

CERTIFICATE OF ANALYSIS

REPORTED TO	Prince George, City of - Pump Station 1100 Patricia Boulevard Prince George, BC V2L 3v9	WORK ORDER	23J2142
ATTENTION	Cheyenne Magee	RECEIVED / TEMP REPORTED	2023-10-18 09:43 / 7.8°C 2023-10-25 15:54
PO NUMBER		COC NUMBER	No Number
PROJECT	Raw Water - PW 660		
PROJECT INFO	[info]		

Introduction:

CARO Analytical Services is a testing laboratory full of smart, engaged scientists driven to make the world a safer and healthier place. Through our clients' projects we become an essential element for a better world. We employ methods conducted in accordance with recognized professional standards using accepted testing methodologies and quality control efforts. CARO is accredited by the Canadian Association for Laboratories Accreditation (CALA) to ISO/IEC 17025:2017 for specific tests listed in the scope of accreditation approved by CALA.

Big Picture Sidekicks



You know that the sample you collected after snowshoeing to site, digging 5 meters, and racing to get it on a plane so you can submit it to the lab for time sensitive results needed to make important and expensive decisions (whew) is VERY important. We know that too.

We've Got Chemistry



It's simple. We figure the more you enjoy working with our fun and engaged team members; the more likely you are to give us continued opportunities to support you.

Ahead of the Curve



Through research, regulation knowledge, and instrumentation, we are your analytical centre for the technical knowledge you need, BEFORE you need it, so you can stay up to date and in the know.

In this Draft Report, please see the Analyses In Progress section after the appendices.

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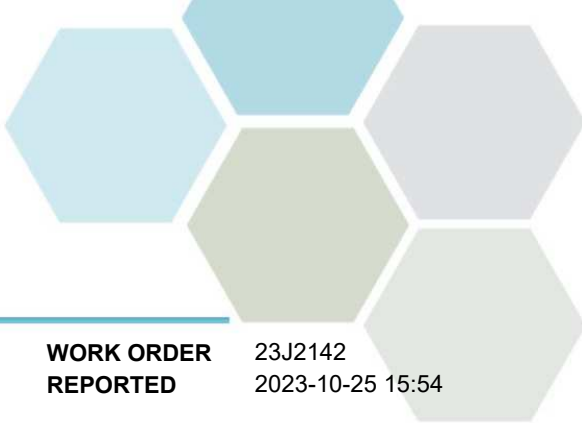
If you have any questions or concerns, please contact me at pmand@caro.ca

Authorized By:

DRAFT REPORT
DATA SUBJECT TO CHANGE

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TEST RESULTS

REPORTED TO PROJECT Prince George, City of - Pump Station
Raw Water - PW 660

WORK ORDER REPORTED 23J2142
2023-10-25 15:54

Analyte	Result	RL	Units	Analyzed	Qualifier
PW 660 (23J2142-01) Matrix: Water Sampled: 2023-10-17 13:45					
Anions					
Bromide	< 0.10	0.10	mg/L	2023-10-24	
Chloride	5.54	0.10	mg/L	2023-10-24	
Fluoride	< 0.10	0.10	mg/L	2023-10-24	
Nitrate (as N)	0.032	0.010	mg/L	2023-10-24	HT1
Nitrite (as N)	< 0.010	0.010	mg/L	2023-10-24	HT1
Phosphate (as P)	0.0050	0.0050	mg/L	2023-10-24	HT1
Sulfate	7.7	1.0	mg/L	2023-10-24	
Calculated Parameters					
Total Trihalomethanes	< 0.00400	0.00400	mg/L	N/A	
Hardness, Dissolved (as CaCO3)	108	0.500	mg/L	N/A	
Nitrate+Nitrite (as N)	0.0315	0.0100	mg/L	N/A	
Nitrogen, Total	< 0.0500	0.0500	mg/L	N/A	
Dissolved Metals					
Aluminum, dissolved	< 0.0050	0.0050	mg/L	2023-10-21	
Antimony, dissolved	< 0.00020	0.00020	mg/L	2023-10-21	
Arsenic, dissolved	< 0.00050	0.00050	mg/L	2023-10-21	
Barium, dissolved	0.0343	0.0050	mg/L	2023-10-21	
Beryllium, dissolved	< 0.00010	0.00010	mg/L	2023-10-21	
Bismuth, dissolved	< 0.00010	0.00010	mg/L	2023-10-21	
Boron, dissolved	< 0.0500	0.0500	mg/L	2023-10-21	
Cadmium, dissolved	0.000025	0.000010	mg/L	2023-10-21	
Calcium, dissolved	29.8	0.20	mg/L	2023-10-21	
Chromium, dissolved	< 0.00050	0.00050	mg/L	2023-10-21	
Cobalt, dissolved	< 0.00010	0.00010	mg/L	2023-10-21	
Copper, dissolved	0.00989	0.00040	mg/L	2023-10-21	
Iron, dissolved	< 0.010	0.010	mg/L	2023-10-21	
Lead, dissolved	0.00193	0.00020	mg/L	2023-10-21	
Lithium, dissolved	0.00010	0.00010	mg/L	2023-10-21	
Magnesium, dissolved	8.05	0.010	mg/L	2023-10-21	
Manganese, dissolved	0.00621	0.00020	mg/L	2023-10-21	
Mercury, dissolved	< 0.000010	0.000010	mg/L	2023-10-23	
Molybdenum, dissolved	0.00160	0.00010	mg/L	2023-10-21	
Nickel, dissolved	0.00093	0.00040	mg/L	2023-10-21	
Phosphorus, dissolved	< 0.050	0.050	mg/L	2023-10-21	
Potassium, dissolved	1.13	0.10	mg/L	2023-10-21	
Selenium, dissolved	0.00060	0.00050	mg/L	2023-10-21	
Silicon, dissolved	5.1	1.0	mg/L	2023-10-21	
Silver, dissolved	< 0.000050	0.000050	mg/L	2023-10-21	
Sodium, dissolved	4.84	0.10	mg/L	2023-10-21	
Strontium, dissolved	0.128	0.0010	mg/L	2023-10-21	
Sulfur, dissolved	< 3.0	3.0	mg/L	2023-10-21	
Tellurium, dissolved	< 0.00050	0.00050	mg/L	2023-10-21	

