

Via USPS
Delivery Confirmation



OC
MA691043



October 21, 2005

US-EPA Region 1
RGP-NOC Processing
Municipal Assistance Unit (CMU)
One Congress Street
Boston, Massachusetts 02114-2023

**RE: EPA Remediation General Permit Notice of Intent
Sunoco Inc., (R & M)**
[REDACTED]
671 Main Street
Winchester, MA
RTN 3-18310

S
OCT

To Whom It May Concern::

On behalf of Sunoco Inc., (R & M) (Sunoco), Corporate Environmental Advisors, Inc. (CEA) is submitting this Notice of Intent (NOI) for an EPA Remediation General Permit (RGP) to treat and discharge petroleum-impacted groundwater at the above referenced site. This work is being conducted as part of Phase IV Remedial Actions at the site under 310 CMR 40.0870 of the Massachusetts Contingency Plan (MCP). **Figure 1**, Site Locus Map, shows the property location with respect to surrounding topography. **Figure 2**, Site Layout, depicts pertinent site features.

The EPA issued a National Pollutant Discharge Elimination System (NPDES) Permit Exclusion to CEA for the discharge on May 27, 2005. However, based on the requirements set forth in the RGP, a NOI is required to be filed with the EPA. A copy of the NPDES Permit Exculsion is attached.

Groundwater and non-aqueous phase liquid (NAPL) will be generated during underground storage tank removal and soil excavation to be initiated at the site on October 31, 2005. Soil excavation and off-site recycling has been selected as the primary source area reduction measure for the site. Once groundwater and/or NAPL is encountered during excavation activities, a groundwater recovery sump will be installed to an approximate depth of 15 feet below surface grade; 4 feet below the anticipated maximum depth of the excavation and approximately 8 feet below the observed depth to groundwater. A pump will be placed in the sump to pump groundwater and NAPL from the excavation into a 21,000-gallon frac-tank. The groundwater treatment and NAPL recovery system configuration is further discussed below.

Groundwater and NAPL will be pumped from the excavation into an on-Site, 21,000-gallon frac-tank to remove suspended materials and to separate NAPL from groundwater. Groundwater will be pumped from the frac-tank using a submersible pump through an on-Site groundwater treatment system. Recovered groundwater will be pre-treated through two, 45-micron bag filters, in series, and then treated using three (3) 2,000-pound liquid-phase granular-activated-carbon-adsorption (GACA) vessels, piped in series. The groundwater treatment system will be designed to treat and discharge groundwater at a maximum flow rate of 50 gallons per minute (GPM). The flow meter and flow totalizer will be located

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CORPORATE HEADQUARTERS: HARTWELL BUSINESS PARK • 127 HARTWELL STREET • WEST BOYLSTON, MA 01583 • PHONE: 508-835-8822 • FAX: 508-835-8812

Solutions Since 1985

immediately prior to discharge of the treated groundwater. Flow rates will be periodically monitored throughout discharging and total discharged gallons of treated groundwater will be recorded at the end of each day.

Generated groundwater will be treated and discharged to a stormwater drainage system located in Main Street. The stormwater drainage system discharges to the Aberjona River, which runs adjacent to the Site. According to the United States Geological Survey (USGS) 7.5 Minute Topographic Boston North Quadrangle, Massachusetts, the Aberjona River flows south through the Town of Winchester and discharges to the Mystic River River, which flows southeast and eventually discharges into the Boston Harbor, refer to **Figure 1**.

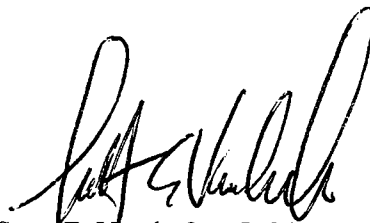
Groundwater discharge will be monitored according to the guidelines described in the RGP. In-line sample ports for sample collection will be installed at the GACA influent, midpoint 1, midpoint 2, and effluent discharge points. In addition, a totalizer and flow meter will be installed along the discharge line for proper recording of groundwater discharge volume and flow rates. The dewatering system is anticipated to be operated for a period of approximately three months. A dewatering schematic is provided in **Figure 3**. The NOI forms and supporting documentation are attached.

If you have any questions or require additional information, please do not hesitate to contact me at (508) 835-8822, Extension 224.

Sincerely,
CORPORATE ENVIRONMENTAL ADVISORS, INC.



Matthew J. Dowling
Senior Hydrogeologist



Scott E. VanderSea, L.S.P., L.E.P.
Principal Hydrogeologist

cc: Mr. William Brochu – Sunoco, Inc. (R & M), 4 Bellows Road, PO Box 1262 Westborough, MA 01581
Mr. Larry Blomquist, 671 Main Street, Winchester, MA 01891



**NOTICE OF INTENT FORM
FOR THE
REMEDIATION GENERAL PERMIT**



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

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

a) Name of facility/site: <u>Former Suroco Station</u>		Facility/site address: <u>671</u>	
Location of facility/site: longitude: <u>42°27'19"</u> latitude: <u>71°08'19"</u>		Facility SIC code(s):	
b) Name of facility/site owner: <u>Lawrence Blomquist</u>		Town: <u>Winchester</u>	
Email address of owner:		State: <u>MA</u>	County: <u>USA</u>
Telephone no. of facility/site owner: <u>781-721-9731</u>		Zip: <u>01890</u>	
Fax no. of facility/site owner:		Owner is (check one): 1. Federal _____ 2. State/Tribal _____	
Address of owner (if different from site):		3. Private ☒ 4. other, if so, describe: _____	
Street:			
Town:		State:	County:
c) Legal name of operator:		Operator telephone no: <u>(508) 835-8822</u>	
<u>Corporate Environmental Advisors, Inc.</u>		Operator fax no.: <u>(508) 835-8812</u>	
Operator contact name and title: <u>Mr. Scott Vandersee - LSP</u>		Operator email:	
Address of operator (if different from owner):		Street: <u>127 Hartwell Street</u>	
Town: <u>West Boylston</u>		State: <u>MA</u>	County: <u>USA</u>
Zip: <u>01583</u>			
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: <u>MA-051-064</u>			
2. Has a prior NPDES application (Form 1 & 2C) ever been filed for the discharge? Yes ☐ No ☒ if "yes," date and tracking #:			
3. Is the discharge a "new discharge" as defined by 40 CFR 122.2? Yes ☒ No ☐			
4. For sites in Massachusetts, is the discharge covered under the MA Contingency Plan (MCP) and exempt from state permitting? Yes ☒ No ☐			

e) Is site/facility subject to any State permitting or other action which is causing the generation of discharge? Yes ☒ No ☐ If "yes," please list: 1. site identification # assigned by the state of NH or MA: MA RTU # 3-4315 & RTU # 3-0310 2. permit or license # assigned: 3. state agency contact information: name, location, and telephone number: MADEP, Mr. John Zupkus, NE Regional Office, Boston MA 617-654-6500	f) Is the site/facility covered by any other EPA permit, including: 1. multi-sector storm water general permit? Y ☐ N ☒ if Y, number: <u> </u> 2. phase I or II construction storm water general permit? Y ☐ N ☒ if Y, number: <u> </u> 3. individual NPDES permit? Y ☐ N ☒ if Y, number: <u> </u> 4. any other water quality related permit? Y ☐ N ☒ if Y, number: <u> </u>
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: Excavation dewatering & treatment performed in accordance with 310 CMR 40.0 of the MCR.	
b) Provide the following information about each discharge:	1) Number of discharge points: <u>1</u> 2) What is the maximum and average flow rate of discharge (in cubic feet per second, ft³/s)? Max. flow <u>0.11</u> Average flow <u>0.11</u> Is maximum flow a design value? Y ☐ N ☒ For average flow, include the units and appropriate notation if this value is a design value or estimate if not available.
3) Latitude and longitude of each discharge within 100 feet: pt.1: long <u>71° 8' 10.53"</u> lat. <u>42° 27' 20.40"</u> pt.4: long. <u> </u> lat. <u> </u>; pt.5: long. <u> </u> lat. <u> </u>; pt.6: long. <u> </u> lat. <u> </u>; etc.	4) If hydrostatic testing, total volume of the discharge (gals): <u> </u> 5) Is the discharge intermittent or seasonal? Yes ☒ No ☐ (Discharge is temporary)
c) Expected dates of discharge (mm/dd/yy): start <u>10/31/05</u> end <u>11/30/05</u>	
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). Attached	

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		X	1	Grab	SM2540 D	5.0 mg/l	49,000	10.98	—	—
2. Total Residual Chlorine	X		1		8167	0.100 mg/l	< 100	—	—	—
3. Total Petroleum Hydrocarbons		X	1		624m/8015	1.0 mg/l	8,300	2.68	—	—
4. Cyanide	X		1		10-204.00-1A	0.010 mg/l	< 10	—	—	—
5. Benzene		X	8		8260 B VPH	0.025 mg/l	415	0.093	117.5	0.026
6. Toluene		X	8		8260 B VPH	0.025 mg/l	2,940	0.659	633.2	0.142
7. Ethylbenzene		X	8		8260 B VPH	0.025 mg/l	966	0.216	219.2	0.049
8. (m,p,o) Xylenes		X	8		8260 B VPH	0.025 mg/l	5,310	1.190	981.4	0.220
9. Total BTEX ⁴		X	8	↓	8260 B VPH	0.025 mg/l	9,321	2.09	1,569.7	0.3517

⁴ 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 ⁵ (1,2-Dibromo-methane)	X		24	GRAB	8260B	0.015 ug/l	-	-	-	-
11. Methyl-tert-Butyl Ether (MtBE)		X	8		8260B VPH	25.0 ug/l	402	0.090	56.31	0.0126
12. tert-Butyl Alcohol (TBA)		X	1		8260B	500 ug/l	7,020	1.573	-	-
13. tert-Amyl Methyl Ether (TAME)		X	1		8260B	25.0 ug/l	26.5	0.006	-	-
14. Naphthalene		X	4		8260B EPA/VPH	5.0 ug/l	72.5	0.016	9.06	0.0020
15. Carbon Tetra-chloride	X		1		8260B	25.0 ug/l	-	-	-	-
16. 1,4 Dichlorobenzene	X		1		8260B	25.0 ug/l	-	-	-	-
17. 1,2 Dichlorobenzene	X		1		8260B/25	5.0 ug/l	-	-	-	-
18. 1,3 Dichlorobenzene	X		1		8260B/25	5.0 ug/l	-	-	-	-
19. 1,1 Dichloroethane	X		1		8260B	25.0 ug/l	-	-	-	-
20. 1,2 Dichloroethane	X		1		8260B	25.0 ug/l	-	-	-	-
21. 1,1 Dichloroethylene	X		1		8260B	25.0 ug/l	-	-	-	-
22. cis-1,2 Dichloro-ethylene	X		1		8260B	25.0 ug/l	-	-	-	-
23. Dichloromethane (Methylene Chloride)	X		1		8260B	25.0 ug/l	-	-	-	-
24. Tetrachloroethylene	X		1	✓	8260B	25.0 ug/l	-	-	-	-

⁵ 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	X		1	GRAB	8260B	25.0 ug/l	-	-	-	-
26. 1,1,2 Trichloroethane	X		1		8260B	25.0 ug/l	-	-	-	-
27. Trichloroethylene	X		1		8260B	25.0 ug/l	-	-	-	-
28. Vinyl Chloride	X		1		8260B	25.0 ug/l	-	-	-	-
29. Acetone	X		1		8260B	500 ug/l	-	-	-	-
30. 1,4 Dioxane	X				8260B	1,000 ug/l	-	-	-	-
31. Total Phenols		X	1		625	1.0 ug/l	2.16	0.0005	-	-
32. Pentachlorophenol	X		1		625	1.0 ug/l	-	-	-	-
33. Total Phthalates ⁶ (Phthalate esters)	X		1		625	1.0 ug/l	-	-	-	-
34. Bis (2-Ethylhexyl) Phthalate [Di-(ethylhexyl) Phthalate]	X		1		625	5.0 ug/l	-	-	-	-
35. Total Group I Polycyclic Aromatic Hydrocarbons (PAH)		X	3		625 EPA	0.50 ug/l	1.53	0.0003	0.191	0
a. Benzo(a) Anthracene	X		3		625 EPA	0.50 ug/l	-	-	-	-
b. Benzo(a) Pyrene	X		3		625 EPA	0.50 ug/l	-	-	-	-
c. Benzo(b) Fluoranthene		X	3		625 EPA	0.50 ug/l	0.54	0.0001	0.0675	0
d. Benzo(k) Fluoranthene		X	3		625 EPA	0.40 ug/l	0.47	0.0001	0.0588	0
e. Chrysene		X	3		625 EPA	0.50 ug/l	0.59	0.0001	0.0738	0

⁶ 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)
f. Dibenzo(a,h) anthracene	X		3	grab	625 EPH	5.0 ug/l	-	-	-	-
g. Indeno(1,2,3-cd) Pyrene	X		3		625 EPH	5.0 ug/l	-	-	-	-
36. Total Group II Polycyclic Aromatic Hydrocarbons (PAH)		X	3		625 EPH	1.0 ug/l	80.0	0.0179	10.0	0.002
h. Acenaphthene	X		3		625 EPH	5.0 ug/l	-	-	-	-
i. Acenaphthylene	X		3			5.0 ug/l	-	-	-	-
j. Anthracene	X		3			5.0 ug/l	-	-	-	-
k. Benzo(ghi) Perylene	X		3			5.0 ug/l	-	-	-	-
l. Fluoranthene		X	3			0.50 ug/l	0.78	0.0002	0.0975	0
m. Fluorene	X		3			5.0 ug/l	-	-	-	-
n. Naphthalene-		X	3		EPH, upH 625	5.0 ug/l	94	0.0211	18.125	0.0041
o. Phenanthrene	X		3			5.0 ug/l	-	-	-	-
p. Pyrene	X		3			5.0 ug/l	-	-	-	-
37. Total Polychlorinated Biphenyls (PCBs)	X		1		608	0.208 ug/l	-	-	-	-
38. Antimony	X		1		200.7	0.0060 mg/l	-	-	-	-
39. Arsenic		X	2		200.7	0.0040 mg/l	23.6	0.005	11.8	0.0026
40. Cadmium	X		2		200.7	0.0012 mg/l	-	-	-	-
41. Chromium III	X		2		200.7	0.0012 mg/l	-	-	-	-
42. Chromium VI	X		1		SM3500	0.025 mg/l	-	-	-	-

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	X		1	grab	200.7	0.0025 mg/l	—	—	—	—
44. Lead	X		2		200.7	0.0038 mg/l	—	—	—	—
45. Mercury	X		2		245.2/7470A	0.0020 mg/l	—	—	—	—
46. Nickel	X		1		200.7	0.0025 mg/l	—	—	—	—
47. Selenium	X		2		200.7	0.0075 mg/l	—	—	—	—
48. Silver	X		2		200.7	0.0050 mg/l	—	—	—	—
49. Zinc	X		1		200.7	0.0100 mg/l	—	—	—	—
50. Iron		X	1	↓	200.7	0.0025 mg/l	9,200	2.06	—	—
Other (describe):										

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

<i>Step 1:</i> Do any of the metals in the influent have a reasonable potential to exceed the effluent limits in Appendix III (i.e., the limits set at zero to five dilutions)? Y X N	If yes, which metals? Arsenic & Iron
<i>Step 2:</i> For any metals which have reasonable potential to exceed the Appendix III limits, calculate the dilution factor (DF) using the formula in Part I.A.3.c) (step 2) of the NOI instructions or as determined by the State prior to the submission of this NOI. What is the dilution factor for applicable metals? Metals: Arsenic = 50 / Iron = 5,000 DF: 5.18 (See attached backup)	Look up the limit calculated at the corresponding dilution factor in Appendix IV. Do any of the metals in the influent have the potential to exceed the corresponding effluent limits in Appendix IV (i.e., is the influent concentration above the limit set at the calculated dilution factor)? Y X N If "Yes," list which metals: Iron *

* However, the treatment system filtration components (bag filters & carbon units) are anticipated to remove Iron concentrations to below the EPA effluent standards.

