6/16/09
MAG910423

GZA
GeoEnvironmental, Inc.

Engineers and Scientists

June 12, 2009
File No. 17812.60

Mr. Victor Alvarez
United States Environmental Protection Agency – Region 1
1 Congress Street, Suite 1100
Boston, Massachusetts 02114-2023

One Edgewater Drive
Norwood
Massachusetts
02062
781-278-3700
FAX 781-278-5701
http://www.gza.com

Re: Submittal of Notice of Intent (NOI)
Excavation Dewatering – Rouge Brook Channel
100 Mechanic Street
Southbridge, Massachusetts
MassDEP - RTN No. 2-14967

Dear Mr. Alvarez:

GZA GeoEnvironmental, Inc. (GZA), on behalf of American Optical Corporation (AO), has prepared this Notice of Intent (NOI) for an application of a National Pollutant Discharge Elimination System (NPDES) Remediation General Permit (RGP) for proposed remediation activities at the above referenced location (Figure 3). This NOI is being submitted for conducting remedial response actions under the Massachusetts Contingency Plan (MCP). The proposed remedial activities are described in GZA's Phase IV - Remedy Implementation Plan (RIP), which was submitted to the Massachusetts Department of Environmental Protection (MassDEP) on July 17, 2008. The Site remediation will be conducted in accordance with all applicable MassDEP regulations and under the guidance of a Licensed Site Professional (LSP). As there is a likely need to discharge water generated from the dewatering of the area of the brook to be excavated, the enclosed NOI form provides required information on the general site conditions, proposed treatment system, discharge location and receiving water, and analytical results for the Rouge Brook channel, which are shown on Figure 2.

The excavation, dewatering, and discharge of treated water are scheduled to begin in the fall of 2009.

SITE DESCRIPTION

The Site is located at the eastern end of the former AO wastewater treatment facility (WWTF) in an undeveloped area of the property (Figure 2). The Site is an approximately 30,000-square foot area, which encompasses Rouge Brook and adjoining wetland areas, as well as an upland area located south of the former southern WWTF lagoon.

Site History

The former AO facility operated from approximately 1870 to 2001 as a research, design and manufacturing facility for various types of lenses, eyeglasses, and other optical wear. As part of the manufacturing process, an iron oxide compound known as "jeweler's rouge" was used in the final grinding and polishing of the lenses. The lenses were then rinsed. Until the construction of the WWTF, the rinse water with spent jeweler's rouge was discharged directly into a topographic low area that intersected a small intermittent stream located along the eastern end of the AO property.

During the late 1960s, the practice of discharging untreated wastewater directly into Rouge Brook ceased when the WWTF was built to adjust the pH of the wastewater, which was then discharged into two lagoons where the solid particles would settle out of the wastewater. The water was then discharged into the brook through a system of weirs located on the northeast side of the lagoons. In 2001, AO ceased manufacturing operations; during January 2003, the WWTF was decommissioned as part of a Release Abatement Measure

(RAM) performed by Rizzo Associates to address metals contamination associated with jeweler's rouge in the former settling lagoons (RTN 2-14448).

PROPOSED ACTIVITIES

The objective of the proposed remedial action is to remove metals-impacted sediment and sludge containing jeweler's rouge from within the banks of Rouge Brook. The proposed location of excavation is depicted in Figure 2. Prior to beginning remedial activities at the Site, a staging area will be established in the cleared area located to the southwest of the former lagoons associated with the former waste-water treatment plant. This area, accessible by a paved road leading from the developed and operating portions of the former AO property, will be used to on- and off-load equipment, to stockpile clean fill materials from off-Site that will be used to replicate areas disturbed by remedial activities, and to stockpile and treat metals-impacted sediments removed from Rouge Brook.

Water generated during dewatering activities will be treated as described in the attached NOI submittal, sampled as required and discharged from the location of the proposed dewatering treatment system downstream to Quinebaug River.

Please do not hesitate to contact the undersigned at (781) 278-3700 if you have any questions or require further information.

Very truly yours,
GZA GEOENVIRONMENTAL, INC.

Sowjanya Chintalapati
Environmental Engineer I

Russell Parkman
Consultant/Reviewer

Lawrence Feldman, LSP
Senior Principal

Attachment: Attachment 1: NOI Form
Attachment 2: Figure 1 - Site Locus Map
Attachment 3: Figure 2 - Proposed Activity Plan of Rouge Brook Area
Attachment 4: Figure 3 - Process Flow Diagram
Attachment 5: Laboratory Analytical Results
Attachment 6: Supplemental Information - 7Q10 data for Rouge Brook
Attachment 7: Copy of a letter from Tribal Historic Preservation Officer

cc: William Cotter, American Optical Corporation
David Butler, American Optical Corporation
Robert Cox, Bowditch and Dewey, LLP
MassDEP – Central Regional Office

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ATTACHMENT 1

NOI FORM

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**: American Optical Corporation (Former)		**Facility/site** address: 100 Mechanic Street, Southbridge,		
Location of **facility/site**: longitude: -72° 00' 53" latitude: 42° 04' 22"	Facility SIC code(s):	Street: Mechanic Street		
b) Name of **facility/site owner:** Southbridge Associates III, LLC		Town: Southbridge		
Email address of owner: DaveBut60@aol.com		State: MA	Zip: 01550	Count
Telephone no.of facility/site **owner**: (508) 943-7735				
Fax no. of facility/site **owner**: N/A		**Owner** is (check one): 1. Federal____ 2. State/Tribal____ 3. Private ✓ 4. other, if so, describe:		
Address of **owner** (if different from site):				
Street: 15 Oakwood Avenue				
Town: Dudley	State: MA	Zip: 01571-3726	County: Worcester	
c) Legal name of **operator**: American Optical Corporation (Former Facility)		**Operator** telephone no: (508) 943-7735		
		Operator fax no.: N/A	**Operator** email: DaveBut60	
Operator contact name and title: David Butler, Former Environmental Manager				
Address of **operator** (if different from owner):		Street: 15 Oakwood Avenue		
Town: Dudley	State: MA	Zip: 01571-3726	County: Worcester	

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

e) Is site/facility subject to any State permitting or other action which is causing the generation of discharge? Yes ✓ No ___ If "yes," please list: 1. site identification # assigned by the state of NH or MA: MA 2. permit or license # assigned: MCP RTN 2-14967 3. state agency contact information: name, location, and telephone number: MA DEP Central Regional Office, 627 Main St., Worcester, MA 508-792-7650	f) Is the site/facility covered by any other EPA permit, including: 1. multi-sector storm water general permit? Y___ N ✓, if Y, number: 2. phase I or II construction storm water general permit? Y___ N ✓, if Y, number: 3. individual NPDES permit? Y___ N ✓, if Y, number: 4. any other water quality related permit? Y___ N ✓, if Y, number: In the application process of 401-WQC (dredging&fill/excavation), 404-Army Corp PGP-2 Permits.

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:

During the Phase IV Activities at the Rouge Brook location, there is a likely need to discharge water generated from the dewatering of the wetland areas to be excavated.

b) Provide the following information about each discharge:	1) Number of discharge points: 3	2) What is the **maximum** and **average flow rate** of discharge (in cubic feet per second, ft3/s)? Max. flow 0.22 Average flow 0.044 Is maximum flow a **design value**? Y ✓ N ___ For average flow, include the units and appropriate notation if this value is a design value or estimate if not available.

3) Latitude and longitude of each discharge within 100 feet: pt.1:long. -72° 0' 54" lat. 42° 4' 23"; pt.2: long. -72° 0' 52" lat. 42° 4' 21"; pt.3: long. -72° 0' 49" lat. 42° 4' 20";
pt.4:long._____ lat._____; pt.5: long._____ lat._____; pt.6:long._____ lat._____; pt.7: long._____ lat._____; pt.8:long._____ lat._____; etc.

4) If hydrostatic testing, total volume of the discharge (gals):	5) Is the discharge intermittent ✓ or seasonal _____? Is discharge ongoing Yes ____ No ✓ ? Only during remediation time.

c) Expected dates of discharge (mm/dd/yy): start 08/01/09 end 11/01/11

d) Please attach a line drawing or flow schematic showing water flow through the facility including:
1. sources of intake water, 2. contributing flow from the operation, 3. treatment units, and 4. discharge points and receiving waters(s).

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

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

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

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

PARAMETER	Believe Absent	Believe Present	# of Samples (1 min-imum)	Type of Sample (e.g., grab)	Analytical Method Used (method #)	Minimum Level (ML) of Test Method (ug/l)	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
1. Total Suspended Solids		✓	1	grab	SM 2540D	5,000	54,000		54,000	
2. Total Residual Chlorine		✓	1	grab	SM 4500 Cl D	20	80		80	
3. Total Petroleum Hydrocarbons	✓		1	grab	1664 A	5,000	BDL		BDL	
4. Cyanide	✓		1	grab	SM 4500 CN CE	5	BDL		BDL	
5. Benzene	✓		1	grab	8260	1	BDL		BDL	
6. Toluene	✓		1	grab	8260	1	BDL		BDL	
7. Ethylbenzene	✓		1	grab	8260	1	BDL		BDL	
8. (m,p,o) Xylenes	✓		1	grab	8260	1	BDL		BDL	
9. Total BTEX[4]	✓		1	grab	8260	4	BDL		BDL	

[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 (ug/l)	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
10. Ethylene Dibromide [5] (1,2- Dibromo-methane)	✓		1	grab	8260	2	BDL		BDL	
11. Methyl-tert-Butyl Ether (MtBE)	✓		1	grab	8260	1	BDL		BDL	
12. tert-Butyl Alcohol (TBA)	✓		1	grab	8260	25	BDL		BDL	
13. tert-Amyl Methyl Ether (TAME)	✓		1	grab	8260	2	BDL		BDL	
14. Naphthalene	✓		1	grab	8260	2	BDL		BDL	
15. Carbon Tetra-chloride	✓		1	grab	8260	1	BDL		BDL	
16. 1,4 Dichlorobenzene	✓		1	grab	8260	1	BDL		BDL	
17. 1,2 Dichlorobenzene	✓		1	grab	8260	1	BDL		BDL	
18. 1,3 Dichlorobenzene	✓		1	grab	8260	1	BDL		BDL	
19. 1,1 Dichloroethane	✓		1	grab	8260	1	BDL		BDL	
20. 1,2 Dichloroethane	✓		1	grab	8260	1	BDL		BDL	
21. 1,1 Dichloroethylene	✓		1	grab	8260	1	BDL		BDL	
22. cis-1,2 Dichloro-ethylene		✓	1	grab	8260	1	1.8		1.8	
23. Dichloromethane (Methylene Chloride)	✓		1	grab	8260	2	BDL		BDL	
24. Tetrachloroethylene	✓		1	grab	8260	1	BDL		BDL	

[5] EDB is a groundwater contaminant at fuel spill and pesticide application sites in New England.

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 (ug/l)	Maximum daily value		Avg. daily Value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
25. 1,1,1 Trichloroethane	✓		1	grab	8260	1	BDL		BDL	
26. 1,1,2 Trichloroethane	✓		1	grab	8260	1	BDL		BDL	
27. Trichloroethylene		✓	1	grab	8260	1	1.4		1.4	
28. Vinyl Chloride	✓		1	grab	8260	1	BDL		BDL	
29. Acetone	✓		1	grab	8260	25	BDL		BDL	
30. 1,4 Dioxane	✓		1	grab	8260	100	BDL		BDL	
31. Total Phenols	✓		1	grab	8270	180	BDL		BDL	
32. Pentachlorophenol	✓		1	grab	8270	10	BDL		BDL	
33. Total Phthalates [6] (Phthalate esthers)	✓		1	grab	8270	81	BDL		BDL	
34. Bis (2-Ethylhexyl) Phthalate [Di-(ethylhexyl) Phthalate]	✓		1	grab	8270	1	BDL		BDL	
35. Total Group I Polycyclic Aromatic Hydrocarbons (PAH)										
a. Benzo(a) Anthracene	✓		1	grab	8270	0.05	BDL		BDL	
b. Benzo(a) Pyrene	✓		1	grab	8270	0.1	BDL		BDL	
c. Benzo(b)Fluoranthene	✓		1	grab	8270	0.05	BDL		BDL	
d. Benzo(k) Fluoranthene	✓		1	grab	8270	0.2	BDL		BDL	
e. Chrysene	✓		1	grab	8270	0.2	BDL		BDL	

[6] 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 (ug/l)	Maximum daily value		Average daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
f. Dibenzo(a,h) anthracene	✓		1	grab	8270	0.2	BDL		BDL	
g. Indeno(1,2,3-cd) Pyrene	✓		1	grab	8270	0.2	BDL		BDL	
36. Total Group II Polycyclic Aromatic Hydrocarbons (PAH)			1	grab						
h. Acenaphthene	✓		1	grab	8270	0.3	BDL		BDL	
i. Acenaphthylene	✓		1	grab	8270	0.3	BDL		BDL	
j. Anthracene	✓		1	grab	8270	0.2	BDL		BDL	
k. Benzo(ghi) Perylene	✓		1	grab	8270	0.5	BDL		BDL	
l. Fluoranthene	✓		1	grab	8270	0.5	BDL		BDL	
m. Fluorene	✓		1	grab	8270	1	BDL		BDL	
n. Naphthalene-	✓		1	grab	8270	1	BDL		BDL	
o. Phenanthrene	✓		1	grab	8270	0.05	BDL		BDL	
p. Pyrene	✓		1	grab	8270	1	BDL		BDL	
37. Total Polychlorinated Biphenyls (PCBs)	✓		1	grab	608	0.90	BDL		BDL	
38. Antimony	✓		1	grab	6010B	25	BDL		BDL	
39. Arsenic	✓		1	grab	6010B	5	BDL		BDL	
40. Cadmium	✓		1	grab	6010B	5	BDL		BDL	
41. Chromium III	✓		1	grab	6010B	5	BDL		BDL	
42. Chromium VI	✓		1	grab	SM 3500 Cr D	10	BDL		BDL	

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 (ug/l)	Maximum daily value		Avg. daily value	
							concentration (ug/l)	mass (kg)	concentration (ug/l)	mass (kg)
43. Copper		✓	1	grab	6010B	5	6.9		6.9	
44. Lead		✓	1	grab	6010B	10	12		12	
45. Mercury	✓		1	grab	7470A	0.2	BDL		BDL	
46. Nickel	✓		1	grab	6010B	10	BDL		BDL	
47. Selenium	✓		1	grab	6010B	25	BDL		BLD	
48. Silver	✓		1	grab	6010B	5	BDL		BDL	
49. Zinc		✓	1	grab	6010B	10	12		12	
50. Iron		✓	1	grab	6010B	25	4800		4800	
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? Copper (Cu), Lead (Pb), Iron (Fe).
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: Cu, Pb, Fe DF: 1	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: Cu, Pb, Fe.

