

Trace Analytical Laboratories, Inc.  
2241 Black Creek Road  
Muskegon, MI 49444-2673



231-773-5998 Phone  
888-979-4469 Fax  
www.trace-labs.com

June 01, 2021

Chelsey Wabsis  
Muskegon Conservation District  
4735 Holton Rd  
Twin Lake, MI 49457

Phone: (231) 828-5097  
Fax: (231) 767-1207

RE: Trace Project 21E0921  
Client Project Mirror Lake 05/26/21

Enclosed are your analytical results. The results of this report relate only to the samples listed in the body of this report.

All reports were examined through Trace's validation process to ensure that requirements for quality and completeness were satisfied. All reported analytical results were obtained in accordance with the methods referenced on the reports. Every practical effort was made to meet the reporting limit specifications for this work, however, some results may have raised reporting limits to correct for percent solids.

For clients that require NELAP Accreditation, Trace certifies that these test results meet all requirements of the NELAP Standard, except for those analytes with a "N" notation. These analytes have not been evaluated by NELAP at Trace's discretion and will not be reported unless requested by client.

If you have questions concerning this report, please contact me at 231.773.5998 or by email at [jmink@trace-labs.com](mailto:jmink@trace-labs.com).

Sincerely,

A handwritten signature in black ink, appearing to read "Jon Mink".

Jon Mink  
Senior Project Manager  
Enclosures



NJDEP Accreditation No. MI008

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### SAMPLE SUMMARY

Trace Project ID: 21E0921  
Client Project ID: Mirror Lake 05/26/21

Trace ID	Sample ID	Matrix	Collected By	Date Collected	Date Received
21E0921-01	ML-01	Aqueous	Client	05/26/21 09:45	05/26/21 10:34

### CERTIFICATE OF ANALYSIS

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## AN EXPLANATION OF TERMS AND SYMBOLS WHICH MAY OCCUR IN THIS REPORT

### DEFINITIONS

LCS	Laboratory Control Sample
LCSD	Laboratory Control Sample Duplicate
MS	Matrix Spike
MSD	Matrix Spike Duplicate
RPD	Relative Percent Difference
DUP	Matrix Duplicate
RDL	Reporting Detection Limit
MCL	Maximum Contamination Limit
TIC	Tentatively Identified Compound
<, ND or U	Indicates the compound was analyzed for but not detected
*	Indicates a result that exceeds its associated MCL or Surrogate control limits
N	Indicates that the laboratory is not accredited by NELAP for this compound
NA	Indicates that the compound is not available.

NOTE: Samples for volatiles that have been extracted with a water miscible solvent were corrected for the total volume of the solvent/water mixture.  
Solid matrices Method Blanks are at 100% solids as such results are the same wet or dry.

### DATA QUALIFIERS

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Trace ID: T110687-BS1

**Analysis: EPA 624.1**

**2-Chloroethylvinyl ether**

Note 812 : Sporadic marginal recovery failure. No data require qualification.

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### ANALYTICAL RESULTS

Trace Project ID: 21E0921  
 Client Project ID: Mirror Lake 05/26/21

Trace ID: 21E0921-01 Matrix: Aqueous Date Collected: 05/26/21 09:45  
 Sample ID: ML-01 Date Received: 05/26/21 10:34

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
<b>VOLATILE ORGANIC COMPOUNDS BY GC-MS</b>									
<b>Analysis Method: EPA 624.1</b>									
<i>Batch: T110687</i>									
Benzene	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
Bromodichloromethane	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
Bromoform	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
Bromomethane	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
Carbon tetrachloride	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
Chlorobenzene	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
Chloroethane	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
2-Chloroethylvinyl ether	<10 ug/L	10	1	05/27/21	nw	05/27/21	nw		
Chloroform	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
Chloromethane	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
Dibromochloromethane	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
Dichlorodifluoromethane	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
1,2-Dichlorobenzene	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
1,3-Dichlorobenzene	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
1,4-Dichlorobenzene	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
1,1-Dichloroethane	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
1,2-Dichloroethane	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
1,1-Dichloroethene	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
trans-1,2-Dichloroethene	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
1,2-Dichloropropane	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
cis-1,3-Dichloropropene	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
trans-1,3-Dichloropropene	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
Ethylbenzene	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
Methylene chloride	<2.0 ug/L	2.0	1	05/27/21	nw	05/27/21	nw		
1,1,2,2-Tetrachloroethane	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
Tetrachloroethene	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
Toluene	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
1,1,1-Trichloroethane	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
1,1,2-Trichloroethane	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
Trichloroethene	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
Trichlorofluoromethane	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		
Vinyl chloride	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw		

