



Engineers
Scientists
Consultants

January 14, 2009

1/15/09.
received
MA6910402

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US Environmental Protection Agency
Ms. Shelly Puleo
Industrial NPDES Permits (CIP)
1 Congress Street, Suite 1100
Boston, Massachusetts 02114-2023

**Re: *NOI for a Remedation General Permit
Martins Construction Site
233 Andover Street
Peabody, MA
RTN 3-27635***

Dear Ms. Puleo:

ESS Group, Inc. (ESS), on the behalf of Martins Construction (Danvers, Massachusetts), is submitting the attached Notice of Intent for a Remediation General Permit (RGP) for the property referenced above. Martins Construction has been designated as the Operator since they have been retained by the owner (Mr. Russell Lyon) to perform construction dewatering in order to install footings for a new building.

The property is currently a Disposal Site (RTN 3-27635) (potentially Tier II but has not been officially classified yet) as defined by the Massachusetts Department of Environmental Protection (MassDEP) and the Massachusetts Contingency Plan (MCP) for a release of petroleum that has been identified via laboratory fingerprinting methodology as hydraulic oil from the former hydraulic lift system. The site formerly was used as an automotive sales and service facility.

Untreated groundwater samples that are representative of the area impacted by hydraulic oil were collected by ESS. The samples were collected from the frac tank that accepted groundwater that was pumped from a construction dewatering sump. The location of this sump is shown on Figure 4. This is also the greatest area of impacted by hydraulic oil. The results of the laboratory analysis for these samples were used to fill out the contaminant information. In addition to the required analysis, we have included the results of sampling for Extractable Petroleum Hydrocarbons (EPH), specifically C9-C18 Aliphatics, to this list as historic groundwater samples have shown this compound to be present and applicable to the released material (hydraulic oil). The EPH result provided is the highest concentration of C9-C18 compounds documented at the site. No floating petroleum is present on the property, and overall the concentration of soluble hydrocarbons is low, as would be expected with a release of hydraulic oil.



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Figure 1 locates the property on a USGS topographic map. Figures 2 and 3 show the discharge pathway and local resource areas, and were based on maps printed from the online MassGIS system (DEP Priority Resources 21E Map). Figure 4 is a Site Plan that shows the general point of intake of the construction dewatering sump, the location of the proposed treatment system, the discharge from the onsite treatment system to a catch basin on site that flows to the Massachusetts State Highway system located in Route 114. The catch basin system discharges directly via an outfall to an intermittent stream. The stream leads to a saltwater wetland and eventually to the Waters River. ESS will secure an Access Permit from the Massachusetts State Highway Department in order to utilize their catch basin system after the RGP is obtained. ESS has also contacted the Peabody Conservation Commission and the Peabody Department of Public Works and is in the process of satisfying their requirements. Please note that a copy of this NOI has been sent to the MassDEP Northeast Regional office.

Per my discussion with Mr. Victor Alvarez on January 13, 2009, we are currently contacting the adjacent property owners in order to access a catch basin on their property that discharges directly to the same approximate location in the intermittent stream. If access is granted, the discharge will not have to flow through the Massachusetts State Highway catch basin system. ESS will contact Mr. Alvarez if there is any change in the discharge pathway. Regardless of whether the catch basin system is used, the point of discharge will be the same intermittent stream as shown on Figure 3. It is anticipated that this change, if necessary, will not affect the approval timeframe for an RGP.

Figure 5 is a schematic of the proposed treatment system as provided by Cyn Environmental Services (Stoughton, Massachusetts). This system is capable of treating up to 50 gallons per minute (design capacity). It is anticipated that the system will operate intermittently during the day in order to maintain storage capacity in the frac tanks. Pumps and heaters are present in the frac tanks to circulate the water and prevent freezing. The maximum daily flow rate is anticipated to be 20 gallons per minute and this is the flow rate used to calculate the maximum daily value. The average daily flow rate has been calculated at 10 gallons per minute and this flow rate was used to calculate the average daily value. The flow rate at any give time will be well under the maximum design flow rate of 50 gallons per minute.

The dilution factor has been calculated at zero, since the discharge point is an intermittent stream. As of January 9, 2009 there is constant flow in this stream and some dilution will occur. The intermittent stream is contained within a manmade swale with a high banking and erosion or overland flow due to flooding is not a concern. The surrounding area is commercial and no nearby sewer systems are known to exist. Discharge to the sanitary sewer system is categorically not allowed by the local sewer authority and therefore not an option.

ESS appreciates your cooperation and attention to this matter. Please do not hesitate to contact me at (781) 489-1183 if you have any questions.



Sincerely,

ESS GROUP, INC.



Brian A. Emery, PG, LSP
Senior Project Manager

Attachments: Attachment A - EPA NOI
Attachment B - Laboratory Reports (Groundwater)
Figure 1 - Site Locus Map
Figure 2 - DEP Priority Resource Map
Figure 3 - Discharge Pathway
Figure 4 - Site Plan
Figure 5 - Proposed Treatment System Schematic

C: Martins Construction
Mr. Russell Lyon
DEP Northeast Region
City of Peabody



Attachment A

EPA NOI

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: Martins construction site		Facility/site address:	
Location of facility/site: longitude: 70 58 54 latitude: 42 33 1	Facility SIC code(s): vacant	Street: 233 Andover Street	
b) Name of facility/site owner: Russ Lyons		Town: Peabody	
Email address of owner:		State: MA	Zip: 01960
Telephone no. of facility/site owner: (207) 329-8913		County:	
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: 19 Landing Way			
Town: Dover	State: NH	Zip: 03820	County: Norfolk
c) Legal name of operator: Martins Construction Company		Operator telephone no: 978.777.9084	
		Operator fax no.: 978.750.4281	Operator email: jeffrey@ma
Operator contact name and title: Jeffrey Albert, Project Manager			
Address of operator (if different from owner):		Street: 130 Sylvan Street	
Town: Danvers	State: MA	Zip: 01923	County: Essex
d) Check "yes" or "no" for the following:			
1. Has a prior NPDES permit exclusion been granted for the discharge? Yes____ No ☒ , if "yes," number:			
2. Has a prior NPDES application (Form 1 & 2C) ever been filed for the discharge? Yes____ No ☒ , if "yes," date and tracking #:			
3. Is the discharge a "new discharge" as defined by 40 CFR 122.2? Yes ☒ No____			
4. For sites in Massachusetts, is the discharge covered under the MA Contingency Plan (MCP) and exempt from state permitting? Yes ☒ No____			

e) Is site/facility subject to any State permitting or other action which is causing the generation of discharge? Yes ☒ No ☐

If "yes," please list:

1. site identification # assigned by the state of NH or MA: RTN 3-27635
2. permit or license # assigned: Tier II Disposal Site
3. state agency contact information: name, location, and telephone number:
MassDEP, NE Regional Office, Wilmington, MA 978.694.3200

f) Is the site/facility covered by any other EPA permit, including:

