

**EPA REMEDIATION GENERAL PERMIT**

**135 AMERICAN LEGION HIGHWAY  
REVERE, MASSACHUSETTS  
RTN 3-27620**

**File No. M1167.02  
May 2010**

**Prepared For:**

**New England Confectionary Company  
135 American Legion Highway  
Revere, MA**

**W**HEATSTONE  
*Engineering & Consulting, Inc.*

*220 Forbes Road/Suite 405  
Braintree, MA 02184-2715*



May 19, 2010  
File No. M1197.02

United States Environmental Protection Agency  
Ms. Shelly Puleo  
Industrial NPDES Permits (CIP)  
1 Congress Street, Suite 1100  
Boston, MA 02114-2023  
*Submitted via electronic mail to:* [NPDES.Generalpermits@epa.gov](mailto:NPDES.Generalpermits@epa.gov)

And

Department of Environmental Protections  
Division of Watershed Management  
627 Main Street, 2<sup>nd</sup> Floor  
Worcester, MA 01608

RE: Remediation General Permit  
Emergency Utility –  
Groundwater Dewatering  
135 American Legion Highway  
Revere, MA  
RTN 3-27620

Dear Ms. Puleo:

The purpose of this letter is to request approval of an EPA Remediation General Permit (RGP) to discharge stored groundwater to the on-site storm system at 135 American Legion Highway in Revere, MA. The system eventually discharges to a wetland located behind the manufacturing facility. The water was generated during emergency utility work performed to repair a broken water line for the fire suppression system of the building. The required emergency activities included subsurface excavations and a significant groundwater dewatering program. Currently, more than 110,000 gallons of groundwater generated from the excavations are being stored in on-site fractionation (frac) tanks. Future upgrades to the fire suppression water line are planned over the next two years; the requested permit will also manage future discharges as well.

*220 Forbes Road/Suite 405 Braintree, MA 02184-2705  
tel (781) 380-0600 fax (781) 380-0601*

## **Site Description**

The property is developed with a multi-purpose 2-story structure with a building footprint of approximately 491,700 square feet that includes manufacturing space, warehousing space, and office space for candy and other confectionary manufacturing. The occupant of the property is New England Confectionary Company (NECCO). Historic uses (in the mid-20<sup>th</sup> century) of the property include filling activities that resulted in metals contamination in soil and the presence of total metals in the groundwater. Concentrations of dissolved metals at the property are below MCP standards. The site is situated within a mixed use area in Revere, Massachusetts. The property is bounded to the north by wetland marsh (also owned by NECCO), beyond which is a residential area; to the east by railroad tracks used by the Massachusetts Bay Transportation Authority (MBTA) commuter rail line, beyond which is the Wonderland Park Greyhound Racing Track and a discount appliance store; to the south by a Comfort Inn Suites Hotel and on Everett Street, an auto body repair shop; and to the west by the American Legion Highway, beyond which is Erricola Park.

The attached Locus Plan (USGS Topographic Plan) shows the approximate location of the property and adjacent wetlands (although the current facility is not shown on the USGS Map). The subject building is shown on Figure No. 2.

## **Proposed and Completed Activities**

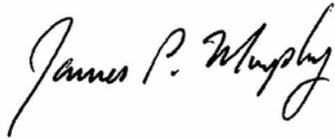
The fire suppression water line surrounds the building approximately 8 feet below ground surface. The groundwater table is approximately 5.5 feet below ground surface. Therefore, because of the permeability of the soils at this property, significant dewatering is necessary. Groundwater testing at the property has not warranted reporting under the Massachusetts Contingency Plan, although total metal concentration will require filtering prior to discharge.

In order to manage total suspended solids and total metals during the dewatering program, the groundwater will be pumped to frac tanks to settle total suspended solids. The emergency repair work was completed during the week of May 10, 2010 with the pumped groundwater stored in 6 frac tanks. The water will be pumped from the frac tanks through an initial bag filter (approximately 5 micron) followed by dual 0.45 micron filters to remove the total metals from the effluent. A sketch of the filter system is provided as an attachment.

The filtered water will be pumped at a rate not to exceed 100 gallons per minute to an on-site storm system that discharges to wetlands on the property. The wetlands are identified as Flats, Shoals on the MassGIS Resource Map and no Critical Habitats, Endangered or Threatened Species, or Historic Registered Places have been identified (see attached US Fish & Wildlife letter). A wetlands map and associated wetlands connection map is also included herein.

Please contact me if you have any further questions.

Sincerely,  
Wheatstone Engineering & Consulting, Inc.



James P. Murphy  
Principal



Robert C. Reynolds  
Project Manager

cc: Mr. Eric Rubin, NECCO

Attachments:

- EPA Notice of Intent Form
- Figure No. 1 Locus Plan
- Figure No. 2 Site Plan
- Figure No. 3 Treatment Schematic
- DEP Wetlands (Map) 1:12,000
- US Fish & Wildlife Letter
- Endangered and Threatened Species Report
- MassGIS Topographic Map
- National Wetlands Inventory, Revere Wetlands Mapping
- Streamflow and Dilution Calculations
- Laboratory Reports

## **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 <b>facility/site</b> :		Facility/site address:		
Location of <b>facility/site</b> : longitude: _____ latitude: _____	Facility SIC code(s):	Street:		
b) Name of <b>facility/site owner</b> :		Town:		
Email address of owner:		State:	Zip:	County:
Telephone no. of facility/site <b>owner</b> :				
Fax no. of facility/site <b>owner</b> :		<b>Owner</b> is (check one): 1. Federal____ 2. State/Tribal____ 3. Private____ 4. other, if so, describe:		
Address of <b>owner</b> (if different from site):				
Street:				
Town:	State:	Zip:	County:	
c) Legal name of <b>operator</b> :	<b>Operator</b> telephone no:			
	<b>Operator</b> fax no.:		<b>Operator</b> email:	
<b>Operator</b> contact name and title:				
Address of <b>operator</b> (if different from owner):		Street:		
Town:	State:	Zip:	County:	
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 ___				

<p>e) Is site/facility subject to any State permitting or other action which is causing the generation of discharge? Yes___ No___</p> <p>If “yes,” please list:</p> <ol style="list-style-type: none"> <li>1. site identification # assigned by the state of NH or MA:</li> <li>2. permit or license # assigned:</li> <li>3. state agency contact information: name, location, and telephone number:</li> </ol>	<p>f) Is the site/facility covered by any other EPA permit, including:</p> <ol style="list-style-type: none"> <li>1. multi-sector storm water general permit? Y___ N___, if Y, number:</li> <li>2. phase I or II construction storm water general permit? Y___ N___, if Y, number:</li> <li>3. individual NPDES permit? Y___ N___, if Y, number:</li> <li>4. any other water quality related permit? Y___ N___, if Y, number:</li> </ol>
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**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:			
b) Provide the following information about each discharge:	<table border="1" style="width: 100%;"> <tr> <td style="width: 20%;">1) Number of discharge points:</td> <td>2) What is the <b>maximum</b> and <b>average flow rate</b> of discharge (in cubic feet per second, ft<sup>3</sup>/s)? Max. flow _____ Average flow _____ Is maximum flow a <b>design value</b>? Y___ N___ For average flow, include the units and appropriate notation if this value is a design value or estimate if not available.</td> </tr> </table>	1) Number of discharge points:	2) What is the <b>maximum</b> and <b>average flow rate</b> of discharge (in cubic feet per second, ft <sup>3</sup> /s)? Max. flow _____ Average flow _____ Is maximum flow a <b>design value</b> ? Y___ N___ For average flow, include the units and appropriate notation if this value is a design value or estimate if not available.
1) Number of discharge points:	2) What is the <b>maximum</b> and <b>average flow rate</b> of discharge (in cubic feet per second, ft <sup>3</sup> /s)? Max. flow _____ Average flow _____ Is maximum flow a <b>design value</b> ? Y___ N___ For average flow, include the units and appropriate notation if this value is a design value or estimate if not available.		
3) Latitude and longitude of each discharge within 100 feet: pt.1:long. _____ lat. _____; 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):	5) Is the discharge intermittent _____ or seasonal _____? Is discharge ongoing Yes _____ No _____?		
c) Expected dates of discharge (mm/dd/yy): start _____ end _____			
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 minimum)	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										
2. Total Residual Chlorine										
3. Total Petroleum Hydrocarbons										
4. Cyanide										
5. Benzene										
6. Toluene										
7. Ethylbenzene										
8. (m,p,o) Xylenes										
9. Total BTEX <sup>4</sup>										

<sup>4</sup>BTEX = Sum of Benzene, Toluene, Ethylbenzene, total Xylenes.

PARAMETER	Believe Absent	Believe Present	# of Samples (1 minimum)	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 <sup>5</sup> (1,2- Dibromo-methane)										
11. Methyl-tert-Butyl Ether (MtBE)										
12. tert-Butyl Alcohol (TBA)										
13. tert-Amyl Methyl Ether (TAME)										
14. Naphthalene										
15. Carbon Tetra-chloride										
16. 1,4 Dichlorobenzene										
17. 1,2 Dichlorobenzene										
18. 1,3 Dichlorobenzene										
19. 1,1 Dichloroethane										
20. 1,2 Dichloroethane										
21. 1,1 Dichloroethylene										
22. cis-1,2 Dichloro-ethylene										
23. Dichloromethane (Methylene Chloride)										
24. Tetrachloroethylene										

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<sup>5</sup>EDB is a groundwater contaminant at fuel spill and pesticide application sites in New England.

PARAMETER	Believe Absent	Believe Present	# of Samples (1 minimum)	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										
26. 1,1,2 Trichloroethane										
27. Trichloroethylene										
28. Vinyl Chloride										
29. Acetone										
30. 1,4 Dioxane										
31. Total Phenols										
32. Pentachlorophenol										
33. Total Phthalates <sup>6</sup> (Phthalate esthers)										
34. Bis (2-Ethylhexyl) Phthalate [Di-(ethylhexyl) Phthalate]										
35. Total Group I Polycyclic Aromatic Hydrocarbons (PAH)										
a. Benzo(a) Anthracene										
b. Benzo(a) Pyrene										
c. Benzo(b)Fluoranthene										
d. Benzo(k) Fluoranthene										
e. Chrysene										

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<sup>6</sup>The sum of individual phthalate compounds.

PARAMETER	Believe Absent	Believe Present	# of Samples (1 minimum)	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)
<b>f. Dibenzo(a,h) anthracene</b>										
<b>g. Indeno(1,2,3-cd) Pyrene</b>										
<b>36. Total Group II Polycyclic Aromatic Hydrocarbons (PAH)</b>										
<b>h. Acenaphthene</b>										
<b>i. Acenaphthylene</b>										
<b>j. Anthracene</b>										
<b>k. Benzo(ghi) Perylene</b>										
<b>l. Fluoranthene</b>										
<b>m. Fluorene</b>										
<b>n. Naphthalene-</b>										
<b>o. Phenanthrene</b>										
<b>p. Pyrene</b>										
<b>37. Total Polychlorinated Biphenyls (PCBs)</b>										
<b>38. Antimony</b>										
<b>39. Arsenic</b>										
<b>40. Cadmium</b>										
<b>41. Chromium III</b>										
<b>42. Chromium VI</b>										

PARAMETER	Believe Absent	Believe Present	# of Samples (1 minimum)	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										
44. Lead										
45. Mercury										
46. Nickel										
47. Selenium										
48. Silver										
49. Zinc										
50. Iron										
Other (describe):										

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

<p><i>Step 1:</i> Do any of the metals in the influent have a <b>reasonable potential</b> to exceed the effluent limits in Appendix III (i.e., the limits set at zero to five dilutions)? Y____ N____</p>	<p>If yes, which metals?</p>
<p><i>Step 2:</i> For any metals which have <b>reasonable potential</b> to exceed the <b>Appendix III</b> limits, calculate the <b>dilution factor (DF)</b> 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: _____  DF: _____</p>	<p>Look up the limit calculated at the corresponding dilution factor in <b>Appendix IV</b>. Do any of the metals in the <b>influent</b> have the potential to exceed the corresponding <b>effluent</b> 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:</p>

**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:						
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 <b>average</b> and <b>maximum flow rates</b> (gallons per minute) for the discharge and the <b>design flow rate(s)</b> (gallons per minute) of the treatment system: Average flow rate of discharge _____ Maximum flow rate of treatment system _____ Design flow rate of treatment system _____						
d) A description of chemical additives being used or planned to be used (attach MSDS sheets):						

**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:						
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 _____,						
e) Provide the reported or calculated seven day-ten year low flow (7Q10) of the receiving water _____ 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)? 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 <input checked="" type="checkbox"/> Has any consultation with the federal services been completed? Yes <input checked="" type="checkbox"/> 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? <input checked="" type="checkbox"/> 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 <input checked="" type="checkbox"/> Have any state or tribal historic preservation officer been consulted in this determination (Massachusetts only)? Yes ___ No <input checked="" type="checkbox"/>

**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.
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**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: <u>NECCO</u>
Operator signature: 
Title: <u>Project Manager</u>
Date: <u>5/21/10</u>



**WHEATSTONE**  
Engineering & Consulting, Inc.

220 Forbes Road  
Suite 405  
Braintree, Ma. 02184-2705  
Tel: (781) 380-0600

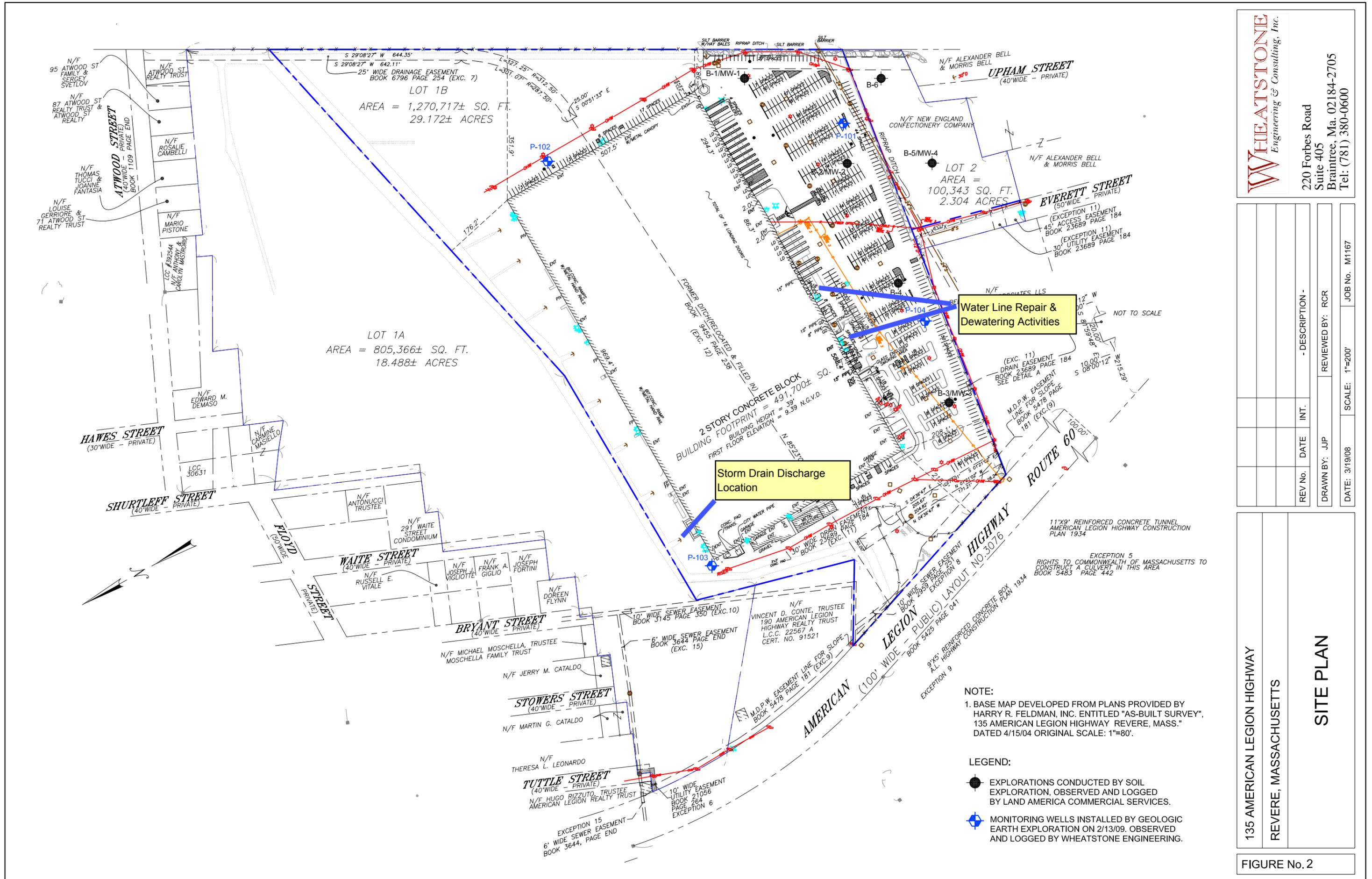
REV No.	DATE	INT.	- DESCRIPTION -

DRAWN BY: JJP      REVIEWED BY: RCR  
DATE: 6/25/09      JOB No. M1167

135 AMERICAN LEGION HIGHWAY  
REVERE, MASSACHUSETTS  
**LOCUS PLAN**  
SOURCE: 1985 USGS BOSTON NORTH, MA QUADRANGLE MAP  
(NOT TO SCALE)

FIGURE No. 1





**NOTE:**  
 1. BASE MAP DEVELOPED FROM PLANS PROVIDED BY HARRY R. FELDMAN, INC. ENTITLED "AS-BUILT SURVEY", 135 AMERICAN LEGION HIGHWAY REVERE, MASS." DATED 4/15/04 ORIGINAL SCALE: 1"=80'.

**LEGEND:**

- EXPLORATIONS CONDUCTED BY SOIL EXPLORATION, OBSERVED AND LOGGED BY LAND AMERICA COMMERCIAL SERVICES.
- ⊕ MONITORING WELLS INSTALLED BY GEOLOGIC EARTH EXPLORATION ON 2/13/09. OBSERVED AND LOGGED BY WHEATSTONE ENGINEERING.

**WHEATSTONE**  
 Engineering & Consulting, Inc.  
 220 Forbes Road  
 Suite 405  
 Braintree, Ma. 02184-2705  
 Tel: (781) 380-0600

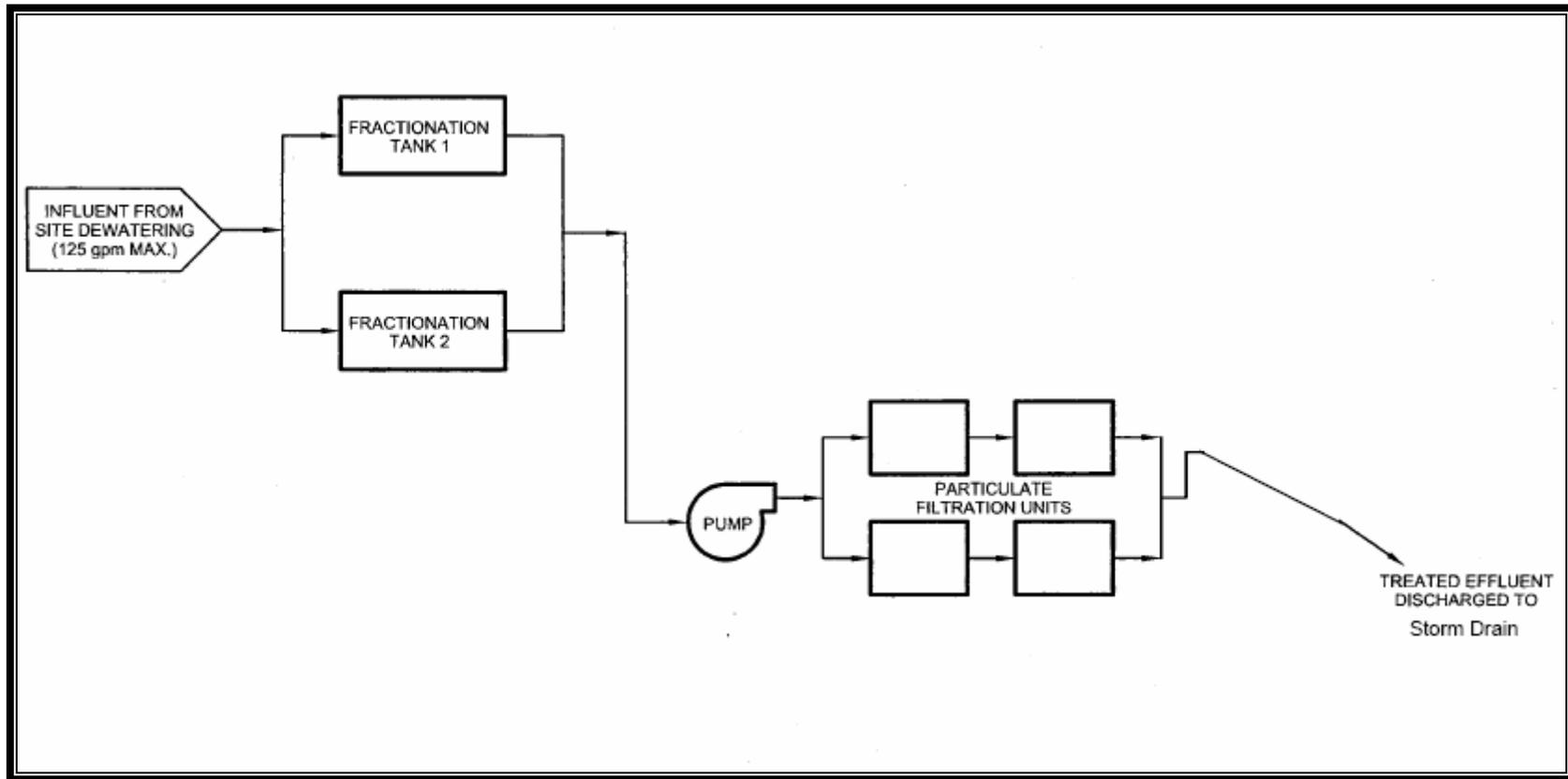
REV No.	DATE	INT.	- DESCRIPTION -

DRAWN BY: JJP  
 REVIEWED BY: RCR  
 DATE: 3/19/08  
 SCALE: 1"=200'  
 JOB No. M1167

135 AMERICAN LEGION HIGHWAY  
 REVERE, MASSACHUSETTS

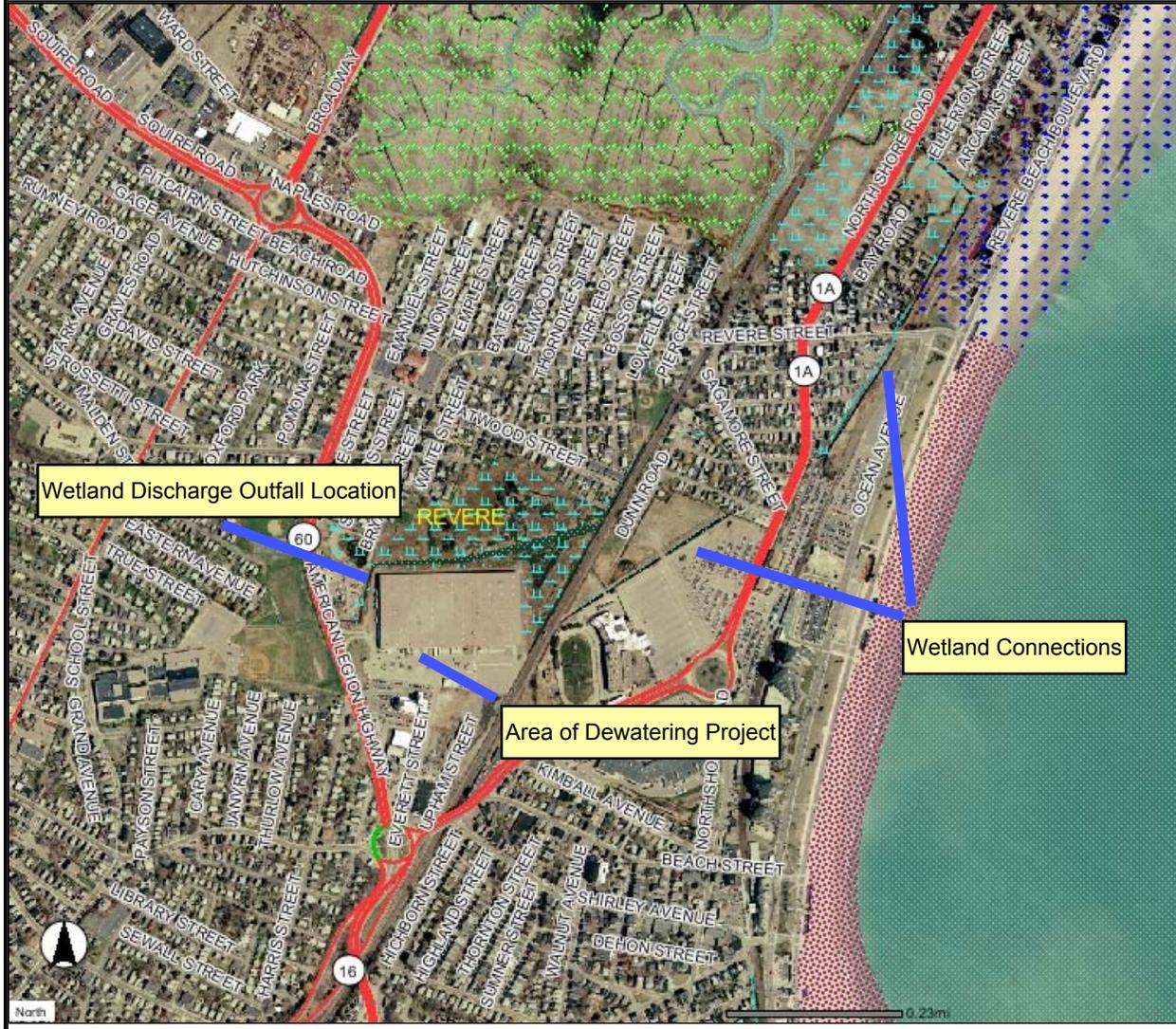
**SITE PLAN**

FIGURE No. 2



**Figure No. 3 Treatment Schematic for Dewatering Program**  
135 American Legion Highway  
Revere, MA

DEP Wetlands 1:12,000



- Mass. Towns Boundaries
- EOT-OTC Roads
- Limited Access Highway
- Multi-lane Hwy, Not Limited Access
- Other Numbered Hwy
- Wetland Connections
- Wetlands 12k Detailed
- Barrier Beach System
- Barrier Beach-Deep Marsh
- Barrier Beach-Wooded Swamp Mixed Trees
- Barrier Beach-Coastal Beach
- Barrier Beach-Coastal Dune
- Barrier Beach-Marsh
- Barrier Beach-Salt Marsh
- Barrier Beach-Wooded Swamp Coniferous
- Barrier Beach-Wooded Swamp Deciduous
- Barrier Beach-Wooded Swamp Deciduous Bog
- Coastal Bank Bluff or Sea Cliff
- Coastal Beach
- Coastal Dune
- Cranberry Bog
- Deep Marsh
- Barrier Beach-Open Water
- Open Water
- Rocky Intertidal Shore
- Salt Marsh
- Shallow Marsh Meadow or Fen
- Shrub Swamp
- Tidal Flat
- Wooded Swamp Coniferous
- Wooded Swamp Deciduous
- Wooded Swamp Mixed Trees



# United States Department of the Interior



## FISH AND WILDLIFE SERVICE

New England Field Office  
70 Commercial Street, Suite 300  
Concord, NH 03301-5087  
<http://www.fws.gov/newengland>

January 4, 2010

To Whom It May Concern:

This project was reviewed for the presence of federally-listed or proposed, threatened or endangered species or critical habitat per instructions provided on the U.S. Fish and Wildlife Service's New England Field Office website:

(<http://www.fws.gov/newengland/EndangeredSpec-Consultation.htm>)

Based on the information currently available, no federally-listed or proposed, threatened or endangered species or critical habitat under the jurisdiction of the U.S. Fish and Wildlife Service (Service) are known to occur in the project area(s). Preparation of a Biological Assessment or further consultation with us under Section 7 of the Endangered Species Act is not required.

