MAG910057

B. Suggested Form for Notice of Intent (NOI) for the Remediation General Permit

1. General site information. Please provide the following information about the site:

a) Name of **facility/site**: Peabody Essex Museum		**Facility/site** address:		
Location of **facility/site**: longitude: 70.89 latitude: 42.52	Facility SIC code(s): 8142	Street: 161 Essex Street		
b) Name of **facility/site owner:** Robert Monk, Facilities Director		Town: Salem		
Email address of owner: rmonk@pem.org		State: MA	Zip: 01970	County: Essex
Telephone no.of facility/site **owner**: (978) 745-9500				
Fax no. of facility/site **owner**: (978) 744-0036		**Owner** is (check one): 1. Federal____ 2. State/Tribal____ 3. Private ✓ 4. other, if so, describe:		
Address of **owner** (if different from site):				
Street:				
Town:	State:	Zip:	County:	
c) Legal name of **operator**: ENSR Corporation	**Operator** telephone no: (978) 589-3054			
	Operator fax no.: (978) 589-3035	**Operator** email: dfolan@ensr.aecom.com		
Operator contact name and title: Daniel Folan, Sr. Project Manager				

Address of **operator** (if different from owner):	Street: (ENSR Corporation) 2 Technology Park Drive		
Town: Westford	State: MA	Zip: 01886	County: Middlesex

d) Check "yes" or "no" for the following:
1. Has a prior NPDES permit exclusion been granted for the discharge? Yes___ No✓, if "yes," number:
2. Has a prior NPDES application (Form 1 & 2C) ever been filed for the discharge? Yes___ No✓, if "yes," date and tracking #:
3. Is the discharge a "new discharge"as defined by 40 CFR 122.2? Yes ✓ No___
4. For sites in Massachusetts, is the discharge covered under the MA Contingency Plan (MCP) and exempt from state permitting? Yes✓No__

e) Is site/facility subject to any State permitting or other action which is causing the generation of discharge? Yes___ No✓
If "yes," please list:
1. site identification # assigned by the state of NH or MA:
2. permit or license # assigned:
3. state agency contact information: name, location, and telephone number:

f) Is the site/facility covered by any other EPA permit, including:
1. multi-sector storm water general permit? Y___ N✓, if Y, number:
2. phase I or II construction storm water general permit? Y___ N✓, if Y, number:
3. individual NPDES permit? Y___ N✓, if Y, number:
4. any other water quality related permit? Y___ N✓, if Y, number:

2. Discharge information. Please provide information about the discharge, (attaching additional sheets as needed) including:

a) Describe the discharge activities for which the owner/applicant is seeking coverage:

The discharge is related to a proposed 3-day groundwater aquifer pumping test from one (1) on-site pumping well. The groundwater is impacted with No. 4 fuel oil. The discharge will be treated on-site using granular activated carbon before it will be discharged to an on-site storm drain.

b) Provide the following information about each discharge:	1) Number of discharge points: 1	2) What is the **maximum** and **average flow rate** of discharge (in cubic feet per second, ft^3/s)? Max. flow .056 Average flow .056 Is maximum flow a **design value**? Y___ N✓ For average flow, include the units and appropriate notation if this value is a design value or estimate if not available. Average flow is in units of cubic feet per second and is an estimate.

3) Latitude and longitude of each discharge within 100 feet: pt.1:long. 70.89 lat. 42.51 ; pt.2: long._____ lat._____; pt.3: long._____ lat._____; pt.4:long._____ lat._____; pt.5: long._____ lat._____; pt.6:long._____ lat._____; pt.7: long._____ lat._____; pt.8:long._____ lat._____; etc.

4) If hydrostatic testing, total volume of the discharge (gals): n/a	5) Is the discharge intermittent ✓ or seasonal ____? Is discharge ongoing Yes ____ No ✓ ?
c) Expected dates of discharge (mm/dd/yy): start 09/19/06 end 09/21/06	
d) Please attach a line drawing or flow schematic showing water flow through the facility including: 1. sources of intake water, 2. contributing flow from the operation, 3. treatment units, and 4. discharge points and receiving waters(s).	

3. Contaminant information. In order to complete this section, the applicant will need to take a minimum of one sample of the untreated water and have it analyzed for **all** of the parameters listed in Appendix III. Historical data, (i.e., data taken no more than 2 years prior to the effective date of the permit) may be used if obtained pursuant to: i. Massachusetts' regulations 310 CMR 40.0000, the Massachusetts Contingency Plan ("Chapter 21E"); ii. New Hampshire's Title 50 RSA 485-A: Water Pollution and Waste Disposal or Title 50 RSA 485-C: Groundwater Protection Act; or iii. an EPA permit exclusion letter issued pursuant to 40 CFR 122.3, provided the data was analyzed with test methods that meet the requirements of this permit. Otherwise, a new sample shall be taken and analyzed.

a) Based on the analysis of the sample(s) of the untreated influent, the applicant must check the box of the sub-categories that the potential discharge falls within.

Gasoline Only	VOC Only	Primarily Metals	Urban Fill Sites	Contaminated Sumps	Mixed Contaminants	Aquifer Testing ✓
Fuel Oils (and ✓ Other Oils) only	VOC with Other Contaminants	Petroleum with Other Contaminants	Listed Contaminated Sites	Contaminated Dredge Condensates	Hydrostatic Testing of Pipelines/Tanks	Well Development or Rehabilitation

b) Based on the analysis of the untreated influent, the applicant must indicate whether each listed chemical is **believed present** or **believed absent** in the potential discharge. Attach additional sheets as needed.

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
1. Total Suspended Solids		✓	1	grab	160.2	5,000	30000	40.9	30000	40.9
2. Total Residual Chlorine	✓		1	grab	330.1	50	ND	0	ND	0
3. Total Petroleum Hydrocarbons		✓	1	grab	1664A	4,400	11800	1.6	11800	1.6
4. Cyanide	✓		1	grab	335.2	5	5	0.0007	5	0.0007
5. Benzene	✓		1	grab	624	5.0	ND	0	ND	0
6. Toluene	✓		1	grab	624	5.0	ND	0	ND	0
7. Ethylbenzene		✓	1	grab	624	5.0	35	0.005	35	0.005
8. (m,p,o) Xylenes		✓	1	grab	624	10.0	87	0.01	87	0.01
9. Total BTEX[4]		✓	1	grab	624	10.0	122	0.02	122	0.02

[4]BTEX = Sum of Benzene, Toluene, Ethylbenzene, total Xylenes.

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
10. Ethylene Dibromide (1,2- Dibromo-methane)	✓		1	grab	504.1	19	ND	0	ND	0
11. Methyl-tert-Butyl Ether (MtBE)	✓		1	grab	624	100	ND	0	ND	0
12. tert-Butyl Alcohol (TBA)	✓		1	grab	624	500	ND	0	ND	0
13. tert-Amyl Methyl Ether (TAME)	✓		1	grab	624	100	ND	0	ND	0
14. Naphthalene		✓	1	grab	8270	4.9	140	0.02	140	0.02
15. Carbon Tetra-chloride	✓		1	grab	624	5.0	ND	0	ND	0
16. 1,4 Dichlorobenzene	✓		1	grab	624	25	ND	0	ND	0
17. 1,2 Dichlorobenzene	✓		1	grab	624	25	ND	0	ND	0
18. 1,3 Dichlorobenzene	✓		1	grab	624	25	ND	0	ND	0
19. 1,1 Dichloroethane	✓		1	grab	624	7.5	ND	0	ND	0
20. 1,2 Dichloroethane	✓		1	grab	624	7.5	ND	0	ND	0
21. 1,1 Dichloroethylene	✓		1	grab	624	5.0	ND	0	ND	0
22. cis-1,2 Dichloro-ethylene	✓		1	grab	624	5.0	ND	0	ND	0
23. Dichloromethane (Methylene Chloride)	✓		1	grab	624	25	ND	0	ND	0
24. Tetrachloroethylene	✓		1	grab	624	7.5	ND	0	ND	0

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily Value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
25. 1,1,1 Trichloroethane	✓		1	grab	624	10	ND	0	ND	0
26. 1,1,2 Trichloroethane	✓		1	grab	624	7.5	ND	0	ND	0
27. Trichloroethylene	✓		1	grab	624	5.0	ND	0	ND	0
28. Vinyl Chloride	✓		1	grab	624	10	ND	0	ND	0
29. Acetone	✓		1	grab	624	50	ND	0	ND	0
30. 1,4 Dioxane	✓		1	grab	624	10000	ND	0	ND	0
31. Total Phenols	✓		1	grab	420.1	30	ND	0	ND	0
32. Pentachlorophenol	✓		1	grab	8270	20	ND	0	ND	0
33. Total Phthalates [5] (Phthalate esthers)	✓		1	grab	8270	4.9	ND	0	ND	0
34. Bis (2-Ethylhexyl) Phthalate [Di-(ethylhexyl) Phthalate]	✓		1	grab	8270	9.8	ND	0	ND	0
35. Total Group I Polycyclic Aromatic Hydrocarbons (PAH)	✓		1	grab	8270	2.0	ND	0	ND	0
a. Benzo(a) Anthracene	✓		1	grab	8270	2.0	ND	0	ND	0
b. Benzo(a) Pyrene	✓		1	grab	8270	2.0	ND	0	ND	0
c. Benzo(b)Fluoranthene	✓		1	grab	8270	2.0	ND	0	ND	0
d. Benzo(k) Fluoranthene	✓		1	grab	8270	2.0	ND	0	ND	0
e. Chrysene	✓		1	grab	8270	2.0	ND	0	ND	0

[5] The sum of individual phthalate compounds.

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Average daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
f. Dibenzo(a,h) anthracene	✓		1	grab	8270	2.0	ND	0	ND	0
g. Indeno(1,2,3-cd) Pyrene	✓		1	grab	8270	2.0	ND	0	ND	0
36. Total Group II Polycyclic Aromatic Hydrocarbons (PAH)		✓	1	grab	8270	2.0	109.8	0.01	109.8	0.01
h. Acenaphthene		✓	1	grab	8270	2.0	2.3	0.0003	2.3	0.0003
i. Acenaphthylene	✓		1	grab	8270	2.0	ND	0	ND	0
j. Anthracene	✓		1	grab	8270	2.0	ND	0	ND	0
k. Benzo(ghi) Perylene	✓		1	grab	8270	2.0	ND	0	ND	0
l. Fluoranthene	✓		1	grab	8270	2.0	ND	0	ND	0
m. Fluorene		✓	1	grab	8270	2.0	3.1	0.0004	3.1	0.0004
n. Naphthalene-		✓	1	grab	8270	2.0	100	0.01	100	0.01
o. Phenanthrene		✓	1	grab	8270	2.0	4.4	0.0006	4.4	0.0006
p. Pyrene	✓		1	grab	8270	2.0	ND	0	ND	0
37. Total Polychlorinated Biphenyls (PCBs)	✓		1	grab	608	0.260	ND	0	ND	0
38. Antimony	✓		1	grab	6020	0.5	ND	0	ND	0
39. Arsenic		✓	1	grab	6020	0.5	25.7	0.004	25.7	0.004
40. Cadmium	✓		1	grab	6020	0.5	ND	0	ND	0
41. Chromium III		✓	1	grab	6020	0.5	1.4	0.0002	1.4	0.0002
42. Chromium VI	✓		1	grab	3500	20	ND	0	ND	0

