TABLE 7 DISSOLVED METALS

Dissolved Metals

| | | | CCME | | | | | | | | | | Sample Statio | ons | | | | | | | | |
|------------------|-------|-----------|------------------|----------------------------|-----------|-----------|-----------|-----------|------------|-----------|-----------|-----------|---------------|-----------|------------|-----------|-----------|-----------|------------|-----------|------------|-----------|
| Dissolved Metals | Units | D.L. | FAL | BC CSR AW | L08 | -124 | | MW08-127 | | | | | MW08-128 | | | | MW08-130 | | | MW09-152 | | |
| | | | | | 08-OCT-08 | 08-OCT-09 | 09-OCT-08 | 08-OCT-09 | 14-Oct-10 | 08-OCT-08 | 08-OCT-09 | 11-Jul-10 | 3-Sep-10 | Dup | 14-Oct-10 | Dup | 07-OCT-08 | 26-JUN-09 | Dup | 08-OCT-09 | Dup | 14-Oct-10 |
| Aluminum (Al) | mg/L | 0.005* | 0.1 ₆ | - | 0.0065 | 0.0037 | 15.3 | 0.0108 | 0.0116 | 0.0338 | 0.0084 | 0.0504 | 0.0335 | 0.0344 | 0.0279 | 0.0276 | 0.0077 | 0.0178 | 0.0181 | 0.0066 | 0.0245 | 0.0132 |
| Antimony (Sb) | mg/L | 0.0005* | - | 0.20 | < 0.00050 | <0.00010 | <0.0025 | 0.00013 | <0.00010 | < 0.00050 | 0.00011 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | < 0.00050 | 0.00032 | 0.00029 | 0.00011 | 0.00012 | 0.00046 |
| Arsenic (As) | mg/L | 0.0005* | 0.005 | 0.05 | < 0.00050 | 0.00038 | 0.0027 | 0.00066 | 0.00079 | 0.00233 | 0.00404 | 0.00469 | 0.00944 | 0.00905 | 0.00813 | 0.00856 | 0.00065 | 0.0018 | 0.00174 | 0.00084 | 0.00090 | 0.00030 |
| Barium (Ba) | mg/L | 0.02 | - | 10 | 0.084 | 0.0874 | 0.257 | 0.0496 | 0.117 | 0.143 | 0.107 | 0.204 | 0.195 | 0.199 | 0.185 | 0.187 | 0.401 | 0.016 | 0.0164 | 0.0212 | 0.0217 | 0.0463 |
| Beryllium (Be) | mg/L | 0.001* | - | 0.053 | <0.0010 | <0.00050 | < 0.0050 | <0.00050 | <0.00050 | <0.0010 | < 0.00050 | < 0.00050 | <0.00050 | <0.00050 | < 0.00050 | <0.00050 | <0.0010 | <0.0010 | <0.0010 | < 0.00050 | < 0.00050 | < 0.00050 |
| Boron (B) | mg/L | 0.1 | - | 50 | <0.10 | 0.050 | 0.31 | 0.067 | 0.017 | <0.10 | 0.021 | 0.024 | 0.017 | 0.018 | 0.017 | 0.017 | <0.10 | 0.806 | 0.817 | 0.690 | 0.725 | < 0.00050 |
| Cadmium (Cd) | mg/L | 0.000017* | 0.000017 | 0.00001 - 0.000067 | <0.000017 | <0.00080 | 0.000206 | <0.000080 | < 0.000017 | 0.000249 | <0.00020 | 0.000041 | 0.000208 | 0.000209 | 0.000187 | 0.000193 | 0.000018 | <0.00020 | <0.0020 | <0.00010 | <0.00020 | 0.000018 |
| Calcium (Ca) | mg/L | 0.1 | - | - | 29.5 | 26.7 | 14.9 | 17.1 | 44.2 | 29.3 | 29.8 | 46.8 | 55.2 | 55.2 | 54.8 | 54.0 | 50.4 | 15.7 | 15.6 | 20.4 | 20.5 | 12.8 |
| Chromium (Cr) | mg/L | 0.001* | - | - | 0.0013 | < 0.0030 | 0.0179 | < 0.0060 | <0.00050 | <0.0010 | < 0.0030 | <0.0015 | <0.0010 | <0.0010 | <0.0010 | <0.0020 | <0.0010 | < 0.003 | <0.0030 | <0.0020 | < 0.0030 | < 0.00050 |
| Cobalt (Co) | mg/L | 0.003* | - | 0.04 | 0.00178 | 0.00138 | 0.0057 | 0.00045 | 0.00025 | 0.00126 | 0.00043 | 0.00017 | 0.00014 | 0.00016 | 0.00017 | 0.00016 | 0.00328 | <0.00020 | <0.00020 | 0.00017 | 0.00017 | < 0.00010 |
| Copper (Cu) | mg/L | 0.001* | 0.002-0.004, | 0.002 - 0.009 ₈ | 0.0046 | 0.00408 | 0.0474 | 0.00102 | 0.00059 | <0.0010 | 0.00046 | 0.00025 | 0.00024 | 0.00031 | < 0.00050 | <0.00050 | 0.0182 | <0.00020 | 0.00021 | 0.00040 | 0.00062 | 0.01440 |
| ron (Fe) | mg/L | 0.03 | 0.3 | - | 0.133 | 0.324 | 8.85 | 1.09 | 2.27 | 10.8 | 5.96 | 15.4 | 9.0 | 8.96 | 10.1 | 9.15 | < 0.030 | 0.083 | 0.093 | 0.098 | 0.094 | 0.040 |
| ead (Pb) | mg/L | 0.0005* | 0.001 - 0.00711 | 0.004 - 0.01610 | < 0.00050 | <0.000050 | 0.0066 | 0.000141 | < 0.000050 | <0.00050 | <0.000050 | <0.000050 | < 0.000050 | 0.000335 | < 0.000050 | <0.000050 | <0.00050 | <0.00010 | <0.00010 | <0.000050 | 0.000052 | 0.000162 |
| ithium (Li) | mg/L | 0.005 | - | - | 0.0194 | 0.0189 | 0.043 | 0.0188 | 0.0057 | 0.0152 | 0.0139 | 0.0070 | 0.0077 | 0.0074 | 0.0078 | 0.0080 | 0.0127 | 0.063 | <0.061 | 0.0580 | 0.0586 | 0.0189 |
| Aagnesium (Mg) | mg/L | 0.1 | - | - | 96.1 | 72.6 | 8.59 | 7.73 | 31.2 | 22.5 | 17.5 | 33.0 | 40.0 | 39.8 | 39.8 | 40.0 | 43.3 | 7.79 | 7.83 | 10.9 | 11.0 | 3.74 |
| Manganese (Mn) | mg/L | 0.0003* | - | - | 0.0506 | 0.0508 | 0.260 | 0.222 | 0.797 | 0.544 | 0.336 | 0.485 | 0.392 | 0.389 | 0.368 | 0.362 | 0.0888 | 0.0255 | 0.0254 | 0.0294 | 0.0304 | 0.00075 |
| Aercury (Hg) | mg/L | 0.00002 | - | 0.001 | <0.000020 | | <0.00010 | | <0.000010 | <0.000020 | | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000010 | <0.000020 | <0.000050 | < 0.000050 | | | <0.000010 |
| Aolybdenum (Mo) | mg/L | 0.001* | 0.073 | 10 | 0.0119 | 0.0281 | 0.0345 | 0.0230 | 0.00388 | 0.0194 | 0.0627 | 0.00663 | 0.015 | 0.0152 | 0.015 | 0.0157 | 0.0466 | 0.0497 | 0.0497 | 0.0382 | 0.0403 | 0.0119 |
| Nickel (Ni) | mg/L | 0.001* | 0.025 - 0.1513 | 0.025 - 0.15 ₁₃ | 0.0024 | 0.00208 | 0.0151 | 0.00663 | 0.00102 | 0.0027 | 0.00371 | < 0.00050 | <0.00050 | <0.00050 | 0.00057 | 0.00051 | 0.0108 | <0.0010 | <0.0010 | 0.00054 | 0.00071 | 0.00124 |
| Potassium (K) | mg/L | 2 | - | - | 3.4 | 3.5 | 6.6 | 2.7 | 3.6 | 4.2 | 3.0 | 4.3 | <0.30 | < 0.30 | 4.2 | 4.0 | 3.0 | 3.2 | 3.2 | 3.2 | 3.2 | <2.0 |
| Selenium (Se) | mg/L | 0.001* | 0.001 | 0.01 | <0.0010 | <0.0010 | <0.0050 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0020 | <0.0020 | <0.0010 | <0.0010 | <0.0010 |
| Silver (Ag) | mg/L | 0.00002* | 0.0001 | 0.0005 - 0.01514 | <0.000020 | 0.000010 | 0.00133 | <0.000010 | 0.000012 | 0.000031 | 0.000013 | 0.000039 | 0.000031 | 0.000037 | 0.000032 | 0.000029 | <0.000020 | <0.000020 | < 0.000020 | <0.000010 | < 0.000010 | <0.000010 |
| Sodium (Na) | mg/L | 2 | - | - | 10.5 | 8.1 | 72.9 | 58.8 | 6.8 | 23.3 | 36.0 | 0.114 | 4.4 | 4.4 | 4.9 | 4.9 | 13.9 | 147 | 148 | 112 | 112 | 36.0 |
| Thallium (TI) | mg/L | 0.002* | 0.0008 | 0.003 | <0.00020 | <0.00010 | <0.0010 | <0.00010 | <0.00010 | <0.00020 | <0.00010 | <0.00010 | < 0.00010 | <0.00010 | < 0.00010 | <0.00010 | <0.00020 | <0.00020 | <0.00020 | <0.00010 | <0.00010 | <0.00010 |
| Tin (Sn) | mg/L | 0.0005* | - | - | <0.00050 | 0.00014 | 0.0027 | 0.00036 | <0.00010 | 0.00071 | 0.00048 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | <0.00010 | 0.00333 | <0.00020 | <0.00020 | 0.00022 | 0.00022 | 0.00023 |
| Titanium (Ti) | mg/L | 0.01 | - | 1 | <0.010 | <0.010 | 0.354 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 | <0.010 |
| Jranium (U) | mg/L | 0.0002* | - | 0.30 | 0.0199 | 0.0175 | 0.0027 | 0.000918 | 0.00688 | 0.00324 | 0.00428 | 0.00470 | 0.0114 | 0.0114 | 0.0104 | 0.0113 | 0.00230 | 0.00662 | 0.00658 | 0.00764 | 0.00765 | 0.00258 |
| /anadium (V) | mg/L | 0.001* | - | - | <0.0010 | <0.0010 | 0.0229 | <0.0010 | <0.0010 | <0.0010 | <0.0010 | 0.0023 | 0.0011 | 0.0011 | <0.0010 | <0.0010 | <0.0010 | <0.0020 | <0.0020 | <0.0010 | <0.0010 | < 0.0010 |
| Zinc (Zn) | mg/L | 0.005 | 0.03 | 0.075 - 2.415 | < 0.0050 | 0.0022 | 0.0327 | 0.0076 | < 0.0030 | 0.0090 | 0.0063 | 0.0045 | <0.0010 | 0.0014 | <0.0030 | <0.0030 | 0.0061 | <0.0020 | <0.0020 | 0.0018 | 0.0031 | 0.0246 |
| Chromium (VI) | mg/L | 0.001 | - | - | | <0.0010 | | <0.0010 | | | <0.0010 | | | | | | | 0.0032 | 0.0015 | <0.0010 | <0.0010 | |

1. **Bolded** and/or <u>Underlined</u> result implies a guideline exceedance, **Blue** indicates guidelines less than detection limits available 2. D.L. = laboratory detection limit

** implies detection limit varied - '<' (less than) value implies detection limit
 CCME FAL - Canadian Council of Ministers of the Environment Freshwater Aquatic Life

<u>BC CSR AW</u> - British Columbia Contaminated Sites Regulation Aquatic Life Guidelines;

provided for comparison only 6. Aluminum guideline is 100 μ g/L when pH \geq 6.5

7. Cadmium guideline:

0.1 µg/L when [CaCO3] is 0 - 30 mg/L 0.3 μg/L when [CaCO3] is 30 - 90 mg/L 0.5 μg/L when [CaCO3] is 90 - 150 mg/L 0.6 µg/L when [CaCO3] is > 150 mg/L

8. Copper guideline:

2 µg/L when [CaCO3] is 0 - 50 mg/L 3 µg/L when [CaCO3] is 50 - 75 mg/L 4 µg/L when [CaCO3] is 75 - 100 mg/L 5 µg/L when [CaCO3] is 100 - 125 mg/L 6 µg/L when [CaCO3] is 125 - 150 mg/L 7 µg/L when [CaCO3] is 150 - 175 mg/L 8 μg/L when [CaCO3] is 175 - 200 mg/L <u>9 µg/L when [CaCO3] is > 200 mg/L</u>

9. Copper guideline:

<u>2 μg/L when [CaCO3] is 0 - 120 mg/L</u> <u>3 μg/L when [CaCO3] is 120 - 180 mg/L</u> 4 µg/L when [CaCO3] is > 180 mg/L

10. Lead guideline: <u>4 μg/L when [CaCO3] is 0 - 50 mg/L</u>

5 µg/L when [CaCO3] is 50 - 100 mg/L 6 µg/L when [CaCO3] is 100 - 200 mg/L 110 µg/L when [CaCO3] is 200 - 300 mg/L 160 µg/L when [CaCO3] is > 300 mg/L

11. Lead guideline:

<u>1 μg/L when [CaCO3] is 0 - 60 mg/L</u> 2 µg/L when [CaCO3] is 60 - 120 mg/L 4 µg/L when [CaCO3] is 120 - 180 mg/L

7 µg/L when [CaCO3] is > 180 mg/L 12 Manganese guideline:

<u>1 μg/L when [CaCO3] is 0 - 60 mg/L</u> 2 µg/L when [CaCO3] is 60 - 120 mg/L 4 µg/L when [CaCO3] is 120 - 180 mg/L 7 µg/L when [CaCO3] is > 180 mg/L

13 Nickel guideline: 25 µg/L when [CaCO3] is 0 - 60 mg/L 65 µg/L when [CaCO3] is 60 - 120 mg/L 110 µg/L when [CaCO3] is 120 - 180 mg/L

150 μg/L when [CaCO3] is > 180 mg/L Silver guidline:

14

15

0.5 μg/L when [CaCO3] < 100 mg/L 15 µg/L when [CaCO3] > 100 mg/L

Zinc guideline:

7.5 µg/L when [CaCO3] is 0 - 90 mg/L <u>15 µg/L when [CaCO3] is 90 - 100 mg/L</u> 90 µg/L when [CaCO3] is 100 - 200 mg/L 165 µg/L when [CaCO3] is 200 - 300 mg/L 240 µg/L when [CaCO3] is > 300 mg/L

TABLE 8: SUMMARY OF GROUNDWATER PARAMETERS

| Monitoring Well | TDS (mg/L) | EC (µS/cm) | рН | Hydrogeochemical Facies | Exceeds CSR and/ or CCME Guidelines |
|--------------------|------------|------------|-------------|---|---|
| L08-124 | 274 – 422 | 460 – 738 | 8.10 – 8.25 | Magnesium-Calcium-Carbonate | Aluminum, Cadmium, Copper, Iron, Silver |
| MW08-127 | 240 – 487 | 404 - 878 | 6.86 - 8.16 | Sodium -Calcium-Carbonate-Sulphate | Aluminum, Cadmium, Copper, Iron, Lead, Silver |
| MW08-128 | 230 – 335 | 367 – 482 | 7.41 – 7.90 | Sodium/Magnesium-Calcium- Magnesium/Sodium-Carbonate | Aluminum, Arsenic, Cadmium, Iron, Silver |
| MW08-130 | 331 – 335 | 557 – 558 | 8.10 - 8.21 | Magnesium-Calcium-Carbonate | Aluminum, Cadmium, Copper, Iron, Silver |
| MW09-152 | 388 – 464 | 587 – 721 | 8.17 – 8.56 | Sodium -Calcium-Carbonate-Chlorate | n.a. |

Notes:

TDS – Total Dissolved Solids

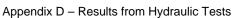
EC – Electrical Conductivity

mg/L – milligram per liter

µS/cm – microsiemen pre centimetre

n.a. -data not available (total metals not collected)

Thor Lake Rare Earth Metals Baseline Project Environmental Baseline Report: Volume 2 – Hydrogeology Final Interim Report