This concludes the review of listed species and critical habitat in the project location(s) and environs referenced above. No further Endangered Species Act coordination of this type is necessary for a period of one year from the date of this letter, unless additional information on listed or proposed species becomes available.

Thank you for your cooperation. Please contact Mr. Anthony Tur at 603-223-2541 if we can be of further assistance.

Sincerely yours,

Thomas R. Chapman  
Supervisor  
New England Field Office



# Species Reports

## Environmental Conservation Online System

### Species listed in Massachusetts based on published historic range and population

#### Notes:

- This report shows the species listed in this state according to the Federal Register listing description.
- This list does not include experimental populations and similarity of appearance listings.
- This list includes species or populations under the sole jurisdiction of the National Marine Fisheries Service.
- Click on the highlighted scientific names below to view a Species Profile for each listing.

### Listed species (based on published historic range and population data) -- 27 listings

#### Animals -- 22 listings

Status	Species/Listing Name
E	Beetle, American burying ( <a href="#">Nicrophorus americanus</a> )
E	Butterfly, Karner blue ( <a href="#">Lycaeides melissa samuelis</a> )
E	Curlew, Eskimo ( <a href="#">Numenius borealis</a> )
T	Plover, piping except Great Lakes watershed ( <a href="#">Charadrius melodus</a> )
E	Plymouth Red-Bellied Turtle ( <a href="#">Pseudemys rubriventris bangsi</a> )
E	Puma (=cougar), eastern ( <a href="#">Puma (=Felis) concolor cougar</a> )
E	Sea turtle, hawksbill ( <a href="#">Eretmochelys imbricata</a> )
E	Sea turtle, Kemp's ridley ( <a href="#">Lepidochelys kempii</a> )
E	Sea turtle, leatherback ( <a href="#">Dermochelys coriacea</a> )
T	Sea turtle, loggerhead ( <a href="#">Caretta caretta</a> )
E	Sturgeon, shortnose ( <a href="#">Acipenser brevirostrum</a> )
E	Tern, roseate northeast U.S. nesting pop. ( <a href="#">Sterna dougallii dougallii</a> )
T	Tiger beetle, northeastern beach ( <a href="#">Cicindela dorsalis dorsalis</a> )
T	Tiger beetle, Puritan ( <a href="#">Cicindela puritana</a> )
T	Turtle, bog (=Muhlenberg) northern ( <a href="#">Clemmys muhlenbergii</a> )
E	Wedgemussel, dwarf ( <a href="#">Alasmidonta heterodon</a> )
E	Whale, blue ( <a href="#">Balaenoptera musculus</a> )
E	Whale, finback ( <a href="#">Balaenoptera physalus</a> )
E	Whale, humpback ( <a href="#">Megaptera novaeangliae</a> )
E	Whale, right ( <a href="#">Balaena glacialis (incl. australis)</a> )
E	Whale, Sei ( <a href="#">Balaenoptera borealis</a> )
E	Wolf, gray Lower 48 States, except where delisted and where EXPN. Mexico. ( <a href="#">Canis lupus</a> )

#### Plants -- 5 listings

Status	Species/Listing Name
--------	----------------------

T	Amaranth, seabeach ( <a href="#">Amaranthus pumilus</a> )
E	Bulrush, Northeastern ( <a href="#">Scirpus ancistrochaetus</a> )
E	Chaffseed, American ( <a href="#">Schwalbea americana</a> )
E	Gerardia, sandplain ( <a href="#">Agalinis acuta</a> )
T	Pogonia, small whorled ( <a href="#">Isotria medeoloides</a> )

---

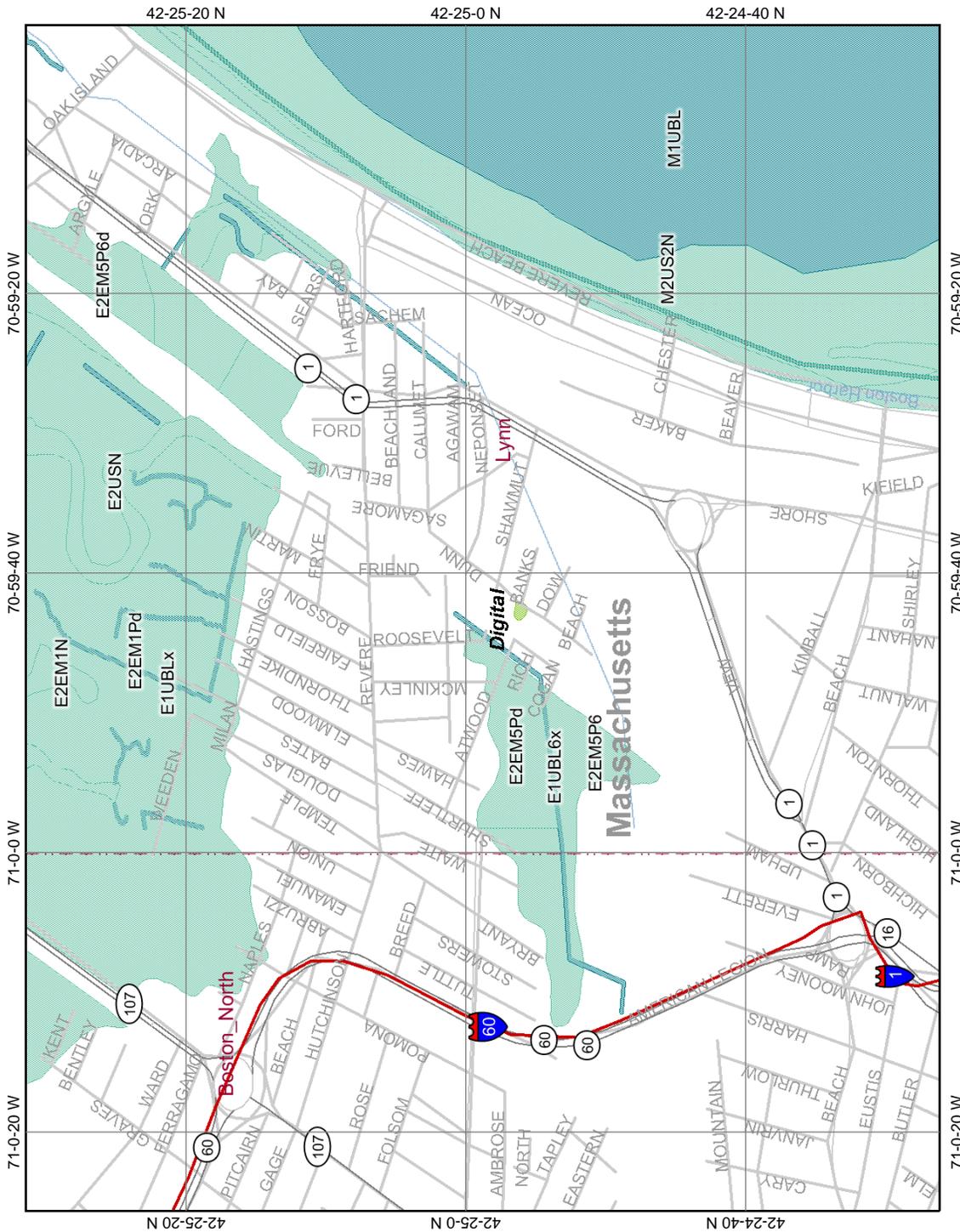
Last updated: April 28, 2010

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MassGIS Topographic Map



# Revere Wetlands Mapping



Map center: 42° 24' 59" N, 70° 59' 43" W



## Legend

- Ohio\_wet\_scan
- 0
- 1
- Out of range
- Interstate
- Major Roads
- Other Road
- Interstate
- State highway
- US highway
- Roads
- Cities
- USGS Quad Index 24K
- Lower 48 Wetland Polygons
- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine
- Lower 48 Available Wetland Data
- Non-Digital
- Digital
- No Data
- Scan
- NHD Streams
- Counties 100K
- States 100K
- South America
- North America

Scale: 1:14,106



This map is a user generated static output from an Internet mapping site and is for general reference only. Data layers that appear on this map may or may not be accurate, current, or otherwise reliable. THIS MAP IS NOT TO BE USED FOR NAVIGATION.



Massachusetts StreamStats

# Streamstats Ungaged Site Report

Date: Fri May 14 2010 13:42:23 Mountain Daylight Time  
 Site Location: Massachusetts  
 NAD83 Latitude: 42.4215 (42 25 17)  
 NAD83 Longitude: -70.9871 (-70 59 13)  
 NAD27 Latitude: 42.4214 (42 25 17)  
 NAD27 Longitude: -70.9876 (-70 59 15)  
 ReachCode: 01090001016977  
 Measure: 4.09  
 Drainage Area: 1.18 mi2

Low Flows Basin Characteristics			
100% Statewide Low Flow (1.18 mi2)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	1.18 (below min value 1.61)	1.61	149
Mean Basin Slope from 250K DEM (percent)	1.32	0.32	24.6
Stratified Drift per Stream Length (square mile per mile)	2.06 (above max value 1.29)	0	1.29
Massachusetts Region (dimensionless)	0	0	1

Warning: Some parameters are outside the suggested range. Estimates will be extrapolations with unknown errors.

Probability of Perennial Flow Basin Characteristics			
100% Perennial Flow Probability (1.18 mi2)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	1.18	0.01	1.99
Percent Underlain By Sand And Gravel (percent)	67.76	0	100
Percent Forest (percent)	0.32	0	100
Massachusetts Region (dimensionless)	0	0	1

Low Flows Streamflow Statistics					
Statistic	Flow (ft <sup>3</sup> /s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
D50	1.13				
D60	1				
D70	0.95				
D75	0.85				
D80	1.09				
D85	0.83				
D90	0.94				
D95	0.5				
D98	0.35				
D99	0.25				
M7D2Y	0.44				
AUGD50	0.93				
M7D10Y	0.28	= Qs			

$$DF = [(Q_d + Q_s) / Q_d]$$

where, •Q<sub>d</sub> = 0.223 cfs  
 •Q<sub>s</sub> = 0.28 cfs

$$DF = [(0.223 + 0.28) / 0.223]$$

----->•DF = 2.256

The equation for estimating the probability of perennial flow is applicable for most areas of Massachusetts except eastern Buzzards Bay, Cape Cod, and the Island regions. The estimate obtained from the equation assumes natural flow conditions at the site. The equation also is best used for sites with drainage areas between 0.01 to 1.99 mi2, as errors beyond for basins beyond these bounds are unknown.

**Probability of Perennial Flow Statistics**

Statistic	Value	Standard Error (percent)
PROBPEREN	0.98	0.6



### StreamStats Print Page

NECCO



#### Legend

- GlobalWatershedPoint
- GlobalWatershed
- Excluded Areas
- rhdgages
- rhddams
- huopoly
- Dendritic Stream Network
- NHD Flowline
- <all other values>
- ArtificialPath
- Canal/Ditch
- Coastline
- Connector
- Pipeline
- Stream/River
- Underground Conduit
- Stream Gages**
- Gaging Station, Continuous Record
- Low Flow, Partial Record
- Peak Flow, Partial Record
- Peak and Low Flow, Partial Record
- Miscellaneous Record
- Unknown

0.4 0.2 0 0.4 Miles

5/14/2010 1:44:13 PM

Report Date:  
03-May-10 14:56



- Final Report
- Re-Issued Report
- Revised Report

**SPECTRUM ANALYTICAL, INC.**  
*Featuring*  
**HANIBAL TECHNOLOGY**  
**Laboratory Report**

Wheatstone Engineering & Consulting, Inc.  
 220 Forbes Road, Suite 405  
 Braintree, MA 02184-2705  
 Attn: Robert Reynolds

Project: Necco - Revere, MA  
 Project #: M1167.02

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SB11288-01	P-104	Ground Water	26-Apr-10 00:00	28-Apr-10 17:15

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received. All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110  
 Connecticut # PH-0777  
 Florida # E87600/E87936  
 Maine # MA138  
 New Hampshire # 2538  
 New Jersey # MA011/MA012  
 New York # 11393/11840  
 Pennsylvania # 68-04426/68-02924  
 Rhode Island # 98  
 USDA # S-51435  
 Vermont # VT-11393



Authorized by:

Hanibal C. Tayeh, Ph.D.  
President/Laboratory Director

Technical Reviewer's Initial:

Spectrum Analytical holds certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes. Please note that this report contains 12 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

*Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our "Quality" web page at [www.spectrum-analytical.com](http://www.spectrum-analytical.com) for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (NY-11840, FL-E87936 and NJ-MA012).*

*Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.*

**CASE NARRATIVE:**

The sample temperature upon receipt by Spectrum Analytical courier was recorded as 4.2 degrees Celsius. The condition of these samples was further noted as refrigerated. The samples were transported on ice to the laboratory facility and the temperature was recorded at 1.4 degrees Celsius upon receipt at the laboratory. Please refer to the Chain of Custody for details specific to sample receipt times.

An infrared thermometer with a tolerance of +/- 2.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method.

According to WSC-CAM 5/2009 Rev.1, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended recovery range, a range has been set based on historical control limits.

Some target analytes which are not listed as exceptions in the Summary of CAM Reporting Limits may exceed the recommended RL based on sample initial volume or weight provided, % moisture content, or responsiveness of a particular analyte to purge and trap instrumentation.

**See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.**

**SW846 8260B**

**Calibration:**

1004048

---

Analyte quantified by quadratic equation type calibration.

Bromoform

This affected the following samples:

1009226-BLK1  
1009226-BS1  
1009226-BSD1  
P-104  
S003820-CCV1

**Laboratory Control Samples:**

1009226 BS/BSD

---

1,1-Dichloroethane percent recoveries (51/110) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

P-104

2-Butanone (MEK) percent recoveries (37/103) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

P-104

Bromochloromethane percent recoveries (97/258) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

P-104

**Laboratory Control Samples:**

1009226 BS/BSD

---

Chloroform percent recoveries (93/260) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

P-104

cis-1,2-Dichloroethene percent recoveries (40/105) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

P-104

trans-1,2-Dichloroethene percent recoveries (28/99) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

P-104

1009226 BSD

---

1,1-Dichloroethane RPD 73% (25%) is outside individual acceptance criteria, but within overall method allowances.

2-Butanone (MEK) RPD 93% (50%) is outside individual acceptance criteria, but within overall method allowances.

Bromochloromethane RPD 91% (25%) is outside individual acceptance criteria, but within overall method allowances.

Chloroform RPD 95% (25%) is outside individual acceptance criteria, but within overall method allowances.

cis-1,2-Dichloroethene RPD 89% (25%) is outside individual acceptance criteria, but within overall method allowances.

Di-isopropyl ether RPD 43% (25%) is outside individual acceptance criteria, but within overall method allowances.

trans-1,2-Dichloroethene RPD 111% (25%) is outside individual acceptance criteria, but within overall method allowances.

1009226-BSD1

---

The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.

Di-isopropyl ether

**Samples:**

S003820-CCV1

---

Analyte percent difference is outside individual acceptance criteria, but within overall method allowances.

1,1,2-Trichlorotrifluoroethane (Freon 113) (24.7%)

Bromochloromethane (30.1%)

Dichlorodifluoromethane (Freon12) (27.0%)

n-Propylbenzene (20.3%)

Trichlorofluoromethane (Freon 11) (20.2%)

This affected the following samples:

1009226-BLK1

1009226-BS1

1009226-BSD1

P-104

Sample Identification

**P-104**  
SB11288-01

Client Project #  
M1167.02

Matrix  
Ground Water

Collection Date/Time  
26-Apr-10 00:00

Received  
28-Apr-10

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
<b>Volatile Organic Compounds</b>												
<u>Volatile Organic Compounds</u>												
<u>Prepared by method SW846 5030 Water MS</u>												
76-13-1	1,1,2-Trichlorotrifluoroethane (Freon 113)	BRL		µg/l	1.0	1	SW846 8260B	03-May-10	03-May-10	JLG	1009226	
67-64-1	Acetone	BRL		µg/l	10.0	1	"	"	"	"	"	"
107-13-1	Acrylonitrile	BRL		µg/l	0.5	1	"	"	"	"	"	"
71-43-2	Benzene	BRL		µg/l	1.0	1	"	"	"	"	"	"
108-86-1	Bromobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	"
74-97-5	Bromochloromethane	BRL		µg/l	1.0	1	"	"	"	"	"	"
75-27-4	Bromodichloromethane	BRL		µg/l	0.5	1	"	"	"	"	"	"
75-25-2	Bromoform	BRL		µg/l	1.0	1	"	"	"	"	"	"
74-83-9	Bromomethane	BRL		µg/l	2.0	1	"	"	"	"	"	"
78-93-3	2-Butanone (MEK)	BRL		µg/l	10.0	1	"	"	"	"	"	"
104-51-8	n-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	"
135-98-8	sec-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	"
98-06-6	tert-Butylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	"
75-15-0	Carbon disulfide	BRL		µg/l	2.0	1	"	"	"	"	"	"
56-23-5	Carbon tetrachloride	BRL		µg/l	1.0	1	"	"	"	"	"	"
108-90-7	Chlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	"
75-00-3	Chloroethane	BRL		µg/l	2.0	1	"	"	"	"	"	"
67-66-3	Chloroform	BRL		µg/l	1.0	1	"	"	"	"	"	"
74-87-3	Chloromethane	BRL		µg/l	2.0	1	"	"	"	"	"	"
95-49-8	2-Chlorotoluene	BRL		µg/l	1.0	1	"	"	"	"	"	"
106-43-4	4-Chlorotoluene	BRL		µg/l	1.0	1	"	"	"	"	"	"
96-12-8	1,2-Dibromo-3-chloropropane	BRL		µg/l	2.0	1	"	"	"	"	"	"
124-48-1	Dibromochloromethane	BRL		µg/l	0.5	1	"	"	"	"	"	"
106-93-4	1,2-Dibromoethane (EDB)	BRL		µg/l	0.5	1	"	"	"	"	"	"
74-95-3	Dibromomethane	BRL		µg/l	1.0	1	"	"	"	"	"	"
95-50-1	1,2-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	"
541-73-1	1,3-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	"
106-46-7	1,4-Dichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	"
75-71-8	Dichlorodifluoromethane (Freon12)	BRL		µg/l	2.0	1	"	"	"	"	"	"
75-34-3	1,1-Dichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	"
107-06-2	1,2-Dichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	"
75-35-4	1,1-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	"
156-59-2	cis-1,2-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	"
156-60-5	trans-1,2-Dichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	"
78-87-5	1,2-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	"
142-28-9	1,3-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	"
594-20-7	2,2-Dichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	"
563-58-6	1,1-Dichloropropene	BRL		µg/l	1.0	1	"	"	"	"	"	"
10061-01-5	cis-1,3-Dichloropropene	BRL		µg/l	0.5	1	"	"	"	"	"	"
10061-02-6	trans-1,3-Dichloropropene	BRL		µg/l	0.5	1	"	"	"	"	"	"
100-41-4	Ethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	"
87-68-3	Hexachlorobutadiene	BRL		µg/l	0.5	1	"	"	"	"	"	"
591-78-6	2-Hexanone (MBK)	BRL		µg/l	10.0	1	"	"	"	"	"	"
98-82-8	Isopropylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	"

*This laboratory report is not valid without an authorized signature on the cover page.*

\* Reportable Detection Limit

BRL = Below Reporting Limit

Sample Identification

P-104

SB11288-01

Client Project #

M1167.02

Matrix

Ground Water

Collection Date/Time

26-Apr-10 00:00

Received

28-Apr-10

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
<b>Volatile Organic Compounds</b>												
<u>Volatile Organic Compounds</u>												
<u>Prepared by method SW846 5030 Water MS</u>												
99-87-6	4-Isopropyltoluene	BRL		µg/l	1.0	1	SW846 8260B	03-May-10	03-May-10	JLG	1009226	
1634-04-4	Methyl tert-butyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	"
108-10-1	4-Methyl-2-pentanone (MIBK)	BRL		µg/l	10.0	1	"	"	"	"	"	"
75-09-2	Methylene chloride	BRL		µg/l	2.0	1	"	"	"	"	"	"
91-20-3	Naphthalene	BRL		µg/l	1.0	1	"	"	"	"	"	"
103-65-1	n-Propylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	"
100-42-5	Styrene	BRL		µg/l	1.0	1	"	"	"	"	"	"
630-20-6	1,1,1,2-Tetrachloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	"
79-34-5	1,1,2,2-Tetrachloroethane	BRL		µg/l	0.5	1	"	"	"	"	"	"
127-18-4	Tetrachloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	"
108-88-3	Toluene	BRL		µg/l	1.0	1	"	"	"	"	"	"
87-61-6	1,2,3-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	"
120-82-1	1,2,4-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	"
108-70-3	1,3,5-Trichlorobenzene	BRL		µg/l	1.0	1	"	"	"	"	"	"
71-55-6	1,1,1-Trichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	"
79-00-5	1,1,2-Trichloroethane	BRL		µg/l	1.0	1	"	"	"	"	"	"
79-01-6	Trichloroethene	BRL		µg/l	1.0	1	"	"	"	"	"	"
75-69-4	Trichlorofluoromethane (Freon 11)	BRL		µg/l	1.0	1	"	"	"	"	"	"
96-18-4	1,2,3-Trichloropropane	BRL		µg/l	1.0	1	"	"	"	"	"	"
95-63-6	1,2,4-Trimethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	"
108-67-8	1,3,5-Trimethylbenzene	BRL		µg/l	1.0	1	"	"	"	"	"	"
75-01-4	Vinyl chloride	BRL		µg/l	1.0	1	"	"	"	"	"	"
179601-23-1	m,p-Xylene	BRL		µg/l	2.0	1	"	"	"	"	"	"
95-47-6	o-Xylene	BRL		µg/l	1.0	1	"	"	"	"	"	"
109-99-9	Tetrahydrofuran	BRL		µg/l	2.0	1	"	"	"	"	"	"
60-29-7	Ethyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	"
994-05-8	Tert-amyl methyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	"
637-92-3	Ethyl tert-butyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	"
108-20-3	Di-isopropyl ether	BRL		µg/l	1.0	1	"	"	"	"	"	"
75-65-0	Tert-Butanol / butyl alcohol	BRL		µg/l	10.0	1	"	"	"	"	"	"
123-91-1	1,4-Dioxane	BRL		µg/l	20.0	1	"	"	"	"	"	"
110-57-6	trans-1,4-Dichloro-2-butene	BRL		µg/l	5.0	1	"	"	"	"	"	"
64-17-5	Ethanol	BRL		µg/l	400	1	"	"	"	"	"	"
<i>Surrogate recoveries:</i>												
460-00-4	4-Bromofluorobenzene	89			70-130 %		"	"	"	"	"	"
2037-26-5	Toluene-d8	95			70-130 %		"	"	"	"	"	"
17060-07-0	1,2-Dichloroethane-d4	101			70-130 %		"	"	"	"	"	"
1868-53-7	Dibromofluoromethane	109			70-130 %		"	"	"	"	"	"

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\* Reportable Detection Limit

