



Occupational Health & Safety • Environmental Consultants

*OccuHealth, Inc.
44 Wood Avenue
Mansfield, MA 02048*

*Tel. (508) 339-9119
Tel. (800) 729-1035
Fax (508) 339-2893
j_mcneff@occuhealth.com*

December 22, 2016

Concord Public Schools
ATTN: Mr. Brian Schlegel
120 Meriam Road
Concord, MA 01742

RE: Water Quality Screening,
Willard Elementary School

Sent via email: BSchlegel@concordps.org

Dear Mr. Schlegel:

OccuHealth, Inc. (OHI) is submitting the enclosed report on the drinking water assessments conducted on December 10, 2016 in the Willard Elementary School building located at 185 Powder Mill Road, Concord, Massachusetts.

Please call either of the undersigned at (508) 339-9119 with any questions. Thank you for the opportunity to be of service.

Regards,
OCCUHEALTH, INC.

A handwritten signature in black ink, appearing to read 'Jay McNeff'.

Jay McNeff, Sr. Project Manager

A handwritten signature in black ink, appearing to read 'Thomas E. Hamilton'.

Thomas E. Hamilton, CIH

Enclosures

OccuHealth

**DRINKING WATER ASSESSMENT
CONCORD PUBLIC SCHOOLS
WILLARD ELEMENTARY SCHOOL
185 POWDER MILL ROAD
CONCORD, MASSACHUSETTS**

Prepared for:

**MR. BRIAN SCHLEGEL
CONCORD PUBLIC SCHOOLS
120 MERIAM ROAD
CONCORD, MA 01742**

Conducted by:

**OCCUHEALTH, INC.
44 WOOD AVENUE
MANSFIELD, MA 02048
(508) 339-9119
OHI JOB 16-8990**

Report Date:

DECEMBER 22, 2016

**DRINKING WATER ASSESSMENT
CONCORD PUBLIC SCHOOLS
WILLARD ELEMENTARY SCHOOL
185 POWDER MILL ROAD
CONCORD, MASSACHUSETTS**

TABLE OF CONTENTS

<u>SECTION</u>	<u>DESCRIPTION</u>	<u>PAGE</u>
1.0	Introduction	1
2.0	Water Testing	1
3.0	Conclusions	3
4.0	Limitations	3

Attachments

Alpha Analytical Laboratory Report
Alpha Analytical Chain-of-Custody Forms

Report Synopsis: On December 10, 2016, OccuHealth, Inc. (OHI) conducted a drinking water assessment in the Willard Elementary School located at 185 Powder Mill Road, Concord, Massachusetts. A total of 20 water samples were collected for copper and lead analysis.

The copper and lead results were within the standards and guidelines for Massachusetts drinking water set by the EPA in their Lead and Copper Rule.

1.0 INTRODUCTION

OccuHealth, Inc. (OHI) was requested to conduct a drinking water assessment in the Willard Elementary School located at 185 Powder Mill Road in Concord, Massachusetts.

The assessment and sampling were conducted on December 10, 2016 by Mr. Jay McNeff, Senior Project Manager, under the supervision of Mr. Thomas E. Hamilton, Certified Industrial Hygienist (CIH), both of OHI. Mr. McNeff was escorted by Mr. Brian Ouellette of the Concord Public Schools. Mr. Brian Schlegel of the Concord Public Schools requested and authorized this assessment.

2.0 WATER TESTING

Sampling and Analytical Methodology

The water samples were collected and submitted under chain-of-custody for analysis to Alpha Analytical of Westborough, MA. Copies of the Alpha Analytical laboratory report and chain-of-custody forms are attached. The laboratory used Prep Method EPA 3005A and Analytical Methods 3 and EPA 200.8 for copper and lead analysis in drinking water. Method 3 refers to the Determination of Metals in Environmental Samples, Supplement I. EPA/600/R-94/111. May 1994.

The Massachusetts DEP (Department of Environmental Protection) procedures entitled How to Collect a Drinking Water Sample for Lead & Copper Testing were followed. An EPA (Environmental Protection Agency) quick reference guide for schools and child care facilities entitled "Lead and Copper Rule" was also utilized. Both documents are attached at the end of the report for reference. Samples were collected between 7:27 am and 8:07 am on Saturday, December 10, 2016 so first draw samples would be from systems that were unused since the previous day.

The following data as provided by Brian Ouellette confirms the buildings were unused overnight from December 9th until the morning of December 10th. Some minor change in the meter readings can be attributed to leakage in the building such as toilet or urinal valves slowly leaking. These changes are considered negligible.

Time/Date	Water meter reading (ft ³)
10:00pm 12/09/2016	03,938,001
07:25am 12/10/2016	03,938,002
08:10am 12/10/2016	03,938,015

Sampling Results

The results are summarized in the Table below. Both Copper and Lead results were below their respective Action Levels of 1.3 mg/L and 0.015 mg/L listed in the Massachusetts Maximum Contaminant Levels and EPA Lead and Copper Rule for drinking water. The Action Level is based on the 90th percentile level which means no more than 10% of the samples may be above the Action Level. There were no samples that were above the Action Level. Further definition and discussion of this rule can be found in the appendix.

Table: Water Testing Results

Sample Number	Location	Copper mg/L	Lead mg/L	Comments
W91	L-01 sink	0.7126	ND	Acceptable
W-92	L-01 sink 2 nd draw	0.5534	ND	Acceptable
W-93	L-05 sink	0.5897	ND	Acceptable
W-94	Kitchen double sink	0.6382	0.00135	Acceptable
W-95	Kitchen double sink 2 nd draw	0.4032	ND	Acceptable
W-96	Teachers' lounge sink	0.6027	ND	Acceptable
W-97	L-15 sink	0.5418	ND	Acceptable
W-98	L-40 sink	0.7325	0.00105	Acceptable
W-99	L-40 sink 2 nd draw	0.5934	ND	Acceptable
W-100	U-25 sink	0.8594	ND	Acceptable
W-101	U-21 sink bubbler	0.8462	ND	Acceptable
W-102	U-15 bubbler	0.9138	ND	Acceptable
W-103	U-11 sink	0.5281	ND	Acceptable
W-104	U-7 bubbler	0.7162	ND	Acceptable
W-105	U-08 boys room left sink	0.5658	0.00219	Acceptable
W-106	U-02 art room right sink	0.5204	0.00103	Acceptable
W-107	Gym lower bubbler	0.7855	ND	Acceptable
W-108	M12D Admin restroom	0.8720	0.00237	Acceptable
W-109	M08 Nurses office sink	1.051	ND	Acceptable
W-110	M08 nurses office sink 2 nd draw	0.5582	ND	Acceptable

mg/L = milligrams per liter

ND = Non Detect value of 0.00100 mg/l for lead

*The action level is not a health-based value. Instead, exceeding the action level triggers a series of treatment techniques. The Treatment Technique for lead requires systems to control the corrosiveness of their water. If more than 10% of tap water samples exceed the copper Action Level of 1.3 mg/L or the lead Action Level of 0.015 mg/L, water systems must take additional steps (U.S. EPA, 2002).

3.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of the water sampling, OHI concludes that the water quality parameters for this sampling event are within normal ranges and thus has no recommended actions to offer at this time. As stated in the EPA Lead and Copper Rule, the school district should monitor the water quality every six months until the 90th percentile measurement is below the Action Level for two consecutive 6 month sample periods.

4.0 LIMITATIONS

The contents of this report are based on OccuHealth, Inc.'s best professional judgement, comparison of collected data with established industry guidelines, and information obtained from representatives of our client.

ATTACHMENTS

Alpha Analytical Laboratory Report

Alpha Analytical Chain-of-Custody Forms

MA DEP Drinking Water Sample Collection Procedure

US EPA Lead and Copper Rule

How to Collect an Initial (First Draw) Sample

Collect the sample before any water has been used. Water should not be used for 8-18 hours before sampling.

Make sure you have clean hands.

Complete the sample recording form.

Only use containers (250 milliliter) supplied by your certified lab.

Containers should not be opened until you are ready to collect the sample.

Sampling containers that have been compromised in any way, e.g., by being touched on the threads or the interior surfaces, must not be used.

Keep food and drink away from the sample and its container.

Anything attached to the end of the faucet, e.g., hoses, should not be removed before taking samples.

Make sure no water has been withdrawn from the tap or water fountain before you collect the sample.

Place the container under the faucet or drinking water fountain that is being tested and collect 250 milliliters of water.

If a faucet is being tested make sure you turn on the cold water tap.

Turn on the water and fill the container without allowing any water to run down the drain.

Close the container according to the instructions from your certified lab.

Make sure the container is labeled with the same information from your sample recording form.

Prepare the container for shipping according to the certified lab's instructions. Ship containers according to the certified lab's instructions.

Samples must be delivered to the lab within 14 days of collection for proper testing.



