July 8, 2008 EBA File: W23101021.015

North American Tungsten Corporation Ltd.
#1640 - 1188 West Georgia Street
Vancouver, BC V6E 4A2

Attention: S. Wade Stogran
Vice-President of Environmental and Corporate Affairs

**Re: Water Quality Monitoring for Mactung Project Area**
**May 9TH, 2008. MacMillan Pass, Yukon – Issued for Review**

On May 9, 2008 fieldwork was conducted in the MacMillan Pass area to collect water quality data in the project area. Water quality monitoring was conducted by helicopter in conjunction with other field work in the area. A total of six samples were collected during the field work, with two of the samples being collected at stations (WQ1A, WQ2A) not previously monitored (Figure 1). Photographs showing the conditions of the sites during the collection of the water quality samples are appended to this report.

## 1.0 SITE OBSERVATIONS

The streams in the project area were in the process of breaking up. Ice cover was still evident on streams at lower elevations. Station 1A (Figure 1) was the uppermost extent of open water in the Tributary C drainage. The appended photographs show the turbid nature of the waters in the lower elevation streams. The upper elevation streams where there was no ice cover were flowing clear at the time of sampling.

## 2.0 METHODS

The collection of water samples was conducted according to normally accepted standards for this type of sampling. No travel blank or duplicate samples were submitted for this sampling event. The samples were analyzed at ALS Environmental (certificate appended) for physical properties, nutrients, total cyanide, total and dissolved metals.

## 3.0 SUMMARY AND DISCUSSION

The analytical results from the May 9, 2008 sampling event are summarized in Table 1. Sample locations WQ1 and 1A are located on tributary C. Sites WQ2 and WQ2A are located on tributary A. Both tributaries A and C flow into the Hess River tributary that is monitored by sites WQ3 and WQ4. Sample location WQ4 on the Hess River tributary



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provides a site for the collective affects of tributaries A and C, while WQ3 provides background water quality (Figure 1).

Samples collected from Tributary C sites WQ1 and WQ1A returned concentrations of aluminum, cadmium and selenium that exceed CCME guidelines for the protection of aquatic life. In addition the upstream site WQ1A returned a concentration for Zinc that exceeds the CCME guidelines. Samples collected from Tributary A sites WQ2 and WQ2A returned concentrations of aluminum, cadmium, iron, selenium and zinc that exceed CCME guidelines for the protection of aquatic life. In addition the upstream site WQ2A returned a concentration for nickel that exceeds the CCME guidelines. The pH value at WQ2A was slightly acidic value of pH 6.11 while all the other sample locations returned pH values near neutral to slightly alkaline. Sulphate concentrations at WQ2A were elevated above other sampling locations which indicates that potential acid runoff conditions exist in this portion of the Tributary A drainage. Background site WQ3 also returned concentrations of aluminum, cadmium, copper and iron that exceed CCME guidelines for the protection of aquatic life. aluminum, cadmium, copper, iron, nickel, selenium and zinc concentrations dropped significantly at site WQ4 with nickel, selenium and zinc being below CCME guidelines for the protection of aquatic life.

## 4.0 CLOSURE

This report contains information on water quality for streams in the Mactung project area. This report has been prepared following current professional standards and is subject to the EBA Environmental Report General Conditions (attached) that form part of this report. EBA trusts that the information contained in this report meets your present requirements. If you have any questions or comments, please do not hesitate to contact the undersigned.

Respectfully Submitted,
EBA Engineering Consultants Ltd.

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## ENVIRONMENTAL REPORT – GENERAL CONDITIONS

This report incorporates and is subject to these "General Conditions".

### 1.0 USE OF REPORT

This report pertains to a specific site, a specific development, and a specific scope of work. It is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site or proposed development would necessitate a supplementary investigation and assessment.

This report and the assessments and recommendations contained in it are intended for the sole use of EBA's client. EBA does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA's client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

### 2.0 LIMITATIONS OF REPORT

This report is based solely on the conditions which existed on site at the time of EBA's investigation. The client, and any other parties using this report with the express written consent of the client and EBA, acknowledge that conditions affecting the environmental assessment of the site can vary with time and that the conclusions and recommendations set out in this report are time sensitive.

The client, and any other party using this report with the express written consent of the client and EBA, also acknowledge that the conclusions and recommendations set out in this report are based on limited observations and testing on the subject site and that conditions may vary across the site which, in turn, could affect the conclusions and recommendations made.

The client acknowledges that EBA is neither qualified to, nor is it making, any recommendations with respect to the purchase, sale, investment or development of the property, the decisions on which are the sole responsibility of the client.

### 2.1 INFORMATION PROVIDED TO EBA BY OTHERS

During the performance of the work and the preparation of this report, EBA may have relied on information provided by persons other than the client. While EBA endeavours to verify the accuracy of such information when instructed to do so by the client, EBA accepts no responsibility for the accuracy or the reliability of such information which may affect the report.

### 3.0 LIMITATION OF LIABILITY

The client recognizes that property containing contaminants and hazardous wastes creates a high risk of claims brought by third parties arising out of the presence of those materials. In consideration of these risks, and in consideration of EBA providing the services requested, the client agrees that EBA's liability to the client, with respect to any issues relating to contaminants or other hazardous wastes located on the subject site shall be limited as follows:

1. With respect to any claims brought against EBA by the client arising out of the provision or failure to provide services hereunder shall be limited to the amount of fees paid by the client to EBA under this Agreement, whether the action is based on breach of contract or tort;
2. With respect to claims brought by third parties arising out of the presence of contaminants or hazardous wastes on the subject site, the client agrees to indemnify, defend and hold harmless EBA from and against any and all claim or claims, action or actions, demands, damages, penalties, fines, losses, costs and expenses of every nature and kind whatsoever, including solicitor-client costs, arising or alleged to arise either in whole or part out of services provided by EBA, whether the claim be brought against EBA for breach of contract or tort.

## 4.0 JOB SITE SAFETY

EBA is only responsible for the activities of its employees on the job site and is not responsible for the supervision of any other persons whatsoever. The presence of EBA personnel on site shall not be construed in any way to relieve the client or any other persons on site from their responsibility for job site safety.

## 5.0 DISCLOSURE OF INFORMATION BY CLIENT

The client agrees to fully cooperate with EBA with respect to the provision of all available information on the past, present, and proposed conditions on the site, including historical information respecting the use of the site. The client acknowledges that in order for EBA to properly provide the service, EBA is relying upon the full disclosure and accuracy of any such information.

## 6.0 STANDARD OF CARE

Services performed by EBA for this report have been conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions in the jurisdiction in which the services are provided. Engineering judgement has been applied in developing the conclusions and/or recommendations provided in this report. No warranty or guarantee, express or implied, is made concerning the test results, comments, recommendations, or any other portion of this report.