BRL = Below Reporting Limit

Page 5 of 12

## Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1009226 - SW846 5030 Water MS</b>										
<b>Blank (1009226-BLK1)</b>					<u>Prepared &amp; Analyzed: 03-May-10</u>					
1,1,2-Trichlorotrifluoroethane (Freon 113)	BRL		µg/l	1.0						
Acetone	BRL		µg/l	10.0						
Acrylonitrile	BRL		µg/l	0.5						
Benzene	BRL		µg/l	1.0						
Bromobenzene	BRL		µg/l	1.0						
Bromochloromethane	BRL		µg/l	1.0						
Bromodichloromethane	BRL		µg/l	0.5						
Bromoform	BRL		µg/l	1.0						
Bromomethane	BRL		µg/l	2.0						
2-Butanone (MEK)	BRL		µg/l	10.0						
n-Butylbenzene	BRL		µg/l	1.0						
sec-Butylbenzene	BRL		µg/l	1.0						
tert-Butylbenzene	BRL		µg/l	1.0						
Carbon disulfide	BRL		µg/l	2.0						
Carbon tetrachloride	BRL		µg/l	1.0						
Chlorobenzene	BRL		µg/l	1.0						
Chloroethane	BRL		µg/l	2.0						
Chloroform	BRL		µg/l	1.0						
Chloromethane	BRL		µg/l	2.0						
2-Chlorotoluene	BRL		µg/l	1.0						
4-Chlorotoluene	BRL		µg/l	1.0						
1,2-Dibromo-3-chloropropane	BRL		µg/l	2.0						
Dibromochloromethane	BRL		µg/l	0.5						
1,2-Dibromoethane (EDB)	BRL		µg/l	0.5						
Dibromomethane	BRL		µg/l	1.0						
1,2-Dichlorobenzene	BRL		µg/l	1.0						
1,3-Dichlorobenzene	BRL		µg/l	1.0						
1,4-Dichlorobenzene	BRL		µg/l	1.0						
Dichlorodifluoromethane (Freon12)	BRL		µg/l	2.0						
1,1-Dichloroethane	BRL		µg/l	1.0						
1,2-Dichloroethane	BRL		µg/l	1.0						
1,1-Dichloroethene	BRL		µg/l	1.0						
cis-1,2-Dichloroethene	BRL		µg/l	1.0						
trans-1,2-Dichloroethene	BRL		µg/l	1.0						
1,2-Dichloropropane	BRL		µg/l	1.0						
1,3-Dichloropropane	BRL		µg/l	1.0						
2,2-Dichloropropane	BRL		µg/l	1.0						
1,1-Dichloropropene	BRL		µg/l	1.0						
cis-1,3-Dichloropropene	BRL		µg/l	0.5						
trans-1,3-Dichloropropene	BRL		µg/l	0.5						
Ethylbenzene	BRL		µg/l	1.0						
Hexachlorobutadiene	BRL		µg/l	0.5						
2-Hexanone (MBK)	BRL		µg/l	10.0						
Isopropylbenzene	BRL		µg/l	1.0						
4-Isopropyltoluene	BRL		µg/l	1.0						
Methyl tert-butyl ether	BRL		µg/l	1.0						
4-Methyl-2-pentanone (MIBK)	BRL		µg/l	10.0						
Methylene chloride	BRL		µg/l	2.0						
Naphthalene	BRL		µg/l	1.0						
n-Propylbenzene	BRL		µg/l	1.0						
Styrene	BRL		µg/l	1.0						
1,1,1,2-Tetrachloroethane	BRL		µg/l	1.0						

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\* Reportable Detection Limit

BRL = Below Reporting Limit

## Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1009226 - SW846 5030 Water MS</b>										
<b>Blank (1009226-BLK1)</b>					<u>Prepared &amp; Analyzed: 03-May-10</u>					
1,1,2,2-Tetrachloroethane	BRL		µg/l	0.5						
Tetrachloroethene	BRL		µg/l	1.0						
Toluene	BRL		µg/l	1.0						
1,2,3-Trichlorobenzene	BRL		µg/l	1.0						
1,2,4-Trichlorobenzene	BRL		µg/l	1.0						
1,3,5-Trichlorobenzene	BRL		µg/l	1.0						
1,1,1-Trichloroethane	BRL		µg/l	1.0						
1,1,2-Trichloroethane	BRL		µg/l	1.0						
Trichloroethene	BRL		µg/l	1.0						
Trichlorofluoromethane (Freon 11)	BRL		µg/l	1.0						
1,2,3-Trichloropropane	BRL		µg/l	1.0						
1,2,4-Trimethylbenzene	BRL		µg/l	1.0						
1,3,5-Trimethylbenzene	BRL		µg/l	1.0						
Vinyl chloride	BRL		µg/l	1.0						
m,p-Xylene	BRL		µg/l	2.0						
o-Xylene	BRL		µg/l	1.0						
Tetrahydrofuran	BRL		µg/l	2.0						
Ethyl ether	BRL		µg/l	1.0						
Tert-amyl methyl ether	BRL		µg/l	1.0						
Ethyl tert-butyl ether	BRL		µg/l	1.0						
Di-isopropyl ether	BRL		µg/l	1.0						
Tert-Butanol / butyl alcohol	BRL		µg/l	10.0						
1,4-Dioxane	BRL		µg/l	20.0						
trans-1,4-Dichloro-2-butene	BRL		µg/l	5.0						
Ethanol	BRL		µg/l	400						
<i>Surrogate: 4-Bromofluorobenzene</i>	43.1		µg/l		50.0		86	70-130		
<i>Surrogate: Toluene-d8</i>	46.2		µg/l		50.0		92	70-130		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	52.2		µg/l		50.0		104	70-130		
<i>Surrogate: Dibromofluoromethane</i>	52.4		µg/l		50.0		105	70-130		
<b>LCS (1009226-BS1)</b>					<u>Prepared &amp; Analyzed: 03-May-10</u>					
1,1,2-Trichlorotrifluoroethane (Freon 113)	22.2		µg/l		20.0		111	70-130		
Acetone	22.8		µg/l		20.0		114	53.2-137		
Acrylonitrile	25.4		µg/l		20.0		127	70-130		
Benzene	18.8		µg/l		20.0		94	70-130		
Bromobenzene	20.5		µg/l		20.0		103	70-130		
Bromochloromethane	19.4		µg/l		20.0		97	70-130		
Bromodichloromethane	19.2		µg/l		20.0		96	70-130		
Bromoform	20.5		µg/l		20.0		103	70-130		
Bromomethane	20.9		µg/l		20.0		105	48.9-147		
2-Butanone (MEK)	7.5	QM9	µg/l		20.0		37	70-139		
n-Butylbenzene	22.1		µg/l		20.0		110	70-130		
sec-Butylbenzene	21.6		µg/l		20.0		108	70-130		
tert-Butylbenzene	21.4		µg/l		20.0		107	70-130		
Carbon disulfide	22.0		µg/l		20.0		110	70-130		
Carbon tetrachloride	18.6		µg/l		20.0		93	70-130		
Chlorobenzene	19.8		µg/l		20.0		99	70-130		
Chloroethane	22.3		µg/l		20.0		111	65.6-130		
Chloroform	18.6		µg/l		20.0		93	70-130		
Chloromethane	21.3		µg/l		20.0		106	70-130		
2-Chlorotoluene	20.0		µg/l		20.0		100	70-130		
4-Chlorotoluene	19.8		µg/l		20.0		99	70-130		

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\* Reportable Detection Limit

BRL = Below Reporting Limit

## Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1009226 - SW846 5030 Water MS</b>										
<b>LCS (1009226-BS1)</b>					<b>Prepared &amp; Analyzed: 03-May-10</b>					
1,2-Dibromo-3-chloropropane	22.2		µg/l		20.0		111	70-130		
Dibromochloromethane	18.6		µg/l		20.0		93	52.9-130		
1,2-Dibromoethane (EDB)	19.4		µg/l		20.0		97	70-130		
Dibromomethane	19.4		µg/l		20.0		97	70-130		
1,2-Dichlorobenzene	21.3		µg/l		20.0		106	70-130		
1,3-Dichlorobenzene	20.5		µg/l		20.0		102	70-130		
1,4-Dichlorobenzene	20.4		µg/l		20.0		102	70-130		
Dichlorodifluoromethane (Freon12)	23.6		µg/l		20.0		118	63.1-130		
1,1-Dichloroethane	10.2	QM9	µg/l		20.0		51	70-130		
1,2-Dichloroethane	18.4		µg/l		20.0		92	70-130		
1,1-Dichloroethene	21.3		µg/l		20.0		106	70-130		
cis-1,2-Dichloroethene	8.0	QM9	µg/l		20.0		40	70-130		
trans-1,2-Dichloroethene	5.7	QM9	µg/l		20.0		28	70-130		
1,2-Dichloropropane	18.7		µg/l		20.0		93	70-130		
1,3-Dichloropropane	18.2		µg/l		20.0		91	70-130		
2,2-Dichloropropane	17.0		µg/l		20.0		85	70-130		
1,1-Dichloropropene	18.6		µg/l		20.0		93	70-130		
cis-1,3-Dichloropropene	19.2		µg/l		20.0		96	70-130		
trans-1,3-Dichloropropene	17.6		µg/l		20.0		88	70-130		
Ethylbenzene	20.7		µg/l		20.0		104	70-130		
Hexachlorobutadiene	22.0		µg/l		20.0		110	70-130		
2-Hexanone (MBK)	19.2		µg/l		20.0		96	70-130		
Isopropylbenzene	20.5		µg/l		20.0		102	70-130		
4-Isopropyltoluene	21.6		µg/l		20.0		108	70-130		
Methyl tert-butyl ether	17.5		µg/l		20.0		88	70-130		
4-Methyl-2-pentanone (MIBK)	18.2		µg/l		20.0		91	61-130		
Methylene chloride	20.8		µg/l		20.0		104	70-130		
Naphthalene	24.3		µg/l		20.0		121	70-130		
n-Propylbenzene	22.5		µg/l		20.0		112	70-130		
Styrene	20.6		µg/l		20.0		103	70-130		
1,1,1,2-Tetrachloroethane	21.2		µg/l		20.0		106	70-130		
1,1,2,2-Tetrachloroethane	21.2		µg/l		20.0		106	70-130		
Tetrachloroethene	18.8		µg/l		20.0		94	70-130		
Toluene	18.2		µg/l		20.0		91	70-130		
1,2,3-Trichlorobenzene	21.2		µg/l		20.0		106	70-130		
1,2,4-Trichlorobenzene	19.8		µg/l		20.0		99	70-130		
1,3,5-Trichlorobenzene	20.9		µg/l		20.0		105	70-130		
1,1,1-Trichloroethane	18.9		µg/l		20.0		94	70-130		
1,1,2-Trichloroethane	19.1		µg/l		20.0		95	70-130		
Trichloroethene	19.3		µg/l		20.0		96	70-130		
Trichlorofluoromethane (Freon 11)	22.7		µg/l		20.0		114	60-172		
1,2,3-Trichloropropane	22.0		µg/l		20.0		110	70-130		
1,2,4-Trimethylbenzene	20.8		µg/l		20.0		104	70-130		
1,3,5-Trimethylbenzene	20.8		µg/l		20.0		104	70-130		
Vinyl chloride	17.8		µg/l		20.0		89	70-130		
m,p-Xylene	41.1		µg/l		40.0		103	70-130		
o-Xylene	21.2		µg/l		20.0		106	70-130		
Tetrahydrofuran	18.2		µg/l		20.0		91	70-130		
Ethyl ether	22.2		µg/l		20.0		111	70-130		
Tert-amyl methyl ether	17.4		µg/l		20.0		87	70-130		
Ethyl tert-butyl ether	18.8		µg/l		20.0		94	70-130		
Di-isopropyl ether	14.6		µg/l		20.0		73	70-130		

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\* Reportable Detection Limit

BRL = Below Reporting Limit

## Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1009226 - SW846 5030 Water MS</b>										
<b><u>LCS (1009226-BS1)</u></b>					<b><u>Prepared &amp; Analyzed: 03-May-10</u></b>					
Tert-Butanol / butyl alcohol	223		µg/l		200		111	70-130		
1,4-Dioxane	158		µg/l		200		79	54.2-130		
trans-1,4-Dichloro-2-butene	24.4		µg/l		20.0		122	70-130		
Ethanol	459		µg/l		400		115	70-130		
<i>Surrogate: 4-Bromofluorobenzene</i>	49.4		µg/l		50.0		99	70-130		
<i>Surrogate: Toluene-d8</i>	46.9		µg/l		50.0		94	70-130		
<i>Surrogate: 1,2-Dichloroethane-d4</i>	51.2		µg/l		50.0		102	70-130		
<i>Surrogate: Dibromofluoromethane</i>	50.4		µg/l		50.0		101	70-130		
<b><u>LCS Dup (1009226-BSD1)</u></b>					<b><u>Prepared &amp; Analyzed: 03-May-10</u></b>					
1,1,2-Trichlorotrifluoroethane (Freon 113)	22.7		µg/l		20.0		114	70-130	2	25
Acetone	23.0		µg/l		20.0		115	53.2-137	0.9	50
Acrylonitrile	26.1		µg/l		20.0		130	70-130	3	25
Benzene	17.6		µg/l		20.0		88	70-130	6	25
Bromobenzene	20.1		µg/l		20.0		100	70-130	2	25
Bromochloromethane	51.5	QM9, QR5	µg/l		20.0		258	70-130	91	25
Bromodichloromethane	17.9		µg/l		20.0		89	70-130	7	25
Bromoform	19.9		µg/l		20.0		100	70-130	3	25
Bromomethane	20.0		µg/l		20.0		100	48.9-147	5	50
2-Butanone (MEK)	20.5	QR5	µg/l		20.0		103	70-139	93	50
n-Butylbenzene	21.5		µg/l		20.0		107	70-130	3	25
sec-Butylbenzene	20.6		µg/l		20.0		103	70-130	5	25
tert-Butylbenzene	20.8		µg/l		20.0		104	70-130	3	25
Carbon disulfide	21.2		µg/l		20.0		106	70-130	4	25
Carbon tetrachloride	17.5		µg/l		20.0		87	70-130	6	25
Chlorobenzene	19.3		µg/l		20.0		96	70-130	3	25
Chloroethane	21.6		µg/l		20.0		108	65.6-130	3	50
Chloroform	52.0	QM9, QR5	µg/l		20.0		260	70-130	95	25
Chloromethane	20.5		µg/l		20.0		102	70-130	4	25
2-Chlorotoluene	18.8		µg/l		20.0		94	70-130	6	25
4-Chlorotoluene	19.9		µg/l		20.0		100	70-130	0.4	25
1,2-Dibromo-3-chloropropane	22.8		µg/l		20.0		114	70-130	3	25
Dibromochloromethane	17.1		µg/l		20.0		85	52.9-130	9	50
1,2-Dibromoethane (EDB)	18.9		µg/l		20.0		94	70-130	2	25
Dibromomethane	18.1		µg/l		20.0		91	70-130	7	25
1,2-Dichlorobenzene	21.4		µg/l		20.0		107	70-130	0.8	25
1,3-Dichlorobenzene	20.7		µg/l		20.0		104	70-130	1	25
1,4-Dichlorobenzene	20.0		µg/l		20.0		100	70-130	2	25
Dichlorodifluoromethane (Freon12)	22.6		µg/l		20.0		113	63.1-130	4	50
1,1-Dichloroethane	22.0	QR5	µg/l		20.0		110	70-130	73	25
1,2-Dichloroethane	17.6		µg/l		20.0		88	70-130	4	25
1,1-Dichloroethene	21.1		µg/l		20.0		105	70-130	0.9	25
cis-1,2-Dichloroethene	21.0	QR5	µg/l		20.0		105	70-130	89	25
trans-1,2-Dichloroethene	19.9	QR5	µg/l		20.0		99	70-130	111	25
1,2-Dichloropropane	17.9		µg/l		20.0		90	70-130	4	25
1,3-Dichloropropane	17.6		µg/l		20.0		88	70-130	3	25
2,2-Dichloropropane	16.7		µg/l		20.0		83	70-130	2	25
1,1-Dichloropropene	17.6		µg/l		20.0		88	70-130	5	25
cis-1,3-Dichloropropene	17.9		µg/l		20.0		90	70-130	7	25
trans-1,3-Dichloropropene	16.8		µg/l		20.0		84	70-130	5	25
Ethylbenzene	19.8		µg/l		20.0		99	70-130	4	25

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\* Reportable Detection Limit

BRL = Below Reporting Limit

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## Volatile Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1009226 - SW846 5030 Water MS</b>										
<b><u>LCS Dup (1009226-BSD1)</u></b>					<b><u>Prepared &amp; Analyzed: 03-May-10</u></b>					
Hexachlorobutadiene	22.0		µg/l		20.0		110	70-130	0	50
2-Hexanone (MBK)	19.5		µg/l		20.0		98	70-130	2	25
Isopropylbenzene	19.8		µg/l		20.0		99	70-130	4	25
4-Isopropyltoluene	21.2		µg/l		20.0		106	70-130	2	25
Methyl tert-butyl ether	21.9		µg/l		20.0		110	70-130	22	25
4-Methyl-2-pentanone (MIBK)	17.5		µg/l		20.0		87	61-130	4	50
Methylene chloride	20.1		µg/l		20.0		101	70-130	3	25
Naphthalene	23.7		µg/l		20.0		119	70-130	2	25
n-Propylbenzene	21.8		µg/l		20.0		109	70-130	3	25
Styrene	20.6		µg/l		20.0		103	70-130	0	25
1,1,1,2-Tetrachloroethane	21.2		µg/l		20.0		106	70-130	0.05	25
1,1,2,2-Tetrachloroethane	21.7		µg/l		20.0		109	70-130	3	25
Tetrachloroethene	17.6		µg/l		20.0		88	70-130	7	25
Toluene	17.7		µg/l		20.0		88	70-130	3	25
1,2,3-Trichlorobenzene	20.8		µg/l		20.0		104	70-130	2	25
1,2,4-Trichlorobenzene	18.5		µg/l		20.0		93	70-130	7	25
1,3,5-Trichlorobenzene	21.7		µg/l		20.0		109	70-130	4	25
1,1,1-Trichloroethane	18.0		µg/l		20.0		90	70-130	5	25
1,1,2-Trichloroethane	17.2		µg/l		20.0		86	70-130	10	25
Trichloroethene	17.8		µg/l		20.0		89	70-130	8	25
Trichlorofluoromethane (Freon 11)	21.8		µg/l		20.0		109	60-172	4	50
1,2,3-Trichloropropane	21.1		µg/l		20.0		106	70-130	4	25
1,2,4-Trimethylbenzene	20.4		µg/l		20.0		102	70-130	2	25
1,3,5-Trimethylbenzene	20.6		µg/l		20.0		103	70-130	1	25
Vinyl chloride	18.6		µg/l		20.0		93	70-130	5	25
m,p-Xylene	39.3		µg/l		40.0		98	70-130	4	25
o-Xylene	21.0		µg/l		20.0		105	70-130	1	25
Tetrahydrofuran	18.7		µg/l		20.0		94	70-130	3	25
Ethyl ether	21.3		µg/l		20.0		106	70-130	4	50
Tert-amyl methyl ether	17.4		µg/l		20.0		87	70-130	0.2	25
Ethyl tert-butyl ether	17.8		µg/l		20.0		89	70-130	5	25
Di-isopropyl ether	22.7	QR2	µg/l		20.0		113	70-130	43	25
Tert-Butanol / butyl alcohol	236		µg/l		200		118	70-130	6	25
1,4-Dioxane	184		µg/l		200		92	54.2-130	15	25
trans-1,4-Dichloro-2-butene	24.2		µg/l		20.0		121	70-130	0.7	25
Ethanol	458		µg/l		400		115	70-130	0.2	30
Surrogate: 4-Bromofluorobenzene	49.0		µg/l		50.0		98	70-130		
Surrogate: Toluene-d8	47.2		µg/l		50.0		94	70-130		
Surrogate: 1,2-Dichloroethane-d4	49.0		µg/l		50.0		98	70-130		
Surrogate: Dibromofluoromethane	49.1		µg/l		50.0		98	70-130		

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\* Reportable Detection Limit

BRL = Below Reporting Limit

## Notes and Definitions

QM9	The spike recovery for this QC sample is outside the established control limits. The sample results for the QC batch were accepted based on LCS/LCSD or SRM recoveries within the control limits.
QR2	The RPD result exceeded the QC control limits; however, both percent recoveries were acceptable. Sample results for the QC batch were accepted based on percent recoveries and completeness of QC data.
QR5	RPD out of acceptance range.
BRL	Below Reporting Limit - Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference

A plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic

Validated by:  
Hanibal C. Tayeh, Ph.D.

**MassDEP Analytical Protocol Certification Form**

<b>Laboratory Name:</b> Spectrum Analytical, Inc.			<b>Project #:</b> M1167.02			
<b>Project Location:</b> Necco - Revere, MA			<b>RTN:</b>			
<b>This form provides certifications for the following data set:</b>			SB11288-01			
<b>Matrices:</b> Ground Water						
<b>CAM Protocol</b>						
✓	8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
	8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
	6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	
<i>Affirmative responses to questions A through F are required for "Presumptive Certainty" status</i>						
<b>A</b>	Were all samples received in a condition consistent with those described on the Chain of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?				✓	Yes    No
<b>B</b>	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?				✓	Yes    No
<b>C</b>	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?				✓	Yes    No
<b>D</b>	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?				✓	Yes    No
<b>E</b>	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?				Yes Yes	No No
<b>F</b>	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to questions A through E)?				✓	Yes    No
<i>Responses to questions G, H and I below are required for "Presumptive Certainty" status</i>						
<b>G</b>	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?				✓	Yes    No
<i>Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.</i>						
<b>H</b>	Were all QC performance standards specified in the CAM protocol(s) achieved?				Yes	✓ No
<b>I</b>	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?				✓	Yes    No
<i>All negative responses are addressed in a case narrative on the cover page of this report.</i>						
<i>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 analytical report is, to the best of my knowledge and belief, accurate and complete.</i>						
 Hanibal C. Tayeh, Ph.D. President/Laboratory Director Date: 5/3/2010						

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\* Reportable Detection Limit

BRL = Below Reporting Limit



Report Date:  
04-May-10 16:30



- Final Report
- Re-Issued Report
- Revised Report

**SPECTRUM ANALYTICAL, INC.**  
*Featuring*  
**HANIBAL TECHNOLOGY**  
**Laboratory Report**

Wheatstone Engineering & Consulting, Inc.  
220 Forbes Road, Suite 405  
Braintree, MA 02184-2705  
Attn: Robert Reynolds

Project: Necco - Revere, MA  
Project #: M1167

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SB10900-01	MW-3	Ground Water	21-Apr-10 00:00	21-Apr-10 16:47

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.  
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110  
Connecticut # PH-0777  
Florida # E87600/E87936  
Maine # MA138  
New Hampshire # 2538  
New Jersey # MA011/MA012  
New York # 11393/11840  
Pennsylvania # 68-04426/68-02924  
Rhode Island # 98  
USDA # S-51435  
Vermont # VT-11393



Authorized by:

Hanibal C. Tayeh, Ph.D.  
President/Laboratory Director

Technical Reviewer's Initial:

Spectrum Analytical holds certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes.  
Please note that this report contains 18 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

*Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our "Quality" web page at [www.spectrum-analytical.com](http://www.spectrum-analytical.com) for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (NY-11840, FL-E87936 and NJ-MA012).*

*Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.*

**CASE NARRATIVE:**

The sample temperature upon receipt by Spectrum Analytical courier was recorded as 5.1 degrees Celsius. The condition of these samples was further noted as refrigerated. The samples were transported on ice to the laboratory facility and the temperature was recorded at 0.8 degrees Celsius upon receipt at the laboratory. Please refer to the Chain of Custody for details specific to sample receipt times.

An infrared thermometer with a tolerance of +/- 2.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method.

According to WSC-CAM 5/2009 Rev.1, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended recovery range, a range has been set based on historical control limits.

Some target analytes which are not listed as exceptions in the Summary of CAM Reporting Limits may exceed the recommended RL based on sample initial volume or weight provided, % moisture content, or responsiveness of a particular analyte to purge and trap instrumentation.

**Dissolved Lead Case Narrative:**

SB10900-01, MW-3 was filtered in accordance with EPA method criteria through a 0.45 micron filter. Per client request, the sample was re-filtered through a 2.7 micron filter; this data is reported as SB10900-01 RE1. Both sets of data are included.

**TSS Case Narrative:**

SB10900-01, MW-3 was filtered in accordance with EPA method criteria. Per client request, the sample was re-filtered through a 2.7 micron filter; this data is reported as SB10900-01 RE1. Both sets of data are included.

**See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.**

**EPA 300.0**

**Samples:**

SB10900-01                      *MW-3*

---

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.  
Chloride

**Hach 8167**

**Samples:**

SB10900-01                      *MW-3*

---

The Reporting Limit has been raised to account for matrix interference.  
Total Residual Chlorine

**SM2540D**

**Samples:**

SB10900-01RE1                      *MW-3*

---

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\* Reportable Detection Limit

BRL = Below Reporting Limit

**SM2540D**

**Samples:**

SB10900-01RE1      *MW-3*

---

This sample was analyzed outside the EPA recommended holding time per client request.

Total Suspended Solids

**SM3500CrD/7196A**

**Samples:**

SB10900-01      *MW-3*

---

The collection time was not indicated on the chain of custody. Therefore, the analysis hold time can not be verified.

Hexavalent Chromium (soluble)

**SW846 6010B**

**Laboratory Control Samples:**

1008623 BS/BSD

---

Iron percent recoveries (97/2950) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

*MW-3*

Zinc percent recoveries (94/225) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

*MW-3*

1008623 BSD

---

Iron RPD 187% (20%) is outside individual acceptance criteria, but within overall method allowances.

Zinc RPD 82% (20%) is outside individual acceptance criteria, but within overall method allowances.

1008623-BSD1

---

The RPD exceeded the QC control limits; however precision is demonstrated with acceptable RPD values for MS/MSD.

Iron

1008742 BS/BSD

---

Antimony percent recoveries (83/85) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

*MW-3*

Iron percent recoveries (95/432) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially high bias:

*MW-3*

Lead percent recoveries (84/86) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

*MW-3*

Nickel percent recoveries (84/86) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

*MW-3*

**SW846 6010B**

**Laboratory Control Samples:**

1008742 BS/BSD

---

Selenium percent recoveries (84/86) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

MW-3

1008742 BSD

---

Iron RPD 128% (20%) is outside individual acceptance criteria, but within overall method allowances.