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

a) A description of the treatment system, including a schematic of the proposed or existing treatment system:						
b) Identify each applicable treatment unit (check all that apply):	Frac. tank ✓	Air stripper	Oil/water separator	Equalization tanks	Bag filter ✓	GAC filter ✓
	Chlorination	Dechlorination	Other (please describe):			
c) Proposed **average** and **maximum flow rates** (gallons per minute) for the discharge and the **design flow rate**(s) (gallons per minute) of the treatment system: Average flow rate of discharge 20 gpm. Maximum flow rate of treatment system 100 gpm Design flow rate of treatment system 100 gpm						
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: Treated water discharges via temporary piping to Rouge Brook.						
c) Attach a detailed map(s) indicating the site location and location of the outfall to the receiving water: 1. For multiple discharges, number the discharges sequentially. 2. For indirect dischargers, indicate the location of the discharge to the indirect conveyance and the discharge to surface water The map should also include the location and distance to the nearest sanitary sewer as well as the locus of nearby sensitive receptors (based on USGS topographical mapping), such as surface waters, drinking water supplies, and wetland areas.						
d) Provide the state water quality classification of the receiving water Class B (discharging from Rouge Brook tributary to Quinepaug River).						
e) Provide the reported or calculated seven day-ten year low flow (7Q10) of the receiving water 0.00191 cfs Please attach any calculation sheets used to support stream flow and dilution calculations.						
f) Is the receiving water a listed 303(d) water quality impaired or limited water? Yes____ No ✓ If yes, for which pollutant(s)? Is there a TMDL? Yes____ No ✓ If yes, for which pollutant(s)?						

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

a) Are any listed threatened or endangered species, or designated critical habitat, in proximity to the discharge? Yes_✓_ No____ National Heritage Endangered Species Program Review
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): n/a
a "no jeopardy" opinion? _____or written concurrence____ on a finding that the discharges are not likely to adversely affect any endangered species or critical habitat?

b) Are any historic properties listed or eligible for listing on the National Register of Historic Places located on the facility or site or in proximity to the discharge?
Yes_____ No_✓_ Have any state or tribal historic preservation officer been consulted in this determination (Massachusetts only)? Yes_✓_ No_____

7. Supplemental information. :

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

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

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

Facility/Site Name: American Optical Corporation

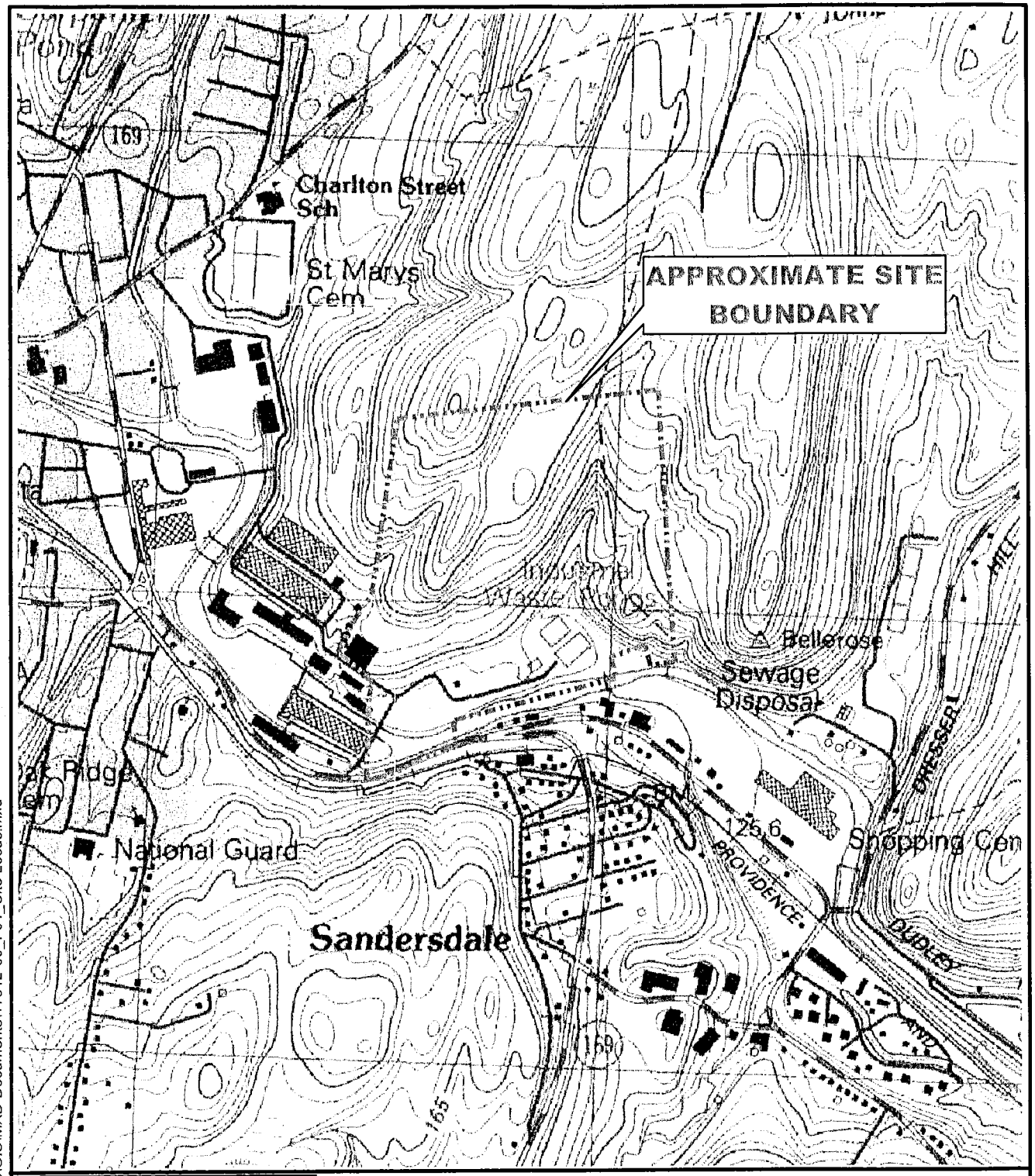
Operator signature: David G. Butler

Title: Former Environmental Manager

Date: 6-10-2009

ATTACHMENT 2

FIGURE 1 – SITE LOCUS MAP



SOURCE : SCANNED USGS TOPOGRAPHIC QUADRANGLES

Data Supplied by :

ATTACHMENT 3

FIGURE 2 – PROPOSED ACTIVITY PLAN OF ROUGE BROOK AREA

EROSION AND SEDIMENT CONTROL NOTES:

1. The contractor shall not disturb vegetated areas outside of the work zone, except to the minimum extent necessary for access and accomplishment of the work shown. The contractor shall minimize the cutting of trees to the extent possible. The protections shown on this plan are minimum requirements. The contractor shall employ whatever supplementary measures necessary to protect wetlands, water bodies, and adjacent areas from disturbance or discharge of sediments.

2. The contractor shall be aware that throughout the duration of the contract, it will be his responsibility to mitigate discharge of waterborne sediment to downstream areas from any work done on, or in support of this project.

3. All necessary precautions shall be taken by the contractor to prevent migration into water of silt, sediment, fuels, solvents, lubricants, concrete, or any other pollutants associated with construction procedures.

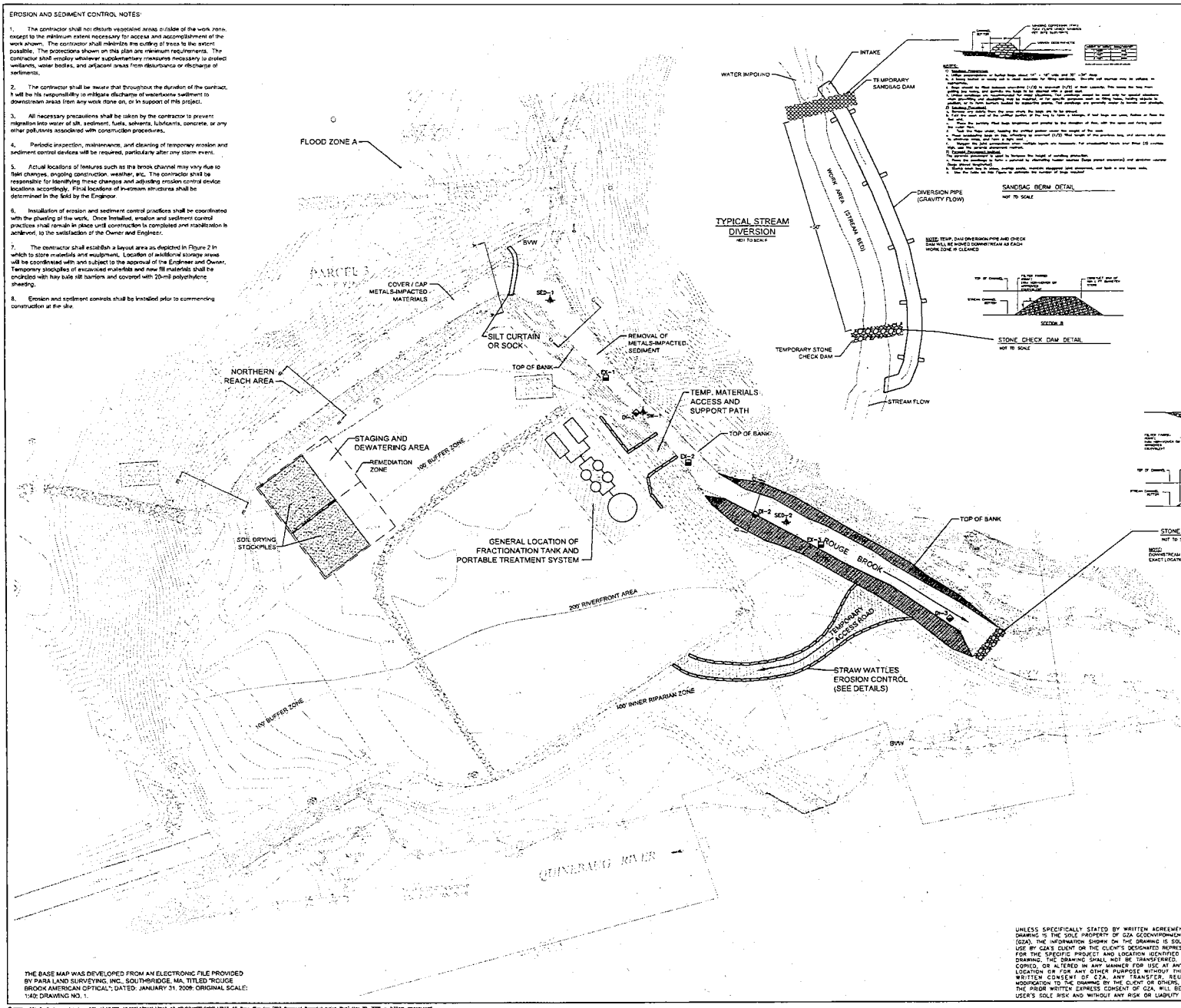
4. Periodic inspection, maintenance, and cleaning of temporary erosion and sediment control devices will be required, particularly after any storm event.

5. Actual locations of features such as the brook channel may vary due to field changes, ongoing construction, weather, etc. The contractor shall be responsible for identifying these changes and adjusting erosion control device locations accordingly. Final locations of in-stream structures shall be determined in the field by the Engineer.

6. Installation of erosion and sediment control practices shall be coordinated with the phasing of the work. Once installed, erosion and sediment control practices shall remain in place until construction is completed and stabilization is achieved, to the satisfaction of the Owner and Engineer.

7. The contractor shall establish a layout area as depicted in Figure 2 in which to store materials and equipment. Location of additional storage areas will be coordinated with and subject to the approval of the Engineer and Owner. Temporary stockpiles of excavated materials and new fill materials shall be encircled with hay bale silt barriers and covered with 20-mil polyethylene sheeting.

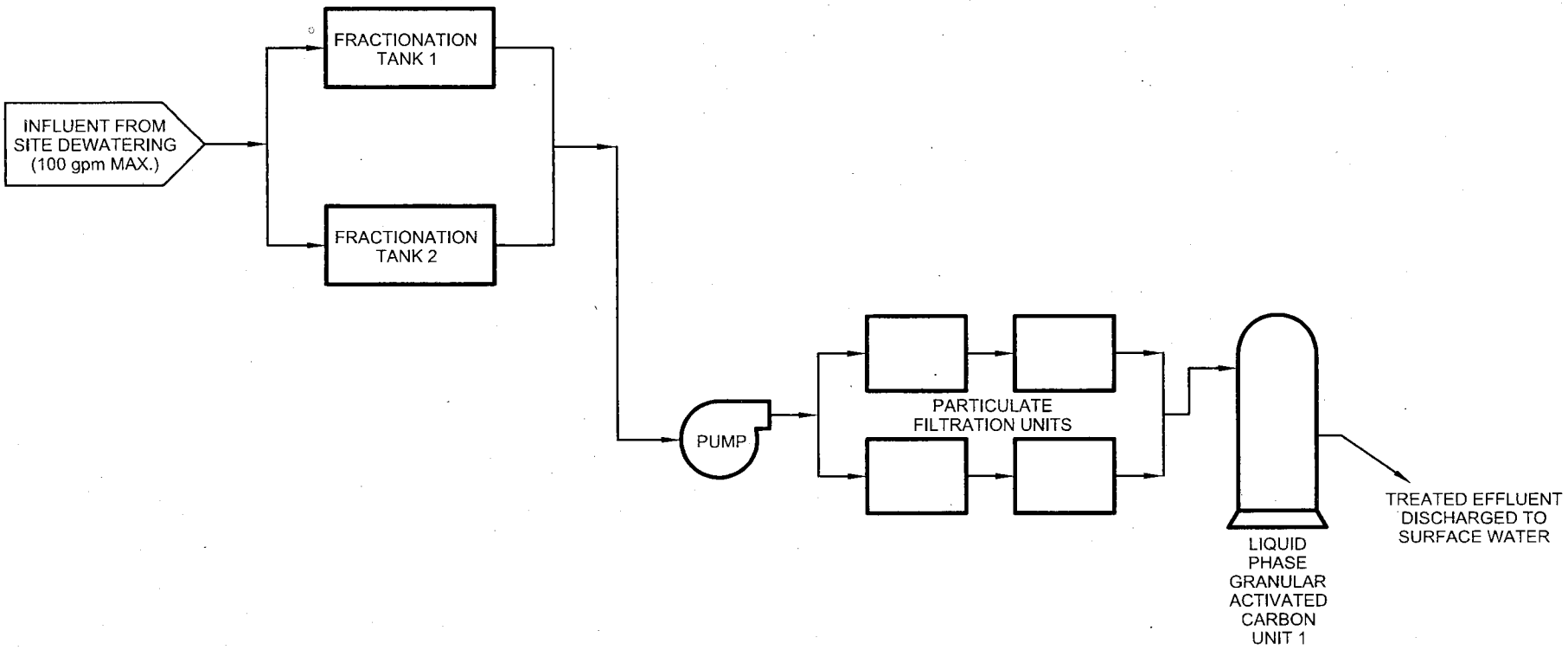
8. Erosion and sediment controls shall be installed prior to commencing construction at the site.