TEST RESULTS

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Analyte	Result	RL	Units	Analyzed	Qualifier
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PW 660 (23J2142-01) | Matrix: Water | Sampled: 2023-10-17 13:45, Continued

Dissolved Metals, Continued

Thallium, dissolved	< 0.000020	0.000020	mg/L	2023-10-21	
Thorium, dissolved	< 0.00010	0.00010	mg/L	2023-10-21	
Tin, dissolved	< 0.00020	0.00020	mg/L	2023-10-21	
Titanium, dissolved	< 0.0050	0.0050	mg/L	2023-10-21	
Tungsten, dissolved	< 0.0010	0.0010	mg/L	2023-10-21	
Uranium, dissolved	0.000227	0.000020	mg/L	2023-10-21	
Vanadium, dissolved	< 0.0050	0.0050	mg/L	2023-10-21	
Zinc, dissolved	0.0066	0.0040	mg/L	2023-10-21	
Zirconium, dissolved	< 0.00010	0.00010	mg/L	2023-10-21	

General Parameters

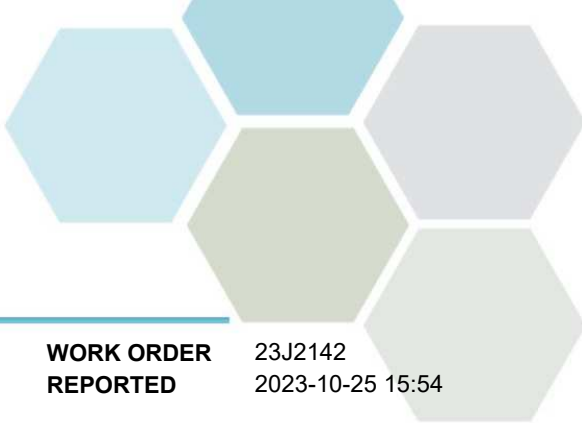
Alkalinity, Total (as CaCO3)	100	1.0	mg/L	2023-10-23	
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0	mg/L	2023-10-23	
Alkalinity, Bicarbonate (as CaCO3)	100	1.0	mg/L	2023-10-23	
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0	mg/L	2023-10-23	
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0	mg/L	2023-10-23	
Ammonia, Total (as N)	< 0.050	0.050	mg/L	2023-10-20	
Carbon, Total Organic	3.82	0.50	mg/L	2023-10-25	
Nitrogen, Total Kjeldahl	< 0.050	0.050	mg/L	2023-10-24	
Solids, Total Suspended	< 2.0	2.0	mg/L	2023-10-24	

Microbiological Parameters

Coliforms, Total	< 1	1	CFU/100 mL	2023-10-18	
Coliforms, Fecal	< 1	1	CFU/100 mL	2023-10-18	
E. coli	< 1	1	CFU/100 mL	2023-10-18	

Total Metals

Aluminum, total	< 0.0050	0.0050	mg/L	2023-10-24	
Antimony, total	< 0.00020	0.00020	mg/L	2023-10-24	
Arsenic, total	< 0.00050	0.00050	mg/L	2023-10-24	
Barium, total	0.0350	0.0050	mg/L	2023-10-24	
Beryllium, total	< 0.00010	0.00010	mg/L	2023-10-24	
Bismuth, total	< 0.00010	0.00010	mg/L	2023-10-24	
Boron, total	< 0.0500	0.0500	mg/L	2023-10-24	
Cadmium, total	0.000025	0.000010	mg/L	2023-10-24	
Calcium, total	29.9	0.20	mg/L	2023-10-24	
Chromium, total	< 0.00050	0.00050	mg/L	2023-10-24	
Cobalt, total	< 0.00010	0.00010	mg/L	2023-10-24	
Copper, total	0.00979	0.00040	mg/L	2023-10-24	
Iron, total	< 0.010	0.010	mg/L	2023-10-24	
Lead, total	0.00192	0.00020	mg/L	2023-10-24	
Lithium, total	0.00013	0.00010	mg/L	2023-10-24	
Magnesium, total	8.29	0.010	mg/L	2023-10-24	
Manganese, total	0.00636	0.00020	mg/L	2023-10-24	



TEST RESULTS

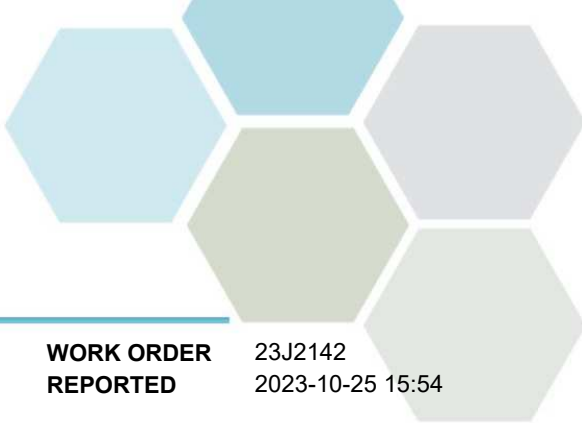
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Analyte	Result	RL	Units	Analyzed	Qualifier
PW 660 (23J2142-01) Matrix: Water Sampled: 2023-10-17 13:45, Continued					
<i>Total Metals, Continued</i>					
Mercury, total	< 0.000010	0.000010	mg/L	2023-10-25	
Molybdenum, total	0.00178	0.00010	mg/L	2023-10-24	
Nickel, total	0.00099	0.00040	mg/L	2023-10-24	
Phosphorus, total	< 0.050	0.050	mg/L	2023-10-24	
Potassium, total	1.19	0.10	mg/L	2023-10-24	
Selenium, total	0.00064	0.00050	mg/L	2023-10-24	
Silicon, total	5.1	1.0	mg/L	2023-10-24	
Silver, total	< 0.000050	0.000050	mg/L	2023-10-24	
Sodium, total	4.97	0.10	mg/L	2023-10-24	
Strontium, total	0.131	0.0010	mg/L	2023-10-24	
Sulfur, total	< 3.0	3.0	mg/L	2023-10-24	
Tellurium, total	< 0.00050	0.00050	mg/L	2023-10-24	
Thallium, total	< 0.000020	0.000020	mg/L	2023-10-24	
Thorium, total	< 0.00010	0.00010	mg/L	2023-10-24	
Tin, total	< 0.00020	0.00020	mg/L	2023-10-24	
Titanium, total	< 0.0050	0.0050	mg/L	2023-10-24	
Tungsten, total	< 0.0010	0.0010	mg/L	2023-10-24	
Uranium, total	0.000254	0.000020	mg/L	2023-10-24	
Vanadium, total	< 0.0050	0.0050	mg/L	2023-10-24	
Zinc, total	0.0045	0.0040	mg/L	2023-10-24	
Zirconium, total	< 0.00010	0.00010	mg/L	2023-10-24	
<i>Volatile Organic Compounds (VOC)</i>					
Bromodichloromethane	< 0.0010	0.0010	mg/L	2023-10-23	
Bromoform	< 0.0010	0.0010	mg/L	2023-10-23	
Chloroform	< 0.0010	0.0010	mg/L	2023-10-23	
Dibromochloromethane	< 0.0010	0.0010	mg/L	2023-10-23	
Surrogate: Toluene-d8	102	70-130	%	2023-10-23	
Surrogate: 4-Bromofluorobenzene	80	70-130	%	2023-10-23	