**Duplicates:**

1008623-DUP1            *Source: SB10900-01*

---

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Iron  
Zinc

The RPD exceeded the QC control limits; however precision is demonstrated with acceptable RPD values for MS/MSD.

Silver

1008742-DUP1            *Source: SB10900-01*

---

Analyses are not controlled on RPD values from sample concentrations that are less than 5 times the reporting level. The batch is accepted based upon the difference between the sample and duplicate is less than or equal to the reporting limit.

Nickel

RPD out of acceptance range. The batch is accepted based upon LCS and/or LCSD recovery.

Iron

The RPD exceeded the QC control limits; however precision is demonstrated with acceptable RPD values for MS/MSD.

Zinc

**Samples:**

SB10900-01            *MW-3*

---

Sample dilution required for high concentration of target analytes to be within the instrument calibration range.

Iron  
Zinc

SB10900-01RE1        *MW-3*

---

Filtered through 2.7 micron filter.

Lead

**SW846 7196A/SM3500CrD**

**Samples:**

SB10900-01            *MW-3*

---

The collection time was not indicated on the chain of custody. Therefore, the analysis hold time can not be verified.

Hexavalent Chromium

Sample Identification

MW-3 Client Project # M1167 Matrix Ground Water Collection Date/Time 21-Apr-10 00:00 Received 21-Apr-10 SB10900-01

CAS No. Analyte(s) Result Flag Units \*RDL Dilution Method Ref. Prepared Analyzed Analyst Batch Cert.

Extractable Petroleum Hydrocarbons

Oil & Grease by 1664 Preservation 21-Apr-10
Oil & Grease 3.50 OG mg/l 1.00 1 EPA 1664 22-Apr-10 23-Apr-10 JK 1008451 X

Total Metals by EPA 200/6000 Series Methods

Metals Preservation Preservation 21-Apr-10

Total Metals by EPA 6000/7000 Series Methods

Total Silver by ICP Preservation 21-Apr-10
Total Arsenic by ICP Preservation " " " " "
Total Barium by ICP Preservation " " " " "
Total Cadmium by ICP Preservation " " " " "
Total Chromium by ICP Preservation " " " " "
Total Copper by ICP Preservation " " " " "
Total Iron by ICP Preservation " " " " "
Total Nickel by ICP Preservation " " " " "
Total Lead by ICP Preservation " " " " "
Total Antimony by ICP Preservation " " " " "
Total Selenium by ICP Preservation " " " " "
Total Zinc by ICP Preservation " " " " "

7440-22-4 Silver 0.0320 mg/l 0.0075 1 SW846 6010B 26-Apr-10 28-Apr-10 LR 1008623
7440-38-2 Arsenic 0.383 mg/l 0.0050 1 " " " " "
7440-39-3 Barium 15.5 mg/l 0.0050 1 " " " " "
7440-43-9 Cadmium 0.143 mg/l 0.0025 1 " " " " "
7440-47-3 Chromium 1.83 mg/l 0.0050 1 " " " " "
7440-50-8 Copper 12.5 mg/l 0.0050 1 " " " " "
7439-89-6 Iron 1,020 GS1 mg/l 0.300 20 " " 28-Apr-10 " "
7440-02-0 Nickel 1.08 mg/l 0.0050 1 " " 28-Apr-10 " "
7439-92-1 Lead 30.6 mg/l 0.0075 1 " " " " "
7440-36-0 Antimony 0.267 mg/l 0.0060 1 " " " " "
7782-49-2 Selenium 0.0348 mg/l 0.0150 1 " " " " "
7440-66-6 Zinc 38.4 GS1 mg/l 0.100 20 " " 28-Apr-10 " "

Total Metals by EPA 200 Series Methods

Total Mercury by CVAA Preservation 21-Apr-10

7439-97-6 Mercury 0.0237 mg/l 0.00020 1 EPA 245.1/7470A 26-Apr-10 27-Apr-10 KNJ 1008628 X

Soluble Metals by EPA 200/6000 Series Methods

Filtration Lab Filtered N/A 1 EPA 200.7/3005A/6010 22-Apr-10 22-Apr-10 KNJ 1008526
14:00 17:28

Filtration for Soluble Metals Preservation 21-Apr-10

Soluble Metals by EPA 6000/7000 Series Methods

Soluble Silver by ICP Preservation 21-Apr-10
Soluble Arsenic by ICP Preservation " " " " "
Soluble Barium by ICP Preservation " " " " "

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\* Reportable Detection Limit BRL = Below Reporting Limit

Sample Identification

MW-3 Client Project # M1167 Matrix Ground Water Collection Date/Time 21-Apr-10 00:00 Received 21-Apr-10  
 SB10900-01

**CAS No. Analyte(s) Result Flag Units \*RDL Dilution Method Ref. Prepared Analyzed Analyst Batch Cert.**

**Soluble Metals by EPA 6000/7000 Series Methods**

	Soluble Cadmium by ICP Preservation							21-Apr-10				
	Soluble Chromium by ICP Preservation						"	"	"	"	"	"
	Soluble Copper by ICP Preservation						"	"	"	"	"	"
	Soluble Iron by ICP Preservation						"	"	"	"	"	"
	Soluble Nickel by ICP Preservation						"	"	"	"	"	"
	Soluble Lead by ICP Preservation						"	"	"	"	"	"
	Soluble Antimony by ICP Preservation						"	"	"	"	"	"
	Soluble Selenium by ICP Preservation						"	"	"	"	"	"
	Soluble Zinc by ICP Preservation						"	"	"	"	"	"
7440-22-4	Silver	BRL		mg/l	0.0050	1	SW846 6010B	26-Apr-10	28-Apr-10	LR	1008742	
7440-38-2	Arsenic	0.0052		mg/l	0.0040	1	"	"	27-Apr-10	"	"	
7440-39-3	Barium	0.387		mg/l	0.0050	1	"	"	28-Apr-10	"	"	
7440-43-9	Cadmium	BRL		mg/l	0.0025	1	"	"	"	"	"	
7440-47-3	Chromium	BRL		mg/l	0.0050	1	"	"	"	"	"	
7440-50-8	Copper	BRL		mg/l	0.0050	1	"	"	"	"	"	
7439-89-6	Iron	0.409		mg/l	0.0150	1	"	"	"	"	"	
7440-02-0	Nickel	BRL		mg/l	0.0050	1	"	"	"	"	"	

Soluble Lead by ICP

Prepared by method SW846 3005A

7439-92-1	Lead	BRL		mg/l	0.0075	1	"	"	"	"	"	
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Re-analysis of Soluble Lead by ICP

Prepared by method SW846 3005A

7439-92-1	Lead	0.0453	Z-2	mg/l	0.0075	1	SW846 6010B	30-Apr-10	03-May-10	LR	1009178	
7440-36-0	Antimony	0.0160		mg/l	0.0060	1	SW846 6010B	26-Apr-10	28-Apr-10	LR	1008742	
7782-49-2	Selenium	BRL		mg/l	0.0150	1	"	"	"	"	"	
7440-66-6	Zinc	0.0131		mg/l	0.0050	1	"	"	"	"	"	

**Soluble Metals by EPA 200 Series Methods**

	Soluble Mercury by CVAA Preservation							21-Apr-10				
7439-97-6	Mercury	BRL		mg/l	0.00020	1	EPA 245.1/7470A	26-Apr-10	27-Apr-10	KNJ	1008743	X

**General Chemistry Parameters**

	Filtration	Completed		N/A		1	Varies	27-Apr-10	27-Apr-10	TDD	1008865	
	Soluble Chloride by EPA 300.0 Preservation							21-Apr-10				
	Chloride by EPA 300.0 Preservation						"	"	"	"	"	"
	pH Preservation						"	"	"	"	"	"
	Total Residual Chlorine Hach 8167 Preservation						"	"	"	"	"	"
	Total Suspended Solids Preservation						"	"	"	"	"	"
	Flashpoint	>150		°F		1	SW846 1010	29-Apr-10	29-Apr-10	VK	1009021	
16887-00-6	Chloride	181		mg/l	5.00	5	EPA 300.0	23-Apr-10	26-Apr-10	JAK	1008749	X
16887-00-6	Chloride	186	GS1	mg/l	100	100	"	"	"	"	"	X

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\* Reportable Detection Limit

BRL = Below Reporting Limit

Sample Identification

MW-3

SB10900-01

Client Project #

M1167

Matrix

Ground Water

Collection Date/Time

21-Apr-10 00:00

Received

21-Apr-10

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Analyst</i>	<i>Batch</i>	<i>Cert.</i>
<b>General Chemistry Parameters</b>												
18540-29-9	Hexavalent Chromium	BRL	HT3	mg/l	0.500	1	SW846 7196A/SM3500C rD	22-Apr-10 18:30	22-Apr-10 18:30	TDD	1008594	
18540-29-9	Hexavalent Chromium (soluble)	BRL	HT3	mg/l	0.005	1	SM3500CrD/719 6A	22-Apr-10 19:30	22-Apr-10 19:30	TDD	1008596	
	pH	7.26	pH	pH Units		1	ASTM D 1293-99B	21-Apr-10 20:27	21-Apr-10 20:38	BD	1008445	X
7782-50-5	Total Residual Chlorine	BRL	R01,CIHT	mg/l	2.00	1	Hach 8167	21-Apr-10 20:31	21-Apr-10 20:31	TDD	1008446	X
<b>Total Suspended Solids</b>												
<u>Prepared by method General Preparation</u>												
	Total Suspended Solids	12,500		mg/l	100	1	SM2540D	23-Apr-10	23-Apr-10	BD	1008590	X
<b>Re-analysis of Total Suspended Solids</b>												
<u>Prepared by method General Preparation</u>												
	Total Suspended Solids	5.00	O09	mg/l	5.00	1	SM2540D	04-May-10	04-May-10	SJL	1009363	X

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**Extractable Petroleum Hydrocarbons - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1008451 - SW846 3510C</b>										
<b><u>Blank (1008451-BLK1)</u></b>								<u>Prepared: 22-Apr-10 Analyzed: 23-Apr-10</u>		
Oil & Grease	BRL		mg/l	1.00						
<b><u>LCS (1008451-BS1)</u></b>								<u>Prepared: 22-Apr-10 Analyzed: 23-Apr-10</u>		
Oil & Grease	22.3		mg/l		25.7		87	83-101		

**Total Metals by EPA 6000/7000 Series Methods - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1008623 - SW846 3005A</b>										
<b><u>Blank (1008623-BLK1)</u></b>					<b><u>Prepared: 26-Apr-10 Analyzed: 28-Apr-10</u></b>					
Zinc	BRL		mg/l	0.0050						
Iron	BRL		mg/l	0.0150						
Nickel	BRL		mg/l	0.0050						
Lead	BRL		mg/l	0.0075						
Selenium	BRL		mg/l	0.0150						
Antimony	BRL		mg/l	0.0060						
Copper	BRL		mg/l	0.0050						
Chromium	BRL		mg/l	0.0050						
Silver	BRL		mg/l	0.0070						
Cadmium	BRL		mg/l	0.0025						
Barium	BRL		mg/l	0.0050						
Arsenic	BRL		mg/l	0.0050						
<b><u>LCS (1008623-BS1)</u></b>					<b><u>Prepared: 26-Apr-10 Analyzed: 28-Apr-10</u></b>					
Zinc	1.18		mg/l	0.0050	1.25		94	85-115		
Selenium	1.16		mg/l	0.0150	1.25		93	85-115		
Antimony	1.13		mg/l	0.0060	1.25		91	85-115		
Lead	1.17		mg/l	0.0075	1.25		94	85-115		
Nickel	1.09		mg/l	0.0050	1.25		87	85-115		
Iron	1.21		mg/l	0.0150	1.25		97	85-115		
Copper	1.19		mg/l	0.0050	1.25		95	85-115		
Silver	1.37		mg/l	0.0070	1.25		109	85-115		
Arsenic	1.09		mg/l	0.0050	1.25		87	85-115		
Barium	1.13		mg/l	0.0050	1.25		91	85-115		
Chromium	1.17		mg/l	0.0050	1.25		94	85-115		
Cadmium	1.18		mg/l	0.0025	1.25		95	85-115		
<b><u>LCS Dup (1008623-BSD1)</u></b>					<b><u>Prepared: 26-Apr-10 Analyzed: 28-Apr-10</u></b>					
Nickel	1.08		mg/l	0.0050	1.25		86	85-115	1	20
Iron	36.8	QR6	mg/l	0.0150	1.25		2950	85-115	187	20
Antimony	1.12		mg/l	0.0060	1.25		89	85-115	1	20
Selenium	1.15		mg/l	0.0150	1.25		92	85-115	1	20
Zinc	2.82	QM9, QR5	mg/l	0.0050	1.25		225	85-115	82	20
Lead	1.16		mg/l	0.0075	1.25		93	85-115	1	20
Arsenic	1.08		mg/l	0.0050	1.25		87	85-115	1	20
Silver	1.35		mg/l	0.0070	1.25		108	85-115	2	20
Cadmium	1.16		mg/l	0.0025	1.25		93	85-115	2	20
Copper	1.19		mg/l	0.0050	1.25		95	85-115	0.2	20
Barium	1.12		mg/l	0.0050	1.25		90	85-115	1	20
Chromium	1.16		mg/l	0.0050	1.25		93	85-115	0.8	20
<b><u>Duplicate (1008623-DUP1)</u></b>					<b><u>Source: SB10900-01 Prepared: 26-Apr-10 Analyzed: 28-Apr-10</u></b>					
Lead	31.2		mg/l	0.0075		30.6			2	20
Antimony	0.276		mg/l	0.0060		0.267			3	20
Nickel	1.11		mg/l	0.0050		1.08			2	20
Selenium	0.0366		mg/l	0.0150		0.0348			5	20
Iron	1030	GS1	mg/l	0.300		1020			0.7	20
Zinc	38.4	GS1	mg/l	0.100		38.4			0.03	20
Silver	0.0394	QR6	mg/l	0.0070		0.0320			21	20
Arsenic	0.397		mg/l	0.0050		0.383			4	20
Barium	16.0		mg/l	0.0050		15.5			3	20
Chromium	1.92		mg/l	0.0050		1.83			5	20
Cadmium	0.147		mg/l	0.0025		0.143			2	20
Copper	13.0		mg/l	0.0050		12.5			4	20

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\* Reportable Detection Limit

BRL = Below Reporting Limit

**Total Metals by EPA 200 Series Methods - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1008628 - EPA200/SW7000 Series</b>										
<u>Blank (1008628-BLK1)</u>								<u>Prepared: 26-Apr-10 Analyzed: 27-Apr-10</u>		
Mercury	BRL		mg/l	0.00020						
<u>LCS (1008628-BS1)</u>								<u>Prepared: 26-Apr-10 Analyzed: 27-Apr-10</u>		
Mercury	0.00465		mg/l	0.00020	0.00500		93	85-115		

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\* Reportable Detection Limit

BRL = Below Reporting Limit

**Soluble Metals by EPA 6000/7000 Series Methods - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1008742 - SW846 3005A</b>										
<b><u>Blank (1008742-BLK1)</u></b>					<b><u>Prepared: 26-Apr-10 Analyzed: 28-Apr-10</u></b>					
Nickel	BRL		mg/l	0.0050						
Zinc	BRL		mg/l	0.0050						
Selenium	BRL		mg/l	0.0150						
Antimony	BRL		mg/l	0.0060						
Lead	BRL		mg/l	0.0075						
Iron	BRL		mg/l	0.0150						
Arsenic	BRL		mg/l	0.0040						
Copper	BRL		mg/l	0.0050						
Chromium	BRL		mg/l	0.0050						
Cadmium	BRL		mg/l	0.0025						
Silver	BRL		mg/l	0.0050						
Barium	BRL		mg/l	0.0050						
<b><u>LCS (1008742-BS1)</u></b>					<b><u>Prepared: 26-Apr-10 Analyzed: 28-Apr-10</u></b>					
Zinc	1.07		mg/l	0.0050	1.25		86	85-115		
Selenium	1.05	QM9	mg/l	0.0150	1.25		84	85-115		
Antimony	1.03	QM9	mg/l	0.0060	1.25		83	85-115		
Lead	1.05	QM9	mg/l	0.0075	1.25		84	85-115		
Nickel	1.05	QM9	mg/l	0.0050	1.25		84	85-115		
Iron	1.19		mg/l	0.0150	1.25		95	85-115		
Chromium	1.07		mg/l	0.0050	1.25		85	85-115		
Silver	1.26		mg/l	0.0050	1.25		101	85-115		
Barium	1.06		mg/l	0.0050	1.25		85	85-115		
Cadmium	1.09		mg/l	0.0025	1.25		87	85-115		
Arsenic	1.08		mg/l	0.0040	1.25		86	85-115		
Copper	1.06		mg/l	0.0050	1.25		85	85-115		
<b><u>LCS Dup (1008742-BSD1)</u></b>					<b><u>Prepared: 26-Apr-10 Analyzed: 28-Apr-10</u></b>					
Zinc	1.19		mg/l	0.0050	1.25		95	85-115	10	20
Iron	5.40	QM9, QR5	mg/l	0.0150	1.25		432	85-115	128	20
Nickel	1.08		mg/l	0.0050	1.25		86	85-115	2	20
Selenium	1.08		mg/l	0.0150	1.25		86	85-115	2	20
Antimony	1.07		mg/l	0.0060	1.25		85	85-115	3	20
Lead	1.08		mg/l	0.0075	1.25		86	85-115	3	20
Arsenic	1.07		mg/l	0.0040	1.25		86	85-115	0.2	20
Silver	1.29		mg/l	0.0050	1.25		103	85-115	2	20
Barium	1.10		mg/l	0.0050	1.25		88	85-115	4	20
Cadmium	1.11		mg/l	0.0025	1.25		89	85-115	2	20
Copper	1.10		mg/l	0.0050	1.25		88	85-115	3	20
Chromium	1.09		mg/l	0.0050	1.25		87	85-115	2	20
<b><u>Duplicate (1008742-DUP1)</u></b>					<b><u>Source: SB10900-01 Prepared: 26-Apr-10 Analyzed: 28-Apr-10</u></b>					
Lead	BRL		mg/l	0.0075		BRL				20
Nickel	0.0051	QR8	mg/l	0.0050		0.0036			33	20
Antimony	0.0163		mg/l	0.0060		0.0160			2	20
Selenium	BRL		mg/l	0.0150		BRL				20
Zinc	0.212	QR6	mg/l	0.0050		0.0131			177	20
Iron	10.3	QR9	mg/l	0.0150		0.409			185	20
Cadmium	BRL		mg/l	0.0025		BRL				20
Arsenic	0.0056		mg/l	0.0040		0.0052			6	20
Barium	0.395		mg/l	0.0050		0.387			2	20
Chromium	BRL		mg/l	0.0050		BRL				20
Copper	0.0022	J	mg/l	0.0050		BRL				20
Silver	BRL		mg/l	0.0050		0.0014				20

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**Soluble Metals by EPA 6000/7000 Series Methods - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1009178 - SW846 3005A</b>										
<b><u>Blank (1009178-BLK1)</u></b>								<u>Prepared: 30-Apr-10 Analyzed: 03-May-10</u>		
Lead	BRL		mg/l	0.0075						
<b><u>LCS (1009178-BS1)</u></b>								<u>Prepared: 30-Apr-10 Analyzed: 03-May-10</u>		
Lead	1.09		mg/l	0.0075	1.25		87	85-115		
<b><u>LCS Dup (1009178-BSD1)</u></b>								<u>Prepared: 30-Apr-10 Analyzed: 03-May-10</u>		
Lead	1.07		mg/l	0.0075	1.25		86	85-115	1	20
<b><u>Duplicate (1009178-DUP1)</u></b>								<u>Prepared: 30-Apr-10 Analyzed: 03-May-10</u>		
Lead	0.0453		mg/l	0.0075		0.0453			0	20
<b><u>Matrix Spike (1009178-MS1)</u></b>								<u>Prepared: 30-Apr-10 Analyzed: 03-May-10</u>		
Lead	1.14		mg/l	0.0075	1.25	0.0453	88	75-125		
<b><u>Matrix Spike Dup (1009178-MSD1)</u></b>								<u>Prepared: 30-Apr-10 Analyzed: 03-May-10</u>		
Lead	1.18		mg/l	0.0075	1.25	0.0453	91	75-125	3	20
<b><u>Post Spike (1009178-PS1)</u></b>								<u>Prepared: 30-Apr-10 Analyzed: 03-May-10</u>		
Lead	1.17		mg/l	0.0075	1.25	0.0453	90	80-120		

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**Soluble Metals by EPA 200 Series Methods - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1008743 - EPA200/SW7000 Series</b>										
<b><u>Blank (1008743-BLK1)</u></b>					<u>Prepared: 26-Apr-10 Analyzed: 27-Apr-10</u>					
Mercury	BRL		mg/l	0.00020						
<b><u>LCS (1008743-BS1)</u></b>					<u>Prepared: 26-Apr-10 Analyzed: 27-Apr-10</u>					
Mercury	0.00463		mg/l	0.00020	0.00500		93	85-115		
<b><u>Duplicate (1008743-DUP1)</u></b>					<u>Source: SB10900-01 Prepared: 26-Apr-10 Analyzed: 27-Apr-10</u>					
Mercury	BRL		mg/l	0.00020		BRL				20
<b><u>Matrix Spike (1008743-MS1)</u></b>					<u>Source: SB10900-01 Prepared: 26-Apr-10 Analyzed: 27-Apr-10</u>					
Mercury	0.00477		mg/l	0.00020	0.00500	BRL	95	75-125		
<b><u>Matrix Spike Dup (1008743-MSD1)</u></b>					<u>Source: SB10900-01 Prepared: 26-Apr-10 Analyzed: 27-Apr-10</u>					
Mercury	0.00483		mg/l	0.00020	0.00500	BRL	97	75-125	1	20
<b><u>Post Spike (1008743-PS1)</u></b>					<u>Source: SB10900-01 Prepared: 26-Apr-10 Analyzed: 27-Apr-10</u>					
Mercury	0.00489		mg/l	0.00020	0.00500	BRL	98	85-115		

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\* Reportable Detection Limit      BRL = Below Reporting Limit

**General Chemistry Parameters - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1008445 - General Preparation</b>										
<u>Reference (1008445-SRM1)</u>					<u>Prepared &amp; Analyzed: 21-Apr-10</u>					
pH	6.06		pH Units		6.00		101	97.5-102.5		
<u>Reference (1008445-SRM8)</u>					<u>Prepared &amp; Analyzed: 21-Apr-10</u>					
pH	6.03		pH Units		6.00		100	97.5-102.5		
<b>Batch 1008446 - General Preparation</b>										
<u>Blank (1008446-BLK1)</u>					<u>Prepared &amp; Analyzed: 21-Apr-10</u>					
Total Residual Chlorine	BRL		mg/l	0.020						
<u>LCS (1008446-BS1)</u>					<u>Prepared &amp; Analyzed: 21-Apr-10</u>					
Total Residual Chlorine	0.053		mg/l	0.020	0.0500		106	90-110		
<u>Calibration Blank (1008446-CCB1)</u>					<u>Prepared &amp; Analyzed: 21-Apr-10</u>					
Total Residual Chlorine	0.001		mg/l							
<u>Calibration Blank (1008446-CCB2)</u>					<u>Prepared &amp; Analyzed: 21-Apr-10</u>					
Total Residual Chlorine	0.001		mg/l							
<u>Calibration Check (1008446-CCV1)</u>					<u>Prepared &amp; Analyzed: 21-Apr-10</u>					
Total Residual Chlorine	0.051		mg/l		0.0500		102	90-110		
<u>Calibration Check (1008446-CCV2)</u>					<u>Prepared &amp; Analyzed: 21-Apr-10</u>					
Total Residual Chlorine	0.047		mg/l		0.0500		94	90-110		
<u>Reference (1008446-SRM1)</u>					<u>Prepared &amp; Analyzed: 21-Apr-10</u>					
Total Residual Chlorine	0.112		mg/l	0.020	0.119		94	85-115		
<b>Batch 1008590 - General Preparation</b>										
<u>Blank (1008590-BLK1)</u>					<u>Prepared &amp; Analyzed: 23-Apr-10</u>					
Total Suspended Solids	BRL		mg/l	5.00						
<u>Blank (1008590-BLK2)</u>					<u>Prepared &amp; Analyzed: 23-Apr-10</u>					
Total Suspended Solids	BRL		mg/l	5.00						
<u>LCS (1008590-BS1)</u>					<u>Prepared &amp; Analyzed: 23-Apr-10</u>					
Total Suspended Solids	86.0		mg/l	10.0	91.3		94	90-110		
<u>LCS (1008590-BS2)</u>					<u>Prepared &amp; Analyzed: 23-Apr-10</u>					
Total Suspended Solids	100		mg/l	10.0	91.3		110	90-110		
<b>Batch 1008594 - General Preparation</b>										
<u>Blank (1008594-BLK1)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium	BRL		mg/l	0.005						
<u>LCS (1008594-BS1)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium	0.052		mg/l	0.005	0.0500		104	80-120		
<u>Calibration Blank (1008594-CCB1)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium	0.001		mg/l							
<u>Calibration Blank (1008594-CCB2)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium	0.001		mg/l							
<u>Calibration Blank (1008594-CCB3)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium	0.001		mg/l							
<u>Calibration Check (1008594-CCV1)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium	0.051		mg/l		0.0500		102	85-115		
<u>Calibration Check (1008594-CCV2)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium	0.050		mg/l		0.0500		100	85-115		
<u>Calibration Check (1008594-CCV3)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium	0.052		mg/l		0.0500		104	85-115		
<u>Reference (1008594-SRM1)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium	0.028		mg/l	0.005	0.0248		113	85-115		
<b>Batch 1008596 - General Preparation</b>										
<u>Blank (1008596-BLK1)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium (soluble)	BRL		mg/l	0.005						

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\* Reportable Detection Limit

