



December 30, 2016

Jeremy Miller
Maintenance Manager
Department of Administrative Services
Enterprise Asset Management Division
1225 Ferry Street SE
Salem, Oregon 97301

Via email: Jeremy.W.MILLER@oregon.gov

Regarding: Drinking Water Sampling for Lead
Operations and Maintenance Shop
1240 Ferry Street SE
Salem, Oregon 97301
PBS Project # 25103.003 Phase 0031

Dear Mr. Miller:

On October 18, 2016, PBS Engineering and Environmental Inc. (PBS) performed drinking water sampling at the Operations and Maintenance shop located at 1240 Ferry Street SE in Salem, Oregon. The testing was requested by State of Oregon Department of Administrative Services in an effort to ensure that concentrations of lead in drinking water remain below the EPA action level.

Sampling methodology and the interpretation of laboratory results were based on the EPA Lead and Copper Rule (LCR). Following LCR sampling guidelines, PBS collected the first 1000 milliliters (mL) of water from each test location (first draw) early in the morning following an overnight stagnation period. The LCR's stagnation period, and sampling protocol specifying the first 1000 mL samples, is designed to maximize the likelihood that the highest concentrations of lead are identified in water used for consumption. At each sample location, immediately following first draw sampling, a flush sample was collected after the water had been allowed to run for 30 seconds.

The water sampling process was supervised by a certified industrial hygienist (CIH) who is also an Oregon Health Authority certified lead risk assessor.

The action level set by the EPA for lead is 15 parts per billion (ppb). If the action level is exceeded in more than 10 percent of taps sampled, then action must be taken to control plumbing-material corrosion.

Six first draw and flush drinking water samples were collected and delivered under chain of custody to BSK Laboratories in Vancouver, Washington for lead analysis. Initially, only first draw samples were analyzed. Any first draw sample that exceeded the EPA action level for lead had its associated flush sample analyzed.

Concentrations of lead in the first draw samples ranged from none detected to 2.4 ppb. Laboratory analysis indicates that all of these drinking water samples contained lead at concentrations below the EPA action level of 15 ppb.

The following table presents all first draw sample locations and lead concentrations in ppb.

4412 SW Corbett Avenue, Portland, OR 97239
503.248.1939 Main
866.727.0140 Fax
888.248.1939 Toll-Free
www.pbsenv.com

First Draw Drinking Water Sample Locations and Lead Concentrations

Sample Number	Sample Location	Lead Concentration (ppb)
SK-OMS-001-FD	Kitchenette 08M break room kitchen sink, first floor	2.6
WF-OMS-003-FD	Water fountain 08M break room, first floor	2.4
WF-OMS-005-FD	Water fountain steam plant, first floor against wall	ND

ND: None Detected

Please refer to the attached Chain of Custody form and laboratory data for greater details. It should be noted that quality control (QC) sample results are included at the end of laboratory information. The QC samples are both laboratory blanks and spiked samples used internally by the laboratory to assess accuracy.

Please feel free to contact me at 503.417.7602 or derek.may@pbsenv.com with any questions or comments.

Sincerely,
PBS Engineering and Environmental Inc.



Derek May, Principal

Attachments: Laboratory Results
Chain of Custody Form

DM::bmp

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BSK Associates Fresno
 1414 Stanislaus St
 Fresno, CA 93706
 559-497-2888 (Main)
 559-485-6935 (FAX)



A6J2704
11/02/2016

Derek May
 PBS Environmental
 4412 SW Corbett Ave
 Portland, OR 97239

RE: Report for A6J2704 Oregon DAS - Lead

Dear Derek May,

Thank you for using BSK Associates for your analytical testing needs. In the following pages, you will find the test results for the samples submitted to our laboratory on 10/20/2016. The results have been approved for release by our Laboratory Director as indicated by the authorizing signature below.

The samples were analyzed for the test(s) indicated on the Chain of Custody (see attached) and the results relate only to the samples analyzed. BSK certifies that the testing was performed in accordance with the quality system requirements specified in the 2009 TNI Standard. Any deviations from this standard or from the method requirements for each test procedure performed will be annotated alongside the analytical result or noted in the Case Narrative. Unless otherwise noted, the sample results are reported on an "as received" basis.