Sample Qualifiers:

HT1 The sample was prepared and/or analyzed past the recommended holding time.



APPENDIX 1: SUPPORTING INFORMATION

REPORTED TO PROJECT Prince George, City of - Pump Station
Raw Water - PW 660

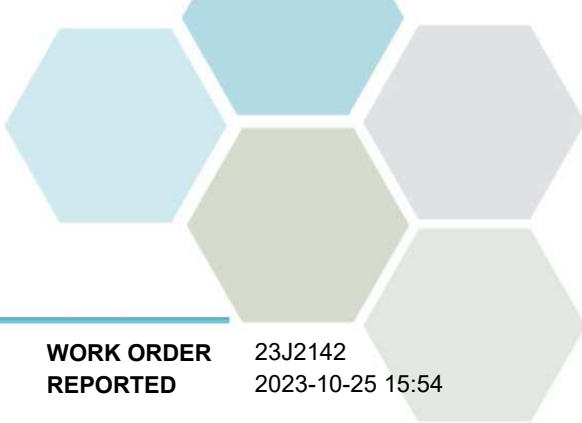
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Analysis Description	Method Ref.	Technique	Accredited	Location
Alkalinity in Water	SM 2320 B* (2021)	Titration with H2SO4	✓	Kelowna
Ammonia, Total in Water	SM 4500-NH3 G* (2021)	Automated Colorimetry (Phenate)	✓	Kelowna
Anions in Water	SM 4110 B (2020)	Ion Chromatography	✓	Kelowna
Carbon, Total Organic in Water	SM 5310 B (2022)	Combustion, Infrared CO2 Detection	✓	Kelowna
Coliforms, Fecal in Water	SM 9222 D (2015)	Membrane Filtration / m-FC Agar	✓	Kelowna
Coliforms, Total in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Dissolved Metals in Water	EPA 200.8 / EPA 6020B	0.45 µm Filtration / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
E. coli in Water	SM 9222* (2015)	Membrane Filtration / Chromocult Agar	✓	Kelowna
Hardness in Water	SM 2340 B (2021)	Calculation: 2.497 [diss Ca] + 4.118 [diss Mg]	✓	N/A
Mercury, dissolved in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	✓	Richmond
Mercury, total in Water	EPA 245.7*	BrCl2 Oxidation / Cold Vapor Atomic Fluorescence Spectrometry (CVAFS)	✓	Richmond
Nitrogen, Total Kjeldahl in Water	SM 4500-Norg D* (2021)	Block Digestion and Flow Injection Analysis	✓	Kelowna
Solids, Total Suspended in Water	Solids in Water, Filtered / SM 2540 D* (2020)	Solids in Water, Filtered / Gravimetry (Dried at 103-105C)	✓	Kelowna
Total Metals in Water	EPA 200.2 / EPA 6020B	HNO3+HCl Hot Block Digestion / Inductively Coupled Plasma-Mass Spectroscopy (ICP-MS)	✓	Richmond
Trihalomethanes in Water	EPA 5030B / EPA 8260D	Purge&Trap / GC-MSD (SIM)	✓	Richmond

Note: An asterisk in the Method Reference indicates that the CARO method has been modified from the reference method

Glossary of Terms:

RL	Reporting Limit (default)
<	Less than the specified Reporting Limit (RL) - the actual RL may be higher than the default RL due to various factors
CFU/100 mL	Colony Forming Units per 100 millilitres
mg/L	Milligrams per litre
EPA	United States Environmental Protection Agency Test Methods
SM	Standard Methods for the Examination of Water and Wastewater, American Public Health Association



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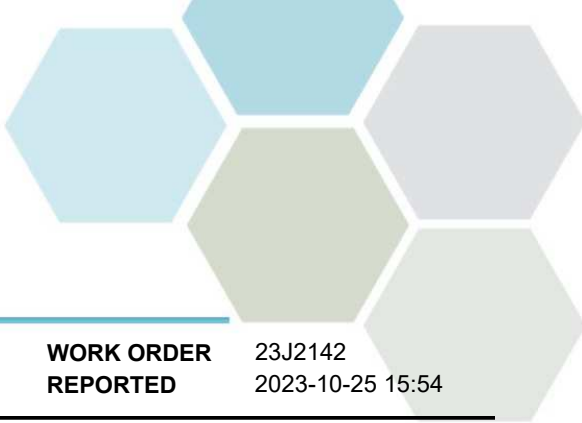
General Comments:

The results in this report apply to the received samples analyzed in accordance with the Chain of Custody document. This analytical report must be reproduced in its entirety. CARO is not responsible for any loss or damage resulting directly or indirectly from error or omission in the conduct of testing. Liability is limited to the cost of analysis. Caro will dispose of all samples within 30 days of sample receipt, unless otherwise agreed.

Results in **Bold** indicate values that are above CARO's method reporting limits. Any results that are above regulatory limits are highlighted **red**. Please note that results will only be highlighted red if the regulatory limits are included on the CARO report. Any Bold and/or highlighted results do not take into account method uncertainty. If you would like method uncertainty or regulatory limits to be included on your report, please contact your Account Manager: pmmand@caro.ca

Please note any regulatory guidelines applied to this report are added as a convenience to the client, at their request, to help provide some initial context to analytical results obtained. Although CARO makes every effort to ensure accuracy of the associated regulatory guideline(s) applied, the guidelines applied cannot be assumed to be correct due to a variety of factors and as such CARO Analytical Services assumes no liability or responsibility for the use of those guidelines to make any decisions. The original source of the regulation should be verified and a review of the guideline(s) should be validated as correct in order to make any decisions arising from the comparison of the analytical data obtained to the relevant regulatory guideline for one's particular circumstances. Further, CARO Analytical Services assumes no liability or responsibility for any loss attributed from the use of these guidelines in any way.