BRL = Below Reporting Limit

**General Chemistry Parameters - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1008596 - General Preparation</b>										
<u>LCS (1008596-BS1)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium (soluble)	0.050		mg/l	0.005	0.0500		100	90-110		
<u>Calibration Blank (1008596-CCB1)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium (soluble)	0.001		mg/l							
<u>Calibration Blank (1008596-CCB2)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium (soluble)	0.001		mg/l							
<u>Calibration Blank (1008596-CCB3)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium (soluble)	0.001		mg/l							
<u>Calibration Check (1008596-CCV1)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium (soluble)	0.053		mg/l		0.0500		106	85-115		
<u>Calibration Check (1008596-CCV2)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium (soluble)	0.049		mg/l		0.0500		98	85-115		
<u>Calibration Check (1008596-CCV3)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium (soluble)	0.051		mg/l		0.0500		102	85-115		
<u>Reference (1008596-SRM1)</u>					<u>Prepared &amp; Analyzed: 22-Apr-10</u>					
Hexavalent Chromium (soluble)	0.027		mg/l	0.005	0.0248		109	85-115		
<b>Batch 1008749 - General Preparation</b>										
<u>Blank (1008749-BLK1)</u>					<u>Prepared: 23-Apr-10 Analyzed: 26-Apr-10</u>					
Chloride	BRL		mg/l	1.00						
Chloride	BRL		mg/l	1.00						
<u>Reference (1008749-SRM1)</u>					<u>Prepared: 23-Apr-10 Analyzed: 26-Apr-10</u>					
Chloride	25.8		mg/l	1.00	25.0		103	0-200		
Chloride	25.8		mg/l	1.00	25.0		103	0-200		
<b>Batch 1009021 - General Preparation</b>										
<u>Duplicate (1009021-DUP1)</u>			<u>Source: SB10900-01</u>		<u>Prepared &amp; Analyzed: 29-Apr-10</u>					
Flashpoint	>150		°F				>150			20
<u>Reference (1009021-SRM1)</u>					<u>Prepared &amp; Analyzed: 29-Apr-10</u>					
Flashpoint	79		°F		81.0		98	95-105		
<b>Batch 1009363 - General Preparation</b>										
<u>Blank (1009363-BLK1)</u>					<u>Prepared &amp; Analyzed: 04-May-10</u>					
Total Suspended Solids	BRL		mg/l	5.00						
<u>Blank (1009363-BLK2)</u>					<u>Prepared &amp; Analyzed: 04-May-10</u>					
Total Suspended Solids	BRL		mg/l	5.00						
<u>LCS (1009363-BS1)</u>					<u>Prepared &amp; Analyzed: 04-May-10</u>					
Total Suspended Solids	96.0		mg/l	10.0				90-110		
<u>LCS (1009363-BS2)</u>					<u>Prepared &amp; Analyzed: 04-May-10</u>					
Total Suspended Solids	90.0		mg/l	10.0				90-110		

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BRL = Below Reporting Limit

## Notes and Definitions

GS1	Sample dilution required for high concentration of target analytes to be within the instrument calibration range.
HT3	The collection time was not indicated on the chain of custody. Therefore, the analysis hold time can not be verified.
O09	This sample was analyzed outside the EPA recommended holding time per client request.
QM9	The spike recovery for this QC sample is outside the established control limits. The sample results for the QC batch were accepted based on LCS/LCSD or SRM recoveries within the control limits.
QR5	RPD out of acceptance range.
QR6	The RPD exceeded the QC control limits; however precision is demonstrated with acceptable RPD values for MS/MSD.
QR8	Analyses are not controlled on RPD values from sample concentrations that are less than 5 times the reporting level. The batch is accepted based upon the difference between the sample and duplicate is less than or equal to the reporting limit.
QR9	RPD out of acceptance range. The batch is accepted based upon LCS and/or LCSD recovery.
R01	The Reporting Limit has been raised to account for matrix interference.
Z-2	Filtered through 2.7 micron filter.
BRL	Below Reporting Limit - Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).
CIHT	The method for residual chlorine indicates that samples should be analyzed immediately. 40 CFR 136 specifies a holding time of 15 minutes from sampling to analysis. Therefore all aqueous residual chlorine samples not analyzed in the field are considered out of hold time at the time of sample receipt.
OG	The required Matrix Spike and Matrix Spike Duplicate (MS/MSD) for Oil & Grease method 1664A can only be analyzed when the client has submitted sufficient sample volume. An extra liter per MS/MSD is required to fulfill the method QC criteria. Please refer to Chain of Custody and QC Summary (MS/MSD) of the Laboratory Report to verify ample sample volume was submitted to fulfill the requirement.
pH	The method for pH does not stipulate a specific holding time other than to state that the samples should be analyzed as soon as possible. For aqueous samples the 40 CFR 136 specifies a holding time of 15 minutes from sampling to analysis. Therefore all aqueous pH samples not analyzed in the field are considered out of hold time at the time of sample receipt. All soil samples are analyzed as soon as possible after sample receipt.

A plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic

Validated by:  
Hanibal C. Tayeh, Ph.D.

**MassDEP Analytical Protocol Certification Form**

<b>Laboratory Name:</b> Spectrum Analytical, Inc.			<b>Project #:</b> M1167		
<b>Project Location:</b> Necco - Revere, MA			<b>RTN:</b>		
<b>This form provides certifications for the following data set:</b>			SB10900-01		
<b>Matrices:</b> Ground Water					
<b>CAM Protocol</b>					
8260 VOC CAM II A	✓ 7470/7471 Hg CAM III B	MassDEP VPH CAM IV A	8081 Pesticides CAM V B	✓ 7196 Hex Cr CAM VI B	MassDEP APH CAM IX A
8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B
✓ 6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B	
<i>Affirmative responses to questions A through F are required for "Presumptive Certainty" status</i>					
<b>A</b>	Were all samples received in a condition consistent with those described on the Chain of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?				Yes    ✓    No
<b>B</b>	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?				✓ Yes    No
<b>C</b>	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?				✓ Yes    No
<b>D</b>	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?				✓ Yes    No
<b>E</b>	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)?				Yes    No
	b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?				Yes    No
<b>F</b>	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to questions A through E)?				✓ Yes    No
<i>Responses to questions G, H and I below are required for "Presumptive Certainty" status</i>					
<b>G</b>	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?				Yes    ✓    No
<i>Data User Note: Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.</i>					
<b>H</b>	Were all QC performance standards specified in the CAM protocol(s) achieved?				Yes    ✓    No
<b>I</b>	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?				Yes    ✓    No
<i>All negative responses are addressed in a case narrative on the cover page of this report.</i>					
<i>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 analytical report is, to the best of my knowledge and belief, accurate and complete.</i>					
 Hanibal C. Tayeh, Ph.D. President/Laboratory Director Date: 5/4/2010					

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\* Reportable Detection Limit

BRL = Below Reporting Limit









# CHAIN OF CUSTODY RECORD

Page 1 of 1

Special Handling: SB 10900

- Standard TAT - 7 to 10 business days
- Rush TAT - Date Needed: 4-27-10
- All TATs subject to laboratory approval.
- Min. 24-hour notification needed for rushes.
- Samples disposed of after 60 days unless otherwise instructed.

Report To: Rob Reynolds  
220 Forbes Rd  
Suite 405  
Braintree, MA 02189

Invoice To:

SAME

Project No.: NECCO

Site Name:

Reverse

State: MA

Telephone #: 781-380-0600  
Project Mgr: R. Reynolds

P.O. No.:

RON: 1

Location:

C. Wildman

1=Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 2=HCl 3=H<sub>2</sub>SO<sub>4</sub> 4=HNO<sub>3</sub> 5=NaOH 6=Ascorbic Acid 7=CH<sub>3</sub>OH  
8=NaHSO<sub>4</sub> 9= 10= 11=

DW=Drinking Water GW=Groundwater WW=Wastewater  
O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air  
X1= X2= X3=

G=Grab C=Composite

Containers:

Analyses:

List preservative code below:  
(check as needed)

QA/QC Reporting Notes:  
(check as needed)

- Provide MA DEP MCP CAM Report
- Provide CT DEP RCP Report
- OAVQC Reporting Level
- Standard
- No QC
- Other

State specific reporting standards:

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Total + D.S.S.	PH	TSS	Oil and Grease	Total Residual Chlorine	TRC	Total + Dissolve metals	Pb using 2.2ml
<u>10900-01</u>	<u>MW-3</u>	<u>4-21-10</u>	<u>AM</u>	<u>G</u>	<u>GW</u>	<u>3</u>			<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>	<u>X</u>

Relinquished by: [Signature]

Received by: [Signature]

Date: 4/21/10 Time: 13:25 Temp: 51

Ambient  Ice  Refrigerated  Fridge temp  Preserv temp

Oil and Grease preserved to be lab preserved (CW)  
\*ed, Fe, As, Cr, Cu, Zn, Ni, Hg, Sb, As, Cd, In, Se, Cr, Pb  
preserved reg 4/22/10  
4/21/10  
Added pencils

Report Date:  
17-Mar-08 17:35



- Final Report
- Re-Issued Report
- Revised Report

**SPECTRUM ANALYTICAL, INC.**

*Featuring*

**HANIBAL TECHNOLOGY**

***Laboratory Report***

Wheatstone Engineering & Consulting, Inc.  
220 Forbes Road, Suite 405  
Braintree, MA 02184-2705  
Attn: Amy McElroy

Project: Necco - Revere, MA  
Project [none]

---

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SA75279-01	MW-4	Ground Water	05-Mar-08 00:00	05-Mar-08 14:12

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.

All applicable NELAC requirements have been met.

Please note that this report contains 8 pages of analytical data plus Chain of Custody document(s).

This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

Massachusetts Certification # M-MA138/MA1110  
Connecticut # PH-0777  
Florida # E87600/E87936  
Maine # MA138  
New Hampshire # 2538  
New Jersey # MA011/MA012  
New York # 11393/11840  
Rhode Island # 98  
USDA # S-51435  
Vermont # VT-11393



Authorized by:

Hanibal C. Tayeh, Ph.D.  
President/Laboratory Director

Technical Reviewer's Initial:

*Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our "Quality" web page at [www.spectrum-analytical.com](http://www.spectrum-analytical.com) for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (NY-11840, FL-E87936 and NJ-MA012).*

**CASE NARRATIVE:**

The samples were received @ 15.0 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 2.0 degrees Celsius was used immediately upon receipt of the samples.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method.

According to WSC-CAM 5/2004 Rev.4, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended 70%-130% recovery range, a range has been set based on historical control limits.

**See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.**

**SW846 6010B**

**Duplicates:**

8030753-DUP1      *Source: SA75279-01*

---

Analyses are not controlled on RPD values from sample concentrations that are less than 5 times the reporting level. The batch is accepted based upon the difference between the sample and duplicate is less than or equal to the reporting limit.

Beryllium  
Nickel

Sample IdentificationMW-4  
SA75279-01Client Project #  
[none]Matrix  
Ground WaterCollection Date/Time  
05-Mar-08 00:00Received  
05-Mar-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Analyst</i>
<b>Soluble Metals by EPA 200/6000 Series Methods</b>											
	Filtration	Lab Filtered		N/A		1	EPA 200.7/3005A	12-Mar-08	12-Mar-08	8030725	DLW
<b>Soluble Metals by EPA 6000/7000 Series Methods</b>											
7440-22-4	Silver	BRL		mg/l	0.0050	1	SW846 6010B	12-Mar-08	14-Mar-08	8030753	SA
7440-38-2	Arsenic	BRL		mg/l	0.0040	1	"	"	"	"	"
7440-41-7	Beryllium	BRL		mg/l	0.0020	1	"	"	"	"	"
7440-43-9	Cadmium	BRL		mg/l	0.0025	1	"	"	"	"	"
7440-47-3	Chromium	BRL		mg/l	0.0050	1	"	"	"	"	"
7440-50-8	Copper	BRL		mg/l	0.0050	1	"	"	"	"	"
7440-02-0	Nickel	BRL		mg/l	0.0050	1	"	"	"	"	"
7439-92-1	Lead	BRL		mg/l	0.0075	1	"	"	"	"	"
7440-36-0	Antimony	BRL		mg/l	0.0060	1	"	"	"	"	"
7782-49-2	Selenium	BRL		mg/l	0.0150	1	"	"	"	"	"
7440-28-0	Thallium	BRL		mg/l	0.0050	1	"	"	"	"	"
7440-66-6	Zinc	BRL		mg/l	0.0685	1	"	"	"	"	"
<b>Soluble Metals by EPA 200 Series Methods</b>											
7439-97-6	Mercury	BRL		mg/l	0.00020	1	EPA 245.1/7470A	12-Mar-08	14-Mar-08	8030754	CRM

*This laboratory report is not valid without an authorized signature on the cover page.*

\* Reportable Detection Limit

BRL = Below Reporting Limit

Page 3 of 8

**Soluble Metals by EPA 6000/7000 Series Methods - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC Limits	RPD	RPD Limit
<b>Batch 8030753 - SW846 3005A</b>									
<b>Blank (8030753-BLK1)</b>									
Prepared: 12-Mar-08 Analyzed: 14-Mar-08									
Antimony	BRL		mg/l	0.0060					
Lead	BRL		mg/l	0.0075					
Thallium	BRL		mg/l	0.0050					
Selenium	BRL		mg/l	0.0150					
Zinc	BRL		mg/l	0.0685					
Nickel	BRL		mg/l	0.0050					
Arsenic	BRL		mg/l	0.0040					
Silver	BRL		mg/l	0.0050					
Cadmium	BRL		mg/l	0.0025					
Chromium	BRL		mg/l	0.0050					
Beryllium	BRL		mg/l	0.0020					
Copper	BRL		mg/l	0.0050					
<b>LCS (8030753-BS1)</b>									
Prepared: 12-Mar-08 Analyzed: 14-Mar-08									
Selenium	1.13		mg/l	0.0150	1.25		90	85-115	
Thallium	1.13		mg/l	0.0050	1.25		91	85-115	
Nickel	1.15		mg/l	0.0050	1.25		92	85-115	
Zinc	1.24		mg/l	0.0685	1.25		99	85-115	
Lead	1.13		mg/l	0.0075	1.25		90	85-115	
Antimony	1.11		mg/l	0.0060	1.25		89	85-115	
Chromium	1.17		mg/l	0.0050	1.25		94	85-115	
Arsenic	1.12		mg/l	0.0040	1.25		89	85-115	
Silver	1.16		mg/l	0.0050	1.25		93	85-115	
Beryllium	1.14		mg/l	0.0020	1.25		91	85-115	
Copper	1.17		mg/l	0.0050	1.25		94	85-115	
Cadmium	1.18		mg/l	0.0025	1.25		94	85-115	
<b>LCS Dup (8030753-BSD1)</b>									
Prepared: 12-Mar-08 Analyzed: 14-Mar-08									
Antimony	1.16		mg/l	0.0060	1.25		93	85-115	5 20
Lead	1.18		mg/l	0.0075	1.25		94	85-115	4 20
Zinc	1.29		mg/l	0.0685	1.25		103	85-115	4 20
Nickel	1.19		mg/l	0.0050	1.25		95	85-115	4 20
Selenium	1.16		mg/l	0.0150	1.25		93	85-115	3 20
Thallium	1.19		mg/l	0.0050	1.25		95	85-115	5 20
Beryllium	1.19		mg/l	0.0020	1.25		95	85-115	4 20
Cadmium	1.23		mg/l	0.0025	1.25		98	85-115	4 20
Copper	1.23		mg/l	0.0050	1.25		99	85-115	5 20
Silver	1.21		mg/l	0.0050	1.25		97	85-115	4 20
Chromium	1.23		mg/l	0.0050	1.25		98	85-115	5 20
Arsenic	1.16		mg/l	0.0040	1.25		93	85-115	4 20
<b>Duplicate (8030753-DUP1) Source: SA75279-01</b>									
Prepared: 12-Mar-08 Analyzed: 14-Mar-08									
Lead	BRL		mg/l	0.0075		BRL			20
Nickel	0.0018	J,QR8	mg/l	0.0050		0.0024		33	20
Antimony	BRL		mg/l	0.0060		BRL			20
Selenium	BRL		mg/l	0.0150		BRL			20
Thallium	0.0020	J	mg/l	0.0050		0.0022		5	20
Zinc	0.0370	J	mg/l	0.0685		0.0409		10	20

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\* Reportable Detection Limit

BRL = Below Reporting Limit

**Soluble Metals by EPA 6000/7000 Series Methods - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC Limits	RPD	RPD Limit
<b>Batch 8030753 - SW846 3005A</b>									
<b>Duplicate (8030753-DUP1)</b>		<b>Source: SA75279-01</b>							
Prepared: 12-Mar-08 Analyzed: 14-Mar-08									
Chromium	BRL		mg/l	0.0050		BRL			20
Cadmium	BRL		mg/l	0.0025		0.0005			20
Beryllium	0.0012	J,QR8	mg/l	0.0020		0.0019		41	20
Arsenic	BRL		mg/l	0.0040		0.0028			20
Silver	BRL		mg/l	0.0050		0.0028			20
Copper	BRL		mg/l	0.0050		BRL			20
<b>Matrix Spike (8030753-MS1)</b>		<b>Source: SA75541-08</b>							
Prepared: 12-Mar-08 Analyzed: 14-Mar-08									
Thallium	1.16		mg/l	0.0050	1.25	0.0027	93	75-125	
Nickel	1.09		mg/l	0.0050	1.25	0.0012	87	75-125	
Zinc	1.23		mg/l	0.0685	1.25	0.0677	93	75-125	
Selenium	1.16		mg/l	0.0150	1.25	BRL	93	75-125	
Antimony	1.16		mg/l	0.0060	1.25	BRL	92	75-125	
Lead	1.13		mg/l	0.0075	1.25	BRL	90	75-125	
Chromium	1.16		mg/l	0.0050	1.25	BRL	93	75-125	
Beryllium	1.14		mg/l	0.0020	1.25	BRL	91	75-125	
Silver	1.20		mg/l	0.0050	1.25	BRL	96	75-125	
Arsenic	1.15		mg/l	0.0040	1.25	BRL	92	75-125	
Copper	1.20		mg/l	0.0050	1.25	BRL	96	75-125	
Cadmium	1.15		mg/l	0.0025	1.25	BRL	92	75-125	
<b>Matrix Spike Dup (8030753-MSD1)</b>		<b>Source: SA75541-08</b>							
Prepared: 12-Mar-08 Analyzed: 14-Mar-08									
Nickel	1.15		mg/l	0.0050	1.25	0.0012	92	75-125	5
Selenium	1.22		mg/l	0.0150	1.25	BRL	97	75-125	4
Zinc	1.28		mg/l	0.0685	1.25	0.0677	97	75-125	3
Lead	1.19		mg/l	0.0075	1.25	BRL	95	75-125	6
Thallium	1.21		mg/l	0.0050	1.25	0.0027	96	75-125	4
Antimony	1.21		mg/l	0.0060	1.25	BRL	97	75-125	4
Copper	1.26		mg/l	0.0050	1.25	BRL	100	75-125	4
Silver	1.26		mg/l	0.0050	1.25	BRL	101	75-125	5
Beryllium	1.20		mg/l	0.0020	1.25	BRL	96	75-125	6
Cadmium	1.22		mg/l	0.0025	1.25	BRL	97	75-125	5
Arsenic	1.20		mg/l	0.0040	1.25	BRL	96	75-125	5
Chromium	1.20		mg/l	0.0050	1.25	BRL	96	75-125	4
<b>Post Spike (8030753-PS1)</b>		<b>Source: SA75541-08</b>							
Prepared: 12-Mar-08 Analyzed: 14-Mar-08									
Nickel	1.12		mg/l	0.0050	1.25	0.0012	90	80-120	
Thallium	1.18		mg/l	0.0050	1.25	0.0027	94	80-120	
Selenium	1.19		mg/l	0.0150	1.25	BRL	95	80-120	
Zinc	1.24		mg/l	0.0685	1.25	0.0677	94	80-120	
Lead	1.16		mg/l	0.0075	1.25	BRL	93	80-120	
Antimony	1.19		mg/l	0.0060	1.25	BRL	95	80-120	
Chromium	1.17		mg/l	0.0050	1.25	BRL	94	80-120	
Copper	1.21		mg/l	0.0050	1.25	BRL	97	80-120	
Beryllium	1.18		mg/l	0.0020	1.25	BRL	94	80-120	
Silver	1.23		mg/l	0.0050	1.25	BRL	98	80-120	
Arsenic	1.18		mg/l	0.0040	1.25	BRL	94	80-120	
Cadmium	1.19		mg/l	0.0025	1.25	BRL	96	80-120	

*This laboratory report is not valid without an authorized signature on the cover page.*

\* Reportable Detection Limit

BRL = Below Reporting Limit

**Soluble Metals by EPA 200 Series Methods - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 8030754 - EPA200/SW7000 Series</b>										
<b><u>Blank (8030754-BLK1)</u></b>										
Prepared: 12-Mar-08 Analyzed: 14-Mar-08										
Mercury	BRL		mg/l	0.00020						
<b><u>LCS (8030754-BS1)</u></b>										
Prepared: 12-Mar-08 Analyzed: 14-Mar-08										
Mercury	0.00518		mg/l	0.00020	0.00500		104	85-115		
<b><u>Duplicate (8030754-DUP1)</u> Source: SA75541-07</b>										
Prepared: 12-Mar-08 Analyzed: 14-Mar-08										
Mercury	BRL		mg/l	0.00020		BRL				20
<b><u>Matrix Spike (8030754-MS1)</u> Source: SA75541-09</b>										
Prepared: 12-Mar-08 Analyzed: 14-Mar-08										
Mercury	0.00542		mg/l	0.00020	0.00500	BRL	108	75-125		
<b><u>Matrix Spike Dup (8030754-MSD1)</u> Source: SA75541-09</b>										
Prepared: 12-Mar-08 Analyzed: 14-Mar-08										
Mercury	0.00540		mg/l	0.00020	0.00500	BRL	108	75-125	0.4	20
<b><u>Post Spike (8030754-PS1)</u> Source: SA75541-09</b>										
Prepared: 12-Mar-08 Analyzed: 14-Mar-08										
Mercury	0.00543		mg/l	0.00020	0.00500	BRL	109	85-115		

*This laboratory report is not valid without an authorized signature on the cover page.*

\* Reportable Detection Limit

BRL = Below Reporting Limit

## Notes and Definitions

QR8	Analyses are not controlled on RPD values from sample concentrations that are less than 5 times the reporting level. The batch is accepted based upon the difference between the sample and duplicate is less than or equal to the reporting limit.
BRL	Below Reporting Limit - Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).

A plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Validated by:  
Hanibal C. Tayeh, Ph.D.  
Nicole Brown

MADEP MCP ANALYTICAL METHOD REPORT CERTIFICATION FORM

Laboratory Name: Spectrum Analytical, Inc. - Agawam, MA			Project #: [none]		
Project Location: Necco - Revere, MA			MADEP RTN <sup>1</sup> :		
This form provides certifications for the following data set: SA75279-01					
Sample matrices:	Ground Water				
<b>MCP SW-846 Methods Used</b>	<input type="checkbox"/> 8260B	<input type="checkbox"/> 8151A	<input type="checkbox"/> 8330	<input checked="" type="checkbox"/> 6010B	<input checked="" type="checkbox"/> 7470A/1A
	<input type="checkbox"/> 8270C	<input type="checkbox"/> 8081A	<input type="checkbox"/> VPH	<input type="checkbox"/> 6020	<input type="checkbox"/> 9014M <sup>2</sup>
	<input type="checkbox"/> 8082	<input type="checkbox"/> 8021B	<input type="checkbox"/> EPH	<input type="checkbox"/> 7000S <sup>3</sup>	<input type="checkbox"/> 7196A
<small>1 List Release Tracking Number (RTN), if known                  2 M - SW-846 Method 9014 or MADEP Physiologically Available Cyanide (PAC) Method                  3 S - SW-846 Methods 7000 Series List individual method and analyte</small>					
<b><i>An affirmative response to questions A, B, C and D is required for "Presumptive Certainty" status</i></b>					
<b>A</b>	Were all samples received by the laboratory in a condition consistent with that described on the Chain of Custody documentation for the data set?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>B</b>	Were all QA/QC procedures required for the specified analytical method(s) included in this report followed, including the requirement to note and discuss in a narrative QC data that did not meet appropriate performance standards or guidelines?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>C</b>	Does the data included in this report meet all the analytical requirements for "Presumptive Certainty", as described in Section 2.0 (a), (b), (c) and (d) of the MADEP document CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>D</b>	<b><u>VPH and EPH methods only:</u></b> Was the VPH or EPH method conducted without significant modifications (see Section 11.3 of respective methods)?				<input type="checkbox"/> Yes <input type="checkbox"/> No
<b><i>A response to questions E and F below is required for "Presumptive Certainty" status</i></b>					
<b>E</b>	Were all analytical QC performance standards and recommendations for the specified methods achieved?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>F</b>	Were results for all analyte-list compounds/elements for the specified method(s) reported?				<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b><i>All negative responses are addressed in a case narrative on the cover page of this report.</i></b>					
<p><b>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 analytical report is, to the best of my knowledge and belief, accurate and complete.</b></p> <div style="text-align: right; margin-top: 20px;">                   Hanibal C. Tayeh, Ph.D.                  President/Laboratory Director                  Date: 3/17/2008             </div>					

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Report Date:  
17-Mar-08 09:43



- Final Report
- Re-Issued Report
- Revised Report

**SPECTRUM ANALYTICAL, INC.**

*Featuring*

**HANIBAL TECHNOLOGY**

***Laboratory Report***

Wheatstone Engineering & Consulting, Inc.  
220 Forbes Road, Suite 405  
Braintree, MA 02184-2705  
Attn: Amy McElroy

Project: Necco - Revere, MA  
Project [none]

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SA75197-01	MW-1	Ground Water	04-Mar-08 00:00	04-Mar-08 14:10
SA75197-02	MW-2	Ground Water	04-Mar-08 00:00	04-Mar-08 14:10
SA75197-03	MW-3	Ground Water	04-Mar-08 00:00	04-Mar-08 14:10

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.

