 1 ft/d.

The fluoride tracer was injected using the “point source” option in MT3D. In this option, the concentration of the injected water is specified for each of the pumping periods. A fluoride concentration of 50 mg/L was used during the two injection periods. The average plume velocity during the 38-day period from the injection to the last groundwater samples is computed to be 0.7 ft/d.

Appendix F
Laboratory Analytical Reports

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65 NY: 11148

CERTIFICATE OF ANALYSIS

Client: ERM-New England Laboratory Job Number: L0107937
Address: 399 Boylston Street Invoice Number: 54095
6th Floor
Boston, MA 02116 Date Received: 27-AUG-01
Attn: Mr. Joe Fiacco Date Reported: 04-SEP-01
Project Number: 143.56 Delivery Method: Alpha
Site: RAYTHEON-WAYLAND

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0107937-01	DUP-1	WAYLAND, MA
L0107937-02	MW-106	WAYLAND, MA
L0107937-03	MW-104	WAYLAND, MA

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately 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: James R. Roth, PhD

James R. Roth, PhD - Laboratory Manager
This document electronically signed

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107937-01	Date Collected: 27-AUG-2001 08:30
	Date Received: 27-AUG-2001
Sample Matrix: DUP-1 WATER	Date Reported: 04-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Plastic, 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Fluoride	0.76	mg/l	0.20	30 4500F-BC	0830 11:25	0831 14:30	MA
Dissolved Metals							
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0827 20:00	0830 16:55	RW
Manganese, Dissolved	0.82	mg/l	0.01	1 6010B	0827 20:00	0830 16:55	RW
Volatile Organics by GC 8021							
Bromodichloromethane	ND	ug/l	0.50	1 8021B			0830 13:35 RY
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	12.	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	1.8	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	66.	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0107937-01
DUP-1

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B	0830 13:35	RY
Surrogate Recovery							
4-Bromochlorobenzene	92.0	%					

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107937-02	Date Collected: 27-AUG-2001 13:40
	Date Received : 27-AUG-2001
Sample Matrix: MW-106 WATER	Date Reported : 04-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Plastic, 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Fluoride	0.30	mg/l	0.20	30 4500F-BC	0830 11:25	0831 14:30	MA
Dissolved Metals							
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0827 20:00	0830 17:00	RW
Manganese, Dissolved	0.52	mg/l	0.01	1 6010B	0827 20:00	0830 17:00	RW
Volatile Organics by GC 8021							
				1 8021B	0831 10:42		RY
Bromodichloromethane	ND	ug/l	2.5				
Bromoform	ND	ug/l	2.5				
Carbon tetrachloride	ND	ug/l	2.5				
Chlorobenzene	ND	ug/l	2.5				
Dibromochloromethane	ND	ug/l	25.				
Bromomethane/Chloroethane	ND	ug/l	25.				
Chloroform	ND	ug/l	2.5				
Chloromethane/Vinyl chloride	ND	ug/l	25.				
1,2-Dichlorobenzene	ND	ug/l	2.5				
1,3-Dichlorobenzene	ND	ug/l	2.5				
1,4-Dichlorobenzene	ND	ug/l	2.5				
Dichlorodifluoromethane	ND	ug/l	25.				
1,1-Dichloroethane	ND	ug/l	2.5				
1,2-Dichloroethane	ND	ug/l	2.5				
1,1-Dichloroethene	ND	ug/l	2.5				
cis-1,2-Dichloroethene	ND	ug/l	2.5				
trans-1,2-Dichloroethene	ND	ug/l	2.5				
1,2-Dichloropropane	ND	ug/l	2.5				
cis-1,3-Dichloropropene	ND	ug/l	2.5				
trans-1,3-Dichloropropene	ND	ug/l	2.5				
Methylene chloride	ND	ug/l	25.				
1,1,2,2-Tetrachloroethane	ND	ug/l	2.5				
Tetrachloroethene	3.3	ug/l	2.5				
1,1,1-Trichloroethane	ND	ug/l	2.5				
1,1,2-Trichloroethane	ND	ug/l	2.5				
Trichloroethene	160	ug/l	2.5				
Trichlorofluoromethane	ND	ug/l	2.5				
2-Chloroethyl vinyl ether	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: L0107937-02
MW-106

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B	0831	10:42 RY
Surrogate Recovery							
4-Bromochlorobenzene	93.0	%					

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107937-03	Date Collected: 27-AUG-2001 12: 15
Sample Matrix: MW-104	Date Received : 27-AUG-2001
Sample Matrix: WATER	Date Reported : 04-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 3-Plastic, 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
Fluoride	0.43	mg/l	0.20	30 4500F-BC	0830 11: 25 0831 14: 30	MA
Dissolved Metals						
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0827 20: 00 0830 17: 05	RW
Manganese, Dissolved	0.58	mg/l	0.01	1 6010B	0827 20: 00 0830 17: 05	RW
Volatile Organics by GC 8021						
Bromodichloromethane	ND	ug/l	5.0			
Bromoform	ND	ug/l	5.0			
Carbon tetrachloride	ND	ug/l	5.0			
Chlorobenzene	ND	ug/l	5.0			
Dibromochloromethane	ND	ug/l	50.			
Bromomethane/Chloroethane	ND	ug/l	50.			
Chloroform	ND	ug/l	5.0			
Chloromethane/Vinyl chloride	ND	ug/l	50.			
1,2-Dichlorobenzene	ND	ug/l	5.0			
1,3-Dichlorobenzene	ND	ug/l	5.0			
1,4-Dichlorobenzene	ND	ug/l	5.0			
Dichlorodifluoromethane	ND	ug/l	50.			
1,1-Dichloroethane	ND	ug/l	5.0			
1,2-Dichloroethane	ND	ug/l	5.0			
1,1-Dichloroethene	ND	ug/l	5.0			
cis-1,2-Dichloroethene	ND	ug/l	5.0			
trans-1,2-Dichloroethene	ND	ug/l	5.0			
1,2-Dichloropropane	ND	ug/l	5.0			
cis-1,3-Dichloropropene	ND	ug/l	5.0			
trans-1,3-Dichloropropene	ND	ug/l	5.0			
Methylene chloride	ND	ug/l	50.			
1,1,2,2-Tetrachloroethane	ND	ug/l	5.0			
Tetrachloroethene	ND	ug/l	5.0			
1,1,1-Trichloroethane	ND	ug/l	5.0			
1,1,2-Trichloroethane	ND	ug/l	5.0			
Trichloroethene	290	ug/l	5.0			
Trichlorofluoromethane	ND	ug/l	5.0			
2-Chloroethyl vinyl ether	ND	ug/l	50.			

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0107937-03
MW-104

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B	0831 11:35	RY
Surrogate Recovery							
4-Bromochlorobenzene	85.0	%					

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

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L0107937

Parameter	Value 1	Value 2	RPD	Units
Fluoride for sample(s) 01-03 (L0107935-11, WG91573)				
Fluoride	0.73	0.72	1	mg/l
Dissolved Metals for sample(s) 01-03 (L0107935-01, WG91287)				
Chromium, Dissolved	ND	ND	NC	mg/l
Manganese, Dissolved	0.01	0.01	0	mg/l

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0107937

Parameter	% Recovery
Fluoride LCS for sample(s) 01-03 (WG91573)	
Fluoride	92
Volatile Organics by GC 8021 LCS for sample(s) 02-03 (WG91411)	
Chlorobenzene	108
1,1-Dichloroethene	107
Trichloroethene	102
Surrogate Recovery	
4-Bromochlorobenzene	107
Volatile Organics by GC 8021 LCS for sample(s) 01 (WG91411)	
Chlorobenzene	108
1,1-Dichloroethene	113
Trichloroethene	109
Surrogate Recovery	
4-Bromochlorobenzene	104
Fluoride SPIKE for sample(s) 01-03 (L0107935-02, WG91573)	
Fluoride	79
Dissolved Metals SPIKE for sample(s) 01-03 (L0107935-02, WG91287)	
Chromium, Dissolved	100
Manganese, Dissolved	94

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

Laboratory Job Number: L0107937

Parameter	MS %	MSD %	RPD
Volatile Organics by GC 8021 for sample(s) 01-03 (L0107788-01, WG91411)			
Chlorobenzene	113	110	3
1,1-Dichloroethene	103	97	6
Trichloroethene	91	90	1

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0107937

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
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Blank Analysis for sample(s) 01-03

Fluoride	ND	mg/l	0.20	30 4500F-BC	0830 11:25 0831 14:30	MA
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Blank Analysis for sample(s) 01-03

Dissolved Metals

Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0827 20:00 0830 16:06	RW
Manganese, Dissolved	ND	mg/l	0.01	1 6010B	0827 20:00 0830 16:06	RW

Blank Analysis for sample(s) 01

Volatile Organics by GC 8021				1 8021B	0830 09:36	RY
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Bromodichloromethane	ND	ug/l	0.50
Bromoform	ND	ug/l	0.50
Carbon tetrachloride	ND	ug/l	0.50
Chlorobenzene	ND	ug/l	0.50
Dibromochloromethane	ND	ug/l	5.0
Bromomethane/Chloroethane	ND	ug/l	5.0
Chloroform	ND	ug/l	0.50
Chloromethane/Vinyl chloride	ND	ug/l	5.0
1,2-Dichlorobenzene	ND	ug/l	0.50
1,3-Dichlorobenzene	ND	ug/l	0.50
1,4-Dichlorobenzene	ND	ug/l	0.50
Dichlorodifluoromethane	ND	ug/l	5.0
1,1-Dichloroethane	ND	ug/l	0.50
1,2-Dichloroethane	ND	ug/l	0.50
1,1-Dichloroethene	ND	ug/l	0.50
cis-1,2-Dichloroethene	ND	ug/l	0.50
trans-1,2-Dichloroethene	ND	ug/l	0.50
1,2-Dichloropropane	ND	ug/l	0.50
cis-1,3-Dichloropropene	ND	ug/l	0.50
trans-1,3-Dichloropropene	ND	ug/l	0.50
Methylene chloride	ND	ug/l	5.0
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50
Tetrachloroethene	ND	ug/l	0.50
1,1,1-Trichloroethane	ND	ug/l	0.50
1,1,2-Trichloroethane	ND	ug/l	0.50
Trichloroethene	ND	ug/l	0.50
Trichlorofluoromethane	ND	ug/l	0.50
2-Chloroethyl vinyl ether	ND	ug/l	5.0

Surrogate Recovery

4-Bromochlorobenzene	88.0	%
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Blank Analysis for sample(s) 02-03

Volatile Organics by GC 8021				1 8021B	0831 09:32	RY
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Bromodichloromethane	ND	ug/l	0.50
Bromoform	ND	ug/l	0.50

ALPHA ANALYTICAL LABORATORIES
 QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0107937

Continued

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Blank Analysis for sample(s) 02-03							
Volatile Organics by GC 8021 continued				1	8021B	0831 09:32 RY	
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				
Surrogate Recovery							
4-Bromochlorobenzene	81.0	%					

ALPHA ANALYTICAL LABORATORIES
ADDENDUM I

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.
30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

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.

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 its 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.

Quality Control Acceptance Criteria

Volatile Organics by Method 8260B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
1,2-Dichloroethane-d ₄	75%	125%	75%	125%		
4-Bromofluorobenzene	75%	125%	75%	125%		
Toluene-d ₈	75%	125%	75%	125%		
Dibromofluoromethane	75%	125%	75%	125%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	61%	145%	59%	172%	all target compounds	
Trichloroethene	71%	120%	62%	137%	20%	30%
Chlorobenzene	75%	130%	60%	133%		
Benzene	76%	127%	66%	142%		
Toluene	76%	125%	59%	139%		

Volatile Organics by Method 8021B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
4-Bromochlorobenzene	70%	110%	70%	120%		
4-Bromofluorobenzene	70%	110%	70%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	70%	130%	70%	130%	all target compounds	
Trichloroethene	70%	130%	70%	130%	20%	30%
Chlorobenzene	70%	130%	70%	130%		
Benzene	70%	130%	70%	130%		
Toluene	70%	130%	70%	130%		
Ethylbenzene	70%	130%	70%	130%		

Semi-Volatile Organics by Method 8270C (includes PAHs)

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Nitrobenzene-d ₅	23%	120%	23%	120%		
Phenol-d ₆	10%	120%	10%	120%		
2-Fluorophenol	21%	120%	25%	120%		
2-Fluorobiphenyl	43%	120%	30%	120%		
p-Terphenyl-d ₁₄	33%	120%	18%	120%		
2,4,6-Tribromophenol	10%	120%	19%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,2,4-Trichlorobenzene	39%	98%	38%	107%	all target compounds	
Acenaphthene	46%	118%	31%	137%	40%	50%
2,4-Dinitrotoluene	24%	96%	28%	89%		
Pyrene	26%	127%	35%	142%		
N-Nitroso-di-n-propylamine	41%	116%	41%	126%		
1,4-Dichlorobenzene	36%	97%	28%	104%		
Pentachlorophenol	9%	103%	17%	109%		
Phenol	12%	110%	26%	90%		
2-Chlorophenol	27%	123%	25%	102%		
4-Chloro-3-methylphenol	23%	97%	26%	103%		
4-Nitrophenol	10%	80%	11%	114%		

Quality Control Acceptance Criteria

PCB/Pesticides by Method 8082/8081

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,4,5,6-Tetrachloro-m-xylene	40%	120%	40%	120%		
Decachlorobiphenyl	40%	120%	40%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
Lindane	56%	123%	46%	127%	all target compounds	
Heptachlor	40%	131%	35%	130%	30%	50%
Aldrin	40%	120%	34%	132%		
Dieldrin	52%	126%	31%	134%		
Endrin	56%	121%	42%	139%		
4,4'-DDT	38%	127%	23%	134%		
Aroclor 1242/1016	40%	140%	40%	140%		
Aroclor 1260	40%	140%	40%	140%		

Volatile Petroleum Hydrocarbons (VPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,5-Dibromotoluene	70%	130%	70%	130%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	70%	130%	70%	130%	50%	50%

Extractable Petroleum Hydrocarbons (EPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Chloro-octadecane	40%	140%	40%	140%		
ortho-Terphenyl	40%	140%	40%	140%		
2-Fluorobiphenyl (fractionation)	40%	140%	40%	140%		
2-Bromonaphthalene (fractionation)	40%	140%	40%	140%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	40%	140%	40%	140%	50%	50%

TPH (GC-FID) by Method 8100M

surrogate spike % recovery	AQ Limits		Soil Limits		duplicate	
	LCL	UCL	LCL	UCL	AQ Limits	Soil Limits
					RPD	RPD
ortho-Terphenyl	40%	140%	40%	140%	40%	40%

TPH by Method 418.1

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
TPH	60%	140%	60%	140%	40%	40%

Quality Control Acceptance Criteria

Trace Metals by Method 6010B/7000 series

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
target analyte	75%	125%	70%	140%	20%	35%

Mercury by Method 7470A/7471A

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
mercury	70%	130%	60%	140%	35%	45%

Total Cyanide by Method 9010B

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
cyanide	80%	120%	65%	135%	30%	40%

Total Phenol by Method 9065

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
phenol	70%	130%	65%	135%	20%	30%

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive Westborough, MA 01581
 PH: 508.898.9220 FAX: 508.898.9193 www.alphalab.com

CHAIN OF CUSTODY

No 12529

Sheet ___ of ___

Date Due: 9/14/01

Client Name: ERM
 Client Address: 399 Boylston St
BOSTON MA 02116
 Phone #: (617) 267-8377 FAX #: (617) 267-6447

Project Name: Raytheon-Wayland
 Project Location: Wayland, MA
 Project #: 143.56
 Project Manager: JOE FIACCO

Report To: Joe Fiacco
 Bill To: _____
 PO#: 143.56

- Standard TAT
 RUSH TAT _____ (# days)
 FAX Results
 State Forms
 SMART Report

Comments: (Please note specific method, detection limit or reporting requirements.)

ANALYSIS REQUEST

Sample ID	Matrix/Source *	Sampling Date	Sampling Time	Sampler's Initials	Solubles: Field Filtered? (Y/N)	VOC's	8021B	Chlorinated's only	Dis. Halogenes; Chromium	Fluoride								
DUP-1	MW	8.27.01	8.30	CA	N	2	1	1										
MW-106	↓	↓	13.40	CA	N	2	1	1										
MW-104	↓	↓	12.15	CA	N	2	1	1										
MW-103				CA	N													

Transfers Relinquished By:	Transfers Accepted By:	Date	Time
<i>Randa Edmondo</i>	<i>Randa Edmondo</i>	8/27/01	1615
<i>Randa Edmondo</i>	<i>M. Fiacco</i>	9/14/01	1205

All samples submitted are subject to Alpha's standard Terms and Conditions.
 * See Reverse side for Matrix, Container, and Preservative Codes.
 Form No.: 01-01

# of Containers:	6	3	3
Container Type: *	V	P	P
Preservative: *	B	A	A

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65 NY: 11148

CERTIFICATE OF ANALYSIS

Client: ERM-New England Laboratory Job Number: L0107935
Address: 399 Boylston Street Invoice Number: 54100
6th Floor
Boston, MA 02116 Date Received: 27-AUG-01
Attn: Mr. Joe Fiacco Date Reported: 04-SEP-01
Project Number: 143.56 Delivery Method: Alpha
Site: RAYTHEON-WAYLAND

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0107935-01	MW-33S	WAYLAND, MA
L0107935-02	MW-33M	WAYLAND, MA
L0107935-03	MW-33D	WAYLAND, MA
L0107935-04	MW-33B	WAYLAND, MA
L0107935-05	MW-43S	WAYLAND, MA
L0107935-06	MW-43D	WAYLAND, MA
L0107935-07	MW-42S	WAYLAND, MA
L0107935-08	MW-44S	WAYLAND, MA
L0107935-09	MW-44M	WAYLAND, MA
L0107935-10	MW-44D	WAYLAND, MA
L0107935-11	SMW-105	WAYLAND, MA

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately 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: James R. Roth, PhD

James R. Roth, PhD - Laboratory Manager
This document electronically signed

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107935-01 Date Collected: 27-AUG-2001 14:45
 Sample Matrix: MW-33S Date Received: 27-AUG-2001
 WATER Date Reported: 04-SEP-2001
 Condition of Sample: Satisfactory Field Prep: None
 Number & Type of Containers: 2-Plastic, 2-Vial