1. multi-sector storm water general permit? Y ☐ N ☒, if Y, number:
2. phase I or II construction storm water general permit? Y ☐ N ☒, if Y, number:
3. individual NPDES permit? Y ☐ N ☒, if Y, number:
4. any other water quality related permit? Y ☐ N ☒, if Y, number:

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

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

Construction dewatering for installing building footings.

b) Provide the following information about each discharge:

1) Number of discharge points:

one

2) What is the **maximum** and **average flow rate** of discharge (in cubic feet per second, ft³/s)? Max. flow 0.04456
Average flow 0.2228 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.
ave flow is 10 gpm, maximum flow is 20 gpm, design flow is 50 gpm

3) Latitude and longitude of each discharge within 100 feet: pt.1: long. 70 58 54 lat. 42 33 1; 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):
NA

5) Is the discharge intermittent ☒ or seasonal ☐?
Is discharge ongoing Yes ☐ No ☒?

c) Expected dates of discharge (mm/dd/yy): start 02/01/09 end 06/30/09

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		✓	1	grab	2540D	10	736,000	388.92	736	194.46
2. Total Residual Chlorine	✓		0							
3. Total Petroleum Hydrocarbons	✓		1	grab	1664A	5				
4. Cyanide	✓		1	grab	4500CNCE	0.05				
5. Benzene	✓		1	grab	8260B	1.0				
6. Toluene		✓	1	grab	8260B	1.0	3.5	0.0018	3.5	0.0009
7. Ethylbenzene	✓		1	grab	8260B	1.0				
8. (m,p,o) Xylenes		✓	1	grab	8260B	3.0	4.5	0.0024	4.5	0.0012
9. Total BTEX ⁴		✓	1	grab	8260B	5.0	8.0	0.0042	8.0	0.0021

⁴BTEX = 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)	✓		1	grab	8260B	1.0				
11. Methyl-tert-Butyl Ether (MtBE)	✓		1	grab	8260B	1.0				
12. tert-Butyl Alcohol (TBA)	✓		0							
13. tert-Amyl Methyl Ether (TAME)	✓		1	grab	8260B	1.0				
14. Naphthalene		✓	1	grab	8260B	1.0	1.4	0.0008	1.4	0.0004
15. Carbon Tetra-chloride	✓		1	grab	8260B	1.0				
16. 1,4 Dichlorobenzene	✓		1	grab	8260B	1.0				
17. 1,2 Dichlorobenzene	✓		1	grab	8260B	1.0				
18. 1,3 Dichlorobenzene	✓		1	grab	8260B	1.0				
19. 1,1 Dichloroethane	✓		1	grab	8260B	1.0				
20. 1,2 Dichloroethane	✓		1	grab	8260B	1.0				
21. 1,1 Dichloroethylene	✓		1	grab	8260B	1.0				
22. cis-1,2 Dichloro-ethylene	✓		1	grab	8260B	1.0				
23. Dichloromethane (Methylene Chloride)	✓		1	grab	8260B	4.0				
24. Tetrachloroethylene	✓		1	grab	8260B	1.0				

⁵EDB 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	✓		1	grab	8260B	1.0				
26. 1,1,2 Trichloroethane	✓		1	grab	8260B	1.0				
27. Trichloroethylene	✓		1	grab	8260B	1.0				
28. Vinyl Chloride	✓		1	grab	8260B	1.0				
29. Acetone	✓		1	grab	8260B	25				
30. 1,4 Dioxane	✓		1	grab	8260B	500				
31. Total Phenols	✓		1	grab	8270C	10				
32. Pentachlorophenol	✓		1	grab	8270C	1.0				
33. Total Phthalates ⁶ (Phthalate esthers)	✓		1	grab	8270C	3.3				
34. Bis (2-Ethylhexyl) Phthalate [Di-(ethylhexyl) Phthalate]		✓	1	grab	8270C	6.0	21.4	0.0114	21.4	0.0057
35. Total Group I Polycyclic Aromatic Hydrocarbons (PAH)		✓	1	grab	8270C	0.05	0.39	0.0002	0.39	0.0001
a. Benzo(a) Anthracene		✓	1	grab	8270C	0.05	0.08	0.00004	0.08	0.00002
b. Benzo(a) Pyrene		✓	1	grab	8270C	0.05	0.07	0.00004	0.07	0.00002
c. Benzo(b) Fluoranthene		✓	1	grab	8270C	0.05	0.09	0.00004	0.09	0.00002
d. Benzo(k) Fluoranthene		✓	1	grab	8270C	0.05	0.05	0.00002	0.05	0.00001
e. Chrysene		✓	1	grab	8270C	0.05	0.10	0.00006	0.10	0.00003

⁶The 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	✓		1	grab	8270C	0.05				
g. Indeno(1,2,3-cd) Pyrene	✓		1	grab	8270C	0.05				
36. Total Group II Polycyclic Aromatic Hydrocarbons (PAH)		✓	1	grab	8270C	0.20	2.99	0.00158	2.99	0.00079
h. Acenaphthene	✓		1	grab	8270C	0.20				
i. Acenaphthylene		✓	1	grab	8270C	0.20	1.36	0.00072	1.36	0.00036
j. Anthracene	✓		1	grab	8270C	0.20				
k. Benzo(ghi) Perylene	✓		1	grab	8270C	0.20				
l. Fluoranthene		✓	1	grab	8270C	0.20	0.23	0.000012	0.23	0.00006
m. Fluorene	✓		1	grab	8270C	0.20				
n. Naphthalene-		✓	1	grab	8260B	0.20	1.4	0.00074	1.4	0.00037
o. Phenanthrene	✓		1	grab	8270C	0.20				
p. Pyrene	✓		1	grab	8270C	0.20				
37. Total Polychlorinated Biphenyls (PCBs)		✓	1	grab	608 ⁺	0.10	4.24	0.0022	4.24	0.0011
38. Antimony	✓		1	grab	7041	2.5				
39. Arsenic		✓	1	grab	7060A	7.5	47.3	0.025	47.3	0.0125
40. Cadmium		✓	1	grab	6010B ⁺	2.5				
41. Chromium III		✓	1	grab	6010B	10	54	0.2854	54	0.1427
42. Chromium VI	✓		1	grab	7196A	50				

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		✓	1	grab	6010B	2	53	0.028	53	0.014
44. Lead		✓	1	grab	6010B	2	98	0.0518	98	0.0259
45. Mercury	✓		1	grab	7470A	0.10				
46. Nickel		✓	1	grab	6010B	1	38	0.0200	38	0.0100
47. Selenium	✓		1	grab	6010B	8				
48. Silver	✓		1	grab	6010B	1				
49. Zinc		✓	1	grab	6010B	5	242	0.1278	242	0.0639
50. Iron		✓	1	grab	6010B	15	32600	17.2264	32600	8.6132
Other (describe): C9-C18 Aliphatics		✓	1	grab	DEP Method	100	305	161.1688	305	80.5844

