

May 16, 2013

EDI Job Number: 13-Y-0167

Assessment and Abandoned Mines Branch (AAM) K-149  
Department of Energy, Mines and Resources, Yukon Government  
Room 2C Royal Center, 4114-4<sup>th</sup> Avenue  
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Attention: Adrienne Turcotte, Mount Nansen Project Officer

**Re: Mount Nansen Surface Water Quality Field Memo: May 6-8, 2013**

|                         |   |
|-------------------------|---|
| <b>Trip Dates:</b>      | May 6-8, 2013   |
| <b>EDI Field Staff:</b> | Joel MacFabe, Meghan Marjanovic, Caleb Light, and Danny Skookum |
| <b>Tasks:</b>           | Hydrology, Water Quality and Snow                               |

## **Field Summary**

EDI conducted surface water quality sampling, hydrometric monitoring, and snow surveys at the Mount Nansen site from May 6, 2013 to May 8, 2013. This trip represented the final snow survey of the 2012/2013 season. EDI visited all water quality sites and hydrometric stations and collected samples and conducted measurements wherever conditions allowed.

The May 6-8, 2013 trip marked a transition from winter conditions to spring conditions, as temperatures remained above zero through the day and flow at many sites increased from the previous trip (April 15-17, 2013), as the ice and snow began to melt. Temperatures on site ranged from -5 °C to +5 °C during the May 6-8 trip. The snowpack has also decreased from the previous trip, with snow depth at the Mount Nansen Meteorological Station reading 37.09 cm on May 7, 2013 compared to 63.08 cm on April 16, 2013.

Additional details on station- and site-specific conditions for each program are provided in the sections below for Hydrology (Section 1), Water Quality (Section 2) and Snow (Section 3). Note the Water Quality Section includes an appendix of water quality parameters that exceeded guidelines and/or the Mount Nansen Effluent Quality Standards from the previous sampling trip (April 15-17, 2013) as well as



the ALS lab and Yukon Government (YG) Environmental Health Services analysis reports. Relevant photos are provided in Section 4. Additional comments, any noteworthy observations, and any changes to budget or scope are included in Section 5.

## 1. Hydrology

The Victoria Creek stations were undergoing various stages of melt. The H-VC-U station was relatively open to the stream bottom, the H-VC-DBC station was still mostly ice covered with flow beneath the ice, and the H-VC-REF station had multiple layers of ice with flow above and below the ice surface with back flooding into the riparian vegetation (Photos 1-3).

Site conditions on Dome Creek were similar to the April 2013 trip, with some additional melt occurring, but still significant ice remaining in much of the valley. Of note, there was some flow over the Mount Nansen Road into H-DC-R, with small channels of water flowing over the ice surface (Photo 4). However, a large portion of the flow was still flowing beneath the ice surface and a discharge measurement could not accurately be captured. The upper Dome Creek stations (H-DC-U1, H-DC-U2 and H-DC-D1b) remained glaciated with water seeping through multiple layers of ice, not suitable for discharge measurements. Conditions at H-DC-DX+105 remained similar to over the winter, and the H-DC-DX station remained frozen to substrate.

The Pony Creek watershed was no longer frozen to substrate, with some water flowing through ice and snow. These conditions were not suitable for a salt tracer, but efforts were made to capture volumetric measurements. A volumetric measurement was captured at the H-PC-DSP culvert (Photo 5); however at the H-PC-U station, water was seeping around the weir and could not be captured in a volumetric measurement (Photo 6).

Back Creek and Minnesota Creek both had water flowing, but at H-BC water was flowing above and below multiple layers of ice and slush (Photo 7), and H-MN was still glaciated with water flowing over the ice surface in multiple braided channels (Photo 8). Discharge could not be accurately measured at these locations.

No winter loggers were downloaded on this trip, in order to minimize data management requirements with the weekly trips scheduled in May. Loggers will be downloaded at the end of May 2013. The following table summarizes the conditions and measurements conducted at each station.



|                                     |   |
|-------------------------------------|---|
| <b>Hydrology program dates:</b>     | May 6-8, 2013   |
| <b>Weather at time of sampling:</b> | Ranging from clear to overcast and mostly calm; -1°C to +4°C. |

| Site        | Measurement?<br>(Yes/No) | Notes / Explanations   |
|-------------|--------------------------|--|
| ATM-DC2/4   | No                       | Loggers were left to be downloaded on a subsequent trip.   |
| H-PC-U      | No                       | Stream is flowing through snow and ice. Water also seeping around weir (Photo 6). Conditions not suitable for discharge measurement, volumetric or salt tracer.  |
| H-PC-DSP    | Yes                      | Stream is flowing through ice in culvert. The channel downstream of the culvert is flowing through snow and ice, and not suitable for a salt tracer, but volumetric discharge measurements were collected from the culvert outlet (Photo 5).   |
| H-DC-DX     | No                       | Channel remains frozen to bed.   |
| H-DC-DX+105 | Yes                      | Channel remains snow and ice covered. Flow was very slow and salt tracer was conducted to provide an estimate of flow.   |
| H-DC-D1b    | No                       | Channel frozen to bed, small amount of flow between multiple layers of ice. Dome Creek Valley at this location is still glaciated, with ice approximately 1 m thick.   |
| H-DC-U1     | No                       | Channel frozen to bed, small amount of flow between multiple layers of ice. Dome Creek Valley at this location is still glaciated, with ice approximately 1 m thick (Photo 9).   |
| H-DC-U2     | No                       | Channel frozen to bed, small amount of flow between multiple layers of ice. Dome Creek Valley at this location is still glaciated, with ice approximately 1 m thick (Photo 9).   |
| H-DC-B      | Yes                      | Water was flowing fast through the excavated ice trench. Salt tracer was conducted.  |
| H-DC-M      | No                       | Stream was flowing over and under ice in multiple channels. Conditions were not suitable for a discharge measurement (i.e. salt tracer).   |
| H-DC-R      | No                       | Water was flowing across the Mount Nansen Road and then over and under ice (Photo 4). Conditions were not suitable for a discharge measurement (i.e. salt tracer). Still significant overflow ice covering channel downstream of road, approximately 1 m thick.                      |
| H-VC-REF    | No                       | The creek was flowing over and under ice with back flooding into the riparian vegetation. Conditions were not suitable for salt tracer, and conditions were prohibitive for ADV measurement as well, with ice thicknesses of 40 cm and water depth not safe for wading. See Photo 3. |
| H-VC-U      | Yes                      | Channel was open to substrate, with ice only on margins. Conducted salt tracer and ADV measurements. Surveyed station and water level. See Photo 1.  |
| H-VC-DBC    | Yes                      | Channel was still mostly ice covered, with some open water leads up and downstream of stilling well. Conducted salt tracer and ADV   |



| Site     | Measurement?<br>(Yes/No) | Notes / Explanations   |
|----------|--------------------------|--|
|          |                          | measurements and surveyed station and water level. See Photo 2.  |
| H-BC     | No                       | Stream was flowing under and over ice (Photo 7). Conditions were not suitable for discharge measurements (i.e. salt tracer).   |
| H-VC-UMN | Yes                      | Large open-water lead upstream of station, mostly ice free to the substrate, except for along stream edges. Downstream of station water was flowing beneath 20 cm of ice as well as over the ice through a layer of slush. Conditions were only suitable for an ADV measurement in the open water and no salt tracer measurement was collected due to overall ice conditions within the measurement reach. |
| H-MN     | No                       | Creek valley still glaciated with approximately 1 m of ice at station. Water was flowing over ice in multiple braided channels, through ice and slush (Photo 8). Conditions were not suitable for discharge measurements (i.e. salt tracer).   |
| H-VC-R   | Yes                      | Open water leads downstream of station, with ice cover remaining upstream of the station. Conducted salt tracer and ADV measurements, and surveyed station and water level.  |
| H-SEEP   | Yes                      | Measured discharge at pipe and recorded flow rate reading at flow meter, no staff gauge reading during ice conditions.   |
| H-TP     | No                       | No staff gauge reading during ice conditions.  |

## 2. Water Quality

Early spring conditions made for open and flowing water at many sites. As mentioned above in the Section 1: Hydrology, Victoria Creek was at various stages of melt (Photos 1-3). Samples were collected at all Victoria Creek sites. Note the WQ-VC-R site continued to be sampled at the winter sampling location, 100 m downstream of the station, as thick overflow ice remained upstream of the culvert.

Dome Creek samples were collected from WQ-DC-M and WQ-DC-DX+105. The WQ-DC-R location had some water flowing over the road and downstream of the road crossing, but thick ice remained at the water sampling location (Photo 4). The upper Dome Creek sites (WQ-DC-U1, WQ-DC-U2, WQ-DC-D1b) remain glaciated with water flowing between multiple layers of ice, which was not suitable for sampling (Photo 9). The WQ-DC-DX site remained frozen to substrate.

Water quality samples were collected from the Pony Creek WQ-PC-U site, at the regular sampling location where the stream was open and flowing into the pond at the culvert inlet (Photo 10). The WQ-PC-D site was not sampled as water was flowing through snow and ice, and there was insufficient flow beneath the snow to collect a sample (Photo 11).

Back Creek and Minnesota Creek had flow but water was flowing through ice and slush and was not suitable for sampling (Photos 7-8).



The WQ-SEEP was sampled and the tailings pond was sampled through the ice. The Brown-McDade pit lake was not sampled during this trip, as only one sampling event is required for May 2013, which has been scheduled for later this month when the lake is anticipated to be ice free. On May 8, 2013, the pit appeared to have melt water on the surface and the ice had collapsed towards the middle of the lake (Photo 12). Rockfall was also evident on the ice surface.

All the mill seeps (WQ-MS-S-03 and WQ-MS-S-08) were either frozen to substrate or had insufficient flow beneath the ice and snow to collect an accurate sample. The WQ-ADIT-SEEP was also frozen to substrate. A bacteriological sample was collected from the pump house well (WQ-PW).

The following table summarizes the site conditions and samples collected at each station. Water quality guideline exceedances from the April 2013 trip are provided in Appendix A. Copies of the ALS Certificate of Analysis and copies of the YG Environmental Health Services results are attached in Appendix B and C, respectively.

|                                     |   |
|-------------------------------------|---|
| <b>WQ Sampling dates:</b>           | May 7-8, 2013   |
| <b>Weather at time of sampling:</b> | Ranging from clear to overcast with periods of light snow; calm; -1 °C to 4 °C. |

| Site         | Sampled? (Yes/No) | Notes / Explanations  |
|--------------|-------------------|---|
| WQ-PIT1      | No                | Sampling not required on this trip. (Photo 12)  |
| WQ-PIT2      | No                | Sampling not required on this trip. (Photo 12)  |
| WQ-PIT3      | No                | Sampling not required on this trip. (Photo 12)  |
| WQ-SEEP      | Yes               | Site conditions normal for time of year.  |
| WQ-TP        | Yes               | Ice remains over pond, sample collected from beneath ice surface.   |
| WQ-D1b       | No                | Channel remains glaciated, water seeping through multiple layers of ice, not suitable for sampling.           |
| WQ-DC-DX     | No                | Frozen to substrate.  |
| WQ-DC-DX+105 | Yes               | Ice and snow remain over most of channel. Sample collected from open water area.                              |
| WQ-DC-U      | Yes               | Ice and snow remain over most of channel. Sample collected from suitable open water location.                 |
| WQ-DC-U1     | No                | Channel remains glaciated (Photo 9). Water seeping through multiple layers of ice, not suitable for sampling. |
| WQ-DC-U2     | No                | Channel remains glaciated. Water seeping through multiple layers of ice, not suitable for sampling (Photo 9). |
| WQ-DC-R      | No                | Channel remains glaciated upstream of road crossing.  |
| WQ-PW        | Yes               | Bacteriological sample collected from pipe.   |
| WQ-VC-U      | Yes               | Channel mostly open to substrate, with ice remaining along  |



| Site   | Sampled? (Yes/No) | Notes / Explanations  |
|--|-------------------|---|
|  |                   | stream margins.   |
| WQ-VC-REF  | Yes               | Water flowing over and under ice and causing back flooding. Sample collected from suitable location (Photo 3).  |
| WQ-VC-R  | Yes               | Samples were collected 100 m downstream of the road crossing, at the winter sampling location where channel is now open. Overflow ice remains upstream of the culvert.                                      |
| WQ-VC-DBC  | Yes               | Open-water lead at sampling location, but thin ice and snow remain up and downstream.   |
| WQ-VC-UMN  | Yes               | Open water at sampling location. Ice and snow remain over most of channel.  |
| WQ-MN  | No                | Creek valley still glaciated with approximately 1 m of ice at the site. Water was flowing over ice in multiple braided channels, through ice and snow (Photo 8). Conditions were not suitable for sampling. |
| WQ-MS-03   | No                | Insufficient water beneath ice for sample.  |
| WQ-MS-08   | No                | Frozen to bed.  |
| WQ-ADIT-SEEP                                     | No                | Frozen to bed.  |
| WQ-BC  | No                | Stream was flowing under and over ice, through layers of snow (Photo 7). Conditions were not suitable for sampling.   |
| WQ-PC-U  | Yes               | Pond mostly ice covered, but a sample was collected from the open channel leading into the pond (Photo 10).   |
| WQ-PC-D  | No                | Water was flowing through snow, with insufficient water beneath snow and ice. Not suitable for sampling (Photo 11).   |
| <b>Quality Assurance/Quality Control Samples</b> |                   |   |
| Field Replicate A                                | Yes               | Collected from WQ-VC-R  |
| Field Replicate B                                | No                | Collected from WQ-DC-DX+105.  |
| Field Blank                                      | Yes               | Samples filled with de-ionized water on site  |
| Trip Blank                                       | Yes               | Samples provided by lab and were transported to and from site   |

### 3. Snow

Most snow courses still had snow sufficient for surveying. There were only two snow courses that could not be surveyed due to lack of snow; SC-SF-1 and SC-WR-1. The snow that was on site was very saturated and dense, as air temperatures have been above zero through the day and ground temperatures are also hovering around zero degrees based on thermistor data from the Mount Nansen



Meteorological Station. The data collected represents the last snow survey event of the 2012/2013 season.

|                                     |  |
|-------------------------------------|--|
| <b>Sampling dates:</b>              | May 6-7, 2013  |
| <b>Weather at time of sampling:</b> | Ranging from clear to overcast; calm; -1 °C to 4 °C. |

| Site        | Sampled? (Yes/No) | Notes / Explanations  |
|-------------|-------------------|---|
| SC-MET      | Yes               | Four snow courses surveyed.                                       |
| SC-WR       | Yes               | Two out of three snow courses were surveyed; SC-WR-1 had no snow. |
| SC-DC       | Yes               | Ten snow courses were surveyed.                                   |
| SC-NF       | Yes               | Two snow courses were surveyed.                                   |
| SC-SF       | Yes               | Only one snow course was surveyed; there was no snow at SC-SF-1.  |
| YG-Airstrip | No                | Survey not required.  |

#### 4. Trip Photos



Photo 1. H-VC-U station looking upstream, showing open water conditions.



**Photo 2. H-VC-DBC station looking upstream, showing persistent ice cover at this location.**



**Photo 3. H/WQ-VC-REF showing water flowing above and below ice.**



**Photo 4. H-DC-R station showing flow of Dome Creek over the road crossing.**



**Photo 5. H-PC-DSP culvert ice conditions.**



Photo 6. H-PC-U weir showing seepage around weir.



Photo 7. H/WQ-BC looking downstream showing water flowing above and below ice.



**Photo 8. H/WQ-MN looking downstream, showing water flowing through ice and slush.**



**Photo 9. View looking up Dome Creek valley towards H/WQ-DC-U1 and H/WQ-DC-U2, showing persistent ice conditions.**



Photo 10. WQ-PC-U site, showing open water leading into pond.



Photo 11. WQ-PC-D site showing water flowing through snow and ice.



Photo 12. WQ-PIT site showing melting ice conditions and rockfall.

## 5. Additional Trip Information/Comments

|   |  |
|---|--|
| Any changes to project scope (i.e. additional sites sampled): | N/A  |
| Any events resulting in changes to budget:                    | N/A  |
| Any alterations to sample scheduling:                         | N/A  |
| Additional Comments:  | The road crossing at Victoria Creek was eroding on the downstream side of the road (on right side, if looking downstream) as a portion of the creek was flowing across the road. |
| Wildlife Sightings:   | N/A  |
| Site concerns including safety concerns                       | N/A  |
| Any additional notes/concerns                                 | N/A  |



