ENVIRONMENTAL • GEOTECHNICAL
BUILDING SCIENCES • MATERIALS TESTING

46555 Humboldt Drive
Novi, Michigan 48377
Telephone 248-669-5140
www.atcgroupservices.com

September 11, 2018

Mathew Sam
Detroit Public Schools
1601 Farnsworth
Detroit, Michigan 48202

SUBMITTED VIA EMAIL TO: mathew.sam@detroitk12.org

SUBJECT: **Drinking Water Screening Report**
Emerson Elementary/ Middle School
18240 Huntington
Detroit, Michigan

Dear Mr. Sam:

ATC Group Services, LLC (ATC) is pleased to submit this Drinking Water Screening Report for the subject school. The drinking water samples collected from the school were submitted to Pace Analytical Services, LLC, for Michigan Department of Environmental Quality (MDEQ) Drinking Water Certified lead and copper analysis.

SCOPE OF WORK

At the request of the Detroit Public Schools (DPS), ATC collected drinking water samples as a general screening for copper and lead at the subject school. The water sampling conducted included the sampling of fixtures within teacher's lounges, kitchens, water fountains and pre-k classrooms. One (1) sample was collected at each outlet: a first draw (Primary) sample. The Primary samples were collected from outlets that had been inactive for a minimum of eight to eighteen hours. The fixture inventory locations including the sample locations are shown on the Fixture Inventory Locations Map included under Attachment A and fixture inventory photos including the sample location photos are included in a Fixture Inventory Photo Log under Attachment B.

The drinking water samples were collected in 125 milliliter, wide-mouth sample containers, containing nitric acid (preservative). Each sample container was labeled utilizing a unique coding system that identified: the type of drinking outlet sampled as well as the location.

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The samples were transported under chain of custody to Pace Analytical Services, LLC, located at 5560 Corporate Exchange Ct. SE Grand Rapids, MI for MDEQ drinking water certified lead and copper analysis, using analytical method EPA 200.8 rev 5.4.

FINDINGS

Analytical results indicate that six (6) of the samples analyzed were above the EPA recommended limits of 15 micrograms per liter (ug/L) for lead. None of the samples analyzed were above the EPA recommended limits of 1300 micrograms per liter (ug/L) for copper. The table below summarizes the analytical results for the samples submitted. The laboratory analytical reports and chain of custody are provided in Attachment C.

Table 1 – Water Testing Results (August 24, 2018)

Sample Number	Location	Description	Total Lead (ug/l)	Total Copper (ug/l)
1-Hall-DWF- 2	Across from elevators	left	<1.0 ug/L	417 ug/L
1-Hall-DWF- 3	Across from elevators	right	<1.0 ug/L	248 ug/L
1-111-CF/B- 10	Room 111	Classroom faucet / Bubbler	<1.0 ug/L	278 ug/L
1-110-CF/B- 11	Room 110	Classroom faucet / Bubbler	<1.0 ug/L	169 ug/L
1-109-CF/B- 14	Room 109	Classroom faucet / Bubbler	<1.0 ug/L	197 ug/L
1-107-CF/B-17	Room 107	Classroom faucet / Bubbler	<1.0 ug/L	497 ug/L
1-105-CF/B-20	Room 105	Classroom faucet / Bubbler	4.3 ug/L	984 ug/L
1-104-CF/B-21	Room 104	Classroom faucet / Bubbler	<1.0 ug/L	281 ug/L
1-103-CF/B-24	Room 103	Classroom faucet / Bubbler	<1.0 ug/L	222 ug/L

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Sample Number	Location	Description	Total Lead (ug/l)	Total Copper (ug/l)
1-102-CF/B-25	Room 102	Classroom faucet / Bubbler	<1.0 ug/L	245 ug/L
2-Hall-DWF-27	Next to elevator-2nd floor	left	<1.0 ug/L	296 ug/L
2-Hall-DWF-28	Next to elevator-2nd floor	right	<1.0 ug/L	301 ug/L
2-K-KS-31	Kitchen	3 chamber sink	<1.0 ug/L	301 ug/L
2-K-KS-32	Kitchen	3 chamber sink	<1.0 ug/L	249 ug/L
2-Café-DWF-34	In cafe	Left	<1.0 ug/L	347 ug/L
2-Café-DWF-35	In cafe	Right	<1.0 ug/L	271 ug/L
1-Hall-B-39	Across from 108	Left	1.8 ug/L	71.5 ug/L
1-Hall-B-40	Across from 108	right	2.2 ug/L	51.5 ug/L
1-Hall-B-41	Next to room 116	left	14.1 ug/L	79.7 ug/L
1-Hall-B-42	Next to room 116	right	5.8 ug/L	90.7 ug/L
2-Hall-B-45	Next to 220	Left	**31.3 ug/L**	398 ug/L
2-Hall-B-47	Next to 214	Left	5.0 ug/L	327 ug/L
2-Hall-B-48	Next to 214	right	7.3 ug/L	149 ug/L
2-Hall-B-49	Next to 212	Left	5.3 ug/L	84.1 ug/L
2-Hall-B-51	Next to 201	Left	**58.5 ug/L**	894 ug/L

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Sample Number	Location	Description	Total Lead (ug/l)	Total Copper (ug/l)
2-Hall-B-53	Next to 205	Left	**18.8 ug/L**	33.3 ug/L
2-Hall-B-54	Next to 205	Right	**40.1 ug/L**	168 ug/L
2-Hall-B-55	Across from 213	Left	**53.7 ug/L**	540 ug/L
2-Hall-B-56	Across from 213	Right	**32.5 ug/L**	501 ug/L
1-Hall-B-59	Across from auditorium	Left	9.3 ug/L	323 ug/L
1-Hall-B-60	Across from auditorium	Right	7.3 ug/L	237 ug/L
1-Hall-B-63	Across form room 201	Left	3.6 ug/L	153 ug/L

Key: NA - Not Analyzed

ug/L- micrograms per liter /parts per billion (ppb)

Analysis of samples of the left bubbler next to room 220, the left bubbler next to room 201, both bubblers next to room 205 (2) and both bubblers next to room 213 (2) indicate that lead levels were above the MCL. No samples indicate that copper levels were above the MCL. See recommendations below.

RECOMMENDATIONS

For drinking water fixtures that exceed the MCL after the initial sampling, ATC recommends the following:

1. Implement a plan in accordance with MDEQ Guidance on Drinking Water Sampling for Lead and Copper, April, 2016 Version2; OR
2. Remove fixture from service.
3. Implement a flush plan for fixtures that exceed the MCL of the initial sample according to MDEQ Guidance and the EPA's 3T's for Reducing Lead in Drinking Water in Schools.

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LIMITATIONS

The sampling and analysis completed was: a preliminary screening for lead and copper only, to assess lead and copper concentrations (ug/L) at drinking water outlets in the school designated as high use by DPS, and may not be representative of all drinking water outlets within the school. If lead or copper concentrations were identified above their respective MCL's at any of the drinking water outlets tested, further review of the plumping system, fixtures affected, and testing may be completed to assess the source of the elevated levels of lead and/or copper, as well as, any other response actions deemed necessary by DPS.

Future drinking water evaluation and sampling in accordance with the recommendations may be predicated on applicable guidelines by the MDEQ or EPA and will be determined prior to developing a sampling plan for the school.

Sincerely,

ATC Group Services, LLC

Martin K. Gamble
Senior Project Manager

Robert C. Smith
Building Science Department Manager

Attachments

Attachment A: Fixture Inventory Locations Map/Form
Attachment B: Fixture Inventory Photo Log
Attachment C: Laboratory Analytical Report

School Name: Emerson Elementary/ Middle School

Address 18240 Huntington

Fixture Identification	Fixture Location	Fixture Description	Photo #
1-MO-SRF- 1	Main office	Staff sink	1
1-Hall-DWF- 2	Across from elevators	left	2
1-Hall-DWF- 3	Across from elevators	right	3
1-SL-SRF- 4	Staff lounge	Staff sink	4
1-K-KS- 5	Kitchen	3 chamber sink	5
1-K-KS- 6	Kitchen	3 chamber sink	6
1-K-KS- 7	Kitchen	Dishwasher	7
1-K-KS- 8	Kitchen	hand sink	8
1-111-CF- 9	Room 111	Classroom faucet	9
1-111-CF/B- 10	Room 111	Classroom faucet / Bubbler	10
1-110-CF/B- 11	Room 110	Classroom faucet / Bubbler	11
1-110-CF- 12	Room 110	Classroom faucet	12