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APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Prince George, City of - Pump Station
Raw Water - PW 660

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2023-10-25 15:54

The following section displays the quality control (QC) data that is associated with your sample data. Groups of samples are prepared in "batches" and analyzed in conjunction with QC samples that ensure your data is of the highest quality. Common QC types include:

- **Method Blank (Blk):** A blank sample that undergoes sample processing identical to that carried out for the test samples. Method blank results are used to assess contamination from the laboratory environment and reagents.
- **Duplicate (Dup):** An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process. Duplicates provide a measure of the analytical method's precision (reproducibility).
- **Blank Spike (BS):** A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS). Blank spikes provide a measure of the analytical method's accuracy.
- **Matrix Spike (MS):** A second aliquot of sample is fortified with a known concentration of target analytes and carried through the entire analytical process. Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.
- **Reference Material (SRM):** A homogenous material of similar matrix to the samples, certified for the parameter(s) listed. Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples. For all types of QC, the specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Anions, Batch B3J2344									
Blank (B3J2344-BLK1)			Prepared: 2023-10-24, Analyzed: 2023-10-24						
Bromide	< 0.10	0.10 mg/L							
Chloride	< 0.10	0.10 mg/L							
Fluoride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Sulfate	< 1.0	1.0 mg/L							
Blank (B3J2344-BLK2)			Prepared: 2023-10-25, Analyzed: 2023-10-25						
Bromide	< 0.10	0.10 mg/L							
Chloride	< 0.10	0.10 mg/L							
Fluoride	< 0.10	0.10 mg/L							
Nitrate (as N)	< 0.010	0.010 mg/L							
Nitrite (as N)	< 0.010	0.010 mg/L							
Phosphate (as P)	< 0.0050	0.0050 mg/L							
Sulfate	< 1.0	1.0 mg/L							
LCS (B3J2344-BS1)			Prepared: 2023-10-24, Analyzed: 2023-10-24						
Bromide	3.72	0.10 mg/L	4.00		93	85-115			
Chloride	16.3	0.10 mg/L	16.0		102	90-110			
Fluoride	4.11	0.10 mg/L	4.00		103	88-108			
Nitrate (as N)	3.81	0.010 mg/L	4.00		95	90-110			
Nitrite (as N)	2.14	0.010 mg/L	2.00		107	85-115			
Phosphate (as P)	1.04	0.0050 mg/L	1.00		104	80-120			
Sulfate	16.1	1.0 mg/L	16.0		101	90-110			
LCS (B3J2344-BS2)			Prepared: 2023-10-25, Analyzed: 2023-10-25						
Bromide	3.98	0.10 mg/L	4.00		100	85-115			
Chloride	16.4	0.10 mg/L	16.0		102	90-110			
Fluoride	4.01	0.10 mg/L	4.00		100	88-108			
Nitrate (as N)	4.11	0.010 mg/L	4.00		103	90-110			
Nitrite (as N)	2.03	0.010 mg/L	2.00		102	85-115			
Phosphate (as P)	0.903	0.0050 mg/L	1.00		90	80-120			
Sulfate	16.1	1.0 mg/L	16.0		100	90-110			

Dissolved Metals, Batch B3J2091



APPENDIX 2: QUALITY CONTROL RESULTS

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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B3J2091, Continued									
Blank (B3J2091-BLK1)					Prepared: 2023-10-21, Analyzed: 2023-10-21				
Aluminum, dissolved	< 0.0050	0.0050 mg/L							
Antimony, dissolved	< 0.00020	0.00020 mg/L							
Arsenic, dissolved	< 0.00050	0.00050 mg/L							
Barium, dissolved	< 0.0050	0.0050 mg/L							
Beryllium, dissolved	< 0.00010	0.00010 mg/L							
Bismuth, dissolved	< 0.00010	0.00010 mg/L							
Boron, dissolved	< 0.0500	0.0500 mg/L							
Cadmium, dissolved	< 0.000010	0.000010 mg/L							
Calcium, dissolved	< 0.20	0.20 mg/L							
Chromium, dissolved	< 0.00050	0.00050 mg/L							
Cobalt, dissolved	< 0.00010	0.00010 mg/L							
Copper, dissolved	< 0.00040	0.00040 mg/L							
Iron, dissolved	< 0.010	0.010 mg/L							
Lead, dissolved	< 0.00020	0.00020 mg/L							
Lithium, dissolved	< 0.00010	0.00010 mg/L							
Magnesium, dissolved	< 0.010	0.010 mg/L							
Manganese, dissolved	< 0.00020	0.00020 mg/L							
Molybdenum, dissolved	< 0.00010	0.00010 mg/L							
Nickel, dissolved	< 0.00040	0.00040 mg/L							
Phosphorus, dissolved	< 0.050	0.050 mg/L							
Potassium, dissolved	< 0.10	0.10 mg/L							
Selenium, dissolved	< 0.00050	0.00050 mg/L							
Silicon, dissolved	< 1.0	1.0 mg/L							
Silver, dissolved	< 0.000050	0.000050 mg/L							
Sodium, dissolved	< 0.10	0.10 mg/L							
Strontium, dissolved	< 0.0010	0.0010 mg/L							
Sulfur, dissolved	< 3.0	3.0 mg/L							
Tellurium, dissolved	< 0.00050	0.00050 mg/L							
Thallium, dissolved	< 0.000020	0.000020 mg/L							
Thorium, dissolved	< 0.00010	0.00010 mg/L							
Tin, dissolved	< 0.00020	0.00020 mg/L							
Titanium, dissolved	< 0.0050	0.0050 mg/L							
Tungsten, dissolved	< 0.0010	0.0010 mg/L							
Uranium, dissolved	< 0.000020	0.000020 mg/L							
Vanadium, dissolved	< 0.0050	0.0050 mg/L							
Zinc, dissolved	< 0.0040	0.0040 mg/L							
Zirconium, dissolved	< 0.00010	0.00010 mg/L							