## 7.0 EMERGENCY PROCEDURES

The client undertakes to inform EBA of all hazardous conditions, or possible hazardous conditions which are known to it. The client recognizes that the activities of EBA may uncover previously unknown hazardous materials or conditions and that such discovery may result in the necessity to undertake emergency procedures to protect EBA employees, other persons and the environment. These procedures may involve additional costs outside of any budgets previously agreed upon. The client agrees to pay EBA for any expenses incurred as a result of such discoveries and to compensate EBA through payment of additional fees and expenses for time spent by EBA to deal with the consequences of such discoveries.

## 8.0 NOTIFICATION OF AUTHORITIES

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

## 9.0 OWNERSHIP OF INSTRUMENTS OF SERVICE

The client acknowledges that all reports, plans, and data generated by EBA during the performance of the work and other documents prepared by EBA are considered its professional work product and shall remain the copyright property of EBA.

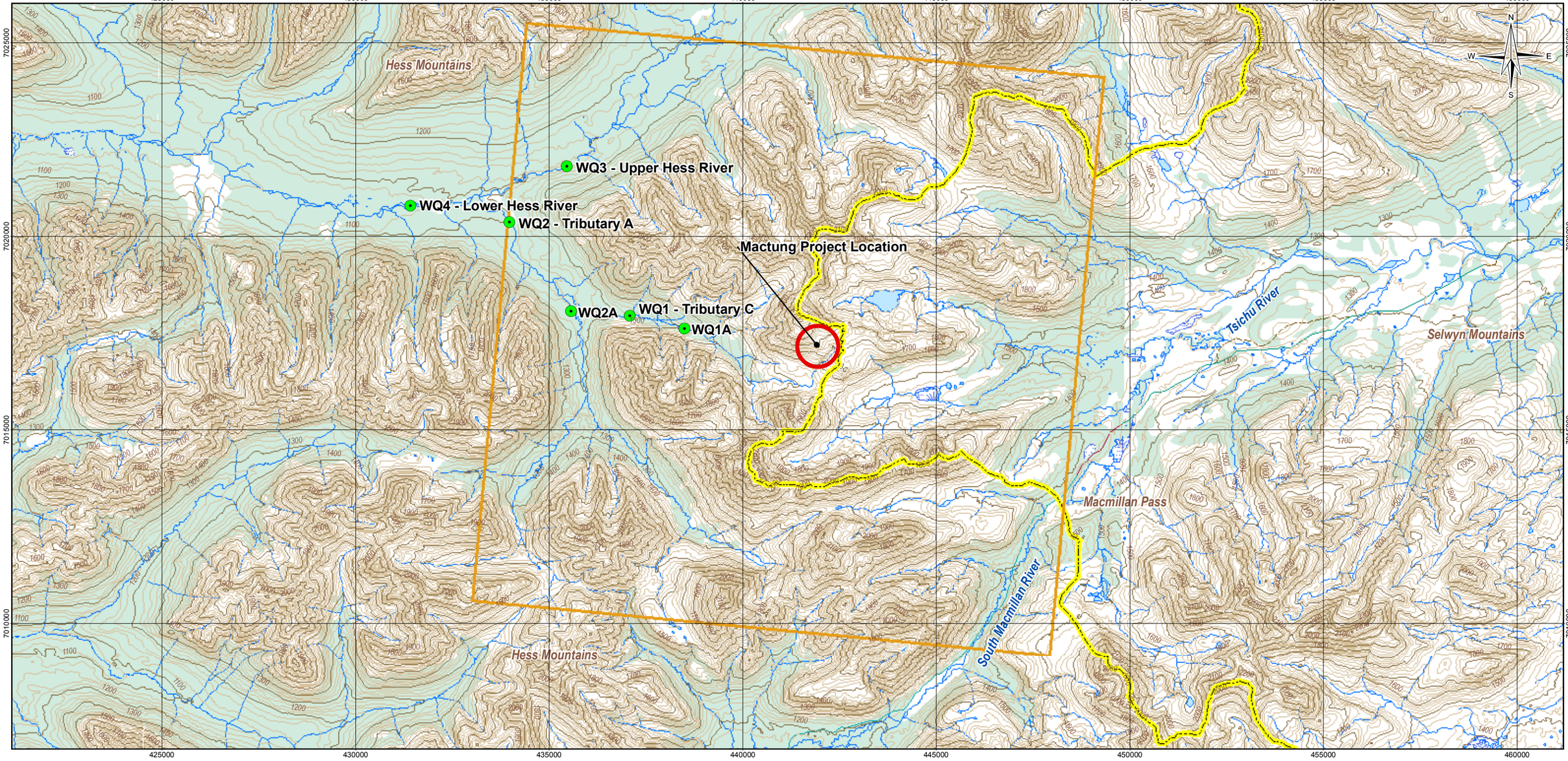
## 10.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA's instruments of professional service), the Client agrees that only the signed and sealed hard copy versions shall be considered final and legally binding. The hard copy versions submitted by EBA shall be the original documents for record and working purposes, and, in the event of a dispute or discrepancies, the hard copy versions shall govern over the electronic versions. Furthermore, the Client agrees and waives all future right of dispute that the original hard copy signed version archived by EBA shall be deemed to be the overall original for the Project.

The Client agrees that both electronic file and hard copy versions of EBA's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. The Client warrants that EBA's instruments of professional service will be used only and exactly as submitted by EBA.

The Client recognizes and agrees that electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

# FIGURES




**LEGEND**

- Sampling Locations
- Local Study Area
- Territorial Boundary
- Mactung Project Location
- Index Contours
- Trail
- Road
- Watercourse
- Waterbody
- Wetland
- Vegetation

**NOTES**

Base data source: 1:50,000 NTS

ISSUED FOR USE

# MACTUNG PROJECT
# 2008 ENVIRONMENTAL BASELINE STUDIES
# WATER QUALITY SAMPLING PROGRAM

## Water Quality Sampling Locations

| PROJECTION | DATUM |
|---|---|
| UTM Zone 9 | NAD83 |

Scale: 1:100,000

1 0.5 0 1 2

Kilometers

EBA Engineering Consultants Ltd.

