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May 25, 2010

Our Ref.: 103-87243

US Environmental Protection Agency
RGP-NOC Processing
Municipal Assistance Unit (CMU)
1 Congress Street, Suite 1100
Boston, MA 02214-2023

Attention: Mr. Victor Alvarez

RE: NOTICE OF INTENT FOR REMEDIATION GENERAL PERMIT
ROAD RECONSTRUCTION PROJECT
293-401 NORTH MAIN STREET/ROUTE 11/FARMINGTON ROAD
ROCHESTER, NEW HAMPSHIRE
NHDOT PROJECT #10620L

Dear Mr. Alvarez:

Golder Associates Inc. (Golder) is pleased to submit this Remediation General Permit (RGP) Notice of Intent (NOI) to the United States Environmental Protection Agency (USEPA) for the above-referenced project on behalf of the New Hampshire Department of Transportation (NHDOT). The purpose of this letter is to summarize NHDOT's NOI for the USEPA RGP and provide supplemental information required to complete the NOI application.

The scope of work for this project includes dewatering of excavation areas within the NHDOT Right-of-Way for the purposes of road reconstruction, replacement of utility lines, and construction of stormwater drainage systems. The excavation areas are located along seven state-listed sites and a former City of Rochester dump. The purpose of the NOI is to permit the discharge of treated groundwater produced during excavation dewatering to the main stem of the Cocheco River.

Please contact Theresa Miller at (603) 668-0880, if you have any questions regarding this submittal.

Sincerely,

GOLDER ASSOCIATES INC.

Theresa A. Miller, P.G., LSP
Senior Hydrogeologist

Alistair P.T. Macdonald, P.G., LSP
Principal and Program Manager

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cc: NHDES-Water Division
City of Rochester
Dale O'Connell - NHDOT-Bureau of Environment
Blair Moody - NHDOT-Bureau of Construction

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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**: 293-401 North Main Street/Route 11/Farmington Road - Rochester - NHDOT Project #10620L		**Facility/site** address: 293-401 North Main Street/Route 11/Farmington Road		
Location of **facility/site**: longitude:_____ latitude:_____ longitude = -70.9942 latitude = 43.3123 See Attached Figure 1	Facility SIC code(s): NA	Street: 293-401 North Main Street/Route 11/Farmington Road		
b) Name of **facility/site owner:** NH Dept of Transportation		Town: Rochester		
Email address of owner: do'connell@dot.state.nh.us		State: NH	Zip: 03867	County: Strafford
Telephone no.of facility/site **owner**: (603) 271-3226				
Fax no. of facility/site **owner**: (603) 271-3914		**Owner** is (check one): 1. Federal____ 2. State/Tribal ✓ 3. Private_____ 4. other, if so, describe:		
Address of **owner** (if different from site):				
Street: 7 Hazen Drive, John O. Morton Building, P.O. Box 483				
Town: Concord	State: NH	Zip: 03302-0483	County: Merrimack	
c) Legal name of **operator**: New Hampshire Department of Transportation	**Operator** telephone no: (603) 271-3226			
	Operator fax no.: (603) 271-3914		**Operator** email: do'connell@dot.state.nh.us	
Operator contact name and title: Dale O'Connell - Contamination Program Manager				

Address of **operator** (if different from owner):	Street: same as owner		
Town: same as owner	State: -	Zip:	County: -

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

e) Is site/facility subject to any State permitting or other action which is causing the generation of discharge? Yes ✓ No Groundwater Management
If "yes," please list: Permits (multiple permits - see Table 1)
1. site identification # assigned by the state of NH or MA:
2. permit or license # assigned:
3. state agency contact information: name, location, and telephone number:
NHDES, 29 Hazen Drive, Concord, NH 03302 - 603-271-3744

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: permit appl. in preparation
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 during roadway reconstruction project which includes several state-listed sites with current NHDES Groundwater Management Permits (GMPs). A listing of these sites and the known impacts at the sites are presented on Table 1.

b) Provide the following information about each discharge:	1) Number of discharge points: 1	2) What is the **maximum** and **average flow rate** of discharge (in cubic feet per second, ft^3/s)? Max. flow_0.0655 (29 gpm) Average flow 0.0273 (12.3 gpm) 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. See calculation in Appendix B

Longitude: -70.9919 Latitude: 43.3137

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

4) If hydrostatic testing, total volume of the discharge (gals): N/A	5) Is the discharge intermittent ✓ or seasonal ____? Is discharge ongoing Yes ____ No ✓ ?
c) Expected dates of discharge (mm/dd/yy): start 06/01/10 end 12/31/10	
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).	

See Attached Figures 1 and 2

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

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

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

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

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
1. Total Suspended Solids		✓	2	grab	2540D	5 mg/l	13000		<5000	
2. Total Residual Chlorine		✓							<10	
3. Total Petroleum Hydrocarbons		✓	5	grab	8100M	0.2mg/l	2700		<200	
4. Cyanide	✓		2	grab	4500	10 ug/l				
5. Benzene		✓	5	grab	8260B	1 ug/l	3		<1	
6. Toluene		✓	5	grab	8260B	1 ug/l	1		<1	
7. Ethylbenzene		✓	5	grab	8260B	1 ug/l	1		<1	
8. (m,p,o) Xylenes		✓	5	grab	8260B	1 ug/l	4		<1	
9. Total BTEX[4]		✓	5	grab	8260B	1 ug/l	5		<5	

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

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
10. Ethylene Dibromide (1,2- Dibromo-methane)	✓		5	grab	8260B	2 ug/l				
11. Methyl-tert-Butyl Ether (MtBE)		✓	5	grab	8260B	5 ug/l	10		<5	
12. tert-Butyl Alcohol (TBA)	✓		5	grab	8260B	30 ug/l				
13. tert-Amyl Methyl Ether (TAME)	✓		5	grab	8260B	5 ug/l				
14. Naphthalene		✓	5	grab	8260B	5 ug/l	160		<5	
15. Carbon Tetra-chloride	✓		5	grab	8260B	2 ug/l				
16. 1,4 Dichlorobenzene		✓	5	grab	8260B	1 ug/l	3		<1	
17. 1,2 Dichlorobenzene	✓		5	grab	8260B	1 ug/l				
18. 1,3 Dichlorobenzene	✓		5	grab	8260B	1 ug/l				
19. 1,1 Dichloroethane	✓		5	grab	8260B	2 ug/l				
20. 1,2 Dichloroethane	✓		5	grab	8260B	2 ug/l				
21. 1,1 Dichloroethylene	✓		5	grab	8260B	1 ug/l				
22. cis-1,2 Dichloro-ethylene	✓		5	grab	8260B	2 ug/l				
23. Dichloromethane (Methylene Chloride)	✓		5	grab	8260B	5 ug/l				
24. Tetrachloroethylene	✓		5	grab	8260B	2 ug/l				

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Avg. daily Value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
25. 1,1,1 Trichloroethane	✓		5	grab	8260B	2 ug/l				
26. 1,1,2 Trichloroethane	✓		5	grab	8260B	2 ug/l				
27. Trichloroethylene	✓		5	grab	8260B	2 ug/l				
28. Vinyl Chloride	✓		5	grab	8260B	2 ug/l				
29. Acetone	✓		5	grab	8260B	10 ug/l				
30. 1,4 Dioxane		✓							<5	
31. Total Phenols		✓							<25	
32. Pentachlorophenol		✓							<0.5	
33. Total Phthalates [5] (Phthalate esthers)		✓							<1	
34. Bis (2-Ethylhexyl) Phthalate [Di-(ethylhexyl) Phthalate]		✓							<1	
35. Total Group I Polycyclic Aromatic Hydrocarbons (PAH)		✓	3	grab	8270D	0.1ug/l	55.2		<5	
a. Benzo(a) Anthracene		✓	3	grab	8270D	0.1ug/l	9.8			
b. Benzo(a) Pyrene		✓	3	grab	8270D	0.1ug/l	9.7			
c. Benzo(b)Fluoranthene		✓	3	grab	8270D	0.1ug/l	13			
d. Benzo(k) Fluoranthene		✓	3	grab	8270D	0.1ug/l	3.5			
e. Chrysene		✓	3	grab	8270D	0.1ug/l	10			

[5] The sum of individual phthalate compounds.

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method	Maximum daily value		Average daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
f. Dibenzo(a,h) anthracene		✓	3	grab	8270C	0.1ug/l	1.4			
g. Indeno(1,2,3-cd) Pyrene		✓	3	grab	8270C	0.1ug/l	7.8			
36. Total Group II Polycyclic Aromatic Hydrocarbons (PAH)		✓	3	grab	8270C	0.1ug/l	288.5		<50	
h. Acenaphthene		✓	3	grab	8270C	0.1ug/l	20			
i. Acenaphthylene		✓	3	grab	8270C	0.1ug/l	17			
j. Anthracene		✓	3	grab	8270C	0.1ug/l	10			
k. Benzo(ghi) Perylene		✓	3	grab	8270C	0.1ug/l	6.5			
l. Fluoranthene		✓	3	grab	8270C	0.1ug/l	29			
m. Fluorene		✓	3	grab	8270C	0.1ug/l	34			
n. Naphthalene-		✓	3	grab	8270C	0.1ug/l	93		<5	
o. Phenanthrene		✓	3	grab	8270C	0.1ug/l	55			
p. Pyrene		✓	3	grab	8270C	0.1ug/l	24			
37. Total Polychlorinated Biphenyls (PCBs)	✓		3	grab	8082	0.5ug/l				
38. Antimony	✓		2	grab	200.8	1 ug/l				
39. Arsenic		✓	5	grab	200.8	1 ug/l	28		<8	
40. Cadmium	✓		5	grab	200.8	1 ug/l				
41. Chromium III		✓	5	grab	200.8	1 ug/l	8		<4	
42. Chromium VI	✓		5	grab	200.8	1 ug/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		✓	2	grab	200.8	1 ug/l	15		<3	
44. Lead		✓	5	grab	200.8	1 ug/l	73		<0.5	
45. Mercury	✓		5	grab	200.8	0.1ug/l				
46. Nickel		✓	2	grab	200.8	1 ug/l	4		<3	
47. Selenium	✓		5	grab	200.8	1 ug/l				
48. Silver	✓		5	grab	200.8	1 ug/l				
49. Zinc		✓	2	grab	200.8	5 ug/l	24		<17	
50. Iron		✓	2	grab	200.8	50 ug/l	1300		<1000	
Other (describe):										

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

Step 1: Do any of the metals in the influent have a **reasonable potential** to exceed the effluent limits in Appendix III (i.e., the limits set at zero to five dilutions)? Y ✓ N____	If yes, which metals? arsenic, copper, lead, 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: arsenic, copper, lead, iron DF: 133 See calculation in Appendix B	Look up the limit calculated at the corresponding dilution factor in **Appendix IV.** Do any of the metals in the **influent** have the potential to exceed the corresponding **effluent** limits in Appendix IV (i.e., is the influent concentration above the limit set at the calculated dilution factor)? Y____ N ✓ If "Yes," list which metals:

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:

Groundwater will be pumped from open excavations into fractionation tanks then through a sediment filter to remove fines, thereby decreasing the total suspended solids and metals. Once fines are removed, the water will be pumped through two GAC vessels in series to remove VOCs and semi-VOCs/PAHs before being discharged to a drainage line which discharges into the Cocheco River located east of the Site. (See attached Figures 1 and 2) The treatment system was designed and will be operated by EnPro Services Inc. of Bow, NH. At the proposed average flow rate (see 4.d below), the wastewater could be discharged without treatment to the Cocheco River.

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 15 Maximum flow rate of treatment system 30 Design flow rate of treatment system 75

d) A description of chemical additives being used or planned to be used (attach MSDS sheets):

None

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

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

b) Provide a narrative description of the discharge pathway, including the name(s) of the receiving waters:

The treated water will be gravity-conveyed to the main stem of the Cocheco River located east of the Site. (See attached Figures 1 and 2)

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.

See Figures 1 and 2

d) Provide the state water quality classification of the receiving water B,

e) Provide the reported or calculated seven day-ten year low flow (7Q10) of the receiving water 4.0 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)?
2008 listing - arsenic, ammonia, chloride, dissolved oxygen, iron, pH, mercury, escherichia coli

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

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

a) Are any listed threatened or endangered species, or designated critical habitat, in proximity to the discharge? Yes____ No ✓
Has any consultation with the federal services been completed ? 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 N/A

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.

NHDOT is conducting road reconstruction activities between 293 and 401 North Main Street in Rochester, New Hampshire. Sites along the road reconstruction project include leaking underground storage tank (LUST) sites associated with existing gasoline service stations; closed LUST sites associated with a transmission repair facility and a car dealership; metals impacted soil and groundwater associated with an arms manufacturer; and sites associated with a former City of Rochester landfill/dump. The dewatering wastewater handled for the road reconstruction project will be pumped from excavations along these sites and the former City dump. Table 1 summarizes these sites and the nature of the release at the sites.

The RGP NOI analytical data for the "untreated influent" are based on samples collected from monitoring wells installed along the east side of North Main Street. Samples were inadvertantly not collected for total residual chlorine (TRC), 1,4-dioxane, total phenols, pentachlorophenol, total phthalates, and bis(2-ethylhexyl) phthalate. For the purposes of this application, we have assumed these compounds are present in the influent. However, with the exception of the TRC, we anticipate that these compounds will be removed from the water by the filters and granular activated carbon treatment prior to discharge. For the TRC, while we believe it is likely present in the influent and will not be removed by the treatment systems, it is our opinion that the concentration in the effluent will be below the 11 microgram per liter (ug/l) monthly average effluent limitation.

Laboratory analytical reports are included in Appendix A, dilution factor calculations are included in Appendix B, and TMDL correspondence are included in Appendix C.

