



December 22, 2017

To: EnvironmentalCompliance@gov.bc.ca
Subject: **2017-11-13 Authorization # PE-107835, T-Zn, T-Cu and D-Al at Site BJ 3.10**

Attention: *Non-compliance Report for Authorization # 107835,
Total Zinc, Total Copper and Dissolved Aluminum at Site BJ 3.10 – Follow-up Report*

Date of Non-compliance: 2017-11-13, 16:40

Location of Non-compliance [Address, long. & lat.]: Lat: 56.280870° Long: -130.111388°

Nature of Non-compliance:

A non-compliance report (NCR) was issued by Pretivm on November 27th for an effluent sample collected on November 23rd which had concentrations above discharge limits in PE-107835 for total zinc (T-Zn), total copper (T-Cu) and dissolved aluminum (D-Al). The results originally reported by the laboratory were:

- T-Zn concentration of 0.0107 mg/L, above the permit discharge limit of 0.0075 mg/L;
- T-Cu concentration of 0.00287 mg/L, above the permit discharge limit of 0.002 mg/L; and
- D-Al concentration of 0.127 mg/L, above the permit discharge limit of 0.05 mg/L.

Initial Response/Actions taken:

An investigation of potential causes of elevated levels of D-Al, T-Cu, and T-Zn was initiated and included review of any activity that may have led to increased metal concentration at BJ 3.10, and a review of potential causes of sample contamination. The investigation looked at sampling practices, site activities, testing practices, field quality control data, laboratory re-test results of the November 13th sample, and recent monitoring results from BJ 3.10. The investigation was conducted by Brucejack Gold Mine Environmental staff and Lorax Environmental. The investigation found that normal sampling practices were in use and there were no unusual activities at the mine site that would explain the slight exceedances reported for the November 13th sample.

The laboratory testing practices investigation found that the D-Al result reported was erroneous, because the sample had not been filtered. The laboratory used remaining sample water from the November 13th BJ 3.10 sample to filter and re-analyze, and issued a new report with D-Al results that were below the detection limit and are typical of levels measured at BJ 3.10 (Table 1).

The investigation concluded that sample contamination is most likely cause of the T-Cu and T-Zn results that were above effluent discharge limits. A deterioration in the analytical laboratories ability to measure low levels of T-Zn may have also contributed to the elevated T-Zn result.

Action taken immediately following the November 27th NCR was to ensure that duplicates and field blanks were collected with each weekly BJ 3.10 sample.

Pretium Resources Inc.

1242 Main Street, Smithers, BC V0J 2N0 | T: 250-847-2526 | www.pretivm.com | TSX/NYSE: PVG

Table 1. BJ 3.10 monitoring results from before and after the non-compliance reported for the November 5th sample.

| Sample Date | QC sample | D-Al (mg/L) | T-Cu (mg/L) | T-Zn (mg/L) |
|----------------|-----------------|-------------|----------------|---------------|
| | Discharge limit | 0.05 | 0.002 | 0.0075 |
| October-02-17 | | 0.0313 | <0.00050 | 0.0033 |
| October-02-17 | duplicate | 0.0318 | <0.00050 | <0.0030 |
| October-09-17 | | 0.0321 | <0.00050 | <0.0030 |
| October-09-17 | duplicate | 0.0366 | <0.00050 | <0.0030 |
| October-16-17 | | 0.0319 | <0.00050 | <0.0030 |
| October-16-17 | duplicate | 0.0308 | <0.00050 | <0.0030 |
| October-23-17 | | 0.0311 | <0.00050 | <0.0030 |
| October-23-17 | duplicate | 0.0314 | <0.00050 | <0.0030 |
| October-30-17 | | 0.0409 | <0.00050 | <0.0030 |
| October-30-17 | duplicate | 0.0413 | <0.00050 | 0.0047 |
| November-05-17 | | 0.0388 | <0.00050 | 0.0051 |
| November-05-17 | duplicate | 0.0408 | <0.00050 | <0.0030 |
| November-13-17 | | 0.0379 | 0.00287 | 0.0107 |
| November-13-17 | duplicate | 0.0359 | <0.00050 | 0.0055 |
| November-20-17 | | 0.0311 | <0.00050 | <0.0030 |
| November-20-17 | duplicate | 0.0317 | <0.00050 | <0.0030 |
| November-27-17 | | 0.0322 | <0.00050 | 0.0047 |
| November-27-17 | duplicate | 0.0340 | <0.00050 | 0.0042 |
| December-03-17 | | 0.0283 | <0.00050 | 0.004 |
| December-03-17 | duplicate | 0.0298 | <0.00050 | <0.0030 |
| December-11-17 | | 0.0304 | <0.00050 | <0.0030 |
| December-11-17 | triplicate | 0.0305 | <0.00050 | <0.0030 |
| December-11-17 | triplicate | 0.0323 | <0.00050 | <0.0030 |

Details of the investigation results for each parameter specific are described in the following paragraphs.

D-Al

D-Al has been below the discharge limit in all 4 weekly samples analyzed from BJ 3.10 since the exceedance event, including the most recent result from December 11, 2017 (Table 1). Investigation by the laboratory determined the originally reported D-Al results (0.127 mg/L and 0.152 mg/L, sample and field duplicate) were tested on non-filtered samples. Dissolved metals must be tested on a sample filtered through a 0.45-micron pore size filter. Re-testing on filtered samples yielded D-Al of 0.0379 mg/L and 0.0359 mg/L for the sample and field duplicate, respectively, below the discharge limit of 0.050 mg/L. The laboratory has implemented corrective actions to prevent re-occurrence and ensure the dissolved metals test is conducted on filtered samples only, and revised report was issued December 5, 2017 with revised dissolved metal data.

T-Cu

T-Cu has been below the discharge limit in all 4 weekly samples analyzed from BJ 3.10 since the exceedance event, including the most recent result from December 11, 2017 (Table 1). The T-Cu analytical result (0.00287 mg/L) was anomalous compared to the concurrently collected field duplicate (<0.0005 mg/L). However, re-test results of the original sample (0.00291 mg/L and 0.00300 mg/L) and field

duplicate (<0.0005) confirmed the originally reported results. Sampling practices and site activities at the time of the exceedance were reviewed by Lorax Environmental and Brucejack Gold Mine environmental staff. Normal sampling practices were in use and there were no unusual activities at the mine site during the time of exceedance that would explain the slight exceedance of the T-Cu discharge limit on November 13, 2017. The field quality control data (field blanks and field duplicates) for T-Cu collected January to December 11, 2017 were reviewed and, except for the November 13, 2017 field duplicate, the data met the quality objectives specified in the British Columbia Field Sampling Manual (2013 Edition). The investigations did not reveal the cause of the probable contamination of T-Cu sample collected on November 13, 2017.

T-Zn

T-Zn has been below the discharge limit in all 4 weekly samples analyzed from BJ 3.10 since the exceedance event, including the most recent results from December 11, 2017 (Table 1). The T-Zn analytical result (0.0107 mg/L) was anomalous compared to the concurrently collected field duplicate (0.0053 mg/L), as well as the re-tested results of the original sample (0.0052 mg/L and 0.0066 mg/L) and field duplicate (0.0040 and 0.0047 mg/L). The measured concentrations were slightly above the laboratory reporting limit (0.003 mg/L) and a difference of twice that amount (0.006 mg/L), between two results, can occasionally occur. From January through December 11, 2017 a total of 18 field duplicates for BJ 3.10 were collected; 13 of the duplicate pairs were within 0.001 mg/L, and larger differences were within 0.006 mg/L, as expected.

The equipment blank collected November 13, 2017 prior to sampling was positive for T-Zn (0.0053 mg/L) suggesting T-Zn contamination may have occurred during the sample collection, shipping and/or testing procedures. Sampling procedures and supplies were reviewed, and found to be consistent with the mine's environmental sampling standard operating procedures. A total of 16 field and equipment blanks were collected at BJ 3.10 in 2017. For blanks collected November 5, 2017 and December 3, 2017 the laboratory increased the T-Zn reporting limit to <0.0055 and <0.006, respectively, citing laboratory contamination and analytical interferences. Subsequently the laboratory investigated T-Zn testing procedures and determined there has been a deterioration in low-level T-Zn test performance since mid-July 2017. Corrective actions were recently implemented by the laboratory to improve the accuracy of T-Zn measurement at low concentrations.

Contact information:

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Attachments:

Analytical Report 17.11.13_Weir at 3.10_L2022595_COA_UPDATE.PDF

Analytical Report 17.11.20_Weir at 3.10_L2026497_COA.PDF
Analytical Report 17.11.27_Weir at 3.10_L2028715_COA.PDF
Analytical Report 17.12.03_Weir at 3.10_L2030935_COA.PDF
Analytical Report 17.12.11_Weir at 3.10_L2034711_COA.PDF



PRETIUM EXPLORATIONS INC.
ATTN: Max Holtby
Suite 2300, Four Bentall Centre
1055 Dunsmuir Street
Vancouver BC V7X1L4

Date Received: 15-NOV-17
Report Date: 05-DEC-17 13:35 (MT)
Version: FINAL REV. 3

Client Phone: 604-558-1784

Certificate of Analysis

Lab Work Order #: L2022595
Project P.O. #: PO1024768
Job Reference: BRUCEJACK BJ 3.10 WEEKLY
C of C Numbers: BJ 3.10 WEEKLY
Legal Site Desc:

Comments: 1-DEC-2017 Dissolved metals results have been updated for samples 1 to 3.
5-DEC-2017 Total metals duplicate results for sample 1 added as samples 4 to 7. Total metals duplicate results for sample 2 have been added as samples 8 to 11.