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: <u>Attached</u>					
b) Identify each applicable treatment unit (check all that apply):	Frac. tank ☒	Air stripper	Oil/water separator ☒	Equalization tanks	Bag filter ☒
	Chlorination	Dechlorination	Other (please describe):		
c) Proposed average and maximum flow rates (gallons per minute) for the discharge and the design flow rate(s) (gallons per minute) of the treatment system: Average flow rate of discharge <u>25</u> Maximum flow rate of treatment system <u>50</u> Design flow rate of treatment system _____					
d) A description of chemical additives being used or planned to be used (attach MSDS sheets): <u>NA</u>					

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: <u>Attached</u>						
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 discharges, 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. <u>Attached</u>						
d) Provide the state water quality classification of the receiving water <u>Class B</u> .						
e) Provide the reported or calculated seven day ten year low flow (7Q10) of the receiving water <u>0.46</u> 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)? <u>Unionized Ammonia, Organic Enrichment, Low DO / pathogens</u> 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.

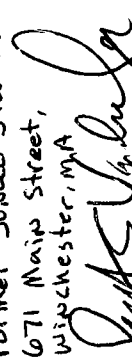
a) Are any listed threatened or endangered species, or designated critical habitat, in proximity to the discharge? Yes <u>No</u> No <u>X</u> Has any consultation with the federal services been completed? No <u>X</u> or is consultation underway? No <u> </u> What were the results of the consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service (check one): a "no jeopardy" opinion? <u> </u> or written concurrence <u> </u> 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 <u> </u> No <u>X</u> Have any state or tribal historic preservation officer been consulted in this determination (Massachusetts only)? Yes <u> </u> No <u> </u>
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7. Supplemental information: See Attached

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

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:	Former Suncoco Station 671 Main Street, Worcester, MA
Operator signature:	
Title:	Principal Hydrogeologist / Consultant for Corporate Environmental Advisors, Inc.
Date:	10/21/05

FIGURES



Name: BOSTON NORTH
 Date: 1/30/2004
 Scale: 1 inch equals 1000 feet

Location: 042° 27' 19.2" N 071° 08' 21.3" W
 Caption: Former Sunoco Station
 671 Main Street
 Winchester, MA
 DUNS: 0005 2010

MA DEP - Bureau of Waste Site Cleanup

Site Scoring Map: 500 feet & 0.5 Mile Radii

SITE NAME:

Former Sunoco Station
DUNS 0005 2019
671 Main Street
WINCHESTER, MA
422719n 710821ew

Site Location

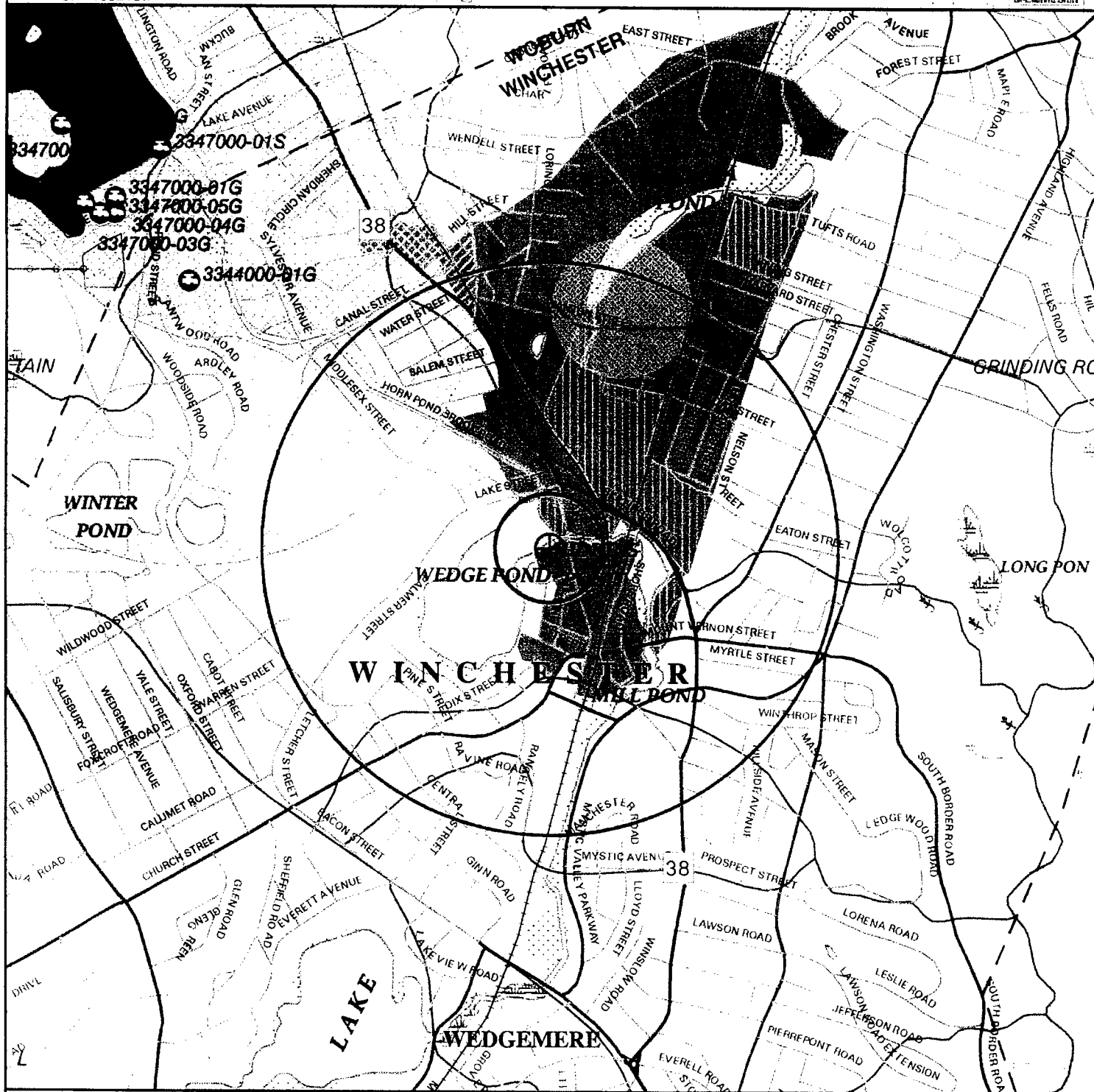
The most appropriate data source is the best available at the date of printing. Please refer to the data source descriptions document.

MASS GIS

Massachusetts
Geographic
Information
System



Massachusetts Executive Office of Environmental Affairs - 2004



Roads: Limited Access, Divided, Major Road, Connector, Street, Track, Trail

Boundaries: Town, County, DEP Region; Train; Powerline; Pipeline; Aqueduct

Basins: Major, Sub; Streams: Perennial, Intermittent, Man Made Shore, Dams

Potentially Productive Aquifers: Medium, High Yield

Non-Potential Drinking Water Source Area: Medium, High Yield

EPA Sole Source Aquifer; FEMA 100-year floodplain

Public Water Supplies: Ground, Surface, Non Community

Approved Zone 2; MWPA; Surface Water Supply Zone A

Hydrography: Water Features, Public Surface Water Supply

Wetlands: Fresh, Salt, NHESP Wetlands Habitat

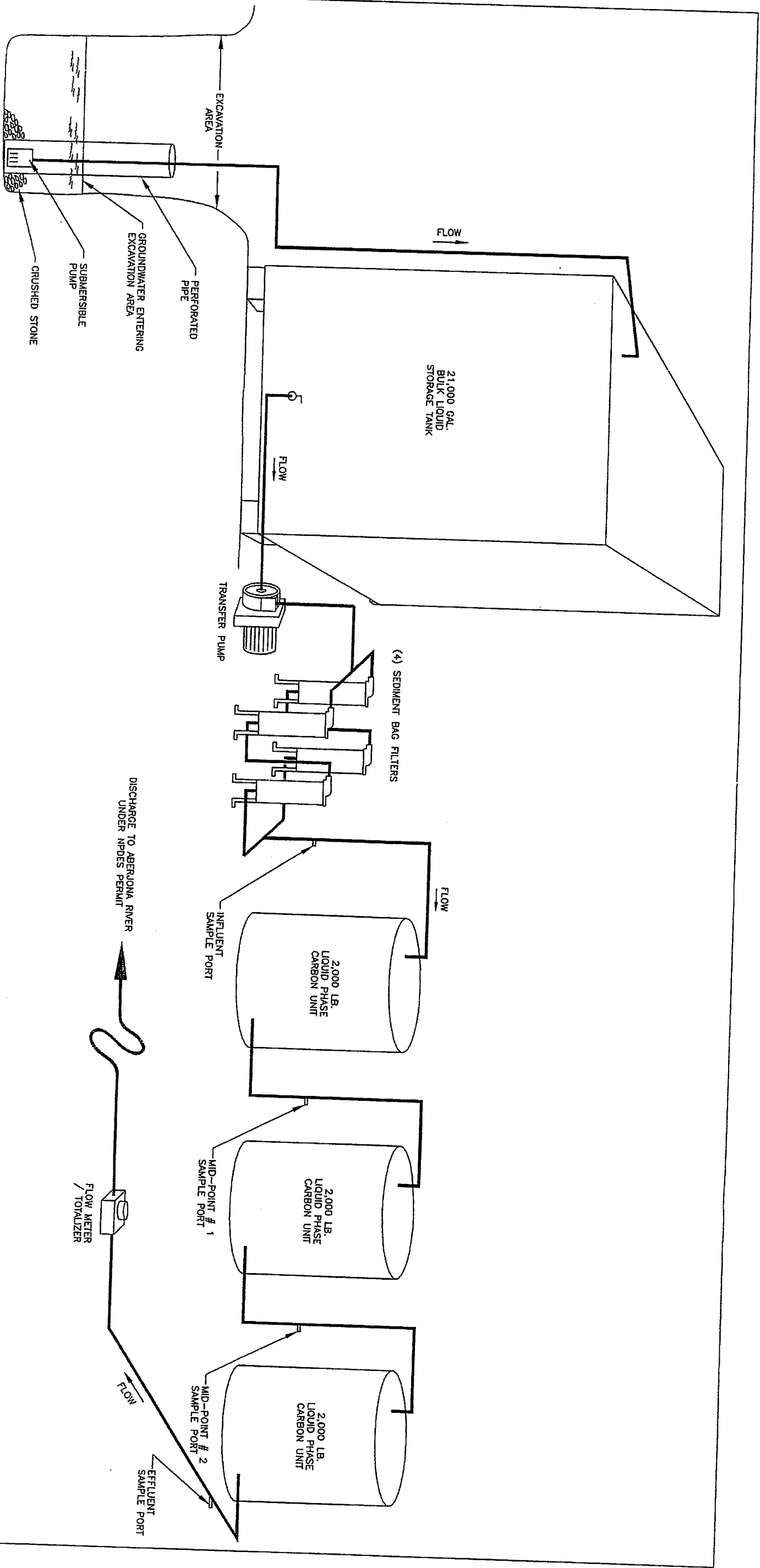
Protected Open Spaces; ACEC

DEP Permitted Solid Waste Facilities; Certified Vernal Pools

SCALE 1:15000

KILOMETERS

February 03, 2004



SEE CORPORATE ENVIRONMENTAL ADVISORS, INC.