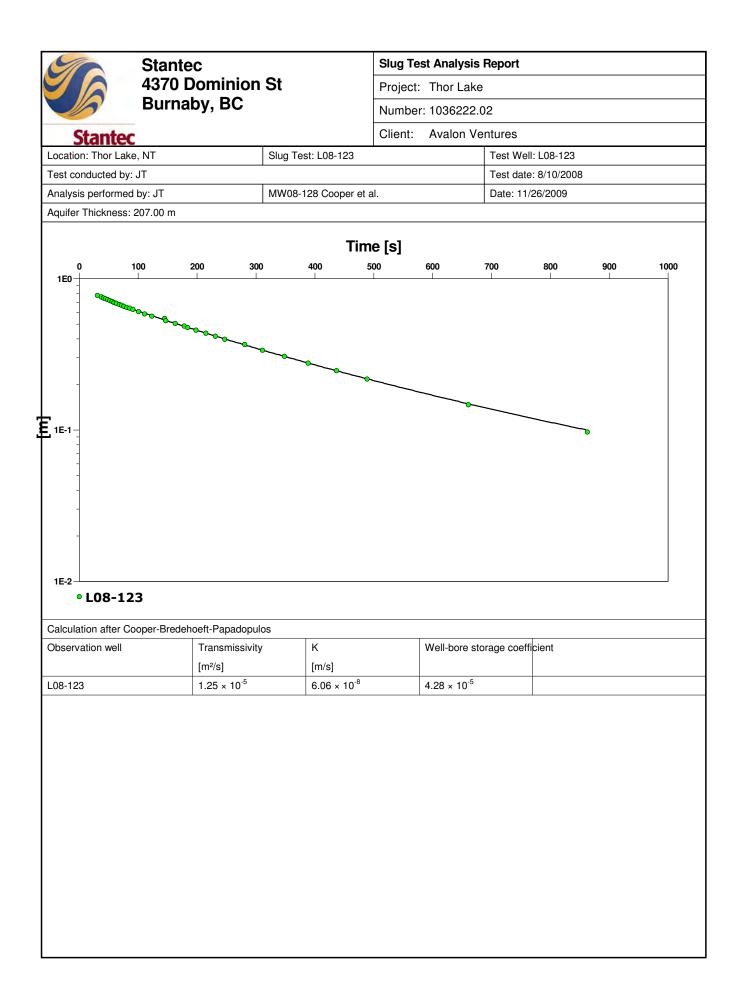


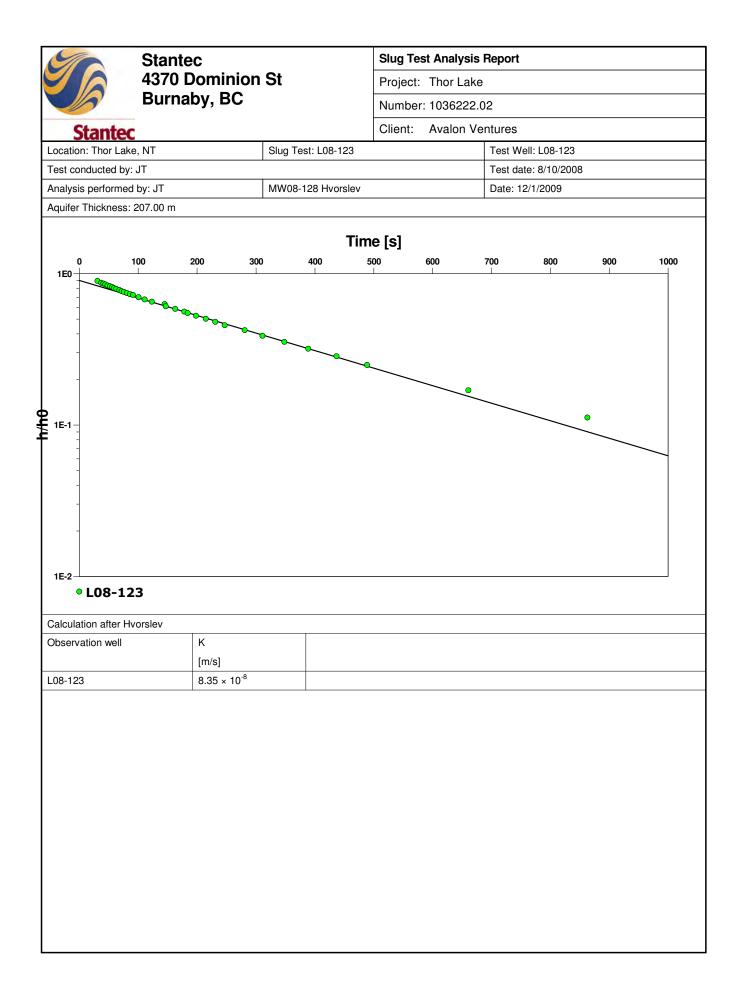


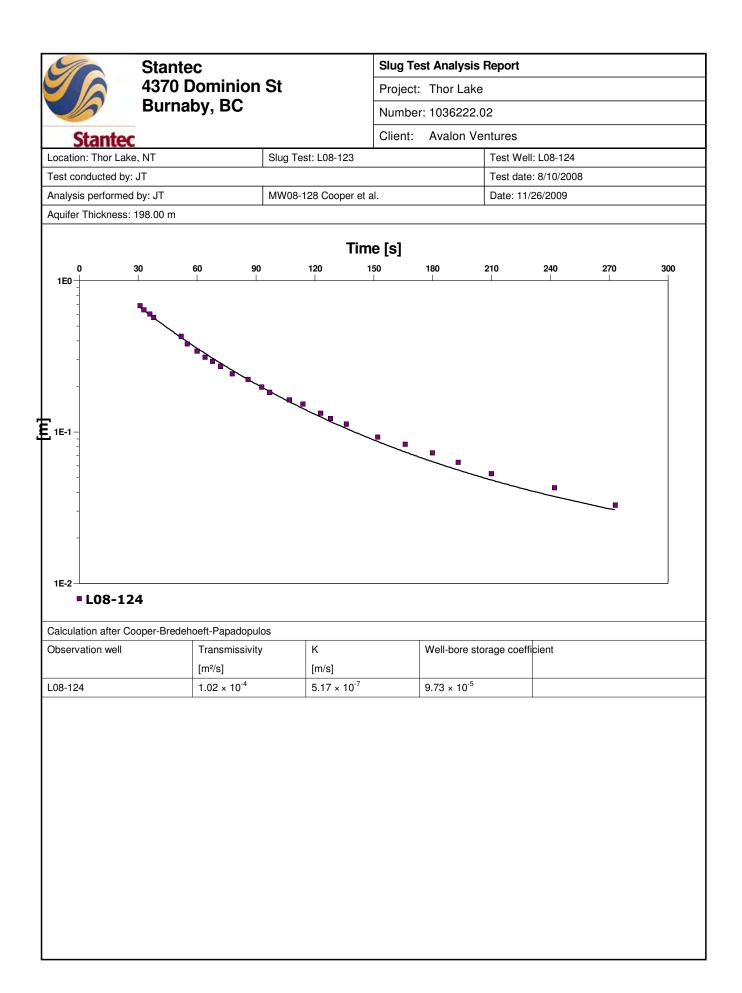
APPENDIX D

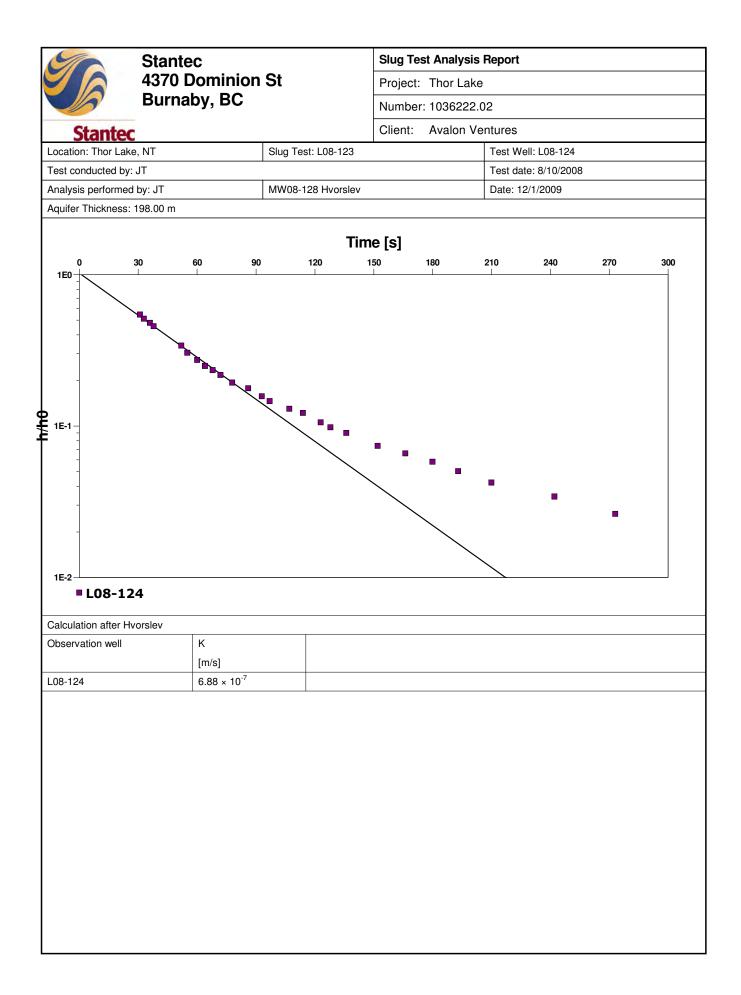
Results from Hydraulic Tests

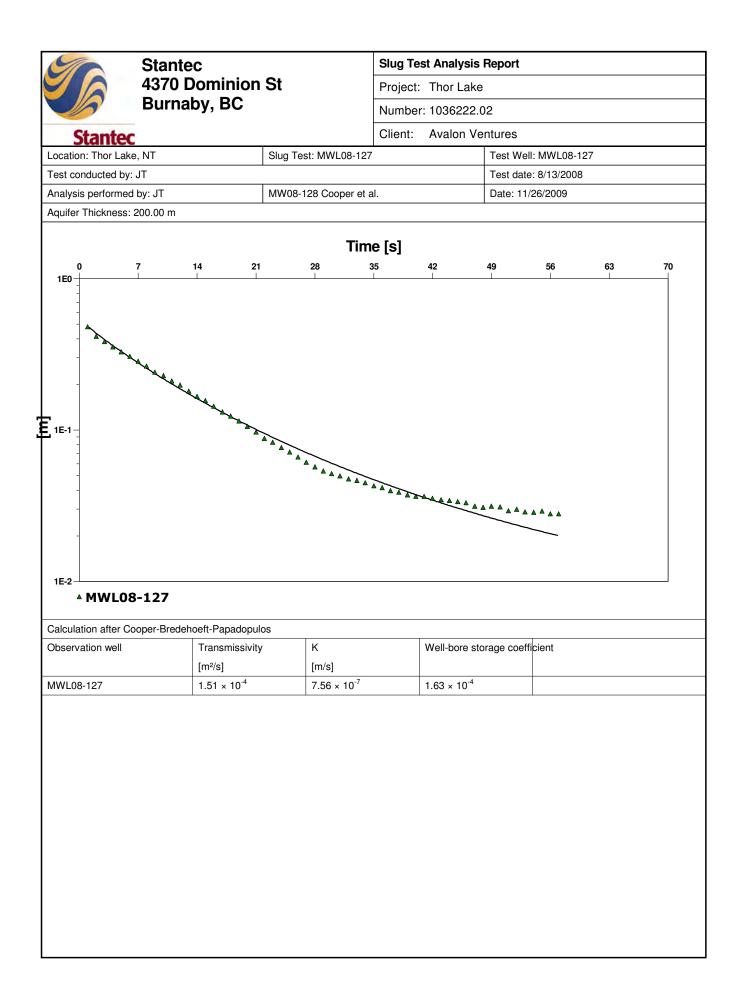
One Team. Infinite Solutions.