Dean Watt, B.Sc.
Account Manager

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ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample ID Description Sampled Date Sampled Time Client ID | | L2022595-1 Water 13-NOV-17 16:40 BJ-3.10 | L2022595-2 Water 13-NOV-17 16:40 BJ-3.10-98 | L2022595-3 Water 13-NOV-17 16:35 BJ-3.10-94 | L2022595-4 Water BJ-3.10 METALS DUP 1 | L2022595-5 Water BJ-3.10 METALS DUP 2 |
|---|--|--|---|---|--|--|
| Grouping | Analyte | | | | | |
| WATER | | | | | | |
| Physical Tests | Conductivity (uS/cm) | 192 | 186 | <2.0 | | |
| | Hardness (as CaCO3) (mg/L) | 56.7 | 57.8 | <0.50 | 59.6 ^{HTC} | 59.1 ^{HTC} |
| | pH (pH) | 7.91 | 7.93 | 5.47 | | |
| | Total Suspended Solids (mg/L) | 6.1 | 4.1 | <1.0 | | |
| | Total Dissolved Solids (mg/L) | 122 | 117 | <10 | | |
| | Turbidity (NTU) | 13.8 | 12.3 | 0.19 | | |
| Anions and Nutrients | Alkalinity, Total (as CaCO3) (mg/L) | 46.6 | 47.1 | <1.0 | | |
| | Ammonia, Total (as N) (mg/L) | 0.250 | 0.248 | <0.0050 | | |
| | Bromide (Br) (mg/L) | <0.050 | <0.050 | <0.050 | | |
| | Chloride (Cl) (mg/L) | 0.72 | 0.72 | <0.50 | | |
| | Fluoride (F) (mg/L) | 0.074 | 0.073 | <0.020 | | |
| | Nitrate (as N) (mg/L) | 3.71 | 3.70 | 0.0055 | | |
| | Nitrite (as N) (mg/L) | 0.0105 | 0.0101 | <0.0010 | | |
| | Total Kjeldahl Nitrogen (mg/L) | <0.39 | <0.38 | <0.050 | | |
| | Total Nitrogen (mg/L) | 3.94 | 3.83 | <0.030 | | |
| | Orthophosphate-Dissolved (as P) (mg/L) | <0.0010 | <0.0010 | <0.0010 | | |
| | Phosphorus (P)-Total (mg/L) | 0.0044 | 0.0057 | <0.0020 | | |
| | Sulfate (SO4) (mg/L) | 32.6 | 32.5 | <0.30 | | |
| Organic / Inorganic Carbon | Total Organic Carbon (mg/L) | 0.62 | 0.92 | <0.50 | | |
| Total Metals | Aluminum (Al)-Total (mg/L) | 0.137 | 0.126 | <0.0030 | 0.366 | 0.473 |
| | Antimony (Sb)-Total (mg/L) | 0.00567 | 0.00508 | <0.00010 | 0.00553 | 0.00567 |
| | Arsenic (As)-Total (mg/L) | 0.00443 | 0.00377 | <0.00010 | 0.00480 | 0.00472 |
| | Barium (Ba)-Total (mg/L) | 0.0680 | 0.0601 | 0.000124 ^{RRV} | 0.0729 | 0.0770 |
| | Beryllium (Be)-Total (mg/L) | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| | Bismuth (Bi)-Total (mg/L) | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| | Boron (B)-Total (mg/L) | 0.047 | 0.044 | <0.010 | 0.048 | 0.049 |
| | Cadmium (Cd)-Total (mg/L) | 0.0000147 | 0.0000103 | <0.000050 | 0.0000133 | 0.0000137 |
| | Calcium (Ca)-Total (mg/L) | 23.4 | 22.0 | <0.050 | 22.0 | 21.8 |
| | Chromium (Cr)-Total (mg/L) | 0.00017 | 0.00011 | <0.00010 | 0.00026 | 0.00026 |
| | Cobalt (Co)-Total (mg/L) | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| | Copper (Cu)-Total (mg/L) | 0.00287 | <0.00050 | <0.00050 | 0.00291 | 0.00300 |
| | Iron (Fe)-Total (mg/L) | 0.063 | 0.055 | <0.010 | 0.086 | 0.088 |
| | Lead (Pb)-Total (mg/L) | 0.000811 | 0.000736 | <0.000050 | 0.000815 | 0.000821 |
| | Lithium (Li)-Total (mg/L) | 0.0174 | 0.0161 | <0.0010 | 0.0170 | 0.0164 |
| | Magnesium (Mg)-Total (mg/L) | 0.98 | 0.83 | <0.10 | 1.09 | 1.10 |
| | Manganese (Mn)-Total (mg/L) | 0.0286 | 0.0245 | <0.00010 | 0.0298 | 0.0302 |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample ID Description Sampled Date Sampled Time Client ID | | L2022595-6 Water BJ-3.10 RAW BOTTLE DUP 1 | L2022595-7 Water BJ-3.10 RAW BOTTLE DUP 2 | L2022595-8 Water BJ-3.10-98 METALS DUP 1 | L2022595-9 Water BJ-3.10-98 METALS DUP 2 | L2022595-10 Water BJ-3.10-98 RAW BOTTLE DUP 1 |
|---|--|--|--|---|---|--|
| Grouping | Analyte | | | | | |
| WATER | | | | | | |
| Physical Tests | Conductivity (uS/cm) | | | | | |
| | Hardness (as CaCO3) (mg/L) | 60.4 ^{HTC} | 58.7 ^{HTC} | 58.7 ^{HTC} | 59.7 ^{HTC} | 59.2 ^{HTC} |
| | pH (pH) | | | | | |
| | Total Suspended Solids (mg/L) | | | | | |
| | Total Dissolved Solids (mg/L) | | | | | |
| | Turbidity (NTU) | | | | | |
| Anions and Nutrients | Alkalinity, Total (as CaCO3) (mg/L) | | | | | |
| | Ammonia, Total (as N) (mg/L) | | | | | |
| | Bromide (Br) (mg/L) | | | | | |
| | Chloride (Cl) (mg/L) | | | | | |
| | Fluoride (F) (mg/L) | | | | | |
| | Nitrate (as N) (mg/L) | | | | | |
| | Nitrite (as N) (mg/L) | | | | | |
| | Total Kjeldahl Nitrogen (mg/L) | | | | | |
| | Total Nitrogen (mg/L) | | | | | |
| | Orthophosphate-Dissolved (as P) (mg/L) | | | | | |
| | Phosphorus (P)-Total (mg/L) | | | | | |
| | Sulfate (SO4) (mg/L) | | | | | |
| Organic / Inorganic Carbon | Total Organic Carbon (mg/L) | | | | | |
| Total Metals | Aluminum (Al)-Total (mg/L) | 0.483 | 0.455 | 0.350 | 0.410 | 0.382 |
| | Antimony (Sb)-Total (mg/L) | 0.00560 | 0.00558 | 0.00545 | 0.00560 | 0.00555 |
| | Arsenic (As)-Total (mg/L) | 0.00455 | 0.00455 | 0.00465 | 0.00454 | 0.00447 |
| | Barium (Ba)-Total (mg/L) | 0.0753 | 0.0740 | 0.0725 | 0.0721 | 0.0696 |
| | Beryllium (Be)-Total (mg/L) | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| | Bismuth (Bi)-Total (mg/L) | <0.000050 | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| | Boron (B)-Total (mg/L) | 0.049 | 0.048 | 0.047 | 0.049 | 0.048 |
| | Cadmium (Cd)-Total (mg/L) | 0.0000148 | 0.0000138 | 0.0000113 | 0.0000112 | 0.0000141 |
| | Calcium (Ca)-Total (mg/L) | 22.4 | 21.7 | 21.7 | 22.1 | 21.9 |
| | Chromium (Cr)-Total (mg/L) | 0.00025 | 0.00082 | 0.00020 | 0.00022 | 0.00026 |
| | Cobalt (Co)-Total (mg/L) | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| | Copper (Cu)-Total (mg/L) | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| | Iron (Fe)-Total (mg/L) | 0.078 | 0.087 | 0.086 | 0.086 | 0.072 |
| | Lead (Pb)-Total (mg/L) | 0.000650 | 0.000663 | 0.000731 | 0.000744 | 0.000621 |
| | Lithium (Li)-Total (mg/L) | 0.0174 | 0.0179 | 0.0166 | 0.0156 | 0.0171 |
| | Magnesium (Mg)-Total (mg/L) | 1.10 | 1.10 | 1.09 | 1.07 | 1.08 |
| | Manganese (Mn)-Total (mg/L) | 0.0285 | 0.0290 | 0.0295 | 0.0290 | 0.0278 |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | Sample ID Description Sampled Date Sampled Time Client ID | L2022595-11 Water | | | |
|-----------------------------------|--|--------------------------------|-----|--|--|
| | | BJ-3.10-98 RAW BOTTLE DUP 2 | | | |
| Grouping | Analyte | | | | |
| WATER | | | | | |
| Physical Tests | Conductivity (uS/cm) | | | | |
| | Hardness (as CaCO3) (mg/L) | 61.6 | HTC | | |
| | pH (pH) | | | | |
| | Total Suspended Solids (mg/L) | | | | |
| | Total Dissolved Solids (mg/L) | | | | |
| | Turbidity (NTU) | | | | |
| Anions and Nutrients | Alkalinity, Total (as CaCO3) (mg/L) | | | | |
| | Ammonia, Total (as N) (mg/L) | | | | |
| | Bromide (Br) (mg/L) | | | | |
| | Chloride (Cl) (mg/L) | | | | |
| | Fluoride (F) (mg/L) | | | | |
| | Nitrate (as N) (mg/L) | | | | |
| | Nitrite (as N) (mg/L) | | | | |
| | Total Kjeldahl Nitrogen (mg/L) | | | | |
| | Total Nitrogen (mg/L) | | | | |
| | Orthophosphate-Dissolved (as P) (mg/L) | | | | |
| | Phosphorus (P)-Total (mg/L) | | | | |
| | Sulfate (SO4) (mg/L) | | | | |
| Organic / Inorganic Carbon | Total Organic Carbon (mg/L) | | | | |
| Total Metals | Aluminum (Al)-Total (mg/L) | 0.416 | | | |
| | Antimony (Sb)-Total (mg/L) | 0.00558 | | | |
| | Arsenic (As)-Total (mg/L) | 0.00456 | | | |
| | Barium (Ba)-Total (mg/L) | 0.0725 | | | |
| | Beryllium (Be)-Total (mg/L) | <0.00010 | | | |
| | Bismuth (Bi)-Total (mg/L) | <0.000050 | | | |
| | Boron (B)-Total (mg/L) | 0.050 | | | |
| | Cadmium (Cd)-Total (mg/L) | 0.0000112 | | | |
| | Calcium (Ca)-Total (mg/L) | 22.8 | | | |
| | Chromium (Cr)-Total (mg/L) | 0.00033 | | | |
| | Cobalt (Co)-Total (mg/L) | <0.00010 | | | |
| | Copper (Cu)-Total (mg/L) | <0.00050 | | | |
| | Iron (Fe)-Total (mg/L) | 0.077 | | | |
| | Lead (Pb)-Total (mg/L) | 0.000623 | | | |
| | Lithium (Li)-Total (mg/L) | 0.0158 | | | |
| | Magnesium (Mg)-Total (mg/L) | 1.11 | | | |
| | Manganese (Mn)-Total (mg/L) | 0.0280 | | | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | | Sample ID | L2022595-1 | L2022595-2 | L2022595-3 | L2022595-4 | L2022595-5 |
|-------------------------|--------------------------------------|--------------|------------|------------|------------------------|-------------------------|-------------------------|
| | | Description | Water | Water | Water | Water | Water |
| | | Sampled Date | 13-NOV-17 | 13-NOV-17 | 13-NOV-17 | | |
| | | Sampled Time | 16:40 | 16:40 | 16:35 | | |
| | | Client ID | BJ-3.10 | BJ-3.10-98 | BJ-3.10-94 | BJ-3.10 METALS DUP 1 | BJ-3.10 METALS DUP 2 |
| Grouping | Analyte | | | | | | |
| WATER | | | | | | | |
| Total Metals | Molybdenum (Mo)-Total (mg/L) | | 0.00280 | 0.00247 | <0.000050 | 0.00264 | 0.00274 |
| | Nickel (Ni)-Total (mg/L) | | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| | Phosphorus (P)-Total (mg/L) | | <0.30 | <0.30 | <0.30 | <0.30 | <0.30 |
| | Potassium (K)-Total (mg/L) | | 3.74 | 3.34 | <0.050 | 4.17 | 4.10 |
| | Selenium (Se)-Total (mg/L) | | 0.000529 | 0.000449 | <0.000050 | 0.000434 | 0.000394 |
| | Silicon (Si)-Total (mg/L) | | 1.34 | 1.33 | <0.10 | 1.87 | 1.98 |
| | Silver (Ag)-Total (mg/L) | | 0.000023 | 0.000015 | <0.000010 | 0.000019 | 0.000019 |
| | Sodium (Na)-Total (mg/L) | | 11.9 | 9.67 | <0.050 | 11.4 | 11.8 |
| | Strontium (Sr)-Total (mg/L) | | 0.362 | 0.348 | 0.00036 ^{RRV} | 0.372 | 0.385 |
| | Thallium (Tl)-Total (mg/L) | | 0.000054 | 0.000055 | <0.000010 | 0.000065 | 0.000071 |
| | Tin (Sn)-Total (mg/L) | | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| | Titanium (Ti)-Total (mg/L) | | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| | Uranium (U)-Total (mg/L) | | 0.000551 | 0.000545 | <0.000010 | 0.000557 | 0.000542 |
| | Vanadium (V)-Total (mg/L) | | 0.00055 | <0.00050 | <0.00050 | 0.00089 | 0.00112 |
| | Zinc (Zn)-Total (mg/L) | | 0.0107 | 0.0055 | 0.0053 | 0.0052 | 0.0066 |
| Dissolved Metals | Dissolved Metals Filtration Location | | FIELD | FIELD | FIELD | | |
| | Aluminum (Al)-Dissolved (mg/L) | | 0.0379 | 0.0359 | <0.0010 | | |
| | Antimony (Sb)-Dissolved (mg/L) | | 0.00527 | 0.00526 | <0.00010 | | |
| | Arsenic (As)-Dissolved (mg/L) | | 0.00424 | 0.00416 | <0.00010 | | |
| | Barium (Ba)-Dissolved (mg/L) | | 0.0582 | 0.0592 | <0.000050 | | |
| | Beryllium (Be)-Dissolved (mg/L) | | <0.00010 | <0.00010 | <0.00010 | | |
| | Bismuth (Bi)-Dissolved (mg/L) | | <0.000050 | <0.000050 | <0.000050 | | |
| | Boron (B)-Dissolved (mg/L) | | 0.042 | 0.042 | <0.010 | | |
| | Cadmium (Cd)-Dissolved (mg/L) | | 0.0000102 | 0.0000102 | <0.000050 | | |
| | Calcium (Ca)-Dissolved (mg/L) | | 21.0 | 21.5 | <0.050 | | |
| | Chromium (Cr)-Dissolved (mg/L) | | 0.00013 | <0.00010 | <0.00010 | | |
| | Cobalt (Co)-Dissolved (mg/L) | | <0.00010 | <0.00010 | <0.00010 | | |
| | Copper (Cu)-Dissolved (mg/L) | | <0.00020 | <0.00020 | <0.00020 | | |
| | Iron (Fe)-Dissolved (mg/L) | | <0.010 | <0.010 | <0.010 | | |
| | Lead (Pb)-Dissolved (mg/L) | | <0.000050 | <0.000050 | <0.000050 | | |
| | Lithium (Li)-Dissolved (mg/L) | | 0.0148 | 0.0161 | <0.0010 | | |
| | Magnesium (Mg)-Dissolved (mg/L) | | 1.00 | 1.01 | <0.10 | | |
| | Manganese (Mn)-Dissolved (mg/L) | | 0.0205 | 0.0215 | <0.00010 | | |
| | Molybdenum (Mo)-Dissolved (mg/L) | | 0.00247 | 0.00248 | <0.000050 | | |
| | Nickel (Ni)-Dissolved (mg/L) | | <0.00050 | <0.00050 | <0.00050 | | |
| | Phosphorus (P)-Dissolved (mg/L) | | <0.30 | <0.30 | <0.30 | | |
| | Potassium (K)-Dissolved (mg/L) | | 3.90 | 3.90 | <0.050 | | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample ID Description Sampled Date Sampled Time Client ID | | L2022595-6 Water BJ-3.10 RAW BOTTLE DUP 1 | L2022595-7 Water BJ-3.10 RAW BOTTLE DUP 2 | L2022595-8 Water BJ-3.10-98 METALS DUP 1 | L2022595-9 Water BJ-3.10-98 METALS DUP 2 | L2022595-10 Water BJ-3.10-98 RAW BOTTLE DUP 1 |
|---|--------------------------------------|--|--|---|---|--|
| Grouping | Analyte | | | | | |
| WATER | | | | | | |
| Total Metals | Molybdenum (Mo)-Total (mg/L) | 0.00269 | 0.00280 | 0.00259 | 0.00262 | 0.00267 |
| | Nickel (Ni)-Total (mg/L) | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| | Phosphorus (P)-Total (mg/L) | <0.30 | <0.30 | <0.30 | <0.30 | <0.30 |
| | Potassium (K)-Total (mg/L) | 3.99 | 4.17 | 4.09 | 3.94 | 4.06 |
| | Selenium (Se)-Total (mg/L) | 0.000428 | 0.000408 | 0.000423 | 0.000429 | 0.000426 |
| | Silicon (Si)-Total (mg/L) | 1.91 | 1.88 | 1.77 | 1.89 | 1.80 |
| | Silver (Ag)-Total (mg/L) | 0.000017 | 0.000016 | 0.000014 | 0.000015 | 0.000015 |
| | Sodium (Na)-Total (mg/L) | 11.7 | 11.4 | 11.4 | 11.1 | 11.3 |
| | Strontium (Sr)-Total (mg/L) | 0.380 | 0.384 | 0.366 | 0.382 | 0.380 |
| | Thallium (Tl)-Total (mg/L) | 0.000066 | 0.000070 | 0.000063 | 0.000066 | 0.000065 |
| | Tin (Sn)-Total (mg/L) | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| | Titanium (Ti)-Total (mg/L) | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| | Uranium (U)-Total (mg/L) | 0.000557 | 0.000571 | 0.000546 | 0.000551 | 0.000553 |
| | Vanadium (V)-Total (mg/L) | 0.00109 | 0.00119 | 0.00087 | 0.00094 | 0.00098 |
| | Zinc (Zn)-Total (mg/L) | <0.0030 | <0.0030 | 0.0040 | 0.0047 | 0.0047 |
| Dissolved Metals | Dissolved Metals Filtration Location | | | | | |
| | Aluminum (Al)-Dissolved (mg/L) | | | | | |
| | Antimony (Sb)-Dissolved (mg/L) | | | | | |
| | Arsenic (As)-Dissolved (mg/L) | | | | | |
| | Barium (Ba)-Dissolved (mg/L) | | | | | |
| | Beryllium (Be)-Dissolved (mg/L) | | | | | |
| | Bismuth (Bi)-Dissolved (mg/L) | | | | | |
| | Boron (B)-Dissolved (mg/L) | | | | | |
| | Cadmium (Cd)-Dissolved (mg/L) | | | | | |
| | Calcium (Ca)-Dissolved (mg/L) | | | | | |
| | Chromium (Cr)-Dissolved (mg/L) | | | | | |
| | Cobalt (Co)-Dissolved (mg/L) | | | | | |
| | Copper (Cu)-Dissolved (mg/L) | | | | | |
| | Iron (Fe)-Dissolved (mg/L) | | | | | |
| | Lead (Pb)-Dissolved (mg/L) | | | | | |
| | Lithium (Li)-Dissolved (mg/L) | | | | | |
| | Magnesium (Mg)-Dissolved (mg/L) | | | | | |
| | Manganese (Mn)-Dissolved (mg/L) | | | | | |
| | Molybdenum (Mo)-Dissolved (mg/L) | | | | | |
| | Nickel (Ni)-Dissolved (mg/L) | | | | | |
| | Phosphorus (P)-Dissolved (mg/L) | | | | | |
| | Potassium (K)-Dissolved (mg/L) | | | | | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | Sample ID Description Sampled Date Sampled Time Client ID | L2022595-11 Water | | | |
|-------------------------|--|--------------------------------|--|--|--|
| | | BJ-3.10-98 RAW BOTTLE DUP 2 | | | |
| Grouping | Analyte | | | | |
| WATER | | | | | |
| Total Metals | Molybdenum (Mo)-Total (mg/L) | 0.00268 | | | |
| | Nickel (Ni)-Total (mg/L) | <0.00050 | | | |
| | Phosphorus (P)-Total (mg/L) | <0.30 | | | |
| | Potassium (K)-Total (mg/L) | 4.06 | | | |
| | Selenium (Se)-Total (mg/L) | 0.000429 | | | |
| | Silicon (Si)-Total (mg/L) | 1.90 | | | |
| | Silver (Ag)-Total (mg/L) | 0.000017 | | | |
| | Sodium (Na)-Total (mg/L) | 11.3 | | | |
| | Strontium (Sr)-Total (mg/L) | 0.378 | | | |
| | Thallium (Tl)-Total (mg/L) | 0.000068 | | | |
| | Tin (Sn)-Total (mg/L) | <0.00010 | | | |
| | Titanium (Ti)-Total (mg/L) | <0.010 | | | |
| | Uranium (U)-Total (mg/L) | 0.000550 | | | |
| | Vanadium (V)-Total (mg/L) | 0.00103 | | | |
| | Zinc (Zn)-Total (mg/L) | 0.0031 | | | |
| Dissolved Metals | Dissolved Metals Filtration Location | | | | |
| | Aluminum (Al)-Dissolved (mg/L) | | | | |
| | Antimony (Sb)-Dissolved (mg/L) | | | | |
| | Arsenic (As)-Dissolved (mg/L) | | | | |
| | Barium (Ba)-Dissolved (mg/L) | | | | |
| | Beryllium (Be)-Dissolved (mg/L) | | | | |
| | Bismuth (Bi)-Dissolved (mg/L) | | | | |
| | Boron (B)-Dissolved (mg/L) | | | | |
| | Cadmium (Cd)-Dissolved (mg/L) | | | | |
| | Calcium (Ca)-Dissolved (mg/L) | | | | |
| | Chromium (Cr)-Dissolved (mg/L) | | | | |
| | Cobalt (Co)-Dissolved (mg/L) | | | | |
| | Copper (Cu)-Dissolved (mg/L) | | | | |
| | Iron (Fe)-Dissolved (mg/L) | | | | |
| | Lead (Pb)-Dissolved (mg/L) | | | | |
| | Lithium (Li)-Dissolved (mg/L) | | | | |
| | Magnesium (Mg)-Dissolved (mg/L) | | | | |
| | Manganese (Mn)-Dissolved (mg/L) | | | | |
| | Molybdenum (Mo)-Dissolved (mg/L) | | | | |
| | Nickel (Ni)-Dissolved (mg/L) | | | | |
| | Phosphorus (P)-Dissolved (mg/L) | | | | |
| | Potassium (K)-Dissolved (mg/L) | | | | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | | Sample ID | L2022595-1 | L2022595-2 | L2022595-3 | L2022595-4 | L2022595-5 |
|---------------------------|---------------------------------|--------------|------------|------------|------------|-------------------------|-------------------------|
| | | Description | Water | Water | Water | Water | Water |
| | | Sampled Date | 13-NOV-17 | 13-NOV-17 | 13-NOV-17 | | |
| | | Sampled Time | 16:40 | 16:40 | 16:35 | | |
| | | Client ID | BJ-3.10 | BJ-3.10-98 | BJ-3.10-94 | BJ-3.10 METALS DUP 1 | BJ-3.10 METALS DUP 2 |
| Grouping | Analyte | | | | | | |
| WATER | | | | | | | |
| Dissolved Metals | Selenium (Se)-Dissolved (mg/L) | | 0.000373 | 0.000429 | <0.000050 | | |
| | Silicon (Si)-Dissolved (mg/L) | | 1.21 | 1.24 | <0.050 | | |
| | Silver (Ag)-Dissolved (mg/L) | | <0.000010 | <0.000010 | <0.000010 | | |
| | Sodium (Na)-Dissolved (mg/L) | | 11.1 | 11.4 | <0.050 | | |
| | Strontium (Sr)-Dissolved (mg/L) | | 0.358 | 0.369 | <0.00020 | | |
| | Thallium (Tl)-Dissolved (mg/L) | | 0.000046 | 0.000046 | <0.000010 | | |
| | Tin (Sn)-Dissolved (mg/L) | | <0.00010 | <0.00010 | <0.00010 | | |
| | Titanium (Ti)-Dissolved (mg/L) | | <0.010 | <0.010 | <0.010 | | |
| | Uranium (U)-Dissolved (mg/L) | | 0.000516 | 0.000526 | <0.000010 | | |
| | Vanadium (V)-Dissolved (mg/L) | | <0.00050 | <0.00050 | <0.00050 | | |
| | Zinc (Zn)-Dissolved (mg/L) | | 0.0042 | 0.0041 | <0.0010 | | |
| Aggregate Organics | COD (mg/L) | | <20 | <20 | <20 | | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | Sample ID Description Sampled Date Sampled Time Client ID | L2022595-6 Water BJ-3.10 RAW BOTTLE DUP 1 | L2022595-7 Water BJ-3.10 RAW BOTTLE DUP 2 | L2022595-8 Water BJ-3.10-98 METALS DUP 1 | L2022595-9 Water BJ-3.10-98 METALS DUP 2 | L2022595-10 Water BJ-3.10-98 RAW BOTTLE DUP 1 |
|---------------------------|--|--|--|---|---|--|
| Grouping | Analyte | | | | | |
| WATER | | | | | | |
| Dissolved Metals | Selenium (Se)-Dissolved (mg/L) Silicon (Si)-Dissolved (mg/L) Silver (Ag)-Dissolved (mg/L) Sodium (Na)-Dissolved (mg/L) Strontium (Sr)-Dissolved (mg/L) Thallium (Tl)-Dissolved (mg/L) Tin (Sn)-Dissolved (mg/L) Titanium (Ti)-Dissolved (mg/L) Uranium (U)-Dissolved (mg/L) Vanadium (V)-Dissolved (mg/L) Zinc (Zn)-Dissolved (mg/L) | | | | | |
| Aggregate Organics | COD (mg/L) | | | | | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | Sample ID Description Sampled Date Sampled Time Client ID | | | | |
|---------------------------|--|--|--|--|--|
| | L2022595-11 Water BJ-3.10-98 RAW BOTTLE DUP 2 | | | | |
| Grouping | Analyte | | | | |
| WATER | | | | | |
| Dissolved Metals | Selenium (Se)-Dissolved (mg/L) Silicon (Si)-Dissolved (mg/L) Silver (Ag)-Dissolved (mg/L) Sodium (Na)-Dissolved (mg/L) Strontium (Sr)-Dissolved (mg/L) Thallium (Tl)-Dissolved (mg/L) Tin (Sn)-Dissolved (mg/L) Titanium (Ti)-Dissolved (mg/L) Uranium (U)-Dissolved (mg/L) Vanadium (V)-Dissolved (mg/L) Zinc (Zn)-Dissolved (mg/L) | | | | |
| Aggregate Organics | COD (mg/L) | | | | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

