

September 1, 2017

Pasco School District No. 1
Attn: Randy D. Nunamaker, Executive Director of Operations
1215 West Lewis Street
Pasco, Washington, 99301

**RE: Winter 2016 Drinking Water Sampling Results
Emerson Morgan Field, 1108 North 10th Avenue, Pasco, Washington**

Dear Randy:

On Thursday, April 6, 2017, Fulcrum Environmental Consulting, Inc. (Fulcrum) collected four drinking water samples for lead and copper analysis from Emerson Morgan Field (Building) located at 1108 North 10th Avenue in Pasco, Washington. Initial sampling identified one fixture location with a copper concentration above guidance levels. Fulcrum returned to the School on Tuesday, April 25, 2017 to collect a sample after remediation of the fixture and found results below guidance levels. Sampling was completed as part of a District-wide project and all analysis was completed by Washington State Department of Ecology (Ecology) accredited laboratories.

Summary

The purpose of initial sampling was to evaluate current drinking water quality conditions with respect to lead and copper as a result of the increased national and local interest related to lead in drinking water. The intent of sampling was to meet the requirements of the pending regulations set forth in Washington Administrative Code (WAC) 246-366A-130 and 246-366A-135¹. Consistent with the regulations, Fulcrum completed sampling at the rates of at least 50% of plumbing fixtures used regularly for drinking or cooking in elementary and preschools and at least 25% of drinking or cooking fixtures in middle schools, junior high schools, and high schools. In addition, Fulcrum sampled administrative facilities in the District at the same rate as elementary schools, of at least 50% of drinking and cooking fixtures.

Fulcrum completed initial sampling on April 6, 2017. Initial results identified one sample with a copper concentration of 1,360 micrograms per liter (µg/L), above the Environmental Protection Agency (EPA) action level of 1,300 µg/L. Upon receipt of results, the District consulted with the Benton-Franklin Health District in development of a remedial action plan.

Copper is not a significant component in fixtures, but is the primary material in the plumbing system. To remediate elevated copper, the District aggressively flushed the fixture with water to clear the plumbing of copper construction debris. Fulcrum returned on Tuesday, April 25, 2017 and collected a sample to evaluate the success of the remediation. The follow-up sample yielded a result of 1,190 µg/L, confirming the remediation was successful at reducing copper below the EPA action level. Following sampling and review

¹ Washington State Department of Health, WAC 246-366A, *The Environmental Health and Safety Standards of Primary and Secondary Schools*, <http://apps.leg.wa.gov/WAC/default.aspx?cite=246-366A>, July 26, 2016

of laboratory results, Benton-Franklin Health District supported Fulcrum's recommendation and the District's request to return the fixture to service.

As all samples now report concentrations below lead and copper action levels, at this time Fulcrum does not recommend any additional sampling. However, consistent with industry practice and the intent of WAC 246-366A, Fulcrum recommends that the District complete re-sampling of the building within the next five years (before November 2021). See Figure 1 in Attachment A for fixture locations and laboratory results.

Sampling Methodology

As a portion of this project, Fulcrum prepared a Sampling and Analysis Plan (SAP) in consultation with the Benton-Franklin Health District intended to satisfy future initial sampling requirements under pending regulations.

For initial evaluation purposes, Fulcrum collected "first draw" samples. This "first draw" water volume consists of 250 milliliters (mL) and is intended to represent the water quality in the fixture, tubing connecting the fixture to the building piping, and potentially a portion of the building piping. If lead and copper are present, this first-draw sample typically contains the highest lead levels and indicates high copper from the associated building piping.

For most post-remediation evaluation sampling, Fulcrum collected three-part samples consisting of the first draw, "second draw", and "third draw" water volumes. Second and third draw samples are intended to represent the water quality of building piping and plumbing components behind the fixture and the water entering the building from the water main.

As a quality control measure, Fulcrum also included a laboratory blank of distilled water and a laboratory "spike" sample with known concentrations of lead and copper at the selected action levels for the project during all sampling events. Blank and spike sample results are included in the results tables for reference.

Blank and spike samples were used to evaluate laboratory performance. The reported lead and copper concentrations of quality assurance samples provided a metric to determine accuracy of the analyses. If the reported concentration of the spike sample differed from the action level, then the spike sample concentration was used as the action level.

Sampling Activities

Fulcrum's two-part sampling process consisted of an initial site visit the prior afternoon/evening to locate and flush each water sampling location (fixture). Sample collection occurred the following morning, after the fixture sat motionless for more than eight but no less than 18 hours, typically approximately 14 hours.