1-109-CF- 13	Room 109	Classroom faucet	13
1-109-CF/B- 14	Room 109	Classroom faucet / Bubbler	14
1-108-CF- 15	Room 108	Classroom faucet	15
1-108-CF/B- 16	Room 108	Classroom faucet / Bubbler	16
1-107-CF/B-17	Room 107	Classroom faucet / Bubbler	17
1-107-CF-18	Room 107	Classroom faucet	18
1-105-CF-19	Room 105	Classroom faucet	19
1-105-CF/B-20	Room 105	Classroom faucet / Bubbler	20
1-104-CF/B-21	Room 104	Classroom faucet / Bubbler	21
1-104-CF-22	Room 104	Classroom faucet	22
1-103-CF-23	Room 103	Classroom faucet	23
1-103-CF/B-24	Room 103	Classroom faucet / Bubbler	24
1-102-CF/B-25	Room 102	Classroom faucet / Bubbler	25
1-102-CF-26	Room 102	Classroom faucet	26
2-Hall-DWF-27	Next to elevator-2nd floor	left	27
2-Hall-DWF-28	Next to elevator-2nd floor	right	28
2-SL-SRF-29	Staff lounge - 2nd floor	Staff sink	29
2-K-KS-30	Kitchen	hand sink	30
2-K-KS-31	Kitchen	3 chamber sink	31
2-K-KS-32	Kitchen	3 chamber sink	32
2-K-KS-33	Kitchen	Dishwasher	33
2-Café-DWF-34	In cafe	left	34
2-Café-DWF-35	In cafe	right	35
2-Hall-DWF-36	Across form room 208	left	36
2-Hall-DWF-37	Across form room 208	right	37
1-MO-SRF-38	Main office	Staff sink	38
1-Hall-B-39	Across from 108	left	39
1-Hall-B-40	GAcross from 108	right	40
1-Hall-B-41	Next to room 116	left	41
1-Hall-B-42	Next to room 116	right	42
1-Hall-B-43	Next to 121	left	43
1-Hall-B-44	Next to 121	right	44
2-Hall-B-45	Next to 220	Left	45
2-Hall-B-46	Next to 220	right	46

2-Hall-B-47	Next to 214	Left	47
2-Hall-B-48	Next to 214	right	48
2-Hall-B-49	Next to 212	Left	49
2-Hall-B-50	Next to 212	Right	50
2-Hall-B-51	Next to 201	Left	51
2-Hall-B-52	Next to 201	Right	52
2-Hall-B-53	Next to 205	Left	53
2-Hall-B-54	Next to 205	Right	54
2-Hall-B-55	Across from 213	Left	55
2-Hall-B-56	Across from 213	Right	56
1-121-B-57	Room 121	Left	57
1-121-CF-58	Room 121	Right	58
1-Hall-B-59	Across from auditorium	Left	59
1-Hall-B-60	Across from auditorium	Right	60
1-K-KS-61	Kitchen	3 chamber sink	61
1-K-KS-62	Kitchen	hand sink	62
1-Hall-B-63	Across form room 201	Left	63
1-Hall-B-64	Across form room 201	Right	64

Photo 1: Staff room faucet, located on the 1st floor in the main office.

Photo 2: Drinking water faucet, located on the 1st floor in hallway.

Photo 3: Drinking water faucet, located on the 1st floor in hallway.

Photo 4: Staff room faucet, located on the 1st floor in the staff lounge.

Photo 5: Kitchen sink, located on the 1st floor in kitchen.

Photo 6: Kitchen sink, located on the 1st floor in kitchen.

Photo 7: Kitchen sink, located on the 1st floor in kitchen.

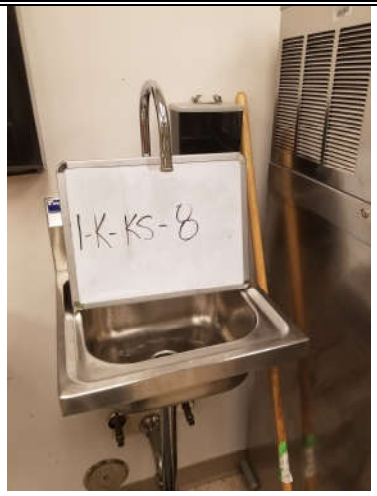

Photo 8: Kitchen sink, located on the 1st floor in kitchen.

Photo 9: Classroom faucet, located on the 1st floor in room 111.

Photo 10: Classroom faucet/bubbler, located on the 1st floor in room 111.

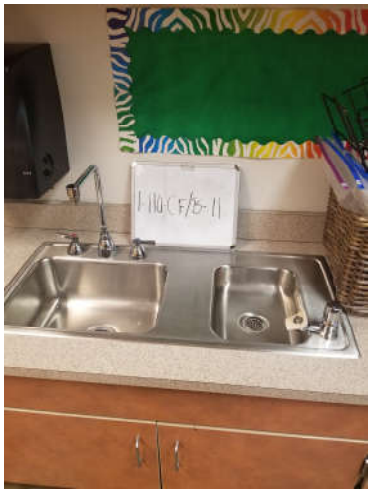

Photo 11: Classroom faucet, located on the 1st floor in room 110.

Photo 12: Classroom faucet/ bubbler, located on the 1st floor in room 110.

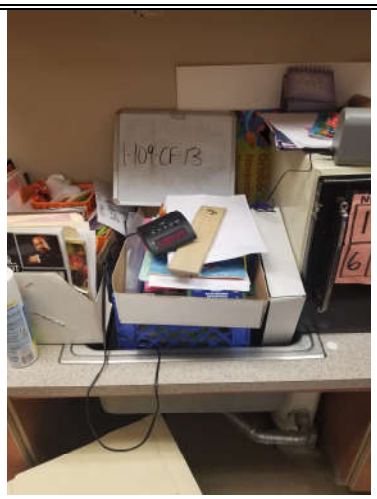

Photo 13: Classroom faucet, located on the 1st floor in room 109.

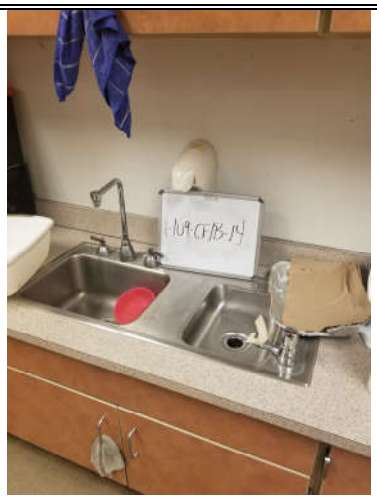

Photo 14: Classroom faucet/bubbler , located on the 1st floor in room 109.

Photo 15: Classroom faucet, located on the 1st floor in room 108.

Photo 16: Classroom faucet/bubbler, located on the 1st floor in room 108.

Photo 17: Classroom faucet/bubbler, located on the 1st floor in room 107.

Photo 18: Classroom faucet, located on the 1st floor in room 107.

Photo 19: Classroom faucet, located on the 1st floor in room 105.

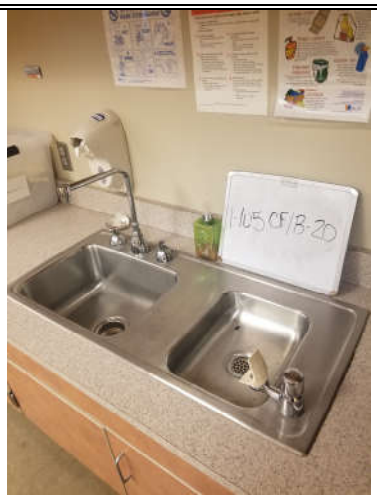

Photo 20: Classroom faucet/bubbler, located on the 1st floor in room 105.

Photo 21: Classroom faucet/bubbler, located on the 1st floor in room 105.

Photo 22: Classroom faucet, located on the 1st floor in room 104.

Photo 23: Classroom faucet, located on the 1st floor in room 103.

Photo 24: Classroom faucet/bubbler, located on the 1st floor in room 103.

Photo 25: Classroom faucet/bubler, located on the 1st floor in room 102.

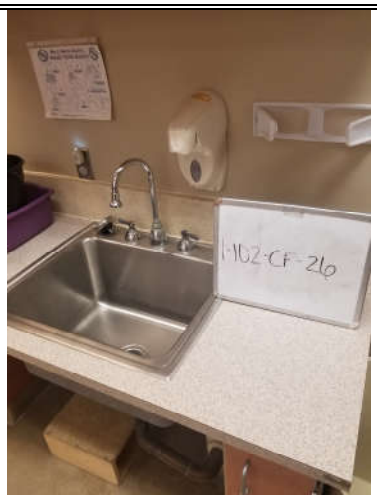

Photo 26: Classroom faucet, located on the 1st floor in room 102.

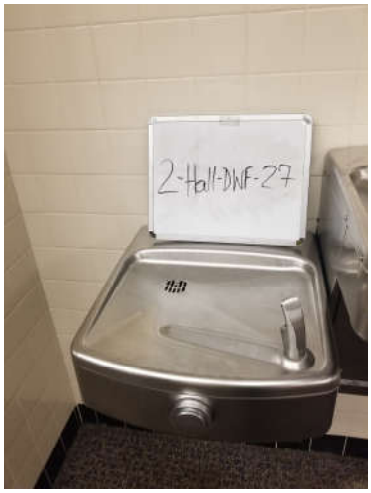

Photo 27: Drinking water faucet, located on the 2nd floor in hallway.