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: 293-401 North Main Street/Route 11/Farmington Road - Rochester - NHDOT Project #10620L

Operator signature:

Title: ~~Civil Engineer/Contract Administrator~~ Contamination Program Manager

Date: 5/25/10

TABLES

Table 1
Summary of Information for State-Listed Sites
293-401 North Main Street/Route 11/Farmington Road
Rochester, New Hampshire

Lot Number Station+Offset	Current Property Name	Previous Property Name	Address (google)	Address (DES)	NHDES Site No.	Current Groundwater Management Permit No.	Nature of Impacts	NHDES Project Manager and phone number
114 St. 303+50Rt to 305+75Rt	Cumberland Farms	none found	293 N Main St	293 N Main St	199401032	199401032-R-002	LUST-petroleum, MtBE, Benzene, TBA and others	Ken Richards - (603) 271-7372
116 St. 312+75Rt to 315+75Rt	Pizza Hut/Dunkin Donuts	Pierce/Granite Ford	303 N Main St	Farmington Rd	199611022	199611022-R-003	Vapor Intrusion Issues, GMP, methane, BTEX, MtBE, various VOCs below AGQSs, activity and use restriction	unassigned
117 St. 315+75Rt to 318+75Rt	"Vacant Lot"/Opportunity Realty of Rochester LLC	Off Price Outlet Store	305 N Main St	305 Farmington Rd	199705019	none	Potential vapor intrusion issues, methane, BTEX, MtBE, various VOCs below AGQSs, petroleum	Joe Donovan - (603) 271-6811
120 St. 318+75Rt to 325+25Rt	Dick Poulin Chevrolet/Welch Cheney Automotive Group LLC	Dick Poulin Chevy Olds	401 N Main St	401 N Main St	199108024	199108024-R-002	MtBE from LUST-petroleum	Jason Domke - (603) 271-7380
122 St. 314+75Lt to 329+50Lt	Thompson Center Arms/Fox Ridge Outfitters/O.L. Development Inc	THOMPSON K W TOOL CO	400 N Main St	400 N Main St	200703058	none	arsenic plume along road, soil impacts onsite	Molly Stark - (603) 271-2890
124 St. 311+50Lt to 312+75Lt	Tri-City Transmission	none found	300 N Main St	Rte 11 Farmington Rd	199403015	none	potential petroleum impacts	N/A-closed site
126 St. 307+25Lt to 309+75Lt	Getty Gas Station/Leemilt's Petroleum Inc.	GETTY #55249	3 Ten Rod Rd	3 Ten Rod Rd	199809066	199809066-R-002	LUST-petroleum	Ken Richards - (603) 271-7372
116 through 120 St. 312+50Rt to 319+50Rt	City of Rochester Landfill	none found	305 N Main St	305 N Main St	not found	none	unlined, uncapped municipal dump - methane, BTEX, MtBE, various VOCs below AGQSs	Doug Kemp - (603) 271-0674

Notes:
1) LUST - leaking underground storage tank
2) MtBE - methyl-tert-butyl-ether
3) TBA - tert-butyl alchohol
4) GMP - groundwater management permit
5) BTEX - benzene, toluene, ethylbenzene, xylenes
6) VOCs - volatile organic compounds
7) AGQSs - ambient groundwater quality standards

Prepared by: TAM
Checked by: BLJ

Table 2
Summary of Groundwater Analytical Results
293-401 North Main Street/Route 11/Farmington Road
Rochester, New Hampshire

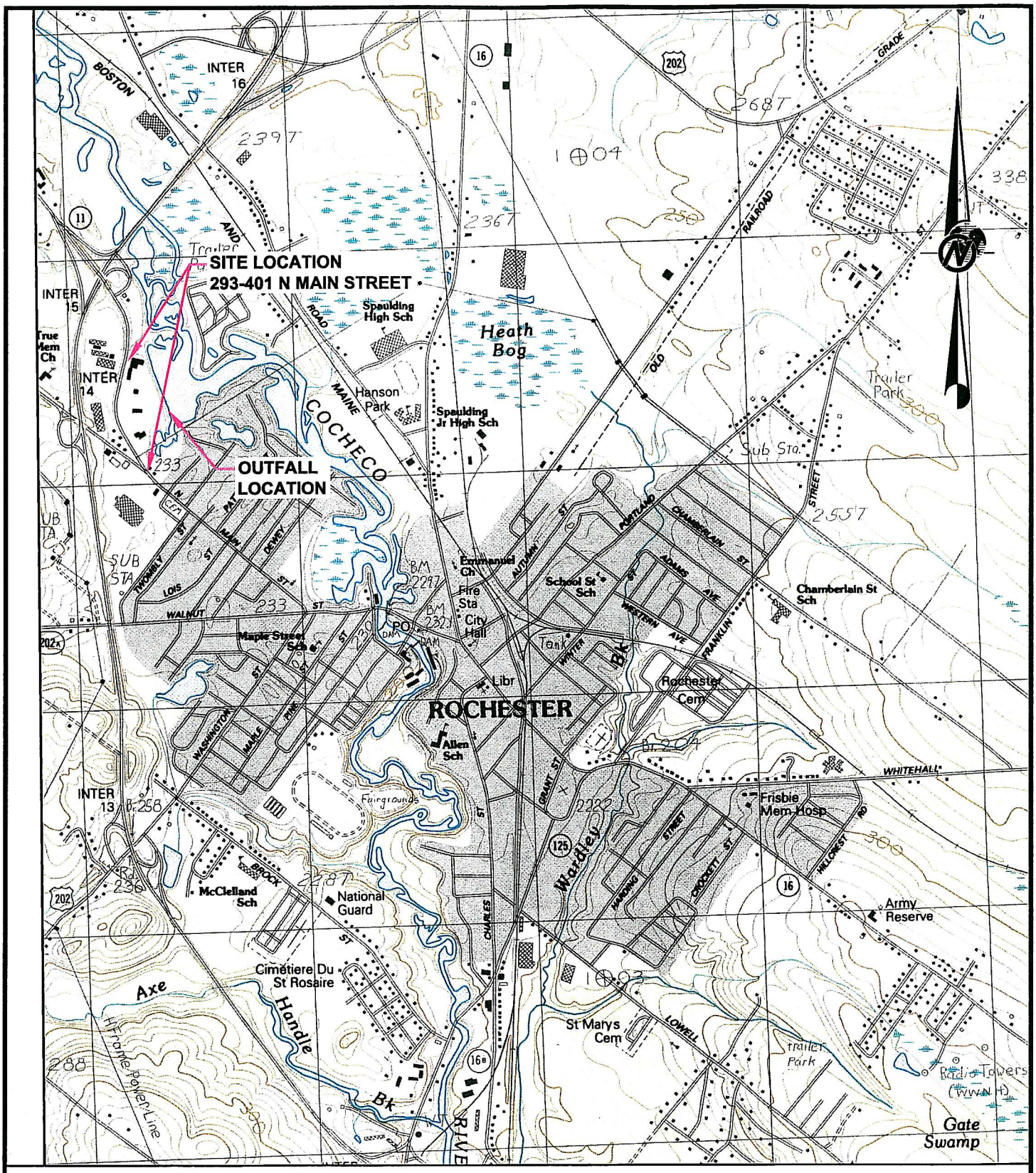
PARAMETERS / Sample Location	NHDES Ambient Groundwater Quality Standards (AGQS)	RGP Limits	SB-201	SB-203	SB-203	SB-208	SB-208	SB-212	SB-215
Date			7/30/09	7/30/09	11/20/09	7/30/09	11/20/09	7/30/09	7/30/09
VOCs (ug/L) via Method 8260B									
mp-Xylene	10,000	100 [9]	ND(1)	2	NA	ND(1)	NA	ND(1)	ND(1)
o-Xylene	10,000	100 [9]	ND(1)	2	NA	ND(1)	NA	ND(1)	ND(1)
1,2,4-Trimethylbenzene	330	NS	ND(1)	2	NA	ND(1)	NA	5	ND(1)
Naphthalene	20	20	ND(5)	**160**	NA	ND(5)	NA	ND(5)	ND(5)
Chlorobenzene	100	NS	ND(2)	ND(2)	NA	ND(2)	NA	7	ND(2)
Toluene	1,000	100 [9]	ND(1)	1	NA	ND(1)	NA	ND(1)	ND(1)
p-Isopropyltoluene	260	NS	ND(1)	ND(1)	NA	ND(1)	NA	2	ND(1)
1,4-Dichlorobenzene	75	5	ND(1)	ND(1)	NA	ND(1)	NA	3	ND(1)
Semi-VOCs (ug/L) via Method 8270D									
Naphthalene	20	20	NA	**93**	NA	ND(0.1)	NA	2.6	NA
2-Methylnaphthalene	280	NS	NA	24	NA	ND(0.1)	NA	0.5	NA
Acenaphthylene	420	100 [10]	NA	17	NA	ND(0.1)	NA	ND(0.1)	NA
Acenaphthene	420	100 [10]	NA	20	NA	ND(0.1)	NA	0.2	NA
Fluorene	280	100 [10]	NA	34	NA	ND(0.1)	NA	0.1	NA
Phenanthrene	210	100 [10]	NA	55	NA	0.1	NA	0.1	NA
Anthracene	2,100	100 [10]	NA	10	NA	ND(0.1)	NA	ND(0.1)	NA
Fluoranthene	280	100 [10]	NA	29	NA	0.1	NA	ND(0.1)	NA
Pyrene	210	100 [10]	NA	24	NA	ND(0.1)	NA	ND(0.1)	NA
Benzo[a]anthracene	0.1	0.0038	NA	**9.8**	NA	**0.1**	NA	ND(0.1)	NA
Chrysene	5	0.0038	NA	**10**	NA	ND(0.1)	NA	ND(0.1)	NA
Benzo[b]fluoranthene	0.1	0.0038	NA	**13**	NA	ND(0.1)	NA	ND(0.1)	NA
Benzo[k]fluoranthene	0.5	0.0038	NA	**3.5**	NA	ND(0.1)	NA	ND(0.1)	NA
Benzo[a]pyrene	0.2	0.0038	NA	**9.7**	NA	ND(0.1)	NA	ND(0.1)	NA
Indeno[1,2,3-cd]pyrene	0.1	0.0038	NA	**7.8**	NA	ND(0.1)	NA	ND(0.1)	NA
Dibenzo[a,h]anthracene	0.1	0.0038	NA	**1.4**	NA	ND(0.1)	NA	ND(0.1)	NA
Benzo[g,h,i]perylene	210	100 [10]	NA	6.5	NA	ND(0.1)	NA	ND(0.1)	NA
PCBs (ug/L) via Method 8082									
various compounds	various	0.000064	NA	ND(0.5)	NA	ND(0.5)	NA	ND(0.5)	NA
TPH (mg/L) via Method 8100 Modified									
TPH (C9-C40)	NS	5	ND(0.2)	2.7	NA	ND(0.2)	NA	0.2	ND(0.2)
Total Metals (mg/L) via Method 200.8									
Antimony	0.006	0.0056	NA	NA	ND(0.001)	NA	ND(0.001)	NA	NA
Arsenic	0.010	0.010	0.001	**0.028**	NA	0.002	NA	0.007	0.004
Barium	2.0	NS	0.060	0.79	NA	0.013	NA	0.62	0.38
Cadmium	0.005	0.0008	ND(0.001)	ND(0.001)	NA	ND(0.001)	NA	ND(0.001)	ND(0.001)
Chromium	0.10	0.0114	ND(0.001)	0.008	NA	0.001	NA	0.004	0.002
Copper	1.3	0.0029	NA	NA	0.002	NA	0.015	NA	NA
Iron	NS	1.0	NA	NA	1.3	NA	0.74	NA	NA
Lead	0.015	0.0005	ND(0.001)	**0.015**	NA	**0.016**	NA	0.008	**0.073**
Mercury	0.002	0.0009	ND(0.0001)	ND(0.0001)	NA	ND(0.0001)	NA	ND(0.0001)	ND(0.0001)
Nickel	0.10	0.0161	NA	NA	0.004	NA	0.002	NA	NA
Selenium	0.050	0.005	ND(0.001)	ND(0.001)	NA	ND(0.001)	NA	ND(0.001)	ND(0.001)
Silver	0.10	0.0004	ND(0.001)	ND(0.001)	NA	ND(0.001)	NA	ND(0.001)	ND(0.001)
Zinc	NS	0.037	NA	NA	0.009	NA	0.024	NA	NA
Suspended Solids (mg/L) via Method 2540D									
Suspended Solids	NS	30	NA	NA	ND(5)	NA	13	NA	NA
TKN (mg/L) via Method 4500 Norg C									
TKN	NS	NS	NA	NA	ND(0.5)	NA	ND(0.5)	NA	NA
Total Phosphorus - P (mg/L) via Method 365.3									
Total Phosphorus - P	NS	NS	NA	NA	ND(0.05)	NA	0.09	NA	NA
BOD (mg/L) via Method 5210B									
BOD	NS	NS	NA	NA	ND(6)	NA	ND(6)	NA	NA
Total Cyanide (mg/L) via Method 4500 CNE									
Total Cyanide	NS	0.0052	NA	NA	ND(0.01)	NA	ND(0.01)	NA	NA

Notes:
1. ug/L = micrograms per liter
2. VOCs = volatile organic compounds
3. Semi-VOCs = semi-volatile organic compounds
4. PCBs = polychorinated biphenyls
5. TPH = total petroleum hydrocarbons
6. ND ( ) = Not detected above indicated laboratory reporting limit
7. NS = No Standard established
8. NA = Not Analyzed
9. 100 [9] indicates effluent limit as total BTEX
10. 100 [10] indicates effluent limit as total group 2 PAHs