All applicable NELAC requirements have been met.

Please note that this report contains 9 pages of analytical data plus Chain of Custody document(s).

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Massachusetts Certification # M-MA138/MA1110  
Connecticut # PH-0777  
Florida # E87600/E87936  
Maine # MA138  
New Hampshire # 2538  
New Jersey # MA011/MA012  
New York # 11393/11840  
Rhode Island # 98  
USDA # S-51435  
Vermont # VT-11393



Authorized by:

Hanibal C. Tayeh, Ph.D.  
President/Laboratory Director

Technical Reviewer's Initial:

*Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our "Quality" web page at [www.spectrum-analytical.com](http://www.spectrum-analytical.com) for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (NY-11840, FL-E87936 and NJ-MA012).*

**CASE NARRATIVE:**

The samples were received @ 4.0 degrees Celsius, please refer to the Chain of Custody for details specific to temperature upon receipt. An infrared thermometer with a tolerance of +/- 2.0 degrees Celsius was used immediately upon receipt of the samples.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method.

According to WSC-CAM 5/2004 Rev.4, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended 70%-130% recovery range, a range has been set based on historical control limits.

**See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.**

**EPA 245.1/7470A**

**Spikes:**

8030339-PS1      *Source: SA75197-02*

---

Analyte out of acceptance range.

Mercury

**SW846 6010B**

**Duplicates:**

8030338-DUP1      *Source: SA75197-01*

---

Analyses are not controlled on RPD values from sample concentrations that are less than 5 times the reporting level. The batch is accepted based upon the difference between the sample and duplicate is less than or equal to the reporting limit.

Copper

Thallium

Sample IdentificationMW-1  
SA75197-01Client Project #  
[none]Matrix  
Ground WaterCollection Date/Time  
04-Mar-08 00:00Received  
04-Mar-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Analyst</i>
<b>Soluble Metals by EPA 200/6000 Series Methods</b>											
	Filtration	Lab Filtered		N/A		1	EPA 200.7/3005A	06-Mar-08	06-Mar-08	8030798	JR
<b>Soluble Metals by EPA 6000/7000 Series Methods</b>											
7440-22-4	Silver	BRL		mg/l	0.0050	1	SW846 6010B	10-Mar-08	11-Mar-08	8030338	LR
7440-38-2	Arsenic	0.0103		mg/l	0.0040	1	"	"	"	"	"
7440-41-7	Beryllium	BRL		mg/l	0.0020	1	"	"	"	"	"
7440-43-9	Cadmium	BRL		mg/l	0.0025	1	"	"	"	"	"
7440-47-3	Chromium	BRL		mg/l	0.0050	1	"	"	"	"	"
7440-50-8	Copper	0.0122		mg/l	0.0050	1	"	"	"	"	"
7440-02-0	Nickel	BRL		mg/l	0.0050	1	"	"	"	"	"
7439-92-1	Lead	BRL		mg/l	0.0075	1	"	"	"	"	"
7440-36-0	Antimony	BRL		mg/l	0.0060	1	"	"	"	"	"
7782-49-2	Selenium	BRL		mg/l	0.0150	1	"	"	"	"	"
7440-28-0	Thallium	BRL		mg/l	0.0050	1	"	"	"	"	"
7440-66-6	Zinc	BRL		mg/l	0.0050	1	"	"	"	"	"
<b>Soluble Metals by EPA 200 Series Methods</b>											
7439-97-6	Mercury	BRL		mg/l	0.00020	1	EPA 245.1/7470A	10-Mar-08	11-Mar-08	8030339	CRM

Sample IdentificationMW-2  
SA75197-02Client Project #  
[none]Matrix  
Ground WaterCollection Date/Time  
04-Mar-08 00:00Received  
04-Mar-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Analyst</i>
<b>Soluble Metals by EPA 200/6000 Series Methods</b>											
	Filtration	Lab Filtered		N/A		1	EPA 200.7/3005A	06-Mar-08	06-Mar-08	8030798	JR
<b>Soluble Metals by EPA 6000/7000 Series Methods</b>											
7440-22-4	Silver	BRL		mg/l	0.0050	1	SW846 6010B	10-Mar-08	11-Mar-08	8030338	LR
7440-38-2	Arsenic	0.0048		mg/l	0.0040	1	"	"	"	"	"
7440-41-7	Beryllium	BRL		mg/l	0.0020	1	"	"	"	"	"
7440-43-9	Cadmium	BRL		mg/l	0.0025	1	"	"	"	"	"
7440-47-3	Chromium	BRL		mg/l	0.0050	1	"	"	"	"	"
7440-50-8	Copper	BRL		mg/l	0.0050	1	"	"	"	"	"
7440-02-0	Nickel	BRL		mg/l	0.0050	1	"	"	"	"	"
7439-92-1	Lead	BRL		mg/l	0.0075	1	"	"	"	"	"
7440-36-0	Antimony	BRL		mg/l	0.0060	1	"	"	"	"	"
7782-49-2	Selenium	BRL		mg/l	0.0150	1	"	"	"	"	"
7440-28-0	Thallium	BRL		mg/l	0.0050	1	"	"	"	"	"
7440-66-6	Zinc	BRL		mg/l	0.0050	1	"	"	"	"	"
<b>Soluble Metals by EPA 200 Series Methods</b>											
7439-97-6	Mercury	BRL		mg/l	0.00020	1	EPA 245.1/7470A	10-Mar-08	11-Mar-08	8030339	CRM

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\* Reportable Detection Limit

BRL = Below Reporting Limit

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Sample IdentificationMW-3  
SA75197-03Client Project #  
[none]Matrix  
Ground WaterCollection Date/Time  
04-Mar-08 00:00Received  
04-Mar-08

<i>CAS No.</i>	<i>Analyte(s)</i>	<i>Result</i>	<i>Flag</i>	<i>Units</i>	<i>*RDL</i>	<i>Dilution</i>	<i>Method Ref.</i>	<i>Prepared</i>	<i>Analyzed</i>	<i>Batch</i>	<i>Analyst</i>
<b>Soluble Metals by EPA 200/6000 Series Methods</b>											
	Filtration	Lab Filtered		N/A		1	EPA 200.7/3005A	06-Mar-08	06-Mar-08	8030798	JR
<b>Soluble Metals by EPA 6000/7000 Series Methods</b>											
7440-22-4	Silver	BRL		mg/l	0.0050	1	SW846 6010B	10-Mar-08	11-Mar-08	8030338	LR
7440-38-2	Arsenic	BRL		mg/l	0.0040	1	"	"	"	"	"
7440-41-7	Beryllium	BRL		mg/l	0.0020	1	"	"	"	"	"
7440-43-9	Cadmium	BRL		mg/l	0.0025	1	"	"	"	"	"
7440-47-3	Chromium	BRL		mg/l	0.0050	1	"	"	"	"	"
7440-50-8	Copper	BRL		mg/l	0.0050	1	"	"	"	"	"
7440-02-0	Nickel	BRL		mg/l	0.0050	1	"	"	"	"	"
7439-92-1	Lead	BRL		mg/l	0.0075	1	"	"	"	"	"
7440-36-0	Antimony	BRL		mg/l	0.0060	1	"	"	"	"	"
7782-49-2	Selenium	BRL		mg/l	0.0150	1	"	"	"	"	"
7440-28-0	Thallium	0.0076		mg/l	0.0050	1	"	"	"	"	"
7440-66-6	Zinc	0.0052		mg/l	0.0050	1	"	"	"	"	"
<b>Soluble Metals by EPA 200 Series Methods</b>											
7439-97-6	Mercury	BRL		mg/l	0.00020	1	EPA 245.1/7470A	10-Mar-08	11-Mar-08	8030339	CRM

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\* Reportable Detection Limit

BRL = Below Reporting Limit

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**Soluble Metals by EPA 6000/7000 Series Methods - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC Limits	RPD	RPD Limit
<b>Batch 8030338 - SW846 3005A</b>									
<b>Blank (8030338-BLK1)</b>									
Prepared: 10-Mar-08 Analyzed: 11-Mar-08									
Lead	BRL		mg/l	0.0075					
Zinc	BRL		mg/l	0.0050					
Selenium	BRL		mg/l	0.0150					
Antimony	BRL		mg/l	0.0060					
Thallium	BRL		mg/l	0.0050					
Nickel	BRL		mg/l	0.0050					
Beryllium	BRL		mg/l	0.0020					
Copper	BRL		mg/l	0.0050					
Chromium	BRL		mg/l	0.0050					
Silver	BRL		mg/l	0.0050					
Arsenic	BRL		mg/l	0.0040					
Cadmium	BRL		mg/l	0.0025					
<b>LCS (8030338-BS1)</b>									
Prepared: 10-Mar-08 Analyzed: 11-Mar-08									
Thallium	1.27		mg/l	0.0050	1.25		102	85-115	
Nickel	1.25		mg/l	0.0050	1.25		100	85-115	
Antimony	1.26		mg/l	0.0060	1.25		101	85-115	
Selenium	1.32		mg/l	0.0150	1.25		105	85-115	
Lead	1.23		mg/l	0.0075	1.25		98	85-115	
Zinc	1.28		mg/l	0.0050	1.25		102	85-115	
Chromium	1.39		mg/l	0.0050	1.25		111	85-115	
Cadmium	1.35		mg/l	0.0025	1.25		108	85-115	
Copper	1.28		mg/l	0.0050	1.25		102	85-115	
Arsenic	1.27		mg/l	0.0040	1.25		102	85-115	
Silver	1.31		mg/l	0.0050	1.25		105	85-115	
Beryllium	1.20		mg/l	0.0020	1.25		96	85-115	
<b>LCS Dup (8030338-BSD1)</b>									
Prepared: 10-Mar-08 Analyzed: 11-Mar-08									
Selenium	1.31		mg/l	0.0150	1.25		105	85-115	0.5 20
Lead	1.22		mg/l	0.0075	1.25		97	85-115	1 20
Nickel	1.24		mg/l	0.0050	1.25		99	85-115	0.9 20
Thallium	1.25		mg/l	0.0050	1.25		100	85-115	2 20
Zinc	1.26		mg/l	0.0050	1.25		101	85-115	2 20
Antimony	1.25		mg/l	0.0060	1.25		100	85-115	1 20
Arsenic	1.26		mg/l	0.0040	1.25		101	85-115	0.8 20
Chromium	1.37		mg/l	0.0050	1.25		110	85-115	0.9 20
Copper	1.25		mg/l	0.0050	1.25		100	85-115	2 20
Cadmium	1.34		mg/l	0.0025	1.25		107	85-115	0.4 20
Silver	1.30		mg/l	0.0050	1.25		104	85-115	0.8 20
Beryllium	1.19		mg/l	0.0020	1.25		95	85-115	0.9 20
<b>Duplicate (8030338-DUP1) Source: SA75197-01</b>									
Prepared: 10-Mar-08 Analyzed: 11-Mar-08									
Nickel	0.0022	J	mg/l	0.0050		0.0026			19 20
Zinc	BRL		mg/l	0.0050		BRL			20
Thallium	0.0075	QR8	mg/l	0.0050		0.0027			94 20
Selenium	BRL		mg/l	0.0150		BRL			20
Antimony	BRL		mg/l	0.0060		BRL			20
Lead	BRL		mg/l	0.0075		BRL			20

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\* Reportable Detection Limit

BRL = Below Reporting Limit

**Soluble Metals by EPA 6000/7000 Series Methods - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC Limits	RPD	RPD Limit
<b>Batch 8030338 - SW846 3005A</b>									
<b>Duplicate (8030338-DUP1)</b>		<b>Source: SA75197-01</b>							
Prepared: 10-Mar-08 Analyzed: 11-Mar-08									
Copper	0.0068	QR8	mg/l	0.0050		0.0122		56	20
Silver	0.0024	J	mg/l	0.0050		0.0024		4	20
Cadmium	BRL		mg/l	0.0025		BRL			20
Arsenic	0.0098		mg/l	0.0040		0.0103		5	20
Chromium	BRL		mg/l	0.0050		BRL			20
Beryllium	BRL		mg/l	0.0020		BRL			20
<b>Matrix Spike (8030338-MS1)</b>		<b>Source: SA75197-02</b>							
Prepared: 10-Mar-08 Analyzed: 11-Mar-08									
Lead	1.24		mg/l	0.0075	1.25	BRL	99	75-125	
Selenium	1.34		mg/l	0.0150	1.25	BRL	107	75-125	
Nickel	1.17		mg/l	0.0050	1.25	0.0014	93	75-125	
Antimony	1.23		mg/l	0.0060	1.25	BRL	99	75-125	
Thallium	1.34		mg/l	0.0050	1.25	0.0016	107	75-125	
Zinc	1.21		mg/l	0.0050	1.25	BRL	97	75-125	
Cadmium	1.31		mg/l	0.0025	1.25	BRL	105	75-125	
Beryllium	1.19		mg/l	0.0020	1.25	BRL	95	75-125	
Chromium	1.35		mg/l	0.0050	1.25	BRL	108	75-125	
Arsenic	1.28		mg/l	0.0040	1.25	0.0048	102	75-125	
Silver	1.40		mg/l	0.0050	1.25	BRL	112	75-125	
Copper	1.32		mg/l	0.0050	1.25	0.0028	106	75-125	
<b>Matrix Spike Dup (8030338-MSD1)</b>		<b>Source: SA75197-02</b>							
Prepared: 10-Mar-08 Analyzed: 11-Mar-08									
Antimony	1.21		mg/l	0.0060	1.25	BRL	96	75-125	2
Lead	1.21		mg/l	0.0075	1.25	BRL	97	75-125	3
Selenium	1.32		mg/l	0.0150	1.25	BRL	105	75-125	2
Thallium	1.31		mg/l	0.0050	1.25	0.0016	105	75-125	2
Nickel	1.14		mg/l	0.0050	1.25	0.0014	91	75-125	3
Zinc	1.20		mg/l	0.0050	1.25	BRL	96	75-125	0.9
Silver	1.36		mg/l	0.0050	1.25	BRL	109	75-125	3
Arsenic	1.25		mg/l	0.0040	1.25	0.0048	100	75-125	3
Beryllium	1.15		mg/l	0.0020	1.25	BRL	92	75-125	3
Cadmium	1.27		mg/l	0.0025	1.25	BRL	102	75-125	3
Chromium	1.34		mg/l	0.0050	1.25	BRL	107	75-125	1
Copper	1.31		mg/l	0.0050	1.25	0.0028	104	75-125	1
<b>Post Spike (8030338-PS1)</b>		<b>Source: SA75197-02</b>							
Prepared: 10-Mar-08 Analyzed: 11-Mar-08									
Zinc	1.27		mg/l	0.0050	1.25	BRL	102	80-120	
Selenium	1.34		mg/l	0.0150	1.25	BRL	107	80-120	
Lead	1.24		mg/l	0.0075	1.25	BRL	99	80-120	
Nickel	1.17		mg/l	0.0050	1.25	0.0014	93	80-120	
Antimony	1.20		mg/l	0.0060	1.25	BRL	96	80-120	
Thallium	1.39		mg/l	0.0050	1.25	0.0016	111	80-120	
Beryllium	1.21		mg/l	0.0020	1.25	BRL	97	80-120	
Arsenic	1.28		mg/l	0.0040	1.25	0.0048	102	80-120	
Cadmium	1.28		mg/l	0.0025	1.25	BRL	103	80-120	
Silver	1.41		mg/l	0.0050	1.25	BRL	112	80-120	
Copper	1.40		mg/l	0.0050	1.25	0.0028	112	80-120	
Chromium	1.39		mg/l	0.0050	1.25	BRL	111	80-120	

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\* Reportable Detection Limit

BRL = Below Reporting Limit

**Soluble Metals by EPA 200 Series Methods - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	Limits	RPD	RPD Limit
<b>Batch 8030339 - EPA200/SW7000 Series</b>										
<b><u>Blank (8030339-BLK1)</u></b>										
Prepared: 10-Mar-08 Analyzed: 11-Mar-08										
Mercury	BRL		mg/l	0.00020						
<b><u>LCS (8030339-BS1)</u></b>										
Prepared: 10-Mar-08 Analyzed: 11-Mar-08										
Mercury	0.00538		mg/l	0.00020	0.00500		108	85-115		
<b><u>Duplicate (8030339-DUP1)</u> Source: SA75197-01</b>										
Prepared: 10-Mar-08 Analyzed: 11-Mar-08										
Mercury	BRL		mg/l	0.00020		BRL				20
<b><u>Matrix Spike (8030339-MS1)</u> Source: SA75197-02</b>										
Prepared: 10-Mar-08 Analyzed: 11-Mar-08										
Mercury	0.00545		mg/l	0.00020	0.00500	BRL	109	75-125		
<b><u>Matrix Spike Dup (8030339-MSD1)</u> Source: SA75197-02</b>										
Prepared: 10-Mar-08 Analyzed: 11-Mar-08										
Mercury	0.00481		mg/l	0.00020	0.00500	BRL	96	75-125	12	20
<b><u>Post Spike (8030339-PS1)</u> Source: SA75197-02</b>										
Prepared: 10-Mar-08 Analyzed: 11-Mar-08										
Mercury	BRL	QC1	mg/l	0.00020	0.00500	BRL		85-115		

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\* Reportable Detection Limit

BRL = Below Reporting Limit

## Notes and Definitions

QC1	Analyte out of acceptance range.
QR8	Analyses are not controlled on RPD values from sample concentrations that are less than 5 times the reporting level. The batch is accepted based upon the difference between the sample and duplicate is less than or equal to the reporting limit.
BRL	Below Reporting Limit - Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference
J	Detected but below the Reporting Limit; therefore, result is an estimated concentration (CLP J-Flag).

A plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Validated by:  
Hanibal C. Tayeh, Ph.D.  
Nicole Brown

MADEP MCP ANALYTICAL METHOD REPORT CERTIFICATION FORM

Laboratory Name: Spectrum Analytical, Inc. - Agawam, MA			Project #: [none]		
Project Location: Necco - Revere, MA			MADEP RTN <sup>1</sup> :		
This form provides certifications for the following data set: SA75197-01 through SA75197-03					
Sample matrices:	Ground Water				
<b>MCP SW-846 Methods Used</b>	<input type="checkbox"/> 8260B	<input type="checkbox"/> 8151A	<input type="checkbox"/> 8330	<input checked="" type="checkbox"/> 6010B	<input checked="" type="checkbox"/> 7470A/1A
	<input type="checkbox"/> 8270C	<input type="checkbox"/> 8081A	<input type="checkbox"/> VPH	<input type="checkbox"/> 6020	<input type="checkbox"/> 9014M <sup>2</sup>
	<input type="checkbox"/> 8082	<input type="checkbox"/> 8021B	<input type="checkbox"/> EPH	<input type="checkbox"/> 7000S <sup>3</sup>	<input type="checkbox"/> 7196A
<p>1 List Release Tracking Number (RTN), if known                  2 M - SW-846 Method 9014 or MADEP Physiologically Available Cyanide (PAC) Method                  3 S - SW-846 Methods 7000 Series List individual method and analyte</p>					
<b><i>An affirmative response to questions A, B, C and D is required for "Presumptive Certainty" status</i></b>					
<b>A</b>	Were all samples received by the laboratory in a condition consistent with that described on the Chain of Custody documentation for the data set?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>B</b>	Were all QA/QC procedures required for the specified analytical method(s) included in this report followed, including the requirement to note and discuss in a narrative QC data that did not meet appropriate performance standards or guidelines?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>C</b>	Does the data included in this report meet all the analytical requirements for "Presumptive Certainty", as described in Section 2.0 (a), (b), (c) and (d) of the MADEP document CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>D</b>	<u><b>VPH and EPH methods only:</b></u> Was the VPH or EPH method conducted without significant modifications (see Section 11.3 of respective methods)?				<input type="checkbox"/> Yes <input type="checkbox"/> No
<b><i>A response to questions E and F below is required for "Presumptive Certainty" status</i></b>					
<b>E</b>	Were all analytical QC performance standards and recommendations for the specified methods achieved?				<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No
<b>F</b>	Were results for all analyte-list compounds/elements for the specified method(s) reported?				<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
<b><i>All negative responses are addressed in a case narrative on the cover page of this report.</i></b>					
<p><b>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 analytical report is, to the best of my knowledge and belief, accurate and complete.</b></p> <div style="text-align: right; margin-top: 20px;">                   Hanibal C. Tayeh, Ph.D.                  President/Laboratory Director                  Date: 3/17/2008 9:43:52AM             </div>					

*This laboratory report is not valid without an authorized signature on the cover page.*



SPECTRUM ANALYTICAL, INC.  
Framming  
HANDHAL TECHNOLOGY

# CHAIN OF CUSTODY RECORD

Page 1 of 1

SA 78197 ✓ FM

**Special Handling:**  
 Standard TAT - 7 to 10 business days  
 Rush TAT - Date Needed: \_\_\_\_\_  
All TATs subject to laboratory approval.  
Min. 24-hour notification needed for rushes.  
Samples disposed of after 60 days unless otherwise instructed.

Report To: Amy M'Elroy  
Site 1405  
200 Forbes Rd  
Bainbridge MA 02814  
Project Mgr.: A. M'Elroy

Invoice To: Same  
P.O. No.: \_\_\_\_\_  
RON: \_\_\_\_\_

Project No.: NECCO  
Site Name: River  
Location: River  
Sampler(s): C. Wildman  
State: MA

1=Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 2=HCl 3=H<sub>2</sub>SO<sub>4</sub> 4=HNO<sub>3</sub> 5=NaOH 6=Ascorbic Acid  
7=CH<sub>3</sub>OH 8=NaHSO<sub>4</sub> 9=\_\_\_\_\_ 10=\_\_\_\_\_

DW=Drinking Water GW=Groundwater WW=Wastewater  
O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air  
X1=\_\_\_\_\_ X2=\_\_\_\_\_ X3=\_\_\_\_\_

G=Grab C=Composite

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Preservative	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Containers:	Analyses:	QA Reporting Notes: (check if needed)
78197-01	MW-1	3-4-08	PM	G	GW					1			<input checked="" type="checkbox"/> Provide MA DEP MCP CAM Report <input type="checkbox"/> Provide CT DPH RCP Report
	MW-2	3-4-08	PM	G	GW					1			<input checked="" type="checkbox"/> QA/QC Reporting Level <input checked="" type="checkbox"/> Standard <input type="checkbox"/> No QC <input type="checkbox"/> Other _____ State specific reporting standards:
	MW-3	3-4-08	AM	G	GW					1			

Priority Pollutant  
Dissolved

Fax results when available to (\_\_\_\_\_) \_\_\_\_\_

E-mail to AMElroy@wmtst.com

EDD Format \_\_\_\_\_

Condition upon receipt:  Iced  Ambient  °C 40

Relinquished by: [Signature] Date: 3/4/08 Time: 14:10

Received by: [Signature] Date: 3/3/08 Time: 10:15

[Signature] Date: 3/5/08 Time: 16:50

Report Date:  
20-May-10 14:32



- Final Report
- Re-Issued Report
- Revised Report

**SPECTRUM ANALYTICAL, INC.**  
*Featuring*  
**HANIBAL TECHNOLOGY**  
**Laboratory Report**

Wheatstone Engineering & Consulting, Inc.  
220 Forbes Road, Suite 405  
Braintree, MA 02184-2705  
Attn: Robert Reynolds

Project: Necco - Revere, MA  
Project #: M1167

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SB12304-01	Frac-Tank	Ground Water	17-May-10 00:00	18-May-10 16:46

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. These results relate only to the sample(s) as received.  
All applicable NELAC requirements have been met.

Massachusetts # M-MA138/MA1110  
Connecticut # PH-0777  
Florida # E87600/E87936  
Maine # MA138  
New Hampshire # 2538  
New Jersey # MA011/MA012  
New York # 11393/11840  
Pennsylvania # 68-04426/68-02924  
Rhode Island # 98  
USDA # S-51435  
Vermont # VT-11393



Authorized by:

Hanibal C. Tayeh, Ph.D.  
President/Laboratory Director

Technical Reviewer's Initial:

Spectrum Analytical holds certification in the State of Massachusetts for the analytes as indicated with an X in the "Cert." column within this report. Please note that the State of Massachusetts does not offer certification for all analytes.  
Please note that this report contains 18 pages of analytical data plus Chain of Custody document(s). When the Laboratory Report is indicated as revised, this report supersedes any previously dated reports for the laboratory ID(s) referenced above. Where this report identifies subcontracted analyses, copies of the subcontractor's test report are available upon request. This report may not be reproduced, except in full, without written approval from Spectrum Analytical, Inc.

*Spectrum Analytical, Inc. is a NELAC accredited laboratory organization and meets NELAC testing standards. Use of the NELAC logo however does not insure that Spectrum is currently accredited for the specific method or analyte indicated. Please refer to our "Quality" web page at [www.spectrum-analytical.com](http://www.spectrum-analytical.com) for a full listing of our current certifications and fields of accreditation. States in which Spectrum Analytical, Inc. holds NELAC certification are New York, New Hampshire, New Jersey and Florida. All analytical work for Volatile Organic and Air analysis are transferred to and conducted at our 830 Silver Street location (NY-11840, FL-E87936 and NJ-MA012).*

*Please contact the Laboratory or Technical Director at 800-789-9115 with any questions regarding the data contained in this laboratory report.*

**CASE NARRATIVE:**

The sample temperature upon receipt by Spectrum Analytical courier was recorded as 4.0 degrees Celsius. The samples were transported on ice to the laboratory facility and the temperature was recorded at 1.5 degrees Celsius upon receipt at the laboratory. Please refer to the Chain of Custody for details specific to sample receipt times.

An infrared thermometer with a tolerance of +/- 2.0 degrees Celsius was used immediately upon receipt of the samples.

If a Matrix Spike (MS), Matrix Spike Duplicate (MSD) or Duplicate (DUP) was not requested on the Chain of Custody, method criteria may have been fulfilled with a source sample not of this Sample Delivery Group.