FILE NO.: W23101021-005_Water_Quality_Map002.mxd

| PROJECT NO. | DWN | CKD | REV |
|---|---|---|---|
| W23101021.005 | BGP | CG | 2 |

| OFFICE | DATE |
|---|---|
| EBA-VANC | June 13, 2008 |

**Figure 1**

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# TABLES

TABLE 1: MACTUNG PROJECT - ENVIRONMENTAL BASELINE STUDIES WATER QUALITY SAMPLING PROGRAM

| Sample Identification | | | | WQ-1 | WQ-1A | WQ-2 | WQ-2A | WQ-3 | WQ-4 |
|---|---|---|---|---|---|---|---|---|---|
| Date Sampled | | | | 09-MAY-08 | 09-MAY-08 | 09-MAY-08 | 09-MAY-08 | 09-MAY-08 | 09-MAY-08 |
| Time Sampled | | | | 12:35 | 11:30 | 11:05 | 13:25 | 10:50 | 10:20 |
| **Physical Tests** | **Units** | **Detection Limits** | **CCME Guidelines** | **Results of Analysis** | | | | | |
| Hardness (as CaCO3) | mg/L | 0.7 | | 178 | 308 | 128 | 123 | 70.5 | 76.9 |
| Conductivity | uS/cm | 2 | | 395 | 606 | 302 | 275 | 150 | 165 |
| pH | pH | 0.01 | 6.5-9 | 7.86 | 7.87 | 7.37 | **6.11** | 7.32 | 7.36 |
| Total Dissolved Solids | mg/L | 10 | | 251 | 435 | 185 | 177 | 104 | 113 |
| Total Suspended Solids | mg/L | 3 | | <3.0 | 8.9 | 23.9 | 20.4 | 6.4 | 29.9 |
| Turbidity | NTU | 0.1 | | 0.14 | 0.1 | 15 | 16.9 | 2.31 | 7.92 |
| **Anions and Nutrients** | | | | | | | | | |
| Ammonia as N | mg/L | 0.005 | | <0.0050 | 0.0052 | <0.0050 | <0.0050 | 0.0105 | 0.0085 |
| Alkalinity, Total (as CaCO3) | mg/L | 2 | | 64.2 | 73.7 | 19.2 | 2.9 | 27.5 | 24 |
| Chloride (Cl) | mg/L | 0.5 | | 1.08 | <0.50 | <0.50 | <0.50 | <0.50 | <0.50 |
| Fluoride (F) | mg/L | 0.02 | | 0.433 | 0.207 | 0.19 | 0.152 | 0.081 | 0.178 |
| Sulfate (SO4) | mg/L | 0.5 | | 121 | 228 | 113 | 114 | 39.4 | 48.7 |
| Nitrate (as N) | mg/L | 0.005 | | 0.0218 | 0.0658 | 0.0555 | 0.056 | 0.0087 | 0.0135 |
| Nitrite (as N) | mg/L | 0.001 | | <0.0010 | <0.0010 | 0.0039 | <0.0010 | <0.0010 | <0.0010 |
| Total Phosphate as P | mg/L | 0.002 | | 0.0091 | 0.0034 | 0.029 | 0.0246 | 0.026 | 0.029 |
| **Cyanides** | | | | | | | | | |
| Cyanide, Total | mg/L | 0.005 | | <0.0050 | <0.0050 | 0.0077 | <0.0050 | 0.011 | 0.0144 |
| **Total Metals** | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.005 | 0.005-0.1 | **0.0187** | **0.014** | **4.06** | **3.5** | **0.232** | **1.01** |
| Antimony (Sb) | mg/L | 0.0005 | | <0.00050 | <0.0010 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Arsenic (As) | mg/L | 0.0005 | 0.005 | 0.00061 | <0.0010 | 0.0006 | <0.00050 | 0.00068 | 0.00058 |
| Barium (Ba) | mg/L | 0.02 | | 0.065 | 0.042 | 0.051 | 0.055 | 0.037 | 0.042 |
| Beryllium (Be) | mg/L | 0.001 | | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Boron (B) | mg/L | 0.1 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Cadmium (Cd) | mg/L | 0.000017 | 0.000017 | **0.000735** | **0.00109** | **0.005** | **0.0055** | **0.000084** | **0.000824** |
| Calcium (Ca) | mg/L | 0.1 | | 64.7 | 109 | 35.9 | 30.6 | 15.8 | 18.2 |
| Chromium (Cr) | mg/L | 0.001 | | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Cobalt (Co) | mg/L | 0.0003 | | <0.00030 | <0.00060 | 0.00976 | 0.0109 | 0.0008 | 0.00201 |
| Copper (Cu) | mg/L | 0.001 | 0.002-0.004 | 0.0014 | <0.0020 | **0.0164** | **0.0079** | **0.0022** | **0.0052** |
| Iron (Fe) | mg/L | 0.03 | 0.3 | 0.097 | 0.062 | **1.23** | **1.54** | **0.608** | **0.654** |
| Lead (Pb) | mg/L | 0.0005 | 0.001-0.007 | <0.00050 | <0.0010 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Lithium (Li) | mg/L | 0.005 | | <0.0050 | <0.010 | 0.0084 | 0.0076 | <0.0050 | <0.0050 |
| Magnesium (Mg) | mg/L | 0.1 | | 4.51 | 9 | 9.11 | 11 | 6.88 | 6.95 |
| Manganese (Mn) | mg/L | 0.0003 | | 0.00184 | 0.00116 | 0.153 | 0.132 | 0.0514 | 0.0553 |
| Mercury (Hg) | mg/L | 0.00002 | 0.000026 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Molybdenum (Mo) | mg/L | 0.001 | 0.073 | 0.0036 | 0.0055 | 0.0013 | <0.0010 | <0.0010 | <0.0010 |
| Nickel (Ni) | mg/L | 0.001 | 0.025-0.15 | 0.0074 | 0.0106 | 0.107 | **0.132** | 0.0055 | 0.0206 |
| Potassium (K) | mg/L | 2 | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| Selenium (Se) | mg/L | 0.001 | 0.001 | **0.0031** | **0.0037** | **0.0026** | **0.0025** | <0.0010 | <0.0010 |
| Silver (Ag) | mg/L | 0.00002 | 0.0001 | <0.000020 | <0.000040 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Sodium (Na) | mg/L | 2 | | 7.2 | 2.3 | <2.0 | <2.0 | <2.0 | <2.0 |
| Thallium (Tl) | mg/L | 0.0002 | 0.0008 | <0.00020 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Tin (Sn) | mg/L | 0.0005 | | <0.00050 | <0.0010 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Titanium (Ti) | mg/L | 0.01 | | <0.010 | <0.010 | <0.010 | <0.010 | 0.011 | <0.010 |
| Uranium (U) | mg/L | 0.0002 | | 0.0043 | 0.0193 | 0.00168 | 0.00082 | 0.00053 | 0.00079 |
| Vanadium (V) | mg/L | 0.001 | | <0.0010 | <0.0020 | 0.0012 | 0.0011 | <0.0010 | <0.0010 |
| Zinc (Zn) | mg/L | 0.005 | 0.03 | 0.0254 | **0.0371** | **0.35** | **0.441** | 0.0079 | 0.0616 |
| **Dissolved Metals** | | | | | | | | | |
| Aluminum (Al) | mg/L | 0.005 | | 0.0204 | 0.01 | 0.0413 | 0.272 | 0.117 | 0.142 |
| Antimony (Sb) | mg/L | 0.0005 | | <0.00050 | <0.0010 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Arsenic (As) | mg/L | 0.0005 | | 0.00057 | <0.0010 | <0.00050 | <0.00050 | 0.0006 | <0.00050 |
| Barium (Ba) | mg/L | 0.02 | | 0.062 | 0.043 | 0.049 | 0.056 | 0.035 | 0.041 |
| Beryllium (Be) | mg/L | 0.001 | | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Boron (B) | mg/L | 0.1 | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| Cadmium (Cd) | mg/L | 0.000017 | | 0.000721 | 0.000385 | 0.00433 | 0.00538 | 0.000095 | 0.00077 |
| Calcium (Ca) | mg/L | 0.1 | | 63.7 | 108 | 36.2 | 30.8 | 16.4 | 19 |
| Chromium (Cr) | mg/L | 0.001 | | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Cobalt (Co) | mg/L | 0.0003 | | <0.00030 | <0.00060 | 0.00918 | 0.0109 | 0.00071 | 0.00178 |
| Copper (Cu) | mg/L | 0.001 | | 0.0016 | <0.0020 | 0.0041 | 0.005 | 0.0022 | 0.0042 |
| Iron (Fe) | mg/L | 0.03 | | 0.056 | 0.05 | <0.030 | 0.068 | 0.361 | 0.169 |
| Lead (Pb) | mg/L | 0.0005 | | <0.00050 | <0.0010 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Lithium (Li) | mg/L | 0.005 | | <0.0050 | <0.010 | 0.0081 | 0.0077 | <0.0050 | <0.0050 |
| Magnesium (Mg) | mg/L | 0.1 | | 4.53 | 9.19 | 9.08 | 11.2 | 7.14 | 7.18 |
| Manganese (Mn) | mg/L | 0.0003 | | 0.00228 | 0.00116 | 0.148 | 0.131 | 0.048 | 0.0508 |
| Mercury (Hg) | mg/L | 0.00002 | | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Molybdenum (Mo) | mg/L | 0.001 | | 0.0037 | 0.0055 | 0.001 | <0.0010 | <0.0010 | <0.0010 |
| Nickel (Ni) | mg/L | 0.001 | | 0.0076 | 0.0109 | 0.101 | 0.132 | 0.0053 | 0.0197 |
| Potassium (K) | mg/L | 2 | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| Selenium (Se) | mg/L | 0.001 | | 0.0032 | 0.0035 | 0.0023 | 0.0024 | <0.0010 | <0.0010 |
| Silver (Ag) | mg/L | 0.00002 | | <0.000020 | <0.000040 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| Sodium (Na) | mg/L | 2 | | 7 | 2.3 | <2.0 | <2.0 | <2.0 | <2.0 |
| Thallium (Tl) | mg/L | 0.0002 | | <0.00020 | <0.00040 | <0.00020 | <0.00020 | <0.00020 | <0.00020 |
| Tin (Sn) | mg/L | 0.0005 | | <0.00050 | <0.0010 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| Titanium (Ti) | mg/L | 0.01 | | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| Uranium (U) | mg/L | 0.0002 | | 0.00416 | 0.0184 | <0.00020 | <0.00020 | 0.00044 | 0.0003 |
| Vanadium (V) | mg/L | 0.001 | | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| Zinc (Zn) | mg/L | 0.005 | | 0.0237 | 0.0309 | 0.281 | 0.441 | 0.0099 | 0.0479 |