| QC Type Description | Parameter | Qualifier | Applies to Sample Number(s) |
|---------------------|-----------------------|-----------|--|
| Method Blank | Zinc (Zn)-Total | MB-LOR | L2022595-1, -3 |
| Matrix Spike | Total Organic Carbon | MS-B | L2022595-1, -2, -3 |
| Matrix Spike | Barium (Ba)-Total | MS-B | L2022595-1, -2, -3 |
| Matrix Spike | Calcium (Ca)-Total | MS-B | L2022595-1, -2, -3 |
| Matrix Spike | Calcium (Ca)-Total | MS-B | L2022595-2 |
| Matrix Spike | Calcium (Ca)-Total | MS-B | L2022595-10, -11, -4, -5, -6, -7, -8, -9 |
| Matrix Spike | Magnesium (Mg)-Total | MS-B | L2022595-2 |
| Matrix Spike | Manganese (Mn)-Total | MS-B | L2022595-1, -2, -3 |
| Matrix Spike | Silicon (Si)-Total | MS-B | L2022595-2 |
| Matrix Spike | Sodium (Na)-Total | MS-B | L2022595-1, -2, -3 |
| Matrix Spike | Sodium (Na)-Total | MS-B | L2022595-2 |
| Matrix Spike | Sodium (Na)-Total | MS-B | L2022595-10, -11, -4, -5, -6, -7, -8, -9 |
| Matrix Spike | Strontium (Sr)-Total | MS-B | L2022595-1, -2, -3 |
| Matrix Spike | Strontium (Sr)-Total | MS-B | L2022595-2 |
| Matrix Spike | Strontium (Sr)-Total | MS-B | L2022595-10, -11, -4, -5, -6, -7, -8, -9 |
| Matrix Spike | Ammonia, Total (as N) | MS-B | L2022595-1, -2, -3 |
| Matrix Spike | Nitrate (as N) | MS-B | L2022595-1, -2, -3 |
| Matrix Spike | Nitrate (as N) | MS-B | L2022595-1, -2, -3 |

Qualifiers for Individual Parameters Listed:

| Qualifier | Description |
|-----------|--|
| HTC | Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable). |
| MB-LOR | Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level. |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |
| RRV | Reported Result Verified By Repeat Analysis |

Test Method References:

| ALS Test Code | Matrix | Test Description | Method Reference** |
|--|--------|---|---------------------------------------|
| ALK-TITR-VA | Water | Alkalinity Species by Titration | APHA 2320 Alkalinity |
| This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values. | | | |
| BR-L-IC-N-VA | Water | Bromide in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| CARBONS-TOC-VA | Water | Total organic carbon by combustion | APHA 5310B TOTAL ORGANIC CARBON (TOC) |
| This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". | | | |
| CL-IC-N-VA | Water | Chloride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| COD-COL-VA | Water | Chemical Oxygen Demand by Colorimetric | APHA 5220 D. CHEMICAL OXYGEN DEMAND |
| This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method. | | | |
| EC-PCT-VA | Water | Conductivity (Automated) | APHA 2510 Auto. Conduc. |
| This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode. | | | |
| EC-SCREEN-VA | Water | Conductivity Screen (Internal Use Only) | APHA 2510 |
| Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc. | | | |
| F-IC-N-VA | Water | Fluoride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| HARDNESS-CALC-VA | Water | Hardness | APHA 2340B |
| Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation. | | | |

Reference Information

| | | | |
|---|-------|--|---|
| MET-D-CCMS-VA | Water | Dissolved Metals in Water by CRC ICPMS | APHA 3030B/6020A (mod) |
| Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS. | | | |
| Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. | | | |
| MET-T-CCMS-VA | Water | Total Metals in Water by CRC ICPMS | EPA 200.2/6020A (mod) |
| Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS. | | | |
| Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. | | | |
| N-T-COL-VA | Water | Total Nitrogen in water by Colour | APHA4500-P(J)/NEMI9171/USGS03-4174 |
| This analysis is carried out using procedures adapted from APHA Method 4500-P (J) "Persulphate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus" and National Environmental Methods Index - Nemi method 5735. | | | |
| NH3-F-VA | Water | Ammonia in Water by Fluorescence | J. ENVIRON. MONIT., 2005, 7, 37-42, RSC |
| This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al. | | | |
| NO2-L-IC-N-VA | Water | Nitrite in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| NO3-L-IC-N-VA | Water | Nitrate in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| P-T-PRES-COL-VA | Water | Total P in Water by Colour | APHA 4500-P Phosphorus |
| This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample. | | | |
| Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples. | | | |
| Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis. | | | |
| PH-PCT-VA | Water | pH by Meter (Automated) | APHA 4500-H pH Value |
| This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode | | | |
| It is recommended that this analysis be conducted in the field. | | | |
| PO4-DO-COL-VA | Water | Diss. Orthophosphate in Water by Colour | APHA 4500-P Phosphorus |
| This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. | | | |
| Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples. | | | |
| Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis. | | | |
| SO4-IC-N-VA | Water | Sulfate in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| TDS-VA | Water | Total Dissolved Solids by Gravimetric | APHA 2540 C - GRAVIMETRIC |
| This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius. | | | |
| TKN-CALC-VA | Water | TKN in Water (Calculation) | BC MOE LABORATORY MANUAL (2005) |
| Total Kjeldahl Nitrogen is a calculated parameter. Total Kjeldahl Nitrogen (calc) = Total Nitrogen - [Nitrite (as N) + Nitrate (as N)]. | | | |
| TSS-LOW-VA | Water | Total Suspended Solids by Grav. (1 mg/L) | APHA 2540D |
| This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. | | | |
| Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples. | | | |
| TURBIDITY-VA | Water | Turbidity by Meter | APHA 2130 Turbidity |
| This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method. | | | |

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

Reference Information

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

| Laboratory Definition Code | Laboratory Location |
|----------------------------|---|
| VA | ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA |

Chain of Custody Numbers:

BJ 3.10 WEEKLY

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



| Report To | | | | Report Format / Distribution | | | | Service Requested (Rush for routine analysis subject to availability) | | | | | | | | | | | | | | | |
|---|---|--|--|---|-----------------|-------------|---------|---|----------------|--------------|------------------|---------------|-------|---------------------|-----------------|-----|-----|-------------------|----------------------|--|--|--|--|
| Company: Pretivm Resources Inc. | | | | <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other | | | | <input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days) | | | | | | | | | | | | | | | |
| Contact: Max Holtby | | | | <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> Excel <input type="checkbox"/> Digital <input type="checkbox"/> Fax | | | | <input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT | | | | | | | | | | | | | | | |
| Address: Suite 2300, Four Bentall Centre, 1055 Dunsmuir Street Vancouver, BC V7X 1L4 PO Box 49334 | | | | Email 1: environmental@pretivm.com | | | | <input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT | | | | | | | | | | | | | | | |
| Phone: (604) 558-1784 Fax: (604) 558-4784 | | | | Email 2: mholtby@pretivm.com | | | | <input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT | | | | | | | | | | | | | | | |
| Email 3: svanzalingen@pretivm.com | | | | Analysis Request | | | | | | | | | | | | | | | | | | | |
| Invoice To Same as Report? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | Client / Project Information | | | | Please indicate below Filtered, Preserved or both (F, P, F/P) | | | | | | | | | | | | | | | |
| Hardcopy of Invoice with Report? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | Job #: Brucejack BJ 3.10 weekly | | | | | | | | | | | | | | | | | | | |
| Company: | | | | PO / AFE: | | | | | | | | | | | | | | | | | | | |
| Contact: | | | | LSD: | | | | | | | | | | | | | | | | | | | |
| Address: invoices@pretivm.com | | | | Quote #: | | | | | | | | | | | | | | | | | | | |
| Phone: Fax: | | | | ALS Contact: Dean Watt | | | | Sampler: LS/XP | | | | | | | | | | | | | | | |
| Lab Work Order # (lab use only) | | | | | | | | | | | | | | | | | | | | | | | |
| Sample # | Sample Identification (This description will appear on the report) | | | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | General | Non-ionized ammonia | Nutrients/ TOC | Total Metals | Dissolved Metals | Low Level TSS | RA226 | Mercury (Dissolved) | Mercury (Total) | DOC | EPH | Unionized Ammonia | Number of Containers | | | | |
| | BJ-3.10-E298312 | | | 13-Nov-17 | 16:40 | Water | X | | X | X | X | X | | | | | | | 5 | | | | |
| | BJ-3.10-98 | | | 13-Nov-17 | 16:40 | Water | X | | X | X | X | X | | | | | | | 5 | | | | |
| | BJ-3.10-94 | | | 13-Nov-17 | 16:35 | Water | X | | X | X | X | X | | | | | | | 5 | | | | |



L2022595-COFC

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Please report results with 5 business day turnaround. PLEASE ALSO SEND RESULTS TO rmccall@pretivm.com. EMS upload required.