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
43. Copper		✓	1	grab	6020	0.5	1.4	0.0002	1.4	0.0002
44. Lead		✓	1	grab	6020	0.5	0.7	0.0001	0.7	0.0001
45. Mercury	✓		1	grab	245.2	0.2	ND	0	ND	0
46. Nickel		✓	1	grab	6020	0.5	4.8	0.0007	4.8	0.0007
47. Selenium		✓	1	grab	6020	1	1	0.001	1	0.001
48. Silver	✓		1	grab	6020	0.5	ND	0	ND	0
49. Zinc		✓	1	grab	6020	0.5	10.6	0.001	10.6	0.001
50. Iron		✓	1	grab	200.7	50	5,400	0.7	5,400	0.7
Other (describe):										

c) For discharges where **metals** are believed present, please fill out the following:

Step 1: Do any of the metals in the influent have a **reasonable potential** to exceed the effluent limits in Appendix III (i.e., the limits set at zero to five dilutions)? Y ✓ N ___	If yes, which metals? Iron
Step 2: For any metals which have **reasonable potential** to exceed the **Appendix III** limits, calculate the **dilution factor (DF)** using the formula in Part I.A.3.c) (step 2) of the NOI instructions or as determined by the State prior to the submission of this NOI. What is the dilution factor for applicable metals? Metals: Iron DF: n/a	Look up the limit calculated at the corresponding dilution factor in **Appendix IV.** Do any of the metals in the **influent** have the potential to exceed the corresponding **effluent** limits in Appendix IV (i.e., is the influent concentration above the limit set at the calculated dilution factor)? Y ✓ N ___ If "Yes," list which metals: Iron

4. Treatment system information. Please describe the treatment system using separate sheets as necessary, including:

a) A description of the treatment system, including a schematic of the proposed or existing treatment system:
See attached sheet and Figure 1.

b) Identify each applicable treatment unit (check all that apply):	Frac. tank ✓	Air stripper	Oil/water separator ✓	Equalization tanks	Bag filter ✓	GAC filter ✓
	Chlorination	Dechlorination	Other (please describe):			

c) Proposed **average** and **maximum flow rates** (gallons per minute) for the discharge and the **design flow rate**(s) (gallons per minute) of the treatment system:
Average flow rate of discharge 25 Maximum flow rate of treatment system 25 Design flow rate of treatment system 25

d) A description of chemical additives being used or planned to be used (attach MSDS sheets):
None

5. Receiving surface water(s). Please provide information about the receiving water(s), using separate sheets as necessary:

a) Identify the discharge pathway:	Direct____	Within facility__	Storm drain ✓	River/brook____	Wetlands____	Other (describe):

b) Provide a narrative description of the discharge pathway, including the name(s) of the receiving waters:
See attached sheet and Figures 2 and 3.

c) Attach a detailed map(s) indicating the site location and location of the outfall to the receiving water:
1. For multiple discharges, number the discharges sequentially.
2. For indirect dischargers, indicate the location of the discharge to the indirect conveyance and the discharge to surface water
The map should also include the location and distance to the nearest sanitary sewer as well as the locus of nearby sensitive receptors (based on USGS topographical mapping), such as surface waters, drinking water supplies, and wetland areas.

d) Provide the state water quality classification of the receiving water "SB"

e) Provide the reported or calculated seven day-ten year low flow (7Q10) of the receiving water n/a cfs
Please attach any calculation sheets used to support stream flow and dilution calculations.

f) Is the receiving water a listed 303(d) water quality impaired or limited water? Yes ✓ No___ If yes, for which pollutant(s)?
Salem Harbor is a listed 303(d) salt water body. The pollutant is pathogens.

Is there a TMDL? Yes___ No ✓ If yes, for which pollutant(s)?

6. Results of Consultation with Federal Services: Please provide the following information according to requirements of Part I.B.4 and Appendices II and VII.

a) Are any listed threatened or endangered species, or designated critical habitat, in proximity to the discharge? Yes___ No ✓
Has any consultation with the federal services been completed ? No ✓ or is consultation underway? Yes No ✓
What were the results of the consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service (~~check~~ one):
a "no jeopardy" opinion? ___or written concurrence___ on a finding that the discharges are not likely to adversely affect any endangered species or critical habitat?

b) Are any historic properties listed or eligible for listing on the National Register of Historic Places located on the facility or site or in proximity to the discharge?
Yes ✓ No___ Have any state or tribal historic preservation officer been consulted in this determination (Massachusetts only)? Yes___ No ✓

7. Supplemental information. :

Please provide any supplemental information. Attach any analytical data used to support the application. Attach any certification(s) required by the general permit.

See attached supplemental information.

SUPPLEMENTAL INFORMATION

1. General Site Info

a) Location of facility/site:
Longitude: 70.8933 degrees west Latitude: 42.5211 degrees north

d) 4. Site is a MA Contingency Plan Site (RTN3-23396)

2. Discharge Information

b) Info about discharge:
3) pt. 1: long. 70.8930 degrees west lat. 42.5192 degrees north

d) attach a line drawing or flow schematic showing water flow through the facility:

(See attached Figures 1, 2, and 3)

4a. Treatment System Information

A 3-day long aquifer pumping test is planned as part of ongoing site investigation activities under the Massachusetts Contingency Plan (MCP). Groundwater will be pumped from an on-site extraction well containing No. 4 fuel oil. To adequately protect the receiving surface water body (Salem Harbor), ENSR will properly treat the groundwater that is removed from the extraction well prior to discharge to an on-site storm drain. Pumped oil and groundwater will be temporarily stored in a 21,000 gallon mobile fractionation tank with an internal underflow/overflow weir settling system. Groundwater pumped from the extraction well will flow beneath the underflow weir and enter the section of the storage tank where particulate material present in the liquid stream is removed out behind an over flow weir. The groundwater will then flow over the overflow weir into a third section of the storage tank where it is pumped from the storage tank through a treatment system. The water level in the storage tank will be controlled by a bubbler controller in the first compartment and a float control in the second compartment. These measures will control oil collected in the first section of the tank from entering the second tank section and will activate the electric pump. The bubbler will also serve as an emergency backup to the float control system by turning off equipment. The water from the storage tank will ultimately be pumped through two in-line sediment bag filters and then through two 1,000 pound liquid phase granular activated carbon (GAC) filters prior to discharge to the on-site catch basin. The catch basin ultimately discharges to the South River channel, located approximately 600 feet south of the site. The South River channel is a salt-water extension of Salem Harbor that is tidally-influenced. Please refer to Figures 1, 2, and 3 for pertinent site features.

In addition, contaminants identified during the August 4, 2006 sampling event (see attached analytical results), will be removed by means of the two 1,000 pound carbon units. The elevated dissolved iron content within the influent water stream will be removed within the holding tank by means of oxidation/precipitation and filtration by the filter bags. The removal of the iron in the filter bags prior to the GAC units will enhance the adsorptive capacity of the carbon treatment units to remove the organic contaminants.

5. Receiving Surface Water

The proposed discharge would be treated on-site and released to an on-site storm water catch basin located in the Loading Dock area behind the Museum near Charter Street. Then, as shown in Figure 2, the discharge would flow in a westerly direction in the subsurface storm drain piping system towards Central Street. At that point, the storm drain piping system turns south and runs beneath Lafayette Street towards Derby Street. The subsurface piping system then crosses beneath Derby Street and connects to the South River channel where it discharges. The discharge pipe was observed by ENSR on 8/16/06 at low tide on the northwesterly corner of the South River channel. The South River channel is a salt-water channel that is an extension of Salem Harbor (see Figures 2 and 3), which is a marine water body.

5c. Indirect Dischargers

Although the nearest sanitary sewer is located adjacent to the Site on Charter Street, based on consultation between ENSR and the South Essex Sewerage District, the South Essex Sewerage District stated that they would not take the proposed discharge.

No drinking water supplies are located within a half-mile radius of the site.

The closest surface water body is South River channel, which is located 600 feet south of the site.

5e. 7Q10 Values

Since the South River channel and Salem Harbor are marine water bodies, no 7Q10 values exist.

6. Results of Consultation with Federal Services

a) Since the Site and location of the proposed discharge is within a downtown area and there are no listed threatened or endangered species, or designated critical habitats within four (4) miles of the discharge, it is ENSR's opinion that there is no need to consult with the USFWS and/or NMFS.

b) The Site (Peabody Essex Museum, 161 Essex Street, Salem, MA) where the proposed discharge will occur is listed on the National Register of Historic Places. It is ENSR's opinion that the proposed discharge will not adversely affect (damage, deteriorate, alter or destroy) the Site for the following reasons:

(i) the pumped groundwater and oil will be contained within hoses, piping, and temporary storage tank before it is treated and discharged to the on-site storm drain;
(ii) in case of potential overflow or leaks, automatic and manual shut-off switches will be in place;
(iii) spill absorbent and containment equipment will be available and in place during the 3-day aquifer pumping test;
(iv) the proposed aquifer pumping test will be a one-time test of relatively short duration (3 days).

8. Signature Requirements: The Notice of Intent must be signed by the operator in accordance with the signatory requirements of 40 CFR Section 122.22, including the following certification:

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, I certify that the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I certify that I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

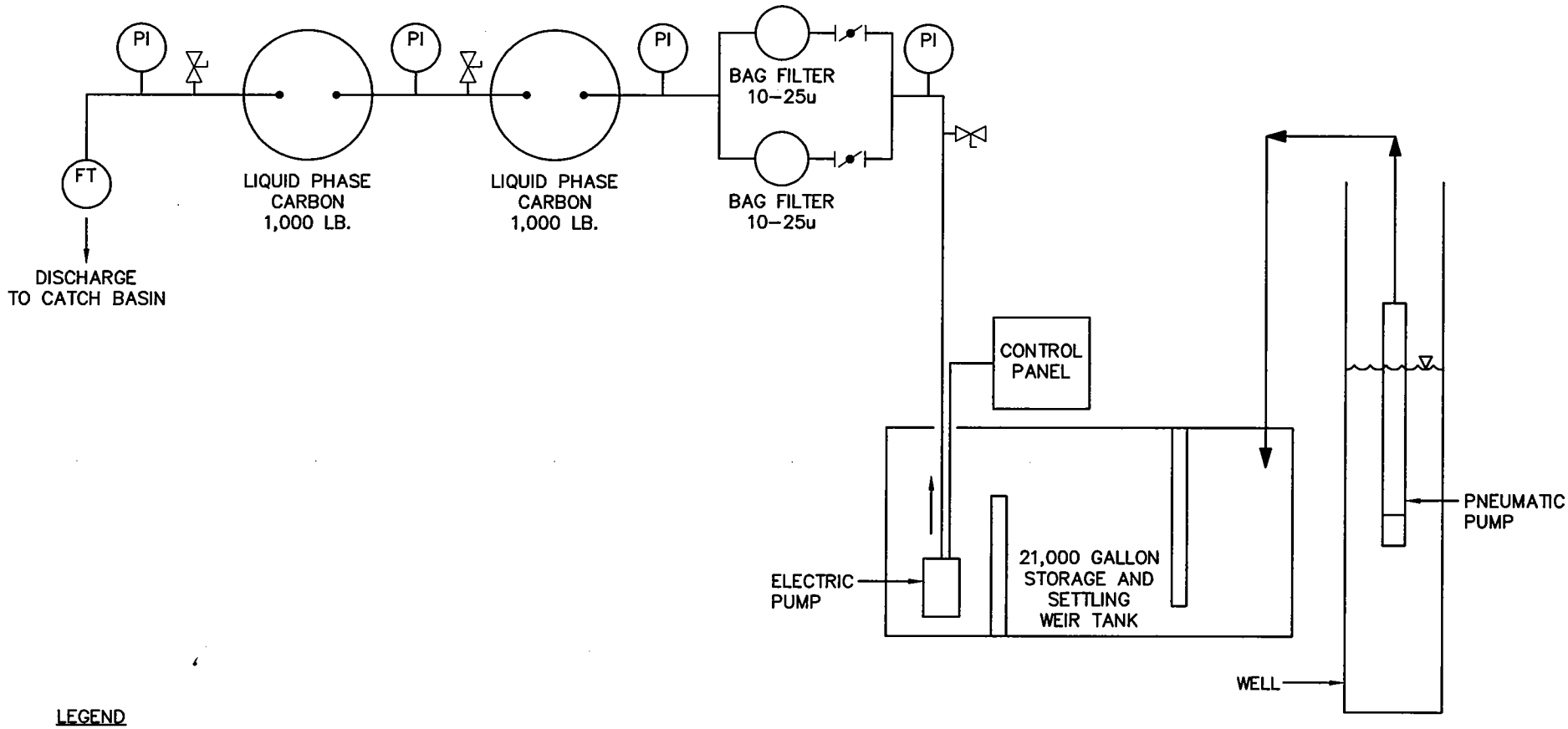
Facility/Site Name: Peabody Essex Museum