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**ANALYTICAL RESULTS**

Trace Project ID: 21E0921  
 Client Project ID: Mirror Lake 05/26/21

Trace ID: 21E0921-01 Matrix: Aqueous Date Collected: 05/26/21 09:45  
 Sample ID: ML-01 Date Received: 05/26/21 10:34

PARAMETERS	RESULTS UNITS	RDL	DILUTION	PREPARED	BY	ANALYZED	BY	NOTES	MCL
<b>VOLATILE ORGANIC COMPOUNDS BY GC-MS</b>									
m,p-Xylene	<2.0 ug/L	2.0	1	05/27/21	nw	05/27/21	nw	N	
o-Xylene	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw	N	
Xylenes, total	<3.0 ug/L	3.0	1	05/27/21	nw	05/27/21	nw		
1,1,2-Trichlorotrifluoroethane	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw	N	
1,1,1-Trichlorotrifluoroethane (Targeted TIC)	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw	N	
Chlorodifluoromethane (Targeted TIC)	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw	N	
Dichlorofluoromethane (Targeted TIC)	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw	N	
1,1-Dichloro-1-fluoroethane (Targeted TIC)	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw	N	
Chlorodifluoroethane (Targeted TIC)	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw	N	
Dichlorotrifluoroethane (Targeted TIC)	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw	N	
Dichlorotetrafluoroethane (Targeted TIC)	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw	N	
Chloropentafluoroethane (Targeted TIC)	<1.0 ug/L	1.0	1	05/27/21	nw	05/27/21	nw	N	
<b>Surrogates:</b>									
1,2-Dichloroethane-d4	96 %	68-133	1	05/27/21	nw	05/27/21	nw		
Toluene-d8	101 %	75-120	1	05/27/21	nw	05/27/21	nw		
4-Bromofluorobenzene	105 %	69-119	1	05/27/21	nw	05/27/21	nw		
1,2-Dichlorobenzene-d4	100 %	72-127	1	05/27/21	nw	05/27/21	nw		

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### QUALITY CONTROL RESULTS

Trace Project ID: 21E0921  
 Client Project ID: Mirror Lake 05/26/21

QC Batch: T110687	Analysis Description: EPA 624
QC Batch Method: EPA 624 Purge and Trap	Analysis Method: EPA 624.1

#### METHOD BLANK: T110687-BLK1

Parameter	Units	Blank Result	Reporting Limit	Notes
Benzene	ug/L	<1.0	1.0	
Bromodichloromethane	ug/L	<1.0	1.0	
Bromoform	ug/L	<1.0	1.0	
Bromomethane	ug/L	<1.0	1.0	
Carbon tetrachloride	ug/L	<1.0	1.0	
Chlorobenzene	ug/L	<1.0	1.0	
Chloroethane	ug/L	<1.0	1.0	
2-Chloroethylvinyl ether	ug/L	<10	10	
Chloroform	ug/L	<1.0	1.0	
Chloromethane	ug/L	<1.0	1.0	
Dibromochloromethane	ug/L	<1.0	1.0	
Dichlorodifluoromethane	ug/L	<1.0	1.0	
1,2-Dichlorobenzene	ug/L	<1.0	1.0	
1,3-Dichlorobenzene	ug/L	<1.0	1.0	
1,4-Dichlorobenzene	ug/L	<1.0	1.0	
1,1-Dichloroethane	ug/L	<1.0	1.0	
1,2-Dichloroethane	ug/L	<1.0	1.0	
1,1-Dichloroethene	ug/L	<1.0	1.0	
trans-1,2-Dichloroethene	ug/L	<1.0	1.0	
1,2-Dichloropropane	ug/L	<1.0	1.0	
cis-1,3-Dichloropropene	ug/L	<1.0	1.0	
trans-1,3-Dichloropropene	ug/L	<1.0	1.0	
Ethylbenzene	ug/L	<1.0	1.0	
Methylene chloride	ug/L	<2.0	2.0	
1,1,2,2-Tetrachloroethane	ug/L	<1.0	1.0	
Tetrachloroethene	ug/L	<1.0	1.0	
Toluene	ug/L	<1.0	1.0	
1,1,1-Trichloroethane	ug/L	<1.0	1.0	
1,1,2-Trichloroethane	ug/L	<1.0	1.0	
Trichloroethene	ug/L	<1.0	1.0	
Trichlorofluoromethane	ug/L	<1.0	1.0	
Vinyl chloride	ug/L	<1.0	1.0	
m,p-Xylene	ug/L	<2.0	2.0	
o-Xylene	ug/L	<1.0	1.0	
Xylenes, total	ug/L	<3.0	3.0	
1,1,2-Trichlorotrifluoroethane	ug/L	<1.0	1.0	
1,1,1-Trichlorotrifluoroethane (Targeted TIC)	ug/L	<1.0	1.0	