Initial Sampling

On the initial visit, Fulcrum flushed cold water through each fixture selected for sampling for approximately one minute. Following the flush, each fixture was covered and secured within a plastic bag. The plastic

bags were marked with signage indicating testing was in progress and the fixture should not be used. Fulcrum returned to the school eight to 18 hours later to collect the samples. Each sample consisted of the first draw collected into 250-mL unpreserved polyethylene bottles and was immediately placed on ice in a chilled cooler.

Samples collected from the initial sampling event were shipped by common carrier under chain of custody to Fremont Analytical Laboratory (Ecology Lab ID: C910-16) in Seattle, Washington for analysis.

Fixture Replacement and Flushing

Fixtures identified with elevated lead concentrations were replaced and preconditioned by running cold water continuously through the fixture for 24 hours, as outlined in WAC 246-366A-130. Following replacement and preconditioning, Fulcrum collected follow-up samples to confirm the success of fixture replacement.

Fixtures producing elevated copper concentrations were generally identified in newer District buildings and were not associated with specific fixture styles. The relationship between building construction age and fixture styles indicates elevated copper concentrations are principally associated with construction debris in the plumbing system.

All fixtures with elevated copper were flushed aggressively by running water through the fixture at high flow with the aerator removed for approximately 30 minutes to clear the plumbing of any debris potentially causing elevated copper concentrations. Following an aggressive flush, fixtures were resampled to evaluate the effectiveness at reducing copper concentrations. The District elected to install filters on fixtures that did not respond to an aggressive flush. Filtered fixtures were resampled following filter installation to verify effectiveness of the filter.

Remedial Sampling

Remedial sampling typically consisted of first, second, and third draw samples from the fixture location and plumbing system in question. First draw samples were collected into 250 mL polyethylene bottles preserved with nitric acid. The second draw water volume consists of water collected into a 250 mL unpreserved polyethylene container immediately following the first draw. No water was lost between collection of the first and second draw samples. The third draw water volume is a 1,000 mL sample collected into a one liter unpreserved polyethylene container after the fixture has been flushed for about three to five minutes.

Samples collected following remedial activities were shipped by common carrier under chain of custody to Fremont Analytical Laboratory (Ecology Lab ID: C910-16) in Seattle, Washington for analysis. Fremont was selected based on their availability to complete analysis on an expedited schedule.

Analytical Results

Samples from both initial and remedial sampling events were analyzed for lead and copper in drinking water by EPA Method 200.8.

Initial Sampling

Sample locations from the initial sampling event are presented in Figure 1 in Attachment A of this letter. A site-specific sampling and analysis plan (SSSAP) that provides a building specific summary of the location, number, and sampling frequency of water fixture locations is located in Attachment B. Initial analytical results are summarized in Table 1 located in Attachment C of this letter. Laboratory analytical results from the initial sampling event are located in Attachment D of this letter.

Remedial Sampling

Sample locations from the remedial sampling event are presented in Figure 1 in Attachment A of this letter. The remedial analytical results from this project are summarized in Table 2 located in Attachment C of this letter. Laboratory analytical results from the remedial sampling event are located in Attachment E of this letter.

Discussion

Initial Sampling

Analytical results identified one sample, identified as the exterior right drinking fountain north of the concessions window, with a copper concentration of 1,360 µg/L, above the EPA action level of 1,300 µg/L. No samples were identified with lead concentrations above the EPA action level of 15 µg/L.

Remedial Sampling

Immediately following receipt of initial sampling results, the District removed the identified fixture from service pending remediation and further testing. To remediate elevated copper concentrations, the District completed an aggressive flush of the fixture. Fulcrum returned on the morning following the aggressive flush, April 25, 2017, to collect follow-up samples.

Analytical results from remedial sampling indicated the aggressive flush was successful at reducing copper concentrations below the action level for the fixture in question.

Recommendations

No samples were found to contain lead concentrations above the EPA action level of 15 µg/L. One initial sample contained copper above the EPA action level of 1,300 µg/L. The District completed an aggressive flush to reduce the copper concentration of the fixture and a follow-up sample yielded a result of 1,190 µg/L, confirming the remediation was successful. Following sampling and review of laboratory results,

Benton-Franklin Health District supported Fulcrum's recommendation and the District's request to return the fixture to service.

As all samples now report concentrations below lead and copper action levels, Fulcrum does not recommend any additional sampling at this time. However, consistent with industry practice and the intent of WAC 246-366A, Fulcrum recommends that the District complete re-sampling of the building within the next five years (before November 2021).

If you have any questions, please feel free to contact me at (509) 574-0839.