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

| | | | | | | | | | | |
|-------------------------------|------------------|--------------|-----------------------------------|-------------|---------|--------------|--------------------------------------|-------|-------|---|
| SHIPMENT RELEASE (client use) | | | SHIPMENT RECEPTION (lab use only) | | | | SHIPMENT VERIFICATION (lab use only) | | | |
| Released by: | Date (dd-mmm-yy) | Time (hh-mm) | Received by: | Date: | Time: | Temperature: | Verified by: | Date: | Time: | Observations: Yes / No ? If Yes add SIF |
| Lionel Sequeira | 13-Nov-17 | 18:00 | JC | NOV 15 2017 | 1140 AM | 6 °C | | | | |



PRETIUM EXPLORATIONS INC.
ATTN: Max Holtby
Suite 2300, Four Bentall Centre
1055 Dunsmuir Street
Vancouver BC V7X1L4

Date Received: 23-NOV-17
Report Date: 07-DEC-17 20:00 (MT)
Version: FINAL REV. 2

Client Phone: 604-558-1784

Certificate of Analysis

Lab Work Order #: L2026497
Project P.O. #: PO1024768
Job Reference: BRUCEJACK BJ 3.10 WEEKLY
C of C Numbers: BJ3.10 WEEKLY
Legal Site Desc:

Comments:

7-DEC-2017 Dissolved Metals data has been revised.

Dean Watt, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | Sample ID Description Sampled Date Sampled Time Client ID | L2026497-1 WATER 20-NOV-17 10:45 BJ-3.10-E298312 | L2026497-2 WATER 20-NOV-17 10:45 BJ-3.10-98 | L2026497-3 WATER 20-NOV-17 10:40 BJ-3.10-94 | |
|-----------------------------------|---|--|---|---|--|
| Grouping | Analyte | | | | |
| WATER | | | | | |
| Physical Tests | Conductivity (uS/cm) | 185 | 180 | <2.0 | |
| | Hardness (as CaCO3) (mg/L) | 60.5 | 58.6 | <0.50 | |
| | pH (pH) | 7.88 | 7.88 | 5.59 | |
| | Total Suspended Solids (mg/L) | 4.0 | 3.9 | <1.0 | |
| | Total Dissolved Solids (mg/L) | 121 | 124 | <10 | |
| | Turbidity (NTU) | 11.1 | 10.7 | <0.10 | |
| Anions and Nutrients | Alkalinity, Total (as CaCO3) (mg/L) | 46.1 | 45.7 | <1.0 | |
| | Ammonia, Total (as N) (mg/L) | 0.234 | 0.236 | <0.0050 | |
| | Bromide (Br) (mg/L) | <0.050 | <0.050 | <0.050 | |
| | Chloride (Cl) (mg/L) | 0.71 | 0.71 | <0.50 | |
| | Fluoride (F) (mg/L) | 0.074 | 0.074 | <0.020 | |
| | Nitrate (as N) (mg/L) | 3.66 | 3.65 | <0.0050 | |
| | Nitrite (as N) (mg/L) | 0.0102 | 0.0102 | <0.0010 | |
| | Total Kjeldahl Nitrogen (mg/L) | <0.40 | <0.39 | <0.050 | |
| | Total Nitrogen (mg/L) | 3.95 | 3.89 | <0.030 | |
| | Orthophosphate-Dissolved (as P) (mg/L) | <0.0010 | <0.0010 | <0.0010 | |
| | Phosphorus (P)-Total (mg/L) | 0.0043 | 0.0040 | <0.0020 | |
| | Sulfate (SO4) (mg/L) | 32.4 | 32.3 | <0.30 | |
| Organic / Inorganic Carbon | Total Organic Carbon (mg/L) | 0.60 | 0.56 | <0.50 | |
| Total Metals | Aluminum (Al)-Total (mg/L) | 0.109 | 0.102 | <0.0030 | |
| | Antimony (Sb)-Total (mg/L) | 0.00475 | 0.00476 | <0.00010 | |
| | Arsenic (As)-Total (mg/L) | 0.00435 | 0.00428 | <0.00010 | |
| | Barium (Ba)-Total (mg/L) | 0.0657 | 0.0630 | <0.000050 | |
| | Beryllium (Be)-Total (mg/L) | <0.00010 | <0.00010 | <0.00010 | |
| | Bismuth (Bi)-Total (mg/L) | <0.000050 | <0.000050 | <0.000050 | |
| | Boron (B)-Total (mg/L) | 0.045 | 0.045 | <0.010 | |
| | Cadmium (Cd)-Total (mg/L) | 0.0000129 | 0.0000133 | <0.0000050 | |
| | Calcium (Ca)-Total (mg/L) | 25.7 | 26.0 | <0.050 | |
| | Chromium (Cr)-Total (mg/L) | 0.00014 | 0.00014 | <0.00010 | |
| | Cobalt (Co)-Total (mg/L) | <0.00010 | <0.00010 | <0.00010 | |
| | Copper (Cu)-Total (mg/L) | <0.00050 | <0.00050 | <0.00050 | |
| | Iron (Fe)-Total (mg/L) | 0.038 | 0.036 | <0.010 | |
| | Lead (Pb)-Total (mg/L) | 0.000529 | 0.000527 | <0.000050 | |
| | Lithium (Li)-Total (mg/L) | 0.0174 | 0.0174 | <0.0010 | |
| | Magnesium (Mg)-Total (mg/L) | 0.99 | 0.98 | <0.10 | |
| | Manganese (Mn)-Total (mg/L) | 0.0262 | 0.0259 | <0.00010 | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | Sample ID Description Sampled Date Sampled Time Client ID | L2026497-1 WATER 20-NOV-17 10:45 BJ-3.10-E298312 | L2026497-2 WATER 20-NOV-17 10:45 BJ-3.10-98 | L2026497-3 WATER 20-NOV-17 10:40 BJ-3.10-94 | |
|-------------------------|---|--|---|---|--|
| Grouping | Analyte | | | | |
| WATER | | | | | |
| Total Metals | Molybdenum (Mo)-Total (mg/L) | 0.00240 | 0.00237 | <0.000050 | |
| | Nickel (Ni)-Total (mg/L) | <0.00050 | <0.00050 | <0.00050 | |
| | Phosphorus (P)-Total (mg/L) | <0.30 | <0.30 | <0.30 | |
| | Potassium (K)-Total (mg/L) | 3.53 | 3.48 | <0.050 | |
| | Selenium (Se)-Total (mg/L) | 0.000433 | 0.000392 | <0.000050 | |
| | Silicon (Si)-Total (mg/L) | 1.34 | 1.32 | <0.10 | |
| | Silver (Ag)-Total (mg/L) | 0.000011 | 0.000011 | <0.000010 | |
| | Sodium (Na)-Total (mg/L) | 11.2 | 11.1 | <0.050 | |
| | Strontium (Sr)-Total (mg/L) | 0.359 | 0.359 | <0.00020 | |
| | Thallium (Tl)-Total (mg/L) | 0.000050 | 0.000046 | <0.000010 | |
| | Tin (Sn)-Total (mg/L) | <0.00010 | <0.00010 | <0.00010 | |
| | Titanium (Ti)-Total (mg/L) | <0.010 | <0.010 | <0.010 | |
| | Uranium (U)-Total (mg/L) | 0.000515 | 0.000504 | <0.000010 | |
| | Vanadium (V)-Total (mg/L) | <0.00050 | <0.00050 | <0.00050 | |
| | Zinc (Zn)-Total (mg/L) | <0.0030 | <0.0030 | <0.0030 | |
| Dissolved Metals | Dissolved Metals Filtration Location | LAB | LAB | LAB | |
| | Aluminum (Al)-Dissolved (mg/L) | 0.0311 | 0.0317 | <0.0010 | |
| | Antimony (Sb)-Dissolved (mg/L) | 0.00463 | 0.00463 | <0.00010 | |
| | Arsenic (As)-Dissolved (mg/L) | 0.00400 | 0.00394 | <0.00010 | |
| | Barium (Ba)-Dissolved (mg/L) | 0.0570 | 0.0573 | <0.000050 | |
| | Beryllium (Be)-Dissolved (mg/L) | <0.00010 | <0.00010 | <0.00010 | |
| | Bismuth (Bi)-Dissolved (mg/L) | <0.000050 | <0.000050 | <0.000050 | |
| | Boron (B)-Dissolved (mg/L) | 0.042 | 0.041 | <0.010 | |
| | Cadmium (Cd)-Dissolved (mg/L) | 0.0000078 | 0.0000054 | <0.0000050 | |
| | Calcium (Ca)-Dissolved (mg/L) | 22.9 | 22.1 | <0.050 | |
| | Chromium (Cr)-Dissolved (mg/L) | <0.00010 | <0.00010 | <0.00010 | |
| | Cobalt (Co)-Dissolved (mg/L) | <0.00010 | <0.00010 | <0.00010 | |
| | Copper (Cu)-Dissolved (mg/L) | <0.00020 | <0.00020 | <0.00020 | |
| | Iron (Fe)-Dissolved (mg/L) | <0.010 | <0.010 | <0.010 | |
| | Lead (Pb)-Dissolved (mg/L) | <0.000050 | <0.000050 | <0.000050 | |
| | Lithium (Li)-Dissolved (mg/L) | 0.0182 | 0.0179 | <0.0010 | |
| | Magnesium (Mg)-Dissolved (mg/L) | 0.83 | 0.81 | <0.10 | |
| | Manganese (Mn)-Dissolved (mg/L) | 0.0188 | 0.0184 | <0.00010 | |
| | Molybdenum (Mo)-Dissolved (mg/L) | 0.00224 | 0.00221 | <0.000050 | |
| | Nickel (Ni)-Dissolved (mg/L) | <0.00050 | <0.00050 | <0.00050 | |
| | Phosphorus (P)-Dissolved (mg/L) | <0.30 | <0.30 | <0.30 | |
| | Potassium (K)-Dissolved (mg/L) | 3.57 | 3.52 | <0.050 | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | Sample ID Description Sampled Date Sampled Time Client ID | L2026497-1 WATER 20-NOV-17 10:45 BJ-3.10-E298312 | L2026497-2 WATER 20-NOV-17 10:45 BJ-3.10-98 | L2026497-3 WATER 20-NOV-17 10:40 BJ-3.10-94 | |
|---------------------------|---|--|---|---|--|
| Grouping | Analyte | | | | |
| WATER | | | | | |
| Dissolved Metals | Selenium (Se)-Dissolved (mg/L) | 0.000401 | 0.000373 | <0.000050 | |
| | Silicon (Si)-Dissolved (mg/L) | 1.17 | 1.17 | <0.050 | |
| | Silver (Ag)-Dissolved (mg/L) | <0.000010 | <0.000010 | <0.000010 | |
| | Sodium (Na)-Dissolved (mg/L) | 10.3 | 10.0 | <0.050 | |
| | Strontium (Sr)-Dissolved (mg/L) | 0.336 | 0.337 | <0.00020 | |
| | Thallium (Tl)-Dissolved (mg/L) | <0.000050 ^{DLB} | <0.000050 ^{DLB} | <0.000010 | |
| | Tin (Sn)-Dissolved (mg/L) | <0.00010 | <0.00010 | <0.00010 | |
| | Titanium (Ti)-Dissolved (mg/L) | <0.010 | <0.010 | <0.010 | |
| | Uranium (U)-Dissolved (mg/L) | 0.000475 | 0.000489 | <0.000010 | |
| | Vanadium (V)-Dissolved (mg/L) | <0.00050 | <0.00050 | <0.00050 | |
| | Zinc (Zn)-Dissolved (mg/L) | <0.0010 | <0.0030 ^{DLB} | <0.0010 | |
| Aggregate Organics | COD (mg/L) | <20 | <20 | <20 | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

| QC Type Description | Parameter | Qualifier | Applies to Sample Number(s) |
|---------------------|-------------------------|-----------|-----------------------------|
| Method Blank | Thallium (Tl)-Dissolved | MB-LOR | L2026497-1, -2, -3 |
| Method Blank | Zinc (Zn)-Dissolved | MB-LOR | L2026497-1, -2, -3 |
| Matrix Spike | Aluminum (Al)-Total | MS-B | L2026497-1, -2, -3 |
| Matrix Spike | Barium (Ba)-Total | MS-B | L2026497-1, -2, -3 |
| Matrix Spike | Calcium (Ca)-Total | MS-B | L2026497-1, -2, -3 |
| Matrix Spike | Iron (Fe)-Total | MS-B | L2026497-1, -2, -3 |
| Matrix Spike | Magnesium (Mg)-Total | MS-B | L2026497-1, -2, -3 |
| Matrix Spike | Manganese (Mn)-Total | MS-B | L2026497-1, -2, -3 |
| Matrix Spike | Potassium (K)-Total | MS-B | L2026497-1, -2, -3 |
| Matrix Spike | Sodium (Na)-Total | MS-B | L2026497-1, -2, -3 |
| Matrix Spike | Strontium (Sr)-Total | MS-B | L2026497-1, -2, -3 |
| Matrix Spike | Titanium (Ti)-Total | MS-B | L2026497-1, -2, -3 |

Qualifiers for Individual Parameters Listed:

| Qualifier | Description |
|-----------|---|
| DLB | Detection Limit Raised. Analyte detected at comparable level in Method Blank. |
| MB-LOR | Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level. |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |

Test Method References:

| ALS Test Code | Matrix | Test Description | Method Reference** |
|--|--------|---|---------------------------------------|
| ALK-TITR-VA | Water | Alkalinity Species by Titration | APHA 2320 Alkalinity |
| This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values. | | | |
| BR-L-IC-N-VA | Water | Bromide in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| CARBONS-TOC-VA | Water | Total organic carbon by combustion | APHA 5310B TOTAL ORGANIC CARBON (TOC) |
| This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". | | | |
| CL-IC-N-VA | Water | Chloride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| COD-COL-VA | Water | Chemical Oxygen Demand by Colorimetric | APHA 5220 D. CHEMICAL OXYGEN DEMAND |
| This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method. | | | |
| EC-PCT-VA | Water | Conductivity (Automated) | APHA 2510 Auto. Conduc. |
| This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode. | | | |
| EC-SCREEN-VA | Water | Conductivity Screen (Internal Use Only) | APHA 2510 |
| Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc. | | | |
| F-IC-N-VA | Water | Fluoride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| HARDNESS-CALC-VA | Water | Hardness | APHA 2340B |
| Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation. | | | |
| MET-D-CCMS-VA | Water | Dissolved Metals in Water by CRC ICPMS | APHA 3030B/6020A (mod) |
| Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS. | | | |
| Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. | | | |
| MET-T-CCMS-VA | Water | Total Metals in Water by CRC ICPMS | EPA 200.2/6020A (mod) |
| Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS. | | | |