ANALYTICAL REPORT

Lab Number:	L1640310
Client:	OccuHealth 44 Wood Avenue Mansfield, MA 02048
ATTN:	Jay McNeff
Phone:	(508) 339-9119
Project Name:	CONCORD SCHOOLS
Project Number:	Not Specified
Report Date:	12/20/16

The original project report/data package is held by Alpha Analytical. This report/data package is paginated and should be reproduced only in its entirety. Alpha Analytical holds no responsibility for results and/or data that are not consistent with the original.

Certifications & Approvals: MA (M-MA086), NY (11148), CT (PH-0574), NH (2003), NJ NELAP (MA935), RI (LAO00065), ME (MA00086), PA (68-03671), VA (460195), MD (348), IL (200077), NC (666), TX (T104704476), DOD (L2217), USDA (Permit #P-330-11-00240).

Eight Walkup Drive, Westborough, MA 01581-1019
508-898-9220 (Fax) 508-898-9193 800-624-9220 - www.alphalab.com



Project Name: CONCORD SCHOOLS
Project Number: Not Specified

Lab Number: L1640310
Report Date: 12/20/16

Alpha Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1640310-01	T-71	DW	CONCORD, MA	12/10/16 06:13	12/10/16
L1640310-02	T-72	DW	CONCORD, MA	12/10/16 06:15	12/10/16
L1640310-03	T-73	DW	CONCORD, MA	12/10/16 06:16	12/10/16
L1640310-04	T-74	DW	CONCORD, MA	12/10/16 06:20	12/10/16
L1640310-05	T-75	DW	CONCORD, MA	12/10/16 06:22	12/10/16
L1640310-06	T-76	DW	CONCORD, MA	12/10/16 06:26	12/10/16
L1640310-07	T-77	DW	CONCORD, MA	12/10/16 06:29	12/10/16
L1640310-08	T-78	DW	CONCORD, MA	12/10/16 06:31	12/10/16
L1640310-09	T-79	DW	CONCORD, MA	12/10/16 06:35	12/10/16
L1640310-10	T-80	DW	CONCORD, MA	12/10/16 06:37	12/10/16
L1640310-11	T-81	DW	CONCORD, MA	12/10/16 06:39	12/10/16
L1640310-12	T-82	DW	CONCORD, MA	12/10/16 06:41	12/10/16
L1640310-13	T-83	DW	CONCORD, MA	12/10/16 06:45	12/10/16
L1640310-14	T-84	DW	CONCORD, MA	12/10/16 06:49	12/10/16
L1640310-15	T-85	DW	CONCORD, MA	12/10/16 06:51	12/10/16
L1640310-16	T-86	DW	CONCORD, MA	12/10/16 06:53	12/10/16
L1640310-17	T-87	DW	CONCORD, MA	12/10/16 06:55	12/10/16
L1640310-18	T-88	DW	CONCORD, MA	12/10/16 06:59	12/10/16
L1640310-19	T-89	DW	CONCORD, MA	12/10/16 07:01	12/10/16
L1640310-20	T-90	DW	CONCORD, MA	12/10/16 07:03	12/10/16
L1640310-21	W-91	DW	CONCORD, MA	12/10/16 07:27	12/10/16
L1640310-22	W-92	DW	CONCORD, MA	12/10/16 07:29	12/10/16
L1640310-23	W-93	DW	CONCORD, MA	12/10/16 07:31	12/10/16
L1640310-24	W-94	DW	CONCORD, MA	12/10/16 07:33	12/10/16

Alpha			Serial_No:12201617:16		
Sample ID	Client ID	Matrix	Sample Location	Collection Date/Time	Receive Date
L1640310-25	W-95	DW	CONCORD, MA	12/10/16 07:35	12/10/16
L1640310-26	W-96	DW	CONCORD, MA	12/10/16 07:38	12/10/16
L1640310-27	W-97	DW	CONCORD, MA	12/10/16 07:40	12/10/16
L1640310-28	W-98	DW	CONCORD, MA	12/10/16 07:42	12/10/16
L1640310-29	W-99	DW	CONCORD, MA	12/10/16 07:44	12/10/16
L1640310-30	W-100	DW	CONCORD, MA	12/10/16 07:46	12/10/16
L1640310-31	W-101	DW	CONCORD, MA	12/10/16 07:47	12/10/16
L1640310-32	W-102	DW	CONCORD, MA	12/10/16 07:50	12/10/16
L1640310-33	W-103	DW	CONCORD, MA	12/10/16 07:52	12/10/16
L1640310-34	W-104	DW	CONCORD, MA	12/10/16 07:54	12/10/16
L1640310-35	W-105	DW	CONCORD, MA	12/10/16 07:56	12/10/16
L1640310-36	W-106	DW	CONCORD, MA	12/10/16 07:58	12/10/16
L1640310-37	W-107	DW	CONCORD, MA	12/10/16 08:00	12/10/16
L1640310-38	W-108	DW	CONCORD, MA	12/10/16 08:02	12/10/16
L1640310-39	W-109	DW	CONCORD, MA	12/10/16 08:05	12/10/16
L1640310-40	W-110	DW	CONCORD, MA	12/10/16 08:07	12/10/16

Project Name: CONCORD SCHOOLS
Project Number: Not Specified

Lab Number: L1640310
Report Date: 12/20/16

Case Narrative

The samples were received in accordance with the Chain of Custody and no significant deviations were encountered during the preparation or analysis unless otherwise noted. Sample Receipt, Container Information, and the Chain of Custody are located at the back of the report.

Results contained within this report relate only to the samples submitted under this Alpha Lab Number and meet NELAP requirements for all NELAP accredited parameters unless otherwise noted in the following narrative. The data presented in this report is organized by parameter (i.e. VOC, SVOC, etc.). Sample specific Quality Control data (i.e. Surrogate Spike Recovery) is reported at the end of the target analyte list for each individual sample, followed by the Laboratory Batch Quality Control at the end of each parameter. Tentatively Identified Compounds (TICs), if requested, are reported for compounds identified to be present and are not part of the method/program Target Compound List, even if only a subset of the TCL are being reported. If a sample was re-analyzed or re-extracted due to a required quality control corrective action and if both sets of data are reported, the Laboratory ID of the re-analysis or re-extraction is designated with an "R" or "RE", respectively. When multiple Batch Quality Control elements are reported (e.g. more than one LCS), the associated samples for each element are noted in the grey shaded header line of each data table. Any Laboratory Batch, Sample Specific % recovery or RPD value that is outside the listed Acceptance Criteria is bolded in the report. All specific QC information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications. Soil/sediments, solids and tissues are reported on a dry weight basis unless otherwise noted. Definitions of all data qualifiers and acronyms used in this report are provided in the Glossary located at the back of the report.

In reference to questions H (CAM) or 4 (RCP) when "NO" is checked, the performance criteria for CAM and RCP methods allow for some quality control failures to occur and still be within method compliance. In these instances the specific failure is not narrated but noted in the associated QC table. The information is also incorporated in the Data Usability format of our Data Merger tool where it can be reviewed along with any associated usability implications.

Please see the associated ADEx data file for a comparison of laboratory reporting limits that were achieved with the regulatory Numerical Standards requested on the Chain of Custody.

HOLD POLICY

For samples submitted on hold, Alpha's policy is to hold samples (with the exception of Air canisters) free of charge for 21 calendar days from the date the project is completed. After 21 calendar days, we will dispose of all samples submitted including those put on hold unless you have contacted your Client Service Representative and made arrangements for Alpha to continue to hold the samples. Air canisters will be disposed after 3 business days from the date the project is completed.

Please contact Client Services at 800-624-9220 with any questions.

Project Name: CONCORD SCHOOLS
Project Number: Not Specified

Lab Number: L1640310
Report Date: 12/20/16

Case Narrative (continued)

Sample Receipt

L1640310-13: The sample was received above the appropriate pH for the Metals analysis. The laboratory added HNO₃ to a pH <2.

I, the undersigned, attest under the pains and penalties of perjury that, to the best of my knowledge and belief and based upon my personal inquiry of those responsible for providing the information contained in this analytical report, such information is accurate and complete. This certificate of analysis is not complete unless this page accompanies any and all pages of this report.