# PHOTOGRAPHS

Photo 1. May 9, 2008 WQ4 Looking upstream

Photo 2. May 9, 2008 WQ4 Looking downstream

Photo 3. May 9, 2008 Sampling at WQ3

Photo 4. May 9, 2008 Upstream view at WQ2

Photo 5. May 9, 2008 Upstream View of Tributary A near to WQ2

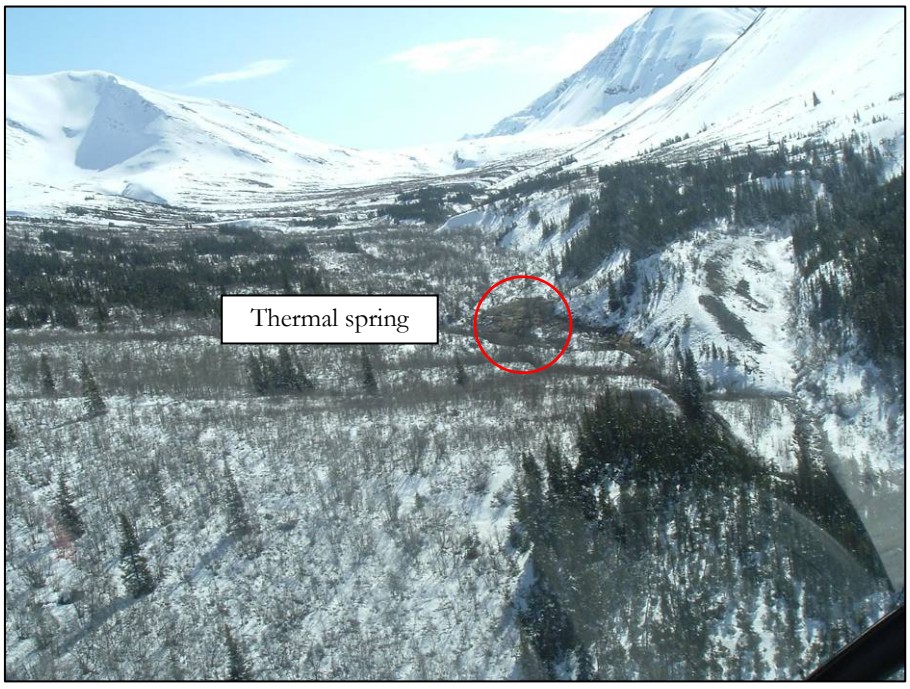


Photo 6. May 9, 2008 Upstream view to WQ1A with minesite in background

Photo 7. May 9, 2008 WQ1A sampling location looking upstream

Photo 8. May 9, 2008 Upstream view at WQ2A

Photo 9. May 9, 2008 View downstream at WQ2A

# ANALYTICAL REPORT

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

# ANALYTICAL REPORT

EBA ENGINEERING CONSULTANTS LTD.

**ATTN:** SCOTT DAVIDSON

CALCITE BUSINESS CENTRE
UNIT 6 - 151 INDUSTRIAL ROAD
WHITEHORSE YT Y1A 2V3

**Reported On:** 03-JUN-08 05:47 PM
**Revision: 3**

**Lab Work Order #:** **L629653** **Date Received:** **14-MAY-08**

**Project P.O. #:** NOT SUBMITTED
**Job Reference:** W23101021.015
**Legal Site Desc:**
**CofC Numbers:** C006544

**Other Information:**

**Comments:**

Joyce Chow
General Manager, Vancouver

**For any questions about this report please contact your Account Manager:**

**Andre Langlais**

THIS REPORT SHALL NOT BE REPRODUCED EXCEPT IN FULL WITHOUT THE WRITTEN AUTHORITY OF THE LABORATORY.
ALL SAMPLES WILL BE DISPOSED OF AFTER 30 DAYS FOLLOWING ANALYSIS. PLEASE CONTACT THE LAB IF YOU REQUIRE ADDITIONAL SAMPLE STORAGE TIME.