If additional clarification of any information is required, please contact your Project Manager, Debra Karlsson, at 559-497-2888.

Thanks again for using BSK Associates. We value your business and appreciate your loyalty.

Sincerely,



Debra Karlsson, Project Coordinator



Accredited in Accordance with NELAP
 ORELAP #4021

Case Narrative

Project and Report Details **Invoice Details**

Client: PBS Environmental	Invoice To: PBS Environmental
Report To: Derek May	Invoice Attn: Accounts Payable
Project #: Operations and Maint. Shop #25103.003 PH 31	Project PO#: -
Received: 10/20/2016 - 09:00	
Report Due: 11/03/2016	

Sample Receipt Conditions

Cooler: Default Cooler	Containers Intact
Temperature on Receipt °C: 19.6	COC/Labels Agree
	Received with no thermal preservation.
	Sample(s) split after receipt at the laboratory.
	Initial receipt at BSK-VAL

Data Qualifiers

The following qualifiers have been applied to one or more analytical results:

None applied

Report Distribution

Recipient(s)	Report Format	CC:
Derek May	FINAL.RPT	



A6J2704

Oregon DAS - Lead

Operations and Maint. Shop #25103.003 PH 31

Certificate of Analysis

Sample ID: A6J2704-01

Sampled By: Client

Sample Description: SK-OMS-001-FD // Kitchenette 08M breakroom kitchen sink 1st Floor

Sample Date - Time: 10/18/16 - 00:00

Matrix: Drinking Water

Sample Type: First Draw

BSK Associates Fresno

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Lead	EPA 200.8	0.0026	0.0010	mg/L	1	A614770	10/26/16	10/27/16	



A6J2704

Oregon DAS - Lead

Operations and Maint. Shop #25103.003 PH 31

Certificate of Analysis

Sample ID: A6J2704-03

Sampled By: Client

Sample Description: WF-OMS-003-FD // Water fountain 08M breakroom 1st Floor

Sample Date - Time: 10/18/16 - 00:00

Matrix: Drinking Water

Sample Type: First Draw

BSK Associates Fresno

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Lead	EPA 200.8	0.0024	0.0010	mg/L	1	A614770	10/26/16	10/27/16	



A6J2704

Oregon DAS - Lead

Operations and Maint. Shop #25103.003 PH 31

Certificate of Analysis

Sample ID: A6J2704-05

Sampled By: Client

Sample Description: WF-OMS-005-FD // Water fountain steam plant 1st Floor against wall

Sample Date - Time: 10/18/16 - 00:00

Matrix: Drinking Water

Sample Type: First Draw

BSK Associates Fresno

Metals

Analyte	Method	Result	RL	Units	RL Mult	Batch	Prepared	Analyzed	Qual
Lead	EPA 200.8	ND	0.0010	mg/L	1	A614771	10/26/16	10/27/16	

BSK Associates Fresno
Metals Quality Control Report

Analyte	Result	RL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Date Analyzed	Qual
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EPA 200.8 - Quality Control

Batch: A614770

Prepared: 10/26/2016

Prep Method: EPA 200.2 - Pb/Cu Rule

Analyst: GNG

Blank (A614770-BLK1)

Lead ND 0.0010 mg/L 10/27/16

Blank Spike (A614770-BS1)

Lead 0.096 0.0010 mg/L 0.10 96 85-115 10/27/16

Blank Spike Dup (A614770-BSD1)

Lead 0.096 0.0010 mg/L 0.10 96 85-115 0 20 10/27/16

Matrix Spike (A614770-MS1), Source: A6J2625-25

Lead 0.18 0.0020 mg/L 0.20 ND 91 70-130 10/27/16

Matrix Spike (A614770-MS2), Source: A6J2625-45

Lead 0.20 0.0020 mg/L 0.20 ND 98 70-130 10/27/16

Matrix Spike Dup (A614770-MSD1), Source: A6J2625-25

Lead 0.19 0.0020 mg/L 0.20 ND 96 70-130 5 20 10/27/16

Matrix Spike Dup (A614770-MSD2), Source: A6J2625-45

Lead 0.20 0.0020 mg/L 0.20 ND 98 70-130 1 20 10/27/16

EPA 200.8 - Quality Control

Batch: A614771

Prepared: 10/26/2016

Prep Method: EPA 200.2 - Pb/Cu Rule

Analyst: GNG

Blank (A614771-BLK1)