THE BASE MAP WAS DEVELOPED FROM AN ELECTRONIC FILE PROVIDED BY PARA LAND SURVEYING, INC., SOUTHBRIDGE, MA, TITLED "ROUGE BROOK AMERICAN OPTICAL"; DATED: JANUARY 31, 2008; ORIGINAL SCALE: 1:400; DRAWING NO. 1.

ATTACHMENT 4

FIGURE 3 – PROCESS FLOW DIAGRAM



PREPARED BY: GZA GeoEnvironmental, Inc. Engineers and Scientists, ONE EDGEWATER DRIVE, Norwood, Massachusetts, (PH) 781-278-3700	AMERICAN OPTICAL CORPORATION 100 MECHANIC STREET SOUTHBRIDGE, MASSACHUSETTS	PROJ MGR: JID DESIGNED BY: SC REVIEWED BY: MS	DATE: 05-19-2009 PROJECT NO. 17812.60	FIGURE 3
PREPARED FOR: AMERICAN OPTICAL	PROCESS FLOW DIAGRAM PROPOSED DEWATERING TREATMENT SYSTEM	DRAWN BY: GAS / EMD CHECKED BY: RBP SCALE: NOT TO SCALE	REVISION NO.	

ATTACHMENT 5

LABORATORY ANALYTICAL RESULTS

con-test®
ANALYTICAL LABORATORY
39 Spruce Street ° East Longmeadow, MA 01028 ° FAX 413/525-6405 ' TEL. 413/525-2332

REPORT DATE 2/20/2009

GZA GEOENVIRONMENTAL, INC.
106 SOUTH STREET
HOPKINTON, MA 01748-2207
ATTN: E.HUTCHINSON/M.MIRENDA

CONTRACT NUMBER:
PURCHASE ORDER NUMBER: 8-32287

PROJECT NUMBER:

ANALYTICAL SUMMARY

LIMS BAT #: LIMT-23272
JOB NUMBER: 01.0017812.60

PROJECT LOCATION: AMERICAN OPTICAL, SOUTHBRIDGE, MA.

FIELD SAMPLE #	LAB ID	MATRIX	SAMPLE DESCRIPTION	TEST	Subcontract Lab (if any) Cert Nos.
01	09B04124	WATER OTHE	SW - 1	8270 h2o low	

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ANALYTICAL LABORATORY

39 Spruce Street ' East Longmeadow, MA 01028 ° FAX 413/525-6405 ' TEL. 413/525-2332

REPORT DATE 2/20/2009

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LIMS BAT #: LIMT-23272
JOB NUMBER: 01.0017812.60

Comments :

LIMS BATCH NO. : LIMT-23272

CASE NARRATIVE SUMMARY

Recommended sample holding times were not exceeded for all samples unless listed below:
None Exceeded

All samples for the method(s) listed were received preserved properly in the proper containers at 4°C +/- 2 degrees as specified on the chain-of-custody form unless listed below:
All properly preserved

In method 8270 for sample 09B04124, the benzidine tailing factor was outside of method specifications. Reduced sensitivity and resolution is expected for some base/neutral compounds.

In method 8270, initial and/or continuing calibration did not meet method specifications. For sample 09B04124, Pentachloronitrobenzene was calibrated with a relative response factor <0.05.

In method 8270, any reported result for Benzoic Acid and 4-Nitrophenol in sample 09B04124 is estimated and likely to be biased on the low side based on continuing calibration bias.

In method 8270, any reported result for Benzoic Acid in sample 09B04124 is likely to be biased on the low side based on laboratory fortified blank (laboratory control sample) recovery bias.

In method 8270, laboratory fortified blank duplicate (laboratory control sample) RPD for 2,4-Dinitrotoluene in sample 09B04124 is outside of control limits. Reduced precision is anticipated for any reported results for this compound in these samples.

There are no other analytical issues which affect the usability of the data.

DETAILED CASE NARRATIVE

METHOD SW846 8270 - ADDITIONAL DETAILS

In method 8270, for 2-Chloronaphthalene in sample 09B04124, data is not affected by continuing calibration non-conformance since bias is on the high side and all results are "not detected".

Laboratory control sample recoveries for required MCP Data Enhancement 8270 compounds were all within control limits specified by the method, 40-140% for base/neutrals and 30-130% for acids except for "difficult analytes" listed below and/or otherwise listed in this narrative.

Difficult analytes for soil LCS - limits between 10 and 180% depending on the compound (see QC summary report for limits): 3,3'-dichlorobenzidine, pyridine, aniline, 4-chloroaniline, 3-nitroaniline, 2,4-dinitrophenol, and N-nitrosodiphenylamine.

Difficult analytes for water LCS - limits between 10 and 150% depending on the compound (see QC summary report for limits): benzoic acid, dimethylphthalate, bis(2-chloroisopropyl)ether, hexachlorocyclopentadiene, pyridine, 4-nitrophenol, and phenol.

Duplicate laboratory fortified blank RPDs were all less than or equal to 20% for water or 30% for soil except for "difficult analytes" where RPDs of 50% are used and/or otherwise listed below or elsewhere in this narrative.

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ANALYTICAL SUMMARY

LIMS BAT #: LIMT-23272

JOB NUMBER: 01.0017812.60

Difficult analytes for water RPDs: aniline, benzoic acid, benzo(a,h)anthracene, dimethylphthalte, hexachlorocyclopentadiene, hexachloroethane, indeno(1,2,3-cd)pyrene, 4,6-dinitro-2-methylphenol, 2,4-dinitrophenol, 4-nitrophenol, 2,4,6-trichlorophenol, pentachlorophenol., and pyridine.

Difficult analytes for soil RPDs: 3,3'-dichlorobenzidine, benzoic acid, 4-nitrophenol, aniline, and pyridine.

In method 8270, for sample 09B04124, surrogate recovery of Phenol-d6 is outside of control limits but within method requirements.

The results of analyses performed are based on samples as submitted to the laboratory and relate only to the items collected and tested.

The CON-TEST Environmental Laboratory operates under the following certifications and accreditations. AIHA accreditations only apply to NIOSH methods and Environmental Lead Analyses.

AIHA 100033	AIHA ELLAP (LEAD) 100033	NORTH CAROLINA CERT. # 652
MASSACHUSETTS MA0100	NEW HAMPSHIRE NELAP 2516	NEW JERSEY NELAP NJ MA007 (AIR)
CONNECTICUT PH-0567	VERMONT DOH (LEAD) No. LL015036	FLORIDA DOH E871027 (AIR)
NEW YORK ELAP/NELAP 10899	RHODE ISLAND (LIC. No. 112)	

I certify that the analyses listed above, unless specifically listed as subcontracted, if any, were performed under my direction according to the approved methodologies listed in this document, and that based upon my inquiry of those individuals immediately responsible for obtaining the information, the material contained in this report is, to the best of my knowledge and belief, accurate and complete.

Edward Denson 2/20/09

SIGNATURE DATE

Tod Kopyscinski
Air Laboratory Manager

Michael Erickson
Assistant Laboratory Director

Edward Denson
Technical Director

Daren Damboragian
Organics Department Supervisor

* See end of data tabulation for notes and comments pertaining to this sample

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2/20/2009

Purchase Order No.: 8-32287

Project Location: AMERICAN OPTICAL, SOUTHBRIDGE, MA.
Date Received: 2/13/2009
Field Sample # : 01

LIMS-BAT #: LIMT-23272
Job Number: 01.0017812.60

Sample ID : 09B04124

‡Sampled : 2/12/2009
SW - 1

Sample Matrix: WATER OTHER

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit Lo	SPEC Limit Hi	P/F
Acenaphthene	ug/l	ND	02/19/09	BGL	0.30			
Acenaphthylene	ug/l	ND	02/19/09	BGL	0.30			
Acetophenone	ug/l	ND	02/19/09	BGL	10.0			
Aniline	ug/l	ND	02/19/09	BGL	5.00			
Anthracene	ug/l	ND	02/19/09	BGL	0.20			
Benzoic Acid	ug/l	ND	02/19/09	BGL	30.0			
Benzo(a)anthracene	ug/l	ND	02/19/09	BGL	0.050			
Benzo(a)pyrene	ug/l	ND	02/19/09	BGL	0.100			
Benzo(b)fluoranthene	ug/l	ND	02/19/09	BGL	0.050			
Benzo(g,h,i)perylene	ug/l	ND	02/19/09	BGL	0.500			
Benzo(k)fluoranthene	ug/l	ND	02/19/09	BGL	0.200			
Bis(2-chloroethoxy)methane	ug/l	ND	02/19/09	BGL	10.0			
Bis(2-chloroethyl)ether	ug/l	ND	02/19/09	BGL	10.0			
Bis(2-chloroisopropyl)ether	ug/l	ND	02/19/09	BGL	10.0			
Bis(2-ethylhexyl)phthalate	ug/l	ND	02/19/09	BGL	1.00			
4-Bromophenyl phenyl ether	ug/l	ND	02/19/09	BGL	10.0			
Butylbenzylphthalate	ug/l	ND	02/19/09	BGL	20.0			
Carbazole	ug/l	ND	02/19/09	BGL	5.00			
4-Chloroaniline	ug/l	ND	02/19/09	BGL	20.0			
4-Chloro-3-methylphenol	ug/l	ND	02/19/09	BGL	20.0			
2-Chloronaphthalene	ug/l	ND	02/19/09	BGL	10.0			
2-Chlorophenol	ug/l	ND	02/19/09	BGL	10.0			
4-Chlorophenylphenyl ether	ug/l	ND	02/19/09	BGL	10.0			
Chrysene	ug/l	ND	02/19/09	BGL	0.20			
Dibenzofuran	ug/l	ND	02/19/09	BGL	10.0			
Dibenz(a,h)anthracene	ug/l	ND	02/19/09	BGL	0.200			
1,2-Dichlorobenzene	ug/l	ND	02/19/09	BGL	5.00			
1,3-Dichlorobenzene	ug/l	ND	02/19/09	BGL	5.00			
1,4-Dichlorobenzene	ug/l	ND	02/19/09	BGL	5.00			

RL = Reporting Limit

ND = Not Detected at or above the Reporting Limit

NM = Not Measured

SPEC LIMIT = a client specified recommended or regulatory level for comparison with data to determine PASS (P) or FAIL (F) condition of results.

* = See end of report for comments and notes applying to this sample

‡ = See attached chain-of-custody record for time sampled

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Purchase Order No.: 8-32287

Project Location: AMERICAN OPTICAL, SOUTHBRIDGE, MA.
Date Received: 2/13/2009
Field Sample # : 01

LIMS-BAT #: LIMT-23272
Job Number: 01.0017812.60

Sample ID : **09B04124** ‡Sampled : 2/12/2009
SW - 1

Sample Matrix: WATER OTHER

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit Lo	SPEC Limit Hi	P/ F
3,3-Dichlorobenzidine	ug/l	ND	02/19/09	BGL	10.0			
2,4-Dichlorophenol	ug/l	ND	02/19/09	BGL	10.0			
Diethylphthalate	ug/l	ND	02/19/09	BGL	10.0			
2,4-Dimethylphenol	ug/l	ND	02/19/09	BGL	40.0			
Dimethylphthalate	ug/l	ND	02/19/09	BGL	20.0			
Di-n-butylphthalate	ug/l	ND	02/19/09	BGL	10.0			
Di-n-octylphthalate	ug/l	ND	02/19/09	BGL	20.0			
4,6-Dinitro-2-methylphenol	ug/l	ND	02/19/09	BGL	10.0			
2,4-Dinitrophenol	ug/l	ND	02/19/09	BGL	20.0			
2,4-Dinitrotoluene	ug/l	ND	02/19/09	BGL	10.0			
2,6-Dinitrotoluene	ug/l	ND	02/19/09	BGL	10.0			
1,2-Diphenylhydrazine (as Azobenzene)	ug/l	ND	02/19/09	BGL	10.0			
Fluoranthene	ug/l	ND	02/19/09	BGL	0.50			
Fluorene	ug/l	ND	02/19/09	BGL	1.00			
Hexachlorobenzene	ug/l	ND	02/19/09	BGL	0.05			
Hexachlorobutadiene	ug/l	ND	02/19/09	BGL	0.20			
Hexachlorocyclopentadiene	ug/l	ND	02/19/09	BGL	20.0			
Hexachloroethane	ug/l	ND	02/19/09	BGL	1.00			
Indeno(1,2,3-cd)pyrene	ug/l	ND	02/19/09	BGL	0.200			
Isophorone	ug/l	ND	02/19/09	BGL	10.0			
o-cresol	ug/l	ND	02/19/09	BGL	10.0			
m & p-Cresol(s)	ug/l	ND	02/19/09	BGL	20.0			
2-Methylnaphthalene	ug/l	ND	02/19/09	BGL	1.00			
Naphthalene	ug/l	ND	02/19/09	BGL	1.00			
2-Nitroaniline °	ug/l	ND	02/19/09	BGL	10.0			
3-Nitroaniline	ug/l	ND	02/19/09	BGL	10.0			
4-Nitroaniline	ug/l	ND	02/19/09	BGL	10.0			
Nitrobenzene	ug/l	ND	02/19/09	BGL	10.0			

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2/20/2009

Purchase Order No.: 8-32287

Project Location: AMERICAN OPTICAL, SOUTHBRIDGE, MA.
Date Received: 2/13/2009
Field Sample # : 01

LIMS-BAT #: LIMT-23272
Job Number: 01.0017812.60

Sample ID : **09B04124**

‡Sampled : 2/12/2009
SW - 1

Sample Matrix: WATER OTHER

	Units	Results	Date Analyzed	Analyst	RL	SPEC Limit Lo	SPEC Limit Hi	P/ F
2-Nitrophenol	ug/l	ND	02/19/09	BGL	10.0			
4-Nitrophenol	ug/l	ND	02/19/09	BGL	20.0			
N-Nitrosodiphenylamine	ug/l	ND	02/19/09	BGL	10.0			
N-Nitroso-di-n-propylamine	ug/l	ND	02/19/09	BGL	10.0			
Pentachloronitribenzene	ug/l	ND	02/19/09	BGL	10.0			
Pentachlorophenol	ug/l	ND	02/19/09	BGL	10.0			
Phenanthrene	ug/l	ND	02/19/09	BGL	0.05			
Phenol	ug/l	ND	02/19/09	BGL	10.0			
Pyrene	ug/l	ND	02/19/09	BGL	1.00			
Pyridine	ug/l	ND	02/19/09	BGL	5.0			
1,2,4,5-Tetrachlorobenzene	ug/l	ND	02/19/09	BGL	10.0			
1,2,4-Trichlorobenzene	ug/l	ND	02/19/09	BGL	5.00			
2,4,5-Trichlorophenol	ug/l	ND	02/19/09	BGL	10.0			
2,4,6-Trichlorophenol	ug/l	ND	02/19/09	BGL	10.0			
Extraction Date 625/8270		2/18/2009	02/19/09	BGL				

Analytical Method:
SW846 8270
SAMPLES ARE EXTRACTED INTO METHYLENE CHLORIDE BY LIQUID/LIQUID EXTRACTION METHOD 3510 C, FOLLOWED BY KUDERNA-DANISH OR TURBOVAP EVAPORATIVE CONCENTRATION AND QUANTITATED BY GC/MS TARGET COMPOUND ANALYSIS.