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

Step 1: Do any of the metals in the influent have a reasonable potential to exceed the effluent limits in Appendix III (i.e., the limits set at zero to five dilutions)? Y <u>✓</u> N <u> </u>	If yes, which metals? copper, lead, nickel, zinc, iron
Step 2: For any metals which have reasonable potential to exceed the Appendix III limits, calculate the dilution factor (DF) using the formula in Part I.A.3.c) (step 2) of the NOI instructions or as determined by the State prior to the submission of this NOI. What is the dilution factor for applicable metals? Metals: <u>copper, lead, nickel, zinc, iron</u> DF: <u>zero</u>	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 <u>✓</u> N <u> </u> If "Yes," list which metals: Cu, Pb, Ni, zinc, iron

present

1,2,4 Trimethylbenzene ✓	1	grab	8260B	1.0	3.3	0.00174	3.3	0.00087
1,3,5 Trimethylbenzene ✓	1	"	8260B	1.0	1.2	0.00064	1.2	0.00032
2-Methylnaphthalene ✓	1	"	8270C	0.20	0.21	0.00011	0.21	0.000055

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 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>10</u> Maximum flow rate of treatment system <u>20</u> Design flow rate of treatment system <u>100</u>						
d) A description of chemical additives being used or planned to be used (attach MSDS sheets): <u>none</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 <u> </u>	Within facility <u> </u>	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>From excavation sump, through treatment system, to on-site catch basin that flows down Rte 114, to intermittent stream, to wetlands, to the Waters River.</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 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 <u>Zone C</u> ,						
e) Provide the reported or calculated seven day-ten year low flow (7Q10) of the receiving water <u>zero (intermittent stream)</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 <u> </u> No ☒ If yes, for which pollutant(s)? Is there a TMDL? Yes <u> </u> No ☒ If yes, for which pollutant(s)?						

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

- a) Are any listed threatened or endangered species, or designated critical habitat, in proximity to the discharge? Yes ___ No ☒
Has any consultation with the federal services been completed? Yes ___ No ☒ or is consultation underway? Yes ___ No ☒
What were the results of the consultation with the U.S. Fish and Wildlife Service and/or National Marine Fisheries Service (check one):
a "no jeopardy" opinion? ___ or written concurrence ___ on a finding that the discharges are not likely to adversely affect any endangered species or critical habitat?
- b) Are any historic properties listed or eligible for listing on the National Register of Historic Places located on the facility or site or in proximity to the discharge?
Yes ___ No ☒ Have any state or tribal historic preservation officer been consulted in this determination (Massachusetts only)? Yes ___ No ☒

7. Supplemental information. :

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

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:

Martins Construction site

Operator signature:



Title:

Project Manager

Date:

1/14/09



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: ESS Group, Inc. (MA)
Client Project ID: 233 Andover St
Client Sample ID: Frac-1 122408
Date Sampled: 12/24/08 11:45
Percent Solids: N/A

ESS Laboratory Work Order: 0812367
ESS Laboratory Sample ID: 0812367-01
Sample Matrix: Ground Water

3005A/6000/7000 Total Metals

Analyte	Results	Units	MRL	Method	Limit	DF	Analyst	Analyzed	I/V	F/V
Antimony	ND	ug/L	2.5	7041		1	JP	01/06/09	100	50
Arsenic	47.3	ug/L	7.5	7060A		3	JP	01/06/09	100	50
Cadmium	ND	ug/L	2.5	6010B		1	JP	12/31/08	100	50
Chromium	54	ug/L	10	6010B		1	JP	12/31/08	100	50
Copper	53	ug/L	10	6010B		1	JP	12/31/08	100	50
Iron	32600	ug/L	50	6010B		1	JP	12/31/08	100	50
Lead	98	ug/L	10	6010B		1	JP	12/31/08	100	50
Mercury	ND	ug/L	0.50	7470A		1	JP	01/06/09	20	40
Nickel	38	ug/L	25	6010B		1	JP	12/31/08	100	50
Selenium	ND	ug/L	25	6010B		1	JP	12/31/08	100	50
Silver	ND	ug/L	5	6010B		1	JP	12/31/08	100	50
Zinc	242	ug/L	25	6010B		1	JP	12/31/08	100	50



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: ESS Group, Inc. (MA)

Client Project ID: 233 Andover St

Client Sample ID: Frac-1 122408

Date Sampled: 12/24/08 11:45

Percent Solids: N/A

Initial Volume: 10

Final Volume: 10

Extraction Method: 5030B

ESS Laboratory Work Order: 0812367

ESS Laboratory Sample ID: 0812367-01

Sample Matrix: Ground Water

Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results	Units	MRL	Limit	DF	Analyzed
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0		1	12/31/08
1,1,1-Trichloroethane	ND	ug/L	1.0		1	12/31/08
1,1,2,2-Tetrachloroethane	ND	ug/L	0.5		1	12/31/08
1,1,2-Trichloroethane	ND	ug/L	1.0		1	12/31/08
1,1-Dichloroethane	ND	ug/L	1.0		1	12/31/08
1,1-Dichloroethene	ND	ug/L	1.0		1	12/31/08
1,1-Dichloropropene	ND	ug/L	2.0		1	12/31/08
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	12/31/08
1,2,3-Trichloropropane	ND	ug/L	1.0		1	12/31/08
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	12/31/08
1,2,4-Trimethylbenzene	3.3	ug/L	1.0		1	12/31/08
1,2-Dibromo-3-Chloropropane	ND	ug/L	5.0		1	12/31/08
1,2-Dibromoethane	ND	ug/L	1.0		1	12/31/08
1,2-Dichlorobenzene	ND	ug/L	1.0		1	12/31/08
1,2-Dichloroethane	ND	ug/L	1.0		1	12/31/08
1,2-Dichloropropane	ND	ug/L	1.0		1	12/31/08
1,3,5-Trimethylbenzene	1.2	ug/L	1.0		1	12/31/08
1,3-Dichlorobenzene	ND	ug/L	1.0		1	12/31/08
1,3-Dichloropropane	ND	ug/L	1.0		1	12/31/08
1,4-Dichlorobenzene	ND	ug/L	1.0		1	12/31/08
1,4-Dioxane - Screen	ND	ug/L	500		1	12/31/08
2,2-Dichloropropane	ND	ug/L	1.0		1	12/31/08
2-Butanone	ND	ug/L	25.0		1	12/31/08
2-Chlorotoluene	ND	ug/L	1.0		1	12/31/08
2-Hexanone	ND	ug/L	10.0		1	12/31/08
4-Chlorotoluene	ND	ug/L	1.0		1	12/31/08
4-Isopropyltoluene	ND	ug/L	1.0		1	12/31/08
4-Methyl-2-Pentanone	ND	ug/L	25.0		1	12/31/08
Acetone	ND	ug/L	25.0		1	12/31/08
Benzene	ND	ug/L	1.0		1	12/31/08
Bromobenzene	ND	ug/L	2.0		1	12/31/08
Bromochloromethane	ND	ug/L	1.0		1	12/31/08
Bromodichloromethane	ND	ug/L	0.6		1	12/31/08
Bromoform	ND	ug/L	1.0		1	12/31/08
Bromomethane	ND	ug/L	2.0		1	12/31/08