Authorized Signature:

 Melissa Cripps

Title: Technical Director/Representative

Date: 12/20/16

METALS

Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-21

Date Collected: 12/10/16 07:27

Client ID: W-91

Date Received: 12/10/16

Sample Location: CONCORD, MA

Field Prep: Not Specified

Matrix: Dw

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.7126		mg/l	0.00100	—	1	12/16/16 12:10	12/17/16 14:50	EPA 3005A	3,200.8	BV
Lead, Total	ND		mg/l	0.00100	—	1	12/16/16 12:10	12/17/16 14:50	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS
Project Number: Not Specified

Lab Number: L1640310
Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-22
Client ID: W-92
Sample Location: CONCORD, MA
Matrix: Dw

Date Collected: 12/10/16 07:29
Date Received: 12/10/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.5534		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 14:57	EPA 3005A	3,200.8	BV
Lead, Total	ND		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 14:57	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-23

Date Collected: 12/10/16 07:31

Client ID: W-93

Date Received: 12/10/16

Sample Location: CONCORD, MA

Field Prep: Not Specified

Matrix: Dw

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.5897		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:00	EPA 3005A	3,200.8	BV
Lead, Total	ND		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:00	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-24

Date Collected: 12/10/16 07:33

Client ID: W-94

Date Received: 12/10/16

Sample Location: CONCORD, MA

Field Prep: Not Specified

Matrix: Dw

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.6382		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:08	EPA 3005A	3,200.8	BV
Lead, Total	0.00135		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:08	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-25

Date Collected: 12/10/16 07:35

Client ID: W-95

Date Received: 12/10/16

Sample Location: CONCORD, MA

Field Prep: Not Specified

Matrix: Dw

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.4032		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:10	EPA 3005A	3,200.8	BV
Lead, Total	ND		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:10	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-26

Date Collected: 12/10/16 07:38

Client ID: W-96

Date Received: 12/10/16

Sample Location: CONCORD, MA

Field Prep: Not Specified

Matrix: Dw

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.6027		mg/l	0.00100	—	1	12/16/16 12:10	12/17/16 15:13	EPA 3005A	3,200.8	BV
Lead, Total	ND		mg/l	0.00100	—	1	12/16/16 12:10	12/17/16 15:13	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-27

Date Collected: 12/10/16 07:40

Client ID: W-97

Date Received: 12/10/16

Sample Location: CONCORD, MA

Field Prep: Not Specified

Matrix: Dw

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.5418		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:15	EPA 3005A	3,200.8	BV
Lead, Total	ND		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:15	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS
Project Number: Not Specified

Lab Number: L1640310
Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-28
Client ID: W-98
Sample Location: CONCORD, MA
Matrix: Dw

Date Collected: 12/10/16 07:42
Date Received: 12/10/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.7325		mg/l	0.00100	—	1	12/16/16 12:10	12/17/16 15:18	EPA 3005A	3,200.8	BV
Lead, Total	0.00105		mg/l	0.00100	—	1	12/16/16 12:10	12/17/16 15:18	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-29

Date Collected: 12/10/16 07:44

Client ID: W-99

Date Received: 12/10/16

Sample Location: CONCORD, MA

Field Prep: Not Specified

Matrix: Dw

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.5934		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:21	EPA 3005A	3,200.8	BV
Lead, Total	ND		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:21	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS
Project Number: Not Specified

Lab Number: L1640310
Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-30
Client ID: W-100
Sample Location: CONCORD, MA
Matrix: Dw

Date Collected: 12/10/16 07:46
Date Received: 12/10/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.8594		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:23	EPA 3005A	3,200.8	BV
Lead, Total	ND		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:23	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS
Project Number: Not Specified

Lab Number: L1640310
Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-31
Client ID: W-101
Sample Location: CONCORD, MA
Matrix: Dw

Date Collected: 12/10/16 07:47
Date Received: 12/10/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.8462		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:26	EPA 3005A	3,200.8	BV
Lead, Total	ND		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:26	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-32

Date Collected: 12/10/16 07:50

Client ID: W-102

Date Received: 12/10/16

Sample Location: CONCORD, MA

Field Prep: Not Specified

Matrix: Dw

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.9138		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:39	EPA 3005A	3,200.8	BV
Lead, Total	ND		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:39	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-33

Date Collected: 12/10/16 07:52

Client ID: W-103

Date Received: 12/10/16

Sample Location: CONCORD, MA

Field Prep: Not Specified

Matrix: Dw

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.5281		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:42	EPA 3005A	3,200.8	BV
Lead, Total	ND		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:42	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS
Project Number: Not Specified

Lab Number: L1640310
Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-34
Client ID: W-104
Sample Location: CONCORD, MA
Matrix: Dw

Date Collected: 12/10/16 07:54
Date Received: 12/10/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.7162		mg/l	0.00100	—	1	12/16/16 12:10	12/17/16 15:44	EPA 3005A	3,200.8	BV
Lead, Total	ND		mg/l	0.00100	—	1	12/16/16 12:10	12/17/16 15:44	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS
Project Number: Not Specified

Lab Number: L1640310
Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-35
Client ID: W-105
Sample Location: CONCORD, MA
Matrix: Dw

Date Collected: 12/10/16 07:56
Date Received: 12/10/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.5658		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:47	EPA 3005A	3,200.8	BV
Lead, Total	0.00219		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:47	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-36

Date Collected: 12/10/16 07:58

Client ID: W-106

Date Received: 12/10/16

Sample Location: CONCORD, MA

Field Prep: Not Specified

Matrix: Dw

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.5204		mg/l	0.00100	—	1	12/16/16 12:10	12/17/16 15:50	EPA 3005A	3,200.8	BV
Lead, Total	0.00103		mg/l	0.00100	—	1	12/16/16 12:10	12/17/16 15:50	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-37

Date Collected: 12/10/16 08:00

Client ID: W-107

Date Received: 12/10/16

Sample Location: CONCORD, MA

Field Prep: Not Specified

Matrix: Dw

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.7855		mg/l	0.00100	—	1	12/16/16 12:10	12/17/16 15:52	EPA 3005A	3,200.8	BV
Lead, Total	ND		mg/l	0.00100	—	1	12/16/16 12:10	12/17/16 15:52	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-38

Date Collected: 12/10/16 08:02

Client ID: W-108

Date Received: 12/10/16

Sample Location: CONCORD, MA

Field Prep: Not Specified

Matrix: Dw

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.8720		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:55	EPA 3005A	3,200.8	BV
Lead, Total	0.00237		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:55	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS
Project Number: Not Specified

Lab Number: L1640310
Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-39
Client ID: W-109
Sample Location: CONCORD, MA
Matrix: Dw

Date Collected: 12/10/16 08:05
Date Received: 12/10/16
Field Prep: Not Specified

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	1.051		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:58	EPA 3005A	3,200.8	BV
Lead, Total	ND		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 15:58	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

SAMPLE RESULTS

Lab ID: L1640310-40

Date Collected: 12/10/16 08:07

Client ID: W-110

Date Received: 12/10/16

Sample Location: CONCORD, MA

Field Prep: Not Specified

Matrix: Dw

Parameter	Result	Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Prep Method	Analytical Method	Analyst
Total Metals - Mansfield Lab											
Copper, Total	0.5582		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 16:00	EPA 3005A	3,200.8	BV
Lead, Total	ND		mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 16:00	EPA 3005A	3,200.8	BV



Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

Method Blank Analysis Batch Quality Control

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 21-40 Batch: WG961906-1									
Copper, Total	ND	mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 14:46	3,200.8	BV
Lead, Total	ND	mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 14:46	3,200.8	BV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 01-12,14-20 Batch: WG962114-1									
Copper, Total	ND	mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 13:35	3,200.8	BV
Lead, Total	ND	mg/l	0.00100	--	1	12/16/16 12:10	12/17/16 13:35	3,200.8	BV

Prep Information

Digestion Method: EPA 3005A

Parameter	Result Qualifier	Units	RL	MDL	Dilution Factor	Date Prepared	Date Analyzed	Analytical Method	Analyst
Total Metals - Mansfield Lab for sample(s): 13 Batch: WG963051-1									
Copper, Total	ND	mg/l	0.0010	--	1	12/20/16 13:45	12/20/16 16:32	3,200.8	AM
Lead, Total	ND	mg/l	0.0010	--	1	12/20/16 13:45	12/20/16 16:32	3,200.8	AM

Prep Information

Digestion Method: EPA 3005A



Lab Control Sample Analysis Batch Quality Control

Project Name: CONCORD SCHOOLS
Project Number: Not Specified

Lab Number: L1640310
Report Date: 12/20/16

Parameter	LCS %Recovery	Qual	LCS %Recovery	Qual	%Recovery Limits	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 21-40 Batch: WG961906-2								
Copper, Total	105		-		85-115	-		
Lead, Total	105		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 01-12,14-20 Batch: WG962114-2								
Copper, Total	104		-		85-115	-		
Lead, Total	104		-		85-115	-		
Total Metals - Mansfield Lab Associated sample(s): 13 Batch: WG963051-2								
Copper, Total	105		-		85-115	-		
Lead, Total	97		-		85-115	-		

Matrix Spike Analysis Batch Quality Control

Project Name: CONCORD SCHOOLS

Project Number: Not Specified

Lab Number: L1640310

Report Date: 12/20/16

Parameter	Native Sample	MS Added	MS Found	MS %Recovery	MSD Found	MSD %Recovery	Recovery Limits	RPD Qual	RPD Limits
-----------	---------------	----------	----------	--------------	-----------	---------------	-----------------	----------	------------

Total Metals - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG961906-3 QC Sample: L1640310-21 Client ID: W-91