Sincerely,



Amanda Enbysk, GIT
Environmental Geologist



Ryan K. Mathews, CIH, CHMM
Principal



ATTACHMENT A

Figure 1: Sample Location Map



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LEGEND

- KF-P-## - Kitchen faucet
- DF-P-## -Drinking fountain

-Lead (Pb) and copper (Cu) results for each sample location are below each identifier. All results reported in µg/L.

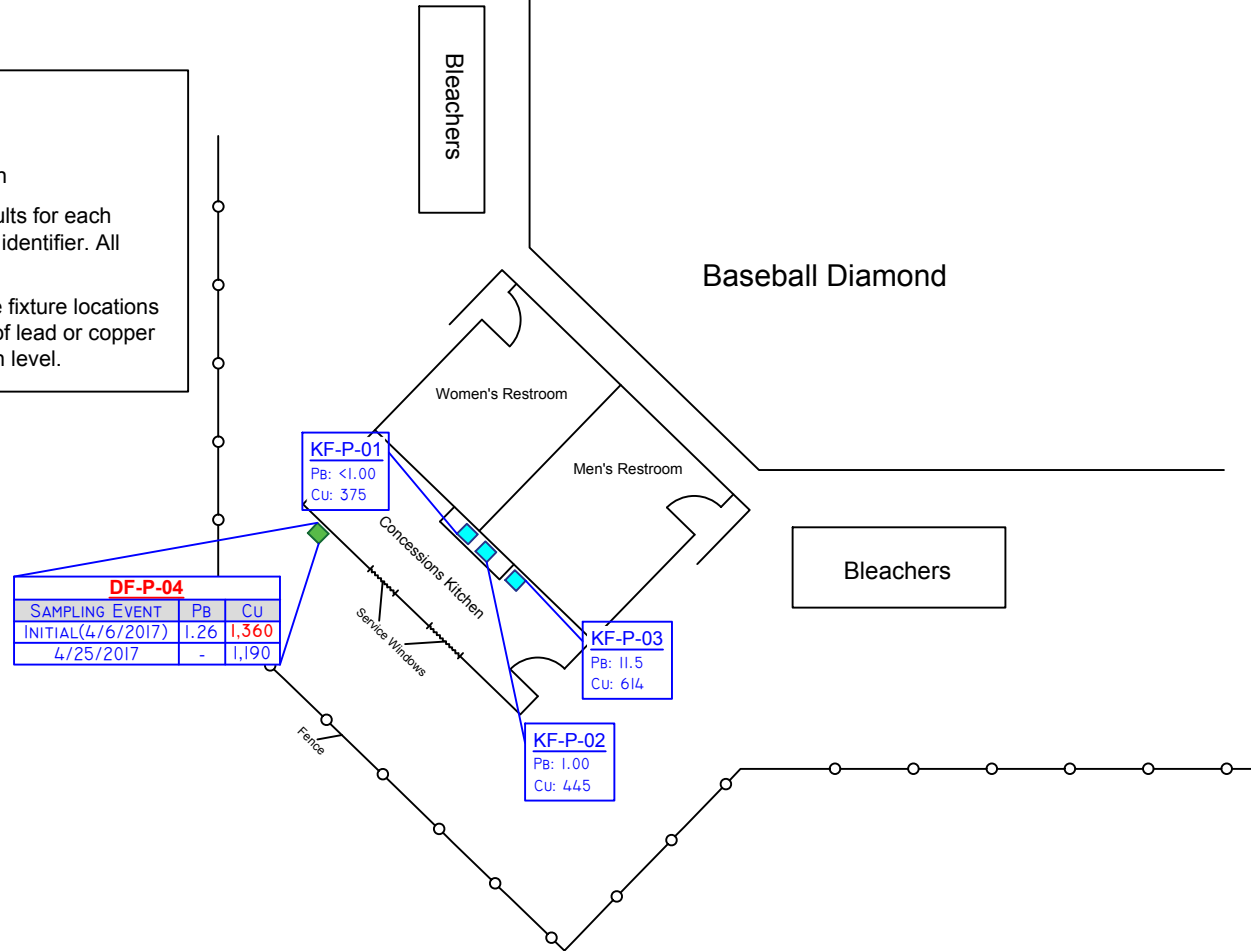
-Samples in **BOLD RED** indicate fixture locations where the initial concentrations of lead or copper were above the respective action level.