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: ESS Group, Inc. (MA)
Client Project ID: 233 Andover St
Client Sample ID: Frac-1 122408
Date Sampled: 12/24/08 11:45
Percent Solids: N/A
Initial Volume: 10
Final Volume: 10
Extraction Method: 5030B

ESS Laboratory Work Order: 0812367
ESS Laboratory Sample ID: 0812367-01
Sample Matrix: Ground Water
Analyst: MD

8260B Volatile Organic Compounds

Carbon Disulfide	ND	ug/L	1.0	1	12/31/08
Carbon Tetrachloride	ND	ug/L	1.0	1	12/31/08
Chlorobenzene	ND	ug/L	1.0	1	12/31/08
Chloroethane	ND	ug/L	2.0	1	12/31/08
Chloroform	ND	ug/L	1.0	1	12/31/08
Chloromethane	ND	ug/L	2.0	1	12/31/08
cis-1,2-Dichloroethene	ND	ug/L	1.0	1	12/31/08
cis-1,3-Dichloropropene	ND	ug/L	0.4	1	12/31/08
Dibromochloromethane	ND	ug/L	1.0	1	12/31/08
Dibromomethane	ND	ug/L	1.0	1	12/31/08
Dichlorodifluoromethane	ND	ug/L	2.0	1	12/31/08
Diethyl Ether	ND	ug/L	1.0	1	12/31/08
Di-isopropyl ether	ND	ug/L	1.0	1	12/31/08
Ethyl tertiary-butyl ether	ND	ug/L	1.0	1	12/31/08
Ethylbenzene	ND	ug/L	1.0	1	12/31/08
Hexachlorobutadiene	ND	ug/L	0.6	1	12/31/08
Hexachloroethane	ND	ug/L	1.0	1	12/31/08
Isopropylbenzene	ND	ug/L	1.0	1	12/31/08
Methyl tert-Butyl Ether	ND	ug/L	1.0	1	12/31/08
Methylene Chloride	ND	ug/L	4.0	1	12/31/08
Naphthalene	1.4	ug/L	1.0	1	12/31/08
n-Butylbenzene	ND	ug/L	1.0	1	12/31/08
n-Propylbenzene	ND	ug/L	1.0	1	12/31/08
sec-Butylbenzene	ND	ug/L	1.0	1	12/31/08
Styrene	ND	ug/L	1.0	1	12/31/08
tert-Butylbenzene	ND	ug/L	1.0	1	12/31/08
Tertiary-amyl methyl ether	ND	ug/L	1.0	1	12/31/08
Tetrachloroethene	ND	ug/L	1.0	1	12/31/08
Tetrahydrofuran	ND	ug/L	5.0	1	12/31/08
Toluene	3.5	ug/L	1.0	1	12/31/08
trans-1,2-Dichloroethene	ND	ug/L	1.0	1	12/31/08
trans-1,3-Dichloropropene	ND	ug/L	0.4	1	12/31/08
Trichloroethene	ND	ug/L	1.0	1	12/31/08
Trichlorofluoromethane	ND	ug/L	1.0	1	12/31/08
Vinyl Chloride	ND	ug/L	1.0	1	12/31/08
Xylene O	1.9	ug/L	1.0	1	12/31/08



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: ESS Group, Inc. (MA)

Client Project ID: 233 Andover St

Client Sample ID: Frac-1 122408

Date Sampled: 12/24/08 11:45

Percent Solids: N/A

Initial Volume: 10

Final Volume: 10

Extraction Method: 5030B

ESS Laboratory Work Order: 0812367

ESS Laboratory Sample ID: 0812367-01

Sample Matrix: Ground Water

Analyst: MD

8260B Volatile Organic Compounds

Xylene P,M	2.6	ug/L	2.0	1	12/31/08
Xylenes (Total)	4.5	ug/L	3.0	1	12/31/08

	%Recovery	Qualifier	Units
Surrogate: 1,2-Dichloroethane-d4	96 %		70-130
Surrogate: 4-Bromofluorobenzene	105 %		70-130
Surrogate: Dibromofluoromethane	104 %		70-130
Surrogate: Toluene-d8	98 %		70-130



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: ESS Group, Inc. (MA)
Client Project ID: 233 Andover St
Client Sample ID: Frac-1 122408
Date Sampled: 12/24/08 11:45
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 0812367
ESS Laboratory Sample ID: 0812367-01
Sample Matrix: Ground Water
Analyst: VSC
Prepared: 12/30/08

8270C Semi-Volatile Organic Compounds

Analyte	Results	Units	MRL	Limit	DF	Analyzed
1,2,4-Trichlorobenzene	ND	ug/L	10.0		1	12/31/08
1,2-Dichlorobenzene	ND	ug/L	10.0		1	12/31/08
1,3-Dichlorobenzene	ND	ug/L	10.0		1	12/31/08
1,4-Dichlorobenzene	ND	ug/L	10.0		1	12/31/08
2,4,5-Trichlorophenol	ND	ug/L	10.0		1	12/31/08
2,4,6-Trichlorophenol	ND	ug/L	10.0		1	12/31/08
2,4-Dichlorophenol	ND	ug/L	10.0		1	12/31/08
2,4-Dimethylphenol	ND	ug/L	50.0		1	12/31/08
2,4-Dinitrophenol	ND	ug/L	50.0		1	12/31/08
2,4-Dinitrotoluene	ND	ug/L	10.0		1	12/31/08
2,6-Dinitrotoluene	ND	ug/L	10.0		1	12/31/08
2-Chloronaphthalene	ND	ug/L	10.0		1	12/31/08
2-Chlorophenol	ND	ug/L	10.0		1	12/31/08
2-Methylphenol	ND	ug/L	10.0		1	12/31/08
2-Nitrophenol	ND	ug/L	10.0		1	12/31/08
3,3'-Dichlorobenzidine	ND	ug/L	10.0		1	12/31/08
3+4-Methylphenol	ND	ug/L	20.0		1	12/31/08
4-Bromophenyl-phenylether	ND	ug/L	10.0		1	12/31/08
4-Chloroaniline	ND	ug/L	20.0		1	12/31/08
4-Nitrophenol	ND	ug/L	50.0		1	12/31/08
Acetophenone	ND	ug/L	10.0		1	12/31/08
Aniline	ND	ug/L	10.0		1	12/31/08
Azobenzene	ND	ug/L	20.0		1	12/31/08
bis(2-Chloroethoxy)methane	ND	ug/L	10.0		1	12/31/08
bis(2-Chloroethyl)ether	ND	ug/L	10.0		1	12/31/08
bis(2-chloroisopropyl)Ether	ND	ug/L	10.0		1	12/31/08
bis(2-Ethylhexyl)phthalate	21.4	ug/L	6.0		1	12/31/08
Butylbenzylphthalate	ND	ug/L	10.0		1	12/31/08
Dibenzofuran	ND	ug/L	10.0		1	12/31/08
Diethylphthalate	ND	ug/L	10.0		1	12/31/08
Dimethylphthalate	ND	ug/L	10.0		1	12/31/08
Di-n-butylphthalate	ND	ug/L	10.0		1	12/31/08
Di-n-octylphthalate	ND	ug/L	10.0		1	12/31/08
Hexachlorobutadiene	ND	ug/L	10.0		1	12/31/08
Hexachloroethane	ND	ug/L	5.0		1	12/31/08