**Appendix A:**  
**Water Quality Parameter Guideline Exceedances – April 2013**



Table A-1. Water Quality Parameter Guideline Exceedances; April 17, 2013

| Analyte                            | Units | CCME-WATER-FAL | Mount Nansen Effluent Discharge Standards | Sample ID       | 0167-130417-001       | 0167-130417-002       | 0167-130417-003       | 0167-130417-005      | 0167-130417-006       | 0167-130417-008       | 0167-130417-009       |
|------------------------------------|-------|----------------|---|-----------------|-----------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|
|                                    |       |                |   | WQ Site ID      | WQ-MS-S-03            | WQ-DC-DX+105          | Field Blank           | WQ-VC-U              | WQ-VC-REF             | WQ-TP                 | WQ-SEEP               |
|                                    |       |                |   | Date Sampled    | 4/17/2013 11:14:00 AM | 4/17/2013 11:30:00 AM | 4/17/2013 11:41:00 AM | 4/17/2013 9:41:00 AM | 4/17/2013 10:07:00 AM | 4/17/2013 12:46:00 PM | 4/17/2013 11:55:00 AM |
|                                    |       |                |   | Detection Limit |                       |                       |                       |                      |                       |                       |                       |
| Temperature (in-situ)              | °C    | -              | -   | -               | 0.1                   | 0.3                   | -                     | 0                    | 0                     | 1.2                   | 1.1                   |
| Specific Conductivity (in-situ)    | µS/cm | -              | -   | -               | 1183                  | 1178                  | -                     | 245.2                | 251.4                 | 2204                  | 1696                  |
| pH (in-situ)                       | -     | 6.5 - 9.0      | 6.0 - 8.5                                 | -               | 6.8                   | 6.86                  | -                     | 6.76                 | 6.97                  | 7.18                  | 7.18                  |
| Turbidity (in-situ)                | NTU   | -              | -   | -               | 51.5                  | 22.9                  | -                     | 0.59                 | 0.35                  | 26.1                  | 24.8                  |
| Colour, True                       | CU    | 15             | -   | 5               | -                     | -                     | -                     | -                    | -                     | -                     | -                     |
| Conductivity                       | µS/cm | -              | -   | 2               | 1120                  | 1150                  | <2.0                  | 242                  | 250                   | 2130                  | 1620                  |
| Hardness (as CaCO3)                | mg/L  | -              | -   | 0.5             | 685                   | 716                   | <0.50                 | 128                  | 135                   | 1330                  | 906                   |
| pH (lab)                           | pH    | 6.5 - 9.0      | 6.0 - 8.5                                 | 0.1             | 7.61                  | 7.91                  | <b>5.66</b>           | 7.85                 | 7.97                  | 7.81                  | 7.44                  |
| Total Suspended Solids             | mg/L  | -              | 50  | 3               | <b>123</b>            | 10.2                  | <3.0                  | <3.0                 | <3.0                  | 6                     | 35.5                  |
| Total Dissolved Solids             | mg/L  | -              | -   | 10              | 736                   | 920                   | <10                   | 154                  | 161                   | 1930                  | 1370                  |
| Turbidity                          | NTU   | -              | -   | 0.1             | -                     | -                     | -                     | -                    | -                     | -                     | -                     |
| Alkalinity, Bicarbonate (as CaCO3) | mg/L  | -              | -   | 1               | 280                   | 269                   | 1.1                   | 114                  | 116                   | 210                   | 248                   |
| Alkalinity, Carbonate (as CaCO3)   | mg/L  | -              | -   | 1               | <1.0                  | <1.0                  | <1.0                  | <1.0                 | <1.0                  | <1.0                  | <1.0                  |
| Alkalinity, Hydroxide (as CaCO3)   | mg/L  | -              | -   | 1               | <1.0                  | <1.0                  | <1.0                  | <1.0                 | <1.0                  | <1.0                  | <1.0                  |
| Alkalinity, Total (as CaCO3)       | mg/L  | -              | -   | 1               | 280                   | 269                   | 1.1                   | 114                  | 116                   | 210                   | 248                   |
| Ammonia, Total (as N)              | mg/L  | -              | -   | 0.005           | 0.178                 | 0.0309                | <0.0050               | 0.0108               | <0.0050               | 1.66                  | 4.42                  |
| Chloride (Cl)                      | mg/L  | -              | -   | 0.5             | <5.0                  | <5.0                  | <0.50                 | <0.50                | <0.50                 | <10                   | <5.0                  |
| Fluoride (F)                       | mg/L  | 0.12           | -   | 0.02            | <0.20                 | <0.20                 | <0.020                | 0.047                | 0.047                 | <0.40                 | <0.20                 |
| Nitrate (as N)                     | mg/L  | 3              | -   | 0.005           | <0.050                | <0.050                | <0.0050               | 0.166                | 0.179                 | 0.14                  | 1.55                  |
| Nitrite (as N)                     | mg/L  | 0.06           | -   | 0.001           | <0.010                | <0.010                | <0.0010               | <0.0010              | <0.0010               | <0.020                | 0.05                  |
| Sulfate (SO4)                      | mg/L  | -              | -   | 0.5             | 399                   | 427                   | <0.50                 | 19.1                 | 19                    | 1150                  | 725                   |
| Cyanide, Weak Acid Diss            | mg/L  | -              | 0.1                                       | 0.005           | <0.0050               | <0.0050               | <0.0050               | <0.0050              | <0.0050               | <0.0050               | 0.0066                |
| Cyanide, Total                     | mg/L  | -              | 0.3                                       | 0.005           | <0.0050               | <0.0050               | <0.0050               | <0.0050              | <0.0050               | <0.0050               | 0.0586                |
| Cyanate                            | mg/L  | -              | -   | 0.2             | <0.20                 | <0.20                 | <0.20                 | <0.20                | <0.20                 | 0.72                  | <0.20                 |
| Thiocyanate (SCN)                  | mg/L  | -              | -   | 0.5             | <0.50                 | <0.50                 | <0.50                 | <0.50                | <0.50                 | <0.50                 | 3.37                  |
| Aluminum (Al)-Total                | mg/L  | 0.005          | -   | 0.003           | <b>0.375</b>          | <b>0.171</b>          | <0.0030               | <b>0.0143</b>        | <b>0.0152</b>         | <b>0.0132</b>         | <b>0.0163</b>         |
| Antimony (Sb)-Total                | mg/L  | -              | 0.15                                      | 0.0001          | 0.00645               | 0.00833               | <0.00010              | <0.00010             | <0.00010              | 0.0531                | 0.00081               |
| Arsenic (As)-Total                 | mg/L  | 0.005          | -   | 0.0001          | <b>0.523</b>          | <b>0.0537</b>         | <0.00010              | 0.00028              | 0.00028               | <b>0.394</b>          | <b>0.0477</b>         |
| Barium (Ba)-Total                  | mg/L  | -              | 1   | 0.00005         | 0.0626                | 0.0134                | <0.000050             | 0.0801               | 0.0778                | 0.0268                | 0.0557                |
| Beryllium (Be)-Total               | mg/L  | -              | -   | 0.0001          | <0.00010              | <0.00010              | <0.00010              | <0.00010             | <0.00010              | <0.00020              | <0.00010              |
| Bismuth (Bi)-Total                 | mg/L  | -              | -   | 0.0005          | <0.00050              | <0.00050              | <0.00050              | <0.00050             | <0.00050              | <0.0010               | <0.00050              |
| Boron (B)-Total                    | mg/L  | -              | -   | 0.01            | <0.010                | <0.010                | <0.010                | <0.010               | <0.010                | 0.149                 | 0.102                 |
| Cadmium (Cd)-Total                 | mg/L  | 0.00001        | 0.02                                      | 0.00001         | <b>0.00209</b>        | <b>0.00401</b>        | <0.000010             | <b>0.000025</b>      | <b>0.000015</b>       | <b>0.00474</b>        | <b>0.000664</b>       |
| Calcium (Ca)-Total                 | mg/L  | -              | -   | 0.05            | 167                   | 171                   | <0.050                | 32.1                 | 33.4                  | 385                   | 271                   |
| Chromium (Cr)-Total                | mg/L  | 0.001          | 0.04                                      | 0.0001          | 0.00062               | 0.0003                | <0.00010              | 0.00012              | 0.00013               | 0.00024               | 0.00047               |
| Cobalt (Co)-Total                  | mg/L  | -              | -   | 0.0001          | 0.00199               | 0.00068               | <0.00010              | <0.00010             | <0.00010              | 0.00297               | 0.00792               |
| Copper (Cu)-Total                  | mg/L  | 0.002          | 0.2                                       | 0.0005          | <b>0.004</b>          | 0.00098               | <0.00050              | 0.00091              | 0.00075               | <b>0.0256</b>         | <b>0.00477</b>        |
| Iron (Fe)-Total                    | mg/L  | 0.3            | 1   | 0.01            | <b>22.3</b>           | <b>0.894</b>          | <0.010                | 0.024                | 0.033                 | <b>1.95</b>           | <b>13.2</b>           |
| Lead (Pb)-Total                    | mg/L  | 0.001          | 0.1                                       | 0.00005         | <b>0.0246</b>         | 0.000547              | <0.000050             | <0.000050            | <0.000050             | <b>0.00196</b>        | 0.000145              |
| Lithium (Li)-Total                 | mg/L  | -              | -   | 0.0005          | 0.00761               | 0.00821               | <0.00050              | <0.00050             | <0.00050              | 0.0109                | 0.00069               |
| Magnesium (Mg)-Total               | mg/L  | -              | -   | 0.1             | 59.2                  | 59.7                  | <0.10                 | 11.5                 | 12.3                  | 91.1                  | 54.4                  |
| Manganese (Mn)-Total               | mg/L  | -              | 0.5                                       | 0.00005         | <b>2.24</b>           | <b>1.39</b>           | <0.000050             | 0.0808               | 0.0597                | <b>6.11</b>           | <b>6.05</b>           |
| Mercury (Hg)-Total                 | mg/L  | 0.000026       | 0.005                                     | 0.00001         | <0.000010             | <0.000010             | <0.000010             | <0.000010            | <0.000010             | <0.000010             | <0.000010             |
| Molybdenum (Mo)-Total              | mg/L  | 0.073          | -   | 0.00005         | 0.000277              | 0.000441              | <0.000050             | 0.000414             | 0.000422              | 0.00465               | 0.00114               |
| Nickel (Ni)-Total                  | mg/L  | 0.025          | 0.3                                       | 0.0005          | 0.00166               | 0.00194               | <0.00050              | <0.00050             | <0.00050              | 0.0045                | 0.00241               |
| Phosphorus (P)-Total               | mg/L  | -              | -   | 0.05            | 0.131                 | <0.050                | <0.050                | <0.050               | <0.050                | <0.050                | <0.050                |
| Potassium (K)-Total                | mg/L  | -              | -   | 0.1             | 3.54                  | 3.4                   | <0.10                 | 0.7                  | 0.7                   | 21.8                  | 6.95                  |
| Selenium (Se)-Total                | mg/L  | 0.001          | -   | 0.0001          | <0.00010              | <0.00010              | <0.00010              | <0.00010             | <0.00010              | <0.00020              | 0.00023               |
| Silicon (Si)-Total                 | mg/L  | -              | -   | 0.05            | 8.02                  | 6.33                  | <0.050                | 6.17                 | 6.29                  | 4.7                   | 7.22                  |
| Silver (Ag)-Total                  | mg/L  | 0.0001         | 0.1                                       | 0.00001         | 0.000383              | 0.000012              | <0.000010             | <0.000010            | <0.000010             | 0.000064              | 0.000035              |
| Sodium (Na)-Total                  | mg/L  | -              | -   | 0.05            | 5.69                  | 5.02                  | <0.050                | 2.83                 | 2.83                  | 35.1                  | 44.6                  |



Table A-1. Water Quality Parameter Guideline Exceedances; April 17, 2013

| Analyte                              | Units | CCME-WATER-FAL | Mount Nansen Effluent Discharge Standards | Sample ID       | 0167-130417-001       | 0167-130417-002       | 0167-130417-003       | 0167-130417-005      | 0167-130417-006       | 0167-130417-008       | 0167-130417-009       |
|--------------------------------------|-------|----------------|---|-----------------|-----------------------|-----------------------|-----------------------|----------------------|-----------------------|-----------------------|-----------------------|
|                                      |       |                |   | WQ Site ID      | WQ-MS-S-03            | WQ-DC-DX+105          | Field Blank           | WQ-VC-U              | WQ-VC-REF             | WQ-TP                 | WQ-SEEP               |
|                                      |       |                |   | Date Sampled    | 4/17/2013 11:14:00 AM | 4/17/2013 11:30:00 AM | 4/17/2013 11:41:00 AM | 4/17/2013 9:41:00 AM | 4/17/2013 10:07:00 AM | 4/17/2013 12:46:00 PM | 4/17/2013 11:55:00 AM |
|                                      |       |                |   | Detection Limit |                       |                       |                       |                      |                       |                       |                       |
| Strontium (Sr)-Total                 | mg/L  | -              | -   | 0.0002          | 0.421                 | 0.402                 | <0.00020              | 0.358                | 0.377                 | 0.951                 | 0.783                 |
| Sulfur (S)-Total                     | mg/L  | -              | -   | 0.5             | 132                   | 140                   | <0.50                 | 6.81                 | 6.87                  | 402                   | 247                   |
| Thallium (Tl)-Total                  | mg/L  | 0.0008         | -   | 0.00001         | 0.000023              | 0.000097              | <0.000010             | <0.000010            | <0.000010             | 0.000367              | 0.000011              |
| Tin (Sn)-Total                       | mg/L  | -              | -   | 0.0001          | <0.00010              | <0.00010              | <0.00010              | <0.00010             | <0.00010              | <0.00020              | <0.00010              |
| Titanium (Ti)-Total                  | mg/L  | -              | -   | 0.01            | 0.022                 | 0.011                 | <0.010                | <0.010               | <0.010                | <0.020                | <0.010                |
| Uranium (U)-Total                    | mg/L  | -              | -   | 0.00001         | 0.002                 | 0.00428               | <0.000010             | 0.000893             | 0.000945              | 0.00196               | 0.00285               |
| Vanadium (V)-Total                   | mg/L  | -              | -   | 0.001           | 0.0026                | <0.0010               | <0.0010               | <0.0010              | <0.0010               | <0.0020               | 0.0017                |
| Zinc (Zn)-Total                      | mg/L  | 0.03           | 0.3                                       | 0.003           | <b>0.226</b>          | <b>0.742</b>          | <0.0030               | <0.0030              | <0.0030               | <b>0.593</b>          | 0.0099                |
| Dissolved Metals Filtration Location |       | -              | -   | n/a             | FIELD                 | FIELD                 | FIELD                 | FIELD                | FIELD                 | FIELD                 | FIELD                 |
| Aluminum (Al)-Dissolved              | mg/L  | 0.005          | -   | 0.001           | 0.0038                | <0.0010               | <0.0010               | <b>0.0053</b>        | 0.005                 | <0.0020               | <b>0.0084</b>         |
| Antimony (Sb)-Dissolved              | mg/L  | -              | -   | 0.0001          | 0.00031               | 0.00853               | <0.00010              | <0.00010             | <0.00010              | 0.0511                | 0.00076               |
| Arsenic (As)-Dissolved               | mg/L  | 0.005          | 0.15                                      | 0.0001          | <b>0.123</b>          | <b>0.0273</b>         | <0.00010              | 0.00026              | 0.00025               | <b>0.0528</b>         | <b>0.0353</b>         |
| Barium (Ba)-Dissolved                | mg/L  | -              | -   | 0.00005         | 0.0422                | 0.012                 | <0.000050             | 0.0803               | 0.0773                | 0.026                 | 0.0545                |
| Beryllium (Be)-Dissolved             | mg/L  | -              | -   | 0.0001          | <0.00010              | <0.00010              | <0.00010              | <0.00010             | <0.00010              | <0.00020              | <0.00010              |
| Bismuth (Bi)-Dissolved               | mg/L  | -              | -   | 0.0005          | <0.00050              | <0.00050              | <0.00050              | <0.00050             | <0.00050              | <0.0010               | <0.00050              |
| Boron (B)-Dissolved                  | mg/L  | -              | -   | 0.01            | <0.010                | <0.010                | <0.010                | <0.010               | <0.010                | 0.142                 | 0.091                 |
| Cadmium (Cd)-Dissolved               | mg/L  | 0.00001        | -   | 0.00001         | <b>0.000676</b>       | <b>0.00106</b>        | <0.000010             | <b>0.000025</b>      | <b>0.000015</b>       | <b>0.00433</b>        | <b>0.000359</b>       |
| Calcium (Ca)-Dissolved               | mg/L  | -              | -   | 0.05            | 174                   | 182                   | <0.050                | 32.3                 | 33.8                  | 382                   | 271                   |
| Chromium (Cr)-Dissolved              | mg/L  | 0.001          | -   | 0.0001          | <0.00010              | <0.00010              | <0.00010              | <0.00010             | <0.00010              | <0.00020              | 0.00019               |
| Cobalt (Co)-Dissolved                | mg/L  | -              | -   | 0.0001          | 0.00173               | 0.0006                | <0.00010              | <0.00010             | <0.00010              | 0.00294               | 0.00777               |
| Copper (Cu)-Dissolved                | mg/L  | 0.002          | -   | 0.0002          | <0.00020              | 0.00024               | <0.00020              | 0.00082              | 0.00066               | <b>0.0208</b>         | 0.00174               |
| Iron (Fe)-Dissolved                  | mg/L  | 0.3            | -   | 0.01            | <b>10.4</b>           | <b>0.339</b>          | <0.010                | 0.014                | 0.014                 | 0.071                 | <b>11.4</b>           |
| Lead (Pb)-Dissolved                  | mg/L  | 0.001          | -   | 0.00005         | 0.000059              | <0.000050             | <0.000050             | <0.000050            | <0.000050             | <0.00010              | <0.000050             |
| Lithium (Li)-Dissolved               | mg/L  | -              | -   | 0.0005          | 0.00699               | 0.00814               | <0.00050              | <0.00050             | <0.00050              | 0.0104                | <0.00050              |
| Magnesium (Mg)-Dissolved             | mg/L  | -              | -   | 0.1             | 60.7                  | 63.6                  | <0.10                 | 11.5                 | 12.3                  | 91.8                  | 55.8                  |
| Manganese (Mn)-Dissolved             | mg/L  | -              | -   | 0.00005         | 2.22                  | 1.39                  | <0.000050             | 0.078                | 0.0577                | 6.07                  | 5.93                  |
| Mercury (Hg)-Dissolved               | mg/L  | 0.000026       | -   | 0.00001         | <0.000010             | <0.000010             | <0.000010             | <0.000010            | <0.000010             | <0.000010             | <0.000010             |
| Molybdenum (Mo)-Dissolved            | mg/L  | 0.073          | -   | 0.00005         | 0.000213              | 0.000417              | <0.000050             | 0.000396             | 0.000431              | 0.00455               | 0.00109               |
| Nickel (Ni)-Dissolved                | mg/L  | 0.025          | -   | 0.0005          | 0.00119               | 0.0018                | <0.00050              | <0.00050             | <0.00050              | 0.0045                | 0.00228               |
| Phosphorus (P)-Dissolved             | mg/L  | -              | -   | 0.05            | <0.050                | <0.050                | <0.050                | <0.050               | <0.050                | <0.050                | <0.050                |
| Potassium (K)-Dissolved              | mg/L  | -              | -   | 0.1             | 3.62                  | 3.58                  | <0.10                 | 0.69                 | 0.69                  | 22.2                  | 6.91                  |
| Selenium (Se)-Dissolved              | mg/L  | 0.001          | -   | 0.0001          | <0.00010              | <0.00010              | <0.00010              | <0.00010             | <0.00010              | <0.00020              | 0.00026               |
| Silicon (Si)-Dissolved               | mg/L  | -              | -   | 0.05            | 7.22                  | 6.39                  | <0.050                | 6.12                 | 6.31                  | 4.57                  | 7.07                  |
| Silver (Ag)-Dissolved                | mg/L  | 0.0001         | -   | 0.00001         | <0.000010             | <0.000010             | <0.000010             | <0.000010            | <0.000010             | <0.000020             | <0.000010             |
| Sodium (Na)-Dissolved                | mg/L  | -              | -   | 0.05            | 5.79                  | 5.02                  | <0.050                | 2.75                 | 2.8                   | 34                    | 44.7                  |
| Strontium (Sr)-Dissolved             | mg/L  | -              | -   | 0.0002          | 0.405                 | 0.412                 | <0.00020              | 0.348                | 0.379                 | 0.958                 | 0.762                 |
| Sulfur (S)-Dissolved                 | mg/L  | -              | -   | 0.5             | 131                   | 145                   | <0.50                 | 6.73                 | 6.78                  | 389                   | 242                   |
| Thallium (Tl)-Dissolved              | mg/L  | 0.0008         | -   | 0.00001         | <0.000010             | 0.000085              | <0.000010             | <0.000010            | <0.000010             | 0.000365              | <0.000010             |
| Tin (Sn)-Dissolved                   | mg/L  | -              | -   | 0.0001          | <0.00010              | <0.00010              | <0.00010              | <0.00010             | <0.00010              | <0.00020              | <0.00010              |
| Titanium (Ti)-Dissolved              | mg/L  | -              | -   | 0.01            | <0.010                | <0.010                | <0.010                | <0.010               | <0.010                | <0.020                | <0.010                |
| Uranium (U)-Dissolved                | mg/L  | -              | -   | 0.00001         | 0.00192               | 0.00441               | <0.000010             | 0.000909             | 0.000934              | 0.002                 | 0.00276               |
| Vanadium (V)-Dissolved               | mg/L  | -              | -   | 0.001           | <0.0010               | <0.0010               | <0.0010               | <0.0010              | <0.0010               | <0.0020               | 0.0011                |
| Zinc (Zn)-Dissolved                  | mg/L  | 0.03           | -   | 0.001           | <b>0.17</b>           | <b>0.751</b>          | <0.0010               | 0.0046               | 0.0011                | <b>0.567</b>          | 0.0086                |
| Chlorophyll a                        | µg/L  | 0.01           | -   | -               | -                     | -                     | -                     | -                    | -                     | -                     | -                     |
| Pheopigments                         | µg/L  | 0.01           | -   | -               | -                     | -                     | -                     | -                    | -                     | -                     | -                     |