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Project Location: AMERICAN OPTICAL, SOUTHBRIDGE, MA.
Date Received: 2/13/2009

LIMS-BAT #: LIMT-23272
Job Number: 01.0017812.60

** END OF REPORT **

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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date: 2/20/2009 Lims Bat # : LIMT-23272

QC Batch Number: GCMS/SEMI-11942

Sample Id	Analysis	QC Analysis	Values	Units	Limits
09B04124					
	Phenol-d6	Surrogate Recovery	13.9	%	15-110
	Nitrobenzene-d5	Surrogate Recovery	89.1	%	30-130
	2-Fluorobiphenyl	Surrogate Recovery	80.8	%	30-130
	2,4,6-Tribromophenol	Surrogate Recovery	91.9	%	15-110
	Terphenyl-d14	Surrogate Recovery	85.8	%	30-130
	2-Fluorophenol	Surrogate Recovery	23.8	%	15-110
BLANK-129745					
	1,4-Dichlorobenzene	Blank	<5.00	ug/l	
	Naphthalene	Blank	<1.00	ug/l	
	1,2-Dichlorobenzene	Blank	<5.00	ug/l	
	1,3-Dichlorobenzene	Blank	<5.00	ug/l	
	Acenaphthene	Blank	<0.30	ug/l	
	Acenaphthylene	Blank	<0.30	ug/l	
	Aniline	Blank	<5.00	ug/l	
	Anthracene	Blank	<0.20	ug/l	
	Benzo(a)anthracene	Blank	<0.050	ug/l	
	Benzo(a)pyrene	Blank	<0.100	ug/l	
	Benzo(b)fluoranthene	Blank	<0.050	ug/l	
	Benzo(g,h,i)perylene	Blank	<0.500	ug/l	
	Benzoic Acid	Blank	<30.0	ug/l	
	Bis(2-chloroethyl)ether	Blank	<10.0	ug/l	
	Bis(2-chloroethoxy)methane	Blank	<10.0	ug/l	
	Bis(2-chloroisopropyl)ether	Blank	<10.0	ug/l	
	Bis(2-ethylhexyl)phthalate	Blank	<1.00	ug/l	
	4-Bromophenyl phenyl ether	Blank	<10.0	ug/l	
	Butylbenzylphthalate	Blank	<20.0	ug/l	
	4-Chloroaniline	Blank	<20.0	ug/l	
	2-Chloronaphthalene	Blank	<10.0	ug/l	
	4-Chlorophenylphenyl ether	Blank	<10.0	ug/l	
	Chrysene	Blank	<0.20	ug/l	
	Dibenz(a,h)anthracene	Blank	<0.200	ug/l	
	Dibenzofuran	Blank	<10.0	ug/l	
	3,3-Dichlorobenzidine	Blank	<10.0	ug/l	
	Diethylphthalate	Blank	<10.0	ug/l	
	Dimethylphthalate	Blank	<20.0	ug/l	
	Di-n-butylphthalate	Blank	<10.0	ug/l	
	2,4-Dinitrotoluene	Blank	<10.0	ug/l	
	2,6-Dinitrotoluene	Blank	<10.0	ug/l	
	1,2-Diphenylhydrazine (as Azobenzene)	Blank	<10.0	ug/l	
	Di-n-octylphthalate	Blank	<20.0	ug/l	
	Fluoranthene	Blank	<0.50	ug/l	
	Fluorene	Blank	<1.00	ug/l	
	Hexachlorobenzene	Blank	<0.05	ug/l	

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QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date: 2/20/2009 Lims Bat # : LIMT-23272

QC Batch Number: GCMS/SEMI-11942

Sample Id	Analysis	QC Analysis	Values	Units	Limits
BLANK-129745					
	Hexachlorobutadiene	Blank	<0.20	ug/l	
	Hexachlorocyclopentadiene	Blank	<20.0	ug/l	
	Hexachloroethane	Blank	<1.00	ug/l	
	Indeno(1,2,3-cd)pyrene	Blank	<0.200	ug/l	
	Isophorone	Blank	<10.0	ug/l	
	2-Methylnaphthalene	Blank	<1.00	ug/l	
	2-Nitroaniline	Blank	<10.0	ug/l	
	3-Nitroaniline	Blank	<10.0	ug/l	
	Nitrobenzene	Blank	<10.0	ug/l	
	N-Nitroso-di-n-propylamine	Blank	<10.0	ug/l	
	N-Nitrosodiphenylamine	Blank	<10.0	ug/l	
	Phenanthrene	Blank	<0.05	ug/l	
	Pyrene	Blank	<1.00	ug/l	
	1,2,4-Trichlorobenzene	Blank	<5.00	ug/l	
	4-Chloro-3-methylphenol	Blank	<20.0	ug/l	
	2-Chlorophenol	Blank	<10.0	ug/l	
	2,4-Dichlorophenol	Blank	<10.0	ug/l	
	2,4-Dimethylphenol	Blank	<40.0	ug/l	
	4,6-Dinitro-2-methylphenol	Blank	<10.0	ug/l	
	2,4-Dinitrophenol	Blank	<20.0	ug/l	
	o-cresol	Blank	<10.0	ug/l	
	m & p-Cresol(s)	Blank	<20.0	ug/l	
	2-Nitrophenol	Blank	<10.0	ug/l	
	4-Nitrophenol	Blank	<20.0	ug/l	
	Phenol	Blank	<10.0	ug/l	
	2,4,5-Trichlorophenol	Blank	<10.0	ug/l	
	2,4,6-Trichlorophenol	Blank	<10.0	ug/l	
	Pentachlorophenol	Blank	<10.0	ug/l	
	Pyridine	Blank	<5.0	ug/l	
	Benzo(k)fluoranthene	Blank	<0.200	ug/l	
	4-Nitroaniline	Blank	<10.0	ug/l	
	Acetophenone	Blank	<10.0	ug/l	
	Carbazole	Blank	<5.00	ug/l	
	Pentachloronitribenzene	Blank	<10.0	ug/l	
	1,2,4,5-Tetrachlorobenzene	Blank	<10.0	ug/l	
LFBLANK-91848					
	1,4-Dichlorobenzene	Lab Fort Blank Amt.	100.00	ug/l	
		Lab Fort Blk. Found	61.80	ug/l	
		Lab Fort Blk. % Rec.	61.80	%	40-140
		Dup Lab Fort Bl Amt.	100.00	ug/l	
		Dup Lab Fort Bl. Fnd	59.55	ug/l	
		Dup Lab Fort Bl %Rec	59.55	%	
		Lab Fort Blank Range	2.25	units	

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QC SUMMARY REPORT

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Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

Report Date: 2/20/2009 Lims Bat # : LIMT-23272

QC Batch Number: GCMS/SEMI-11942

Sample Id	Analysis	QC Analysis	Values	Units	Limits
LFBLANK-91848					
	1,4-Dichlorobenzene	Lab Fort Bl. Av. Rec	60.67	%	
		LFB Duplicate RPD	3.70	%	0-20
	Naphthalene	Lab Fort Blank Amt.	100.00	ug/l	
		Lab Fort Blk. Found	63.28	ug/l	
		Lab Fort Blk. % Rec.	63.28	%	40-140
		Dup Lab Fort Bl Amt.	100.00	ug/l	
		Dup Lab Fort Bl. Fnd	60.88	ug/l	
		Dup Lab Fort Bl %Rec	60.88	%	
		Lab Fort Blank Range	2.39	units	
		Lab Fort Bl. Av. Rec	62.08	%	
		LFB Duplicate RPD	3.86	%	0-20
	1,2-Dichlorobenzene	Lab Fort Blank Amt.	100.00	ug/l	
		Lab Fort Blk. Found	61.28	ug/l	
		Lab Fort Blk. % Rec.	61.28	%	40-140
		Dup Lab Fort Bl Amt.	100.00	ug/l	
		Dup Lab Fort Bl. Fnd	59.67	ug/l	
		Dup Lab Fort Bl %Rec	59.67	%	
		Lab Fort Blank Range	1.60	units	
		Lab Fort Bl. Av. Rec	60.47	%	
		LFB Duplicate RPD	2.66	%	0-20
	1,3-Dichlorobenzene	Lab Fort Blank Amt.	100.00	ug/l	
		Lab Fort Blk. Found	61.41	ug/l	
		Lab Fort Blk. % Rec.	61.41	%	40-140
		Dup Lab Fort Bl Amt.	100.00	ug/l	
		Dup Lab Fort Bl. Fnd	58.70	ug/l	
		Dup Lab Fort Bl %Rec	58.70	%	
		Lab Fort Blank Range	2.71	units	
		Lab Fort Bl. Av. Rec	60.05	%	
		LFB Duplicate RPD	4.51	%	0-20
	Acenaphthene	Lab Fort Blank Amt.	100.00	ug/l	
		Lab Fort Blk. Found	64.92	ug/l	
		Lab Fort Blk. % Rec.	64.92	%	40-140
		Dup Lab Fort Bl Amt.	100.00	ug/l	
		Dup Lab Fort Bl. Fnd	61.76	ug/l	
		Dup Lab Fort Bl %Rec	61.76	%	
		Lab Fort Blank Range	3.16	units	
		Lab Fort Bl. Av. Rec	63.34	%	
		LFB Duplicate RPD	4.98	%	0-20
	Acenaphthylene	Lab Fort Blank Amt.	100.00	ug/l	
		Lab Fort Blk. Found	64.56	ug/l	
		Lab Fort Blk. % Rec.	64.56	%	40-140
		Dup Lab Fort Bl Amt.	100.00	ug/l	
		Dup Lab Fort Bl. Fnd	61.39	ug/l	

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ANALYTICAL LABORATORY
39 Spruce Street ° East Longmeadow, MA 01028 ° FAX 413/525-6405 ° TEL. 413/525-2332

QC SUMMARY REPORT

SAMPLE QC: Sample Results with Duplicates
Sample Matrix Spikes and Matrix Spike Duplicates

BATCH QC: Lab fortified Blanks and Duplicates
Standard Reference Materials and Duplicates
Method Blanks

QC Batch Number: GCMS/SEMI-11942

Sample Id	Analysis	QC Analysis	Values	Units	Limits
LFBLANK-91848					
	Acenaphthylene	Dup Lab Fort Bl %Rec	61.39	%	
		Lab Fort Blank Range	3.17	units	
		Lab Fort Bl. Av. Rec	62.97	%	
		LFB Duplicate RPD	5.03	%	0-20
	Aniline	Lab Fort Blank Amt.	100.00	ug/l	
		Lab Fort Blk. Found	50.74	ug/l	
		Lab Fort Blk. % Rec.	50.74	%	40-140
		Dup Lab Fort Bl Amt.	100.00	ug/l	
		Dup Lab Fort Bl. Fnd	50.35	ug/l	
		Dup Lab Fort Bl %Rec	50.35	%	
		Lab Fort Blank Range	0.38	units	
		Lab Fort Bl. Av. Rec	50.54	%	
		LFB Duplicate RPD	0.77	%	0-50
	Anthracene	Lab Fort Blank Amt.	100.00	ug/l	
		Lab Fort Blk. Found	64.42	ug/l	
		Lab Fort Blk. % Rec.	64.42	%	40-140
		Dup Lab Fort Bl Amt.	100.00	ug/l	
		Dup Lab Fort Bl. Fnd	59.80	ug/l	
		Dup Lab Fort Bl %Rec	59.80	%	
		Lab Fort Blank Range	4.62	units	
		Lab Fort Bl. Av. Rec	62.11	%	
		LFB Duplicate RPD	7.43	%	0-20
	Benzo(a)anthracene	Lab Fort Blank Amt.	100.000	ug/l	
		Lab Fort Blk. Found	70.140	ug/l	
		Lab Fort Blk. % Rec.	70.140	%	40-140
		Dup Lab Fort Bl Amt.	100.000	ug/l	
		Dup Lab Fort Bl. Fnd	67.120	ug/l	
		Dup Lab Fort Bl %Rec	67.120	%	
		Lab Fort Blank Range	3.020	units	
		Lab Fort Bl. Av. Rec	68.630	%	
		LFB Duplicate RPD	4.400	%	0-50
	Benzo(a)pyrene	Lab Fort Blank Amt.	100.000	ug/l	
		Lab Fort Blk. Found	75.790	ug/l	
		Lab Fort Blk. % Rec.	75.790	%	40-140
		Dup Lab Fort Bl Amt.	100.000	ug/l	
		Dup Lab Fort Bl. Fnd	70.930	ug/l	
		Dup Lab Fort Bl %Rec	70.930	%	
		Lab Fort Blank Range	4.860	units	
		Lab Fort Bl. Av. Rec	73.360	%	
		LFB Duplicate RPD	6.624	%	0-20
	Benzo(b)fluoranthene	Lab Fort Blank Amt.	100.000	ug/l	
		Lab Fort Blk. Found	76.430	ug/l	
		Lab Fort Blk. % Rec.	76.430	%	40-140

MADEP MCP Analytical Method Report Certification Form

Laboratory Name: **CON-TEST Analytical Laboratory**	Project #: LIMT-23272
Project Location: AMERICAN OPTICAL, SOUTHBRIDGE	MADEP RTN[1]:

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

09B04124 - 09B04125

Sample Matrices: ☐ Groundwater ☐ Soil/Sediment ☐ Drinking Water ☒ Other: SURFACE WATER

MCP SW-846 Methods Used					
	8260B ( )	8151A ( )	8330 ( )	6010B ( )	7470A/1A ( )
	8270C (X)	8081A ( )	VPH ( )	6020 ( )	9014M[2] ( )
As specified in MADEP Compendium of Analytical Methods. (check all that apply)	8082 ( )	8021B ( )	EPH ( )	7000 S[3] ( )	7196A ( )

1 List Release Tracking Number (RTN), if known
2 M – SW-846 Method 9014 or MADEP Physiologically Available Cyanide (PAC) Method
3 S – SW-846 Methods 7000 Series List individual method and analyte.

