

December 11, 2017

ISSUED FOR USE

FILE: 704-ENW.VENW03140-01

School District 68 (Nanaimo-Ladysmith)
395 Wakesiah Road
Nanaimo, BC V9R 3K6

Via Email: BHackwood@sd68.bc.ca; Chris.Baker@sd68.bc.ca

Attention: Mr. Brian Hackwood, Maintenance Manager

Subject: Domestic Water Testing (Lead) Inventory – Brechin Elementary

1.0 INTRODUCTION

Tetra Tech Canada Inc. (Tetra Tech) was retained School District 68 Nanaimo-Ladysmith (SD 68) to conduct a domestic water testing inventory at Brechin Elementary located in SD 68. Tetra Tech understands that the BC Ministry of Education has issued a directive to protect drinking water. The directive requires that a systematic investigation of public drinking water supplies at select schools in the District be undertaken. The investigation is based on procedures set forth by the Vancouver Island Health Authority (VIHA), modified per Health Canada guidelines, to ascertain risk and mitigation.

Tetra Tech understands that the sampling schedule, collection, testing and reporting of results needs to be completed by December 22, 2017 in order to allow sufficient time for SD 68 to implement mitigation measures prior to its deadline of March 31, 2018.

Carrie McVeigh, of SD 68, provided Tetra Tech with authorization to proceed with the inventory on October 24, 2017.

2.0 METHODOLOGY

Tetra Tech completed the domestic water testing inventory program at Brechin Elementary on November 20th, 2017. The 2017 sampling program was conducted as per the protocols established during the 2016 program. The methodologies employed during the field program are detailed in the following subsections.

2.1 Sampling Locations

Tetra Tech reviewed plans for the facility prior to commencing the field work to identify potential sampling locations. The facility was then assessed in the field and sampling locations were selected based on the probability of human consumption at a location. The sampling locations included one point that was closest to the location where the water supply enters the building, one that is the furthest point from where the water supply enters the building and from points where human consumption of water occurred or was reasonably likely to occur. The sampling locations for Brechin Elementary are shown on the attached Figure 1.

Drinking fountains and kitchen sinks were all considered to have a high probability of human consumption of water and were always sampled. Sinks with visible evidence of human consumption of water, such as water bottles, cups, or electric kettles were also considered to have a high probability of human consumption of water and were sampled. Although classroom sinks were considered to have a moderate probability of human consumption of water, only

representative samples were collected as per the direction of SD 68 Maintenance Manager, Mr. Brian Hackwood. Classroom laboratory and art room sinks, where present, were considered to have a low probability of human consumption of water so only representative samples were collected. Finally, washrooms and utility sinks, unless there was other evidence of human consumption of water (such as an electric kettle) were considered to be a low probability of human consumption of water and only representative samples were collected.

2.2 Drinking Water Sampling

Sampling was conducted in the early hours of Monday, November 20th, 2017 in order collect water samples representative of an approximate worse-case scenario of water that had remained in contact with the school's plumbing over the course of a weekend. Two samples were collected at each sample location; the first collected immediately prior to any water line flushing (0 second sample); the second collected after thirty seconds of water line flushing (30 second sample).

The process for the sequence of analysis for a sample location is as follows:

- Only the pre-flush (0 second) sample is initially submitted for laboratory analysis;
- If the analytical result exceeds the *Guidelines for Canadian Drinking Water Quality* (GCDWQ) Maximum Allowable Concentration (MAC), the 30 second sample would be submitted for further analysis; and
- If the 30 second sample analytical result exceeds the GCDWQ MAC, additional samples would be collected after flushing with cold water for 2 minutes and 5 minutes at a subsequent sampling event and both samples submitted for analysis.

Water samples were collected directly from the sample point into clean, labeled, new laboratory-supplied containers pre-charged with preservative for total lead. Sampling personnel wore new nitrile gloves prior to collecting each sample. Samples were kept in a cooler with ice after collection until being brought back to Tetra Tech's Nanaimo office, where samples not immediately submitted to the laboratory were stored in refrigerated conditions.

2.3 Analytical Testing

Maxxam is a Canadian Association for Laboratory Accreditation (CALA) accredited laboratory that is qualified to analyze the samples using British Columbia Ministry of Environment (MOE)-approved procedures. All water samples submitted were analyzed for total lead.

2.4 Quality Assurance / Quality Control

During the sampling program, Tetra Tech implemented a Quality Assurance/Quality Control (QA/QC) program to ensure the integrity of the sampling methodology and analytical testing. The QA/QC program adhered to Tetra Tech's in-house Quality Management System (QMS), which was designed to generate representative samples, minimize the potential for cross-contamination between sampling locations and samples, and reduce the potential for systematic bias.

The QA/QC program included the following tasks:

- Recording the results of field activities in the field concurrently with the activities;
- Use of clean, new sampling gloves at each sampling location;
- Placing samples into new, labeled laboratory-supplied containers;

- Transporting samples to Maxxam in chilled coolers using chain-of-custody procedures;
- Using a Canadian Association for Laboratory Accreditation (CALA) accredited laboratory that is qualified to analyze the samples using MOE-approved procedures;
- Independently verifying the sample concentrations flagged by Maxxam as being greater than Health Canada guidelines; and
- Conducting a review of this report by a qualified senior Tetra Tech professional to ensure that the report meets Tetra Tech technical and reporting requirements.

Laboratory Quality Assurance / Quality Control Program

Water samples were submitted to Maxxam, a CALA accredited laboratory. Laboratory testing was conducted using methods outlined in the British Columbia Environmental Laboratory Manual. Laboratory QA/QC reports are attached to the laboratory reports presented in Appendix B. Samples included in the QA/QC reports consist of laboratory batches and will include random samples from the lab report and potentially other projects to complete a batch.

The Laboratories will note any sample deficiencies, such as unacceptable headspace, broken jars or bottles, etc. As well, the laboratory will measure the temperature of samples received by the laboratory in Burnaby.

3.0 ASSESSMENT STANDARDS

As per the guidance from the Vancouver Island Health Authority (VIHA), Tetra Tech compared the sample analytical results to the *Guidelines for Canadian Drinking Water Quality* (GCDWQ) published by Health Canada, February 2017. The guidelines list a Maximum Acceptable Concentration (MAC) for lead of 10 µg/L (0.010 mg/L). The MAC for lead is based on chronic effects and is intended to apply to average concentrations in water consumed for extended periods. No immediately toxic concentration for lead is listed, however exposure to lead should nevertheless be kept to a minimum.

4.0 ANALYTICAL RESULTS

Tetra Tech collected water samples from Brechin Elementary on November 20th, 2017. A total of 11 sample locations were identified; two samples were collected at each location (i.e., 0 second sample and 30 second sample). Eleven pre-flush (0 second) samples were submitted for laboratory analysis of total lead.

Nine of the 0 second samples contained concentration of total lead below the GCDWQ MAC but two 0 second samples were greater than the guideline.

Sample BR02 was collected from a sink (with a drinking fountain attachment) in Classroom 125 and BR11 was collected from a girls' water closet on the lower floor. The 30 second sample for these two locations was submitted for laboratory analysis of total lead.

Both of the 30 second samples contained concentrations of total lead below the GCDWQ MAC.