# ALS LABORATORY GROUP ANALYTICAL REPORT

| | Sample ID | L629653-1 | L629653-2 | L629653-3 | L629653-4 | L629653-5 |
|---|---|---|---|---|---|---|
| | Description | | | | | |
| | Sampled Date | 09-MAY-08 | 09-MAY-08 | 09-MAY-08 | 09-MAY-08 | 09-MAY-08 |
| | Sampled Time | 12:35 | 11:30 | 11:05 | 13:25 | 10:50 |
| | Client ID | WQ-1 | WQ-1A | WQ-2 | WQ-2A | WQ-3 |
| **Grouping** | **Analyte** | | | | | |
| **WATER** | | | | | | |
| **Physical Tests** | Anion Sum (meq/L) | 3.9 | 6.2 | 2.8 | 2.4 | 1.4 |
| | Cation Sum (meq/L) | 3.9 | 6.3 | 2.6 | 2.5 | 1.4 |
| | Cation - Anion Balance (%) | 0.1 | 0.1 | -3.4 | 1.3 | 2.2 |
| | Hardness (as CaCO3) (mg/L) | 178 | 308 | 128 | 123 | 70.5 |
| | Conductivity (uS/cm) | 395 | 606 | 302 | 275 | 150 |
| | pH (pH) | 7.86 | 7.87 | 7.37 | 6.11 | 7.32 |
| | Total Dissolved Solids (mg/L) | 251 | 435 | 185 | 177 | 104 |
| | Total Suspended Solids (mg/L) | <3.0 | 8.9 | 23.9 | 20.4 | 6.4 |
| | Turbidity (NTU) | 0.14 | 0.10 | 15.0 | 16.9 | 2.31 |
| **Anions and Nutrients** | Ammonia as N (mg/L) | <0.0050 | 0.0052 | <0.0050 | <0.0050 | 0.0105 |
| | Alkalinity, Total (as CaCO3) (mg/L) | 64.2 | 73.7 | 19.2 | 2.9 | 27.5 |
| | Chloride (Cl) (mg/L) | 1.08 | <0.50 | <0.50 | <0.50 | <0.50 |
| | Fluoride (F) (mg/L) | 0.433 | 0.207 | 0.190 | 0.152 | 0.081 |
| | Sulfate (SO4) (mg/L) | 121 | 228 | 113 | 114 | 39.4 |
| | Nitrate (as N) (mg/L) | 0.0218 | 0.0658 | 0.0555 | 0.0560 | 0.0087 |
| | Nitrite (as N) (mg/L) | <0.0010 | <0.0010 | 0.0039 | <0.0010 | <0.0010 |
| | Total Phosphate as P (mg/L) | 0.0091 | 0.0034 | 0.0290 | 0.0246 | 0.026 |
| **Cyanides** | Cyanide, Total (mg/L) | <0.0050 | <0.0050 | 0.0077 | <0.0050 | 0.0110 |
| **Total Metals** | Aluminum (Al)-Total (mg/L) | 0.0187 | 0.014 | 4.06 | 3.50 | 0.232 |
| | Antimony (Sb)-Total (mg/L) | <0.00050 | <0.0010 | <0.00050 | <0.00050 | <0.00050 |
| | Arsenic (As)-Total (mg/L) | 0.00061 | <0.0010 | 0.00060 | <0.00050 | 0.00068 |
| | Barium (Ba)-Total (mg/L) | 0.065 | 0.042 | 0.051 | 0.055 | 0.037 |
| | Beryllium (Be)-Total (mg/L) | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 |
| | Boron (B)-Total (mg/L) | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| | Cadmium (Cd)-Total (mg/L) | 0.000735 | 0.00109 | 0.00500 | 0.00550 | 0.000084 |
| | Calcium (Ca)-Total (mg/L) | 64.7 | 109 | 35.9 | 30.6 | 15.8 |
| | Chromium (Cr)-Total (mg/L) | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 |
| | Cobalt (Co)-Total (mg/L) | <0.00030 | <0.00060 | 0.00976 | 0.0109 | 0.00080 |
| | Copper (Cu)-Total (mg/L) | 0.0014 | <0.0020 | 0.0164 | 0.0079 | 0.0022 |
| | Iron (Fe)-Total (mg/L) | 0.097 | 0.062 | 1.23 | 1.54 | 0.608 |
| | Lead (Pb)-Total (mg/L) | <0.00050 | <0.0010 | <0.00050 | <0.00050 | <0.00050 |
| | Lithium (Li)-Total (mg/L) | <0.0050 | <0.010 | 0.0084 | 0.0076 | <0.0050 |
| | Magnesium (Mg)-Total (mg/L) | 4.51 | 9.00 | 9.11 | 11.0 | 6.88 |
| | Manganese (Mn)-Total (mg/L) | 0.00184 | 0.00116 | 0.153 | 0.132 | 0.0514 |
| | Mercury (Hg)-Total (mg/L) | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| | Molybdenum (Mo)-Total (mg/L) | 0.0036 | 0.0055 | 0.0013 | <0.0010 | <0.0010 |
| | Nickel (Ni)-Total (mg/L) | 0.0074 | 0.0106 | 0.107 | 0.132 | 0.0055 |
| | Potassium (K)-Total (mg/L) | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |

# ALS LABORATORY GROUP ANALYTICAL REPORT

| | | | | | | |
|---|---|---|---|---|---|---|
| | **Sample ID** | L629653-6 | | | | |
| | **Description** | | | | | |
| | **Sampled Date** | 09-MAY-08 | | | | |
| | **Sampled Time** | 10:20 | | | | |
| | **Client ID** | WQ-4 | | | | |
| **Grouping** | **Analyte** | | | | | |
| **WATER** | | | | | | |
| **Physical Tests** | Anion Sum (meq/L) | 1.5 | | | | |
| | Cation Sum (meq/L) | 1.6 | | | | |
| | Cation - Anion Balance (%) | 2.0 | | | | |
| | Hardness (as CaCO3) (mg/L) | 76.9 | | | | |
| | Conductivity (uS/cm) | 165 | | | | |
| | pH (pH) | 7.36 | | | | |
| | Total Dissolved Solids (mg/L) | 113 | | | | |
| | Total Suspended Solids (mg/L) | 29.9 | | | | |
| | Turbidity (NTU) | 7.92 | | | | |
| **Anions and Nutrients** | Ammonia as N (mg/L) | 0.0085 | | | | |
| | Alkalinity, Total (as CaCO3) (mg/L) | 24.0 | | | | |
| | Chloride (Cl) (mg/L) | <0.50 | | | | |
| | Fluoride (F) (mg/L) | 0.178 | | | | |
| | Sulfate (SO4) (mg/L) | 48.7 | | | | |
| | Nitrate (as N) (mg/L) | 0.0135 | | | | |
| | Nitrite (as N) (mg/L) | <0.0010 | | | | |
| | Total Phosphate as P (mg/L) | 0.029 | | | | |
| **Cyanides** | Cyanide, Total (mg/L) | 0.0144 | | | | |
| **Total Metals** | Aluminum (Al)-Total (mg/L) | 1.01 | | | | |
| | Antimony (Sb)-Total (mg/L) | <0.00050 | | | | |
| | Arsenic (As)-Total (mg/L) | 0.00058 | | | | |
| | Barium (Ba)-Total (mg/L) | 0.042 | | | | |
| | Beryllium (Be)-Total (mg/L) | <0.0010 | | | | |
| | Boron (B)-Total (mg/L) | <0.10 | | | | |
| | Cadmium (Cd)-Total (mg/L) | 0.000824 | | | | |
| | Calcium (Ca)-Total (mg/L) | 18.2 | | | | |
| | Chromium (Cr)-Total (mg/L) | <0.0010 | | | | |
| | Cobalt (Co)-Total (mg/L) | 0.00201 | | | | |
| | Copper (Cu)-Total (mg/L) | 0.0052 | | | | |
| | Iron (Fe)-Total (mg/L) | 0.654 | | | | |
| | Lead (Pb)-Total (mg/L) | <0.00050 | | | | |
| | Lithium (Li)-Total (mg/L) | <0.0050 | | | | |
| | Magnesium (Mg)-Total (mg/L) | 6.95 | | | | |
| | Manganese (Mn)-Total (mg/L) | 0.0553 | | | | |
| | Mercury (Hg)-Total (mg/L) | <0.000020 | | | | |
| | Molybdenum (Mo)-Total (mg/L) | <0.0010 | | | | |
| | Nickel (Ni)-Total (mg/L) | 0.0206 | | | | |
| | Potassium (K)-Total (mg/L) | <2.0 | | | | |