Lead ND 0.0010 mg/L 10/27/16

Blank Spike (A614771-BS1)

Lead 0.098 0.0010 mg/L 0.10 98 85-115 10/27/16

Blank Spike Dup (A614771-BSD1)

Lead 0.097 0.0010 mg/L 0.10 97 85-115 1 20 10/27/16

Matrix Spike (A614771-MS1), Source: A6J2704-05

Lead 0.18 0.0020 mg/L 0.20 ND 92 70-130 10/27/16

Matrix Spike (A614771-MS2), Source: A6J2839-04

Lead 0.19 0.0020 mg/L 0.20 0.0026 93 70-130 10/27/16

Matrix Spike Dup (A614771-MSD1), Source: A6J2704-05

Lead 0.19 0.0020 mg/L 0.20 ND 94 70-130 3 20 10/27/16

Matrix Spike Dup (A614771-MSD2), Source: A6J2839-04

Lead 0.19 0.0020 mg/L 0.20 0.0026 92 70-130 1 20 10/27/16

Certificate of Analysis

Notes:

- The Chain of Custody document and Sample Integrity Sheet are part of the analytical report.
- Any remaining sample(s) for testing will be disposed of according to BSK's sample retention policy unless other arrangements are made in advance.
- All positive results for EPA Methods 504.1 and 524.2 require the analysis of a Field Reagent Blank (FRB) to confirm that the results are not a contamination error from field sampling steps. If Field Reagent Blanks were not submitted with the samples, this method requirement has not been performed.
- Samples collected by BSK Analytical Laboratories were collected in accordance with the BSK Sampling and Collection Standard Operating Procedures.
- J-value is equivalent to DNQ (Detected, not quantified) which is a trace value. A trace value is an analyte detected between the MDL and the laboratory reporting limit. This result is of an unknown data quality and is only qualitative (estimated). Baseline noise, calibration curve extrapolation below the lowest calibrator, method blank detections, and integration artifacts can all produce apparent DNQ values, which contribute to the un-reliability of these values.
- (1) - Residual chlorine and pH analysis have a 15 minute holding time for both drinking and waste water samples as defined by the EPA and 40 CFR 136. Waste water and ground water (monitoring well) samples must be field filtered to meet the 15 minute holding time for dissolved metals.
- Summations of analytes (i.e. Total Trihalomethanes) may appear to add individual amounts incorrectly, due to rounding of analyte values occurring before or after the total value is calculated, as well as rounding of the total value.
- RL Multiplier is the factor used to adjust the reporting limit (RL) due to variations in sample preparation procedures and dilutions required for matrix interferences.
- Due to the subjective nature of the Threshold Odor Method, all characterizations of the detected odor are the opinion of the panel of analysts. The characterizations can be found in Standard Methods 2170B Figure 2170:1.
- The MCLs provided in this report (if applicable) represent the primary MCLs for that analyte.

Definitions

mg/L:	Milligrams/Liter (ppm)	MDL:	Method Detection Limit	MDA95:	Min. Detected Activity
mg/Kg:	Milligrams/Kilogram (ppm)	RL:	Reporting Limit: DL x Dilution	MPN:	Most Probable Number
µg/L:	Micrograms/Liter (ppb)	ND:	None Detected at RL	CFU:	Colony Forming Unit
µg/Kg:	Micrograms/Kilogram (ppb)	pCi/L:	Picocuries per Liter	Absent:	Less than 1 CFU/100mLs
%:	Percent Recovered (surrogates)	RL Mult:	RL Multiplier	Present:	1 or more CFU/100mLs
NR:	Non-Reportable	MCL:	Maximum Contaminant Limit		

Please see the individual Subcontract Lab's report for applicable certifications.

BSK is not accredited under the NELAP program for the following parameters:

****NA****

Certifications: Please refer to our website for a copy of our Accredited Fields of Testing under each certification.