Assessments - Remediation - Emergency Response
127 HARTWELL ST W BOSTON, MA

SCALE: NOT TO SCALE

DATE: 10/28/04

APP. BY: SEV

DR. BY: K. HAZEL

JOB NO.: 5167-03-2

EXCAVATION DEWATERING

PROCESS & INSTRUMENTATION DIAGRAM

SUNOCO, INC (R & M)

671 MAIN STREET WINCHESTER, MA

FIGURE 4

TABLES

Table 1
Groundwater Analytical Results - Volatile Petroleum Hydrocarbons
 Former Sunoco Station
 671 Main Street, Winchester, MA
 DUNS #0005-2019

SAMPLE	DATE	ANALYTICAL METHOD	C3 - C8 ALIPHATICS	C9 - C12 ALIPHATICS	C9 - C10 AROMATICS	BENZENE	TOLUENE	ETHYL BENZENE	XYLENES	MTBE	NAPHTHALENE	TPH	EDB	LEAD
Method 1 Standards GW-2			1,000	10,000	5,000	2,000	6,000	30,000	6,000	50,000	10,000	NA	3	NA
Method 1 Standards GW-3			4,000	20,000	4,000	7,000	50,000	4,000	50,000	50,000	3,000	50,000	50,000	30
Upper Concentration Limits			100,000	100,000	100,000	70,000	100,000	100,000	100,000	100,000	60,000	100,000	100,000	300
MW-1 (GW-2&3)	9/14/1992	624M, 8015(GRO)	NA	NA	NA	ND	ND	ND	ND	NA	NA	ND	NA	NA
	7/8/1993	624M	NA	NA	NA	ND	ND	ND	ND	2.4	NA	NA	NA	NA
	10/1/1996	624M	NA	NA	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
	3/28/2003	MADEP VPH	ND	ND	ND	ND	ND	ND	ND	ND	ND	*	NA	NA
	6/4/2004	MA DEP VPH & 8260	<50	<50	<50	<2	<2	<2	<2	<2	<3	NA	<0.2	NA
	4/19/2005	MADEP VPH	<50	<50	<50	<2.0	<2.0	<2.0	<4.0	<2.0	<3.0	NA	NA	NA
MW-2 (GW-3)	9/14/1992	624M, 8015(GRO)	NA	NA	NA	5.9	5.9	5.9	5.9	NA	NA	1,600	NA	NA
	7/8/1993	624M	NA	NA	NA	ND	ND	ND	ND	17	NA	NA	NA	NA
	10/1/1996	624M	NA	NA	NA	ND	ND	ND	ND	ND	NA	NA	NA	NA
	4/1/1998	MADEP VPH	22.2	ND	7.5	ND	ND	ND	ND	9.4	ND	*	NA	NA
	11/28/1998	MADEP VPH	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	NA	NA
	3/28/2003	MADEP VPH	ND	ND	ND	ND	ND	ND	ND	9.71	ND	*	NA	NA
	6/4/2004	MA DEP VPH	<50	<50	<50	<2	<2	<2	<2	45.4	<3	NA	NA	NA
	4/19/2005	MADEP VPH	99.6	<50	<50	<2.0	<2.0	<2.0	<4.0	132	<3.0	NA	NA	NA
MW-3 (GW-3)	9/14/1992	624M, 8015(GRO)	NA	NA	NA	110	190	360	2,400	NA	NA	8,300	NA	NA
	7/8/1993	624M	NA	NA	NA	99	13	47	190	990	NA	NA	NA	NA
	10/1/1996	624M	NA	NA	NA	29	1	1	6	380	NA	NA	NA	NA
	4/1/1998	MADEP VPH	727	273	192	22.2	12.6	13.5	6.4	1,530	4	*	ND	ND
	11/28/1998	MADEP VPH	526	122	104	8.1	ND	ND	ND	55.3	ND	NA	NA	NA
	3/28/2003	MADEP VPH	3,310	2,330	5,060	1,530	7,740	1,990	9,590	9,650	ND	*	NA	NA
	6/4/2004	MA DEP VPH	3,750	389	6,590	666	1,480	2,270	10,180	4,080	308	NA	<0.015	NA
	4/19/2005	MADEP VPH	6,850	10,300	2300	105	2,940	966	5,310	107	94	NA	NA	NA
MW-4 (GW-2&3)	4/1/1998	MADEP VPH	51.0	10.2	12.0	ND	ND	ND	ND	10.9	ND	*	NA	NA
	11/28/1998	MADEP VPH	ND	ND	ND	ND	ND	ND	ND	13.8	ND	NA	NA	NA
	3/28/2003	MADEP VPH	ND	518	ND	171	22.9	ND	ND	1,900	ND	*	NA	NA
	6/4/2004	MADEP VPH	841	<50	67	473	172	43	130	611	4	NA	NA	NA
	4/19/2005	MADEP VPH	1,030	51.6	<50	358	5.4	5.3	12.8	208	<3.0	NA	NA	NA
MW-5 (GW-3)	6/4/2004	MA DEP VPH	1,090	<50	63.1	284	3.8	7.4	7.9	584	247	NA	NA	NA
	4/19/2005	MADEP VPH	1,060	106	102	61.6	<2.0	<2.0	<4.0	<62.1	51.1	NA	NA	NA
MW-6 (GW-2&3)	6/4/2004	MA DEP VPH	<50	<50	<50	<2	<2	<2	<2	3.1	<2	NA	NA	NA
	4/19/2005	MADEP VPH	<50	<50	<50	<2.0	<2.0	<2.0	<4.0	<2.0	<3.0	NA	NA	NA
MW-9 (GW-3)	7/15/2004	MA DEP VPH	<50	<50	72.1	<2	<2	<2	<2	15.1	<3	NA	NA	NA
	4/19/2005	MADEP VPH	<50	<50	<50	<2.0	<2.0	<2.0	<4.0	3.5	<3.0	NA	NA	NA

NOTES:
 All concentrations expressed in micrograms per liter (µg/l) or parts per billion (ppb).
 NA = not applicable.
 ND = not detected
 Shaded values exceed Method 1 Risk Characterization (MIRC) GW-2 and/or GW-3 standards
 Refer to Tables 2 and 3 for additional laboratory analyses.

Table 2
Groundwater Analytical Results - Extractable Petroleum Hydrocarbons
Former Sunoco Station
671 Main Street, Winchester, MA
DUNS #0005-2019

Sample ID	Sample Date	Analytical Method	C9-C18 Aliphatics (ug/l)	C19-C36 Aliphatics (ug/l)	C11-C22 Aromatics (ug/l)	Acenaphthene	Acenaphthylene	Anthracene	Benzo(a)Anthracene	Benzo(a)Pyrene	Benzo(b)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene	Dibenzo(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	2-methylnaphthalene	Naphthalene	Phenanthrene	Pyrene	
Method 1 Groundwater Standards																							
GW-2			1,000	NA	50,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000	6,000	NA	NA
GW-3			20,000	50,000	30,000	5,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	6,000	50	3,000
Upper Concentration Limits			100,000	100,000	100,000	50,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	30,000	100,000	60,000	3,000	30,000
MW-1	3/28/03	MA DEP EPH	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	6/4/2004	MA DEP EPH	<100	<100	<100	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	
	4/19/2005	MA DEP EPH	<110	<110	<110	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	
MW-2	11/28/1998		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3/28/2003	MA DEP EPH	ND	158	124	ND	ND	ND	ND	ND	0.54	ND	0.47	ND	ND	ND	ND	ND	ND	ND	0.52	ND	0.57
	4/19/2005	MA DEP EPH	<100	<100	101	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
MW-3	11/28/1998		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3/28/2003	MA DEP EPH	ND	ND	344	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	105	ND	ND
	6/4/2004	MA DEP EPH	696	103	272	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	<5.1	72	<5.1	<5.1	
4/19/2005	MA DEP EPH	255	<100	162	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	10.70	47.2	<5.0	<5.0	
MW-4	11/28/1998		ND	416	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	3/28/2003	MA DEP EPH	ND	2,210	1,170	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.99
	6/4/2004	MA DEP EPH	<110	438	250	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	
4/19/2005	MA DEP EPH	<100	<100	218	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	
MW-5	4/19/2005	MA DEP EPH	<110	<110	216	17.6	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	15.2	<5.3	<5.3	45.9	16.5	<5.3	
MW-6	4/19/2005	MA DEP EPH	<110	<110	<110	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	
MW-7	6/8/2004	MA DEP EPH	<100	<100	<100	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	<5.2	
MW-9	6/8/2004	MA DEP EPH	<110	<110	<110	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	<5.3	
	4/19/2005	MA DEP EPH	<110	918	231	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	<5.6	

Notes:
 Reported in micrograms per liter (ug/l) = parts per billion (ppb).
 <# = Less than laboratory Method Detection Limit.
 Bold = Exceedance of Method 1 Groundwater Standards.
 Only analytes detected above laboratory reporting limits are shown.

Table 3
Groundwater Analytical Results - Dissolved Metals
Former Sunoco Station
671 Main Street, Winchester MA
DUNS #0005-2019

Sample ID	Sample Date	Laboratory Analytical Method	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
MW-1	6/4/2004	RCRA 8 Metals	<5	<200	<4	<10	<5	<0.2	<10	<5
Method 1 Risk Characterization Standards										
GW-3			400	30,000	10	2,000	30	1	80	7

Notes:

< Indicates less than laboratory Method Detection Limit.

ND Indicates not detected above Method Detection Limit

Blank space indicates parameter not analyzed

NS Indicates no published DEP Standard

Shaded concentrations exceed applicable MIRC GW-2 and/or GW-3 Standards

All concentrations expressed in ug/kg (ppb)

* = Sample of NCA boring collected by CEA

Table 3

Groundwater Analytical Results - Dissolved Metals
 Former Sunoco Station
 671 Main Street, Winchester MA
 DUNS #0005-2019

Sample ID	Sample Date	Laboratory Analytical Method	Arsenic	Barium	Cadmium	Chromium	Lead	Mercury	Selenium	Silver
MW-1	6/4/2004	RCRA 8 Metals	<5	<200	<4	<10	<5	<0.2	<10	<5
Method 1 Risk Characterization Standards										
GW-3			400	30,000	10	2,000	30	1	80	7

Notes:

< Indicates less than laboratory Method Detection Limit.

ND Indicates not detected above Method Detection Limit

Blank space indicates parameter not analyzed

NS Indicates no published DEP Standard

Shaded concentrations exceed applicable MIRC GW-2 and/or GW-3 Standards

All concentrations expressed in ug/kg (ppb)

* = Sample of NCA boring collected by CEA

Table 4
Groundwater Analytical Results - EPA RGP NOI Sampling Requirements
Former Sunoco Station
671 Main Street, Winchester, MA
DUNS #0005-2019

Parameter	Effluent Limit	Influent Composite (MW-3/MW-4)
		10/11/05
1. Total Suspended Solids (TSS)	30 milligrams/liter (mg/l) 50 mg/l for hydrostatic testing only	49.0
2. Total Residual Chlorine (TRC)	FW1 = 11 ug/l2 SW3 = 7.5 ug/l2	<100
3. Total Petroleum Hydrocarbons (TPH)	5.0 mg/l	8.3
4. Cyanide (CN)4	SW = 1.0 ug/l5 FW = 5.2 ug/l5	<10.0
5. Benzene (B)	5.0 ug/l 50.0 ug/l -hydrostatic testing only	415
6. Toluene (T)	(limited as ug/L total BTEX)	2,120
7. Ethylbenzene (E) - 100414	(limited as ug/L total BTEX)	782.0
8. (m,p,o) Xylenes (X)	(limited as ug/L total BTEX)	2,519
9. Total BTEX6	100 ug/l	5,836
10. Ethylene Dibromide (EDB) (1,2- Dibromo-methane)	0.05 ug/l	--
11. Methyl-tert-Butyl Ether (MtBE)	70.0 ug/l	402
12. tert-Butyl Alcohol (TBA) (Tertiary-Butanol)	Monitor Only (ug/L)	7,020
13. tert-Amyl Methyl Ether (TAME)	Monitor Only (ug/L)	26.5
14. Naphthalene	20 ug/l7	72.5
15. Carbon Tetrachloride	4.4 ug/l	<25.0
16. 1,4 Dichlorobenzene (p-DCB)	5.0 ug/l	<25.0
17. 1,2 Dichlorobenzene (o-DCB)	600 ug/l	<25.0
18. 1,3 Dichlorobenzene (m-DCB)	320 ug/l	<25.0
19. Total dichlorobenzene	763 ug/l in NH only	<75.0
20. 1,1 Dichloroethane (DCA)	70 ug/l	<25.0
21. 1,2 Dichloroethane (DCA)	5.0 ug/l	<25.0
22. 1,1 Dichloroethylene (DCE)	3.2 ug/	<25.0
23. cis-1,2 Dichloro-ethylene (DCE)	70 ug/l	<25.0
24. Dichloromethane (Methylene Chloride)	4.6 ug/l	<50.0
25. Tetrachloroethylene (PCE)	5.0 ug/l	<25.0
26. 1,1,1 Trichloro-ethane (TCA)	200 ug/l	<25.0
27. 1,1,2 Trichloro-ethane (TCA)	5.0 ug/l	<25.0
28. Trichloroethylene (TCE)	5.0 ug/l	<25.0
29. Vinyl Chloride (Chloroethene)	2.0 ug/l	<25.0
30. Acetone	Monitor Only (ug/L)	<500
31. 1,4 Dioxane	Monitor Only (ug/L)	<1,000
32. Total Phenols	300 ug/l	216
33. Pentachlorophenol (PCP)	1.0 ug/l	<1.0
34. Total Phthalates 8 (Phthalate esthers)	3.0 ug/L	<1.0
35. Bis (2-Ethylhexyl) Phthalate [Di(ethylhexyl) Phthalate]	6.0 ug/l	<5.0
36. Total Group I Polycyclic Aromatic Hydrocarbons (PAH)	10.0 ug/l	<35.0
a. Benzo(a) Anthracene	0.0038 ug/l 9	<5.0
b. Benzo(a) Pyrene	0.0038 ug/l9	<5.0
c. Benzo(b)Fluoranthene	0.0038 ug/l9	<5.0
d. Benzo(k)Fluoranthene	0.0038 ug/l9	<5.0
e. Chrysene	0.0038 ug/l9	<5.0
f. Dibenzo(a,h)anthracene	0.0038 ug/l9	<5.0
g. Indeno(1,2,3-cd) Pyrene	0.0038 ug/l9	<5.0

Table 4
Groundwater Analytical Results - EPA RGP NOI Sampling Requirements
Former Sunoco Station
671 Main Street, Winchester, MA
DUNS #0005-2019