Table A-1. Water Quality Parameter Guideline Exceedances; April 17, 2013

| Analyte                            | Units | CCME-WATER-FAL | Mount Nansen Effluent Discharge Standards | Sample ID       | 0167-130417-011       | 0167-130416-019       | 0167-130416-020      | 0167-130416-021      | 0167-130417-023      | 0167-130417-027      | 0167-130417-028      |
|------------------------------------|-------|----------------|---|-----------------|-----------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                                    |       |                |   | WQ Site ID      | WQ-DC-U               | WQ-VC-UMN             | WQ-VC-DBC-r          | WQ-VC-DBC            | WQ-VC-R              | WQ-PIT1              | WQ-PIT2              |
|                                    |       |                |   | Date Sampled    | 4/17/2013 11:30:00 AM | 4/16/2013 12:14:00 PM | 4/16/2013 2:47:00 PM | 4/16/2013 2:47:00 PM | 4/17/2013 9:12:00 AM | 4/18/2013 9:45:00 AM | 4/18/2013 9:45:00 AM |
|                                    |       |                |   | Detection Limit |                       |                       |                      |                      |                      |                      |                      |
| Temperature (in-situ)              | °C    | -              | -   | -               | 0.4                   | 0                     | -                    | 0                    | 0                    | 0.1                  | 1.7                  |
| Specific Conductivity (in-situ)    | µS/cm | -              | -   | -               | 1920                  | 279.9                 | -                    | 251.8                | 275                  | 2093                 | 2103                 |
| pH (in-situ)                       | -     | 6.5 - 9.0      | 6.0 - 8.5                                 | -               | 7.48                  | 6.7                   | -                    | 6.86                 | 6.77                 | 7.22                 | 7.31                 |
| Turbidity (in-situ)                | NTU   | -              | -   | -               | 38.4                  | 0.37                  | -                    | 0.68                 | 0.18                 | 0.42                 | 0.49                 |
| Colour, True                       | CU    | 15             | -   | 5               | -                     | -                     | -                    | -                    | -                    | -                    | -                    |
| Conductivity                       | µS/cm | -              | -   | 2               | 1880                  | 269                   | 242                  | 243                  | 270                  | 2050                 | 2050                 |
| Hardness (as CaCO3)                | mg/L  | -              | -   | 0.5             | 1150                  | 139                   | 127                  | 129                  | 137                  | 1410                 | 1430                 |
| pH (lab)                           | pH    | 6.5 - 9.0      | 6.0 - 8.5                                 | 0.1             | 7.88                  | 7.83                  | 7.91                 | 7.88                 | 7.88                 | 7.85                 | 7.89                 |
| Total Suspended Solids             | mg/L  | -              | 50  | 3               | 19.8                  | <3.0                  | <3.0                 | <3.0                 | <3.0                 | <3.0                 | <3.0                 |
| Total Dissolved Solids             | mg/L  | -              | -   | 10              | 1670                  | 162                   | 159                  | 155                  | 174                  | 1940                 | 1930                 |
| Turbidity                          | NTU   | -              | -   | 0.1             | -                     | -                     | -                    | -                    | -                    | -                    | -                    |
| Alkalinity, Bicarbonate (as CaCO3) | mg/L  | -              | -   | 1               | 291                   | 114                   | 113                  | 114                  | 111                  | 201                  | 201                  |
| Alkalinity, Carbonate (as CaCO3)   | mg/L  | -              | -   | 1               | <1.0                  | <1.0                  | <1.0                 | <1.0                 | <1.0                 | <1.0                 | <1.0                 |
| Alkalinity, Hydroxide (as CaCO3)   | mg/L  | -              | -   | 1               | <1.0                  | <1.0                  | <1.0                 | <1.0                 | <1.0                 | <1.0                 | <1.0                 |
| Alkalinity, Total (as CaCO3)       | mg/L  | -              | -   | 1               | 291                   | 114                   | 113                  | 114                  | 111                  | 201                  | 201                  |
| Ammonia, Total (as N)              | mg/L  | -              | -   | 0.005           | 3.34                  | <0.0050               | <0.0050              | <0.0050              | <0.0050              | 0.0118               | 0.0136               |
| Chloride (Cl)                      | mg/L  | -              | -   | 0.5             | <5.0                  | <0.50                 | <0.50                | <0.50                | 0.81                 | <10                  | <10                  |
| Fluoride (F)                       | mg/L  | 0.12           | -   | 0.02            | <0.20                 | 0.046                 | 0.046                | 0.046                | 0.047                | <0.40                | <0.40                |
| Nitrate (as N)                     | mg/L  | 3              | -   | 0.005           | 0.967                 | 0.135                 | 0.164                | 0.166                | 0.139                | <0.10                | 0.11                 |
| Nitrite (as N)                     | mg/L  | 0.06           | -   | 0.001           | 0.024                 | <0.0010               | <0.0010              | <0.0010              | <0.0010              | <0.020               | <0.020               |
| Sulfate (SO4)                      | mg/L  | -              | -   | 0.5             | 897                   | 32.8                  | 19.3                 | 19.4                 | 33.7                 | 1190                 | 1160                 |
| Cyanide, Weak Acid Diss            | mg/L  | -              | 0.1                                       | 0.005           | 0.0113                | <0.0050               | <0.0050              | <0.0050              | <0.0050              | -                    | -                    |
| Cyanide, Total                     | mg/L  | -              | 0.3                                       | 0.005           | 0.0378                | <0.0050               | <0.0050              | <0.0050              | <0.0050              | -                    | -                    |
| Cyanate                            | mg/L  | -              | -   | 0.2             | 0.84                  | 0.44                  | 0.31                 | 0.33                 | 0.23                 | -                    | -                    |
| Thiocyanate (SCN)                  | mg/L  | -              | -   | 0.5             | 1.58                  | <0.50                 | <0.50                | <0.50                | <0.50                | -                    | -                    |
| Aluminum (Al)-Total                | mg/L  | 0.005          | -   | 0.003           | <b>0.0184</b>         | <b>0.012</b>          | <b>0.0136</b>        | <b>0.0127</b>        | <b>0.0072</b>        | <0.0060              | <0.0060              |
| Antimony (Sb)-Total                | mg/L  | -              | 0.15                                      | 0.0001          | 0.00082               | 0.00016               | <0.00010             | <0.00010             | 0.00028              | 0.00353              | 0.00307              |
| Arsenic (As)-Total                 | mg/L  | 0.005          | -   | 0.0001          | <b>0.0326</b>         | 0.00062               | 0.0003               | 0.00027              | 0.00096              | <b>0.00776</b>       | 0.00802              |
| Barium (Ba)-Total                  | mg/L  | -              | 1   | 0.00005         | 0.071                 | 0.0779                | 0.0818               | 0.0822               | 0.0819               | 0.0147               | 0.0135               |
| Beryllium (Be)-Total               | mg/L  | -              | -   | 0.0001          | <0.00010              | <0.00010              | <0.00010             | <0.00010             | <0.00010             | <0.00020             | <0.00020             |
| Bismuth (Bi)-Total                 | mg/L  | -              | -   | 0.0005          | <0.00050              | <0.00050              | <0.00050             | <0.00050             | <0.00050             | <0.0010              | <0.0010              |
| Boron (B)-Total                    | mg/L  | -              | -   | 0.01            | 0.07                  | <0.010                | <0.010               | <0.010               | <0.010               | <0.020               | <0.020               |
| Cadmium (Cd)-Total                 | mg/L  | 0.00001        | 0.02                                      | 0.00001         | <b>0.000452</b>       | <b>0.000034</b>       | <b>0.000023</b>      | <b>0.000027</b>      | <b>0.000027</b>      | <b>0.00517</b>       | 0.00516              |
| Calcium (Ca)-Total                 | mg/L  | -              | -   | 0.05            | 286                   | 34.4                  | 32.6                 | 33.7                 | 34.8                 | 374                  | 372                  |
| Chromium (Cr)-Total                | mg/L  | 0.001          | 0.04                                      | 0.0001          | 0.00034               | 0.00012               | 0.00014              | 0.00011              | 0.0001               | <0.00020             | <0.00020             |
| Cobalt (Co)-Total                  | mg/L  | -              | -   | 0.0001          | 0.00566               | <0.00010              | <0.00010             | <0.00010             | <0.00010             | <0.00020             | <0.00020             |
| Copper (Cu)-Total                  | mg/L  | 0.002          | 0.2                                       | 0.0005          | <b>0.00289</b>        | 0.00091               | 0.00089              | 0.0009               | 0.00094              | <b>0.003</b>         | 0.0028               |
| Iron (Fe)-Total                    | mg/L  | 0.3            | 1   | 0.01            | <b>6.59</b>           | 0.022                 | 0.029                | 0.027                | 0.012                | 0.031                | 0.033                |
| Lead (Pb)-Total                    | mg/L  | 0.001          | 0.1                                       | 0.00005         | 0.000199              | <0.000050             | <0.000050            | <0.000050            | <0.000050            | 0.00032              | 0.00024              |
| Lithium (Li)-Total                 | mg/L  | -              | -   | 0.0005          | 0.00226               | <0.00050              | <0.00050             | <0.00050             | 0.00071              | 0.0103               | 0.0094               |
| Magnesium (Mg)-Total               | mg/L  | -              | -   | 0.1             | 108                   | 12                    | 11.6                 | 12                   | 12.2                 | 112                  | 113                  |
| Manganese (Mn)-Total               | mg/L  | -              | 0.5                                       | 0.00005         | <b>4.9</b>            | 0.128                 | 0.083                | 0.084                | 0.0561               | 0.129                | 0.346                |
| Mercury (Hg)-Total                 | mg/L  | 0.000026       | 0.005                                     | 0.00001         | <0.000010             | <0.000010             | <0.000010            | <0.000010            | <0.000010            | <0.000010            | <0.000010            |
| Molybdenum (Mo)-Total              | mg/L  | 0.073          | -   | 0.00005         | 0.00107               | 0.000369              | 0.000425             | 0.000427             | 0.000401             | 0.00015              | 0.00014              |
| Nickel (Ni)-Total                  | mg/L  | 0.025          | 0.3                                       | 0.0005          | 0.00202               | <0.00050              | <0.00050             | <0.00050             | <0.00050             | <0.0010              | <0.0010              |
| Phosphorus (P)-Total               | mg/L  | -              | -   | 0.05            | <0.050                | <0.050                | <0.050               | <0.050               | <0.050               | <0.050               | <0.050               |
| Potassium (K)-Total                | mg/L  | -              | -   | 0.1             | 6.98                  | 0.77                  | 0.71                 | 0.73                 | 0.84                 | 4.05                 | 3.99                 |
| Selenium (Se)-Total                | mg/L  | 0.001          | -   | 0.0001          | 0.00019               | <0.00010              | <0.00010             | <0.00010             | <0.00010             | <0.00020             | <0.00020             |
| Silicon (Si)-Total                 | mg/L  | -              | -   | 0.05            | 7.77                  | 6.08                  | 6.26                 | 6.45                 | 6.18                 | 3.66                 | 3.6                  |
| Silver (Ag)-Total                  | mg/L  | 0.0001         | 0.1                                       | 0.00001         | 0.000026              | <0.000010             | <0.000010            | <0.000010            | <0.000010            | <0.000020            | <0.000020            |
| Sodium (Na)-Total                  | mg/L  | -              | -   | 0.05            | 38.3                  | 3.49                  | 2.8                  | 2.82                 | 3.86                 | 13.1                 | 13.1                 |



Table A-1. Water Quality Parameter Guideline Exceedances; April 17, 2013

| Analyte                              | Units | CCME-WATER-FAL | Mount Nansen Effluent Discharge Standards | Sample ID       | 0167-130417-011       | 0167-130416-019       | 0167-130416-020      | 0167-130416-021      | 0167-130417-023      | 0167-130417-027      | 0167-130417-028      |
|--------------------------------------|-------|----------------|---|-----------------|-----------------------|-----------------------|----------------------|----------------------|----------------------|----------------------|----------------------|
|                                      |       |                |   | WQ Site ID      | WQ-DC-U               | WQ-VC-UMN             | WQ-VC-DBC-r          | WQ-VC-DBC            | WQ-VC-R              | WQ-PIT1              | WQ-PIT2              |
|                                      |       |                |   | Date Sampled    | 4/17/2013 11:30:00 AM | 4/16/2013 12:14:00 PM | 4/16/2013 2:47:00 PM | 4/16/2013 2:47:00 PM | 4/17/2013 9:12:00 AM | 4/18/2013 9:45:00 AM | 4/18/2013 9:45:00 AM |
|                                      |       |                |   | Detection Limit |                       |                       |                      |                      |                      |                      |                      |
| Strontium (Sr)-Total                 | mg/L  | -              | -   | 0.0002          | 0.994                 | 0.35                  | 0.361                | 0.356                | 0.338                | 1.15                 | 1.15                 |
| Sulfur (S)-Total                     | mg/L  | -              | -   | 0.5             | 311                   | 11.5                  | 7                    | 7.08                 | 11.9                 | 397                  | 395                  |
| Thallium (Tl)-Total                  | mg/L  | 0.0008         | -   | 0.00001         | 0.00001               | <0.000010             | <0.000010            | <0.000010            | <0.000010            | 0.000085             | 0.000083             |
| Tin (Sn)-Total                       | mg/L  | -              | -   | 0.0001          | <0.00010              | <0.00010              | <0.00010             | <0.00010             | <0.00010             | <0.00020             | <0.00020             |
| Titanium (Ti)-Total                  | mg/L  | -              | -   | 0.01            | <0.010                | <0.010                | <0.010               | <0.010               | <0.010               | <0.020               | <0.020               |
| Uranium (U)-Total                    | mg/L  | -              | -   | 0.00001         | 0.0041                | 0.000924              | 0.000931             | 0.000909             | 0.000875             | 0.00443              | 0.00435              |
| Vanadium (V)-Total                   | mg/L  | -              | -   | 0.001           | <0.0010               | <0.0010               | <0.0010              | <0.0010              | <0.0010              | <0.0020              | <0.0020              |
| Zinc (Zn)-Total                      | mg/L  | 0.03           | 0.3                                       | 0.003           | 0.008                 | <0.0030               | <0.0030              | <0.0030              | <0.0030              | <b>0.698</b>         | 0.69                 |
| Dissolved Metals Filtration Location |       | -              | -   | n/a             | FIELD                 | FIELD                 | FIELD                | FIELD                | FIELD                | FIELD                | FIELD                |
| Aluminum (Al)-Dissolved              | mg/L  | 0.005          | -   | 0.001           | 0.0048                | 0.0044                | <b>0.0054</b>        | 0.0049               | 0.0036               | <0.0020              | <0.0020              |
| Antimony (Sb)-Dissolved              | mg/L  | -              | -   | 0.0001          | 0.00073               | 0.00016               | <0.00010             | <0.00010             | 0.00032              | 0.00332              | 0.00328              |
| Arsenic (As)-Dissolved               | mg/L  | 0.005          | 0.15                                      | 0.0001          | <b>0.0236</b>         | 0.00059               | 0.00027              | 0.00024              | 0.00092              | <b>0.00631</b>       | 0.00656              |
| Barium (Ba)-Dissolved                | mg/L  | -              | -   | 0.00005         | 0.0657                | 0.0788                | 0.0811               | 0.0818               | 0.082                | 0.0143               | 0.0147               |
| Beryllium (Be)-Dissolved             | mg/L  | -              | -   | 0.0001          | <0.00010              | <0.00010              | <0.00010             | <0.00010             | <0.00010             | <0.00020             | <0.00020             |
| Bismuth (Bi)-Dissolved               | mg/L  | -              | -   | 0.0005          | <0.00050              | <0.00050              | <0.00050             | <0.00050             | <0.00050             | <0.0010              | <0.0010              |
| Boron (B)-Dissolved                  | mg/L  | -              | -   | 0.01            | 0.062                 | <0.010                | <0.010               | <0.010               | <0.010               | <0.020               | <0.020               |
| Cadmium (Cd)-Dissolved               | mg/L  | 0.00001        | -   | 0.00001         | <b>0.00032</b>        | <b>0.000038</b>       | <b>0.000026</b>      | <b>0.000025</b>      | <b>0.000022</b>      | <b>0.00488</b>       | 0.005                |
| Calcium (Ca)-Dissolved               | mg/L  | -              | -   | 0.05            | 282                   | 35.5                  | 32                   | 32.4                 | 35                   | 376                  | 381                  |
| Chromium (Cr)-Dissolved              | mg/L  | 0.001          | -   | 0.0001          | <0.00010              | <0.00010              | <0.00010             | <0.00010             | <0.00010             | <0.00020             | <0.00020             |
| Cobalt (Co)-Dissolved                | mg/L  | -              | -   | 0.0001          | 0.00539               | <0.00010              | <0.00010             | <0.00010             | <0.00010             | <0.00020             | <0.00020             |
| Copper (Cu)-Dissolved                | mg/L  | 0.002          | -   | 0.0002          | 0.00132               | 0.00085               | 0.00081              | 0.00076              | 0.00086              | <b>0.00225</b>       | 0.00211              |
| Iron (Fe)-Dissolved                  | mg/L  | 0.3            | -   | 0.01            | <b>5.13</b>           | <0.010                | 0.012                | 0.012                | 0.013                | <0.010               | <0.010               |
| Lead (Pb)-Dissolved                  | mg/L  | 0.001          | -   | 0.00005         | <0.000050             | <0.000050             | <0.000050            | <0.000050            | <0.000050            | <0.00010             | <0.00010             |
| Lithium (Li)-Dissolved               | mg/L  | -              | -   | 0.0005          | 0.00197               | <0.00050              | <0.00050             | <0.00050             | 0.00066              | 0.0098               | 0.0094               |
| Magnesium (Mg)-Dissolved             | mg/L  | -              | -   | 0.1             | 108                   | 12.2                  | 11.4                 | 11.6                 | 12.1                 | 113                  | 115                  |
| Manganese (Mn)-Dissolved             | mg/L  | -              | -   | 0.00005         | 4.79                  | 0.122                 | 0.08                 | 0.0786               | 0.057                | 0.083                | 0.0916               |
| Mercury (Hg)-Dissolved               | mg/L  | 0.000026       | -   | 0.00001         | <0.000010             | <0.000010             | <0.000010            | <0.000010            | <0.000010            | <0.000010            | <0.000010            |
| Molybdenum (Mo)-Dissolved            | mg/L  | 0.073          | -   | 0.00005         | 0.00104               | 0.000369              | 0.000402             | 0.000387             | 0.000438             | 0.00014              | 0.00013              |
| Nickel (Ni)-Dissolved                | mg/L  | 0.025          | -   | 0.0005          | 0.00191               | <0.00050              | <0.00050             | <0.00050             | <0.00050             | <0.0010              | <0.0010              |
| Phosphorus (P)-Dissolved             | mg/L  | -              | -   | 0.05            | <0.050                | <0.050                | <0.050               | <0.050               | <0.050               | <0.050               | <0.050               |
| Potassium (K)-Dissolved              | mg/L  | -              | -   | 0.1             | 6.94                  | 0.8                   | 0.68                 | 0.71                 | 0.84                 | 4.07                 | 4.06                 |
| Selenium (Se)-Dissolved              | mg/L  | 0.001          | -   | 0.0001          | 0.00018               | <0.00010              | <0.00010             | <0.00010             | <0.00010             | <0.00020             | <0.00020             |
| Silicon (Si)-Dissolved               | mg/L  | -              | -   | 0.05            | 7.57                  | 6.18                  | 6.08                 | 6.22                 | 6.08                 | 3.65                 | 3.67                 |
| Silver (Ag)-Dissolved                | mg/L  | 0.0001         | -   | 0.00001         | <0.000010             | <0.000010             | <0.000010            | <0.000010            | <0.000010            | <0.000020            | <0.000020            |
| Sodium (Na)-Dissolved                | mg/L  | -              | -   | 0.05            | 36.2                  | 3.41                  | 2.74                 | 2.69                 | 3.72                 | 12.6                 | 12.4                 |
| Strontium (Sr)-Dissolved             | mg/L  | -              | -   | 0.0002          | 0.972                 | 0.348                 | 0.361                | 0.353                | 0.382                | 1.15                 | 1.13                 |
| Sulfur (S)-Dissolved                 | mg/L  | -              | -   | 0.5             | 299                   | 11.6                  | 6.83                 | 6.92                 | 11.7                 | 385                  | 393                  |
| Thallium (Tl)-Dissolved              | mg/L  | 0.0008         | -   | 0.00001         | <0.000010             | <0.000010             | <0.000010            | <0.000010            | <0.000010            | 0.000086             | 0.000087             |
| Tin (Sn)-Dissolved                   | mg/L  | -              | -   | 0.0001          | <0.00010              | <0.00010              | <0.00010             | <0.00010             | <0.00010             | <0.00020             | <0.00020             |
| Titanium (Ti)-Dissolved              | mg/L  | -              | -   | 0.01            | <0.010                | <0.010                | <0.010               | <0.010               | <0.010               | <0.020               | <0.020               |
| Uranium (U)-Dissolved                | mg/L  | -              | -   | 0.00001         | 0.00385               | 0.000915              | 0.000891             | 0.000853             | 0.00099              | 0.00442              | 0.00441              |
| Vanadium (V)-Dissolved               | mg/L  | -              | -   | 0.001           | <0.0010               | <0.0010               | <0.0010              | <0.0010              | <0.0010              | <0.0020              | <0.0020              |
| Zinc (Zn)-Dissolved                  | mg/L  | 0.03           | -   | 0.001           | 0.0073                | 0.0031                | 0.0014               | <0.0010              | 0.0021               | <b>0.681</b>         | 0.69                 |
| Chlorophyll a                        | µg/L  | 0.01           | -   | -               | -                     | -                     | -                    | -                    | -                    | 0.144                | 0.11                 |
| Pheopigments                         | µg/L  | 0.01           | -   | -               | -                     | -                     | -                    | -                    | -                    | 0.37                 | 0.11                 |