DF-P-04			
SAMPLING EVENT	Pb	Cu	
INITIAL(4/6/2017)	1.26	1,360	
4/25/2017	-	1,190	

KF-P-01
Pb: <1.00
Cu: 375

KF-P-03
Pb: 11.5
Cu: 614

KF-P-02
Pb: 1.00
Cu: 445



DRAWING PROVIDED BY PASCO SCHOOL DISTRICT No. 1

ATTACHMENT B

Site-Specific Sampling and Analysis Plan



Site-Specific Sampling and Analysis Plan

Pasco School District No. 1 – Winter 2016 Drinking Water Sampling

Note: This SSSAP has been prepared as a supplement to the project SAP/QAPP and provides a building specific summary of the location, number, and sampling frequency of water fixture locations.

Campus/Building: Emerson Morgan Field Address: 1108 North 10th Avenue, Pasco, WA 99301

☐ Elementary ☐ Middle School ☒ High School ☐ Administration

Date of Construction: 1952 Modernizations: 2010; 2011

Fixture Type	Fixture Locations	Fixture Styles ¹	Samples Collected	Ratio
Drinking fountain/water cooler (DF)	1	1	1	25%
Kitchen Fixture (KF)	3	3	3	75%
Classroom faucet, including faucets in Food Labs and Life Sciences Classrooms (CF)	0	N/A	N/A	N/A
Classroom drinking fountain at sink (CDF)	0	N/A	N/A	N/A
Nurse's Office/Health Room (NF)	0	N/A	N/A	N/A
Teacher's Lounges/Work Rooms (OF)	0	N/A	N/A	N/A
TOTALS	4		4	100%

¹ Fixture styles are approximate and based on sampler's observations

Lead Sampler: Amanda Enbysk Date: 04/06/2017

Sample Prefix: EMF - 040617 - - P (first-draw) - 01 to 06
 School Code Date Fixture Type Sample Type Sample Number

Laboratory: Fremont Analytical Laboratory Delivery Date: April 10, 2017

Comments:

ATTACHMENT C

Table 1: Initial Sampling Analytical Results Summary Table
Table 2: Remedial Sampling Analytical Results Summary Table

Table 1: Initial Sampling Analytical Results

Sample Identification and Location	Fixture Type	Lead Results (µg/L)	Copper Results (µg/L)
EMF4617-KF-P-01: Concessions kitchen, northernmost fixture	Kitchen Faucet	<1.00	375
EMF4617-KF-P-02: Concessions kitchen, center fixture	Kitchen Faucet	1.00	445
EMF4617-KF-P-03: Concessions kitchen, southernmost fixture (handwash)	Kitchen Faucet	11.5	614
EMF4617-DF-P-04: Exterior, right fixture north of service windows	Drinking Fountain	1.26	1,360
<i>EMF4617-KF-P-05: Laboratory Blank</i>	<i>Distilled Water Blank</i>	<1.00	1.16
<i>EMF4617-KF-P-06: Laboratory Spike</i>	<i>Lead and Copper Spike</i>	15.7	1,350
EPA Action Level		15	1,300

1 µg/L means microgram per liter or parts per billion (ppb).

2 Action levels based on the U.S. EPA's Lead and Copper Rule.

Results indicated in **bold** indicate concentrations above the action levels of 15 µg/L for lead and 1,300 µg/L for copper
Results indicated in *italics* are quality assurance spike and blank samples

Table 2: Remedial Sampling Analytical Results

Sample Identification and Location	Fixture Type	Initial Copper Results (µg/L)	4/25/17 Copper Results (µg/L)
DF-P-04: Exterior, right fixture north of service windows	Drinking Fountain	1,360	1,190
<i>KF-P-05: Laboratory Blank</i>	<i>Distilled Water Blank</i>	1.16	0.515
<i>KF-P-06: Laboratory Spike</i>	<i>Lead and Copper Spike</i>	1,350	1,290
EPA Action Level		1,300	1,300

1 µg/L means microgram per liter or parts per billion (ppb).

2 Action levels based on the U.S. EPA's Lead and Copper Rule.

Results indicated in **bold** indicate concentrations above the action level of 1,300 µg/L for copper
Results indicated in *italics* are quality assurance spike and blank samples

ATTACHMENT D

Initial Analytical Results





Fremont
Analytical

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Fulcrum Environmental

Ryan Mathews
406 N. 2nd Street
Yakima, WA 98901

RE: Pasco School District Drinking Water Sampling-Emerson Morga
Work Order Number: 1704092

April 12, 2017

Attention Ryan Mathews:

Fremont Analytical, Inc. received 6 sample(s) on 4/7/2017 for the analyses presented in the following report.