Parameter	Effluent Limit	Influent Composite (MW-3/MW-4)
		10/11/05
37. Total Group II Polycyclic Aromatic Hydrocarbons (PAH)	100 ug/l	47.6
h. Acenaphthene	(limited as total ug/L Group II PAHs)	<1.0
i. Acenaphthylene	(limited as ug/L total Group II PAHs)	<5.0
j. Anthracene	(limited as ug/L total Group II PAHs)	<5.0
k. Benzo(ghi) Perylene	(limited as ug/L total Group II PAHs)	<5.0
l. Fluoranthene	(limited as ug/L total Group II PAHs)	<1.0
m. Fluorene	(limited as ug/L total Group II PAHs)	<5.0
n. Naphthalene	20 ug/l	47.6
o. Phenanthrene	(limited as ug/L total Group II PAHs)	<5.0
p. Pyrene	(limited as ug/L total Group II PAHs)	<5.0
38. Total Polychlorinated Biphenyls (PCBs)10	0.000064 ug/L11	<0.208
Metal parameters	Total Recoverable Metal Limit @ H = 50 mg/l CaCO312 for discharges in Massachusetts (ug/l)	
39. Antimony	5.6	<6.0
40. Arsenic	10	23.6
41. Cadmium	0.2	<1.2
42. Chromium III (trivalent)	48.8	<2.5
43. Chromium VI (hexavalent)	11.4	<25.0
44. Copper	5.2	<2.5
45. Lead	1.3	<3.8
46. Mercury	0.9	<0.20
47. Nickel	29	<2.5
48. Selenium	5	<7.5
49. Silver	1.2	<5.0
50. Zinc	66.6	<10.0
51. Iron	1,000	9,200

ATTACHMENTS

Dilution Factor Calculations and Backup

Dillution Factor Calculation

Former Sunoco Station

671 Main Street

Winchester, MA

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

DF = Dillution factor **5.181818**

Qd = Max flow rate of discharge in cubic feet per second

0.11

Qs = receiving water flow in cubic feet per seconds 7Q10 flow rate

0.46

7Q10 = min flow for seven consecutive days with a recurrence interval of 10 years

0.46 *

* 7Q10 flow based on data obtained from USGS Gauging Station Number 01102500

Data attached

APPENDIX IV
TOTAL RECOVERABLE METALS LIMITATIONS (ug/L) AT SELECTED DILUTION
RANGES AND TECHNOLOGY BASED CEILING LIMITATIONS FOR
FACILITIES LOCATED IN MASSACHUSETTS
(for discharges to freshwater at H = 50 mg/L CaCO₃)¹

PARAMETER	DILUTION RANGE CONCENTRATION					
	0 - 5	5 -10	10 - 50	50 - 100	>100	CEILING VALUE
1. Antimony	5.6	30	60	141	141	141 ²
2. Arsenic	10	50	100	500	540	540 ³
3. Cadmium	0.2	1.0	2.0	10.0	20.0	260
4. Chromium ^{III} (Trivalent)	48.8	244	489	1,710	1,710	1,710
5. Chromium ^{VI} (Hexavalent)	11.4	57	114	570	1,140	1,710 ⁴
6. Copper	5.2	26	52	260	520	2,070
7. Lead	1.3	6.5	13	66	132	430
8. Mercury	0.9	2.3	2.3	2.3	2.3	2.3 ⁵
9. Nickel	29.0	145	290	1,451	2,380	2,380
10. Selenium	5.0	25	50	250	408	408 ⁶
11. Silver	1.2	6	12	57	115	240
12. Zinc	66.6	333	666	1,480	1,480	1,480
13. Iron	1,000	5,000	5,000	5,000	5,000	5,000

1. Based on 7Q10 Flow.

2. Based on 40 CFR 437.42, "The Centralized Waste Treatment Point Source Category - Subpart D - Multiple Wastestreams - Best Practicable Control Technology" (BPT) daily maximum for Antimony

3. Based on 40 CFR 445.11, "RCRA Subtitle C Landfill Best Practicable Control Technology" (BPT) for Arsenic.

4. Assumes Hexavalent Chromium reduced to Tri-valent Chromium in treatment.

5. Based on 40 CFR 437.42, "The Centralized Waste Treatment Point Source Category - Subpart D - Multiple Wastestreams - Best Practicable Control Technology" (BPT) daily maximum for Mercury

6. Based on 40 CFR 437.42, "The Centralized Waste Treatment Point Source Category - Subpart D - Multiple Wastestreams - Best Practicable Control Technology" (BPT) daily maximum for Selenium

ABERJONA RIVER AT WINCHESTER, MA

General Information

USGS Station Number: 01102500

Station Type: Gaging Station, continuous record

Period of Record: 1939-present

Latitude (d/m/s): 422650

Longitude (d/m/s): 710822

Location: 0.5 mile upstream from head of Mystic Lakes

Hydrologic Unit Code: 01090001

Basin Name: Boston Harbor

Remarks: Flow affected by diversions. Some regulation by Winchester at dam 1800 feet upstream.

Basin Characteristics

Drainage Area(sq.miles): 24.1

Stratified Drift
Area(sq.miles):

Waterbody
Area(sq.miles):

Wetland Area(sq.miles):

Total Stream
Length(miles):

Mean Basin
Slope(percent):

Minimum Elevation(ft):

Mean Elevation(ft):

Maximum Elevation(ft):

Streamflow Statistics

(All statistics in cubic feet per second)

Flood-Flow Frequencies

Citations	<u>1</u>	<u>2</u>	<u>3</u>
Mean Annual Flood:		96	
10 Year Flood:		646	
25 Year Flood:		855	
50 Year Flood:		1030	
100 Year Flood:		1230	
500 Year Flood:		1760	

Flow Durations

1%:	
2%:	
3%:	
5%:	
7%:	
10%:	68
15%:	
20%:	
25%:	37.2
30%:	
35%:	
40%:	
45%:	
50%:	17
55%:	

60%:	
65%:	
70%:	5.3
75%:	3.7
80%:	
85%:	
90%:	1.3
93%:	
95%:	0.68
97%:	
98%:	
99%:	0.46

August Median Flow

August Median Flow:

Low-Flow Frequencies

7-day, 2-year low flow: 0.92

7-day, 10-year low flow: 0.46

¹ Wandle, S.W., Jr., 1984, Gazetteer of Hydrologic Characteristics of Streams in Massachusetts--Coastal River Basins of the North Shore and Massachusetts Bay: U.S. Geological Survey Water-Resources Investigations Report 84-4281, 60 p.

² Murphy, P.J., in press, Evaluation of mixed-population flood-frequency analysis: American Society of Civil Engineers, Journal of Hydrologic Engineering, Paper 96-98-HE.

³ Socolow, R.S., Leighton, C.R., Zanca, J.L., and Ramsbey, L.R., 1998, Water Resources Data Massachusetts and Rhode Island Water Year 1997: U.S. Geological Survey Water-Data Report MA-RI-97-1, 334 p.

U.S. Department of the Interior, U.S. Geological Survey
10 Bearfoot Road
Northborough, MA 01532
(508) 490-5000

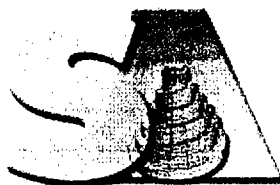
Maintainer: webmaster@mass1.er.usgs.gov

Laboratory Analytical Report
(October 11, 2005 Groundwater Sampling)



Report Date:
17-Oct-05 16:54

☒ Final Report



SPECTRUM ANALYTICAL, INC.

Featuring

HANIBAL TECHNOLOGY

Laboratory Report

CEA, Inc.
127 Hartwell Street
West Boylston, MA 01583
Attn: Adam Last

Project: Sunoco-671 Main St-Winchester, MA
Project #: 5167-03

<u>Laboratory ID</u>	<u>Client Sample ID</u>	<u>Matrix</u>	<u>Date Sampled</u>	<u>Date Received</u>
SA35566-01	Discharge Composite (MW-3 + MW-4)	Ground Water	11-Oct-05 00:00	12-Oct-05 14:15

I attest that the information contained within the report has been reviewed for accuracy and checked against the quality control requirements for each method. All applicable NELAC requirements have been met.

Please note that this report contains 17 pages of analytical data including Chain of Custody document(s).

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Connecticut # PH-0777
Florida # E87600/E87936
Maine # MA138
New Hampshire # 2538/2972
New York # 11393/11840
Rhode Island # 98
USDA # S-51435
Vermont # VT-11393



Authorized by:

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

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Sample Identification
 Discharge Composite (MW-3 + MW-4)
 SA35566-01

Client Project #
 5167-03

Matrix
 Ground Water

Collection Date/Time
 11-Oct-05 00:00

Received
 12-Oct-05

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Volatile Organic Compounds										
<u>Volatile Organic Compounds</u>		Prepared by method SW846 5030 Water MS								
67-64-1	Acetone	BRL	500 µg/l	50	SW 846 8260B	14-Oct-05	14-Oct-05	5100867	RLJ	
71-43-2	Benzene	415	25.0 µg/l	50	"	"	"	"	"	
56-23-5	Carbon tetrachloride	BRL	25.0 µg/l	50	"	"	"	"	"	
95-50-1	1,2-Dichlorobenzene	BRL	25.0 µg/l	50	"	"	"	"	"	
541-73-1	1,3-Dichlorobenzene	BRL	25.0 µg/l	50	"	"	"	"	"	
106-46-7	1,4-Dichlorobenzene	BRL	25.0 µg/l	50	"	"	"	"	"	
75-34-3	1,1-Dichloroethane	BRL	25.0 µg/l	50	"	"	"	"	"	
107-06-2	1,2-Dichloroethane	BRL	25.0 µg/l	50	"	"	"	"	"	
75-35-4	1,1-Dichloroethene	BRL	25.0 µg/l	50	"	"	"	"	"	
156-59-2	cis-1,2-Dichloroethene	BRL	25.0 µg/l	50	"	"	"	"	"	
100-41-4	Ethylbenzene	782	25.0 µg/l	50	"	"	"	"	"	
1634-04-4	Methyl tert-butyl ether	402	25.0 µg/l	50	"	"	"	"	"	
75-09-2	Methylene chloride	BRL	50.0 µg/l	50	"	"	"	"	"	
91-20-3	Naphthalene	72.5	50.0 µg/l	50	"	"	"	"	"	
127-18-4	Tetrachloroethene	BRL	25.0 µg/l	50	"	"	"	"	"	
108-88-3	Toluene	2,120	25.0 µg/l	50	"	"	"	"	"	
71-55-6	1,1,1-Trichloroethane	BRL	25.0 µg/l	50	"	"	"	"	"	
79-00-5	1,1,2-Trichloroethane	BRL	25.0 µg/l	50	"	"	"	"	"	
79-01-6	Trichloroethene	BRL	25.0 µg/l	50	"	"	"	"	"	
75-01-4	Vinyl chloride	BRL	25.0 µg/l	50	"	"	"	"	"	
1330-20-7	m,p-Xylene	1,930	50.0 µg/l	50	"	"	"	"	"	
95-47-6	o-Xylene	589	25.0 µg/l	50	"	"	"	"	"	
994-05-8	Tert-amyl methyl ether	26.5	25.0 µg/l	50	"	"	"	"	"	
75-65-0	Tert-Butanol / butyl alcohol	7,020	500 µg/l	50	"	"	"	"	"	
123-91-1	1,4-Dioxane	BRL	1000 µg/l	50	"	"	"	"	"	
<u>Surrogate recoveries:</u>										
460-00-4	4-Bromofluorobenzene	106	70-130 %		"	"	"	"	"	
2037-26-5	Toluene-d8	117	70-130 %		"	"	"	"	"	
17060-07-0	1,2-Dichloroethane-d4	113	70-130 %		"	"	"	"	"	
1868-53-7	Dibromofluoromethane	116	70-130 %		"	"	"	"	"	
Extractable Petroleum Hydrocarbons										
	Non-polar material (SGT-HEM)	BRL	1.0 mg/l	1	EPA 1664	14-Oct-05	16-Oct-05	5100891	JK	
Semivolatile Organic Compounds by GC										
<u>Polychlorinated Biphenyls by EPA 608</u>		Prepared by method SW846 3535								
12674-11-2	PCB 1016	BRL	0.208 µg/l	1	EPA 608	13-Oct-05	14-Oct-05	5100743	MP	
11104-28-2	PCB 1221	BRL	0.208 µg/l	1	"	"	"	"	"	
11141-16-5	PCB 1232	BRL	0.208 µg/l	1	"	"	"	"	"	
53469-21-9	PCB 1242	BRL	0.208 µg/l	1	"	"	"	"	"	
12672-29-6	PCB 1248	BRL	0.208 µg/l	1	"	"	"	"	"	
11097-69-1	PCB 1254	BRL	0.208 µg/l	1	"	"	"	"	"	
11096-82-5	PCB 1260	BRL	0.208 µg/l	1	"	"	"	"	"	
37324-23-5	PCB 1262	BRL	0.208 µg/l	1	"	"	"	"	"	
11100-14-4	PCB 1268	BRL	0.208 µg/l	1	"	"	"	"	"	
<u>Surrogate recoveries:</u>										
10386-84-2	4,4-DB-Octafluorobiphenyl (Sr)	105	30-150 %		"	"	"	"	"	

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* Reportable Detection Limit

BRL = Below Reporting Limit

Sample Identification

Discharge Composite (MW-3 + MW-4)
SA35566-01

Client Project #
5167-03

Matrix
Ground Water

Collection Date/Time
11-Oct-05 00:00

Received
12-Oct-05

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
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Semivolatile Organic Compounds by GCPolychlorinated Biphenyls by EPA 608

Prepared by method SW846 3535

2051-24-3	Decachlorobiphenyl (Sr)	105	30-150 %		EPA 608	13-Oct-05	14-Oct-05	5100743	MP	
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Semivolatile Organic Compounds by GCMSSemivolatile Organic Compounds by EPA 625