MADEP has published a list of analytical methods (CAM) which provides a series of recommended protocols for the acquisition, analysis and reporting of analytical data in support of MCP decisions. "Presumptive Certainty" can be established only for those methods published by the MADEP in the MCP CAM. The compounds and/or elements reported were specifically requested by the client on the Chain of Custody and in some cases may not include the full analyte list as defined in the method.

According to WSC-CAM 5/2009 Rev.1, Table 11 A-1, recovery for some VOC analytes have been deemed potentially difficult. Although they may still be within the recommended recovery range, a range has been set based on historical control limits.

Some target analytes which are not listed as exceptions in the Summary of CAM Reporting Limits may exceed the recommended RL based on sample initial volume or weight provided, % moisture content, or responsiveness of a particular analyte to purge and trap instrumentation.

**See below for any non-conformances and issues relating to quality control samples and/or sample analysis/matrix.**

**EPA 608**

**Samples:**

SB12304-01                      *Frac-Tank*

---

The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.

Decachlorobiphenyl (Sr) [2C]

**SW846 8270C**

**Calibration:**

1004037

---

Analyte quantified by quadratic equation type calibration.

Atrazine  
Benzidine  
Hexachlorocyclopentadiene

This affected the following samples:

1010532-BLK1  
1010532-BS1  
1010532-BSD1  
Frac-Tank  
S004461-CCV1

S003603-ICV1

---

Analyte percent recovery is outside individual acceptance criteria.

Atrazine (%)  
Benzidine (278%)

**Calibration:**

S003603-ICV1

---

This affected the following samples:

- 1010532-BLK1
- 1010532-BS1
- 1010532-BSD1
- Frac-Tank
- S004461-CCV1

**Laboratory Control Samples:**

1010532 BS/BSD

---

4-Nitrophenol percent recoveries (31/28) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Frac-Tank

Atrazine percent recoveries (/) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Frac-Tank

Phenol percent recoveries (41/39) are outside individual acceptance criteria, but within overall method allowances. All reported results of the following samples are considered to have a potentially low bias:

Frac-Tank

**Samples:**

S004461-CCV1

---

Analyte percent difference is outside individual acceptance criteria, but within overall method allowances.

- Bis(2-chloroisopropyl)ether (45.1%)
- Nitrobenzene (21.4%)
- Pentachloronitrobenzene (20.3%)

Analyte percent drift is outside individual acceptance criteria, but within overall method allowances.

- 2,4-Dinitrophenol (74.3%)
- 4,6-Dinitro-2-methylphenol (64.1%)
- 4-Nitrophenol (-27.2%)
- Atrazine (-25.4%)
- Benzidine (-51.8%)
- Benzoic acid (38.8%)

This affected the following samples:

- 1010532-BLK1
- 1010532-BS1
- 1010532-BSD1
- Frac-Tank

Sample Identification

**Frac-Tank**  
SB12304-01

Client Project #  
M1167

Matrix  
Ground Water

Collection Date/Time  
17-May-10 00:00

Received  
18-May-10

<u>CAS No.</u>	<u>Analyte(s)</u>	<u>Result</u>	<u>Flag</u>	<u>Units</u>	<u>*RDL</u>	<u>Dilution</u>	<u>Method Ref.</u>	<u>Prepared</u>	<u>Analyzed</u>	<u>Analyst</u>	<u>Batch</u>	<u>Cert.</u>
<b>Microextractable Organic Compounds</b>												
106-93-4	1,2-Dibromoethane (EDB)	BRL		µg/l	0.0100	1	EPA 504.1	18-May-10	19-May-10	DS	1010426	
<b>Semivolatile Organic Compounds by GCMS</b>												
<u>Semivolatile Organic Compounds by SW846 8270C</u>												
<u>Prepared by method SW846 3510C</u>												
83-32-9	Acenaphthene	BRL		µg/l	5.21	1	SW846 8270C	19-May-10	20-May-10	MSL	1010532	
208-96-8	Acenaphthylene	BRL		µg/l	5.21	1	"	"	"	"	"	
62-53-3	Aniline	BRL		µg/l	5.21	1	"	"	"	"	"	
120-12-7	Anthracene	BRL		µg/l	5.21	1	"	"	"	"	"	
1912-24-9	Atrazine	BRL		µg/l	5.21	1	"	"	"	"	"	
103-33-3	Azobenzene/Diphenyldiazine	BRL		µg/l	5.21	1	"	"	"	"	"	
92-87-5	Benzidine	BRL		µg/l	5.21	1	"	"	"	"	"	
56-55-3	Benzo (a) anthracene	BRL		µg/l	5.21	1	"	"	"	"	"	
50-32-8	Benzo (a) pyrene	BRL		µg/l	5.21	1	"	"	"	"	"	
205-99-2	Benzo (b) fluoranthene	BRL		µg/l	5.21	1	"	"	"	"	"	
191-24-2	Benzo (g,h,i) perylene	BRL		µg/l	5.21	1	"	"	"	"	"	
207-08-9	Benzo (k) fluoranthene	BRL		µg/l	5.21	1	"	"	"	"	"	
65-85-0	Benzoic acid	BRL		µg/l	5.21	1	"	"	"	"	"	
100-51-6	Benzyl alcohol	BRL		µg/l	5.21	1	"	"	"	"	"	
111-91-1	Bis(2-chloroethoxy)methane	BRL		µg/l	5.21	1	"	"	"	"	"	
111-44-4	Bis(2-chloroethyl)ether	BRL		µg/l	5.21	1	"	"	"	"	"	
108-60-1	Bis(2-chloroisopropyl)ether	BRL		µg/l	5.21	1	"	"	"	"	"	
117-81-7	Bis(2-ethylhexyl)phthalate	BRL		µg/l	5.21	1	"	"	"	"	"	
101-55-3	4-Bromophenyl phenyl ether	BRL		µg/l	5.21	1	"	"	"	"	"	
85-68-7	Butyl benzyl phthalate	BRL		µg/l	5.21	1	"	"	"	"	"	
86-74-8	Carbazole	BRL		µg/l	5.21	1	"	"	"	"	"	
59-50-7	4-Chloro-3-methylphenol	BRL		µg/l	5.21	1	"	"	"	"	"	
106-47-8	4-Chloroaniline	BRL		µg/l	5.21	1	"	"	"	"	"	
91-58-7	2-Chloronaphthalene	BRL		µg/l	5.21	1	"	"	"	"	"	
95-57-8	2-Chlorophenol	BRL		µg/l	5.21	1	"	"	"	"	"	
7005-72-3	4-Chlorophenyl phenyl ether	BRL		µg/l	5.21	1	"	"	"	"	"	
218-01-9	Chrysene	BRL		µg/l	5.21	1	"	"	"	"	"	
53-70-3	Dibenzo (a,h) anthracene	BRL		µg/l	5.21	1	"	"	"	"	"	
132-64-9	Dibenzofuran	BRL		µg/l	5.21	1	"	"	"	"	"	
95-50-1	1,2-Dichlorobenzene	BRL		µg/l	5.21	1	"	"	"	"	"	
541-73-1	1,3-Dichlorobenzene	BRL		µg/l	5.21	1	"	"	"	"	"	
106-46-7	1,4-Dichlorobenzene	BRL		µg/l	5.21	1	"	"	"	"	"	
91-94-1	3,3'-Dichlorobenzidine	BRL		µg/l	5.21	1	"	"	"	"	"	
120-83-2	2,4-Dichlorophenol	BRL		µg/l	5.21	1	"	"	"	"	"	
84-66-2	Diethyl phthalate	BRL		µg/l	5.21	1	"	"	"	"	"	
131-11-3	Dimethyl phthalate	BRL		µg/l	5.21	1	"	"	"	"	"	
105-67-9	2,4-Dimethylphenol	BRL		µg/l	5.21	1	"	"	"	"	"	
84-74-2	Di-n-butyl phthalate	BRL		µg/l	5.21	1	"	"	"	"	"	
534-52-1	4,6-Dinitro-2-methylphenol	BRL		µg/l	5.21	1	"	"	"	"	"	
51-28-5	2,4-Dinitrophenol	BRL		µg/l	5.21	1	"	"	"	"	"	
121-14-2	2,4-Dinitrotoluene	BRL		µg/l	5.21	1	"	"	"	"	"	
606-20-2	2,6-Dinitrotoluene	BRL		µg/l	5.21	1	"	"	"	"	"	

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\* Reportable Detection Limit

BRL = Below Reporting Limit

Sample Identification

Frac-Tank Client Project # Matrix Collection Date/Time Received
SB12304-01 M1167 Ground Water 17-May-10 00:00 18-May-10

CAS No. Analyte(s) Result Flag Units \*RDL Dilution Method Ref. Prepared Analyzed Analyst Batch Cert.

Semivolatile Organic Compounds by GCMS

Semivolatile Organic Compounds by SW846 8270C

Prepared by method SW846 3510C

Table with 12 columns: CAS No., Analyte(s), Result, Flag, Units, \*RDL, Dilution, Method Ref., Prepared, Analyzed, Analyst, Batch, Cert. Rows include various organic compounds like Di-n-octyl phthalate, Fluoranthene, Fluorene, etc.

Surrogate recoveries:

Table with 12 columns: CAS No., Analyte(s), Result, Flag, Units, \*RDL, Dilution, Method Ref., Prepared, Analyzed, Analyst, Batch, Cert. Rows include 2-Fluorobiphenyl, 2-Fluorophenol, Nitrobenzene-d5, etc.

Semivolatile Organic Compounds by GC

Polychlorinated Biphenyls by EPA 608

Prepared by method SW846 3510C

Table with 12 columns: CAS No., Analyte(s), Result, Flag, Units, \*RDL, Dilution, Method Ref., Prepared, Analyzed, Analyst, Batch, Cert. Row includes Aroclor-1016.

This laboratory report is not valid without an authorized signature on the cover page.

\* Reportable Detection Limit

BRL = Below Reporting Limit

Sample Identification

**Frac-Tank** Client Project # M1167 Matrix Ground Water Collection Date/Time 17-May-10 00:00 Received 18-May-10  
 SB12304-01

**CAS No. Analyte(s) Result Flag Units \*RDL Dilution Method Ref. Prepared Analyzed Analyst Batch Cert.**

**Semivolatile Organic Compounds by GC**

Polychlorinated Biphenyls by EPA 608

Prepared by method SW846 3510C

11104-28-2	Aroclor-1221	BRL		µg/l	0.0233	1	EPA 608	19-May-10	20-May-10	IMR	1010533
11141-16-5	Aroclor-1232	BRL		µg/l	0.0233	1	"	"	"	"	"
53469-21-9	Aroclor-1242	BRL		µg/l	0.0233	1	"	"	"	"	"
12672-29-6	Aroclor-1248	BRL		µg/l	0.0233	1	"	"	"	"	"
11097-69-1	Aroclor-1254	BRL		µg/l	0.0233	1	"	"	"	"	"
11096-82-5	Aroclor-1260	0.0494		µg/l	0.0233	1	"	"	"	"	"
37324-23-5	Aroclor-1262	BRL		µg/l	0.0233	1	"	"	"	"	"
11100-14-4	Aroclor-1268	BRL		µg/l	0.0233	1	"	"	"	"	"

*Surrogate recoveries:*

10386-84-2	4,4-DB-Octafluorobiphenyl (Sr)	102			30-150 %		"	"	"	"	"
10386-84-2	4,4-DB-Octafluorobiphenyl (Sr) [2C]	116			30-150 %		"	"	"	"	"
2051-24-3	Decachlorobiphenyl (Sr)	138			30-150 %		"	"	"	"	"
2051-24-3	Decachlorobiphenyl (Sr) [2C]	170	S02		30-150 %		"	"	"	"	"

**Extractable Petroleum Hydrocarbons**

TPH 8100 by GC

Prepared by method SW846 3510C

8006-61-9	Gasoline	BRL		mg/l	0.2	1	+SW846 8100Mod.	19-May-10	19-May-10	SHM	1010536
68476-30-2	Fuel Oil #2	BRL		mg/l	0.2	1	"	"	"	"	"
68476-31-3	Fuel Oil #4	BRL		mg/l	0.2	1	"	"	"	"	"
68553-00-4	Fuel Oil #6	BRL		mg/l	0.2	1	"	"	"	"	"
M09800000	Motor Oil	BRL		mg/l	0.2	1	"	"	"	"	"
8032-32-4	Ligroin	BRL		mg/l	0.2	1	"	"	"	"	"
J00100000	Aviation Fuel	BRL		mg/l	0.2	1	"	"	"	"	"
	Hydraulic Oil	BRL		mg/l	0.2	1	"	"	"	"	"
	Dielectric Fluid	BRL		mg/l	0.2	1	"	"	"	"	"
	Unidentified	BRL		mg/l	0.2	1	"	"	"	"	"
	Other Oil	BRL		mg/l	0.2	1	"	"	"	"	"
	Total Petroleum Hydrocarbons	BRL		mg/l	0.2	1	"	"	"	"	"

*Surrogate recoveries:*

3386-33-2	1-Chlorooctadecane	98			40-140 %		"	"	"	"	"
-----------	--------------------	----	--	--	----------	--	---	---	---	---	---

**General Chemistry Parameters**

	Cyanide, Total Preservation							18-May-10			
57-12-5	Cyanide (total)	0.00548		mg/l	0.00500	1	EPA 335.4 / SW846 9012A	19-May-10	19-May-10	eemon	1010539 X

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\* Reportable Detection Limit

BRL = Below Reporting Limit

### Microextractable Organic Compounds - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1010426 - General Preparation SVOC</b>										
<b><u>Blank (1010426-BLK1)</u></b>					<u>Prepared &amp; Analyzed: 18-May-10</u>					
1,2-Dibromoethane (EDB)	BRL		µg/l	0.0100						
<b><u>LCS (1010426-BS1)</u></b>					<u>Prepared &amp; Analyzed: 18-May-10</u>					
1,2-Dibromoethane (EDB)	0.215		µg/l	0.0100	0.200		108	50-150		
<b><u>LCS Dup (1010426-BSD1)</u></b>					<u>Prepared &amp; Analyzed: 18-May-10</u>					
1,2-Dibromoethane (EDB)	0.211		µg/l	0.0100	0.200		106	50-150	2	50

## Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1010532 - SW846 3510C</b>										
<b><u>Blank (1010532-BLK1)</u></b>					<u>Prepared: 19-May-10 Analyzed: 20-May-10</u>					
Acenaphthene	BRL		µg/l	5.00						
Acenaphthylene	BRL		µg/l	5.00						
Aniline	BRL		µg/l	5.00						
Anthracene	BRL		µg/l	5.00						
Atrazine	BRL		µg/l	5.00						
Azobenzene/Diphenyldiazine	BRL		µg/l	5.00						
Benzidine	BRL		µg/l	5.00						
Benzo (a) anthracene	BRL		µg/l	5.00						
Benzo (a) pyrene	BRL		µg/l	5.00						
Benzo (b) fluoranthene	BRL		µg/l	5.00						
Benzo (g,h,i) perylene	BRL		µg/l	5.00						
Benzo (k) fluoranthene	BRL		µg/l	5.00						
Benzoic acid	BRL		µg/l	5.00						
Benzyl alcohol	BRL		µg/l	5.00						
Bis(2-chloroethoxy)methane	BRL		µg/l	5.00						
Bis(2-chloroethyl)ether	BRL		µg/l	5.00						
Bis(2-chloroisopropyl)ether	BRL		µg/l	5.00						
Bis(2-ethylhexyl)phthalate	BRL		µg/l	5.00						
4-Bromophenyl phenyl ether	BRL		µg/l	5.00						
Butyl benzyl phthalate	BRL		µg/l	5.00						
Carbazole	BRL		µg/l	5.00						
4-Chloro-3-methylphenol	BRL		µg/l	5.00						
4-Chloroaniline	BRL		µg/l	5.00						
2-Chloronaphthalene	BRL		µg/l	5.00						
2-Chlorophenol	BRL		µg/l	5.00						
4-Chlorophenyl phenyl ether	BRL		µg/l	5.00						
Chrysene	BRL		µg/l	5.00						
Dibenzo (a,h) anthracene	BRL		µg/l	5.00						
Dibenzofuran	BRL		µg/l	5.00						
1,2-Dichlorobenzene	BRL		µg/l	5.00						
1,3-Dichlorobenzene	BRL		µg/l	5.00						
1,4-Dichlorobenzene	BRL		µg/l	5.00						
3,3'-Dichlorobenzidine	BRL		µg/l	5.00						
2,4-Dichlorophenol	BRL		µg/l	5.00						
Diethyl phthalate	BRL		µg/l	5.00						
Dimethyl phthalate	BRL		µg/l	5.00						
2,4-Dimethylphenol	BRL		µg/l	5.00						
Di-n-butyl phthalate	BRL		µg/l	5.00						
4,6-Dinitro-2-methylphenol	BRL		µg/l	5.00						
2,4-Dinitrophenol	BRL		µg/l	5.00						
2,4-Dinitrotoluene	BRL		µg/l	5.00						
2,6-Dinitrotoluene	BRL		µg/l	5.00						
Di-n-octyl phthalate	BRL		µg/l	5.00						
Fluoranthene	BRL		µg/l	5.00						
Fluorene	BRL		µg/l	5.00						
Hexachlorobenzene	BRL		µg/l	5.00						
Hexachlorobutadiene	BRL		µg/l	5.00						
Hexachlorocyclopentadiene	BRL		µg/l	5.00						
Hexachloroethane	BRL		µg/l	5.00						
Indeno (1,2,3-cd) pyrene	BRL		µg/l	5.00						
Isophorone	BRL		µg/l	5.00						
2-Methylnaphthalene	BRL		µg/l	5.00						

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\* Reportable Detection Limit

BRL = Below Reporting Limit

## Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1010532 - SW846 3510C</b>										
<b><u>Blank (1010532-BLK1)</u></b>					<u>Prepared: 19-May-10 Analyzed: 20-May-10</u>					
2-Methylphenol	BRL		µg/l	5.00						
3 & 4-Methylphenol	BRL		µg/l	10.0						
Naphthalene	BRL		µg/l	5.00						
2-Nitroaniline	BRL		µg/l	5.00						
3-Nitroaniline	BRL		µg/l	5.00						
4-Nitroaniline	BRL		µg/l	20.0						
Nitrobenzene	BRL		µg/l	5.00						
2-Nitrophenol	BRL		µg/l	5.00						
4-Nitrophenol	BRL		µg/l	20.0						
N-Nitrosodimethylamine	BRL		µg/l	5.00						
N-Nitrosodi-n-propylamine	BRL		µg/l	5.00						
N-Nitrosodiphenylamine	BRL		µg/l	5.00						
Pentachlorophenol	BRL		µg/l	20.0						
Phenanthrene	BRL		µg/l	5.00						
Phenol	BRL		µg/l	5.00						
Pyrene	BRL		µg/l	5.00						
Pyridine	BRL		µg/l	5.00						
1-Methylnaphthalene	BRL		µg/l	5.00						
1,2,4-Trichlorobenzene	BRL		µg/l	5.00						
2,4,5-Trichlorophenol	BRL		µg/l	5.00						
2,4,6-Trichlorophenol	BRL		µg/l	5.00						
Pentachloronitrobenzene	BRL		µg/l	5.00						
1,2,4,5-Tetrachlorobenzene	BRL		µg/l	5.00						
<i>Surrogate: 2-Fluorobiphenyl</i>	37.4		µg/l		50.0		75	30-130		
<i>Surrogate: 2-Fluorophenol</i>	24.4		µg/l		50.0		49	15-110		
<i>Surrogate: Nitrobenzene-d5</i>	43.2		µg/l		50.0		86	30-130		
<i>Surrogate: Phenol-d5</i>	18.5		µg/l		50.0		37	15-110		
<i>Surrogate: Terphenyl-dl4</i>	44.4		µg/l		50.0		89	30-130		
<i>Surrogate: 2,4,6-Tribromophenol</i>	48.0		µg/l		50.0		96	15-110		
<b><u>LCS (1010532-BS1)</u></b>					<u>Prepared: 19-May-10 Analyzed: 20-May-10</u>					
Acenaphthene	35.0		µg/l	5.00	50.0		70	40-130		
Acenaphthylene	35.3		µg/l	5.00	50.0		71	40-130		
Aniline	42.8		µg/l	5.00	50.0		86	40-130		
Anthracene	36.8		µg/l	5.00	50.0		74	40-130		
Atrazine	BRL	QC2	µg/l	5.00	50.0			40-130		
Azobenzene/Diphenyldiazine	41.9		µg/l	5.00	50.0		84	40-130		
Benzidine	BRL		µg/l	5.00	50.0			0-140		
Benzo (a) anthracene	39.8		µg/l	5.00	50.0		80	40-130		
Benzo (a) pyrene	40.0		µg/l	5.00	50.0		80	40-130		
Benzo (b) fluoranthene	39.2		µg/l	5.00	50.0		78	40-130		
Benzo (g,h,i) perylene	37.3		µg/l	5.00	50.0		75	40-130		
Benzo (k) fluoranthene	41.8		µg/l	5.00	50.0		84	40-130		
Benzoic acid	28.3		µg/l	5.00	50.0		57	17.2-130		
Benzyl alcohol	33.2		µg/l	5.00	50.0		66	40-130		
Bis(2-chloroethoxy)methane	37.2		µg/l	5.00	50.0		74	40-130		
Bis(2-chloroethyl)ether	33.9		µg/l	5.00	50.0		68	40-130		
Bis(2-chloroisopropyl)ether	49.8		µg/l	5.00	50.0		100	40-130		
Bis(2-ethylhexyl)phthalate	37.4		µg/l	5.00	50.0		75	40-130		
4-Bromophenyl phenyl ether	45.5		µg/l	5.00	50.0		91	40-130		
Butyl benzyl phthalate	35.9		µg/l	5.00	50.0		72	40-130		
Carbazole	39.6		µg/l	5.00	50.0		79	40-130		

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\* Reportable Detection Limit

BRL = Below Reporting Limit

## Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1010532 - SW846 3510C</b>										
<b>LCS (1010532-BS1)</b>					Prepared: 19-May-10 Analyzed: 20-May-10					
4-Chloro-3-methylphenol	35.8		µg/l	5.00	50.0		72	40-130		
4-Chloroaniline	36.5		µg/l	5.00	50.0		73	40-130		
2-Chloronaphthalene	34.3		µg/l	5.00	50.0		69	40-130		
2-Chlorophenol	29.9		µg/l	5.00	50.0		60	40-130		
4-Chlorophenyl phenyl ether	40.4		µg/l	5.00	50.0		81	40-130		
Chrysene	39.2		µg/l	5.00	50.0		78	40-130		
Dibenzo (a,h) anthracene	38.9		µg/l	5.00	50.0		78	40-130		
Dibenzofuran	34.7		µg/l	5.00	50.0		69	40-130		
1,2-Dichlorobenzene	31.5		µg/l	5.00	50.0		63	40-130		
1,3-Dichlorobenzene	29.2		µg/l	5.00	50.0		58	40-130		
1,4-Dichlorobenzene	33.8		µg/l	5.00	50.0		68	40-130		
3,3'-Dichlorobenzidine	33.5		µg/l	5.00	50.0		67	40-130		
2,4-Dichlorophenol	33.4		µg/l	5.00	50.0		67	40-130		
Diethyl phthalate	38.4		µg/l	5.00	50.0		77	40-130		
Dimethyl phthalate	35.2		µg/l	5.00	50.0		70	40-130		
2,4-Dimethylphenol	30.4		µg/l	5.00	50.0		61	40-130		
Di-n-butyl phthalate	39.2		µg/l	5.00	50.0		78	40-130		
4,6-Dinitro-2-methylphenol	54.4		µg/l	5.00	50.0		109	40-130		
2,4-Dinitrophenol	54.7		µg/l	5.00	50.0		109	40-130		
2,4-Dinitrotoluene	40.7		µg/l	5.00	50.0		81	40-130		
2,6-Dinitrotoluene	39.6		µg/l	5.00	50.0		79	40-130		
Di-n-octyl phthalate	39.6		µg/l	5.00	50.0		79	40-130		
Fluoranthene	39.6		µg/l	5.00	50.0		79	40-130		
Fluorene	41.9		µg/l	5.00	50.0		84	40-130		
Hexachlorobenzene	38.7		µg/l	5.00	50.0		77	40-130		
Hexachlorobutadiene	37.1		µg/l	5.00	50.0		74	40-130		
Hexachlorocyclopentadiene	45.5		µg/l	5.00	50.0		91	40-130		
Hexachloroethane	32.9		µg/l	5.00	50.0		66	40-130		
Indeno (1,2,3-cd) pyrene	39.4		µg/l	5.00	50.0		79	40-130		
Isophorone	38.6		µg/l	5.00	50.0		77	40-130		
2-Methylnaphthalene	36.3		µg/l	5.00	50.0		73	40-130		
2-Methylphenol	28.7		µg/l	5.00	50.0		57	40-130		
3 & 4-Methylphenol	29.5		µg/l	10.0	50.0		59	40-130		
Naphthalene	33.5		µg/l	5.00	50.0		67	40-130		
2-Nitroaniline	36.8		µg/l	5.00	50.0		74	40-130		
3-Nitroaniline	37.9		µg/l	5.00	50.0		76	40-130		
4-Nitroaniline	39.7		µg/l	20.0	50.0		79	40-130		
Nitrobenzene	39.8		µg/l	5.00	50.0		80	40-130		
2-Nitrophenol	36.4		µg/l	5.00	50.0		73	40-130		
4-Nitrophenol	15.7	QC2	µg/l	20.0	50.0		31	40-130		
N-Nitrosodimethylamine	25.9		µg/l	5.00	50.0		52	40-130		
N-Nitrosodi-n-propylamine	38.1		µg/l	5.00	50.0		76	40-130		
N-Nitrosodiphenylamine	41.0		µg/l	5.00	50.0		82	40-130		
Pentachlorophenol	37.9		µg/l	20.0	50.0		76	40-130		
Phenanthrene	35.6		µg/l	5.00	50.0		71	40-130		
Phenol	20.3		µg/l	5.00	50.0		41	40-130		
Pyrene	37.3		µg/l	5.00	50.0		75	40-130		
Pyridine	14.8		µg/l	5.00	50.0		30	10-140		
1,2,4-Trichlorobenzene	35.3		µg/l	5.00	50.0		71	40-130		
1-Methylnaphthalene	33.6		µg/l	5.00	50.0		67	40-140		
2,4,5-Trichlorophenol	36.6		µg/l	5.00	50.0		73	40-130		
2,4,6-Trichlorophenol	33.2		µg/l	5.00	50.0		66	40-130		