Drinking Water Metals by EPA Method 200.8

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Chelsea Ward
Project Manager

DoD/ELAP Certification #L2371, ISO/IEC 17025:2005
ORELAP Certification: WA 100009-007 (NELAP Recognized)

CLIENT: Fulcrum Environmental
Project: Pasco School District Drinking Water Sampl
Work Order: 1704092

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1704092-001	EMF4617-KF-P-01	04/06/2017 8:30 AM	04/07/2017 10:25 AM
1704092-002	EMF4617-KF-P-02	04/06/2017 8:30 AM	04/07/2017 10:25 AM
1704092-003	EMF4617-KF-P-03	04/06/2017 8:30 AM	04/07/2017 10:25 AM
1704092-004	EMF4617-DF-P-04	04/06/2017 8:30 AM	04/07/2017 10:25 AM
1704092-005	EMF4617-WC-P-05	04/06/2017 8:30 AM	04/07/2017 10:25 AM
1704092-006	EMF4617-DF-P-06	04/06/2017 8:30 AM	04/07/2017 10:25 AM

CLIENT: Fulcrum Environmental**Project:** Pasco School District Drinking Water Sampling-Emerson Morgan Field

WorkOrder Narrative:

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Prep Sample Comments:

1704092-001A 215108: Prep Comments for EPA200.8, Sample 1704092-001A: Turbidity: 0.01 NTU
1704092-002A 215112: Prep Comments for EPA200.8, Sample 1704092-002A: Turbidity: 0.01 NTU
1704092-003A 215113: Prep Comments for EPA200.8, Sample 1704092-003A: Turbidity: 0.01 NTU
1704092-004A 215114: Prep Comments for EPA200.8, Sample 1704092-004A: Turbidity: 0.01 NTU
1704092-005A 215115: Prep Comments for EPA200.8, Sample 1704092-005A: Turbidity: 0.01 NTU
1704092-006A 215116: Prep Comments for EPA200.8, Sample 1704092-006A: Turbidity: 0.01 NTU

Qualifiers:

- * - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



Analytical Report

Work Order: 1704092
Date Reported: 4/12/2017

CLIENT: Fulcrum Environmental

Project: Pasco School District Drinking Water Sampling-Emerson Morgan Field

Lab ID: 1704092-001

Collection Date: 4/6/2017 8:30:00 AM

Client Sample ID: EMF4617-KF-P-01

Matrix: Drinking Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Drinking Water Metals by EPA Method 200.8</u>				Batch ID: 16754		Analyst: TN
Copper	375	0.500		µg/L	1	4/12/2017 10:38:23 AM
Lead	ND	1.00		µg/L	1	4/12/2017 10:38:23 AM

Lab ID: 1704092-002

Collection Date: 4/6/2017 8:30:00 AM

Client Sample ID: EMF4617-KF-P-02

Matrix: Drinking Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Drinking Water Metals by EPA Method 200.8</u>				Batch ID: 16754		Analyst: TN
Copper	445	0.500		µg/L	1	4/12/2017 11:03:52 AM
Lead	1.00	1.00		µg/L	1	4/12/2017 11:03:52 AM

Lab ID: 1704092-003

Collection Date: 4/6/2017 8:30:00 AM

Client Sample ID: EMF4617-KF-P-03

Matrix: Drinking Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Drinking Water Metals by EPA Method 200.8</u>				Batch ID: 16754		Analyst: TN
Copper	614	0.500		µg/L	1	4/12/2017 11:07:53 AM
Lead	11.5	1.00		µg/L	1	4/12/2017 11:07:53 AM



Analytical Report

Work Order: 1704092
Date Reported: 4/12/2017

CLIENT: Fulcrum Environmental

Project: Pasco School District Drinking Water Sampling-Emerson Morgan Field

Lab ID: 1704092-004

Client Sample ID: EMF4617-DF-P-04

Collection Date: 4/6/2017 8:30:00 AM

Matrix: Drinking Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Drinking Water Metals by EPA Method 200.8</u>				Batch ID: 16754		Analyst: TN
Copper	1,360	0.500		µg/L	1	4/12/2017 11:11:54 AM
Lead	1.26	1.00		µg/L	1	4/12/2017 11:11:54 AM

Lab ID: 1704092-005

Client Sample ID: EMF4617-WC-P-05

Collection Date: 4/6/2017 8:30:00 AM

Matrix: Drinking Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Drinking Water Metals by EPA Method 200.8</u>				Batch ID: 16754		Analyst: TN
Copper	1.16	0.500		µg/L	1	4/12/2017 11:15:56 AM
Lead	ND	1.00		µg/L	1	4/12/2017 11:15:56 AM

Lab ID: 1704092-006

Client Sample ID: EMF4617-DF-P-06

Collection Date: 4/6/2017 8:30:00 AM

Matrix: Drinking Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Drinking Water Metals by EPA Method 200.8</u>				Batch ID: 16754		Analyst: TN
Copper	1,350	0.500		µg/L	1	4/12/2017 11:19:57 AM
Lead	15.7	1.00		µg/L	1	4/12/2017 11:19:57 AM