Table A-1. Water Quality Parameter Guideline Exceedances; April 17, 2013

| Analyte                            | Units | CCME-WATER-FAL | Mount Nansen Effluent Discharge Standards | Sample ID       | 0167-130417-029      | 0167-130417-030      | TRAVEL BLANK         |
|------------------------------------|-------|----------------|---|-----------------|----------------------|----------------------|----------------------|
|                                    |       |                |   | WQ Site ID      | WQ-PIT3              | WQ-PW                | Trip Blank           |
|                                    |       |                |   | Date Sampled    | 4/18/2013 9:45:00 AM | 4/18/2013 9:45:00 AM | 4/18/2013 9:45:00 AM |
|                                    |       |                |   | Detection Limit |                      |                      |                      |
| Temperature (in-situ)              | °C    | -              | -   | -               | 4.4                  | 1                    | -                    |
| Specific Conductivity (in-situ)    | µS/cm | -              | -   | -               | 2808                 | 431.9                | -                    |
| pH (in-situ)                       | -     | 6.5 - 9.0      | 6.0 - 8.5                                 | -               | 6.72                 | 7.2                  | -                    |
| Turbidity (in-situ)                | NTU   | -              | -   | -               | 0.66                 | 0                    | -                    |
| Colour, True                       | CU    | 15             | -   | 5               | -                    | <5.0                 | -                    |
| Conductivity                       | µS/cm | -              | -   | 2               | 2700                 | 415                  | <2.0                 |
| Hardness (as CaCO3)                | mg/L  | -              | -   | 0.5             | 1900                 | 222                  | -                    |
| pH (lab)                           | pH    | 6.5 - 9.0      | 6.0 - 8.5                                 | 0.1             | 7.6                  | 8.11                 | 5.97                 |
| Total Suspended Solids             | mg/L  | -              | 50  | 3               | 3.6                  | -                    | <3.0                 |
| Total Dissolved Solids             | mg/L  | -              | -   | 10              | 2750                 | 250                  | <10                  |
| Turbidity                          | NTU   | -              | -   | 0.1             | -                    | <0.10                | -                    |
| Alkalinity, Bicarbonate (as CaCO3) | mg/L  | -              | -   | 1               | 258                  | -                    | <1.0                 |
| Alkalinity, Carbonate (as CaCO3)   | mg/L  | -              | -   | 1               | <1.0                 | -                    | <1.0                 |
| Alkalinity, Hydroxide (as CaCO3)   | mg/L  | -              | -   | 1               | <1.0                 | -                    | <1.0                 |
| Alkalinity, Total (as CaCO3)       | mg/L  | -              | -   | 1               | 258                  | 181                  | <1.0                 |
| Ammonia, Total (as N)              | mg/L  | -              | -   | 0.005           | 0.0536               | -                    | <0.0050              |
| Chloride (Cl)                      | mg/L  | -              | -   | 0.5             | <10                  | 0.53                 | <0.50                |
| Fluoride (F)                       | mg/L  | 0.12           | -   | 0.02            | <0.40                | 0.094                | <0.020               |
| Nitrate (as N)                     | mg/L  | 3              | -   | 0.005           | <0.10                | 0.155                | <0.0050              |
| Nitrite (as N)                     | mg/L  | 0.06           | -   | 0.001           | <0.020               | <0.0010              | <0.0010              |
| Sulfate (SO4)                      | mg/L  | -              | -   | 0.5             | 1640                 | 43.2                 | <0.50                |
| Cyanide, Weak Acid Diss            | mg/L  | -              | 0.1                                       | 0.005           | -                    | -                    | <0.0050              |
| Cyanide, Total                     | mg/L  | -              | 0.3                                       | 0.005           | -                    | -                    | <0.0050              |
| Cyanate                            | mg/L  | -              | -   | 0.2             | -                    | -                    | <0.20                |
| Thiocyanate (SCN)                  | mg/L  | -              | -   | 0.5             | -                    | -                    | <0.50                |
| Aluminum (Al)-Total                | mg/L  | 0.005          | -   | 0.003           | <0.0060              | <0.010               | <0.0030              |
| Antimony (Sb)-Total                | mg/L  | -              | 0.15                                      | 0.0001          | 0.00095              | <0.00050             | <0.00010             |
| Arsenic (As)-Total                 | mg/L  | 0.005          | -   | 0.0001          | 0.0105               | 0.00038              | <0.00010             |
| Barium (Ba)-Total                  | mg/L  | -              | 1   | 0.00005         | 0.00987              | 0.096                | <0.000050            |
| Beryllium (Be)-Total               | mg/L  | -              | -   | 0.0001          | <0.00020             | -                    | <0.00010             |
| Bismuth (Bi)-Total                 | mg/L  | -              | -   | 0.0005          | <0.0010              | -                    | <0.00050             |
| Boron (B)-Total                    | mg/L  | -              | -   | 0.01            | <0.020               | <0.10                | <0.010               |
| Cadmium (Cd)-Total                 | mg/L  | 0.00001        | 0.02                                      | 0.00001         | 0.0111               | <0.00020             | <0.000010            |
| Calcium (Ca)-Total                 | mg/L  | -              | -   | 0.05            | 476                  | 51.3                 | <0.050               |
| Chromium (Cr)-Total                | mg/L  | 0.001          | 0.04                                      | 0.0001          | <0.00020             | <0.0020              | <0.00010             |
| Cobalt (Co)-Total                  | mg/L  | -              | -   | 0.0001          | 0.00183              | -                    | <0.00010             |
| Copper (Cu)-Total                  | mg/L  | 0.002          | 0.2                                       | 0.0005          | 0.0026               | <0.0010              | <0.00050             |
| Iron (Fe)-Total                    | mg/L  | 0.3            | 1   | 0.01            | 0.264                | <0.030               | <0.010               |
| Lead (Pb)-Total                    | mg/L  | 0.001          | 0.1                                       | 0.00005         | 0.00017              | 0.00067              | <0.000050            |
| Lithium (Li)-Total                 | mg/L  | -              | -   | 0.0005          | 0.0115               | -                    | <0.00050             |
| Magnesium (Mg)-Total               | mg/L  | -              | -   | 0.1             | 155                  | 22.9                 | <0.10                |
| Manganese (Mn)-Total               | mg/L  | -              | 0.5                                       | 0.00005         | 3.02                 | <0.0020              | <0.000050            |
| Mercury (Hg)-Total                 | mg/L  | 0.000026       | 0.005                                     | 0.00001         | <0.000010            | <0.00020             | <0.000010            |
| Molybdenum (Mo)-Total              | mg/L  | 0.073          | -   | 0.00005         | <0.00010             | -                    | <0.000050            |
| Nickel (Ni)-Total                  | mg/L  | 0.025          | 0.3                                       | 0.0005          | 0.002                | -                    | <0.00050             |
| Phosphorus (P)-Total               | mg/L  | -              | -   | 0.05            | <0.050               | -                    | <0.050               |
| Potassium (K)-Total                | mg/L  | -              | -   | 0.1             | 5.59                 | 0.97                 | <0.10                |
| Selenium (Se)-Total                | mg/L  | 0.001          | -   | 0.0001          | <0.00020             | <0.0010              | <0.00010             |
| Silicon (Si)-Total                 | mg/L  | -              | -   | 0.05            | 3.78                 | -                    | <0.050               |
| Silver (Ag)-Total                  | mg/L  | 0.0001         | 0.1                                       | 0.00001         | <0.000020            | -                    | <0.000010            |
| Sodium (Na)-Total                  | mg/L  | -              | -   | 0.05            | 15.6                 | 5                    | <0.050               |

Guidelines: - Federal CCME Canadian Environmental Quality Guidelines (JUL, 2012), CCME: Freshwater Aquatic Life  
 - Mount Nansen Effluent Discharge Standards

Color Key:

- Exceeds CCME Guideline
- Exceeds MN Effluent Discharge Standards
- Exceeds both CCME and MN Standards

Note: For those guidelines that are hardness dependent, the most conservative guideline has been applied.



Table A-1. Water Quality Parameter Guideline Exceedances; April 17, 2013

| Analyte                              | Units | CCME-WATER-FAL | Mount Nansen Effluent Discharge Standards | Sample ID       | 0167-130417-029      | 0167-130417-030      | TRAVEL BLANK         |
|--------------------------------------|-------|----------------|---|-----------------|----------------------|----------------------|----------------------|
|                                      |       |                |   | WQ Site ID      | WQ-PIT3              | WQ-PW                | Trip Blank           |
|                                      |       |                |   | Date Sampled    | 4/18/2013 9:45:00 AM | 4/18/2013 9:45:00 AM | 4/18/2013 9:45:00 AM |
|                                      |       |                |   | Detection Limit |                      |                      |                      |
| Strontium (Sr)-Total                 | mg/L  | -              | -   | 0.0002          | 1.38                 | -                    | <0.00020             |
| Sulfur (S)-Total                     | mg/L  | -              | -   | 0.5             | 527                  | -                    | <0.50                |
| Thallium (Tl)-Total                  | mg/L  | 0.0008         | -   | 0.00001         | 0.00011              | -                    | <0.000010            |
| Tin (Sn)-Total                       | mg/L  | -              | -   | 0.0001          | <0.00020             | -                    | <0.00010             |
| Titanium (Ti)-Total                  | mg/L  | -              | -   | 0.01            | <0.020               | -                    | <0.010               |
| Uranium (U)-Total                    | mg/L  | -              | -   | 0.00001         | 0.00423              | 0.00242              | <0.000010            |
| Vanadium (V)-Total                   | mg/L  | -              | -   | 0.001           | <0.0020              | -                    | <0.0010              |
| Zinc (Zn)-Total                      | mg/L  | 0.03           | 0.3                                       | 0.003           | 1.11                 | <0.050               | <0.0030              |
| Dissolved Metals Filtration Location |       | -              | -   | n/a             | FIELD                | -                    | -                    |
| Aluminum (Al)-Dissolved              | mg/L  | 0.005          | -   | 0.001           | <0.0020              | -                    | -                    |
| Antimony (Sb)-Dissolved              | mg/L  | -              | -   | 0.0001          | 0.00069              | -                    | -                    |
| Arsenic (As)-Dissolved               | mg/L  | 0.005          | 0.15                                      | 0.0001          | 0.00619              | -                    | -                    |
| Barium (Ba)-Dissolved                | mg/L  | -              | -   | 0.00005         | 0.0101               | -                    | -                    |
| Beryllium (Be)-Dissolved             | mg/L  | -              | -   | 0.0001          | <0.00020             | -                    | -                    |
| Bismuth (Bi)-Dissolved               | mg/L  | -              | -   | 0.0005          | <0.0010              | -                    | -                    |
| Boron (B)-Dissolved                  | mg/L  | -              | -   | 0.01            | <0.020               | -                    | -                    |
| Cadmium (Cd)-Dissolved               | mg/L  | 0.00001        | -   | 0.00001         | 0.0106               | -                    | -                    |
| Calcium (Ca)-Dissolved               | mg/L  | -              | -   | 0.05            | 487                  | -                    | -                    |
| Chromium (Cr)-Dissolved              | mg/L  | 0.001          | -   | 0.0001          | <0.00020             | -                    | -                    |
| Cobalt (Co)-Dissolved                | mg/L  | -              | -   | 0.0001          | 0.00166              | -                    | -                    |
| Copper (Cu)-Dissolved                | mg/L  | 0.002          | -   | 0.0002          | 0.00161              | -                    | -                    |
| Iron (Fe)-Dissolved                  | mg/L  | 0.3            | -   | 0.01            | 0.152                | -                    | -                    |
| Lead (Pb)-Dissolved                  | mg/L  | 0.001          | -   | 0.00005         | <0.00010             | -                    | -                    |
| Lithium (Li)-Dissolved               | mg/L  | -              | -   | 0.0005          | 0.0106               | -                    | -                    |
| Magnesium (Mg)-Dissolved             | mg/L  | -              | -   | 0.1             | 167                  | -                    | -                    |
| Manganese (Mn)-Dissolved             | mg/L  | -              | -   | 0.00005         | 3.01                 | -                    | -                    |
| Mercury (Hg)-Dissolved               | mg/L  | 0.000026       | -   | 0.00001         | <0.000010            | -                    | -                    |
| Molybdenum (Mo)-Dissolved            | mg/L  | 0.073          | -   | 0.00005         | <0.00010             | -                    | -                    |
| Nickel (Ni)-Dissolved                | mg/L  | 0.025          | -   | 0.0005          | 0.0019               | -                    | -                    |
| Phosphorus (P)-Dissolved             | mg/L  | -              | -   | 0.05            | <0.050               | -                    | -                    |
| Potassium (K)-Dissolved              | mg/L  | -              | -   | 0.1             | 5.84                 | -                    | -                    |
| Selenium (Se)-Dissolved              | mg/L  | 0.001          | -   | 0.0001          | <0.00020             | -                    | -                    |
| Silicon (Si)-Dissolved               | mg/L  | -              | -   | 0.05            | 3.77                 | -                    | -                    |
| Silver (Ag)-Dissolved                | mg/L  | 0.0001         | -   | 0.00001         | <0.000020            | -                    | -                    |
| Sodium (Na)-Dissolved                | mg/L  | -              | -   | 0.05            | 14.8                 | -                    | -                    |
| Strontium (Sr)-Dissolved             | mg/L  | -              | -   | 0.0002          | 1.36                 | -                    | -                    |
| Sulfur (S)-Dissolved                 | mg/L  | -              | -   | 0.5             | 533                  | -                    | -                    |
| Thallium (Tl)-Dissolved              | mg/L  | 0.0008         | -   | 0.00001         | 0.00011              | -                    | -                    |
| Tin (Sn)-Dissolved                   | mg/L  | -              | -   | 0.0001          | <0.00020             | -                    | -                    |
| Titanium (Ti)-Dissolved              | mg/L  | -              | -   | 0.01            | <0.020               | -                    | -                    |
| Uranium (U)-Dissolved                | mg/L  | -              | -   | 0.00001         | 0.00407              | -                    | -                    |
| Vanadium (V)-Dissolved               | mg/L  | -              | -   | 0.001           | <0.0020              | -                    | -                    |
| Zinc (Zn)-Dissolved                  | mg/L  | 0.03           | -   | 0.001           | 1.09                 | -                    | -                    |
| Chlorophyll a                        | µg/L  | 0.01           | -   | -               | <0.010               | -                    | -                    |
| Pheopigments                         | µg/L  | 0.01           | -   | -               | 0.16                 | -                    | -                    |



**Appendix B:**  
**ALS Analytical Report**



ENVIRONMENTAL DYNAMICS INC.  
ATTN: Lyndsay Doetzel  
3-478 Range Road  
Whitehorse YT Y1A 3A2

Date Received: 18-APR-13  
Report Date: 01-MAY-13 16:37 (MT)  
Version: FINAL

Client Phone: 867-393-4882

## Certificate of Analysis

**Lab Work Order #:** L1291240  
**Project P.O. #:** NOT SUBMITTED  
**Job Reference:** MOUNT NANSEN 13-Y-0167  
**C of C Numbers:** 1, 2, 3, 4, 5, 6  
**Legal Site Desc:**

Can Dang  
Senior 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 A Campbell Brothers Limited Company

## ALS ENVIRONMENTAL ANALYTICAL REPORT

|                             | Sample ID<br>Description<br>Sampled Date<br>Sampled Time<br>Client ID | L1291240-1<br>Water<br>17-APR-13<br>11:14<br>0167-130417-001 | L1291240-2<br>Water<br>17-APR-13<br>11:30<br>0167-130417-002 | L1291240-3<br>Water<br>17-APR-13<br>11:41<br>0167-130417-003 | L1291240-4<br>Water<br>17-APR-13<br>09:41<br>0167-130417-005 | L1291240-5<br>Water<br>17-APR-13<br>10:07<br>0167-130417-006 |
|-----------------------------|---|--|--|--|--|--|
| Grouping                    | Analyte   |  |  |  |  |  |
| <b>WATER</b>                |   |  |  |  |  |  |
| <b>Physical Tests</b>       | Colour, True (CU)   |  |  |  |  |  |
|                             | Conductivity (uS/cm)  | 1120   | 1150   | <2.0   | 242  | 250  |
|                             | Hardness (as CaCO3) (mg/L)  | 685  | 716  | <0.50  | 128  | 135  |
|                             | pH (pH)   | 7.61   | 7.91   | 5.66   | 7.85   | 7.97   |
|                             | Total Suspended Solids (mg/L)   | 123  | 10.2   | <3.0   | <3.0   | <3.0   |
|                             | Total Dissolved Solids (mg/L)   | 736  | 920  | <10  | 154  | 161  |
|                             | Turbidity (NTU)   |  |  |  |  |  |
| <b>Anions and Nutrients</b> | Alkalinity, Bicarbonate (as CaCO3) (mg/L)                             | 280  | 269  | 1.1  | 114  | 116  |
|                             | Alkalinity, Carbonate (as CaCO3) (mg/L)                               | <1.0   | <1.0   | <1.0   | <1.0   | <1.0   |
|                             | Alkalinity, Hydroxide (as CaCO3) (mg/L)                               | <1.0   | <1.0   | <1.0   | <1.0   | <1.0   |
|                             | Alkalinity, Total (as CaCO3) (mg/L)                                   | 280  | 269  | 1.1  | 114  | 116  |
|                             | Ammonia, Total (as N) (mg/L)  | 0.178  | 0.0309   | <0.0050  | 0.0108   | <0.0050  |
|                             | Chloride (Cl) (mg/L)  | <5.0 <sup>DLA</sup>  | <5.0 <sup>DLA</sup>  | <0.50  | <0.50  | <0.50  |
|                             | Fluoride (F) (mg/L)   | <0.20 <sup>DLA</sup>   | <0.20 <sup>DLA</sup>   | <0.020   | 0.047  | 0.047  |
|                             | Nitrate (as N) (mg/L)   | <0.050 <sup>DLA</sup>  | <0.050 <sup>DLA</sup>  | <0.0050  | 0.166  | 0.179  |
|                             | Nitrite (as N) (mg/L)   | <0.010 <sup>DLA</sup>  | <0.010 <sup>DLA</sup>  | <0.0010  | <0.0010  | <0.0010  |
|                             | Sulfate (SO4) (mg/L)  | 399  | 427  | <0.50  | 19.1   | 19.0   |
| <b>Cyanides</b>             | Cyanide, Weak Acid Diss (mg/L)  | <0.0050  | <0.0050  | <0.0050  | <0.0050  | <0.0050  |
|                             | Cyanide, Total (mg/L)   | <0.0050  | <0.0050  | <0.0050  | <0.0050  | <0.0050  |
|                             | Cyanate (mg/L)  | <0.20  | <0.20  | <0.20  | <0.20  | <0.20  |
|                             | Thiocyanate (SCN) (mg/L)  | <0.50  | <0.50  | <0.50  | <0.50  | <0.50  |
| <b>Total Metals</b>         | Aluminum (Al)-Total (mg/L)  | 0.375  | 0.171  | <0.0030  | 0.0143   | 0.0152   |
|                             | Antimony (Sb)-Total (mg/L)  | 0.00645  | 0.00833  | <0.00010   | <0.00010   | <0.00010   |
|                             | Arsenic (As)-Total (mg/L)   | 0.523  | 0.0537   | <0.00010   | 0.00028  | 0.00028  |
|                             | Barium (Ba)-Total (mg/L)  | 0.0626   | 0.0134   | <0.000050  | 0.0801   | 0.0778   |
|                             | Beryllium (Be)-Total (mg/L)   | <0.00010   | <0.00010   | <0.00010   | <0.00010   | <0.00010   |
|                             | Bismuth (Bi)-Total (mg/L)   | <0.00050   | <0.00050   | <0.00050   | <0.00050   | <0.00050   |
|                             | Boron (B)-Total (mg/L)  | <0.010   | <0.010   | <0.010   | <0.010   | <0.010   |
|                             | Cadmium (Cd)-Total (mg/L)   | 0.00209  | 0.00401  | <0.000010  | 0.000025   | 0.000015   |
|                             | Calcium (Ca)-Total (mg/L)   | 167  | 171  | <0.050   | 32.1   | 33.4   |
|                             | Chromium (Cr)-Total (mg/L)  | 0.00062  | 0.00030  | <0.00010   | 0.00012  | 0.00013  |
|                             | Cobalt (Co)-Total (mg/L)  | 0.00199  | 0.00068  | <0.00010   | <0.00010   | <0.00010   |
|                             | Copper (Cu)-Total (mg/L)  | 0.00400  | 0.00098  | <0.00050   | 0.00091  | 0.00075  |
|                             | Iron (Fe)-Total (mg/L)  | 22.3   | 0.894  | <0.010   | 0.024  | 0.033  |
|                             | Lead (Pb)-Total (mg/L)  | 0.0246   | 0.000547   | <0.000050  | <0.000050  | <0.000050  |
|                             | Lithium (Li)-Total (mg/L)   | 0.00761  | 0.00821  | <0.00050   | <0.00050   | <0.00050   |
|                             | Magnesium (Mg)-Total (mg/L)   | 59.2   | 59.7   | <0.10  | 11.5   | 12.3   |