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**METHOD BLANK: T110687-BLK1**

Parameter	Units	Blank Result	Reporting Limit	Notes
Chlorodifluoromethane (Targeted TIC)	ug/L	<1.0	1.0	
Dichlorofluoromethane (Targeted TIC)	ug/L	<1.0	1.0	
1,1-Dichloro-1-fluoroethane (Targeted TIC)	ug/L	<1.0	1.0	
Chlorodifluoroethane (Targeted TIC)	ug/L	<1.0	1.0	
Dichlorotrifluoroethane (Targeted TIC)	ug/L	<1.0	1.0	
Dichlorotetrafluoroethane (Targeted TIC)	ug/L	<1.0	1.0	
Chloropentafluoroethane (Targeted TIC)	ug/L	<1.0	1.0	
1,2-Dichloroethane-d4 (S)	%	96	68-133	
Toluene-d8 (S)	%	102	75-120	
4-Bromofluorobenzene (S)	%	105	69-119	
1,2-Dichlorobenzene-d4 (S)	%	101	72-127	

**LABORATORY CONTROL SAMPLE: T110687-BS1**

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Benzene	ug/L	20.0	19.8	99	80-120	
Bromodichloromethane	ug/L	20.0	19.4	97	80-120	
Bromoform	ug/L	20.0	20.4	102	71-115	
Bromomethane	ug/L	20.0	19.8	99	34-189	
Carbon tetrachloride	ug/L	20.0	20.6	103	79-141	
Chlorobenzene	ug/L	20.0	21.2	106	80-120	
Chloroethane	ug/L	20.0	19.2	96	74-151	
<b>2-Chloroethylvinyl ether</b>	<b>ug/L</b>	<b>20.0</b>	<b>&lt;10</b>	<b>38</b>	<b>70-130</b>	<b>812</b>
Chloroform	ug/L	20.0	19.9	99	80-120	
Chloromethane	ug/L	20.0	16.9	84	42-162	
Dibromochloromethane	ug/L	20.0	21.2	106	76-116	
Dichlorodifluoromethane	ug/L	20.0	20.7	103	46-153	
1,2-Dichlorobenzene	ug/L	20.0	20.9	104	80-120	
1,3-Dichlorobenzene	ug/L	20.0	21.1	106	80-120	
1,4-Dichlorobenzene	ug/L	20.0	21.2	106	80-120	
1,1-Dichloroethane	ug/L	20.0	19.1	95	62-120	
1,2-Dichloroethane	ug/L	20.0	19.4	97	80-120	
1,1-Dichloroethene	ug/L	20.0	19.5	98	64-156	
trans-1,2-Dichloroethene	ug/L	20.0	19.7	99	62-142	
1,2-Dichloropropane	ug/L	20.0	19.8	99	80-120	
cis-1,3-Dichloropropene	ug/L	20.0	21.2	106	73-121	
trans-1,3-Dichloropropene	ug/L	20.0	21.8	109	73-118	
Ethylbenzene	ug/L	20.0	21.1	105	78-120	

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**LABORATORY CONTROL SAMPLE: T110687-BS1**

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limit	Notes
Methylene chloride	ug/L	20.0	19.0	95	38-167	
1,1,2,2-Tetrachloroethane	ug/L	20.0	21.0	105	81-124	
Tetrachloroethene	ug/L	20.0	22.2	111	73-138	
Toluene	ug/L	20.0	20.8	104	80-120	
1,1,1-Trichloroethane	ug/L	20.0	20.2	101	83-128	
1,1,2-Trichloroethane	ug/L	20.0	20.0	100	80-120	
Trichloroethene	ug/L	20.0	20.6	103	69-133	
Trichlorofluoromethane	ug/L	20.0	20.6	103	71-172	
Vinyl chloride	ug/L	20.0	18.0	90	47-184	
m,p-Xylene	ug/L	40.0	42.8	107	78-122	
o-Xylene	ug/L	20.0	21.4	107	78-122	
1,1,2-Trichlorotrifluoroethane	ug/L	20.0	20.6	103	70-130	
1,2-Dichloroethane-d4 (S)	%	30.0	29.4	98	68-133	
Toluene-d8 (S)	%	30.0	30.8	103	75-120	
4-Bromofluorobenzene (S)	%	30.0	30.8	103	69-119	
1,2-Dichlorobenzene-d4 (S)	%	30.0	30.5	102	72-127	