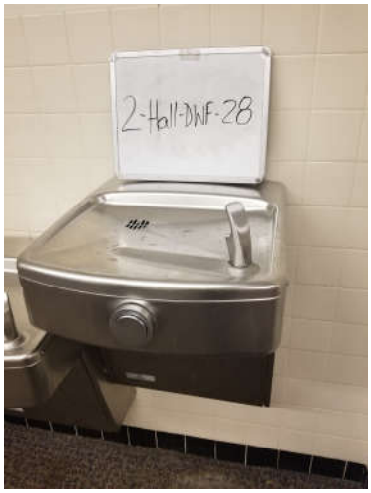

Photo 28: Drinking water faucet, located on the 2nd floor in hallway.

Photo 29: Staff room faucet, located on the 2ndt floor in the staff lounge.

Photo 30: Kitchen sink, located on the 2nd floor in the kitchen.

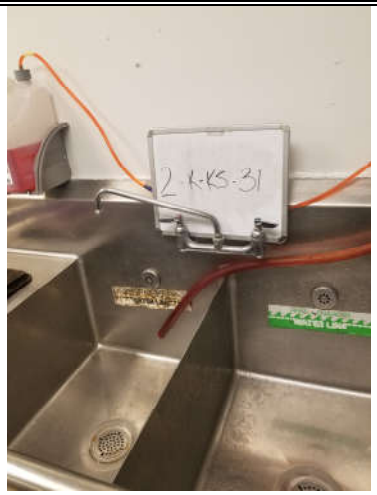

Photo 31: Kitchen sink, located on the 2nd floor in the kitchen.

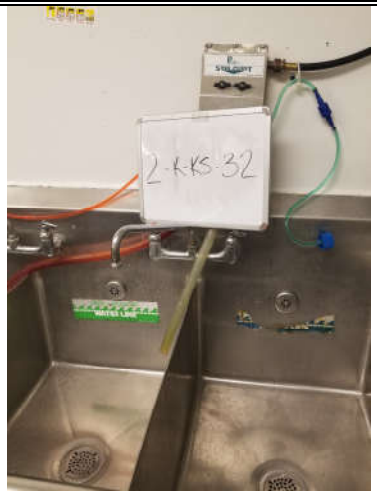

Photo 32: Kitchen sink, located on the 2nd floor in the kitchen.

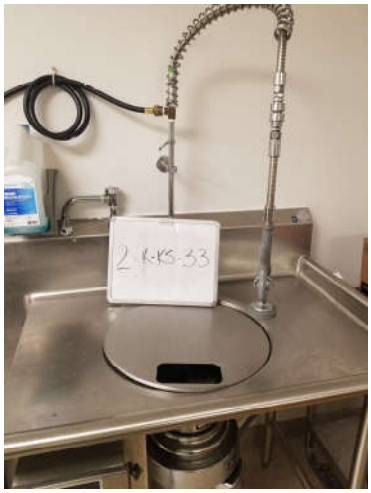

Photo 33: Kitchen sink, located on the 2nd floor in the kitchen.

Photo 34: Drinking water faucet, located on the 2nd floor in cafeteria.

Photo 35: Drinking water faucet, located on the 2nd floor in in cafeteria.

Photo 36: Drinking water faucet, located on the 2nd floor in hallway.

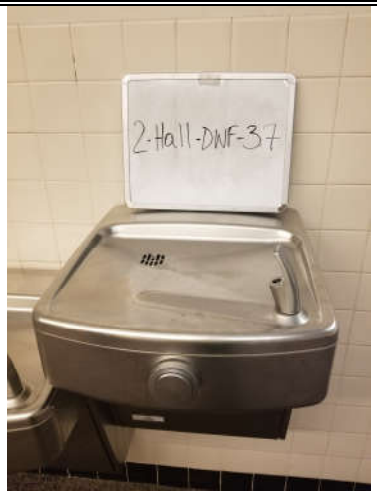

Photo 37: Drinking water faucet, located on the 2nd floor in hallway.

Photo 38: Staff room faucet, located on the 1st floor in the main office.

Photo 39: Bubbler, located on the 1st floor in hallway.

Photo 40: Bubbler, located on the 1st floor in hallway.

Photo 41: Bubbler, located on the 1st floor in hallway.

Photo 42: Bubbler, located on the 1st floor in hallway.

Photo 43: Bubbler, located on the 1st floor in hallway.

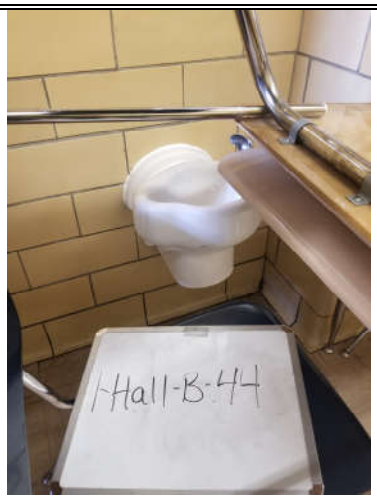

Photo 44: Bubbler, located on the 1st floor in hallway.

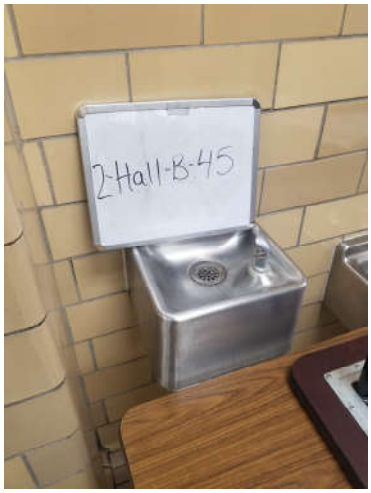

Photo 45: Bubbler, located on the 2nd floor in hallway.

Photo 46: Bubbler, located on the 2nd floor in hallway.

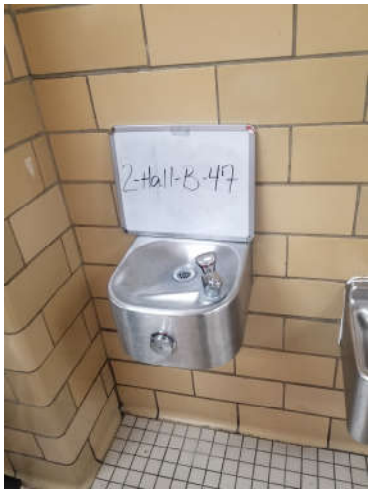

Photo 47: Bubbler, located on the 2nd floor in hallway.

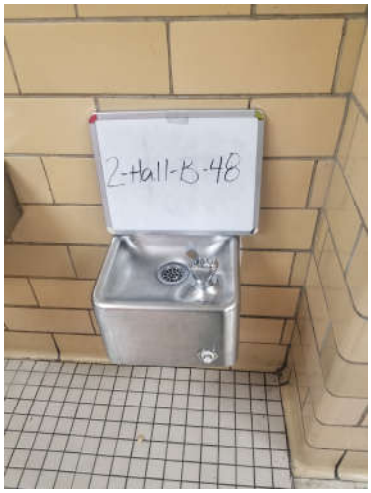

Photo 48: Bubbler, located on the 2nd floor in hallway.

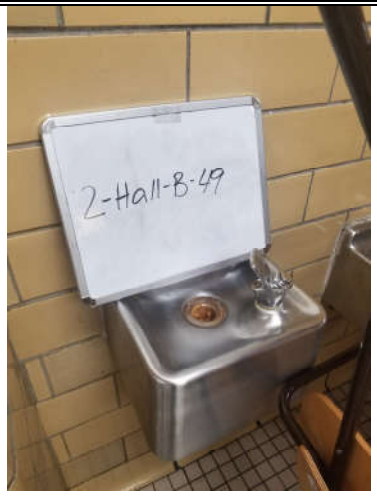

Photo 49: Bubbler, located on the 2nd floor in hallway.

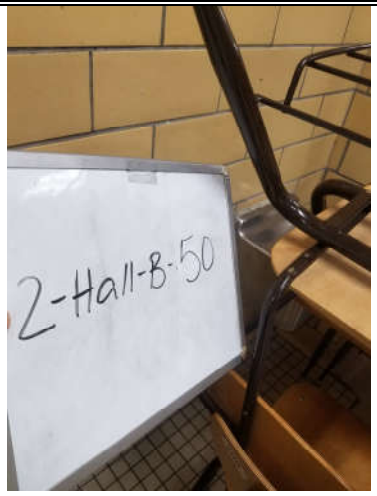

Photo 50: Bubbler, located on the 2nd floor in hallway.

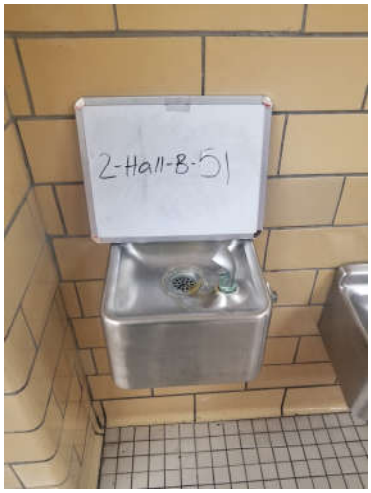

Photo 51: Bubbler, located on the 2nd floor in hallway.