An affirmative response to questions A, B, C and D is required for "Presumptive Certainty" status

A	Were all samples received by the laboratory in a condition consistent with that described on the Chain-of-Custody documentation for the data set?	☒ Yes ☐ No[1]
B	Were all QA/QC procedures required for the specified analytical method(s) included in this report followed, including the requirement to note and discuss in a narrative QC data that did not meet appropriate performance standards or guidelines?	☒ Yes ☐ No[1]
C	Does the data included in this report meet all the analytical requirements for "Presumptive Certainty", as described in Section 2.0 (a), (b), (c) and (d) of the MADEP document CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	☒ Yes ☐ No[1]
D	***VPH and EPH Methods only***: Was the VPH or EPH Method conducted without significant modifications (see Section 11.3 of respective Methods)	☐ Yes ☐ No[1]

A response to questions E and F below is required for "Presumptive Certainty" status

E	Were all analytical QC performance standards and recommendations for the specified methods achieved?	☐ Yes ☒ No[1]
F	Were results for all analyte-list compounds/elements for the specified method(s) reported?	☒ Yes ☐ No[1]

[1] *All Negative responses must be addressed in an attached Environmental Laboratory case narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature: Edward Denson	Position: Technical Director
Printed Name: Edward Denson	Date: 2/20/09

Lot # 23272

con-test® ANALYTICAL LABORATORY

Phone: 413-525-2332
Fax: 413-525-6405
Email: info@contestlabs.com
www.contestlabs.com

CHAIN OF CUSTODY RECORD

0902-00052

39 SPRUCE ST, 2ND FLOO
EAST LONGMEADOW, MA

Company Name: GZA GeoEnvironmental, Inc.
Address: 106 South Street
Hopkinton, MA 01748-2207
Attention: Edith Hutchinson / Michelle Mirenda
Project Location: American Optical - Southbridge, MA
Sampled By: GZA-Norwood, MA / B.D. - S.T.

Telephone:(781) 278-4703
Project # 01-0017812.60
Client PO # B-32287

DATA DELIVERY (check one):
☐FAX ☐EMAIL ☑WEBSITE CLIENT
Fax #:
Email:
Format: ☑EXCEL ☑PDF ☐GIS KEY

Proposal Provided? (For Billing purposes)
☐ yes ____________ proposal date

ANALYSIS REQUEST: 8270-PAH low level (2 / 1 / G)

Field ID	Sample Description 09B	Lab #	Start Date/Time	Stop Date/Time	Composite	Grab	*Matrix Code	8270-PAH low level
01	SW-1	04124 ~~2/12/09~~	2/12/09	1330			SW	✓
02		~~04125~~ (KD)						
03								
04								
05								
06								
07								
08								
09								
10								

	Date/Time
Relinquished by: (signature) [signature]	2/13/09 1100
Received by: (signature) [signature]	2-13-09 1600
Relinquished by: (signature) [signature]	2-13-09 1730
Received by: (signature) [signature] / Temp 5°	2/13/09 17:30

Turnaround
☐ 24 Hour*
☐ 48 Hour*
☐ ~~72 Hour*~~
☑ Std.
☐ Other**
Date needed**
*Require lab approval.

Detection Limit Requirements
Regulations? ____________
Data Enhancement Project? ☑Y ☐N
(MA MCP sites only)
Special Requirements or DL's: "See STR" and TF

*Matrix Code:
GW= groundwater
WW= wastewater
DW= drinking water
A = air
S = soil/solid
SL = sludge
O = other

**Pr
I = I
H =
M =
N =
S =
B =
O =

Con-Test Laboratory is the ONLY independent laboratory in all of New England with both prestigious AIHA and NELAC Cert

If not, explain:

4) How were the samples received:

On Ice [X] Direct from Sampling [ ] Ambient [ ] In Cooler(s) [X]

Were the samples received in Temperature Compliance of (2-6°C)? (Yes) No

Temperature °C by Temp blank _____ Temperature °C by Temp gun 5°C

5) Are there Dissolved samples for the lab to filter? Yes (No)

Who was notified _____ Date _____ Time _____

6) Are there any samples "On Hold"? Yes (No) Stored where [ ]

7) Are there any RUSH or SHORT HOLDING TIME samples? Yes (No)

Who was notified _____ Date _____ Time _____

8) Location where samples are stored: 198

Permission to subcontract samples? Yes No
(Walk-in clients only) if not already approved

Client Signature: _____

Containers sent in to Con-Test

	# of containers		# of containers
1 Liter Amber	2	8 oz clear jar	
500 mL Amber		4 oz clear jar	
250 mL Amber (8oz amber)		2 oz clear jar	
1 Liter Plastic		Other glass jar	
500 mL Plastic		Plastic Bag / Ziploc	
250 mL plastic		Air Cassette	
40 mL Vial - type listed below		Brass Sleeves	
Colisure / bacteria bottle		Tubes	
Dissolved Oxygen bottle		Summa Cans	
Flashpoint bottle		Regulators	
Encore		Other	

Laboratory Comments:

40 mL vials: # HCl _____ # Methanol _____

Bisulfate _____ # DI Water _____ Time and Date Frozen: _____

Thiosulfate _____ Unpreserved _____

Do all samples have the proper pH: Yes No N/A

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

PROJECT NARRATIVE

Edie Hutchinson
GZA GeoEnvironmental, Inc. (MA)
106 South Street
Hopkinton, MA 01748

RE: American Optical
ESS Laboratory Work Order Number: 0902154

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this Project Narrative, the entire report has been paginated. The ESS Laboratory Certifications sheet is the final report page. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

Laurel Stoddard
Laboratory Director

Digitally signed by Laurel Stoddard
Date: 2009.02.20 16:04:06 -05'00'

Analytical Summary
The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration may be used instead of automated integration because it produces more accurate results. All ICP Metals were analyzed using the established linear dynamic range to determine acceptable analytical results.

ESS Laboratory certifies that the test results meet the requirements of NELAC, except where noted within this project narrative.
Samples were analyzed in accordance with the Guidelines Establishing Test Procedures for the Analysis of Pollutants, 40 CFR Part 136, as amended.

Sample Receipt
The following sample(s) were received on February 12, 2009 for the analyses specified on the enclosed Chain of Custody Record.

Laboratory ID	Matrix	Client Sample ID
0902154-01	Surface Water	SW-1

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: American Optical

ESS Laboratory Work Order: 0902154

PROJECT NARRATIVE

Classical Chemistry

0902154-01 **The recommended holding time listed in 40 CFR Part 136 for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.**

No other observations noted.

End of Project Narrative.

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: American Optical
Client Sample ID: SW-1
Date Sampled: 02/12/09 13:30
Percent Solids: N/A
Initial Volume: 1000
Final Volume: 1
Extraction Method: 3510C

ESS Laboratory Work Order: 0902154
ESS Laboratory Sample ID: 0902154-01
Sample Matrix: Surface Water
Analyst: SEP
Prepared: 02/13/09

608 Polychlorinated Biphenyls (PCB)

Analyte	Results	Units	MRL	Limit	DF	Analyzed
Aroclor 1016	ND	ug/L	0.10		1	02/17/09
Aroclor 1221	ND	ug/L	0.10		1	02/17/09
Aroclor 1232	ND	ug/L	0.10		1	02/17/09
Aroclor 1242	ND	ug/L	0.10		1	02/17/09
Aroclor 1248	ND	ug/L	0.10		1	02/17/09
Aroclor 1254	ND	ug/L	0.10		1	02/17/09
Aroclor 1260	ND	ug/L	0.10		1	02/17/09
Aroclor 1262	ND	ug/L	0.10		1	02/17/09
Aroclor 1268	ND	ug/L	0.10		1	02/17/09

	%Recovery	Qualifier	Limits
Surrogate: Decachlorobiphenyl	*69 %*		*30-150*
Surrogate: Decachlorobiphenyl [2C]	*79 %*		*30-150*
Surrogate: Tetrachloro-m-xylene	*66 %*		*30-150*
Surrogate: Tetrachloro-m-xylene [2C]	*83 %*		*30-150*

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: American Optical
Client Sample ID: SW-1
Date Sampled: 02/12/09 13:30
Percent Solids: N/A

ESS Laboratory Work Order: 0902154
ESS Laboratory Sample ID: 0902154-01
Sample Matrix: Surface Water

Classical Chemistry

Analyte	Results	Units	MRL	Method	Limit	DF	Analyst	Analyzed
Total Cyanide (LL)	ND	mg/L	0.0050	4500 CN CE		1	EEM	02/17/09
Total Petroleum Hydrocarbon	ND	mg/L	5	1664A		1	JP	02/20/09
Total Residual Chlorine	**0.08**	mg/L	0.02	4500Cl D		1	EEM	02/13/09 9:20
Total Suspended Solids	**54**	mg/L	5	2540D		1	KJK	02/12/09

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: American Optical

ESS Laboratory Work Order: 0902154

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
608 Polychlorinated Biphenyls (PCB)										
Batch BB91320 - 3510C										
Blank										
Aroclor 1016	ND	0.10	ug/L							
Aroclor 1221	ND	0.10	ug/L							
Aroclor 1232	ND	0.10	ug/L							
Aroclor 1242	ND	0.10	ug/L							
Aroclor 1248	ND	0.10	ug/L							
Aroclor 1254	ND	0.10	ug/L							
Aroclor 1260	ND	0.10	ug/L							
Aroclor 1262	ND	0.10	ug/L							
Aroclor 1268	ND	0.10	ug/L							
Surrogate: Decachlorobiphenyl	*0.0387*		ug/L	*0.05000*		*76*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0409*		ug/L	*0.05000*		*82*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0326*		ug/L	*0.05000*		*65*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0406*		ug/L	*0.05000*		*81*	*30-150*			
LCS										
Aroclor 1016	0.96	0.10	ug/L	1.000		96	40-140			
Aroclor 1260	0.91	0.10	ug/L	1.000		91	40-140			
Surrogate: Decachlorobiphenyl	*0.0417*		ug/L	*0.05000*		*83*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0457*		ug/L	*0.05000*		*91*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0429*		ug/L	*0.05000*		*86*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0500*		ug/L	*0.05000*		*100*	*30-150*			
LCS Dup										
Aroclor 1016	0.96	0.10	ug/L	1.000		96	40-140	0.02	50	
Aroclor 1260	0.93	0.10	ug/L	1.000		93	40-140	1	50	
Surrogate: Decachlorobiphenyl	*0.0408*		ug/L	*0.05000*		*82*	*30-150*			
Surrogate: Decachlorobiphenyl [2C]	*0.0444*		ug/L	*0.05000*		*89*	*30-150*			
Surrogate: Tetrachloro-m-xylene	*0.0411*		ug/L	*0.05000*		*82*	*30-150*			
Surrogate: Tetrachloro-m-xylene [2C]	*0.0475*		ug/L	*0.05000*		*95*	*30-150*			
Classical Chemistry										
Batch BB91220 - General Preparation										
Blank										
Total Suspended Solids	ND	5	mg/L							
LCS										
Total Suspended Solids	62		mg/L	60.60		102	80-120			
Batch BB91303 - General Preparation										
Blank										
Total Residual Chlorine	ND	0.02	mg/L							
LCS										
Total Residual Chlorine	1.54		mg/L	1.580		97	85-115			
Batch BB91703 - TCN Prep										

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: American Optical

ESS Laboratory Work Order: 0902154

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
Classical Chemistry										
Batch BB91703 - TCN Prep										
Blank										
Total Cyanide (LL)	ND	0.0050	mg/L							
LCS										
Total Cyanide (LL)	0.0194	0.0050	mg/L	0.02006		97	90-110			
LCS										
Total Cyanide (LL)	0.138	0.0050	mg/L	0.1504		92	90-110			
LCS Dup										
Total Cyanide (LL)	0.140	0.0050	mg/L	0.1504		93	90-110	1	20	
Batch BB92005 - General Preparation										
Blank										
Total Petroleum Hydrocarbon	ND	5	mg/L							
LCS										
Total Petroleum Hydrocarbon	19	5	mg/L	20.00		94	66-114			

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: American Optical

ESS Laboratory Work Order: 0902154

Notes and Definitions

U	Analyte included in the analysis, but not detected
HT	The recommended holding time listed in 40 CFR Part 136 for pH, Dissolved Oxygen, Sulfite and Residual Chlorine is fifteen minutes.
ND	Analyte NOT DETECTED above the detection limit
dry	Sample results reported on a dry weight basis
RPD	Relative Percent Difference
MDL	Method Detection Limit
MRL	Method Reporting Limit
I/V	Initial Volume
F/V	Final Volume
§	Subcontracted analysis; see attached report
1	Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
2	Range result excludes concentrations of target analytes eluting in that range.
3	Range result excludes the concentration of the C9-C10 aromatic range.
Avg	Results reported as a mathematical average.