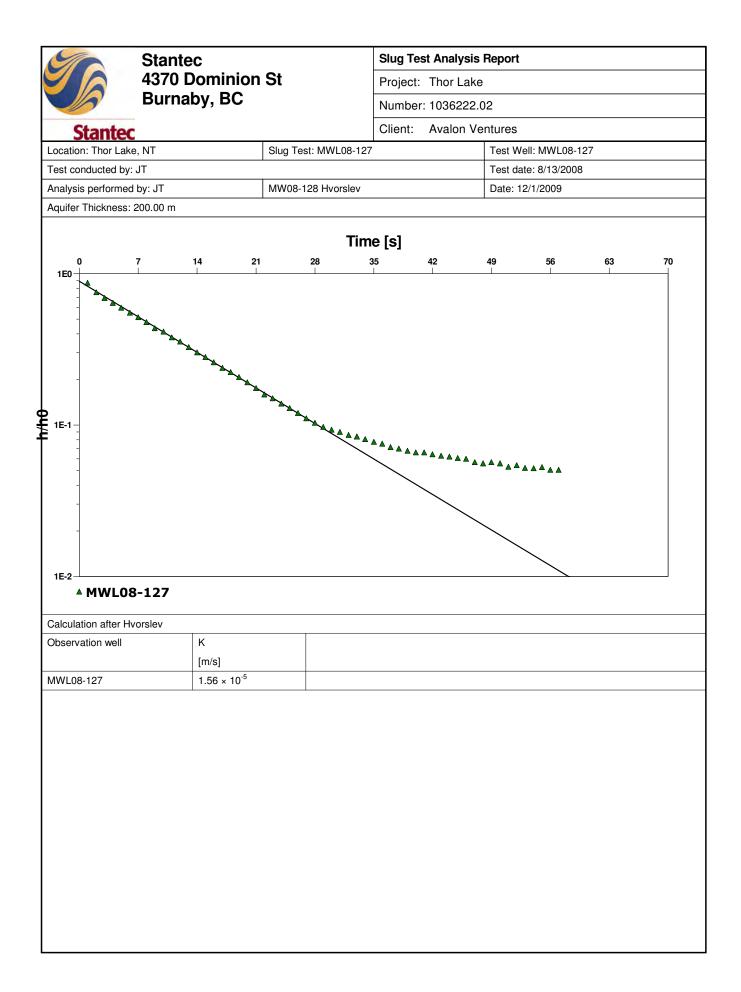


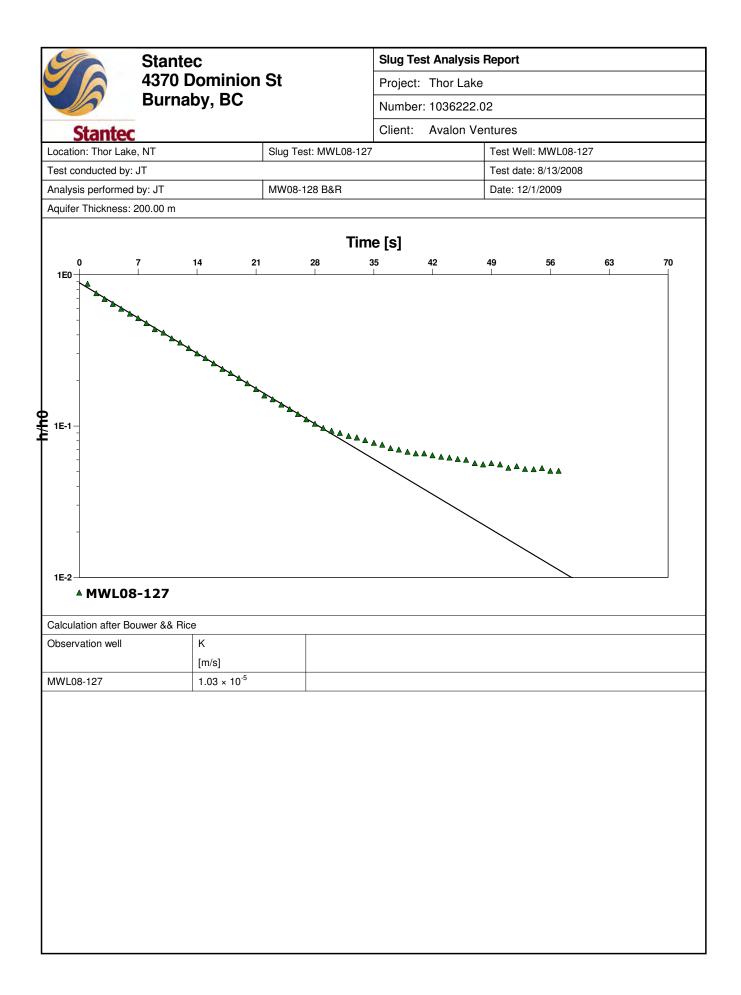


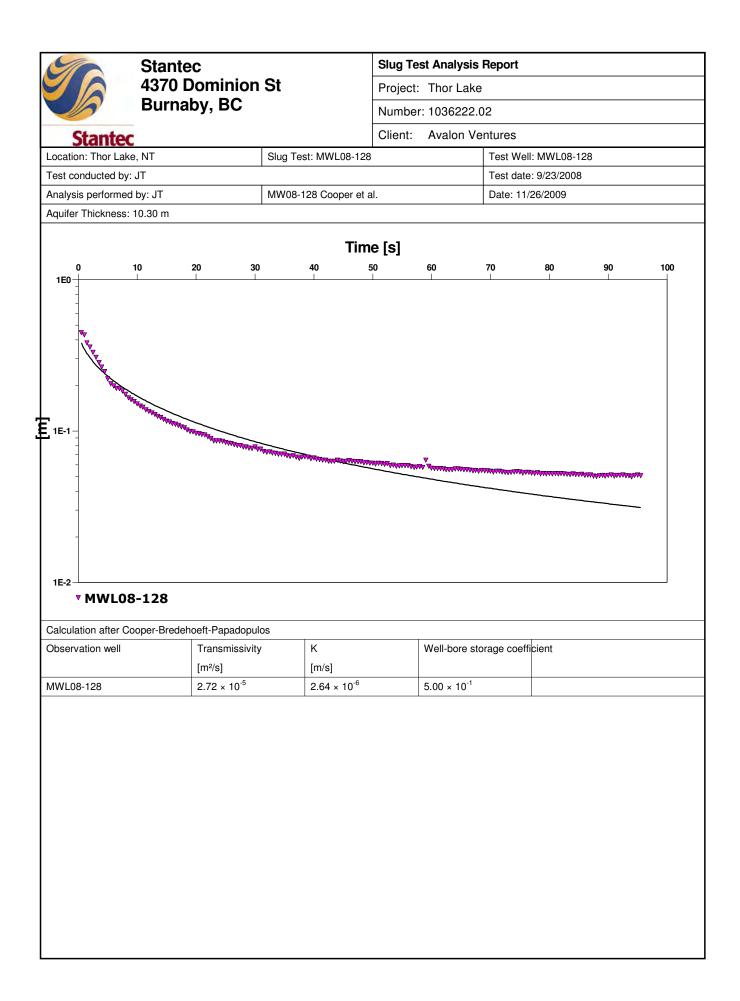


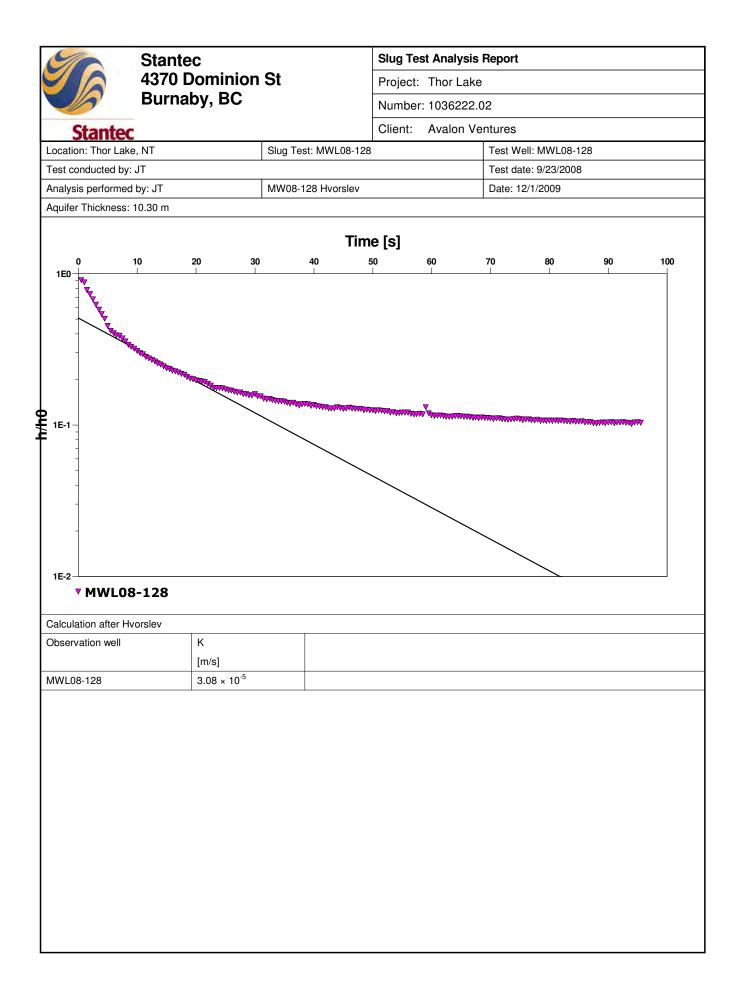


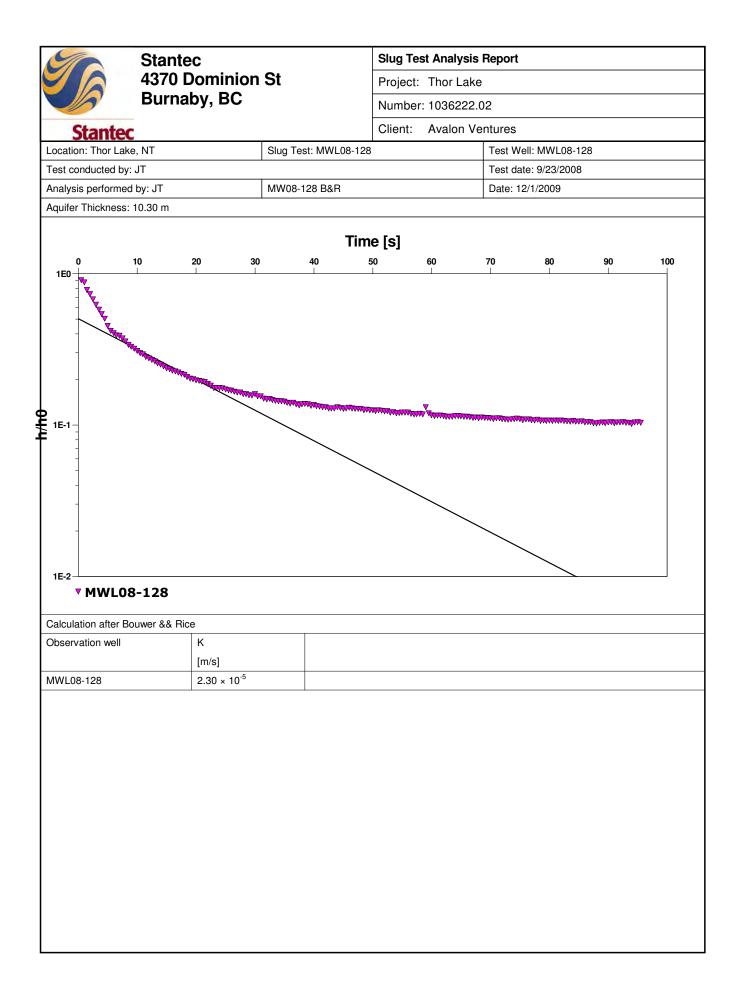


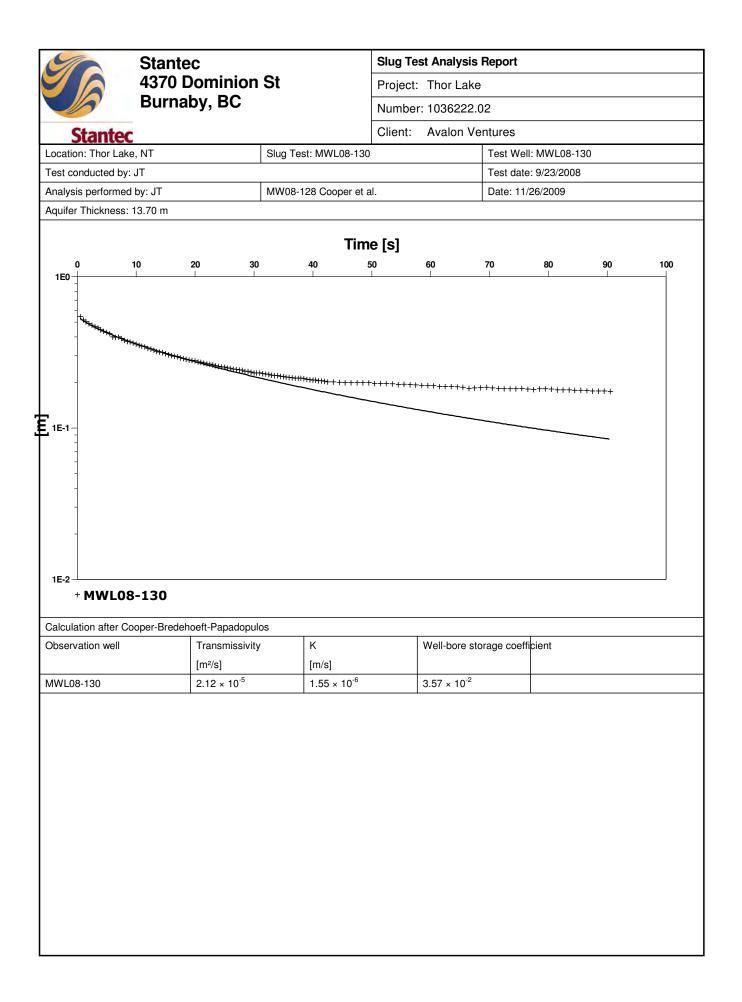


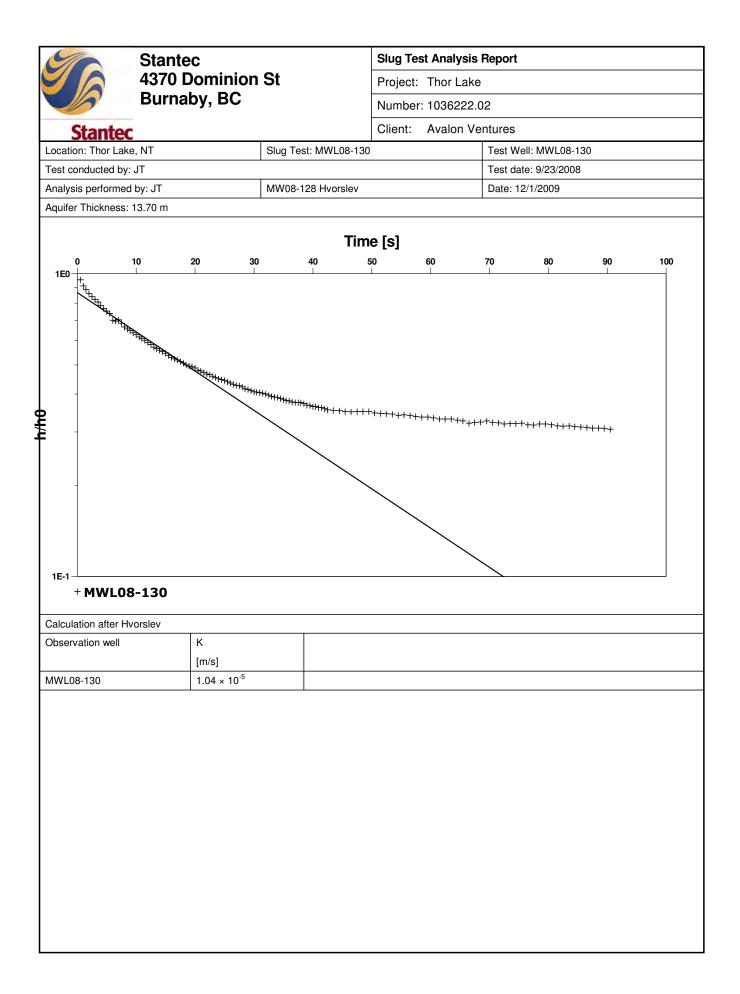


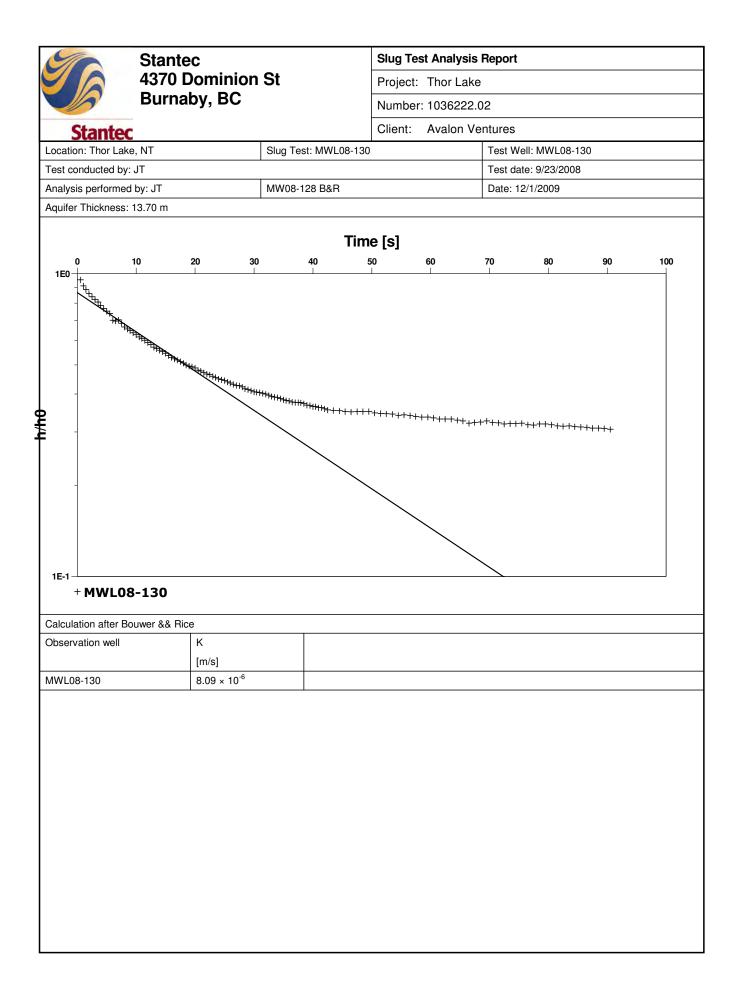












| Client: | Avalon |
|------------|-----------|
| Project: | Thor Lake |
| Project #: | 1036222 |
| Personnel: | TL |

| Pressure Interval | | | | | |
|-------------------|----------|--------|----------|--|--|
| Minutes | Pressure | Volume | ∆ Volume | | |
| 0 | 25 | 0 | - | | |
| 1 | 25 | 3.1 | 3.1 | | |
| 2 | 25 | 5.3 | 2.2 | | |
| 3 | 25 | 7.1 | 1.8 | | |
| 4 | 25 | 9 | 1.9 | | |
| 5 | 25 | 10.9 | 1.9 | | |
| 6 | 25 | | | | |
| 7 | 25 | 14.3 | 3.4 | | |
| 8 | 25 | 15.9 | 1.6 | | |
| 9 | 25 | 17.4 | 1.5 | | |
| 10 | 25 | 19 | 1.6 | | |

Pressure Interval

| Minutes | Pressure | Volume | ∆ Volume |
|---------|----------|--------|----------|
| 0 | 50 | 0 | - |
| 1 | 50 | 2.8 | 2.8 |
| 2 | 50 | 5.3 | 2.5 |
| 3 | 50 | 7.9 | 2.6 |
| 4 | 50 | 10.4 | 2.5 |
| 5 | 50 | 12.9 | 2.5 |
| 6 | 50 | 15.2 | 2.3 |
| 7 | 50 | 17.7 | 2.5 |
| 8 | 50 | 20 | 2.3 |
| 9 | 50 | 22.4 | 2.4 |
| 10 | 50 | 24.7 | 2.3 |

Pressure Interval

| Minutes | Pressure | Volume | ∆ Volume |
|----------|----------|--------|----------|
| winnutes | FIESSULE | volume | Δ volume |
| 0 | 75 | 0 | - |
| 1 | 75 | 3.2 | 3.2 |
| 2 | 75 | 6.3 | 3.1 |
| 3 | 75 | 9.3 | 3 |
| 4 | 75 | 12.3 | 3 |
| 5 | 75 | 15.4 | 3.1 |
| 6 | 75 | | |
| 7 | 75 | 21.4 | 6 |
| 8 | 75 | 24.4 | 3 |
| 9 | 75 | 27.4 | 3 |
| 10 | 75 | 30.4 | 3 |

Collar E.I. <u>1.06 m</u> Trend:

| Trend: | | |
|---------|-----------|--|
| Plunge: | | |
| Date: | 25-Mar-09 | |
| | | |

| Pressure Interval | | | | |
|-------------------|----------|--------|----------|--|
| Minutes | Pressure | Volume | ∆ Volume | |
| 0 | 95 | 0 | - | |
| 1 | 95 | 3.6 | 3.6 | |
| 2 | 95 | 7.1 | 3.5 | |
| 3 | 95 | 10.6 | 3.5 | |
| 4 | 95 | 14.8 | 4.2 | |
| 5 | 95 | 17.5 | 2.7 | |
| 6 | 95 | 21 | 3.5 | |
| 7 | 95 | 24.3 | 3.3 | |
| 8 | 95 | 27.6 | 3.3 | |
| 9 | 95 | 30.9 | 3.3 | |
| 10 | 95 | 34.3 | 3.4 | |

Pressure Interval

| Minutes | Pressure | Volume | ∆ Volume |
|---------|----------|--------|----------|
| 0 | 75 | 0 | - |
| 1 | 75 | 2.6 | 2.6 |
| 2 | 75 | 5.1 | 2.5 |
| 3 | 75 | 7.7 | 2.6 |
| 4 | 75 | 10.2 | 2.5 |
| 5 | 75 | 12.6 | 2.4 |
| 6 | 75 | 15.2 | 2.6 |
| 7 | 75 | 17.6 | 2.4 |
| 8 | 75 | 20.1 | 2.5 |
| 9 | 75 | 22.5 | 2.4 |
| 10 | 75 | 25 | 2.5 |

Pressure Interval

| TTESSATE INTELVAL | | | | | |
|-------------------|----------|--------|----------|--|--|
| Minutes | Pressure | Volume | ∆ Volume | | |
| 0 | 50 | 0 | - | | |
| 1 | 50 | 1.6 | 1.6 | | |
| 2 | 50 | 3.2 | 1.6 | | |
| 3 | 50 | 4.8 | 1.6 | | |
| 4 | 50 | 6.5 | 1.7 | | |
| 5 | 50 | 8.1 | 1.6 | | |
| 6 | 50 | 9.7 | 1.6 | | |
| 7 | 50 | 11.3 | 1.6 | | |
| 8 | 50 | 13 | 1.7 | | |
| 9 | 50 | 14.6 | 1.6 | | |
| 10 | 50 | 16.2 | 1.6 | | |

Hole # L09-152 Design Test Interval: 410' - 636' = 225' Test #: 1 Measurements: Depth to WT: 3.5 m b T.O.P Top of Packer Interval: 411' Bottom of Packer Interval (or Bottom of hole): 636' Packer Int. Midpoint (double packer): // Water Flushed: (Vol./Time/Until Clean): Packer Inflation Pressure: 500 psi Stickup Height: Borehole Outside Diametric: NQ 3" Packer Pipe ID / or Drill Rod ID:

Measurement Units

| Volume: | gal |
|-----------|-----|
| Pressure: | psi |
| Length: | ft |

Time

| Start Packer Testing: | 1230pm |
|-----------------------|--------|
| Start Flushing: | 7am |
| End Flushing: | 1230pm |
| End Packer Testing: | 1430am |

Calculations

Pi = Pg + hg + hs - hf

Pg = gauge pressure (m)

hg = height of gauge obove ground level (m)

hs = depth to pre-test water level (m)

hf = frictional losses (m)

| | | | | | | | | | | K = T/b |
|------|---------|-----|--------|---------|----------|-------|---|--------|----------|--------------|
| Step | P (psi) | | Pi (m) | gal/min | Q (m3/s) | R (m) | | rb (m) | T (m2/d) | 68.5 |
| | 1 | 25 | 18.635 | 1.6 | 0.000101 | | 5 | 0.038 | 4.21E-06 | 6.15E-08 m/s |
| | 2 | 50 | 36.21 | 2.4 | 0.000151 | | 5 | 0.038 | 3.25E-06 | 4.74E-08 m/s |
| | 3 | 75 | 53.785 | 3 | 0.000189 | | 5 | 0.038 | 2.73E-06 | 3.99E-08 m/s |
| | 4 | 100 | 71.36 | 3.3 | 0.000208 | | 5 | 0.038 | 2.27E-06 | 3.31E-08 m/s |
| | 3b | 75 | 53.785 | 2.4 | 0.000151 | | 5 | 0.038 | 2.19E-06 | 3.19E-08 m/s |
| | 2b | 50 | 36.21 | 1.6 | 0.000101 | | 5 | 0.038 | 2.17E-06 | 3.16E-08 m/s |
| | | | | | | | | | | |

| Client: | Avalon | |
|------------|-----------|--|
| Project: | Thor Lake | |
| Project #: | 1036222 | |
| Personnel: | TL | |

| Pressure Interval | | | | | | |
|-------------------|----------|--------|----------|--|--|--|
| Minutes | Pressure | Volume | Δ Volume | | | |
| 0 | 20 | 0 | - | | | |
| 1 | 20 | 2 | 2 | | | |
| 2 | 20 | 3 | 1 | | | |
| 3 | 20 | 4.8 | 1.8 | | | |
| 4 | 20 | 7.7 | 2.9 | | | |
| 5 | 20 | 9.5 | 1.8 | | | |
| 6 | 20 | 11.3 | 1.8 | | | |
| 7 | 20 | 13.1 | 1.8 | | | |
| | | | | | | |
| 0 | 40 | 0 | - | | | |
| 1 | 40 | 2.9 | 2.9 | | | |
| 2 | 40 | 5.8 | 2.9 | | | |
| 3 | 40 | 8.7 | 2.9 | | | |
| | | | | | | |
| 0 | 60 | 0 | - | | | |
| 1 | 60 | 3.7 | 3.7 | | | |
| 2 | 60 | 7.3 | 3.6 | | | |
| 3 | 60 | 10.9 | 3.6 | | | |
| 4 | 60 | 14.3 | 3.4 | | | |
| 5 | 60 | 17.8 | 3.5 | | | |
| 6 | 60 | 20.8 | 3 | | | |
| 7 | 60 | 23.8 | 3 | | | |
| 8 | 60 | 26.8 | 3 | | | |
| | | | | | | |
| 0 | 80 | 0 | - | | | |
| 1 | 80 | 3.7 | 3.7 | | | |
| 2 | 80 | 7.3 | 3.6 | | | |
| 3 | 80 | 10.8 | 3.5 | | | |
| 4 | 80 | 14.3 | 3.5 | | | |
| 5 | 80 | 17.8 | 3.5 | | | |
| | | | | | | |
| 0 | 100 | 0 | - | | | |
| 1 | 100 | 3.7 | 3.7 | | | |
| 2 | 100 | 7.5 | 3.8 | | | |
| 3 | 100 | 11 | 3.5 | | | |
| 4 | 100 | 14.7 | 3.7 | | | |
| 5 | 100 | 18.4 | 3.7 | | | |
| 6 | 100 | 22 | 3.6 | | | |
| 7 | 100 | 25.6 | 3.6 | | | |
| 8 | 100 | 29.2 | 3.6 | | | |

| Collar E.I.: | 1.06 m |
|--------------|-----------|
| Trend: | |
| Plunge: | |
| Date: | 25-Mar-09 |
| | |

| Pressure Interval | | | | | | |
|-------------------|----------|--------|----------|--|--|--|
| Minutes | Pressure | Volume | ∆ Volume | | | |
| 0 | 120 | 0 | - | | | |
| 1 | 120 | 4 | 4 | | | |
| 2 | 120 | 7.9 | 3.9 | | | |
| 3 | 120 | 11.7 | 3.8 | | | |
| 4 | 120 | 15.2 | 3.5 | | | |
| 5 | 120 | 18.7 | 3.5 | | | |
| 6 | 120 | 22.2 | 3.5 | | | |
| 7 | 120 | | | | | |
| 8 | 120 | 29.1 | 6.9 | | | |
| | | | | | | |
| 0 | 180 | 0 | - | | | |
| 1 | 180 | 5.3 | 5.3 | | | |
| 2 | 180 | 10.6 | 5.3 | | | |
| 3 | 180 | 15.9 | 5.3 | | | |
| | | | | | | |
| 0 | 120 | 0 | - | | | |
| 1 | 120 | 4 | 4 | | | |
| 2 | 120 | 7.3 | 3.3 | | | |
| 3 | 120 | 10.6 | 3.3 | | | |
| 4 | 120 | 14.1 | 3.5 | | | |
| 5 | 5 120 | | 3.2 | | | |
| 6 | 120 | 20.5 | 3.2 | | | |
| 7 | 120 | 23.7 | 3.2 | | | |
| | | | | | | |
| 0 | 100 | 0 | - | | | |
| 1 | 100 | 2.9 | 2.9 | | | |
| 2 | 100 | 5.6 | 2.7 | | | |
| 3 | 100 | 8.4 | 2.8 | | | |
| 4 | 100 | 11.2 | 2.8 | | | |
| 5 | 100 | 14 | 2.8 | | | |
| | | | | | | |
| 0 | 80 | 0 | - | | | |
| 1 | 80 | 2.5 | 2.5 | | | |
| 2 | 80 | 4.9 | 2.4 | | | |
| 3 | 80 | 7.4 | 2.5 | | | |
| 4 | 80 | 9.9 | 2.5 | | | |
| 5 | 80 | 12.4 | 2.5 | | | |
| | | | | | | |
| | | | | | | |
| | 1 | 1 | | | | |

L09-152 Hole # Design Test Interval: 300' Test #: 3 Measurements: Depth to WT: 3.3 m.b. t.o.p Top of Packer Interval: 311' Bottom of Packer 626' Interval (or Bottom of hole): Packer Int. Midpoint (double packer): _// Water Flushed: (Vol./Time/Until Clean): clean Packer Inflation Pressure: 500 psi Stickup Height: Borehole Outside Diametric: NQ 3" Packer Pipe ID / or Drill Rod ID:

Measurement Units

| gal |
|-----|
| psi |
| ft |
| |

<u>Time</u>

| Start Packer Testing: | |
|-----------------------|--|
| Start Flushing: | |
| End Flushing: | |
| End Packer Testing: | |

Pi = Pg + hg + hs - hf

Pg = gauge pressure (m)

hg = height of gauge obove ground level (m)

hs = depth to pre-test water level (m)

hf = frictional losses (m)

| | | | | | | | | | | K = T/b |
|------|-------|-----|--------|---------|----------|-------|----|-------|----------|----------|
| Step | P (ps | i) | Pi (m) | gal/min | Q (m3/s) | R (m) | rb | o (m) | T (m2/d) | 96 |
| | 1 | 20 | 15.12 | 1.8 | 0.000114 | | 5 | 0.038 | 5.84E-06 | 6.08E-08 |
| | 2 | 40 | 29.18 | 2.9 | 0.000183 | | 5 | 0.038 | 4.87E-06 | 5.08E-08 |
| | 3 | 60 | 43.24 | 3 | 0.000189 | | 5 | 0.038 | 3.40E-06 | 3.54E-08 |
| | 4 | 80 | 57.3 | 3.5 | 0.000221 | | 5 | 0.038 | 2.99E-06 | 3.12E-08 |
| | 5 | 100 | 71.36 | 3.6 | 0.000227 | | 5 | 0.038 | 2.47E-06 | 2.58E-08 |
| | 6 | 120 | 85.42 | 3.5 | 0.000221 | | 5 | 0.038 | 2.01E-06 | 2.09E-08 |
| | 7 | 180 | 127.6 | 5.3 | 0.000334 | | 5 | 0.038 | 2.04E-06 | 2.12E-08 |
| | 6a | 120 | 85.42 | 3.2 | 0.000202 | | 5 | 0.038 | 1.84E-06 | 1.91E-08 |
| | 5a | 100 | 71.36 | 2.8 | 0.000177 | | 5 | 0.038 | 1.92E-06 | 2.00E-08 |
| | 4a | 80 | 57.3 | 2.5 | 0.000158 | | 5 | 0.038 | 2.14E-06 | 2.23E-08 |
| | | | | | | | | | | |

| Client: | Avalon |
|------------|-----------|
| Project: | Thor Lake |
| Project #: | 1036222 |
| Crew: | JT |

| Pressure Interval | | | | | | |
|-------------------|----------|--------|----------|--|--|--|
| Minutes | Pressure | Volume | ∆ Volume | | | |
| 0 | 20 | 0 | - | | | |
| 1 | 20 | 2.7 | 2.7 | | | |
| 2 | 20 | 5.3 | 2.6 | | | |
| 3 | 20 | 7.8 | 2.5 | | | |
| 4 | 20 | 10.2 | 2.4 | | | |
| 5 | 20 | 12.6 | 2.4 | | | |
| 6 | 20 | 14.9 | 2.3 | | | |
| 7 | 20 | 17.3 | 2.4 | | | |
| | | | | | | |
| 0 | 40 | 0 | - | | | |
| 1 | 40 | 3.8 | 3.8 | | | |
| 2 | 40 | 7.5 | 3.7 | | | |
| 3 | 40 | 11.3 | 3.8 | | | |
| 4 | 40 | 15 | 3.7 | | | |
| 5 | 40 | 18.7 | 3.7 | | | |
| 6 | 40 | 22.4 | 3.7 | | | |
| | | | | | | |
| 0 | 60 | 0 | - | | | |
| 1 | 1 60 | | 4.8 | | | |
| 2 | 60 | 9.7 | 4.9 | | | |
| 3 | 60 | 14.6 | 4.9 | | | |
| 4 | 60 | 19.5 | 4.9 | | | |
| | | | | | | |
| 0 | 80 | 0 | - | | | |
| 1 | 80 | 6.3 | 6.3 | | | |
| 2 | 80 | 12.5 | 6.2 | | | |
| 3 | 80 | 18.7 | 6.2 | | | |
| 4 | 80 | 24.9 | 6.2 | | | |
| | | | | | | |
| 0 | 100 | 0 | - | | | |
| 1 | 100 | 8.4 | 8.4 | | | |
| 2 | 100 | 16.5 | 8.1 | | | |
| 3 | 100 | 24.6 | 8.1 | | | |
| 4 | 100 | 32.7 | 8.1 | | | |
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| Collar E.I.: | 1.06 m |
|--------------|-----------|
| Date: | 25-Mar-09 |

| Pressure Interval | | | | | | |
|-------------------|----------|--------|----------|--|--|--|
| Minutes | Pressure | Volume | ∆ Volume | | | |
| 0 | 120 | 0 | - | | | |
| 1 | 120 | 9.2 | 9.2 | | | |
| 2 | 120 | 18.3 | 9.1 | | | |
| 3 | 120 | 26.8 | 8.5 | | | |
| 4 | 120 | 34.9 | 8.1 | | | |
| 5 | 120 | 42.9 | 8 | | | |
| 6 | 120 | 50.9 | 8 | | | |
| 7 | 120 | 59 | 8.1 | | | |
| | | | | | | |
| 0 | 100 | 0 | - | | | |
| 1 | 100 | 6.9 | 6.9 | | | |
| 2 | 100 | 13.8 | 6.9 | | | |
| 3 | 100 | 20.6 | 6.8 | | | |
| 4 | 100 | 27.5 | 6.9 | | | |
| | | | | | | |
| 0 | 80 | 0 | - | | | |
| 1 | 80 | 5.3 | 5.3 | | | |
| 2 | 80 | 10.7 | 5.4 | | | |
| 3 | 80 | 16.1 | 5.4 | | | |
| 4 | 80 | 21.4 | 5.3 | | | |
| | | | | | | |
| 0 | 60 | 0 | - | | | |
| 1 | 60 | 4.6 | 4.6 | | | |
| 2 | 60 | 9.2 | 4.6 | | | |
| 3 | 60 | 13.7 | 4.5 | | | |
| 4 | 60 | 18.3 | 4.6 | | | |
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 ID
 L09-152