Date: 4/12/2017

Work Order: 1704092
CLIENT: Fulcrum Environmental
Project: Pasco School District Drinking Water Sampl

QC SUMMARY REPORT
Drinking Water Metals by EPA Method 200.8

Sample ID	MB-16754	SampType:	MBLK	Units:	µg/L	Prep Date:	4/12/2017	RunNo:	35495		
Client ID:	MBLKW	Batch ID:	16754			Analysis Date:	4/12/2017	SeqNo:	679884		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Copper	ND	0.500									
Lead	ND	1.00									

Sample ID	LCS-16754	SampType:	LCS	Units:	µg/L	Prep Date:	4/12/2017	RunNo:	35495		
Client ID:	LCSW	Batch ID:	16754			Analysis Date:	4/12/2017	SeqNo:	679885		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Copper	99.4	0.500	100.0	0	99.4	85	115				
Lead	50.0	1.00	50.00	0	100	85	115				

Sample ID	1704092-001ADUP	SampType:	DUP	Units:	µg/L	Prep Date:	4/12/2017	RunNo:	35495		
Client ID:	EMF4617-KF-P-01	Batch ID:	16754			Analysis Date:	4/12/2017	SeqNo:	679887		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Copper	381	0.500						375.3	1.62	30	
Lead	ND	1.00						0		30	

Sample ID	1704092-001AMS	SampType:	MS	Units:	µg/L	Prep Date:	4/12/2017	RunNo:	35495		
Client ID:	EMF4617-KF-P-01	Batch ID:	16754			Analysis Date:	4/12/2017	SeqNo:	679888		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Copper	540	0.500	200.0	375.3	82.5	70	130				
Lead	91.1	1.00	100.0	0.9770	90.1	70	130				

Sample ID	1704092-001AMSD	SampType:	MSD	Units:	µg/L	Prep Date:	4/12/2017	RunNo:	35495		
Client ID:	EMF4617-KF-P-01	Batch ID:	16754			Analysis Date:	4/12/2017	SeqNo:	679891		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Copper	577	0.500	200.0	375.3	101	70	130	540.2	6.58	30	
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Work Order: 1704092
CLIENT: Fulcrum Environmental
Project: Pasco School District Drinking Water Sampl

QC SUMMARY REPORT

Drinking Water Metals by EPA Method 200.8

Sample ID	1704092-001AMSD	SampType:	MSD	Units:	µg/L	Prep Date:	4/12/2017	RunNo:	35495		
Client ID:	EMF4617-KF-P-01	Batch ID:	16754			Analysis Date:	4/12/2017	SeqNo:	679891		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Lead	94.4	1.00	100.0	0.9770	93.5	70	130	91.06	3.66	30	

Client Name: **FE**
 Logged by: **Erica Silva**

Work Order Number: **1704092**
 Date Received: **4/7/2017 10:25:00 AM**

Chain of Custody

1. Is Chain of Custody complete? Yes ☒ No ☐ Not Present ☐
 2. How was the sample delivered? FedEx

Log In

3. Coolers are present? Yes ☒ No ☐ NA ☐
 4. Shipping container/cooler in good condition? Yes ☒ No ☐
 5. Custody Seals present on shipping container/cooler?
 (Refer to comments for Custody Seals not intact) Yes ☐ No ☒ Not Required ☐
 6. Was an attempt made to cool the samples? Yes ☒ No ☐ NA ☐
 7. Were all items received at a temperature of >0°C to 10.0°C* Yes ☒ No ☐ NA ☐
 8. Sample(s) in proper container(s)? Yes ☒ No ☐
 9. Sufficient sample volume for indicated test(s)? Yes ☒ No ☐
 10. Are samples properly preserved? Yes ☒ No ☐
 11. Was preservative added to bottles? Yes ☐ No ☒ NA ☐
 12. Is there headspace in the VOA vials? Yes ☐ No ☐ NA ☒
 13. Did all samples containers arrive in good condition(unbroken)? Yes ☒ No ☐
 14. Does paperwork match bottle labels? Yes ☒ No ☐
 15. Are matrices correctly identified on Chain of Custody? Yes ☒ No ☐
 16. Is it clear what analyses were requested? Yes ☒ No ☐
 17. Were all holding times able to be met? Yes ☒ No ☐

Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: Date
 By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
 Regarding:
 Client Instructions:

19. Additional remarks:

Item Information

Item #	Temp °C
Cooler	2.1
Sample	1.8

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C



ATTACHMENT E

Remedial Analytical Results





Fremont
Analytical

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Fulcrum Environmental

Ryan Mathews
406 N. 2nd Street
Yakima, WA 98901

RE: Pasco SD Drinking Water - Emerson Morgan Field
Work Order Number: 1704310

April 26, 2017

Attention Ryan Mathews:

Fremont Analytical, Inc. received 5 sample(s) on 4/26/2017 for the analyses presented in the following report.