ESS Laboratory

Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: GZA GeoEnvironmental, Inc. (MA)
Client Project ID: American Optical

ESS Laboratory Work Order: 0902154

ESS LABORATORY CERTIFICATIONS

U.S. Army Corps of Engineers
Soil and Water

Rhode Island: A-179
Potable and Non Potable Water
http://www.health.ri.gov/labs/waterlabs-instate.php

Connecticut: PH-0750
Potable and Non Potable Water, Solid and Hazardous Waste
http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/out_state.pdf

Maine: RI002
Potable and Non Potable Water
http://www.maine.gov/dep/blwq/topic/vessel/lab_list.pdf

Massachusetts: M-RI002
Potable and Non Potable Water
http://public.dep.state.ma.us/labcert/labcert.aspx

New Hampshire (NELAP accredited): 242405
Potable and Non PotableWater
http://www4.egov.nh.gov/des/nhelap/namesearch.asp

New York (NELAP accredited): 11313
Potable and Non Potable Water, Solid and Hazardous Waste
http://www.wadsworth.org/labcert/elap/comm.html

United States Department of Agriculture
Soil Permit: S-54210

New Jersey (NELAP accredited): RI002
Potable and Non Potable Water, Solid and Hazardous Waste
http://www.nj.gov/dep/oqa/certlabs.htm

Maryland: 301
Potable Water
http://www.mde.state.md.us/assets/document/wsp_labs

South Carolina: 78003
Volatile Organic Compounds in Potable Water

CHAIN-OF-CUSTODY RECORD

ESS

W.O. #

ANALYSIS REQUIRED

	Sample I.D.	Date/Time Sampled	Matrix (A=Air, S=Soil, GW=Ground W., SW=Surface W., WW=Waste W., DW=Drinking W., P=Product, Other (specify))	☐ pH ☐ Cond.	GC Methane, Ethane, Ethene	EPA 8260	EPA 8260 - 8010 List (Chlor)	EPA 8260 - 8021 list	EPA 8021 - 8020 List (BTEX)	EPA 524.2 DW VOCs	EPA 624 WW VOCs	☐ 601 ☐ 602 WW VOCs	EPA 8270 FULL SVOCs	EPA 8270 ☐ PAH ☐ A/BN	EPA 625 WW SVOCs	EPA 8082-PCBs	EPA 8081-Pest	~~TPH-GC (MOD. 8100)~~ 1664	TPH GC w/FING.	EPH (MA DEP)	VPH (MA DEP)	Metals ☐ PPM-13 ☐ R-8	MCP 14 Metals (MA)	Metals (List Below)**	TCLP - Specify Below	SPLP - Specify Below	EPA 300 ☐ Cl ☐ SO4
01	SW-1	2/12/09 1330	SW															✓									
PRESERVATIVE (Cl - HCl, M=Methanol, N - HNO3, S - H2SO4, Na - NaOH, O - Other)*																		CL									
CONTAINER TYPE (P-Plastic, G-Glass, V-Vial, T-Teflon, O-Other)*																		G									

RELINQUISHED BY: (AFFILIATION)	DATE/TIME	RECEIVED BY: (AFFILIATION)	DATE/TIME
[signature]	2/12/09 1655	[signature]	2/12/09 1655
[signature]	2-12-09 18:00	K. [illegible]	2/12/09 1820

NOTES: (Unless otherwise noted, all samples have been refrigerated to 4° C)
*Specify "Other" preservatives and containers types in this space.

① See Attached Sheet for Analysis and Required
Cooler Temp 3.6°C

PROJECT MANAGER: Michelle Miranda EXT: 4710
Edie Hutchinson x4703

TURNAROUND TIME: (Standard) Rush___ Days, Approved by ________

LAB USE:
TEMP. OF COO

GZA GEOENVIRONMENTAL, INC.
Labaratory Division

106 South Street
Hopkinton, MA 01748
(781) 278-4700
FAX (508) 435-9912

GZA FILE NO: 01.0017812.60 TASK NO: 1 P.O

PROJECT American Optical

LOCATION Southbridge, MA

COLLECTOR(S) B.D. / S.T SHEET

GZA GeoEnvironmental, Inc.
106 South Street
Hopkinton, MA 01748
(781) 278-4700

Laboratory Identification Numbers:
MA and ME: **MA092** NH: **2028**
CT: **PH0579** RI: **LAO00236**
NELAC - NYS DOH: **11063**

ANALYTICAL REPORT

GZA GeoEnvironmental, Inc.
One Edgewater Drive
Norwood, MA 02062

James Daubenspeck

Project No.: **01.0017812.60**
Work Order No.: **0902-00052**
Date Received: **02/13/2009**
Date Reported: **02/23/2009**

SAMPLE INFORMATION

Date Sampled	Matrix	Laboratory ID	Sample ID
02/12/2009	Aqueous	0902-00052 001	SW-1
02/12/2009	Aqueous	0902-00052 002	SW-1 Dissolved Metals

GZA GeoEnvironmental, Inc.
106 South Street
Hopkinton, MA 01748
(781) 278-4700

ANALYTICAL REPORT

GZA GeoEnvironmental, Inc.
One Edgewater Drive
Norwood, MA 02062

James Daubenspeck

Project Name.: **American Optical**
Project No.: **01.0017812.60**

Date Received: **02/13/2009**
Date Reported: **02/23/2009**
Work Order No.: **0902-00052**

PROJECT NARRATIVE:

1. Sample Receipt

The samples were received on 02/12/09 via __GZA courier, __EC, __FEDEX, or __x_hand delivered.
The samples were received intact for all requested analyses.

The following questions are answered upon sample receipt to determine compliance with MADEP Defined "Presumptive Certainty":

Were the samples received between 2-6 degrees C (Temperature = 3.5 degrees C)? (x) yes ( ) no
* The temperature requirement for most analyses is above freezing to 6 degrees C.

Were the samples received with method specific preservatives within holding time? (x) yes ( ) no
* The chain of custody indicates that the samples, when required, were chemically preserved in accordance with the method they reference.

Were all constituents for the MCP Method(s) selected assigned on the COC? ( ) yes (x) no
* Full MCP14 Metals ( ) yes (x) no ( ) not assigned
* Full EPA 8270 SVOCs ( ) yes (x) no ( ) not assigned
* Full EPA 8260 or 8021 VOCs (x) yes ( ) no ( ) not assigned

2. Subcontracted Analyses

Analyses for TOC were subcontracted to Rhode Island Analytical, Warwick RI (RIAL);
Certification MA: MA-RI015, NH: 253700 A&B, CT: PH-0508, ME: RI015, RI: RI-033, NY:11726,

Analyses for TPH by 1664, TSS, Total Residual Chlorine, Cyanide and PCB's by 608 were subcontracted to ESS Laboratory, Cranston, RI.

Analyses for low level SVOC's were subcontracted to ConTest Analytical Laboratory, East Longmeadow, MA

The data is included in GZA's report for ease of electronic data transfer and is indicated by "XXX" in the tech column. The data report from the subcontractor is attached.

3. EPA Method 6010B/7470A - Metals

All samples were pre-concentrated 5 times in order to reach the required reporting limits for As (0.005mg/L) and Cu (0.005 mg/L).

Attach QC 6010B 02/17/09 - Aqueous
Attach QC 7470A 02/18/09 - Aqueous
Attach QC 7470A 02/20/09 - Aqueous

4. EPA Method 8260 - VOCs

The continuing calibration verification standard (CCV) (02/12/09 S) had an analyte outside of the 30%D QC

acceptance limit. The outlier includes dichlorodifluoromethane (49%).

The Laboratory Control Sample (LCS) (02/12/09 S) had a MA MCP 8260 list analyte outside of the 70-130% QC acceptance limits. Specific outlier includes dichlorodifluoromethane (149%). This analyte was not detected in the associated samples.

The Laboratory Control Sample Duplicate (LCSD) (02/12/09 S) had a MA MCP 8260 list analyte outside of the 70-130% QC acceptance limits. Specific outlier includes dichlorodifluoromethane (152%).

Attach QC 8260 02/18/09 S - Aqueous

5. Method SM 18 3500 Cr(D) - Hexavalent Chromium

Attach QC 02/13/09

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MADEP MCP ANALYTICAL METHOD REPORT CERTIFICATION FORM

Laboratory Name: **GZA GeoEnvironmental, Inc.**	Project #: **01.0017812.60**
Project Location:	MADEP RTN[1]:

This Form provides certifications for the following data set: [list Laboratory Sample ID Number(s)]

0902-00052

Sample Matrices: Groundwater Soil/Sediment Drinking Water X Other: Surface Water

MCP SW-846 Methods Used	8260B (X)	8151A ( )	8330 ( )	6010B (X)	7470A/1A (X)
	8270C ( )	8081A ( )	VPH ( )	6020 ( )	9014M [2] ( )
As specified in MADEP Compendium of Analytical Methods. (check all that apply)	8082 ( )	8021B ( )	EPH ( )	7000 S[3] ( )	7196A ( )

1 List Release Tracking Number (RTN), if known
2 M – SW-846 Method 9014 or MADEP Physiologically Available Cyanide (PAC) Method
3 S – SW-846 Methods 7000 Series List individual method and analyte.

An affirmative response to questions A, B, C and D is required for "Presumptive Certainty" status

A	Were all samples received by the laboratory in a condition consistent with that described on the Chain-of-Custody documentation for the data set?	X Yes ☐ No[1]
B	Were all QA/QC procedures required for the specified analytical method(s) included in this report followed, including the requirement to note and discuss in a narrative QC data that did not meet appropriate performance standards or guidelines?	X Yes ☐ No[1]
C	Does the data included in this report meet all the analytical requirements for "Presumptive Certainty", as described in Section 2.0 (a), (b), (c) and (d) of the MADEP document CAM VII A, "Quality Assurance and Quality Control Guidelines for the Acquisition and Reporting of Analytical Data"?	X Yes ☐ No[1]
D	***VPH and EPH Methods only***: Was the VPH or EPH Method conducted without significant modifications (see Section 11.3 of respective Methods)	☐ Yes ☐ No[1]

A response to questions E and F below is required for "Presumptive Certainty" status

E	Were all analytical QC performance standards and recommendations for the specified methods achieved?	☐ Yes X No[1]
F	Were results for all analyte-list compounds/elements for the specified method(s) reported?	☐ Yes X No[1]

[1] *All Negative responses must be addressed in an attached Environmental Laboratory case narrative.*

I, the undersigned, attest under the pains and penalties of perjury that, based upon my personal inquiry of those responsible for obtaining the information, the material contained in this analytical report is, to the best of my knowledge and belief, accurate and complete.

Signature:	Position: Laboratory Supervisor
Printed Name: Andrew Yaroshefski	Date: 2/23/09

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Project No.:	**01.0017812.60**	Date Reported:	**02/23/2009**
		Work Order No.:	**0902-00052**

LABORATORY STATEMENTS:

NELAC certification, as indicated by the NELAC ID Number, is per analyte. For a complete list of NELAC validated analytes, please contact the laboratory.

Abbreviations:
% R = % Recovery
DF = Dilution Factor
CF = Calculation Factor
DO = Diluted Out

Method Key:
Method 8260: The current version of the method is 8260B.
Method 8270: The current version of the method is 8270D.
Method 6010: The current version of the method is 6010B.

Soil data is reported on a dry weight basis unless otherwise specified.

Matrix Spike / Matrix Spike Duplicate sets are performed as per method and are reported at the end of the analytical report if assigned on the Chain of Custody.

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Date Received: **02/13/2009**
Date Reported: **02/23/2009**
Work Order No.: **0902-00052**

Sample ID: **SW-1** Sample No.: **001**

Sample Date: **02/12/2009**

Test Performed	Method	Results	Units	Tech	Analysis Date
VOLATILE ORGANICS	EPA 8260			MQS	02/18/2009
Dichlorodifluoromethane	EPA 8260	<2.0	ug/L	MQS	02/18/2009
Chloromethane	EPA 8260	<2.0	ug/L	MQS	02/18/2009
Vinyl Chloride	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Bromomethane	EPA 8260	<2.0	ug/L	MQS	02/18/2009
Chloroethane	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Trichlorofluoromethane	EPA 8260	<2.0	ug/L	MQS	02/18/2009
Diethylether	EPA 8260	<5.0	ug/L	MQS	02/18/2009
Acetone	EPA 8260	<25	ug/L	MQS	02/18/2009
1,1-Dichloroethene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Freon 113	EPA 8260	<2.0	ug/L	MQS	02/18/2009
Carbon Disulfide	EPA 8260	<50	ug/L	MQS	02/18/2009
Dichloromethane	EPA 8260	<2.0	ug/L	MQS	02/18/2009
tert-Butyl alcohol (TBA)	EPA 8260	<25	ug/L	MQS	02/18/2009
Methyl-Tert-Butyl-Ether	EPA 8260	<1.0	ug/L	MQS	02/18/2009
trans-1,2-Dichloroethene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
1,1-Dichloroethane	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Di-isopropyl ether (DIPE)	EPA 8260	<2.0	ug/L	MQS	02/18/2009
Ethyl tert-butyl ether ETBE	EPA 8260	<2.0	ug/L	MQS	02/18/2009
2-Butanone	EPA 8260	<25	ug/L	MQS	02/18/2009
2,2-Dichloropropane	EPA 8260	<1.0	ug/L	MQS	02/18/2009
cis-1,2-Dichloroethene	EPA 8260	1.8	ug/L	MQS	02/18/2009
Chloroform	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Bromochloromethane	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Tetrahydrofuran	EPA 8260	<10	ug/L	MQS	02/18/2009
1,1,1-Trichloroethane	EPA 8260	<1.0	ug/L	MQS	02/18/2009
1,1-Dichloropropene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Carbon Tetrachloride	EPA 8260	<1.0	ug/L	MQS	02/18/2009
1,2-Dichloroethane	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Benzene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
tert-Amyl methyl ether TAME	EPA 8260	<2.0	ug/L	MQS	02/18/2009
Trichloroethene	EPA 8260	1.4	ug/L	MQS	02/18/2009
1,4-Dioxane	EPA 8260	<100	ug/L	MQS	02/18/2009
1,2-Dichloropropane	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Bromodichloromethane	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Dibromomethane	EPA 8260	<1.0	ug/L	MQS	02/18/2009
4-Methyl-2-Pentanone	EPA 8260	<25	ug/L	MQS	02/18/2009

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Work Order No.: **0902-00052**