 Test Interval:
 415 ft

 Test #:
 4

Measurements:

| Depth to WT: | 3.3 m |
|-------------------------------|-------|
| Top of Packer Interval: | 211' |
| Bottom of Packer | |
| Interval (or Bottom of hole): | 626' |
| Packer Int. Midpoint | |
| (double packer): // | |
| Water Flushed: | |
| (Vol./Time/Until Clean): | clean |
| Borehole Outside Diametric: | NQ 3" |
| | |

Measurement Units

| Volume: | gal |
|-----------|-----|
| Pressure: | psi |
| Length: | ft |

Pi = Pg + hg + hs - hf

Pg = gauge pressure (m)

hg = height of gauge obove ground level (m)

hs = depth to pre-test water level (m)

hf = frictional losses (m)

| | | | 0000 () | | | | | | | K = T/b |
|------|--------|-----|---------|---------|----------|-------|----|-------|----------|----------|
| | | | | | | | | | | K = 1/D |
| Step | P (psi |) | Pi (m) | gal/min | Q (m3/s) | R (m) | rb | (m) | T (m2/d) | 126.5 |
| | 1 | 20 | 15.12 | 2.4 | 0.000151 | | 5 | 0.038 | 7.78E-06 | 6.15E-08 |
| | 2 | 40 | 29.18 | 3.7 | 0.000233 | | 5 | 0.038 | 6.22E-06 | 4.91E-08 |
| | 3 | 60 | 43.24 | 4.9 | 0.000309 | | 5 | 0.038 | 5.56E-06 | 4.39E-08 |
| | 4 | 80 | 57.3 | 6.2 | 0.000391 | | 5 | 0.038 | 5.31E-06 | 4.19E-08 |
| | 5 | 100 | 71.36 | 8.1 | 0.000511 | | 5 | 0.038 | 5.57E-06 | 4.40E-08 |
| | 6 | 120 | 85.42 | 8 | 0.000505 | | 5 | 0.038 | 4.59E-06 | 3.63E-08 |
| | 6a | 100 | 71.36 | 6.9 | 0.000435 | | 5 | 0.038 | 4.74E-06 | 3.75E-08 |
| | 5a | 80 | 57.3 | 5.3 | 0.000334 | | 5 | 0.038 | 4.53E-06 | 3.58E-08 |
| | 4a | 60 | 43.24 | 4.6 | 0.00029 | | 5 | 0.038 | 5.22E-06 | 4.12E-08 |

| Client: | Avalon |
|------------|-----------|
| Project: | Thor Lake |
| Project #: | 1036222 |
| Personnel: | Τι |

| Minutes Pressure Volume A Volume 0 20 0 1 1 20 0 1 2 20 0 1 0 40 0 1 1 40 0.7 1 2 40 1.2 1 3 40 1.8 1 4 40 2.3 1 5 40 3.1 1 | |
|---|----------|
| 1 20 0 2 20 0 0 40 0 1 40 0.7 2 40 1.2 3 40 1.8 4 40 2.3 5 40 2.7 | 0 |
| 2 20 0 0 40 0 1 40 0.7 2 40 1.2 3 40 1.8 4 40 2.3 5 40 2.7 | 0 |
| 0 40 0 1 40 0.7 2 40 1.2 3 40 1.8 4 40 2.3 5 40 2.7 | - |
| 1 40 0.7 2 40 1.2 3 40 1.8 4 40 2.3 5 40 2.7 | - 0.7 |
| 1 40 0.7 2 40 1.2 3 40 1.8 4 40 2.3 5 40 2.7 | - 0.7 |
| 2 40 1.2 3 40 1.8 4 40 2.3 5 40 2.7 | 0.7 |
| 3 40 1.8 4 40 2.3 5 40 2.7 | |
| 4 40 2.3 5 40 2.7 | 0.5 |
| 5 40 2.7 | 0.6 |
| | 0.5 |
| 6 10 21 | 0.4 |
| | 0.4 |
| 7 40 3.5 | 0.4 |
| | |
| 0 60 0 | - |
| 1 60 1.3 | 1.3 |
| 2 60 2.5 | 1.2 |
| 3 60 3.7 | 1.2 |
| 4 60 4.9 | 1.2 |
| | |
| 0 80 0 | - |
| 1 80 1.4 | 1.4 |
| 2 80 2.8 | 1.4 |
| 3 80 4.2 | 1.4 |
| | |
| 0 100 0 | - |
| 1 100 2 | 2 |
| 2 100 4 | 2 |
| 3 100 6 | 2 |
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| Collar E.I.: | 1.06 m |
|--------------|-----------|
| Trend: | |
| Plunge: | |
| Date: | 25-Mar-09 |
| | |

| Pressure Interval | | | | | | |
|-------------------|----------|--------|----------|--|--|--|
| Minutes | Pressure | Volume | ∆ Volume | | | |
| 0 | 80 | 0 | - | | | |
| 1 | 80 | 1.5 | 1.5 | | | |
| 2 | 80 | 2.9 | 1.4 | | | |
| 3 | 80 | 4.4 | 1.5 | | | |
| 4 | 80 | 5.8 | 1.4 | | | |
| | | | | | | |
| 0 | 60 | 0 | - | | | |
| 1 | 60 | 1.2 | 1.2 | | | |
| 2 | 60 | 2.4 | 1.2 | | | |
| 3 | 60 | 3.6 | 1.2 | | | |
| | | | | | | |
| 0 | 40 | 0 | - | | | |
| 1 | 40 | 0.7 | 0.7 | | | |
| 2 | 40 | 1.4 | 0.7 | | | |
| 3 | 40 | 2.2 | 0.8 | | | |
| 4 | 40 | 2.9 | 0.7 | | | |
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| | 1 | 1 | 1 | | | |

| Hole # | L09-152 | |
|-------------|--------------------|-------|
| Design Tes | st Interval: | 10 ft |
| Test #: | | 5 |
| | | |
| Measuren | nents: | |
| Depth to \ | NT: | 2.64 |
| Top of Pac | ker Interval: | 181' |
| Bottom of | Packer | |
| Interval (o | r Bottom of hole): | 191' |
| Packer Int | . Midpoint | |
| (double pa | acker): | 186' |
| Water Flu | shed: | |
| (Vol./Time | e/Until Clean): | clean |
| Packer Inf | lation Pressure: | |
| Stickup He | eight: | |
| Borehole (| Outside Diametric: | NQ 3" |
| Packer Pip | e ID / or | |
| Drill Rod I | D: | |
| | | |
| Measuren | nent Units | |
| Volume: | gal | |
| Pressure: | psi | |
| Length: | ft | |
| | | |
| <u>Time</u> | | |

| Start Packer Testing: | |
|-----------------------|--|
| Start Flushing: | |
| End Flushing: | |
| End Packer Testing: | |

Pg + hg + hs - hf Pi =

- Pg =
- gauge pressure (m) height of gauge obove ground level (m) hg =

depth to pre-test water level (m) frictional losses (m) hs =

hf =

| | metic | 11033 | ses (iii) | | | | | | |
|------|--------|-------|-----------|-------------|--------------|-----|--------|----------|----------|
| | | | | | | | | | K = T/b |
| Step | P (psi |) Р | i (m) | Q (gal/min) | Q (m3/s) R (| (m) | rb (m) | T (m2/d) | 3 |
| | 1 | 20 | 15.12 | 0 | 0 | 5 | 0.038 | 0 | 0.00E+00 |
| | 2 | 40 | 29.18 | 0.4 | 2.52E-05 | 5 | 0.038 | 6.72E-07 | 2.24E-07 |
| | 3 | 60 | 43.24 | 1.2 | 7.57E-05 | 5 | 0.038 | 1.36E-06 | 4.54E-07 |
| | 4 | 80 | 57.3 | 1.4 | 8.83E-05 | 5 | 0.038 | 1.2E-06 | 3.99E-07 |
| | 5 | 100 | 71.36 | 2 | 1.26E-04 | 5 | 0.038 | 1.37E-06 | 4.58E-07 |
| | 4a | 80 | 57.3 | 1.4 | 8.83E-05 | 5 | 0.038 | 1.2E-06 | 3.99E-07 |
| | 3a | 60 | 43.24 | 1.2 | 7.57E-05 | 5 | 0.038 | 1.36E-06 | 4.54E-07 |
| | 2a | 40 | 29.18 | 0.7 | 4.42E-05 | 5 | 0.038 | 1.18E-06 | 3.92E-07 |
| | | | | | | | | | |

| Client: | Avalon | | | | |
|------------|-----------|--|--|--|--|
| Project: | Thor Lake | | | | |
| Project #: | 1036222 | | | | |
| Personnel | JT | | | | |

| Pressure I | | | |
|------------|----------|--------|----------|
| Minutes | Pressure | Volume | ∆ Volume |
| 0 | 20 | 0 | - |
| 1 | 20 | 1.4 | 1.4 |
| 2 | 20 | 2.6 | 1.2 |
| 3 | 20 | 3.7 | 1.1 |
| 4 | 20 | 4.9 | 1.2 |
| 5 | 20 | 6 | 1.1 |
| 0 | 40 | 0 | |
| - | 40 | 0 | 3.2 |
| 1 | 40 | 3.2 | |
| 2 | 40 | 6.3 | 3.1 |
| 3 | 40 | 9.4 | 3.1 |
| 4 | 40 | 12.3 | 2.9 |
| 5 | 40 | 15.1 | 2.8 |
| 6 | 40 | 18 | 2.9 |
| 7 | 40 | 20.8 | 2.8 |
| 0 | 60 | 0 | - |
| 1 | 60 | 5 | 5 |
| 2 | 60 | 9.6 | 4.6 |
| 3 | 60 | 13.3 | 3.7 |
| 4 | 60 | 13.5 | 3.7 |
| 5 | 60 | 20.7 | 3.7 |
| , | 00 | 20.7 | 5.7 |
| 0 | 80 | 0 | - |
| 1 | 80 | 6.5 | 6.5 |
| 2 | 80 | 13 | 6.5 |
| 3 | 80 | 19.4 | 6.4 |
| 4 | 80 | 25.8 | 6.4 |
| | | | |
| 0 | 100 | 0 | - |
| 1 | 100 | 8.7 | 8.7 |
| 2 | 100 | 16.5 | 7.8 |
| 3 | 100 | 24.7 | 8.2 |
| 4 | 100 | 32.7 | 8 |
| 5 | 100 | 40.8 | 8.1 |
| 6 | 100 | 48.8 | 8 |
| 7 | 100 | 56.8 | 8 |
| | | | |
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| | | 1 | |

| Collar E.I.: | 1.06 m | | | | |
|--------------|-----------|--|--|--|--|
| Trend: | | | | | |
| Plunge: | | | | | |
| Date: | 25-Mar-09 | | | | |
| | | | | | |

| MinutesPressureVolumeΔ Volume0800-1803.43.42808.75.338014.65.948020.25.658025.35.168033.45.188040.55.178035.45.188040.55.17600-1601.81.82605.63.83609.53.946013.43.956017.13.766020.83.776024.63.83111924.63.811111111111111113609.53.946013.43.956017.13.766020.83.77620.83.771111111111111111111111111111111111 | Pressure I | Pressure Interval | | | | | | |
|--|------------|-------------------|--------|----------|--|--|--|--|
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | Minutes | Pressure | Volume | ∆ Volume | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 0 | 80 | 0 | - | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 1 | 80 | 3.4 | 3.4 | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 2 | 80 | 8.7 | 5.3 | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 3 | 80 | 14.6 | 5.9 | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 4 | 80 | 20.2 | 5.6 | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 5 | 80 | 25.3 | 5.1 | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 6 | 80 | 30.3 | 5 | | | | |
| 0 60 0 - 1 60 1.8 1.8 2 60 5.6 3.8 3 60 9.5 3.9 4 60 13.4 3.9 5 60 17.1 3.7 6 60 20.8 3.7 | 7 | 80 | 35.4 | 5.1 | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | 8 | 80 | 40.5 | 5.1 | | | | |
| $\begin{array}{c ccccccccccccccccccccccccccccccccccc$ | | | | | | | | |
| 2 60 5.6 3.8 3 60 9.5 3.9 4 60 13.4 3.9 5 60 17.1 3.7 6 60 20.8 3.7 | 0 | 60 | 0 | - | | | | |
| 3 60 9.5 3.9 4 60 13.4 3.9 5 60 17.1 3.7 6 60 20.8 3.7 | 1 | 60 | 1.8 | 1.8 | | | | |
| 4 60 13.4 3.9 5 60 17.1 3.7 6 60 20.8 3.7 | 2 | 60 | 5.6 | 3.8 | | | | |
| 5 60 17.1 3.7 6 60 20.8 3.7 | 3 | 60 | 9.5 | 3.9 | | | | |
| 6 60 20.8 3.7 | 4 | 60 | 13.4 | 3.9 | | | | |
| | 5 | 60 | 17.1 | 3.7 | | | | |
| | 6 | 60 | 20.8 | 3.7 | | | | |
| Image: second | 7 | 60 | 24.6 | 3.8 | | | | |
| Image: second | | | | | | | | |
| Image: second | | | | | | | | |
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| Image: state | | | | | | | | |
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| Image: Constraint of the sector of | | 1 | | | | | | |
| Image: Constraint of the sector of | | 1 | 1 | | | | | |
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| Hole # L09-152 | |
|-------------------------------|-------|
| Design Test Interval: | 10 ft |
| Test #: | 6 |
| | |
| Measurements: | |
| Depth to WT: | 3.3 |
| Top of Packer Interval: | 61' |
| Bottom of Packer | |
| Interval (or Bottom of hole): | 71' |
| Packer Int. Midpoint | |
| (double packer): | 66' |
| Water Flushed: | |
| (Vol./Time/Until Clean): | clean |
| Packer Inflation Pressure: | |
| Stickup Height: | |
| Borehole Outside Diametric: | NQ 3" |
| Packer Pipe ID / or | |
| Drill Rod ID: | |

2.24

Measurement Units

| Volume: | gal |
|-----------|-----|
| Pressure: | psi |
| Length: | ft |
| | |

<u>Time</u>

| Start Packer Testing: | |
|-----------------------|--|
| Start Flushing: | |
| End Flushing: | |
| End Packer Testing: | |

Pi = Pg + hg + hs - hf

Pg = gauge pressure (m)

height of gauge above ground level (m) depth to pre-test water level (m) hg =

hs =

hf = frictional losses (m)

| | | | , | | | | | | | | |
|------|--------|-----|--------|---------|------------|-------|----|--------|----------|--------------|-----------------------------|
| | | | | | | | | | | K = T/b | b = length of test interval |
| Step | P (psi |) | Pi (m) | Gal/Min | Q (m3/s) | R (m) | 1 | rb (m) | T (m2/d) | 3 | |
| | 1 | 20 | 17.8 | 1.2 | 0.00007572 | | 10 | 0.0379 | 3.78E-06 | 1.26E-06 m/s | |
| | 2 | 40 | 31.86 | 2.9 | 0.00018299 | | 10 | 0.0379 | 5.10E-06 | 1.70E-06 m/s | |
| | 3 | 60 | 45.92 | 3.7 | 0.00023347 | | 10 | 0.0379 | 4.51E-06 | 1.50E-06 m/s | |
| | 4 | 80 | 59.98 | 6.4 | 0.00040384 | | 10 | 0.0379 | 5.98E-06 | 1.99E-06 m/s | |
| | 5 | 100 | 74.04 | 8 | 0.0005048 | | 10 | 0.0379 | 6.05E-06 | 2.02E-06 m/s | |
| | 4a | 80 | 59.98 | 5.1 | 0.00032181 | | 10 | 0.0379 | 4.76E-06 | 1.59E-06 m/s | |
| | 3a | 60 | 45.92 | 3.8 | 0.00023978 | | 10 | 0.0379 | 4.64E-06 | 1.55E-06 m/s | |
| | | | | | | | | | | | |

Thor Lake Rare Earth Metals Baseline Project Environmental Baseline Report: Volume 2 – Hydrogeology Final Interim Report