Bold indicates exceedance of AGQS

Prepared By: BLJ
Checked By: TAM

FIGURES



REFERENCE

1.) BASE MAPS TAKEN FROM USGS MAP TITLED, "ROCHESTER,NH". DATED 1983, CONTOUR INTERVAL: 10 FEET

2000 0 2000
SCALE FEET

Golder Associates
WESTBOROUGH, MA

SCALE	AS SHOWN
DATE	05/12/10
DESIGN	TAM
CADD	CDS
CHECK	Jaw
REVIEW	RWB

TITLE

SITE AND OUTFALL LOCATION MAP

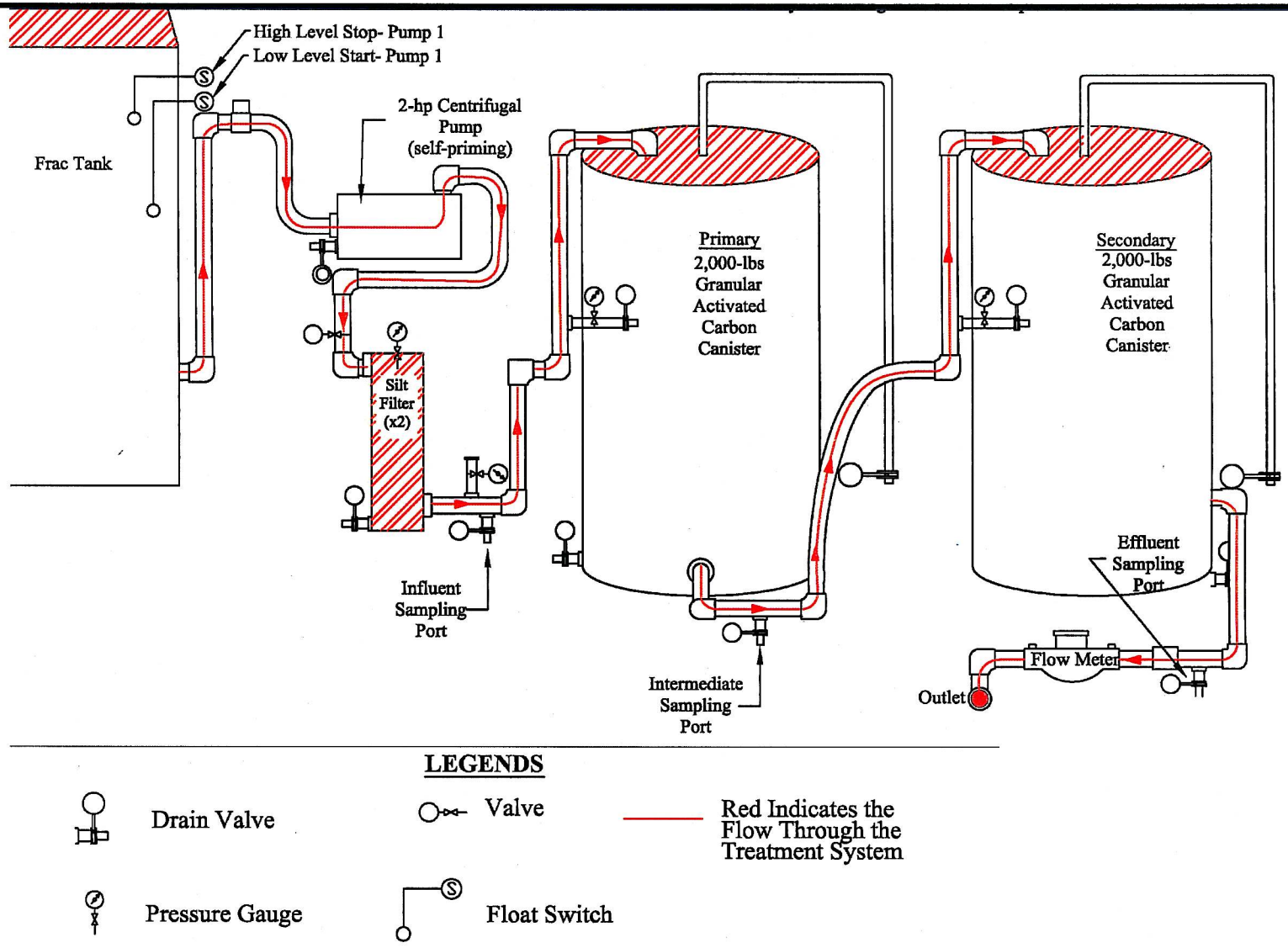
FILE No.	10387243A001		
PROJECT No.	103-87243	REV.	0

NHDOT, FARMINGTON ROAD, ROCHESTER, NH

FIGURE 1

Drawing file: 10387243A001.dwg May 13, 2010 - 2:58pm

Drawing file: 10387243A002.dwg May 13, 2010 – 2:58pm



REFERENCE

1.) FIGURE COPIED FROM GROUNDWATER TREATMENT SYSTEM SCHEMATIC - 754PM, BY ENPRO SERVICES, INC. DATED OCTOBER, 2009.

PROJECT No.	103-87243
FILE No.	10387243A002
REV. 0	SCALE N.T.S.
DESIGN	TAM 05/12/10
CADD	CDS 5/12/10
CHECK	
REVIEW	

TITLE

PROPOSED TREATMENT SYSTEM SCHEMATIC

PROJECT

NHDOT
FARMINGTON ROAD
ROCHESTER, NH

Golder Associates
Manchester, New Hampshire

FIGURE 2

APPENDIX A

LABORATORY ANALYTICAL DATA

eastern analytical

professional laboratory services

Theresa A. Miller
Golder Associates, Inc.
670 N. Commercial St., Suite 103
Manchester , NH 03101

ACCREDITED IN ACCORDANCE WITH nela

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 81418
Client Identification: NHDOT - Rochester | 093-87094
Date Received: 7/31/2009

Dear Ms. Miller:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted
< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director

8.10.09
Date

_____
# of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

Eastern Analytical, Inc. ID#: 81418

Client: **Golder Associates, Inc.** Client Designation: **NHDOT - Rochester | 093-87094**

Temperature upon receipt (°C): 5 **Received on ice or cold packs (Yes/No): Y**

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
81418.01	SB-215	7/31/09	7/30/09	aqueous		Adheres to Sample Acceptance Policy
81418.02	SB-208	7/31/09	7/30/09	aqueous		Adheres to Sample Acceptance Policy
81418.03	SB-212	7/31/09	7/30/09	aqueous		Adheres to Sample Acceptance Policy
81418.04	SB-201	7/31/09	7/30/09	aqueous		Adheres to Sample Acceptance Policy
81418.05	SB-203	7/31/09	7/30/09	aqueous		Adheres to Sample Acceptance Policy
81418.06	Trip Blank	7/31/09	7/20/09	aqueous		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitibility, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983
2) Standard Methods for Examination of Water and Wastewater : Inorganics, 19th Edition, 1995; Microbiology, 20th Edition, 1998
3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
4) Hach Water Analysis Handbook, 2nd edition, 1992

LABORATORY REPORT

Eastern Analytical, Inc. ID#: 81418

Client: **Golder Associates, Inc.** Client Designation: **NHDOT - Rochester | 093-87094**

Sample ID:	SB-215	SB-208	SB-212	SB-201	SB-203	Trip Blank
Lab Sample ID:	81418.01	81418.02	81418.03	81418.04	81418.05	81418.06
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	7/30/09	7/30/09	7/30/09	7/30/09	7/30/09	7/20/09
Date Received:	7/31/09	7/31/09	7/31/09	7/31/09	7/31/09	7/31/09
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Date of Analysis:	8/4/09	8/4/09	8/4/09	8/4/09	8/4/09	8/4/09
Analyst:	VG	VG	VG	VG	VG	VG
Method:	8260B	8260B	8260B	8260B	8260B	8260B
Dilution Factor:	1	1	1	1	1	1
Dichlorodifluoromethane	< 5	< 5	< 5	< 5	< 5	< 5
Chloromethane	< 2	< 2	< 2	< 2	< 2	< 2
Vinyl chloride	< 2	< 2	< 2	< 2	< 2	< 2
Bromomethane	< 2	< 2	< 2	< 2	< 2	< 2
Chloroethane	< 5	< 5	< 5	< 5	< 5	< 5
Trichlorofluoromethane	< 5	< 5	< 5	< 5	< 5	< 5
Diethyl Ether	< 5	< 5	< 5	< 5	< 5	< 5
Acetone	< 10	< 10	< 10	< 10	< 10	< 10
1,1-Dichloroethene	< 1	< 1	< 1	< 1	< 1	< 1
tert-Butyl Alcohol (TBA)	< 30	< 30	< 30	< 30	< 30	< 30
Methylene chloride	< 5	< 5	< 5	< 5	< 5	< 5
Carbon disulfide	< 5	< 5	< 5	< 5	< 5	< 5
Methyl-t-butyl ether(MTBE)	< 5	< 5	< 5	< 5	< 5	< 5
Ethyl-t-butyl ether(ETBE)	< 5	< 5	< 5	< 5	< 5	< 5
Isopropyl ether(DIPE)	< 5	< 5	< 5	< 5	< 5	< 5
tert-amyl methyl ether(TAME)	< 5	< 5	< 5	< 5	< 5	< 5
trans-1,2-Dichloroethene	< 2	< 2	< 2	< 2	< 2	< 2
1,1-Dichloroethane	< 2	< 2	< 2	< 2	< 2	< 2
2,2-Dichloropropane	< 2	< 2	< 2	< 2	< 2	< 2
cis-1,2-Dichloroethene	< 2	< 2	< 2	< 2	< 2	< 2
2-Butanone(MEK)	< 10	< 10	< 10	< 10	< 10	< 10
Bromochloromethane	< 2	< 2	< 2	< 2	< 2	< 2
Tetrahydrofuran(THF)	< 10	< 10	< 10	< 10	< 10	< 10
Chloroform	< 2	< 2	< 2	< 2	< 2	< 2
1,1,1-Trichloroethane	< 2	< 2	< 2	< 2	< 2	< 2
Carbon tetrachloride	< 2	< 2	< 2	< 2	< 2	< 2
1,1-Dichloropropene	< 2	< 2	< 2	< 2	< 2	< 2
Benzene	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dichloroethane	< 2	< 2	< 2	< 2	< 2	< 2
Trichloroethene	< 2	< 2	< 2	< 2	< 2	< 2
1,2-Dichloropropane	< 2	< 2	< 2	< 2	< 2	< 2
Dibromomethane	< 2	< 2	< 2	< 2	< 2	< 2
Bromodichloromethane	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
4-Methyl-2-pentanone(MIBK)	< 10	< 10	< 10	< 10	< 10	< 10
cis-1,3-Dichloropropene	< 2	< 2	< 2	< 2	< 2	< 2
Toluene	< 1	< 1	< 1	< 1	**1**	< 1
trans-1,3-Dichloropropene	< 2	< 2	< 2	< 2	< 2	< 2
1,1,2-Trichloroethane	< 2	< 2	< 2	< 2	< 2	< 2
2-Hexanone	< 10	< 10	< 10	< 10	< 10	< 10
Tetrachloroethene	< 2	< 2	< 2	< 2	< 2	< 2
1,3-Dichloropropane	< 2	< 2	< 2	< 2	< 2	< 2
Dibromochloromethane	< 2	< 2	< 2	< 2	< 2	< 2
1,2-Dibromoethane(EDB)	< 2	< 2	< 2	< 2	< 2	< 2
Chlorobenzene	< 2	< 2	**7**	< 2	< 2	< 2
1,1,1,2-Tetrachloroethane	< 2	< 2	< 2	< 2	< 2	< 2
Ethylbenzene	< 1	< 1	< 1	< 1	< 1	< 1

LABORATORY REPORT

Eastern Analytical, Inc. ID#: 81418

Client: **Golder Associates, Inc.** Client Designation: **NHDOT - Rochester | 093-87094**

Sample ID:	SB-215	SB-208	SB-212	SB-201	SB-203	Trip Blank
Lab Sample ID:	81418.01	81418.02	81418.03	81418.04	81418.05	81418.06
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	7/30/09	7/30/09	7/30/09	7/30/09	7/30/09	7/20/09
Date Received:	7/31/09	7/31/09	7/31/09	7/31/09	7/31/09	7/31/09
Units:	ug/l	ug/l	ug/l	ug/l	ug/l	ug/l
Date of Analysis:	8/4/09	8/4/09	8/4/09	8/4/09	8/4/09	8/4/09
Analyst:	VG	VG	VG	VG	VG	VG
Method:	8260B	8260B	8260B	8260B	8260B	8260B
Dilution Factor:	1	1	1	1	1	1
mp-Xylene	< 1	< 1	< 1	< 1	**2**	< 1
o-Xylene	< 1	< 1	< 1	< 1	**2**	< 1
Styrene	< 1	< 1	< 1	< 1	< 1	< 1
Bromoform	< 2	< 2	< 2	< 2	< 2	< 2
IsoPropylbenzene	< 1	< 1	< 1	< 1	< 1	< 1
Bromobenzene	< 2	< 2	< 2	< 2	< 2	< 2
1,1,2,2-Tetrachloroethane	< 2	< 2	< 2	< 2	< 2	< 2
1,2,3-Trichloropropane	< 2	< 2	< 2	< 2	< 2	< 2
n-Propylbenzene	< 1	< 1	< 1	< 1	< 1	< 1
2-Chlorotoluene	< 2	< 2	< 2	< 2	< 2	< 2
4-Chlorotoluene	< 2	< 2	< 2	< 2	< 2	< 2
1,3,5-Trimethylbenzene	< 1	< 1	< 1	< 1	< 1	< 1
tert-Butylbenzene	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trimethylbenzene	< 1	< 1	**5**	< 1	**2**	< 1
sec-Butylbenzene	< 1	< 1	< 1	< 1	< 1	< 1
1,3-Dichlorobenzene	< 1	< 1	< 1	< 1	< 1	< 1
p-Isopropyltoluene	< 1	< 1	**2**	< 1	< 1	< 1
1,4-Dichlorobenzene	< 1	< 1	**3**	< 1	< 1	< 1
1,2-Dichlorobenzene	< 1	< 1	< 1	< 1	< 1	< 1
n-Butylbenzene	< 1	< 1	< 1	< 1	< 1	< 1
1,2-Dibromo-3-chloropropane	< 2	< 2	< 2	< 2	< 2	< 2
1,3,5-Trichlorobenzene	< 1	< 1	< 1	< 1	< 1	< 1
1,2,4-Trichlorobenzene	< 1	< 1	< 1	< 1	< 1	< 1
Hexachlorobutadiene	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Naphthalene	< 5	< 5	< 5	< 5	**160**	< 5
1,2,3-Trichlorobenzene	< 1	< 1	< 1	< 1	< 1	< 1
4-Bromofluorobenzene (surr)	**94 %R**	**94 %R**	**96 %R**	**93 %R**	**101 %R**	**94 %R**
1,2-Dichlorobenzene-d4 (surr)	**107 %R**	**106 %R**	**107 %R**	**110 %R**	**103 %R**	**103 %R**
Toluene-d8 (surr)	**102 %R**	**98 %R**	**98 %R**	**97 %R**	**100 %R**	**98 %R**