Drinking Water Metals by EPA Method 200.8

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Chelsea Ward
Project Manager

CC:
Amanda Enbysk

CLIENT: Fulcrum Environmental
Project: Pasco SD Drinking Water - Emerson Morga
Work Order: 1704310

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1704310-001	EMF42517-DF-P-04	04/25/2017 8:00 AM	04/26/2017 9:36 AM
1704310-002	EMF42517-DF-S-04	04/25/2017 8:00 AM	04/26/2017 9:36 AM
1704310-003	EMF42517-DF-T-04	04/25/2017 8:00 AM	04/26/2017 9:36 AM
1704310-004	EMF42517-WC-P-05	04/25/2017 8:00 AM	04/26/2017 9:36 AM
1704310-005	EMF42517-DF-P-06	04/25/2017 8:00 AM	04/26/2017 9:36 AM

CLIENT: Fulcrum Environmental
Project: Pasco SD Drinking Water - Emerson Morgan Field

WorkOrder Narrative:

I. SAMPLE RECEIPT:

Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:

Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:

Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Prep Sample Comments:

1704310-001A 216814: Prep Comments for EPA200.8, Sample 1704310-001A: Turbidity: 0.05 NTU

1704310-004A 216815: Prep Comments for EPA200.8, Sample 1704310-004A: Turbidity: 0.06 NTU

1704310-005A 216816: Prep Comments for EPA200.8, Sample 1704310-005A: Turbidity: 0.01 NTU

Qualifiers:

- * - Flagged value is not within established control limits
- B - Analyte detected in the associated Method Blank
- D - Dilution was required
- E - Value above quantitation range
- H - Holding times for preparation or analysis exceeded
- I - Analyte with an internal standard that does not meet established acceptance criteria
- J - Analyte detected below Reporting Limit
- N - Tentatively Identified Compound (TIC)
- Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
- S - Spike recovery outside accepted recovery limits
- ND - Not detected at the Reporting Limit
- R - High relative percent difference observed

Acronyms:

- %Rec - Percent Recovery
- CCB - Continued Calibration Blank
- CCV - Continued Calibration Verification
- DF - Dilution Factor
- HEM - Hexane Extractable Material
- ICV - Initial Calibration Verification
- LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
- MB or MBLANK - Method Blank
- MDL - Method Detection Limit
- MS/MSD - Matrix Spike / Matrix Spike Duplicate
- PDS - Post Digestion Spike
- Ref Val - Reference Value
- RL - Reporting Limit
- RPD - Relative Percent Difference
- SD - Serial Dilution
- SGT - Silica Gel Treatment
- SPK - Spike
- Surr - Surrogate



Analytical Report

Work Order: 1704310
Date Reported: 4/26/2017

CLIENT: Fulcrum Environmental
Project: Pasco SD Drinking Water - Emerson Morgan Field

Lab ID: 1704310-001
Client Sample ID: EMF42517-DF-P-04
Collection Date: 4/25/2017 8:00:00 AM
Matrix: Drinking Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Drinking Water Metals by EPA Method 200.8</u>				Batch ID: 16884	Analyst: TN	
Copper	1,190	0.500		µg/L	1	4/26/2017 12:36:22 PM

Lab ID: 1704310-004
Client Sample ID: EMF42517-WC-P-05
Collection Date: 4/25/2017 8:00:00 AM
Matrix: Drinking Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Drinking Water Metals by EPA Method 200.8</u>				Batch ID: 16884	Analyst: TN	
Copper	0.515	0.500		µg/L	1	4/26/2017 12:40:23 PM

Lab ID: 1704310-005
Client Sample ID: EMF42517-DF-P-06
Collection Date: 4/25/2017 8:00:00 AM
Matrix: Drinking Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
<u>Drinking Water Metals by EPA Method 200.8</u>				Batch ID: 16884	Analyst: TN	
Copper	1,290	0.500		µg/L	1	4/26/2017 12:44:24 PM

Work Order: 1704310
CLIENT: Fulcrum Environmental
Project: Pasco SD Drinking Water - Emerson Morga