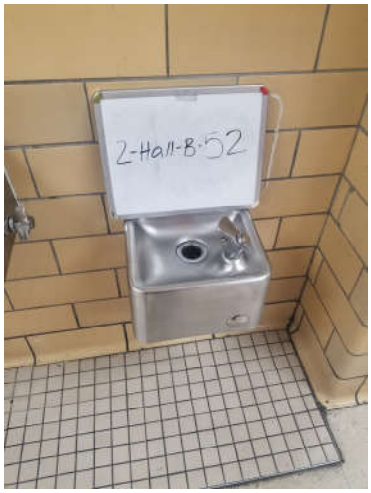

Photo 52: Bubbler, located on the 2nd floor in hallway.

Photo 53: Bubbler, located on the 2nd floor in hallway.

Photo 54: Bubbler, located on the 2nd floor in hallway.

Photo 55: Bubbler, located on the 2nd floor in hallway.

Photo 56: Bubbler, located on the 2nd floor in hallway.

Photo 57: Bubbler, located on the 1st floor in room 121.

Photo 58: Classroom faucet, located on the 1st floor in room 121.

Photo 59: Bubbler, located on the 1st floor in hallway.

Photo 60: Bubbler, located on the 1st floor in hallway.

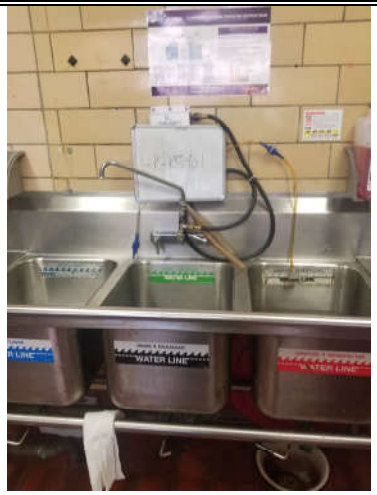

Photo 61: Kitchen sink, located on the 1st floor in kitchen.

Photo 62: Kitchen sink, located on the 1st floor in kitchen.

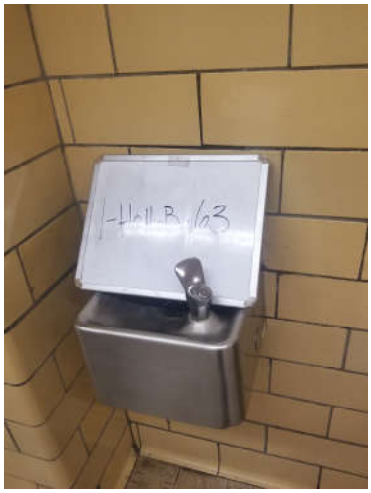

Photo 63: Bubbler, located on the 1st floor in hallway.

Photo 64: Bubbler, located on the 1st floor in hallway.

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

August 24, 2018

Robert Smith
ATC Group Services
46555 Humboldt
Suite 100
Novi, MI 48377

RE: Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Dear Robert Smith:
Enclosed are the analytical results for sample(s) received by the laboratory on August 10, 2018. The results relate only to the samples included in this report. Results reported herein conform to the most current, applicable TNI/NELAC standards and the laboratory's Quality Assurance Manual, where applicable, unless otherwise noted in the body of the report.

If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Will Cole
will.cole@pacelabs.com
(616)975-4500
Project Manager

Enclosures

cc: AP c/o Abigail Jardine, ATC Group Services
Michael Hauswirth, ATC Group Services

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

CERTIFICATIONS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Grand Rapids Certification ID's

5560 Corporate Exchange Ct SE, Grand Rapids, MI 49512
Minnesota Department of Health, Certificate #1385941
Arkansas Department of Environmental Quality, Certificate #18-046-0
Georgia Environmental Protection Division, Stipulation
Illinois Environmental Protection Agency, Certificate #004325
Michigan Department of Environmental Quality, Laboratory #0034
New York State Department of Health, Serial #57971 and 57972
North Carolina Division of Water Resources, Certificate #659
Virginia Department of General Services, Certificate #9780
Wisconsin Department of Natural Resources, Laboratory #999472650
U.S. Department of Agriculture Permit to Receive Soil, Permit #P330-17-00278

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
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SAMPLE SUMMARY

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Lab ID	Sample ID	Matrix	Date Collected	Date Received
4616232001	**1-HALL-DWF-2**	Drinking Water	08/09/18 08:05	08/10/18 18:00
4616232002	**1-HALL-DWF-3**	Drinking Water	08/09/18 08:08	08/10/18 18:00
4616232003	**1-111-CF/B-10**	Drinking Water	08/09/18 08:15	08/10/18 18:00
4616232004	**1-110-CF/B-11**	Drinking Water	08/09/18 08:15	08/10/18 18:00
4616232005	**1-109-CF/B-14**	Drinking Water	08/09/18 08:09	08/10/18 18:00
4616232006	**1-107-CF/B-17**	Drinking Water	08/09/18 08:17	08/10/18 18:00
4616232007	**1-105-CF/B-20**	Drinking Water	08/09/18 08:19	08/10/18 18:00
4616232008	**1-104-CF/B-21**	Drinking Water	08/09/18 08:21	08/10/18 18:00
4616232009	**1-103-CF/B-24**	Drinking Water	08/09/18 08:24	08/10/18 18:00
4616232010	**1-102-CF/B-25**	Drinking Water	08/09/18 08:27	08/10/18 18:00
4616232011	**2-HALL-DWF-27**	Drinking Water	08/09/18 08:34	08/10/18 18:00
4616232012	**2-HALL-DWF-28**	Drinking Water	08/09/18 08:37	08/10/18 18:00
4616232013	**2-K-KSS-31**	Drinking Water	08/09/18 08:40	08/10/18 18:00
4616232014	**2-K-KS-32**	Drinking Water	08/09/18 08:41	08/10/18 18:00
4616232015	**2-CAFE-DWF-34**	Drinking Water	08/09/18 08:45	08/10/18 18:00
4616232016	**2-CAFE-DWF-35**	Drinking Water	08/09/18 08:47	08/10/18 18:00
4616232017	**1-HALL-B-39**	Drinking Water	08/09/18 08:50	08/10/18 18:00
4616232018	**1-HALL-B-40**	Drinking Water	08/09/18 08:49	08/10/18 18:00
4616232019	**1-HALL-B-41**	Drinking Water	08/09/18 08:52	08/10/18 18:00
4616232020	**1-HALL-B-42**	Drinking Water	08/09/18 08:53	08/10/18 18:00
4616232021	**2-HALL-B-45**	Drinking Water	08/09/18 08:53	08/10/18 18:00
4616232022	**2-HALL-B-47**	Drinking Water	08/09/18 08:53	08/10/18 18:00
4616232023	**2-HALL-B-48**	Drinking Water	08/09/18 08:54	08/10/18 18:00
4616232024	**2-HALL-B-49**	Drinking Water	08/09/18 08:55	08/10/18 18:00
4616232025	**2-HALL-B-51**	Drinking Water	08/09/18 08:57	08/10/18 18:00
4616232026	**2-HALL-B-53**	Drinking Water	08/09/18 08:56	08/10/18 18:00
4616232027	**2-HALL-B-54**	Drinking Water	08/09/18 08:58	08/10/18 18:00
4616232028	**2-HALL-B-55**	Drinking Water	08/09/18 09:00	08/10/18 18:00
4616232029	**2-HALL-B-56**	Drinking Water	08/09/18 09:00	08/10/18 18:00
4616232030	**1-HALL-B-59**	Drinking Water	08/09/18 09:02	08/10/18 18:00
4616232031	**1-HALL-B-60**	Drinking Water	08/09/18 09:03	08/10/18 18:00
4616232032	**1-HALL-B-63**	Drinking Water	08/09/18 09:05	08/10/18 18:00