QC REPORT

Eastern Analytical, Inc. ID#: 81418

Client: **Golder Associates, Inc.** Client Designation: **NHDOT - Rochester | 093-87094**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Dichlorodifluoromethane	< 5			8/4/2009	ug/l			8260B
Chloromethane	< 2			8/4/2009	ug/l			8260B
Vinyl chloride	< 2			8/4/2009	ug/l			8260B
Bromomethane	< 2			8/4/2009	ug/l			8260B
Chloroethane	< 5			8/4/2009	ug/l			8260B
Trichlorofluoromethane	< 5			8/4/2009	ug/l			8260B
Diethyl Ether	< 5			8/4/2009	ug/l			8260B
Acetone	< 10			8/4/2009	ug/l			8260B
1,1-Dichloroethene	< 1	26 (128 %R)	25 (123 %R) (4 RPD)	8/4/2009	ug/l	61 - 145	20	8260B
tert-Butyl Alcohol (TBA)	< 30			8/4/2009	ug/l			8260B
Methylene chloride	< 5			8/4/2009	ug/l			8260B
Carbon disulfide	< 5			8/4/2009	ug/l			8260B
Methyl-t-butyl ether(MTBE)	< 5			8/4/2009	ug/l			8260B
Ethyl-t-butyl ether(ETBE)	< 5			8/4/2009	ug/l			8260B
Isopropyl ether(DIPE)	< 5			8/4/2009	ug/l			8260B
tert-amyl methyl ether(TAME)	< 5			8/4/2009	ug/l			8260B
trans-1,2-Dichloroethene	< 2			8/4/2009	ug/l			8260B
1,1-Dichloroethane	< 2			8/4/2009	ug/l			8260B
2,2-Dichloropropane	< 2			8/4/2009	ug/l			8260B
cis-1,2-Dichloroethene	< 2			8/4/2009	ug/l			8260B
2-Butanone(MEK)	< 10			8/4/2009	ug/l			8260B
Bromochloromethane	< 2			8/4/2009	ug/l			8260B
Tetrahydrofuran(THF)	< 10			8/4/2009	ug/l			8260B
Chloroform	< 2			8/4/2009	ug/l			8260B
1,1,1-Trichloroethane	< 2			8/4/2009	ug/l			8260B
Carbon tetrachloride	< 2			8/4/2009	ug/l			8260B
1,1-Dichloropropene	< 2			8/4/2009	ug/l			8260B
Benzene	< 1	23 (115 %R)	22 (111 %R) (4 RPD)	8/4/2009	ug/l	76 - 127	20	8260B
1,2-Dichloroethane	< 2			8/4/2009	ug/l			8260B
Trichloroethene	< 2	24 (120 %R)	24 (119 %R) (1 RPD)	8/4/2009	ug/l	71 - 120	20	8260B
1,2-Dichloropropane	< 2			8/4/2009	ug/l			8260B
Dibromomethane	< 2			8/4/2009	ug/l			8260B
Bromodichloromethane	< 0.5			8/4/2009	ug/l			8260B
4-Methyl-2-pentanone(MIBK)	< 10			8/4/2009	ug/l			8260B
cis-1,3-Dichloropropene	< 2			8/4/2009	ug/l			8260B
Toluene	< 1	23 (115 %R)	22 (111 %R) (4 RPD)	8/4/2009	ug/l	76 - 125	20	8260B
trans-1,3-Dichloropropene	< 2			8/4/2009	ug/l			8260B
1,1,2-Trichloroethane	< 2			8/4/2009	ug/l			8260B
2-Hexanone	< 10			8/4/2009	ug/l			8260B
Tetrachloroethene	< 2			8/4/2009	ug/l			8260B
1,3-Dichloropropane	< 2			8/4/2009	ug/l			8260B
Dibromochloromethane	< 2			8/4/2009	ug/l			8260B
1,2-Dibromoethane(EDB)	< 2			8/4/2009	ug/l			8260B
Chlorobenzene	< 2	24 (119 %R)	23 (115 %R) (3 RPD)	8/4/2009	ug/l	75 - 130	20	8260B
1,1,1,2-Tetrachloroethane	< 2			8/4/2009	ug/l			8260B

QC REPORT

Eastern Analytical, Inc. ID#: 81418

Client: **Golder Associates, Inc.** Client Designation: **NHDOT - Rochester | 093-87094**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Ethylbenzene	< 1			8/4/2009	ug/l			8260B
mp-Xylene	< 1			8/4/2009	ug/l			8260B
o-Xylene	< 1			8/4/2009	ug/l			8260B
Styrene	< 1			8/4/2009	ug/l			8260B
Bromoform	< 2			8/4/2009	ug/l			8260B
IsoPropylbenzene	< 1			8/4/2009	ug/l			8260B
Bromobenzene	< 2			8/4/2009	ug/l			8260B
1,1,2,2-Tetrachloroethane	< 2			8/4/2009	ug/l			8260B
1,2,3-Trichloropropane	< 2			8/4/2009	ug/l			8260B
n-Propylbenzene	< 1			8/4/2009	ug/l			8260B
2-Chlorotoluene	< 2			8/4/2009	ug/l			8260B
4-Chlorotoluene	< 2			8/4/2009	ug/l			8260B
1,3,5-Trimethylbenzene	< 1			8/4/2009	ug/l			8260B
tert-Butylbenzene	< 1			8/4/2009	ug/l			8260B
1,2,4-Trimethylbenzene	< 1			8/4/2009	ug/l			8260B
sec-Butylbenzene	< 1			8/4/2009	ug/l			8260B
1,3-Dichlorobenzene	< 1			8/4/2009	ug/l			8260B
p-Isopropyltoluene	< 1			8/4/2009	ug/l			8260B
1,4-Dichlorobenzene	< 1			8/4/2009	ug/l			8260B
1,2-Dichlorobenzene	< 1			8/4/2009	ug/l			8260B
n-Butylbenzene	< 1			8/4/2009	ug/l			8260B
1,2-Dibromo-3-chloropropane	< 2			8/4/2009	ug/l			8260B
1,3,5-Trichlorobenzene	< 1			8/4/2009	ug/l			8260B
1,2,4-Trichlorobenzene	< 1			8/4/2009	ug/l			8260B
Hexachlorobutadiene	< 0.5			8/4/2009	ug/l			8260B
Naphthalene	< 5			8/4/2009	ug/l			8260B
1,2,3-Trichlorobenzene	< 1			8/4/2009	ug/l			8260B
4-Bromofluorobenzene (surr)	93 %R	114 %R	111 %R	8/4/2009	% Rec	86 - 115	50	8260B
1,2-Dichlorobenzene-d4 (surr)	106 %R	103 %R	99 %R	8/4/2009	% Rec	80 - 120	50	8260B
Toluene-d8 (surr)	98 %R	103 %R	100 %R	8/4/2009	% Rec	70 - 130	50	8260B

Samples were extracted and analyzed within holding time limits.
Instrumentation was calibrated in accordance with the method requirements.
The method blanks were free of contamination at the reporting limits.
Sample surrogate recoveries met the above stated criteria.
The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.
There were no exceptions in the analyses, unless noted.
* Flagged analyte recoveries deviated from the QA/QC limits.

LABORATORY REPORT

Eastern Analytical, Inc. ID#: 81418

Client: **Golder Associates, Inc.** Client Designation: **NHDOT - Rochester | 093-87094**

Sample ID:	SB-208	SB-212	SB-203
Lab Sample ID:	81418.02	81418.03	81418.05
Matrix:	aqueous	aqueous	aqueous
Date Sampled:	7/30/09	7/30/09	7/30/09
Date Received:	7/31/09	7/31/09	7/31/09
Units:	ug/l	ug/l	ug/l
Date of Extraction/Prep:	8/3/09	8/3/09	8/3/09
Date of Analysis:	8/4/09	8/4/09	8/4/09
Analyst:	JMR	JMR	JMR
Method:	8270D	8270D	8270D
Dilution Factor:	1	1	1
Naphthalene	< 0.1	**2.6**	**93**
2-Methylnaphthalene	< 0.1	**0.5**	**24**
Acenaphthylene	< 0.1	< 0.1	**17**
Acenaphthene	< 0.1	**0.2**	**20**
Fluorene	< 0.1	**0.1**	**34**
Phenanthrene	**0.1**	**0.1**	**55**
Anthracene	< 0.1	< 0.1	**10**
Fluoranthene	**0.1**	< 0.1	**29**
Pyrene	< 0.1	< 0.1	**24**
Benzo[a]anthracene	**0.1**	< 0.1	**9.8**
Chrysene	< 0.1	< 0.1	**10**
Benzo[b]fluoranthene	< 0.1	< 0.1	**13**
Benzo[k]fluoranthene	< 0.1	< 0.1	**3.5**
Benzo[a]pyrene	< 0.1	< 0.1	**9.7**
Indeno[1,2,3-cd]pyrene	< 0.1	< 0.1	**7.8**
Dibenz[a,h]anthracene	< 0.1	< 0.1	**1.4**
Benzo[g,h,i]perylene	< 0.1	< 0.1	**6.5**
p-Terphenyl-D14 (surr)	**78 %R**	**82 %R**	**76 %R**

QC REPORT

Eastern Analytical, Inc. ID#: 81418 **Batch ID:** 733622-31152/A080309PAH1

Client: **Golder Associates, Inc.** Client Designation: **NHDOT - Rochester | 093-87094**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
Naphthalene	< 0.1	23 (91 %R)	23 (92 %R) (1 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
2-Methylnaphthalene	< 0.1	23 (93 %R)	24 (95 %R) (2 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
Acenaphthylene	< 0.1	23 (94 %R)	24 (94 %R) (0 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
Acenaphthene	< 0.1	23 (91 %R)	23 (91 %R) (0 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
Fluorene	< 0.1	23 (93 %R)	23 (93 %R) (0 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
Phenanthrene	< 0.1	23 (92 %R)	23 (93 %R) (1 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
Anthracene	< 0.1	23 (90 %R)	23 (91 %R) (1 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
Fluoranthene	< 0.1	24 (97 %R)	25 (98 %R) (1 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
Pyrene	< 0.1	24 (95 %R)	24 (96 %R) (1 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
Benzo[a]anthracene	< 0.1	21 (82 %R)	21 (83 %R) (1 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
Chrysene	< 0.1	23 (92 %R)	23 (93 %R) (1 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
Benzo[b]fluoranthene	< 0.1	23 (94 %R)	24 (95 %R) (1 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
Benzo[k]fluoranthene	< 0.1	23 (93 %R)	24 (94 %R) (1 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
Benzo[a]pyrene	< 0.1	25 (99 %R)	25 (100 %R) (1 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
Indeno[1,2,3-cd]pyrene	< 0.1	27 (107 %R)	27 (109 %R) (2 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
Dibenz[a,h]anthracene	< 0.1	25 (100 %R)	25 (102 %R) (2 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
Benzo[g,h,i]perylene	< 0.1	24 (95 %R)	24 (96 %R) (1 RPD)	8/4/2009	ug/l	40 - 140	20	8270D
p-Terphenyl-D14 (surr)	82 %R	95 %R	92 %R	8/4/2009	% Rec	33 - 130	20	8270D

Samples were extracted and analyzed within holding time limits.
Instrumentation was calibrated in accordance with the method requirements.
The method blanks were free of contamination at the reporting limits.
Sample surrogate recoveries met the above stated criteria.
The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.
There were no exceptions in the analyses, unless noted.
* Flagged analyte recoveries deviated from the QA/QC limits.

LABORATORY REPORT

Eastern Analytical, Inc. ID#: 81418

Client: **Golder Associates, Inc.** Client Designation: **NHDOT - Rochester | 093-87094**

Sample ID:	SB-215	SB-208	SB-212	SB-201	SB-203
Lab Sample ID:	81418.01	81418.02	81418.03	81418.04	81418.05
Matrix:	aqueous	aqueous	aqueous	aqueous	aqueous
Date Sampled:	7/30/09	7/30/09	7/30/09	7/30/09	7/30/09
Date Received:	7/31/09	7/31/09	7/31/09	7/31/09	7/31/09
Units:	mg/L	mg/L	mg/L	mg/L	mg/L
Date of Extraction/Prep:	8/3/09	8/3/09	8/3/09	8/3/09	8/3/09
Date of Analysis:	8/3/09	8/3/09	8/3/09	8/3/09	8/3/09
Analyst:	JMR	JMR	JMR	JMR	JMR
Method:	8100mod	8100mod	8100mod	8100mod	8100mod
Dilution Factor:	1	1	1	1	1
TPH (C9-C40)	< 0.2	< 0.2	**0.2**	< 0.2	**2.7**
p-Terphenyl-D14 (TPH surr)	**69 %R**	**76 %R**	**85 %R**	**83 %R**	**99 %R**

QC REPORT

Eastern Analytical, Inc. ID#: 81418 **Batch ID:** 733622-31109/A080309TPHL11

Client: **Golder Associates, Inc.** Client Designation: **NHDOT - Rochester | 093-87094**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
TPH (C9-C40)	< 0.2	1.0 (85 %R)	1.1 (90 %R) (6 RPD)	8/3/2009	mg/L	30 - 160	20	8100mod
p-Terphenyl-D14 (TPH surr)	86 %R	90 %R	93 %R	8/3/2009	% Rec	30 - 130		8100mod

Samples were extracted and analyzed within holding time limits.
Instrumentation was calibrated in accordance with the method requirements.
The method blanks were free of contamination at the reporting limits.
Sample surrogate recoveries met the above stated criteria.
The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.
There were no exceptions in the analyses, unless noted.
* Flagged analyte recoveries deviated from the QA/QC limits.