Reference Information

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

| | | | |
|---|-------|--|---|
| N-T-COL-VA | Water | Total Nitrogen in water by Colour | APHA4500-P(J)/NEMI9171/USGS03-4174 |
| This analysis is carried out using procedures adapted from APHA Method 4500-P (J) "Persulphate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus" and National Environmental Methods Index - Nemi method 5735. | | | |
| NH3-F-VA | Water | Ammonia in Water by Fluorescence | J. ENVIRON. MONIT., 2005, 7, 37-42, RSC |
| This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al. | | | |
| NO2-L-IC-N-VA | Water | Nitrite in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| NO3-L-IC-N-VA | Water | Nitrate in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| P-T-PRES-COL-VA | Water | Total P in Water by Colour | APHA 4500-P Phosphorus |
| This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample. | | | |
| Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples. | | | |
| Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis. | | | |
| PH-PCT-VA | Water | pH by Meter (Automated) | APHA 4500-H pH Value |
| This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode | | | |
| It is recommended that this analysis be conducted in the field. | | | |
| PO4-DO-COL-VA | Water | Diss. Orthophosphate in Water by Colour | APHA 4500-P Phosphorus |
| This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. | | | |
| Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples. | | | |
| Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis. | | | |
| SO4-IC-N-VA | Water | Sulfate in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| TDS-VA | Water | Total Dissolved Solids by Gravimetric | APHA 2540 C - GRAVIMETRIC |
| This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius. | | | |
| TKN-CALC-VA | Water | TKN in Water (Calculation) | BC MOE LABORATORY MANUAL (2005) |
| Total Kjeldahl Nitrogen is a calculated parameter. Total Kjeldahl Nitrogen (calc) = Total Nitrogen - [Nitrite (as N) + Nitrate (as N)]. | | | |
| TSS-LOW-VA | Water | Total Suspended Solids by Grav. (1 mg/L) | APHA 2540D |
| This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. | | | |
| Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples. | | | |
| TURBIDITY-VA | Water | Turbidity by Meter | APHA 2130 Turbidity |
| This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method. | | | |

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

| Laboratory Definition Code | Laboratory Location |
|----------------------------|---|
| VA | ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA |

Chain of Custody Numbers:

Reference Information

BJ3.10 WEEKLY

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



PRETIUM EXPLORATIONS INC.
ATTN: Max Holtby
Suite 2300, Four Bentall Centre
1055 Dunsmuir Street
Vancouver BC V7X1L4

Date Received: 29-NOV-17
Report Date: 07-DEC-17 17:49 (MT)
Version: FINAL

Client Phone: 604-558-1784

Certificate of Analysis

Lab Work Order #: L2028715
Project P.O. #: PO1024768
Job Reference: BRUCEJACK BJ 3.10 WEEKLY
C of C Numbers: BJ3.10 WEEKLY
Legal Site Desc:

Dean Watt, B.Sc.
Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | Sample ID Description Sampled Date Sampled Time Client ID | L2028715-1 WATER 27-NOV-17 15:45 BJ-3.10 | L2028715-2 WATER 27-NOV-17 15:45 BJ-3.10-96 | L2028715-3 WATER 27-NOV-17 15:35 BJ-3.10-94 | |
|-----------------------------------|---|--|---|---|--|
| Grouping | Analyte | | | | |
| WATER | | | | | |
| Physical Tests | Conductivity (uS/cm) | 192 | 185 | <2.0 | |
| | Hardness (as CaCO3) (mg/L) | 57.6 | 58.1 | <0.50 | |
| | pH (pH) | 7.69 | 7.68 | 5.49 | |
| | Total Suspended Solids (mg/L) | 2.9 | <3.0 | <3.0 | |
| | Total Dissolved Solids (mg/L) | 118 | 154 | <10 | |
| | Turbidity (NTU) | 8.24 | 8.17 | 0.12 | |
| Anions and Nutrients | Alkalinity, Total (as CaCO3) (mg/L) | 47.8 | 46.1 | <1.0 | |
| | Ammonia, Total (as N) (mg/L) | 0.268 | 0.270 | <0.0050 | |
| | Bromide (Br) (mg/L) | <0.050 | <0.050 | <0.050 | |
| | Chloride (Cl) (mg/L) | 0.70 | 0.70 | <0.50 | |
| | Fluoride (F) (mg/L) | 0.074 | 0.075 | <0.020 | |
| | Nitrate (as N) (mg/L) | 3.57 | 3.57 | <0.0050 | |
| | Nitrite (as N) (mg/L) | 0.0100 | 0.0097 | <0.0010 | |
| | Total Kjeldahl Nitrogen (mg/L) | <0.39 | <0.39 | <0.050 | |
| | Total Nitrogen (mg/L) | 3.95 | 3.94 | <0.030 | |
| | Orthophosphate-Dissolved (as P) (mg/L) | 0.0012 | 0.0011 | <0.0010 | |
| | Phosphorus (P)-Total (mg/L) | 0.0045 | 0.0031 | <0.0020 | |
| | Sulfate (SO4) (mg/L) | 31.7 | 31.9 | <0.30 | |
| Organic / Inorganic Carbon | Total Organic Carbon (mg/L) | <0.50 | <0.50 | <0.50 | |
| Total Metals | Aluminum (Al)-Total (mg/L) | 0.0800 | 0.0625 | <0.0030 | |
| | Antimony (Sb)-Total (mg/L) | 0.00510 | 0.00504 | <0.00010 | |
| | Arsenic (As)-Total (mg/L) | 0.00429 | 0.00421 | <0.00010 | |
| | Barium (Ba)-Total (mg/L) | 0.0640 | 0.0647 | <0.000050 | |
| | Beryllium (Be)-Total (mg/L) | <0.00010 | <0.00010 | <0.00010 | |
| | Bismuth (Bi)-Total (mg/L) | <0.000050 | <0.000050 | <0.000050 | |
| | Boron (B)-Total (mg/L) | 0.043 | 0.043 | <0.010 | |
| | Cadmium (Cd)-Total (mg/L) | 0.0000110 | 0.0000112 | <0.000050 | |
| | Calcium (Ca)-Total (mg/L) | 27.5 | 26.8 | <0.050 | |
| | Chromium (Cr)-Total (mg/L) | 0.00013 | 0.00011 | <0.00010 | |
| | Cobalt (Co)-Total (mg/L) | <0.00010 | <0.00010 | <0.00010 | |
| | Copper (Cu)-Total (mg/L) | <0.00050 | <0.00050 | <0.00050 | |
| | Iron (Fe)-Total (mg/L) | 0.026 | 0.024 | <0.010 | |
| | Lead (Pb)-Total (mg/L) | 0.000468 | 0.000466 | 0.000103 | |
| | Lithium (Li)-Total (mg/L) | 0.0170 | 0.0170 | <0.0010 | |
| | Magnesium (Mg)-Total (mg/L) | 0.98 | 0.97 | <0.10 | |
| | Manganese (Mn)-Total (mg/L) | 0.0254 | 0.0250 | <0.00010 | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | | Sample ID | L2028715-1 | L2028715-2 | L2028715-3 |
|-------------------------|--------------------------------------|--------------|------------|------------|------------|
| | | Description | WATER | WATER | WATER |
| | | Sampled Date | 27-NOV-17 | 27-NOV-17 | 27-NOV-17 |
| | | Sampled Time | 15:45 | 15:45 | 15:35 |
| | | Client ID | BJ-3.10 | BJ-3.10-96 | BJ-3.10-94 |
| Grouping | Analyte | | | | |
| WATER | | | | | |
| Total Metals | Molybdenum (Mo)-Total (mg/L) | | 0.00269 | 0.00261 | <0.000050 |
| | Nickel (Ni)-Total (mg/L) | | <0.00050 | <0.00050 | <0.00050 |
| | Phosphorus (P)-Total (mg/L) | | <0.30 | <0.30 | <0.30 |
| | Potassium (K)-Total (mg/L) | | 3.70 | 3.66 | <0.050 |
| | Selenium (Se)-Total (mg/L) | | 0.000437 | 0.000431 | <0.000050 |
| | Silicon (Si)-Total (mg/L) | | 1.30 | 1.23 | <0.10 |
| | Silver (Ag)-Total (mg/L) | | <0.000010 | <0.000010 | <0.000010 |
| | Sodium (Na)-Total (mg/L) | | 10.5 | 10.4 | <0.050 |
| | Strontium (Sr)-Total (mg/L) | | 0.379 | 0.376 | <0.00020 |
| | Thallium (Tl)-Total (mg/L) | | 0.000048 | 0.000048 | <0.000010 |
| | Tin (Sn)-Total (mg/L) | | <0.00010 | <0.00010 | <0.00010 |
| | Titanium (Ti)-Total (mg/L) | | <0.010 | <0.010 | <0.010 |
| | Uranium (U)-Total (mg/L) | | 0.000533 | 0.000532 | <0.000010 |
| | Vanadium (V)-Total (mg/L) | | <0.00050 | <0.00050 | <0.00050 |
| | Zinc (Zn)-Total (mg/L) | | 0.0047 | 0.0042 | <0.0030 |
| Dissolved Metals | Dissolved Metals Filtration Location | | LAB | LAB | LAB |
| | Aluminum (Al)-Dissolved (mg/L) | | 0.0322 | 0.0340 | <0.0010 |
| | Antimony (Sb)-Dissolved (mg/L) | | 0.00539 | 0.00535 | <0.00010 |
| | Arsenic (As)-Dissolved (mg/L) | | 0.00407 | 0.00420 | <0.00010 |
| | Barium (Ba)-Dissolved (mg/L) | | 0.0555 | 0.0583 | <0.000050 |
| | Beryllium (Be)-Dissolved (mg/L) | | <0.00010 | <0.00010 | <0.00010 |
| | Bismuth (Bi)-Dissolved (mg/L) | | <0.000050 | <0.000050 | <0.000050 |
| | Boron (B)-Dissolved (mg/L) | | 0.042 | 0.043 | <0.010 |
| | Cadmium (Cd)-Dissolved (mg/L) | | 0.0000081 | 0.0000085 | <0.0000050 |
| | Calcium (Ca)-Dissolved (mg/L) | | 21.5 | 21.6 | <0.050 |
| | Chromium (Cr)-Dissolved (mg/L) | | <0.00010 | <0.00010 | <0.00010 |
| | Cobalt (Co)-Dissolved (mg/L) | | <0.00010 | <0.00010 | <0.00010 |
| | Copper (Cu)-Dissolved (mg/L) | | <0.00020 | <0.00020 | <0.00020 |
| | Iron (Fe)-Dissolved (mg/L) | | <0.010 | <0.010 | <0.010 |
| | Lead (Pb)-Dissolved (mg/L) | | 0.000061 | 0.000061 | <0.000050 |
| | Lithium (Li)-Dissolved (mg/L) | | 0.0172 | 0.0174 | <0.0010 |
| | Magnesium (Mg)-Dissolved (mg/L) | | 0.95 | 0.99 | <0.10 |
| | Manganese (Mn)-Dissolved (mg/L) | | 0.0195 | 0.0199 | <0.00010 |
| | Molybdenum (Mo)-Dissolved (mg/L) | | 0.00256 | 0.00258 | <0.000050 |
| | Nickel (Ni)-Dissolved (mg/L) | | <0.00050 | <0.00050 | <0.00050 |
| | Phosphorus (P)-Dissolved (mg/L) | | <0.30 | <0.30 | <0.30 |
| | Potassium (K)-Dissolved (mg/L) | | 3.78 | 3.83 | <0.050 |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | | Sample ID | L2028715-1 | L2028715-2 | L2028715-3 | | |
|---------------------------|---------------------------------|--------------|------------|------------|------------|--|--|
| | | Description | WATER | WATER | WATER | | |
| | | Sampled Date | 27-NOV-17 | 27-NOV-17 | 27-NOV-17 | | |
| | | Sampled Time | 15:45 | 15:45 | 15:35 | | |
| | | Client ID | BJ-3.10 | BJ-3.10-96 | BJ-3.10-94 | | |
| Grouping | Analyte | | | | | | |
| WATER | | | | | | | |
| Dissolved Metals | Selenium (Se)-Dissolved (mg/L) | 0.000406 | 0.000425 | <0.000050 | | | |
| | Silicon (Si)-Dissolved (mg/L) | 1.17 | 1.20 | <0.050 | | | |
| | Silver (Ag)-Dissolved (mg/L) | <0.000010 | <0.000010 | <0.000010 | | | |
| | Sodium (Na)-Dissolved (mg/L) | 10.4 | 11.1 | <0.050 | | | |
| | Strontium (Sr)-Dissolved (mg/L) | 0.371 | 0.372 | <0.00020 | | | |
| | Thallium (Tl)-Dissolved (mg/L) | 0.000047 | 0.000043 | <0.000010 | | | |
| | Tin (Sn)-Dissolved (mg/L) | <0.00010 | <0.00010 | <0.00010 | | | |
| | Titanium (Ti)-Dissolved (mg/L) | <0.010 | <0.010 | <0.010 | | | |
| | Uranium (U)-Dissolved (mg/L) | 0.000558 | 0.000545 | <0.000010 | | | |
| | Vanadium (V)-Dissolved (mg/L) | <0.00050 | <0.00050 | <0.00050 | | | |
| | Zinc (Zn)-Dissolved (mg/L) | <0.0010 | <0.0010 | <0.0010 | | | |
| Aggregate Organics | COD (mg/L) | <20 | <20 | <20 | | | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

| QC Type Description | Parameter | Qualifier | Applies to Sample Number(s) |
|---------------------|-----------------------|-----------|-----------------------------|
| Method Blank | Zinc (Zn)-Total | MB-LOR | L2028715-3 |
| Matrix Spike | Total Organic Carbon | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Aluminum (Al)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Antimony (Sb)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Arsenic (As)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Barium (Ba)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Boron (B)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Calcium (Ca)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Copper (Cu)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Iron (Fe)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Lead (Pb)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Lithium (Li)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Magnesium (Mg)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Manganese (Mn)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Molybdenum (Mo)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Potassium (K)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Silicon (Si)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Silver (Ag)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Sodium (Na)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Strontium (Sr)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Uranium (U)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Vanadium (V)-Total | MS-B | L2028715-1, -2, -3 |
| Matrix Spike | Nitrate (as N) | MS-B | L2028715-1, -2, -3 |

Qualifiers for Individual Parameters Listed:

| Qualifier | Description |
|-----------|---|
| MB-LOR | Method Blank exceeds ALS DQO. Limits of Reporting have been adjusted for samples with positive hits below 5x blank level. |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |

Test Method References:

| ALS Test Code | Matrix | Test Description | Method Reference** |
|--|--------|---|---------------------------------------|
| ALK-TITR-VA | Water | Alkalinity Species by Titration | APHA 2320 Alkalinity |
| This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values. | | | |
| BR-L-IC-N-VA | Water | Bromide in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| CARBONS-TOC-VA | Water | Total organic carbon by combustion | APHA 5310B TOTAL ORGANIC CARBON (TOC) |
| This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". | | | |
| CL-IC-N-VA | Water | Chloride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| COD-COL-VA | Water | Chemical Oxygen Demand by Colorimetric | APHA 5220 D. CHEMICAL OXYGEN DEMAND |
| This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method. | | | |
| EC-PCT-VA | Water | Conductivity (Automated) | APHA 2510 Auto. Conduc. |
| This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode. | | | |
| EC-SCREEN-VA | Water | Conductivity Screen (Internal Use Only) | APHA 2510 |
| Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc. | | | |
| F-IC-N-VA | Water | Fluoride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |