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

|                             | Sample ID<br>Description<br>Sampled Date<br>Sampled Time<br>Client ID | L1291240-6<br>Water<br>17-APR-13<br>12:46<br>0167-130417-008 | L1291240-7<br>Water<br>17-APR-13<br>11:55<br>0167-130417-009 | L1291240-8<br>Water<br>17-APR-13<br>11:30<br>0167-130417-011 | L1291240-9<br>Water<br>16-APR-13<br>12:14<br>0167-130416-019 | L1291240-10<br>Water<br>16-APR-13<br>14:47<br>0167-130416-020 |
|-----------------------------|---|--|--|--|--|---|
| Grouping                    | Analyte   |  |  |  |  |   |
| <b>WATER</b>                |   |  |  |  |  |   |
| <b>Physical Tests</b>       | Colour, True (CU)   |  |  |  |  |   |
|                             | Conductivity (uS/cm)  | 2130   | 1620   | 1880   | 269  | 242   |
|                             | Hardness (as CaCO3) (mg/L)  | 1330   | 906  | 1150   | 139  | 127   |
|                             | pH (pH)   | 7.81   | 7.44   | 7.88   | 7.83   | 7.91  |
|                             | Total Suspended Solids (mg/L)   | 6.0  | 35.5   | 19.8   | <3.0   | <3.0  |
|                             | Total Dissolved Solids (mg/L)   | 1930   | 1370   | 1670   | 162  | 159   |
|                             | Turbidity (NTU)   |  |  |  |  |   |
| <b>Anions and Nutrients</b> | Alkalinity, Bicarbonate (as CaCO3) (mg/L)                             | 210  | 248  | 291  | 114  | 113   |
|                             | Alkalinity, Carbonate (as CaCO3) (mg/L)                               | <1.0   | <1.0   | <1.0   | <1.0   | <1.0  |
|                             | Alkalinity, Hydroxide (as CaCO3) (mg/L)                               | <1.0   | <1.0   | <1.0   | <1.0   | <1.0  |
|                             | Alkalinity, Total (as CaCO3) (mg/L)                                   | 210  | 248  | 291  | 114  | 113   |
|                             | Ammonia, Total (as N) (mg/L)  | 1.66   | 4.42   | 3.34   | <0.0050  | <0.0050   |
|                             | Chloride (Cl) (mg/L)  | <10 <sup>DLA</sup>   | <5.0 <sup>DLA</sup>  | <5.0 <sup>DLA</sup>  | <0.50  | <0.50   |
|                             | Fluoride (F) (mg/L)   | <0.40 <sup>DLA</sup>   | <0.20 <sup>DLA</sup>   | <0.20 <sup>DLA</sup>   | 0.046  | 0.046   |
|                             | Nitrate (as N) (mg/L)   | 0.14   | 1.55   | 0.967  | 0.135  | 0.164   |
|                             | Nitrite (as N) (mg/L)   | <0.020 <sup>DLA</sup>  | 0.050  | 0.024  | <0.0010  | <0.0010   |
|                             | Sulfate (SO4) (mg/L)  | 1150   | 725  | 897  | 32.8   | 19.3  |
| <b>Cyanides</b>             | Cyanide, Weak Acid Diss (mg/L)  | <0.0050  | 0.0066   | 0.0113   | <0.0050  | <0.0050   |
|                             | Cyanide, Total (mg/L)   | <0.0050  | 0.0586   | 0.0378   | <0.0050  | <0.0050   |
|                             | Cyanate (mg/L)  | 0.72   | <0.20  | 0.84   | 0.44   | 0.31  |
|                             | Thiocyanate (SCN) (mg/L)  | <0.50  | 3.37   | 1.58   | <0.50  | <0.50   |
| <b>Total Metals</b>         | Aluminum (Al)-Total (mg/L)  | 0.0132   | 0.0163   | 0.0184   | 0.0120   | 0.0136  |
|                             | Antimony (Sb)-Total (mg/L)  | 0.0531   | 0.00081  | 0.00082  | 0.00016  | <0.00010  |
|                             | Arsenic (As)-Total (mg/L)   | 0.394  | 0.0477   | 0.0326   | 0.00062  | 0.00030   |
|                             | Barium (Ba)-Total (mg/L)  | 0.0268   | 0.0557   | 0.0710   | 0.0779   | 0.0818  |
|                             | Beryllium (Be)-Total (mg/L)   | <0.00020 <sup>DLA</sup>                                      | <0.00010   | <0.00010   | <0.00010   | <0.00010  |
|                             | Bismuth (Bi)-Total (mg/L)   | <0.0010 <sup>DLA</sup>                                       | <0.00050   | <0.00050   | <0.00050   | <0.00050  |
|                             | Boron (B)-Total (mg/L)  | 0.149  | 0.102  | 0.070  | <0.010   | <0.010  |
|                             | Cadmium (Cd)-Total (mg/L)   | 0.00474  | 0.000664   | 0.000452   | 0.000034   | 0.000023  |
|                             | Calcium (Ca)-Total (mg/L)   | 385  | 271  | 286  | 34.4   | 32.6  |
|                             | Chromium (Cr)-Total (mg/L)  | 0.00024  | 0.00047  | 0.00034  | 0.00012  | 0.00014   |
|                             | Cobalt (Co)-Total (mg/L)  | 0.00297  | 0.00792  | 0.00566  | <0.00010   | <0.00010  |
|                             | Copper (Cu)-Total (mg/L)  | 0.0256   | 0.00477  | 0.00289  | 0.00091  | 0.00089   |
|                             | Iron (Fe)-Total (mg/L)  | 1.95   | 13.2   | 6.59   | 0.022  | 0.029   |
|                             | Lead (Pb)-Total (mg/L)  | 0.00196  | 0.000145   | 0.000199   | <0.000050  | <0.000050   |
|                             | Lithium (Li)-Total (mg/L)   | 0.0109   | 0.00069  | 0.00226  | <0.00050   | <0.00050  |
|                             | Magnesium (Mg)-Total (mg/L)   | 91.1   | 54.4   | 108  | 12.0   | 11.6  |

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

|                             | Sample ID<br>Description<br>Sampled Date<br>Sampled Time<br>Client ID | L1291240-11<br>Water<br>16-APR-13<br>14:47<br>0167-130416-021 | L1291240-12<br>Water<br>17-APR-13<br>09:12<br>0167-130417-023 | L1291240-13<br>Water<br>18-APR-13<br>09:45<br>0167-130417-027 | L1291240-14<br>Water<br>18-APR-13<br>09:45<br>0167-130417-028 | L1291240-15<br>Water<br>18-APR-13<br>09:45<br>0167-130417-029 |
|-----------------------------|---|---|---|---|---|---|
| Grouping                    | Analyte   |   |   |   |   |   |
| <b>WATER</b>                |   |   |   |   |   |   |
| <b>Physical Tests</b>       | Colour, True (CU)   |   |   |   |   |   |
|                             | Conductivity (uS/cm)  | 243   | 270   | 2050  | 2050  | 2700  |
|                             | Hardness (as CaCO3) (mg/L)  | 129   | 137   | 1410  | 1430  | 1900  |
|                             | pH (pH)   | 7.88  | 7.88  | 7.85  | 7.89  | 7.60  |
|                             | Total Suspended Solids (mg/L)   | <3.0  | <3.0  | <3.0  | <3.0  | 3.6   |
|                             | Total Dissolved Solids (mg/L)   | 155   | 174   | 1940  | 1930  | 2750  |
|                             | Turbidity (NTU)   |   |   |   |   |   |
| <b>Anions and Nutrients</b> | Alkalinity, Bicarbonate (as CaCO3) (mg/L)                             | 114   | 111   | 201   | 201   | 258   |
|                             | Alkalinity, Carbonate (as CaCO3) (mg/L)                               | <1.0  | <1.0  | <1.0  | <1.0  | <1.0  |
|                             | Alkalinity, Hydroxide (as CaCO3) (mg/L)                               | <1.0  | <1.0  | <1.0  | <1.0  | <1.0  |
|                             | Alkalinity, Total (as CaCO3) (mg/L)                                   | 114   | 111   | 201   | 201   | 258   |
|                             | Ammonia, Total (as N) (mg/L)  | <0.0050   | <0.0050   | 0.0118  | 0.0136  | 0.0536  |
|                             | Chloride (Cl) (mg/L)  | <0.50   | 0.81  | <10 <sup>DLA</sup>  | <10 <sup>DLA</sup>  | <10 <sup>DLA</sup>  |
|                             | Fluoride (F) (mg/L)   | 0.046   | 0.047   | <0.40 <sup>DLA</sup>  | <0.40 <sup>DLA</sup>  | <0.40 <sup>DLA</sup>  |
|                             | Nitrate (as N) (mg/L)   | 0.166   | 0.139   | <0.10 <sup>DLA</sup>  | 0.11 <sup>DLA</sup>   | <0.10 <sup>DLA</sup>  |
|                             | Nitrite (as N) (mg/L)   | <0.0010   | <0.0010   | <0.020 <sup>DLA</sup>   | <0.020 <sup>DLA</sup>   | <0.020 <sup>DLA</sup>   |
|                             | Sulfate (SO4) (mg/L)  | 19.4  | 33.7  | 1190  | 1160  | 1640  |
| <b>Cyanides</b>             | Cyanide, Weak Acid Diss (mg/L)  | <0.0050   | <0.0050   |   |   |   |
|                             | Cyanide, Total (mg/L)   | <0.0050   | <0.0050   |   |   |   |
|                             | Cyanate (mg/L)  | 0.33  | 0.23  |   |   |   |
|                             | Thiocyanate (SCN) (mg/L)  | <0.50   | <0.50   |   |   |   |
| <b>Total Metals</b>         | Aluminum (Al)-Total (mg/L)  | 0.0127  | 0.0072  | <0.0060 <sup>DLA</sup>  | <0.0060 <sup>DLA</sup>  | <0.0060 <sup>DLA</sup>  |
|                             | Antimony (Sb)-Total (mg/L)  | <0.00010  | 0.00028   | 0.00353   | 0.00307   | 0.00095   |
|                             | Arsenic (As)-Total (mg/L)   | 0.00027   | 0.00096   | 0.00776   | 0.00802   | 0.0105  |
|                             | Barium (Ba)-Total (mg/L)  | 0.0822  | 0.0819  | 0.0147  | 0.0135  | 0.00987   |
|                             | Beryllium (Be)-Total (mg/L)   | <0.00010  | <0.00010  | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>                                       |
|                             | Bismuth (Bi)-Total (mg/L)   | <0.00050  | <0.00050  | <0.0010 <sup>DLA</sup>  | <0.0010 <sup>DLA</sup>  | <0.0010 <sup>DLA</sup>  |
|                             | Boron (B)-Total (mg/L)  | <0.010  | <0.010  | <0.020 <sup>DLA</sup>   | <0.020 <sup>DLA</sup>   | <0.020 <sup>DLA</sup>   |
|                             | Cadmium (Cd)-Total (mg/L)   | 0.000027  | 0.000027  | 0.00517   | 0.00516   | 0.0111  |
|                             | Calcium (Ca)-Total (mg/L)   | 33.7  | 34.8  | 374   | 372   | 476   |
|                             | Chromium (Cr)-Total (mg/L)  | 0.00011   | 0.00010   | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>                                       |
|                             | Cobalt (Co)-Total (mg/L)  | <0.00010  | <0.00010  | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>                                       | 0.00183   |
|                             | Copper (Cu)-Total (mg/L)  | 0.00090   | 0.00094   | 0.0030  | 0.0028  | 0.0026  |
|                             | Iron (Fe)-Total (mg/L)  | 0.027   | 0.012   | 0.031   | 0.033   | 0.264   |
|                             | Lead (Pb)-Total (mg/L)  | <0.000050   | <0.000050   | 0.00032   | 0.00024   | 0.00017   |
|                             | Lithium (Li)-Total (mg/L)   | <0.00050  | 0.00071   | 0.0103  | 0.0094  | 0.0115  |
|                             | Magnesium (Mg)-Total (mg/L)   | 12.0  | 12.2  | 112   | 113   | 155   |

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

|                             | Sample ID<br>Description<br>Sampled Date<br>Sampled Time<br>Client ID | L1291240-16<br>Water<br>18-APR-13<br>09:45<br>0167-130417-030 | L1291240-17<br>Water<br>18-APR-13<br>09:45<br>TRAVEL BLANK |  |  |
|-----------------------------|---|---|--|--|--|
| Grouping                    | Analyte   |   |  |  |  |
| <b>WATER</b>                |   |   |  |  |  |
| <b>Physical Tests</b>       | Colour, True (CU)   | <5.0  |  |  |  |
|                             | Conductivity (uS/cm)  | 415   | <2.0   |  |  |
|                             | Hardness (as CaCO3) (mg/L)  | 222   |  |  |  |
|                             | pH (pH)   | 8.11  | 5.97   |  |  |
|                             | Total Suspended Solids (mg/L)   |   | <3.0   |  |  |
|                             | Total Dissolved Solids (mg/L)   | 250   | <10  |  |  |
|                             | Turbidity (NTU)   | <0.10   |  |  |  |
| <b>Anions and Nutrients</b> | Alkalinity, Bicarbonate (as CaCO3) (mg/L)                             |   | <1.0   |  |  |
|                             | Alkalinity, Carbonate (as CaCO3) (mg/L)                               |   | <1.0   |  |  |
|                             | Alkalinity, Hydroxide (as CaCO3) (mg/L)                               |   | <1.0   |  |  |
|                             | Alkalinity, Total (as CaCO3) (mg/L)                                   | 181   | <1.0   |  |  |
|                             | Ammonia, Total (as N) (mg/L)  |   | <0.0050  |  |  |
|                             | Chloride (Cl) (mg/L)  | 0.53  | <0.50  |  |  |
|                             | Fluoride (F) (mg/L)   | 0.094   | <0.020   |  |  |
|                             | Nitrate (as N) (mg/L)   | 0.155   | <0.0050  |  |  |
|                             | Nitrite (as N) (mg/L)   | <0.0010   | <0.0010  |  |  |
|                             | Sulfate (SO4) (mg/L)  | 43.2  | <0.50  |  |  |
| <b>Cyanides</b>             | Cyanide, Weak Acid Diss (mg/L)  |   | <0.0050  |  |  |
|                             | Cyanide, Total (mg/L)   |   | <0.0050  |  |  |
|                             | Cyanate (mg/L)  |   | <0.20  |  |  |
|                             | Thiocyanate (SCN) (mg/L)  |   | <0.50  |  |  |
| <b>Total Metals</b>         | Aluminum (Al)-Total (mg/L)  | <0.010  | <0.0030  |  |  |
|                             | Antimony (Sb)-Total (mg/L)  | <0.00050  | <0.00010   |  |  |
|                             | Arsenic (As)-Total (mg/L)   | 0.00038   | <0.00010   |  |  |
|                             | Barium (Ba)-Total (mg/L)  | 0.096   | <0.000050  |  |  |
|                             | Beryllium (Be)-Total (mg/L)   |   | <0.00010   |  |  |
|                             | Bismuth (Bi)-Total (mg/L)   |   | <0.00050   |  |  |
|                             | Boron (B)-Total (mg/L)  | <0.10   | <0.010   |  |  |
|                             | Cadmium (Cd)-Total (mg/L)   | <0.00020  | <0.000010  |  |  |
|                             | Calcium (Ca)-Total (mg/L)   | 51.3  | <0.050   |  |  |
|                             | Chromium (Cr)-Total (mg/L)  | <0.0020   | <0.00010   |  |  |
|                             | Cobalt (Co)-Total (mg/L)  |   | <0.00010   |  |  |
|                             | Copper (Cu)-Total (mg/L)  | <0.0010   | <0.00050   |  |  |
|                             | Iron (Fe)-Total (mg/L)  | <0.030  | <0.010   |  |  |
|                             | Lead (Pb)-Total (mg/L)  | 0.00067   | <0.000050  |  |  |
|                             | Lithium (Li)-Total (mg/L)   |   | <0.00050   |  |  |
|                             | Magnesium (Mg)-Total (mg/L)   | 22.9  | <0.10  |  |  |