Sampling locations are shown on Figure 1. Laboratory testing results for Brechin Elementary are summarized in the table below. The complete laboratory certificate is provided as Appendix B.

Table 1: Laboratory Testing Results

Sample ID	Sample Date	MAC	Total Lead (µg/L)
0 Second Samples			
BR01-0s	11/20/2017	10 µg/L	1.22
BR02-0s	11/20/2017		10.5
BR03-0s	11/20/2017		9.09
BR04-0s	11/20/2017		1.72
BR05-0s	11/20/2017		1.00
BR06-0s	11/20/2017		6.34
BR07-0s	11/20/2017		0.23
BR08-0s	11/20/2017		1.24
BR09-0s	11/20/2017		4.24
BR10-0s	11/20/2017		2.38
BR11-0s	11/20/2017		73.2
30 Second Samples			
BR02-30s	11/20/2017	10 µg/L	1.04
BR11-0s	11/20/2017		5.97
Notes:	Grey Fill	Exceeds GCDWQ MAC	

5.0 DISCUSSION AND RECOMMENDATIONS

Tetra Tech's sampling program was based upon guidance from the Ministry of Health, found in the document *Guidance on Controlling Corrosion in Drinking Water Distribution Systems* (2009). The rationale is that for each sampling point, if the pre-flush (0 second) sample (Tier 1) contained elevated lead concentrations, it could indicate that the faucet or fittings are the likely source of lead. If a subsequent 30 second flush sample (Tier 2) contained elevated lead concentrations, the source of the lead would likely be the piping (plumbing) leading to the faucet; whereas low lead concentrations in the 30 second sample would further indicate that the source was likely the faucet and fittings. Finally, a 5 minute flush sample (if required) should be drawing water directly from the water supply piping within the building and would indicate if flushing is feasible for lowering the lead concentration in water within the building.

The Health Canada guidance recommend that Tier 2 sampling (30 second samples) take place when Tier 1 sampling identifies more than 10% of sites with lead concentrations above the MAC, and then only at the 10% of sampling sites with the highest lead concentration. Rather, Tetra Tech ran every 30 second sample for locations where the 0 second sample was above the MAC to show that flushing was adequate to lower the lead concentration in the drinking water at each point of concern.

The guidance from the Ministry of Health recommended that samples be collected after the sampling points had been stagnant for a minimum of 8 hours but not longer than 24 hours in order to simulate the worst case daily scenario for lead in drinking water consumption. Based on guidance from VIHA, SD 68 directed Tetra Tech to collect samples Monday mornings prior to any staff or students arriving at the facilities in order to simulate a worst-case scenario for stagnant water. As such, lead concentrations reported represent what could be expected following a weekend and would likely be lower on subsequent weekday mornings.

Nine of the 11 pre-flush (0 second) samples collected at Brechin Elementary contained concentrations of lead below the GCDWQ MAC. Lead concentrations at sample locations BR02 and BR11 exceeded the MAC for the 0 second samples but were below the guideline for the 30 second samples. The 0 second sample concentration at BR02 was only slightly above the MAC at 10.5 µg/L. At BR11, the 0 second sample concentration was over seven times greater than the MAC (73.2 µg/L). As BR11 is located in a water closet on the lower level, it is likely that this sink may not be utilized frequently, thus the stagnant time upon sampling was most likely substantially greater than 48 hours.

As previously noted, where lead concentrations are elevated in 0 second samples, the contributing source is likely the fixture (i.e., faucet or fittings). Where the 30 second sample is also elevated the source is likely the plumbing immediately behind the fixture. Since lead concentrations at locations BR02 and BR11 exceeded the MAC for the 0 second sample but not for the 30 second sample, there is potentially a lead source in the fixtures.

Flushing is adequate to lower the lead concentrations at the two noted locations. During sample collection, Tetra Tech noted signage throughout the facility stating “Water Quality – First thing in the morning... Run the water for two minutes before drinking. Throughout the day... Let the water run until it is cold before drinking.” Tetra Tech recommends that this signage be maintained at each point where drinking water could be consumed and that this procedure continues to be followed as it promotes drinking water safety awareness.

6.0 SUMMARY AND CONCLUSIONS

Nine of the 11 pre-flush (0 second) samples collected at Brechin contained concentrations of total lead below the GCDWQ MAC of 10µg/L (0.010 mg/L). Two samples had concentrations of lead exceeding the GCDWQ for the 0 second sample but were below the guideline for the 30 second samples.

Tetra Tech recommends that SD 68 continue with its ongoing procedure of conducting a 2 minute flush at each drinking water consumption point each morning; and running taps/faucets until cold prior to consuming water. Tetra Tech noted signage at most drinking water consumption points stating “Water Quality – First thing in the morning... Run the water for two minutes before drinking. Throughout the day... Let the water run until it is cold before drinking.”

Tetra Tech recommends that the facility be inspected on a routine basis to ensure that the above noted signage is present and in good condition at each point where drinking water could be consumed. Tetra Tech further recommends that a bulletin be provided to staff summarizing the drinking water quality results at the facility and reminding them of the above procedure. Staff should then instruct students and visitors in the drinking water procedure.

7.0 CLOSURE

This report has been prepared based on the scope of work and for the use of School District 68, which includes distribution as required for the purposes for which this assessment was commissioned. The assessment has been carried out in accordance with generally accepted professional practice. No other warranty is made, either express or implied. Professional judgment has been applied in developing the recommendations in this report.

This report was prepared by personnel with professional experience in investigations of this nature and who specifically conducted the investigations at this Site. Reference should be made to the 'Geoenvironmental Report – Limitations on the Use of this Document' attached in Appendix A that forms a part of this report.

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,
Tetra Tech Canada Inc.



Shawneen Walker, B.Sc., R.P.Bio., P.Biol.
Biologist
Environment Practice
Direct Line: 250.756.3966 x245
Shawneen.Walker@tetrattech.com



Nigel Cavanagh, M.Sc., R.P.Bio., P.Biol.
Senior Aquatic Biologist
Environment Practice
Direct Line: 250.756.3966 x240
Nigel.Cavanagh@tetrattech.com

/dr

Attachments: Figure 1 - Brechin Elementary Sample Locations
Appendix A - Limitations on the Use of this Document
Appendix B - Laboratory Report

FIGURES

Figure 1 Brechin Elementary Sample Locations

Q:\Edmonton\Drafting\PROJECTS\704-ENW\VEN\ENW\VENW03140-01\02_Acad\ENW\VENW03140-01_Figure 1_Brechin.dwg [FIGURE 1] December 08, 2017 - 1:46:26 pm (BY: DAS, DEBASHS)

ENCLOSED SPACES

Crawl Space Hatch

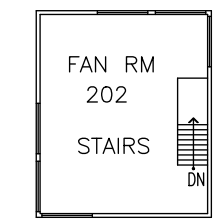
- 1 - District Storage Room

Other Hatches

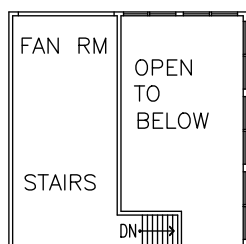
- 2 - HV 4 - ?? Mech Rm Above Staff W.C.
- 3 - HV 3 - ?? Mech Rm Above Staff W.C.
- 4 - Clg Hatch Mech Rm Above Multi-Purpose
- 5 - HV 2 - Lockout Mech Rm Above Multi-Purpose
- 6 - HV 1 - Lockout Mech Rm Above Multi-Purpose