Copper, Total	0.7126	0.25	0.927	86	-	-	70-130	-	20
Lead, Total	ND	0.51	0.542	106	-	-	70-130	-	20

Total Metals - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG961906-5 QC Sample: L1640310-31 Client ID: W-101

Copper, Total	0.8462	0.25	1.06	86	-	-	70-130	-	20
Lead, Total	ND	0.51	0.528	104	-	-	70-130	-	20

Total Metals - Mansfield Lab Associated sample(s): 01-12, 14-20 QC Batch ID: WG962114-3 QC Sample: L1640310-01 Client ID: T-71

Copper, Total	0.5495	0.25	0.7662	87	-	-	70-130	-	20
Lead, Total	0.00125	0.51	0.5257	103	-	-	70-130	-	20

Total Metals - Mansfield Lab Associated sample(s): 01-12, 14-20 QC Batch ID: WG962114-5 QC Sample: L1640310-11 Client ID: T-81

Copper, Total	0.6058	0.25	0.8404	94	-	-	70-130	-	20
Lead, Total	ND	0.51	0.5309	104	-	-	70-130	-	20

Total Metals - Mansfield Lab Associated sample(s): 13 QC Batch ID: WG963051-3 QC Sample: L1640310-13 Client ID: T-83

Copper, Total	0.5416	0.25	0.7187	71	-	-	70-130	-	20
Lead, Total	ND	0.51	0.4983	98	-	-	70-130	-	20

Lab Duplicate Analysis

Batch Quality Control

Project Name: CONCORD SCHOOLS
Project Number: Not Specified

Lab Number: L1640310
Report Date: 12/20/16

Parameter	Native Sample		Duplicate Sample		Units	RPD	Qual	RPD Limits
Total Metals - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG961906-4 QC Sample: L1640310-21 Client ID: W-91								
Copper, Total	0.7126		0.7008		mg/l	2		20
Lead, Total	ND		ND		mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 21-40 QC Batch ID: WG961906-6 QC Sample: L1640310-31 Client ID: W-101								
Copper, Total	0.8462		0.8583		mg/l	1		20
Lead, Total	ND		ND		mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 01-12,14-20 QC Batch ID: WG962114-4 QC Sample: L1640310-01 Client ID: T-71								
Copper, Total	0.5495		0.5417		mg/l	1		20
Lead, Total	0.00125		0.00116		mg/l	7		20
Total Metals - Mansfield Lab Associated sample(s): 01-12,14-20 QC Batch ID: WG962114-6 QC Sample: L1640310-11 Client ID: T-81								
Copper, Total	0.6058		0.6350		mg/l	5		20
Lead, Total	ND		ND		mg/l	NC		20
Total Metals - Mansfield Lab Associated sample(s): 13 QC Batch ID: WG963051-4 QC Sample: L1640310-13 Client ID: T-83								
Copper, Total	0.5416		0.5294		mg/l	2		20
Lead, Total	ND		ND		mg/l	NC		20

Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

Sample Receipt and Container Information

Were project specific reporting limits specified? YES

Cooler Information Custody Seal

Cooler

A Absent

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1640310-01A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-02A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-03A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-04A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-05A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-06A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-07A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-08A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-09A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-10A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-11A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-12A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-13A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-14A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-15A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-16A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-17A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-18A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-19A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-20A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-21A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-22A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-23A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-24A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-25A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-26A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-27A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-28A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-29A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)

*Values in parentheses indicate holding time in days



Project Name: CONCORD SCHOOLS

Project Number: Not Specified

Lab Number: L1640310

Report Date: 12/20/16

Container Information

Container ID	Container Type	Cooler	pH	Temp deg C	Pres	Seal	Analysis(*)
L1640310-30A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-31A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-32A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-33A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-34A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-35A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-36A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-37A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-38A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-39A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)
L1640310-40A	Plastic 250ml HNO3 preserved	A	<2	3.0	Y	Absent	CU-2008T(180),PB-2008T(180)

*Values in parentheses indicate holding time in days



Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

GLOSSARY

Acronyms

EDL	- Estimated Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The EDL includes any adjustments from dilutions, concentrations or moisture content, where applicable. The use of EDLs is specific to the analysis of PAHs using Solid-Phase Microextraction (SPME).
EPA	- Environmental Protection Agency.
LCS	- Laboratory Control Sample: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
LCSD	- Laboratory Control Sample Duplicate: Refer to LCS.
LFB	- Laboratory Fortified Blank: A sample matrix, free from the analytes of interest, spiked with verified known amounts of analytes or a material containing known and verified amounts of analytes.
MDL	- Method Detection Limit: This value represents the level to which target analyte concentrations are reported as estimated values, when those target analyte concentrations are quantified below the reporting limit (RL). The MDL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
MS	- Matrix Spike Sample: A sample prepared by adding a known mass of target analyte to a specified amount of matrix sample for which an independent estimate of target analyte concentration is available.
MSD	- Matrix Spike Sample Duplicate: Refer to MS.
NA	- Not Applicable.
NC	- Not Calculated: Term is utilized when one or more of the results utilized in the calculation are non-detect at the parameter's reporting unit.
NDPA/DPA	- N-Nitrosodiphenylamine/Diphenylamine.
NI	- Not Ignitable.
NP	- Non-Plastic: Term is utilized for the analysis of Atterberg Limits in soil.
RL	- Reporting Limit: The value at which an instrument can accurately measure an analyte at a specific concentration. The RL includes any adjustments from dilutions, concentrations or moisture content, where applicable.
RPD	- Relative Percent Difference: The results from matrix and/or matrix spike duplicates are primarily designed to assess the precision of analytical results in a given matrix and are expressed as relative percent difference (RPD). Values which are less than five times the reporting limit for any individual parameter are evaluated by utilizing the absolute difference between the values; although the RPD value will be provided in the report.
SRM	- Standard Reference Material: A reference sample of a known or certified value that is of the same or similar matrix as the associated field samples.
STLP	- Semi-dynamic Tank Leaching Procedure per EPA Method 1315.
TIC	- Tentatively Identified Compound: A compound that has been identified to be present and is not part of the target compound list (TCL) for the method and/or program. All TICs are qualitatively identified and reported as estimated concentrations.

Footnotes

- 1 - The reference for this analyte should be considered modified since this analyte is absent from the target analyte list of the original method.

Terms

Total: With respect to Organic analyses, a 'Total' result is defined as the summation of results for individual isomers or Aroclors. If a 'Total' result is requested, the results of its individual components will also be reported. This is applicable to 'Total' results for methods 8260, 8081 and 8082.

Analytical Method: Both the document from which the method originates and the analytical reference method. (Example: EPA 8260B is shown as 1,8260B.) The codes for the reference method documents are provided in the References section of the Addendum.

Data Qualifiers

- A** - Spectra identified as "Aldol Condensation Product".
- B** - The analyte was detected above the reporting limit in the associated method blank. Flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For MCP-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank. For DOD-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte at less than ten times (10x) the concentration found in the blank AND the analyte was detected above one-half the reporting limit (or above the reporting limit for common lab contaminants) in the associated method blank. For NJ-Air-related projects, flag only applies to associated field samples that have detectable concentrations of the analyte above the reporting limit. For NJ-related projects (excluding Air), flag only applies to associated field samples that have detectable concentrations of the analyte, which was detected above the reporting limit in the associated method blank or above five times the

Report Format: Data Usability Report



Project Name: CONCORD SCHOOLS

Lab Number: L1640310

Project Number: Not Specified

Report Date: 12/20/16

Data Qualifiers

reporting limit for common lab contaminants (Phthalates, Acetone, Methylene Chloride, 2-Butanone).

- C** - Co-elution: The target analyte co-elutes with a known lab standard (i.e. surrogate, internal standards, etc.) for co-extracted analyses.
- D** - Concentration of analyte was quantified from diluted analysis. Flag only applies to field samples that have detectable concentrations of the analyte.
- E** - Concentration of analyte exceeds the range of the calibration curve and/or linear range of the instrument.
- G** - The concentration may be biased high due to matrix interferences (i.e. co-elution) with non-target compound(s). The result should be considered estimated.
- H** - The analysis of pH was performed beyond the regulatory-required holding time of 15 minutes from the time of sample collection.
- I** - The lower value for the two columns has been reported due to obvious interference.
- M** - Reporting Limit (RL) exceeds the MCP CAM Reporting Limit for this analyte.
- NJ** - Presumptive evidence of compound. This represents an estimated concentration for Tentatively Identified Compounds (TICs), where the identification is based on a mass spectral library search.
- P** - The RPD between the results for the two columns exceeds the method-specified criteria.
- Q** - The quality control sample exceeds the associated acceptance criteria. For DOD-related projects, LCS and/or Continuing Calibration Standard exceedences are also qualified on all associated sample results. Note: This flag is not applicable for matrix spike recoveries when the sample concentration is greater than 4x the spike added or for batch duplicate RPD when the sample concentrations are less than 5x the RL. (Metals only.)
- R** - Analytical results are from sample re-analysis.
- RE** - Analytical results are from sample re-extraction.
- S** - Analytical results are from modified screening analysis.
- J** - Estimated value. This represents an estimated concentration for Tentatively Identified Compounds (TICs).
- ND** - Not detected at the reporting limit (RL) for the sample.