Operator signature: Daniel Folan

Title: Sr. Project Manager, ENSR

Date: 09/07/06

FILENAME: 10542-004-02A.DWG



LEGEND

- BUTTERFLY VALVE
- SAMPLE PORT
- PI — PRESSURE INDICATOR
- FT — FLOW TOTALIZER

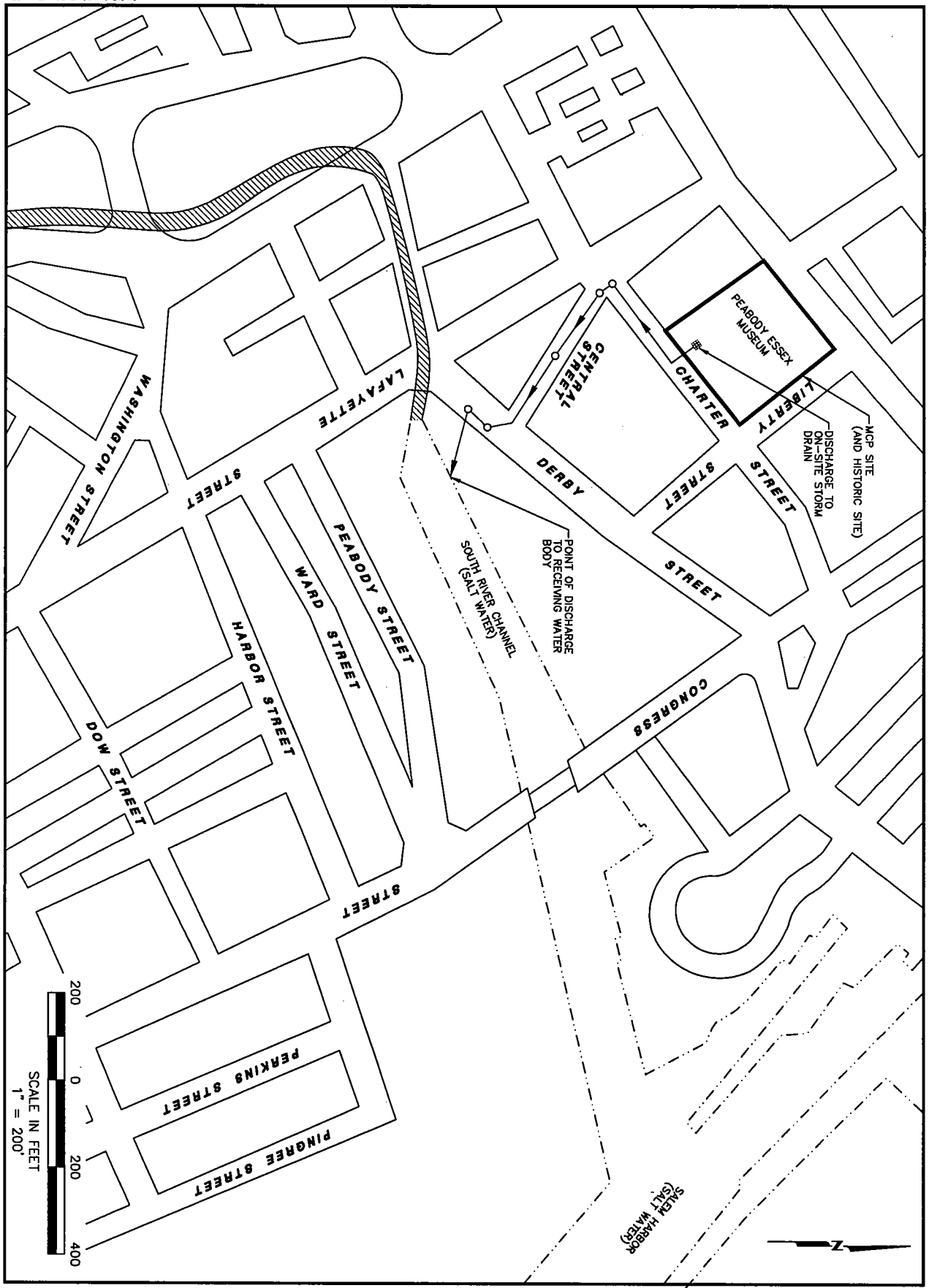
ENSR | AECOM

ENSR CORPORATION
2 TECHNOLOGY PARK DRIVE
WESTFORD, MASSACHUSETTS 01886
PHONE: (978) 589-3000
FAX: (978) 589-3100
WEB: HTTP://WWW.ENSR.AECOM.COM

CARBON TREATMENT LAYOUT
PEABODY ESSEX MUSEUM
161 ESSEX STREET
SALEM, MA

FIGURE NUMBER:	DRAWN BY:	DATE:	PROJECT NUMBER:	SHEET NUMBER:
1	K.P.B.	8/06	10542-004-300	1

FILENAME: 10542-004-01B.DWG



SHEET NUMBER:	FIGURE NUMBER:
1	2

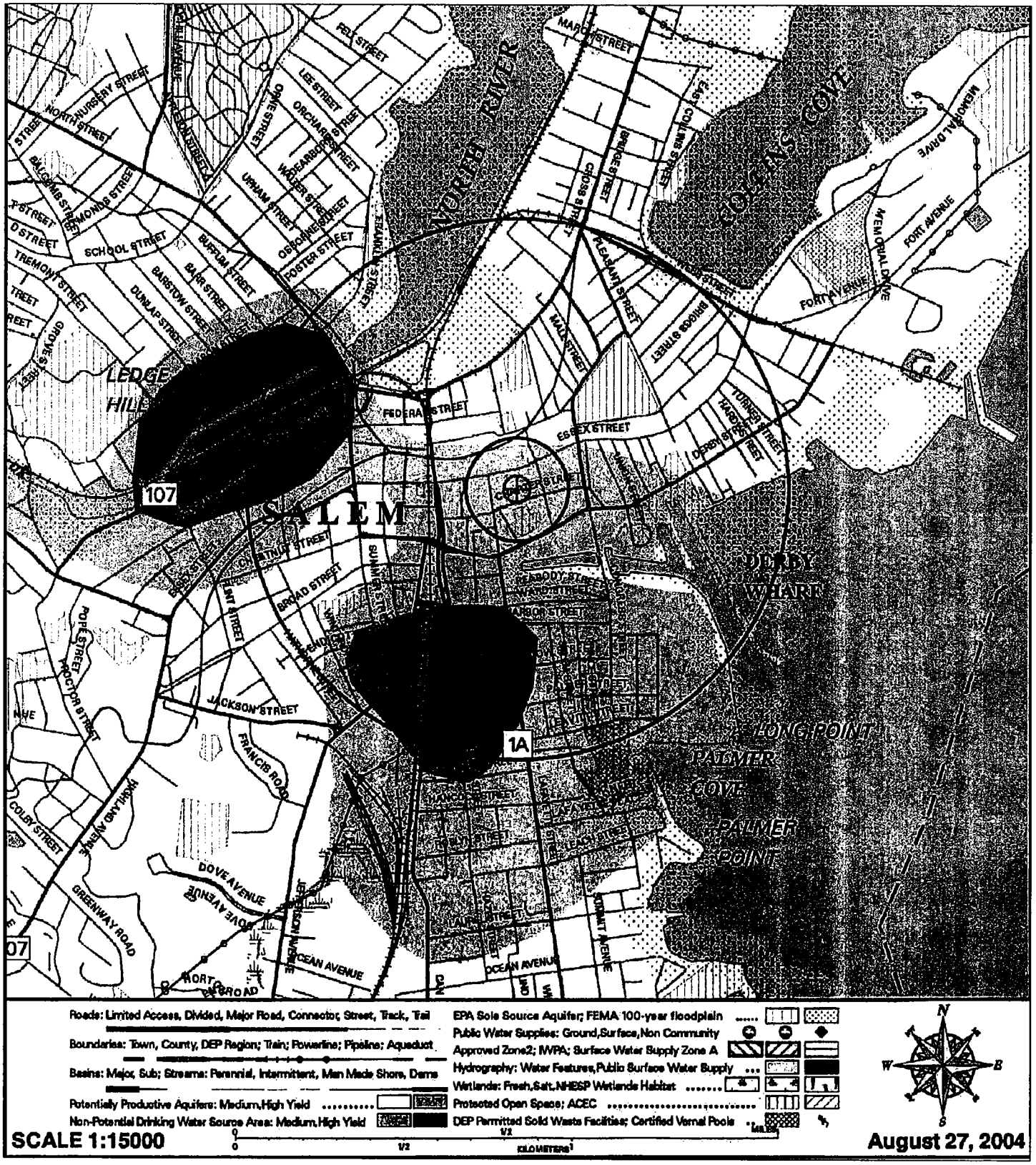
STORM DRAIN ROUTE
PEABODY ESSEX MUSEUM
161 ESSEX STREET
SALEM, MA

SCALE:	DATE:	PROJECT NUMBER:
1" = 200'	8/06	10542-004-300

ENSR | AECOM

ENSR CORPORATION
2 TECHNOLOGY PARK DRIVE
WESTFORD, MASSACHUSETTS 01886
PHONE: (978) 589-3000
FAX: (978) 589-3100
WEB: HTTP://WWW.ENSR.AECOM.COM

DESIGNED BY:	REVISIONS			
	NO.:	DESCRIPTION:	DATE:	BY:
DRAWN BY: J.E.B.				
CHECKED BY: M.N.				
APPROVED BY: D.F.				



Client:
Peabody Essex Museum
Salem, MA.

ENSR INTERNATIONAL
2 Technology Park Drive
Westford, MA 01886
(978) 589-3000 www.ensr.com

Project:
Phase I
Initial Site Investigation Report
Charter Street Site
RTN 3-23396
161 Essex Street, Salem, MA.

Figure 3.
21E Map

November 2004

DRAWING: 10542001-10.DWG

ALPHA ANALYTICAL LABORATORIES

Eight Walkup Drive
Westborough, Massachusetts 01581-1019
(508) 898-9220 www.alphalab.com

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

CERTIFICATE OF ANALYSIS

Client: ENSR Consulting & Engineering

Address: 2 Technology Park Drive
Westford, MA 01886

Attn: Mr. Dan Folan

Project Number: 10542-004

Site: PEABODY ESSEX MUSEUM

Laboratory Job Number: L0611133

Date Received: 04-AUG-2006

Date Reported: 11-AUG-2006

Delivery Method: Alpha

ALPHA SAMPLE NUMBER	CLIENT IDENTIFICATION	SAMPLE LOCATION
L0611133-01	MW14GW-080406	SALEM, MA
L0611133-02	TRIP BLANK-624	SALEM, MA
L0611133-03	TRIP BLANK-504	SALEM, MA

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

Authorized by: _____
Technical Director

ALPHA ANALYTICAL LABORATORIES
NARRATIVE REPORT

Laboratory Job Number: L0611133

The samples were received in accordance with the chain of custody and no significant deviations were encountered during preparation or analysis unless otherwise noted below.