Sample ID: **SW-1** Sample No.: **001**

Sample Date: **02/12/2009**

Test Performed	Method	Results	Units	Tech	Analysis Date
cis-1,3-Dichloropropene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Toluene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
trans-1,3-Dichloropropene	EPA 8260	<2.0	ug/L	MQS	02/18/2009
1,1,2-Trichloroethane	EPA 8260	<1.0	ug/L	MQS	02/18/2009
2-Hexanone	EPA 8260	<25	ug/L	MQS	02/18/2009
1,3-Dichloropropane	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Tetrachloroethene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Dibromochloromethane	EPA 8260	<1.0	ug/L	MQS	02/18/2009
1,2-Dibromoethane (EDB)	EPA 8260	<2.0	ug/L	MQS	02/18/2009
Chlorobenzene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
1,1,1,2-Tetrachloroethane	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Ethylbenzene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
m&p-Xylene	EPA 8260	<2.0	ug/L	MQS	02/18/2009
o-Xylene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Styrene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Bromoform	EPA 8260	<2.0	ug/L	MQS	02/18/2009
Isopropylbenzene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
1,1,2,2-Tetrachloroethane	EPA 8260	<1.0	ug/L	MQS	02/18/2009
1,2,3-Trichloropropane	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Bromobenzene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
N-Propylbenzene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
2-Chlorotoluene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
1,3,5-Trimethylbenzene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
4-Chlorotoluene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
tert-Butylbenzene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
1,2,4-Trimethylbenzene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
sec-Butylbenzene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
p-Isopropyltoluene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
1,3-Dichlorobenzene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
1,4-Dichlorobenzene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
n-Butylbenzene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
1,2-Dichlorobenzene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
1,2-Dibromo-3-Chloropropane	EPA 8260	<5.0	ug/L	MQS	02/18/2009
1,2,4-Trichlorobenzene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Hexachlorobutadiene	EPA 8260	<1.0	ug/L	MQS	02/18/2009
Naphthalene	EPA 8260	<2.0	ug/L	MQS	02/18/2009
1,2,3-Trichlorobenzene	EPA 8260	<1.0	ug/L	MQS	02/18/2009

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Sample ID: **SW-1** Sample No.: **001**

Sample Date: **02/12/2009**

Test Performed	Method	Results	Units	Tech	Analysis Date
Surrogates:	EPA 8260				
***1,2-Dichloroethane-D4	EPA 8260	90.2	% R	MQS	02/18/2009
***Toluene-D8	EPA 8260	101	% R	MQS	02/18/2009
***4-Bromofluorobenzene	EPA 8260	99.3	% R	MQS	02/18/2009
Preparation	EPA 5030B	1.0	CF	MQS	02/18/2009
METALS					
Antimony	EPA 6010B	<0.025	mg/L	LLZ	02/18/2009
Arsenic	EPA 6010B	<0.0050	mg/L	LLZ	02/18/2009
Cadmium	EPA 6010B	<0.0050	mg/L	LLZ	02/18/2009
Chromium	EPA 6010B	<0.0050	mg/L	LLZ	02/18/2009
Lead	EPA 6010B	0.012	mg/L	LLZ	02/18/2009
Nickel	EPA 6010B	<0.010	mg/L	LLZ	02/18/2009
Selenium	EPA 6010B	<0.025	mg/L	LLZ	02/18/2009
Silver	EPA 6010B	<0.0050	mg/L	LLZ	02/18/2009
Zinc	EPA 6010B	0.012	mg/L	LLZ	02/18/2009
Iron	EPA 6010B	4.8	mg/L	LLZ	02/18/2009
Mercury	EPA 7470A	<0.00020	mg/L	TN	02/20/2009
Hexavalent Chromium	SM 3500CrD	<0.010	mg/L	LLZ	02/13/2009
Copper	EPA 6010B	0.0069	mg/L	LLZ	02/18/2009
SUBCONTRACTED ANALYTES					
Total Suspended Solids	SM-2540D	54	mg/L	XXX	02/12/2009
Residual Chlorine	SM4500-Cl D	0.08	mg/L	XXX	02/13/2009
TPH via Method 1664	EPA 1664	<5	mg/L	XXX	02/20/2009
Total Cyanide	SM4500 CN CE	<0.0050	mg/L	XXX	02/17/2009
POLYCHLORINATED BIPHENYLS	EPA 608				
Total Organic Carbon	SM-5310B	<5	mg/L	XXX	02/17/2009

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MASSACHUSETTS LABORATORY I.D. NO. MA092

EPA METHOD 6010B ANALYSIS
Metals by ICP

QUALITY CONTROL - AQUEOUS

DATE PREPARED: 2/17/2009

QC Sample	Method Blank	Lab Control Sample	LC Duplicate	LC/LCD Diff.
Units	mg/L	% Recovery	% Recovery	RPD
Acceptance Limits	Results	80-120	80-120	20%
Analyte				
Silver (Ag)	<0.0050	102	98.5	3.37
Aluminum (Al)	NA	NA	NA	NA
Arsenic (As)	<0.0050	105	104	0.89
Boron (B)	NA	NA	NA	NA
Barium (Ba)	NA	NA	NA	NA
Beryllium (Be)	NA	NA	NA	NA
Calcium (Ca)	NA	NA	NA	NA
Cadmium (Cd)	<0.0050	99.3	98.6	0.66
Cobalt (Co)	NA	NA	NA	NA
Chromium (Cr)	<0.0050	103	101	1.13
Copper (Cu)	<0.0050	116	115	3.41
Iron (Fe)	<0.025	104	105	0.18
Magnesium (Mg)	NA	NA	NA	NA
Manganese (Mn)	NA	NA	NA	NA
Molybdenum (Mo)	NA	NA	NA	NA
Nickel (Ni)	<0.010	103	103	0.10
Lead (Pb)	<0.010	98.8	98.9	0.02
Antimony (Sb)	<0.025	102	102	0.04
Selenium (Se)	<0.025	105	105	0.16
Strontium (Sr)	NA	NA	NA	NA
Titanium (Ti)	NA	NA	NA	NA
Thallium (Tl)	NA	NA	NA	NA
Vanadium (V)	NA	NA	NA	NA
Zinc (Zn)	<0.010	110	106	3.80
Zirconium (Zr)	NA	NA	NA	NA

Matrix Spike / Duplicate Spike performed as per method and reported if assigned on Chain of Custody.

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EPA METHOD 7470A ANALYSIS
Mercury by Cold Vapor Atomic Absorption

QUALITY CONTROL - AQUEOUS

Date Prepared: 02/18/09

QC Sample	Method Blank	Lab Control Sample	Lab Control Sample Duplicate	LC/LCD Difference
Units	mg/L	% Recovery	% Recovery	RPD
Acceptance Limits	Results	80-120	80-120	20%
Analyte				
Mercury (Hg)	<0.00020	83.7	86.0	2.71

RPD = Relative Percent Difference

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EPA METHOD 7470A ANALYSIS
Mercury by Cold Vapor Atomic Absorption

QUALITY CONTROL - AQUEOUS

Date Prepared: 02/20/09

QC Sample	Method Blank	Lab Control Sample	Lab Control Sample Duplicate	LC/LCD Difference
Units	mg/L	% Recovery	% Recovery	RPD
Acceptance Limits	Results	80-120	80-120	20%
Analyte				
Mercury (Hg)	<0.00020	96.6	99.9	3.38

RPD = Relative Percent Difference

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EPA Method 8260 / 524.2 Aqueous Method Blank (MB) and Laboratory Control Sample/Duplicate (LCS/LCSD) Data

Method Blank			Laboratory Control Sample				Laboratory Control Sample Duplicate					
Date Analyzed:	2/18/2009		Date Analyzed:	2/18/2009			2/18/2009					
Volatile Organics	Conc. ug/L	Acceptance Limit	Spike Concentration = 20ug/L	% Recovery	Acceptance Limits	Verdict	% Recovery	Acceptance Limits	Verdict	RPD	Limit	Verdict
dichlorodifluoromethane	< 1.0	< 1.0	dichlorodifluoromethane	149	70-130	out	152	70-130	out	1.88	<25	ok
chloromethane	< 1.0	< 1.0	chloromethane	111	70-130	ok	115	70-130	ok	3.48	<25	ok
vinyl chloride	< 0.5	< 0.5	vinyl chloride	113	60-120	ok	114	70-130	ok	1.05	<25	ok
bromomethane	< 1.0	< 1.0	bromomethane	106	70-130	ok	107	70-130	ok	0.78	<25	ok
chloroethane	< 0.5	< 0.5	chloroethane	100	70-130	ok	99.7	70-130	ok	0.61	<25	ok
trichlorofluoromethane	< 1.0	< 1.0	trichlorofluoromethane	110	70-130	ok	112	70-130	ok	1.83	<25	ok
diethyl ether	< 2.5	< 2.5	diethyl ether	96.6	70-130	ok	95.9	70-130	ok	0.76	<25	ok
acetone	< 13	< 13	acetone	103	70-130	ok	110	70-130	ok	6.31	<25	ok
1,1-dichloroethene	< 0.5	< 0.5	1,1-dichloroethene	100	60-120	ok	102	70-130	ok	1.84	<25	ok
FREON-113	< 1.0	< 1.0	FREON-113	112	70-130	ok	113	70-130	ok	1.08	<25	ok
iodomethane	< 0.5	< 0.5	iodomethane	103	70-130	ok	107	70-130	ok	0.60	<25	ok
carbon disulfide	< 5.0	< 5.0	carbon disulfide	130	70-130	out	130	70-130	ok	0.37	<25	ok
dichloromethane	< 1.0	< 1.0	dichloromethane	100	70-130	ok	101	70-130	ok	0.97	<25	ok
tert-butyl alcohol (TBA)	< 13	< 13	tert-butyl alcohol (TBA)	110	70-130	ok	112	70-130	ok	2.35	<25	ok
acrylonitrile	< 0.5	< 0.5	acrylonitrile	86.6	70-130	ok	84.0	70-130	ok	3.10	<25	ok
methyl-tert-butyl-ether	< 0.5	< 0.5	methyl-tert-butyl-ether	96.1	70-130	ok	103	70-130	ok	7.35	<25	ok
trans-1,2-dichloroethene	< 0.5	< 0.5	trans-1,2-dichloroethene	102	70-130	ok	102	70-130	ok	0.32	<25	ok
1,1-dichloroethane	< 0.5	< 0.5	1,1-dichloroethane	96.8	70-130	ok	98.3	70-130	ok	1.58	<25	ok
di-isopropyl ether (DIPE)	< 1.0	< 1.0	di-isopropyl ether (DIPE)	94.8	70-130	ok	96.3	70-130	ok	1.55	<25	ok
ethyl tert-butyl ether (ETBE)	< 1.0	< 1.0	ethyl tert-butyl ether (ETBE)	96.7	70-130	ok	98.2	70-130	ok	1.54	<25	ok
vinyl acetate	< 13	< 13	vinyl acetate	91.7	70-130	ok	93.3	70-130	ok	1.76	<25	ok
2-butanone	< 13	< 13	2-butanone	102	70-130	ok	99.5	70-130	ok	2.07	<25	ok
2,2-dichloropropane	< 0.5	< 0.5	2,2-dichloropropane	104	70-130	ok	101	70-130	ok	2.61	<25	ok
cis-1,2-dichloroethene	< 0.5	< 0.5	cis-1,2-dichloroethene	99.9	70-130	ok	101	70-130	ok	1.13	<25	ok
chloroform	< 0.5	< 0.5	chloroform	96.1	80-120	ok	97.4	70-130	ok	1.35	<25	ok
bromochloromethane	< 0.5	< 0.5	bromochloromethane	105	70-130	ok	106	70-130	ok	0.28	<25	ok
tetrahydrofuran	< 5.0	< 5.0	tetrahydrofuran	112	70-130	ok	112	70-130	ok	0.26	<25	ok
1,1,1-trichloroethane	< 0.5	< 0.5	1,1,1-trichloroethane	96.6	70-130	ok	98.3	70-130	ok	1.68	<25	ok
1,1-dichloropropene	< 0.5	< 0.5	1,1-dichloropropene	101	70-130	ok	101	70-130	ok	0.16	<25	ok
carbon tetrachloride	< 0.5	< 0.5	carbon tetrachloride	102	70-130	ok	103	70-130	ok	1.56	<25	ok
1,2-dichloroethane	< 0.5	< 0.5	1,2-dichloroethane	99.6	70-130	ok	99.7	70-130	ok	0.05	<25	ok
benzene	< 0.5	< 0.5	benzene	99.7	70-130	ok	98.7	70-130	ok	1.01	<25	ok
tert-amyl methyl ether (TAME)	< 1.0	< 1.0	tert-amyl methyl ether (TAME)	102	70-130	ok	106	70-130	ok	3.21	<25	ok
trichloroethene	< 0.5	< 0.5	trichloroethene	103	70-130	ok	104	70-130	ok	0.20	<25	ok
1,2-dichloropropane	< 0.5	< 0.5	1,2-dichloropropane	95.7	80-120	ok	96.0	70-130	ok	0.27	<25	ok
bromodichloromethane	< 0.5	< 0.5	bromodichloromethane	98.9	70-130	ok	99.9	70-130	ok	1.02	<25	ok
1,4-Dioxane	< 50	< 50	1,4-Dioxane	97.8	70-130	ok	98.8	70-130	ok	1.03	<25	ok
dibromomethane	< 0.5	< 0.5	dibromomethane	106	70-130	ok	107	70-130	ok	0.16	<25	ok
4-methyl-2-pentanone	< 13	< 13	4-methyl-2-pentanone	97.3	70-130	ok	99.6	70-130	ok	2.25	<25	ok
cis-1,3-dichloropropene	< 0.5	< 0.5	cis-1,3-dichloropropene	104	70-130	ok	106	70-130	ok	1.71	<25	ok
toluene	< 0.5	< 0.5	toluene	99.4	80-120	ok	100	70-130	ok	0.90	<25	ok
trans-1,3-dichloropropene	< 1.0	< 1.0	trans-1,3-dichloropropene	99.9	70-130	ok	101	70-130	ok	0.78	<25	ok
1,1,2-trichloroethane	< 0.5	< 0.5	1,1,2-trichloroethane	99.1	70-130	ok	98.0	70-130	ok	1.09	<25	ok
2-hexanone	< 13	< 13	2-hexanone	101	70-130	ok	102	70-130	ok	0.21	<25	ok
1,3-dichloropropane	< 0.5	< 0.5	1,3-dichloropropane	102	70-130	ok	102	70-130	ok	0.36	<25	ok
tetrachloroethene	< 0.5	< 0.5	tetrachloroethene	109	70-130	ok	108	70-130	ok	0.35	<25	ok
dibromochloromethane	< 0.5	< 0.5	dibromochloromethane	108	70-130	ok	107	70-130	ok	0.26	<25	ok
1,2-dibromoethane (EDB)	< 1.0	< 1.0	1,2-dibromoethane (EDB)	106	70-130	ok	106	70-130	ok	0.50	<25	ok
chlorobenzene	< 0.5	< 0.5	chlorobenzene	104	70-130	ok	103	70-130	ok	0.33	<25	ok
1,1,1,2-tetrachloroethane	< 0.5	< 0.5	1,1,1,2-tetrachloroethane	103	70-130	ok	102	70-130	ok	1.00	<25	ok
ethylbenzene	< 0.5	< 0.5	ethylbenzene	104	80-120	ok	105	70-130	ok	0.87	<25	ok
1,1,2,2-tetrachloroethane	< 0.5	< 0.5	1,1,2,2-tetrachloroethane	101	70-130	ok	102	70-130	ok	0.88	<25	ok
m&p-xylene	< 1.0	< 1.0	m&p-xylene	100	70-130	ok	100	70-130	ok	0.05	<25	ok
o-xylene	< 0.5	< 0.5	o-xylene	92.7	70-130	ok	92.1	70-130	ok	0.68	<25	ok
styrene	< 0.5	< 0.5	styrene	105	70-130	ok	106	70-130	ok	0.94	<25	ok
bromoform	< 1.0	< 1.0	bromoform	103	70-130	ok	104	70-130	ok	1.05	<25	ok
isopropylbenzene	< 0.5	< 0.5	isopropylbenzene	111	70-130	ok	111	70-130	ok	0.05	<25	ok
1,2,3-trichloropropane	< 0.5	< 0.5	1,2,3-trichloropropane	95.5	70-130	ok	94.0	70-130	ok	1.56	<25	ok
bromobenzene	< 0.5	< 0.5	bromobenzene	103	70-130	ok	103	70-130	ok	0.36	<25	ok
n-propylbenzene	< 0.5	< 0.5	n-propylbenzene	100	70-130	ok	100	70-130	ok	0.28	<25	ok
2-chlorotoluene	< 0.5	< 0.5	2-chlorotoluene	95.4	70-130	ok	92.3	70-130	ok	3.37	<25	ok
1,3,5-trimethylbenzene	< 0.5	< 0.5	1,3,5-trimethylbenzene	99.4	70-130	ok	99.8	70-130	ok	0.47	<25	ok
trans-1,4-dichloro-2-butene	< 1.0	< 1.0	trans-1,4-dichloro-2-butene	89.1	70-130	ok	88.8	70-130	ok	0.37	<25	ok
4-chlorotoluene	< 0.5	< 0.5	4-chlorotoluene	94.7	70-130	ok	96.3	70-130	ok	1.69	<25	ok
tert-butylbenzene	< 0.5	< 0.5	tert-butylbenzene	117	70-130	ok	117	70-130	ok	0.03	<25	ok
1,2,4-trimethylbenzene	< 0.5	< 0.5	1,2,4-trimethylbenzene	94.0	70-130	ok	94.8	70-130	ok	0.82	<25	ok
sec-butylbenzene	< 0.5	< 0.5	sec-butylbenzene	95.9	70-130	ok	96.2	70-130	ok	0.32	<25	ok
p-isopropyltoluene	< 0.5	< 0.5	p-isopropyltoluene	97.9	70-130	ok	97.5	70-130	ok	0.39	<25	ok
1,3-dichlorobenzene	< 0.5	< 0.5	1,3-dichlorobenzene	95.9	70-130	ok	97.1	70-130	ok	1.26	<25	ok
1,4-dichlorobenzene	< 0.5	< 0.5	1,4-dichlorobenzene	98.7	70-130	ok	100	70-130	ok	1.64	<25	ok
n-butylbenzene	< 0.5	< 0.5	n-butylbenzene	94.8	70-130	ok	96.8	70-130	ok	1.02	<25	ok
1,2-dichlorobenzene	< 0.5	< 0.5	1,2-dichlorobenzene	95.0	70-130	ok	95.4	70-130	ok	0.61	<25	ok
1,2-dibromo-3-chloropropane	< 2.5	< 2.5	1,2-dibromo-3-chloropropane	102	70-130	ok	104	70-130	ok	1.79	<25	ok
1,3,5-trichlorobenzene	< 0.5	< 0.5	1,3,5-trichlorobenzene	108	70-130	ok	107	70-130	ok	1.00	<25	ok
1,2,4-trichlorobenzene	< 0.5	< 0.5	1,2,4-trichlorobenzene	107	70-130	ok	109	70-130	ok	1.54	<25	ok
hexachlorobutadiene	< 0.5	< 0.5	hexachlorobutadiene	105	70-130	ok	107	70-130	ok	1.16	<25	ok
naphthalene	< 1.0	< 1.0	naphthalene	98.3	70-130	ok	99.3	70-130	ok	1.02	<25	ok
1,2,3-trichlorobenzene	< 0.5	< 0.5	1,2,3-trichlorobenzene	102	70-130	ok	104	70-130	ok	1.45	<25	ok