Roof Access

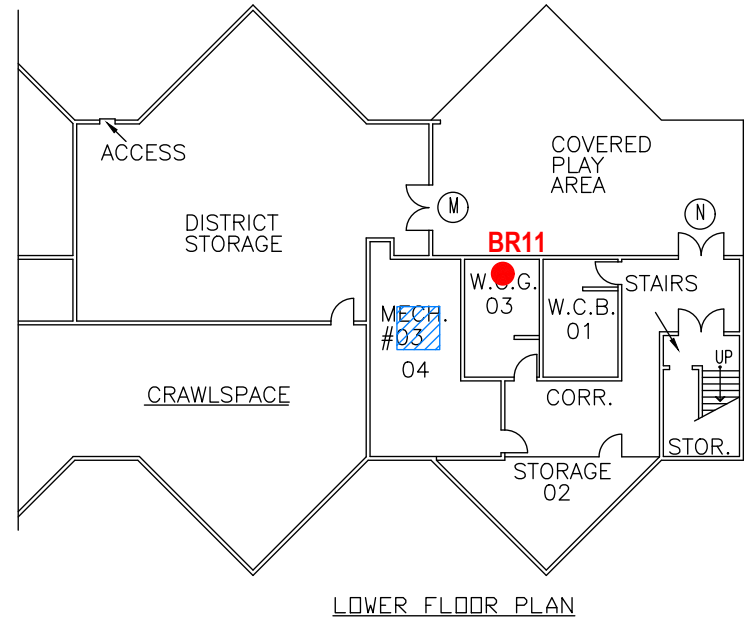
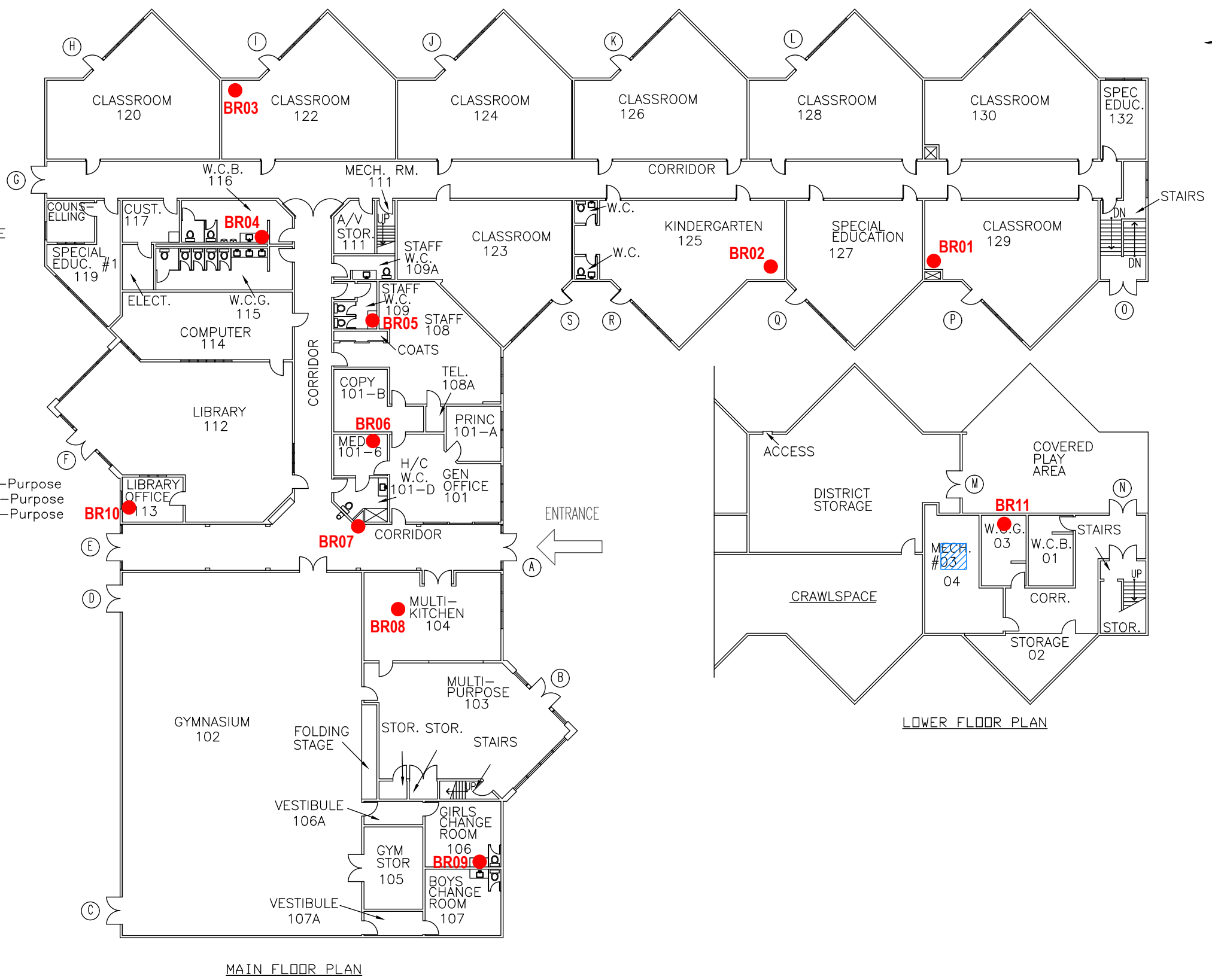
Stairs To Roof - Mech. Rm Above Staff Washroom



MECHANICAL ROOM ABOVE STAFF WASHROOM



MECHANICAL ROOM ABOVE MULTI-PURPOSE ROOM



LOWER FLOOR PLAN

NOTES:

- 1) BASE DRAWING IS PROVIDED BY CLIENT
- 2) DRAWING NOT TO SCALE

LEGEND:

- WATER ENTRY POINT
- SAMPLE LOCATION

CLIENT

School District 68



DOMESTIC WATER TESTING (LEAD) INVENTORY
BRECHIN ELEMENTARY SCHOOL
510 MILLSTONE AVENUE, NANAIMO, BC

BRECHIN ELEMENTARY SAMPLE LOCATIONS

PROJECT NO. ENW.VENW03140-01	DWN DBD	CKD SW	REV 0
OFFICE EDM	DATE December 2017		

Figure 1

APPENDIX A

LIMITATIONS ON THE USE OF THIS DOCUMENT

LIMITATIONS ON USE OF THIS DOCUMENT

GEOENVIRONMENTAL

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Electronic files submitted by TETRA TECH have been prepared and submitted using specific software and hardware systems. TETRA TECH makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

1.3 STANDARD OF CARE

Services performed by TETRA TECH for the Professional Document have been conducted in accordance with the Contract, in a manner

consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions in the jurisdiction in which the services are provided. Professional judgment has been applied in developing the conclusions and/or recommendations provided in this Professional Document. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of the Professional Document.

If any error or omission is detected by the Client or an Authorized Party, the error or omission must be immediately brought to the attention of TETRA TECH.