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Fluoride	0.39	mg/l	0.20	30 4500F-BC	0830 11:25	0831 14:30	MA
Dissolved Metals							
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0827 20:00	0830 16:11	RW
Manganese, Dissolved	0.01	mg/l	0.01	1 6010B	0827 20:00	0830 16:11	RW
Volatile Organics by GC 8021							
Bromodichloromethane	ND	ug/l	2.5	1 8021B	0829 21:10		RY
Bromoform	ND	ug/l	2.5				
Carbon tetrachloride	ND	ug/l	2.5				
Chlorobenzene	ND	ug/l	2.5				
Dibromochloromethane	ND	ug/l	25.				
Bromomethane/Chloroethane	ND	ug/l	25.				
Chloroform	ND	ug/l	2.5				
Chloromethane/Vinyl chloride	ND	ug/l	25.				
1,2-Dichlorobenzene	ND	ug/l	2.5				
1,3-Dichlorobenzene	ND	ug/l	2.5				
1,4-Dichlorobenzene	ND	ug/l	2.5				
Dichlorodifluoromethane	ND	ug/l	25.				
1,1-Dichloroethane	ND	ug/l	2.5				
1,2-Dichloroethane	ND	ug/l	2.5				
1,1-Dichloroethene	ND	ug/l	2.5				
cis-1,2-Dichloroethene	ND	ug/l	2.5				
trans-1,2-Dichloroethene	ND	ug/l	2.5				
1,2-Dichloropropane	ND	ug/l	2.5				
cis-1,3-Dichloropropene	ND	ug/l	2.5				
trans-1,3-Dichloropropene	ND	ug/l	2.5				
Methylene chloride	ND	ug/l	25.				
1,1,2,2-Tetrachloroethane	ND	ug/l	2.5				
Tetrachloroethene	ND	ug/l	2.5				
1,1,1-Trichloroethane	78.	ug/l	2.5				
1,1,2-Trichloroethane	ND	ug/l	2.5				
Trichloroethene	240	ug/l	2.5				
Trichlorofluoromethane	ND	ug/l	2.5				
2-Chloroethyl vinyl ether	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: L0107935-01
MW-33S

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B	0829 21:10	RY
Surrogate Recovery							
4-Bromochlorobenzene	100.	%					

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107935-02 Date Collected: 27-AUG-2001 15:00
 Sample Matrix: MW-33M Date Received: 27-AUG-2001
 WATER Date Reported: 04-SEP-2001
 Condition of Sample: Satisfactory Field Prep: None
 Number & Type of Containers: 2-Plastic, 2-Vial

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Fluoride	0.28	mg/l	0.20	30 4500F-BC	0830 11:25	0831 14:30	MA
Dissolved Metals							
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0827 20:00	0830 16:22	RW
Manganese, Dissolved	0.73	mg/l	0.01	1 6010B	0827 20:00	0830 16:22	RW
Volatile Organics by GC 8021							
Bromodichloromethane	ND	ug/l	0.50	1 8021B	0829 22:03		RY
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	3.1	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0107935-02
MW-33M

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Volatile Organics by GC 8021 continued				1	8021B	0829	22:03 RY
Surrogate Recovery							
4-Bromochlorobenzene	84.0	%					

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107935-03 Date Collected: 27-AUG-2001 14:15
 MW-33D Date Received: 27-AUG-2001
 Sample Matrix: WATER Date Reported: 04-SEP-2001
 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 GC 8021				1 8021B	0829 22:55 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 90.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107935-04 Date Collected: 27-AUG-2001 15:45
 MW-33B Date Received: 27-AUG-2001
 Sample Matrix: WATER Date Reported: 04-SEP-2001
 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 GC 8021				1 8021B	0829 23:48 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromodichloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 87.0 %

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107935-05	Date Collected: 27-AUG-2001 11:00
Sample Matrix: MW-43S	Date Received: 27-AUG-2001
Sample Matrix: WATER	Date Reported: 04-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Plastic, 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Fluoride	1.2	mg/l	0.20	30 4500F-BC	0830 11:25	0831 14:30	MA
Dissolved Metals							
Chromium, Dissolved	0.01	mg/l	0.01	1 6010B	0827 20:00	0830 16:32	RW
Manganese, Dissolved	ND	mg/l	0.01	1 6010B	0827 20:00	0830 16:32	RW
Volatile Organics by GC 8021							
Bromodichloromethane	ND	ug/l	5.0	1 8021B	0830 00:40		RY
Bromoform	ND	ug/l	5.0				
Carbon tetrachloride	ND	ug/l	5.0				
Chlorobenzene	ND	ug/l	5.0				
Dibromochloromethane	ND	ug/l	50.				
Bromomethane/Chloroethane	ND	ug/l	50.				
Chloroform	ND	ug/l	5.0				
Chloromethane/Vinyl chloride	ND	ug/l	50.				
1,2-Dichlorobenzene	ND	ug/l	5.0				
1,3-Dichlorobenzene	ND	ug/l	5.0				
1,4-Dichlorobenzene	ND	ug/l	5.0				
Dichlorodifluoromethane	ND	ug/l	50.				
1,1-Dichloroethane	ND	ug/l	5.0				
1,2-Dichloroethane	ND	ug/l	5.0				
1,1-Dichloroethene	ND	ug/l	5.0				
cis-1,2-Dichloroethene	ND	ug/l	5.0				
trans-1,2-Dichloroethene	ND	ug/l	5.0				
1,2-Dichloropropane	ND	ug/l	5.0				
cis-1,3-Dichloropropene	ND	ug/l	5.0				
trans-1,3-Dichloropropene	ND	ug/l	5.0				
Methylene chloride	ND	ug/l	50.				
1,1,2,2-Tetrachloroethane	ND	ug/l	5.0				
Tetrachloroethene	5.8	ug/l	5.0				
1,1,1-Trichloroethane	ND	ug/l	5.0				
1,1,2-Trichloroethane	ND	ug/l	5.0				
Trichloroethene	290	ug/l	5.0				
Trichlorofluoromethane	ND	ug/l	5.0				
2-Chloroethyl vinyl ether	ND	ug/l	50.				

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0107935-05
MW-43S

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B	0830	00:40 RY
Surrogate Recovery							
4-Bromochlorobenzene	85.0	%					

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107935-06 Date Collected: 27-AUG-2001 11:30
 MW-43D Date Received: 27-AUG-2001
 Sample Matrix: WATER Date Reported: 04-SEP-2001
 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 GC 8021				1 8021B	0830 01:33 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 89.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107935-07 Date Collected: 27-AUG-2001 11:45
 MW-42S Date Received: 27-AUG-2001
 Sample Matrix: WATER Date Reported: 04-SEP-2001
 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 GC 8021				1 8021B	0830 03:18 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	1.3	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	4.0	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 83.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107935-08 Date Collected: 27-AUG-2001 12:30
 MW-44S Date Received: 27-AUG-2001
 Sample Matrix: WATER Date Reported: 04-SEP-2001
 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 GC 8021				1 8021B	0830 04:11 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	0.78	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 84.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107935-09 Date Collected: 27-AUG-2001 12:35
 MW-44M Date Received: 27-AUG-2001
 Sample Matrix: WATER Date Reported: 04-SEP-2001
 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 GC 8021				1 8021B	0830 11:50 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 87.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107935-10 Date Collected: 27-AUG-2001 12:45
 MW-44D Date Received: 27-AUG-2001
 Sample Matrix: WATER Date Reported: 04-SEP-2001
 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 GC 8021				1 8021B	0830 12:42 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 86.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107935-11 Date Collected: 27-AUG-2001 14: 45
 SMW-105 Date Received : 27-AUG-2001
 Sample Matrix: WATER Date Reported : 04-SEP-2001
 Condition of Sample: Satisfactory Field Prep: None
 Number & Type of Containers: 2-Plastic, 2-Vial

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Fluoride	0.73	mg/l	0.20	30 4500F-BC	0830 11: 25	0831 14: 30	MA
Dissolved Metals							
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0827 20: 00	0830 16: 37	RW
Manganese, Dissolved	0.76	mg/l	0.01	1 6010B	0827 20: 00	0830 16: 37	RW
Volatile Organics by GC 8021							
Bromodichloromethane	ND	ug/l	1.0	1 8021B	0831 12: 28		RY
Bromoform	ND	ug/l	1.0				
Carbon tetrachloride	ND	ug/l	1.0				
Chlorobenzene	ND	ug/l	1.0				
Dibromochloromethane	ND	ug/l	10.				
Bromomethane/Chloroethane	ND	ug/l	10.				
Chloroform	ND	ug/l	1.0				
Chloromethane/Vinyl chloride	ND	ug/l	10.				
1,2-Dichlorobenzene	ND	ug/l	1.0				
1,3-Dichlorobenzene	ND	ug/l	1.0				
1,4-Dichlorobenzene	ND	ug/l	1.0				
Dichlorodifluoromethane	ND	ug/l	10.				
1,1-Dichloroethane	ND	ug/l	1.0				
1,2-Dichloroethane	ND	ug/l	1.0				
1,1-Dichloroethene	ND	ug/l	1.0				
cis-1,2-Dichloroethene	12.	ug/l	1.0				
trans-1,2-Dichloroethene	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	1.0				
cis-1,3-Dichloropropene	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.0				
Methylene chloride	ND	ug/l	10.				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Tetrachloroethene	1.8	ug/l	1.0				
1,1,1-Trichloroethane	ND	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.0				
Trichloroethene	60.	ug/l	1.0				
Trichlorofluoromethane	ND	ug/l	1.0				
2-Chloroethyl vinyl ether	ND	ug/l	10.				

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0107935-11
SMW-105

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B	0831	12:28 RY
Surrogate Recovery							
4-Bromochlorobenzene	82.0	%					

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

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L0107935

Parameter	Value 1	Value 2	RPD	Units
Fluoride for sample(s) 01-02, 05, 11 (L0107935-11, WG91573)				
Fluoride	0.73	0.72	1	mg/l
Dissolved Metals for sample(s) 01-02, 05, 11 (L0107935-01, WG91287)				
Chromium, Dissolved	ND	ND	NC	mg/l
Manganese, Dissolved	0.01	0.01	0	mg/l

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0107935

Parameter	% Recovery
Fluoride LCS for sample(s) 01-02, 05, 11 (WG91573)	
Fluoride	92
Volatile Organics by GC 8021 LCS for sample(s) 01-08 (WG91411)	
Chlorobenzene	109
1,1-Dichloroethene	106
Trichloroethene	106
Surrogate Recovery	
4-Bromochlorobenzene	98
Volatile Organics by GC 8021 LCS for sample(s) 11 (WG91653)	
Chlorobenzene	108
1,1-Dichloroethene	107
Trichloroethene	102
Surrogate Recovery	
4-Bromochlorobenzene	107
Volatile Organics by GC 8021 LCS for sample(s) 09-10 (WG91411)	
Chlorobenzene	108
1,1-Dichloroethene	113
Trichloroethene	109
Surrogate Recovery	
4-Bromochlorobenzene	104
Fluoride SPIKE for sample(s) 01-02, 05, 11 (L0107935-02, WG91573)	
Fluoride	79
Dissolved Metals SPIKE for sample(s) 01-02, 05, 11 (L0107935-02, WG91287)	
Chromium, Dissolved	100
Manganese, Dissolved	94

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

Laboratory Job Number: L0107935

Parameter	MS %	MSD %	RPD
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Volatile Organics by GC 8021 for sample(s) 01-10 (L0107788-01, WG91411)			
Chlorobenzene	113	110	3
1,1-Dichloroethene	103	97	6
Trichloroethene	91	90	1

Volatile Organics by GC 8021 for sample(s) 11 (L0107953-01, WG91653)			
Chlorobenzene	111	117	5
1,1-Dichloroethene	104	99	5
Trichloroethene	92	89	3

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0107935

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
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Blank Analysis for sample(s) 01-02, 05, 11

Fluoride	ND	mg/l	0.20	30 4500F-BC	0830 11:25 0831 14:30 MA	
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Blank Analysis for sample(s) 01-02, 05, 11

Dissolved Metals

Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0827 20:00 0830 16:06 RW	
Manganese, Dissolved	ND	mg/l	0.01	1 6010B	0827 20:00 0830 16:06 RW	

Blank Analysis for sample(s) 01-08

Volatile Organics by GC 8021				1 8021B	0829 20:18 RY	
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Bromodichloromethane	ND	ug/l	0.50			
Bromoform	ND	ug/l	0.50			
Carbon tetrachloride	ND	ug/l	0.50			
Chlorobenzene	ND	ug/l	0.50			
Dibromochloromethane	ND	ug/l	5.0			
Bromomethane/Chloroethane	ND	ug/l	5.0			
Chloroform	ND	ug/l	0.50			
Chloromethane/Vinyl chloride	ND	ug/l	5.0			
1,2-Dichlorobenzene	ND	ug/l	0.50			
1,3-Dichlorobenzene	ND	ug/l	0.50			
1,4-Dichlorobenzene	ND	ug/l	0.50			
Dichlorodifluoromethane	ND	ug/l	5.0			
1,1-Dichloroethane	ND	ug/l	0.50			
1,2-Dichloroethane	ND	ug/l	0.50			
1,1-Dichloroethene	ND	ug/l	0.50			
cis-1,2-Dichloroethene	ND	ug/l	0.50			
trans-1,2-Dichloroethene	ND	ug/l	0.50			
1,2-Dichloropropane	ND	ug/l	0.50			
cis-1,3-Dichloropropene	ND	ug/l	0.50			
trans-1,3-Dichloropropene	ND	ug/l	0.50			
Methylene chloride	ND	ug/l	5.0			
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50			
Tetrachloroethene	ND	ug/l	0.50			
1,1,1-Trichloroethane	ND	ug/l	0.50			
1,1,2-Trichloroethane	ND	ug/l	0.50			
Trichloroethene	ND	ug/l	0.50			
Trichlorofluoromethane	ND	ug/l	0.50			
2-Chloroethyl vinyl ether	ND	ug/l	5.0			

Surrogate Recovery

4-Bromochlorobenzene	86.0	%				
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Blank Analysis for sample(s) 09-10

Volatile Organics by GC 8021				1 8021B	0830 09:36 RY	
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Bromodichloromethane	ND	ug/l	0.50			
Bromoform	ND	ug/l	0.50			

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0107935

Continued

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Blank Analysis for sample(s) 09-10							
Volatile Organics by GC 8021 continued				1	8021B	0830 09:36 RY	
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				
Surrogate Recovery							
4-Bromochlorobenzene	88.0	%					
Blank Analysis for sample(s) 11							
Volatile Organics by GC 8021				1	8021B	0831 09:32 RY	
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				

ALPHA ANALYTICAL LABORATORIES
 QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0107935

Continued

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
Blank Analysis for sample(s) 11						
Volatile Organics by GC 8021 continued				1 8021B	0831 09:32 RY	
1,1-Dichloroethene	ND	ug/l	0.50			
cis-1,2-Dichloroethene	ND	ug/l	0.50			
trans-1,2-Dichloroethene	ND	ug/l	0.50			
1,2-Dichloropropane	ND	ug/l	0.50			
cis-1,3-Dichloropropene	ND	ug/l	0.50			
trans-1,3-Dichloropropene	ND	ug/l	0.50			
Methylene chloride	ND	ug/l	5.0			
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50			
Tetrachloroethene	ND	ug/l	0.50			
1,1,1-Trichloroethane	ND	ug/l	0.50			
1,1,2-Trichloroethane	ND	ug/l	0.50			
Trichloroethene	ND	ug/l	0.50			
Trichlorofluoromethane	ND	ug/l	0.50			
2-Chloroethyl vinyl ether	ND	ug/l	5.0			
Surrogate Recovery						
4-Bromochlorobenzene	81.0	%				

ALPHA ANALYTICAL LABORATORIES
ADDENDUM I

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.
30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

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.

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 its 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.

Quality Control Acceptance Criteria

Volatile Organics by Method 8260B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
1,2-Dichloroethane-d ₄	75%	125%	75%	125%		
4-Bromofluorobenzene	75%	125%	75%	125%		
Toluene-d ₈	75%	125%	75%	125%		
Dibromofluoromethane	75%	125%	75%	125%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	61%	145%	59%	172%	all target compounds	
Trichloroethene	71%	120%	62%	137%	20%	30%
Chlorobenzene	75%	130%	60%	133%		
Benzene	76%	127%	66%	142%		
Toluene	76%	125%	59%	139%		

Volatile Organics by Method 8021B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
4-Bromochlorobenzene	70%	110%	70%	120%		
4-Bromofluorobenzene	70%	110%	70%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	70%	130%	70%	130%	all target compounds	
Trichloroethene	70%	130%	70%	130%	20%	30%
Chlorobenzene	70%	130%	70%	130%		
Benzene	70%	130%	70%	130%		
Toluene	70%	130%	70%	130%		
Ethylbenzene	70%	130%	70%	130%		

Semi-Volatile Organics by Method 8270C (includes PAHs)

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Nitrobenzene-d ₅	23%	120%	23%	120%		
Phenol-d ₆	10%	120%	10%	120%		
2-Fluorophenol	21%	120%	25%	120%		
2-Fluorobiphenyl	43%	120%	30%	120%		
p-Terphenyl-d ₁₄	33%	120%	18%	120%		
2,4,6-Tribromophenol	10%	120%	19%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,2,4-Trichlorobenzene	39%	98%	38%	107%	all target compounds	
Acenaphthene	46%	118%	31%	137%	40%	50%
2,4-Dinitrotoluene	24%	96%	28%	89%		
Pyrene	26%	127%	35%	142%		
N-Nitroso-di-n-propylamine	41%	116%	41%	126%		
1,4-Dichlorobenzene	36%	97%	28%	104%		
Pentachlorophenol	9%	103%	17%	109%		
Phenol	12%	110%	26%	90%		
2-Chlorophenol	27%	123%	25%	102%		
4-Chloro-3-methylphenol	23%	97%	26%	103%		
4-Nitrophenol	10%	80%	11%	114%		

Quality Control Acceptance Criteria

PCB/Pesticides by Method 8082/8081

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,4,5,6-Tetrachloro-m-xylene	40%	120%	40%	120%		
Decachlorobiphenyl	40%	120%	40%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
Lindane	56%	123%	46%	127%	all target compounds	
Heptachlor	40%	131%	35%	130%	30%	50%
Aldrin	40%	120%	34%	132%		
Dieldrin	52%	126%	31%	134%		
Endrin	56%	121%	42%	139%		
4,4'-DDT	38%	127%	23%	134%		
Aroclor 1242/1016	40%	140%	40%	140%		
Aroclor 1260	40%	140%	40%	140%		

Volatile Petroleum Hydrocarbons (VPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,5-Dibromotoluene	70%	130%	70%	130%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	70%	130%	70%	130%	50%	50%

Extractable Petroleum Hydrocarbons (EPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Chloro-octadecane	40%	140%	40%	140%		
ortho-Terphenyl	40%	140%	40%	140%		
2-Fluorobiphenyl (fractionation)	40%	140%	40%	140%		
2-Bromonaphthalene (fractionation)	40%	140%	40%	140%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	40%	140%	40%	140%	50%	50%

TPH (GC-FID) by Method 8100M

surrogate spike % recovery	AQ Limits		Soil Limits		duplicate	
	LCL	UCL	LCL	UCL	AQ Limits	Soil Limits
ortho-Terphenyl	40%	140%	40%	140%	RPD	RPD
					40%	40%

TPH by Method 418.1

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
TPH	60%	140%	60%	140%	40%	40%

Quality Control Acceptance Criteria

Trace Metals by Method 6010B/7000 series

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
target analyte	75%	125%	70%	140%	20%	35%

Mercury by Method 7470A/7471A

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
mercury	70%	130%	60%	140%	35%	45%

Total Cyanide by Method 9010B

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
cyanide	80%	120%	65%	135%	30%	40%

Total Phenol by Method 9065

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
phenol	70%	130%	65%	135%	20%	30%

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive Westborough, MA 01581
 PH: 508.898.9220 FAX: 508.898.9193 www.alpha-lab.com

CHAIN OF CUSTODY

No 12527

Sheet ___ of ___

Date Due: 8/14/07

Client Name: ERM
 Client Address: 399 Boylston St.
BOSTON, MA. 02116
 Phone #: (617)267-8377 FAX #: (617)267-6447

Project Name: RATHBON-WAYLAND
 Project Location: WAYLAND, MA.
 Project #: 143.56
 Project Manager: JOE FACLO

Report To: JOE FACLO
 Bill To: _____
 PO#: 143-56

Standard TAT
 RUSH TAT _____ (# days)
 FAX Results
 State Forms
 SMART Report

Comments: (Please note specific method, detection limit or reporting requirements.)