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

|                         |                                      | Sample ID    | L1291240-1      | L1291240-2      | L1291240-3      | L1291240-4      | L1291240-5      |
|-------------------------|--------------------------------------|--------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                         |                                      | Description  | Water           | Water           | Water           | Water           | Water           |
|                         |                                      | Sampled Date | 17-APR-13       | 17-APR-13       | 17-APR-13       | 17-APR-13       | 17-APR-13       |
|                         |                                      | Sampled Time | 11:14           | 11:30           | 11:41           | 09:41           | 10:07           |
|                         |                                      | Client ID    | 0167-130417-001 | 0167-130417-002 | 0167-130417-003 | 0167-130417-005 | 0167-130417-006 |
| Grouping                | Analyte                              |              |                 |                 |                 |                 |                 |
| <b>WATER</b>            |                                      |              |                 |                 |                 |                 |                 |
| <b>Total Metals</b>     | Manganese (Mn)-Total (mg/L)          |              | 2.24            | 1.39            | <0.000050       | 0.0808          | 0.0597          |
|                         | Mercury (Hg)-Total (mg/L)            |              | <0.000010       | <0.000010       | <0.000010       | <0.000010       | <0.000010       |
|                         | Molybdenum (Mo)-Total (mg/L)         |              | 0.000277        | 0.000441        | <0.000050       | 0.000414        | 0.000422        |
|                         | Nickel (Ni)-Total (mg/L)             |              | 0.00166         | 0.00194         | <0.00050        | <0.00050        | <0.00050        |
|                         | Phosphorus (P)-Total (mg/L)          |              | 0.131           | <0.050          | <0.050          | <0.050          | <0.050          |
|                         | Potassium (K)-Total (mg/L)           |              | 3.54            | 3.40            | <0.10           | 0.70            | 0.70            |
|                         | Selenium (Se)-Total (mg/L)           |              | <0.00010        | <0.00010        | <0.00010        | <0.00010        | <0.00010        |
|                         | Silicon (Si)-Total (mg/L)            |              | 8.02            | 6.33            | <0.050          | 6.17            | 6.29            |
|                         | Silver (Ag)-Total (mg/L)             |              | 0.000383        | 0.000012        | <0.000010       | <0.000010       | <0.000010       |
|                         | Sodium (Na)-Total (mg/L)             |              | 5.69            | 5.02            | <0.050          | 2.83            | 2.83            |
|                         | Strontium (Sr)-Total (mg/L)          |              | 0.421           | 0.402           | <0.00020        | 0.358           | 0.377           |
|                         | Sulfur (S)-Total (mg/L)              |              | 132             | 140             | <0.50           | 6.81            | 6.87            |
|                         | Thallium (Tl)-Total (mg/L)           |              | 0.000023        | 0.000097        | <0.000010       | <0.000010       | <0.000010       |
|                         | Tin (Sn)-Total (mg/L)                |              | <0.00010        | <0.00010        | <0.00010        | <0.00010        | <0.00010        |
|                         | Titanium (Ti)-Total (mg/L)           |              | 0.022           | 0.011           | <0.010          | <0.010          | <0.010          |
|                         | Uranium (U)-Total (mg/L)             |              | 0.00200         | 0.00428         | <0.000010       | 0.000893        | 0.000945        |
|                         | Vanadium (V)-Total (mg/L)            |              | 0.0026          | <0.0010         | <0.0010         | <0.0010         | <0.0010         |
|                         | Zinc (Zn)-Total (mg/L)               |              | 0.226           | 0.742           | <0.0030         | <0.0030         | <0.0030         |
| <b>Dissolved Metals</b> | Dissolved Metals Filtration Location |              | FIELD           | FIELD           | FIELD           | FIELD           | FIELD           |
|                         | Aluminum (Al)-Dissolved (mg/L)       |              | 0.0038          | <0.0010         | <0.0010         | 0.0053          | 0.0050          |
|                         | Antimony (Sb)-Dissolved (mg/L)       |              | 0.00031         | 0.00853         | <0.00010        | <0.00010        | <0.00010        |
|                         | Arsenic (As)-Dissolved (mg/L)        |              | 0.123           | 0.0273          | <0.00010        | 0.00026         | 0.00025         |
|                         | Barium (Ba)-Dissolved (mg/L)         |              | 0.0422          | 0.0120          | <0.000050       | 0.0803          | 0.0773          |
|                         | Beryllium (Be)-Dissolved (mg/L)      |              | <0.00010        | <0.00010        | <0.00010        | <0.00010        | <0.00010        |
|                         | Bismuth (Bi)-Dissolved (mg/L)        |              | <0.00050        | <0.00050        | <0.00050        | <0.00050        | <0.00050        |
|                         | Boron (B)-Dissolved (mg/L)           |              | <0.010          | <0.010          | <0.010          | <0.010          | <0.010          |
|                         | Cadmium (Cd)-Dissolved (mg/L)        |              | 0.000676        | 0.00106         | <0.000010       | 0.000025        | 0.000015        |
|                         | Calcium (Ca)-Dissolved (mg/L)        |              | 174             | 182             | <0.050          | 32.3            | 33.8            |
|                         | Chromium (Cr)-Dissolved (mg/L)       |              | <0.00010        | <0.00010        | <0.00010        | <0.00010        | <0.00010        |
|                         | Cobalt (Co)-Dissolved (mg/L)         |              | 0.00173         | 0.00060         | <0.00010        | <0.00010        | <0.00010        |
|                         | Copper (Cu)-Dissolved (mg/L)         |              | <0.00020        | 0.00024         | <0.00020        | 0.00082         | 0.00066         |
|                         | Iron (Fe)-Dissolved (mg/L)           |              | 10.4            | 0.339           | <0.010          | 0.014           | 0.014           |
|                         | Lead (Pb)-Dissolved (mg/L)           |              | 0.000059        | <0.000050       | <0.000050       | <0.000050       | <0.000050       |
|                         | Lithium (Li)-Dissolved (mg/L)        |              | 0.00699         | 0.00814         | <0.00050        | <0.00050        | <0.00050        |
|                         | Magnesium (Mg)-Dissolved (mg/L)      |              | 60.7            | 63.6            | <0.10           | 11.5            | 12.3            |
|                         | Manganese (Mn)-Dissolved (mg/L)      |              | 2.22            | 1.39            | <0.000050       | 0.0780          | 0.0577          |
|                         | Mercury (Hg)-Dissolved (mg/L)        |              | <0.000010       | <0.000010       | <0.000010       | <0.000010       | <0.000010       |

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample ID<br>Description<br>Sampled Date<br>Sampled Time<br>Client ID |                                      | L1291240-6<br>Water<br>17-APR-13<br>12:46<br>0167-130417-008 | L1291240-7<br>Water<br>17-APR-13<br>11:55<br>0167-130417-009 | L1291240-8<br>Water<br>17-APR-13<br>11:30<br>0167-130417-011 | L1291240-9<br>Water<br>16-APR-13<br>12:14<br>0167-130416-019 | L1291240-10<br>Water<br>16-APR-13<br>14:47<br>0167-130416-020 |
|---|--------------------------------------|--|--|--|--|---|
| Grouping  | Analyte                              |  |  |  |  |   |
| <b>WATER</b>  |                                      |  |  |  |  |   |
| <b>Total Metals</b>   | Manganese (Mn)-Total (mg/L)          | 6.11   | 6.05   | 4.90   | 0.128  | 0.0830  |
|   | Mercury (Hg)-Total (mg/L)            | <0.000010  | <0.000010  | <0.000010  | <0.000010  | <0.000010   |
|   | Molybdenum (Mo)-Total (mg/L)         | 0.00465  | 0.00114  | 0.00107  | 0.000369   | 0.000425  |
|   | Nickel (Ni)-Total (mg/L)             | 0.0045   | 0.00241  | 0.00202  | <0.00050   | <0.00050  |
|   | Phosphorus (P)-Total (mg/L)          | <0.050   | <0.050   | <0.050   | <0.050   | <0.050  |
|   | Potassium (K)-Total (mg/L)           | 21.8   | 6.95   | 6.98   | 0.77   | 0.71  |
|   | Selenium (Se)-Total (mg/L)           | <0.00020 <sup>DLA</sup>                                      | 0.00023  | 0.00019  | <0.00010   | <0.00010  |
|   | Silicon (Si)-Total (mg/L)            | 4.70   | 7.22   | 7.77   | 6.08   | 6.26  |
|   | Silver (Ag)-Total (mg/L)             | 0.000064   | 0.000035   | 0.000026   | <0.000010  | <0.000010   |
|   | Sodium (Na)-Total (mg/L)             | 35.1   | 44.6   | 38.3   | 3.49   | 2.80  |
|   | Strontium (Sr)-Total (mg/L)          | 0.951  | 0.783  | 0.994  | 0.350  | 0.361   |
|   | Sulfur (S)-Total (mg/L)              | 402  | 247  | 311  | 11.5   | 7.00  |
|   | Thallium (Tl)-Total (mg/L)           | 0.000367   | 0.000011   | 0.000010   | <0.000010  | <0.000010   |
|   | Tin (Sn)-Total (mg/L)                | <0.00020 <sup>DLA</sup>                                      | <0.00010   | <0.00010   | <0.00010   | <0.00010  |
|   | Titanium (Ti)-Total (mg/L)           | <0.020 <sup>DLA</sup>  | <0.010   | <0.010   | <0.010   | <0.010  |
|   | Uranium (U)-Total (mg/L)             | 0.00196  | 0.00285  | 0.00410  | 0.000924   | 0.000931  |
|   | Vanadium (V)-Total (mg/L)            | <0.0020 <sup>DLA</sup>                                       | 0.0017   | <0.0010  | <0.0010  | <0.0010   |
|   | Zinc (Zn)-Total (mg/L)               | 0.593  | 0.0099   | 0.0080   | <0.0030  | <0.0030   |
| <b>Dissolved Metals</b>   | Dissolved Metals Filtration Location | FIELD  | FIELD  | FIELD  | FIELD  | FIELD   |
|   | Aluminum (Al)-Dissolved (mg/L)       | <0.0020 <sup>DLA</sup>                                       | 0.0084   | 0.0048   | 0.0044   | 0.0054  |
|   | Antimony (Sb)-Dissolved (mg/L)       | 0.0511   | 0.00076  | 0.00073  | 0.00016  | <0.00010  |
|   | Arsenic (As)-Dissolved (mg/L)        | 0.0528   | 0.0353   | 0.0236   | 0.00059  | 0.00027   |
|   | Barium (Ba)-Dissolved (mg/L)         | 0.0260   | 0.0545   | 0.0657   | 0.0788   | 0.0811  |
|   | Beryllium (Be)-Dissolved (mg/L)      | <0.00020 <sup>DLA</sup>                                      | <0.00010   | <0.00010   | <0.00010   | <0.00010  |
|   | Bismuth (Bi)-Dissolved (mg/L)        | <0.0010 <sup>DLA</sup>                                       | <0.00050   | <0.00050   | <0.00050   | <0.00050  |
|   | Boron (B)-Dissolved (mg/L)           | 0.142  | 0.091  | 0.062  | <0.010   | <0.010  |
|   | Cadmium (Cd)-Dissolved (mg/L)        | 0.00433  | 0.000359   | 0.000320   | 0.000038   | 0.000026  |
|   | Calcium (Ca)-Dissolved (mg/L)        | 382  | 271  | 282  | 35.5   | 32.0  |
|   | Chromium (Cr)-Dissolved (mg/L)       | <0.00020 <sup>DLA</sup>                                      | 0.00019  | <0.00010   | <0.00010   | <0.00010  |
|   | Cobalt (Co)-Dissolved (mg/L)         | 0.00294  | 0.00777  | 0.00539  | <0.00010   | <0.00010  |
|   | Copper (Cu)-Dissolved (mg/L)         | 0.0208   | 0.00174  | 0.00132  | 0.00085  | 0.00081   |
|   | Iron (Fe)-Dissolved (mg/L)           | 0.071  | 11.4   | 5.13   | <0.010   | 0.012   |
|   | Lead (Pb)-Dissolved (mg/L)           | <0.00010 <sup>DLA</sup>                                      | <0.000050  | <0.000050  | <0.000050  | <0.000050   |
|   | Lithium (Li)-Dissolved (mg/L)        | 0.0104   | <0.00050   | 0.00197  | <0.00050   | <0.00050  |
|   | Magnesium (Mg)-Dissolved (mg/L)      | 91.8   | 55.8   | 108  | 12.2   | 11.4  |
|   | Manganese (Mn)-Dissolved (mg/L)      | 6.07   | 5.93   | 4.79   | 0.122  | 0.0800  |
|   | Mercury (Hg)-Dissolved (mg/L)        | <0.000010  | <0.000010  | <0.000010  | <0.000010  | <0.000010   |

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample ID<br>Description<br>Sampled Date<br>Sampled Time<br>Client ID | L1291240-11<br>Water<br>16-APR-13<br>14:47<br>0167-130416-021 | L1291240-12<br>Water<br>17-APR-13<br>09:12<br>0167-130417-023 | L1291240-13<br>Water<br>18-APR-13<br>09:45<br>0167-130417-027 | L1291240-14<br>Water<br>18-APR-13<br>09:45<br>0167-130417-028 | L1291240-15<br>Water<br>18-APR-13<br>09:45<br>0167-130417-029 |                          |
|---|---|---|---|---|---|--------------------------|
| Grouping  | Analyte   |   |   |   |   |                          |
| <b>WATER</b>  |   |   |   |   |   |                          |
| <b>Total Metals</b>   | Manganese (Mn)-Total (mg/L)                                   | 0.0840  | 0.0561  | 0.129   | 0.346   | 3.02                     |
|   | Mercury (Hg)-Total (mg/L)                                     | <0.000010   | <0.000010   | <0.000010   | <0.000010   | <0.000010                |
|   | Molybdenum (Mo)-Total (mg/L)                                  | 0.000427  | 0.000401  | 0.00015 <sup>DLA</sup>  | 0.00014 <sup>DLA</sup>  | <0.00010 <sup>DLA</sup>  |
|   | Nickel (Ni)-Total (mg/L)                                      | <0.00050  | <0.00050  | <0.0010 <sup>DLA</sup>  | <0.0010 <sup>DLA</sup>  | 0.0020                   |
|   | Phosphorus (P)-Total (mg/L)                                   | <0.050  | <0.050  | <0.050  | <0.050  | <0.050                   |
|   | Potassium (K)-Total (mg/L)                                    | 0.73  | 0.84  | 4.05  | 3.99  | 5.59                     |
|   | Selenium (Se)-Total (mg/L)                                    | <0.00010  | <0.00010  | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>  |
|   | Silicon (Si)-Total (mg/L)                                     | 6.45  | 6.18  | 3.66  | 3.60  | 3.78                     |
|   | Silver (Ag)-Total (mg/L)                                      | <0.000010   | <0.000010   | <0.000020 <sup>DLA</sup>                                      | <0.000020 <sup>DLA</sup>                                      | <0.000020 <sup>DLA</sup> |
|   | Sodium (Na)-Total (mg/L)                                      | 2.82  | 3.86  | 13.1  | 13.1  | 15.6                     |
|   | Strontium (Sr)-Total (mg/L)                                   | 0.356   | 0.338   | 1.15  | 1.15  | 1.38                     |
|   | Sulfur (S)-Total (mg/L)                                       | 7.08  | 11.9  | 397   | 395   | 527                      |
|   | Thallium (Tl)-Total (mg/L)                                    | <0.000010   | <0.000010   | 0.000085 <sup>DLA</sup>                                       | 0.000083 <sup>DLA</sup>                                       | 0.000110 <sup>DLA</sup>  |
|   | Tin (Sn)-Total (mg/L)   | <0.00010  | <0.00010  | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>  |
|   | Titanium (Ti)-Total (mg/L)                                    | <0.010  | <0.010  | <0.020 <sup>DLA</sup>   | <0.020 <sup>DLA</sup>   | <0.020 <sup>DLA</sup>    |
|   | Uranium (U)-Total (mg/L)                                      | 0.000909  | 0.000875  | 0.00443 <sup>DLA</sup>  | 0.00435 <sup>DLA</sup>  | 0.00423 <sup>DLA</sup>   |
|   | Vanadium (V)-Total (mg/L)                                     | <0.0010   | <0.0010   | <0.0020 <sup>DLA</sup>  | <0.0020 <sup>DLA</sup>  | <0.0020 <sup>DLA</sup>   |
|   | Zinc (Zn)-Total (mg/L)  | <0.0030   | <0.0030   | 0.698   | 0.690   | 1.11                     |
| <b>Dissolved Metals</b>   | Dissolved Metals Filtration Location                          | FIELD   | FIELD   | FIELD <sup>DLA</sup>  | FIELD <sup>DLA</sup>  | FIELD <sup>DLA</sup>     |
|   | Aluminum (Al)-Dissolved (mg/L)                                | 0.0049  | 0.0036  | <0.0020 <sup>DLA</sup>  | <0.0020 <sup>DLA</sup>  | <0.0020 <sup>DLA</sup>   |
|   | Antimony (Sb)-Dissolved (mg/L)                                | <0.00010  | 0.00032   | 0.00332   | 0.00328   | 0.00069                  |
|   | Arsenic (As)-Dissolved (mg/L)                                 | 0.00024   | 0.00092   | 0.00631   | 0.00656   | 0.00619                  |
|   | Barium (Ba)-Dissolved (mg/L)                                  | 0.0818  | 0.0820  | 0.0143  | 0.0147  | 0.0101                   |
|   | Beryllium (Be)-Dissolved (mg/L)                               | <0.00010  | <0.00010  | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>  |
|   | Bismuth (Bi)-Dissolved (mg/L)                                 | <0.00050  | <0.00050  | <0.0010 <sup>DLA</sup>  | <0.0010 <sup>DLA</sup>  | <0.0010 <sup>DLA</sup>   |
|   | Boron (B)-Dissolved (mg/L)                                    | <0.010  | <0.010  | <0.020 <sup>DLA</sup>   | <0.020 <sup>DLA</sup>   | <0.020 <sup>DLA</sup>    |
|   | Cadmium (Cd)-Dissolved (mg/L)                                 | 0.000025  | 0.000022  | 0.00488   | 0.00500   | 0.0106                   |
|   | Calcium (Ca)-Dissolved (mg/L)                                 | 32.4  | 35.0  | 376   | 381   | 487                      |
|   | Chromium (Cr)-Dissolved (mg/L)                                | <0.00010  | <0.00010  | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>  |
|   | Cobalt (Co)-Dissolved (mg/L)                                  | <0.00010  | <0.00010  | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>                                       | 0.00166                  |
|   | Copper (Cu)-Dissolved (mg/L)                                  | 0.00076   | 0.00086   | 0.00225   | 0.00211   | 0.00161                  |
|   | Iron (Fe)-Dissolved (mg/L)                                    | 0.012   | 0.013   | <0.010  | <0.010  | 0.152                    |
|   | Lead (Pb)-Dissolved (mg/L)                                    | <0.000050   | <0.000050   | <0.00010 <sup>DLA</sup>                                       | <0.00010 <sup>DLA</sup>                                       | <0.00010 <sup>DLA</sup>  |
|   | Lithium (Li)-Dissolved (mg/L)                                 | <0.00050  | 0.00066   | 0.0098  | 0.0094  | 0.0106                   |
|   | Magnesium (Mg)-Dissolved (mg/L)                               | 11.6  | 12.1  | 113   | 115   | 167                      |
|   | Manganese (Mn)-Dissolved (mg/L)                               | 0.0786  | 0.0570  | 0.0830  | 0.0916  | 3.01                     |
|   | Mercury (Hg)-Dissolved (mg/L)                                 | <0.000010   | <0.000010   | <0.000010   | <0.000010   | <0.000010                |

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

|                         | Sample ID                            | L1291240-16     | L1291240-17  |  |  |
|-------------------------|--------------------------------------|-----------------|--------------|--|--|
|                         | Description                          | Water           | Water        |  |  |
|                         | Sampled Date                         | 18-APR-13       | 18-APR-13    |  |  |
|                         | Sampled Time                         | 09:45           | 09:45        |  |  |
|                         | Client ID                            | 0167-130417-030 | TRAVEL BLANK |  |  |
| Grouping                | Analyte                              |                 |              |  |  |
| <b>WATER</b>            |                                      |                 |              |  |  |
| <b>Total Metals</b>     | Manganese (Mn)-Total (mg/L)          | <0.0020         | <0.000050    |  |  |
|                         | Mercury (Hg)-Total (mg/L)            | <0.00020        | <0.000010    |  |  |
|                         | Molybdenum (Mo)-Total (mg/L)         |                 | <0.000050    |  |  |
|                         | Nickel (Ni)-Total (mg/L)             |                 | <0.00050     |  |  |
|                         | Phosphorus (P)-Total (mg/L)          |                 | <0.050       |  |  |
|                         | Potassium (K)-Total (mg/L)           | 0.97            | <0.10        |  |  |
|                         | Selenium (Se)-Total (mg/L)           | <0.0010         | <0.00010     |  |  |
|                         | Silicon (Si)-Total (mg/L)            |                 | <0.050       |  |  |
|                         | Silver (Ag)-Total (mg/L)             |                 | <0.000010    |  |  |
|                         | Sodium (Na)-Total (mg/L)             | 5.0             | <0.050       |  |  |
|                         | Strontium (Sr)-Total (mg/L)          |                 | <0.00020     |  |  |
|                         | Sulfur (S)-Total (mg/L)              |                 | <0.50        |  |  |
|                         | Thallium (Tl)-Total (mg/L)           |                 | <0.000010    |  |  |
|                         | Tin (Sn)-Total (mg/L)                |                 | <0.00010     |  |  |
|                         | Titanium (Ti)-Total (mg/L)           |                 | <0.010       |  |  |
|                         | Uranium (U)-Total (mg/L)             | 0.00242         | <0.000010    |  |  |
|                         | Vanadium (V)-Total (mg/L)            |                 | <0.0010      |  |  |
|                         | Zinc (Zn)-Total (mg/L)               | <0.050          | <0.0030      |  |  |
| <b>Dissolved Metals</b> | 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)      |                 |              |  |  |
|                         | Mercury (Hg)-Dissolved (mg/L)        |                 |              |  |  |