Volatile Organics

L0611133-01 has elevated detection limits due to the 5x dilution required by the elevated concentrations of non-target compounds in the sample.

PAH

L0611133-01 has elevated detection limits due to the 10x dilution required by the elevated concentrations of target compounds in the sample.

PCB

The surrogate % recovery for Decachlorobiphenyl is below the acceptance criteria for the method on the method blank.

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

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

Laboratory Sample Number: L0611133-01
MW14GW-080406
Sample Matrix: WATER

Date Collected: 04-AUG-2006 12:00
Date Received : 04-AUG-2006
Date Reported : 11-AUG-2006

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 7-Amber,4-Plastic,4-Vial

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATE PREP	DATE ANAL	ID
Solids, Total Suspended	30	mg/l	5.0	4	160.2		0808 09:40	DW
Cyanide, Total	0.005	mg/l	0.005	4	335.2	0807 16:00	0807 22:00	DD
Chlorine, Total Residual	ND	mg/l	0.05	4	330.1		0804 19:20	BA
pH	7.5	SU	-	4	150.1		0804 23:10	DP
TPH	11.8	mg/l	4.40	74	1664A	0808 14:30	0809 13:30	AT
Phenolics, Total	ND	mg/l	0.03	4	420.1		0808 10:40	AT
Chromium, Hexavalent	ND	mg/l	0.02	30	3500CR-D	0804 19:35	0804 19:35	DP
Hardness	410	mg/l	1.7	19	200.7	0807 19:00	0810 17:49	CF
Total Metals								
Antimony, Total	ND	mg/l	0.0005	1	6020	0807 19:00	0810 21:38	RC
Arsenic, Total	0.0257	mg/l	0.0005	1	6020	0807 19:00	0810 21:38	RC
Cadmium, Total	ND	mg/l	0.0005	1	6020	0807 19:00	0810 21:38	RC
Chromium, Total	0.0014	mg/l	0.0005	1	6020	0807 19:00	0810 21:38	RC
Copper, Total	0.0014	mg/l	0.0005	1	6020	0807 19:00	0810 21:38	RC
Iron, Total	5.4	mg/l	0.05	19	200.7	0807 19:00	0810 17:49	CF
Lead, Total	0.0007	mg/l	0.0005	1	6020	0807 19:00	0810 21:38	RC
Mercury, Total	ND	mg/l	0.0002	4	245.2	0810 16:40	0811 12:19	DM
Nickel, Total	0.0048	mg/l	0.0005	1	6020	0807 19:00	0810 21:38	RC
Selenium, Total	0.001	mg/l	0.001	1	6020	0807 19:00	0810 21:38	RC
Silver, Total	ND	mg/l	0.0005	1	6020	0807 19:00	0810 21:38	RC
Zinc, Total	0.0106	mg/l	0.0050	1	6020	0807 19:00	0810 21:38	RC
Pesticides by GC 504				14	504.1	0809 12:30	0809 17:14	JB
1,2-Dibromoethane	ND	ug/l	0.019					
1,2-Dibromo-3-chloropropane	ND	ug/l	0.019					
Volatile Organics by GC/MS 624				5	624		0808 12:00	MM
Methylene chloride	ND	ug/l	25.					
1,1-Dichloroethane	ND	ug/l	7.5					
Chloroform	ND	ug/l	7.5					

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0611133-01
MW14GW-080406

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Volatile Organics by GC/MS 624 cont'd				5 624		0808 12:00	MM
Carbon tetrachloride	ND	ug/l	5.0				
1,2-Dichloropropane	ND	ug/l	18.				
Dibromochloromethane	ND	ug/l	5.0				
1,1,2-Trichloroethane	ND	ug/l	7.5				
2-Chloroethylvinyl ether	ND	ug/l	50.				
Tetrachloroethene	ND	ug/l	7.5				
Chlorobenzene	ND	ug/l	18.				
Trichlorofluoromethane	ND	ug/l	25.				
1,2-Dichloroethane	ND	ug/l	7.5				
1,1,1-Trichloroethane	ND	ug/l	10.				
Bromodichloromethane	ND	ug/l	5.0				
trans-1,3-Dichloropropene	ND	ug/l	7.5				
cis-1,3-Dichloropropene	ND	ug/l	7.5				
Bromoform	ND	ug/l	5.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	5.0				
Benzene	ND	ug/l	5.0				
Toluene	ND	ug/l	5.0				
Ethylbenzene	35	ug/l	5.0				
Chloromethane	ND	ug/l	50.				
Bromomethane	ND	ug/l	25.				
Vinyl chloride	ND	ug/l	10.				
Chloroethane	ND	ug/l	10.				
1,1-Dichloroethene	ND	ug/l	5.0				
trans-1,2-Dichloroethene	ND	ug/l	7.5				
cis-1,2-Dichloroethene	ND	ug/l	5.0				
Trichloroethene	ND	ug/l	5.0				
1,2-Dichlorobenzene	ND	ug/l	25.				
1,3-Dichlorobenzene	ND	ug/l	25.				
1,4-Dichlorobenzene	ND	ug/l	25.				
p/m-Xylene	61	ug/l	10				
o-xylene	26	ug/l	5.0				
Xylene (Total)	87	ug/l	10				
Styrene	ND	ug/l	5.0				
Acetone	ND	ug/l	50.				
Carbon disulfide	ND	ug/l	25.				
2-Butanone	ND	ug/l	50.				
Vinyl acetate	ND	ug/l	100				
4-Methyl-2-pentanone	ND	ug/l	50.				
2-Hexanone	ND	ug/l	50.				
Acrolein	ND	ug/l	40.				
Acrylonitrile	ND	ug/l	50.				
Methyl tert butyl ether	ND	ug/l	100				
1,4-Dioxane	ND	ug/l	10000				
Tert-Butyl Alcohol	ND	ug/l	500				
Tertiary-Amyl Methyl Ether	ND	ug/l	100				
Surrogate(s)	Recovery		QC Criteria				
Pentafluorobenzene	87.0	%	80-120				
Fluorobenzene	94.0	%	80-120				

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0611133-01
MW14GW-080406

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Volatile Organics by GC/MS 624 cont'd				5 624		0808 12:00	MM
4-Bromofluorobenzene	85.0	%	80-120				
SVOC's by GC/MS 8270				1 8270C	0808 11:25	0811 02:03	RL
Acenaphthene	ND	ug/l	4.9				
Benzidine	ND	ug/l	49.				
1,2,4-Trichlorobenzene	ND	ug/l	4.9				
Hexachlorobenzene	ND	ug/l	4.9				
Bis(2-chloroethyl)ether	ND	ug/l	4.9				
1-Chloronaphthalene	ND	ug/l	4.9				
2-Chloronaphthalene	ND	ug/l	5.9				
1,2-Dichlorobenzene	ND	ug/l	4.9				
1,3-Dichlorobenzene	ND	ug/l	4.9				
1,4-Dichlorobenzene	ND	ug/l	4.9				
3,3'-Dichlorobenzidine	ND	ug/l	49.				
2,4-Dinitrotoluene	ND	ug/l	5.9				
2,6-Dinitrotoluene	ND	ug/l	4.9				
Azobenzene	ND	ug/l	4.9				
Fluoranthene	ND	ug/l	4.9				
4-Chlorophenyl phenyl ether	ND	ug/l	4.9				
4-Bromophenyl phenyl ether	ND	ug/l	4.9				
Bis(2-chloroisopropyl)ether	ND	ug/l	4.9				
Bis(2-chloroethoxy)methane	ND	ug/l	4.9				
Hexachlorobutadiene	ND	ug/l	9.8				
Hexachlorocyclopentadiene	ND	ug/l	9.8				
Hexachloroethane	ND	ug/l	4.9				
Isophorone	ND	ug/l	4.9				
Naphthalene	140	ug/l	4.9				
Nitrobenzene	ND	ug/l	4.9				
NDPA/DPA	ND	ug/l	15.				
n-Nitrosodi-n-propylamine	ND	ug/l	4.9				
Bis(2-ethylhexyl)phthalate	ND	ug/l	9.8				
Butyl benzyl phthalate	ND	ug/l	4.9				
Di-n-butylphthalate	ND	ug/l	4.9				
Di-n-octylphthalate	ND	ug/l	4.9				
Diethyl phthalate	ND	ug/l	4.9				
Dimethyl phthalate	ND	ug/l	4.9				
Benzo(a)anthracene	ND	ug/l	4.9				
Benzo(a)pyrene	ND	ug/l	4.9				
Benzo(b)fluoranthene	ND	ug/l	4.9				
Benzo(k)fluoranthene	ND	ug/l	4.9				
Chrysene	ND	ug/l	4.9				
Acenaphthylene	ND	ug/l	4.9				
Anthracene	ND	ug/l	4.9				
Benzo(ghi)perylene	ND	ug/l	4.9				
Fluorene	ND	ug/l	4.9				
Phenanthrene	ND	ug/l	4.9				
Dibenzo(a,h)anthracene	ND	ug/l	4.9				
Indeno(1,2,3-cd)pyrene	ND	ug/l	6.8				
Pyrene	ND	ug/l	4.9				

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0611133-01
MW14GW-080406

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
SVOC's by GC/MS 8270 cont'd				1 8270C	0808 11:25	0811 02:03	RL
Benzo(e)pyrene	ND	ug/l	4.9				
Biphenyl	5.1	ug/l	4.9				
Perylene	ND	ug/l	4.9				
Aniline	ND	ug/l	9.8				
4-Chloroaniline	ND	ug/l	4.9				
1-Methylnaphthalene	88	ug/l	4.9				
2-Nitroaniline	ND	ug/l	4.9				
3-Nitroaniline	ND	ug/l	4.9				
4-Nitroaniline	ND	ug/l	6.8				
Dibenzofuran	ND	ug/l	4.9				
a,a-Dimethylphenethylamine	ND	ug/l	49.				
Hexachloropropene	ND	ug/l	9.8				
Nitrosodi-n-butylamine	ND	ug/l	9.8				
2-Methylnaphthalene	110	ug/l	4.9				
1,2,4,5-Tetrachlorobenzene	ND	ug/l	20.				
Pentachlorobenzene	ND	ug/l	20.				
a-Naphthylamine	ND	ug/l	20.				
b-Naphthylamine	ND	ug/l	20.				
Phenacetin	ND	ug/l	9.8				
Dimethoate	ND	ug/l	20.				
4-Aminobiphenyl	ND	ug/l	9.8				
Pentachloronitrobenzene	ND	ug/l	9.8				
Isodrin	ND	ug/l	9.8				
p-Dimethylaminoazobenzene	ND	ug/l	9.8				
Chlorobenzilate	ND	ug/l	20.				
3-Methylcholanthrene	ND	ug/l	20.				
Ethyl Methanesulfonate	ND	ug/l	15.				
Acetophenone	ND	ug/l	20.				
Nitrosodipiperidine	ND	ug/l	20.				
7,12-Dimethylbenz(a)anthracene	ND	ug/l	9.8				
n-Nitrosodimethylamine	ND	ug/l	49.				
2,4,6-Trichlorophenol	ND	ug/l	4.9				
p-Chloro-m-cresol	ND	ug/l	4.9				
2-Chlorophenol	ND	ug/l	5.9				
2,4-Dichlorophenol	ND	ug/l	9.8				
2,4-Dimethylphenol	ND	ug/l	9.8				
2-Nitrophenol	ND	ug/l	20.				
4-Nitrophenol	ND	ug/l	9.8				
2,4-Dinitrophenol	ND	ug/l	20.				
4,6-Dinitro-o-cresol	ND	ug/l	20.				
Pentachlorophenol	ND	ug/l	20.				
Phenol	ND	ug/l	6.8				
2-Methylphenol	ND	ug/l	5.9				
3-Methylphenol/4-Methylphenol	ND	ug/l	5.9				
2,4,5-Trichlorophenol	ND	ug/l	4.9				
2,6-Dichlorophenol	ND	ug/l	9.8				
Benzoic Acid	ND	ug/l	49.				
Benzyl Alcohol	ND	ug/l	9.8				
Carbazole	ND	ug/l	4.9				