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

SAMPLE ANALYTE COUNT

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Lab ID	Sample ID	Method	Analysts	Analytes Reported
4616232001	**1-HALL-DWF-2**	EPA 200.8	NHAM	2
4616232002	**1-HALL-DWF-3**	EPA 200.8	NHAM	2
4616232003	**1-111-CF/B-10**	EPA 200.8	NHAM	2
4616232004	**1-110-CF/B-11**	EPA 200.8	NHAM	2
4616232005	**1-109-CF/B-14**	EPA 200.8	NHAM	2
4616232006	**1-107-CF/B-17**	EPA 200.8	NHAM	2
4616232007	**1-105-CF/B-20**	EPA 200.8	NHAM	2
4616232008	**1-104-CF/B-21**	EPA 200.8	NHAM	2
4616232009	**1-103-CF/B-24**	EPA 200.8	NHAM	2
4616232010	**1-102-CF/B-25**	EPA 200.8	NHAM	2
4616232011	**2-HALL-DWF-27**	EPA 200.8	NHAM	2
4616232012	**2-HALL-DWF-28**	EPA 200.8	NHAM	2
4616232013	**2-K-KSS-31**	EPA 200.8	NHAM	2
4616232014	**2-K-KS-32**	EPA 200.8	NHAM	2
4616232015	**2-CAFE-DWF-34**	EPA 200.8	NHAM	2
4616232016	**2-CAFE-DWF-35**	EPA 200.8	NHAM	2
4616232017	**1-HALL-B-39**	EPA 200.8	NHAM	2
4616232018	**1-HALL-B-40**	EPA 200.8	NHAM	2
4616232019	**1-HALL-B-41**	EPA 200.8	NHAM	2
4616232020	**1-HALL-B-42**	EPA 200.8	NHAM	2
4616232021	**2-HALL-B-45**	EPA 200.8	NHAM	2
4616232022	**2-HALL-B-47**	EPA 200.8	NHAM	2
4616232023	**2-HALL-B-48**	EPA 200.8	NHAM	2
4616232024	**2-HALL-B-49**	EPA 200.8	NHAM	2
4616232025	**2-HALL-B-51**	EPA 200.8	NHAM	2
4616232026	**2-HALL-B-53**	EPA 200.8	NHAM	2
4616232027	**2-HALL-B-54**	EPA 200.8	NHAM	2
4616232028	**2-HALL-B-55**	EPA 200.8	NHAM	2
4616232029	**2-HALL-B-56**	EPA 200.8	NHAM	2
4616232030	**1-HALL-B-59**	EPA 200.8	NHAM	2
4616232031	**1-HALL-B-60**	EPA 200.8	NHAM	2
4616232032	**1-HALL-B-63**	EPA 200.8	NHAM	2

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-HALL-DWF-2 **Lab ID: 4616232001** Collected: 08/09/18 08:05 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**417**	ug/L	10.0	1300	10		08/23/18 16:48	7440-50-8	
Lead	**<1.0**	ug/L	1.0	15	1		08/23/18 13:18	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-HALL-DWF-3 **Lab ID: 4616232002** Collected: 08/09/18 08:08 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**248**	ug/L	5.0	1300	5		08/23/18 16:52	7440-50-8	
Lead	**<1.0**	ug/L	1.0	15	1		08/23/18 13:22	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-111-CF/B-10 **Lab ID: 4616232003** Collected: 08/09/18 08:15 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**278**	ug/L	5.0	1300	5		08/23/18 16:53	7440-50-8	
Lead	**<1.0**	ug/L	1.0	15	1		08/23/18 13:23	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-110-CF/B-11 **Lab ID: 4616232004** Collected: 08/09/18 08:15 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**169**	ug/L	5.0	1300	5		08/23/18 16:54	7440-50-8	
Lead	**<1.0**	ug/L	1.0	15	1		08/23/18 13:24	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-109-CF/B-14 **Lab ID: 4616232005** Collected: 08/09/18 08:09 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**197**	ug/L	5.0	1300	5		08/23/18 16:55	7440-50-8	
Lead	**<1.0**	ug/L	1.0	15	1		08/23/18 13:25	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-107-CF/B-17 **Lab ID: 4616232006** Collected: 08/09/18 08:17 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**497**	ug/L	10.0	1300	10		08/23/18 16:56	7440-50-8	
Lead	**<1.0**	ug/L	1.0	15	1		08/23/18 13:29	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-105-CF/B-20 **Lab ID: 4616232007** Collected: 08/09/18 08:19 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**984**	ug/L	50.0	1300	50		08/23/18 16:57	7440-50-8	
Lead	**4.3**	ug/L	1.0	15	1		08/23/18 13:30	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-104-CF/B-21 **Lab ID: 4616232008** Collected: 08/09/18 08:21 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**281**	ug/L	5.0	1300	5		08/23/18 17:00	7440-50-8	
Lead	**<1.0**	ug/L	1.0	15	1		08/23/18 13:31	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-103-CF/B-24 **Lab ID: 4616232009** Collected: 08/09/18 08:24 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**222**	ug/L	5.0	1300	5		08/23/18 17:01	7440-50-8	
Lead	**<1.0**	ug/L	1.0	15	1		08/23/18 13:32	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-102-CF/B-25 **Lab ID: 4616232010** Collected: 08/09/18 08:27 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**245**	ug/L	5.0	1300	5		08/23/18 17:02	7440-50-8	
Lead	**<1.0**	ug/L	1.0	15	1		08/23/18 13:33	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 2-HALL-DWF-27 **Lab ID: 4616232011** Collected: 08/09/18 08:34 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**296**	ug/L	5.0	1300	5		08/23/18 17:03	7440-50-8	
Lead	**<1.0**	ug/L	1.0	15	1		08/23/18 13:34	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 2-HALL-DWF-28 **Lab ID: 4616232012** Collected: 08/09/18 08:37 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**301**	ug/L	5.0	1300	5		08/23/18 17:07	7440-50-8	
Lead	**<1.0**	ug/L	1.0	15	1		08/23/18 13:38	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 2-K-KSS-31 **Lab ID: 4616232013** Collected: 08/09/18 08:40 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**301**	ug/L	5.0	1300	5		08/23/18 17:08	7440-50-8	
Lead	**<1.0**	ug/L	1.0	15	1		08/23/18 13:43	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 2-K-KS-32 **Lab ID: 4616232014** Collected: 08/09/18 08:41 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**249**	ug/L	5.0	1300	5		08/23/18 17:26	7440-50-8	
Lead	**<1.0**	ug/L	1.0	15	1		08/23/18 13:47	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 2-CAFE-DWF-34 **Lab ID: 4616232015** Collected: 08/09/18 08:45 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**347**	ug/L	5.0	1300	5		08/23/18 17:27	7440-50-8	
Lead	**<1.0**	ug/L	1.0	15	1		08/23/18 13:48	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 2-CAFE-DWF-35 **Lab ID: 4616232016** Collected: 08/09/18 08:47 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**271**	ug/L	5.0	1300	5		08/23/18 17:28	7440-50-8	
Lead	**<1.0**	ug/L	1.0	15	1		08/23/18 13:49	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-HALL-B-39 **Lab ID: 4616232017** Collected: 08/09/18 08:50 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**71.5**	ug/L	1.0	1300	1		08/23/18 13:50	7440-50-8	
Lead	**1.8**	ug/L	1.0	15	1		08/23/18 13:50	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-HALL-B-40 **Lab ID: 4616232018** Collected: 08/09/18 08:49 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**51.5**	ug/L	1.0	1300	1		08/23/18 13:53	7440-50-8	
Lead	**2.2**	ug/L	1.0	15	1		08/23/18 13:53	7439-92-1	

REPORT OF LABORATORY ANALYSIS

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-HALL-B-41 **Lab ID: 4616232019** Collected: 08/09/18 08:52 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**79.7**	ug/L	1.0	1300	1		08/23/18 13:54	7440-50-8	
Lead	**14.1**	ug/L	1.0	15	1		08/23/18 13:54	7439-92-1	

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-HALL-B-42 **Lab ID: 4616232020** Collected: 08/09/18 08:53 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**90.7**	ug/L	1.0	1300	1		08/23/18 13:55	7440-50-8	
Lead	**5.8**	ug/L	1.0	15	1		08/23/18 13:55	7439-92-1	

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 2-HALL-B-45 **Lab ID: 4616232021** Collected: 08/09/18 08:53 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**398**	ug/L	5.0	1300	5		08/23/18 17:29	7440-50-8	
Lead	**31.3**	ug/L	1.0	15	1		08/23/18 13:56	7439-92-1	

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ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 2-HALL-B-47 **Lab ID: 4616232022** Collected: 08/09/18 08:53 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**327**	ug/L	5.0	1300	5		08/23/18 17:30	7440-50-8	
Lead	**5.0**	ug/L	1.0	15	1		08/23/18 13:57	7439-92-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 2-HALL-B-48 **Lab ID: 4616232023** Collected: 08/09/18 08:54 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**149**	ug/L	5.0	1300	5		08/24/18 10:57	7440-50-8	
Lead	**7.3**	ug/L	1.0	15	1		08/23/18 13:58	7439-92-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 2-HALL-B-49 **Lab ID: 4616232024** Collected: 08/09/18 08:55 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**84.1**	ug/L	1.0	1300	1		08/23/18 14:02	7440-50-8	
Lead	**5.3**	ug/L	1.0	15	1		08/23/18 14:02	7439-92-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 2-HALL-B-51 **Lab ID: 4616232025** Collected: 08/09/18 08:57 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**894**	ug/L	50.0	1300	50		08/23/18 17:38	7440-50-8	
Lead	**58.5**	ug/L	1.0	15	1		08/23/18 14:05	7439-92-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 2-HALL-B-53 **Lab ID: 4616232026** Collected: 08/09/18 08:56 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**33.3**	ug/L	1.0	1300	1		08/23/18 14:06	7440-50-8	
Lead	**18.8**	ug/L	1.0	15	1		08/23/18 14:06	7439-92-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 2-HALL-B-54 **Lab ID: 4616232027** Collected: 08/09/18 08:58 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**168**	ug/L	5.0	1300	5		08/23/18 17:39	7440-50-8	
Lead	**40.1**	ug/L	1.0	15	1		08/23/18 14:07	7439-92-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 2-HALL-B-55 **Lab ID: 4616232028** Collected: 08/09/18 09:00 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**540**	ug/L	10.0	1300	10		08/23/18 17:40	7440-50-8	
Lead	**53.7**	ug/L	1.0	15	1		08/23/18 14:08	7439-92-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 2-HALL-B-56 **Lab ID: 4616232029** Collected: 08/09/18 09:00 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**501**	ug/L	10.0	1300	10		08/23/18 17:41	7440-50-8	
Lead	**32.5**	ug/L	1.0	15	1		08/23/18 14:09	7439-92-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-HALL-B-59 **Lab ID: 4616232030** Collected: 08/09/18 09:02 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**323**	ug/L	5.0	1300	5		08/23/18 17:42	7440-50-8	
Lead	**9.3**	ug/L	1.0	15	1		08/23/18 14:10	7439-92-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-HALL-B-60 **Lab ID: 4616232031** Collected: 08/09/18 09:03 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**237**	ug/L	5.0	1300	5		08/23/18 17:43	7440-50-8	
Lead	**7.3**	ug/L	1.0	15	1		08/23/18 14:11	7439-92-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