1.4 DISCLOSURE OF INFORMATION BY CLIENT

The Client acknowledges that it has fully cooperated with TETRA TECH with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The Client further acknowledges that in order for TETRA TECH to properly provide the services contracted for in the Contract, TETRA TECH has relied upon the Client with respect to both the full disclosure and accuracy of any such information.

1.5 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

During the performance of the work and the preparation of this Professional Document, TETRA TECH may have relied on information provided by persons other than the Client.

While TETRA TECH endeavours to verify the accuracy of such information, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information even where inaccurate or unreliable information impacts any recommendations, design or other deliverables and causes the Client or an Authorized Party loss or damage.

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This Professional Document is based solely on the conditions presented and the data available to TETRA TECH at the time the data were collected in the field or gathered from available databases.

The Client, and any Authorized Party, acknowledges that the Professional Document is based on limited data and that the conclusions, opinions, and recommendations contained in the Professional Document are the result of the application of professional judgment to such limited data.

The Professional Document is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site conditions present, or variation in assumed conditions which might form the basis of design or recommendations as outlined in this report, at or on the development proposed as of the date of the Professional Document requires a supplementary investigation and assessment.

TETRA TECH is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the Client.

1.7 NOTIFICATION OF AUTHORITIES

In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by TETRA TECH in its reasonably exercised discretion.

APPENDIX B

LABORATORY REPORT

Your Project #: ENW.VENW03140-01

Attention: Shawneen Walker

TETRA TECH CANADA INC.
#1 - 4376 BOBAN DRIVE
NANAIMO, BC
Canada V9T 6A7

Your C.O.C. #: 540307-06-01, 540307-07-01, 540307-08-01, 540307-09-01, 540307-10-01, 540307-11-01

Report Date: 2017/11/27
Report #: R2483087
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7A3413

Received: 2017/11/21, 08:23

Sample Matrix: DRINKING WATER
Samples Received: 45

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Elements by CRC ICPMS (total)	45	N/A	2017/11/22	BBY7SOP-00003,	BCLM2005,EPA6020bR2m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Your Project #: ENW.VENW03140-01

Attention: Shawneen Walker

TETRA TECH CANADA INC.
#1 - 4376 BOBAN DRIVE
NANAIMO, BC
Canada V9T 6A7

Your C.O.C. #: 540307-06-01, 540307-07-01, 540307-08-01, 540307-09-01, 540307-10-01, 540307-11-01

Report Date: 2017/11/27
Report #: R2483087
Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7A3413
Received: 2017/11/21, 08:23

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Letitia Prefontaine, B.Sc., Senior Project Manager
Email: LPrefontaine@maxxam.ca
Phone# (604)639-2616
=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B7A3413
Report Date: 2017/11/27

TETRA TECH CANADA INC.
Client Project #: ENW.VENW03140-01
Sampler Initials: SW

ELEMENTS BY ATOMIC SPECTROSCOPY (DRINKING WATER)

Maxxam ID			SN2867	SN2868	SN2869	SN2870	SN2871	SN2872		
Sampling Date			2017/11/20	2017/11/20	2017/11/20	2017/11/20	2017/11/20	2017/11/20		
COC Number			540307-06-01	540307-06-01	540307-06-01	540307-06-01	540307-06-01	540307-06-01		
	UNITS	MAC	SV01-OS	SV02-OS	SV03-OS	SV04-OS	SV05-OS	SV06-OS	RDL	QC Batch

Total Metals by ICPMS

Total Lead (Pb)	ug/L	10	10.6	10.3	14.5	49.9	9.14	18.2	0.20	8837811
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No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

Maxxam ID			SN2873	SN2874	SN2875	SN2876		SN2895		
Sampling Date			2017/11/20	2017/11/20	2017/11/20	2017/11/20		2017/11/20		
COC Number			540307-06-01	540307-06-01	540307-06-01	540307-06-01		540307-07-01		
	UNITS	MAC	SV07-OS	SV08-OS	SV09-OS	SV10-OS	QC Batch	SV11-OS	RDL	QC Batch

Total Metals by ICPMS

Total Lead (Pb)	ug/L	10	6.10	21.2	8.51	13.0	8837811	8.86	0.20	8837830
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No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

Maxxam ID			SN2896	SN2897	SN2898	SN2899	SN2900	SN2901		
Sampling Date			2017/11/20	2017/11/20	2017/11/20	2017/11/20	2017/11/20	2017/11/20		
COC Number			540307-07-01	540307-07-01	540307-07-01	540307-07-01	540307-07-01	540307-08-01		
	UNITS	MAC	SV12-OS	SV13-OS	SV14-OS	SV15-OS	DUP3-OS	BR01-OS	RDL	QC Batch

Total Metals by ICPMS

Total Lead (Pb)	ug/L	10	67.2	25.2	24.1	21.4	3.80	1.22	0.20	8837830
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No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

Maxxam ID			SN2902	SN2903	SN2904	SN2905	SN2906	SN2907		
Sampling Date			2017/11/20	2017/11/20	2017/11/20	2017/11/20	2017/11/20	2017/11/20		
COC Number			540307-08-01	540307-08-01	540307-08-01	540307-08-01	540307-08-01	540307-08-01		
	UNITS	MAC	BR02-OS	BR03-OS	BR04-OS	BR05-OS	BR06-OS	BR07-OS	RDL	QC Batch

Total Metals by ICPMS

Total Lead (Pb)	ug/L	10	10.5	9.09	1.72	1.00	6.34	0.23	0.20	8837830
-----------------	------	----	------	------	------	------	------	------	------	---------

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

Maxxam Job #: B7A3413
Report Date: 2017/11/27

TETRA TECH CANADA INC.
Client Project #: ENW.VENW03140-01
Sampler Initials: SW

ELEMENTS BY ATOMIC SPECTROSCOPY (DRINKING WATER)

Maxxam ID			SN2908	SN2909	SN2910	SN2911	SN2912	SN2914		
Sampling Date			2017/11/20	2017/11/20	2017/11/20	2017/11/20	2017/11/20	2017/11/20		
COC Number			540307-08-01	540307-08-01	540307-08-01	540307-09-01	540307-09-01	540307-10-01		
	UNITS	MAC	BR08-OS	BR09-OS	BR10-OS	BR11-OS	DUP4-OS	FP01-OS	RDL	QC Batch

Total Metals by ICPMS

Total Lead (Pb)	ug/L	10	1.24	4.24	2.38	73.2	0.32	110	0.20	8837830
-----------------	------	----	------	------	------	-------------	------	------------	------	---------

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

Maxxam Job #: B7A3413
Report Date: 2017/11/27

TETRA TECH CANADA INC.
Client Project #: ENW.VENW03140-01
Sampler Initials: SW

ELEMENTS BY ATOMIC SPECTROSCOPY (DRINKING WATER)

Maxxam ID			SN2915	SN2916	SN2917	SN2918	SN2919	SN2920		
Sampling Date			2017/11/20	2017/11/20	2017/11/20	2017/11/20	2017/11/20	2017/11/20		
COC Number			540307-10-01	540307-10-01	540307-10-01	540307-10-01	540307-10-01	540307-10-01		
	UNITS	MAC	FP02-OS	FP03-OS	FP04-OS	FP05-OS	FP06-OS	FP07-OS	RDL	QC Batch

Total Metals by ICPMS

Total Lead (Pb)	ug/L	10	34.9	2.77	1.60	0.53	5.48	15.7	0.20	8837846
-----------------	------	----	------	------	------	------	------	------	------	---------