Reference Information

| | | | |
|---|-------|--|---|
| HARDNESS-CALC-VA | Water | Hardness | APHA 2340B |
| Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation. | | | |
| MET-D-CCMS-VA | Water | Dissolved Metals in Water by CRC ICPMS | APHA 3030B/6020A (mod) |
| Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS. | | | |
| Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. | | | |
| MET-T-CCMS-VA | Water | Total Metals in Water by CRC ICPMS | EPA 200.2/6020A (mod) |
| Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS. | | | |
| Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. | | | |
| N-T-COL-VA | Water | Total Nitrogen in water by Colour | APHA4500-P(J)/NEMI9171/USGS03-4174 |
| This analysis is carried out using procedures adapted from APHA Method 4500-P (J) "Persulphate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus" and National Environmental Methods Index - Nemi method 5735. | | | |
| NH3-F-VA | Water | Ammonia in Water by Fluorescence | J. ENVIRON. MONIT., 2005, 7, 37-42, RSC |
| This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al. | | | |
| NO2-L-IC-N-VA | Water | Nitrite in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| NO3-L-IC-N-VA | Water | Nitrate in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| P-T-PRES-COL-VA | Water | Total P in Water by Colour | APHA 4500-P Phosphorus |
| This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample. | | | |
| Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples. | | | |
| Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis. | | | |
| PH-PCT-VA | Water | pH by Meter (Automated) | APHA 4500-H pH Value |
| This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode | | | |
| It is recommended that this analysis be conducted in the field. | | | |
| PO4-DO-COL-VA | Water | Diss. Orthophosphate in Water by Colour | APHA 4500-P Phosphorus |
| This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. | | | |
| Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples. | | | |
| Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis. | | | |
| SO4-IC-N-VA | Water | Sulfate in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| TDS-VA | Water | Total Dissolved Solids by Gravimetric | APHA 2540 C - GRAVIMETRIC |
| This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius. | | | |
| TKN-CALC-VA | Water | TKN in Water (Calculation) | BC MOE LABORATORY MANUAL (2005) |
| Total Kjeldahl Nitrogen is a calculated parameter. Total Kjeldahl Nitrogen (calc) = Total Nitrogen - [Nitrite (as N) + Nitrate (as N)]. | | | |
| TSS-LOW-VA | Water | Total Suspended Solids by Grav. (1 mg/L) | APHA 2540D |
| This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. | | | |
| Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples. | | | |
| TSS-VA | Water | Total Suspended Solids by Gravimetric | APHA 2540 D - GRAVIMETRIC |



PRETIUM EXPLORATIONS INC.
ATTN: Max Holtby
Suite 2300, Four Bentall Centre
1055 Dunsmuir Street
Vancouver BC V7X1L4

Date Received: 05-DEC-17
Report Date: 22-DEC-17
Version: INTERNAL

Client Phone: 604-558-1784

Certificate of Analysis

Lab Work Order #: L2030935
Project P.O. #: PO1024768
Job Reference: BRUCEJACK BJ 3.10 WEEKLY
C of C Numbers: BJ 3.10 WEEKLY
Legal Site Desc:

DRAFT

Dean Watt, B.Sc.
Account Manager

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ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700
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ALS ENVIRONMENTAL ANALYTICAL REPORT

| | | Sample ID | L2030935-1 | L2030935-2 | L2030935-3 |
|-----------------------------------|--|--------------|------------|--------------|------------|
| | | Description | Water | Water | Water |
| | | Sampled Date | 03-DEC-17 | 03-DEC-17 | 03-DEC-17 |
| | | Sampled Time | 11:30 | 11:55 | 11:31 |
| | | Client ID | BJ-3.10 | WEIR AT 3.10 | BJ-3.10-99 |
| Grouping | Analyte | | | | |
| WATER | | | | | |
| Physical Tests | Conductivity (uS/cm) | | 187 | 188 | <2.0 |
| | Hardness (as CaCO3) (mg/L) | | 60.6 | 73.2 | <0.50 |
| | pH (pH) | | 7.84 | 7.82 | 5.49 |
| | Total Suspended Solids (mg/L) | | 2.6 | 3.5 | <3.0 |
| | Total Dissolved Solids (mg/L) | | 129 | 131 | <10 |
| | Turbidity (NTU) | | 6.07 | 6.54 | <0.10 |
| Anions and Nutrients | Alkalinity, Total (as CaCO3) (mg/L) | | 46.8 | 47.1 | <1.0 |
| | Ammonia, Total (as N) (mg/L) | | 0.245 | 0.259 | <0.0050 |
| | Bromide (Br) (mg/L) | | <0.050 | <0.050 | <0.050 |
| | Chloride (Cl) (mg/L) | | 0.63 | 0.63 | <0.50 |
| | Fluoride (F) (mg/L) | | 0.062 | 0.064 | <0.020 |
| | Nitrate (as N) (mg/L) | | 3.51 | 3.50 | <0.0050 |
| | Nitrite (as N) (mg/L) | | 0.0095 | 0.0088 | <0.0010 |
| | Total Kjeldahl Nitrogen (mg/L) | | <0.38 | <0.38 | <0.050 |
| | Total Nitrogen (mg/L) | | 3.83 | 3.76 | <0.030 |
| | Orthophosphate-Dissolved (as P) (mg/L) | | 0.0017 | <0.0010 | <0.0010 |
| | Phosphorus (P)-Total (mg/L) | | 0.0038 | 0.0029 | <0.0020 |
| | Sulfate (SO4) (mg/L) | | 31.3 | 31.3 | <0.30 |
| Organic / Inorganic Carbon | Dissolved Organic Carbon (mg/L) | | 0.97 | | <0.50 |
| | Total Organic Carbon (mg/L) | | <0.50 | <0.50 | <0.50 |
| Total Metals | Aluminum (Al)-Total (mg/L) | | 0.0945 | 0.107 | <0.0030 |
| | Antimony (Sb)-Total (mg/L) | | 0.00635 | 0.00651 | <0.00010 |
| | Arsenic (As)-Total (mg/L) | | 0.00385 | 0.00411 | <0.00010 |
| | Barium (Ba)-Total (mg/L) | | 0.0552 | 0.0596 | <0.000050 |
| | Beryllium (Be)-Total (mg/L) | | <0.00010 | <0.00010 | <0.00010 |
| | Bismuth (Bi)-Total (mg/L) | | <0.000050 | <0.000050 | <0.000050 |
| | Boron (B)-Total (mg/L) | | 0.040 | 0.043 | <0.010 |
| | Cadmium (Cd)-Total (mg/L) | | <0.0000050 | 0.0000097 | <0.0000050 |
| | Calcium (Ca)-Total (mg/L) | | 22.7 | 23.5 | <0.050 |
| | Chromium (Cr)-Total (mg/L) | | 0.00012 | 0.00011 | <0.00010 |
| | Cobalt (Co)-Total (mg/L) | | <0.00010 | <0.00010 | <0.00010 |
| | Copper (Cu)-Total (mg/L) | | <0.00050 | <0.00050 | <0.00050 |
| | Iron (Fe)-Total (mg/L) | | 0.018 | 0.020 | <0.010 |
| | Lead (Pb)-Total (mg/L) | | 0.000375 | 0.000394 | <0.000050 |
| | Lithium (Li)-Total (mg/L) | | 0.0164 | 0.0173 | <0.0010 |
| | Magnesium (Mg)-Total (mg/L) | | 0.88 | 0.91 | <0.10 |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | Sample ID Description Sampled Date Sampled Time Client ID | L2030935-1 Water 03-DEC-17 11:30 BJ-3.10 | L2030935-2 Water 03-DEC-17 11:55 WEIR AT 3.10 | L2030935-3 Water 03-DEC-17 11:31 BJ-3.10-99 | |
|-------------------------|---|--|---|---|--|
| Grouping | Analyte | | | | |
| WATER | | | | | |
| Total Metals | Manganese (Mn)-Total (mg/L) | 0.0208 | 0.0230 | <0.00010 | |
| | Mercury (Hg)-Total (mg/L) | <0.0000050 | | <0.0000050 | |
| | Molybdenum (Mo)-Total (mg/L) | 0.00241 | 0.00238 | <0.000050 | |
| | Nickel (Ni)-Total (mg/L) | <0.00050 | <0.00050 | <0.00050 | |
| | Phosphorus (P)-Total (mg/L) | <0.30 | <0.30 | <0.30 | |
| | Potassium (K)-Total (mg/L) | 3.52 | 3.38 | <0.050 | |
| | Selenium (Se)-Total (mg/L) | 0.000406 | 0.000448 | <0.000050 | |
| | Silicon (Si)-Total (mg/L) | 1.29 | 1.23 | <0.10 | |
| | Silver (Ag)-Total (mg/L) | <0.000010 | <0.000010 | <0.000010 | |
| | Sodium (Na)-Total (mg/L) | 9.48 | 9.94 | <0.050 | |
| | Strontium (Sr)-Total (mg/L) | 0.344 | 0.338 | <0.00020 | |
| | Thallium (Tl)-Total (mg/L) | 0.000047 | 0.000052 | <0.000010 | |
| | Tin (Sn)-Total (mg/L) | <0.00010 | <0.00010 | <0.00010 | |
| | Titanium (Ti)-Total (mg/L) | <0.010 | <0.010 | <0.010 | |
| | Uranium (U)-Total (mg/L) | 0.000509 | 0.000514 | <0.000010 | |
| | Vanadium (V)-Total (mg/L) | <0.00050 | <0.00050 | <0.00050 | |
| | Zinc (Zn)-Total (mg/L) | 0.0040 | <0.0030 | <0.0060 ^{DLAI} | |
| Dissolved Metals | Dissolved Mercury Filtration Location | FIELD | | FIELD | |
| | Dissolved Metals Filtration Location | FIELD | LAB | FIELD | |
| | Aluminum (Al)-Dissolved (mg/L) | 0.0283 | 0.0298 | <0.0010 | |
| | Antimony (Sb)-Dissolved (mg/L) | 0.00450 | 0.00477 | <0.00010 | |
| | Arsenic (As)-Dissolved (mg/L) | 0.00393 | 0.00402 | <0.00010 | |
| | Barium (Ba)-Dissolved (mg/L) | 0.0640 | 0.0656 | <0.000050 | |
| | Beryllium (Be)-Dissolved (mg/L) | <0.00010 | <0.00010 | <0.00010 | |
| | Bismuth (Bi)-Dissolved (mg/L) | <0.000050 | <0.000050 | <0.000050 | |
| | Boron (B)-Dissolved (mg/L) | 0.037 | 0.040 | <0.010 | |
| | Cadmium (Cd)-Dissolved (mg/L) | 0.0000073 | 0.0000102 | <0.0000050 | |
| | Calcium (Ca)-Dissolved (mg/L) | 22.8 | 27.6 | <0.050 | |
| | Chromium (Cr)-Dissolved (mg/L) | <0.00010 | <0.00010 | <0.00010 | |
| | Cobalt (Co)-Dissolved (mg/L) | <0.00010 | <0.00010 | <0.00010 | |
| | Copper (Cu)-Dissolved (mg/L) | <0.00020 | 0.00032 | <0.00020 | |
| | Iron (Fe)-Dissolved (mg/L) | <0.010 | <0.010 | <0.010 | |
| | Lead (Pb)-Dissolved (mg/L) | 0.000100 | 0.000059 | <0.000050 | |
| | Lithium (Li)-Dissolved (mg/L) | 0.0174 | 0.0181 | <0.0010 | |
| | Magnesium (Mg)-Dissolved (mg/L) | 0.89 | 1.02 | <0.10 | |
| | Manganese (Mn)-Dissolved (mg/L) | 0.0167 | 0.0195 | <0.00010 | |
| | Mercury (Hg)-Dissolved (mg/L) | <0.0000050 | | <0.0000050 | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | | Sample ID | L2030935-1 | L2030935-2 | L2030935-3 | | |
|---------------------------|----------------------------------|--------------|------------|--------------|-----------------------|--|--|
| | | Description | Water | Water | Water | | |
| | | Sampled Date | 03-DEC-17 | 03-DEC-17 | 03-DEC-17 | | |
| | | Sampled Time | 11:30 | 11:55 | 11:31 | | |
| | | Client ID | BJ-3.10 | WEIR AT 3.10 | BJ-3.10-99 | | |
| Grouping | Analyte | | | | | | |
| WATER | | | | | | | |
| Dissolved Metals | Molybdenum (Mo)-Dissolved (mg/L) | | 0.00203 | 0.00230 | <0.000050 | | |
| | Nickel (Ni)-Dissolved (mg/L) | | <0.00050 | <0.00050 | <0.00050 | | |
| | Phosphorus (P)-Dissolved (mg/L) | | <0.30 | <0.30 | <0.30 | | |
| | Potassium (K)-Dissolved (mg/L) | | 3.53 | 4.00 | <0.050 | | |
| | Selenium (Se)-Dissolved (mg/L) | | 0.000441 | 0.000417 | <0.000050 | | |
| | Silicon (Si)-Dissolved (mg/L) | | 1.19 | 1.22 | <0.050 | | |
| | Silver (Ag)-Dissolved (mg/L) | | <0.000010 | <0.000010 | <0.000010 | | |
| | Sodium (Na)-Dissolved (mg/L) | | 10.0 | 11.8 | <0.050 | | |
| | Strontium (Sr)-Dissolved (mg/L) | | 0.322 | 0.375 | <0.00020 | | |
| | Thallium (Tl)-Dissolved (mg/L) | | 0.000042 | 0.000045 | <0.000010 | | |
| | Tin (Sn)-Dissolved (mg/L) | | <0.00010 | 0.00025 | <0.00010 | | |
| | Titanium (Ti)-Dissolved (mg/L) | | <0.010 | <0.010 | <0.010 | | |
| | Uranium (U)-Dissolved (mg/L) | | 0.000454 | 0.000489 | <0.000010 | | |
| | Vanadium (V)-Dissolved (mg/L) | | <0.00050 | <0.00050 | <0.00050 | | |
| | Zinc (Zn)-Dissolved (mg/L) | | 0.0011 | <0.0010 | 0.0019 ^{RRV} | | |
| Aggregate Organics | COD (mg/L) | | <20 | <20 | <20 | | |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

| QC Type Description | Parameter | Qualifier | Applies to Sample Number(s) |
|---------------------------|---------------------------|-----------|-----------------------------|
| Laboratory Control Sample | Titanium (Ti)-Dissolved | MES | L2030935-1 |
| Matrix Spike | Total Organic Carbon | MS-B | L2030935-1, -2, -3 |
| Matrix Spike | Barium (Ba)-Dissolved | MS-B | L2030935-2 |
| Matrix Spike | Calcium (Ca)-Dissolved | MS-B | L2030935-2 |
| Matrix Spike | Magnesium (Mg)-Dissolved | MS-B | L2030935-2 |
| Matrix Spike | Molybdenum (Mo)-Dissolved | MS-B | L2030935-2 |
| Matrix Spike | Selenium (Se)-Dissolved | MS-B | L2030935-2 |
| Matrix Spike | Silicon (Si)-Dissolved | MS-B | L2030935-2 |
| Matrix Spike | Sodium (Na)-Dissolved | MS-B | L2030935-2 |
| Matrix Spike | Strontium (Sr)-Dissolved | MS-B | L2030935-2 |
| Matrix Spike | Uranium (U)-Dissolved | MS-B | L2030935-2 |
| Matrix Spike | Nitrate (as N) | MS-B | L2030935-1, -2, -3 |

Qualifiers for Individual Parameters Listed:

| Qualifier | Description |
|-----------|---|
| DLAI | Detection limit raised due to low level analytical interference or background. |
| MES | Data Quality Objective was marginally exceeded (by < 10% absolute) for < 10% of analytes in a Multi-Element Scan / Multi-Parameter Scan (considered acceptable as per OMOE & CCME). |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |
| RRV | Reported Result Verified By Repeat Analysis |