ANALYSIS REQUEST

Sample ID	Matrix/Source *	Sampling Date	Sampling Time	Sampler's Initials	Solubles: Field Filtered? (Y/N)	VOCS by 8021B - CHLORINATEDS ONLY	Dr. Manganese & Chromium	Fluoride										
MW-33S	MW	8/21/07	1445	RCB	N	2	1	1										
MW-33M			1500	VE	N	2	1	1										
MW-33D			1415	RCB		2												
MW-33B			1545	VE		2												
MW-43S			1100	RCB	N	2	1	1										
MW-43D			1130	VE		2												
MW-42S			1145	RCB		2												
MW-44S			1230	RCB		2												
MW-44M			1235	VE		2												
MW-44D			1245	RCB		2												
MW-10.5	✓	✓	1445	CA	N	2	1	1										

All samples submitted are subject to Alpha's standard Terms and Conditions.
 * See Reverse side for Matrix, Container, and Preservative Codes.

of Containers: 22 4 4
 Container Type: * V P P
 Preservative: * B A A

Transfers Accepted By:	Date	Time
<i>[Signature]</i>	8/21/07	1415
<i>[Signature]</i>	8/21/07	1445
<i>[Signature]</i>	8/21/07	1735
Transfers Relinquished By:		
<i>[Signature]</i>		
<i>[Signature]</i>		

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65 NY: 11148

CERTIFICATE OF ANALYSIS

Client: ERM-New England Laboratory Job Number: L0107974
Address: 399 Boylston Street Invoice Number: 54141
6th Floor
Boston, MA 02116 Date Received: 28-AUG-01
Attn: Mr. Joe Fiacco Date Reported: 05-SEP-01
Project Number: 143.56 Delivery Method: Alpha
Site: RAYTHEON-WAYLAND

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0107974-01	MW-101	WAYLAND, MA
L0107974-02	MW-116	WAYLAND, MA
L0107974-03	MW-112	WAYLAND, MA
L0107974-04	MW-109	WAYLAND, MA
L0107974-05	MW-111	WAYLAND, MA
L0107974-06	MW-110	WAYLAND, MA
L0107974-07	MW-108	WAYLAND, MA

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately 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

Scott McLean - Laboratory Director
This document electronically signed

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107974-01	Date Collected: 28-AUG-2001 09:40
Sample Matrix: MW-101	Date Received: 28-AUG-2001
Sample Matrix: WATER	Date Reported: 05-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Plastic, 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
Fluoride	0.20	mg/l	0.20	30 4500F-BC	0831 09:10 0901 15:30	ST
Dissolved Metals						
Chromium, Dissolved	0.02	mg/l	0.01	1 6010B	0828 20:10 0831 01:06	RW
Manganese, Dissolved	0.16	mg/l	0.01	1 6010B	0828 20:10 0831 01:06	RW
Volatile Organics by GC 8021						
Bromodichloromethane	ND	ug/l	0.50			
Bromoform	ND	ug/l	0.50			
Carbon tetrachloride	ND	ug/l	0.50			
Chlorobenzene	ND	ug/l	0.50			
Dibromochloromethane	ND	ug/l	5.0			
Bromomethane/Chloroethane	ND	ug/l	5.0			
Chloroform	ND	ug/l	0.50			
Chloromethane/Vinyl chloride	ND	ug/l	5.0			
1,2-Dichlorobenzene	ND	ug/l	0.50			
1,3-Dichlorobenzene	ND	ug/l	0.50			
1,4-Dichlorobenzene	ND	ug/l	0.50			
Dichlorodifluoromethane	ND	ug/l	5.0			
1,1-Dichloroethane	ND	ug/l	0.50			
1,2-Dichloroethane	ND	ug/l	0.50			
1,1-Dichloroethene	ND	ug/l	0.50			
cis-1,2-Dichloroethene	ND	ug/l	0.50			
trans-1,2-Dichloroethene	ND	ug/l	0.50			
1,2-Dichloropropane	ND	ug/l	0.50			
cis-1,3-Dichloropropene	ND	ug/l	0.50			
trans-1,3-Dichloropropene	ND	ug/l	0.50			
Methylene chloride	ND	ug/l	5.0			
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50			
Tetrachloroethene	ND	ug/l	0.50			
1,1,1-Trichloroethane	ND	ug/l	0.50			
1,1,2-Trichloroethane	ND	ug/l	0.50			
Trichloroethene	2.3	ug/l	0.50			
Trichlorofluoromethane	ND	ug/l	0.50			
2-Chloroethyl vinyl ether	ND	ug/l	5.0			

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0107974-01
MW-101

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B	0904 20:15	RY
Surrogate Recovery							
4-Bromochlorobenzene	98.0	%					

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107974-02	Date Collected: 28-AUG-2001 11:55
	Date Received : 28-AUG-2001
Sample Matrix: MW-116 WATER	Date Reported : 05-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Plastic, 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
Fluoride	ND	mg/l	0.20	30 4500F-BC	0831 09:10 0901 15:30	ST
Dissolved Metals						
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0828 20:10 0831 01:18	RW
Manganese, Dissolved	0.41	mg/l	0.01	1 6010B	0828 20:10 0831 01:18	RW
Volatile Organics by GC 8021						
Bromodichloromethane	ND	ug/l	2.5			
Bromoform	ND	ug/l	2.5			
Carbon tetrachloride	ND	ug/l	2.5			
Chlorobenzene	ND	ug/l	2.5			
Dibromochloromethane	ND	ug/l	25.			
Bromomethane/Chloroethane	ND	ug/l	25.			
Chloroform	ND	ug/l	2.5			
Chloromethane/Vinyl chloride	ND	ug/l	25.			
1,2-Dichlorobenzene	ND	ug/l	2.5			
1,3-Dichlorobenzene	ND	ug/l	2.5			
1,4-Dichlorobenzene	ND	ug/l	2.5			
Dichlorodifluoromethane	ND	ug/l	25.			
1,1-Dichloroethane	ND	ug/l	2.5			
1,2-Dichloroethane	ND	ug/l	2.5			
1,1-Dichloroethene	ND	ug/l	2.5			
cis-1,2-Dichloroethene	ND	ug/l	2.5			
trans-1,2-Dichloroethene	ND	ug/l	2.5			
1,2-Dichloropropane	ND	ug/l	2.5			
cis-1,3-Dichloropropene	ND	ug/l	2.5			
trans-1,3-Dichloropropene	ND	ug/l	2.5			
Methylene chloride	ND	ug/l	25.			
1,1,2,2-Tetrachloroethane	ND	ug/l	2.5			
Tetrachloroethene	ND	ug/l	2.5			
1,1,1-Trichloroethane	64.	ug/l	2.5			
1,1,2-Trichloroethane	ND	ug/l	2.5			
Trichloroethene	180	ug/l	2.5			
Trichlorofluoromethane	ND	ug/l	2.5			
2-Chloroethyl vinyl ether	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: L0107974-02
MW-116

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B	0904	21:08 RY
Surrogate Recovery							
4-Bromochlorobenzene	111.	%					

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107974-03	Date Collected: 28-AUG-2001 13:10
Sample Matrix: MW-112	Date Received: 28-AUG-2001
Sample Matrix: WATER	Date Reported: 05-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Plastic, 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
Fluoride	ND	mg/l	0.20	30 4500F-BC	0831 09:10 0901 15:30	ST
Dissolved Metals						
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0828 20:10 0831 01:30	RW
Manganese, Dissolved	0.13	mg/l	0.01	1 6010B	0828 20:10 0831 01:30	RW
Volatile Organics by GC 8021						
Bromodichloromethane	ND	ug/l	1.0	1 8021B	0904 22:00	RY
Bromoform	ND	ug/l	1.0			
Carbon tetrachloride	ND	ug/l	1.0			
Chlorobenzene	ND	ug/l	1.0			
Dibromochloromethane	ND	ug/l	10.			
Bromomethane/Chloroethane	ND	ug/l	10.			
Chloroform	ND	ug/l	1.0			
Chloromethane/Vinyl chloride	ND	ug/l	10.			
1,2-Dichlorobenzene	ND	ug/l	1.0			
1,3-Dichlorobenzene	ND	ug/l	1.0			
1,4-Dichlorobenzene	ND	ug/l	1.0			
Dichlorodifluoromethane	ND	ug/l	10.			
1,1-Dichloroethane	ND	ug/l	1.0			
1,2-Dichloroethane	ND	ug/l	1.0			
1,1-Dichloroethene	ND	ug/l	1.0			
cis-1,2-Dichloroethene	ND	ug/l	1.0			
trans-1,2-Dichloroethene	ND	ug/l	1.0			
1,2-Dichloropropane	ND	ug/l	1.0			
cis-1,3-Dichloropropene	ND	ug/l	1.0			
trans-1,3-Dichloropropene	ND	ug/l	1.0			
Methylene chloride	ND	ug/l	10.			
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0			
Tetrachloroethene	ND	ug/l	1.0			
1,1,1-Trichloroethane	29.	ug/l	1.0			
1,1,2-Trichloroethane	ND	ug/l	1.0			
Trichloroethene	82.	ug/l	1.0			
Trichlorofluoromethane	ND	ug/l	1.0			
2-Chloroethyl vinyl ether	ND	ug/l	10.			

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0107974-03
MW-112

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B	0904 22:00	RY
Surrogate Recovery							
4-Bromochlorobenzene	113.	%					

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107974-04 Date Collected: 28-AUG-2001 15:40
 MW-109 Date Received: 28-AUG-2001
 Sample Matrix: WATER Date Reported: 05-SEP-2001
 Condition of Sample: Satisfactory Field Prep: None
 Number & Type of Containers: 2-Plastic, 2-Vial

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Fluoride	0.55	mg/l	0.20	30 4500F-BC	0831 09:10	0901 15:30	ST
Dissolved Metals							
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0828 20:10	0831 01:36	RW
Manganese, Dissolved	1.5	mg/l	0.01	1 6010B	0828 20:10	0831 01:36	RW
Volatile Organics by GC 8021							
Bromodichloromethane	ND	ug/l	0.50	1 8021B			0904 22:53 RY
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	1.6	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	18.	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0107974-04
MW-109

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B	0904 22:53	RY
Surrogate Recovery							
4-Bromochlorobenzene	99.0	%					

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107974-05	Date Collected: 28-AUG-2001 13:50
Sample Matrix: MW-111	Date Received: 28-AUG-2001
Sample Matrix: WATER	Date Reported: 05-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Plastic, 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
Fluoride	0.48	mg/l	0.20	30 4500F-BC	0831 09:10 0901 15:30	ST
Dissolved Metals						
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0828 20:10 0831 01:42	RW
Manganese, Dissolved	1.1	mg/l	0.01	1 6010B	0828 20:10 0831 01:42	RW
Volatile Organics by GC 8021						
Bromodichloromethane	ND	ug/l	0.50			
Bromoform	ND	ug/l	0.50			
Carbon tetrachloride	ND	ug/l	0.50			
Chlorobenzene	ND	ug/l	0.50			
Dibromochloromethane	ND	ug/l	5.0			
Bromomethane/Chloroethane	ND	ug/l	5.0			
Chloroform	ND	ug/l	0.50			
Chloromethane/Vinyl chloride	ND	ug/l	5.0			
1,2-Dichlorobenzene	ND	ug/l	0.50			
1,3-Dichlorobenzene	ND	ug/l	0.50			
1,4-Dichlorobenzene	ND	ug/l	0.50			
Dichlorodifluoromethane	ND	ug/l	5.0			
1,1-Dichloroethane	ND	ug/l	0.50			
1,2-Dichloroethane	ND	ug/l	0.50			
1,1-Dichloroethene	0.72	ug/l	0.50			
cis-1,2-Dichloroethene	ND	ug/l	0.50			
trans-1,2-Dichloroethene	ND	ug/l	0.50			
1,2-Dichloropropane	ND	ug/l	0.50			
cis-1,3-Dichloropropene	ND	ug/l	0.50			
trans-1,3-Dichloropropene	ND	ug/l	0.50			
Methylene chloride	ND	ug/l	5.0			
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50			
Tetrachloroethene	ND	ug/l	0.50			
1,1,1-Trichloroethane	24.	ug/l	0.50			
1,1,2-Trichloroethane	ND	ug/l	0.50			
Trichloroethene	70.	ug/l	0.50			
Trichlorofluoromethane	ND	ug/l	0.50			
2-Chloroethyl vinyl ether	ND	ug/l	5.0			

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0107974-05
MW-111

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B	0904 23:45	RY
Surrogate Recovery							
4-Bromochlorobenzene	118.	%					

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107974-06	Date Collected: 28-AUG-2001 14:50
	Date Received : 28-AUG-2001
Sample Matrix: MW-110 WATER	Date Reported : 05-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Plastic, 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
Fluoride	0.32	mg/l	0.20	30 4500F-BC	0831 09:10 0901 15:30	ST
Dissolved Metals						
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0828 20:10 0831 01:48	RW
Manganese, Dissolved	0.24	mg/l	0.01	1 6010B	0828 20:10 0831 01:48	RW
Volatile Organics by GC 8021						
Bromodichloromethane	ND	ug/l	0.50			
Bromoform	ND	ug/l	0.50			
Carbon tetrachloride	ND	ug/l	0.50			
Chlorobenzene	ND	ug/l	0.50			
Dibromochloromethane	ND	ug/l	5.0			
Bromomethane/Chloroethane	ND	ug/l	5.0			
Chloroform	ND	ug/l	0.50			
Chloromethane/Vinyl chloride	ND	ug/l	5.0			
1,2-Dichlorobenzene	ND	ug/l	0.50			
1,3-Dichlorobenzene	ND	ug/l	0.50			
1,4-Dichlorobenzene	ND	ug/l	0.50			
Dichlorodifluoromethane	ND	ug/l	5.0			
1,1-Dichloroethane	ND	ug/l	0.50			
1,2-Dichloroethane	ND	ug/l	0.50			
1,1-Dichloroethene	ND	ug/l	0.50			
cis-1,2-Dichloroethene	ND	ug/l	0.50			
trans-1,2-Dichloroethene	ND	ug/l	0.50			
1,2-Dichloropropane	ND	ug/l	0.50			
cis-1,3-Dichloropropene	ND	ug/l	0.50			
trans-1,3-Dichloropropene	ND	ug/l	0.50			
Methylene chloride	ND	ug/l	5.0			
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50			
Tetrachloroethene	ND	ug/l	0.50			
1,1,1-Trichloroethane	ND	ug/l	0.50			
1,1,2-Trichloroethane	ND	ug/l	0.50			
Trichloroethene	ND	ug/l	0.50			
Trichlorofluoromethane	ND	ug/l	0.50			
2-Chloroethyl vinyl ether	ND	ug/l	5.0			

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0107974-06
MW-110

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Volatile Organics by GC 8021 continued				1	8021B	0905 00:38	RY
Surrogate Recovery							
4-Bromochlorobenzene	106.	%					

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107974-07	Date Collected: 28-AUG-2001 16:40
Sample Matrix: MW-108	Date Received: 28-AUG-2001
Sample Matrix: WATER	Date Reported: 05-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Plastic, 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
Fluoride	ND	mg/l	0.20	30 4500F-BC	0831 09:10 0901 15:30	ST
Dissolved Metals						
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0828 20:10 0831 01:54	RW
Manganese, Dissolved	1.7	mg/l	0.01	1 6010B	0828 20:10 0831 01:54	RW
Volatile Organics by GC 8021						
Bromodichloromethane	ND	ug/l	0.50	1 8021B	0905 01:30	RY
Bromoform	ND	ug/l	0.50			
Carbon tetrachloride	ND	ug/l	0.50			
Chlorobenzene	ND	ug/l	0.50			
Dibromochloromethane	ND	ug/l	5.0			
Bromomethane/Chloroethane	ND	ug/l	5.0			
Chloroform	ND	ug/l	0.50			
Chloromethane/Vinyl chloride	ND	ug/l	5.0			
1,2-Dichlorobenzene	ND	ug/l	0.50			
1,3-Dichlorobenzene	ND	ug/l	0.50			
1,4-Dichlorobenzene	ND	ug/l	0.50			
Dichlorodifluoromethane	ND	ug/l	5.0			
1,1-Dichloroethane	ND	ug/l	0.50			
1,2-Dichloroethane	ND	ug/l	0.50			
1,1-Dichloroethene	ND	ug/l	0.50			
cis-1,2-Dichloroethene	ND	ug/l	0.50			
trans-1,2-Dichloroethene	ND	ug/l	0.50			
1,2-Dichloropropane	ND	ug/l	0.50			
cis-1,3-Dichloropropene	ND	ug/l	0.50			
trans-1,3-Dichloropropene	ND	ug/l	0.50			
Methylene chloride	ND	ug/l	5.0			
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50			
Tetrachloroethene	ND	ug/l	0.50			
1,1,1-Trichloroethane	ND	ug/l	0.50			
1,1,2-Trichloroethane	ND	ug/l	0.50			
Trichloroethene	1.4	ug/l	0.50			
Trichlorofluoromethane	ND	ug/l	0.50			
2-Chloroethyl vinyl ether	ND	ug/l	5.0			