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

Maxxam ID			SN2921	SN2922	SN2923	SN2928	SN2929	SN2930		
Sampling Date			2017/11/20	2017/11/20	2017/11/20	2017/11/20	2017/11/20	2017/11/20		
COC Number			540307-10-01	540307-10-01	540307-10-01	540307-11-01	540307-11-01	540307-11-01		
	UNITS	MAC	FP08-OS	FP09-OS	FP10-OS	FP11-OS	FP12-OS	FP13-OS	RDL	QC Batch

Total Metals by ICPMS

Total Lead (Pb)	ug/L	10	1.43	3.42	1.42	16.8	16.5	4.27	0.20	8837846
-----------------	------	----	------	------	------	------	------	------	------	---------

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

Maxxam ID			SN2931	SN2932	SN2933	SN2934		
Sampling Date			2017/11/20	2017/11/20	2017/11/20	2017/11/20		
COC Number			540307-11-01	540307-11-01	540307-11-01	540307-11-01		
	UNITS	MAC	FP14-OS	FP15-OS	FP16-OS	DUP5-OS	RDL	QC Batch

Total Metals by ICPMS

Total Lead (Pb)	ug/L	10	21.4	1.62	3.45	0.93	0.20	8837846
-----------------	------	----	------	------	------	------	------	---------

No Fill	No Exceedance
Grey	Exceeds 1 criteria policy/level
Black	Exceeds both criteria/levels

RDL = Reportable Detection Limit

Maxxam Job #: B7A3413
Report Date: 2017/11/27

TETRA TECH CANADA INC.
Client Project #: ENW.VENW03140-01
Sampler Initials: SW

GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.3°C
Package 2	11.0°C

Samples received with incomplete Chain of Custody. Sampling times not provided.

Sample SV08-OS : Received with incorrect label. Sample received labelled SV08-3OS as indicated on the sample bottle. Inspected as per COC.

Sample DUP6-OS : Received with incorrect label. Sample received labelled DUP5-OS as indicated on the sample bottle. Inspected as per sample bottle label.

MAC: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, February 2017.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)

It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:

1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.

Results relate only to the items tested.

Maxxam Job #: B7A3413
Report Date: 2017/11/27

QUALITY ASSURANCE REPORT

TETRA TECH CANADA INC.
Client Project #: ENW.VENW03140-01
Sampler Initials: SW

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8837811	Total Lead (Pb)	2017/11/22	98	80 - 120	103	80 - 120	<0.20	ug/L	1.0	20
8837830	Total Lead (Pb)	2017/11/22	102	80 - 120	102	80 - 120	<0.20	ug/L	0.19	20
8837846	Total Lead (Pb)	2017/11/22	NC	80 - 120	99	80 - 120	<0.20	ug/L	0.83	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

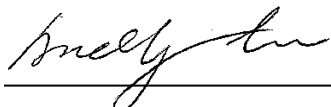
NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

Maxxam Job #: B7A3413
Report Date: 2017/11/27

TETRA TECH CANADA INC.
Client Project #: ENW.VENW03140-01
Sampler Initials: SW

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Andy Lu, Ph.D., P.Chem., Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



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4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel: (604) 734 7276 Toll-free: 800-563-6266 Fax: (604) 731 2386 www.maxxam.ca

Page 1 of 6

INVOICE TO:		Report Information		Project Information	
Company Name	#1433 TETRA TECH CANADA INC.	Company Name	Shawneen Walker	Quotation #	B71611
Contact Name	Shawneen Walker	Contact Name	Shawneen Walker	P.O. #	
Address	#1 - 4376 BOBAN DRIVE NANAIMO BC V9T 6A7	Address	Shawneen Walker@tetrattech.com	Project #	ENW.VENW03140-01
Phone	(250) 756-2256 x	Phone		Site #	
Email	smwalker@tetrattech.ca; EBA.Labdata@tetrattech.com	Email	smwalker@tetrattech.ca; EBA.Labdata@tetrattech.com	Sampled By	S. Walker

B7A3413_COC

C8540307-06-01

Regulatory Criteria:		Special Instructions	ANALYSIS REQUESTED (PLEASE BE SPECIFIC)										Turnaround Time (TAT) Required:		
<input type="checkbox"/> CSR														Please provide advance notice for rush projects	
<input checked="" type="checkbox"/> CCME														Regular (Standard) TAT: <input checked="" type="checkbox"/>	
<input checked="" type="checkbox"/> BC Water Quality														(will be applied if Rush TAT is not specified): Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.	
<input type="checkbox"/> Other														Job Specific Rush TAT (if applies to entire submission) 1 DAY <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> Date Required: <input type="checkbox"/>	
														Rush Confirmation Number: <input type="text"/>	
														(call lab for #)	

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM																
Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered? (Y/N)	Lead - Drinking Water									# of Bottles	Comments
1	SV01-0s	17/20/11		water	X										1	
2	SV02-0s															
3	SV03-0s															
4	SV04-0s															
5	SV05-0s															
6	SV06-0s															
7	SV07-0s															
8	SV08-0s															
9	SV09-0s															
10	SV10-0s															

RELINQUISHED BY: (Signature/Print)		Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)		Date: (YY/MM/DD)	Time	# Jars used and not submitted	Lab Use Only		
Shawneen Walker		17/20/11	07:00	EVA SYKORA		20/11/21	08:23		Time Sensitive <input type="checkbox"/>	Temperature (°C) on Receipt: 3, 4, 6	
										Custody Seal Intact on Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.

* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

11, 11, 11
ICE-PRESENT IN
1 COOLER (WITH
TEMPERATURES 3, 4, 6)

Maxxam Analytics International Corporation o/a Maxxam Analytics

INVOICE TO:		Report Information		Project Information	
Company Name #1433 TETRA TECH CANADA INC.		Company Name Shawneen Walker		Quotation # B71611	
Contact Name Shawneen Walker		Contact Name Shawneen Walker		P.O. #	
Address #1 - 4376 BOBAN DRIVE NANAIMO BC V9T 6A7		Address		Project # ENW.VENW03140-01	
(250) 756-2256 x Fax: (250) 756-2686 x		Phone Email smwalker@eba.ca; EBA Labdata@tetratech.com		Project Name	
		Email		Site # S Walker	
				Sampled By	
Regulatory Criteria: <input type="checkbox"/> CSR <input checked="" type="checkbox"/> CCME <input checked="" type="checkbox"/> BC Water Quality <input type="checkbox"/> Other _____		Special Instructions		ANALYSIS REQUESTED (PLEASE BE SPECIFIC)	
		Metals Field Filtered ? (Y/N)		Lead - Drinking Water	
SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM					
	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix
1		SV11-OS	17/10/20		Water X
2		SV12-OS	↓		↓
3		SV13-OS			
4		SV14-OS			
5		SV15-OS			
6		DUP 3-OS	↓		↓
7					
8					
9					
10					
* RELINQUISHED BY: (Signature/Print) Shawneen Walker		Date: (YY/MM/DD) 17/11/20	Time 07:00	RECEIVED BY: (Signature/Print) Eva Sylva EVA SYLVA	
				Date: (YY/MM/DD) 2017/11/21	Time 08:23
		# jars used and not submitted	Lab Use Only		
		Time Genitive <input type="checkbox"/>	Temperature (°C) on Receipt 3,4,6		Custody Seal Intact on Cooler? NA Yes No