Prepared by method SW846 3535

83-32-9	Acenaphthene	BRL	1.00 µg/l	1	EPA 625	13-Oct-05	14-Oct-05	5100744	M.B	
208-96-8	Acenaphthylene	BRL	5.00 µg/l	1	"	"	"	"	"	
120-12-7	Anthracene	BRL	5.00 µg/l	1	"	"	"	"	"	
56-55-3	Benzo (a) anthracene	BRL	5.00 µg/l	1	"	"	"	"	"	
50-32-8	Benzo (a) pyrene	BRL	5.00 µg/l	1	"	"	"	"	"	
205-99-2	Benzo (b) fluoranthene	BRL	5.00 µg/l	1	"	"	"	"	"	
191-24-2	Benzo (g,h,i) perylene	BRL	5.00 µg/l	1	"	"	"	"	"	
207-08-9	Benzo (k) fluoranthene	BRL	5.00 µg/l	1	"	"	"	"	"	
117-81-7	Bis(2-ethylhexyl)phthalate	BRL	5.00 µg/l	1	"	"	"	"	"	
85-68-7	Butyl benzyl phthalate	BRL	5.00 µg/l	1	"	"	"	"	"	
59-50-7	4-Chloro-3-methylphenol	BRL	1.00 µg/l	1	"	"	"	"	"	
95-57-8	2-Chlorophenol	BRL	1.00 µg/l	1	"	"	"	"	"	
218-01-9	Chrysene	BRL	5.00 µg/l	1	"	"	"	"	"	
53-70-3	Dibenzo (a,h) anthracene	BRL	5.00 µg/l	1	"	"	"	"	"	
95-50-1	1,2-Dichlorobenzene	BRL	2.00 µg/l	1	"	"	"	"	"	
541-73-1	1,3-Dichlorobenzene	BRL	2.00 µg/l	1	"	"	"	"	"	
106-46-7	1,4-Dichlorobenzene	BRL	2.00 µg/l	1	"	"	"	"	"	
120-83-2	2,4-Dichlorophenol	BRL	1.00 µg/l	1	"	"	"	"	"	
84-66-2	Diethyl phthalate	BRL	5.00 µg/l	1	"	"	"	"	"	
131-11-3	Dimethyl phthalate	BRL	5.00 µg/l	1	"	"	"	"	"	
105-67-9	2,4-Dimethylphenol	BRL	1.00 µg/l	1	"	"	"	"	"	
84-74-2	Di-n-butyl phthalate	BRL	5.00 µg/l	1	"	"	"	"	"	
534-52-1	4,6-Dinitro-2-methylphenol	BRL	1.00 µg/l	1	"	"	"	"	"	
51-28-5	2,4-Dinitrophenol	BRL	1.00 µg/l	1	"	"	"	"	"	
117-84-0	Di-n-octyl phthalate	BRL	5.00 µg/l	1	"	"	"	"	"	
206-44-0	Fluoranthene	BRL	1.00 µg/l	1	"	"	"	"	"	
86-73-7	Fluorene	BRL	5.00 µg/l	1	"	"	"	"	"	
193-39-5	Indeno (1,2,3-cd) pyrene	BRL	5.00 µg/l	1	"	"	"	"	"	
78-59-1	Isophorone	BRL	5.00 µg/l	1	"	"	"	"	"	
91-57-6	2-Methylnaphthalene	8.24	5.00 µg/l	1	"	"	"	"	"	
95-48-7	2-Methylphenol	BRL	1.00 µg/l	1	"	"	"	"	"	
108-39-4,106-43,4-	Methylphenol	2.16	1.00 µg/l	1	"	"	"	"	"	
91-20-3	Naphthalene	47.6	2.00 µg/l	1	"	"	"	"	"	
88-75-5	2-Nitrophenol	BRL	1.00 µg/l	1	"	"	"	"	"	
100-02-7	4-Nitrophenol	BRL	1.00 µg/l	1	"	"	"	"	"	
87-86-5	Pentachlorophenol	BRL	1.00 µg/l	1	"	"	"	"	"	
85-01-8	Phenanthrene	BRL	5.00 µg/l	1	"	"	"	"	"	
108-95-2	Phenol	BRL	1.00 µg/l	1	"	"	"	"	"	
129-00-0	Pyrene	BRL	5.00 µg/l	1	"	"	"	"	"	
110-86-1	Pyridine	BRL	5.00 µg/l	1	"	"	"	"	"	
95-95-4	2,4,5-Trichlorophenol	BRL	1.00 µg/l	1	"	"	"	"	"	
88-06-2	2,4,6-Trichlorophenol	BRL	1.00 µg/l	1	"	"	"	"	"	

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* Reportable Detection Limit

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Page 3 of 17

Sample Identification

Discharge Composite (MW-3 + MW-4)
SA35566-01

Client Project #
5167-03

Matrix
Ground Water

Collection Date/Time
11-Oct-05 00:00

Received
12-Oct-05

CAS No.	Analyte(s)	Result	*RDL/Units	Dilution	Method Ref.	Prepared	Analyzed	Batch	Analyst	Flag
Semivolatile Organic Compounds by GCMS										
<u>Semivolatile Organic Compounds by EPA 625</u>			Prepared by method		SW846 3535					
<i>Surrogate recoveries:</i>										
321-60-8	2-Fluorobiphenyl	61.2	30-130 %		EPA 625	13-Oct-05	14-Oct-05	5100744	M.B	
367-12-4	2-Fluorophenol	33.2	15-110 %		"	"	"	"	"	
4165-60-0	Nitrobenzene-d5	54.5	30-130 %		"	"	"	"	"	
4165-62-2	Phenol-d5	21.1	15-110 %		"	"	"	"	"	
1718-51-0	Terphenyl-d14	49.9	30-130 %		"	"	"	"	"	
118-79-6	2,4,6-Tribromophenol	68.7	15-110 %		"	"	"	"	"	
Total Metals by EPA 200 Series Methods										
7440-22-4	Silver	BRL	0.0050 mg/l	1	EPA 200.7	14-Oct-05	17-Oct-05	5100812	RE	
7440-38-2	Arsenic	0.0236	0.0040 mg/l	1	"	"	"	"	"	
7440-43-9	Cadmium	BRL	0.0012 mg/l	1	"	"	"	"	"	
7440-47-3	Chromium	BRL	0.0025 mg/l	1	"	"	"	"	"	
7440-50-8	Copper	BRL	0.0025 mg/l	1	"	"	"	"	"	
7439-89-6	Iron	9.20	0.0025 mg/l	1	"	"	"	"	"	
7439-97-6	Mercury	BRL	0.00020 mg/l	1	EPA 245.2/7470A	"	17-Oct-05	5100814	YP	
7440-02-0	Nickel	BRL	0.0025 mg/l	1	EPA 200.7	"	17-Oct-05	5100812	RE	
7439-92-1	Lead	BRL	0.0038 mg/l	1	"	"	"	"	"	
7440-36-0	Antimony	BRL	0.0060 mg/l	1	"	"	"	"	"	
7782-49-2	Selenium	BRL	0.0075 mg/l	1	"	"	"	"	"	
7440-66-6	Zinc	BRL	0.0100 mg/l	1	"	"	"	"	"	
General Chemistry Parameters										
1854-029-9	Hexavalent Chromium	BRL	0.025 mg/l	5	SM3500CrD/71 96A	12-Oct-05 18:15	12-Oct-05	5100740	ES	HT-3- R-01
57-12-5	Cyanide (total)	BRL	0.0100 mg/l	1	10-204-00-1-A / SW-846 9012A	13-Oct-05	13-Oct-05	5100828	JAK	
7782-50-5	Total Residual Chlorine	BRL	0.100 mg/l	5	Hach 8167	12-Oct-05 17:15	12-Oct-05	5100764	ES	HT-2- R-01
	Total Suspended Solids	49.0	5.00 mg/l	1	SM2540D	13-Oct-05	13-Oct-05	5100781	EK	

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5100867 - SW846 5030 Water MS									
Blank (5100867-BLK1)			Prepared & Analyzed: 14-Oct-05						
Acetone	BRL	10.0 µg/l							
Acrylonitrile	BRL	1.0 µg/l							
Benzene	BRL	0.5 µg/l							
Bromobenzene	BRL	1.0 µg/l							
Bromochloromethane	BRL	1.0 µg/l							
Bromodichloromethane	BRL	1.0 µg/l							
Bromoform	BRL	1.0 µg/l							
Bromomethane	BRL	2.0 µg/l							
2-Butanone (MEK)	BRL	10.0 µg/l							
n-Butylbenzene	BRL	1.0 µg/l							
sec-Butylbenzene	BRL	1.0 µg/l							
tert-Butylbenzene	BRL	1.0 µg/l							
Carbon disulfide	BRL	5.0 µg/l							
Carbon tetrachloride	BRL	0.5 µg/l							
Chlorobenzene	BRL	1.0 µg/l							
Chloroethane	BRL	2.0 µg/l							
Chloroform	BRL	1.0 µg/l							
Chloromethane	BRL	2.0 µg/l							
2-Chlorotoluene	BRL	1.0 µg/l							
4-Chlorotoluene	BRL	1.0 µg/l							
1,2-Dibromo-3-chloropropane	BRL	2.0 µg/l							
Dibromochloromethane	BRL	1.0 µg/l							
1,2-Dibromoethane (EDB)	BRL	1.0 µg/l							
Dibromomethane	BRL	1.0 µg/l							
1,2-Dichlorobenzene	BRL	0.5 µg/l							
1,3-Dichlorobenzene	BRL	0.5 µg/l							
1,4-Dichlorobenzene	BRL	0.5 µg/l							
Dichlorodifluoromethane (Freon12)	BRL	2.0 µg/l							
1,1-Dichloroethane	BRL	0.5 µg/l							
1,2-Dichloroethane	BRL	0.5 µg/l							
1,1-Dichloroethene	BRL	0.5 µg/l							
cis-1,2-Dichloroethene	BRL	0.5 µg/l							
trans-1,2-Dichloroethene	BRL	1.0 µg/l							
1,2-Dichloropropane	BRL	1.0 µg/l							
1,3-Dichloropropane	BRL	1.0 µg/l							
2,2-Dichloropropane	BRL	1.0 µg/l							
1,1-Dichloropropene	BRL	1.0 µg/l							
cis-1,3-Dichloropropene	BRL	1.0 µg/l							
trans-1,3-Dichloropropene	BRL	1.0 µg/l							
Ethylbenzene	BRL	0.5 µg/l							
Hexachlorobutadiene	BRL	1.0 µg/l							
2-Hexanone (MBK)	BRL	10.0 µg/l							
Isopropylbenzene	BRL	1.0 µg/l							
4-Isopropyltoluene	BRL	1.0 µg/l							
Methyl tert-butyl ether	BRL	0.5 µg/l							
4-Methyl-2-pentanone (MIBK)	BRL	10.0 µg/l							
Methylene chloride	BRL	1.0 µg/l							
Naphthalene	BRL	1.0 µg/l							
n-Propylbenzene	BRL	1.0 µg/l							
Styrene	BRL	1.0 µg/l							
1,1,1,2-Tetrachloroethane	BRL	1.0 µg/l							
1,1,2,2-Tetrachloroethane	BRL	1.0 µg/l							
Tetrachloroethene	BRL	0.5 µg/l							
Toluene	BRL	0.5 µg/l							

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Volatile Organic Compounds - Quality Control

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5100867 - SW846 5030 Water MS									
Blank (5100867-BLK1)			Prepared & Analyzed: 14-Oct-05						
1,2,3-Trichlorobenzene	BRL	1.0 µg/l							
1,2,4-Trichlorobenzene	BRL	1.0 µg/l							
1,1,1-Trichloroethane	BRL	0.5 µg/l							
1,1,2-Trichloroethane	BRL	0.5 µg/l							
Trichloroethene	BRL	0.5 µg/l							
Trichlorofluoromethane (Freon 11)	BRL	1.0 µg/l							
1,2,3-Trichloropropane	BRL	1.0 µg/l							
1,2,4-Trimethylbenzene	BRL	1.0 µg/l							
1,3,5-Trimethylbenzene	BRL	1.0 µg/l							
Vinyl chloride	BRL	0.5 µg/l							
m,p-Xylene	BRL	1.0 µg/l							
o-Xylene	BRL	0.5 µg/l							
Tetrahydrofuran	BRL	10.0 µg/l							
Ethyl ether	BRL	1.0 µg/l							
Tert-amyl methyl ether	BRL	0.5 µg/l							
Ethyl tert-butyl ether	BRL	1.0 µg/l							
Di-isopropyl ether	BRL	1.0 µg/l							
Tert-Butanol / butyl alcohol	BRL	10.0 µg/l							
1,4-Dioxane	BRL	20.0 µg/l							
Surrogate: 4-Bromofluorobenzene	50.0	µg/l	50.0		100	70-130			
Surrogate: Toluene-d8	56.1	µg/l	50.0		112	70-130			
Surrogate: 1,2-Dichloroethane-d4	56.0	µg/l	50.0		112	70-130			
Surrogate: Dibromofluoromethane	57.2	µg/l	50.0		114	70-130			
LCS (5100867-BS1)			Prepared & Analyzed: 14-Oct-05						
Acetone	12.3	µg/l	20.0		61.5	2.17-194			
Acrylonitrile	22.3	µg/l	20.0		112	70-130			
Benzene	25.6	µg/l	20.0		128	70-130			
Bromobenzene	20.2	µg/l	20.0		101	70-130			
Bromochloromethane	25.8	µg/l	20.0		129	70-130			
Bromodichloromethane	26.3	µg/l	20.0		132	70-130			QC-1
Bromoform	18.3	µg/l	20.0		91.5	70-130			
Bromomethane	22.0	µg/l	20.0		110	61.9-145			
2-Butanone (MEK)	14.4	µg/l	20.0		72.0	14.9-165			
n-Butylbenzene	16.6	µg/l	20.0		83.0	70-130			
sec-Butylbenzene	19.4	µg/l	20.0		97.0	70-130			
tert-Butylbenzene	18.6	µg/l	20.0		93.0	70-130			
Carbon disulfide	23.8	µg/l	20.0		119	70-130			
Carbon tetrachloride	26.3	µg/l	20.0		132	70-130			QC-1
Chlorobenzene	20.4	µg/l	20.0		102	70-130			
Chloroethane	25.6	µg/l	20.0		128	64.4-134			
Chloroform	25.6	µg/l	20.0		128	70-130			
Chloromethane	27.5	µg/l	20.0		138	70-130			QC-1
2-Chlorotoluene	21.5	µg/l	20.0		108	70-130			
4-Chlorotoluene	21.1	µg/l	20.0		106	70-130			
1,2-Dibromo-3-chloropropane	17.9	µg/l	20.0		89.5	70-130			
Dibromochloromethane	26.6	µg/l	20.0		133	45.3-146			
1,2-Dibromoethane (EDB)	25.8	µg/l	20.0		129	70-130			
Dibromomethane	25.4	µg/l	20.0		127	70-130			
1,2-Dichlorobenzene	19.2	µg/l	20.0		96.0	70-130			
1,3-Dichlorobenzene	20.9	µg/l	20.0		104	70-130			
1,4-Dichlorobenzene	18.5	µg/l	20.0		92.5	70-130			
Dichlorodifluoromethane (Freon12)	33.8	µg/l	20.0		169	49.6-201			
1,1-Dichloroethane	25.0	µg/l	20.0		125	70-130			
1,2-Dichloroethane	25.0	µg/l	20.0		125	70-130			