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\* Reportable Detection Limit

BRL = Below Reporting Limit

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## Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1010532 - SW846 3510C</b>										
<b><u>LCS (1010532-BS1)</u></b>					<u>Prepared: 19-May-10 Analyzed: 20-May-10</u>					
Pentachloronitrobenzene	46.9		µg/l	5.00	50.0		94	40-140		
1,2,4,5-Tetrachlorobenzene	37.1		µg/l	5.00	50.0		74	40-140		
<i>Surrogate: 2-Fluorobiphenyl</i>	37.7		µg/l		50.0		75	30-130		
<i>Surrogate: 2-Fluorophenol</i>	26.1		µg/l		50.0		52	15-110		
<i>Surrogate: Nitrobenzene-d5</i>	46.5		µg/l		50.0		93	30-130		
<i>Surrogate: Phenol-d5</i>	19.5		µg/l		50.0		39	15-110		
<i>Surrogate: Terphenyl-dl4</i>	44.4		µg/l		50.0		89	30-130		
<i>Surrogate: 2,4,6-Tribromophenol</i>	52.0		µg/l		50.0		104	15-110		
<b><u>LCS Dup (1010532-BSD1)</u></b>					<u>Prepared: 19-May-10 Analyzed: 20-May-10</u>					
Acenaphthene	33.5		µg/l	5.00	50.0		67	40-130	4	20
Acenaphthylene	33.6		µg/l	5.00	50.0		67	40-130	5	20
Aniline	39.0		µg/l	5.00	50.0		78	40-130	9	20
Anthracene	37.0		µg/l	5.00	50.0		74	40-130	0.7	20
Atrazine	BRL	QC2	µg/l	5.00	50.0			40-130		20
Azobenzene/Diphenyldiazine	41.6		µg/l	5.00	50.0		83	40-130	0.7	20
Benzidine	BRL	QC2	µg/l	5.00	50.0			0-140		20
Benzo (a) anthracene	37.2		µg/l	5.00	50.0		74	40-130	7	20
Benzo (a) pyrene	38.9		µg/l	5.00	50.0		78	40-130	3	20
Benzo (b) fluoranthene	34.7		µg/l	5.00	50.0		69	40-130	12	20
Benzo (g,h,i) perylene	36.3		µg/l	5.00	50.0		73	40-130	3	20
Benzo (k) fluoranthene	46.0		µg/l	5.00	50.0		92	40-130	10	20
Benzoic acid	27.8		µg/l	5.00	50.0		56	17.2-130	2	20
Benzyl alcohol	31.7		µg/l	5.00	50.0		63	40-130	5	20
Bis(2-chloroethoxy)methane	36.5		µg/l	5.00	50.0		73	40-130	2	20
Bis(2-chloroethyl)ether	32.5		µg/l	5.00	50.0		65	40-130	4	20
Bis(2-chloroisopropyl)ether	48.2		µg/l	5.00	50.0		96	40-130	3	20
Bis(2-ethylhexyl)phthalate	34.3		µg/l	5.00	50.0		69	40-130	9	20
4-Bromophenyl phenyl ether	44.9		µg/l	5.00	50.0		90	40-130	1	20
Butyl benzyl phthalate	33.8		µg/l	5.00	50.0		68	40-130	6	20
Carbazole	39.3		µg/l	5.00	50.0		79	40-130	0.7	20
4-Chloro-3-methylphenol	35.6		µg/l	5.00	50.0		71	40-130	0.6	20
4-Chloroaniline	35.3		µg/l	5.00	50.0		71	40-130	4	20
2-Chloronaphthalene	32.8		µg/l	5.00	50.0		66	40-130	5	20
2-Chlorophenol	29.3		µg/l	5.00	50.0		59	40-130	2	20
4-Chlorophenyl phenyl ether	37.9		µg/l	5.00	50.0		76	40-130	6	20
Chrysene	37.2		µg/l	5.00	50.0		74	40-130	5	20
Dibenzo (a,h) anthracene	38.8		µg/l	5.00	50.0		78	40-130	0.5	20
Dibenzofuran	33.4		µg/l	5.00	50.0		67	40-130	4	20
1,2-Dichlorobenzene	32.8		µg/l	5.00	50.0		66	40-130	4	20
1,3-Dichlorobenzene	28.8		µg/l	5.00	50.0		58	40-130	1	20
1,4-Dichlorobenzene	33.1		µg/l	5.00	50.0		66	40-130	2	20
3,3'-Dichlorobenzidine	33.0		µg/l	5.00	50.0		66	40-130	2	20
2,4-Dichlorophenol	32.8		µg/l	5.00	50.0		66	40-130	2	20
Diethyl phthalate	36.4		µg/l	5.00	50.0		73	40-130	5	20
Dimethyl phthalate	33.4		µg/l	5.00	50.0		67	40-130	6	20
2,4-Dimethylphenol	29.5		µg/l	5.00	50.0		59	40-130	3	20
Di-n-butyl phthalate	38.4		µg/l	5.00	50.0		77	40-130	2	20
4,6-Dinitro-2-methylphenol	53.2		µg/l	5.00	50.0		106	40-130	2	20
2,4-Dinitrophenol	51.7		µg/l	5.00	50.0		103	40-130	6	20
2,4-Dinitrotoluene	39.0		µg/l	5.00	50.0		78	40-130	4	20
2,6-Dinitrotoluene	37.3		µg/l	5.00	50.0		75	40-130	6	20

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\* Reportable Detection Limit

BRL = Below Reporting Limit

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## Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1010532 - SW846 3510C</b>										
<b><u>LCS Dup (1010532-BSD1)</u></b>					<u>Prepared: 19-May-10 Analyzed: 20-May-10</u>					
Di-n-octyl phthalate	38.5		µg/l	5.00	50.0		77	40-130	3	20
Fluoranthene	38.5		µg/l	5.00	50.0		77	40-130	3	20
Fluorene	39.5		µg/l	5.00	50.0		79	40-130	6	20
Hexachlorobenzene	38.2		µg/l	5.00	50.0		76	40-130	1	20
Hexachlorobutadiene	36.6		µg/l	5.00	50.0		73	40-130	1	20
Hexachlorocyclopentadiene	43.0		µg/l	5.00	50.0		86	40-130	6	20
Hexachloroethane	32.0		µg/l	5.00	50.0		64	40-130	3	20
Indeno (1,2,3-cd) pyrene	37.2		µg/l	5.00	50.0		74	40-130	6	20
Isophorone	37.7		µg/l	5.00	50.0		75	40-130	2	20
2-Methylnaphthalene	35.8		µg/l	5.00	50.0		72	40-130	1	20
2-Methylphenol	27.7		µg/l	5.00	50.0		55	40-130	3	20
3 & 4-Methylphenol	28.2		µg/l	10.0	50.0		56	40-130	4	20
Naphthalene	33.7		µg/l	5.00	50.0		67	40-130	0.5	20
2-Nitroaniline	34.8		µg/l	5.00	50.0		70	40-130	6	20
3-Nitroaniline	36.2		µg/l	5.00	50.0		72	40-130	5	20
4-Nitroaniline	38.3		µg/l	20.0	50.0		77	40-130	4	20
Nitrobenzene	39.1		µg/l	5.00	50.0		78	40-130	2	20
2-Nitrophenol	36.1		µg/l	5.00	50.0		72	40-130	1	20
4-Nitrophenol	14.2	QC2	µg/l	20.0	50.0		28	40-130	10	20
N-Nitrosodimethylamine	24.6		µg/l	5.00	50.0		49	40-130	5	20
N-Nitrosodi-n-propylamine	36.8		µg/l	5.00	50.0		74	40-130	3	20
N-Nitrosodiphenylamine	40.6		µg/l	5.00	50.0		81	40-130	1	20
Pentachlorophenol	37.1		µg/l	20.0	50.0		74	40-130	2	20
Phenanthrene	35.6		µg/l	5.00	50.0		71	40-130	0.2	20
Phenol	19.3	QC2	µg/l	5.00	50.0		39	40-130	5	20
Pyrene	35.2		µg/l	5.00	50.0		70	40-130	6	20
Pyridine	12.8		µg/l	5.00	50.0		26	10-140	14	20
1,2,4-Trichlorobenzene	35.4		µg/l	5.00	50.0		71	40-130	0.4	20
1-Methylnaphthalene	32.5		µg/l	5.00	50.0		65	40-140	3	20
2,4,5-Trichlorophenol	35.5		µg/l	5.00	50.0		71	40-130	3	20
2,4,6-Trichlorophenol	31.8		µg/l	5.00	50.0		64	40-130	5	20
Pentachloronitrobenzene	46.4		µg/l	5.00	50.0		93	40-140	1	20
1,2,4,5-Tetrachlorobenzene	36.3		µg/l	5.00	50.0		73	40-140	2	20
Surrogate: 2-Fluorobiphenyl	34.8		µg/l		50.0		70	30-130		
Surrogate: 2-Fluorophenol	24.1		µg/l		50.0		48	15-110		
Surrogate: Nitrobenzene-d5	45.3		µg/l		50.0		91	30-130		
Surrogate: Phenol-d5	18.3		µg/l		50.0		37	15-110		
Surrogate: Terphenyl-dl4	41.0		µg/l		50.0		82	30-130		
Surrogate: 2,4,6-Tribromophenol	49.8		µg/l		50.0		100	15-110		

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\* Reportable Detection Limit

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**Semivolatile Organic Compounds by GC - Quality Control**

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1010533 - SW846 3510C</b>										
<b>Blank (1010533-BLK1)</b>					<u>Prepared &amp; Analyzed: 19-May-10</u>					
Aroclor-1016	BRL		µg/l	0.200						
Aroclor-1016 [2C]	BRL		µg/l	0.200						
Aroclor-1221	BRL		µg/l	0.200						
Aroclor-1221 [2C]	BRL		µg/l	0.200						
Aroclor-1232	BRL		µg/l	0.200						
Aroclor-1232 [2C]	BRL		µg/l	0.200						
Aroclor-1242	BRL		µg/l	0.200						
Aroclor-1242 [2C]	BRL		µg/l	0.200						
Aroclor-1248	BRL		µg/l	0.200						
Aroclor-1248 [2C]	BRL		µg/l	0.200						
Aroclor-1254	BRL		µg/l	0.200						
Aroclor-1254 [2C]	BRL		µg/l	0.200						
Aroclor-1260	BRL		µg/l	0.200						
Aroclor-1260 [2C]	BRL		µg/l	0.200						
Aroclor-1262	BRL		µg/l	0.200						
Aroclor-1262 [2C]	BRL		µg/l	0.200						
Aroclor-1268	BRL		µg/l	0.200						
Aroclor-1268 [2C]	BRL		µg/l	0.200						
<i>Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)</i>	<i>0.0940</i>		<i>µg/l</i>		<i>0.200</i>		<i>47</i>	<i>30-150</i>		
<i>Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]</i>	<i>0.0780</i>		<i>µg/l</i>		<i>0.200</i>		<i>39</i>	<i>30-150</i>		
<i>Surrogate: Decachlorobiphenyl (Sr)</i>	<i>0.0690</i>		<i>µg/l</i>		<i>0.200</i>		<i>34</i>	<i>30-150</i>		
<i>Surrogate: Decachlorobiphenyl (Sr) [2C]</i>	<i>0.0810</i>		<i>µg/l</i>		<i>0.200</i>		<i>40</i>	<i>30-150</i>		
<b>LCS (1010533-BS1)</b>					<u>Prepared &amp; Analyzed: 19-May-10</u>					
Aroclor-1016	1.72		µg/l	0.200	2.50		69	50-114		
Aroclor-1016 [2C]	1.80		µg/l	0.200	2.50		72	50-114		
Aroclor-1260	1.68		µg/l	0.200	2.50		67	40-127		
Aroclor-1260 [2C]	1.63		µg/l	0.200	2.50		65	40-127		
<i>Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)</i>	<i>0.120</i>		<i>µg/l</i>		<i>0.200</i>		<i>60</i>	<i>30-150</i>		
<i>Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]</i>	<i>0.116</i>		<i>µg/l</i>		<i>0.200</i>		<i>58</i>	<i>30-150</i>		
<i>Surrogate: Decachlorobiphenyl (Sr)</i>	<i>0.185</i>		<i>µg/l</i>		<i>0.200</i>		<i>92</i>	<i>30-150</i>		
<i>Surrogate: Decachlorobiphenyl (Sr) [2C]</i>	<i>0.130</i>		<i>µg/l</i>		<i>0.200</i>		<i>65</i>	<i>30-150</i>		
<b>LCS Dup (1010533-BSD1)</b>					<u>Prepared &amp; Analyzed: 19-May-10</u>					
Aroclor-1016	1.74		µg/l	0.200	2.50		69	50-114	0.8	20
Aroclor-1016 [2C]	1.90		µg/l	0.200	2.50		76	50-114	5	20
Aroclor-1260	1.69		µg/l	0.200	2.50		67	40-127	0.4	20
Aroclor-1260 [2C]	1.67		µg/l	0.200	2.50		67	40-127	3	20
<i>Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)</i>	<i>0.117</i>		<i>µg/l</i>		<i>0.200</i>		<i>58</i>	<i>30-150</i>		
<i>Surrogate: 4,4-DB-Octafluorobiphenyl (Sr) [2C]</i>	<i>0.123</i>		<i>µg/l</i>		<i>0.200</i>		<i>62</i>	<i>30-150</i>		
<i>Surrogate: Decachlorobiphenyl (Sr)</i>	<i>0.148</i>		<i>µg/l</i>		<i>0.200</i>		<i>74</i>	<i>30-150</i>		
<i>Surrogate: Decachlorobiphenyl (Sr) [2C]</i>	<i>0.137</i>		<i>µg/l</i>		<i>0.200</i>		<i>68</i>	<i>30-150</i>		

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\* Reportable Detection Limit

BRL = Below Reporting Limit

## Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1010536 - SW846 3510C</b>										
<b><u>Blank (1010536-BLK1)</u></b>					<u>Prepared &amp; Analyzed: 19-May-10</u>					
Gasoline	BRL		mg/l	0.1						
Fuel Oil #2	BRL		mg/l	0.1						
Fuel Oil #4	BRL		mg/l	0.1						
Fuel Oil #6	BRL		mg/l	0.1						
Motor Oil	BRL		mg/l	0.1						
Ligroin	BRL		mg/l	0.1						
Aviation Fuel	BRL		mg/l	0.1						
Hydraulic Oil	BRL		mg/l	0.1						
Dielectric Fluid	BRL		mg/l	0.1						
Unidentified	BRL		mg/l	0.1						
Other Oil	BRL		mg/l	0.1						
Total Petroleum Hydrocarbons	BRL		mg/l	0.1						
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.0418</i>		mg/l		<i>0.0500</i>		<i>84</i>	<i>40-140</i>		
<b><u>LCS (1010536-BS1)</u></b>					<u>Prepared &amp; Analyzed: 19-May-10</u>					
Fuel Oil #2	11.2		mg/l	0.1	10.0		112	40-140		
<i>Surrogate: 1-Chlorooctadecane</i>	<i>0.0447</i>		mg/l		<i>0.0500</i>		<i>89</i>	<i>40-140</i>		

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### General Chemistry Parameters - Quality Control

Analyte(s)	Result	Flag	Units	*RDL	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
<b>Batch 1010539 - General Preparation</b>										
<b><u>Blank (1010539-BLK1)</u></b>					<u>Prepared &amp; Analyzed: 19-May-10</u>					
Cyanide (total)	BRL		mg/l	0.00500						
<b><u>Blank (1010539-BLK2)</u></b>					<u>Prepared &amp; Analyzed: 19-May-10</u>					
Cyanide (total)	BRL		mg/l	0.00500						
<b><u>LCS (1010539-BS1)</u></b>					<u>Prepared &amp; Analyzed: 19-May-10</u>					
Cyanide (total)	0.316		mg/l	0.00500	0.300		105	90-110		
<b><u>LCS (1010539-BS2)</u></b>					<u>Prepared &amp; Analyzed: 19-May-10</u>					
Cyanide (total)	0.311		mg/l	0.00500	0.300		104	90-110		
<b><u>Duplicate (1010539-DUP1)</u></b>					<u>Source: SB12304-01</u> <u>Prepared &amp; Analyzed: 19-May-10</u>					
Cyanide (total)	0.00554		mg/l	0.00500		0.00548			1	20
<b><u>Matrix Spike (1010539-MS1)</u></b>					<u>Source: SB12304-01</u> <u>Prepared &amp; Analyzed: 19-May-10</u>					
Cyanide (total)	0.305		mg/l	0.00500	0.300	0.00548	100	90-110		
<b><u>Matrix Spike Dup (1010539-MSD1)</u></b>					<u>Source: SB12304-01</u> <u>Prepared &amp; Analyzed: 19-May-10</u>					
Cyanide (total)	0.318		mg/l	0.00500	0.300	0.00548	104	90-110	4	20
<b><u>Reference (1010539-SRM1)</u></b>					<u>Prepared &amp; Analyzed: 19-May-10</u>					
Cyanide (total)	0.406		mg/l	0.00500	0.434		93	75-125		

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## Notes and Definitions

QC2	Analyte out of acceptance range in QC spike but no reportable concentration present in sample.
S02	The surrogate recovery for this sample cannot be accurately quantified due to interference from coeluting organic compounds present in the sample extract.
BRL	Below Reporting Limit - Analyte NOT DETECTED at or above the reporting limit
dry	Sample results reported on a dry weight basis
NR	Not Reported
RPD	Relative Percent Difference

A plus sign (+) in the Method Reference column indicates the method is not accredited by NELAC.

### Interpretation of Total Petroleum Hydrocarbon Report

Petroleum identification is determined by comparing the GC fingerprint obtained from the sample with a library of GC fingerprints obtained from analyses of various petroleum products. Possible match categories are as follows:

- Gasoline - includes regular, unleaded, premium, etc.
- Fuel Oil #2 - includes home heating oil, #2 fuel oil, and diesel
- Fuel Oil #4 - includes #4 fuel oil
- Fuel Oil #6 - includes #6 fuel oil and bunker "C" oil
- Motor Oil - includes virgin and waste automobile oil
- Ligroin - includes mineral spirits, petroleum naphtha, vm&p naphtha
- Aviation Fuel - includes kerosene, Jet A and JP-4
- Other Oil - includes lubricating and cutting oil, and silicon oil

At times, the unidentified petroleum product is quantified using a calibration that most closely approximates the distribution of compounds in the sample. When this occurs, the result is qualified as \*TPH (Calculated as).

Laboratory Control Sample (LCS): A known matrix spiked with compound(s) representative of the target analytes, which is used to document laboratory performance.

Matrix Duplicate: An intra-laboratory split sample which is used to document the precision of a method in a given sample matrix.

Matrix Spike: An aliquot of a sample spiked with a known concentration of target analyte(s). The spiking occurs prior to sample preparation and analysis. A matrix spike is used to document the bias of a method in a given sample matrix.

Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from the analytical process.

Method Detection Limit (MDL): The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is greater than zero and is determined from analysis of a sample in a given matrix type containing the analyte.

Reportable Detection Limit (RDL): The lowest concentration that can be reliably achieved within specified limits of precision and accuracy during routine laboratory operating conditions. For many analytes the RDL analyte concentration is selected as the lowest non-zero standard in the calibration curve. While the RDL is approximately 5 to 10 times the MDL, the RDL for each sample takes into account the sample volume/weight, extract/digestate volume, cleanup procedures and, if applicable, dry weight correction. Sample RDLs are highly matrix-dependent.

Surrogate: An organic compound which is similar to the target analyte(s) in chemical composition and behavior in the analytical process, but which is not normally found in environmental samples. These compounds are spiked into all blanks, standards, and samples prior to analysis. Percent recoveries are calculated for each surrogate.

Continuing Calibration Verification: The calibration relationship established during the initial calibration must be verified at periodic

Validated by:  
Hanibal C. Tayeh, Ph.D.  
Kimberly Wisk

**MassDEP Analytical Protocol Certification Form**

<b>Laboratory Name:</b> Spectrum Analytical, Inc.			<b>Project #:</b> M1167			
<b>Project Location:</b> Necco - Revere, MA			<b>RTN:</b>			
<b>This form provides certifications for the following data set:</b>			SB12304-01			
<b>Matrices:</b> Ground Water						
<b>CAM Protocol</b>						
8260 VOC CAM II A	7470/7471 Hg CAM III B	MassDEP VPH CAM IV A	8081 Pesticides CAM V B	7196 Hex Cr CAM VI B	MassDEP APH CAM IX A	
✓ 8270 SVOC CAM II B	7010 Metals CAM III C	MassDEP EPH CAM IV B	8151 Herbicides CAM V C	8330 Explosives CAM VIII A	TO-15 VOC CAM IX B	
6010 Metals CAM III A	6020 Metals CAM III D	8082 PCB CAM V A	9014 Total Cyanide/PAC CAM VI A	6860 Perchlorate CAM VIII B		
<i>Affirmative responses to questions A through F are required for "Presumptive Certainty" status</i>						
<b>A</b>	Were all samples received in a condition consistent with those described on the Chain of Custody, properly preserved (including temperature) in the field or laboratory, and prepared/analyzed within method holding times?				✓ Yes	No
<b>B</b>	Were the analytical method(s) and all associated QC requirements specified in the selected CAM protocol(s) followed?				✓ Yes	No
<b>C</b>	Were all required corrective actions and analytical response actions specified in the selected CAM protocol(s) implemented for all identified performance standard non-conformances?				✓ Yes	No
<b>D</b>	Does the laboratory report comply with all the reporting requirements specified in CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?				✓ Yes	No
<b>E</b>	a. VPH, EPH, and APH Methods only: Was each method conducted without significant modification(s)? b. APH and TO-15 Methods only: Was the complete analyte list reported for each method?				Yes Yes	No No
<b>F</b>	Were all applicable CAM protocol QC and performance standard non-conformances identified and evaluated in a laboratory narrative (including all "No" responses to questions A through E)?				✓ Yes	No
<i>Responses to questions G, H and I below are required for "Presumptive Certainty" status</i>						
<b>G</b>	Were the reporting limits at or below all CAM reporting limits specified in the selected CAM protocol(s)?				✓ Yes	No
<b>Data User Note:</b> Data that achieve "Presumptive Certainty" status may not necessarily meet the data usability and representativeness requirements described in 310 CMR 40. 1056 (2)(k) and WSC-07-350.						
<b>H</b>	Were all QC performance standards specified in the CAM protocol(s) achieved?				Yes	✓ No
<b>I</b>	Were results reported for the complete analyte list specified in the selected CAM protocol(s)?				✓ Yes	No
<i>All negative responses are addressed in a case narrative on the cover page of this report.</i>						
<i>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 analytical report is, to the best of my knowledge and belief, accurate and complete.</i>						
 Hanibal C. Tayeh, Ph.D. President/Laboratory Director Date: 5/20/2010						

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SPECTRUM ANALYTICAL, INC.  
HANBURN TECHNOLOGY  
Framingham

# CHAIN OF CUSTODY RECORD

Page 1 of 1

8812304 01

**Special Handling:**  
 Standard TAT - 7 to 10 business days  
 Rush TAT - Date Needed: 5-20-10  
All TATs subject to laboratory approval.  
Min. 24-hour notification needed for rushes.  
Samples disposed of after 60 days unless otherwise instructed.

Report To: Rob Reynolds  
220 Forbes Rd.  
Site #05  
Braintree, MA 02184  
Project Mgr.: Rob Reynolds

Invoice To: SAVILE  
P.O. No.: \_\_\_\_\_  
RQN: \_\_\_\_\_

Project No.: M 1167  
Site Name: NECCO  
Location: River State: MA  
Sampler(s): C. Wildman

1=Na<sub>2</sub>S<sub>2</sub>O<sub>3</sub> 2=HCl 3=H<sub>2</sub>SO<sub>4</sub> 4=HNO<sub>3</sub> 5=NaOH 6=Ascorbic Acid  
7=CH<sub>3</sub>OH 8=NaHSO<sub>4</sub> 9=\_\_\_\_\_ 10=\_\_\_\_\_  
DW=Drinking Water GW=Groundwater WW=Wastewater  
O=Oil SW=Surface Water SO=Soil SL=Sludge A=Air  
X1=\_\_\_\_\_ X2=\_\_\_\_\_ X3=\_\_\_\_\_

G=Grab C=Composite

QA Reporting Notes:  
(check if needed)  
 Provide MA DEP MCP CAM Report  
 Provide CT DPH RCP Report  
QA/QC Reporting Level  
 Standard  No QC  
 Other  
State specific reporting standards:

Lab Id:	Sample Id:	Date:	Time:	Type	Matrix	Preservative	# of VOA Vials	# of Amber Glass	# of Clear Glass	# of Plastic	Analyses:	QA Reporting Notes:	Relinquished by:	Received by:	Date:	Time:	
8812304101	FRAC-TANK	5-17-10	PM	G	GW		4				EDB by 504.1 Semi Volatiles 8270 PCB's by 608 TPH 8100M Cyanide	*Please lab preserve EDB, Cyanide samples*	<i>[Signature]</i>	<i>[Signature]</i>	5-18-10	1146	

Fax results when available to (\_\_\_\_\_)  
 E-mail to Reynolds@whatsatstonecorp.com  
EDD Format \_\_\_\_\_  
Condition upon receipt:  Iced  Ambient 4.0 °C

Relinquished by: *[Signature]*

Received by: *[Signature]*

Date: 5-18-10 Time: 1146  
5/18/10 1146