Report Format: Data Usability Report



Project Name: CONCORD SCHOOLS
Project Number: Not Specified

Lab Number: L1640310
Report Date: 12/20/16

REFERENCES

- 3 Methods for the Determination of Metals in Environmental Samples, Supplement I. EPA/600/R-94/111. May 1994.

LIMITATION OF LIABILITIES

Alpha Analytical performs services with reasonable care and diligence normal to the analytical testing laboratory industry. In the event of an error, the sole and exclusive responsibility of Alpha Analytical shall be to re-perform the work at it's own expense. In no event shall Alpha Analytical be held liable for any incidental, consequential or special damages, including but not limited to, damages in any way connected with the use of, interpretation of, information or analysis provided by Alpha Analytical.

We strongly urge our clients to comply with EPA protocol regarding sample volume, preservation, cooling, containers, sampling procedures, holding time and splitting of samples in the field.



Alpha Analytical, Inc.
 Facility: **Company-wide**
 Department: **Quality Assurance**
 Title: **Certificate/Approval Program Summary**

ID No.: **17873**
 Revision 7
 Published Date: 8/5/2016 11:25:56 AM
 Page 1 of 1

Certification Information

The following analytes are not included in our Primary NELAP Scope of Accreditation:

Westborough Facility

EPA 624: m/p-xylene, o-xylene
 EPA 8260C: NPW: 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene, Azobenzene; SCM: Iodomethane (methyl iodide), Methyl methacrylate, 1,2,4,5-Tetramethylbenzene; 4-Ethyltoluene.
 EPA 8270D: NPW: Dimethylnaphthalene, 1,4-Diphenylhydrazine; SCM: Dimethylnaphthalene, 1,4-Diphenylhydrazine.
 EPA 300: DW: Bromide
 EPA 6860: NPW and SCM: Perchlorate
 EPA 9010: NPW and SCM: Amenable Cyanide Distillation
 EPA 9012B: NPW: Total Cyanide
 EPA 9050A: NPW: Specific Conductance
 SM3500: NPW: Ferrous Iron
 SM4500: NPW: Amenable Cyanide, Dissolved Oxygen; SCM: Total Phosphorus, TKN, NO₂, NO₃.
 SM5310C: DW: Dissolved Organic Carbon

Mansfield Facility

SM 2540D: TSS
 EPA 3005A NPW
 EPA 8082A: NPW: PCB: 1, 5, 31, 87, 101, 110, 141, 151, 153, 180, 183, 187.
 EPA TO-15: Halothane, 2,4,4-Trimethyl-2-pentene, 2,4,4-Trimethyl-1-pentene, Thiophene, 2-Methylthiophene, 3-Methylthiophene, 2-Ethylthiophene, 1,2,3-Trimethylbenzene, Indan, Indene, 1,2,4,5-Tetramethylbenzene, Benzothiophene, 1-Methylnaphthalene.
 Biological Tissue Matrix: **EPA 3050B**

The following analytes are included in our Massachusetts DEP Scope of Accreditation

Westborough Facility:

Drinking Water

EPA 300.0: Nitrate-N, Fluoride, Sulfate; EPA 353.2: Nitrate-N, Nitrite-N; **SM4500NO3-F**: Nitrate-N, Nitrite-N; **SM4500F-C**, **SM4500CN-CE**, EPA 180.1, **SM2130B**, **SM4500Cl-D**, **SM2320B**, **SM2540C**, **SM4500H-B**
 EPA 332: Perchlorate; EPA 524.2: THMs and VOCs; EPA 504.1: EDB, DBCP.
 Microbiology: **SM9215B**; **SM9223-P/A**, **SM9223B-Colilert-QT**, **SM9222D**.

Non-Potable Water

SM4500H,B, EPA 120.1, **SM2510B**, **SM2540C**, **SM2320B**, **SM4500CL-E**, **SM4500F-BC**, **SM4500NH3-BH**, EPA 350.1: Ammonia-N, **LACHAT 10-107-06-1-B**: Ammonia-N, **SM4500NO3-F**, EPA 353.2: Nitrate-N, EPA 351.1, **SM4500P-E**, **SM4500P-B**, **E**, **SM4500SO4-E**, **SM5220D**, EPA 410.4, **SM5210B**, **SM5310C**, **SM4500CL-D**, EPA 1664, EPA 420.1, **SM4500-CN-CE**, **SM2540D**.
 EPA 624: Volatile Halocarbons & Aromatics,
 EPA 608: Chlordane, Toxaphene, Aldrin, alpha-BHC, beta-BHC, gamma-BHC, delta-BHC, Dieldrin, DDD, DDE, DDT, Endosulfan I, Endosulfan II, Endosulfan sulfate, Endrin, Endrin Aldehyde, Heptachlor, Heptachlor Epoxide, PCBs
 EPA 625: SVOC (Acid/Base/Neutral Extractables), EPA 600/4-81-045: PCB-Oil.
 Microbiology: **SM9223B-Colilert-QT**; **Enterolert-QT**, **SM9222D-MF**.

Mansfield Facility:

Drinking Water

EPA 200.7: Ba, Be, Cd, Cr, Cu, Ni, Na, Ca. EPA 200.8: Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Ni, Se, TL. EPA 245.1 Hg.

Non-Potable Water

EPA 200.7: Al, Sb, As, Be, Cd, Ca, Cr, Co, Cu, Fe, Pb, Mg, Mn, Mo, Ni, K, Se, Ag, Na, Sr, TL, Ti, V, Zn.
 EPA 200.8: Al, Sb, As, Be, Cd, Cr, Cu, Pb, Mn, Ni, Se, Ag, TL, Zn.
 EPA 245.1 Hg.
SM2340B

For a complete listing of analytes and methods, please contact your Alpha Project Manager.

CHAIN OF CUSTODY

PAGE 1 OF 4



8 Wakeup Drive
Mansfield, MA 01561
Tel: 508-335-9220

320 Forbes Blvd
Mansfield, MA 02548
Tel: 508-822-8300

Client Information

Client: Occurrence, Inc.

Address: 44 Woods Ave

Mansfield, MA 02043

Phone: 508 334 9119

Email: info@occurrence.com

Additional Project Information:

Project Information

Project Name: CONCORD SE-SE-13

Project Location: CONCORD, MA

Project #:

Project Manager: JAY McNEIL

ALPHA Quote #: DAVE SANFORD

Turn-Around Time

☒ Standard ☐ RUSH (only confirmed if pre-approved)

Date Due:

Date Rec'd In Lab: 12/10/16

ALPHA Job #: 11624 0310

Report Information - Data Deliverables

☐ ADEX ☒ EMAIL

☐ Same as Client info ☐ PO #: 11054

Regulatory Requirements & Project Information Requirements

☐ Yes ☐ No MA MCP Analytical Methods
☐ Yes ☐ No Matrix Spike Required on this SDG? (Required for MCP Inorganics)
☐ Yes ☐ No GW1 Standards (Info Required for Metals & EPH with Targets)
☐ Yes ☐ No NPDES RGP
☐ Other State / Fed Program

Criteria

ANALYSIS		SAMPLE INFO	
VOC: <input type="checkbox"/> 6260 <input type="checkbox"/> 624 <input type="checkbox"/> 624.2	METALS: <input type="checkbox"/> ABN <input type="checkbox"/> PAH	TPH: <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint	Sample Comments
<input type="checkbox"/> 6260 <input type="checkbox"/> 624 <input type="checkbox"/> 624.2	METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15	EPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	Filtration <input type="checkbox"/> Field <input type="checkbox"/> Lab to do <input type="checkbox"/> Preservation <input type="checkbox"/> Lab to do <input type="checkbox"/>
<input type="checkbox"/> 6260 <input type="checkbox"/> 624 <input type="checkbox"/> 624.2	METALS: <input type="checkbox"/> RCRAS <input type="checkbox"/> RCRAB <input type="checkbox"/> RCP 15	VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	
<input type="checkbox"/> 6260 <input type="checkbox"/> 624 <input type="checkbox"/> 624.2	METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15	TPH: <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint	
<input type="checkbox"/> 6260 <input type="checkbox"/> 624 <input type="checkbox"/> 624.2	METALS: <input type="checkbox"/> ABN <input type="checkbox"/> PAH	EPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	
<input type="checkbox"/> 6260 <input type="checkbox"/> 624 <input type="checkbox"/> 624.2	METALS: <input type="checkbox"/> RCRAS <input type="checkbox"/> RCRAB <input type="checkbox"/> RCP 15	VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	
<input type="checkbox"/> 6260 <input type="checkbox"/> 624 <input type="checkbox"/> 624.2	METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15	TPH: <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint	
<input type="checkbox"/> 6260 <input type="checkbox"/> 624 <input type="checkbox"/> 624.2	METALS: <input type="checkbox"/> ABN <input type="checkbox"/> PAH	EPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	
<input type="checkbox"/> 6260 <input type="checkbox"/> 624 <input type="checkbox"/> 624.2	METALS: <input type="checkbox"/> RCRAS <input type="checkbox"/> RCRAB <input type="checkbox"/> RCP 15	VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	
<input type="checkbox"/> 6260 <input type="checkbox"/> 624 <input type="checkbox"/> 624.2	METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15	TPH: <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint	
<input type="checkbox"/> 6260 <input type="checkbox"/> 624 <input type="checkbox"/> 624.2	METALS: <input type="checkbox"/> ABN <input type="checkbox"/> PAH	EPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only	

ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Time	Sample Matrix	Sampler Initials
40310 61	T-71	12/10/16	6:13	DW	ATM
02	T-72		6:15		
03	T-73		6:16		
04	T-74		6:20		
05	T-75		6:22		
06	T-76		6:26		
07	T-77		6:29		
08	T-78		6:31		
09	T-79		6:35		
10	T-80		6:37		

Container Type
 P= Plastic
 A= Amber glass
 V= Vial
 G= Glass
 B= Bacteria cup
 C= Cube
 O= Other
 E= Encore
 D= BOD Bottle

Preservative
 A= None
 B= HCl
 C= HNO₃
 D= H₂SO₄
 E= NaOH
 F= NaOH
 G= NaHSO₄
 H= Na₂SO₄
 I= Ascorbic Acid
 J= NH₄Cl
 K= Zn Acetate
 O= Other

Relinquished By:

Received By:

Date/Time

Date/Time


All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.

CHAIN OF CUSTODY				PAGE 3 OF 4																																																																																							
Client Information 320 Forbes Blvd Mansfield, MA 02048 Tel: 508-899-9200		Project Information Project Name: CONCOGN SUBS Project Location: CONCOGN MA Project #: Project Manager: JAY McNEPP ALPHA Quote #: DATE SUBMITTERS Turn-Around Time		Date Rec'd in Lab: 12/10/16 ALPHA Job #: 11648310																																																																																							
Client Information Client: OCCURMATH, INC Address: 44 Woods Ave Mansfield, MA 02048 Phone: 508 339 9119 Email: RENTIS@OCCURMATH.COM		Regulatory Requirements & Project Information Requirements <input type="checkbox"/> Yes <input type="checkbox"/> No MA MCP Analytical Methods <input type="checkbox"/> Yes <input type="checkbox"/> No Matrix Spike Required on this SDG? (Required for MCP Inorganics) <input type="checkbox"/> Yes <input type="checkbox"/> No GW1 Standards (Info Required for Metals & EPH with Targets) <input type="checkbox"/> Yes <input type="checkbox"/> No NPDES RGP <input type="checkbox"/> Other State / Fed Program		Billing Information <input type="checkbox"/> ADEX <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> Same as Client Info PO #: 11054																																																																																							
Additional Project Information: <input checked="" type="checkbox"/> Standard <input type="checkbox"/> RUSH (only confirmed if pre-approved) Date Due:																																																																																											
<table border="1"> <thead> <tr> <th>ALPHA Lab ID (Lab Use Only)</th> <th>Sample ID</th> <th>Collection Date</th> <th>Time</th> <th>Sample Matrix</th> <th>Sampler Initials</th> <th>ANALYSIS</th> <th>Criteria</th> </tr> </thead> <tbody> <tr> <td>4010-21</td> <td>W-91</td> <td>12/10/16</td> <td>7:27</td> <td>DW</td> <td>JM</td> <td>VOC: <input type="checkbox"/> 8260 <input type="checkbox"/> 824 <input type="checkbox"/> 524.2 SVOC: <input type="checkbox"/> ABN <input type="checkbox"/> PAH METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15 EPA: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> RCRA8 <input type="checkbox"/> PP13 VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only TPH: <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint</td> <td> SAMPLE INFO <input type="checkbox"/> Filtration <input type="checkbox"/> Field <input type="checkbox"/> Lab to do <input type="checkbox"/> Preservation <input type="checkbox"/> Lab to do </td> </tr> <tr><td>20</td><td>W-92</td><td></td><td>7:29</td><td></td><td></td><td></td><td></td></tr> <tr><td>23</td><td>W-93</td><td></td><td>7:31</td><td></td><td></td><td></td><td></td></tr> <tr><td>24</td><td>W-94</td><td></td><td>7:33</td><td></td><td></td><td></td><td></td></tr> <tr><td>25</td><td>W-95</td><td></td><td>7:35</td><td></td><td></td><td></td><td></td></tr> <tr><td>26</td><td>W-96</td><td></td><td>7:38</td><td></td><td></td><td></td><td></td></tr> <tr><td>27</td><td>W-97</td><td></td><td>7:40</td><td></td><td></td><td></td><td></td></tr> <tr><td>28</td><td>W-98</td><td></td><td>7:42</td><td></td><td></td><td></td><td></td></tr> <tr><td>29</td><td>W-99</td><td></td><td>7:44</td><td></td><td></td><td></td><td></td></tr> <tr><td>30</td><td>W-100</td><td></td><td>7:46</td><td></td><td></td><td></td><td></td></tr> </tbody> </table>				ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Time	Sample Matrix	Sampler Initials	ANALYSIS	Criteria	4010-21	W-91	12/10/16	7:27	DW	JM	VOC: <input type="checkbox"/> 8260 <input type="checkbox"/> 824 <input type="checkbox"/> 524.2 SVOC: <input type="checkbox"/> ABN <input type="checkbox"/> PAH METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15 EPA: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> RCRA8 <input type="checkbox"/> PP13 VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only TPH: <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint	SAMPLE INFO <input type="checkbox"/> Filtration <input type="checkbox"/> Field <input type="checkbox"/> Lab to do <input type="checkbox"/> Preservation <input type="checkbox"/> Lab to do	20	W-92		7:29					23	W-93		7:31					24	W-94		7:33					25	W-95		7:35					26	W-96		7:38					27	W-97		7:40					28	W-98		7:42					29	W-99		7:44					30	W-100		7:46				
ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Time	Sample Matrix	Sampler Initials	ANALYSIS	Criteria																																																																																				
4010-21	W-91	12/10/16	7:27	DW	JM	VOC: <input type="checkbox"/> 8260 <input type="checkbox"/> 824 <input type="checkbox"/> 524.2 SVOC: <input type="checkbox"/> ABN <input type="checkbox"/> PAH METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15 EPA: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> RCRA8 <input type="checkbox"/> PP13 VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only TPH: <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint	SAMPLE INFO <input type="checkbox"/> Filtration <input type="checkbox"/> Field <input type="checkbox"/> Lab to do <input type="checkbox"/> Preservation <input type="checkbox"/> Lab to do																																																																																				
20	W-92		7:29																																																																																								
23	W-93		7:31																																																																																								
24	W-94		7:33																																																																																								
25	W-95		7:35																																																																																								
26	W-96		7:38																																																																																								
27	W-97		7:40																																																																																								
28	W-98		7:42																																																																																								
29	W-99		7:44																																																																																								
30	W-100		7:46																																																																																								
Container Type P= Plastic A= Amber glass V= Vial G= Glass B= Bacteria cup C= Cube O= Other E= Encore D= BOD Bottle		Preservative A= None B= HCl C= HNO ₃ D= H ₂ SO ₄ E= NaOH F= MeOH G= NaHSO ₄ H= Na ₂ S ₂ O ₃ I= Ascorbic Acid J= NH ₄ Cl K= Zn Acetate O= Other		Container Type Preservative																																																																																							
Relinquished By: <i>[Signature]</i> Date/Time: 12/10/16 9:05 AM		Received By: <i>[Signature]</i> Date/Time: 12/10/16 2:45 PM																																																																																									
All samples submitted are subject to Alpha's Terms and Conditions. See reverse side.																																																																																											