Test Method References:

| ALS Test Code | Matrix | Test Description | Method Reference** |
|--|--------|--|---------------------------------------|
| ALK-TITR-VA | Water | Alkalinity Species by Titration | APHA 2320 Alkalinity |
| This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values. | | | |
| BR-L-IC-N-VA | Water | Bromide in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| CARBONS-DOC-VA | Water | Dissolved organic carbon by combustion | APHA 5310B TOTAL ORGANIC CARBON (TOC) |
| This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are determined by filtering the sample through a 0.45 micron membrane filter prior to analysis. | | | |
| CARBONS-TOC-VA | Water | Total organic carbon by combustion | APHA 5310B TOTAL ORGANIC CARBON (TOC) |
| This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". | | | |
| CL-IC-N-VA | Water | Chloride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| COD-COL-VA | Water | Chemical Oxygen Demand by Colorimetric | APHA 5220 D. CHEMICAL OXYGEN DEMAND |
| This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method. | | | |
| EC-PCT-VA | Water | Conductivity (Automated) | APHA 2510 Auto. Conduc. |
| This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode. | | | |
| EC-SCREEN-VA | Water | Conductivity Screen (Internal Use Only) | APHA 2510 |
| Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc. | | | |
| F-IC-N-VA | Water | Fluoride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| HARDNESS-CALC-VA | Water | Hardness | APHA 2340B |
| Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation. | | | |
| HG-D-CVAA-VA | Water | Diss. Mercury in Water by CVAAS or CVAFS | APHA 3030B/EPA 1631E (mod) |
| Water samples are filtered (0.45 um), preserved with hydrochloric acid, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS. | | | |

Reference Information

| | | | |
|---|-------|--|---|
| HG-T-CVAA-VA | Water | Total Mercury in Water by CVAAS or CVAFS | EPA 1631E (mod) |
| Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS or CVAFS. | | | |
| MET-D-CCMS-VA | Water | Dissolved Metals in Water by CRC ICPMS | APHA 3030B/6020A (mod) |
| Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS. | | | |
| Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. | | | |
| MET-T-CCMS-VA | Water | Total Metals in Water by CRC ICPMS | EPA 200.2/6020A (mod) |
| Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS. | | | |
| Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. | | | |
| N-T-COL-VA | Water | Total Nitrogen in water by Colour | APHA4500-P(J)/NEMI9171/USGS03-4174 |
| This analysis is carried out using procedures adapted from APHA Method 4500-P (J) "Persulphate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus" and National Environmental Methods Index - Nemi method 5735. | | | |
| NH3-F-VA | Water | Ammonia in Water by Fluorescence | J. ENVIRON. MONIT., 2005, 7, 37-42, RSC |
| This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al. | | | |
| NO2-L-IC-N-VA | Water | Nitrite in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| NO3-L-IC-N-VA | Water | Nitrate in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| P-T-PRES-COL-VA | Water | Total P in Water by Colour | APHA 4500-P Phosphorus |
| This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample. | | | |
| Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples. | | | |
| Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis. | | | |
| PH-PCT-VA | Water | pH by Meter (Automated) | APHA 4500-H pH Value |
| This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode | | | |
| It is recommended that this analysis be conducted in the field. | | | |
| PO4-DO-COL-VA | Water | Diss. Orthophosphate in Water by Colour | APHA 4500-P Phosphorus |
| This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. | | | |
| Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples. | | | |
| Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis. | | | |
| SO4-IC-N-VA | Water | Sulfate in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| TDS-VA | Water | Total Dissolved Solids by Gravimetric | APHA 2540 C - GRAVIMETRIC |
| This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius. | | | |
| TKN-CALC-VA | Water | TKN in Water (Calculation) | BC MOE LABORATORY MANUAL (2005) |
| Total Kjeldahl Nitrogen is a calculated parameter. Total Kjeldahl Nitrogen (calc) = Total Nitrogen - [Nitrite (as N) + Nitrate (as N)]. | | | |
| TSS-LOW-VA | Water | Total Suspended Solids by Grav. (1 mg/L) | APHA 2540D |
| This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. | | | |
| Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples. | | | |
| TSS-VA | Water | Total Suspended Solids by Gravimetric | APHA 2540 D - GRAVIMETRIC |



| Report To | | | | | Report Format / Distribution | | | | | Service Requested (Rush for routine analysis subject to availability) | | | | | | | | | | |
|--|---|--------------|--------------------|-------|---|-----------------|--------------|---------|---------------------|---|--------------|------------------|---------------|-------|---------------------|-----------------|-----|-----|------------------|----------------------|
| Company: Pretivm Resources Inc. | | | | | <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other | | | | | <input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days) | | | | | | | | | | |
| Contact: Max Holtby | | | | | <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> Excel <input type="checkbox"/> Digital <input type="checkbox"/> Fax | | | | | <input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT | | | | | | | | | | |
| Address: Suite 2300, Four Bentall Centre, 1055 Dunsmuir Street Vancouver, BC V7X 1L4 PO Box 49334 | | | | | Email 1: environmental@pretivm.com | | | | | <input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT | | | | | | | | | | |
| Phone: (604) 558-1784 Fax: (604) 558-4784 | | | | | Email 2: mholtby@pretivm.com | | | | | <input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT | | | | | | | | | | |
| Email 3: svanzalingen@pretivm.com | | | | | Analysis Request | | | | | | | | | | | | | | | |
| Invoice To Same as Report? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | Client / Project Information | | | | | Please indicate below Filtered, Preserved or both (F, P, F/P) | | | | | | | | | | |
| Hardcopy of Invoice with Report? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | Job #: Brucejack BJ 3.10 weekly | | | | | | | | | | | | | | | |
| Company: | | | | | PO / AFE: | | | | | | | | | | | | | | | |
| Contact: | | | | | LSD: | | | | | | | | | | | | | | | |
| Address: invoices@pretivm.com | | | | | Quote #: | | | | | | | | | | | | | | | |
| Phone: Fax: | | | | | ALS Contact: Dean Watt | | | | | Sampler: DB/BDT | | | | | | | | | | |
| Lab Work Order # (lab use only) | | | | | | | | | | | | | | | | | | | | |
| Sample # | Sample Identification (This description will appear on the report) | | | | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | General | Non-ionized ammonia | Nutrients/ TOC | Total Metals | Dissolved Metals | Low Level TSS | RA226 | Mercury (Dissolved) | Mercury (Total) | DOC | EPH | Dissolved Metals | Number of Containers |
| | BJ-3.10-E298312 | | | | 03-Dec-17 | 11:30 | Water | X | | X | X | X | X | X | X | X | X | | | 8 |
| | Weir at 3.10 | | | | 03-Dec-17 | 11:55 | Water | X | | X | X | | | | | | | | X | 4 |
| | BJ-3.10-99 | | | | 03-Dec-17 | 11:31 | Water | X | | X | X | X | | | X | X | X | | | 7 |
|  L2030935-COFC | | | | | | | | | | | | | | | | | | | | |
| Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details | | | | | | | | | | | | | | | | | | | | |
| Please report results with 5 business day turnaround. PLEASE ALSO SEND RESULTS TO rmccall@pretivm.com . EMS upload required. Please analyze for low level TSS from generals bottle if possible. | | | | | | | | | | | | | | | | | | | | |
| Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. | | | | | | | | | | | | | | | | | | | | |
| By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab. | | | | | | | | | | | | | | | | | | | | |
| Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses. | | | | | | | | | | | | | | | | | | | | |
| SHIPMENT RELEASE (client use) | | | | | SHIPMENT RECEPTION (lab use only) | | | | | SHIPMENT VERIFICATION (lab use only) | | | | | | | | | | |
| Released by: | Date (dd-mmm-yy) | Time (hh-mm) | Received by: | Date: | Time: | Temperature: | Verified by: | Date: | Time: | Observations: Yes / No ? If Yes add SIF | | | | | | | | | | |
| Darcie Blackall | 3-Dec-17 | 18:00 | <i>[Signature]</i> | Dec 5 | 11:29 | 7.0 °C | | | | | | | | | | | | | | |



PRETIUM EXPLORATIONS INC.
ATTN: Max Holtby
Suite 2300, Four Bentall Centre
1055 Dunsmuir Street
Vancouver BC V7X1L4

Date Received: 13-DEC-17
Report Date: 21-DEC-17 23:23 (MT)
Version: DRAFT

Client Phone: 604-558-1784

Certificate of Analysis

Lab Work Order #: L2034711
Project P.O. #: PO1024768
Job Reference: BRUCEJACK BJ 3.10 WEEKLY
C of C Numbers: BJ 3.10 WEEKLY
Legal Site Desc:

DRAFT

Dean Watt, B.Sc.
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 8081 Lougheed Hwy, Suite 100, Burnaby, BC V5A 1W9 Canada | Phone: +1 604 253 4188 | Fax: +1 604 253 6700
ALS CANADA LTD Part of the ALS Group An ALS Limited Company

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | | Sample ID | L2034711-1 | L2034711-2 | L2034711-3 | L2034711-4 |
|-----------------------------------|--|--------------|------------|------------|------------|--------------|
| | | Description | Water | Water | Water | Water |
| | | Sampled Date | 11-DEC-17 | 11-DEC-17 | 11-DEC-17 | 11-DEC-17 |
| | | Sampled Time | 16:25 | 16:25 | 16:48 | 16:40 |
| | | Client ID | BJ-3.10 | BJ-3.10-98 | 3.10 WEIR | 3.10 WEIR-94 |
| Grouping | Analyte | | | | | |
| WATER | | | | | | |
| Physical Tests | Conductivity (uS/cm) | | 192 | 191 | 189 | <2.0 |
| | Hardness (as CaCO3) (mg/L) | | 60.3 | 59.1 | 58.1 | <0.50 |
| | pH (pH) | | 7.80 | 7.76 | 7.78 | 5.54 |
| | Total Suspended Solids (mg/L) | | 3.1 | 2.1 | 3.0 | <1.0 |
| | Total Dissolved Solids (mg/L) | | 127 | 108 | 123 | <10 |
| | Turbidity (NTU) | | 6.69 | 5.91 | 6.19 | <0.10 |
| Anions and Nutrients | Alkalinity, Total (as CaCO3) (mg/L) | | 47.4 | 47.0 | 47.0 | <1.0 |
| | Ammonia, Total (as N) (mg/L) | | 0.249 | 0.248 | 0.266 | <0.0050 |
| | Bromide (Br) (mg/L) | | <0.050 | <0.050 | <0.050 | <0.050 |
| | Chloride (Cl) (mg/L) | | 0.64 | 0.64 | 0.64 | <0.50 |
| | Fluoride (F) (mg/L) | | 0.066 | 0.066 | 0.066 | <0.020 |
| | Nitrate (as N) (mg/L) | | 3.57 | 3.57 | 3.57 | <0.0050 |
| | Nitrite (as N) (mg/L) | | 0.0091 | 0.0083 | 0.0090 | <0.0010 |
| | Total Kjeldahl Nitrogen (mg/L) | | 0.42 | <0.39 | 0.44 | <0.050 |
| | Total Nitrogen (mg/L) | | 4.00 | 3.94 | 4.03 | <0.030 |
| | Orthophosphate-Dissolved (as P) (mg/L) | | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| | Phosphorus (P)-Total (mg/L) | | 0.0023 | 0.0022 | 0.0027 | 0.0817 |
| | Sulfate (SO4) (mg/L) | | 31.1 | 31.1 | 31.1 | <0.30 |
| Organic / Inorganic Carbon | Total Organic Carbon (mg/L) | | 0.88 | <0.50 | <0.50 | <0.50 |
| Total Metals | Aluminum (Al)-Total (mg/L) | | 0.146 | 0.116 | 0.173 | <0.0030 |
| | Antimony (Sb)-Total (mg/L) | | 0.00448 | 0.00456 | 0.00452 | <0.00010 |
| | Arsenic (As)-Total (mg/L) | | 0.00411 | 0.00415 | 0.00418 | <0.00010 |
| | Barium (Ba)-Total (mg/L) | | 0.0645 | 0.0644 | 0.0642 | <0.000050 |
| | Beryllium (Be)-Total (mg/L) | | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| | Bismuth (Bi)-Total (mg/L) | | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| | Boron (B)-Total (mg/L) | | 0.045 | 0.045 | 0.045 | <0.010 |
| | Cadmium (Cd)-Total (mg/L) | | 0.0000111 | 0.0000102 | 0.0000099 | <0.0000050 |
| | Calcium (Ca)-Total (mg/L) | | 22.4 | 21.6 | 21.5 | <0.050 |
| | Chromium (Cr)-Total (mg/L) | | 0.00016 | 0.00012 | 0.00014 | <0.00010 |
| | Cobalt (Co)-Total (mg/L) | | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| | Copper (Cu)-Total (mg/L) | | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| | Iron (Fe)-Total (mg/L) | | 0.027 | 0.023 | 0.027 | <0.010 |
| | Lead (Pb)-Total (mg/L) | | 0.000313 | 0.000317 | 0.000325 | <0.000050 |
| | Lithium (Li)-Total (mg/L) | | 0.0182 | 0.0176 | 0.0175 | <0.0010 |
| | Magnesium (Mg)-Total (mg/L) | | 0.97 | 0.97 | 0.98 | <0.10 |
| | Manganese (Mn)-Total (mg/L) | | 0.0223 | 0.0224 | 0.0239 | <0.00010 |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | | Sample ID | L2034711-1 | L2034711-2 | L2034711-3 | L2034711-4 |
|-------------------------|--------------------------------------|--------------|------------|------------|------------|--------------|
| | | Description | Water | Water | Water | Water |
| | | Sampled Date | 11-DEC-17 | 11-DEC-17 | 11-DEC-17 | 11-DEC-17 |
| | | Sampled Time | 16:25 | 16:25 | 16:48 | 16:40 |
| | | Client ID | BJ-3.10 | BJ-3.10-98 | 3.10 WEIR | 3.10 WEIR-94 |
| Grouping | Analyte | | | | | |
| WATER | | | | | | |
| Total Metals | Molybdenum (Mo)-Total (mg/L) | | 0.00243 | 0.00233 | 0.00238 | <0.000050 |
| | Nickel (Ni)-Total (mg/L) | | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| | Phosphorus (P)-Total (mg/L) | | <0.30 | <0.30 | <0.30 | <0.30 |
| | Potassium (K)-Total (mg/L) | | 3.76 | 3.78 | 3.78 | <0.050 |
| | Selenium (Se)-Total (mg/L) | | 0.000426 | 0.000475 | 0.000463 | <0.000050 |
| | Silicon (Si)-Total (mg/L) | | 1.37 | 1.36 | 1.38 | <0.10 |
| | Silver (Ag)-Total (mg/L) | | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| | Sodium (Na)-Total (mg/L) | | 10.4 | 10.5 | 10.4 | <0.050 |
| | Strontium (Sr)-Total (mg/L) | | 0.355 | 0.358 | 0.351 | <0.00020 |
| | Thallium (Tl)-Total (mg/L) | | 0.000046 | 0.000044 | 0.000049 | <0.000010 |
| | Tin (Sn)-Total (mg/L) | | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| | Titanium (Ti)-Total (mg/L) | | <0.010 | <0.010 | <0.010 | <0.010 |
| | Uranium (U)-Total (mg/L) | | 0.000436 | 0.000439 | 0.000453 | <0.000010 |
| | Vanadium (V)-Total (mg/L) | | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| | Zinc (Zn)-Total (mg/L) | | <0.0030 | <0.0030 | <0.0030 | <0.0030 |
| Dissolved Metals | Dissolved Metals Filtration Location | | LAB | LAB | LAB | LAB |
| | Aluminum (Al)-Dissolved (mg/L) | | 0.0304 | 0.0305 | 0.0323 | <0.0010 |
| | Antimony (Sb)-Dissolved (mg/L) | | 0.00504 | 0.00512 | 0.00521 | <0.00010 |
| | Arsenic (As)-Dissolved (mg/L) | | 0.00383 | 0.00393 | 0.00390 | <0.00010 |
| | Barium (Ba)-Dissolved (mg/L) | | 0.0602 | 0.0574 | 0.0576 | <0.000050 |
| | Beryllium (Be)-Dissolved (mg/L) | | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| | Bismuth (Bi)-Dissolved (mg/L) | | <0.000050 | <0.000050 | <0.000050 | <0.000050 |
| | Boron (B)-Dissolved (mg/L) | | 0.040 | 0.040 | 0.042 | <0.010 |
| | Cadmium (Cd)-Dissolved (mg/L) | | 0.0000097 | 0.0000059 | 0.0000052 | <0.0000050 |
| | Calcium (Ca)-Dissolved (mg/L) | | 22.6 | 22.1 | 21.8 | <0.050 |
| | Chromium (Cr)-Dissolved (mg/L) | | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| | Cobalt (Co)-Dissolved (mg/L) | | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| | Copper (Cu)-Dissolved (mg/L) | | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| | Iron (Fe)-Dissolved (mg/L) | | <0.010 | <0.010 | <0.010 | <0.010 |
| | Lead (Pb)-Dissolved (mg/L) | | 0.000051 | 0.000050 | 0.000051 | <0.000050 |
| | Lithium (Li)-Dissolved (mg/L) | | 0.0175 | 0.0174 | 0.0195 | <0.0010 |
| | Magnesium (Mg)-Dissolved (mg/L) | | 0.95 | 0.94 | 0.93 | <0.10 |
| | Manganese (Mn)-Dissolved (mg/L) | | 0.0167 | 0.0167 | 0.0174 | <0.00010 |
| | Molybdenum (Mo)-Dissolved (mg/L) | | 0.00243 | 0.00239 | 0.00246 | <0.000050 |
| | Nickel (Ni)-Dissolved (mg/L) | | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| | Phosphorus (P)-Dissolved (mg/L) | | <0.30 | <0.30 | <0.30 | <0.30 |
| | Potassium (K)-Dissolved (mg/L) | | 4.03 | 3.87 | 3.87 | <0.050 |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