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* Reportable Detection Limit

BRL = Below Reporting Limit

Volatile Organic Compounds - Quality Control

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5100867 - SW846 5030 Water MS									
LCS (5100867-BS1)			Prepared & Analyzed: 14-Oct-05						
1,1-Dichloroethene	23.6	µg/l	20.0		118	70-130			
cis-1,2-Dichloroethene	26.0	µg/l	20.0		130	70-130			
trans-1,2-Dichloroethene	22.5	µg/l	20.0		112	70-130			
1,2-Dichloropropane	25.6	µg/l	20.0		128	70-130			
1,3-Dichloropropane	25.8	µg/l	20.0		129	70-130			
2,2-Dichloropropane	24.2	µg/l	20.0		121	70-130			
1,1-Dichloropropene	25.1	µg/l	20.0		126	70-130			
cis-1,3-Dichloropropene	25.4	µg/l	20.0		127	70-130			
trans-1,3-Dichloropropene	24.8	µg/l	20.0		124	70-130			
Ethylbenzene	20.9	µg/l	20.0		104	70-130			
Hexachlorobutadiene	19.4	µg/l	20.0		97.0	68.6-137			
2-Hexanone (MBK)	17.2	µg/l	20.0		86.0	70-130			
Isopropylbenzene	20.5	µg/l	20.0		102	70-130			
4-Isopropyltoluene	18.7	µg/l	20.0		93.5	70-130			
Methyl tert-butyl ether	25.4	µg/l	20.0		127	70-130			
4-Methyl-2-pentanone (MIBK)	24.7	µg/l	20.0		124	48.6-137			
Methylene chloride	24.3	µg/l	20.0		122	70-130			
Naphthalene	17.8	µg/l	20.0		89.0	70-130			
n-Propylbenzene	18.5	µg/l	20.0		92.5	70-130			
Styrene	17.9	µg/l	20.0		89.5	70-130			
1,1,1,2-Tetrachloroethane	20.5	µg/l	20.0		102	70-130			
1,1,2,2-Tetrachloroethane	19.8	µg/l	20.0		99.0	70-130			
Tetrachloroethene	25.4	µg/l	20.0		127	70-130			
Toluene	25.1	µg/l	20.0		126	70-130			
1,2,3-Trichlorobenzene	19.7	µg/l	20.0		98.5	70-130			
1,2,4-Trichlorobenzene	18.6	µg/l	20.0		93.0	70-130			
1,1,1-Trichloroethane	25.5	µg/l	20.0		128	70-130			
1,1,2-Trichloroethane	25.7	µg/l	20.0		128	70-130			
Trichloroethene	25.5	µg/l	20.0		128	70-130			
Trichlorofluoromethane (Freon 11)	26.0	µg/l	20.0		130	67.9-143			
1,2,3-Trichloropropane	19.9	µg/l	20.0		99.5	70-130			
1,2,4-Trimethylbenzene	18.6	µg/l	20.0		93.0	70-130			
1,3,5-Trimethylbenzene	18.3	µg/l	20.0		91.5	70-130			
Vinyl chloride	25.8	µg/l	20.0		129	70-130			
m,p-Xylene	40.1	µg/l	40.0		100	70-130			
o-Xylene	20.1	µg/l	20.0		100	70-130			
Tetrahydrofuran	23.2	µg/l	20.0		116	70-130			
Ethyl ether	23.7	µg/l	20.0		118	70-136			
Tert-amyl methyl ether	25.0	µg/l	20.0		125	70-130			
Ethyl tert-butyl ether	26.3	µg/l	20.0		132	70-130			QC-1
Di-isopropyl ether	25.7	µg/l	20.0		128	70-130			
Tert-Butanol / butyl alcohol	225	µg/l	200		112	70-130			
1,4-Dioxane	225	µg/l	200		112	36.5-156			
Surrogate: 4-Bromofluorobenzene	53.1	µg/l	50.0		106	70-130			
Surrogate: Toluene-d8	56.8	µg/l	50.0		114	70-130			
Surrogate: 1,2-Dichloroethane-d4	51.7	µg/l	50.0		103	70-130			
Surrogate: Dibromofluoromethane	54.8	µg/l	50.0		110	70-130			

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* Reportable Detection Limit

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Page 7 of 17

Extractable Petroleum Hydrocarbons - Quality Control

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5100891 - SW846 3510C									
Blank (5100891-BLK1)			Prepared: 14-Oct-05 Analyzed: 16-Oct-05						
Non-polar material (SGT-HEM)	BRL	1.0 mg/l							
LCS (5100891-BS1)			Prepared: 14-Oct-05 Analyzed: 16-Oct-05						
Non-polar material (SGT-HEM)	29.7	mg/l	33.0		90.0	0-200			

Semivolatile Organic Compounds by GC - Quality Control

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5100743 - SW846 3535									
Blank (5100743-BLK1)			Prepared & Analyzed: 13-Oct-05						
PCB 1016	BRL	0.200 µg/l							
PCB 1221	BRL	0.200 µg/l							
PCB 1232	BRL	0.200 µg/l							
PCB 1242	BRL	0.200 µg/l							
PCB 1248	BRL	0.200 µg/l							
PCB 1254	BRL	0.200 µg/l							
PCB 1260	BRL	0.200 µg/l							
PCB 1262	BRL	0.200 µg/l							
PCB 1268	BRL	0.200 µg/l							
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	0.140	µg/l	0.200		70.0	30-150			
Surrogate: Decachlorobiphenyl (Sr)	0.190	µg/l	0.200		95.0	30-150			
LCS (5100743-BS1)			Prepared & Analyzed: 13-Oct-05						
PCB 1016	2.48	0.200 µg/l	2.50		99.2	40-140			
PCB 1260	2.36	0.200 µg/l	2.50		94.4	40-140			
Surrogate: 4,4-DB-Octafluorobiphenyl (Sr)	0.120	µg/l	0.200		60.0	30-150			
Surrogate: Decachlorobiphenyl (Sr)	0.210	µg/l	0.200		105	30-150			

Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5100744 - SW846 3535									
Blank (5100744-BLK1)			Prepared & Analyzed: 13-Oct-05						
Acenaphthene	BRL	5.00 µg/l							
Acenaphthylene	BRL	5.00 µg/l							
Aniline	BRL	5.00 µg/l							
Anthracene	BRL	5.00 µg/l							
Azobenzene/Diphenyldiazine	BRL	5.00 µg/l							
Benzidine	BRL	5.00 µg/l							
Benzo (a) anthracene	BRL	5.00 µg/l							
Benzo (a) pyrene	BRL	5.00 µg/l							
Benzo (b) fluoranthene	BRL	5.00 µg/l							
Benzo (g,h,i) perylene	BRL	5.00 µg/l							
Benzo (k) fluoranthene	BRL	5.00 µg/l							
Benzoic acid	BRL	5.00 µg/l							
Benzyl alcohol	BRL	5.00 µg/l							
Bis(2-chloroethoxy)methane	BRL	5.00 µg/l							
Bis(2-chloroethyl)ether	BRL	5.00 µg/l							
Bis(2-chloroisopropyl)ether	BRL	5.00 µg/l							
Bis(2-ethylhexyl)phthalate	BRL	5.00 µg/l							
4-Bromophenyl phenyl ether	BRL	5.00 µg/l							
Butyl benzyl phthalate	BRL	5.00 µg/l							
Carbazole	BRL	5.00 µg/l							
4-Chloro-3-methylphenol	BRL	5.00 µg/l							
4-Chloroaniline	BRL	5.00 µg/l							
2-Chloronaphthalene	BRL	5.00 µg/l							
2-Chlorophenol	BRL	5.00 µg/l							
4-Chlorophenyl phenyl ether	BRL	5.00 µg/l							
Chrysene	BRL	5.00 µg/l							
Dibenzo (a,h) anthracene	BRL	5.00 µg/l							
Dibenzofuran	BRL	5.00 µg/l							
1,2-Dichlorobenzene	BRL	5.00 µg/l							
1,3-Dichlorobenzene	BRL	5.00 µg/l							
1,4-Dichlorobenzene	BRL	5.00 µg/l							
3,3'-Dichlorobenzidine	BRL	5.00 µg/l							
2,4-Dichlorophenol	BRL	5.00 µg/l							
Diethyl phthalate	BRL	5.00 µg/l							
Dimethyl phthalate	BRL	5.00 µg/l							
2,4-Dimethylphenol	BRL	5.00 µg/l							
Di-n-butyl phthalate	BRL	5.00 µg/l							
4,6-Dinitro-2-methylphenol	BRL	5.00 µg/l							
2,4-Dinitrophenol	BRL	5.00 µg/l							
2,4-Dinitrotoluene	BRL	5.00 µg/l							
2,6-Dinitrotoluene	BRL	5.00 µg/l							
Di-n-octyl phthalate	BRL	5.00 µg/l							
Fluoranthene	BRL	5.00 µg/l							
Fluorene	BRL	5.00 µg/l							
Hexachlorobenzene	BRL	5.00 µg/l							
Hexachlorobutadiene	BRL	5.00 µg/l							
Hexachlorocyclopentadiene	BRL	5.00 µg/l							
Hexachloroethane	BRL	5.00 µg/l							
Indeno (1,2,3-cd) pyrene	BRL	5.00 µg/l							
Isophorone	BRL	5.00 µg/l							
2-Methylnaphthalene	BRL	5.00 µg/l							
2-Methylphenol	BRL	5.00 µg/l							
3,4-Methylphenol	BRL	10.0 µg/l							
Naphthalene	BRL	5.00 µg/l							

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* Reportable Detection Limit

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Page 9 of 17

Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5100744 - SW846 3535									
Blank (5100744-BLK1)			Prepared & Analyzed: 13-Oct-05						
2-Nitroaniline	BRL	5.00 µg/l							
3-Nitroaniline	BRL	5.00 µg/l							
4-Nitroaniline	BRL	5.00 µg/l							
Nitrobenzene	BRL	5.00 µg/l							
2-Nitrophenol	BRL	5.00 µg/l							
4-Nitrophenol	BRL	5.00 µg/l							
N-Nitrosodimethylamine	BRL	5.00 µg/l							
N-Nitrosodi-n-propylamine	BRL	5.00 µg/l							
N-Nitrosodiphenylamine	BRL	5.00 µg/l							
Pentachlorophenol	BRL	5.00 µg/l							
Phenanthrene	BRL	5.00 µg/l							
Phenol	BRL	5.00 µg/l							
Pyrene	BRL	5.00 µg/l							
Pyridine	BRL	5.00 µg/l							
1,2,4-Trichlorobenzene	BRL	5.00 µg/l							
2,4,5-Trichlorophenol	BRL	5.00 µg/l							
2,4,6-Trichlorophenol	BRL	5.00 µg/l							
Surrogate: 2-Fluorobiphenyl	68.0	µg/l	100		68.0	30-130			
Surrogate: 2-Fluorophenol	67.5	µg/l	100		67.5	15-110			
Surrogate: Nitrobenzene-d5	61.5	µg/l	100		61.5	30-130			
Surrogate: Phenol-d5	59.9	µg/l	100		59.9	15-110			
Surrogate: Terphenyl-d14	79.2	µg/l	100		79.2	30-130			
Surrogate: 2,4,6-Tribromophenol	68.3	µg/l	100		68.3	15-110			
LCS (5100744-BS1)			Prepared & Analyzed: 13-Oct-05						
Acenaphthene	69.6	5.00 µg/l	100		69.6	40-140			
Acenaphthylene	68.6	5.00 µg/l	100		68.6	40-140			
Aniline	49.9	5.00 µg/l	100		49.9	40-140			
Anthracene	72.4	5.00 µg/l	100		72.4	40-140			
Azobenzene/Diphenyldiazine	66.4	5.00 µg/l	100		66.4	40-140			
Benzidine	33.0	5.00 µg/l	100		33.0	40-140			QC-2
Benzo (a) anthracene	75.2	5.00 µg/l	100		75.2	40-140			
Benzo (a) pyrene	79.3	5.00 µg/l	100		79.3	40-140			
Benzo (b) fluoranthene	76.7	5.00 µg/l	100		76.7	40-140			
Benzo (g,h,i) perylene	81.1	5.00 µg/l	100		81.1	40-140			
Benzo (k) fluoranthene	76.9	5.00 µg/l	100		76.9	40-140			
Benzoic acid	68.2	5.00 µg/l	100		68.2	30-130			
Benzyl alcohol	57.2	5.00 µg/l	100		57.2	40-140			
Bis(2-chloroethoxy)methane	66.7	5.00 µg/l	100		66.7	40-140			
Bis(2-chloroethyl)ether	47.4	5.00 µg/l	100		47.4	40-140			
Bis(2-chloroisopropyl)ether	57.1	5.00 µg/l	100		57.1	40-140			
Bis(2-ethylhexyl)phthalate	82.1	5.00 µg/l	100		82.1	40-140			
4-Bromophenyl phenyl ether	73.0	5.00 µg/l	100		73.0	40-140			
Butyl benzyl phthalate	80.0	5.00 µg/l	100		80.0	40-140			
Carbazole	69.3	5.00 µg/l	100		69.3	0-200			
4-Chloro-3-methylphenol	80.4	5.00 µg/l	100		80.4	30-130			
4-Chloroaniline	63.8	5.00 µg/l	100		63.8	40-140			
2-Chloronaphthalene	65.2	5.00 µg/l	100		65.2	40-140			
2-Chlorophenol	60.9	5.00 µg/l	100		60.9	30-130			
4-Chlorophenyl phenyl ether	72.2	5.00 µg/l	100		72.2	40-140			
Chrysene	75.4	5.00 µg/l	100		75.4	40-140			
Dibenzo (a,h) anthracene	88.2	5.00 µg/l	100		88.2	40-140			
Dibenzofuran	71.0	5.00 µg/l	100		71.0	40-140			
1,2-Dichlorobenzene	57.7	5.00 µg/l	100		57.7	40-140			
1,3-Dichlorobenzene	56.1	5.00 µg/l	100		56.1	40-140			