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0107974-07
MW-108

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B	0905 01:30	RY
Surrogate Recovery							
4-Bromochlorobenzene	104.	%					

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

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L0107974

Parameter	Value 1	Value 2	RPD	Units
Fluoride for sample(s) 01-07 (L0107974-01, WG91575)				
Fluoride	0.20	0.20	0	mg/l
Dissolved Metals for sample(s) 01-07 (L0107974-01, WG91289)				
Chromium, Dissolved	0.02	0.02	0	mg/l
Manganese, Dissolved	0.16	0.16	0	mg/l

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0107974

Parameter	% Recovery
Fluoride LCS for sample(s) 01-07 (WG91575)	
Fluoride	86
Volatile Organics by GC 8021 LCS for sample(s) 01-07 (WG91741)	
Chlorobenzene	111
1,1-Dichloroethene	109
Trichloroethene	105
Surrogate Recovery	
4-Bromochlorobenzene	114
Fluoride SPIKE for sample(s) 01-07 (L0107974-03, WG91575)	
Fluoride	85
Dissolved Metals SPIKE for sample(s) 01-07 (L0107974-02, WG91289)	
Chromium, Dissolved	100
Manganese, Dissolved	98

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

Laboratory Job Number: L0107974

Parameter	MS %	MSD %	RPD
Volatile Organics by GC 8021 for sample(s) 01-07 (L0107974-01, WG91741)			
Chlorobenzene	120	125	4
1,1-Dichloroethene	106	103	3
Trichloroethene	99	101	2

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0107974

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
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Blank Analysis for sample(s) 01-07

Fluoride	ND	mg/l	0.20	30 4500F-BC	0831 09:10 0901 15:30	ST
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Blank Analysis for sample(s) 01-07

Dissolved Metals

Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0828 20:10 0831 01:00	RW
Manganese, Dissolved	ND	mg/l	0.01	1 6010B	0828 20:10 0831 01:00	RW

Blank Analysis for sample(s) 01-07

Volatile Organics by GC 8021

	1	8021B	0904 17:37	RY
Bromodichloromethane	ND	ug/l	0.50	
Bromoform	ND	ug/l	0.50	
Carbon tetrachloride	ND	ug/l	0.50	
Chlorobenzene	ND	ug/l	0.50	
Dibromochloromethane	ND	ug/l	5.0	
Bromomethane/Chloroethane	ND	ug/l	5.0	
Chloroform	ND	ug/l	0.50	
Chloromethane/Vinyl chloride	ND	ug/l	5.0	
1,2-Dichlorobenzene	ND	ug/l	0.50	
1,3-Dichlorobenzene	ND	ug/l	0.50	
1,4-Dichlorobenzene	ND	ug/l	0.50	
Dichlorodifluoromethane	ND	ug/l	5.0	
1,1-Dichloroethane	ND	ug/l	0.50	
1,2-Dichloroethane	ND	ug/l	0.50	
1,1-Dichloroethene	ND	ug/l	0.50	
cis-1,2-Dichloroethene	ND	ug/l	0.50	
trans-1,2-Dichloroethene	ND	ug/l	0.50	
1,2-Dichloropropane	ND	ug/l	0.50	
cis-1,3-Dichloropropene	ND	ug/l	0.50	
trans-1,3-Dichloropropene	ND	ug/l	0.50	
Methylene chloride	ND	ug/l	5.0	
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50	
Tetrachloroethene	ND	ug/l	0.50	
1,1,1-Trichloroethane	ND	ug/l	0.50	
1,1,2-Trichloroethane	ND	ug/l	0.50	
Trichloroethene	ND	ug/l	0.50	
Trichlorofluoromethane	ND	ug/l	0.50	
2-Chloroethyl vinyl ether	ND	ug/l	5.0	

Surrogate Recovery

4-Bromochlorobenzene	99.0	%
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ALPHA ANALYTICAL LABORATORIES
ADDENDUM I

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.
30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

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.

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 its 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.

Quality Control Acceptance Criteria

Volatile Organics by Method 8260B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
1,2-Dichloroethane-d ₄	75%	125%	75%	125%		
4-Bromofluorobenzene	75%	125%	75%	125%		
Toluene-d ₈	75%	125%	75%	125%		
Dibromofluoromethane	75%	125%	75%	125%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	61%	145%	59%	172%	all target compounds	
Trichloroethene	71%	120%	62%	137%	20%	30%
Chlorobenzene	75%	130%	60%	133%		
Benzene	76%	127%	66%	142%		
Toluene	76%	125%	59%	139%		

Volatile Organics by Method 8021B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
4-Bromochlorobenzene	70%	110%	70%	120%		
4-Bromofluorobenzene	70%	110%	70%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	70%	130%	70%	130%	all target compounds	
Trichloroethene	70%	130%	70%	130%	20%	30%
Chlorobenzene	70%	130%	70%	130%		
Benzene	70%	130%	70%	130%		
Toluene	70%	130%	70%	130%		
Ethylbenzene	70%	130%	70%	130%		

Semi-Volatile Organics by Method 8270C (includes PAHs)

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Nitrobenzene-d ₅	23%	120%	23%	120%		
Phenol-d ₆	10%	120%	10%	120%		
2-Fluorophenol	21%	120%	25%	120%		
2-Fluorobiphenyl	43%	120%	30%	120%		
p-Terphenyl-d ₁₄	33%	120%	18%	120%		
2,4,6-Tribromophenol	10%	120%	19%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,2,4-Trichlorobenzene	39%	98%	38%	107%	all target compounds	
Acenaphthene	46%	118%	31%	137%	40%	50%
2,4-Dinitrotoluene	24%	96%	28%	89%		
Pyrene	26%	127%	35%	142%		
N-Nitroso-di-n-propylamine	41%	116%	41%	126%		
1,4-Dichlorobenzene	36%	97%	28%	104%		
Pentachlorophenol	9%	103%	17%	109%		
Phenol	12%	110%	26%	90%		
2-Chlorophenol	27%	123%	25%	102%		
4-Chloro-3-methylphenol	23%	97%	26%	103%		
4-Nitrophenol	10%	80%	11%	114%		

Quality Control Acceptance Criteria

PCB/Pesticides by Method 8082/8081

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,4,5,6-Tetrachloro-m-xylene	40%	120%	40%	120%		
Decachlorobiphenyl	40%	120%	40%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
Lindane	56%	123%	46%	127%	all target compounds	
Heptachlor	40%	131%	35%	130%	30%	50%
Aldrin	40%	120%	34%	132%		
Dieldrin	52%	126%	31%	134%		
Endrin	56%	121%	42%	139%		
4,4'-DDT	38%	127%	23%	134%		
Aroclor 1242/1016	40%	140%	40%	140%		
Aroclor 1260	40%	140%	40%	140%		

Volatile Petroleum Hydrocarbons (VPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,5-Dibromotoluene	70%	130%	70%	130%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	70%	130%	70%	130%	50%	50%

Extractable Petroleum Hydrocarbons (EPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Chloro-octadecane	40%	140%	40%	140%		
ortho-Terphenyl	40%	140%	40%	140%		
2-Fluorobiphenyl (fractionation)	40%	140%	40%	140%		
2-Bromonaphthalene (fractionation)	40%	140%	40%	140%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	40%	140%	40%	140%	50%	50%

TPH (GC-FID) by Method 8100M

surrogate spike % recovery	AQ Limits		Soil Limits		duplicate	
	LCL	UCL	LCL	UCL	AQ Limits	Soil Limits
					RPD	RPD
ortho-Terphenyl	40%	140%	40%	140%	40%	40%

TPH by Method 418.1

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
TPH	60%	140%	60%	140%	40%	40%

Quality Control Acceptance Criteria

Trace Metals by Method 6010B/7000 series

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
target analyte	75%	125%	70%	140%	20%	35%

Mercury by Method 7470A/7471A

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
mercury	70%	130%	60%	140%	35%	45%

Total Cyanide by Method 9010B

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
cyanide	80%	120%	65%	135%	30%	40%

Total Phenol by Method 9065

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
phenol	70%	130%	65%	135%	20%	30%

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive Westborough, MA 01581
 PH: 508.898.9220 FAX: 508.898.9193 www.alphalab.com

CHAIN OF CUSTODY

No 1036

Sheet _____ of _____ Date Rec'd in Lab: 8/28/01

Client Name: ERM
 Client Address: 395 BOSTON ST
BOSTON MA 02116
 Phone #: (617) 267-8337 FAX #: (617) 267-6147

Project Name: Raytheon - Weyland
 Project Location: Weyland, MA
 Project #: 143.56
 Project Manager: Joe Fiaco

Report To: Joe Fiaco
 Bill To: _____
 PO#: 143.56

- Standard TAT
- RUSH TAT _____ (* DAYS)
- FAX Results
- State Forms
- Smart Report

Comments (Please note specific method, detection limit or reporting requirements.)

ANALYSIS REQUEST

Sample ID	Matrix/Source *	Sampling Date	Sampling Time	Sampler's Initials	Solubles: Field Filtered? (Y/N)	ANALYSIS REQUEST		
						voc by 80213		
						chlorinated only		
						Ann Hargreave, Chromium		
						Fluoride		
MW-101	MG	8.27.01	9.40	CA	N	2	1	1
MW-116			11.55		N	2	1	1
MW-112			13.10		N	2	1	1
MW-109			15.40		N	2	1	1
MW-111			13.50		N	2	1	1
MW-110			14.50		N	2	1	1
MW-108			16.40		N	2	1	1

Transfers Accepted By:	Date	Time
<u>Linda Edmonds</u>	<u>8/28/01</u>	<u>1640</u>
<u>M. Larice</u>	<u>8/28</u>	<u>1810</u>

Transfers Relinquished By:
<u>Linda Edmonds</u>
<u>Linda Edmonds</u>

All samples submitted are subject to Alpha's standard Terms and Conditions.
 * See Reverse side for Matrix, Container, and Preservative Codes.

# of Containers:	<u>14</u>	<u>8</u>	<u>8</u>
Container Type: *	<u>V</u>	<u>P</u>	<u>P</u>

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65 NY: 11148

CERTIFICATE OF ANALYSIS

Client: ERM-New England Laboratory Job Number: L0107982
Address: 399 Boylston Street Invoice Number: 54046
6th Floor
Boston, MA 02116 Date Received: 28-AUG-01
Attn: Mr. Joe Fiacco Date Reported: 31-AUG-01
Project Number: 143.56 Delivery Method: Alpha
Site: RAYTHEON-WAYLAND

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0107982-01	DUP-1	WAYLAND, MA
L0107982-02	MW-34	WAYLAND, MA
L0107982-03	MW-37M	WAYLAND, MA
L0107982-04	MW-10	WAYLAND, MA
L0107982-05	MW-41	WAYLAND, MA
L0107982-06	TRIP BLANK	WAYLAND, MA

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately 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: James R. Roth, PhD

James R. Roth, PhD - Laboratory Manager
This document electronically signed

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107982-01 Date Collected: 28-AUG-2001 07:00
 DUP-1 Date Received: 28-AUG-2001
 Sample Matrix: WATER Date Reported: 31-AUG-2001
 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 GC 8021				1 8021B	0830 17:54 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	1.5	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	4.7	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	24.	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	88.	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				
Surrogate Recovery							
4-Bromochlorobenzene	98.0	%					

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107982-02 Date Collected: 28-AUG-2001 09:00
 Sample Matrix: MW-34 Date Received: 28-AUG-2001
 WATER Date Reported: 31-AUG-2001
 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 GC 8021				1 8021B	0830 18:47 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromodichloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 88.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107982-03 Date Collected: 28-AUG-2001 13:00
 MW-37M Date Received: 28-AUG-2001
 Sample Matrix: WATER Date Reported: 31-AUG-2001
 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 GC 8021				1 8021B	0830 20:32 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromodichloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	0.65	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 86.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107982-04 Date Collected: 28-AUG-2001 16:20
 MW-10 Date Received: 28-AUG-2001
 Sample Matrix: WATER Date Reported: 31-AUG-2001
 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 GC 8021				1 8021B	0830 21:25 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 83.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107982-05 Date Collected: 28-AUG-2001 16:45
 MW-41 Date Received: 28-AUG-2001
 Sample Matrix: WATER Date Reported: 31-AUG-2001
 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 GC 8021				1 8021B	0830 22:18 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	0.71	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	5.8	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 88.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107982-06 Date Collected: 23-AUG-2001 17:40
 Sample Matrix: TRIP BLANK Date Received: 28-AUG-2001
 WATER Date Reported: 31-AUG-2001
 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 GC 8021				1 8021B	0830 23:10 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 89.0 %

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

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

Laboratory Job Number: L0107982

Parameter	MS %	MSD %	RPD
Volatile Organics by GC 8021 for sample(s) 01-06 (L0107788-01, WG91411)			
Chlorobenzene	113	110	3
1,1-Dichloroethene	103	97	6
Trichloroethene	91	90	1

ALPHA ANALYTICAL LABORATORIES
 QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0107982

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Blank Analysis for sample(s) 01-06							
Volatile Organics by GC 8021				1	8021B	0830 17:02 RY	
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				
Surrogate Recovery							
4-Bromochlorobenzene	87.0	%					

ALPHA ANALYTICAL LABORATORIES
ADDENDUM I

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.

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.

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 its 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.

Quality Control Acceptance Criteria

Volatiles Organics by Method 8260B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
1,2-Dichloroethane-d ₄	75%	125%	75%	125%		
4-Bromofluorobenzene	75%	125%	75%	125%		
Toluene-d ₈	75%	125%	75%	125%		
Dibromofluoromethane	75%	125%	75%	125%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	61%	145%	59%	172%	all target compounds	
Trichloroethene	71%	120%	62%	137%	20%	30%
Chlorobenzene	75%	130%	60%	133%		
Benzene	76%	127%	66%	142%		
Toluene	76%	125%	59%	139%		

Volatiles Organics by Method 8021B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
4-Bromochlorobenzene	70%	110%	70%	120%		
4-Bromofluorobenzene	70%	110%	70%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	70%	130%	70%	130%	all target compounds	
Trichloroethene	70%	130%	70%	130%	20%	30%
Chlorobenzene	70%	130%	70%	130%		
Benzene	70%	130%	70%	130%		
Toluene	70%	130%	70%	130%		
Ethylbenzene	70%	130%	70%	130%		

Semi-Volatile Organics by Method 8270C (includes PAHs)

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Nitrobenzene-d ₅	23%	120%	23%	120%		
Phenol-d ₆	10%	120%	10%	120%		
2-Fluorophenol	21%	120%	25%	120%		
2-Fluorobiphenyl	43%	120%	30%	120%		
p-Terphenyl-d ₁₄	33%	120%	18%	120%		
2,4,6-Tribromophenol	10%	120%	19%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,2,4-Trichlorobenzene	39%	98%	38%	107%	all target compounds	
Acenaphthene	46%	118%	31%	137%	40%	50%
2,4-Dinitrotoluene	24%	96%	28%	89%		
Pyrene	26%	127%	35%	142%		
N-Nitroso-di-n-propylamine	41%	116%	41%	126%		
1,4-Dichlorobenzene	36%	97%	28%	104%		
Pentachlorophenol	9%	103%	17%	109%		
Phenol	12%	110%	26%	90%		
2-Chlorophenol	27%	123%	25%	102%		
4-Chloro-3-methylphenol	23%	97%	26%	103%		
4-Nitrophenol	10%	80%	11%	114%		

Quality Control Acceptance Criteria

PCB/Pesticides by Method 8082/8081

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,4,5,6-Tetrachloro-m-xylene	40%	120%	40%	120%		
Decachlorobiphenyl	40%	120%	40%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
Lindane	56%	123%	46%	127%	all target compounds	
Heptachlor	40%	131%	35%	130%	30%	50%
Aldrin	40%	120%	34%	132%		
Dieldrin	52%	126%	31%	134%		
Endrin	56%	121%	42%	139%		
4,4'-DDT	38%	127%	23%	134%		
Aroclor 1242/1016	40%	140%	40%	140%		
Aroclor 1260	40%	140%	40%	140%		

Volatile Petroleum Hydrocarbons (VPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,5-Dibromotoluene	70%	130%	70%	130%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	70%	130%	70%	130%	50%	50%

Extractable Petroleum Hydrocarbons (EPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Chloro-octadecane	40%	140%	40%	140%		
ortho-Terphenyl	40%	140%	40%	140%		
2-Fluorobiphenyl (fractionation)	40%	140%	40%	140%		
2-Bromonaphthalene (fractionation)	40%	140%	40%	140%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	40%	140%	40%	140%	50%	50%

TPH (GC-FID) by Method 8100M

surrogate spike % recovery	AQ Limits		Soil Limits		duplicate	
	LCL	UCL	LCL	UCL	AQ Limits	Soil Limits
					RPD	RPD
ortho-Terphenyl	40%	140%	40%	140%	40%	40%

TPH by Method 418.1

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
TPH	60%	140%	60%	140%	40%	40%

Quality Control Acceptance Criteria

Trace Metals by Method 6010B/7000 series

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
target analyte	75%	125%	70%	140%	20%	35%

Mercury by Method 7470A/7471A

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
mercury	70%	130%	60%	140%	35%	45%

Total Cyanide by Method 9010B

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
cyanide	80%	120%	65%	135%	30%	40%

Total Phenol by Method 9065

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
phenol	70%	130%	65%	135%	20%	30%

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive Westborough, MA 01581
 PH: 508.898.9220 FAX: 508.898.9193 www.alphalab.com

CHAIN OF CUSTODY

No 14499

Sheet ___ of ___

Date Due: 9/5/01

Client Name: ERM
 Client Address: 399 Boylston St
Boston, MA 02116
 Phone #: (617) 267 9377 FAX #: (617) 267 6447

Project Name: RAYMON - WAYLAND
 Project Location: WAYLAND, MA
 Project #: 143-56
 Project Manager: JOE FIALLO

Report To: JOE FIALLO
 Bill To: _____
 PO#: 143-56

- Standard TAT
 RUSH TAT _____ (# days)
 FAX Results
 State Forms
 SMART Report

Comments: (Please note specific method, detection limit or reporting requirements.)