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CATERMS.
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

11, 11, 11 ICE-PRESENT IN 1
COOLER (WITH TEMPERATURES
3, 4, 6)

Maxxam
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Page 36

INVOICE TO:

Company Name: #1433 TETRA TECH CANADA INC.
Contact Name: Shawneen Walker
Address: #1 - 4376 BOBAN DRIVE
NANAIMO BC V9T 6A7
Phone: (250) 756-2256 x Fax: (250) 756-2686 x
Email: smwalker@eba.ca; EBA.Labdata@tetratech.com

Report Information:

Company Name: Shawneen Walker
Contact Name: Shawneen Walker
Address: shawneen.walker@tetratech.com
Phone: smwalker@eba.ca; EBA.Labdata@tetratech.com
Email: smwalker@eba.ca; EBA.Labdata@tetratech.com

Project Information:

Quotation #: B71611
P.O. #: ENW.VENW03140-01
Project #: ENW.VENW03140-01
Site #: S.Walker
Sampled By: S.Walker

Barcode: B7A3413_COC
540307
Project Manager: Letitia Prefontaine
C8540307-08-01

Regulatory Criteria:

☐ CSR
☒ CCME
☒ BC Water Quality
☐ Other

Special Instructions:

ANALYSIS REQUESTED (PLEASE BE SPECIFIC):

Turnaround Time (TAT) Required:
Please provide advance notice for rush projects

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission):
1 DAY ☐ 2 Day ☐ 3 Day ☐ Date Required: ☐
Rush Confirmation Number: (call lab for #)

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered? (Y/N)	Lead - Drinking Water	# of Bottles	Comments
1	BR01-05	17/11/20		water	X		1	
2	BR02-05							
3	BR03-05							
4	BR04-05							
5	BR05-05							
6	BR06-05							
7	BR07-05							
8	BR08-05							
9	BR09-05							
10	BR10-05							

*** RELINQUISHED BY: (Signature/Print)** Shawneen Walker
Date: (YY/MM/DD) 17/11/20
Time 07:00

RECEIVED BY: (Signature/Print) Eva Sykora
Date: (YY/MM/DD) 20/11/21
Time 08:23

Jars used and not submitted

Lab Use Only

Time Sensitive ☐ Temperature (°C) on Receipt 3, 4, 6
Custody Seal Intact on Cooler? N/A ☐ Yes ☐ No

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11/11/11 ICE-PRESENT IN 4
COOLER (WITH TEMPERATURES
3, 4, 6)

INVOICE TO:		Report Information		Project Information	
Company Name	#1433 TETRA TECH CANADA INC.	Company Name	Shawneen Walker	Quotation #	B71611
Contact Name	Shawneen Walker	Contact Name	Shawneen Walker	P.O. #	
Address	#1 - 4376 BOBAN DRIVE NANAIMO BC V9T 6A7	Address	shawneen.walker@tetratech.com	Project #	ENW.VENW03140-01
Phone	(250) 756-2256 x	Phone		Project Name	
Email	smwalker@eba.ca; EBA.Labdata@tetratech.com	Email	smwalker@eba.ca; EBA.Labdata@tetratech.com	Site #	S. Walker
				Sampled By	S. Walker



B7A3413_COC

Bottle Order #:

540307

Project Manager

Letitia Prefontaine

Regulatory Criteria	Special Instructions	ANALYSIS REQUESTED (PLEASE BE SPECIFIC)
<input type="checkbox"/> CSR <input checked="" type="checkbox"/> CCME <input checked="" type="checkbox"/> BC Water Quality <input type="checkbox"/> Other _____		

Turnaround Time (TAT) Required:

Please provide advance notice for rush projects

Regular (Standard) TAT:
(will be applied if Rush TAT is not specified):
Standard TAT = 5-7 Working days for most tests.

Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.

Job Specific Rush TAT (if applies to entire submission)
 1 DAY ☐ 2 Day ☐ 3 Day ☐ Date Required: _____

Rush Confirmation Number: _____ (call lab for #)

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y / N)	Lead - Drinking Water														# of Bottles	Comments
1	BR11-05	17/11/20		Water	X															1	
2	DUP4-05	↓		↓	↓															↓	
3																					
4																					
5																					
6																					
7																					
8																					
9																					
10																					

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Time Sensitive	Temperature (°C) on Receipt	Custody Seal Intact on Cooler?
Shawneen Walker	17/11/20	07:00	Eva Sykora	2017/11/21	08:23		<input type="checkbox"/>	3, 4, 6	N/A <input type="checkbox"/> Yes <input type="checkbox"/> No

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11/11/11 ICE-PRESENT IN 1 COOLER (WITH TEMPERATURES 3, 4, 6)



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INVOICE TO:		Report Information		Project Information	
Company Name	#1433 TETRA TECH CANADA INC.	Company Name	Shawneen Walker	Quotation #	B71611
Contact Name	Shawneen Walker	Contact Name	Shawneen Walker	P.O. #	
Address	#1 - 4376 BOBAN DRIVE NANAIMO BC V9T 6A7	Address	Shawneen Walker@tetratech.com	Project #	ENW.VENW03140-01
Phone	(250) 756-2256 x	Phone		Site #	
Email	smwalker@eba.ca; EBA.Labdata@tetratech.com	Email	smwalker@eba.ca; EBA.Labdata@tetratech.com	Sampled By	S. Walker
Regulatory Criteria:		Special Instructions		ANALYSIS REQUESTED (PLEASE BE SPECIFIC)	
<input type="checkbox"/> CSR <input checked="" type="checkbox"/> CCME <input checked="" type="checkbox"/> BC Water Quality <input type="checkbox"/> Other					
Turnaround Time (TAT) Required:					
Regular (Standard) TAT:					
(will be applied if Rush TAT is not specified):					
Standard TAT = 5-7 Working days for most tests.					
Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.					
Job Specific Rush TAT (if applies to entire submission)					
1 DAY <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> Date Required: <input type="checkbox"/>					
Rush Confirmation Number:					
(call lab for #)					
SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM					
Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Lead - Drinking Water
1	FP01-05	17/11/20		water	X
2	FP02-05				
3	FP03-05				
4	FP04-05				
5	FP05-05				
6	FP06-05				
7	FP07-05				
8	FP08-05				
9	FP09-05				
10	FP10-05				
* RELINQUISHED BY: (Signature/Print)		Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	
Shawneen Walker		17/11/20	07:00	Eva Syfora	
				2017/11/21 08:23	
# jars used and not submitted		Time Sensitive		Lab Use Only	
		<input type="checkbox"/>		Custody Seal Intact on Cooler?	
		Temperature (°C) on Receipt		N/A <input type="checkbox"/> Yes <input type="checkbox"/> No	
		3, 4, 6			
* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.					
* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.					