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* Reportable Detection Limit

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Semivolatile Organic Compounds by GCMS - Quality Control

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5100744 - SW846 3535									
LCS (5100744-BS1)					Prepared & Analyzed: 13-Oct-05				
1,4-Dichlorobenzene	55.5	5.00 µg/l	100		55.5	40-140			
3,3'-Dichlorobenzidine	77.4	5.00 µg/l	100		77.4	40-140			
2,4-Dichlorophenol	70.6	5.00 µg/l	100		70.6	30-130			
Diethyl phthalate	78.5	5.00 µg/l	100		78.5	40-140			
Dimethyl phthalate	76.0	5.00 µg/l	100		76.0	40-140			
2,4-Dimethylphenol	68.8	5.00 µg/l	100		68.8	30-130			
Di-n-butyl phthalate	73.5	5.00 µg/l	100		73.5	40-140			
4,6-Dinitro-2-methylphenol	99.7	5.00 µg/l	100		99.7	30-130			
2,4-Dinitrophenol	99.0	5.00 µg/l	100		99.0	30-130			
2,4-Dinitrotoluene	90.0	5.00 µg/l	100		90.0	40-140			
2,6-Dinitrotoluene	88.6	5.00 µg/l	100		88.6	40-140			
Di-n-octyl phthalate	81.7	5.00 µg/l	100		81.7	40-140			
Fluoranthene	74.1	5.00 µg/l	100		74.1	40-140			
Fluorene	72.8	5.00 µg/l	100		72.8	40-140			
Hexachlorobenzene	73.4	5.00 µg/l	100		73.4	40-140			
Hexachlorobutadiene	62.1	5.00 µg/l	100		62.1	40-140			
Hexachlorocyclopentadiene	47.7	5.00 µg/l	100		47.7	40-140			
Hexachloroethane	56.5	5.00 µg/l	100		56.5	40-140			
Indeno (1,2,3-cd) pyrene	80.0	5.00 µg/l	100		80.0	40-140			
Isophorone	69.5	5.00 µg/l	100		69.5	40-140			
2-Methylnaphthalene	68.1	5.00 µg/l	100		68.1	40-140			
2-Methylphenol	63.9	5.00 µg/l	100		63.9	40-140			
3,4-Methylphenol	53.6	10.0 µg/l	100		53.6	40-140			
Naphthalene	64.7	5.00 µg/l	100		64.7	40-140			
2-Nitroaniline	77.5	5.00 µg/l	100		77.5	40-140			
3-Nitroaniline	77.0	5.00 µg/l	100		77.0	40-140			
4-Nitroaniline	81.9	5.00 µg/l	100		81.9	40-140			
Nitrobenzene	62.2	5.00 µg/l	100		62.2	40-140			
2-Nitrophenol	71.7	5.00 µg/l	100		71.7	30-130			
4-Nitrophenol	63.7	5.00 µg/l	100		63.7	30-130			
N-Nitrosodimethylamine	63.8	5.00 µg/l	100		63.8	40-140			
N-Nitrosodi-n-propylamine	63.8	5.00 µg/l	100		63.8	40-140			
N-Nitrosodiphenylamine	76.5	5.00 µg/l	100		76.5	40-140			
Pentachlorophenol	101	5.00 µg/l	100		101	30-130			
Phenanthrene	71.2	5.00 µg/l	100		71.2	40-140			
Phenol	62.5	5.00 µg/l	100		62.5	30-130			
Pyrene	72.6	5.00 µg/l	100		72.6	40-140			
Pyridine	48.9	5.00 µg/l	100		48.9	40-140			
1,2,4-Trichlorobenzene	62.4	5.00 µg/l	100		62.4	40-140			
2,4,5-Trichlorophenol	74.0	5.00 µg/l	100		74.0	30-130			
2,4,6-Trichlorophenol	71.0	5.00 µg/l	100		71.0	30-130			
Surrogate: 2-Fluorobiphenyl	64.9	µg/l	100		64.9	30-130			
Surrogate: 2-Fluorophenol	55.0	µg/l	100		55.0	15-110			
Surrogate: Nitrobenzene-d5	61.6	µg/l	100		61.6	30-130			
Surrogate: Phenol-d5	47.8	µg/l	100		47.8	15-110			
Surrogate: Terphenyl-d14	77.3	µg/l	100		77.3	30-130			
Surrogate: 2,4,6-Tribromophenol	85.6	µg/l	100		85.6	15-110			

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* Reportable Detection Limit

BRL = Below Reporting Limit

Page 11 of 17

Total Metals by EPA 200 Series Methods - Quality Control

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5100812 - EPA 200 Series									
Blank (5100812-BLK1)			Prepared: 14-Oct-05 Analyzed: 17-Oct-05						
Zinc	BRL	0.0100 mg/l							
Iron	BRL	0.0700 mg/l							
Nickel	BRL	0.0025 mg/l							
Lead	BRL	0.0038 mg/l							
Antimony	BRL	0.0060 mg/l							
Selenium	BRL	0.0075 mg/l							
Silver	BRL	0.0050 mg/l							
Copper	BRL	0.0025 mg/l							
Chromium	BRL	0.0025 mg/l							
Cadmium	BRL	0.0012 mg/l							
Arsenic	BRL	0.0040 mg/l							
LCS (5100812-BS1)			Prepared: 14-Oct-05 Analyzed: 17-Oct-05						
Nickel	0.0990	0.0025 mg/l	0.100		99.0	85-115			
Iron	0.108	0.0025 mg/l	0.100		108	85-115			
Lead	0.101	0.0038 mg/l	0.100		101	85-115			
Selenium	0.0924	0.0075 mg/l	0.100		92.4	85-115			
Zinc	0.0980	0.0025 mg/l	0.100		98.0	85-115			
Antimony	0.0895	0.0060 mg/l	0.100		89.5	85-115			
Copper	0.101	0.0025 mg/l	0.100		101	85-115			
Chromium	0.0972	0.0025 mg/l	0.100		97.2	85-115			
Cadmium	0.0965	0.0012 mg/l	0.100		96.5	85-115			
Arsenic	0.0943	0.0040 mg/l	0.100		94.3	85-115			
Silver	0.0476	0.0050 mg/l	0.0500		95.2	85-115			
Duplicate (5100812-DUP1)			Source: SA35566-01		Prepared: 14-Oct-05 Analyzed: 17-Oct-05				
Nickel	BRL	0.0025 mg/l		BRL				20	
Zinc	BRL	0.0100 mg/l		0.0073			6.62	20	
Selenium	BRL	0.0075 mg/l		BRL				20	
Lead	BRL	0.0038 mg/l		BRL				20	
Iron	9.55	0.0025 mg/l		9.20			3.73	20	
Antimony	BRL	0.0060 mg/l		BRL				20	
Silver	BRL	0.0050 mg/l		BRL				20	
Copper	BRL	0.0025 mg/l		BRL				20	
Chromium	BRL	0.0025 mg/l		BRL				20	
Cadmium	BRL	0.0012 mg/l		BRL				20	
Arsenic	0.0215	0.0040 mg/l		0.0236			9.31	20	
Matrix Spike (5100812-MS1)			Source: SA35255-04		Prepared: 14-Oct-05 Analyzed: 17-Oct-05				
Selenium	0.0686	0.0075 mg/l	0.100	BRL	68.6	70-130			QM-07
Zinc	0.125	0.0025 mg/l	0.100	0.0668	58.2	70-130			QM-07
Antimony	0.0572	0.0060 mg/l	0.100	BRL	57.2	70-130			QM-07
Lead	0.0612	0.0038 mg/l	0.100	BRL	61.2	70-130			QM-07
Nickel	0.0644	0.0025 mg/l	0.100	0.0021	62.3	70-130			QM-07
Iron	0.128	0.0025 mg/l	0.100	0.0683	59.7	70-130			QM-07
Silver	0.0305	0.0050 mg/l	0.0500	BRL	61.0	70-130			QM-07
Arsenic	0.0700	0.0040 mg/l	0.100	BRL	70.0	70-130			
Cadmium	0.0647	0.0012 mg/l	0.100	BRL	64.7	70-130			QM-07
Chromium	0.0651	0.0025 mg/l	0.100	BRL	65.1	70-130			QM-07
Copper	0.0652	0.0025 mg/l	0.100	0.0008	64.4	70-130			QM-07
Matrix Spike Dup (5100812-MSD1)			Source: SA35255-04		Prepared: 14-Oct-05 Analyzed: 17-Oct-05				
Zinc	0.130	0.0025 mg/l	0.100	0.0668	63.2	70-130	3.92	20	QM-07
Selenium	0.0771	0.0075 mg/l	0.100	BRL	77.1	70-130	11.7	20	QM-07
Antimony	0.0609	0.0060 mg/l	0.100	BRL	60.9	70-130	6.27	20	QM-07
Lead	0.0663	0.0038 mg/l	0.100	BRL	66.3	70-130	8.00	20	QM-07

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

* Reportable Detection Limit

BRL = Below Reporting Limit

Total Metals by EPA 200 Series Methods - Quality Control

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5100812 - EPA 200 Series									
Matrix Spike Dup (5100812-MSD1)	Source: SA35255-04		Prepared: 14-Oct-05 Analyzed: 17-Oct-05						
Nickel	0.0676	0.0025 mg/l	0.100	0.0021	65.5	70-130	4.85	20	QM-07
Iron	0.138	0.0025 mg/l	0.100	0.0683	69.7	70-130	7.52	20	QM-07
Cadmium	0.0678	0.0012 mg/l	0.100	BRL	67.8	70-130	4.68	20	QM-07
Silver	0.0340	0.0050 mg/l	0.0500	BRL	68.0	70-130	10.9	20	QM-07
Chromium	0.0686	0.0025 mg/l	0.100	BRL	68.6	70-130	5.24	20	QM-07
Arsenic	0.0738	0.0040 mg/l	0.100	BRL	73.8	70-130	5.29	20	
Copper	0.0692	0.0025 mg/l	0.100	0.0008	68.4	70-130	5.95	20	QM-07
Batch 5100814 - EPA200/SW7000 Series									
Blank (5100814-BLK1)	Prepared: 14-Oct-05 Analyzed: 17-Oct-05								
Mercury	BRL	0.00020 mg/l							
LCS (5100814-BS1)	Prepared: 14-Oct-05 Analyzed: 17-Oct-05								
Mercury	0.00291	0.00020 mg/l	0.00250		116	80-120			
Duplicate (5100814-DUP1)	Source: SA35263-08		Prepared: 14-Oct-05 Analyzed: 17-Oct-05						
Mercury	BRL	0.00020 mg/l		0.00010	20				
Matrix Spike (5100814-MS1)	Source: SA35567-01		Prepared: 14-Oct-05 Analyzed: 17-Oct-05						
Mercury	0.00329	0.00020 mg/l	0.00250	BRL	132	75-125	QM-07		
Matrix Spike Dup (5100814-MSD1)	Source: SA35567-01		Prepared: 14-Oct-05 Analyzed: 17-Oct-05						
Mercury	0.00322	0.00020 mg/l	0.00250	BRL	129	75-125	2.15	20	QM-07

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

* Reportable Detection Limit

BRL = Below Reporting Limit

General Chemistry Parameters - Quality Control

Analyte(s)	Result	*RDL Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Flag
Batch 5100740 - General Preparation									
Blank (5100740-BLK1)	Prepared & Analyzed: 12-Oct-05								
Hexavalent Chromium	BRL	0.005 mg/l							
LCS (5100740-BS1)	Prepared & Analyzed: 12-Oct-05								
Hexavalent Chromium	0.049	0.005 mg/l	0.0500		98.0	90-110			
Duplicate (5100740-DUP1)	Source: SA35567-01		Prepared & Analyzed: 12-Oct-05						
Hexavalent Chromium	BRL	0.005 mg/l		BRL				20	
Matrix Spike (5100740-MS1)	Source: SA35567-01		Prepared & Analyzed: 12-Oct-05						
Hexavalent Chromium	0.050	0.005 mg/l	0.0500	BRL	100	80-120			
Reference (5100740-SRM1)	Prepared & Analyzed: 12-Oct-05								
Hexavalent Chromium	0.027	0.005 mg/l	0.0250		108	85-115			
Batch 5100764 - General Preparation									
Blank (5100764-BLK1)	Prepared & Analyzed: 12-Oct-05								
Total Residual Chlorine	BRL	0.020 mg/l							
LCS (5100764-BS1)	Prepared & Analyzed: 12-Oct-05								
Total Residual Chlorine	0.048	0.020 mg/l	0.0500		96.0	90-110			
Duplicate (5100764-DUP1)	Source: SA35567-01		Prepared & Analyzed: 12-Oct-05						
Total Residual Chlorine	BRL	0.020 mg/l		0.005			0.00	20	
Matrix Spike (5100764-MS1)	Source: SA35567-01		Prepared & Analyzed: 12-Oct-05						
Total Residual Chlorine	0.049	0.020 mg/l	0.0500	0.005	88.0	80-120			
Reference (5100764-SRM1)	Prepared & Analyzed: 12-Oct-05								
Total Residual Chlorine	0.103	0.020 mg/l	0.107		96.3	85-115			
Batch 5100781 - General Preparation									
Blank (5100781-BLK1)	Prepared & Analyzed: 13-Oct-05								
Total Suspended Solids	BRL	5.00 mg/l							
Duplicate (5100781-DUP1)	Source: SA35495-02		Prepared & Analyzed: 13-Oct-05						
Total Suspended Solids	496	20.0 mg/l		488			1.63	20	
Duplicate (5100781-DUP2)	Source: SA35566-01		Prepared & Analyzed: 13-Oct-05						
Total Suspended Solids	49.0	5.00 mg/l		49.0			0.00	20	
Reference (5100781-SRM1)	Prepared & Analyzed: 13-Oct-05								
Total Suspended Solids	92.0	10.0 mg/l	95.3		96.5	90-110			
Batch 5100828 - General Preparation									
Blank (5100828-BLK1)	Prepared & Analyzed: 13-Oct-05								
Cyanide (total)	BRL	0.0100 mg/l							
Blank (5100828-BLK2)	Prepared & Analyzed: 13-Oct-05								
Cyanide (total)	BRL	0.0100 mg/l							
LCS (5100828-BS1)	Prepared & Analyzed: 13-Oct-05								
Cyanide (total)	0.302	0.0100 mg/l	0.300		101	90-110			
LCS (5100828-BS2)	Prepared & Analyzed: 13-Oct-05								
Cyanide (total)	0.299	0.0100 mg/l	0.300		99.7	90-110			
Matrix Spike (5100828-MS1)	Source: SA35338-01		Prepared & Analyzed: 13-Oct-05						
Cyanide (total)	0.301	0.0100 mg/l	0.300	BRL	100	75-125			
Matrix Spike Dup (5100828-MSD1)	Source: SA35338-01		Prepared & Analyzed: 13-Oct-05						
Cyanide (total)	0.296	0.0100 mg/l	0.300	BRL	98.7	75-125	1.68	20	
Reference (5100828-SRM1)	Prepared & Analyzed: 13-Oct-05								
Cyanide (total)	0.337	0.0100 mg/l	0.333		101	75.7-125			