# ALS LABORATORY GROUP ANALYTICAL REPORT

| | | Sample ID | L629653-1 | L629653-2 | L629653-3 | L629653-4 | L629653-5 |
|---|---|---|---|---|---|---|---|
| | | Description | | | | | |
| | | Sampled Date | 09-MAY-08 | 09-MAY-08 | 09-MAY-08 | 09-MAY-08 | 09-MAY-08 |
| | | Sampled Time | 12:35 | 11:30 | 11:05 | 13:25 | 10:50 |
| | | Client ID | WQ-1 | WQ-1A | WQ-2 | WQ-2A | WQ-3 |
| **Grouping** | **Analyte** | | | | | | |
| **WATER** | | | | | | | |
| **Total Metals** | Selenium (Se)-Total (mg/L) | | 0.0031 | 0.0037 | 0.0026 | 0.0025 | <0.0010 |
| | Silver (Ag)-Total (mg/L) | | <0.000020 | <0.000040 | <0.000020 | <0.000020 | <0.000020 |
| | Sodium (Na)-Total (mg/L) | | 7.2 | 2.3 | <2.0 | <2.0 | <2.0 |
| | Thallium (Tl)-Total (mg/L) | | <0.00020 | <0.00040 | <0.00020 | <0.00020 | <0.00020 |
| | Tin (Sn)-Total (mg/L) | | <0.00050 | <0.0010 | <0.00050 | <0.00050 | <0.00050 |
| | Titanium (Ti)-Total (mg/L) | | <0.010 | <0.010 | <0.010 | <0.010 | 0.011 |
| | Uranium (U)-Total (mg/L) | | 0.00430 | 0.0193 | 0.00168 | 0.00082 | 0.00053 |
| | Vanadium (V)-Total (mg/L) | | <0.0010 | <0.0020 | 0.0012 | 0.0011 | <0.0010 |
| | Zinc (Zn)-Total (mg/L) | | 0.0254 | 0.0371 | 0.350 | 0.441 | 0.0079 |
| **Dissolved Metals** | Aluminum (Al)-Dissolved (mg/L) | | 0.0204 | 0.010 | 0.0413 | 0.272 | 0.117 |
| | Antimony (Sb)-Dissolved (mg/L) | | <0.00050 | <0.0010 | <0.00050 | <0.00050 | <0.00050 |
| | Arsenic (As)-Dissolved (mg/L) | | 0.00057 | <0.0010 | <0.00050 | <0.00050 | 0.00060 |
| | Barium (Ba)-Dissolved (mg/L) | | 0.062 | 0.043 | 0.049 | 0.056 | 0.035 |
| | Beryllium (Be)-Dissolved (mg/L) | | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 |
| | Boron (B)-Dissolved (mg/L) | | <0.10 | <0.10 | <0.10 | <0.10 | <0.10 |
| | Cadmium (Cd)-Dissolved (mg/L) | | 0.000721 | 0.000385 | 0.00433 | 0.00538 | 0.000095 |
| | Calcium (Ca)-Dissolved (mg/L) | | 63.7 | 108 | 36.2 | 30.8 | 16.4 |
| | Chromium (Cr)-Dissolved (mg/L) | | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 |
| | Cobalt (Co)-Dissolved (mg/L) | | <0.00030 | <0.00060 | 0.00918 | 0.0109 | 0.00071 |
| | Copper (Cu)-Dissolved (mg/L) | | 0.0016 | <0.0020 | 0.0041 | 0.0050 | 0.0022 |
| | Iron (Fe)-Dissolved (mg/L) | | 0.056 | 0.050 | <0.030 | 0.068 | 0.361 |
| | Lead (Pb)-Dissolved (mg/L) | | <0.00050 | <0.0010 | <0.00050 | <0.00050 | <0.00050 |
| | Lithium (Li)-Dissolved (mg/L) | | <0.0050 | <0.010 | 0.0081 | 0.0077 | <0.0050 |
| | Magnesium (Mg)-Dissolved (mg/L) | | 4.53 | 9.19 | 9.08 | 11.2 | 7.14 |
| | Manganese (Mn)-Dissolved (mg/L) | | 0.00228 | 0.00116 | 0.148 | 0.131 | 0.0480 |
| | Mercury (Hg)-Dissolved (mg/L) | | <0.000020 | <0.000020 | <0.000020 | <0.000020 | <0.000020 |
| | Molybdenum (Mo)-Dissolved (mg/L) | | 0.0037 | 0.0055 | 0.0010 | <0.0010 | <0.0010 |
| | Nickel (Ni)-Dissolved (mg/L) | | 0.0076 | 0.0109 | 0.101 | 0.132 | 0.0053 |
| | Potassium (K)-Dissolved (mg/L) | | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| | Selenium (Se)-Dissolved (mg/L) | | 0.0032 | 0.0035 | 0.0023 | 0.0024 | <0.0010 |
| | Silver (Ag)-Dissolved (mg/L) | | <0.000020 | <0.000040 | <0.000020 | <0.000020 | <0.000020 |
| | Sodium (Na)-Dissolved (mg/L) | | 7.0 | 2.3 | <2.0 | <2.0 | <2.0 |
| | Thallium (Tl)-Dissolved (mg/L) | | <0.00020 | <0.00040 | <0.00020 | <0.00020 | <0.00020 |
| | Tin (Sn)-Dissolved (mg/L) | | <0.00050 | <0.0010 | <0.00050 | <0.00050 | <0.00050 |
| | Titanium (Ti)-Dissolved (mg/L) | | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| | Uranium (U)-Dissolved (mg/L) | | 0.00416 | 0.0184 | <0.00020 | <0.00020 | 0.00044 |
| | Vanadium (V)-Dissolved (mg/L) | | <0.0010 | <0.0020 | <0.0010 | <0.0010 | <0.0010 |
| | Zinc (Zn)-Dissolved (mg/L) | | 0.0237 | 0.0309 | 0.281 | 0.441 | 0.0099 |