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

|                         |                                  | Sample ID    | L1291240-1      | L1291240-2      | L1291240-3      | L1291240-4      | L1291240-5      |
|-------------------------|----------------------------------|--------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                         |                                  | Description  | Water           | Water           | Water           | Water           | Water           |
|                         |                                  | Sampled Date | 17-APR-13       | 17-APR-13       | 17-APR-13       | 17-APR-13       | 17-APR-13       |
|                         |                                  | Sampled Time | 11:14           | 11:30           | 11:41           | 09:41           | 10:07           |
|                         |                                  | Client ID    | 0167-130417-001 | 0167-130417-002 | 0167-130417-003 | 0167-130417-005 | 0167-130417-006 |
| Grouping                | Analyte                          |              |                 |                 |                 |                 |                 |
| <b>WATER</b>            |                                  |              |                 |                 |                 |                 |                 |
| <b>Dissolved Metals</b> | Molybdenum (Mo)-Dissolved (mg/L) | 0.000213     | 0.000417        | <0.000050       | 0.000396        | 0.000431        |                 |
|                         | Nickel (Ni)-Dissolved (mg/L)     | 0.00119      | 0.00180         | <0.00050        | <0.00050        | <0.00050        |                 |
|                         | Phosphorus (P)-Dissolved (mg/L)  | <0.050       | <0.050          | <0.050          | <0.050          | <0.050          |                 |
|                         | Potassium (K)-Dissolved (mg/L)   | 3.62         | 3.58            | <0.10           | 0.69            | 0.69            |                 |
|                         | Selenium (Se)-Dissolved (mg/L)   | <0.00010     | <0.00010        | <0.00010        | <0.00010        | <0.00010        |                 |
|                         | Silicon (Si)-Dissolved (mg/L)    | 7.22         | 6.39            | <0.050          | 6.12            | 6.31            |                 |
|                         | Silver (Ag)-Dissolved (mg/L)     | <0.000010    | <0.000010       | <0.000010       | <0.000010       | <0.000010       |                 |
|                         | Sodium (Na)-Dissolved (mg/L)     | 5.79         | 5.02            | <0.050          | 2.75            | 2.80            |                 |
|                         | Strontium (Sr)-Dissolved (mg/L)  | 0.405        | 0.412           | <0.00020        | 0.348           | 0.379           |                 |
|                         | Sulfur (S)-Dissolved (mg/L)      | 131          | 145             | <0.50           | 6.73            | 6.78            |                 |
|                         | Thallium (Tl)-Dissolved (mg/L)   | <0.000010    | 0.000085        | <0.000010       | <0.000010       | <0.000010       |                 |
|                         | Tin (Sn)-Dissolved (mg/L)        | <0.00010     | <0.00010        | <0.00010        | <0.00010        | <0.00010        |                 |
|                         | Titanium (Ti)-Dissolved (mg/L)   | <0.010       | <0.010          | <0.010          | <0.010          | <0.010          |                 |
|                         | Uranium (U)-Dissolved (mg/L)     | 0.00192      | 0.00441         | <0.000010       | 0.000909        | 0.000934        |                 |
|                         | Vanadium (V)-Dissolved (mg/L)    | <0.0010      | <0.0010         | <0.0010         | <0.0010         | <0.0010         |                 |
|                         | Zinc (Zn)-Dissolved (mg/L)       | 0.170        | 0.751           | <0.0010         | 0.0046          | 0.0011          |                 |
| <b>Plant Pigments</b>   | Chlorophyll a (ug/L)             |              |                 |                 |                 |                 |                 |
|                         | Pheopigments (ug/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       | L1291240-6      | L1291240-7      | L1291240-8      | L1291240-9      | L1291240-10     |
|-------------------------|----------------------------------|--------------------------|--------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
|                         |                                  |                          |              |                 | Water           | Water           | Water           | Water           | Water           |
|                         |                                  | 17-APR-13                | 12:46        | 0167-130417-008 | 17-APR-13       | 17-APR-13       | 17-APR-13       | 16-APR-13       | 16-APR-13       |
|                         |                                  |                          |              |                 | 0167-130417-008 | 0167-130417-009 | 0167-130417-011 | 0167-130416-019 | 0167-130416-020 |
|                         |                                  |                          |              |                 |                 |                 |                 |                 |                 |
| Grouping                | Analyte                          |                          |              |                 |                 |                 |                 |                 |                 |
| WATER                   |                                  |                          |              |                 |                 |                 |                 |                 |                 |
| <b>Dissolved Metals</b> | Molybdenum (Mo)-Dissolved (mg/L) | 0.00455                  | 0.00109      | 0.00104         | 0.000369        | 0.000402        |                 |                 |                 |
|                         | Nickel (Ni)-Dissolved (mg/L)     | 0.0045                   | 0.00228      | 0.00191         | <0.00050        | <0.00050        |                 |                 |                 |
|                         | Phosphorus (P)-Dissolved (mg/L)  | <0.050                   | <0.050       | <0.050          | <0.050          | <0.050          |                 |                 |                 |
|                         | Potassium (K)-Dissolved (mg/L)   | 22.2                     | 6.91         | 6.94            | 0.80            | 0.68            |                 |                 |                 |
|                         | Selenium (Se)-Dissolved (mg/L)   | <0.00020 <sup>DLA</sup>  | 0.00026      | 0.00018         | <0.00010        | <0.00010        |                 |                 |                 |
|                         | Silicon (Si)-Dissolved (mg/L)    | 4.57                     | 7.07         | 7.57            | 6.18            | 6.08            |                 |                 |                 |
|                         | Silver (Ag)-Dissolved (mg/L)     | <0.000020 <sup>DLA</sup> | <0.000010    | <0.000010       | <0.000010       | <0.000010       |                 |                 |                 |
|                         | Sodium (Na)-Dissolved (mg/L)     | 34.0                     | 44.7         | 36.2            | 3.41            | 2.74            |                 |                 |                 |
|                         | Strontium (Sr)-Dissolved (mg/L)  | 0.958                    | 0.762        | 0.972           | 0.348           | 0.361           |                 |                 |                 |
|                         | Sulfur (S)-Dissolved (mg/L)      | 389                      | 242          | 299             | 11.6            | 6.83            |                 |                 |                 |
|                         | Thallium (Tl)-Dissolved (mg/L)   | 0.000365                 | <0.000010    | <0.000010       | <0.000010       | <0.000010       |                 |                 |                 |
|                         | Tin (Sn)-Dissolved (mg/L)        | <0.00020 <sup>DLA</sup>  | <0.00010     | <0.00010        | <0.00010        | <0.00010        |                 |                 |                 |
|                         | Titanium (Ti)-Dissolved (mg/L)   | <0.020 <sup>DLA</sup>    | <0.010       | <0.010          | <0.010          | <0.010          |                 |                 |                 |
|                         | Uranium (U)-Dissolved (mg/L)     | 0.00200                  | 0.00276      | 0.00385         | 0.000915        | 0.000891        |                 |                 |                 |
|                         | Vanadium (V)-Dissolved (mg/L)    | <0.0020 <sup>DLA</sup>   | 0.0011       | <0.0010         | <0.0010         | <0.0010         |                 |                 |                 |
|                         | Zinc (Zn)-Dissolved (mg/L)       | 0.567                    | 0.0086       | 0.0073          | 0.0031          | 0.0014          |                 |                 |                 |
| <b>Plant Pigments</b>   | Chlorophyll a (ug/L)             |                          |              |                 |                 |                 |                 |                 |                 |
|                         | Pheopigments (ug/L)              |                          |              |                 |                 |                 |                 |                 |                 |

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

| Sample ID<br>Description<br>Sampled Date<br>Sampled Time<br>Client ID |                                  | L1291240-11<br>Water<br>16-APR-13<br>14:47<br>0167-130416-021 | L1291240-12<br>Water<br>17-APR-13<br>09:12<br>0167-130417-023 | L1291240-13<br>Water<br>18-APR-13<br>09:45<br>0167-130417-027 | L1291240-14<br>Water<br>18-APR-13<br>09:45<br>0167-130417-028 | L1291240-15<br>Water<br>18-APR-13<br>09:45<br>0167-130417-029 |
|---|----------------------------------|---|---|---|---|---|
| Grouping  | Analyte                          |   |   |   |   |   |
| <b>WATER</b>  |                                  |   |   |   |   |   |
| <b>Dissolved Metals</b>   | Molybdenum (Mo)-Dissolved (mg/L) | 0.000387  | 0.000438  | 0.00014 <sup>DLA</sup>  | 0.00013 <sup>DLA</sup>  | <0.00010 <sup>DLA</sup>                                       |
|   | Nickel (Ni)-Dissolved (mg/L)     | <0.00050  | <0.00050  | <0.0010 <sup>DLA</sup>  | <0.0010 <sup>DLA</sup>  | 0.0019  |
|   | Phosphorus (P)-Dissolved (mg/L)  | <0.050  | <0.050  | <0.050  | <0.050  | <0.050  |
|   | Potassium (K)-Dissolved (mg/L)   | 0.71  | 0.84  | 4.07  | 4.06  | 5.84  |
|   | Selenium (Se)-Dissolved (mg/L)   | <0.00010  | <0.00010  | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>                                       |
|   | Silicon (Si)-Dissolved (mg/L)    | 6.22  | 6.08  | 3.65  | 3.67  | 3.77  |
|   | Silver (Ag)-Dissolved (mg/L)     | <0.000010   | <0.000010   | <0.000020 <sup>DLA</sup>                                      | <0.000020 <sup>DLA</sup>                                      | <0.000020 <sup>DLA</sup>                                      |
|   | Sodium (Na)-Dissolved (mg/L)     | 2.69  | 3.72  | 12.6  | 12.4  | 14.8  |
|   | Strontium (Sr)-Dissolved (mg/L)  | 0.353   | 0.382   | 1.15  | 1.13  | 1.36  |
|   | Sulfur (S)-Dissolved (mg/L)      | 6.92  | 11.7  | 385   | 393   | 533   |
|   | Thallium (Tl)-Dissolved (mg/L)   | <0.000010   | <0.000010   | 0.000086  | 0.000087  | 0.000110  |
|   | Tin (Sn)-Dissolved (mg/L)        | <0.00010  | <0.00010  | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>                                       | <0.00020 <sup>DLA</sup>                                       |
|   | Titanium (Ti)-Dissolved (mg/L)   | <0.010  | <0.010  | <0.020 <sup>DLA</sup>   | <0.020 <sup>DLA</sup>   | <0.020 <sup>DLA</sup>   |
|   | Uranium (U)-Dissolved (mg/L)     | 0.000853  | 0.000990  | 0.00442 <sup>DLA</sup>  | 0.00441 <sup>DLA</sup>  | 0.00407 <sup>DLA</sup>  |
|   | Vanadium (V)-Dissolved (mg/L)    | <0.0010   | <0.0010   | <0.0020 <sup>DLA</sup>  | <0.0020 <sup>DLA</sup>  | <0.0020 <sup>DLA</sup>  |
|   | Zinc (Zn)-Dissolved (mg/L)       | <0.0010   | 0.0021  | 0.681   | 0.690   | 1.09  |
| <b>Plant Pigments</b>   | Chlorophyll a (ug/L)             |   |   | 0.144   | 0.110   | <0.010  |
|   | Pheopigments (ug/L)              |   |   | 0.370   | 0.110   | 0.160   |

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

|                         | Sample ID                        | L1291240-16     | L1291240-17  |  |  |
|-------------------------|----------------------------------|-----------------|--------------|--|--|
|                         | <b>Description</b>               | Water           | Water        |  |  |
|                         | <b>Sampled Date</b>              | 18-APR-13       | 18-APR-13    |  |  |
|                         | <b>Sampled Time</b>              | 09:45           | 09:45        |  |  |
|                         | <b>Client ID</b>                 | 0167-130417-030 | TRAVEL BLANK |  |  |
| Grouping                | Analyte                          |                 |              |  |  |
| <b>WATER</b>            |                                  |                 |              |  |  |
| <b>Dissolved Metals</b> | Molybdenum (Mo)-Dissolved (mg/L) |                 |              |  |  |
|                         | Nickel (Ni)-Dissolved (mg/L)     |                 |              |  |  |
|                         | Phosphorus (P)-Dissolved (mg/L)  |                 |              |  |  |
|                         | Potassium (K)-Dissolved (mg/L)   |                 |              |  |  |
|                         | 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)  |                 |              |  |  |
|                         | Sulfur (S)-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)       |                 |              |  |  |
| <b>Plant Pigments</b>   | Chlorophyll a (ug/L)             |                 |              |  |  |
|                         | Pheopigments (ug/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)  |
|---------------------|---------------------------|-----------|--|
| Matrix Spike        | Sulfate (SO4)             | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -16, -17, -2, -3, -4, -5, -6, -7, -8, -9 |
| Matrix Spike        | Barium (Ba)-Dissolved     | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9           |
| Matrix Spike        | Boron (B)-Dissolved       | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9           |
| Matrix Spike        | Manganese (Mn)-Dissolved  | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9           |
| Matrix Spike        | Sodium (Na)-Dissolved     | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9           |
| Matrix Spike        | Strontium (Sr)-Dissolved  | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9           |
| Matrix Spike        | Antimony (Sb)-Dissolved   | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9           |
| Matrix Spike        | Arsenic (As)-Dissolved    | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9           |
| Matrix Spike        | Copper (Cu)-Dissolved     | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9           |
| Matrix Spike        | Manganese (Mn)-Dissolved  | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9           |
| Matrix Spike        | Molybdenum (Mo)-Dissolved | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9           |
| Matrix Spike        | Sodium (Na)-Dissolved     | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9           |
| Matrix Spike        | Strontium (Sr)-Dissolved  | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9           |
| Matrix Spike        | Barium (Ba)-Dissolved     | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9           |
| Matrix Spike        | Strontium (Sr)-Dissolved  | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9           |
| Matrix Spike        | Barium (Ba)-Dissolved     | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9           |
| Matrix Spike        | Strontium (Sr)-Dissolved  | MS-B      | L1291240-1, -10, -11, -12, -13, -14, -15, -2, -3, -4, -5, -6, -7, -8, -9           |
| Matrix Spike        | Copper (Cu)-Total         | MS-B      | L1291240-16  |
| Matrix Spike        | Uranium (U)-Total         | MS-B      | L1291240-16  |

**Qualifiers for Individual Parameters Listed:**

| Qualifier | Description  |
|-----------|--|
| DLA       | Detection Limit Adjusted For required dilution   |
| 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**     |
|---|--------|---|------------------------|
| <b>ALK-COL-VA</b>   | Water  | Alkalinity by Colourimetric (Automated) | EPA 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.  |        |   |                        |
| <b>ALK-PCT-VA</b>   | Water  | Alkalinity by Auto. 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.            |        |   |                        |
| <b>ALK-PCT-VA</b>   | Water  | Alkalinity by Auto. 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.            |        |   |                        |
| <b>ANIONS-CL-IC-WR</b>  | Water  | Chloride by Ion Chromatography          | EPA 300.1              |
| This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19, Dionex 2003. |        |   |                        |
| <b>ANIONS-F-IC-WR</b>   | Water  | Fluoride by Ion Chromatography          | EPA 300.1              |
| This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19,              |        |   |                        |

## Reference Information

Dionex 2003.

|   |       |  |                                  |
|---|-------|--|----------------------------------|
| <b>ANIONS-NO2-IC-WR</b>   | Water | Nitrite Nitrogen by Ion Chromatography   | EPA 300.1                        |
| This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19, Dionex 2003. Nitrate is detected by UV absorbance.   |       |  |                                  |
| <b>ANIONS-NO3-IC-WR</b>   | Water | Nitrate Nitrogen by Ion Chromatography   | EPA 300.1                        |
| This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19, Dionex 2003. Nitrate is detected by UV absorbance.   |       |  |                                  |
| <b>ANIONS-SO4-IC-WR</b>   | Water | Sulphate by Ion Chromatography           | EPA 300.1                        |
| This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19, Dionex 2003.   |       |  |                                  |
| <b>CHLOROA-VA</b>   | Water | Chlorophyll a by Fluorometer             | EPA 445.0                        |
| This analysis is done using procedures modified from EPA Method 445.0. Chlorophyll-a is determined by a routine acetone extraction followed with analysis by fluorometry using the non-acidification procedure. This method is not subject to interferences from chlorophyll b.   |       |  |                                  |
| <b>CN-CNO-WT</b>  | Water | Cyanate                                  | APHA 4500-CN-L                   |
| <b>CN-SCN-VA</b>  | Water | Thiocyanate by Colour                    | APHA 4500-CN CYANIDE             |
| This analysis is carried out using procedures adapted from APHA Method 4500-CN- M "Thiocyanate" Thiocyanate is determined by the ferric nitrate colourimetric method.   |       |  |                                  |
| <b>CN-T-CFA-VA</b>  | Water | Total Cyanide in water by CFA            | ISO 14403:2002                   |
| This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there could be a positive interference with this method, but it would be less than 1% and could be as low as zero.   |       |  |                                  |
| <b>CN-WAD-CFA-VA</b>  | Water | Weak Acid Diss. Cyanide in water by CFA  | APHA 4500-CN CYANIDE             |
| This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.   |       |  |                                  |
| <b>COLOUR-TRUE-VA</b>   | Water | Colour (True) by Spectrometer            | BCMOE Colour Single Wavelength   |
| This analysis is carried out using procedures adapted from British Columbia Environmental Manual "Colour- Single Wavelength." Colour (True Colour) is determined by filtering a sample through a 0.45 micron membrane filter followed by analysis of the filtrate using the platinum-cobalt colourimetric method. Aparent Colour is determined without prior sample filtration. Colour is pH dependent. Unless otherwise indicated, reported colour results pertain to the pH of the sample as received, to within +/- 1 pH unit.   |       |  |                                  |
| <b>EC-PCT-VA</b>  | 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.  |       |  |                                  |
| <b>HARDNESS-CALC-VA</b>   | 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.  |       |  |                                  |
| <b>HG-DIS-LOW-CVAFS-VA</b>  | Water | Dissolved Mercury in Water by CVAFS(Low) | EPA SW-846 3005A & 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 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). |       |  |                                  |
| <b>HG-TOT-CVAFS-VA</b>  | Water | Total Mercury in Water by CVAFS          | 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).  |       |  |                                  |
| <b>HG-TOT-LOW-CVAFS-VA</b>  | Water | Total Mercury in Water by CVAFS(Low)     | 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).  |       |  |                                  |
| <b>MET-D-CCMS-VA</b>  | Water | Dissolved Metals in Water by CRC ICPMS   | APHA 3030 B&E / EPA SW-846 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  |       |  |                                  |

## Reference Information

States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

**MET-DIS-LOW-ICP-VA**      Water      Dissolved Metals in Water by ICPOES      EPA 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 procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

**MET-T-CCMS-VA**      Water      Total Metals in Water by CRC ICPMS      APHA 3030 B&E / EPA SW-846 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 hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

**MET-TOT-ICP-VA**      Water      Total Metals in Water by ICPOES      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 (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

**MET-TOT-LOW-ICP-VA**      Water      Total Metals in Water by ICPOES      EPA 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 (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

**MET-TOT-LOW-MS-VA**      Water      Total Metals in Water by ICPMS(Low)      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-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. Weston et al.

**PH-MAN-VA**      Water      pH by Manual Meter      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.

**PH-MAN-VA**      Water      pH by Manual Meter      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.

**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.

**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.

**PHEOPIGMENTS-VA**      Water      Pheopigments by Fluorometer      EPA 445.0

This analysis is done using procedures modified from EPA Method 445.0. Phaeophorbides (pheopigments) present in the sample are determined collectively as Pheophytin-a. Pheophytin-a is determined by a routine acetone extraction followed with analysis by fluorometry using the acidification procedure.