QC SUMMARY REPORT

Drinking Water Metals by EPA Method 200.8

Sample ID	MB-16884	SampType:	MBLK	Units:	µg/L	Prep Date:	4/26/2017	RunNo:	35748		
Client ID:	MBLKW	Batch ID:	16884			Analysis Date:	4/26/2017	SeqNo:	684782		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Copper	ND	0.500									
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Sample ID	LCS-16884	SampType: LCS			Units: µg/L		Prep Date: 4/26/2017			RunNo: 35748		
Client ID:	LCSW	Batch ID: 16884			Analysis Date: 4/26/2017			SeqNo: 684783				
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual	

Copper	101	0.500	100.0	0	101	85	115				
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Sample ID	1704309-001ADUP	SampType:	DUP	Units:	µg/L	Prep Date:	4/26/2017	RunNo:	35748		
Client ID:	BATCH	Batch ID:	16884			Analysis Date:	4/26/2017	SeqNo:	684787		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Copper	1,640	0.500						1,648	0.306	30	
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Sample ID	1704309-001AMS	SampType:	MS	Units:	µg/L	Prep Date:	4/26/2017	RunNo:	35748		
Client ID:	BATCH	Batch ID:	16884			Analysis Date:	4/26/2017	SeqNo:	684788		
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Copper	1,780	0.500	200.0	1,648	67.6	70	130				S
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NOTES:

S - Outlying spike recovery(ies) observed. A duplicate analysis was performed and recovered within range.

Sample ID	1704309-001AMSD	SampType:	MSD	Units:	µg/L	Prep Date:	4/26/2017	RunNo:	35748		
Client ID:	BATCH	Batch ID:	16884	Analysis Date:				4/26/2017	SeqNo:	684789	
Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual

Copper	1,820	0.500	200.0	1,648	85.7	70	130	1,783	2.02	30	
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Work Order Number: **1704310**

Date Received: **4/26/2017 9:36:00 AM**

1. Is Chain of Custody complete?	Yes ☒	No ☐	Not Present ☐
2. How was the sample delivered?	UPS		

3. Coolers are present?	Yes ☒	No ☐	NA ☐
4. Shipping container/cooler in good condition?	Yes ☒	No ☐	
5. Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☐	No ☐	Not Required ☒
6. Was an attempt made to cool the samples?	Yes ☒	No ☐	NA ☐
7. Were all items received at a temperature of $>0^{\circ}\text{C}$ to 10.0°C *	Yes ☒	No ☐	NA ☐
8. Sample(s) in proper container(s)?	Yes ☒	No ☐	
9. Sufficient sample volume for indicated test(s)?	Yes ☒	No ☐	
10. Are samples properly preserved?	Yes ☒	No ☐	
11. Was preservative added to bottles?	Yes ☒	No ☐	NA ☐
			HNO ₃
12. Is there headspace in the VOA vials?	Yes ☐	No ☐	NA ☒
13. Did all samples containers arrive in good condition(unbroken)?	Yes ☒	No ☐	
14. Does paperwork match bottle labels?	Yes ☒	No ☐	
15. Are matrices correctly identified on Chain of Custody?	Yes ☒	No ☐	
16. Is it clear what analyses were requested?	Yes ☒	No ☐	
17. Were all holding times able to be met?	Yes ☒	No ☐	

18. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☒

Person Notified: Date:
 By Whom: Via: ☐ eMail ☐ Phone ☐ Fax ☐ In Person
 Regarding:
 Client Instructions:

19. Additional remarks:

Item #	Temp °C
Cooler	4.8
Sample	1.4

Original



Fremont

Analytical

3600 Fremont Ave N.
Seattle, WA 98103

Tel: 206-352-3790
Fax: 206-352-7178

Client: Fulcrum Environmental Consulting

Address: 406 North Second Street

City, State, Zip: Yakima, WA, 98901

Telephone: 509.574.0839

Fax: 509.575.8453

Chain of Custody Record and Laboratory Services Agreement

Date: 4/25/2017

Laboratory Project No (Internal):

1704310

Page: 1 of 1

Project Name: Pasco School District Drinking Water - Emerson Megan Field

Project No: 161818.17

Location: Emerson Megan Field PHS, Pasco, WA

Collected by: Amanda Enbysk

Report To (PM): Ryan Mathews

PM Email: rmathews@fulcrum.net; aenbysk@fulcrum.net

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8)	Total (T) Dissolved (D)	Anions (IC)***	EDB (8011)	Comments	
1 EMF 42517-DF-P-04	4/25/17	0800	DW														⊕	H2O; unp.
2 EMF 42517-DF-S-04																		H2O; unp.
3 EMF 42517-DF-T-04																		
4 EMF 42517-WC-P-05																		⊕
5 EMF 42517-DF-P-06																		⊕
6																		
7																		
8																		
9																		
10																		