LCS (B3J2091-BS1)					Prepared: 2023-10-21, Analyzed: 2023-10-21				
Aluminum, dissolved	4.03	0.0050 mg/L	4.00		101	80-120			
Antimony, dissolved	0.0406	0.00020 mg/L	0.0400		101	80-120			
Arsenic, dissolved	0.402	0.00050 mg/L	0.400		101	80-120			
Barium, dissolved	0.0393	0.0050 mg/L	0.0400		98	80-120			
Beryllium, dissolved	0.0421	0.00010 mg/L	0.0400		105	80-120			
Bismuth, dissolved	0.0404	0.00010 mg/L	0.0400		101	80-120			
Boron, dissolved	0.423	0.0500 mg/L	0.400		106	80-120			
Cadmium, dissolved	0.0397	0.000010 mg/L	0.0400		99	80-120			
Calcium, dissolved	4.17	0.20 mg/L	4.00		104	80-120			
Chromium, dissolved	0.0400	0.00050 mg/L	0.0400		100	80-120			
Cobalt, dissolved	0.0399	0.00010 mg/L	0.0400		100	80-120			
Copper, dissolved	0.0402	0.00040 mg/L	0.0400		100	80-120			
Iron, dissolved	4.06	0.010 mg/L	4.00		101	80-120			
Lead, dissolved	0.0408	0.00020 mg/L	0.0400		102	80-120			
Lithium, dissolved	0.0432	0.00010 mg/L	0.0400		108	80-120			
Magnesium, dissolved	4.00	0.010 mg/L	4.00		100	80-120			
Manganese, dissolved	0.0404	0.00020 mg/L	0.0400		101	80-120			



APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Prince George, City of - Pump Station
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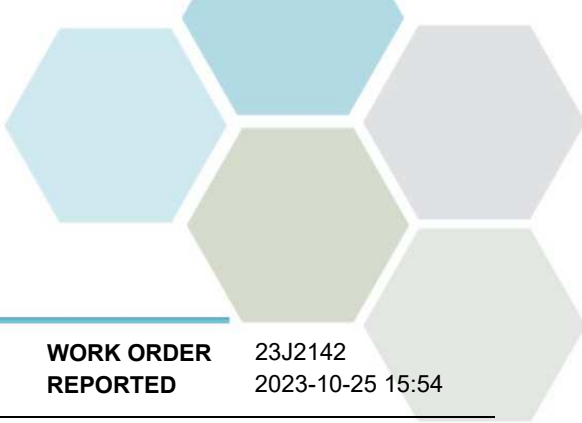
WORK ORDER REPORTED 23J2142
2023-10-25 15:54

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Dissolved Metals, Batch B3J2091, Continued									
LCS (B3J2091-BS1), Continued					Prepared: 2023-10-21, Analyzed: 2023-10-21				
Molybdenum, dissolved	0.0392	0.00010 mg/L	0.0400		98	80-120			
Nickel, dissolved	0.0403	0.00040 mg/L	0.0400		101	80-120			
Phosphorus, dissolved	4.02	0.050 mg/L	4.00		101	80-120			
Potassium, dissolved	4.09	0.10 mg/L	4.00		102	80-120			
Selenium, dissolved	0.413	0.00050 mg/L	0.400		103	80-120			
Silicon, dissolved	4.3	1.0 mg/L	4.00		107	80-120			
Silver, dissolved	0.0398	0.000050 mg/L	0.0400		100	80-120			
Sodium, dissolved	4.10	0.10 mg/L	4.00		102	80-120			
Strontium, dissolved	0.0410	0.0010 mg/L	0.0400		102	80-120			
Sulfur, dissolved	41.3	3.0 mg/L	40.0		103	80-120			
Tellurium, dissolved	0.0392	0.00050 mg/L	0.0400		98	80-120			
Thallium, dissolved	0.0409	0.000020 mg/L	0.0400		102	80-120			
Thorium, dissolved	0.0412	0.00010 mg/L	0.0400		103	80-120			
Tin, dissolved	0.0403	0.00020 mg/L	0.0400		101	80-120			
Titanium, dissolved	0.0413	0.0050 mg/L	0.0400		103	80-120			
Tungsten, dissolved	0.0416	0.0010 mg/L	0.0400		104	80-120			
Uranium, dissolved	0.0403	0.000020 mg/L	0.0400		101	80-120			
Vanadium, dissolved	0.0402	0.0050 mg/L	0.0400		100	80-120			
Zinc, dissolved	0.402	0.0040 mg/L	0.400		101	80-120			
Zirconium, dissolved	0.0410	0.00010 mg/L	0.0400		102	80-120			

Dissolved Metals, Batch B3J2150

Blank (B3J2150-BLK1)					Prepared: 2023-10-22, Analyzed: 2023-10-23				
Mercury, dissolved	< 0.000010	0.000010 mg/L							
Blank (B3J2150-BLK2)					Prepared: 2023-10-22, Analyzed: 2023-10-23				
Mercury, dissolved	< 0.000010	0.000010 mg/L							
Blank (B3J2150-BLK3)					Prepared: 2023-10-22, Analyzed: 2023-10-23				
Mercury, dissolved	< 0.000010	0.000010 mg/L							
Blank (B3J2150-BLK4)					Prepared: 2023-10-22, Analyzed: 2023-10-23				
Mercury, dissolved	< 0.000010	0.000010 mg/L							
Blank (B3J2150-BLK5)					Prepared: 2023-10-22, Analyzed: 2023-10-24				
Mercury, dissolved	< 0.000010	0.000010 mg/L							
LCS (B3J2150-BS1)					Prepared: 2023-10-22, Analyzed: 2023-10-23				
Mercury, dissolved	0.000251	0.000010 mg/L	0.000250		100	80-120			
LCS (B3J2150-BS2)					Prepared: 2023-10-22, Analyzed: 2023-10-23				
Mercury, dissolved	0.000256	0.000010 mg/L	0.000250		102	80-120			
LCS (B3J2150-BS3)					Prepared: 2023-10-22, Analyzed: 2023-10-23				
Mercury, dissolved	0.000273	0.000010 mg/L	0.000250		109	80-120			
LCS (B3J2150-BS4)					Prepared: 2023-10-22, Analyzed: 2023-10-24				
Mercury, dissolved	0.000239	0.000010 mg/L	0.000250		95	80-120			
LCS (B3J2150-BS5)					Prepared: 2023-10-22, Analyzed: 2023-10-24				
Mercury, dissolved	0.000208	0.000010 mg/L	0.000250		83	80-120			