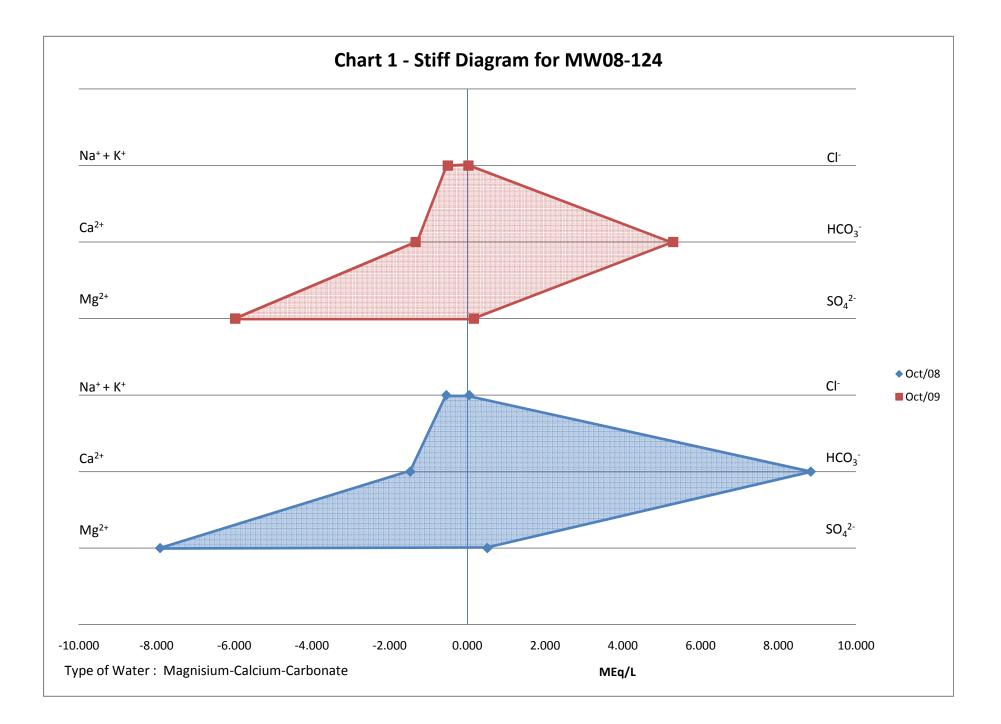
Appendix E – Hydrogeochemical Plots

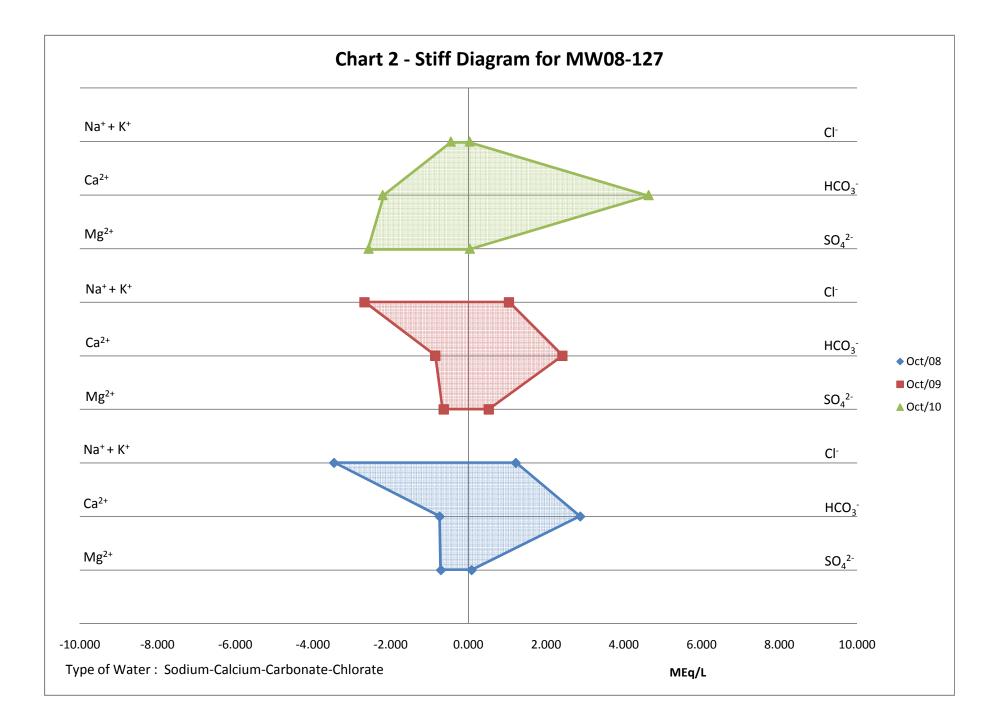


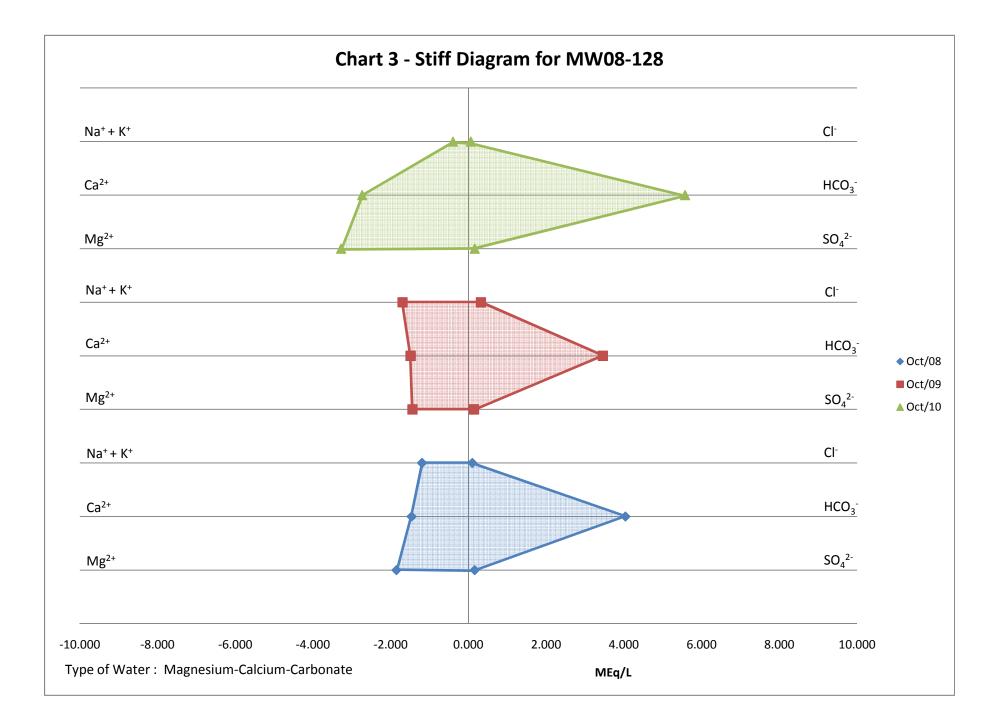


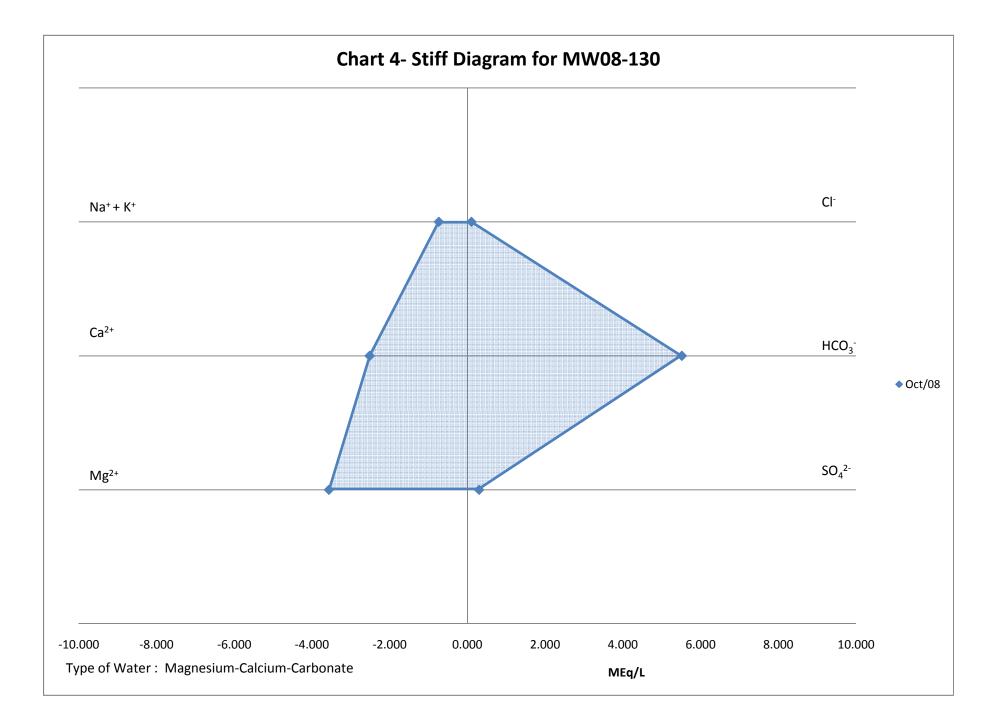
Hydrogeochemical Plots

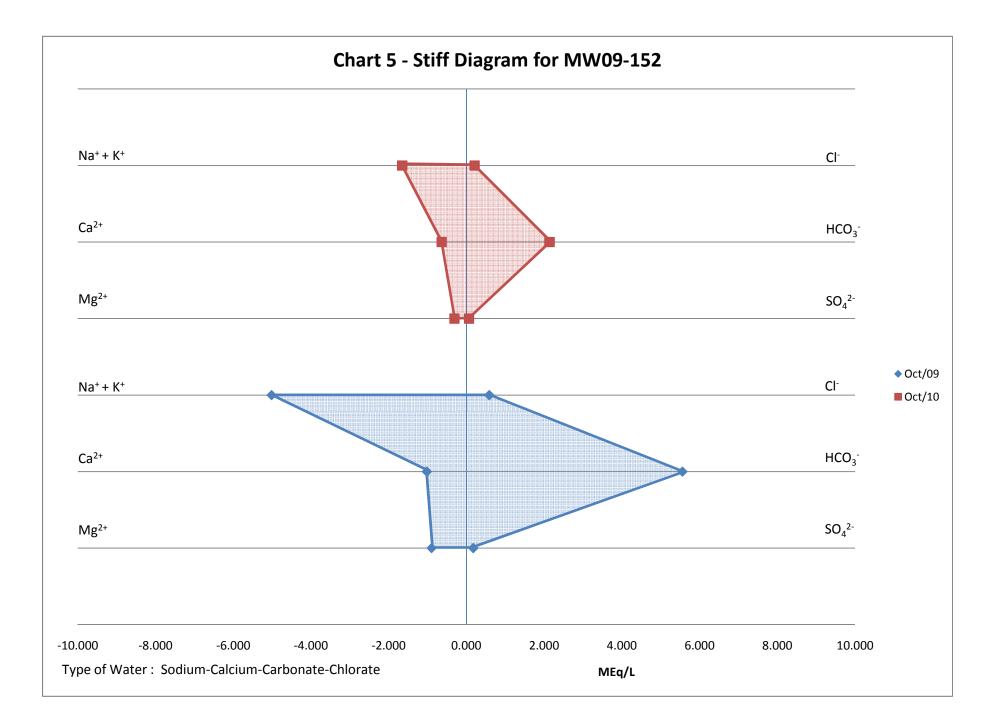
One Team. Infinite Solutions.

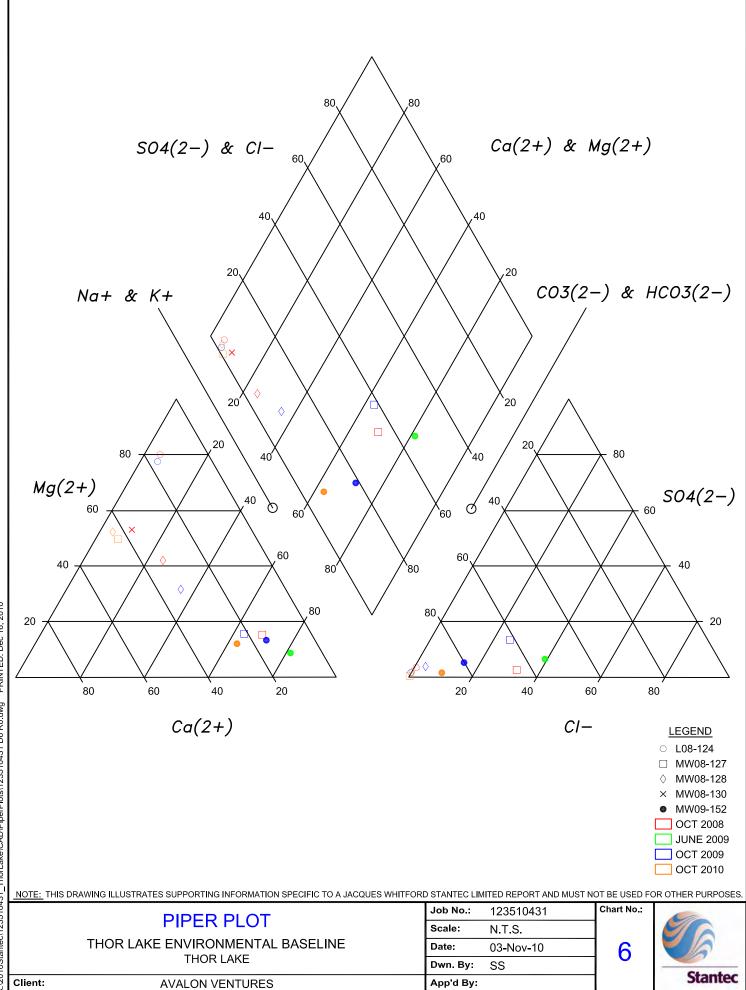












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Thor Lake Rare Earth Metals Baseline Project Environmental Baseline Report: Volume 2 – Hydrogeology Final Interim Report

Appendix F – Laboratory Certificates





Laboratory Certificates

One Team. Infinite Solutions.

ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division



10

| | Contificate of Apolysia | | | | | | | | | |
|---|---|--------------------|------------------------------|--|--|--|--|--|--|--|
| Certificate of Analysis JACQUES WHITFORD AXYS LTD. ATTN: JENNIFER TODD 4370 DOMINION ST 5TH FLOOR Reported On: 10-OCT-08 04:33 PM | | | | | | | | | | |
| BURNABY BC V5G | G 4L7 | | | | | | | | | |
| Lab Work Order #: | L688290 | Date Receive | d: 26-SEP-08 | | | | | | | |
| Project P.O. #: Job Reference: Legal Site Desc: CofC Numbers: Other Information: | 1036222.OD / Z9100 1036222.OD / Z9100 AVALON VENTURES - THOR LAKE C048742 | | | | | | | | | |
| | etection limits for some metals have been increased due to high levels of metals analysis. | s in the samples o | or interferences encountered | | | | | | | |
| | | | | | | | | | | |
| | | | | | | | | | | |
| | Bryan Mark Account Manager | | | | | | | | | |

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

ALS Canada Ltd. Part of the ALS Laboratory Group 1988 Triumph Street, Vancouver, BC V5L 1K5 Phone: +1 604 253 4188 Fax: +1 604 253 6700 www.alsglobal.com A Campbell Brothers Limited Company

L688290 CONTD Ρ

ALS LABORATORY GROUP ANALYTICAL REPORT

| P | AGE | 2 | of | 6 | |
|---|------|-------|-----|----|--|
| 1 | 0-00 | CT-08 | 16: | 32 | |

| | Sample ID | L688290-1 | L688290-2 | L688290-3 | |
|-------------------------------|-------------------------------------|-----------|-----------|-----------|--|
| | Description Sampled Date | | | | |
| | Sampled Time | 20-SEP-08 | 20-SEP-08 | 21-SEP-08 | |
| | Client ID | MWL08-127 | MWL08-128 | MWL08-130 | |
| Grouping | Analyte | | | | |
| WATER | | | | | |
| Physical Tests | Conductivity (uS/cm) | 878 | 482 | 557 | |
| | Hardness (as CaCO3) (mg/L) | 142 | 261 | 282 | |
| | рН (рН) | 8.15 | 7.59 | 8.10 | |
| | Total Suspended Solids (mg/L) | 33.0 | 49.5 | 14.5 | |
| | Total Dissolved Solids (mg/L) | 487 | 335 | 331 | |
| | Turbidity (NTU) | 13.0 | 79.3 | 4.05 | |
| Anions and Nutrients | Alkalinity, Total (as CaCO3) (mg/L) | 287 | 251 | 266 | |
| | Ammonia as N (mg/L) | <0.020 | 0.581 | 0.066 | |
| | Bromide (Br) (mg/L) | 0.358 | <0.25 | <0.050 | |
| | Chloride (CI) (mg/L) | 108 | 3.6 | 3.48 | |
| | Fluoride (F) (mg/L) | 2.54 | 1.29 | 1.05 | |
| | Nitrate (as N) (mg/L) | <0.0050 | <0.025 | 5.07 | |
| | Nitrite (as N) (mg/L) | <0.0010 | 0.0137 | 0.227 | |
| | Total Kjeldahl Nitrogen (mg/L) | 0.477 | 1.88 | 0.813 | |
| | Ortho Phosphate as P (mg/L) | <0.0010 | 0.0016 | <0.0010 | |
| | Total Phosphate as P (mg/L) | 0.024 | 0.030 | 0.0062 | |
| | Sulfate (SO4) (mg/L) | 1.00 | 4.8 | 14.9 | |
| Organic / Inorganic Carbon | Total Organic Carbon (mg/L) | 10.4 | 30.9 | 16.0 | |
| Total Metals | Aluminum (Al)-Total (mg/L) | 0.566 | 0.552 | 0.811 | |
| | Antimony (Sb)-Total (mg/L) | <0.0010 | <0.00050 | <0.00050 | |
| | Arsenic (As)-Total (mg/L) | 0.0017 | 0.0231 | 0.00102 | |
| | Barium (Ba)-Total (mg/L) | 0.044 | 0.179 | 0.440 | |
| | Beryllium (Be)-Total (mg/L) | <0.0020 | <0.0010 | <0.0010 | |
| | Boron (B)-Total (mg/L) | 0.67 | <0.10 | <0.10 | |
| | Cadmium (Cd)-Total (mg/L) | 0.000316 | 0.000430 | 0.000156 | |
| | Calcium (Ca)-Total (mg/L) | 24.3 | 49.1 | 48.3 | |
| | Chromium (Cr)-Total (mg/L) | <0.0020 | 0.0013 | 0.0071 | |
| | Cobalt (Co)-Total (mg/L) | <0.00060 | 0.00146 | 0.00316 | |
| | Copper (Cu)-Total (mg/L) | 0.0276 | 0.0033 | 0.0402 | |
| | Iron (Fe)-Total (mg/L) | 0.837 | 8.89 | 2.69 | |
| | Lead (Pb)-Total (mg/L) | <0.0010 | 0.00253 | 0.00360 | |
| | Lithium (Li)-Total (mg/L) | 0.051 | 0.0161 | 0.0154 | |
| | Magnesium (Mg)-Total (mg/L) | 19.8 | 33.6 | 39.1 | |
| | Manganese (Mn)-Total (mg/L) | 0.190 | 0.490 | 0.123 | |
| | Mercury (Hg)-Total (mg/L) | <0.000020 | <0.000020 | <0.000020 | |
| | Molybdenum (Mo)-Total (mg/L) | 0.0286 | 0.0241 | 0.0559 | |
| | Nickel (Ni)-Total (mg/L) | 0.0020 | 0.0035 | 0.0108 | |
| | Potassium (K)-Total (mg/L) | 5.9 | 7.8 | 3.9 | |

L688290 CONTD.... PAGE 3 of 6

ALS LABORATORY GROUP ANALYTICAL REPORT ^{10-OCT-08 16:32}

| | | 1 | 1 | 1 | 1 | 1 |
|------------------|------------------------------|-----------|-----------|-----------|---|---|
| | Sample ID Description | L688290-1 | L688290-2 | L688290-3 | | |
| | Sampled Date Sampled Time | 20-SEP-08 | 20-SEP-08 | 21-SEP-08 | | |
| - | Client ID | MWL08-127 | MWL08-128 | MWL08-130 | | |
| Grouping | Analyte | | | | | |
| WATER | | | | | | |
| Total Metals | Selenium (Se)-Total (mg/L) | <0.0020 | <0.0010 | 0.0011 | | |
| | Silver (Ag)-Total (mg/L) | 0.000396 | 0.000332 | 0.00351 | | |
| | Sodium (Na)-Total (mg/L) | 131 | 11.8 | 16.6 | | |
| | Thallium (TI)-Total (mg/L) | <0.00040 | <0.00020 | <0.00020 | | |
| | Tin (Sn)-Total (mg/L) | <0.0010 | <0.00050 | 0.00053 | | |
| | Titanium (Ti)-Total (mg/L) | <0.010 | 0.010 | 0.016 | | |
| | Uranium (U)-Total (mg/L) | 0.0132 | 0.0266 | 0.00273 | | |
| | Vanadium (V)-Total (mg/L) | <0.0020 | 0.0021 | <0.0010 | | |
| | Zinc (Zn)-Total (mg/L) | 0.0091 | 0.0140 | 0.0118 | | |
| Speciated Metals | Chromium, Hexavalent (mg/L) | <0.001 | <0.001 | <0.001 | | |
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Reference Information

| Additional Comment | s for Sample | Listed: | |
|---|----------------|--|---|
| Samplenum | Matrix | Report Remarks | Sample Comments |
| Methods Listed (if ap | plicable): | | |
| ALS Test Code | Matrix | Test Description | Analytical Method Reference(Based On) |
| LK-COL-VA | Water | Alkalinity by Colourimetric (Automated) | APHA 310.2 |
| This analysis is carried colourimetric method. | out using pro | cedures adapted from EPA Method 310.2 "A | Ikalinity". Total Alkalinity is determined using the methyl orange |
| LK-PCT-VA | Water | Alkalinity by Auto. Titration | APHA 2320 "Alkalinity" |
| | | | Alkalinity". Total alkalinity is determined by potentiometric titration to from phenolphthalein alkalinity and total alkalinity values. |
| NIONS-BR-IC-VA | Water | Bromide by Ion Chromatography | APHA 4110 "Determination of Anions by IC |
| | f Inorganic An | | Determination of Anions by Ion Chromatography" and EPA Method aly determined by this method include: bromide, chloride, fluoride, |
| NIONS-CL-IC-VA | Water | Chloride by Ion Chromatography | APHA 4110 "Determination of Anions by IC |
| | f Inorganic An | | Determination of Anions by Ion Chromatography" and EPA Method aly determined by this method include: bromide, chloride, fluoride, |
| NIONS-F-IC-VA | Water | Fluoride by Ion Chromatography | APHA 4110 "Determination of Anions by IC |
| | f Inorganic An | | Determination of Anions by Ion Chromatography" and EPA Method aly determined by this method include: bromide, chloride, fluoride, |
| NIONS-NO2-IC-VA | Water | Nitrite by Ion Chromatography | APHA 4110 "Determination of Anions by IC |
| | f Inorganic An | | Determination of Anions by Ion Chromatography" and EPA Method aly determined by this method include: bromide, chloride, fluoride, |
| NIONS-NO3-IC-VA | Water | Nitrate by Ion Chromatography | APHA 4110 "Determination of Anions by IC |
| | f Inorganic An | | Determination of Anions by Ion Chromatography" and EPA Method aly determined by this method include: bromide, chloride, fluoride, |
| NIONS-SO4-IC-VA | Water | Sulfate by Ion Chromatography | APHA 4110 "Determination of Anions by IC |
| | f Inorganic An | | Determination of Anions by Ion Chromatography" and EPA Method aly determined by this method include: bromide, chloride, fluoride, |
| ARBONS-TOC-VA | Water | Total organic carbon by combustion | APHA 5310 "TOTAL ORGANIC CARBON (TOC) |
| This analysis is carried | out using pro | cedures adapted from APHA Method 5310 | Total Organic Carbon (TOC)". |
| R-CR6-ED | Water | Chromium, Hexavalent (Cr +6) | APHA 3500-Cr C (Ion Chromatography) |
| C-PCT-VA | Water | Conductivity (Automated) | APHA 2510 Auto. Conduc. |
| This analysis is carried electrode. | out using pro | cedures adapted from APHA Method 2510 "(| Conductivity". Conductivity is determined using a conductivity |
| | | | |