Fresno

State of California - ELAP	1180	State of Hawaii	4021
State of Nevada	CA000792016-1	State of Oregon - NELAP	4021
EPA - UCMR3	CA00079	State of Washington	C997-16

Sacramento

State of California - ELAP	2435
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San Bernardino

State of California - ELAP	2993	State of Oregon - NELAP	4119-001
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Vancouver

State of Oregon - NELAP	WA100008-008	State of Washington	C824-16
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Sample Integrity

BSK Bottles: Yes No

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COC Info	Was temperature within range? Chemistry $\leq 6^{\circ}\text{C}$ Micro $< 10^{\circ}\text{C}$	Yes	No	<u>NA</u>	Were correct containers and preservatives received for the tests requested?	<u>Yes</u>	No	NA
	If samples were taken today, is there evidence that chilling has begun?	Yes	No	<u>NA</u>	Were there bubbles in the VOA vials? (Volatiles Only)	Yes	No	<u>NA</u>
	Did all bottles arrive unbroken and intact?	<u>Yes</u>	No		Was a sufficient amount of sample received?	<u>Yes</u>	No	
	Did all bottle labels agree with COC?	<u>Yes</u>	No		Do samples have a hold time <72 hours?	Yes	<u>No</u>	
	Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes	No	<u>NA</u>	Was PM notified of discrepancies? PM: _____ By/Time: _____	Yes	No	<u>NA</u>

Bottles Received	250ml(A) 500ml(B) 1Liter(C) 40ml VOA(V)	Checks		Passed?							
		Y	N	Y	N						
	Bacti Na ₂ S ₂ O ₃	—	—								
	None (P) White Cap	—	—								
	Cr6 (P) Lt. Green Label/Blue Cap NH ₄ OH(NH ₄) ₂ SO ₄ DW	Cl, pH > 8	Y	N							
	Cr6 (P) Pink Label/Blue Cap NH ₄ OH(NH ₄) ₂ SO ₄ WW	pH 9.3-9.7	Y	N							
	Cr6 (P) Black Label/Blue Cap NH ₄ OH(NH ₄) ₂ SO ₄ 7199 ***24 HOUR HOLD TIME***	pH 9.0-9.5	Y	N							
	HNO ₃ (P) Red Cap or HCl (P) Purple Cap/Lt. Blue Label	—	—								
	H ₂ SO ₄ (P) or (AG) Yellow Cap/Label	pH < 2	Y	N							
	NaOH (P) Green Cap	Cl, pH > 10	Y	N							
	NaOH + ZnAc (P)	pH > 9	Y	N							
	Dissolved Oxygen 300ml (g)	—	—								
	None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	—	—								
	HCl (AG) Lt. Blue Label O&G, Diesel	—	—								
	Ascorbic, EDTA, KH ₂ Ct (AG) Pink Label 525	—	—								
	Na ₂ O ₃ S 250mL (AG) Neon Green Label 515	—	—								
	Na ₂ S ₂ O ₃ 1 Liter (Brown P) 549	—	—								
	Na ₂ S ₂ O ₃ (AG) Blue Label 548, THM, 524	—	—								
	Na ₂ S ₂ O ₃ (CG) Blue Label 504, 505, 547	—	—								
	Na ₂ S ₂ O ₃ + MCAA (CG) Orange Label 531	pH < 3	Y	N							
	NH ₄ Cl (AG) Purple Label 552	—	—								
	EDA (AG) Brown Label DBPs	—	—								
	HCL (CG) 524.2, BTEX, Gas, MTBE, 8260/624	—	—								
	Buffer pH 4 (CG)	—	—								
	H ₃ PO ₄ (CG) Salmon Label	—	—								
	Other:										
	Asbestos 1Liter Plastic w/ Foil	—	—								
	Low Level Hg / Metals Double Baggie	—	—								
	Bottled Water	—	—								
	Clear Glass 250mL / 500mL / 1 Liter	—	—								
	Soil Tube Brass / Steel / Plastic	—	—								
	Tedlar Bag / Plastic Bag	—	—								

Split	Container	Preservative	Date/Time/Initials	Container	Preservative	Date/Time/Initials
	<u>S</u> P	250*			S P	
S P				S P		