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CHAIN-OF-CUSTODY RECORD

Page \_\_\_\_\_ of \_\_\_\_\_

Trace ID No.  
 21E0421

Report Results To:

Bill To:

Trace Use:

Company Name: Muskegon Conservation District PO #: \_\_\_\_\_  
 Report To: Chelsea Woods Contact Name: Emily Graham  
 Mailing Address: 4735 Holton Rd Billing Address (if different): \_\_\_\_\_  
 City, State, Zip Code: Twin Lake MI 49457 City, State, Zip Code: Spartan  
 Office Phone: 231-626-5607 Cell Phone: \_\_\_\_\_ Phone Number: 231-626-5607  
 Email Address: Chelsea.Woods@cmwd.org Billing Email Address: emily.graham@cmwd.org

Logged By: [Signature]  
 Checked By: [Signature]  
 Soil Volatiles Preserved (circle if applicable):  
 MeOH Low Level Lab  
 Sampling Time: \_\_\_\_\_

Turnaround Requirements:

- Standard, 5-10 Days  
 3 Day\*  
 1 Day\*

Matrix Key:

- S = Soil / Solid W = Wipes  
 LW = Liquid Waste  
 A = Air  
 SL = Sludge  
 OI = Oil D = Drinking Water

\*Results provided end of business day, requires prior approval.

Trace No.	Date Collected	Time Collected	Client Sample ID	Sampled By:	Metals Field Filtered (Y / N)	Matrix	Number of Containers	Preservation						Remarks			
								Cool	HCl	HNO <sub>3</sub>	H <sub>2</sub> SO <sub>4</sub>	NaOH	Other				
1	5/20	0:45	ML-01				1	✓									
2	5/20	0:45	ML-02				1	✓									
3	5/20	0:45	ML-03				1	✓									
<p>Project Name: <u>Mirror Lake</u></p> <p>Analysis Requested: <u>VOC @24 Dupont</u></p>																	

Please Sign

Released By	Received By	Date	Time
<u>[Signature]</u>	<u>[Signature]</u>	<u>5/20/21</u>	<u>10:34</u>

In executing this Chain of Custody, the client acknowledges the terms as set forth at www.trace-labs.com/terms-of-agreement.

Check this box if you would not like your samples analyzed if received outside of the conditions outlined in the Trace Sample Acceptance Policy at www.trace-labs.com/downloads. Form 70-Z-1

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**21E0921**  
 Muskegon Conservation District  
 Project Manager: Jon Mink

**Sample Log In Checklist**

*NC 5/26/21*

Date: <i>5/26/21</i>	Original Observation	Corrected Temperature	IR-8 (CF: -0.5°C)	IR-9 (CF: 0.0°C)	20B12743 (CF: -0.4°C)	Temp Blank	Client Sample
Time: <i>10:34</i>							
Logged by: <i>NC</i>							
Package Description: <i>Cooler</i>							
Package Temp °C	<i>5.8</i>	<i>5.8</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
Representative Sample Temp °C	<i>14.6</i>	<i>14.2</i>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

**Sample Receipt**

- Yes  No
- Received on ice or other coolant
- Ice still present upon receipt
- Custody seals present
- Trace Courier  Client Drop-off
- Yes  No Custody seals intact (if applicable)
- UPS  Fex Ex  US Mail  Other

**Sample Condition**

- Yes  No  N/A
- All sample containers arrived unbroken and labeled
- Sufficient sample to run requested analyses
- Correct chemical preservative added to samples
- Samples preserved at Trace
- Chemical preservation verified, check EMD pH test strip used (if applicable)
- pH 0-2.5 (Lot: HC029115)  pH 11.0-13.0 (Lot: HC729101)  Other
- Air bubbles absent from VOAs

**Chain of Custody (COC)**

- Yes  No
- All bottle labels agree with COC
- COC filled out properly
- COC signed by client

**Notes:**

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