Surrogates:	Recovery (%)	Acceptance Limits	Surrogates:	Recovery (%)	Acceptance Limits	Verdict	Recovery (%)	Acceptance Limits	Verdict	RPD	Acceptance Limits	Verdict
DIBROMOFLUOROMETHANE	102	70-130	DIBROMOFLUOROMETHANE	101	70-130	ok	103	70-130	ok	1.42	<25	ok
1,2-DICHLOROETHANE-D4	95.0	70-130	1,2-DICHLOROETHANE-D4	105	70-130	ok	106	70-130	ok	0.72	<25	ok
TOLUENE-D8	99.0	70-130	TOLUENE-D8	101	70-130	ok	102	70-130	ok	0.75	<25	ok
4-BROMOFLUOROBENZENE	100	70-130	4-BROMOFLUOROBENZENE	103	70-130	ok	105	70-130	ok	2.00	<25	ok
1,2-DICHLOROBENZENE-D4	102	70-130	1,2-DICHLOROBENZENE-D4	100	70-130	ok	102	70-130	ok	2.03	<25	ok

Instrument: HP GC/MS "S"

GZA GEOENVIRONMENTAL, INC.
ENVIRONMENTAL CHEMISTRY LABORATORY
106 SOUTH ST, HOPKINTON, MA 01748
MASSACHUSETTS LABORATORY I.D. NO. MA092

EPA METHOD 7196A/SM 18 3500 CR (d) ANALYSIS
Hexavalent Chromium by Colorometric Method

QUALITY CONTROL - AQUEOUS

Date Prepared: 02/13/09

QC Sample	Method Blank	Lab Control Sample	Lab Control Sample Duplicate	LC/LCD Difference
Units	mg/L	% Recovery	% Recovery	RPD
Acceptance Limits	Results	80-120	80-120	20%
Analyte				
Hex Cr (Cr+6)	<0.010	100	90.0	10.5

RPD = Relative Percent Difference

CHAIN-OF-CUSTODY RECORD

W.O. #

Sample I.D.	Date/Time Sampled	Matrix A=Air S=Soil GW=Ground W. SW=Surface W. WW=Waste W. DW=Drinking W. P=Product Other (specify)	☐ pH ☐ Cond.	Total Organic Carbon (TOC)	EPA 8260B GC/MS	EPA 8260 - 8010 list (Chlor.)	EPA 8260 - 8021 list	TRC - SM4500 CLD	EPA 524.2 DW VOCs	EPA 624 WW VOCs	☐ 601 ☐ 602 WW VOCs	EPA 8270 FULL SVOCs 8270D GC/MS	EPA 8270 ☐ PAH ☐ A ☐ BN	EPA 625 WW SVOCs	EPA 608 PCBs	TSS SM2540D		TPH-1664	EPH (MA DEP)	VPH (MA DEP)	Metals ☐ PPM-13 ☐ R-8	MCP 14 Metals (MA)	Metals (List Below)[1] via ICP	TCLP - Specify Below	SPLP - Specify Below	EPA 300 ☐ Cl ☐ SO4	EPA 300 ☐ NO2 ☐ NO3
SW-1	2/12/09 1330	SW		X	X			X				X			X	X		X					X				
PRESERVATIVE (Cl - HCl, M=Methanol, N - HNO3, S - H2SO4, Na - NaOH, O - Other)*				S	Cl			—				—			—	—		G					M				
CONTAINER TYPE (P-Plastic, G-Glass, V-Vial, T-Teflon, O-Other)*				P	G			P				G			G	P		Cl					P				

RELINQUISHED BY: (AFFILIATION)	DATE/TIME	RECEIVED BY: (AFFILIATION)
Bill Davis	2/12/09 4pm	[signature] 2/12/09 1620
RELINQUISHED BY: (AFFILIATION)	DATE/TIME	RECEIVED BY: (AFFILIATION)
[signature]		[signature] WAlkin
RELINQUISHED BY: (AFFILIATION)	DATE/TIME	RECEIVED BY: (AFFILIATION)
WAlkin		[signature] 2/12/09 1800

PROJECT MANAGER: James Daubenspeck EXT: 5863

NOTES: (Unless otherwise noted, all samples have been refrigerated to 4° C)
*Specify "Other" preservatives and containers types in this space.
1. Metals - Sb, As, Cd, Cr, Cu, Pb, Ni, Se, Ag, Zn, Fe. by me
Hexachrom - SM 3500 CrD.
~~2. EDB - Ethylene dibromide by method 504.1~~
3. PAH's as per appendix 6 (RCP) requirements.
[Pls refer the attached e-mail & Appendix G] → A do

TURNAROUND TIME: Standard Rush___ Days, Approved by __________ LAB USE: TEMP. OF COOLER

GZA GEOENVIRONMENTAL, INC.
Labaratory Division

106 South Street
Hopkinton, MA 01748
(781) 278-4700
FAX (508) 435-9912

GZA FILE NO: 01.0017812.60 TASK NO: 1 P.O. NO

PROJECT: American Optical

LOCATION: Southbridge Ma.

COLLECTOR(S): Bill Davis / Sam Tuttle SHEET

ATTACHMENT 6

SUPPLEMENTAL INFORMATION – 7Q10 DATA FOR ROUGE BROOK CHANNEL

Peak Flow Basin Characteristics			
100% Statewide Low Flow (0.23 mi2)			
Parameter	Value	Regression Equation Valid Range	
		Min	Max
Drainage Area (square miles)	0.23 (below min value 1.61)	1.61	149
Mean Basin Slope from 250K DEM (percent)	3.91	0.32	24.6
Stratified Drift per Stream Length (square mile per mile)	0	0	1.29
Massachusetts Region (dimensionless)	0	0	1

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

Streamflow Statistics					
Statistic	Flow (ft^3/s)	Prediction Error (percent)	Equivalent years of record	90-Percent Prediction Interval	
				Minimum	Maximum
D50	0.21				
D60	0.12				
D70	0.0554				
D75	0.0385				
D80	0.0281				
D85	0.019				
D90	0.0119				
D95	0.00616				
D98	0.00361				
D99	0.00238				
M7D2Y	0.0066				
AUGD50	0.0195				
M7D10Y	0.00191				

GZA
GeoEnvironmental, Inc.
One Edgewater Drive
Norwood, MA 02062
781-278-3700
Fax 781-278-5701
http://www.gza.com

Engineers and Scientists

JOB 01 0017612.60
SHEET NO. 1 OF 1
CALCULATED BY Saroj Chandalal DATE 4/14/09
CHECKED BY ______ DATE ______
SCALE N/A

Dilution factor calculations for

Dilution factor, $Df = \frac{Q_d + Q_s}{Q_d}$

where, Q_d = Maximum flow rate of discharge in cubic feet per second (cfs)

(1 gpm = 0.00223 cfs)

Q_s = Receiving water 7Q10 flow (cfs)
(From USGS Streamstats website)

Q_d = 100 gpm = 0.22 cfs

Q_s = 0.00191 cfs

$$Df = \frac{0.22 + 0.00191}{0.22} = 1$$

ATTACHMENT 7

COPY OF A LETTER FROM TRIBAL HISTORIC PRESERVATION OFFICER

Southbridge
RC.45858

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A
MASSACHUSETTS HISTORICAL COMMISSION
220 MORRISSEY BOULEVARD
BOSTON, MASS. 02125
617-727-8470, FAX: 617-727-5128

RECEIVED
FEB 17 2009
MASS. HIST. COMM
RC.45858

PROJECT NOTIFICATION FORM

Project Name: Bouge Brook Remediation Project

Location / Address: 100 Mechanic Street (Assessors' ID Map 38, Parcel 1)

City / Town: Southbridge

Project Proponent

Name: American Optical Corporation (owner: Southbridge Associates III, LLC)

Address: 100 Mechanic Street

City/Town/Zip/Telephone: Southbridge, MA 01550

Agency license or funding for the project (list all licenses, permits, approvals, grants or other entitlements being sought from state and federal agencies).

Agency Name	Type of License or funding (specify)
Please see attached permit list	

After review of MHC files and the materials you submitted, it has been determined that this project is unlikely to affect significant historic or archaeological resources.
RC.45858

3/3/09
Jonathan K. Patton Date
Archaeologist / Preservation Planner
Massachusetts Historical Commission

Project Description (narrative):

Please see attached "Project Narrative"

Does the project include demolition? If so, specify nature of demolition and describe the building(s) which are proposed for demolition.

No

xc: Karen K. Adams, USACOE NED, Regulatory
Kate Atwood, USACOE NED
DEP-CERO, wetlands
Southbridge Historical Commission

Does the project include rehabilitation of any existing buildings? If so, specify nature of rehabilitation and describe the building(s) which are proposed for rehabilitation.

No

Does the project include new construction? If so, describe (attach plans and elevations if necessary).

No

950 CMR: OFFICE OF THE SECRETARY OF THE COMMONWEALTH

APPENDIX A (continued)

To the best of your knowledge, are any historic or archaeological properties known to exist within the project's area of potential impact? If so, specify. NO

What is the total acreage of the project area? Parcel is 53 acres but remediation project is under 3 acres, including staging + materials handling.

Woodland	<2	acres	Productive Resources:		
Wetland	<1	acres	Agriculture	0	acres
Floodplain	<1	acres	Forestry	0	acres
Open space		acres	Mining/Extraction	0	acres
Developed	0	acres (of remediation area)	Total Project Acreage		acres

What is the acreage of the proposed new construction? 0 acres

What is the present land use of the project area?
Undeveloped wetlands and woods adjacent to Activity Use Limitation (AUL) open area. All resource areas that will be temporarily altered for the purposes of remediation will be restored in place.

Please attach a copy of the section of the USGS quadrangle map which clearly marks the project location.
Attached

This Project Notification Form has been submitted to the MHC in compliance with 950 CMR 71.00.

Signature of Person submitting this form: Michele Simoneaux Date: February 12, 2009

Name: Michele Simoneaux (GZA GeoEnvironmental, Inc.)

Address: One Edgewater Drive

City/Town/Zip: Norwood, MA 02062

Telephone: 781-278-5802

REGULATORY AUTHORITY

950 CMR 71.00: M.G.L. c. 9, §§ 26-27C as amended by St. 1988, c. 254.