**S-DIS-ICP-VA**      Water      Dissolved Sulfur in Water by ICPOES      EPA SW-846 3005A/6010B

## Reference Information

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).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

**S-TOT-ICP-VA**                      Water                      Total Sulfur in Water by ICPOES                      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).

Method Limitation: This method will not give total sulfur results for all samples. Sulfide or other volatile forms of sulfur that may be present in submitted samples, is often lost during the sampling, preservation and analysis process. The data reported as total and/or dissolved sulfur represents all non-volatile forms of sulfur present in a particular sample.

**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.

**TSS-VA**                                      Water                      Total Suspended 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.

**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.

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\*\* 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:*

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| Laboratory Definition Code | Laboratory Location                                     |
|----------------------------|---|
| WR                         | ALS ENVIRONMENTAL - WHITEHORSE, YUKON, CANADA           |
| WT                         | ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA           |
| VA                         | ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA |

---

**Chain of Custody Numbers:**

|   |   |   |   |   |  |
|---|---|---|---|---|--|
| 1 | 2 | 3 | 4 | 5 |  |
| 6 |   |   |   |   |  |

**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**  
 Company: EDI  
 Contact: Lindsay Doetzel  
 Address: 3-478 Range Road  
 Y1A #a2  
 Phone: 867-393-4882 Fax:  
 Invoice To Same as Report?  Yes  No  
 Hardcopy of invoice with Report?  Yes  No  
 Company:  
 Contact:  
 Address:  
 Phone:  
 Lab Work Order #  
 Quote #: Q38399  
 ALS Contact:  
 Fax:

| Sample #        | Lab Work Order # (lab use only) | Sample Identification                        |  | Date (dd-mm-yy) | Time (hh:mm) | Sample Type | Sampler: | Analysis Request |           |           |             |               |                     |               |                |          |               |                      |
|-----------------|---------------------------------|--|--|-----------------|--------------|-------------|----------|------------------|-----------|-----------|-------------|---------------|---------------------|---------------|----------------|----------|---------------|----------------------|
|                 |                                 | (This description will appear on the report) |  |                 |              |             |          | ALK-PCT-VA       | CN-CNO-WT | CN-SCN-VA | CN-T-CFA-VA | CN-WAD-CFA-VA | EC-MAN-WR,PH-MAN-WR | MET-D-BCMDG-A | MET-T-BCMDG-VA | NH3-F-VA | TDS-VA,TSS-VA | Number of Containers |
| 0167-130417-001 |                                 |  |  | 17-APR-13       | 11:14        | Water       |          | X                | X         | X         | X           | X             | X                   | X             | X              | X        | X             | 6                    |
| 0167-130417-002 |                                 |  |  | 17-APR-13       | 11:30        | Water       |          | X                | X         | X         | X           | X             | X                   | X             | X              | X        | X             | 6                    |
| 0167-130417-003 |                                 |  |  | 17-APR-13       | 11:41        | Water       |          | X                | X         | X         | X           | X             | X                   | X             | X              | X        | X             | 6                    |
| 0167-1304-004   |                                 |  |  |                 |              | Water       |          | X                | X         | X         | X           | X             | X                   | X             | X              | X        | X             | 6                    |
| 0167-130417-005 |                                 |  |  | 17-APR-13       | 9:41         | Water       |          | X                | X         | X         | X           | X             | X                   | X             | X              | X        | X             | 6                    |
| 0167-130417-006 |                                 |  |  | APR-13          | 10:07        | Water       |          | X                | X         | X         | X           | X             | X                   | X             | X              | X        | X             | 6                    |
| 0167-1304-007   |                                 |  |  |                 |              | Water       |          | X                | X         | X         | X           | X             | X                   | X             | X              | X        | X             | 6                    |
| 0167-1304-008   |                                 |  |  |                 |              | Water       |          | X                | X         | X         | X           | X             | X                   | X             | X              | X        | X             | 6                    |
| 0167-1304-009   |                                 |  |  |                 |              | Water       |          | X                | X         | X         | X           | X             | X                   | X             | X              | X        | X             | 6                    |
| 0167-1304-010   |                                 |  |  |                 |              | Water       |          | X                | X         | X         | X           | X             | X                   | X             | X              | X        | X             | 6                    |
| 0167-1304-011   |                                 |  |  |                 |              | Water       |          | X                | X         | X         | X           | X             | X                   | X             | X              | X        | X             | 6                    |
| 0167-1304-012   |                                 |  |  |                 |              | Water       |          | X                | X         | X         | X           | X             | X                   | X             | X              | X        | X             | 6                    |



L1291240-COFC

NO LTSO

**Special Instruct:**

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.

Released by: Meghan Macjanevic  
 Date (dd-mm-yy): 19-APR-13  
 Time (hh-mm): 09:00

Received by: [Signature]  
 Date: 18-APR-13  
 Time: 9:45  
 Temperature: 0.5 °C

SHIPMENT-RELEASE (client use)  
 SHIPMENT-RECEPTION (lab use only)  
 SHIPMENT-VERIFICATION (lab use only)

Verified by: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Time: \_\_\_\_\_

Observations: Yes / No? \_\_\_\_\_  
 If Yes add SIF \_\_\_\_\_

eswater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details



**Report To**  
 Company: EDI  
 Contact: Lindsay Doetzel  
 Address: 3-478 Range Road  
 Y1A #a2  
 Phone: 867-393-4882 Fax:  
 Invoice To Same as Report?  Yes  No  
 Hardcopy of Invoice with Report?  Yes  No  
 Company:  
 Contact:  
 Address:  
 Phone:  
 Fax: Q38399

**Report Format / Distribution**  
 Standard  Other  
 PDF  Excel  Digital  Fax  
 Email 1: ldoetzel@edynamics.com  
 Email 2:  
 Email 3:  
**Client / Project Information**  
 Job #: Mount Nansen 13-Y-0167  
 PO / AFE:  
 LSD:  
 Quote #: Q38399

**Service Requested** (Rush for routine analysis subject to availability)  
 Regular (Standard Turnaround Times - Business Days)  
 Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT  
 Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT  
 Same Day or Weekend Emergency - Contact ALS to Confirm TAT

| Sample | Lab Work Order #<br>(lab use only) | Sample Identification<br>(This description will appear on the report) | Sampler:           |                 | Sample Type | Number of Containers |
|--------|------------------------------------|---|--------------------|-----------------|-------------|----------------------|
|        |                                    |   | Date<br>(dd-mm-yy) | Time<br>(hh:mm) |             |                      |
|        |                                    | 0167-1304 -013  |                    |                 | Water       | X 6                  |
|        |                                    | 0167-1304 -014  |                    |                 | Water       | X 6                  |
|        |                                    | 0167-1304 -015  |                    |                 | Water       | X 6                  |
|        |                                    | 0167-1304 -016  |                    |                 | Water       | X 6                  |
|        |                                    | 0167-1304 -017  |                    |                 | Water       | X 6                  |
|        |                                    | 0167-1304 -018  |                    |                 | Water       | X 6                  |
|        |                                    | 0167-1304 -019  |                    |                 | Water       | X 6                  |
|        |                                    | 0167-1304 -020  |                    |                 | Water       | X 6                  |
|        |                                    | 0167-1304 -021  |                    |                 | Water       | X 6                  |
|        |                                    | 0167-1304 -022  |                    |                 | Water       | X 6                  |
|        |                                    | 0167-1304 7-023   | 17-APR-13          | 09:12           | Water       | X 6                  |
|        |                                    | 0167-1304 -024  |                    |                 | Water       | X 6                  |



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

NO L150

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.

|                                      |                            |                     |                                   |       |                 |
|--------------------------------------|----------------------------|---------------------|-----------------------------------|-------|-----------------|
| Released by: <i>Morgan</i>           | Date (dd-mm-yy): 18-APR-13 | Time (hh-mm): 09:00 | Received by:                      | Date: | Temperature: °C |
| SHIPMENT RELEASE (client use)        |                            |                     | SHIPMENT RECEPTION (lab use only) |       |                 |
| SHIPMENT VERIFICATION (lab use only) |                            |                     | Verified by:                      | Date: | Time:           |
| Observations: Yes / No ?             |                            |                     | If Yes add SIF                    |       |                 |

GENF 18.01 Front



|  |  |   |  |  |  |
|--|--|---|--|--|--|
| <b>Report To</b><br>Company: EDI<br>Contact: Lindsay Doetzel<br>Address: 3-478 Range Road<br>Y1A #a2<br>Phone: 867-393-4882 Fax:<br>Invoice To Same as Report? <input type="checkbox"/> Yes <input type="checkbox"/> No<br>Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input type="checkbox"/> No<br>Company:<br>Contact:<br>Address:<br>Phone: |  | <b>Report Format / Distribution</b><br><input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other<br><input checked="" type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input type="checkbox"/> Fax<br>Email 1: ldoetzel@edynamics.com<br>Email 2:<br>Email 3: |  | <b>Service Requested</b> (Rush for routine analysis subject to availability)<br><input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)<br><input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT<br><input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT<br><input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT |  |
| <b>Client / Project Information</b><br>Job #: Mount Nansen 13-Y-0167<br>PO / AFE:<br>LSD:<br>Quote #: Q38399   |  | <b>Analysis Request</b><br>Please indicate below Filtered, Preserved or both (F, P, F/P)<br>ANIONS-ALL-IC-WR<br>ALK-PCT-VA<br>EC-MAN-WR,PH-MAN-WR<br>CN-WAD-CFA-VA<br>CN-T-CFA-VA<br>MET-D-BCMDG-A<br>MET-T-BCMDG-VA<br>NH3-F-VA<br>TDS-VA,TSS-VA<br>Rainbow Trout L159<br>Number of Containers                       |  | Sample Identification<br>(This description will appear on the report)<br>0167-1304 -001<br>0167-1304 -002<br>0167-1304 -003<br>0167-1304 -004<br>0167-1304 -005<br>0167-1304 -006<br>0167-1304 -007<br>0167-1304 17-008<br>0167-1304 17-009<br>0167-1304 -010<br>0167-1304 17-011<br>0167-1304 -012  |  |
| <b>ALS Contact:</b><br>Lab Work Order #<br>(lab use only)  |  | <b>Sampler:</b><br>Time (hh:mm)<br>Sample Type<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water<br>Water   |  | Verified by:<br>Date:<br>Temperature: °C<br>17-APR-13 12:46<br>17-APR-13 11:55<br>17-APR- 11:30  |  |
| Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details  |  |   |  |  |  |



No L150

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

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

|  |                              |                      |                                   |       |                        |                                      |       |       |   |
|--|------------------------------|----------------------|-----------------------------------|-------|------------------------|--------------------------------------|-------|-------|---|
| Released by:<br><i>Megan Rajanovic</i> | Date (dd-mm-yy)<br>18-Apr-13 | Time (hh-mm)<br>0900 | Received by:                      | Date: | Temperature: °C<br>9°C | Verified by:                         | Date: | Time: | Observations:<br>Yes / No ?<br>If Yes add SIF |
| SHIPMENT RELEASE (client use)          |                              |                      | SHIPMENT RECEPTION (lab use only) |       |                        | SHIPMENT VERIFICATION (lab use only) |       |       |   |



|   |  |  |  |   |  |
|---|--|--|--|---|--|
| <b>Report To</b>  |  | <b>Report Format / Distribution</b>  |  | <b>Service Requested (Rush for routine analysis subject to availability)</b>                    |  |
| Company: EDI  |  | <input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other  |  | <input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)            |  |
| Contact: Lindsay Doetzel  |  | <input checked="" type="checkbox"/> PDF <input 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: 3-478 Range Road   |  | Email 1: ldoetzel@edynamics.com  |  | <input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT   |  |
| Y1A #a2   |  | Email 2:   |  | <input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT                |  |
| Phone: 867-393-4882   |  | Email 3:   |  | <b>Analysis Request</b>   |  |
| <b>Invoice To</b>   |  | <b>Client / Project Information</b>  |  | Please indicate below Filtered, Preserved or both (F, P, F/P)                                   |  |
| Same as Report? <input type="checkbox"/> Yes <input type="checkbox"/> No  |  | Job #: Mount Nansen 13-Y-0167  |  | ALK-PCT-VA  |  |
| Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input type="checkbox"/> No   |  | PO / A/E:  |  | ANIONS-ALL-C-WR   |  |
| Company:  |  | LSD:   |  | CN-CNO-WT   |  |
| Contact:  |  | Quote #: Q38399  |  | CN-SCN-VA   |  |
| Address:  |  | ALS Contact:   |  | CN-WAD-CFA-VA   |  |
| Phone:  |  | ALS Contact:   |  | EC-MAN-WR,PH-MAN-WR   |  |
| Fax:  |  | ALS Contact:   |  | MET-D-BCMDG-A   |  |
| Lab Work Order # (lab use only)   |  | ALS Contact:   |  | MET-T-BCMDG-VA  |  |
| Sample Identification   |  | Date (dd-mm-yy)  |  | NH3-F-VA  |  |
| (This description)  |  | Time (hh:mm)   |  | TDS-VA-TSS-VA   |  |
| 0167-1304 -013  |  | 17 APR 13  |  | Number of Containers  |  |
| 0167-1304 -014  |  |  |  | 6   |  |
| 0167-1304 -015  |  |  |  | 6   |  |
| 0167-1304 17-016  |  | 16 APR 13 12:14  |  | 6   |  |
| 0167-1304 -017  |  | 16 APR 13 14:47  |  | 6   |  |
| 0167-1304 -018  |  | 16 APR 13 14:47  |  | 6   |  |
| 0167-1304 16-019  |  |  |  | 6   |  |
| 0167-1304 16-020  |  |  |  | 6   |  |
| 0167-1304 16-021  |  |  |  | 6   |  |
| 0167-1304 -022  |  |  |  | 6   |  |
| 0167-1304 -023  |  |  |  | 6   |  |
| 0167-1304 -024  |  |  |  | 6   |  |
| Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details |  |  |  |   |  |
| No LT50   |  |  |  |   |  |

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.

|                                       |              |  |       |   |       |
|---------------------------------------|--------------|--|-------|---|-------|
| <b>SHIPMENT RELEASE (client use)</b>  |              | <b>SHIPMENT RECEPTION (lab use only)</b> |       | <b>SHIPMENT VERIFICATION (lab use only)</b> |       |
| Date (dd-mm-yy)                       | Time (hh:mm) | Date:                                    | Time: | Date:                                       | Time: |
| 19-APR-13                             | 09:00        |  |       |   |       |
| Released by: <i>Meghan Maglenovic</i> |              | Received by: <i>[Signature]</i>          |       | Verified by:                                |       |
| Temperature: °C                       |              | Temperature: °C                          |       | Observations: Yes / No ? If Yes add SIF     |       |





**Appendix C:**  
**YG Environmental Health Services Bacteriological Results**



Health and Social Services  
Santé et Affaires sociales  
Environmental Health Services  
Service d'hygiène du milieu

**BACTERIOLOGICAL ANALYSIS OF DRINKING WATER  
ANALYSE BACTÉRIOLOGIQUE DE L'EAU POTABLE**

#2 Hospital Road, Whitehorse, Yukon Y1A 3H8 2 Hospital Road, Whitehorse (Yukon) Y1A 3H8  
phone : (867) 667-8391 fax : (867) 667-8322 Tél. : 867-667-8391 Téléc. : 867-667-8322  
Toll free: 1-800-661-0408 ext.8391 Sans frais au Yukon 1-800-661-0408, poste 8391

**Contact Information • Coordonnées de la personne-ressource**

Contact Person Lyndsay Doetzel Phone 867 353 9629  
Personne-ressource Lyndsay Doetzel Téléphone 867 353 9629  
Mailing address #3-478 Ranger Road Fax \_\_\_\_\_  
Adresse postale Whitehorse, Yukon Télécopieur \_\_\_\_\_  
Postal code \_\_\_\_\_  
Code postal \_\_\_\_\_  
First Nation, Municipal or Business Name EDI  
Nom de la Première nation, de la municipalité ou de l'entreprise \_\_\_\_\_  
Agent \_\_\_\_\_ Fax \_\_\_\_\_  
Agent \_\_\_\_\_ Télécopieur \_\_\_\_\_

**Sampling Location • Lieu de la prise d'échantillon**

Municipal Address Mt NANSEN Subdivision \_\_\_\_\_  
Adresse municipale Mt NANSEN Lotissement \_\_\_\_\_  
Legal Description Lot \_\_\_\_\_ Quad \_\_\_\_\_ Plan no. \_\_\_\_\_  
Designation officielle Lot \_\_\_\_\_ Quadrilatère \_\_\_\_\_ Plan n° \_\_\_\_\_  
Other Information (e.g., Location, Business / Building Name) \_\_\_\_\_  
Autres renseignements (ex. : emplacement, nom de l'entreprise, nom de l'édifice) \_\_\_\_\_

**Sample Collection / Prélèvement de l'échantillon**

Collected By JH, DS Date 130417 Time 14:09 am  
Échantillon prélevé par JH, DS Date 130417 Heure 14:09 ~~pm~~  
YY/MM/DD • AA/MM/JJ  
Sampling Site (e.g., kitchen tap) WG PW  
Point d'échantillonnage (ex.: robinet de cuisine) WG PW  
Is this a Resample from a Previous Test?  Yes  No Previous Sample Number \_\_\_\_\_  
Est-ce un deuxième échantillon d'un test antérieur?  Oui  Non Numéro de l'échantillon précédent \_\_\_\_\_

**Sample Supply / Source d'approvisionnement en eau**

Public Supply  Bulk Water Distributor  Business  Private Residence  
Municipal - par canalisation Municipal - par camion Privé - entreprise Privé - résidence

**Sample Source / Provenance de l'échantillon**

Dug Well  Driven Well  Drilled Well Depth of Well  
Puits creusé Puits tubulaire Puits foré à la sondeuse Profondeur du puits \_\_\_\_\_  
 Water Holding Tank  Other (explain)  
Réservoir d'eau Autre (précisez) \_\_\_\_\_

**Water Treatment / Traitement de l'eau**

Is the Water Chlorinated?  Yes  No Free Available Chlorine \_\_\_\_\_ p.p.m.  
L'eau contient-elle du chlore?  Oui  Non Chlore libre disponible \_\_\_\_\_ mg/L  
Other Treatment Systems (e.g., UV; softener, filter)  
Autre dispositif de traitement (ex. : désinfection aux rayons UV, adoucisseur d'eau, filtre) \_\_\_\_\_

**For Laboratory Use Only / À l'usage du laboratoire seulement**

Receipt of Sample 13-04-18 Time 1000 am By SS  
Réception de l'échantillon Date 13-04-18 Heure 1000 pm Par SS  
YY/MM/DD • AA/MM/JJ  
Condition of Sample  Satisfactory  Unsatisfactory Details 3.4°C  
État de l'échantillon  Satisfaisant  Non satisfaisant Précisez 3.4°C  
Incubation 13-04-18 Time 1015 am By SS Incubator 1  
Incubation Date 13-04-18 Heure 1015 pm Par SS Incubateur 1  
YY/MM/DD • AA/MM/JJ  
Tests Completed 13-04-19 Time 1100 am By SS  
Tests terminés Date 13-04-19 Heure 1100 pm Par SS  
YY/MM/DD • AA/MM/JJ

**Results (See Reverse Side for Interpretation)  
Résultats (Voir au verso l'interprétation des résultats)**

|  |  |
|--|--|
| <b>Total Coliforms/Coliformes totaux</b><br><input type="checkbox"/> Present / Présence <input checked="" type="checkbox"/> Absent / Absence | <b>E. coli/E. coli</b><br><input type="checkbox"/> Present / Présence <input checked="" type="checkbox"/> Absent / Absence |
|--|--|

**Comments / Commentaires**

Report Authorized By [Signature] Position WLT Date 13-04-19  
Rapport autorisé par [Signature] Poste WLT Date 13-04-19  
YY/MM/DD • AA/MM/JJ

Distribution: White - Chain of Custody Yellow - Client Copy Pink - Lab Copy  
Distribution: Blanc - Chaîne de possession Jaune - Client Rose - Laboratoire

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Sample Number : **55049**  
Numéro de l'échantillon : **55049**