LABORATORY REPORT

Eastern Analytical, Inc. ID#: 81418

Client: **Golder Associates, Inc.** Client Designation: **NHDOT - Rochester | 093-87094**

Sample ID:	SB-208	SB-212	SB-203
Lab Sample ID:	81418.02	81418.03	81418.05
Matrix:	aqueous	aqueous	aqueous
Date Sampled:	7/30/09	7/30/09	7/30/09
Date Received:	7/31/09	7/31/09	7/31/09
% Solid:			
Units:	ug/l	ug/l	ug/l
Date of Extraction/Prep:	8/3/09	8/3/09	8/3/09
Date of Analysis:	8/4/09	8/4/09	8/5/09
Analyst:	JW	JW	JW
Extraction Method:	608/3510C	608/3510C	608/3510C
Analysis Method:	8082	8082	8082
Dilution Factor:	1	1	1
PCB-1016	< 0.5	< 0.5	< 0.5
PCB-1221	< 0.5	< 0.5	< 0.5
PCB-1232	< 0.5	< 0.5	< 0.5
PCB-1242	< 0.5	< 0.5	< 0.5
PCB-1248	< 0.5	< 0.5	< 0.5
PCB-1254	< 0.5	< 0.5	< 0.5
PCB-1260	< 0.5	< 0.5	< 0.5
TMX (surr)	**74 %R**	**81 %R**	**72 %R**
DCB (surr)	**94 %R**	**53 %R**	**65 %R**

QC REPORT

Eastern Analytical, Inc. ID#: 81418 **Batch ID:** 733622-35611/A080309PCB1

Client: **Golder Associates, Inc.** Client Designation: **NHDOT - Rochester | 093-87094**

Parameter Name	Blank	LCS	LCSD	Analysis Date	Units	Limits	RPD	Method
PCB-1016	< 0.5	3.6 (90 %R)	3.6 (91 %R) (1 RPD)	8/4/2009	ug/l	40 - 140	20	8082
PCB-1221	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	8/4/2009	ug/l	40 - 140	20	8082
PCB-1232	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	8/4/2009	ug/l	40 - 140	20	8082
PCB-1242	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	8/4/2009	ug/l	40 - 140	20	8082
PCB-1248	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	8/4/2009	ug/l	40 - 140	20	8082
PCB-1254	< 0.5	< 0.5 (%R N/A)	< 0.5 (%R N/A) (RPD N/A)	8/4/2009	ug/l	40 - 140	20	8082
PCB-1260	< 0.5	3.5 (88 %R)	3.5 (87 %R) (1 RPD)	8/4/2009	ug/l	40 - 140	20	8082
TMX (surr)	72 %R	85 %R	82 %R	8/4/2009	% Rec	30 - 150		8082
DCB (surr)	94 %R	98 %R	91 %R	8/4/2009	% Rec	30 - 150		8082

Samples were extracted and analyzed within holding time limits.
Instrumentation was calibrated in accordance with the method requirements.
The method blanks were free of contamination at the reporting limits.
Sample surrogate recoveries met the above stated criteria.
The associated matrix spikes and/or Laboratory Control Samples met acceptance criteria.
There were no exceptions in the analyses, unless noted.
* Flagged analyte recoveries deviated from the QA/QC limits.

LABORATORY REPORT

Eastern Analytical, Inc. ID#: 81418

Client: **Golder Associates, Inc.** Client Designation: **NHDOT - Rochester | 093-87094**

Sample ID:	SB-215	SB-208	SB-212	SB-201					
Lab Sample ID:	81418.01	81418.02	81418.03	81418.04					
Matrix:	aqueous	aqueous	aqueous	aqueous					
Date Sampled:	7/30/09	7/30/09	7/30/09	7/30/09	**Analytical Matrix**	**Units**	**Date of Analysis**	**Method**	**Analyst**
Date Received:	7/31/09	7/31/09	7/31/09	7/31/09					
Arsenic	**0.004**	**0.002**	**0.007**	**0.001**	AqTot	mg/L	8/4/09	200.8	DS
Barium	**0.38**	**0.013**	**0.62**	**0.060**	AqTot	mg/L	8/4/09	200.8	DS
Cadmium	< 0.001	< 0.001	< 0.001	< 0.001	AqTot	mg/L	8/4/09	200.8	DS
Chromium	**0.002**	**0.001**	**0.004**	< 0.001	AqTot	mg/L	8/4/09	200.8	DS
Lead	**0.073**	**0.016**	**0.008**	< 0.001	AqTot	mg/L	8/4/09	200.8	DS
Mercury	< 0.0001	< 0.0001	< 0.0001	< 0.0001	AqTot	mg/L	8/4/09	200.8	DS
Selenium	< 0.001	< 0.001	< 0.001	< 0.001	AqTot	mg/L	8/4/09	200.8	DS
Silver	< 0.001	< 0.001	< 0.001	< 0.001	AqTot	mg/L	8/4/09	200.8	DS

Sample ID:	SB-203					
Lab Sample ID:	81418.05					
Matrix:	aqueous					
Date Sampled:	7/30/09	**Analytical Matrix**	**Units**	**Date of Analysis**	**Method**	**Analyst**
Date Received:	7/31/09					
Arsenic	**0.028**	AqTot	mg/L	8/4/09	200.8	DS
Barium	**0.79**	AqTot	mg/L	8/4/09	200.8	DS
Cadmium	< 0.001	AqTot	mg/L	8/4/09	200.8	DS
Chromium	**0.008**	AqTot	mg/L	8/4/09	200.8	DS
Lead	**0.015**	AqTot	mg/L	8/4/09	200.8	DS
Mercury	< 0.0001	AqTot	mg/L	8/4/09	200.8	DS
Selenium	< 0.001	AqTot	mg/L	8/4/09	200.8	DS
Silver	< 0.001	AqTot	mg/L	8/4/09	200.8	DS

QC REPORT

Eastern Analytical, Inc. ID#: 81418

Client: **Golder Associates, Inc.** Client Designation: **NHDOT - Rochester | 093-87094**

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Arsenic	< 0.001	1.1 (112 %R)		mg/L	8/4/09	85 - 115	20	200.8
Barium	< 0.001	1.1 (111 %R)		mg/L	8/4/09	85 - 115	20	200.8
Cadmium	< 0.001	1.1 (107 %R)		mg/L	8/4/09	85 - 115	20	200.8
Chromium	< 0.001	1.1 (106 %R)		mg/L	8/4/09	85 - 115	20	200.8
Lead	< 0.001	1.1 (106 %R)		mg/L	8/4/09	85 - 115	20	200.8
Mercury	< 0.0001	0.0011 (111 %R)		mg/L	8/4/09	85 - 115	20	200.8
Selenium	< 0.001	1.0 (103 %R)		mg/L	8/4/09	85 - 115	20	200.8
Silver	< 0.001	0.11 (110 %R)		mg/L	8/4/09	85 - 115	20	200.8

Parameter Name	MS/MSD Parent ID	MS/MSD Parent	Matrix Spike	MSD	Units	Date of Analysis	Limits	RPD	Method
Arsenic	81394.02	0.001	1.0 (103 %R)	1.0 (104 %R) (1 RPD)	mg/L	8/4/09	70-130	20	200.8
Barium	81394.02	0.038	1.0 (100 %R)	1.1 (103 %R) (3 RPD)	mg/L	8/4/09	70-130	20	200.8
Cadmium	81394.02	< 0.001	0.98 (98 %R)	1.0 (100 %R) (2 RPD)	mg/L	8/4/09	70-130	20	200.8
Chromium	81394.02	< 0.001	0.87 (87 %R)	0.87 (87 %R) (0 RPD)	mg/L	8/4/09	70-130	20	200.8
Lead	81394.02	0.007	1.0 (102 %R)	1.0 (102 %R) (0 RPD)	mg/L	8/4/09	70-130	20	200.8
Mercury	81394.02	< 0.0001	0.0011 (110 %R)	0.0011 (108 %R) (2 RPD)	mg/L	8/4/09	70-130	20	200.8
Selenium	81394.02	0.001	0.96 (96 %R)	0.96 (96 %R) (0 RPD)	mg/L	8/4/09	70-130	20	200.8
Silver	81394.02	< 0.001	0.77 (77 %R)	0.79 (79 %R) (3 RPD)	mg/L	8/4/09	70-130	20	200.8

Samples were analyzed within holding times unless noted on the sample results page.
Instrumentation was calibrated in accordance with the method requirements.
The method blanks were free of contamination at the reporting limits.
The associated matrix spikes and/or Laboratory Control Samples met the above stated criteria.
Exceptions to the above statements are flagged or noted above or on the QC Narrative page.
* Flagged analyte recoveries deviated from the QA/QC limits.

Page 1 of 1

CHAIN-OF-CUSTODY RECORD

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

FOR LAB USE ONLY 81418

SAMPLE I.D.	SAMPLING DATE/TIME *IF COMPOSITE, INDICATE BOTH START & FINISH DATE/TIME	MATRIX (SEE BELOW)	GRAB/*COMPOSITE	VOC: 524.2 524.2 BTEX 524.2 MTBE ONLY	VOC: 8260B 624 VTICS 1,4 DIOXANE EDB DBCP	VOC: 8021B BTEX HALOS	VOC: 8015B GRO MEGRO MAVPH	SVOC: 8270C 625 SVTICS ABN A BN PAH	SVOC: TPH8100 L1 L2	SVOC: 8015B DRO MEDRO MAEPH	SVOC: 608 PEST/PCB PEST 8081A PCB 8082	SVOC: OIL & GREASE 1664 TPH 1664	TCLP: TCLP 1311 ABN METALS VOC PEST HERB	METALS: DISSOLVED METALS (LIST BELOW)	METALS: TOTAL METALS (LIST BELOW)	INORGANICS: TS TSS TDS SPEC. CON.	INORGANICS: BR CL F SO4 NO2 NO3 NO2/NO3	INORGANICS: BOD CBOD T. ALK.	INORGANICS: TKN NH3 T. PHOS.	INORGANICS: pH T. RES. CHLORINE	INORGANICS: COD PHENOLS TOC	INORGANICS: TOTAL CYANIDE TOTAL SULFIDE	INORGANICS: REACTIVE CYANIDE REACTIVE SULFIDE FLASHPOINT IGNITABILITY	MICRO: T. COLIFORM E. COLI F. COLIFORM	MICRO: ENTEROCOCCI HETEROTROPHIC PLATE COUNT	OTHER			# OF CONTAINERS	NOTES MEOH VIAL #
SB-215	7/30/09 / 0900	GW	G		X				X						X														8	4
SB-208	7/30/09 / 1100	GW	G		X			X	X		X				X														5	
SB-212	7/30/09 / 1300	GW	G		X			X	X		X				X														5	
SB-201	7/30/09 / 1430	GW	G		X				X						X														4	
SB-203	7/30/09 / 1600	GW	G		X			X	X		X				X														5	
Trip Blank	7/20/09 EAI prep AD 8/7/09				X																								2	

MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SURFACE WATER; DW-DRINKING WATER; WW-WASTE WATER

PRESERVATIVE: H-HCL; N-HNO_3; S-H_2SO_4; Na-NaOH; M-MEOH

PROJECT MANAGER: Theresa Miller

COMPANY: Golder Associates

ADDRESS: 670 N. Commercial St. Suite 103

CITY: Manchester STATE: NH ZIP: 03101

PHONE: 603-668-0880 EXT.:

FAX: 603-668-1199

E-MAIL: tmiller@golder.com

SITE NAME: NHDOT - Rochester

PROJECT #: 093-87094

STATE: NH MA ME VT OTHER:

REGULATORY PROGRAM: **NPDES:** RGP POTW STORMWATER OR GWP, OIL FUND, BROWNFIELD OR OTHER:

QUOTE #: 1007156 PO #: 093-87094

DATE NEEDED: STD - 5 day

QA/QC REPORTING LEVEL

A B C

OR

MA MCP

PRESUMPTIVE CERTAINTY

REPORTING OPTIONS

PRELIMS YES OR NO

IF YES: FAX OR PDF

ELECTRONIC OPTIONS

NO FAX E-MAIL PDF EQUIS

TEMP. 5 °C

ICE? YES NO

SAMPLER(S): Jess Alexander 0800

Jess Alexander ~~7/30/09~~ 7/31/09 10:15 [signature]

RELINQUISHED BY: DATE: TIME: RECEIVED BY:

[signature] 7-31-09 13:12 [signature]

RELINQUISHED BY: DATE: TIME: RECEIVED BY:

RELINQUISHED BY: DATE: TIME: RECEIVED BY:

METALS: 8 RCRA 13 PP FE, MN PB, CU

OTHER METALS:

DISSOLVED METALS FIELD FILTERED? YES NO

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

SITE HISTORY:

SUSPECTED CONTAMINATION:

FIELD READINGS:

eastern analytical, inc. professional laboratory services 25 CHENELL DRIVE | CONCORD, NH 03301 | TEL: 603.228.0525 | 1.800.287.0525 | FAX: 603.228.4591 | E-MAIL: CUSTOMER_SERVICE@EAILABS.COM | WWW.EAILABS.COM

(WHITE: ORIGINAL GREEN: PROJECT MANAGER)

eastern analytical

professional laboratory services

Theresa A. Miller
Golder Associates, Inc.
670 N. Commercial St., Suite 103
Manchester , NH 03101

ACCREDITED IN ACCORDANCE WITH nelac

Subject: Laboratory Report

Eastern Analytical, Inc. ID: 84696
Client Identification: NH DOT Rochester / 093-87084
Date Received: 11/20/2009

Dear Ms. Miller:

Enclosed please find the laboratory report for the above identified project. All analyses were performed in accordance with our QA/QC Program. Unless otherwise stated, holding times, preservation techniques, container types, and sample conditions adhered to EPA Protocol. Samples which were collected by Eastern Analytical, Inc. (EAI) were collected in accordance with approved EPA procedures. Eastern Analytical, Inc. certifies that the enclosed test results meet all requirements of NELAP and other applicable state certifications. Please refer to our website at www.eailabs.com for a copy of our NELAP certificate and accredited parameters.

The following standard abbreviations and conventions apply to all EAI reports:

Solid samples are reported on a dry weight basis, unless otherwise noted
< : "less than" followed by the reporting limit
> : "greater than" followed by the reporting limit
%R : % Recovery

Eastern Analytical Inc. maintains certification in the following states: Connecticut (PH-0492), Maine (NH005), Massachusetts (M-NH005), New Hampshire/NELAP (1012), Rhode Island (269) and Vermont (VT1012).

The following information is contained within this report: Sample Conditions summary, Analytical Results/Data, Quality Control data (if requested) and copies of the Chain of Custody. This report may not be reproduced except in full, without the the written approval of the laboratory.

If you have any questions regarding the results contained within, please feel free to directly contact me or the chemist(s) who performed the testing in question. Unless otherwise requested, we will dispose of the sample(s) 30 days from the sample receipt date.

We appreciate this opportunity to be of service and look forward to your continued patronage.