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: ESS Group, Inc. (MA)
Client Project ID: 233 Andover St
Client Sample ID: Frac-1 122408
Date Sampled: 12/24/08 11:45
Percent Solids: N/A

ESS Laboratory Work Order: 0812367
ESS Laboratory Sample ID: 0812367-01
Sample Matrix: Ground Water

Classical Chemistry

Analyte	Results	Units	MRL	Method	Limit	DF	Analyst	Analyzed
Hexavalent Chromium	ND	ug/L	50	7196A		1	JP	12/24/08 14:56
Total Cyanide	ND	mg/L	0.050	4500CN CE		1	EEM	12/29/08
Total Petroleum Hydrocarbon	ND	mg/L	5	1664A		1	EBM	12/30/08
Total Suspended Solids	736	mg/L	10	2540D		1	EEM	12/29/08



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: ESS Group, Inc. (MA)
Client Project ID: 233 Andover St
Client Sample ID: Trip Blank
Date Sampled: 12/24/08 00:00
Percent Solids: N/A
Initial Volume: 10
Final Volume: 10
Extraction Method: 5030B

ESS Laboratory Work Order: 0812367
ESS Laboratory Sample ID: 0812367-02
Sample Matrix: Aqueous
Analyst: MD

8260B Volatile Organic Compounds

Analyte	Results	Units	MRL	Limit	DF	Analyzed
1,1,1,2-Tetrachloroethane	ND	ug/L	1.0		1	12/29/08
1,1,1-Trichloroethane	ND	ug/L	1.0		1	12/29/08
1,1,2,2-Tetrachloroethane	ND	ug/L	0.5		1	12/29/08
1,1,2-Trichloroethane	ND	ug/L	1.0		1	12/29/08
1,1-Dichloroethane	ND	ug/L	1.0		1	12/29/08
1,1-Dichloroethene	ND	ug/L	1.0		1	12/29/08
1,1-Dichloropropene	ND	ug/L	2.0		1	12/29/08
1,2,3-Trichlorobenzene	ND	ug/L	1.0		1	12/29/08
1,2,3-Trichloropropane	ND	ug/L	1.0		1	12/29/08
1,2,4-Trichlorobenzene	ND	ug/L	1.0		1	12/29/08
1,2,4-Trimethylbenzene	ND	ug/L	1.0		1	12/29/08
1,2-Dibromo-3-Chloropropane	ND	ug/L	5.0		1	12/29/08
1,2-Dibromoethane	ND	ug/L	1.0		1	12/29/08
1,2-Dichlorobenzene	ND	ug/L	1.0		1	12/29/08
1,2-Dichloroethane	ND	ug/L	1.0		1	12/29/08
1,2-Dichloropropane	ND	ug/L	1.0		1	12/29/08
1,3,5-Trimethylbenzene	ND	ug/L	1.0		1	12/29/08
1,3-Dichlorobenzene	ND	ug/L	1.0		1	12/29/08
1,3-Dichloropropane	ND	ug/L	1.0		1	12/29/08
1,4-Dichlorobenzene	ND	ug/L	1.0		1	12/29/08
1,4-Dioxane - Screen	ND	ug/L	500		1	12/29/08
2,2-Dichloropropane	ND	ug/L	1.0		1	12/29/08
2-Butanone	ND	ug/L	25.0		1	12/29/08
2-Chlorotoluene	ND	ug/L	1.0		1	12/29/08
2-Hexanone	ND	ug/L	10.0		1	12/29/08
4-Chlorotoluene	ND	ug/L	1.0		1	12/29/08
4-Isopropyltoluene	ND	ug/L	1.0		1	12/29/08
4-Methyl-2-Pentanone	ND	ug/L	25.0		1	12/29/08
Acetone	ND	ug/L	25.0		1	12/29/08
Benzene	ND	ug/L	1.0		1	12/29/08
Bromobenzene	ND	ug/L	2.0		1	12/29/08
Bromochloromethane	ND	ug/L	1.0		1	12/29/08
Bromodichloromethane	ND	ug/L	0.6		1	12/29/08
Bromoform	ND	ug/L	1.0		1	12/29/08
Bromomethane	ND	ug/L	2.0		1	12/29/08



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: ESS Group, Inc. (MA)
Client Project ID: 233 Andover St
Client Sample ID: Frac-1 122408
Date Sampled: 12/24/08 11:45
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 0.25
Extraction Method: 3520C

ESS Laboratory Work Order: 0812367
ESS Laboratory Sample ID: 0812367-01
Sample Matrix: Ground Water
Analyst: VSC
Prepared: 12/30/08

8270C(SIM) Semi-Volatile Organic Compounds

Analyte	Results	Units	MRL	Limit	DF	Analyzed
1,1-Biphenyl	ND	ug/L	0.20		1	01/06/09
2-Methylnaphthalene	0.21	ug/L	0.20		1	01/06/09
Acenaphthene	ND	ug/L	0.20		1	01/06/09
Acenaphthylene	1.36	ug/L	0.20		1	01/06/09
Anthracene	ND	ug/L	0.20		1	01/06/09
Benzo(a)anthracene	0.08	ug/L	0.05		1	01/06/09
Benzo(a)pyrene	0.07	ug/L	0.05		1	01/06/09
Benzo(b)fluoranthene	0.09	ug/L	0.05		1	01/06/09
Benzo(g,h,i)perylene	ND	ug/L	0.20		1	01/06/09
Benzo(k)fluoranthene	0.05	ug/L	0.05		1	01/06/09
Chrysene	0.10	ug/L	0.05		1	01/06/09
Dibenzo(a,h)Anthracene	ND	ug/L	0.05		1	01/06/09
Fluoranthene	0.23	ug/L	0.20		1	01/06/09
Fluorene	ND	ug/L	0.20		1	01/06/09
Hexachlorobenzene	ND	ug/L	0.20		1	01/06/09
Indeno(1,2,3-cd)Pyrene	ND	ug/L	0.05		1	01/06/09
Naphthalene	ND	ug/L	0.20		1	01/06/09
Pentachlorophenol	ND	ug/L	1.00		1	01/06/09
Phenanthrene	ND	ug/L	0.20		1	01/06/09
Pyrene	ND	ug/L	0.20		1	01/06/09

%Recovery Qualifier Limits



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: ESS Group, Inc. (MA)
Client Project ID: 233 Andover St
Client Sample ID: Frac-1 122408
Date Sampled: 12/24/08 11:45
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 1
Extraction Method: 3520C

ESS Laboratory Work Order: 0812367
ESS Laboratory Sample ID: 0812367-01
Sample Matrix: Ground Water
Analyst: VSC
Prepared: 12/30/08

8270C Semi-Volatile Organic Compounds

Isophorone	ND	ug/L	10.0	1	12/31/08
Nitrobenzene	ND	ug/L	10.0	1	12/31/08
N-Nitrosodimethylamine	ND	ug/L	10.0	1	12/31/08
Phenol	ND	ug/L	10.0	1	12/31/08