# ALS LABORATORY GROUP ANALYTICAL REPORT

| | | | | | | |
|---|---|---|---|---|---|---|
| | **Sample ID** | L629653-6 | | | | |
| | **Description** | | | | | |
| | **Sampled Date** | 09-MAY-08 | | | | |
| | **Sampled Time** | 10:20 | | | | |
| | **Client ID** | WQ-4 | | | | |
| **Grouping** | **Analyte** | | | | | |
| **WATER** | | | | | | |
| **Total Metals** | Selenium (Se)-Total (mg/L) | <0.0010 | | | | |
| | Silver (Ag)-Total (mg/L) | <0.000020 | | | | |
| | Sodium (Na)-Total (mg/L) | <2.0 | | | | |
| | Thallium (Tl)-Total (mg/L) | <0.00020 | | | | |
| | Tin (Sn)-Total (mg/L) | <0.00050 | | | | |
| | Titanium (Ti)-Total (mg/L) | <0.010 | | | | |
| | Uranium (U)-Total (mg/L) | 0.00079 | | | | |
| | Vanadium (V)-Total (mg/L) | <0.0010 | | | | |
| | Zinc (Zn)-Total (mg/L) | 0.0616 | | | | |
| **Dissolved Metals** | Aluminum (Al)-Dissolved (mg/L) | 0.142 | | | | |
| | Antimony (Sb)-Dissolved (mg/L) | <0.00050 | | | | |
| | Arsenic (As)-Dissolved (mg/L) | <0.00050 | | | | |
| | Barium (Ba)-Dissolved (mg/L) | 0.041 | | | | |
| | Beryllium (Be)-Dissolved (mg/L) | <0.0010 | | | | |
| | Boron (B)-Dissolved (mg/L) | <0.10 | | | | |
| | Cadmium (Cd)-Dissolved (mg/L) | 0.000770 | | | | |
| | Calcium (Ca)-Dissolved (mg/L) | 19.0 | | | | |
| | Chromium (Cr)-Dissolved (mg/L) | <0.0010 | | | | |
| | Cobalt (Co)-Dissolved (mg/L) | 0.00178 | | | | |
| | Copper (Cu)-Dissolved (mg/L) | 0.0042 | | | | |
| | Iron (Fe)-Dissolved (mg/L) | 0.169 | | | | |
| | Lead (Pb)-Dissolved (mg/L) | <0.00050 | | | | |
| | Lithium (Li)-Dissolved (mg/L) | <0.0050 | | | | |
| | Magnesium (Mg)-Dissolved (mg/L) | 7.18 | | | | |
| | Manganese (Mn)-Dissolved (mg/L) | 0.0508 | | | | |
| | Mercury (Hg)-Dissolved (mg/L) | <0.000020 | | | | |
| | Molybdenum (Mo)-Dissolved (mg/L) | <0.0010 | | | | |
| | Nickel (Ni)-Dissolved (mg/L) | 0.0197 | | | | |
| | Potassium (K)-Dissolved (mg/L) | <2.0 | | | | |
| | Selenium (Se)-Dissolved (mg/L) | <0.0010 | | | | |
| | Silver (Ag)-Dissolved (mg/L) | <0.000020 | | | | |
| | Sodium (Na)-Dissolved (mg/L) | <2.0 | | | | |
| | Thallium (Tl)-Dissolved (mg/L) | <0.00020 | | | | |
| | Tin (Sn)-Dissolved (mg/L) | <0.00050 | | | | |
| | Titanium (Ti)-Dissolved (mg/L) | <0.010 | | | | |
| | Uranium (U)-Dissolved (mg/L) | 0.00030 | | | | |
| | Vanadium (V)-Dissolved (mg/L) | <0.0010 | | | | |
| | Zinc (Zn)-Dissolved (mg/L) | 0.0479 | | | | |

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Analytical Method Reference(Based On) |
|---|---|---|---|
| **ALK-COL-VA** | Water | Alkalinity by Colourimetric (Automated) | APHA 310.2 |

This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method.

| | | | |
|---|---|---|---|
| **ANIONS-CL-IC-VA** | Water | Chloride by Ion Chromatography | APHA 4110 "Determination of Anions by IC |

This analysis is carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Anions routinely determined by this method include: bromide, chloride, fluoride, nitrate, nitrite and sulphate.

| | | | |
|---|---|---|---|
| **ANIONS-F-IC-VA** | Water | Fluoride by Ion Chromatography | APHA 4110 "Determination of Anions by IC |

This analysis is carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Anions routinely determined by this method include: bromide, chloride, fluoride, nitrate, nitrite and sulphate.

| | | | |
|---|---|---|---|
| **ANIONS-NO2-IC-VA** | Water | Nitrite by Ion Chromatography | APHA 4110 "Determination of Anions by IC |

This analysis is carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Anions routinely determined by this method include: bromide, chloride, fluoride, nitrate, nitrite and sulphate.

| | | | |
|---|---|---|---|
| **ANIONS-NO3-IC-VA** | Water | Nitrate by Ion Chromatography | APHA 4110 "Determination of Anions by IC |

This analysis is carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Anions routinely determined by this method include: bromide, chloride, fluoride, nitrate, nitrite and sulphate.

| | | | |
|---|---|---|---|
| **ANIONS-SO4-IC-VA** | Water | Sulfate by Ion Chromatography | APHA 4110 "Determination of Anions by IC |

This analysis is carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Anions routinely determined by this method include: bromide, chloride, fluoride, nitrate, nitrite and sulphate.

| | | | |
|---|---|---|---|
| **CN-T-MID-HH-COL-VA** | Water | Total Cyanide by HH Distillation | APHA 4500-CN "Cyanide" |

This analysis is carried out using procedures adapted from APHA Method 4500-CN "Cyanide". Total or strong acid dissociable (SAD) cyanide are determined by sample distillation and analysis using the chloramine-T 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.

| | | | |
|---|---|---|---|
| **HARDNESS-CALC-VA** | Water | Hardness | APHA 2340B |

Hardness is calculated from Calcium and Magnesium concentrations, and is expressed as calcium carbonate equivalents.

| | | | |
|---|---|---|---|
| **HG-DIS-CCME-CVAFS-VA** | Water | Diss. Mercury in Water by CVAFS (CCME) | EPA 3005A/245.7 |

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by filtration (EPA Method 3005A) and involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

| | | | |
|---|---|---|---|
| **HG-TOT-CCME-CVAFS-VA** | Water | Total Mercury in Water by CVAFS (CCME) | EPA 245.7 |

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves a cold-oxidation of the acidified sample using bromine monochloride prior to reduction of the sample with stannous chloride. Instrumental analysis is by cold vapour atomic fluorescence spectrophotometry (EPA Method 245.7).