CHAIN OF CUSTODY				PAGE <u>4</u> OF <u>4</u>
Alpha 8 Wallup Drive Westboro, MA 01581 Tel: 508-898-9220		320 Forbes Blvd Mansfield, MA 02048 Tel: 508-872-9300		
Client Information Client: <u>OCCEMILITA, INC.</u> Address: <u>44 WOODS AVE</u> <u>MANCHESTER, MA 02048</u> Phone: <u>508 339 9119</u> Email: <u>info@occemilita.com</u>				
Project Information Project Name: <u>CONCRETE SAMPLES</u> Project Location: <u>CONCRETE, MA</u> Project #: _____ Project Manager: <u>JAY McNEEL</u> ALPHA Quote #: <u>DATE SUBMIT</u> Turn-Around Time: _____				
Date Rec'd in Lab: <u>12/10/16</u> ALPHA Job #: <u>6164 0310</u> Report Information - Data Deliverables: <input type="checkbox"/> ADEX <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> Same as Client Info PO #: <u>11054</u> Regulatory Requirements & Project Information Requirements: <input type="checkbox"/> Yes <input type="checkbox"/> No MA MCP Analytical Methods <input type="checkbox"/> Yes <input type="checkbox"/> No CT RCP Analytical Methods <input type="checkbox"/> Yes <input type="checkbox"/> No Matrix Spike Required on this SDG? (Required for MCP Inorganics) <input type="checkbox"/> Yes <input type="checkbox"/> No GW1 Standards (Info Required for Metals & EPH with Targets) <input type="checkbox"/> Yes <input type="checkbox"/> No NPDES RGP <input type="checkbox"/> Other State / Fed Program _____ Criteria _____				
ANALYSIS				
VOC: <input type="checkbox"/> 8260 <input type="checkbox"/> 624 <input type="checkbox"/> 5242 SVOC: <input type="checkbox"/> ABN <input type="checkbox"/> PAH METALS: <input type="checkbox"/> MCP 13 <input type="checkbox"/> MCP 14 <input type="checkbox"/> RCP 15 METALS: <input type="checkbox"/> RCRAS <input type="checkbox"/> RCRAS <input type="checkbox"/> RCRAS EPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only VPH: <input type="checkbox"/> Ranges & Targets <input type="checkbox"/> Ranges Only TPH: <input type="checkbox"/> Quant Only <input type="checkbox"/> Fingerprint SAMPLE INFO <input type="checkbox"/> Filtration <input type="checkbox"/> Field <input type="checkbox"/> Lab to do <input type="checkbox"/> Preservation <input type="checkbox"/> Lab to do				
TOTAL # BOTTLES				
ALPHA Lab ID (Lab Use Only)	Sample ID	Collection Date	Time	Sampler Initials
40710 31	W-101	12/10/16	7:47	DW
72	W-102		7:50	
73	W-103		7:52	
74	W-104		7:54	
75	W-105		7:56	
76	W-106		7:58	
77	W-107		8:00	
78	W-108		8:02	
79	W-109		8:05	
40	W-110		8:07	
Container Type P= Plastic A= Amber glass V= Vial G= Glass B= Bacteria cup C= Cube O= Other E= Encore D= BOD Bottle		Preservative A= None B= HCl C= HNO ₃ D= H ₂ SO ₄ E= NaOH F= MeOH G= NaHSO ₄ H= Na ₂ S ₂ O ₄ I= Ascorbic Acid J= NH ₄ Cl K= Zn Acetate O= Other		
Relinquished By: <u>[Signature]</u> Date/Time: <u>12/10/16 9:55am</u>		Received By: <u>[Signature]</u> Date/Time: <u>12/16/16 09:05</u>		
All samples submitted are subject to Alpha's Terms and Conditions. See reverse side. FORM NO 01-01 (rev. 12-Mar-2012)				

Lead and Copper Rule:

A Quick Reference Guide for Schools and Child Care Facilities that are Regulated Under the Safe Drinking Water Act



This document is designed for schools and child care facilities that meet the definition of a public water system and therefore must comply with the Lead and Copper Rule (LCR) requirements. The guidance contained in this document does not substitute for EPA's regulations, nor is it a regulation itself. This reference guide provides an overview of the requirements but does not contain all of the details you will find in the LCR. Compliance is based on the actual rule language. States and local governments can impose additional requirements.

OVERVIEW OF THE RULE

Schools and child care facilities that have their own water supply and are considered non-transient, non-community water systems (NTNCWSs) are subject to the Lead and Copper Rule (LCR) requirements.

The LCR was developed to protect public health by minimizing lead and copper levels in drinking water. The most common source of lead and copper in drinking water is corrosion of plumbing materials. Plumbing materials that can be made with lead and copper include pipes, solder, fixtures, and faucets.

The LCR established an action level of 0.015 mg/L (15 ppb) for lead and 1.3 mg/L (1300 ppb) for copper based on the 90th percentile level of tap water samples. This means no more than 10 percent of your samples can be above either action level. If lead or copper levels are found above the action levels, it does not signal a violation but can trigger other requirements that include water quality parameter (WQP) monitoring, corrosion control treatment (CCT), source water monitoring/treatment, public education, and lead service line replacement. An explanation of how to calculate the 90th percentile level is provided on page 3 of this guide.

HEALTH RISKS OF LEAD AND COPPER

CHILDREN

Children are especially susceptible to lead and copper exposure because their bodies absorb these metals at higher rates than the average adult. Children younger than six are most at risk due to their rapid rate of growth. Exposure to high levels of lead can cause damage to the brain, red blood cells, and kidneys. Exposure to even low levels of lead can cause low IQ, hearing impairment, reduced attention span, and poor classroom performance. Exposure to high levels of copper can cause stomach and intestinal distress, liver or kidney damage, and complications of Wilson's disease in genetically predisposed people.

Because children spend so much time in school and child care facilities and their bodies are developing rapidly, it is important to provide safe drinking water to avoid health problems linked to lead or copper exposure.

ADULTS

High lead levels in adults have been linked to increased blood-pressure. Pregnant women and their fetuses are especially vulnerable to lead exposure since lead can significantly harm the fetus, causing lower birth weight and slowing down normal mental and physical development.

SOURCES OF LEAD AND COPPER IN DRINKING WATER

When lead and copper are found in tap water it is typically due to leaching from internal plumbing materials. If the water is too corrosive, it can cause lead or copper to leach out of the plumbing materials and enter the drinking water.

The potential for leaching increases the longer the water is in contact with the plumbing components. School water supplies tend to have extended periods of no water use (e.g., overnight, weekends, holidays, summer) that increase the likelihood of elevated lead levels at the tap.

LEAD AND COPPER TAP SAMPLING REQUIREMENTS

KEY POINTS

- "First draw" samples must be collected.
- Samples must be collected after the water has had time to sit in the pipes for at least 6 hours.
- If either action level is exceeded, water quality parameter (WQP) and source water sampling may be required.
- The number of lead and copper or WQP samples collected depends on the daily population served by the school or child care facility (see Table 1).
- Lead and copper samples must be collected every 6 months, unless the system qualifies for reduced monitoring (see Table 2).
- Samples for subsequent rounds of monitoring must be collected from the same sites used in the initial round.

Table 1: Lead and Copper Tap and WQP Tap Monitoring

School or Child Care Facility Daily Population Served	Number of Lead and Copper Tap Sample Sites		Number of WQP Tap Sample Sites	
	Standard	Reduced	Standard	Reduced
10,001 - 50,000	60	30	10	7
3,301 - 10,000	40	20	3	3
501 - 3,300	20	10	2	2
101 - 500	10	5	1	1
≤ 100	5	5	1	1

Table 2: Criteria for Reduced Lead and Copper Tap Monitoring

Can monitor...	If...
Annually	<p>The 90th percentile is less than both action levels (ALs) for 2 consecutive 6-month monitoring periods; or</p> <p>Optimal water quality parameter specifications are met for 2 consecutive 6-month monitoring periods and the primacy agency approves.</p>
Triennially (every 3 years)	<p>The 90th percentile is less than both ALs for 3 consecutive years of monitoring; or optimal water quality parameter specifications are met for 3 consecutive years of monitoring and the primacy agency approves; or</p> <p>The 90th percentile lead levels are ≤ 0.005 mg/L and 90th percentile copper levels are ≤ 0.65 mg/L; or</p> <p>The system is deemed to have optimized corrosion control by meeting the copper action level and showing:</p> <ul style="list-style-type: none"> • for 2 consecutive 6-month periods that the difference between the lead 90th percentile tap water level and the highest lead source water sample is less than the Practical Quantitation Limit for lead; or • the highest source water lead level is below the Method Detection Level and the 90th percentile tap water lead level is ≤ the Practical Quantitation Limit for lead for 2 consecutive 6-month periods.
Once every 9 years	The school or child care facility population is ≤ 3,300, the system meets monitoring waiver criteria, and a waiver is approved by the primacy agency.

CALCULATING THE 90TH PERCENTILE FOR LEAD AND COPPER

If you collect 5 samples...	rank the results from the lowest to the highest value, and then average the two highest results. This value is the 90 th percentile.
If you collect 10 samples...	rank the results from the lowest to the highest value, numbering each from 1 to 10. The 9 th value is the 90 th percentile.
If you collect 20 or more samples...	rank the results from the lowest to the highest value, numbering each from 1 up to the number of samples taken. Multiply the number of samples taken by 0.9. The resulting number is the value that is the 90 th percentile. <i>Example calculation:</i> 20 samples x 0.9 = 18. The 18 th value in a ranked set of sample values is the 90 th percentile.