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichlorobenzene-d4	62 %		30-130
Surrogate: 2,4,6-Tribromophenol	73 %		15-110
Surrogate: 2-Chlorophenol-d4	62 %		15-110
Surrogate: 2-Fluorobiphenyl	64 %		30-130
Surrogate: 2-Fluorophenol	54 %		15-110
Surrogate: Nitrobenzene-d5	60 %		30-130
Surrogate: Phenol-d6	79 %		15-110
Surrogate: p-Terphenyl-d14	46 %		30-130



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: ESS Group, Inc. (MA)

Client Project ID: 233 Andover St

Client Sample ID: Trip Blank

Date Sampled: 12/24/08 00:00

Percent Solids: N/A

Initial Volume: 10

Final Volume: 10

Extraction Method: 5030B

ESS Laboratory Work Order: 0812367

ESS Laboratory Sample ID: 0812367-02

Sample Matrix: Aqueous

Analyst: MD

8260B Volatile Organic Compounds

Carbon Disulfide	ND	ug/L	1.0	1	12/29/08
Carbon Tetrachloride	ND	ug/L	1.0	1	12/29/08
Chlorobenzene	ND	ug/L	1.0	1	12/29/08
Chloroethane	ND	ug/L	2.0	1	12/29/08
Chloroform	ND	ug/L	1.0	1	12/29/08
Chloromethane	ND	ug/L	2.0	1	12/29/08
cis-1,2-Dichloroethene	ND	ug/L	1.0	1	12/29/08
cis-1,3-Dichloropropene	ND	ug/L	0.4	1	12/29/08
Dibromochloromethane	ND	ug/L	1.0	1	12/29/08
Dibromomethane	ND	ug/L	1.0	1	12/29/08
Dichlorodifluoromethane	ND	ug/L	2.0	1	12/29/08
Diethyl Ether	ND	ug/L	1.0	1	12/29/08
Di-isopropyl ether	ND	ug/L	1.0	1	12/29/08
Ethyl tertiary-butyl ether	ND	ug/L	1.0	1	12/29/08
Ethylbenzene	ND	ug/L	1.0	1	12/29/08
Hexachlorobutadiene	ND	ug/L	0.6	1	12/29/08
Hexachloroethane	ND	ug/L	1.0	1	12/29/08
Isopropylbenzene	ND	ug/L	1.0	1	12/29/08
Methyl tert-Butyl Ether	ND	ug/L	1.0	1	12/29/08
Methylene Chloride	ND	ug/L	4.0	1	12/29/08
Naphthalene	ND	ug/L	1.0	1	12/29/08
n-Butylbenzene	ND	ug/L	1.0	1	12/29/08
n-Propylbenzene	ND	ug/L	1.0	1	12/29/08
sec-Butylbenzene	ND	ug/L	1.0	1	12/29/08
Styrene	ND	ug/L	1.0	1	12/29/08
tert-Butylbenzene	ND	ug/L	1.0	1	12/29/08
Tertiary-amyl methyl ether	ND	ug/L	1.0	1	12/29/08
Tetrachloroethene	ND	ug/L	1.0	1	12/29/08
Tetrahydrofuran	ND	ug/L	5.0	1	12/29/08
Toluene	ND	ug/L	1.0	1	12/29/08
trans-1,2-Dichloroethene	ND	ug/L	1.0	1	12/29/08
trans-1,3-Dichloropropene	ND	ug/L	0.5	1	12/29/08
Trichloroethene	ND	ug/L	1.0	1	12/29/08
Trichlorofluoromethane	ND	ug/L	1.0	1	12/29/08
Vinyl Chloride	ND	ug/L	1.0	1	12/29/08
Xylene O	ND	ug/L	1.0	1	12/29/08



ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: ESS Group, Inc. (MA)