General Parameters, Batch B3J1958

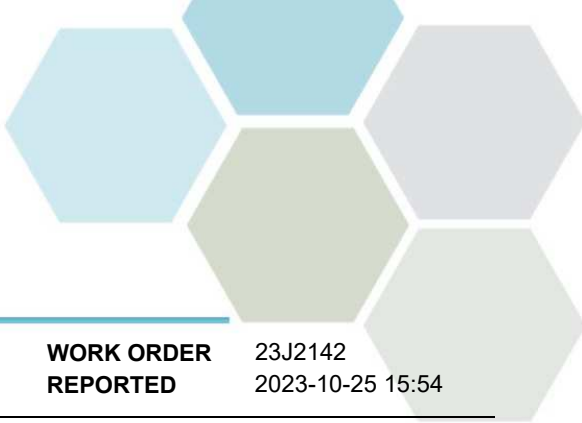


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Prince George, City of - Pump Station
Raw Water - PW 660

WORK ORDER REPORTED 23J2142
2023-10-25 15:54

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B3J1958, Continued									
Blank (B3J1958-BLK1)			Prepared: 2023-10-20, Analyzed: 2023-10-20						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B3J1958-BLK2)			Prepared: 2023-10-20, Analyzed: 2023-10-20						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B3J1958-BLK3)			Prepared: 2023-10-20, Analyzed: 2023-10-20						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
Blank (B3J1958-BLK4)			Prepared: 2023-10-20, Analyzed: 2023-10-20						
Ammonia, Total (as N)	< 0.050	0.050 mg/L							
LCS (B3J1958-BS1)			Prepared: 2023-10-20, Analyzed: 2023-10-20						
Ammonia, Total (as N)	0.943	0.050 mg/L	1.00		94	85-115			
LCS (B3J1958-BS2)			Prepared: 2023-10-20, Analyzed: 2023-10-20						
Ammonia, Total (as N)	0.941	0.050 mg/L	1.00		94	85-115			
LCS (B3J1958-BS3)			Prepared: 2023-10-20, Analyzed: 2023-10-20						
Ammonia, Total (as N)	0.946	0.050 mg/L	1.00		95	85-115			
LCS (B3J1958-BS4)			Prepared: 2023-10-20, Analyzed: 2023-10-20						
Ammonia, Total (as N)	0.933	0.050 mg/L	1.00		93	85-115			
General Parameters, Batch B3J2157									
Blank (B3J2157-BLK1)			Prepared: 2023-10-23, Analyzed: 2023-10-23						
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
Blank (B3J2157-BLK2)			Prepared: 2023-10-23, Analyzed: 2023-10-23						
Alkalinity, Total (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Phenolphthalein (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Bicarbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Carbonate (as CaCO3)	< 1.0	1.0 mg/L							
Alkalinity, Hydroxide (as CaCO3)	< 1.0	1.0 mg/L							
LCS (B3J2157-BS1)			Prepared: 2023-10-23, Analyzed: 2023-10-23						
Alkalinity, Total (as CaCO3)	102	1.0 mg/L	100		102	80-120			
Alkalinity, Phenolphthalein (as CaCO3)	40.2	1.0 mg/L	50.0		80	0-200			
LCS (B3J2157-BS2)			Prepared: 2023-10-23, Analyzed: 2023-10-23						
Alkalinity, Total (as CaCO3)	106	1.0 mg/L	100		106	80-120			
Alkalinity, Phenolphthalein (as CaCO3)	22.6	1.0 mg/L	50.0		45	0-200			
General Parameters, Batch B3J2214									
Blank (B3J2214-BLK1)			Prepared: 2023-10-23, Analyzed: 2023-10-24						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
Blank (B3J2214-BLK2)			Prepared: 2023-10-23, Analyzed: 2023-10-24						
Nitrogen, Total Kjeldahl	< 0.050	0.050 mg/L							
LCS (B3J2214-BS1)			Prepared: 2023-10-23, Analyzed: 2023-10-24						
Nitrogen, Total Kjeldahl	1.01	0.050 mg/L	1.00		101	85-115			



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REPORTED TO PROJECT Prince George, City of - Pump Station
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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
General Parameters, Batch B3J2214, Continued									
LCS (B3J2214-BS2)			Prepared: 2023-10-23, Analyzed: 2023-10-24						
Nitrogen, Total Kjeldahl	0.998	0.050 mg/L	1.00		100	85-115			
General Parameters, Batch B3J2317									
Blank (B3J2317-BLK1)			Prepared: 2023-10-24, Analyzed: 2023-10-24						
Solids, Total Suspended	< 2.0	2.0 mg/L							
LCS (B3J2317-BS1)			Prepared: 2023-10-24, Analyzed: 2023-10-24						
Solids, Total Suspended	90.0	10.0 mg/L	100		90	85-115			
General Parameters, Batch B3J2443									
Blank (B3J2443-BLK1)			Prepared: 2023-10-25, Analyzed: 2023-10-25						
Carbon, Total Organic	< 0.50	0.50 mg/L							
Blank (B3J2443-BLK2)			Prepared: 2023-10-25, Analyzed: 2023-10-25						
Carbon, Total Organic	< 0.50	0.50 mg/L							
LCS (B3J2443-BS1)			Prepared: 2023-10-25, Analyzed: 2023-10-25						
Carbon, Total Organic	9.07	0.50 mg/L	10.0		91	78-116			
LCS (B3J2443-BS2)			Prepared: 2023-10-25, Analyzed: 2023-10-25						
Carbon, Total Organic	8.75	0.50 mg/L	10.0		88	78-116			
Microbiological Parameters, Batch B3J1679									
Blank (B3J1679-BLK1)			Prepared: 2023-10-18, Analyzed: 2023-10-18						
Coliforms, Total	< 1	1 CFU/100 mL							
E. coli	< 1	1 CFU/100 mL							
Blank (B3J1679-BLK2)			Prepared: 2023-10-18, Analyzed: 2023-10-18						
Coliforms, Total	< 1	1 CFU/100 mL							
E. coli	< 1	1 CFU/100 mL							
Blank (B3J1679-BLK3)			Prepared: 2023-10-18, Analyzed: 2023-10-18						
Coliforms, Total	< 1	1 CFU/100 mL							
E. coli	< 1	1 CFU/100 mL							
Blank (B3J1679-BLK4)			Prepared: 2023-10-18, Analyzed: 2023-10-18						
Coliforms, Total	< 1	1 CFU/100 mL							
E. coli	< 1	1 CFU/100 mL							
Blank (B3J1679-BLK5)			Prepared: 2023-10-18, Analyzed: 2023-10-18						
Coliforms, Total	< 1	1 CFU/100 mL							
E. coli	< 1	1 CFU/100 mL							
Blank (B3J1679-BLK6)			Prepared: 2023-10-18, Analyzed: 2023-10-18						
Coliforms, Total	< 1	1 CFU/100 mL							
E. coli	< 1	1 CFU/100 mL							
Blank (B3J1679-BLK7)			Prepared: 2023-10-18, Analyzed: 2023-10-18						
Coliforms, Total	< 1	1 CFU/100 mL							
E. coli	< 1	1 CFU/100 mL							
Blank (B3J1679-BLK8)			Prepared: 2023-10-18, Analyzed: 2023-10-18						
Coliforms, Total	< 1	1 CFU/100 mL							