ALS ENVIRONMENTAL ANALYTICAL REPORT

| | | Sample ID | L2034711-1 | L2034711-2 | L2034711-3 | L2034711-4 |
|---------------------------|---------------------------------|--------------|------------|------------|------------|--------------|
| | | Description | Water | Water | Water | Water |
| | | Sampled Date | 11-DEC-17 | 11-DEC-17 | 11-DEC-17 | 11-DEC-17 |
| | | Sampled Time | 16:25 | 16:25 | 16:48 | 16:40 |
| | | Client ID | BJ-3.10 | BJ-3.10-98 | 3.10 WEIR | 3.10 WEIR-94 |
| Grouping | Analyte | | | | | |
| WATER | | | | | | |
| Dissolved Metals | Selenium (Se)-Dissolved (mg/L) | | 0.000438 | 0.000375 | 0.000355 | <0.000050 |
| | Silicon (Si)-Dissolved (mg/L) | | 1.14 | 1.18 | 1.19 | <0.050 |
| | Silver (Ag)-Dissolved (mg/L) | | <0.000010 | <0.000010 | <0.000010 | <0.000010 |
| | Sodium (Na)-Dissolved (mg/L) | | 11.1 | 11.0 | 10.7 | <0.050 |
| | Strontium (Sr)-Dissolved (mg/L) | | 0.366 | 0.374 | 0.361 | <0.00020 |
| | Thallium (Tl)-Dissolved (mg/L) | | 0.000050 | 0.000045 | 0.000046 | <0.000010 |
| | Tin (Sn)-Dissolved (mg/L) | | <0.00010 | <0.00010 | <0.00010 | <0.00010 |
| | Titanium (Ti)-Dissolved (mg/L) | | <0.010 | <0.010 | <0.010 | <0.010 |
| | Uranium (U)-Dissolved (mg/L) | | 0.000551 | 0.000544 | 0.000549 | <0.000010 |
| | Vanadium (V)-Dissolved (mg/L) | | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| | Zinc (Zn)-Dissolved (mg/L) | | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Aggregate Organics | COD (mg/L) | | <20 | <20 | <20 | <20 |

* Please refer to the Reference Information section for an explanation of any qualifiers detected.

Reference Information

QC Samples with Qualifiers & Comments:

| QC Type Description | Parameter | Qualifier | Applies to Sample Number(s) |
|---------------------|---|-----------|-----------------------------|
| Method Blank | Alkalinity, Total (as CaCO ₃) | B | L2034711-4 |
| Matrix Spike | Barium (Ba)-Dissolved | MS-B | L2034711-1, -2, -3, -4 |
| Matrix Spike | Calcium (Ca)-Dissolved | MS-B | L2034711-1, -2, -3, -4 |
| Matrix Spike | Magnesium (Mg)-Dissolved | MS-B | L2034711-1, -2, -3, -4 |
| Matrix Spike | Manganese (Mn)-Dissolved | MS-B | L2034711-1, -2, -3, -4 |
| Matrix Spike | Potassium (K)-Dissolved | MS-B | L2034711-1, -2, -3, -4 |
| Matrix Spike | Sodium (Na)-Dissolved | MS-B | L2034711-1, -2, -3, -4 |
| Matrix Spike | Strontium (Sr)-Dissolved | MS-B | L2034711-1, -2, -3, -4 |
| Matrix Spike | Uranium (U)-Dissolved | MS-B | L2034711-1, -2, -3, -4 |
| Matrix Spike | Calcium (Ca)-Total | MS-B | L2034711-1, -2, -3, -4 |
| Matrix Spike | Magnesium (Mg)-Total | MS-B | L2034711-1, -2, -3, -4 |
| Matrix Spike | Manganese (Mn)-Total | MS-B | L2034711-1, -2, -3, -4 |
| Matrix Spike | Sodium (Na)-Total | MS-B | L2034711-1, -2, -3, -4 |
| Matrix Spike | Strontium (Sr)-Total | MS-B | L2034711-1, -2, -3, -4 |
| Matrix Spike | Total Nitrogen | MS-B | L2034711-1, -2, -3 |
| Matrix Spike | Total Nitrogen | MS-B | L2034711-4 |

Qualifiers for Individual Parameters Listed:

| Qualifier | Description |
|-----------|--|
| B | Method Blank exceeds ALS DQO. Associated sample results which are < Limit of Reporting or > 5 times blank level are considered reliable. |
| MS-B | Matrix Spike recovery could not be accurately calculated due to high analyte background in sample. |

Test Method References:

| ALS Test Code | Matrix | Test Description | Method Reference** |
|--|--------|---|---------------------------------------|
| ALK-TITR-VA | Water | Alkalinity Species by Titration | APHA 2320 Alkalinity |
| This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values. | | | |
| BR-L-IC-N-VA | Water | Bromide in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| CARBONS-TOC-VA | Water | Total organic carbon by combustion | APHA 5310B TOTAL ORGANIC CARBON (TOC) |
| This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)". | | | |
| CL-IC-N-VA | Water | Chloride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| COD-COL-VA | Water | Chemical Oxygen Demand by Colorimetric | APHA 5220 D. CHEMICAL OXYGEN DEMAND |
| This analysis is carried out using procedures adapted from APHA Method 5220 "Chemical Oxygen Demand (COD)". Chemical oxygen demand is determined using the closed reflux colourimetric method. | | | |
| EC-PCT-VA | Water | Conductivity (Automated) | APHA 2510 Auto. Conduc. |
| This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode. | | | |
| EC-SCREEN-VA | Water | Conductivity Screen (Internal Use Only) | APHA 2510 |
| Qualitative analysis of conductivity where required during preparation of other tests - e.g. TDS, metals, etc. | | | |
| F-IC-N-VA | Water | Fluoride in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| HARDNESS-CALC-VA | Water | Hardness | APHA 2340B |
| Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO ₃ equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation. | | | |
| MET-D-CCMS-VA | Water | Dissolved Metals in Water by CRC ICPMS | APHA 3030B/6020A (mod) |
| Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS. | | | |
| Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. | | | |

Reference Information

| | | | |
|---|-------|--|---|
| MET-T-CCMS-VA | Water | Total Metals in Water by CRC ICPMS | EPA 200.2/6020A (mod) |
| Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS. | | | |
| Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method. | | | |
| N-T-COL-VA | Water | Total Nitrogen in water by Colour | APHA4500-P(J)/NEMI9171/USGS03-4174 |
| This analysis is carried out using procedures adapted from APHA Method 4500-P (J) "Persulphate Method for Simultaneous Determination of Total Nitrogen and Total Phosphorus" and National Environmental Methods Index - Nemi method 5735. | | | |
| NH3-F-VA | Water | Ammonia in Water by Fluorescence | J. ENVIRON. MONIT., 2005, 7, 37-42, RSC |
| This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al. | | | |
| NO2-L-IC-N-VA | Water | Nitrite in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| NO3-L-IC-N-VA | Water | Nitrate in Water by IC (Low Level) | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| P-T-PRES-COL-VA | Water | Total P in Water by Colour | APHA 4500-P Phosphorus |
| This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample. | | | |
| Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples. | | | |
| Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis. | | | |
| PH-PCT-VA | Water | pH by Meter (Automated) | APHA 4500-H pH Value |
| This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode | | | |
| It is recommended that this analysis be conducted in the field. | | | |
| PO4-DO-COL-VA | Water | Diss. Orthophosphate in Water by Colour | APHA 4500-P Phosphorus |
| This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. | | | |
| Samples with very high dissolved solids (i.e. seawaters, brackish waters) may produce a negative bias by this method. Alternate methods are available for these types of samples. | | | |
| Arsenic (5+), at elevated levels, is a positive interference on colourimetric phosphate analysis. | | | |
| SO4-IC-N-VA | Water | Sulfate in Water by IC | EPA 300.1 (mod) |
| Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. | | | |
| TDS-VA | Water | Total Dissolved Solids by Gravimetric | APHA 2540 C - GRAVIMETRIC |
| This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius. | | | |
| TKN-CALC-VA | Water | TKN in Water (Calculation) | BC MOE LABORATORY MANUAL (2005) |
| Total Kjeldahl Nitrogen is a calculated parameter. Total Kjeldahl Nitrogen (calc) = Total Nitrogen - [Nitrite (as N) + Nitrate (as N)]. | | | |
| TSS-LOW-VA | Water | Total Suspended Solids by Grav. (1 mg/L) | APHA 2540D |
| This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius. | | | |
| Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples. | | | |
| TURBIDITY-VA | Water | Turbidity by Meter | APHA 2130 Turbidity |
| This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method. | | | |

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

| Laboratory Definition Code | Laboratory Location |
|----------------------------|---|
| VA | ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA |

Reference Information

Chain of Custody Numbers:

BJ 3.10 WEEKLY

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.

mg/kg wwt - milligrams per kilogram based on wet weight of sample.

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.

mg/L - milligrams per litre.

< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

DRAFT



| Report To | | | | | Report Format / Distribution | | | | | Service Requested (Rush for routine analysis subject to availability) | | | | | | | | | | | | | | | | |
|--|---|--------------|--------------|-------------|---|-----------------|--------------|---------|---------------------|---|--------------|------------------|---------------|-------|---------------------|-----------------|-----|-----|------------------|----------------------|--|--|--|--|--|--|
| Company: Pretivm Resources Inc. | | | | | <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other | | | | | <input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days) | | | | | | | | | | | | | | | | |
| Contact: Max Holtby | | | | | <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> Excel <input type="checkbox"/> Digital <input type="checkbox"/> Fax | | | | | <input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT | | | | | | | | | | | | | | | | |
| Address: Suite 2300, Four Bentall Centre, 1055 Dunsmuir Street Vancouver, BC V7X 1L4 PO Box 49334 | | | | | Email 1: environmental@pretivm.com | | | | | <input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT | | | | | | | | | | | | | | | | |
| Phone: (604) 558-1784 Fax: (604) 558-4784 | | | | | Email 2: mholby@pretivm.com | | | | | <input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT | | | | | | | | | | | | | | | | |
| Email 3: svanzalingen@pretivm.com | | | | | Analysis Request | | | | | | | | | | | | | | | | | | | | | |
| Invoice To Same as Report? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | Client / Project Information | | | | | Please indicate below Filtered, Preserved or both (F, P, F/P) | | | | | | | | | | | | | | | | |
| Hardcopy of Invoice with Report? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No | | | | | Job #: Brucejack BJ 3.10 weekly | | | | | | | | | | | | | | | | | | | | | |
| Company: | | | | | PO / AFE: | | | | | | | | | | | | | | | | | | | | | |
| Contact: | | | | | LSD: | | | | | | | | | | | | | | | | | | | | | |
| Address: invoices@pretivm.com | | | | | Quote #: | | | | | | | | | | | | | | | | | | | | | |
| Phone: Fax: | | | | | ALS Contact: Dean Watt | | | | | Sampler: LS/AM | | | | | | | | | | | | | | | | |
| Lab Work Order # (lab use only) | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sample # | Sample Identification (This description will appear on the report) | | | | Date (dd-mmm-yy) | Time (hh:mm) | Sample Type | General | Non-ionized ammonia | Nutrients/ TOC | Total Metals | Dissolved Metals | Low Level TSS | RA226 | Mercury (Dissolved) | Mercury (Total) | DOC | EPH | Dissolved Metals | Number of Containers | | | | | | |
| | BJ-3.10-E298312 | | | | 11-Dec-17 | 16:25 | Water | X | | X | X | X | X | | | | | | | 5 | | | | | | |
| | BJ-3.10-98 | | | | 11-Dec-17 | 16:25 | Water | X | | X | X | X | X | | | | | | | 5 | | | | | | |
| | 3.10 Weir | | | | 11-Dec-17 | 16:48 | Water | X | | X | X | X | X | | | | | | | 5 | | | | | | |
| | 3.10 Weir - 94 | | | | 11-Dec-17 | 16:40 | water | X | | X | X | X | X | | | | | | | 5 | | | | | | |
|  L2034711-COFC | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Please report results with 5 business day turnaround. PLEASE ALSO SEND RESULTS TO rmccall@pretivm.com . EMS upload required. Please analyze for low level TSS from generals bottle if possible. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SHIPMENT RELEASE (client use) | | | | | SHIPMENT RECEPTION (lab use only) | | | | | SHIPMENT VERIFICATION (lab use only) | | | | | | | | | | | | | | | | |
| Released by: | Date (dd-mmm-yy) | Time (hh-mm) | Received by: | Date: | Time: | Temperature: | Verified by: | Date: | Time: | Observations: Yes / No ? If Yes add SIF | | | | | | | | | | | | | | | | |
| Lionel Sequeira | 11-Dec-17 | 18:00 | B JL | DEC 12 2017 | 10:35 Am | 1 °C | | | | | | | | | | | | | | | | | | | | |