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0611133-01
MW14GW-080406

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
SVOC's by GC/MS 8270 cont'd				1 8270C	0808 11:25	0811 02:03	RL
Pyridine	ND	ug/l	49.				
2-Picoline	ND	ug/l	20.				
Pronamide	ND	ug/l	20.				
Methyl methanesulfonate	ND	ug/l	20.				
Surrogate(s)	Recovery		QC Criteria				
2-Fluorophenol	33.0	%	21-120				
Phenol-d6	27.0	%	10-120				
Nitrobenzene-d5	68.0	%	23-120				
2-Fluorobiphenyl	74.0	%	43-120				
2,4,6-Tribromophenol	113	%	10-120				
4-Terphenyl-d14	100	%	33-120				
PAH by GC/MS SIM 8270M				1 8270C-M	0808 11:25	0811 00:08	RL
Acenaphthene	2.3	ug/l	2.0				
2-Chloronaphthalene	ND	ug/l	2.0				
Fluoranthene	ND	ug/l	2.0				
Hexachlorobutadiene	ND	ug/l	4.9				
Naphthalene	100	ug/l	2.0				
Benzo(a)anthracene	ND	ug/l	2.0				
Benzo(a)pyrene	ND	ug/l	2.0				
Benzo(b)fluoranthene	ND	ug/l	2.0				
Benzo(k)fluoranthene	ND	ug/l	2.0				
Chrysene	ND	ug/l	2.0				
Acenaphthylene	ND	ug/l	2.0				
Anthracene	ND	ug/l	2.0				
Benzo(ghi)perylene	ND	ug/l	2.0				
Fluorene	3.1	ug/l	2.0				
Phenanthrene	4.4	ug/l	2.0				
Dibenzo(a,h)anthracene	ND	ug/l	2.0				
Indeno(1,2,3-cd)Pyrene	ND	ug/l	2.0				
Pyrene	ND	ug/l	2.0				
1-Methylnaphthalene	68	ug/l	2.0				
2-Methylnaphthalene	96	ug/l	2.0				
Pentachlorophenol	ND	ug/l	7.8				
Hexachlorobenzene	ND	ug/l	7.8				
Perylene	ND	ug/l	2.0				
Biphenyl	6.0	ug/l	2.0				
2,6-Dimethylnaphthalene	29	ug/l	2.0				
1-Methylphenanthrene	ND	ug/l	2.0				
Benzo(e)Pyrene	ND	ug/l	2.0				
Hexachloroethane	ND	ug/l	7.8				
Surrogate(s)	Recovery		QC Criteria				
2-Fluorophenol	46.0	%	21-120				
Phenol-d6	41.0	%	10-120				
Nitrobenzene-d5	70.0	%	23-120				
2-Fluorobiphenyl	63.0	%	43-120				
2,4,6-Tribromophenol	90.0	%	10-120				

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

Laboratory Sample Number: L0611133-01
MW14GW-080406

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATE PREP	DATE ANAL	ID
PAH by GC/MS SIM 8270M cont'd				1	8270C-M	0808 11:25	0811 00:08	RL
4-Terphenyl-d14	101	%	33-120					
Polychlorinated Biphenyls				5	608	0808 11:25	0811 03:29	JB
Aroclor 1016	ND	ug/l	0.260					
Aroclor 1221	ND	ug/l	0.260					
Aroclor 1232	ND	ug/l	0.260					
Aroclor 1242	ND	ug/l	0.260					
Aroclor 1248	ND	ug/l	0.260					
Aroclor 1254	ND	ug/l	0.260					
Aroclor 1260	ND	ug/l	0.260					
Surrogate(s)	Recovery		QC Criteria					
2,4,5,6-Tetrachloro-m-xylene	87.0	%	30-150					
Decachlorobiphenyl	68.0	%	30-150					

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

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

Laboratory Sample Number: L0611133-02
TRIP BLANK-624
Sample Matrix: WATER

Date Collected: 03-AUG-2006 16:15
Date Received : 04-AUG-2006
Date Reported : 11-AUG-2006

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 1-Vial

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Volatile Organics by GC/MS 624				5 624		0808 12:37	MM
Methylene chloride	ND	ug/l	5.0				
1,1-Dichloroethane	ND	ug/l	1.5				
Chloroform	ND	ug/l	1.5				
Carbon tetrachloride	ND	ug/l	1.0				
1,2-Dichloropropane	ND	ug/l	3.5				
Dibromochloromethane	ND	ug/l	1.0				
1,1,2-Trichloroethane	ND	ug/l	1.5				
2-Chloroethylvinyl ether	ND	ug/l	10.				
Tetrachloroethene	ND	ug/l	1.5				
Chlorobenzene	ND	ug/l	3.5				
Trichlorofluoromethane	ND	ug/l	5.0				
1,2-Dichloroethane	ND	ug/l	1.5				
1,1,1-Trichloroethane	ND	ug/l	2.0				
Bromodichloromethane	ND	ug/l	1.0				
trans-1,3-Dichloropropene	ND	ug/l	1.5				
cis-1,3-Dichloropropene	ND	ug/l	1.5				
Bromoform	ND	ug/l	1.0				
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0				
Benzene	ND	ug/l	1.0				
Toluene	ND	ug/l	1.0				
Ethylbenzene	ND	ug/l	1.0				
Chloromethane	ND	ug/l	10.				
Bromomethane	ND	ug/l	5.0				
Vinyl chloride	ND	ug/l	2.0				
Chloroethane	ND	ug/l	2.0				
1,1-Dichloroethene	ND	ug/l	1.0				
trans-1,2-Dichloroethene	ND	ug/l	1.5				
cis-1,2-Dichloroethene	ND	ug/l	1.0				
Trichloroethene	ND	ug/l	1.0				
1,2-Dichlorobenzene	ND	ug/l	5.0				
1,3-Dichlorobenzene	ND	ug/l	5.0				
1,4-Dichlorobenzene	ND	ug/l	5.0				
p/m-Xylene	ND	ug/l	2.0				
o-xylene	ND	ug/l	1.0				
Xylene (Total)	ND	ug/l	2.0				
Styrene	ND	ug/l	1.0				
Acetone	ND	ug/l	10.				
Carbon disulfide	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: L0611133-02
TRIP BLANK-624

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Volatile Organics by GC/MS 624 cont'd				5 624		0808 12:37	MM
2-Butanone	ND	ug/l	10.				
Vinyl acetate	ND	ug/l	20.				
4-Methyl-2-pentanone	ND	ug/l	10.				
2-Hexanone	ND	ug/l	10.				
Acrolein	ND	ug/l	8.0				
Acrylonitrile	ND	ug/l	10.				
Methyl tert butyl ether	ND	ug/l	20.				
1,4-Dioxane	ND	ug/l	2000				
Tert-Butyl Alcohol	ND	ug/l	100				
Tertiary-Amyl Methyl Ether	ND	ug/l	20.				
Surrogate(s)	Recovery		QC Criteria				
Pentafluorobenzene	92.0	%	80-120				
Fluorobenzene	95.0	%	80-120				
4-Bromofluorobenzene	91.0	%	80-120				

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

ALPHA ANALYTICAL LABORATORIES
CERTIFICATE OF ANALYSIS

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

Laboratory Sample Number: L0611133-03
TRIP BLANK-504
Sample Matrix: WATER

Date Collected: 03-AUG-2006 16:15
Date Received : 04-AUG-2006
Date Reported : 11-AUG-2006

Condition of Sample: Satisfactory

Field Prep: None

Number & Type of Containers: 2-Vial

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Pesticides by GC 504				14 504.1	0809 12:30	0809 17:36	JB
1,2-Dibromoethane	ND	ug/l	0.018				
1,2-Dibromo-3-chloropropane	ND	ug/l	0.018				

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

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L0611133

Parameter	Value 1	Value 2	Units	RPD	RPD Limits
Cyanide, Total for sample(s) 01 (L0610989-11, WG249108-4)					
Cyanide, Total	0.916	0.923	mg/l	1	30
Chlorine, Total Residual for sample(s) 01 (L0611133-01, WG248905-3)					
Chlorine, Total Residual	ND	ND	mg/l	NC	
pH for sample(s) 01 (L0611133-01, WG248930-2)					
pH	7.5	7.4	SU	1	
TPH for sample(s) 01 (L0611133-01, WG249274-4)					
TPH	11.8	10.8	mg/l	9	34
Phenolics, Total for sample(s) 01 (L0610997-02, WG249237-4)					
Phenolics, Total	ND	ND	mg/l	NC	
Chromium, Hexavalent for sample(s) 01 (L0611133-01, WG248912-4)					
Chromium, Hexavalent	ND	ND	mg/l	NC	
Hardness for sample(s) 01 (L0611133-01, WG249088-1)					
Hardness	410	400	mg/l	2	
Total Metals for sample(s) 01 (L0611133-01, WG249088-1)					
Iron, Total	5.4	5.3	mg/l	2	
Total Metals for sample(s) 01 (L0611133-01, WG249087-1)					
Antimony, Total	ND	ND	mg/l	NC	20
Arsenic, Total	0.0257	0.0251	mg/l	2	20
Cadmium, Total	ND	ND	mg/l	NC	20
Chromium, Total	0.0014	0.0013	mg/l	5	20
Copper, Total	0.0014	0.0015	mg/l	3	20
Lead, Total	0.0007	0.0007	mg/l	3	20
Nickel, Total	0.0048	0.0047	mg/l	2	20
Selenium, Total	0.001	0.001	mg/l	5	20
Silver, Total	ND	ND	mg/l	NC	20
Zinc, Total	0.0106	0.0120	mg/l	13	20
Total Metals for sample(s) 01 (L0611375-01, WG249635-3)					
Mercury, Total	0.0002	ND	mg/l	NC	
Volatile Organics by GC/MS 624 for sample(s) 01-02 (L0611060-03, WG249378-2)					
Methylene chloride	ND	ND	ug/l	NC	30
1,1-Dichloroethane	ND	ND	ug/l	NC	30
Chloroform	ND	ND	ug/l	NC	30
Carbon tetrachloride	ND	ND	ug/l	NC	30
1,2-Dichloropropane	ND	ND	ug/l	NC	30
Dibromochloromethane	ND	ND	ug/l	NC	30
1,1,2-Trichloroethane	ND	ND	ug/l	NC	30
2-Chloroethylvinyl ether	ND	ND	ug/l	NC	30
Tetrachloroethene	3.0	3.8	ug/l	24	30