ANALYSIS REQUEST

Sample ID	Matrix/Source *	Sampling Date	Sampling Time	Sampler's Initials	Solubles: Field Filtered? (Y/N)	VOS by 80218 - CHLORINATED ONLY												
Dup - 1	MW	8/28/01	0700	RES		2												
MW-34			0900	VE		2												
MW-37M			1300	RCB		2												
MW-10			1620	VE		2												
MW-41			1645	RCB		2												
TRIP BANK	LW	8/23	1740			1												

Transfers Accepted By:	Date	Time
<i>Linda Edwards</i>	8/28/01	1650
<i>M. L. Nave</i>	8/28	1810

Transfers Relinquished By:
<i>Linda Edwards</i>

All samples submitted are subject to Alpha's standard Terms and Conditions.
 * See Reverse side for Matrix, Container, and Preservative Codes.
 Form No.: 01-01

# of Containers:	11
Container Type: *	Y
Preservative: *	B

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65 NY: 11148

CERTIFICATE OF ANALYSIS

Client: ERM-New England Laboratory Job Number: L0107975
Address: 399 Boylston Street Invoice Number: 54102
6th Floor
Boston, MA 02116 Date Received: 28-AUG-01
Attn: Mr. Joe Fiacco Date Reported: 04-SEP-01
Project Number: 143.56 Delivery Method: Alpha
Site: RAYTHEON-WAYLAND

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0107975-01	MW-45S	WAYLAND, MA
L0107975-02	MW-45M	WAYLAND, MA
L0107975-03	MW-45D	WAYLAND, MA
L0107975-04	MW-45B	WAYLAND, MA
L0107975-05	MW-47S	WAYLAND, MA
L0107975-06	MW-47D	WAYLAND, MA
L0107975-07	HA-104	WAYLAND, MA
L0107975-08	HA-103	WAYLAND, MA
L0107975-09	MW-46S	WAYLAND, MA
L0107975-10	MW-46M	WAYLAND, MA
L0107975-11	HA-101	WAYLAND, MA

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately 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: James R. Roth, PhD

James R. Roth, PhD - Laboratory Manager
This document electronically signed

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107975-01 Date Collected: 28-AUG-2001 11:15
 MW-45S Date Received: 28-AUG-2001
 Sample Matrix: WATER Date Reported: 04-SEP-2001
 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 GC 8021				1 8021B	0831 19:31 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	2.1	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	8.4	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 94.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107975-02 Date Collected: 28-AUG-2001 11:45
 MW-45M Date Received: 28-AUG-2001
 Sample Matrix: WATER Date Reported: 04-SEP-2001
 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 GC 8021				1 8021B	0831 20:23 RY		
Bromodichloromethane	ND	ug/l	1.0				
Bromoform	ND	ug/l	1.0				
Carbon tetrachloride	ND	ug/l	1.0				
Chlorobenzene	ND	ug/l	1.0				
Dibromodichloromethane	ND	ug/l	10.				
Bromomethane/Chloroethane	ND	ug/l	10.				
Chloroform	ND	ug/l	1.0				
Chloromethane/Vinyl chloride	ND	ug/l	10.				
1,2-Dichlorobenzene	ND	ug/l	1.0				
1,3-Dichlorobenzene	ND	ug/l	1.0				
1,4-Dichlorobenzene	ND	ug/l	1.0				
Dichlorodifluoromethane	ND	ug/l	10.				
1,1-Dichloroethane	1.4	ug/l	1.0				
1,2-Dichloroethane	ND	ug/l	1.0				
1,1-Dichloroethene	4.5	ug/l	1.0				
cis-1,2-Dichloroethene	ND	ug/l	1.0				
trans-1,2-Dichloroethene	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	1.0				
cis-1,3-Dichloropropene	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.0				
Methylene chloride	ND	ug/l	10.				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Tetrachloroethene	ND	ug/l	1.0				
1,1,1-Trichloroethane	24.	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.0				
Trichloroethene	97.	ug/l	1.0				
Trichlorofluoromethane	ND	ug/l	1.0				
2-Chloroethyl vinyl ether	ND	ug/l	10.				

Surrogate Recovery

4-Bromochlorobenzene 92.0 %

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107975-03	Date Collected: 28-AUG-2001 10:00
	Date Received : 28-AUG-2001
Sample Matrix: MW-45D WATER	Date Reported : 04-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
Volatile Organics by GC 8021				1 8021B	0831 21:16 RY	
Bromodichloromethane	ND	ug/l	1.0			
Bromoform	ND	ug/l	1.0			
Carbon tetrachloride	ND	ug/l	1.0			
Chlorobenzene	ND	ug/l	1.0			
Dibromodichloromethane	ND	ug/l	10.			
Bromomethane/Chloroethane	ND	ug/l	10.			
Chloroform	ND	ug/l	1.0			
Chloromethane/Vinyl chloride	ND	ug/l	10.			
1,2-Dichlorobenzene	ND	ug/l	1.0			
1,3-Dichlorobenzene	ND	ug/l	1.0			
1,4-Dichlorobenzene	ND	ug/l	1.0			
Dichlorodifluoromethane	ND	ug/l	10.			
1,1-Dichloroethane	ND	ug/l	1.0			
1,2-Dichloroethane	ND	ug/l	1.0			
1,1-Dichloroethene	ND	ug/l	1.0			
cis-1,2-Dichloroethene	3.0	ug/l	1.0			
trans-1,2-Dichloroethene	ND	ug/l	1.0			
1,2-Dichloropropane	ND	ug/l	1.0			
cis-1,3-Dichloropropene	ND	ug/l	1.0			
trans-1,3-Dichloropropene	ND	ug/l	1.0			
Methylene chloride	ND	ug/l	10.			
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0			
Tetrachloroethene	ND	ug/l	1.0			
1,1,1-Trichloroethane	ND	ug/l	1.0			
1,1,2-Trichloroethane	ND	ug/l	1.0			
Trichloroethene	51.	ug/l	1.0			
Trichlorofluoromethane	ND	ug/l	1.0			
2-Chloroethyl vinyl ether	ND	ug/l	10.			

Surrogate Recovery

4-Bromochlorobenzene	84.0	%
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Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107975-04 Date Collected: 28-AUG-2001 10:00
 MW-45B Date Received: 28-AUG-2001
 Sample Matrix: WATER Date Reported: 04-SEP-2001
 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 GC 8021				1 8021B	0831 22:09 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	7.8	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 85.0 %

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107975-05	Date Collected: 28-AUG-2001 13:30
	Date Received: 28-AUG-2001
Sample Matrix: MW-47S WATER	Date Reported: 04-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
Volatile Organics by GC 8021				1 8021B	0831 23:02	RY
Bromodichloromethane	ND	ug/l	0.50			
Bromoform	ND	ug/l	0.50			
Carbon tetrachloride	ND	ug/l	0.50			
Chlorobenzene	ND	ug/l	0.50			
Dibromodichloromethane	ND	ug/l	5.0			
Bromomethane/Chloroethane	ND	ug/l	5.0			
Chloroform	ND	ug/l	0.50			
Chloromethane/Vinyl chloride	ND	ug/l	5.0			
1,2-Dichlorobenzene	ND	ug/l	0.50			
1,3-Dichlorobenzene	ND	ug/l	0.50			
1,4-Dichlorobenzene	ND	ug/l	0.50			
Dichlorodifluoromethane	ND	ug/l	5.0			
1,1-Dichloroethane	ND	ug/l	0.50			
1,2-Dichloroethane	ND	ug/l	0.50			
1,1-Dichloroethene	ND	ug/l	0.50			
cis-1,2-Dichloroethene	ND	ug/l	0.50			
trans-1,2-Dichloroethene	ND	ug/l	0.50			
1,2-Dichloropropane	ND	ug/l	0.50			
cis-1,3-Dichloropropene	ND	ug/l	0.50			
trans-1,3-Dichloropropene	ND	ug/l	0.50			
Methylene chloride	ND	ug/l	5.0			
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50			
Tetrachloroethene	ND	ug/l	0.50			
1,1,1-Trichloroethane	4.4	ug/l	0.50			
1,1,2-Trichloroethane	ND	ug/l	0.50			
Trichloroethene	15.	ug/l	0.50			
Trichlorofluoromethane	ND	ug/l	0.50			
2-Chloroethyl vinyl ether	ND	ug/l	5.0			

Surrogate Recovery

4-Bromochlorobenzene	94.0	%
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Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107975-06 Date Collected: 28-AUG-2001 13:55
 MW-47D Date Received: 28-AUG-2001
 Sample Matrix: WATER Date Reported: 04-SEP-2001
 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 GC 8021				1 8021B	0831 23:54 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	1.2	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	1.3	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	10.	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 82.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107975-07 Date Collected: 28-AUG-2001 14:00
 HA-104 Date Received: 28-AUG-2001
 Sample Matrix: WATER Date Reported: 04-SEP-2001
 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 GC 8021				1 8021B	0901 00:47 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	4.0	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	5.2	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 87.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107975-08 Date Collected: 28-AUG-2001 15:30
 HA-103 Date Received: 28-AUG-2001
 Sample Matrix: WATER Date Reported: 04-SEP-2001
 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 GC 8021				1 8021B	0901 01:40 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 85.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107975-09 Date Collected: 28-AUG-2001 15:15
 MW-46S Date Received: 28-AUG-2001
 Sample Matrix: WATER Date Reported: 04-SEP-2001
 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 GC 8021				1 8021B	0901 02:33 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 83.0 %

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107975-10	Date Collected: 28-AUG-2001 15:35
	Date Received : 28-AUG-2001
Sample Matrix: MW-46M WATER	Date Reported : 04-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
Volatile Organics by GC 8021				1 8021B	0901 03:25 RY	
Bromochloromethane	ND	ug/l	0.50			
Bromoform	ND	ug/l	0.50			
Carbon tetrachloride	ND	ug/l	0.50			
Chlorobenzene	ND	ug/l	0.50			
Dibromochloromethane	ND	ug/l	5.0			
Bromomethane/Chloroethane	ND	ug/l	5.0			
Chloroform	ND	ug/l	0.50			
Chloromethane/Vinyl chloride	ND	ug/l	5.0			
1,2-Dichlorobenzene	ND	ug/l	0.50			
1,3-Dichlorobenzene	ND	ug/l	0.50			
1,4-Dichlorobenzene	ND	ug/l	0.50			
Dichlorodifluoromethane	ND	ug/l	5.0			
1,1-Dichloroethane	ND	ug/l	0.50			
1,2-Dichloroethane	ND	ug/l	0.50			
1,1-Dichloroethene	2.5	ug/l	0.50			
cis-1,2-Dichloroethene	ND	ug/l	0.50			
trans-1,2-Dichloroethene	ND	ug/l	0.50			
1,2-Dichloropropane	ND	ug/l	0.50			
cis-1,3-Dichloropropene	ND	ug/l	0.50			
trans-1,3-Dichloropropene	ND	ug/l	0.50			
Methylene chloride	ND	ug/l	5.0			
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50			
Tetrachloroethene	ND	ug/l	0.50			
1,1,1-Trichloroethane	3.0	ug/l	0.50			
1,1,2-Trichloroethane	ND	ug/l	0.50			
Trichloroethene	4.2	ug/l	0.50			
Trichlorofluoromethane	ND	ug/l	0.50			
2-Chloroethyl vinyl ether	ND	ug/l	5.0			

Surrogate Recovery

4-Bromochlorobenzene	96.0	%
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Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107975-11 Date Collected: 28-AUG-2001 16:00
 HA-101 Date Received: 28-AUG-2001
 Sample Matrix: WATER Date Reported: 04-SEP-2001
 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 GC 8021				1 8021B	0901 04:18 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	0.71	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 84.0 %

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

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0107975

Parameter	% Recovery
Volatile Organics by GC 8021 LCS for sample(s) 01-11 (WG91653)	
Chlorobenzene	110
1,1-Dichloroethene	101
Trichloroethene	99
Surrogate Recovery	
4-Bromochlorobenzene	99

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

Laboratory Job Number: L0107975

Parameter	MS %	MSD %	RPD
Volatile Organics by GC 8021 for sample(s) 01-11 (L0107953-01, WG91653)			
Chlorobenzene	111	117	5
1,1-Dichloroethene	104	99	5
Trichloroethene	92	89	3

ALPHA ANALYTICAL LABORATORIES
 QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0107975

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Blank Analysis for sample(s) 01-11							
Volatile Organics by GC 8021				1 8021B		0831 17:45	RY
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				
Surrogate Recovery							
4-Bromochlorobenzene	83.0	%					

ALPHA ANALYTICAL LABORATORIES
ADDENDUM I

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.

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.

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 its 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.

Quality Control Acceptance Criteria

Volatile Organics by Method 8260B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
1,2-Dichloroethane-d ₄	75%	125%	75%	125%		
4-Bromofluorobenzene	75%	125%	75%	125%		
Toluene-d ₈	75%	125%	75%	125%		
Dibromofluoromethane	75%	125%	75%	125%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	61%	145%	59%	172%	all target compounds	
Trichloroethene	71%	120%	62%	137%	20%	30%
Chlorobenzene	75%	130%	60%	133%		
Benzene	76%	127%	66%	142%		
Toluene	76%	125%	59%	139%		

Volatile Organics by Method 8021B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
4-Bromochlorobenzene	70%	110%	70%	120%		
4-Bromofluorobenzene	70%	110%	70%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	70%	130%	70%	130%	all target compounds	
Trichloroethene	70%	130%	70%	130%	20%	30%
Chlorobenzene	70%	130%	70%	130%		
Benzene	70%	130%	70%	130%		
Toluene	70%	130%	70%	130%		
Ethylbenzene	70%	130%	70%	130%		

Semi-Volatile Organics by Method 8270C (includes PAHs)

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Nitrobenzene-d ₅	23%	120%	23%	120%		
Phenol-d ₆	10%	120%	10%	120%		
2-Fluorophenol	21%	120%	25%	120%		
2-Fluorobiphenyl	43%	120%	30%	120%		
p-Terphenyl-d ₁₄	33%	120%	18%	120%		
2,4,6-Tribromophenol	10%	120%	19%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,2,4-Trichlorobenzene	39%	98%	38%	107%	all target compounds	
Acenaphthene	46%	118%	31%	137%	40%	50%
2,4-Dinitrotoluene	24%	96%	28%	89%		
Pyrene	26%	127%	35%	142%		
N-Nitroso-di-n-propylamine	41%	116%	41%	126%		
1,4-Dichlorobenzene	36%	97%	28%	104%		
Pentachlorophenol	9%	103%	17%	109%		
Phenol	12%	110%	26%	90%		
2-Chlorophenol	27%	123%	25%	102%		
4-Chloro-3-methylphenol	23%	97%	26%	103%		
4-Nitrophenol	10%	80%	11%	114%		

Quality Control Acceptance Criteria

PCB/Pesticides by Method 8082/8081

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,4,5,6-Tetrachloro-m-xylene	40%	120%	40%	120%		
Decachlorobiphenyl	40%	120%	40%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
Lindane	56%	123%	46%	127%	all target compounds	
Heptachlor	40%	131%	35%	130%	30%	50%
Aldrin	40%	120%	34%	132%		
Dieldrin	52%	126%	31%	134%		
Endrin	56%	121%	42%	139%		
4,4'-DDT	38%	127%	23%	134%		
Aroclor 1242/1016	40%	140%	40%	140%		
Aroclor 1260	40%	140%	40%	140%		

Volatile Petroleum Hydrocarbons (VPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,5-Dibromotoluene	70%	130%	70%	130%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	70%	130%	70%	130%	50%	50%

Extractable Petroleum Hydrocarbons (EPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Chloro-octadecane	40%	140%	40%	140%		
ortho-Terphenyl	40%	140%	40%	140%		
2-Fluorobiphenyl (fractionation)	40%	140%	40%	140%		
2-Bromonaphthalene (fractionation)	40%	140%	40%	140%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	40%	140%	40%	140%	50%	50%

TPH (GC-FID) by Method 8100M

surrogate spike % recovery	AQ Limits		Soil Limits		duplicate	
	LCL	UCL	LCL	UCL	AQ Limits	Soil Limits
					RPD	RPD
ortho-Terphenyl	40%	140%	40%	140%	40%	40%

TPH by Method 418.1

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
TPH	60%	140%	60%	140%	40%	40%

Quality Control Acceptance Criteria

Trace Metals by Method 6010B/7000 series

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
target analyte	75%	125%	70%	140%	20%	35%

Mercury by Method 7470A/7471A

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
mercury	70%	130%	60%	140%	35%	45%

Total Cyanide by Method 9010B

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
cyanide	80%	120%	65%	135%	30%	40%

Total Phenol by Method 9065

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
phenol	70%	130%	65%	135%	20%	30%

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive Westborough, MA 01581
 PH: 508.898.9220 FAX: 508.898.9193 www.alphalab.com

CHAIN OF CUSTODY

No 1032

Sheet ____ of ____

Date Rec'd in Lab:

8/28/01

Client Name: ERM
 Client Address: 399 Baylston St.
BOSTON, MA 02116
 Phone #: (617) 267 8377 FAX #: (617) 267 6447

Project Name: RAYTHEON - WAYLAND
 Project Location: WAYLAND, MA
 Project #: 143.56
 Project Manager: JOE FIALLO

Report To: JOE FIALLO
 Bill To: _____
 PO#: 143.56

- Standard TAT
- RUSH TAT _____ (* DAYS)
- FAX Results
- State Forms
- Smart Report

Comments (Please note specific method, detection limit or reporting requirements.)

ANALYSIS REQUEST

Sample ID	Matrix/Source *	Sampling Date	Sampling Time	Sampler's Initials	Solubles: Field Filtered? (Y/N)	Vols by 8021B - CHLORINATEDS ONLY												
MW-455	MW	8/28/01	1115	RCB		2												
MW-45M			1145	VZ		2												
MW-45D			1000	RCB		2												
MW-45B			1000	VZ		2												
MW-415			1330	RCB		2												
MW-41D			1355	VZ		2												
HA-104			9400	RCB		2												
HA-103			1530	RCB		2												
MW-465			1515	RCB		2												
MW-46M			1535	VZ		2												
HA-101	Y	Y	1600	RCB		2												

All samples submitted are subject to Alpha's standard Terms and Conditions.