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Analytical Method Reference(Based On) |
|---|---|---|---|
| **IONBALANCE-VA** | Water | Ion Balance Calculation | APHA 1030E |

Cation Sum, Anion Sum, and Ion Balance (as % difference) are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Because all aqueous solutions are electrically neutral, the calculated ion balance (% difference of cations minus anions) should be near-zero.

Cation and Anion Sums are the total meq/L concentration of major cations and anions. Dissolved species are used where available. Minor ions are included where data is present. Ion Balance is calculated as:

Ion Balance (%) = [Cation Sum-Anion Sum] / [Cation Sum+Anion Sum]

| | | | |
|---|---|---|---|
| **MET-DIS-CCME-ICP-VA** | Water | Diss. Metals in Water by ICPOES (CCME) | EPA SW-846 3005A/6010B |

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

| | | | |
|---|---|---|---|
| **MET-DIS-CCME-MS-VA** | Water | Diss. Metals in Water by ICPMS (CCME) | EPA SW-846 3005A/6020A |

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

| | | | |
|---|---|---|---|
| **MET-TOT-CCME-ICP-VA** | Water | Total Metals in Water by ICPOES (CCME) | EPA SW-846 3005A/6010B |

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

| | | | |
|---|---|---|---|
| **MET-TOT-CCME-MS-VA** | Water | Total Metals in Water by ICPMS (CCME) | EPA SW-846 3005A/6020A |

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

| | | | |
|---|---|---|---|
| **NH3-COL-VA** | Water | Ammonia by Color | APHA 4500-NH3 "Nitrogen (Ammonia)" |

This analysis is carried out, on unpreserved samples, using procedures adapted from APHA Method 4500-NH3 "Nitrogen (Ammonia)". Ammonia is determined using the phenate colourimetric method.

| | | | |
|---|---|---|---|
| **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

| | | | |
|---|---|---|---|
| **PO4-T-COL-VA** | Water | Total Phosphate P by Color | APHA 4500-P "Phosphorous" |

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". All forms of phosphate are determined by the ascorbic acid colourimetric method. Dissolved ortho-phosphate (dissolved reactive phosphorous) is determined by direct measurement. Total phosphate (total phosphorous) is determined after persulphate digestion of a sample. Total dissolved phosphate (total dissolved phosphorous) is determined by filtering a sample through a 0.45 micron membrane filter followed by persulfate digestion of the filtrate.

| | | | |
|---|---|---|---|
| **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.

# Reference Information

**Methods Listed (if applicable):**

| ALS Test Code | Matrix | Test Description | Analytical Method Reference(Based On) |
|---|---|---|---|
| **TSS-VA** | Water | Solids by Gravimetric | APHA 2540 D - GRAVIMETRIC |

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.

| | | | |
|---|---|---|---|
| **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.

** Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.
*The last two letters of the above ALS Test Code column indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*

| Laboratory Definition Code | Laboratory Location | Laboratory Definition Code | Laboratory Location |
|---|---|---|---|
| VA | ALS LABORATORY GROUP - VANCOUVER, BC, CANADA | | |

*GLOSSARY OF REPORT TERMS*
*Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in enviromental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.*
*The reported surrogate recovery value provides a measure of method efficiency.*
*mg/kg (units) - unit of concentration based on mass, parts per million*
*mg/L (units) - unit of concentration based on volume, parts per million*
*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.*
*Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.*

*ALS Laboratory Group has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, ALS Laboratory Group assumes no liability for the use or interpretation of the results.*

**ALS Laboratory Group**
ANALYTICAL CHEMISTRY & TESTING SERVICES

**Environmental Division**

# CHAIN OF CUSTODY / ANALYTICAL REQUEST FORM

CANADA TOLL FREE 1-800-668-9878

www.alsenviro.com

COC # C006544

Page 1 of 1

| REPORT TO: | REPORT FORMAT / DISTRIBUTION | SERVICE REQUESTED |
|---|---|---|
| COMPANY: EBA Engineering | STANDARD ✓ OTHER | X REGULAR SERVICE (DEFAULT) |
| CONTACT: Scott Davidson | PDF ✓ EXCEL ✓ CUSTOM FAX | RUSH SERVICE (2-3 DAYS) |
| ADDRESS: Unit 6 151 Industrial Rd Whitehorse, YT Y1A 2V3 | EMAIL 1: sdavidson@eba.ca | PRIORITY SERVICE (1 DAY or ASAP) |
| PHONE: 867 668 3068 FAX: 867 668 4349 | EMAIL 2: WStogran@natungsten.com | EMERGENCY SERVICE (<1 DAY / WEEKEND) - CONTACT ALS |

| INVOICE TO: SAME AS REPORT ? YES / NO | INDICATE BOTTLES: FILTERED / PRESERVED (F/P) → → → |
|---|---|
| COMPANY: North American Tungsten | CLIENT / PROJECT INFORMATION: |
| CONTACT: Wade Stogran / Dave Tenney | JOB #: W2310102.1 . 015 |
| ADDRESS: #1640, 1188 West Georgia Vancouver BC V6E 4A2 | PO /AFE: |
| PHONE: 604-684-5300 FAX: | Legal Site Description: |
| | QUOTE #: |
| Lab Work Order # (lab use only): L629653 | SAMPLER (Initials): DSM/SCD |

ANALYSIS REQUEST

| Sample # | SAMPLE IDENTIFICATION (This description will appear on the report) | DATE | TIME | SAMPLE TYPE | Total Metals (F) | Dissolved Metals (F) | Routine (General Parameters) (P) | Cyanide (P) | HAZARDOUS ? | HIGHLY CONTAMINATED ? | NUMBER OF CONTAINERS |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | WQ-1 | May 9/2008 | 12:35 | Water | | | | | N | N | 4 |
| | WQ-1A | | 11:30 | | | | | | N | N | 4 |
| | WQ-2 | | 11:05 | | | | | | N | N | 4 |
| | WQ-2A | | 13:25 | | | | | | N | N | 4 |
| | WQ-3 | | 10:50 | | | | | | N | N | 4 |
| | WQ-4 | | 10:20 | | | | | | N | N | 4 |

| GUIDELINES / REGULATIONS | SPECIAL INSTRUCTIONS / HAZARDOUS DETAILS |
|---|---|
| | Anions + Nutrients for Routine if questions please contact. |

**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 specified on the reverse page of the white report copy.**

| RELINQUISHED BY: | DATE & TIME: | RECEIVED BY: | DATE & TIME: |
|---|---|---|---|
| RELINQUISHED BY: | DATE & TIME: | RECEIVED BY: | DATE & TIME: |
| | | Gunn | May 14/08 13:45 |

| SAMPLE CONDITION (lab use only) | |
|---|---|
| TEMPERATURE: 6°C | SAMPLES RECEIVED IN GOOD CONDITION (YES) NO (If no provide details) |

REFER TO BACK PAGE FOR REGIONAL LOCATIONS AND SAMPLING INFORMATION

WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY

GENF14.00