Methods Listed (if applicable): ALS Test Code Matrix Test Description Analytical Method Reference(Based On) Hardness is calculated from Calcium and Magnesium concentrations, and is expressed as calcium carbonate equivalents. HG-TOT-CCME-CVAFS- Water Total Mercurv in Water by CVAFS (CCME) EPA 245.7 VA 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). Total Metals in Water by ICPOES (CCME) MET-TOT-CCME-ICP-VA Water EPA SW-846 3005A/6010B This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B). MET-TOT-CCME-MS-VA Water Total Metals in Water by ICPMS (CCME) EPA SW-846 3005A/6020A This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A). NH3-SIE-VA Water APHA 4500-NH3 "Nitrogen (Ammonia)" Ammonia by SIE This analysis is carried out, on sulphuric acid preserved samples, using procedures adapted from APHA Method 4500-NH3 "Nitrogen (Ammonia)". Ammonia is determined using an ammonia selective electrode. PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value" This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode PO4-DO-COL-VA Water Dissolved ortho Phosphate by Color APHA 4500-P "Phosphorous" This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". All forms of phosphate are determined by the ascorbic acid colourimetric method. Dissolved ortho-phosphate (dissolved reactive phosphorous) is determined by direct measurement. Total phosphate (total phosphorous) is determined after persulphate digestion of a sample. Total dissolved phosphate (total dissolved phosphorous) is determined by filtering a sample through a 0.45 micron membrane filter followed by persulfate digestion of the filtrate. PO4-T-COL-VA Water Total Phosphate P by Color APHA 4500-P "Phosphorous" This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". All forms of phosphate are determined by the ascorbic acid colourimetric method. Dissolved ortho-phosphate (dissolved reactive phosphorous) is determined by direct measurement. Total phosphate (total phosphorous) is determined after persulphate digestion of a sample. Total dissolved phosphate (total dissolved phosphorous) is determined by filtering a sample through a 0.45 micron membrane filter followed by persulfate digestion of the filtrate. **TDS-VA** Water Total Dissolved Solids by Gravimetric APHA 2540 C - GRAVIMETRIC This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, TDS is determined by evaporating the filtrate to dryness at 180 degrees celsius. **TKN-SIE-VA** Water Total Kjeldahl Nitrogen by SIE APHA 4500-Norg (TKN) This analysis is carried out using procedures adapted from APHA Method 4500-Norg "Nitrogen (Organic)". Total kjeldahl nitrogen is determined by sample digestion at 367 celcius with analysis using an ammonia selective electrode. **TSS-VA** Water Solids by Gravimetric APHA 2540 D - GRAVIMETRIC

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, TSS is determined by drying the filter at 104 degrees celsius.

L688290 CONTD.... PAGE 5 of 6

Methods Listed (if applicable):

| · | , | | |
|---------------|--------|--------------------|---------------------------------------|
| ALS Test Code | Matrix | Test Description | Analytical Method Reference(Based On) |
| | | | |
| TURBIDITY-VA | Water | Turbidity by Meter | APHA 2130 "Turbidity" |

This analysis is carried out using procedures adapted from APHA Method 2130 "Turbidity". Turbidity is determined by the nephelometric method.

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

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

GLOSSARY OF REPORT TERMS

Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in environmental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.

The reported surrogate recovery value provides a measure of method efficiency.

mg/kg (units) - unit of concentration based on mass, parts per million

mg/L (units) - unit of concentration based on volume, parts per million

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

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

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

| REFER TO BACK | RELINQUISHED BY | Ву | - | | | | | | 2 | - | Sample # | (lab use only) | PHONE: | | ADDRESS: | CONTACT: | COMPANY: | INVOICE TO: | PHONE: | Bunaby | ADDRESS: | CONTACT: | COMPANY: | REPORT TO: | Enviror | ALS |
|---|--|--|--------|---------------------------------|---|---|----------------|---------------------------------------|------------|-------------|--|-------------------------------|----------|------------------------------|----------|------------------|-------------------------------|--|----------------------|--|------------------------------------|-------------------------|---------------------------|------------------------------|------------------------|---------------------------------|
| PAGE FOR REGIONAL | HED BY: | F se of this form the | CCHE | GUIDELINES / REGULATIONS | 6 | | | MW 1-00- 150 | - | 12 | (This description will appear on the report) | # | FAX: | | | | Y | SAME AS REPORT ? | 04 436 3014 FAX: 604 | - | ASTO DON | 5 | r: Jacques Whitfoud | 10: | Environmental Division | |
| LOCATIONS AND SAM | DATE & TIME: R | ilure to complete user acknowledge | | JLATIONS | | 1 | * TKN | | | | ppear on the report | | 0 | E | P | L | 0 | ES INO II | 436 3752 | - | St. STITYLOON E | - | AXKS S | 77 | ALS | |
| MPLING INFORMATION | RECEIVED BY. | ailure to complete all portions of this form may delay analysis. user acknowledges and agrees with the Terms and Conditions | QAIQC | | | | , Ampronia All | Xp 21,00 | Sept 20.08 | Sept 20,08 |) DATE | | QUOTE #: | Legal Site Description: That | PO /AFE: | JOB# 1036222.02 | CLIENT / PROJECT INFORMATION: | INDICATE BOTTLES: FILTERED / PRESERVED (F/P) | | EMAIL 2: 0 | EMAIL 1: jenniler. to | PDF V EXCEL V CUS | STANDARD COTHER | REPORT FORMAT / DISTRIBUTION | www.a | CHAIN OF CUSTOD |
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| WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY | COND SAMPLE COND | Please fill in this form LEGIBLY. as specified on the reverse page of the white report copy. | | HAZARDOUS | | | 24.200 | C C C C C C C C C C C C C C C C C C C | 2 2 2 | 222 | To Cr Anit TK | CV Drb TSS O-PC N | 34 | te CE | A | Plai It d, | r sthc) | NA AAAA | ANALYS | | Or PRIORITY SERVICE (1 DAY or ASAP | RUSH SERVICE (2-3 DAYS) | REGULAR SERVICE (DEFAULT) | SERVICE REQUESTED | L 6883 J | |
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| 00 | ON / | 2 | | | | 1 | | U | nu | | | BER C | | | | | | | | S | L | | | | 3 | - |

| REFER TO BACK | RELINQUISHED BY | Ву | - | | | | | | 2 | - | Sample # | (lab use only) | PHONE: | | ADDRESS: | CONTACT: | COMPANY: | INVOICE TO: | PHONE: | Bunaby | ADDRESS: | CONTACT: | COMPANY: | REPORT TO: | Enviror | ALS |
|---|--|--|--------|---------------------------------|---|---|----------------|---------------------------------------|------------|-------------|--|-------------------------------|----------|------------------------------|----------|------------------|-------------------------------|--|----------------------|--|------------------------------------|-------------------------|---------------------------|------------------------------|------------------------|---------------------------------|
| PAGE FOR REGIONAL | HED BY: | F se of this form the | CCHE | GUIDELINES / REGULATIONS | 6 | | | MW 1-00- 150 | - | 12 | (This description will appear on the report) | # | FAX: | | | | Y | SAME AS REPORT ? | 04 436 3014 FAX: 604 | - | ASTO DON | 5 | r: Jacques Whitfoud | 10: | Environmental Division | |
| LOCATIONS AND SAM | DATE & TIME: R | ilure to complete user acknowledge | | JLATIONS | | 1 | * TKN | | | | ppear on the report | | 0 | E | P | L | 0 | ES INO II | 436 3752 | - | St. STITYLOON E | - | AXKS S | 77 | ALS | |
| MPLING INFORMATION | RECEIVED BY. | ailure to complete all portions of this form may delay analysis. user acknowledges and agrees with the Terms and Conditions | QAIQC | | | | , Ampronia All | Xp 21,00 | Sept 20.08 | Sept 20,08 |) DATE | | QUOTE #: | Legal Site Description: That | PO /AFE: | JOB# 1036222.02 | CLIENT / PROJECT INFORMATION: | INDICATE BOTTLES: FILTERED / PRESERVED (F/P) | | EMAIL 2: | EMAIL 1: jenniler. to | PDF V EXCEL V CUS | STANDARD COTHER | REPORT FORMAT / DISTRIBUTION | www.a | CHAIN OF CUSTOD |
| WHITE - REPORT COPY, PIN | 1 Pook Sot 26 | may delay analysis. Ple erms and Conditions as s | - EDT. | SPECIAL INSTRUCTIONS / | | | sampled sept | | | Groundwater | TIME SAMPLE TYPE | (Initials): JT | Lake | low Ventures - That | | 00152/ | FION: | RESERVED (F/P) $\rightarrow \rightarrow -$ | | 0 | todd @ lang wanhit | CUSTOM FAX | (R) | TION | www.alsenviro.com | CANADA TOUL EREF 1-800-668-9878 |
| WHITE - REPORT COPY, PINK - FILE COPY, YELLOW - CLIENT COPY | COND SAMPLE COND | Please fill in this form LEGIBLY. as specified on the reverse page of the white report copy. | | HAZARDOUS | | | 24.200 | C C C C C C C C C C C C C C C C C C C | 2 2 2 | 222 | To Cr Anit TK | CV Drb TSS O-PC N | 34 | te CE | A | Plai It d, | r sthc) | NA AAAA | ANALYS | | Or PRIORITY SERVICE (1 DAY or ASAP | RUSH SERVICE (2-3 DAYS) | REGULAR SERVICE (DEFAULT) | SERVICE REQUESTED | L 6883 J | |
| COPY GENF14.00 | SAMPLES RECEIVED IN GOOD CONDITION YES | of the white report copy. | | DETAILS | | | | | | 5 | | ARDC | | 2 | ATE | =D 2 | | | ANALYSIS REQUEST | EMERGENCY SERVICE (<1 DAY / WEEKEND) - CONTACT ALS | л ASAP) | PACKS - | LT) | | + of 0 | |
| 00 | ON / | 2 | | | | 1 | | U | nu | | | BER C | | | | | | | | S | L | | | | 3 | - |

Part of the ALS Laboratory Group

Toll Free: 1-800-668-9878 Manitoba: 1-800-607-7555

1988 Triumph Street, Vancouver, BC V5L 1K5

Phone: +1 604 253 4188 Fax: +1 604 253 6700 www.alsglobal.com

ALS LABORATORY GROUP SAMPLE RECEIPT CONFIRMATION

| Company: | JACQUES WHITF | ORD AXYS LTD. |
|---|--|---------------|
| ATTN: | JENNIFER TODD | |
| Fax Number: Account Manager: | 604-436-3752 NATASHA MARKC | VIC-MIROVIC |
| Job Reference: Project P.O. #: Date Sampled: Date Received: Sampled By: Workorder #: | 1036222.OD / Z91 1036222.OD / Z9100 20-SEP-08 26-SEP-08 JT L688290 | |
| Chain of Custody #: | C048742 | |

Sample #/SampleID/DateSampled/DateDue: L688290-1/MWL08-127/20-SEP-08/09-OCT-08

| Matrix | Product Description | Product Due* |
|--------|---|--------------|
| Water | Alkalinity by Colourimetric (Automated) | |
| Water | Anions by Ion Chromatography | |
| | Bromide by Ion Chromatography | |
| | Chloride by Ion Chromatography | |
| | Fluoride by Ion Chromatography | |
| | Nitrite by Ion Chromatography | |
| | Nitrate by Ion Chromatography | |
| | Sulfate by Ion Chromatography | |
| Water | Total organic carbon by combustion | |
| Water | Chromium, Hexavalent (Cr +6) | |
| Water | Conductivity (Automated) | |
| Water | Total Metals in Water (CCME/BCWQG) | |
| | Hardness | |
| | Total Mercury in Water by CVAFS (CCME) | |
| | Total Metals in Water by ICPOES (CCME) | |
| | Total Metals in Water by ICPMS (CCME) | |
| Water | Ammonia by SIE | |
| Water | pH by Meter (Automated) | |
| Water | Dissolved ortho Phosphate by Color | |
| Water | Total Phosphate P by Color | |
| Misc. | Handling/Disposal Fee | |

ALS Laboratory Group strives to deliver on-time results to our clients at all times. However, there are times when, due to capacity issues or other unforeseen circumstances, we are unable to meet our expected TATs. The information above is related to a recent workorder you have submitted to our laboratory. We have also included a summary on the parameters of interest for this workorder. In the event that you have an inquiry, please refer to the Work Order # (L+6 digits) when calling your Account Manager.

| Sample # | /SampleID/DateSampled/DateDue: L | 688290-1/MWL08-127/20-SEP-08/09-OCT-08 |
|----------|---|--|
| Matrix | Product Description | Product Due* |
| Water | Total Dissolved Solids by Gravimetric | |
| Water | Total Kjeldahl Nitrogen by SIE | |
| Water | Solids by Gravimetric | |
| Water | Turbidity by Meter | |
| Sample # | /SampleID/DateSampled/DateDue: L | 688290-2/MWL08-128/20-SEP-08/09-OCT-08 |
| Matrix | Product Description | Product Due* |
| Water | Alkalinity by Colourimetric (Automated) | |
| Water | Anions by Ion Chromatography | |
| | Bromide by Ion Chromatography | |
| | Chloride by Ion Chromatography | |
| | Fluoride by Ion Chromatography | |
| | Nitrite by Ion Chromatography | |
| | Nitrate by Ion Chromatography | |
| | Sulfate by Ion Chromatography | |
| Water | Total organic carbon by combustion | |
| Water | Chromium, Hexavalent (Cr +6) | |
| Water | Conductivity (Automated) | |
| Water | Total Metals in Water (CCME/BCWQG) | |
| | Hardness | |
| | Total Mercury in Water by CVAFS (CC | ME) |
| | Total Metals in Water by ICPOES (CC | ME) |
| | Total Metals in Water by ICPMS (CCM | IE) |
| Water | Ammonia by SIE | |
| Water | pH by Meter (Automated) | |
| Water | Dissolved ortho Phosphate by Color | |
| Water | Total Phosphate P by Color | |
| Misc. | Handling/Disposal Fee | |
| Water | Total Dissolved Solids by Gravimetric | |
| Water | Total Kjeldahl Nitrogen by SIE | |
| Water | Solids by Gravimetric | |
| Water | Turbidity by Meter | |
| Sample # | /SampleID/DateSampled/DateDue: L | 688290-3/MWL08-130/21-SEP-08/09-OCT-08 |
| Matrix | Product Description | Product Due* |
| Water | Alkalinity by Colourimetric (Automated) | |

Water Alkalinity by Colourimetric (Automated)

ALS Laboratory Group strives to deliver on-time results to our clients at all times. However, there are times when, due to capacity issues or other unforeseen circumstances, we are unable to meet our expected TATs. The information above is related to a recent workorder you have submitted to our laboratory. We have also included a summary on the parameters of interest for this workorder. In the event that you have an inquiry, please refer to the Work Order # (L+6 digits) when calling your Account Manager.

Sample #/SampleID/DateSampled/DateDue: L688290-3/MWL08-130/21-SEP-08/09-OCT-08

| Matrix | Product Description Product Due* |
|-------------|---|
| Water | Anions by Ion Chromatography |
| Water | Bromide by Ion Chromatography |
| | Chloride by Ion Chromatography |
| | Fluoride by Ion Chromatography |
| | |
| | Nitrite by Ion Chromatography Nitrate by Ion Chromatography |
| | Sulfate by Ion Chromatography |
| Matan | |
| Water | Total organic carbon by combustion |
| Water | Chromium, Hexavalent (Cr +6) |
| Water | Conductivity (Automated) |
| Water | Total Metals in Water (CCME/BCWQG) |
| | Hardness |
| | Total Mercury in Water by CVAFS (CCME) |
| | Total Metals in Water by ICPOES (CCME) |
| | Total Metals in Water by ICPMS (CCME) |
| Water | Ammonia by SIE |
| Water | pH by Meter (Automated) |
| Water | Dissolved ortho Phosphate by Color |
| Water | Total Phosphate P by Color |
| Misc. | Handling/Disposal Fee |
| Water | Total Dissolved Solids by Gravimetric |
| Water | Total Kjeldahl Nitrogen by SIE |
| Water | Solids by Gravimetric |
| Water | Turbidity by Meter |
| * INDICATES | ESTIMATED COMPLETION DATE OF REQUESTED PRODUCT IF DIFFERENT THAN THE ESTIMATED COMPLETION DATE. |

Notice of Sub-contract Laboratory Service

Please be advised that the following tests will be subcontracted to the corresponding laboratory:

Chromium, Hexavalent (Cr +6) Subcontracted to: ALS LABORATORY GROUP - EDMONTON, ALBERTA, CANADA

Please contact your Account Manager immediately should you have questions or concerns regarding this arrangement. Approval of this arrangement shall be implied unless otherwise notified by you.

ALS Laboratory Group strives to deliver on-time results to our clients at all times. However, there are times when, due to capacity issues or other unforeseen circumstances, we are unable to meet our expected TATs. The information above is related to a recent workorder you have submitted to our laboratory. We have also included a summary on the parameters of interest for this workorder. In the event that you have an inquiry, please refer to the Work Order # (L+6 digits) when calling your Account Manager.

ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division



10

| | Certificate of Analysis |
|-------------------------|---|
| JACQUES WHITFO | - |
| ATTN: JENNIFER | |
| PO BOX 21 | REET, 5TH FLOOR Reported On: 30-OCT-08 04:38 PM |
| BURNABY BC V50 | 5 4L7 |
| | |
| Lab Work Order #: | L694303 Date Received: 10-OCT-08 |
| | |
| Project P.O. #: | |
| Job Reference: | 1036222.02./79100 |
| Legal Site Desc: | 08 011247 |
| CofC Numbers: | 08-011347 |
| Other Information: | |
| | |
| | |
| corres | ome of the submitted water samples, the measured concentration of specific dissolved parameters is greater than the sponding total parameters concentration. The explanation for these findings is one or a combination of the following: soratory method variability; |
| - bia - fie - fie | Id sampling method variability; as introduced during general handling, filtering, storage, transportation and/or analysis of the sample; Id sample grab bias - where separate grab samples are processed to produce total and dissolved samples; Id sample split bias - where total and dissolved parameters samples are produced from the same grab sample. Irther clarification on any of the above information, please contact your ALS account manager. |
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| | Henry Illa & |
| | 1 million |
| | Bryan Mark |
| | Account Manager |
| | |

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

ALS Canada Ltd. Part of the ALS Laboratory Group 1988 Triumph Street, Vancouver, BC V5L 1K5 Phone: +1 604 253 4188 Fax: +1 604 253 6700 www.alsglobal.com A Campbell Brothers Limited Company

L694303 CONTD

ALS LABORATORY GROUP ANALYTICAL REPORT

| PAGE | 2 | of | 6 |
|--------|-----|-----|----|
| 30-OCT | -08 | 16: | 35 |

| | Sample ID Description Sampled Date Sampled Time Client ID | L694303-1 WATER 08-OCT-08 MWL08-124 | L694303-2 WATER 09-OCT-08 10:00 MWL08-127 | L694303-3 WATER 08-OCT-08 MWL08-128 | L694303-4 WATER 07-OCT-08 MWL08-130 | |
|-------------------------------|---|--|---|--|--|--|
| Grouping | Analyte | | | | | |
| WATER | | | | | | |
| Physical Tests | Conductivity (uS/cm) | 738 | 405 | 382 | 558 | |
| | Hardness (as CaCO3) (mg/L) | 469 | 72.6 | 166 | 304 | |
| | рН (рН) | 8.25 | 8.16 | 7.90 | 8.21 | |
| | Total Suspended Solids (mg/L) | 110 | 213 | 29.2 | 3.2 | |
| | Total Dissolved Solids (mg/L) | 422 | 291 | 258 | 335 | |
| | Turbidity (NTU) | 171 | 1150 | 42.2 | 2.69 | |
| Anions and Nutrients | Alkalinity, Total (as CaCO3) (mg/L) | 442 | 144 | 202 | 276 | |
| | Ammonia as N (mg/L) | <0.020 | 0.024 | 0.610 | 0.070 | |
| | Bromide (Br) (mg/L) | <0.050 | <0.25 | <0.25 | <0.050 | |
| | Chloride (Cl) (mg/L) | 1.55 | 43.2 | 3.5 | 3.68 | |
| | Fluoride (F) (mg/L) | 2.41 | 1.37 | 0.97 | 1.04 | |
| | Nitrate (as N) (mg/L) | 0.475 | <0.025 | <0.025 | 5.55 | |
| | Nitrite (as N) (mg/L) | 0.0254 | 0.0079 | 0.0078 | 0.237 | |
| | Total Kjeldahl Nitrogen (mg/L) | 0.470 | 2.19 | 1.79 | 0.872 | |
| | Ortho Phosphate as P (mg/L) | <0.0010 | 0.0087 | <0.0010 | <0.0010 | |
| | Total Phosphate as P (mg/L) | <0.020 | 0.066 | 0.163 | 0.0044 | |
| | Sulfate (SO4) (mg/L) | 24.5 | 4.0 | 7.7 | 14.4 | |
| Organic / Inorganic Carbon | Dissolved Organic Carbon (mg/L) | 7.78 | 28.7 | 25.5 | 15.8 | |
| | Total Organic Carbon (mg/L) | 14.4 | 48.9 | 26.9 | 15.6 | |
| Total Metals | Aluminum (Al)-Total (mg/L) | 1.14 | 37.0 | 0.302 | 0.178 | |
| | Antimony (Sb)-Total (mg/L) | <0.00050 | <0.0025 | <0.00050 | <0.00050 | |
| | Arsenic (As)-Total (mg/L) | 0.00067 | 0.0067 | 0.00512 | 0.00054 | |
| | Barium (Ba)-Total (mg/L) | 0.160 | 0.473 | 0.156 | 0.407 | |
| | Beryllium (Be)-Total (mg/L) | <0.0010 | <0.0050 | <0.0010 | <0.0010 | |
| | Boron (B)-Total (mg/L) | <0.10 | 0.33 | <0.10 | <0.10 | |
| | Cadmium (Cd)-Total (mg/L) | 0.000254 | 0.000287 | 0.000282 | 0.000060 | |
| | Calcium (Ca)-Total (mg/L) | 30.9 | 17.6 | 29.1 | 50.5 | |
| | Chromium (Cr)-Total (mg/L) | 0.0104 | 0.0489 | 0.0010 | <0.0010 | |
| | Cobalt (Co)-Total (mg/L) | 0.00439 | 0.0143 | 0.00138 | 0.00349 | |
| | Copper (Cu)-Total (mg/L) | 0.0256 | 0.0804 | 0.0029 | 0.0272 | |
| | Iron (Fe)-Total (mg/L) | 32.1 | 37.4 | 14.5 | 0.303 | |
| | Lead (Pb)-Total (mg/L) | 0.00069 | 0.0146 | 0.00103 | <0.00050 | |
| | Lithium (Li)-Total (mg/L) | 0.0208 | 0.075 | 0.0147 | 0.0126 | |
| | Magnesium (Mg)-Total (mg/L) | 94.1 | 17.2 | 22.1 | 43.0 | |
| | Manganese (Mn)-Total (mg/L) | 0.188 | 0.619 | 0.552 | 0.100 | |
| | Mercury (Hg)-Total (mg/L) | <0.000020 | <0.00010 | <0.000020 | <0.000020 | |
| | Molybdenum (Mo)-Total (mg/L) | 0.0215 | 0.0359 | 0.0177 | 0.0456 | |
| | Nickel (Ni)-Total (mg/L) | 0.0075 | 0.0396 | 0.0036 | 0.0115 | |

L694303 CONTD.... PAGE 3 of 6 30-OCT-08 16:35

ALS LABORATORY GROUP ANALYTICAL REPORT 30-OCT-08 16:35

| | Sample ID Description Sampled Date Sampled Time Client ID | L694303-1 WATER 08-OCT-08 MWL08-124 | L694303-2 WATER 09-OCT-08 10:00 MWL08-127 | L694303-3 WATER 08-OCT-08 MWL08-128 | L694303-4 WATER 07-OCT-08 MWL08-130 |
|------------------|---|--|---|--|--|
| Grouping | Analyte | | | | |
| WATER | | | | | |
| Total Metals | Potassium (K)-Total (mg/L) | 3.9 | 10.5 | 4.1 | 3.1 |
| | Selenium (Se)-Total (mg/L) | <0.0010 | <0.0050 | <0.0010 | <0.0010 |
| | Silver (Ag)-Total (mg/L) | 0.00470 | 0.00229 | 0.000171 | 0.00377 |
| | Sodium (Na)-Total (mg/L) | 10.6 | 74.5 | 22.3 | 13.8 |
| | Thallium (TI)-Total (mg/L) | <0.00020 | <0.0010 | <0.00020 | <0.00020 |
| | Tin (Sn)-Total (mg/L) | 0.00196 | <0.0025 | 0.00176 | 0.00106 |
| | Titanium (Ti)-Total (mg/L) | 0.018 | 0.696 | 0.010 | < 0.010 |
| | Uranium (U)-Total (mg/L) | 0.0197 | 0.0035 | 0.00382 | 0.00235 |
| | Vanadium (V)-Total (mg/L) | 0.0013 | 0.0642 | 0.0012 | <0.00233 |
| | Zinc (Zn)-Total (mg/L) | 0.0188 | 0.0987 | 0.0139 | 0.0052 |
| Dissolved Metals | Aluminum (Al)-Dissolved (mg/L) | 0.0065 | 15.3 | 0.0338 | 0.0077 |
| | Antimony (Sb)-Dissolved (mg/L) | <0.00050 | <0.0025 | <0.00050 | <0.00050 |
| | Arsenic (As)-Dissolved (mg/L) | <0.00050 | 0.0027 | 0.00233 | 0.00065 |
| | Barium (Ba)-Dissolved (mg/L) | 0.084 | 0.257 | 0.143 | 0.401 |
| | Beryllium (Be)-Dissolved (mg/L) | <0.0010 | <0.0050 | <0.0010 | <0.0010 |
| | Boron (B)-Dissolved (mg/L) | <0.10 | 0.31 | <0.10 | <0.10 |
| | Cadmium (Cd)-Dissolved (mg/L) | <0.000017 | 0.000206 | 0.000249 | 0.000018 |
| | Calcium (Ca)-Dissolved (mg/L) | 29.5 | 14.9 | 29.3 | 50.4 |
| | Chromium (Cr)-Dissolved (mg/L) | 0.0013 | 0.0179 | <0.0010 | <0.0010 |
| | Cobalt (Co)-Dissolved (mg/L) | 0.00178 | 0.0057 | 0.00126 | 0.00328 |
| | Copper (Cu)-Dissolved (mg/L) | 0.0046 | 0.0474 | <0.00120 | 0.0182 |
| | Iron (Fe)-Dissolved (mg/L) | 0.133 | 8.85 | 10.8 | < 0.030 |
| | Lead (Pb)-Dissolved (mg/L) | <0.00050 | 0.0066 | <0.00050 | <0.00050 |
| | Lithium (Li)-Dissolved (mg/L) | 0.0194 | 0.043 | 0.0152 | 0.0127 |
| | Magnesium (Mg)-Dissolved (mg/L) | 96.1 | 8.59 | 22.5 | 43.3 |
| | Magnese (Mn)-Dissolved (mg/L) | 0.0506 | 0.260 | 0.544 | 0.0888 |
| | Marganose (Mir) Dissolved (mg/L) Mercury (Hg)-Dissolved (mg/L) | <0.000020 | <0.00010 | <0.00020 | <0.000020 |
| | Molybdenum (Mo)-Dissolved (mg/L) | 0.0119 | 0.0345 | 0.0194 | 0.0466 |
| | Nickel (Ni)-Dissolved (mg/L) | 0.0024 | 0.0151 | 0.0027 | 0.0108 |
| | Potassium (K)-Dissolved (mg/L) | 3.4 | 6.6 | 4.2 | 3.0 |
| | Selenium (Se)-Dissolved (mg/L) | <0.0010 | <0.0050 | <0.0010 | <0.0010 |
| | Silver (Ag)-Dissolved (mg/L) | <0.000020 | 0.00133 | 0.000031 | <0.000020 |
| | Sodium (Na)-Dissolved (mg/L) | 10.5 | 72.9 | 23.3 | 13.9 |
| | Thallium (TI)-Dissolved (mg/L) | <0.00020 | <0.0010 | <0.00020 | <0.00020 |
| | Tin (Sn)-Dissolved (mg/L) | <0.00050 | 0.0027 | 0.00071 | 0.00333 |
| | Titanium (Ti)-Dissolved (mg/L) | <0.010 | 0.354 | <0.010 | <0.010 |
| | Uranium (U)-Dissolved (mg/L) | 0.0199 | 0.0027 | 0.00324 | 0.00230 |
| | Vanadium (V)-Dissolved (mg/L) | <0.0010 | 0.0229 | <0.0010 | <0.0010 |
| | Zinc (Zn)-Dissolved (mg/L) | <0.0050 | 0.0327 | 0.0090 | 0.0061 |

L694303 CONTD.... PAGE 4 of 6 30-OCT-08 16:35

| Additional Comments | for Sample | Listed: | |
|---|---------------|---|--|
| Samplenum | Matrix | Report Remarks | Sample Comments |
| Methods Listed (if app | licable): | | |
| ALS Test Code | Matrix | Test Description | Analytical Method Reference(Based On) |
| ALK-COL-VA | Water | Alkalinity by Colourimetric (Automate | d) APHA 310.2 |
| This analysis is carried or colourimetric method. | ut using proc | cedures adapted from EPA Method 310.2 | "Alkalinity". Total Alkalinity is determined using the methyl orange |
| ALK-PCT-VA | Water | Alkalinity by Auto. Titration | APHA 2320 "Alkalinity" |
| | | | 0 "Alkalinity". Total alkalinity is determined by potentiometric titration to ted from phenolphthalein alkalinity and total alkalinity values. |
| ANIONS-BR-IC-VA | Water | Bromide by Ion Chromatography | APHA 4110 "Determination of Anions by IC |
| | norganic An | | 0 "Determination of Anions by Ion Chromatography" and EPA Method tinely determined by this method include: bromide, chloride, fluoride, |
| ANIONS-CL-IC-VA | Water | Chloride by Ion Chromatography | APHA 4110 "Determination of Anions by IC |
| | norganic An | | 0 "Determination of Anions by Ion Chromatography" and EPA Method tinely determined by this method include: bromide, chloride, fluoride, |
| ANIONS-F-IC-VA | Water | Fluoride by Ion Chromatography | APHA 4110 "Determination of Anions by IC |
| | norganic An | | 0 "Determination of Anions by Ion Chromatography" and EPA Method tinely determined by this method include: bromide, chloride, fluoride, |
| ANIONS-NO2-IC-VA | Water | Nitrite by Ion Chromatography | APHA 4110 "Determination of Anions by IC |
| | norganic An | | 0 "Determination of Anions by Ion Chromatography" and EPA Method tinely determined by this method include: bromide, chloride, fluoride, |
| ANIONS-NO3-IC-VA | Water | Nitrate by Ion Chromatography | APHA 4110 "Determination of Anions by IC |
| | norganic An | | 0 "Determination of Anions by Ion Chromatography" and EPA Method tinely determined by this method include: bromide, chloride, fluoride, |
| ANIONS-SO4-IC-VA | Water | Sulfate by Ion Chromatography | APHA 4110 "Determination of Anions by IC |
| | norganic An | | 0 "Determination of Anions by Ion Chromatography" and EPA Method tinely determined by this method include: bromide, chloride, fluoride, |
| CARBONS-DOC-VA | Water | Dissolved organic carbon by combus | tion APHA 5310 "TOTAL ORGANIC CARBON (TOC)" |
| | | cedures adapted from APHA Method 531 ough a 0.45 micron membrane filter prior | 0 "Total Organic Carbon (TOC)". Dissolved carbon (DOC) fractions are to analysis. |
| CARBONS-TOC-VA | Water | Total organic carbon by combustion | APHA 5310 "TOTAL ORGANIC CARBON (TOC)" |
| This analysis is carried o | ut using proc | cedures adapted from APHA Method 531 | 0 "Total Organic Carbon (TOC)". |
| EC-PCT-VA | Water | Conductivity (Automated) | APHA 2510 Auto. Conduc. |
| This analysis is carried of electrode. | ut using proc | cedures adapted from APHA Method 251 | 0 "Conductivity". Conductivity is determined using a conductivity |

L694303 CONTD.... PAGE 5 of 6

Reference Information

Methods Listed (if applicable):

| ALS Test Code | Matrix | Test Description | Analytical Method Reference(Based On) |
|---------------|--------|------------------|---------------------------------------|
| | | | |

HARDNESS-CALC-VA Water Hardness

Water

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

Diss. Mercury in Water by CVAFS (CCME)

Total Mercury in Water by CVAFS (CCME)

Diss. Metals in Water by ICPOES (CCME)

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

HG-TOT-CCME-CVAFS- Water

MET-DIS-CCME-ICP-VA Water

HG-DIS-CCME-CVAFS-

VA. 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).

EPA SW-846 3005A/6010B

APHA 2340B

EPA 3005A/245.7

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 acid digestion, using either hotblock or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-DIS-CCME-MS-VA Water

Diss. Metals in Water by ICPMS (CCME)

ME) 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

MET-TOT-CCME-ICP-VA Water

Total Metals in Water by ICPOES (CCME)

EPA SW-846 3005A/6010B

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

| МЕТ-ТОТ-ССМЕ-М | S-VA Water |
|----------------|------------|
| | |

Total Metals in Water by ICPMS (CCME)

EPA SW-846 3005A/6020A

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

NH3-SIE-VA

6020A).

Water Ammonia by SIE

APHA 4500-NH3 "Nitrogen (Ammonia)"

This analysis is carried out, on sulphuric acid preserved samples, using procedures adapted from APHA Method 4500-NH3 "Nitrogen (Ammonia)". Ammonia is determined using an ammonia selective electrode.

PH-PCT-VA

Water pH by Meter (Automated)

APHA 4500-H "pH Value"

This analysis is carried out using procedures adapted from APHA Method 4500-H "pH Value". The pH is determined in the laboratory using a pH electrode

PO4-DO-COL-VA

Water Dissolved ortho Phosphate by Color

APHA 4500-P "Phosphorous"

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". All forms of phosphate are determined by the

L694303 CONTD.... PAGE 6 of 6

| ALS Test Code | Matrix | Test Description | Analy | rtical Method Reference(Based On) |
|---|--------------------------------------|---|--|---|
| phosphate (total phos | phorous) is dete | ermined after persulphate dige | solved reactive phosphorous) is determine stion of a sample. Total dissolved phospha ilter followed by persulfate digestion of the | te (total dissolved phosphorous) is |
| PO4-T-COL-VA | Water | Total Phosphate P by Colo | or APHA | A 4500-P "Phosphorous" |
| ascorbic acid colourin phosphate (total phos | netric method. D phorous) is dete | Dissolved ortho-phosphate (distermined after persulphate dige | lethod 4500-P "Phosphorus". All forms of p solved reactive phosphorous) is determine stion of a sample. Total dissolved phospha ilter followed by persulfate digestion of the | d by direct measurement. Total te (total dissolved phosphorous) is |
| TDS-VA | Water | Total Dissolved Solids by | Gravimetric APHA | A 2540 C - GRAVIMETRIC |
| | | | lethod 2540 "Solids". Solids are determine r, TDS is determined by evaporating the fil | |
| TKN-SIE-VA | Water | Total Kjeldahl Nitrogen by | SIE APHA | A 4500-Norg (TKN) |
| | | edures adapted from APHA M analysis using an ammonia sel | lethod 4500-Norg "Nitrogen (Organic)". To ective electrode. | tal kjeldahl nitrogen is determined by |
| TSS-VA | Water | Total Suspended Solids by | Gravimetric APHA | 2540 D - GRAVIMETRIC |
| | | | lethod 2540 "Solids". Solids are determine ore filter, TSS is determined by drying the f | |
| TURBIDITY-VA | Water | Turbidity by Meter | APHA | A 2130 "Turbidity" |
| This analysis is carrie | d out using proc | edures adapted from APHA N | lethod 2130 "Turbidity". Turbidity is determ | ined by the nephelometric method. |
| | | | are generally based on nationally or internate laboratory that performed analytical ana | |
| Laboratory Definition | on Code La | boratory Location | Laboratory Definition Code | Laboratory Location |
| | | S LABORATORY GROUP - | | |

Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in environmental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.

The reported surrogate recovery value provides a measure of method efficiency.

mg/kg (units) - unit of concentration based on mass, parts per million

mg/L (units) - unit of concentration based on volume, parts per million

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

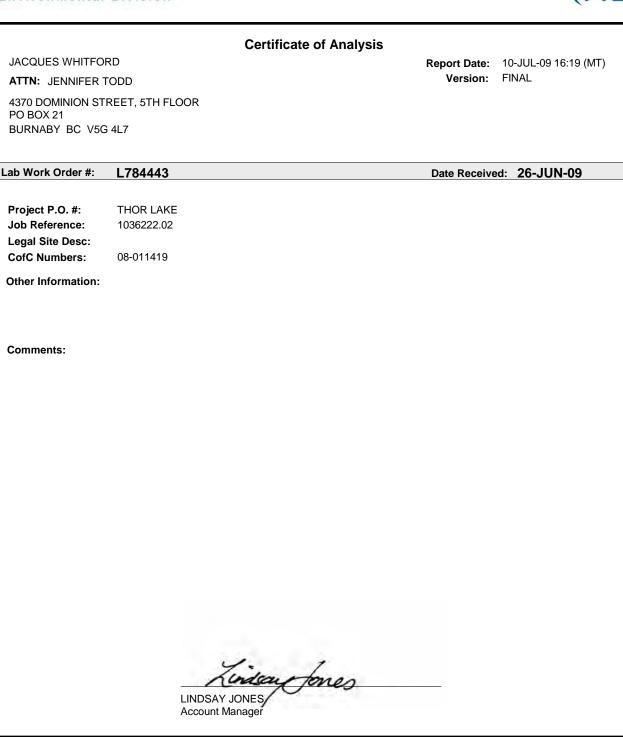
Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

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

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ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division



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L784443 CONTD.... PAGE 2 of 6 10-JUL-09 16:22

ALS LABORATORY GROUP ANALYTICAL REPORT

| | Sample ID Description Sampled Date Sampled Time Client ID | L784443-1 WATER 26-JUN-09 10:00 152 | L784443-2 WATER 26-JUN-09 10:00 163 |
|-------------------------------|---|---|---|
| Grouping | Analyte | | |
| WATER | | | |
| Physical Tests | Conductivity (uS/cm) | 717 | 721 |
| Thysical rests | Hardness (as CaCO3) (mg/L) | 71.4 | 71.3 |
| | pH (pH) | 8.52 | 8.56 |
| | Total Suspended Solids (mg/L) | 110 | 116 |
| | Total Dissolved Solids (mg/L) | 466 | 464 |
| | Turbidity (NTU) | 35.1 | 34.1 |
| Anions and Nutrients | Alkalinity, Total (as CaCO3) (mg/L) | 287 | 282 |
| | Ammonia as N (mg/L) | 0.100 | 0.103 |
| | Bromide (Br) (mg/L) | 0.188 | 0.193 |
| | Chloride (Cl) (mg/L) | 61.8 | 62.0 |
| | Fluoride (F) (mg/L) | 4.37 | 4.38 |
| | Nitrate (as N) (mg/L) | <0.0050 | <0.0050 |
| | Nitrite (as N) (mg/L) | <0.0010 | <0.0010 |
| | Total Kjeldahl Nitrogen (mg/L) | 0.705 | 0.681 |
| | Sulfate (SO4) (mg/L) | 12.6 | 12.6 |
| Organic / Inorganic Carbon | Total Organic Carbon (mg/L) | 9.32 | 8.78 |
| Dissolved Metals | Aluminum (AI)-Dissolved (mg/L) | 0.0176 | 0.0181 |
| | Antimony (Sb)-Dissolved (mg/L) | 0.00032 | 0.00029 |
| | Arsenic (As)-Dissolved (mg/L) | 0.00180 | 0.00174 |
| | Barium (Ba)-Dissolved (mg/L) | 0.0160 | 0.0164 |
| | Beryllium (Be)-Dissolved (mg/L) | <0.0010 | <0.0010 |
| | Bismuth (Bi)-Dissolved (mg/L) | <0.0010 | <0.0010 |
| | Boron (B)-Dissolved (mg/L) | 0.806 | 0.817 |
| | Cadmium (Cd)-Dissolved (mg/L) | <0.00020 | <0.00020 |
| | Calcium (Ca)-Dissolved (mg/L) | 15.7 | 15.6 |
| | Chromium (Cr)-Dissolved (mg/L) | <0.0030 | <0.0030 |
| | Cobalt (Co)-Dissolved (mg/L) | <0.00020 | <0.00020 |
| | Copper (Cu)-Dissolved (mg/L) | <0.00020 | 0.00021 |
| | Iron (Fe)-Dissolved (mg/L) | 0.083 | 0.093 |
| | Lead (Pb)-Dissolved (mg/L) | <0.00010 | <0.00010 |
| | Lithium (Li)-Dissolved (mg/L) | 0.063 | 0.061 |
| | Magnesium (Mg)-Dissolved (mg/L) | 7.79 | 7.83 |
| | Magnese (Mn)-Dissolved (mg/L) | 0.0255 | 0.0254 |
| | Manganese (Min)-Dissolved (mg/L) Mercury (Hg)-Dissolved (mg/L) | <0.0255 | <0.00050 |
| | Melculy (Hg)-Dissolved (Hg/L) Molybdenum (Mo)-Dissolved (mg/L) | <0.000050 | 0.0497 |
| | Nickel (Ni)-Dissolved (mg/L) | <0.0497 | <0.0497 |
| | | | |
| | Phosphorus (P)-Dissolved (mg/L) | <0.30 | <0.30 |
| | Potassium (K)-Dissolved (mg/L) | 3.2 | 3.2 |
| | Selenium (Se)-Dissolved (mg/L) | <0.0020 | <0.0020 |
| | Silicon (Si)-Dissolved (mg/L) | 4.09 | 4.02 |