* See Reverse side for Matrix, Container, and Preservative Codes.

of Containers: 22
 Container Type: * V

Transfers Accepted By:	Date	Time
<i>[Signature]</i>	8/28/01	16:55
<i>[Signature]</i>	8/28/01	16:00

Transfers Relinquished By:

[Signature]

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65 NY: 11148

CERTIFICATE OF ANALYSIS

Client: ERM-New England Laboratory Job Number: L0107953
Address: 399 Boylston Street Invoice Number: 54135
6th Floor
Boston, MA 02116 Date Received: 28-AUG-01
Attn: Mr. Joe Fiacco Date Reported: 05-SEP-01
Project Number: 143.56 Delivery Method: Client
Site: RAYTHEON-WAYLAND

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0107953-01	MW-103	WAYLAND, MA
L0107953-02	MW-102	WAYLAND, MA
L0107953-03	MW-40	WAYLAND, MA
L0107953-04	MW-40S	WAYLAND, MA
L0107953-05	MW-37	WAYLAND, MA
L0107953-06	MW-38	WAYLAND, MA

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately 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

Scott McLean - Laboratory Director
This document electronically signed

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107953-01	Date Collected: 27-AUG-2001 16:30
	Date Received : 28-AUG-2001
Sample Matrix: MW-103 WATER	Date Reported : 05-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Plastic, 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
Fluoride	ND	mg/l	0.20	30 4500F-BC	0904 10:50 0904 16:00	MA
Dissolved Metals						
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0828 15:15 0830 11:25	RW
Manganese, Dissolved	0.60	mg/l	0.01	1 6010B	0828 15:15 0830 11:25	RW
Volatile Organics by GC 8021						
Bromodichloromethane	ND	ug/l	0.50			
Bromoform	ND	ug/l	0.50			
Carbon tetrachloride	ND	ug/l	0.50			
Chlorobenzene	ND	ug/l	0.50			
Dibromochloromethane	ND	ug/l	5.0			
Bromomethane/Chloroethane	ND	ug/l	5.0			
Chloroform	ND	ug/l	0.50			
Chloromethane/Vinyl chloride	ND	ug/l	5.0			
1,2-Dichlorobenzene	ND	ug/l	0.50			
1,3-Dichlorobenzene	ND	ug/l	0.50			
1,4-Dichlorobenzene	ND	ug/l	0.50			
Dichlorodifluoromethane	ND	ug/l	5.0			
1,1-Dichloroethane	ND	ug/l	0.50			
1,2-Dichloroethane	ND	ug/l	0.50			
1,1-Dichloroethene	ND	ug/l	0.50			
cis-1,2-Dichloroethene	ND	ug/l	0.50			
trans-1,2-Dichloroethene	ND	ug/l	0.50			
1,2-Dichloropropane	ND	ug/l	0.50			
cis-1,3-Dichloropropene	ND	ug/l	0.50			
trans-1,3-Dichloropropene	ND	ug/l	0.50			
Methylene chloride	ND	ug/l	5.0			
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50			
Tetrachloroethene	0.65	ug/l	0.50			
1,1,1-Trichloroethane	ND	ug/l	0.50			
1,1,2-Trichloroethane	ND	ug/l	0.50			
Trichloroethene	5.9	ug/l	0.50			
Trichlorofluoromethane	ND	ug/l	0.50			
2-Chloroethyl vinyl ether	ND	ug/l	5.0			

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0107953-01
MW-103

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Volatile Organics by GC 8021 continued				1	8021B	0831	13:21 RY
Surrogate Recovery							
4-Bromochlorobenzene	86.0	%					

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107953-02 Date Collected: 27-AUG-2001 18:30
 Sample Matrix: MW-102 Date Received: 28-AUG-2001
 WATER Date Reported: 05-SEP-2001
 Condition of Sample: Satisfactory Field Prep: None
 Number & Type of Containers: 2-Plastic, 2-Vial

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Fluoride	ND	mg/l	0.20	30 4500F-BC	0904 10:50	0904 16:00	MA
Dissolved Metals							
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0828 15:15	0830 11:35	RW
Manganese, Dissolved	0.69	mg/l	0.01	1 6010B	0828 15:15	0830 11:35	RW
Volatile Organics by GC 8021							
Bromodichloromethane	ND	ug/l	10.	1 8021B	0831 14:14		RY
Bromoform	ND	ug/l	10.				
Carbon tetrachloride	ND	ug/l	10.				
Chlorobenzene	ND	ug/l	10.				
Dibromochloromethane	ND	ug/l	100				
Bromomethane/Chloroethane	ND	ug/l	100				
Chloroform	ND	ug/l	10.				
Chloromethane/Vinyl chloride	ND	ug/l	100				
1,2-Dichlorobenzene	ND	ug/l	10.				
1,3-Dichlorobenzene	ND	ug/l	10.				
1,4-Dichlorobenzene	ND	ug/l	10.				
Dichlorodifluoromethane	ND	ug/l	100				
1,1-Dichloroethane	ND	ug/l	10.				
1,2-Dichloroethane	ND	ug/l	10.				
1,1-Dichloroethene	ND	ug/l	10.				
cis-1,2-Dichloroethene	ND	ug/l	10.				
trans-1,2-Dichloroethene	ND	ug/l	10.				
1,2-Dichloropropane	ND	ug/l	10.				
cis-1,3-Dichloropropene	ND	ug/l	10.				
trans-1,3-Dichloropropene	ND	ug/l	10.				
Methylene chloride	ND	ug/l	100				
1,1,2,2-Tetrachloroethane	ND	ug/l	10.				
Tetrachloroethene	ND	ug/l	10.				
1,1,1-Trichloroethane	ND	ug/l	10.				
1,1,2-Trichloroethane	ND	ug/l	10.				
Trichloroethene	500	ug/l	10.				
Trichlorofluoromethane	ND	ug/l	10.				
2-Chloroethyl vinyl ether	ND	ug/l	100				

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0107953-02
MW-102

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B	0831 14:14	RY
Surrogate Recovery							
4-Bromochlorobenzene	85.0	%					

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107953-03 Date Collected: 27-AUG-2001 17:30
 MW-40 Date Received: 28-AUG-2001
 Sample Matrix: WATER Date Reported: 05-SEP-2001
 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 GC 8021				1 8021B	0831 00:03 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	3.3	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	10.	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 88.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107953-04 Date Collected: 27-AUG-2001 18:00
 MW-40S Date Received: 28-AUG-2001
 Sample Matrix: WATER Date Reported: 05-SEP-2001
 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 GC 8021				1 8021B	0831 00:56 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	1.7	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	14.	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 89.0 %

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107953-05 Date Collected: 27-AUG-2001 16:30
 Sample Matrix: MW-37 Date Received: 28-AUG-2001
 WATER Date Reported: 05-SEP-2001
 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 GC 8021				1 8021B	0831 01:48 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	1.1	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	5.2	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 89.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0107953-06 Date Collected: 27-AUG-2001 17:00
 MW-38 Date Received: 28-AUG-2001
 Sample Matrix: WATER Date Reported: 05-SEP-2001
 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 GC 8021				1 8021B	0831 02:41 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	0.78	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	2.1	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 85.0 %

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

ALPHA ANALYTICAL LABORATORIES
 QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L0107953

Parameter	Value 1	Value 2	RPD	Units
Fluoride for sample(s) 01-02 (L0108030-03, WG91737)				
Fluoride	ND	ND	NC	mg/l
Dissolved Metals for sample(s) 01-02 (L0107953-01, WG91288)				
Chromium, Dissolved	ND	ND	NC	mg/l
Manganese, Dissolved	0.60	0.59	2	mg/l

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0107953

Parameter	% Recovery
Fluoride LCS for sample(s) 01-02 (WG91737)	
Fluoride	94
Volatile Organics by GC 8021 LCS for sample(s) 03-06 (WG91653)	
Chlorobenzene	112
1,1-Dichloroethene	106
Trichloroethene	104
Surrogate Recovery	
4-Bromochlorobenzene	99
Volatile Organics by GC 8021 LCS for sample(s) 01-02 (WG91653)	
Chlorobenzene	108
1,1-Dichloroethene	107
Trichloroethene	102
Surrogate Recovery	
4-Bromochlorobenzene	107
Fluoride SPIKE for sample(s) 01-02 (L0108030-02, WG91737)	
Fluoride	81
Dissolved Metals SPIKE for sample(s) 01-02 (L0107953-02, WG91288)	
Chromium, Dissolved	100
Manganese, Dissolved	102

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

Laboratory Job Number: L0107953

Parameter	MS %	MSD %	RPD
Volatile Organics by GC 8021 for sample(s) 01-06 (L0107953-01, WG91653)			
Chlorobenzene	111	117	5
1,1-Dichloroethene	104	99	5
Trichloroethene	92	89	3

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0107953

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
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Blank Analysis for sample(s) 01-02

Fluoride	ND	mg/l	0.20	30 4500F-BC	0904 10:50 0904 16:00	MA
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Blank Analysis for sample(s) 01-02

Dissolved Metals

Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0828 15:15 0830 11:20	RW
Manganese, Dissolved	ND	mg/l	0.01	1 6010B	0828 15:15 0830 11:20	RW

Blank Analysis for sample(s) 03-06

Volatile Organics by GC 8021				1 8021B	0830 17:02	RY
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Bromodichloromethane	ND	ug/l	0.50			
Bromoform	ND	ug/l	0.50			
Carbon tetrachloride	ND	ug/l	0.50			
Chlorobenzene	ND	ug/l	0.50			
Dibromochloromethane	ND	ug/l	5.0			
Bromomethane/Chloroethane	ND	ug/l	5.0			
Chloroform	ND	ug/l	0.50			
Chloromethane/Vinyl chloride	ND	ug/l	5.0			
1,2-Dichlorobenzene	ND	ug/l	0.50			
1,3-Dichlorobenzene	ND	ug/l	0.50			
1,4-Dichlorobenzene	ND	ug/l	0.50			
Dichlorodifluoromethane	ND	ug/l	5.0			
1,1-Dichloroethane	ND	ug/l	0.50			
1,2-Dichloroethane	ND	ug/l	0.50			
1,1-Dichloroethene	ND	ug/l	0.50			
cis-1,2-Dichloroethene	ND	ug/l	0.50			
trans-1,2-Dichloroethene	ND	ug/l	0.50			
1,2-Dichloropropane	ND	ug/l	0.50			
cis-1,3-Dichloropropene	ND	ug/l	0.50			
trans-1,3-Dichloropropene	ND	ug/l	0.50			
Methylene chloride	ND	ug/l	5.0			
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50			
Tetrachloroethene	ND	ug/l	0.50			
1,1,1-Trichloroethane	ND	ug/l	0.50			
1,1,2-Trichloroethane	ND	ug/l	0.50			
Trichloroethene	ND	ug/l	0.50			
Trichlorofluoromethane	ND	ug/l	0.50			
2-Chloroethyl vinyl ether	ND	ug/l	5.0			

Surrogate Recovery

4-Bromochlorobenzene	87.0	%				
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Blank Analysis for sample(s) 01-02

Volatile Organics by GC 8021				1 8021B	0831 09:32	RY
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Bromodichloromethane	ND	ug/l	0.50			
Bromoform	ND	ug/l	0.50			

ALPHA ANALYTICAL LABORATORIES
 QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0107953

Continued

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Blank Analysis for sample(s) 01-02							
Volatile Organics by GC 8021 continued				1	8021B	0831 09:32 RY	
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				
Surrogate Recovery							
4-Bromochlorobenzene	81.0	%					

ALPHA ANALYTICAL LABORATORIES
ADDENDUM I

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.
30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

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.

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 its 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.

Quality Control Acceptance Criteria

Volatile Organics by Method 8260B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
1,2-Dichloroethane-d ₄	75%	125%	75%	125%		
4-Bromofluorobenzene	75%	125%	75%	125%		
Toluene-d ₈	75%	125%	75%	125%		
Dibromofluoromethane	75%	125%	75%	125%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	61%	145%	59%	172%	all target compounds	
Trichloroethene	71%	120%	62%	137%	20%	30%
Chlorobenzene	75%	130%	60%	133%		
Benzene	76%	127%	66%	142%		
Toluene	76%	125%	59%	139%		

Volatile Organics by Method 8021B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
4-Bromochlorobenzene	70%	110%	70%	120%		
4-Bromofluorobenzene	70%	110%	70%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	70%	130%	70%	130%	all target compounds	
Trichloroethene	70%	130%	70%	130%	20%	30%
Chlorobenzene	70%	130%	70%	130%		
Benzene	70%	130%	70%	130%		
Toluene	70%	130%	70%	130%		
Ethylbenzene	70%	130%	70%	130%		

Semi-Volatile Organics by Method 8270C (includes PAHs)

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Nitrobenzene-d ₅	23%	120%	23%	120%		
Phenol-d ₆	10%	120%	10%	120%		
2-Fluorophenol	21%	120%	25%	120%		
2-Fluorobiphenyl	43%	120%	30%	120%		
p-Terphenyl-d ₁₄	33%	120%	18%	120%		
2,4,6-Tribromophenol	10%	120%	19%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,2,4-Trichlorobenzene	39%	98%	38%	107%	all target compounds	
Acenaphthene	46%	118%	31%	137%	40%	50%
2,4-Dinitrotoluene	24%	96%	28%	89%		
Pyrene	26%	127%	35%	142%		
N-Nitroso-di-n-propylamine	41%	116%	41%	126%		
1,4-Dichlorobenzene	36%	97%	28%	104%		
Pentachlorophenol	9%	103%	17%	109%		
Phenol	12%	110%	26%	90%		
2-Chlorophenol	27%	123%	25%	102%		
4-Chloro-3-methylphenol	23%	97%	26%	103%		
4-Nitrophenol	10%	80%	11%	114%		

Quality Control Acceptance Criteria

PCB/Pesticides by Method 8082/8081

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,4,5,6-Tetrachloro-m-xylene	40%	120%	40%	120%		
Decachlorobiphenyl	40%	120%	40%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
Lindane	56%	123%	46%	127%	all target compounds	
Heptachlor	40%	131%	35%	130%	30%	50%
Aldrin	40%	120%	34%	132%		
Dieldrin	52%	126%	31%	134%		
Endrin	56%	121%	42%	139%		
4,4'-DDT	38%	127%	23%	134%		
Aroclor 1242/1016	40%	140%	40%	140%		
Aroclor 1260	40%	140%	40%	140%		

Volatile Petroleum Hydrocarbons (VPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,5-Dibromotoluene	70%	130%	70%	130%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	70%	130%	70%	130%	50%	50%

Extractable Petroleum Hydrocarbons (EPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Chloro-octadecane	40%	140%	40%	140%		
ortho-Terphenyl	40%	140%	40%	140%		
2-Fluorobiphenyl (fractionation)	40%	140%	40%	140%		
2-Bromonaphthalene (fractionation)	40%	140%	40%	140%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	40%	140%	40%	140%	50%	50%

TPH (GC-FID) by Method 8100M

surrogate spike % recovery	AQ Limits		Soil Limits		duplicate	
	LCL	UCL	LCL	UCL	AQ Limits	Soil Limits
					RPD	RPD
ortho-Terphenyl	40%	140%	40%	140%	40%	40%

TPH by Method 418.1

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
TPH	60%	140%	60%	140%	40%	40%

Quality Control Acceptance Criteria

Trace Metals by Method 6010B/7000 series

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
target analyte	75%	125%	70%	140%	20%	35%

Mercury by Method 7470A/7471A

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
mercury	70%	130%	60%	140%	35%	45%

Total Cyanide by Method 9010B

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
cyanide	80%	120%	65%	135%	30%	40%

Total Phenol by Method 9065

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
phenol	70%	130%	65%	135%	20%	30%

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive Westborough, MA 01581
 PH: 508.898.9220 FAX: 508.898.9193 www.alphalab.com

CHAIN OF CUSTODY

No 3124

Sheet _____ of _____

ALPHA Job # L0107953
 Date Rec'd in Lab: 8/28/01

Client Name: ERM
 Client Address: 295 Bay Street
BOSTON MA 02116
 Phone # (617) 267-8322 FAX #: (617) 267-6447

Project Name: Raytheon Wayland
 Project Location: Wayland, MA
 Project #: 143.56
 Project Manager: Joe Fiocco

Report To: J. Fiocco
 Bill To: _____
 PO#: 143.56

- Standard TAT
 RUSH TAT _____ (# DAYS)
 FAX Results
 State Forms
 Smart Report

Comments (Please note specific method, detection limit or reporting requirements.)

ANALYSIS REQUEST

Sample ID	Matrix/Source *	Sampling Date	Sampling Time	Sampler's Initials	Solubles: Field Filtered? (Y/N)	ANALYSIS REQUEST									
						VOC by 802113 chlorinated cataly									
						AWs range work, chromium									
						Fluoride									
MW-103	MG	8.27.01	16.30	CA	N		2	1	1						
MW-102			18.30	CA	N		2	1	1						
MW-40			17.30	RB			2								
MW-40S			18.00	RB			2								
MW-37			16.30	RB			2								
MW-38			17.00	RB			2								

Transfers Relinquished By:	Date	Time
<u>[Signature]</u>	<u>8/28/01</u>	<u>1400</u>
<u>[Signature]</u>		
<u>[Signature]</u>		

All samples submitted are subject to Alpha's standard Terms and Conditions.
 * See Reverse side for Matrix, Container, and Preservative Codes.
 Form No.: 01-01

# of Containers:	<u>12</u>	<u>2</u>	<u>2</u>						
Container Type: *	<u>V</u>	<u>P</u>	<u>P</u>						
Preservative: *	<u>B</u>	<u>A</u>	<u>A</u>						

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65 NY: 11148

CERTIFICATE OF ANALYSIS

Client: ERM-New England Laboratory Job Number: L0108134
Address: 399 Boylston Street Invoice Number: 54229
6th Floor
Boston, MA 02116 Date Received: 31-AUG-01
Attn: Mr. Joe Fiacco Date Reported: 07-SEP-01
Project Number: 143.56 Delivery Method: Alpha
Site: RAYTHEON

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0108134-01	MW-47M	WAYLAND, MA
L0108134-02	MW-TP3	WAYLAND, MA
L0108134-03	TRIP BLANK	WAYLAND, MA

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately 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: James R. Roth, PhD

James R. Roth, PhD - Laboratory Manager
This document electronically signed

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0108134-01 Date Collected: 29-AUG-2001 15:50
 MW-47M Date Received: 31-AUG-2001
 Sample Matrix: WATER Date Reported: 07-SEP-2001
 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 GC 8021				1 8021B	0906 15:12 RY		
Bromodichloromethane	ND	ug/l	1.0				
Bromoform	ND	ug/l	1.0				
Carbon tetrachloride	ND	ug/l	1.0				
Chlorobenzene	ND	ug/l	1.0				
Dibromochloromethane	ND	ug/l	10.				
Bromomethane/Chloroethane	ND	ug/l	10.				
Chloroform	ND	ug/l	1.0				
Chloromethane/Vinyl chloride	ND	ug/l	10.				
1,2-Dichlorobenzene	ND	ug/l	1.0				
1,3-Dichlorobenzene	ND	ug/l	1.0				
1,4-Dichlorobenzene	ND	ug/l	1.0				
Dichlorodifluoromethane	ND	ug/l	10.				
1,1-Dichloroethane	ND	ug/l	1.0				
1,2-Dichloroethane	ND	ug/l	1.0				
1,1-Dichloroethene	ND	ug/l	1.0				
cis-1,2-Dichloroethene	4.3	ug/l	1.0				
trans-1,2-Dichloroethene	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	1.0				
cis-1,3-Dichloropropene	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.0				
Methylene chloride	ND	ug/l	10.				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Tetrachloroethene	2.7	ug/l	1.0				
1,1,1-Trichloroethane	ND	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.0				
Trichloroethene	67.	ug/l	1.0				
Trichlorofluoromethane	ND	ug/l	1.0				
2-Chloroethyl vinyl ether	ND	ug/l	10.				