B7A3413_COC



C#540307-10-01

Letitia Prefontaine

11/11/20 ICE-PRESENT IN 1
COOLER (WITH TEMPERATURE
3, 4, 6)

Maxxam <small>A BURNABY VICTORIA GROUP COMPANY</small>		Maxxam Analytics International Corporation o/a Maxxam Analytics 4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel: (604) 734 7276 Toll-free: 800-563-6266 Fax: (604) 731 2386 www.maxxam.ca	
INVOICE TO:		Report Information	
Company Name: #1433 TETRA TECH CANADA INC. Contact Name: Shawneen Walker Address: #1 - 4376 BOBAN DRIVE NANAIMO BC V9T 6A7 Phone: (250) 756-2256 x Fax: (250) 756-2686 x Email: smwalker@eba.ca; EBA.Labdata@tetrattech.com		Company Name: Shawneen Walker Contact Name: Shawneen Walker Address: Shawneen Walker e tetrattech.com Phone: smwalker@eba.ca; EBA.Labdata@tetrattech.com Email: smwalker@eba.ca; EBA.Labdata@tetrattech.com	
		Project Information Quotation #: B71611 P.O. #: ENW.VENW03140-01 Project #: ENW.VENW03140-01 Site #: S. Walker Sampled By: S. Walker	
Regulatory Criteria: <input type="checkbox"/> CSR <input type="checkbox"/> CCME <input type="checkbox"/> BC Water Quality <input type="checkbox"/> Other: _____		Special Instructions: _____ ANALYSIS REQUESTED (PLEASE BE SPECIFIC): <div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small; margin-right: 5px;">Metals Field Filtered 7 (Y/N)</div> <div style="border: 1px solid black; padding: 5px;"> Lead - Drinking Water </div> </div>	
SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM		Turnaround Time (TAT) Required: Please provide advance notice for rush projects Regular (Standard) TAT: (will be applied if Rush TAT is not specified): Standard TAT = 5-7 Working days for most tests... Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details. Job Specific Rush TAT (if applies to entire submission) 1 DAY <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> Date Required: _____ Rush Confirmation Number: _____ (call lab for #)	
# of Bottles	Comments		
1	Sample Barcode Label	Sample (Location) Identification	Date Sampled
2			Time Sampled
3			Matrix
4			
5			
6			
7			
8			
9			
10			
* RELINQUISHED BY: (Signature/Print) Shawneen Walker		Date: (YY/MM/DD) Time 17/11/20 07:00	
RECEIVED BY: (Signature/Print) EVA SYLORA		Date: (YY/MM/DD) Time 2017/11/21 08:23	
# jars used and not submitted <input type="checkbox"/>		Lab Use Only Time Sensitive: <input type="checkbox"/> Temperature (°C) on Receipt: 3,4,6 Custody Seal Intact on Cooler? N/A <input type="checkbox"/> Yes <input type="checkbox"/> No	
* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS. * IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.			

11/11/11 ICE - PRESENT IN 1 COOLER
 C WITH TEMPERATURES
 3,4,6)

Your Project #: ENW.VENW03140-01
Your C.O.C. #: 541404-01-01, 541404-02-01

Attention: Shawneen Walker

TETRA TECH CANADA INC.
#1 - 4376 BOBAN DRIVE
NANAIMO, BC
Canada V9T 6A7

Report Date: 2017/12/01

Report #: R2485179

Version: 1 - Final

CERTIFICATE OF ANALYSIS

MAXXAM JOB #: B7A5946

Received: 2017/11/29, 08:45

Sample Matrix: DRINKING WATER
Samples Received: 20

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Elements by CRC ICPMS (total)	20	N/A	2017/11/30	BBY7SOP-00003,	BCLM2005,EPA6020bR2m

Remarks:

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Letitia Prefontaine, B.Sc., Senior Project Manager

Email: LPrefontaine@maxxam.ca

Phone# (604)639-2616

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B7A5946
Report Date: 2017/12/01

TETRA TECH CANADA INC.
Client Project #: ENW.VENW03140-01

ELEMENTS BY ATOMIC SPECTROSCOPY (DRINKING WATER)

Maxxam ID			SO6588	SO6589	SO6590	SO6591		SO6592		
Sampling Date			2017/11/20	2017/11/20	2017/11/20	2017/11/20		2017/11/20		
COC Number			541404-01-01	541404-01-01	541404-01-01	541404-01-01		541404-01-01		
	UNITS	MAC	GB06-30S	SV01-30S	SV02-30S	SV03-30S	RDL	SV04-30S	RDL	QC Batch
Total Metals by ICPMS										
Total Lead (Pb)	ug/L	10	1.80	3.15	6.10	4.34	0.20	1100	1.0	8847865
No Fill	No Exceedance									
Grey	Exceeds 1 criteria policy/level									
Black	Exceeds both criteria/levels									
RDL = Reportable Detection Limit										

Maxxam ID			SO6593	SO6594	SO6595	SO6596	SO6597	SO6612		
Sampling Date			2017/11/20	2017/11/20	2017/11/20	2017/11/20	2017/11/20	2017/11/20		
COC Number			541404-01-01	541404-01-01	541404-01-01	541404-01-01	541404-01-01	541404-02-01		
	UNITS	MAC	SV06-30S	SV08-30S	SV10-30S	SV12-30S	SV13-30S	SV14-30S	RDL	QC Batch
Total Metals by ICPMS										
Total Lead (Pb)	ug/L	10	3.41	2.94	2.23	13.1	3.66	3.78	0.20	8847865
No Fill	No Exceedance									
Grey	Exceeds 1 criteria policy/level									
Black	Exceeds both criteria/levels									
RDL = Reportable Detection Limit										

Maxxam ID			SO6613	SO6614	SO6615	SO6616	SO6617	SO6618		
Sampling Date			2017/11/20	2017/11/20	2017/11/20	2017/11/20	2017/11/20	2017/11/20		
COC Number			541404-02-01	541404-02-01	541404-02-01	541404-02-01	541404-02-01	541404-02-01		
	UNITS	MAC	SV15-30S	BR02-30S	BR11-30S	FP01-30S	FP02-30S	FP07-30S	RDL	QC Batch
Total Metals by ICPMS										
Total Lead (Pb)	ug/L	10	3.72	1.04	5.97	8.48	7.59	6.91	0.20	8847865
No Fill	No Exceedance									
Grey	Exceeds 1 criteria policy/level									
Black	Exceeds both criteria/levels									
RDL = Reportable Detection Limit										

Maxxam ID			SO6619	SO6620	SO6621		
Sampling Date			2017/11/20	2017/11/20	2017/11/20		
COC Number			541404-02-01	541404-02-01	541404-02-01		
	UNITS	MAC	FP11-30S	FP12-30S	FP17-30S	RDL	QC Batch
Total Metals by ICPMS							
Total Lead (Pb)	ug/L	10	13.5	1.11	4.17	0.20	8847865
No Fill	No Exceedance						
Grey	Exceeds 1 criteria policy/level						
Black	Exceeds both criteria/levels						
RDL = Reportable Detection Limit							

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GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	9.3°C
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Samples received with incomplete Chain of Custody. Sampling times not provided.

FP17-30S received with missing/incorrect labels. Samples on CoC correspond to samples received with the exception to the missing FP17-30S (1x 120mL HNO₃) bottle. Instead, we received a bottle labelled FP14-30S with the same sampling dates as FP17-30S. By process of elimination, FP14-30S inspected as FP17-30S.

MAC: The guidelines that have been included in this report have been taken from the Canadian Drinking Water Quality Summary Table, February 2017.