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH DUPLICATE ANALYSIS

Laboratory Job Number: L0611133

Continued

Parameter	Value 1	Value 2	Units	RPD	RPD Limits
Volatile Organics by GC/MS 624 for sample(s) 01-02 (L0611060-03, WG249378-2)					
Chlorobenzene	ND	ND	ug/l	NC	30
Trichlorofluoromethane	ND	ND	ug/l	NC	30
1,2-Dichloroethane	ND	ND	ug/l	NC	30
1,1,1-Trichloroethane	ND	ND	ug/l	NC	30
Bromodichloromethane	ND	ND	ug/l	NC	30
trans-1,3-Dichloropropene	ND	ND	ug/l	NC	30
cis-1,3-Dichloropropene	ND	ND	ug/l	NC	30
Bromoform	ND	ND	ug/l	NC	30
1,1,2,2-Tetrachloroethane	ND	ND	ug/l	NC	30
Chloromethane	ND	ND	ug/l	NC	30
Bromomethane	ND	ND	ug/l	NC	30
Vinyl chloride	ND	ND	ug/l	NC	30
Chloroethane	ND	ND	ug/l	NC	30
1,1-Dichloroethene	ND	ND	ug/l	NC	30
trans-1,2-Dichloroethene	ND	ND	ug/l	NC	30
cis-1,2-Dichloroethene	ND	ND	ug/l	NC	30
Trichloroethene	ND	ND	ug/l	NC	30
1,2-Dichlorobenzene	ND	ND	ug/l	NC	30
1,3-Dichlorobenzene	ND	ND	ug/l	NC	30
1,4-Dichlorobenzene	ND	ND	ug/l	NC	30
Surrogate(s)	Recovery				QC Criteria
Pentafluorobenzene	83.0	82.0	%		80-120
Fluorobenzene	90.0	89.0	%		80-120
4-Bromofluorobenzene	86.0	81.0	%		80-120
Polychlorinated Biphenyls for sample(s) 01 (L0611174-01, WG249231-4)					
Aroclor 1016	ND	ND	ug/l	NC	30
Aroclor 1221	ND	ND	ug/l	NC	30
Aroclor 1232	ND	ND	ug/l	NC	30
Aroclor 1242	ND	ND	ug/l	NC	30
Aroclor 1248	ND	ND	ug/l	NC	30
Aroclor 1254	ND	ND	ug/l	NC	30
Aroclor 1260	ND	ND	ug/l	NC	30
Surrogate(s)	Recovery				QC Criteria
2,4,5,6-Tetrachloro-m-xylene	73.0	70.0	%		30-150
Decachlorobiphenyl	79.0	79.0	%		30-150

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0611133

Parameter	% Recovery	QC Criteria
Cyanide, Total LCS for sample(s) 01 (WG249108-2)		
Cyanide, Total	97	90-110
Chlorine, Total Residual LCS for sample(s) 01 (WG248905-2)		
Chlorine, Total Residual	105	
pH LCS for sample(s) 01 (WG248930-1)		
pH	100	
TPH LCS for sample(s) 01 (WG249274-2)		
TPH	85	64-132
Phenolics, Total LCS for sample(s) 01 (WG249237-2)		
Phenolics, Total	95	
Chromium, Hexavalent LCS for sample(s) 01 (WG248912-2)		
Chromium, Hexavalent	101	
Hardness LCS for sample(s) 01 (WG249088-4)		
Hardness	95	
Total Metals LCS for sample(s) 01 (WG249088-4)		
Iron, Total	95	
Total Metals LCS for sample(s) 01 (WG249087-4)		
Antimony, Total	97	80-120
Arsenic, Total	99	80-120
Cadmium, Total	108	80-120
Chromium, Total	102	80-120
Copper, Total	98	80-120
Lead, Total	102	80-120
Nickel, Total	100	80-120
Selenium, Total	97	80-120
Silver, Total	100	80-120
Zinc, Total	101	80-120
Total Metals LCS for sample(s) 01 (WG249635-1)		
Mercury, Total	97	
Pesticides by GC 504 LCS for sample(s) 01,03 (WG249424-2)		
1,2-Dibromoethane	85	70-130
1,2-Dibromo-3-chloropropane	97	70-130
Volatile Organics by GC/MS 624 LCS for sample(s) 01-02 (WG249378-5)		
Methylene chloride	114	10-221
1,1-Dichloroethane	125	59-155
Chloroform	108	51-138
Carbon tetrachloride	118	70-140
1,2-Dichloropropane	120	10-210

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0611133

Continued

Parameter	% Recovery	QC Criteria
Volatile Organics by GC/MS 624 LCS for sample(s) 01-02 (WG249378-5)		
Dibromochloromethane	112	53-149
1,1,2-Trichloroethane	119	52-150
2-Chloroethylvinyl ether	82	10-305
Tetrachloroethene	107	64-148
Chlorobenzene	112	37-160
Trichlorofluoromethane	151	17-181
1,2-Dichloroethane	121	49-155
1,1,1-Trichloroethane	118	52-162
Bromodichloromethane	107	35-155
trans-1,3-Dichloropropene	117	17-183
cis-1,3-Dichloropropene	112	10-227
Bromoform	127	45-169
1,1,2,2-Tetrachloroethane	138	46-157
Benzene	112	37-151
Toluene	110	47-150
Ethylbenzene	121	37-162
Chloromethane	167	10-273
Bromomethane	108	10-242
Vinyl chloride	175	10-251
Chloroethane	103	14-230
1,1-Dichloroethene	99	10-234
trans-1,2-Dichloroethene	109	54-156
cis-1,2-Dichloroethene	108	60-140
Trichloroethene	109	71-157
1,2-Dichlorobenzene	120	18-190
1,3-Dichlorobenzene	116	59-156
1,4-Dichlorobenzene	121	18-190
p/m-Xylene	125	40-160
o-Xylene	122	40-160
XYLENE (TOTAL)	124	40-160
Styrene	124	40-160
Acetone	127	40-160
Carbon disulfide	118	40-160
2-Butanone	110	40-160
Vinyl acetate	106	40-160
4-Methyl-2-pentanone	104	40-160
2-Hexanone	106	40-160
Acrolein	129	40-160
Acrylonitrile	104	40-160
Surrogate(s)		
Pentafluorobenzene	93	80-120
Fluorobenzene	96	80-120
4-Bromofluorobenzene	91	80-120

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0611133

Continued

Parameter	% Recovery	QC Criteria
SVOC's by GC/MS 8270 LCS for sample(s) 01 (WG249780-2)		
Acenaphthene	64	46-118
1,2,4-Trichlorobenzene	48	39-98
2-Chloronaphthalene	66	40-140
1,2-Dichlorobenzene	42	40-140
1,4-Dichlorobenzene	41	36-97
2,4-Dinitrotoluene	82	24-96
2,6-Dinitrotoluene	94	40-140
Fluoranthene	102	40-140
4-Chlorophenyl phenyl ether	74	40-140
n-Nitrosodi-n-propylamine	55	41-116
Butyl benzyl phthalate	97	40-140
Anthracene	74	40-140
Pyrene	94	26-127
Hexachloropropene	40	40-140
P-Chloro-M-Cresol	69	23-97
2-Chlorophenol	47	27-123
2-Nitrophenol	54	30-130
4-Nitrophenol	31	10-80
2,4-Dinitrophenol	74	30-130
Pentachlorophenol	88	9-103
Phenol	18	12-110
Surrogate(s)		
2-Fluorophenol	24	21-120
Phenol-d6	21	10-120
Nitrobenzene-d5	54	23-120
2-Fluorobiphenyl	68	43-120
2,4,6-Tribromophenol	104	10-120
4-Terphenyl-d14	104	33-120
PAH by GC/MS SIM 8270M LCS for sample(s) 01 (WG249781-2)		
Acenaphthene	64	46-118
2-Chloronaphthalene	59	
Fluoranthene	119	
Anthracene	77	
Pyrene	96	26-127
Pentachlorophenol	99	9-103
Surrogate(s)		
2-Fluorophenol	49	21-120
Phenol-d6	45	10-120
Nitrobenzene-d5	79	23-120
2-Fluorobiphenyl	50	43-120
2,4,6-Tribromophenol	91	10-120
4-Terphenyl-d14	82	33-120

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0611133

Continued

Parameter	% Recovery	QC Criteria
Polychlorinated Biphenyls LCS for sample(s) 01 (WG249231-2)		
Aroclor 1016	94	40-140
Aroclor 1260	124	40-140
Surrogate(s)		
2,4,5,6-Tetrachloro-m-xylene	64	30-150
Decachlorobiphenyl	54	30-150
Cyanide, Total SPIKE for sample(s) 01 (L0610989-11, WG249108-3)		
Cyanide, Total	97	80-120
TPH SPIKE for sample(s) 01 (L0610998-01, WG249274-3)		
TPH	83	64-132
Phenolics, Total SPIKE for sample(s) 01 (L0610997-01, WG249237-3)		
Phenolics, Total	91	
Chromium, Hexavalent SPIKE for sample(s) 01 (L0611133-01, WG248912-3)		
Chromium, Hexavalent	96	
Hardness SPIKE for sample(s) 01 (L0611133-01, WG249088-2)		
Hardness	76	
Total Metals SPIKE for sample(s) 01 (L0611133-01, WG249088-2)		
Iron, Total	90	
Total Metals SPIKE for sample(s) 01 (L0611133-01, WG249087-2)		
Antimony, Total	97	80-120
Arsenic, Total	102	80-120
Cadmium, Total	108	80-120
Chromium, Total	103	80-120
Copper, Total	99	80-120
Lead, Total	101	80-120
Nickel, Total	101	80-120
Selenium, Total	95	80-120
Silver, Total	95	80-120
Zinc, Total	100	80-120
Total Metals SPIKE for sample(s) 01 (L0611375-01, WG249635-2)		
Mercury, Total	115	
Pesticides by GC 504 SPIKE for sample(s) 01,03 (L0610928-01, WG249424-3)		
1,2-Dibromoethane	87	
Volatile Organics by GC/MS 624 SPIKE for sample(s) 01-02 (L0611060-03, WG249378-1)		
Methylene chloride	78	10-221
1,1-Dichloroethane	81	59-155
Chloroform	77	51-138
Carbon tetrachloride	74	70-140

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0611133

Continued

Parameter	% Recovery	QC Criteria
Volatile Organics by GC/MS 624 SPIKE for sample(s) 01-02 (L0611060-03, WG249378-1)		
1,2-Dichloropropane	81	10-210
Dibromochloromethane	80	53-149
1,1,2-Trichloroethane	91	52-150
2-Chloroethylvinyl ether	103	10-305
Tetrachloroethene	73	64-148
Chlorobenzene	67	37-160
Trichlorofluoromethane	79	17-181
1,2-Dichloroethane	91	49-155
1,1,1-Trichloroethane	71	52-162
Bromodichloromethane	77	35-155
trans-1,3-Dichloropropene	63	17-183
cis-1,3-Dichloropropene	53	10-227
Bromoform	74	45-169
1,1,2,2-Tetrachloroethane	89	46-157
Benzene	75	35-151
Toluene	75	47-150
Ethylbenzene	71	37-162
Chloromethane	96	10-273
Bromomethane	49	10-242
Vinyl chloride	108	10-251
Chloroethane	78	14-230
1,1-Dichloroethene	81	10-234
trans-1,2-Dichloroethene	77	54-156
cis-1,2-Dichloroethene	76	60-140
Trichloroethene	71	71-157
1,2-Dichlorobenzene	69	18-190
1,3-Dichlorobenzene	65	59-156
1,4-Dichlorobenzene	67	18-190
p/m-Xylene	73	40-160
o-Xylene	70	40-160
XYLENE (TOTAL)	72	40-160
Styrene	69	40-160
Acetone	135	40-160
Carbon disulfide	74	40-160
2-Butanone	121	40-160
Vinyl acetate	90	40-160
4-Methyl-2-pentanone	120	40-160
2-Hexanone	126	40-160
Acrolein	158	40-160
Acrylonitrile	119	40-160
Surrogate(s)		
Pentafluorobenzene	89	80-120
Fluorobenzene	95	80-120
4-Bromofluorobenzene	85	80-120

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH SPIKE ANALYSES

Laboratory Job Number: L0611133

Continued

Parameter	% Recovery	QC Criteria
Polychlorinated Biphenyls SPIKE for sample(s) 01 (L0611174-01, WG249231-3)		
Aroclor 1016	89	40-140
Aroclor 1260	121	40-140
Surrogate(s)		
2,4,5,6-Tetrachloro-m-xylene	76	30-150
Decachlorobiphenyl	78	30-150