Surrogate Recovery

4-Bromochlorobenzene 109. %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0108134-02 Date Collected: 29-AUG-2001 16:30
 MW-TP3 Date Received: 31-AUG-2001
 Sample Matrix: WATER Date Reported: 07-SEP-2001
 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 GC 8021				1 8021B	0906 16:05 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	16.	ug/l	0.50				
trans-1,2-Dichloroethene	0.75	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	1.3	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	12.	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 98.0 %

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0108134-03 Date Collected: 13-AUG-2001 17:40
 Sample Matrix: TRIP BLANK Date Received: 31-AUG-2001
 WATER Date Reported: 07-SEP-2001
 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 GC 8021				1 8021B	0906 16:57 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 89.0 %

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

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0108134

Parameter	% Recovery
Volatile Organics by GC 8021 LCS for sample(s) 01-03 (WG91741)	
Chlorobenzene	110
1,1-Dichloroethene	112
Trichloroethene	107
Surrogate Recovery	
4-Bromochlorobenzene	109

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

Laboratory Job Number: L0108134

Parameter	MS %	MSD %	RPD
Volatile Organics by GC 8021 for sample(s) 01-03 (L0107974-01, WG91741)			
Chlorobenzene	120	125	4
1,1-Dichloroethene	106	103	3
Trichloroethene	99	101	2

ALPHA ANALYTICAL LABORATORIES
 QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0108134

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Blank Analysis for sample(s) 01-03							
Volatile Organics by GC 8021				1	8021B	0906 09:29 RY	
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				
Surrogate Recovery							
4-Bromochlorobenzene	105.	%					

ALPHA ANALYTICAL LABORATORIES
ADDENDUM I

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.

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.

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 its 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.

Quality Control Acceptance Criteria

Volatile Organics by Method 8260B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
1,2-Dichloroethane-d ₄	75%	125%	75%	125%		
4-Bromofluorobenzene	75%	125%	75%	125%		
Toluene-d ₈	75%	125%	75%	125%		
Dibromofluoromethane	75%	125%	75%	125%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	61%	145%	59%	172%	all target compounds	
Trichloroethene	71%	120%	62%	137%	20%	30%
Chlorobenzene	75%	130%	60%	133%		
Benzene	76%	127%	66%	142%		
Toluene	76%	125%	59%	139%		

Volatile Organics by Method 8021B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
4-Bromochlorobenzene	70%	110%	70%	120%		
4-Bromofluorobenzene	70%	110%	70%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	70%	130%	70%	130%	all target compounds	
Trichloroethene	70%	130%	70%	130%	20%	30%
Chlorobenzene	70%	130%	70%	130%		
Benzene	70%	130%	70%	130%		
Toluene	70%	130%	70%	130%		
Ethylbenzene	70%	130%	70%	130%		

Semi-Volatile Organics by Method 8270C (includes PAHs)

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Nitrobenzene-d ₅	23%	120%	23%	120%		
Phenol-d ₆	10%	120%	10%	120%		
2-Fluorophenol	21%	120%	25%	120%		
2-Fluorobiphenyl	43%	120%	30%	120%		
p-Terphenyl-d ₁₄	33%	120%	18%	120%		
2,4,6-Tribromophenol	10%	120%	19%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,2,4-Trichlorobenzene	39%	98%	38%	107%	all target compounds	
Acenaphthene	46%	118%	31%	137%	40%	50%
2,4-Dinitrotoluene	24%	96%	28%	89%		
Pyrene	26%	127%	35%	142%		
N-Nitroso-di-n-propylamine	41%	116%	41%	126%		
1,4-Dichlorobenzene	36%	97%	28%	104%		
Pentachlorophenol	9%	103%	17%	109%		
Phenol	12%	110%	26%	90%		
2-Chlorophenol	27%	123%	25%	102%		
4-Chloro-3-methylphenol	23%	97%	26%	103%		
4-Nitrophenol	10%	80%	11%	114%		

Quality Control Acceptance Criteria

PCB/Pesticides by Method 8082/8081

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,4,5,6-Tetrachloro-m-xylene	40%	120%	40%	120%		
Decachlorobiphenyl	40%	120%	40%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
Lindane	56%	123%	46%	127%	all target compounds 30% 50%	
Heptachlor	40%	131%	35%	130%		
Aldrin	40%	120%	34%	132%		
Dieldrin	52%	126%	31%	134%		
Endrin	56%	121%	42%	139%		
4,4'-DDT	38%	127%	23%	134%		
Aroclor 1242/1016	40%	140%	40%	140%		
Aroclor 1260	40%	140%	40%	140%		

Volatile Petroleum Hydrocarbons (VPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,5-Dibromotoluene	70%	130%	70%	130%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	70%	130%	70%	130%	50%	50%

Extractable Petroleum Hydrocarbons (EPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Chloro-octadecane	40%	140%	40%	140%		
ortho-Terphenyl	40%	140%	40%	140%		
2-Fluorobiphenyl (fractionation)	40%	140%	40%	140%		
2-Bromonaphthalene (fractionation)	40%	140%	40%	140%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	40%	140%	40%	140%	50%	50%

TPH (GC-FID) by Method 8100M

surrogate spike % recovery	AQ Limits		Soil Limits		duplicate	
	LCL	UCL	LCL	UCL	AQ Limits	Soil Limits
					RPD	RPD
ortho-Terphenyl	40%	140%	40%	140%	40%	40%

TPH by Method 418.1

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
TPH	60%	140%	60%	140%	40%	40%

Quality Control Acceptance Criteria

Trace Metals by Method 6010B/7000 series

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
target analyte	75%	125%	70%	140%	20%	35%

Mercury by Method 7470A/7471A

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
mercury	70%	130%	60%	140%	35%	45%

Total Cyanide by Method 9010B

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
cyanide	80%	120%	65%	135%	30%	40%

Total Phenol by Method 9065

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
phenol	70%	130%	65%	135%	20%	30%

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive Westborough, MA 01581
 PH: 508.898.9220 FAX: 508.898.9193 www.alphalab.com

CHAIN OF CUSTODY

No 14501

Sheet 1 of 1

Date Due: 9/10/01

Client Name: ERM
 Client Address: 399 Boylston Fl. 6
Boston, MA 02116
 Phone #: 617-267-8377 FAX #: 617-267-6447

Project Name: Raytheon
 Project Location: Wayland, MA
 Project #: 143.56
 Project Manager: J. Fiacco

Report To: Joe Fiacco
 Bill To: _____
 PO#: _____

Standard TAT
 RUSH TAT _____ (# days)
 FAX Results
 State Forms
 SMART Report

Comments: (Please note specific method, detection limit or reporting requirements.)

ANALYSIS REQUEST

Sample ID	Matrix/Source *	Sampling Date	Sampling Time	Sampler's Initials	Solubles: Field Filtered? (Y/N)	8021B													
MW-47M	MW	8-27-01	1550	VZ	N	2													
MW-TP3	MW	8-29-01	1630	VZ	N	2													
TRIP BLANK		8/13	1740			1													

Transfers Relinquished By:	Transfers Accepted By:	Date	Time
<i>Victoria Zolner</i>	<i>Joe Fiacco</i>	8/27/01	15:50
<i>Joe Fiacco</i>	<i>Joe Fiacco</i>	8/29/01	16:30
		8/13	17:40

All samples submitted are subject to Alpha's standard Terms and Conditions.
 * See Reverse side for Matrix, Container, and Preservative Codes.

of Containers: 5
 Container Type: * V
 Preservative: * B

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65 NY: 11148

CERTIFICATE OF ANALYSIS

Client: ERM-New England Laboratory Job Number: L0108030
Address: 399 Boylston Street Invoice Number: 54160
6th Floor
Boston, MA 02116 Date Received: 29-AUG-01
Attn: Mr. Joe Fiacco Date Reported: 06-SEP-01
Project Number: 143.60 Delivery Method: Alpha
Site: RAYTHEON-WAYLAND

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0108030-01	MW-107	WAYLAND, MA
L0108030-02	MW-115	WAYLAND, MA
L0108030-03	MW-113	WAYLAND, MA
L0108030-04	TRIP BLANK	WAYLAND, MA
L0108030-05	MW-32	WAYLAND, MA
L0108030-06	HA-102	WAYLAND, MA

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately 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: James R. Roth, PhD

James R. Roth, PhD - Laboratory Manager
This document electronically signed

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0108030-01 Date Collected: 28-AUG-2001 17:30
 MW-107 Date Received: 29-AUG-2001
 Sample Matrix: WATER Date Reported: 06-SEP-2001
 Condition of Sample: Satisfactory Field Prep: None
 Number & Type of Containers: 2-Plastic, 2-Vial

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Fluoride	1.6	mg/l	0.20	30 4500F-BC	0904 10:50	0904 16:00	MA
Dissolved Metals							
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0829 19:00	0904 15:39	RW
Manganese, Dissolved	3.3	mg/l	0.01	1 6010B	0829 19:00	0904 15:39	RW
Volatile Organics by GC 8021							
Bromodichloromethane	ND	ug/l	0.50	1 8021B	0904 11:28		RY
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	2.0	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	34.	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0108030-01
MW-107

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B	0904	11:28 RY
Surrogate Recovery							
4-Bromochlorobenzene	94.0	%					

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0108030-02 Date Collected: 29-AUG-2001 12:30
 Sample Matrix: MW-115 Date Received: 29-AUG-2001
 WATER Date Reported: 06-SEP-2001
 Condition of Sample: Satisfactory Field Prep: None
 Number & Type of Containers: 2-Plastic, 2-Vial

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Fluoride	ND	mg/l	0.20	30 4500F-BC	0904 10:50	0904 16:00	MA
Dissolved Metals							
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0829 19:00	0904 15:49	RW
Manganese, Dissolved	1.7	mg/l	0.01	1 6010B	0829 19:00	0904 15:49	RW
Volatile Organics by GC 8021							
Bromodichloromethane	ND	ug/l	1.0	1 8021B	0904 12:21		RY
Bromoform	ND	ug/l	1.0				
Carbon tetrachloride	ND	ug/l	1.0				
Chlorobenzene	ND	ug/l	1.0				
Dibromochloromethane	ND	ug/l	10.				
Bromomethane/Chloroethane	ND	ug/l	10.				
Chloroform	ND	ug/l	1.0				
Chloromethane/Vinyl chloride	ND	ug/l	10.				
1,2-Dichlorobenzene	ND	ug/l	1.0				
1,3-Dichlorobenzene	ND	ug/l	1.0				
1,4-Dichlorobenzene	ND	ug/l	1.0				
Dichlorodifluoromethane	ND	ug/l	10.				
1,1-Dichloroethane	ND	ug/l	1.0				
1,2-Dichloroethane	ND	ug/l	1.0				
1,1-Dichloroethene	ND	ug/l	1.0				
cis-1,2-Dichloroethene	ND	ug/l	1.0				
trans-1,2-Dichloroethene	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	1.0				
cis-1,3-Dichloropropene	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.0				
Methylene chloride	ND	ug/l	10.				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Tetrachloroethene	ND	ug/l	1.0				
1,1,1-Trichloroethane	24.	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.0				
Trichloroethene	81.	ug/l	1.0				
Trichlorofluoromethane	ND	ug/l	1.0				
2-Chloroethyl vinyl ether	ND	ug/l	10.				

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0108030-02
MW-115

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B	0904 12:21	RY
Surrogate Recovery							
4-Bromochlorobenzene	90.0	%					

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0108030-03	Date Collected: 29-AUG-2001 13:30
	Date Received : 29-AUG-2001
Sample Matrix: MW-113 WATER	Date Reported : 06-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Plastic, 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Fluoride	ND	mg/l	0.20	30 4500F-BC	0904 10:50	0904 16:00	MA
Dissolved Metals							
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0829 19:00	0904 15:59	RW
Manganese, Dissolved	1.5	mg/l	0.01	1 6010B	0829 19:00	0904 15:59	RW
Volatile Organics by GC 8021							
Bromodichloromethane	ND	ug/l	0.50	1 8021B	0904 13:14		RY
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	6.5	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	24.	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0108030-03
MW-113

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B	0904 13:14	RY
Surrogate Recovery							
4-Bromochlorobenzene	98.0	%					

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0108030-04	Date Collected: 23-AUG-2001 17:40
Sample Matrix: TRIP BLANK	Date Received: 29-AUG-2001
Sample Matrix: WATER	Date Reported: 06-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 1-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
Volatile Organics by GC 8021				1 8021B	0904 14:06 RY	
Bromodichloromethane	ND	ug/l	0.50			
Bromoform	ND	ug/l	0.50			
Carbon tetrachloride	ND	ug/l	0.50			
Chlorobenzene	ND	ug/l	0.50			
Dibromodichloromethane	ND	ug/l	5.0			
Bromomethane/Chloroethane	ND	ug/l	5.0			
Chloroform	ND	ug/l	0.50			
Chloromethane/Vinyl chloride	ND	ug/l	5.0			
1,2-Dichlorobenzene	ND	ug/l	0.50			
1,3-Dichlorobenzene	ND	ug/l	0.50			
1,4-Dichlorobenzene	ND	ug/l	0.50			
Dichlorodifluoromethane	ND	ug/l	5.0			
1,1-Dichloroethane	ND	ug/l	0.50			
1,2-Dichloroethane	ND	ug/l	0.50			
1,1-Dichloroethene	ND	ug/l	0.50			
cis-1,2-Dichloroethene	ND	ug/l	0.50			
trans-1,2-Dichloroethene	ND	ug/l	0.50			
1,2-Dichloropropane	ND	ug/l	0.50			
cis-1,3-Dichloropropene	ND	ug/l	0.50			
trans-1,3-Dichloropropene	ND	ug/l	0.50			
Methylene chloride	ND	ug/l	5.0			
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50			
Tetrachloroethene	ND	ug/l	0.50			
1,1,1-Trichloroethane	ND	ug/l	0.50			
1,1,2-Trichloroethane	ND	ug/l	0.50			
Trichloroethene	ND	ug/l	0.50			
Trichlorofluoromethane	ND	ug/l	0.50			
2-Chloroethyl vinyl ether	ND	ug/l	5.0			

Surrogate Recovery

4-Bromodichlorobenzene	85.0	%
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Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0108030-05 Date Collected: 29-AUG-2001 10:35
 Sample Matrix: MW-32 Date Received: 29-AUG-2001
 WATER Date Reported: 06-SEP-2001
 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 GC 8021				1 8021B	0904 14:59 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromodichloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromochlorobenzene 88.0 %

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0108030-06	Date Collected: 28-AUG-2001 16:50
Sample Matrix: HA-102	Date Received: 29-AUG-2001
Sample Matrix: WATER	Date Reported: 06-SEP-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
Volatile Organics by GC 8021				1 8021B	0904 15:52	RY
Bromodichloromethane	ND	ug/l	0.50			
Bromoform	ND	ug/l	0.50			
Carbon tetrachloride	ND	ug/l	0.50			
Chlorobenzene	ND	ug/l	0.50			
Dibromodichloromethane	ND	ug/l	5.0			
Bromomethane/Chloroethane	ND	ug/l	5.0			
Chloroform	ND	ug/l	0.50			
Chloromethane/Vinyl chloride	ND	ug/l	5.0			
1,2-Dichlorobenzene	ND	ug/l	0.50			
1,3-Dichlorobenzene	ND	ug/l	0.50			
1,4-Dichlorobenzene	ND	ug/l	0.50			
Dichlorodifluoromethane	ND	ug/l	5.0			
1,1-Dichloroethane	ND	ug/l	0.50			
1,2-Dichloroethane	ND	ug/l	0.50			
1,1-Dichloroethene	ND	ug/l	0.50			
cis-1,2-Dichloroethene	ND	ug/l	0.50			
trans-1,2-Dichloroethene	ND	ug/l	0.50			
1,2-Dichloropropane	ND	ug/l	0.50			
cis-1,3-Dichloropropene	ND	ug/l	0.50			
trans-1,3-Dichloropropene	ND	ug/l	0.50			
Methylene chloride	ND	ug/l	5.0			
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50			
Tetrachloroethene	2.6	ug/l	0.50			
1,1,1-Trichloroethane	ND	ug/l	0.50			
1,1,2-Trichloroethane	ND	ug/l	0.50			
Trichloroethene	8.4	ug/l	0.50			
Trichlorofluoromethane	ND	ug/l	0.50			
2-Chloroethyl vinyl ether	ND	ug/l	5.0			

Surrogate Recovery

4-Bromodichlorobenzene	93.0	%
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Comments: Complete list of References and Glossary of Terms found in Addendum I

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L0108030

Parameter	Value 1	Value 2	RPD	Units
Fluoride for sample(s) 01-03 (L0108030-03, WG91737)				
Fluoride	ND	ND	NC	mg/l
Dissolved Metals for sample(s) 01-03 (L0108030-01, WG91634)				
Chromium, Dissolved	ND	ND	NC	mg/l
Manganese, Dissolved	3.3	3.3	0	mg/l

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0108030

Parameter	% Recovery
Fluoride LCS for sample(s) 01-03 (WG91737)	
Fluoride	94
Volatile Organics by GC 8021 LCS for sample(s) 01-06 (WG91741)	
Chlorobenzene	110
1,1-Dichloroethene	110
Trichloroethene	107
Surrogate Recovery	
4-Bromochlorobenzene	98
Fluoride SPIKE for sample(s) 01-03 (L0108030-02, WG91737)	
Fluoride	81
Dissolved Metals SPIKE for sample(s) 01-03 (L0108030-02, WG91634)	
Chromium, Dissolved	100
Manganese, Dissolved	80

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

Laboratory Job Number: L0108030

Parameter	MS %	MSD %	RPD
Volatile Organics by GC 8021 for sample(s) 01-06 (L0107974-01, WG91741)			
Chlorobenzene	120	125	4
1,1-Dichloroethene	106	103	3
Trichloroethene	99	101	2

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0108030

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Blank Analysis for sample(s) 01-03							
Fluoride	ND	mg/l	0.20	30 4500F-BC	0904 10:50	0904 16:00	MA
Blank Analysis for sample(s) 01-03							
Dissolved Metals							
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0829 19:00	0904 15:33	RW
Manganese, Dissolved	ND	mg/l	0.01	1 6010B	0829 19:00	0904 15:33	RW
Blank Analysis for sample(s) 01-06							
Volatile Organics by GC 8021				1 8021B	0904 10:00 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				
Surrogate Recovery							
4-Bromochlorobenzene	82.0	%					

ALPHA ANALYTICAL LABORATORIES
ADDENDUM I

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.
30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

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.

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 its 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.