Client Project ID: 233 Andover St

Client Sample ID: Trip Blank

Date Sampled: 12/24/08 00:00

Percent Solids: N/A

Initial Volume: 10

Final Volume: 10

Extraction Method: 5030B

ESS Laboratory Work Order: 0812367

ESS Laboratory Sample ID: 0812367-02

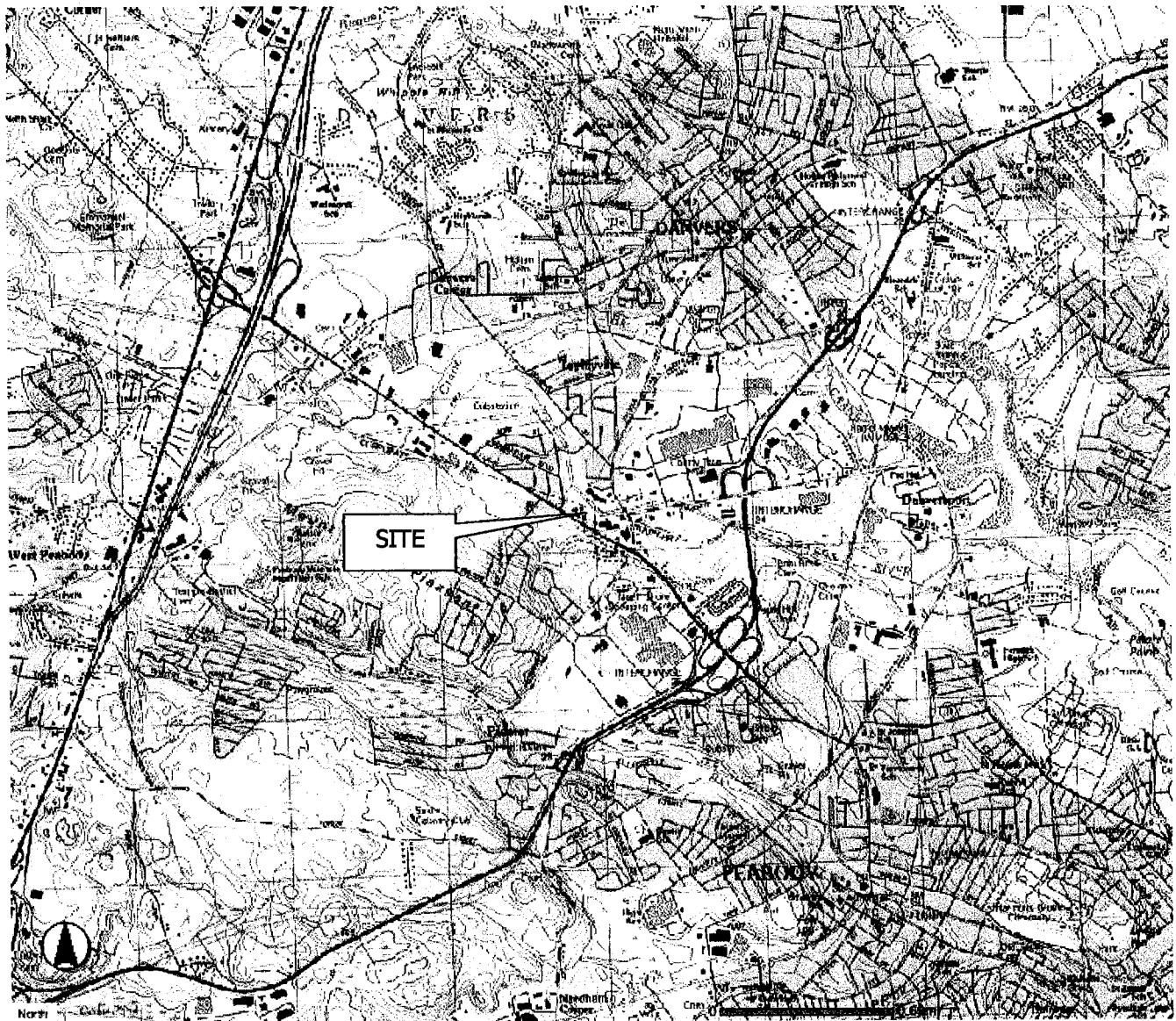
Sample Matrix: Aqueous

Analyst: MD

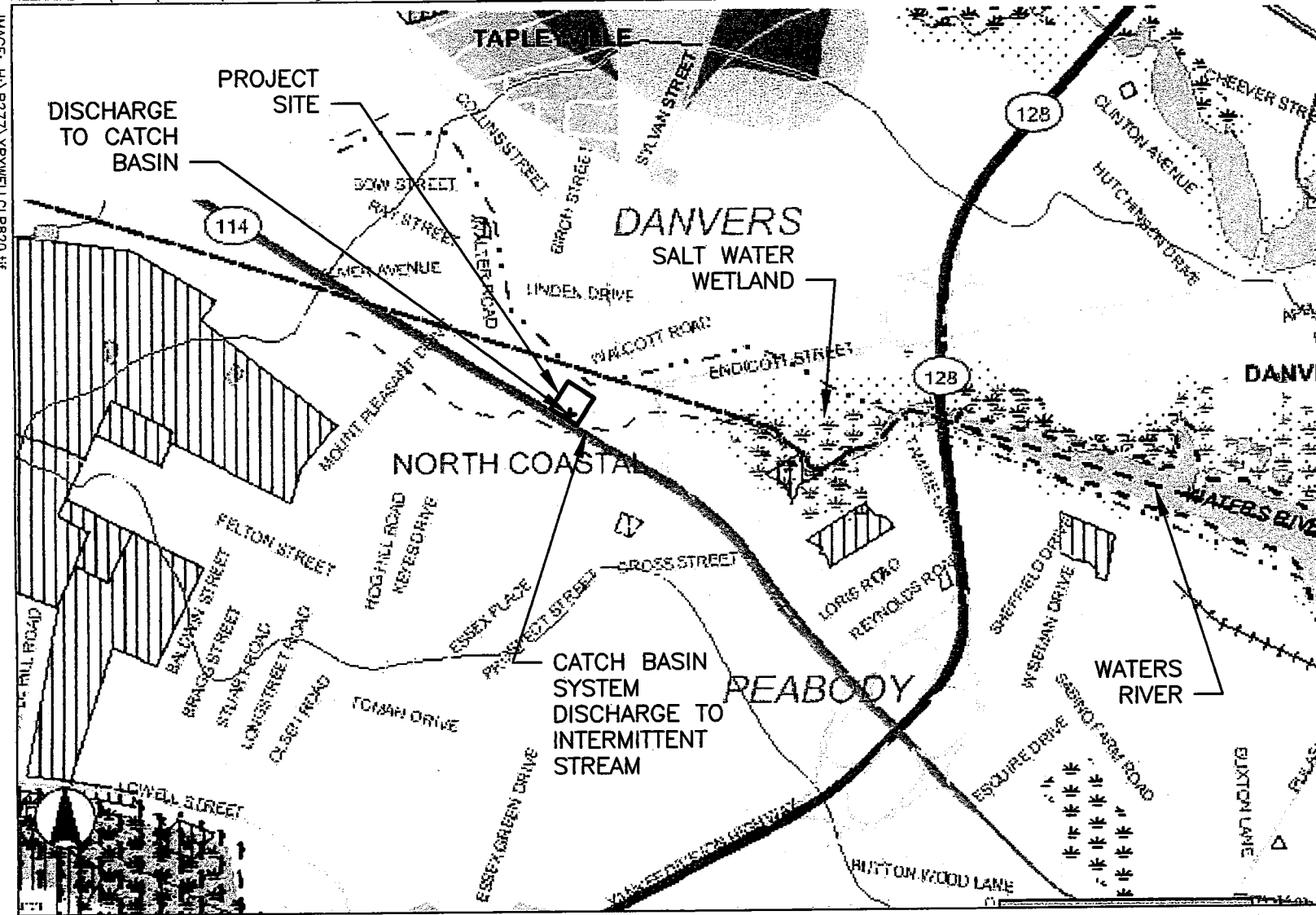
8260B Volatile Organic Compounds

Xylene P,M	ND	ug/L	2.0	1	12/29/08
Xylenes (Total)	ND	ug/L	3.0	1	12/29/08

	%Recovery	Qualifier	Limits
Surrogate: 1,2-Dichloroethane-d4	91 %		70-130
Surrogate: 4-Bromofluorobenzene	98 %		70-130
Surrogate: Dibromofluoromethane	100 %		70-130
Surrogate: Toluene-d8	97 %		70-130