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WORK ORDER REPORTED 23J2142
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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Microbiological Parameters, Batch B3J1679, Continued									
Blank (B3J1679-BLK8), Continued			Prepared: 2023-10-18, Analyzed: 2023-10-18						
E. coli	< 1	1 CFU/100 mL							
Blank (B3J1679-BLK9)			Prepared: 2023-10-18, Analyzed: 2023-10-18						
Coliforms, Total	< 1	1 CFU/100 mL							
E. coli	< 1	1 CFU/100 mL							
Blank (B3J1679-BLKA)			Prepared: 2023-10-18, Analyzed: 2023-10-18						
Coliforms, Total	< 1	1 CFU/100 mL							
E. coli	< 1	1 CFU/100 mL							
Blank (B3J1679-BLKB)			Prepared: 2023-10-18, Analyzed: 2023-10-18						
Coliforms, Total	< 1	1 CFU/100 mL							
E. coli	< 1	1 CFU/100 mL							
Blank (B3J1679-BLKC)			Prepared: 2023-10-18, Analyzed: 2023-10-18						
Coliforms, Total	< 1	1 CFU/100 mL							
E. coli	< 1	1 CFU/100 mL							
Blank (B3J1679-BLKD)			Prepared: 2023-10-18, Analyzed: 2023-10-18						
Coliforms, Total	< 1	1 CFU/100 mL							
E. coli	< 1	1 CFU/100 mL							
Blank (B3J1679-BLKE)			Prepared: 2023-10-18, Analyzed: 2023-10-18						
Coliforms, Total	< 1	1 CFU/100 mL							
E. coli	< 1	1 CFU/100 mL							
Microbiological Parameters, Batch B3J1766									
Blank (B3J1766-BLK1)			Prepared: 2023-10-18, Analyzed: 2023-10-18						
Coliforms, Fecal	< 1	1 CFU/100 mL							
Blank (B3J1766-BLK2)			Prepared: 2023-10-18, Analyzed: 2023-10-18						
Coliforms, Fecal	< 1	1 CFU/100 mL							
Total Metals, Batch B3J2272									
Blank (B3J2272-BLK1)			Prepared: 2023-10-23, Analyzed: 2023-10-24						
Aluminum, total	< 0.0050	0.0050 mg/L							
Antimony, total	< 0.00020	0.00020 mg/L							
Arsenic, total	< 0.00050	0.00050 mg/L							
Barium, total	< 0.0050	0.0050 mg/L							
Beryllium, total	< 0.00010	0.00010 mg/L							
Bismuth, total	< 0.00010	0.00010 mg/L							
Boron, total	< 0.0500	0.0500 mg/L							
Cadmium, total	< 0.000010	0.000010 mg/L							
Calcium, total	< 0.20	0.20 mg/L							
Chromium, total	< 0.00050	0.00050 mg/L							
Cobalt, total	< 0.00010	0.00010 mg/L							
Copper, total	< 0.00040	0.00040 mg/L							
Iron, total	< 0.010	0.010 mg/L							
Lead, total	< 0.00020	0.00020 mg/L							
Lithium, total	< 0.00010	0.00010 mg/L							
Magnesium, total	< 0.010	0.010 mg/L							
Manganese, total	< 0.00020	0.00020 mg/L							
Molybdenum, total	< 0.00010	0.00010 mg/L							
Nickel, total	< 0.00040	0.00040 mg/L							