Quality Control Acceptance Criteria

Volatile Organics by Method 8260B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
1,2-Dichloroethane-d ₄	75%	125%	75%	125%		
4-Bromofluorobenzene	75%	125%	75%	125%		
Toluene-d ₈	75%	125%	75%	125%		
Dibromofluoromethane	75%	125%	75%	125%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	61%	145%	59%	172%	all target compounds	
Trichloroethene	71%	120%	62%	137%	20%	30%
Chlorobenzene	75%	130%	60%	133%		
Benzene	76%	127%	66%	142%		
Toluene	76%	125%	59%	139%		

Volatile Organics by Method 8021B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
4-Bromochlorobenzene	70%	110%	70%	120%		
4-Bromofluorobenzene	70%	110%	70%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	70%	130%	70%	130%	all target compounds	
Trichloroethene	70%	130%	70%	130%	20%	30%
Chlorobenzene	70%	130%	70%	130%		
Benzene	70%	130%	70%	130%		
Toluene	70%	130%	70%	130%		
Ethylbenzene	70%	130%	70%	130%		

Semi-Volatile Organics by Method 8270C (includes PAHs)

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Nitrobenzene-d ₅	23%	120%	23%	120%		
Phenol-d ₆	10%	120%	10%	120%		
2-Fluorophenol	21%	120%	25%	120%		
2-Fluorobiphenyl	43%	120%	30%	120%		
p-Terphenyl-d ₁₄	33%	120%	18%	120%		
2,4,6-Tribromophenol	10%	120%	19%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,2,4-Trichlorobenzene	39%	98%	38%	107%	all target compounds	
Acenaphthene	46%	118%	31%	137%	40%	50%
2,4-Dinitrotoluene	24%	96%	28%	89%		
Pyrene	26%	127%	35%	142%		
N-Nitroso-di-n-propylamine	41%	116%	41%	126%		
1,4-Dichlorobenzene	36%	97%	28%	104%		
Pentachlorophenol	9%	103%	17%	109%		
Phenol	12%	110%	26%	90%		
2-Chlorophenol	27%	123%	25%	102%		
4-Chloro-3-methylphenol	23%	97%	26%	103%		
4-Nitrophenol	10%	80%	11%	114%		

Quality Control Acceptance Criteria

PCB/Pesticides by Method 8082/8081

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,4,5,6-Tetrachloro-m-xylene	40%	120%	40%	120%		
Decachlorobiphenyl	40%	120%	40%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
Lindane	56%	123%	46%	127%	all target compounds	
Heptachlor	40%	131%	35%	130%	30%	50%
Aldrin	40%	120%	34%	132%		
Dieldrin	52%	126%	31%	134%		
Endrin	56%	121%	42%	139%		
4,4'-DDT	38%	127%	23%	134%		
Aroclor 1242/1016	40%	140%	40%	140%		
Aroclor 1260	40%	140%	40%	140%		

Volatile Petroleum Hydrocarbons (VPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,5-Dibromotoluene	70%	130%	70%	130%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	70%	130%	70%	130%	50%	50%

Extractable Petroleum Hydrocarbons (EPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Chloro-octadecane	40%	140%	40%	140%		
ortho-Terphenyl	40%	140%	40%	140%		
2-Fluorobiphenyl (fractionation)	40%	140%	40%	140%		
2-Bromonaphthalene (fractionation)	40%	140%	40%	140%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	40%	140%	40%	140%	50%	50%

TPH (GC-FID) by Method 8100M

surrogate spike % recovery	AQ Limits		Soil Limits		duplicate	
	LCL	UCL	LCL	UCL	AQ Limits	Soil Limits
					RPD	RPD
ortho-Terphenyl	40%	140%	40%	140%	40%	40%

TPH by Method 418.1

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
TPH	60%	140%	60%	140%	40%	40%

Quality Control Acceptance Criteria

Trace Metals by Method 6010B/7000 series

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
target analyte	75%	125%	70%	140%	20%	35%

Mercury by Method 7470A/7471A

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
mercury	70%	130%	60%	140%	35%	45%

Total Cyanide by Method 9010B

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
cyanide	80%	120%	65%	135%	30%	40%

Total Phenol by Method 9065

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
phenol	70%	130%	65%	135%	20%	30%

ALPHA Analytical Laboratories, Inc.

Eight Walkup Drive Westborough, MA 01581
 PH: 508.898.9220 FAX: 508.898.9193 www.alphalab.com

CHAIN OF CUSTODY

No 1033

Sheet 1 of 1

Date Rec'd in Lab: 8/29/01

Client Name: ERM
 Client Address: 399 BOYLSTON ST.
BOSTON, MA. 02116
 Phone #: (617) 267 8377 FAX #: (617) 267 6447

Project Name: RAYTHEON-WAYLAND
 Project Location: WAYLAND, MA.
 Project #: 143.60
 Project Manager: JOE FIALO

Report To: JOE FIALO
 Bill To: _____
 PO#: 143.60

- Standard TAT
- RUSH TAT _____ (* DAYS)
- FAX Results
- State Forms
- Smart Report

Comments (Please note specific method, detection limit or reporting requirements.)
SAMPLE MW-107 (METALS) NEEDS TO BE FILTERED ASAP

ANALYSIS REQUEST

Sample ID	Matrix/Source *	Sampling Date	Sampling Time	Sampler's Initials	Solubles: Field Filtered? (Y/N)	VOL by 90213 chlorinated only	Days Manganese; chromium	Flare										
HW-107	MW	8/28/01	17:30	CA	N	2	1	1										
MW-115		8/29/01	1230	RCB	N	2	1	1										
MW-115			1330	RCB	N	2	1	1										
TRIPBLANK	LW	8/29/01	1710			1												
MW-32	MW	8/29/01	1035	VZ		2												
HA-102	MW	8/29/01	1650	VZ		2												

Transfers Relinquished By:	Date	Time
<i>[Signature]</i>	8/29/01	1:20
<i>[Signature]</i>	8/29/01	1:30

All samples submitted are subject to Alpha's standard Terms and Conditions.
 * See Reverse side for Matrix, Container, and Preservative Codes.
 Form No.: 01-01

# of Containers:	3	3	
Container Type: *	V	P	P
Preservative: *	B	A	A

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65 NY: 11148

CERTIFICATE OF ANALYSIS

Client: ERM-New England Laboratory Job Number: L0109065
Address: 399 Boylston Street Invoice Number: 55252
6th Floor
Boston, MA 02116 Date Received: 28-SEP-01
Attn: Mr. Joe Fiacco Date Reported: 05-OCT-01
Project Number: 143.60 Delivery Method: Alpha
Site: RAYTHEON

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0109065-01	MW-114	WAYLAND, MA
L0109065-02	TRIP BLANK	WAYLAND, MA

I attest under the pains and penalties of perjury that, based upon my inquiry of those individuals immediately 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: James R. Roth, PhD

James R. Roth, PhD - Laboratory Manager
This document electronically signed

ALPHA ANALYTICAL LABORATORIES
NARRATIVE REPORT

Laboratory Job Number: L0109065

Alpha Report L0109065:

Volatile Organics

It should be noted that one or more of the matrix spike/matrix spike duplicate percent recoveries as well as the relative percent difference on the matrix spike/matrix spike duplicate for the analysis of 8021 associated with Alpha Sample(s) L0109065-01 and -02 is invalid because the sample concentration is greater than four times the spike amount added.

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0109065-01	Date Collected: 28-SEP-2001 09:25
Sample Matrix: MW-114	Date Received: 28-SEP-2001
Sample Matrix: WATER	Date Reported: 05-OCT-2001
Condition of Sample: Satisfactory	Field Prep: None
Number & Type of Containers: 2-Plastic, 2-Vial	

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP ANAL	ID
Fluoride	ND	mg/l	0.20	30 4500F-BC	1003 13:40 1003 15:25	MA
Dissolved Metals						
Chromium, Dissolved	ND	mg/l	0.01	1 6010B	0928 18:30 1004 23:08	RW
Manganese, Dissolved	1.7	mg/l	0.01	1 6010B	0928 18:30 1004 23:08	RW
Volatile Organics by GC 8021						
Bromodichloromethane	ND	ug/l	0.50			
Bromoform	ND	ug/l	0.50			
Carbon tetrachloride	ND	ug/l	0.50			
Chlorobenzene	ND	ug/l	0.50			
Dibromochloromethane	ND	ug/l	5.0			
Bromomethane/Chloroethane	ND	ug/l	5.0			
Chloroform	ND	ug/l	0.50			
Chloromethane/Vinyl chloride	ND	ug/l	5.0			
1,2-Dichlorobenzene	ND	ug/l	0.50			
1,3-Dichlorobenzene	ND	ug/l	0.50			
1,4-Dichlorobenzene	ND	ug/l	0.50			
Dichlorodifluoromethane	ND	ug/l	5.0			
1,1-Dichloroethane	ND	ug/l	0.50			
1,2-Dichloroethane	ND	ug/l	0.50			
1,1-Dichloroethene	ND	ug/l	0.50			
cis-1,2-Dichloroethene	ND	ug/l	0.50			
trans-1,2-Dichloroethene	ND	ug/l	0.50			
1,2-Dichloropropane	ND	ug/l	0.50			
cis-1,3-Dichloropropene	ND	ug/l	0.50			
trans-1,3-Dichloropropene	ND	ug/l	0.50			
Methylene chloride	ND	ug/l	5.0			
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50			
Tetrachloroethene	ND	ug/l	0.50			
1,1,1-Trichloroethane	5.5	ug/l	0.50			
1,1,2-Trichloroethane	ND	ug/l	0.50			
Trichloroethene	23.	ug/l	0.50			
Trichlorofluoromethane	ND	ug/l	0.50			
2-Chloroethyl vinyl ether	ND	ug/l	5.0			

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0109065-01
MW-114

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	ANAL	ID
Volatile Organics by GC 8021 continued				1	8021B		
Surrogate Recovery							
4-Bromochlorobenzene	76.0	%					

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

ALPHA ANALYTICAL LABORATORIES
 CERTIFICATE OF ANALYSIS

MA: M-MA-086 NH: 200395-B/C CT: PH-0574 ME: MA086 RI: 65

Laboratory Sample Number: L0109065-02 Date Collected: 26-SEP-2001 08:25
 Sample Matrix: TRIP BLANK Date Received: 28-SEP-2001
 WATER Date Reported: 05-OCT-2001
 Condition of Sample: Satisfactory Field Prep: None
 Number & Type of Containers: 1-Vial

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Volatile Organics by GC 8021				1 8021B	1001 13:31 RY		
Bromodichloromethane	ND	ug/l	0.50				
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromodichloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				

Surrogate Recovery

4-Bromodichlorobenzene 74.0 %

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

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L0109065

Parameter	Value 1	Value 2	RPD	Units
Fluoride for sample(s) 01 (L0109169-02, WG94137)				
Fluoride	0.56	0.64	13	mg/l
Dissolved Metals for sample(s) 01 (L0109065-01, WG94112)				
Chromium, Dissolved	ND	ND	NC	mg/l
Manganese, Dissolved	1.7	1.7	0	mg/l

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0109065

Parameter	% Recovery
Fluoride LCS for sample(s) 01 (WG94137)	
Fluoride	91
Volatile Organics by GC 8021 LCS for sample(s) 01-02 (WG93779)	
Chlorobenzene	112
1,1-Dichloroethene	108
Trichloroethene	106
Surrogate Recovery	
4-Bromochlorobenzene	91
Fluoride SPIKE for sample(s) 01 (L0109169-02, WG94137)	
Fluoride	76
Dissolved Metals SPIKE for sample(s) 01 (L0109081-01, WG94112)	
Chromium, Dissolved	90
Manganese, Dissolved	80

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

Laboratory Job Number: L0109065

Parameter	MS %	MSD %	RPD
Volatile Organics by GC 8021 for sample(s) 01-02 (L0108850-06, WG93779)			
Chlorobenzene	106	111	5
1,1-Dichloroethene	93	99	6
Trichloroethene	45	70	43

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0109065

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE		ID
					PREP	ANAL	
Blank Analysis for sample(s) 01							
Fluoride	ND	mg/l	0.20	30 4500F-BC	1003 13:40	1003 15:25	MA
Blank Analysis for sample(s) 01							
Dissolved Metals							
Chromium, Dissolved	ND	mg/l	0.01	1 6010B		1004 22:50	RW
Manganese, Dissolved	ND	mg/l	0.01	1 6010B		1004 22:50	RW
Blank Analysis for sample(s) 01-02							
Volatile Organics by GC 8021							
Bromodichloromethane	ND	ug/l	0.50	1 8021B		1001 10:31	RY
Bromoform	ND	ug/l	0.50				
Carbon tetrachloride	ND	ug/l	0.50				
Chlorobenzene	ND	ug/l	0.50				
Dibromochloromethane	ND	ug/l	5.0				
Bromomethane/Chloroethane	ND	ug/l	5.0				
Chloroform	ND	ug/l	0.50				
Chloromethane/Vinyl chloride	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	0.50				
1,3-Dichlorobenzene	ND	ug/l	0.50				
1,4-Dichlorobenzene	ND	ug/l	0.50				
Dichlorodifluoromethane	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	0.50				
1,2-Dichloroethane	ND	ug/l	0.50				
1,1-Dichloroethene	ND	ug/l	0.50				
cis-1,2-Dichloroethene	ND	ug/l	0.50				
trans-1,2-Dichloroethene	ND	ug/l	0.50				
1,2-Dichloropropane	ND	ug/l	0.50				
cis-1,3-Dichloropropene	ND	ug/l	0.50				
trans-1,3-Dichloropropene	ND	ug/l	0.50				
Methylene chloride	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	0.50				
Tetrachloroethene	ND	ug/l	0.50				
1,1,1-Trichloroethane	ND	ug/l	0.50				
1,1,2-Trichloroethane	ND	ug/l	0.50				
Trichloroethene	ND	ug/l	0.50				
Trichlorofluoromethane	ND	ug/l	0.50				
2-Chloroethyl vinyl ether	ND	ug/l	5.0				
Surrogate Recovery							
4-Bromochlorobenzene	77.0	%					

ALPHA ANALYTICAL LABORATORIES
ADDENDUM I

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Update III, 1997.
30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

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.

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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.

Quality Control Acceptance Criteria

Volatile Organics by Method 8260B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
1,2-Dichloroethane-d ₄	75%	125%	75%	125%		
4-Bromofluorobenzene	75%	125%	75%	125%		
Toluene-d ₈	75%	125%	75%	125%		
Dibromofluoromethane	75%	125%	75%	125%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	61%	145%	59%	172%	all target compounds	
Trichloroethene	71%	120%	62%	137%	20%	30%
Chlorobenzene	75%	130%	60%	133%		
Benzene	76%	127%	66%	142%		
Toluene	76%	125%	59%	139%		

Volatile Organics by Method 8021B

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
4-Bromochlorobenzene	70%	110%	70%	120%		
4-Bromofluorobenzene	70%	110%	70%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,1-Dichloroethene	70%	130%	70%	130%	all target compounds	
Trichloroethene	70%	130%	70%	130%	20%	30%
Chlorobenzene	70%	130%	70%	130%		
Benzene	70%	130%	70%	130%		
Toluene	70%	130%	70%	130%		
Ethylbenzene	70%	130%	70%	130%		

Semi-Volatile Organics by Method 8270C (includes PAHs)

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Nitrobenzene-d ₅	23%	120%	23%	120%		
Phenol-d ₆	10%	120%	10%	120%		
2-Fluorophenol	21%	120%	25%	120%		
2-Fluorobiphenyl	43%	120%	30%	120%		
p-Terphenyl-d ₁₄	33%	120%	18%	120%		
2,4,6-Tribromophenol	10%	120%	19%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
1,2,4-Trichlorobenzene	39%	98%	38%	107%	all target compounds	
Acenaphthene	46%	118%	31%	137%	40%	50%
2,4-Dinitrotoluene	24%	96%	28%	89%		
Pyrene	26%	127%	35%	142%		
N-Nitroso-di-n-propylamine	41%	116%	41%	126%		
1,4-Dichlorobenzene	36%	97%	28%	104%		
Pentachlorophenol	9%	103%	17%	109%		
Phenol	12%	110%	26%	90%		
2-Chlorophenol	27%	123%	25%	102%		
4-Chloro-3-methylphenol	23%	97%	26%	103%		
4-Nitrophenol	10%	80%	11%	114%		

Quality Control Acceptance Criteria

PCB/Pesticides by Method 8082/8081

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,4,5,6-Tetrachloro-m-xylene	40%	120%	40%	120%		
Decachlorobiphenyl	40%	120%	40%	120%		
matrix spike / matrix spike duplicate (MS/MSD) & lab control sample (LCS)	percent recovery				duplicate and/or MSD	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
Lindane	56%	123%	46%	127%	all target compounds	
Heptachlor	40%	131%	35%	130%	30%	50%
Aldrin	40%	120%	34%	132%		
Dieldrin	52%	126%	31%	134%		
Endrin	56%	121%	42%	139%		
4,4'-DDT	38%	127%	23%	134%		
Aroclor 1242/1016	40%	140%	40%	140%		
Aroclor 1260	40%	140%	40%	140%		

Volatile Petroleum Hydrocarbons (VPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
2,5-Dibromotoluene	70%	130%	70%	130%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	70%	130%	70%	130%	50%	50%

Extractable Petroleum Hydrocarbons (EPH) by MA DEP 98-1

surrogate spike % recovery	AQ Limits		Soil Limits			
	LCL	UCL	LCL	UCL		
Chloro-octadecane	40%	140%	40%	140%		
ortho-Terphenyl	40%	140%	40%	140%		
2-Fluorobiphenyl (fractionation)	40%	140%	40%	140%		
2-Bromonaphthalene (fractionation)	40%	140%	40%	140%		
laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
all compounds	40%	140%	40%	140%	50%	50%

TPH (GC-FID) by Method 8100M

surrogate spike % recovery	AQ Limits		Soil Limits		duplicate	
	LCL	UCL	LCL	UCL	AQ Limits	Soil Limits
					RPD	RPD
ortho-Terphenyl	40%	140%	40%	140%	40%	40%

TPH by Method 418.1

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
TPH	60%	140%	60%	140%	40%	40%

Quality Control Acceptance Criteria

Trace Metals by Method 6010B/7000 series

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
target analyte	75%	125%	70%	140%	20%	35%

Mercury by Method 7470A/7471A

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
mercury	70%	130%	60%	140%	35%	45%

Total Cyanide by Method 9010B

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
cyanide	80%	120%	65%	135%	30%	40%

Total Phenol by Method 9065

matrix spike (MS) & laboratory control sample (LCS)	percent recovery				duplicate	
	AQ Limits		Soil Limits		AQ Limits	Soil Limits
	LCL	UCL	LCL	UCL	RPD	RPD
phenol	70%	130%	65%	135%	20%	30%