Sincerely,

Lorraine Olashaw, Lab Director

12-4-09
Date

6
# of pages (excluding cover letter)

SAMPLE CONDITIONS PAGE

Eastern Analytical, Inc. ID#: 84696

Client: **Golder Associates, Inc.** Client Designation: **NH DOT Rochester / 093-87084**

Temperature upon receipt (°C): 2 **Received on ice or cold packs (Yes/No): Y**

Lab ID	Sample ID	Date Received	Date Sampled	Sample Matrix	% Dry Weight	Exceptions/Comments (other than thermal preservation)
84696.01	SB-208	11/20/09	11/20/09	aqueous		Adheres to Sample Acceptance Policy
84696.02	SB-203	11/20/09	11/20/09	aqueous		Adheres to Sample Acceptance Policy

Samples were properly preserved and the pH measured when applicable unless otherwise noted. Analysis of solids for pH, Flashpoint, Ignitibility, Paint Filter, Corrosivity, Conductivity and Specific Gravity are reported on an "as received" basis.

All results contained in this report relate only to the above listed samples.

References include:

1) EPA 600/4-79-020, 1983
2) Standard Methods for Examination of Water and Wastewater : Inorganics, 19th Edition, 1995; Microbiology, 20th Edition, 1998
3) Test Methods for Evaluating Solid Waste SW 846 3rd Edition including updates IVA and IVB
4) Hach Water Analysis Handbook, 2nd edition, 1992

LABORATORY REPORT

Eastern Analytical, Inc. ID#: 84696

Client: **Golder Associates, Inc.** Client Designation: **NH DOT Rochester / 093-87084**

Sample ID:	SB-208	SB-203					
Lab Sample ID:	84696.01	84696.02					
Matrix:	aqueous	aqueous					
Date Sampled:	11/20/09	11/20/09		**Analysis**			
Date Received:	11/20/09	11/20/09	**Units**	**Date**	**Time**	**Method**	**Analyst**
Solids Suspended	**13**	< 5	mg/L	11/25/09	15:00	2540D	SFW
TKN	< 0.5	< 0.5	mg/L	11/25/09	15:30	4500NorgC	SEL
Total Phosphorus-P	**0.09**	< 0.05	mg/L	11/30/09	6:00	365.3	JCC
BOD	< 6	< 6	mg/L	11/20/09	18:00	5210B	AAM
Cyanide Total	< 0.01	< 0.01	mg/L	11/30/09	13:00	4500CNE	JCC

QC REPORT

Eastern Analytical, Inc. ID#: 84696

Client: **Golder Associates, Inc.** Client Designation: **NH DOT Rochester / 093-87084**

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended	< 5	98 (98 %R)	NA	mg/L	11/25/09	90 - 110	20	2540D
Cyanide Total	< 0.01	0.23 (92 %R)	0.23 (92 %R) (0 RPD)	mg/L	11/30/09	85 - 115	20	4500CNE
TKN	< 0.5	5.3 (106 %R)	5.0 (100 %R) (6 RPD)	mg/L	11/25/09	90 - 110	20	4500Norg
Total Phosphorus-P	< 0.05	0.31 (104 %R)	0.31 (105 %R) (1 RPD)	mg/L	11/30/09	90 - 110	20	365.3
BOD	< 6	420 (106 %R)	410 (102 %R) (4 RPD)	mg/L	11/20/09	84 - 115	20	5210B

Parameter Name	MS/MSD Parent ID	MS/MSD Parent	Matrix Spike	MSD	Units	Date of Analysis	Limits	RPD	Method
Solids Suspended		NA	NA	NA	mg/L	11/25/09		20	2540D
Cyanide Total	84791.01	< 0.02	0.19 (93 %R)	0.20 (98 %R) (5 RPD)	mg/L	11/30/09	80-120	20	4500CNE
TKN	84523.08	< 0.5	5.4 (100 %R)	5.3 (98 %R) (2 RPD)	mg/L	11/25/09	80-120	20	4500Norg
Total Phosphorus-P	84855.01	2.1	6.1 (106 %R)	5.9 (101 %R) (5 RPD)	mg/L	11/30/09	80-120	20	365.3
BOD	84668.01	400	860 (114 %R)	NA	mg/L	11/20/09	75-125	20	5210B

Parameter Name	Duplicate Parent ID	Duplicate Parent	Duplicate	Units	Date of Analysis	RPD	Method
Solids Suspended	84695.01	< 5	< 5 (RPD N/A)	mg/L	11/25/09	20	2540D
Cyanide Total		NA	NA	mg/L	11/30/09	20	4500CNE
TKN		NA	NA	mg/L	11/25/09	20	4500Norg
Total Phosphorus-P		NA	NA	mg/L	11/30/09	20	365.3
BOD	84668.01	400	460 (14 RPD)	mg/L	11/20/09	20	5210B

Samples were analyzed within holding times unless noted on the sample results page.
Instrumentation was calibrated in accordance with the method requirements.
The method blanks were free of contamination at the reporting limits.
The associated matrix spikes and/or Laboratory Control Samples met the above stated criteria.
Exceptions to the above statements are flagged or noted above or on the QC Narrative page.
* Flagged analyte recoveries deviated from the QA/QC limits.

LABORATORY REPORT

Eastern Analytical, Inc. ID#: 84696

Client: **Golder Associates, Inc.** Client Designation: **NH DOT Rochester / 093-87084**

Sample ID:	SB-208	SB-203					
Lab Sample ID:	84696.01	84696.02					
Matrix:	aqueous	aqueous					
Date Sampled:	11/20/09	11/20/09	**Analytical Matrix**	**Units**	**Date of Analysis**	**Method**	**Analyst**
Date Received:	11/20/09	11/20/09					
Antimony	< 0.001	< 0.001	AqTot	mg/L	11/24/09	200.8	DS
Copper	**0.015**	**0.002**	AqTot	mg/L	11/24/09	200.8	DS
Iron	**0.74**	**1.3**	AqTot	mg/L	11/24/09	200.8	DS
Nickel	**0.002**	**0.004**	AqTot	mg/L	11/24/09	200.8	DS
Zinc	**0.024**	**0.009**	AqTot	mg/L	11/24/09	200.8	DS

QC REPORT

Eastern Analytical, Inc. ID#: 84696

Client: **Golder Associates, Inc.** Client Designation: **NH DOT Rochester / 093-87084**

Parameter Name	Blank	LCS	LCSD	Units	Date of Analysis	Limits	RPD	Method
Antimony	< 0.001	1.0 (104 %R)		mg/L	11/24/09	85 - 115	20	200.8
Copper	< 0.001	0.93 (93 %R)		mg/L	11/24/09	85 - 115	20	200.8
Iron	< 0.05	11 (103 %R)		mg/L	11/24/09	85 - 115	20	200.8
Nickel	< 0.001	1.0 (102 %R)		mg/L	11/24/09	85 - 115	20	200.8
Zinc	< 0.005	0.96 (96 %R)		mg/L	11/24/09	85 - 115	20	200.8

Parameter Name	MS/MSD Parent ID	MS/MSD Parent	Matrix Spike	MSD	Units	Date of Analysis	Limits	RPD	Method
Antimony	84664.01	< 0.001	1.1 (109 %R)	1.1 (110 %R) (1 RPD)	mg/L	11/24/09	70-130	20	200.8
Copper	84664.01	0.006	0.79 (78 %R)	0.78 (77 %R) (1 RPD)	mg/L	11/24/09	70-130	20	200.8
Iron	84664.01	< 0.05	9.0 (82 %R)	9.6 (87 %R) (6 RPD)	mg/L	11/24/09	70-130	20	200.8
Nickel	84664.01	< 0.001	0.84 (84 %R)	0.84 (84 %R) (0 RPD)	mg/L	11/24/09	70-130	20	200.8
Zinc	84664.01	< 0.005	0.77 (77 %R)	0.75 (75 %R) (3 RPD)	mg/L	11/24/09	70-130	20	200.8

Samples were analyzed within holding times unless noted on the sample results page.
Instrumentation was calibrated in accordance with the method requirements.
The method blanks were free of contamination at the reporting limits.
The associated matrix spikes and/or Laboratory Control Samples met the above stated criteria.
Exceptions to the above statements are flagged or noted above or on the QC Narrative page.
* Flagged analyte recoveries deviated from the QA/QC limits.

Page 1 of 1

CHAIN-OF-CUSTODY RECORD

BOLD FIELDS REQUIRED. PLEASE CIRCLE REQUESTED ANALYSIS.

84696

SAMPLE I.D.	SAMPLING DATE/TIME *IF COMPOSITE, INDICATE BOTH START & FINISH DATE/TIME	MATRIX (SEE BELOW)	GRAB/*COMPOSITE	VOC: 524.2 524.2 BTEX 524.2 MTBE ONLY	VOC: 8260B 624 VTICs 1, 4 DIOXANE EDB DBCP	VOC: 8021B BTEX HALOS	VOC: 8015B GRO MEGRO MAVPH	SVOC: 8270C 625 SVTICs ABN A BN PAH	SVOC: TPH8100 L1 L2	SVOC: 8015B DRO MEDRO MAEPH	SVOC: 608 PEST/PCB PEST 8081A PCB 8082	SVOC: OIL & GREASE 1664 TPH 1664	TCLP: TCLP 1311 ABN METALS VOC PEST HERB	METALS: DISSOLVED METALS (LIST BELOW)	METALS: TOTAL METALS (LIST BELOW)	INORGANICS: TS (TSS) TDS SPEC. CON.	INORGANICS: BR CL F SO4 NO2 NO3 NO2/NO3	INORGANICS: BOD CBOD T. ALK.	INORGANICS: TKN NH3 (T. PHOS)	INORGANICS: pH (T. RES. CHLORINE)	INORGANICS: COD PHENOLS TOC	INORGANICS: TOTAL CYANIDE TOTAL SULFIDE	INORGANICS: REACTIVE CYANIDE REACTIVE SULFIDE FLASHPOINT IGNITABILITY	MICRO: T. COLIFORM E. COLI F. COLIFORM	MICRO: ENTEROCOCCI HETEROTROPHIC PLATE COUNT	OTHER	OTHER	OTHER	# OF CONTAINERS	NOTES MEOH VIAL #
SB-208	11/20/09/0930	GW	G												X	X		X	X	X		X								
SB-203	11/20/09/1030	GW	G												X	X		X	X	X		X								
																				5A										

MATRIX: A-AIR; S-SOIL; GW-GROUND WATER; SW-SURFACE WATER; DW-DRINKING WATER; WW-WASTE WATER

PRESERVATIVE: H-HCL; N-HNO_3; S-H_2SO_4; Na-NaOH; M-MEOH

PROJECT MANAGER: Theresa Miller

COMPANY: Golder Associates

ADDRESS: 670 N. Commercial St. Suite 103

CITY: Manchester STATE: NH ZIP: 03101

PHONE: 603-668-0880 EXT.:

FAX: 603-668-1199

E-MAIL: Tmiller@golder.com

SITE NAME: NHDOT-Rochester

PROJECT #: 093-87084

STATE: (NH) MA ME VT OTHER:

REGULATORY PROGRAM: NPDES: (RGP) POTW STORMWATER OR GWP, OIL FUND, BROWNFIELD OR OTHER:

QUOTE #: PO #: 093-87084

DATE NEEDED: Std 5 day

QA/QC REPORTING LEVEL

A B C

OR

MA MCP

PRESUMPTIVE CERTAINTY

REPORTING OPTIONS

PRELIMS: (YES) OR NO

IF YES: FAX OR (PDF)

ELECTRONIC OPTIONS

NO FAX (E-MAIL) (PDF) EQUIS

TEMP. 2 °C

ICE? (YES) NO

SAMPLER(S): Jess Alexander

RELINQUISHED BY:	DATE:	TIME:	RECEIVED BY:
Jess Alexander	11/20/09	1145	R. Blood
R. Blood	2009.11.20	1350	[illegible]

METALS: 8 RCRA 13 PP FE, MN PB, CU

OTHER METALS: Cu, Fe, Ni, Zn, Antimony

DISSOLVED METALS FIELD FILTERED? YES NO

NOTES: (IE: SPECIAL DETECTION LIMITS, BILLING INFO, IF DIFFERENT)

- Total Cyanide method 335.2
- TSS Method 160.2
- RGP permit (NH) application detection limits required

SITE HISTORY:

SUSPECTED CONTAMINATION:

FIELD READINGS:

eastern analytical, inc. professional laboratory services 25 CHENELL DRIVE | CONCORD, NH 03301 | TEL: 603.228.0525 | 1.800.287.0525 | FAX: 603.228.4591 | E-MAIL: CUSTOMER_SERVICE@EAILABS.COM | WWW.EAILABS.COM

(WHITE: ORIGINAL GREEN: PROJECT MANAGER)

APPENDIX B

DILUTION FACTOR AND DISCHARGE FLOW RATE CALCULATION

Golder Associates, Manchester, New Hampshire	SUBJECT: Rochester-North Main Street Discharge Flow Rate Calculation		
	Job No. 103-87243	Made By: Jam Checked: RMB	Date: 5/24/10
	Ref.	Reviewed: ASM	Sheet 1 of 2

OBJECTIVE

The objective of this calculation is to calculate the required dilution factor to achieve the effluent limitations and the allowable discharge flow rate for the New Hampshire Department of Transportation (NHDOT) construction dewatering project located along North Main Street/Route 11/Farmington Road in Rochester, NH (the Site).

METHOD

1. Obtain current receiving water flow rates from NHDES.
2. Look up New Hampshire Total Recoverable Metals Limitations in remediation general permit (RGP) guidance.
3. Compare analytical results from the Site for metals to the corresponding effluent metals limits for New Hampshire.
4. Calculate the dilution factor (DF) needed to achieve the effluent limitations.
5. Calculate the discharge flow rate that would result in the necessary a dilution factor (DF), based on dilution factor needed to reduce the concentration of metals to near or below effluent metals limits established for New Hampshire.

ASSUMPTIONS

1. Metals results from monitoring wells are representative of groundwater that will be encountered during excavation dewatering activities.
2. The proposed treatment system for construction dewatering activities consists of a bag filter and granular activated carbon vessels. This calculation assumes that the treatment system will provide sediment removal which will reduce the concentration of metals to below the New Hampshire RGP effluent limitations.