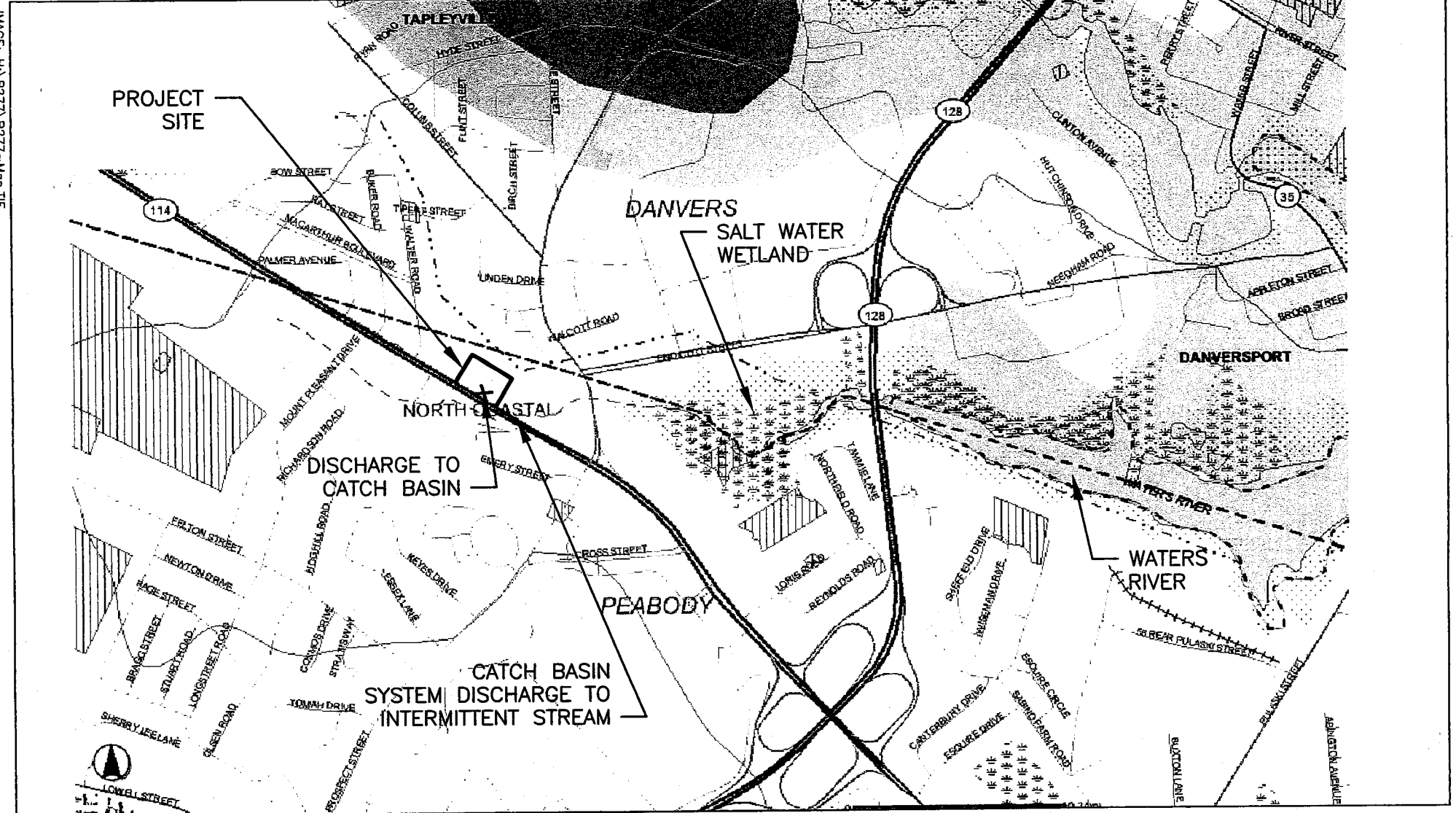
DATE: Jan 14, 2009 - 10:03AM
 FILENAME: H:\P277\1.13.09\FIGURE 2.dwg



233 Andover Street
 Peabody, Massachusetts

Engineers
 Scientists
 Consultants

Source: Maps.massgis.state.ma.us/21e/MapFrame.htm
 Scale:



233 Andover Street
 Peabody, Massachusetts

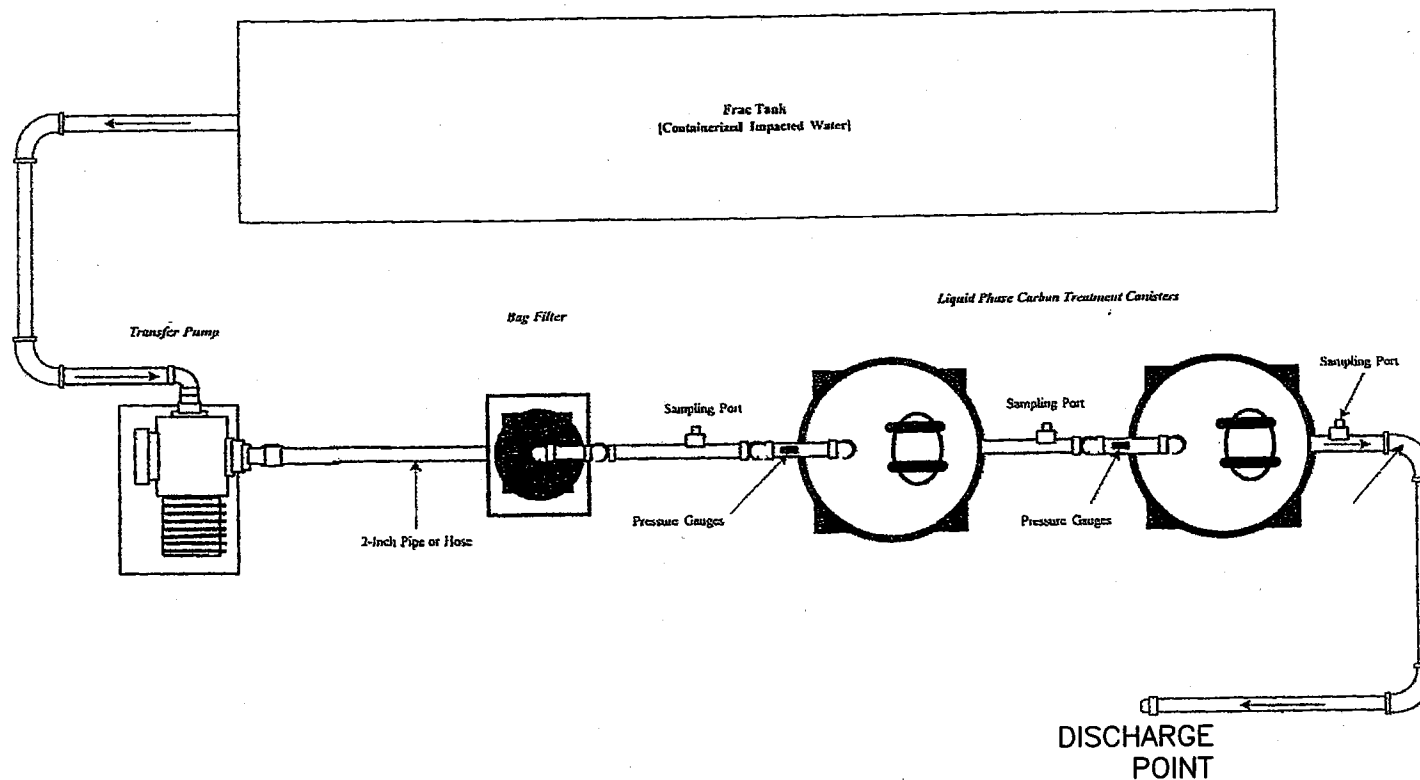
Engineers
 Scientists
 Consultants

Source: Maps.massgis.state.ma.us/21e/MapFrame.htm
 Scale: N.T.S

DISCHARGE PATHWAY

**Figure
 3**

GENERAL TREATMENT SYSTEM LAYOUT SCHEMATIC



CYN Environmental Services
 100 Tosca Drive, Stoughton, MA 02072

Drawn By:	PDM
Reviewed By:	BS
Scale:	None
Date:	9 September 2008

Treatment System Layout Plan Harvard Allston Science Complex

Release Tracking No.:	Cyn Job No.:	Figure No. 5
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ESS
 Group, Inc.

Engineers
 Scientists
 Consultants

233 Andover Street
 Peabody, Massachusetts

Source: CYN Environmental Services
 Scale:

**TREATMENT SYSTEM
 LAYOUT PLAN**

**Figure
 5**