ANALYTICAL RESULTS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Sample: 1-HALL-B-63 **Lab ID: 4616232032** Collected: 08/09/18 09:05 Received: 08/10/18 18:00 Matrix: Drinking Water

Parameters	Results	Units	Report Limit	Reg. Limit	DF	Prepared	Analyzed	CAS No.	Qual
200.8 MET ICPMS Drinking Water	Analytical Method: EPA 200.8								
Copper	**153**	ug/L	5.0	1300	5		08/23/18 17:44	7440-50-8	
Lead	**3.6**	ug/L	1.0	15	1		08/23/18 14:12	7439-92-1	

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

QC Batch: 31545 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: ICPMS Metals, No Prep
Associated Lab Samples: 4616232001, 4616232002, 4616232003, 4616232004, 4616232005, 4616232006, 4616232007, 4616232008, 4616232009, 4616232010, 4616232011, 4616232012

METHOD BLANK: 127201 Matrix: Water
Associated Lab Samples: 4616232001, 4616232002, 4616232003, 4616232004, 4616232005, 4616232006, 4616232007, 4616232008, 4616232009, 4616232010, 4616232011, 4616232012

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	<1.0	1.0	08/23/18 13:16	
Lead	ug/L	<1.0	1.0	08/23/18 13:16	

LABORATORY CONTROL SAMPLE: 127202

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	20	19.5	98	85-115	
Lead	ug/L	20	19.3	97	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 127203 127204

Parameter	Units	4616232001 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	417	200	200	631	630	107	106	70-130	0	20	
Lead	ug/L	<1.0	20	20	19.5	19.2	97	95	70-130	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 127206 127207

Parameter	Units	4616232011 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	296	100	100	390	399	95	104	70-130	2	20	
Lead	ug/L	<1.0	20	20	19.6	19.8	97	98	70-130	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

QC Batch: 31546 Analysis Method: EPA 200.8
QC Batch Method: EPA 200.8 Analysis Description: ICPMS Metals, No Prep
Associated Lab Samples: 4616232013, 4616232014, 4616232015, 4616232016, 4616232017, 4616232018, 4616232019, 4616232020, 4616232021, 4616232022, 4616232023, 4616232024, 4616232025, 4616232026, 4616232027, 4616232028, 4616232029, 4616232030, 4616232031, 4616232032

METHOD BLANK: 127212 Matrix: Water
Associated Lab Samples: 4616232013, 4616232014, 4616232015, 4616232016, 4616232017, 4616232018, 4616232019, 4616232020, 4616232021, 4616232022, 4616232023, 4616232024, 4616232025, 4616232026, 4616232027, 4616232028, 4616232029, 4616232030, 4616232031, 4616232032

Parameter	Units	Blank Result	Reporting Limit	Analyzed	Qualifiers
Copper	ug/L	<1.0	1.0	08/23/18 13:41	
Lead	ug/L	<1.0	1.0	08/23/18 13:41	

LABORATORY CONTROL SAMPLE: 127213

Parameter	Units	Spike Conc.	LCS Result	LCS % Rec	% Rec Limits	Qualifiers
Copper	ug/L	20	19.4	97	85-115	
Lead	ug/L	20	19.3	96	85-115	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 127214 127215

Parameter	Units	4616232013 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	301	100	100	408	401	107	100	70-130	2	20	
Lead	ug/L	<1.0	20	20	20.0	19.7	97	96	70-130	1	20	

MATRIX SPIKE & MATRIX SPIKE DUPLICATE: 127217 127218

Parameter	Units	4616232023 Result	MS Spike Conc.	MSD Spike Conc.	MS Result	MSD Result	MS % Rec	MSD % Rec	% Rec Limits	RPD	Max RPD	Qual
Copper	ug/L	149	100	100	244	241	95	93	70-130	1	20	
Lead	ug/L	7.3	20	20	26.1	26.3	94	95	70-130	1	20	

Results presented on this page are in the units indicated by the "Units" column except where an alternate unit is presented to the right of the result.

REPORT OF LABORATORY ANALYSIS

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

QUALIFIERS

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

DEFINITIONS

DF - Dilution Factor, if reported, represents the factor applied to the reported data due to dilution of the sample aliquot.

ND - Not Detected at or above adjusted reporting limit.

TNTC - Too Numerous To Count

J - Estimated concentration above the adjusted method detection limit and below the adjusted reporting limit.

MDL - Adjusted Method Detection Limit.

PQL - Practical Quantitation Limit.

RL - Reporting Limit - The lowest concentration value that meets project requirements for quantitative data with known precision and bias for a specific analyte in a specific matrix.

S - Surrogate

1,2-Diphenylhydrazine decomposes to and cannot be separated from Azobenzene using Method 8270. The result for each analyte is a combined concentration.

Consistent with EPA guidelines, unrounded data are displayed and have been used to calculate % recovery and RPD values.

LCS(D) - Laboratory Control Sample (Duplicate)

MS(D) - Matrix Spike (Duplicate)

DUP - Sample Duplicate

RPD - Relative Percent Difference

NC - Not Calculable.

SG - Silica Gel - Clean-Up

U - Indicates the compound was analyzed for, but not detected.

N-Nitrosodiphenylamine decomposes and cannot be separated from Diphenylamine using Method 8270. The result reported for each analyte is a combined concentration.

Pace Analytical is TNI accredited. Contact your Pace PM for the current list of accredited analytes.

TNI - The NELAC Institute.

Pace Analytical Services, LLC
5560 Corporate Exchange Ct. SE
Grand Rapids, MI 49512
(616)975-4500

QUALITY CONTROL DATA CROSS REFERENCE TABLE

Project: DW - Emerson ES/MS
Pace Project No.: 4616232

Lab ID	Sample ID	QC Batch Method	QC Batch	Analytical Method	Analytical Batch
4616232001	**1-HALL-DWF-2**	EPA 200.8	31545		
4616232002	**1-HALL-DWF-3**	EPA 200.8	31545		
4616232003	**1-111-CF/B-10**	EPA 200.8	31545		
4616232004	**1-110-CF/B-11**	EPA 200.8	31545		
4616232005	**1-109-CF/B-14**	EPA 200.8	31545		
4616232006	**1-107-CF/B-17**	EPA 200.8	31545		
4616232007	**1-105-CF/B-20**	EPA 200.8	31545		
4616232008	**1-104-CF/B-21**	EPA 200.8	31545		
4616232009	**1-103-CF/B-24**	EPA 200.8	31545		
4616232010	**1-102-CF/B-25**	EPA 200.8	31545		
4616232011	**2-HALL-DWF-27**	EPA 200.8	31545		
4616232012	**2-HALL-DWF-28**	EPA 200.8	31545		
4616232013	**2-K-KSS-31**	EPA 200.8	31546		
4616232014	**2-K-KS-32**	EPA 200.8	31546		
4616232015	**2-CAFE-DWF-34**	EPA 200.8	31546		
4616232016	**2-CAFE-DWF-35**	EPA 200.8	31546		
4616232017	**1-HALL-B-39**	EPA 200.8	31546		
4616232018	**1-HALL-B-40**	EPA 200.8	31546		
4616232019	**1-HALL-B-41**	EPA 200.8	31546		
4616232020	**1-HALL-B-42**	EPA 200.8	31546		
4616232021	**2-HALL-B-45**	EPA 200.8	31546		
4616232022	**2-HALL-B-47**	EPA 200.8	31546		
4616232023	**2-HALL-B-48**	EPA 200.8	31546		
4616232024	**2-HALL-B-49**	EPA 200.8	31546		
4616232025	**2-HALL-B-51**	EPA 200.8	31546		
4616232026	**2-HALL-B-53**	EPA 200.8	31546		
4616232027	**2-HALL-B-54**	EPA 200.8	31546		
4616232028	**2-HALL-B-55**	EPA 200.8	31546		
4616232029	**2-HALL-B-56**	EPA 200.8	31546		
4616232030	**1-HALL-B-59**	EPA 200.8	31546		
4616232031	**1-HALL-B-60**	EPA 200.8	31546		
4616232032	**1-HALL-B-63**	EPA 200.8	31546		