REFERENCES

1. Golder Associates Inc (Golder), email correspondence to/from NHDES regarding receiving water flow rate (7Q10) dated May 6 through 10, 2010.
2. United States Environmental Protection Agency (USEPA), Final Remediation General Permit Under the National Pollutant Discharge Elimination System (NPDES) for Discharges in New Hampshire, 2005.
3. Eastern Analytical Inc, Laboratory Report, Eastern Analytical, Inc. ID: 81418 and 84696, Client Identification: NH DOT Rochester|093-87084 dated July 31, 2009 and November 20, 2009, respectively.

CALCULATIONS

1. Obtain current receiving water flow rates. According to NHDES, the 7Q10 (i.e., the annual minimum flow for 7 consecutive days with a recurrence interval of 10 years) flow rate for the receiving water (main stem of the Cocheco River) is 4.0 cubic feet per second (cfs) (Attachment A).
2. Look up NH Total Recoverable Metals Limitations. (Attachment B)
3. Compare analytical results from the Site for metals to the corresponding effluent metals limitations for New Hampshire. See attached Table 1 – Evaluation of Dilution Factor and Effluent Limitations.
4. Calculate the dilution factor required for untreated discharge. See attached Table 1.
   Required Maximum DF = maximum analytical result/(effluent limitation concentration * effluent limitation DF basis)

   DF for untreated discharge = 132.7 (see attached Table 1)

5. For the calculated dilution factor and stream flow rate, calculate the discharge flow rate that would result in the necessary DF.

From Appendix V in Reference 3 (Attachment C), the Dilution Factor (DF) is determined from the following equation:

$$DF = \left(\frac{Qd + Qs}{Qd}\right) \times 0.9 \text{ or } Qd = \left(\frac{Qs}{DF/0.9 - 1}\right)$$

Where:

DF = Dilution factor
Qd = Discharge flow rate
Qs = Receiving (stream) water flow rate
gpm = gallons per minute
cfs = cubic feet per second

Example calculation for DF = 100

$$Qd = \left(\frac{4.0cfs}{100/0.9 - 1}\right) x \frac{448.8gpm}{cfs} = 16.3gpm$$

DF for untreated discharge =	132.7		(see attached Table 1)
Allowable Discharge Flow Rate (Qd24) =	12.3		gpm (24 hours per day)
Gallons per day (24 hours) =	17,649	gallons	$= 12.3\ gpm \times \frac{60\ min}{hr} \times 24\ hr$
Discharge flow rate (10- hr shift) (Qd10) =	29.4	gpm	$= 17{,}649 \frac{gallons}{24\ hr} \times \frac{24\ hr}{day} \times \frac{day}{10 - hr - shift} \times \frac{hr}{60\ min}$
Discharge flow rate (10- hr shift) (Qd10) =	0.0655	cfs	$= 29.4 \frac{gallons}{min} \times \frac{cfs}{448.8\ gpm}$

FINDINGS AND CONCLUSIONS

Arsenic, copper, lead and iron concentrations as detected in groundwater exceed the EPA established effluent limitation standards for discharge to surface water using dilution factor of 0 to 5 (Table 1). Therefore, concentrations for these metals were compared to Appendix V-Total Recoverable Metals Limitations at Selected Dilution Ranges (Attachment B) to determine which metal would require the highest dilution factor. Golder determined that lead (maximum detected concentration of 73 micrograms per liter) would require the highest dilution factor (greater than 100) to allow discharge to surface water. Golder calculated the necessary DF to be 132.7.

Based on the 7Q10 for the main stem of the Cocheco River in Rochester and the metal analytical results, Golder calculated an allowable discharge flow rate over a 24-hour period of 12.3 gallons per minute. This flow rate is approximately 17,650 gallons of discharge per day. To discharge the same volume in a 10-hour shift and achieve the 132.7 dilution factor averaged over a 24-hour period, a maximum discharge flow rate of 29 gallons per minute during the 10-hour discharge period is recommended.

TABLE 1
Evaluation of Dilution Factor and Effluent Limitations
Notice of Intent for Remediation General Permit

			Dilution Range Concentration					Ceiling		
			DF 0 - 5	DF 5 - 10	DF 10 - 50	DF 50 - 100	DF > 100	Value		
	Maximum Analytical Result (ug/l)	AGQS (for potential GW discharge)	RGP Effluent Limitation [1]	Effluent Limitation	Effluent Limitation	Effluent Limitation	Effluent Limitation	Effluent Limitation	DF required [2]	Effluent Limitation Basis
Antimony	<1	6	5.6	30	60	141	141	141	NC	NA
Arsenic	28	10	10	50	100	500	540	540	2.8	DF 0 - 5
Cadmium	<1	5	0.8	4.0	8.0	16.0	32.0	260	NC	NA
Chromium III (trivalent)*	8	100	27.7	138	277	1,385	1,710	1,710	0.3	DF 0 - 5
Chromium VI (hexavalent)*	8	100	11.4	57	114	570	1,140	1,710	0.7	DF 0 - 5
Copper	15	1,300	2.9	14.5	29	142	285	2,070	10.3	DF 5 - 10
Lead	73	15	0.5	2.5	5	27	55	430	132.7	DF < 100
Mercury	<0.1	2	0.9	2.3	2.3	2.3	2.3	2.3	NC	NA
Nickel	4	100	16.1	80.5	161	807	1,614	2,380	0.2	DF 0 - 5
Selenium	<1	50	5.0	25	50	250	408	408	NC	NA
Silver	<0.1	100	0.4	2	4	17	35	240	NC	NA
Zinc	24	NS	37	185	370	1,480	1,480	1,480	0.6	DF 0 - 5
Iron	1,300	NS	1,000	5,000	5,000	5,000	5,000	5,000	1.3	DF 0 - 5
								Maximum DF Required=	**132.7**	

Notes:

1. Effluent Limitations from Total Recoverable Metal Limit @ H = 25 mg/l CaCO3 for Discharges in New Hampshire (ug/l)
2. Required Maximum DF = maximum analytical result/(effluent limitation concentration * effluent limitation DF basis)
3. ug/L = micrograms per liter
4. * indicates analytical result for total chromium
5. Bold values indicate analyzed results exceed the effluent limitation for DF category or the detection limit of the analytical result is above the limitation

For a given dilution factor (DF) and stream flow rate (Qs), calculate a discharge flow rate (Qd)

$$DF = \left(\frac{Qd + Qs}{Qd}\right) \times 0.9 \quad \text{or} \quad Qd = \left(\frac{1}{DF/0.9Qs + 1/Qs}\right) \times 0.9$$

Qs = Stream 7Q10 (cubic feet per second (CFS))	4	CFS (from NHDES correspondence)
Qs = Stream 7Q10 (gallons per minute (gpm))	1795	gpm
For untreated discharge, DF required =	132.7	
Allowable Discharge Flow Rate (Qd24) = (Daily average flow (24 hr average))	12.3	gpm (24 hours per day)
Allowable Discharge Flow Rate (Qd24) =	0.0273	CFS (24 hours per day)

Calculation of Flow Rate for 10 hour shift:

For DF = >100 over 24 hours, but only discharging for 10 hours per day

Daily average flow (24 hr average) (Qd24) =	12.3	gpm (24 hours per day)
Gallons per day (24 hours) =	17,649	gallons per day
Discharge Flow Rate for 10-hour shift (Qd10	**29.4**	**gpm (for a 10-hour shift/discharge period)**
Discharge Flow Rate for 10-hour shift (Qd10	**0.0655**	**CFS (for a 10-hour shift/discharge period)**

$$= 17{,}649 \frac{gallons}{24hr} x \frac{24hr}{day} x \frac{day}{10 - hr - shift} x \frac{hr}{60\min}$$

Prepared by: TAM 5/20/10
Checked by: RWB 5/20/10

ATTACHMENT A

Miller, Theresa

From: Andrews, Jeff [Jeffrey.Andrews@des.nh.gov]
Sent: Monday, May 10, 2010 8:33 AM
To: Miller, Theresa
Subject: RE: 7Q10 information request

Hi Theresa, either of those locations on the non-flowing embayment in the Cocheco River would have zero for the 7Q10. If the discharge location could be moved to the main stem of the of the river then the 7Q10 would be approximately 4.0 cfs .

Please call me if you have any questions on this.

Thanks, Jeff

Jeffrey G. Andrews, P.E.
Sanitary Engineer
Wastewater Engineering Bureau
NH Department of Environmental Services
Tel: (603) 271-2984
Fax: (603) 271-4128
E-mail: Jeff.Andrews@des.nh.gov

-----Original Message-----
From: Miller, Theresa [mailto:theresa_miller@golder.com]
Sent: Friday, May 07, 2010 1:05 PM
To: Andrews, Jeff
Subject: 7Q10 information request

Hi Jeff,

I have attached two figures illustrating two potential discharge locations for an RGP NOI that I am preparing. The locations are on the Cocheco River in Rochester between 303 and 305 North Main Street. Can you provide me with 7Q10 data for these locations? Please call or email me with any questions.

Thanks, Theresa

Theresa Miller, P.G., LSP | Senior Hydrogeologist | **Golder Associates Inc.**
670 North Commercial Street, Suite 103, Manchester, New Hampshire, USA 03101
T: +1 (603) 668-0880 | **D:** +1 (603) 668-0880 | **F:** +1 (603) 668-1199 | **C:** +1 | **E:** theresa_miller@golder.com | **www.golder.com**

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ATTACHMENT B

☆ these values are in ug/L

APPENDIX IV

TOTAL RECOVERABLE METALS LIMITATIONS (ug/l) AT SELECTED DILUTION RANGES AND TECHNOLOGY BASED CEILING LIMITATIONS FOR FACILITIES LOCATED IN NEW HAMPSHIRE

(for discharges to freshwater at H = 25 mg/L CaCO3) [1]

PARAMETER	DILUTION RANGE CONCENTRATION					
	0 - 5	5 -10	10 - 50	50 - 100	>100	CEILING VALUE[2]
1. Antimony	5.6	30	60	141	141	141 [3]
2. Arsenic	10	50	100	500	540	540 [4]
3. Cadmium	0.8	4.0	8.0	16.0	32.0	260
4. Chromium^{III} (Trivalent)	27.7	138	277	1,385	1,710	1,710
5. Chromium^{VI} (Hexavalent)	11.4	57	114	570	1,140	1,710 [5]
6. Copper	2.9	14.5	29	142	285	2,070
7. Lead	0.5	2.5	5	27	55	430
8. Mercury	0.9	2.3	2.3	2.3	2.3	2.3 [6]
9. Nickel	16.1	80.5	161	807	1,614	2,380
10. Selenium	5.0	25	50	250	408	408 [7]
11. Silver	0.4	2	4	17	35	240
12. Zinc	37	185	370	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. *The Ceiling Value is a Technology Based Value; Unless otherwise indicated it represents the "Best Available Control Technology" (BAT) for the Metal Finishing Industry, 40 CFR Section 433.14 (monthly average concentration).*

3. *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*

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

5. *Assumes Hexavalent Chromium reduced to Tri-valent Chromium in treatment.*

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 Mercury*

7. *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*

ATTACHMENT C

ii. If potential discharges (untreated influent) with metals contain concentrations below the concentrations listed in Appendix III, the applicant may skip step 2 and those metals will **not** be subject to permit limitations or monitoring requirements.

Step 2: Calculation of Dilution Factor

1) **For applicants in NH**: If a metal concentration in a potential discharge (untreated influent) to **freshwater**[3] exceeds the limits in Appendix III with zero dilution, the applicant shall evaluate the potential concentration considering a dilution factor (DF) using the formula below. **For sites in New Hampshire, the applicant must contact NH DES to determine the 7Q10 and dilution factor.**

$$DF = [(Qd + Qs)/Qd] \times 0.9$$

Where:	**DF**	**= Dilution Factor**
	Qd	**= Maximum flow rate of the discharge in cubic feet per second (cfs) (1.0 gpm = .00223 cfs)**
	Qs	**= Receiving water 7Q10 flow, in cfs, where,**
	7Q10	**= The annual minimum flow for 7 consecutive days with a recurrence interval of 10 years**
	0.9	**= Allowance for reserving 10% of the assets in the receiving stream as per Chapter ENV-Ws 1700, Surface Water Quality Regulations**

i. Using the DF calculated from the formula above, the applicant must refer to the corresponding DF range column in Appendix IV. The applicant then compares the maximum concentration of the metal entered on the NOI to the corresponding total recoverable metals limits listed in Appendix IV.

1. If a metal concentration in the potential discharge (untreated influent) is less than the corresponding limit in Appendix IV, the metal will **not** be subject to permit limitations or monitoring requirements.
2. If a metal concentration in the potential discharge (untreated influent) is equal to or exceeds the corresponding limit in Appendix IV, the applicant must reduce it in the effluent to a concentration below the applicable total recoverable metals limit in Appendix IV prior to discharge.

ii. In either case, the applicant must submit the results of this calculation as part of the NOI. EPA and NH DES will review the proposed effluent limitations for each metal and approve or disapprove the limits in the notification of coverage letter to the applicant.