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH MS/MSD ANALYSIS

Laboratory Job Number: L0611133

Parameter	MS %	MSD %	RPD	RPD Limit	MS/MSD Limits
SVOC's by GC/MS 8270 for sample(s) 01 (L0611133-01, WG249780-4)					
Acenaphthene	77	68	12	30	46-118
1,2,4-Trichlorobenzene	54	45	18	30	39-98
2-Chloronaphthalene	77	63	20	30	40-140
1,2-Dichlorobenzene	50	45	11	30	40-140
1,4-Dichlorobenzene	45	41	9	30	36-97
2,4-Dinitrotoluene	90	77	16	30	24-96
2,6-Dinitrotoluene	90	81	11	30	40-140
Fluoranthene	110	95	15	30	40-140
4-Chlorophenyl phenyl ether	86	72	18	30	40-140
n-Nitrosodi-n-propylamine	41	54	27	30	41-116
Butyl benzyl phthalate	99	86	14	30	40-140
Anthracene	81	68	17	30	40-140
Pyrene	100	86	15	30	26-127
Hexachloropropene	54	45	18	30	40-140
P-Chloro-M-Cresol	79	68	15	30	23-97
2-Chlorophenol	54	50	8	30	27-123
2-Nitrophenol	54	52	4	30	30-130
4-Nitrophenol	77	63	20	30	10-80
2,4-Dinitrophenol	86	72	18	30	30-130
Pentachlorophenol	100	86	15	30	9-103
Phenol	34	32	6	30	12-110
Surrogate(s)					
2-Fluorophenol	38	34	11		21-120
Phenol-d6	38	36	5		10-120
Nitrobenzene-d5	58	54	7		23-120
2-Fluorobiphenyl	79	69	14		43-120
2,4,6-Tribromophenol	118	100	17		10-120
4-Terphenyl-d14	109	96	13		33-120
PAH by GC/MS SIM 8270M for sample(s) 01 (L0611133-01, WG249781-4)					
Acenaphthene	75	71	5	40	46-118
2-Chloronaphthalene	63	68	8	40	
Fluoranthene	120	120	0	40	
Anthracene	86	81	6	40	
Pyrene	120	110	9	40	26-127
Pentachlorophenol	97	100	3	40	9-103
Surrogate(s)					
2-Fluorophenol	65	73	12		21-120
Phenol-d6	73	82	12		10-120
Nitrobenzene-d5	74	86	15		23-120
2-Fluorobiphenyl	67	73	9		43-120
2,4,6-Tribromophenol	103	100	3		10-120
4-Terphenyl-d14	115	110	4		33-120

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0611133

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATE PREP	DATE ANAL	ID
Blank Analysis for sample(s) 01 (WG248973-1)								
Solids, Total Suspended	ND	mg/l	5.0	4	160.2		0808 09:40	DW
Blank Analysis for sample(s) 01 (WG249108-1)								
Cyanide, Total	ND	mg/l	0.005	4	335.2	0807 16:00	0807 21:31	DD
Blank Analysis for sample(s) 01 (WG248905-1)								
Chlorine, Total Residual	ND	mg/l	0.05	4	330.1		0804 19:20	BA
Blank Analysis for sample(s) 01 (WG249274-1)								
TPH	ND	mg/l	4.00	74	1664A	0808 14:30	0809 13:30	AT
Blank Analysis for sample(s) 01 (WG249237-1)								
Phenolics, Total	ND	mg/l	0.03	4	420.1		0808 10:40	AT
Blank Analysis for sample(s) 01 (WG248912-1)								
Chromium, Hexavalent	ND	mg/l	0.02	30	3500CR-D	0804 19:35	0804 19:35	DP
Blank Analysis for sample(s) 01 (WG249088-3)								
Hardness	ND	mg/l	1.7	19	200.7	0807 19:00	0810 17:42	CF
Blank Analysis for sample(s) 01 (WG249088-3)								
Total Metals				19	200.7			
Iron, Total	ND	mg/l	0.05	19	200.7	0807 19:00	0810 17:42	CF
Blank Analysis for sample(s) 01 (WG249087-3)								
Total Metals								
Antimony, Total	ND	mg/l	0.0005	1	6020	0807 19:00	0810 21:05	RC
Arsenic, Total	ND	mg/l	0.0005	1	6020	0807 19:00	0810 21:05	RC
Cadmium, Total	ND	mg/l	0.0005	1	6020	0807 19:00	0810 21:05	RC
Chromium, Total	ND	mg/l	0.0005	1	6020	0807 19:00	0810 21:05	RC
Copper, Total	ND	mg/l	0.0005	1	6020	0807 19:00	0810 21:05	RC
Lead, Total	ND	mg/l	0.0005	1	6020	0807 19:00	0810 21:05	RC
Nickel, Total	ND	mg/l	0.0005	1	6020	0807 19:00	0810 21:05	RC
Selenium, Total	ND	mg/l	0.001	1	6020	0807 19:00	0810 21:05	RC
Silver, Total	ND	mg/l	0.0005	1	6020	0807 19:00	0810 21:05	RC
Zinc, Total	ND	mg/l	0.0050	1	6020	0807 19:00	0810 21:05	RC

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0611133

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATE PREP	DATE ANAL	ID
Blank Analysis for sample(s) 01 (WG249635-4)								
Total Metals								
Mercury, Total	ND	mg/l	0.0002	4	245.2	0810 16:40	0811 11:45	DM
Blank Analysis for sample(s) 01,03 (WG249424-1)								
Pesticides by GC 504				14	504.1		0809 13:49	JB
1,2-Dibromoethane	ND	ug/l	0.020					
1,2-Dibromo-3-chloropropane	ND	ug/l	0.020					
Blank Analysis for sample(s) 01-02 (WG249378-6)								
Volatile Organics by GC/MS 624				5	624		0808 08:49	MM
Methylene chloride	ND	ug/l	5.0					
1,1-Dichloroethane	ND	ug/l	1.5					
Chloroform	ND	ug/l	1.5					
Carbon tetrachloride	ND	ug/l	1.0					
1,2-Dichloropropane	ND	ug/l	3.5					
Dibromochloromethane	ND	ug/l	1.0					
1,1,2-Trichloroethane	ND	ug/l	1.5					
2-Chloroethylvinyl ether	ND	ug/l	10.					
Tetrachloroethene	ND	ug/l	1.5					
Chlorobenzene	ND	ug/l	3.5					
Trichlorofluoromethane	ND	ug/l	5.0					
1,2-Dichloroethane	ND	ug/l	1.5					
1,1,1-Trichloroethane	ND	ug/l	2.0					
Bromodichloromethane	ND	ug/l	1.0					
trans-1,3-Dichloropropene	ND	ug/l	1.5					
cis-1,3-Dichloropropene	ND	ug/l	1.5					
Bromoform	ND	ug/l	1.0					
1,1,2,2-Tetrachloroethane	ND	ug/l	1.0					
Benzene	ND	ug/l	1.0					
Toluene	ND	ug/l	1.0					
Ethylbenzene	ND	ug/l	1.0					
Chloromethane	ND	ug/l	10.					
Bromomethane	ND	ug/l	5.0					
Vinyl chloride	ND	ug/l	2.0					
Chloroethane	ND	ug/l	2.0					
1,1-Dichloroethene	ND	ug/l	1.0					
trans-1,2-Dichloroethene	ND	ug/l	1.5					
cis-1,2-Dichloroethene	ND	ug/l	1.0					
Trichloroethene	ND	ug/l	1.0					
1,2-Dichlorobenzene	ND	ug/l	5.0					
1,3-Dichlorobenzene	ND	ug/l	5.0					
1,4-Dichlorobenzene	ND	ug/l	5.0					
p/m-Xylene	ND	ug/l	2.0					
o-xylene	ND	ug/l	1.0					
Xylene (Total)	ND	ug/l	2.0					
Styrene	ND	ug/l	1.0					

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0611133

Continued

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Blank Analysis for sample(s) 01-02 (WG249378-6)							
Volatile Organics by GC/MS 624 cont'd				5 624		0808 08:49	MM
Acetone	ND	ug/l	10.				
Carbon disulfide	ND	ug/l	5.0				
2-Butanone	ND	ug/l	10.				
Vinyl acetate	ND	ug/l	20.				
4-Methyl-2-pentanone	ND	ug/l	10.				
2-Hexanone	ND	ug/l	10.				
Acrolein	ND	ug/l	8.0				
Acrylonitrile	ND	ug/l	10.				
Methyl tert butyl ether	ND	ug/l	20.				
1,4-Dioxane	ND	ug/l	2000				
Tert-Butyl Alcohol	ND	ug/l	100				
Tertiary-Amyl Methyl Ether	ND	ug/l	20.				
Surrogate(s)	Recovery		QC Criteria				
Pentafluorobenzene	87.0	%	80-120				
Fluorobenzene	94.0	%	80-120				
4-Bromofluorobenzene	85.0	%	80-120				
Blank Analysis for sample(s) 01 (WG249780-1)							
SVOC's by GC/MS 8270				1 8270C	0808 11:25	0810 21:50	RL
Acenaphthene	ND	ug/l	5.0				
Benzidine	ND	ug/l	50.				
1,2,4-Trichlorobenzene	ND	ug/l	5.0				
Hexachlorobenzene	ND	ug/l	5.0				
Bis(2-chloroethyl)ether	ND	ug/l	5.0				
1-Chloronaphthalene	ND	ug/l	5.0				
2-Chloronaphthalene	ND	ug/l	6.0				
1,2-Dichlorobenzene	ND	ug/l	5.0				
1,3-Dichlorobenzene	ND	ug/l	5.0				
1,4-Dichlorobenzene	ND	ug/l	5.0				
3,3'-Dichlorobenzidine	ND	ug/l	50.				
2,4-Dinitrotoluene	ND	ug/l	6.0				
2,6-Dinitrotoluene	ND	ug/l	5.0				
Azobenzene	ND	ug/l	5.0				
Fluoranthene	ND	ug/l	5.0				
4-Chlorophenyl phenyl ether	ND	ug/l	5.0				
4-Bromophenyl phenyl ether	ND	ug/l	5.0				
Bis(2-chloroisopropyl)ether	ND	ug/l	5.0				
Bis(2-chloroethoxy)methane	ND	ug/l	5.0				
Hexachlorobutadiene	ND	ug/l	10.				
Hexachlorocyclopentadiene	ND	ug/l	10.				
Hexachloroethane	ND	ug/l	5.0				
Isophorone	ND	ug/l	5.0				
Naphthalene	ND	ug/l	5.0				
Nitrobenzene	ND	ug/l	5.0				
NDPA/DPA	ND	ug/l	15.				