WO# : 4616232

4616232

#20257

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

Section A
Required Client Information:

Company:	ATC Group Services LLC
Address:	46555 Humboldt Drive, Suite 100
	Novi, MI 48377
Email:	robert.smith@atcgs.com
Phone:	248-669-5140 Fax: 248-669-5147
Requested Due Date:	

Required Project Information:

Report To:	Robert Smith
Copy To:	
Purchase Order #:	
Project Name:	Lead & Copper Testing
Project #:	Emerson ES/MS

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	Will Cole
Pace Profile #:	Profile 236 - Line 2

Regulatory Agency	State / Location
	MI

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test: Y/N	Lead & Copper	Residual Chlorine (Y/N)
1	1-HALL-DWF-2	DW	G	8/9/2018	805				1			X						X	X	
2	1-HALL-DWF-3	DW	G	8/9/2018	808				1			X						X	X	
3	1-111-CF/B-10	DW	G	8/9/2018	815				1			X						X	X	
4	1-110-CF/B-11	DW	G	8/9/2018	815				1			X						X	X	
5	1-109-CF/B-14	DW	G	8/9/2018	809				1			X						X	X	
6	1-107-CF/B-17	DW	G	8/9/2018	817				1			X						X	X	
7	1-105-CF/B-20	DW	G	8/9/2018	819				1			X						X	X	
8	1-104-CF/B-21	DW	G	8/9/2018	821				1			X						X	X	
9	1-103-CF/B-24	DW	G	8/9/2018	824				1			X						X	X	
10	1-102-CF/B-25	DW	G	8/9/2018	827				1			X						X	X	
11	2-HALL-DWF-27	DW	G	8/9/2018	834				1			X						X	X	
12	2-HALL-DWF-28	DW	G	8/9/2018	837				1			X						X	X	

(46-46)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
		8/10/18	1300		8/10/18	1400	
				Matt Pace	8/10/18	1500	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Kandy Peters

SIGNATURE of SAMPLER: Kandy Peters

DATE Signed: 8/9/2018

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

WO#: 4616232

PM: WDC Due Date: 08/27/18

CLIENT: ATC

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

#20258

Section A
Required Client Information:

Company:	ATC Group Services LLC
Address:	46555 Humboldt Drive, Suite 100
	Novi, MI 48377
Email:	robert.smith@atcgs.com
Phone:	248-669-5140 Fax: 248-669-5147
Requested Due Date:	

Required Project Information:

Report To:	Robert Smith
Copy To:	
Purchase Order #:	
Project Name:	Lead & Copper Testing
Project #:	Emerson ES/MS

Section C
Invoice Information:

Attention:	
Company Name:	
Address:	
Pace Quote:	
Pace Project Manager:	Will Cole
Pace Profile #:	Profile 236 - Line 2

Regulatory Agency

State / Location
MI

SAMPLE ID
One Character per box.
(A-Z, 0-9 / , -)
Sample Ids must be unique

MATRIX	CODE
Drinking Water	DW
Water	WT
Waste Water	WW
Product	P
Soil/Solid	SL
Oil	OL
Wipe	WP
Air	AR
Other	OT
Tissue	TS

ITEM #	SAMPLE ID	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Analyses Test: Lead & Copper	Residual Chlorine (Y/N)
13	2-K-KSS-31	DW	G	8/9/2018	840				1			X						X	
14	2-K-KS-32	DW	G	8/9/2018	841				1			X						X	
15	2-CAFÉ-DWF-34	DW	G	8/9/2018	845				1			X						X	
16	2-CAFÉ-DWF-35	DW	G	8/9/2018	847				1			X						X	
17	1-HALL-B-39	DW	G	8/9/2018	850				1			X						X	
18	1-HALL-B-40	DW	G	8/9/2018	849				1			X						X	
19	1-HALL-B-41	DW	G	8/9/2018	852				1			X						X	
20	1-HALL-B-42	DW	G	8/9/2018	853				1			X						X	
21	2-HALL-B-45	DW	G	8/9/2018	853				1			X						X	
22	2-HALL-B-47	DW	G	8/9/2018	853				1			X						X	
23	2-HALL-B-48	DW	G	8/9/2018	854				1			X						X	
24	2-HALL-B-49	DW	G	8/9/2018	855				1			X						X	

Requested Analysis Filtered (Y/N)

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
					8/10/18	1400	
		8/10/18	1800	Watts/Pace	8/10/18	1800	

SAMPLER NAME AND SIGNATURE

PRINT Name of SAMPLER: Kandy Peters

SIGNATURE of SAMPLER: Kandy Peters DATE Signed: 8/9/2018

TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)

4616232

Pace Analytical

CHAIN-OF-CUSTODY / Analytical Request Document

The Chain-of-Custody is a LEGAL DOCUMENT. All relevant fields must be completed accurately.

#20259

Section A Required Client Information:		Section B Required Project Information:		Section C Invoice Information:	
Company:	ATC Group Services LLC	Report To:	Robert Smith	Attention:	
Address:	46555 Humboldt Drive, Suite 100	Copy To:		Company Name:	
Novi, MI 48377				Address:	
Email:	robert.smith@atcgs.com	Purchase Order #:		Pace Quote:	
Phone:	248-669-5140 Fax: 248-669-5147	Project Name:	Lead & Copper Testing	Pace Project Manager:	Will Cole
Requested Due Date:		Project #:	Emerson ES/MS	Pace Profile #:	Profile 236 - Line 2

Regulatory Agency	State / Location
	MI

ITEM #	SAMPLE ID One Character per box. (A-Z, 0-9 / , -) Sample Ids must be unique	MATRIX CODE (see valid codes to left)	SAMPLE TYPE (G=GRAB C=COMP)	COLLECTED START DATE	COLLECTED START TIME	COLLECTED END DATE	COLLECTED END TIME	SAMPLE TEMP AT COLLECTION	# OF CONTAINERS	Preservatives: Unpreserved	H2SO4	HNO3	HCl	NaOH	Na2S2O3	Methanol	Other	Requested Analysis Filtered (Y/N) Y/N	Analyses Test: Lead & Copper	Residual Chlorine (Y/N)
25	2-HALL-B-51	DW	G	8/9/2018	857				1			X							X	
26	2-HALL-B-53	DW	G	8/9/2018	856				1			X							X	
27	2-HALL-B-54	DW	G	8/9/2018	858				1			X							X	
28	2-HALL-B-55	DW	G	8/9/2018	900				1			X							X	
29	2-HALL-B-56	DW	G	8/9/2018	900				1			X							X	
30	1-HALL-B-59	DW	G	8/9/2018	902				1			X							X	
31	1-HALL-B-60	DW	G	8/9/2018	903				1			X							X	
32	1-HALL-B-63	DW	G	8/9/2018	905				1			X							X	
		DW	G						1			X							X	
		DW	G						1			X							X	
		DW	G						1			X							X	
		DW	G						1			X							X	

ADDITIONAL COMMENTS	RELINQUISHED BY / AFFILIATION	DATE	TIME	ACCEPTED BY / AFFILIATION	DATE	TIME	SAMPLE CONDITIONS
					8/10/18	1400	
		8/10/18	1800	Watts/Pace	08/10/18	1800	

SAMPLER NAME AND SIGNATURE					
PRINT Name of SAMPLER:	Kandy Peters		TEMP in C	Received on Ice (Y/N)	Custody Sealed Cooler (Y/N)	Samples Intact (Y/N)
SIGNATURE of SAMPLER:	Kandy Peters	DATE Signed: 8/9/2018				

SAMPLE RECEIVING / LOG-IN CHECKLIST

Pace Analytical®

Client: QTC | Work Order #: 4616232

Receipt Record Page/Line #: 46-46

Recorded by (initials/date): DN 8-10-18

☑ Cooler ☐ Box ☐ Other ____ | Qty Received: 1

Thermometer Used: ☐ IR Gun (#202) ☐ Digital Thermometer (#54) ☑ IR Gun (#402)

Cooler #	Time	Observed °C	Correction Factor °C	Actual °C
—	2324			
Temp Blank:				
Sample 1:			0	24.1
Sample 2:			0	24.3
Sample 3:			0	24.0

Custody Seals: ☑ None ☐ Present / Intact ☐ Present / Not Intact

Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☑ None

Coolant Location: Dispersed / Top / Middle / Bottom

Temp Blank Present: ☐ Yes ☑ No

If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative

When above 6 °C take a 3 Sample Average °C: 24.1

☐ VOC Trip Blank received?

Cooler #	Time	Observed °C	Correction Factor °C	Actual °C
Temp Blank:				
Sample 1:				
Sample 2:				
Sample 3:				

Custody Seals: ☐ None ☐ Present / Intact ☐ Present / Not Intact

Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None

Coolant Location: Dispersed / Top / Middle / Bottom

Temp Blank Present: ☐ Yes ☐ No

If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative

When above 6 °C take a 3 Sample Average °C: ____

☐ VOC Trip Blank received?