ATTACHMENT D

LABORATORY REPORT

Eastern Analytical, Inc. ID#: 81418

Client: **Golder Associates, Inc.** Client Designation: **NHDOT - Rochester | 093-87094**

Sample ID:	SB-215	SB-208	SB-212	SB-201					
Lab Sample ID:	81418.01	81418.02	81418.03	81418.04					
Matrix:	aqueous	aqueous	aqueous	aqueous					
Date Sampled:	7/30/09	7/30/09	7/30/09	7/30/09	**Analytical Matrix**	**Units**	**Date of Analysis**	**Method**	**Analyst**
Date Received:	7/31/09	7/31/09	7/31/09	7/31/09					
Arsenic	**0.004**	**0.002**	**0.007**	**0.001**	AqTot	mg/L	8/4/09	200.8	DS
Barium	**0.38**	**0.013**	**0.62**	**0.060**	AqTot	mg/L	8/4/09	200.8	DS
Cadmium	< 0.001	< 0.001	< 0.001	< 0.001	AqTot	mg/L	8/4/09	200.8	DS
Chromium	**0.002**	**0.001**	**0.004**	< 0.001	AqTot	mg/L	8/4/09	200.8	DS
Lead	**0.073**	**0.016**	**0.008**	< 0.001	AqTot	mg/L	8/4/09	200.8	DS
Mercury	< 0.0001	< 0.0001	< 0.0001	< 0.0001	AqTot	mg/L	8/4/09	200.8	DS
Selenium	< 0.001	< 0.001	< 0.001	< 0.001	AqTot	mg/L	8/4/09	200.8	DS
Silver	< 0.001	< 0.001	< 0.001	< 0.001	AqTot	mg/L	8/4/09	200.8	DS

Sample ID:	SB-203					
Lab Sample ID:	81418.05					
Matrix:	aqueous					
Date Sampled:	7/30/09	**Analytical Matrix**	**Units**	**Date of Analysis**	**Method**	**Analyst**
Date Received:	7/31/09					
Arsenic	**0.028**	AqTot	mg/L	8/4/09	200.8	DS
Barium	**0.79**	AqTot	mg/L	8/4/09	200.8	DS
Cadmium	< 0.001	AqTot	mg/L	8/4/09	200.8	DS
Chromium	**0.008**	AqTot	mg/L	8/4/09	200.8	DS
Lead	**0.015**	AqTot	mg/L	8/4/09	200.8	DS
Mercury	< 0.0001	AqTot	mg/L	8/4/09	200.8	DS
Selenium	< 0.001	AqTot	mg/L	8/4/09	200.8	DS
Silver	< 0.001	AqTot	mg/L	8/4/09	200.8	DS

LABORATORY REPORT

Eastern Analytical, Inc. ID#: 84696

Client: **Golder Associates, Inc.** Client Designation: **NH DOT Rochester / 093-87084**

Sample ID:	SB-208	SB-203					
Lab Sample ID:	84696.01	84696.02					
Matrix:	aqueous	aqueous					
Date Sampled:	11/20/09	11/20/09	**Analytical Matrix**	**Units**	**Date of Analysis**	**Method**	**Analyst**
Date Received:	11/20/09	11/20/09					
Antimony	< 0.001	< 0.001	AqTot	mg/L	11/24/09	200.8	DS
Copper	**0.015**	**0.002**	AqTot	mg/L	11/24/09	200.8	DS
Iron	**0.74**	**1.3**	AqTot	mg/L	11/24/09	200.8	DS
Nickel	**0.002**	**0.004**	AqTot	mg/L	11/24/09	200.8	DS
Zinc	**0.024**	**0.009**	AqTot	mg/L	11/24/09	200.8	DS

APPENDIX C

TMDL INFORMATION

Publications

Public Comment Form

All documents have been saved in Adobe Acrobat Reader format.

TMDL Project Summary Table

Lake Nutrient TMDL Draft Reports

Pollutant of Concern: Phosphorous

Project Reports and Documents:
- Baboosic Lake Draft Report
- Baboosic Lake Public Notice
- Back Lake Draft Report [3MB]
- Back Lake Public Notice
- Country Pond Draft Report
- Country Pond Public Notice
- Dorrs Pond Draft Report
- Dorrs Pond Public Notice
- Flints Pond Draft Report
- Flints Pond Public Notice
- Forest Lake Draft Report
- Forest Lake Public Notice
- French Pond Final Draft Report
- French Pond Public Notice
- Governor's Lake Final Draft Report
- Governor's Lake Public Notice
- Greenwood Pond TMDL Final Draft Report
- Greenwood Pond Public Notice
- Halfmoon Pond Final Draft Report
- Halfmoon Pond Public Notice
- Harvey Lake TMDL Final Draft Report
- Harvey Lake Public Notice
- Horseshoe Pond Final Draft Report
- Horseshoe Pond Public Notice
- Nutt Pond Draft Report
- Nutt Pond Public Notice
- Pawtuckaway Lake Draft Report
- Pawtuckaway Lake Public notice
- Pine Island Pond Draft Report
- Pine Island Pond Public Notice
- Robinson Pond Draft Report
- Robinson Pond Public Notice
- Sebbins Pond Draft Report
- Sebbins Pond Public Notice
- Showell Pond Draft Report
- Showell Pond Public Notice
- Sondogardy Pond Draft Report
- Sondogardy Pond Public Notice
- Stevens Pond Draft Report
- Stevens Pond Public Notice
- Tom Pond Draft Report
- Tom Pond Public Notice
- Turtle Pond Draft Report
- Turtle Pond Public Notice
- Webster Lake Draft Report
- Webster Lake Public Notice

Policy-Porcupine Brook View Map

Pollutant of Concern: Chloride

Study Area: Salem and Windham

Pollutants Allocated or Likely to be Allocated to the Road Salt

TMDL:

Project Reports and Documents: Public Comment Notice
Data Quality Audit
Data Report
Data Report Appendices
Final Chloride TMDL for Policy-Porcupine Brook
EPA's Review and Approval of Chloride TMDL for Policy-Porcupine Brook

Date:

Number of approved TMDL's

North Tributary to Canobie Lake View Map

Pollutant of Concern: Chloride

Study Area: Windham

Pollutants Allocated or Likely to be Allocated to the TMDL: Road Salt

Project Reports and Documents: Public Comment Notice
Data Quality Audit
Data Report
Data Report Appendices
Final Chloride TMDL for North Tributary to Canobie Lake
EPA's Review and Approval of Chloride TMDL for North Tributary to Canobie Lake

Date:

Number of approved TMDL's

Dinsmore Brook View Map

Pollutant of Concern: Chloride

Study Area: Windham

Pollutants Allocated or Likely to be Allocated to the TMDL: Road Salt

Project Reports and Documents: Public Comment Notice
Data Quality Audit
Data Report
Data Report Appendices
Final Chloride TMDL for Dinsmore Brook
EPA's Review and Approval of Chloride TMDL for Dinsmore Brook

Date: Comments accepted through 2/7/08

Number of approved TMDL's

Beaver Brook View Map

Pollutant of Concern: Chloride

Study Area: Derry and Londonderry

Pollutants Allocated or Likely to be Allocated to the TMDL: Road Salt

Project Reports and Documents: Public Comment Notice
Data Quality Audit
Data Report
Data Report Appendices
Final Chloride TMDL for Beaver Brook
EPA's Review and Approval of Chloride TMDL for Beaver Brook

Date: Comments accepted through 2/7/08

Number of approved TMDL's

Acid Impaired Lakes

Water Quality Standard of Concern: pH

Study Area: Statewide

Pollutants Allocated or Likely to be Allocated to the

TMDL:	Atmospheric deposition of NOx and SOx
Project Reports and Documents:	EPA's Review and Approval for 158 Acid Lake TMDLs EPA's Review and Approval of 114 Acid Beach TMDLs Final TMDL Report for 158 Acid Impaired Ponds Appendices to the Final TMDL Report for 158 Acid Impaired Ponds Final TMDL Report for 65 Acid Impaired Ponds Final TMDL Report Approved by EPA - Appendix A EPA's Review and Approval for 45 Acid Lake TMDL's EPA's Review and Approval for 20 Acid Lake TMDL's
Date:	09/20/07 11/21/07 10/4/04
Number of approved TMDL's	158 Lakes 114 Beaches 65 Lakes 21 Beaches

Ashuelot River View Map

Water Quality Standard of Concern:	Dissolved Oxygen
Study Area:	Keene to West Swanzey
Pollutants Allocated or Likely to be Allocated to the TMDL:	CBOD, Ammonia, Phosphorous
Project Reports and Documents:	Under Development
Date:	
Number of approved TMDL's	

South Branch Ashuelot River View Map

Water Quality Standard of Concern:	Dissolved Oxygen
Study Area:	Troy to Swanzey
Pollutants Allocated or Likely to be Allocated to the TMDL:	CBOD
Project Reports and Documents:	Under Development
Date:	
Number of approved TMDL's	

Beach Bacteria TMDLs

Water Quality Standard of Concern:	Bacteria
Study Area:	Washington, Troy, Nottingham
Pollutants Allocated or Likely to be Allocated to the TMDL:	Bacteria
Project Reports and Documents:	Mill Pond Town Beach Final TMDL Approved by EPA EPA's Review and Approval of the Mill Pond Town Beach Bacteria TMDL Sand Dam Village Pond Final TMDL Approved by EPA EPA's Review and Approval of the Sand Dam Village Pond Beach Bacteria TMDL
Date:	12/13/2006 11/08/2006
Number of approved TMDL's	1 1

Cocheco River View Map

Water Quality Standard of Concern:	Dissolved Oxygen

Study Area: Farmington to Rochester

Pollutants Allocated or Likely to be Allocated to the TMDL: CBOD

Project Reports and Documents: Under Development

Date:

Number of approved TMDL's

Contoocook River View Map

Water Quality Standard of Concern: Dissolved Oxygen

Study Area: Jaffrey to Peterborough

Pollutants Allocated or Likely to be Allocated to the TMDL: CBOD

Project Reports and Documents: Draft TMDL Report with appendices

Date: Comments accepted through 7/28/2006

Number of approved TMDL's

Contoocook River

Water Quality Standard of Concern: Dissolved Oxygen

Study Area: Peterborough to Antrim

Pollutants Allocated or Likely to be Allocated to the TMDL: CBOD

Project Reports and Documents: Under Development

Date:

Number of approved TMDL's

Hampton Harbor View Maps

Water Quality Standard of Concern: Bacteria

Study Area: Hampton and Seabrook

Pollutants Allocated or Likely to be Allocated to the TMDL: Bacteria

Project Reports and Documents: Final TMDL Approved by EPA
EPA's Review and Comments of the Hampton Harbor TMDL Report
EPA's Approval of 2 TMDL's
EPA's Second Approval of 8 Additional TMDL's

Date: 9/29/03

Number of approved TMDL's 10

Lamprey River View Map

Water Quality Standard of Concern: Dissolved Oxygen and Phosphorous

Study Area: Epping

Pollutants Allocated or Likely to be Allocated to the TMDL: CBOD, Ammonia, Phosphorous

Project Reports and Documents: Final TMDL Approved by EPA

Date: 2/17/00

Number of approved TMDL's 3

Little Harbor View Map

Water Quality Standard of Concern: Bacteria

Study Area: Newcastle & others

Pollutants Allocated or Likely to be Allocated to the TMDL: Bacteria

Project Reports and Documents: Final TMDL Approved by EPA

EPA's Review and Approval of the Little Harbor TMDL Report

Date: 8/25/06

Number of approved TMDL's 2

Lower Sugar River View Map

Water Quality Standard of Concern: Dissolved Oxygen

Study Area: Lower portion, Claremont

Pollutants Allocated or Likely to be Allocated to the TMDL: CBOD, Ammonia, Phosphorous

Project Reports and Documents: Final TMDL Report Approved by EPA
EPA's Review and Comments on the Lower Sugar River TMDL
EPA's Approval Letter to NHDES for the Lower Sugar River TMDL

Date: 9/29/00

Number of approved TMDL's 2

Regional Mercury Loading

Water Quality Standard of Concern: Mercury in Fish Tissue

Study Area: Regional TMDL

Pollutants Allocated or Likely to be Allocated to the TMDL: Mercury

Project Reports and Documents: EPA's Review and Approval of the Northeast Regional Mercury TMDL
FINAL Northeast Regional Mercury TMDL Report
Fact Sheet for the Draft Northeast Regional Mercury TMDL

Date: 12/21/07

Number of approved TMDL's 5,124

Salmon Falls River View Map

Water Quality Standard of Concern: Dissolved Oxygen and Phosphorous

Study Area: Downstream of Somersworth

Pollutants Allocated or Likely to be Allocated to the TMDL: CBOD, Ammonia, Phosphorous

Project Reports and Documents: EPA's Review and Comments of the Salmon Falls River TMDL
Final Salmon Falls River TMDL Report
Final TMDL Approved by EPA

Date: 11/22/99

Number of approved TMDL's 1

Williams Brook View Maps

Water Quality Standard of Concern: Iron

Study Area: Northfield

Pollutants Allocated or Likely to be Allocated to the TMDL: Iron

Project Reports and Documents: Final TMDL Approved by EPA

Date: 9/24/02

Number of approved TMDL's 1

Adobe Acrobat Reader format. Download a free reader from Adobe.

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(603) 271-3503 | TDD Access: Relay NH 1-800-735-2964 | Hours: M-F, 8am-4pm

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TMDL Project Summary Table

Waterbody Name	Study Area	Pollutant of Concern	Pollutant(s) Allocated or Likely to be Allocated to the TMDL	EPA Approval Date	Number of Approved TMDL's
Policy-Porcupine Brook more...	Salem and Windham	Chloride	Chloride (Road Salt)	1/22/2009	1
North Tributary to Canobie Lake more...	Windham	Chloride	Chloride (Road Salt)	1/22/2009	1
Dinsmore Brook more...	Windham	Chloride	Chloride (Road Salt)	1/22/2009	1
Beaver Brook more...	Derry and Londonderry	Chloride	Chloride (Road Salt)	1/22/2009	1
Acid Impaired Lakes and Beaches more...	Statewide	pH	Atmospheric Deposition of NOx and SOx	9/20/2007 11/21/2007 10/4/2004 10/4/2004 10/26/2009	158 Lakes 114 Beaches 65 Lakes 21 Beaches 9 Beaches
Beach Bacteria TMDLs more...	Washington, Troy,	Bacteria	Bacteria	12/13/2006 11/08/2006	1 1
Hampton Harbor more...	Hampton and Seabrook	Bacteria	Bacteria	9/29/2003	10
Lamprey River more...	Epping	Dissolved Oxygen and Phosphorous	CBOD, Ammonia, Phosphorous	2/17/2000	3
Little Harbor more...	Newcastle & others	Bacteria	Bacteria	8/25/2006	2
Lower Sugar River more...	Claremont to CT River	Dissolved Oxygen	CBOD, Ammonia, Phosphorous	9/29/2000	2
Regional Mercury Loading more...	Regional TMDL	Mercury in Fish Tissue	Mercury	12/21/2007	5,124
Salmon Falls River and the Piscataqua River Estuary more...	Downstream of Somersworth	Dissolved Oxygen and Phosphorous	CBOD, Ammonia, Phosphorous	11/22/1999	6
Williams Brook more...	Northfield	Iron	Iron	9/24/2002	1