Comments

* Odd numbers only. RIL



A6J2704



10242016

PBSEN1939

Turnaround: Standard

Due Date: 11/3/2016



PBS Environmental



Sample Integrity

BSK Bottles: Yes No

Page 1 of 1



COC Info	Was temperature within range? Chemistry $\leq 6^{\circ}\text{C}$ Micro $< 10^{\circ}\text{C}$	Yes	No	<u>NA</u>	Were correct containers and preservatives received for the tests requested?	Yes	No	<u>NA</u>
	If samples were taken today, is there evidence that chilling has begun?	Yes	No	<u>NA</u>	Were there bubbles in the VOA vials? (Volatiles Only)	Yes	No	<u>NA</u>
	Did all bottles arrive unbroken and intact?	<u>Yes</u>	No		Was a sufficient amount of sample received?	<u>Yes</u>	No	
	Did all bottle labels agree with COC?	<u>Yes</u>	No		Do samples have a hold time <72 hours?	Yes	<u>No</u>	
	Was sodium thiosulfate added to CN sample(s) until chlorine was no longer present?	Yes	No	<u>NA</u>	Was PM notified of discrepancies? PM: _____ By/Time: _____	Yes	No	<u>NA</u>

Bottles Received		Checks		Passed?				
		Checks	Passed?					
	250ml(A) 500ml(B) 1Liter(C) 40ml VOA(V)							
	Bacti $\text{Na}_2\text{S}_2\text{O}_3$	—	—					
	None (P) White Cap	—	—					
	Cr6 (P) Lt. Green Label/Blue Cap $\text{NH}_4\text{OH}(\text{NH}_4)_2\text{SO}_4$ DW	Cl, pH > 8	Y	N				
	Cr6 (P) Pink Label/Blue Cap $\text{NH}_4\text{OH}(\text{NH}_4)_2\text{SO}_4$ WW	pH 9.3-9.7	Y	N				
	Cr6 (P) Black Label/Blue Cap $\text{NH}_4\text{OH}(\text{NH}_4)_2\text{SO}_4$ 7199 ***24 HOUR HOLD TIME***	pH 9.0-9.5	Y	N				
	HNO_3 (P) ^{Brown Cap} or HCl (P) ^{Purple Cap/Lt. Blue Label}	—	—					
	H_2SO_4 (P) or (AG) Yellow Cap/Label	pH < 2	Y	N				
	NaOH (P) Green Cap	Cl, pH > 10	Y	N				
	$\text{NaOH} + \text{ZnAc}$ (P)	pH > 9	Y	N				
	Dissolved Oxygen 300ml (g)	—	—					
	None (AG) 608/8081/8082, 625, 632/8321, 8151, 8270	—	—					
	HCl (AG) Lt. Blue Label O&G, Diesel	—	—					
	Ascorbic, EDTA, KH_2Cl (AG) Pink Label 525	—	—					
	$\text{Na}_2\text{O}_3\text{S}$ 250mL (AG) Neon Green Label 515	—	—					
	$\text{Na}_2\text{S}_2\text{O}_3$ 1 Liter (Brown P) 549	—	—					
	$\text{Na}_2\text{S}_2\text{O}_3$ (AG) Blue Label 548, THM, 524	—	—					
	$\text{Na}_2\text{S}_2\text{O}_3$ (CG) Blue Label 504, 505, 547	—	—					
	$\text{Na}_2\text{S}_2\text{O}_3 + \text{MCAA}$ (CG) Orange Label 531	pH < 3	Y	N				
	NH_4Cl (AG) Purple Label 552	—	—					
	EDA (AG) Brown Label DBPs	—	—					
	HCL (CG) 524.2, BTEX, Gas, MTBE, 8260/624	—	—					
	Buffer pH 4 (CG)	—	—					
	H_3PO_4 (CG) Salmon Label	—	—					
	Other:							
	Asbestos 1Liter Plastic w/ Foil	—	—					
	Low Level Hg / Metals Double Baggie	—	—					
	Bottled Water	—	—					
	Clear Glass 250mL / 500mL / 1 Liter	—	—					
	Soil Tube Brass / Steel / Plastic	—	—					
	Tedlar Bag / Plastic Bag	—	—					

Split	Container	Preservative	Date/Time/Initials	Container	Preservative	Date/Time/Initials
	(S) P 250*			S P		
	S P			S P		

Comments: * Odd numbers only. RIL All containers received intact re 10/25