Cooler #	Time	Observed °C	Correction Factor °C	Actual °C
Temp Blank:				
Sample 1:				
Sample 2:				
Sample 3:				

Custody Seals: ☐ None ☐ Present / Intact ☐ Present / Not Intact

Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None

Coolant Location: Dispersed / Top / Middle / Bottom

Temp Blank Present: ☐ Yes ☐ No

If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative

When above 6 °C take a 3 Sample Average °C: ____

☐ VOC Trip Blank received?

Cooler #	Time	Observed °C	Correction Factor °C	Actual °C
Temp Blank:				
Sample 1:				
Sample 2:				
Sample 3:				

Custody Seals: ☐ None ☐ Present / Intact ☐ Present / Not Intact

Coolant Type: ☐ Loose Ice ☐ Bagged Ice ☐ Blue Ice ☐ None

Coolant Location: Dispersed / Top / Middle / Bottom

Temp Blank Present: ☐ Yes ☐ No

If Present, Temperature Blank Location is: ☐ Representative ☐ Not Representative

When above 6 °C take a 3 Sample Average °C: ____

☐ VOC Trip Blank received?

If any shaded areas checked, complete Sample Receiving Non-Conformance

Paperwork Received

Yes	No	
☑	☐	Chain of Custody record(s)? If No, Initiated By ____
☑	☐	Received for Lab Signed/Date/Time?
☐	☑	USDA Soil Documents?
☐	☑	Sampling / Field Forms?
☐	☑	Other ____

COC Information

☑ Pace COC ☐ Other ____

COC ID Numbers: 20257, 20258, 20259

Check COC for Accuracy

Yes	No	
☑	☐	Analysis Requested?
☑	☑	Sample ID matches COC?
☑	☐	Sample Date and Time matches COC?
☑	☐	All containers indicated are received?

DN 8-10

Sample Condition Summary

N/A	Yes	No	
	☐	☑	Broken containers/lids?
	☐	☑	Missing or incomplete labels?
	☐	☑	Illegible information on labels?
	☐	☑	Low volume received?
	☐	☑	Inappropriate or non-Pace containers received?
☑	☐	☐	VOC vials have headspace?
	☐	☑	Extra sample locations?
	☐	☑	Containers not listed on COC?

Check Sample Preservation

N/A	Yes	No	
	☑	☐	Temperature Blank **OR** average sample temperature, ≥6° C?
☐	☐	☑	If "Yes" was thermal preservation required?
☑	☐	☐	If "Yes" were ALL samples collected the same day as receipt?
☐	☐	☑	Completed Sample Preservation Verification Form?
☐	☑	☐	Samples chemically preserved correctly?
☑	☐		If "No", add wire tag and fill out Non-Conformance Form?
☑	☐		Received unpreserved Terracore kit?
			If "Yes" unpreserved vials must be frozen

Work Order Not Logged In with Short Hold / Rush

☐ Copies of COC To Lab Areas

Notes

Yes	No	
☑	☐	Were all samples logged into Epic?
☑	☐	Were all samples labelled?
☑	☐	Were samples placed on scan locations?

Initial / Date : DN 8-10-18

Pace Analytical®

AQUEOUS SAMPLE PRESERVATION VERIFICATION

Client: CTC

Receipt Log #: 46-46

Completed By (initials/date): DN 8-10-18

Work Order #: 4616232

COC ID #: 20257

Adjusted by: _____

Date: _____

pH Strip Reagent or Lot #: ☑ HC739245 ☐ Other _____

Container Type	BP3C or AG3O		BP1-4S		AG2S		BP1-4N Total		BP1-4N Dissolved			
Preservative	NaOH >12		H_2SO_4 <2		H_2SO_4 <2		HNO_3 <2		HNO_3 <2			
pH	Received	Adjusted	Received	Adjusted	Received	Adjusted	Received	Adjusted	Received	Adjusted	Received	Adjusted
COC Line #1							✓					
COC Line #2							✓					
COC Line #3							✓					
COC Line #4							✓					
COC Line #5							✓					
COC Line #6							✓					
COC Line #7							✓					
COC Line #8							✓					
COC Line #9							✓					
COC Line #10							✓					
COC Line #11							✓					
COC Line #12							✓					

Comments:

Place a check mark in the Received box if pH is acceptable. If pH is not acceptable, document the Received and Adjusted pH values in the appropriate columns (project manager will review all adjustments at work order release). Never add more than 2x the default preservation volume (see table below for default volumes). Complete and attach a wire tag to all adjusted samples. A Sample Receiving Non-Conformance Report must be completed if a pH adjustment was required.

COC ID #: 20258

Adjusted by: _____

Date: _____

Container Type	BP3C or AG3O		BP1-4S		AG2S		BP1-4N Total		BP1-4N Dissolved			
Preservative	NaOH >12		H_2SO_4 <2		H_2SO_4 <2		HNO_3 <2		HNO_3 <2			
pH	Received	Adjusted	Received	Adjusted	Received	Adjusted	Received	Adjusted	Received	Adjusted	Received	Adjusted
COC Line #1							✓					
COC Line #2							✓					
COC Line #3							✓					
COC Line #4							✓					
COC Line #5							✓					
COC Line #6							✓					
COC Line #7							✓					
COC Line #8							✓					
COC Line #9							✓					
COC Line #10							✓					
COC Line #11							✓					
COC Line #12							✓					

Comments:

Container Size (mL)	Default Preservative Volume (mL)
Container Types 5 / 23	NaOH
250	1.3
Container Type 4	H_2SO_4
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13	H_2SO_4
500	2.5
Container Types 6 / 15	HNO_3
125	0.7
250	1.25
500	2.5
1000	5.0

Pace Analytical® AQUEOUS SAMPLE PRESERVATION VERIFICATION

Client: OTC

Receipt Log #: 416-416

Completed By (initials/date): DM 8-10-18

Work Order #: 416233

COC ID #: 20259

Adjusted by: _____

Date: _____

pH Strip Reagent or Lot #

☑ HC739245

☐ Other _____

Container Type	BP3C or AG3O		BP1-4S		AG2S		BP1-4N Total		BP1-4N Dissolved			
Preservative	NaOH >12		H_2SO_4 <2		H_2SO_4 <2		HNO_3 <2		HNO_3 <2			
pH	Received	Adjusted	Received	Adjusted	Received	Adjusted	Received	Adjusted	Received	Adjusted	Received	Adjusted
COC Line #1							✓					
COC Line #2							✓					
COC Line #3							✓					
COC Line #4							✓					
COC Line #5							✓					
COC Line #6							✓					
COC Line #7							✓					
COC Line #8							✓					
COC Line #9												
COC Line #10												
COC Line #11												
COC Line #12												

Comments:

Place a check mark in the Received box if pH is acceptable. If pH is not acceptable, document the Received and Adjusted pH values in the appropriate columns (project manager will review all adjustments at work order release). Never add more than 2x the default preservation volume (see table below for default volumes). Complete and attach a wire tag to all adjusted samples. A Sample Receiving Non-Conformance Report must be completed if a pH adjustment was required.

COC ID #: _____

Adjusted by: _____

Date: _____

Container Type	BP3C or AG3O		BP1-4S		AG2S		BP1-4N Total		BP1-4N Dissolved			
Preservative	NaOH >12		H_2SO_4 <2		H_2SO_4 <2		HNO_3 <2		HNO_3 <2			
pH	Received	Adjusted	Received	Adjusted	Received	Adjusted	Received	Adjusted	Received	Adjusted	Received	Adjusted
COC Line #1												
COC Line #2												
COC Line #3												
COC Line #4												
COC Line #5												
COC Line #6												
COC Line #7												
COC Line #8												
COC Line #9												
COC Line #10												
COC Line #11												
COC Line #12												

Comments:

Container Size (mL)	Default Preservative Volume (mL)
Container Types 5 / 23	NaOH
250	1.3
Container Type 4	H_2SO_4
125	0.5
250	1.0
500	2.0
1000	4.0
Container Type 13	H_2SO_4
500	2.5
Container Types 6 / 15	HNO_3
125	0.7
250	1.25
500	2.5
1000	5.0

Pace Analytical®

SAMPLE RECEIVING NON-CONFORMANCE REPORT

Client: QTC

Work Order #: 4616232

Receipt Log #: 46-46

Completed By (initials/date): DN 8-10-18

Project Chemist:

List non-conformance issues associated with this work order in the chart below/left. Identify discrepancies between the COC and sample tags in the chart below/right. Add comments as needed.

		Type of Problem										COC					Sample Tag					
COC ID #	Line #	Discrepancy	Missing Container	Broken Container	Label Missing / Incomplete	Label Illegible	Low Volume	Inappropriate Container	Headspace	Not Listed on COC	Preservation	Sample Field ID	Date Sampled	Time Sampled	Container Type	Qty	Sample Field ID	Date Sampled	Time Sampled	Container Type	Qty	Line Item Comments
202571	13	✓										2-K-KS5-31					2-K-KS-31					

General Comments:

Project Chemist (initials/date):