Criteria A = Maximum Acceptable Concentration (MAC) / Criteria B = Aesthetic Objectives (AO) / Criteria C = Operational Guidance Values (OG)
It is recommended to consult these guidelines when interpreting your data since there are non-numerical guidelines that are not included on this report.

Turbidity Guidelines:

1. Chemically assisted filtration: less than or equal to 0.3 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 1.0 NTU at any time.
2. Slow sand / diatomaceous earth filtration: less than or equal to 1.0 NTU in 95% of the measurements or 95% of the time each month. Shall not exceed 3.0 NTU at any time.
3. Membrane filtration: less than or equal to 0.1 NTU in 99% of the measurements made or at least 99% of the time each calendar month. Shall not exceed 0.3 NTU at any time.

ELEMENTS BY ATOMIC SPECTROSCOPY (DRINKING WATER) Comments

Sample SO6592 [SV04-30S] Elements by CRC ICPMS (total): Detection limits raised due to dilution to bring analyte within the calibrated range.

Results relate only to the items tested.

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QUALITY ASSURANCE REPORT

TETRA TECH CANADA INC.
Client Project #: ENW.VENW03140-01

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8847865	Total Lead (Pb)	2017/11/30	93	80 - 120	99	80 - 120	<0.20	ug/L	1.4	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

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TETRA TECH CANADA INC.
Client Project #: ENW.VENW03140-01

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



Rob Reinert, B.Sc., Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam <small>A Bureau Veritas Group Company</small>		Maxxam Analytics International Corporation o/a Maxxam Analytics 4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel: (604) 734 7276 Toll-free: 800-563-6266 Fax: (604) 731 2386 www.maxxam.ca		Page 1 of 2 B7A5946_COC	
INVOICE TO: Company Name: #1433 TETRA TECH CANADA INC. Contact Name: Shawneen Walker Address: #1 - 4376 BOBAN DRIVE NANAIMO BC V9T 6A7 Phone: (250) 756-2256 x Fax: (250) 756-2686 x Email: smwalker@eba.ca; EBA.Labdata@tetratech.com		Report Information Company Name: Shawneen Walker Contact Name: Shawneen Walker Address: <i>Shawneen Walker@tetratech.com</i> Phone: <i>smwalker@eba.ca</i> Fax: <i>EBA.Labdata@tetratech.com</i> Email: <i>smwalker@eba.ca</i>		Project Information Quotation #: B71611 P.O. #: ENW.VENW03140-01 Project #: Client Name: Site #: Sampled By:	
Regulatory Criteria: <input type="checkbox"/> CSR <input checked="" type="checkbox"/> CCME <input checked="" type="checkbox"/> BC Water Quality <input type="checkbox"/> Other:		Special Instructions:		ANALYSIS REQUESTED (PLEASE BE SPECIFIC) <div style="display: flex; align-items: center;"> <div style="writing-mode: vertical-rl; transform: rotate(180deg); font-size: small; margin-right: 5px;">Metals Field Filtered? (Y/N)</div> <div style="border: 1px solid black; padding: 5px;"> Lead - Drinking Water </div> </div>	
SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM				Turnaround Time (TAT) Required: Please provide advance notice for rush projects Regular (Standard) TAT: (will be applied if Rush TAT is not specified): Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details. Job Specific Rush TAT (if applies to entire submission): <i>For Dec 1/07</i> 1 DAY <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> Date Required: <i>Dec 1/07</i> Rush Confirmation Number: (call lab for #)	
# of Bottles	Comments				
1	Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix
2		GB06-30s	17/11/20		Water
3		SV01-30s			
4		SV02-30s			
5		SV03-30s			
6		SV04-30s			
7		SV06-30s			
8		SV08-30s			
9		SV10-30s			
10		SV12-30s			
		SV13-30s			
RELINQUISHED BY: (Signature/Print) <i>Shawneen Walker</i>		Date: (YY/MM/DD) 17/11/28	Time: 13:00	RECEIVED BY: (Signature/Print) <i>Shawneen Walker</i>	
		Date: (YY/MM/DD) 17/11/29	Time: 08:00	# jars used and not submitted: <i>NA</i>	
* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.		IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.		Lab Use Only Time Sensitive: <input type="checkbox"/> Temperature (°C) on Receipt: <i>9.10.9</i> Custody Seal Intact on Cooler? <i>NA</i> Yes <input type="checkbox"/> No <input type="checkbox"/> White: Maxxam Yellow: Client	



Maxxam Analytics International Corporation o/a Maxxam Analytics
4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel: (604) 734 7276 Toll-free: 800-563-6266 Fax: (604) 731 2386 www.maxxam.ca



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Only

Bottle Order #:

541404

Project Manager

Letitia Prefontaine

INVOICE TO:		Report Information		Project Information	
Company Name	#1433 TETRA TECH CANADA INC.	Company Name	Shawneen Walker	Quotation #	B71611
Contact Name	Shawneen Walker	Contact Name	Shawneen Walker	P.O. #	
Address	#1 - 4376 BOBAN DRIVE NANAIMO BC V9T 6A7	Address		Project #	ENW.VENW03140-01
Phone	(250) 756-2256 x	Phone		Project Name	
Email	smwalker@eba.ca; EBA.Labdata@tetrattech.com	Email	smwalker@eba.ca; EBA.Labdata@tetrattech.com	Site #	
				Sampled By	

Regulatory Criteria:	Special Instructions	ANALYSIS REQUESTED (PLEASE BE SPECIFIC)	Turnaround Time (TAT) Required:
<input type="checkbox"/> CSR <input checked="" type="checkbox"/> CCME <input checked="" type="checkbox"/> BC Water Quality <input type="checkbox"/> Other			Please provide advance notice for rush projects Regular (Standard) TAT: (will be applied if Rush TAT is not specified): Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details. Job Specific Rush TAT (if applies to entire submission): 1 DAY <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> Date Required: Dec 1/17 Rush Confirmation Number: _____ (call lab for #) # of Bottles: _____ Comments: _____

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM						ANALYSIS REQUESTED (PLEASE BE SPECIFIC)										Turnaround Time (TAT) Required:		
Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered ? (Y/N)	Lead - Drinking Water											# of Bottles	Comments
1	SV14-30s	17/11/20		Water	X												1	
2	SV15-30s																	
3	BR02-30s																	
4	BR11-30s																	
5	FP01-30s																	
6	FP02-30s																	
7	FP07-30s																	
8	FP11-30s																	
9	FP12-30s																	
10	FP17-30s																	

RELINQUISHED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)	Date: (YY/MM/DD)	Time	# jars used and not submitted	Lab Use Only
Shawneen Walker	17/11/28	13:00	Adam Awan	17/11/28	08:45	NA	Time Sensitive <input type="checkbox"/> Temperature (°C) on Receipt: 9.12.9 Custody Seal Intact on Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No White: Maxxam Yellow: Client

* UNLESS OTHERWISE AGREED TO IN WRITING, WORK SUBMITTED ON THIS CHAIN OF CUSTODY IS SUBJECT TO MAXXAM'S STANDARD TERMS AND CONDITIONS. SIGNING OF THIS CHAIN OF CUSTODY DOCUMENT IS ACKNOWLEDGMENT AND ACCEPTANCE OF OUR TERMS WHICH ARE AVAILABLE FOR VIEWING AT WWW.MAXXAM.CA/TERMS.
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