COMPLIANCE REQUIREMENTS IF ACTION LEVEL IS EXCEEDED

KEY POINTS

Four compliance areas must be addressed within certain time frames following an action level exceedance:

- Public education
- Water quality parameter (WQP) monitoring
- Source water monitoring and source water treatment
- Corrosion control treatment (CCT)

Contact your primacy agency in the event of an action level exceedance to ensure you follow the required steps. Failure to do so may result in a compliance violation.

Public Education within 60 Days

When the AL for lead is exceeded, a water system must issue public education print materials (no public education is required if only the copper AL is exceeded). (See Appendix A for an example public education poster.)

- Display informational posters on lead in drinking water in a public place or common area in each of the buildings served by the system; and
- Distribute informational pamphlets and/or brochures on lead in drinking water to each person served by the system.

You have the option of using the alternative mandatory language provided in §141.85(a)(2) or using the original language now contained in §141.85(a)(1). You do not need State approval before using this alternative language.

Public Education Requirement	Poster	Pamphlet	Compliance Letter to State
Within 60 days of exceedance ¹	✓	✓	
Every 12 months for as long as exceedance occurs	✓	✓	
Within 10 days after the end of each period in which public education was required			✓

¹Applies first time action level is exceeded, and applies any subsequent time that a system exceeds the lead action level when it is not already providing public education.

Water Quality Parameter Sampling within same Lead and Copper monitoring period

Collect water quality parameter (WQP) tap samples.

- See Table 1 for number of samples required.
- WQP samples are collected at taps and at each entry point to the distribution system.
- WQPs include: pH, alkalinity, calcium, and in the initial sample, conductivity and temperature as well. If treatment is currently installed, other parameters may also be included depending on the treatment type.
- After follow-up monitoring, the primacy agency will set a range of optimal WQPs.

Entry Point to Distribution System Monitoring within 6 months	<p>System must:</p> <ul style="list-style-type: none"> Collect samples at each entry point to the distribution system. (You may want to use the same sampling points designated for chemical sampling – check with your primacy agency.) Make a recommendation for source water treatment.
Corrosion Control Treatment	<p>within 6 months: Recommend optimal corrosion control treatment.</p> <p>within 18 months: Complete corrosion control treatment study if required by primacy agency.</p> <p>within 24 months: Install corrosion control treatment after primacy agencies has determined appropriate treatment.</p> <p>within 36 months: Monitor WQP at entry points for 2 consecutive 6-month periods.</p>
<h2>COMPLIANCE REQUIREMENTS IF ACTION LEVEL EXCEEDANCE CONTINUES</h2>	
KEY POINTS	<p>If the system continues to exceed the AL after installation of corrosion control treatment or source water treatment there are two additional compliance areas:</p> <ul style="list-style-type: none"> Lead service line monitoring Lead service line replacement <p>Contact your primacy agency for further assistance if installation of corrosion control treatment or source water treatment does not end AL exceedances.</p>
<h2>DEFINITIONS</h2>	
90 th Percentile	The highest concentration of lead or copper in tap water that is exceeded by 10 percent of the sites sampled during a monitoring period. This value is compared to the lead action level (AL) to determine whether an AL has been exceeded. (See "Calculating the 90 th Percentile" above for instructions.)
Action Level (AL)	The concentration of lead or copper in tap water which determines whether a system may be required to install corrosion control treatment, collect water quality parameter samples, collect source water samples, replace lead service lines, and/or deliver public education about lead. The action level for lead is 0.015 mg/L or 15 ppb. The action level for copper is 1.3 mg/L or 1300 ppb.
Corrosion Control Treatment (CCT)	Water treatment generally in the form of chemical addition meant to reduce the corrosivity of the water.
Entry Point to the Distribution System	An entry point to the distribution system is a point after any treatment is applied, but before water reaches the first consumer. Because this location is often used for sampling, it is ideal to have a dedicated sampling tap which is inaccessible for drinking purposes.
First Draw Sample	A tap water sample taken after water has been standing motionless in plumbing pipes for a period of time and is collected without flushing the tap. Approximately 8 hours is an ideal amount of time to let the water sit before collecting a first draw sample, a minimum of 6 hours is required.
Method Detection Limit (MDL)	The minimum concentration of a substance that can be measured and reported with 99 percent confidence that the analyte concentration is greater than zero.
Optimal Water Quality Parameters	Ranges or minimums set by the primacy agency that indicate a system's CCT is operating at a level to most effectively minimize lead and copper concentrations at user's taps.
Practical Quantitation Limit (PQL)	The concentration that can be reliably measured within specified limits during routine laboratory operating conditions using approved methods. The PQL for lead is 0.005 mg/L. The PQL for copper is 0.050 mg/L.
Water Quality Parameters (WQPs)	A set of water qualities or characteristics used to help systems and states determine what levels of CCT would work best for the system and whether this treatment is being properly operated and maintained over time. WQPs include: pH, alkalinity, calcium, conductivity, and temperature. If treatment is currently installed, other parameters such as orthophosphate and silica may also be included depending on the treatment type.

LEAD in Drinking Water

HEALTH EFFECTS OF LEAD

Lead is found throughout the environment in lead-based paint, air, soil, household dust, food, certain types of pottery, porcelain and pewter, and water. Lead can pose a significant risk to your health if too much of it enters your body.

Lead builds up in the body over many years and can cause damage to the brain, red blood cells and kidneys. The greatest risk is to young children and pregnant women. Amounts of lead that won't hurt adults can slow down normal mental and physical development of growing bodies. In addition, a child at play often comes into contact with sources of lead contamination—like dirt and dust—that rarely affect an adult. It is important to wash children's hands and toys often, and to try to make sure they only put food in their mouths.



LEAD IN DRINKING WATER

Lead in drinking water, although rarely the sole cause of lead poisoning, can significantly increase a person's total lead exposure, particularly the exposure of infants who drink baby formulas and concentrated juices that are mixed with water. EPA estimates that drinking water can make up 20 percent or more of a person's total exposure to lead.

THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY (EPA) and (a)

are concerned about lead in your drinking water. Some drinking water samples taken from this facility have lead levels above the EPA action level of 15 parts per billion (ppb), or 0.015 milligrams of lead per liter of water (mg/L). Under Federal law we are required to have a program in place to minimize lead in your drinking water by (b).

This program includes:

- 1) Corrosion control treatment (treating the water to make it less likely that lead will dissolve into the water);
- 2) Source water treatment (removing any lead that is in the water at the time it leaves our treatment facility); and
- 3) A public education program.

If you have any questions about how we are carrying out the requirements of the lead regulation please call us at (c).

This poster also explains the simple steps you can take to protect yourself by reducing your exposure to lead in drinking water.

HOW LEAD ENTERS OUR WATER

Lead is unusual among drinking water contaminants in that it seldom occurs naturally in water supplies like rivers and lakes. Lead enters drinking water primarily as a result of the corrosion, or wearing away, of materials containing lead in the water distribution system and household plumbing. These materials include lead-based solder used to join

copper pipe, brass and chrome-plated brass faucets, and in some cases pipes made of lead that connect houses and buildings to water mains (service lines). In 1986, Congress banned the use of lead solder containing greater than 0.2% lead, and restricted the lead content of faucets, pipes and other plumbing materials to 8.0%.

When water stands in lead pipes or plumbing systems containing lead for several hours or more, the lead may dissolve into your drinking water. This means the first water drawn

from the tap in the morning, or later in the afternoon if the water has not been used all day, can contain fairly high levels of lead.

STEPS YOU CAN TAKE to Reduce Exposure to Lead in Drinking Water

1. FLUSH YOUR SYSTEM. Let the water run from the tap before using it for drinking or cooking any time the water in a faucet has gone unused for more than six hours. The longer water resides in plumbing the more lead it may contain. Flushing the tap means running the cold water faucet for about 15-30 seconds. Although toilet flushing or showering flushes water through a portion of the plumbing system, you still need to flush the water in each faucet before using it for drinking or cooking. Flushing tap water is a simple and inexpensive measure you can take to protect your health. It usually uses less than one to two gallons of water.

2. USE ONLY COLD WATER FOR COOKING AND DRINKING. Do not cook with, or drink water from the hot water tap. Hot water can dissolve more lead more quickly than cold water. If you need hot water, draw water from the cold tap and then heat it.

3. USE BOTTLED WATER. The steps described above will reduce the lead concentrations in your drinking water. However, if you are still concerned, you may wish to use bottled water for drinking and cooking.



FOR MORE INFORMATION

YOU CAN CONSULT a variety of sources for additional information:

Your family doctor or pediatrician can perform a blood test for lead and provide you with information about the health effects of lead. State and local government agencies that can be contacted include:

- | | | |
|--|--------|--------|
| (d) | at (e) | can |
| provide you with information about your facility's water supply; and | | |
| (f) | at (g) | or the |
| (h) | at (i) | can |
| provide you with information about the health effects of lead. | | |