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WORK ORDER REPORTED 23J2142
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Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B3J2272, Continued									
Blank (B3J2272-BLK1), Continued					Prepared: 2023-10-23, Analyzed: 2023-10-24				
Phosphorus, total	< 0.050	0.050 mg/L							
Potassium, total	< 0.10	0.10 mg/L							
Selenium, total	< 0.00050	0.00050 mg/L							
Silicon, total	< 1.0	1.0 mg/L							
Silver, total	< 0.000050	0.000050 mg/L							
Sodium, total	< 0.10	0.10 mg/L							
Strontium, total	< 0.0010	0.0010 mg/L							
Sulfur, total	< 3.0	3.0 mg/L							
Tellurium, total	< 0.00050	0.00050 mg/L							
Thallium, total	< 0.000020	0.000020 mg/L							
Thorium, total	< 0.00010	0.00010 mg/L							
Tin, total	< 0.00020	0.00020 mg/L							
Titanium, total	< 0.0050	0.0050 mg/L							
Tungsten, total	< 0.0010	0.0010 mg/L							
Uranium, total	< 0.000020	0.000020 mg/L							
Vanadium, total	< 0.0050	0.0050 mg/L							
Zinc, total	< 0.0040	0.0040 mg/L							
Zirconium, total	< 0.00010	0.00010 mg/L							
LCS (B3J2272-BS1)					Prepared: 2023-10-23, Analyzed: 2023-10-24				
Aluminum, total	3.99	0.0050 mg/L	4.00		100	80-120			
Antimony, total	0.0409	0.00020 mg/L	0.0400		102	80-120			
Arsenic, total	0.396	0.00050 mg/L	0.400		99	80-120			
Barium, total	0.0401	0.0050 mg/L	0.0400		100	80-120			
Beryllium, total	0.0388	0.00010 mg/L	0.0400		97	80-120			
Bismuth, total	0.0393	0.00010 mg/L	0.0400		98	80-120			
Boron, total	0.395	0.0500 mg/L	0.400		99	80-120			
Cadmium, total	0.0396	0.000010 mg/L	0.0400		99	80-120			
Calcium, total	4.02	0.20 mg/L	4.00		101	80-120			
Chromium, total	0.0401	0.00050 mg/L	0.0400		100	80-120			
Cobalt, total	0.0404	0.00010 mg/L	0.0400		101	80-120			
Copper, total	0.0405	0.00040 mg/L	0.0400		101	80-120			
Iron, total	3.92	0.010 mg/L	4.00		98	80-120			
Lead, total	0.0397	0.00020 mg/L	0.0400		99	80-120			
Lithium, total	0.0385	0.00010 mg/L	0.0400		96	80-120			
Magnesium, total	3.95	0.010 mg/L	4.00		99	80-120			
Manganese, total	0.0407	0.00020 mg/L	0.0400		102	80-120			
Molybdenum, total	0.0388	0.00010 mg/L	0.0400		97	80-120			
Nickel, total	0.0399	0.00040 mg/L	0.0400		100	80-120			
Phosphorus, total	4.00	0.050 mg/L	4.00		100	80-120			
Potassium, total	4.05	0.10 mg/L	4.00		101	80-120			
Selenium, total	0.402	0.00050 mg/L	0.400		100	80-120			
Silicon, total	4.3	1.0 mg/L	4.00		106	80-120			
Silver, total	0.0399	0.000050 mg/L	0.0400		100	80-120			
Sodium, total	3.98	0.10 mg/L	4.00		100	80-120			
Strontium, total	0.0407	0.0010 mg/L	0.0400		102	80-120			
Sulfur, total	40.0	3.0 mg/L	40.0		100	80-120			
Tellurium, total	0.0382	0.00050 mg/L	0.0400		96	80-120			
Thallium, total	0.0396	0.000020 mg/L	0.0400		99	80-120			
Thorium, total	0.0403	0.00010 mg/L	0.0400		101	80-120			
Tin, total	0.0402	0.00020 mg/L	0.0400		101	80-120			
Titanium, total	0.0394	0.0050 mg/L	0.0400		99	80-120			
Tungsten, total	0.0405	0.0010 mg/L	0.0400		101	80-120			
Uranium, total	0.0402	0.000020 mg/L	0.0400		101	80-120			
Vanadium, total	0.0404	0.0050 mg/L	0.0400		101	80-120			
Zinc, total	0.399	0.0040 mg/L	0.400		100	80-120			

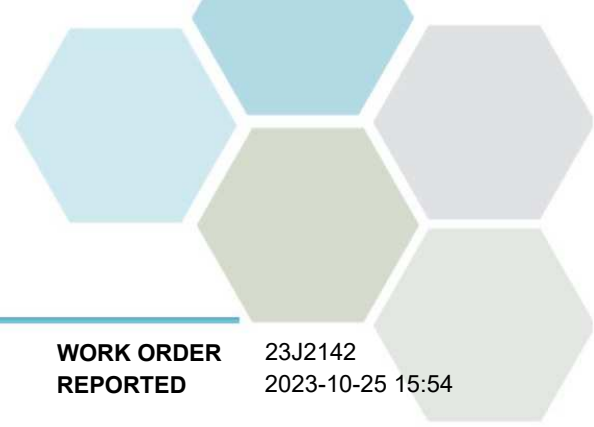


APPENDIX 2: QUALITY CONTROL RESULTS

REPORTED TO PROJECT Prince George, City of - Pump Station
Raw Water - PW 660

WORK ORDER REPORTED 23J2142
2023-10-25 15:54

Analyte	Result	RL Units	Spike Level	Source Result	% REC	REC Limit	% RPD	RPD Limit	Qualifier
Total Metals, Batch B3J2272, Continued									
LCS (B3J2272-BS1), Continued			Prepared: 2023-10-23, Analyzed: 2023-10-24						
Zirconium, total	0.0412	0.00010 mg/L	0.0400		103	80-120			
Total Metals, Batch B3J2478									
Blank (B3J2478-BLK1)			Prepared: 2023-10-25, Analyzed: 2023-10-25						
Mercury, total	< 0.000010	0.000010 mg/L							
Blank (B3J2478-BLK2)			Prepared: 2023-10-25, Analyzed: 2023-10-25						
Mercury, total	< 0.000010	0.000010 mg/L							
LCS (B3J2478-BS1)			Prepared: 2023-10-25, Analyzed: 2023-10-25						
Mercury, total	0.000249	0.000010 mg/L	0.000250		100	80-120			
LCS (B3J2478-BS2)			Prepared: 2023-10-25, Analyzed: 2023-10-25						
Mercury, total	0.000262	0.000010 mg/L	0.000250		105	80-120			
Volatile Organic Compounds (VOC), Batch B3J2151									
Blank (B3J2151-BLK1)			Prepared: 2023-10-23, Analyzed: 2023-10-23						
Bromodichloromethane	< 0.0010	0.0010 mg/L							
Bromoform	< 0.0010	0.0010 mg/L							
Chloroform	< 0.0010	0.0010 mg/L							
Dibromochloromethane	< 0.0010	0.0010 mg/L							
Surrogate: Toluene-d8	0.0295	mg/L	0.0250		118	70-130			
Surrogate: 4-Bromofluorobenzene	0.0226	mg/L	0.0249		91	70-130			
LCS (B3J2151-BS1)			Prepared: 2023-10-23, Analyzed: 2023-10-23						
Bromodichloromethane	0.0220	0.0010 mg/L	0.0200		110	70-130			
Bromoform	0.0209	0.0010 mg/L	0.0201		104	70-130			
Chloroform	0.0229	0.0010 mg/L	0.0201		114	70-130			
Dibromochloromethane	0.0213	0.0010 mg/L	0.0201		106	70-130			
Surrogate: Toluene-d8	0.0277	mg/L	0.0250		111	70-130			
Surrogate: 4-Bromofluorobenzene	0.0288	mg/L	0.0249		116	70-130			



APPENDIX 3: REVISION HISTORY

REPORTED TO PROJECT Prince George, City of - Pump Station
Raw Water - PW 660

WORK ORDER REPORTED 23J2142
2023-10-25 15:54

ANALYSES IN PROGRESS

Sample Number	Sample Name	Pending Analyses
23J2142-01	PW 660	Halides

DRAFT