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0611133

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATE PREP	DATE ANAL	ID
Blank Analysis for sample(s) 01 (WG249780-1)								
SVOC's by GC/MS 8270 cont'd				1	8270C	0808 11:25	0810 21:50	RL
n-Nitrosodi-n-propylamine	ND	ug/l	5.0					
Bis(2-ethylhexyl)phthalate	ND	ug/l	10.					
Butyl benzyl phthalate	ND	ug/l	5.0					
Di-n-butylphthalate	ND	ug/l	5.0					
Di-n-octylphthalate	ND	ug/l	5.0					
Diethyl phthalate	ND	ug/l	5.0					
Dimethyl phthalate	ND	ug/l	5.0					
Benzo(a)anthracene	ND	ug/l	5.0					
Benzo(a)pyrene	ND	ug/l	5.0					
Benzo(b)fluoranthene	ND	ug/l	5.0					
Benzo(k)fluoranthene	ND	ug/l	5.0					
Chrysene	ND	ug/l	5.0					
Acenaphthylene	ND	ug/l	5.0					
Anthracene	ND	ug/l	5.0					
Benzo(ghi)perylene	ND	ug/l	5.0					
Fluorene	ND	ug/l	5.0					
Phenanthrene	ND	ug/l	5.0					
Dibenzo(a,h)anthracene	ND	ug/l	5.0					
Indeno(1,2,3-cd)pyrene	ND	ug/l	7.0					
Pyrene	ND	ug/l	5.0					
Benzo(e)pyrene	ND	ug/l	5.0					
Biphenyl	ND	ug/l	5.0					
Perylene	ND	ug/l	5.0					
Aniline	ND	ug/l	10.					
4-Chloroaniline	ND	ug/l	5.0					
1-Methylnaphthalene	ND	ug/l	5.0					
2-Nitroaniline	ND	ug/l	5.0					
3-Nitroaniline	ND	ug/l	5.0					
4-Nitroaniline	ND	ug/l	7.0					
Dibenzofuran	ND	ug/l	5.0					
a,a-Dimethylphenethylamine	ND	ug/l	50.					
Hexachloropropene	ND	ug/l	10.					
Nitrosodi-n-butylamine	ND	ug/l	10.					
2-Methylnaphthalene	ND	ug/l	5.0					
1,2,4,5-Tetrachlorobenzene	ND	ug/l	20.					
Pentachlorobenzene	ND	ug/l	20.					
a-Naphthylamine	ND	ug/l	20.					
b-Naphthylamine	ND	ug/l	20.					
Phenacetin	ND	ug/l	10.					
Dimethoate	ND	ug/l	20.					
4-Aminobiphenyl	ND	ug/l	10.					
Pentachloronitrobenzene	ND	ug/l	10.					
Isodrin	ND	ug/l	10.					
p-Dimethylaminoazobenzene	ND	ug/l	10.					
Chlorobenzilate	ND	ug/l	20.					
3-Methylcholanthrene	ND	ug/l	20.					

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0611133

Continued

PARAMETER	RESULT	UNITS	RDL	REF METHOD	DATE PREP	DATE ANAL	ID
Blank Analysis for sample(s) 01 (WG249780-1)							
SVOC's by GC/MS 8270 cont'd				1 8270C	0808 11:25	0810 21:50	RL
Ethyl Methanesulfonate	ND	ug/l	15.				
Acetophenone	ND	ug/l	20.				
Nitrosodipiperidine	ND	ug/l	20.				
7,12-Dimethylbenz(a)anthracene	ND	ug/l	10.				
n-Nitrosodimethylamine	ND	ug/l	50.				
2,4,6-Trichlorophenol	ND	ug/l	5.0				
p-Chloro-m-cresol	ND	ug/l	5.0				
2-Chlorophenol	ND	ug/l	6.0				
2,4-Dichlorophenol	ND	ug/l	10.				
2,4-Dimethylphenol	ND	ug/l	10.				
2-Nitrophenol	ND	ug/l	20.				
4-Nitrophenol	ND	ug/l	10.				
2,4-Dinitrophenol	ND	ug/l	20.				
4,6-Dinitro-o-cresol	ND	ug/l	20.				
Pentachlorophenol	ND	ug/l	20.				
Phenol	ND	ug/l	7.0				
2-Methylphenol	ND	ug/l	6.0				
3-Methylphenol/4-Methylphenol	ND	ug/l	6.0				
2,4,5-Trichlorophenol	ND	ug/l	5.0				
2,6-Dichlorophenol	ND	ug/l	10.				
Benzoic Acid	ND	ug/l	50.				
Benzyl Alcohol	ND	ug/l	10.				
Carbazole	ND	ug/l	5.0				
Pyridine	ND	ug/l	50.				
2-Picoline	ND	ug/l	20.				
Pronamide	ND	ug/l	20.				
Methyl methanesulfonate	ND	ug/l	20.				
Surrogate(s)	Recovery		QC Criteria				
2-Fluorophenol	25.0	%	21-120				
Phenol-d6	20.0	%	10-120				
Nitrobenzene-d5	57.0	%	23-120				
2-Fluorobiphenyl	52.0	%	43-120				
2,4,6-Tribromophenol	98.0	%	10-120				
4-Terphenyl-d14	100	%	33-120				
Blank Analysis for sample(s) 01 (WG249781-1)							
PAH by GC/MS SIM 8270M				1 8270C-M	0808 11:25	0811 07:32	RL
Acenaphthene	ND	ug/l	0.20				
2-Chloronaphthalene	ND	ug/l	0.20				
Fluoranthene	ND	ug/l	0.20				
Hexachlorobutadiene	ND	ug/l	0.50				
Naphthalene	ND	ug/l	0.20				
Benzo(a)anthracene	ND	ug/l	0.20				
Benzo(a)pyrene	ND	ug/l	0.20				
Benzo(b)fluoranthene	ND	ug/l	0.20				

ALPHA ANALYTICAL LABORATORIES
QUALITY ASSURANCE BATCH BLANK ANALYSIS

Laboratory Job Number: L0611133

Continued

PARAMETER	RESULT	UNITS	RDL	REF	METHOD	DATE PREP	DATE ANAL	ID
Blank Analysis for sample(s) 01 (WG249781-1)								
PAH by GC/MS SIM 8270M cont'd				1	8270C-M	0808 11:25	0811 07:32	RL
Benzo(k)fluoranthene	ND	ug/l	0.20					
Chrysene	ND	ug/l	0.20					
Acenaphthylene	ND	ug/l	0.20					
Anthracene	ND	ug/l	0.20					
Benzo(ghi)perylene	ND	ug/l	0.20					
Fluorene	ND	ug/l	0.20					
Phenanthrene	ND	ug/l	0.20					
Dibenzo(a,h)anthracene	ND	ug/l	0.20					
Indeno(1,2,3-cd)Pyrene	ND	ug/l	0.20					
Pyrene	ND	ug/l	0.20					
1-Methylnaphthalene	ND	ug/l	0.20					
2-Methylnaphthalene	ND	ug/l	0.20					
Pentachlorophenol	ND	ug/l	0.80					
Hexachlorobenzene	ND	ug/l	0.80					
Perylene	ND	ug/l	0.20					
Biphenyl	ND	ug/l	0.20					
2,6-Dimethylnaphthalene	ND	ug/l	0.20					
1-Methylphenanthrene	ND	ug/l	0.20					
Benzo(e)Pyrene	ND	ug/l	0.20					
Hexachloroethane	ND	ug/l	0.80					
Surrogate(s)	Recovery		QC Criteria					
2-Fluorophenol	24.0	%	21-120					
Phenol-d6	20.0	%	10-120					
Nitrobenzene-d5	58.0	%	23-120					
2-Fluorobiphenyl	48.0	%	43-120					
2,4,6-Tribromophenol	51.0	%	10-120					
4-Terphenyl-d14	104	%	33-120					
Blank Analysis for sample(s) 01 (WG249231-1)								
Polychlorinated Biphenyls				5	608	0808 11:25	0811 01:06	JB
Aroclor 1016	ND	ug/l	0.250					
Aroclor 1221	ND	ug/l	0.250					
Aroclor 1232	ND	ug/l	0.250					
Aroclor 1242	ND	ug/l	0.250					
Aroclor 1248	ND	ug/l	0.250					
Aroclor 1254	ND	ug/l	0.250					
Aroclor 1260	ND	ug/l	0.250					
Surrogate(s)	Recovery		QC Criteria					
2,4,5,6-Tetrachloro-m-xylene	62.0	%	30-150					
Decachlorobiphenyl	15.0	%	30-150					

REFERENCES

1. Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. EPA SW-846. Third Edition. Updates I - IIIA, 1997.

4. Methods for Chemical Analysis of Water and Wastes. EPA 600/4-79-020. Revised March 1983.

5. Methods for the Organic Chemical Analysis of Municipal and Industrial Wastewater. Appendix A, Part 136, 40 CFR (Code of Federal Regulations).

14. Methods for the Determination of Organic Compounds in Finished Drinking Water and Raw Source Water. EPA/600/4-88/039, Revised July 1991.

19. Inductively Coupled Plasma Atomic Emission Spectrometric Method for Trace Element Analysis of Water and Wastes. Appendix C, Part 136, 40 CFR (Code of Federal Regulations). July 1, 1999 edition.

30. Standard Methods for the Examination of Water and Wastewater. APHA-AWWA-WPCF. 18th Edition. 1992.

74. Method 1664,Revision A: N-Hexane Extractable Material (HEM; Oil & Grease) and Silica Gel Treated N-Hexane Extractable Material (SGT-HEM; Non-polar Material) by Extraction and Gravimetry, EPA-821-R-98-002, February 1999.

REFERENCES

GLOSSARY OF TERMS AND SYMBOLS

REF	Reference number in which test method may be found.
METHOD	Method number by which analysis was performed.
ID	Initials of the analyst.
ND	Not detected in comparison to the reported detection limit.
NI	Not Ignitable.
ug/cart	Micrograms per Cartridge.

LIMITATION OF LIABILITIES

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

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

Katie Oblen

CHAIN OF CUSTODY PAGE 1 OF 1

ALPHA LABORATORIES
WESTBORO, MA TEL: 508-898-9220 FAX: 508-898-9193
RAYNHAM, MA TEL: 508-822-9300 FAX: 508-822-3288

Date Rec'd in Lab: 8/4

ALPHA Job #: L061133

Client Information

Client: ENSR
Address: 2 Technology Park Dr
Westford, MA 01886
Phone: (978) 589-3054
Fax: (978) 589-3035
Email: dfolan@AECOM.com
☐ These samples have been previously analyzed by Alpha

Project Information

Project Name: Peabody Essex Museum
Project Location: Salem, MA
Project #: 10542-004
Project Manager: Dan Folan
ALPHA Quote #:

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved!)
Date Due: 8/11 Time:

Report Information - Data Deliverables

☐ FAX ☒ EMAIL
☐ ADEx ☐ Add'l Deliverables

Billing Information

☐ Same as Client info PO #:

Regulatory Requirements/Report Limits

State /Fed Program: MA MCP
Criteria: GW-1

MA MCP PRESUMPTIVE CERTAINTY --- CT REASONABLE CONFIDENCE PROTOCOLS

☒ Yes ☐ No Are MCP Analytical Methods Required?
☐ Yes ☐ No Are CT RCP (Reasonable Confidence Protocols) Required?

Other Project Specific Requirements/Comments/Detection Limits:
METALS include: Sb, As, Cd, Cr, Cu, Fe, Pb, Hg, Ni, Se, Ag, Zn

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Collection Time	Sample Matrix	Sampler's Initials	624	504	Total Metals	TSS	TRC, Hex Cr, pH	8270 PAH - Low	TPH - 1664	TCN	Total Phenol	PCBs	Sample Specific Comments
1133.1	MW14GW-080406	8/4/06	1200	GW	DMF	X	X	X	X	X	X	X	X	X	X	
2	TRIP BLANK - 624	8/3/06	1615	W	ALPHA	X										
3	TRIP BLANK - 504	8/3/06	1615	W	ALPHA		X									

SAMPLE HANDLING
Filtration
☐ Done
☒ Not needed
☐ Lab to do
Preservation
☐ Lab to do
(Please specify below)

TOTAL # BOTTLES

PLEASE ANSWER QUESTIONS ABOVE!

IS YOUR PROJECT MA MCP or CT RCP?

	Container Type										
	Preservative	NaS	NaS HNO3	N	N	N	HCl	NaOH	H2SO4	NaS	

Relinquished By:	Date/Time	Received By:	Date/Time
Daniel Folan	8/4/06 - 1435		8/4/06 14:3
	8/4/06 1536		8/4/06 1550
	8/4 1600		8/4 1600

Please print clearly, legibly and completely. Samples can not be logged in and turnaround time clock will not start until any ambiguities are resolved. All samples submitted are subject to Alpha's Payment Terms. See reverse side.

FORM NO: 01-01 (rev. 10-OCT-05)