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

* Reportable Detection Limit

BRL = Below Reporting Limit

Notes and Definitions

HT-2	This sample was received outside the EPA recommended holding time for the analysis specified.
HT-3	The collection time was not indicated on the chain of custody. Therefore, the analysis hold time can not be verified.
QC-1	Analyte out of acceptance range.
QC-2	Analyte out of acceptance range in QC spike but no reportable concentration present in sample.
QM-07	The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on acceptable LCS recovery.
R-01	The Reporting Limit for this analyte has been raised to account for matrix interference.
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.

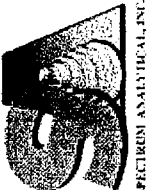
Method Blank: An analyte-free matrix to which all reagents are added in the same volumes or proportions as used in sample processing. The method blank should be carried through the complete sample preparation and analytical procedure. The method blank is used to document contamination resulting from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

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



SPECTRUM ANALYTICAL, INC.
Pawtucket
RHODE ISLAND

CHAIN OF CUSTODY RECORD

Page 1 of 1

Report To: CEA
107 Wickford Street
Wickford, RI, 02896

Invoice To: _____

P.O. No.: _____ RQN: _____

Project No.: S167-03
Site Name: Sunoco Weymouth
Location: 671 Main Street Weymouth, MA
Sampler(s): W-1065

Project Mgr.: Scott Vandenberg

1-Na₂SO₃ 2-HCl 3-H₂SO₄ 4-HNO₃ 5-NaOH 6-Ascorbic Acid
7-CH₃OH 8-NaHSO₄ 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: SSS60-01 Sample Id: Plastic Date: 10/11/05 Time: _____

Type: C Matrix: GW

Containers: # of VOA Vials 4 # of Amber Glass 3 # of Clear Glass 3 # of Plastic 3

Analyses:

QA Reporting Notes: (check if needed)

State specific reporting standards if applicable, please list below:

☐ Provide MCP CAM Report Were all field QC requirements met as per MADEP CAM Section 2.4?

☐ Yes ☐ No (Response required for CAM report)

* See Attached List

☒ Fax results when available to (SOE) 635-8812

☐ E-mail to _____

EDD Format _____

Condition upon receipt: ☐ Iced ☐ Ambient ☒ Other

Relinquished by: Scott Vandenberg

Received by: Chris Thompson

Date: 10/12/05 Time: 12:20

Date: 10/12/05 Time: 14:15

Existing NPDES Permit Exclusion



**U.S. ENVIRONMENTAL PROTECTION AGENCY****New England****1 Congress Street****Suite 1100****Boston, MA 02114-2023****Telephone: (617) 918-1649****FAX: (617) 918-1505**

5/27/05 (11:10)

TO: Mr. Matt Dowling**OFFICE:** CEA**TELEPHONE:** _____**FROM:** Michael J. O'Brien, Municipal Permits Br.**TELEPHONE:** 617-918-1649**Subject:** NPOES Permit Exclusion Letter for (former) Sunoco Service Station
Winchester**Comments:** 4 pages follow.

**UNITED STATES ENVIRONMENTAL PROTECTION AGENCY**

REGION 1

1 CONGRESS STREET, SUITE 1100
BOSTON, MASSACHUSETTS 02114-2023

DATE: May 27, 2005

Mr. William J. Brochu
Sunoco, Inc. (R & M)
P. O. Box 1262
Westborough, MA 01581

AND

Mr. Matthew J. Dowling
Senior Hydrogeologist
Corporate Environmental Advisors, Inc.
127 Hartwell Street
West Boylston, Massachusetts 01583Re: (former) Sunoco Service Station
671 Main Street
Winchester, Massachusetts**NPDES Exclusion #MA-05I-064**

Dear Mr. Brochu and Mr. Dowling:

As of June 3, 2002, the On-Scene Coordinators (OSC's) in the Emergency Planning & Response Branch of EPA-New England (EPA-NE) have no longer been issuing National Pollutant Discharge Elimination (NPDES) Permit "Exclusion" letters in the states of Massachusetts and New Hampshire. EPA is, however, still the permitting authority for point source water discharge permits in these two states. Since the early 90's, EPA-NE granted exclusions to the NPDES permit process under the authority of Section 122.3(d) of the NPDES regulations to allow expedited testing and cleanup of contaminated sites for which a discharge of groundwater and incidental surface water was required following appropriate treatment. This process was necessary due to the large number of cleanups requiring permits and the time-frame necessary to issue individual NPDES permits.

Exclusion letters were developed for each site following submission and review of an application with various site information, test data, treatment type, and other facts. Discharge effluent limits, monitoring requirements and other special conditions were set out in the letters signed by the OSC in charge. Exclusion letters are now issued by the Municipal Permits Branch of the NPDES Program and signed by the Associate Director of that branch.

We are in the process of developing a new General NPDES Permit to cover short and long term discharges from remediation activities. We expect the lead time needed to become covered by the General Permit to be about the same as the current exclusion waiver process. We hope to have the General Permit published in the Federal Register as final and effective in the near future. Until the effective date of the new General Permit, EPA-NE is requesting that you provide treatment of any such discharges to waters of the United States consistent with the limits and other requirements traditionally established in the Exclusion letters process.

Please refer to "Attachment A" to this letter for the interim requirements for discharge.

Toll Free • 1-888-372-7341

Internet Address (URL) • <http://www.epa.gov/region1>

Recycled/Recyclable • Printed with Vegetable Oil Based Inks on Recycled Paper (Minimum 30% Postconsumer)

If you have any questions or concerns about this process please contact Michael J. O'Brien of the NPDES Program at (617) 918-1649. Additional contacts for the NPDES Program include Olga Vergara for MA issues at (617) 918-1519 and Shelley Puleo for NH issues at (617) 918-1545. Thank you for your cooperation as we develop this new permit.

Sincerely yours,


Roger Tanson, Associate Director
MUNICIPAL PERMITS BRANCH

cc. State of MA/or
State of NH

******(former) Sunoco Service Station******
671 Main Street
Winchester, Massachusetts

ATTACHMENT A

The discharge(s) referenced in the accompanying letter must be in accordance with the following provisions:

1. No discharge of oil, sufficient to cause a sheen (as defined in 40 CFR 110), occurs to the drainage system. The discharge of a sheen of oil or gasoline constitutes an oil spill and must be reported immediately to the National Response Center (NRC) at (800) 424-8802.
2. Security provisions are maintained to assure that system failure, vandalism, or other incidents will be addressed in a timely fashion, preventing the loss of oil or contaminated water to the drainage system.
3. The flow rate shall be maintained within acceptable operating parameters and shall not exceed the design flow of the treatment system. There shall be no bypass of the treatment system unless unavoidable to prevent loss of life, personal injury, or severe property damage. No filter backwash or other maintenance waters shall be discharged without treatment.
4. Sampling and analysis, in accordance with EPA Methods, must be performed for the following chemicals with the listed limits being applicable:

Total Suspended Solids (TSS)	50 ppm
Total Petroleum Hydrocarbons (TPH)	5 ppm
Polynuclear Aromatic Hydrocarbons (PAHs), Group II Total isomers	100 ppb
Benzene	5 ppb
Toluene	*
Ethyl Benzene	*
Xylenes	*
The total for Benzene, Toluene, Ethyl Benzene, and Xylenes (BTEX)	----- 100 ppb
Naphthalene	20 ppb
Methyl-tert-Butyl Ether (MtBE)	70 ppb

Should sampling indicate the presence of additional chemicals, discharge concentrations should not exceed the Federal Drinking Water Standards (MCL's) or 100 ppb, whichever is lower, in the effluent.

Solids - These waters shall be free from floating, suspended, and settleable solids in concentrations or combinations that would impair any use assigned to this class, that would cause esthetically objectionable conditions, or that would impair the benthic biota or degrade the chemical composition of the bottom sediments.

Color and Turbidity - These waters shall be free from color and turbidity in concentrations or combinations that are esthetically objectionable conditions or that would impair the use assigned to this class.

Laboratory samples must be obtained from the influent to treatment, and from the effluent to the drainage system once each day for the first, third and sixth day of discharge. These samples must be analyzed with a 72-hour turnaround time. If the system is working properly, sampling for the remainder of the month shall be weekly and then monthly. Thereafter. The turnaround time for these samples shall ensure that no more than seven days pass between the sampling event and when the results are received and reviewed by the contractor.

If analysis indicates that the effluent limits have been exceeded, then the system must be shut down immediately and the problem corrected. Upon restarting the system, a sample must be taken and there must be 24 hour turnaround for the results. If the analysis indicates that the problem has been corrected, then the sampling schedule shall resume. If not, then the system shall be shut down again and repaired.

5. Analytical Reports, with quality control information, are to be reported to EPA and the MADEP or NHDES Project Manager by the 28th of the following month. Reports to EPA should be sent to:

Municipal Permits Branch (CMP)
ATTN: Michael J. O'Brien
Office of Ecosystem Protection
U. S. Environmental Protection Agency
One Congress St., Suite 1100
Boston, MA 02114-2023

Please include assigned reference # on all correspondence.

6. You, or your contractor, must maintain copies of all analytical reports, and quality control information for a period of 3 years from the date of the report.

You should consider these requirements to be in effect immediately.

NPDES PERMIT EXCLUSION APPLICATION - INCIDENT NOTIFICATION REPORT							HBR CASE NO.
U. S. EPA - Region 1, One Congress Street, Suite 1100 (HBR), Boston, MA 02114							NPDES Exclusion Ref.#
Received: / /			Military Time:		GRANTED BY:		
A) REPORTER INFO	Requested by: Matthew J. Dowling						
	Organization Name: Corporate Environmental Advisors, Inc.						
	Address: 127 Hartwell Street						
	City: W. Boylston		County: Worcester		State: MA		
	Zip: 01583		Phone No. (508) 835-8822		Ext: 224		
B) DIS-CHARGER/ PERMITTEE/ OWNER	Same as above in A		Name/Company Name: Sunoco, Inc. (R&M)				
	Address: 4 Bellows Road, PO Box 1262				Contact: William J. Brochu		
	City: Westborough		County: Worcester		State: Massachusetts		
	Zip: 01581		Phone No. 1-800-777-6444		Ext: 1357		
C) DISCHARGE INCIDENT LOCATION	Same as above in B		Site Location Name: Former Sunoco Service Station				
	Address: 671 Main Street						
	City: Winchester		County: Middlesex		State: MA		
	Zip: 01890-1902		Phone No. N/A		Ext: N/A		
D) DATES	Discharge Start Date: 06/15/05			Discharge Duration: 3 months			
E) GROUND WATER CONT.			Contaminant 1		Contaminant 2		Contaminant 3
			Non-Aqueous Phase Liquid		C5 - C8 Aliphatics		C9 - C12 Aromatics
	Approx. Concentrations				6,850 ug/l		6,590 µg/l
			Contaminant 4		Contaminant 5		Contaminant 6
			C9 - C12 Aliophatics		Total BTEX		MTBE
	Approx. Concentrations		10,300 ug/l		20,000 ug/l		9,000 ug/l
F) TREATMENT SYSTEM	Treatment		Frac Tank X		Air stripper		Oil/Water Separator: X
	Equipment		GAC Filter X (x3)		Bag Filter X (x2)		
	(Check Applicable)		Equalization Tanks		Other=>Describe		
	Written Description of System:						
	Groundwater will be pumped from the excavation into and onsite frac-tank. NAPL will be seperated, removed and transported for off-site recycling. Groundwater will be pre-treated through two, 45-micron bag filters in series and then through three liquid phase granular activated carbon vessels in series. Treated groundwater will be discharged to a stormwater drainage system located Main Street. The stormwater drainage system discharges to the Aberjona River, which runs adjacent to the site.						
G) RECEIVING WATERS	Discharge VIA: (Check applicable)		Direct:	Storm Drain: X	Wetlands:	Brook/River: X	Over and Unknown:
			Within Facility		Other:		
	Receiving Waterway Name: Aberjona River						
H) PURPOSE OF DISCHARGE	Dewatering Activity: (Check Applicable)		UST Replacement/Removal: X		Contaminated Excavation: X		Pump Test
			Recovery & Treatment X		Other=> Describe		
	Description:						
	Discharge will be performed during excavation de-watering						
I) FLOW	Maximum Flow Rate:		50		GPM		
J) INFO	Site ID#: RTN 3-4315						
	Agency Name: MA DEP				Contact: Mr. John Zupkus		
	Agency Name:				Contact:		