L784443 CONTD PAGE 3 of 6

ALS LABORATORY GROUP ANALYTICAL REPORT

10-JUL-09 16:22

| | Sample ID Description Sampled Date Sampled Time Client ID | L784443-1 WATER 26-JUN-09 10:00 152 | L784443-2 WATER 26-JUN-09 10:00 163 | | |
|------------------|---|---|---|--|--|
| Grouping | Analyte | | | | |
| WATER | | | | | |
| Dissolved Metals | Silver (Ag)-Dissolved (mg/L) Sodium (Na)-Dissolved (mg/L) Strontium (Sr)-Dissolved (mg/L) Thallium (TI)-Dissolved (mg/L) Tin (Sn)-Dissolved (mg/L) Titanium (Ti)-Dissolved (mg/L) Uranium (U)-Dissolved (mg/L) Vanadium (V)-Dissolved (mg/L) | <0.000020 147 0.270 <0.00020 <0.00020 <0.010 0.00662 <0.0020 | <0.000020 148 0.269 <0.00020 <0.00020 <0.010 0.00658 <0.0020 | | |
| Speciated Metals | Zinc (Zn)-Dissolved (mg/L) Hexavalent Chromium (mg/L) | <0.0020 0.0032 | <0.0020 0.0015 | | |
| | | | | | |

| Additional Comment | s for Sample | Listed: | |
|---|--------------------------------|--|---|
| Samplenum | Matrix | Report Remarks | Sample Comments |
| Methods Listed (if ap | plicable): | | |
| ALS Test Code | Matrix | Test Description | Analytical Method Reference(Based On) |
| ALK-COL-VA | Water | Alkalinity by Colourimetric (Automated) | APHA 310.2 |
| This analysis is carried colourimetric method. | out using proc | cedures adapted from EPA Method 310.2 "Alka | alinity". Total Alkalinity is determined using the methyl orange |
| ANIONS-BR-IC-VA | Water | Bromide by Ion Chromatography | APHA 4110 B. |
| This analysis is carried Conductivity" and EPA | out using proc Method 300.0 | edures adapted from APHA Method 4110 B. ' "Determination of Inorganic Anions by Ion Ch | Ion Chromatography with Chemical Suppression of Eluent romatography". |
| ANIONS-CL-IC-VA | Water | Chloride by Ion Chromatography | APHA 4110 B. |
| | | cedures adapted from APHA Method 4110 B. ' "Determination of Inorganic Anions by Ion Ch | Ion Chromatography with Chemical Suppression of Eluent romatography". |
| ANIONS-F-IC-VA | Water | Fluoride by Ion Chromatography | APHA 4110 B. |
| | | edures adapted from APHA Method 4110 B. ' "Determination of Inorganic Anions by Ion Ch | Ion Chromatography with Chemical Suppression of Eluent romatography". |
| ANIONS-NO2-IC-VA | Water | Nitrite by Ion Chromatography | APHA 4110 B. |
| | Method 300.0 | | Ion Chromatography with Chemical Suppression of Eluent romatography". Specifically, the nitrite detection is by UV |
| ANIONS-NO3-IC-VA | Water | Nitrate by Ion Chromatography | APHA 4110 B. |
| | Method 300.0 | | Ion Chromatography with Chemical Suppression of Eluent romatography". Specifically, the nitrate detection is by UV |
| ANIONS-SO4-IC-VA | Water | Sulfate by Ion Chromatography | APHA 4110 B. |
| | | edures adapted from APHA Method 4110 B. ' "Determination of Inorganic Anions by Ion Ch | Ion Chromatography with Chemical Suppression of Eluent romatography". |
| CARBONS-TOC-VA | Water | Total organic carbon by combustion | APHA 5310 "TOTAL ORGANIC CARBON (TOC)" |
| This analysis is carried | out using proc | cedures adapted from APHA Method 5310 "To | tal Organic Carbon (TOC)". |
| CARBONS-TOC-VA | Water | Total organic carbon by combustion | APHA 5310 TOTAL ORGANIC CARBON (TOC) |
| This analysis is carried | out using proc | cedures adapted from APHA Method 5310 "To | tal Organic Carbon (TOC)". |
| CR-CR6-ED | Water | Chromium, Hexavalent (Cr +6) | APHA 3500-Cr C (Ion Chromatography) |
| EC-PCT-VA | Water | Conductivity (Automated) | APHA 2510 Auto. Conduc. |
| This analysis is carried electrode. | out using proc | cedures adapted from APHA Method 2510 "Co | nductivity". Conductivity is determined using a conductivity |
| HARDNESS-CALC-VA | Water | Hardness | APHA 2340B |
| Hardness is calculated | from Calcium | and Magnesium concentrations, and is expres | sed as calcium carbonate equivalents. |

L784443 CONTD.... PAGE 5 of 6

| ALS Test Code | Matrix | Test Description | Analytical Method Reference(Based On) |
|--|--|---|--|
| American Public Health States Environmental F involves a cold-oxidatio | Association, rotection Age n of the acidif | and with procedures adapted from "Test Method ncy (EPA). The procedures may involve prelimir | Examination of Water and Wastewater" published by the s for Evaluating Solid Waste" SW-846 published by the United hary sample treatment by filtration (EPA Method 3005A) and reduction of the sample with stannous chloride. Instrumental 7). |
| MET-DIS-ICP-VA | Water | Dissolved Metals in Water by ICPOES | EPA SW-846 3005A/6010B |
| American Public Health | Association, rotection Age | and with procedures adapted from "Test Method ncy (EPA). The procedure involves filtration (EP | Examination of Water and Wastewater" published by the s for Evaluating Solid Waste" SW-846 published by the United A Method 3005A) and analysis by inductively coupled plasma - |
| MET-DIS-LOW-MS-VA | Water | Dissolved Metals in Water by ICPMS(Low) | EPA SW-846 3005A/6020A |
| American Public Health States Environmental F | Association, rotection Age | and with procedures adapted from "Test Method | Examination of Water and Wastewater" published by the s for Evaluating Solid Waste" SW-846 published by the United sample treatment by filtration (EPA Method 3005A). hod 6020A). |
| NH3-SIE-VA | Water | Ammonia by SIE | APHA 4500 D NH3 NITROGEN (AMMONIA) |
| | | uric acid preserved samples, using procedures a monia selective electrode. | dapted from APHA Method 4500-NH3 "Nitrogen (Ammonia)". |
| PH-PCT-VA | Water | pH by Meter (Automated) | APHA 4500-H "pH Value" |
| This analysis is carried electrode | out using proc | edures adapted from APHA Method 4500-H "pH | I Value". The pH is determined in the laboratory using a pH |
| PH-PCT-VA | Water | pH by Meter (Automated) | APHA 4500-H pH Value |
| This analysis is carried electrode | out using proc | edures adapted from APHA Method 4500-H "pF | I Value". The pH is determined in the laboratory using a pH |
| TDS-VA | Water | Total Dissolved Solids by Gravimetric | APHA 2540 C - GRAVIMETRIC |
| | | | Is". Solids are determined gravimetrically. Total Dissolved Solids ned by evaporating the filtrate to dryness at 180 degrees celsius. |
| TKN-SIE-VA | Water | Total Kjeldahl Nitrogen by SIE | APHA 4500-Norg (TKN) |
| This analysis is carried sample digestion at 367 | out using prod ' celcius with a | cedures adapted from APHA Method 4500-Norg analysis using an ammonia selective electrode. | "Nitrogen (Organic)". Total kjeldahl nitrogen is determined by |
| TSS-VA | Water | Total Suspended Solids by Gravimetric | APHA 2540 D - GRAVIMETRIC |
| | | | ls". Solids are determined gravimetrically. Total Suspended etermined by drying the filter at 104 degrees celsius. |
| | | Turbidity by Meter | APHA 2130 "Turbidity" |
| TURBIDITY-VA | Water | | idie de Trancistica in determinent les the group place stais as the set |
| | | cedures adapted from APHA Method 2130 "Turb | laity . Turbiaity is determined by the nephelometric method. |
| TURBIDITY-VA This analysis is carried TURBIDITY-VA | | cedures adapted from APHA Method 2130 "Turb | APHA 2130 Turbidity |

L784443 CONTD.... PAGE 6 of 6

Reference Information

Methods Listed (if applicable):

| ALS Test Code | Matrix | Test Description | A | Analytical Method Reference(Based On) |
|---------------------|------------|---|----------------------------|---|
| Laboratory Definiti | on Code La | aboratory Location | Laboratory Definition Code | Laboratory Location |
| VA | | S LABORATORY GROUP - NCOUVER, BC, CANADA | ED | ALS LABORATORY GROUP - EDMONTON, ALBERTA, CANADA |

GLOSSARY OF REPORT TERMS

Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in environmental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.

The reported surrogate recovery value provides a measure of method efficiency.

mg/kg (units) - unit of concentration based on mass, parts per million

mg/L (units) - unit of concentration based on volume, parts per million

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

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.

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

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| r of Cor | | | | S | - לעאורדי | 755 | PH, Consummerty | 0 | 1/NW3 | 5 | SS METAL | | | Sampler: | | ALS Contact: | | Lab Work Order # (lab use only) | |
| Numbe | | | | ANIAN | Total | 7.25 | pH, Hq | Toc | TKN | CrVI | Diss | le Type | Si | Time | Date | 1) | Sample Identification cription will appear on the report | | Sample # |
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| 5 | | | | x | 2 | x | x | X | × | × | × | ATAK | - | | JUNE 26/09 | | | 163 | |
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Part of the ALS Laboratory Group Toll Free: 1-800-668-9878 Manitoba: 1-800-607-7555

1988 Triumph Street, Vancouver, BC V5L 1K5

Phone: +1 604 253 4188 Fax: +1 604 253 6700 www.alsglobal.com

ALS LABORATORY GROUP SAMPLE RECEIPT CONFIRMATION

| ATTN:JENNIFER TODDFax Number:604-436-3752Account Manager:NATASHA MARKOVIC-MIROVICJob Reference:Project P.O. #:Date Sampled:26-JUN-09Date Received:26-JUN-09Sampled By:JTWorkorder #:L784443 | Company: | JACQUES WHITFO |)RD |
|--|---------------------|----------------|--------------------------------------|
| Account Manager: NATASHA MARKOVIC-MIROVIC Job Reference: Project P.O. #: Date Sampled: 26-JUN-09 Date Received: 26-JUN-09 Sampled By: JT | ATTN: | JENNIFER TODD | |
| Job Reference: Project P.O. #: Date Sampled: 26-JUN-09 Date Received: 26-JUN-09 Sampled By: JT | Fax Number: | 604-436-3752 | |
| Project P.O. #:Date Sampled:26-JUN-09Date Received:26-JUN-09Estimated Completion Date:11-JUL-09Sampled By:JT | Account Manager: | NATASHA MARKO | VIC-MIROVIC |
| Date Sampled:26-JUN-09Date Received:26-JUN-09Sampled By:JT | Job Reference: | | |
| Date Received: 26-JUN-09 Estimated Completion Date: 11-JUL-09 Sampled By: JT | Project P.O. #: | | |
| Sampled By: JT | Date Sampled: | 26-JUN-09 | |
| | Date Received: | 26-JUN-09 | Estimated Completion Date: 11-JUL-09 |
| Workorder #: L784443 | Sampled By: | JT | |
| | Workorder #: | L784443 | |
| Chain of Custody #: 08-011419 | Chain of Custody #: | 08-011419 | |

Sample #/SampleID/DateSampled/DateDue: L784443-1/152/26-JUN-09/11-JUL-09

| - | - | |
|--------|---|--------------|
| Matrix | Product Description | Product Due* |
| Water | Alkalinity by Colourimetric (Automated) | |
| Water | Anions by Ion Chromatography | |
| | Bromide by Ion Chromatography | |
| | Chloride by Ion Chromatography | |
| | Fluoride by Ion Chromatography | |
| | Nitrite by Ion Chromatography | |
| | Nitrate by Ion Chromatography | |
| | Sulfate by Ion Chromatography | |
| Water | Total organic carbon by combustion | |
| Water | Chromium, Hexavalent (Cr +6) | |
| Water | Conductivity (Automated) | |
| Water | Dissolved Mercury in Water by CVAFS | |
| Water | Diss. Metals in Water by ICPOES & ICPMS | |
| | Hardness | |
| | Dissolved Metals in Water by ICPOES | |
| | Dissolved Metals in Water by ICPMS(Low) | |
| Water | Ammonia by SIE | |
| Water | pH by Meter (Automated) | |
| Misc. | Handling/Disposal Fee | |
| Water | Total Dissolved Solids by Gravimetric | |
| Water | Total Kjeldahl Nitrogen by Auto. Colour | |

ALS Laboratory Group strives to deliver on-time results to our clients at all times. However, there are times when, due to capacity issues or other unforeseen circumstances, we are unable to meet our expected TATs. The information above is related to a recent workorder you have submitted to our laboratory. We have also included a summary on the parameters of interest for this workorder. In the event that you have an inquiry, please refer to the Work Order # (L+6 digits) when calling your Account Manager.

| Sample # | /SampleID/DateSampled/DateDue: | L784443-1/152/26-JUN-09/11-JUL-09 | |
|----------|---|-----------------------------------|--|
| Matrix | Product Description | Product Due* | |
| Water | Total Suspended Solids by Gravimetric | | |
| Water | Turbidity by Meter | | |
| Sample # | /SampleID/DateSampled/DateDue: | L784443-2/163/26-JUN-09/11-JUL-09 | |
| Matrix | Product Description | Product Due* | |
| Water | Alkalinity by Colourimetric (Automated) | | |
| Water | Anions by Ion Chromatography | | |
| | Bromide by Ion Chromatography | | |
| | Chloride by Ion Chromatography | | |
| | Fluoride by Ion Chromatography | | |
| | Nitrite by Ion Chromatography | | |
| | Nitrate by Ion Chromatography | | |
| | Sulfate by Ion Chromatography | | |
| Water | Total organic carbon by combustion | | |
| Water | Chromium, Hexavalent (Cr +6) | | |
| Water | Conductivity (Automated) | | |
| Water | Dissolved Mercury in Water by CVAFS | | |
| Water | Diss. Metals in Water by ICPOES & ICPM | S | |
| | Hardness | | |
| | Dissolved Metals in Water by ICPO | ES | |
| | Dissolved Metals in Water by ICPM | S(Low) | |
| Water | Ammonia by SIE | | |
| Water | pH by Meter (Automated) | | |
| Misc. | Handling/Disposal Fee | | |
| Water | Total Dissolved Solids by Gravimetric | | |
| Water | Total Kjeldahl Nitrogen by Auto. Colour | | |
| Water | Total Suspended Solids by Gravimetric | | |
| Water | Turbidity by Meter | | |

* INDICATES ESTIMATED COMPLETION DATE OF REQUESTED PRODUCT IF DIFFERENT THAN THE ESTIMATED COMPLETION DATE.

Notice of Sub-contract Laboratory Service

Please be advised that the following tests will be subcontracted to the corresponding laboratory:

Chromium, Hexavalent (Cr +6) Subcontracted to: ALS LABORATORY GROUP - EDMONTON, ALBERTA, CANADA

Please contact your Account Manager immediately should you have questions or concerns regarding this arrangement. Approval of this arrangement shall be implied unless otherwise notified by you.

ALS Laboratory Group strives to deliver on-time results to our clients at all times. However, there are times when, due to capacity issues or other unforeseen circumstances, we are unable to meet our expected TATs. The information above is related to a recent workorder you have submitted to our laboratory. We have also included a summary on the parameters of interest for this workorder. In the event that you have an inquiry, please refer to the Work Order # (L+6 digits) when calling your Account Manager.

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| For Emergency < 1 Day, ASAP or Weekend - Contact ALS | | | | | | | | - | | _ | | mail 1. JENNI FER, TOLD D. JACON ESWHITFORD. COM | | | | 56 417 | 4320 DOMINION , BURNABY BC V | udiess. |
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| Numbe | | | | ANIAN | Total | 7.25 | pH, G | 700 | TKN | CrVI | SSIC | Sample Type | Time | Date | port) | Sample Identification scription will appear on the rep | | Sample # |
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ALS Laboratory Group ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

| | Certificate of Analysis | | |
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| JACQUES WHITFOR | RD | | 26-OCT-09 14:03 (MT) |
| ATTN: JENNIFER T | ODD | Version: | FINAL |
| 4370 DOMINION STI PO BOX 21 | REET, 5TH FLOOR | | |
| BURNABY BC V5G | 4L7 | | |
| | | | |
| Lab Work Order #: | L829174 | Date Receive | ed: 13-OCT-09 |
| | | | |
| Project P.O. #: | THOR LAKE | | |
| Job Reference: | 1036222.02/Z9100 | | |
| Legal Site Desc: | GROUNDWATER SAMPLES | | |
| CofC Numbers: | 09-020378 | | |
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| | Lindsay Jones | | |
| | Account Manager | | |

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

ALS Canada Ltd. Part of the ALS Laboratory Group 1988 Triumph Street, Vancouver, BC V5L 1K5 Phone: +1 604 253 4188 Fax: +1 604 253 6700 www.alsglobal.com A Campbell Brothers Limited Company



L829174 CONTD.... PAGE 2 of 6

ALS LABORATORY GROUP ANALYTICAL REPORT

26-OCT-09 14:15

| | Sample ID Description | L829174-1 | L829174-2 | L829174-3 | L829174-4 | L829174-5 |
|-------------------------------|---|-----------|-----------|-----------|-----------|-----------|
| | Sampled Date Sampled Time | 08-OCT-09 | 08-OCT-09 | 08-OCT-09 | 08-OCT-09 | 08-OCT-09 |
| | Client ID | MW08-127 | MW08-128 | MW09-152 | L08-124 | DUP1 |
| Grouping | Analyte | | | | | |
| WATER | | | | | | |
| Physical Tests | Conductivity (uS/cm) | 404 | 367 | 592 | 460 | 587 |
| - | Hardness (as CaCO3) (mg/L) | 74.5 | 147 | 95.9 | 365 | 96.5 |
| | рН (рН) | 6.86 | 7.41 | 8.17 | 8.10 | 8.24 |
| | Total Suspended Solids (mg/L) | 56.8 | 17.8 | 23.3 | 28.8 | 35.8 |
| | Total Dissolved Solids (mg/L) | 240 | 230 | 388 | 274 | 399 |
| | Turbidity (NTU) | 42.7 | 20.0 | 22.6 | 70.6 | 19.8 |
| Anions and Nutrients | Alkalinity, Bicarbonate (as CaCO3) (mg/L) | 121 | 173 | 278 | 265 | 289 |
| | Alkalinity, Carbonate (as CaCO3) (mg/L) | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| | Alkalinity, Hydroxide (as CaCO3) (mg/L) | <2.0 | <2.0 | <2.0 | <2.0 | <2.0 |
| | Alkalinity, Total (as CaCO3) (mg/L) | 121 | 173 | 278 | 265 | 289 |
| | Ammonia as N (mg/L) | 0.063 | 0.575 | 0.106 | 0.046 | 0.067 |
| | Bromide (Br) (mg/L) | <0.050 | <0.050 | <0.050 | <0.050 | <0.050 |
| | Chloride (Cl) (mg/L) | 36.9 | 11.4 | 20.8 | 0.84 | 21.0 |
| | Fluoride (F) (mg/L) | 0.720 | 1.16 | 2.76 | 2.19 | 2.79 |
| | Nitrate (as N) (mg/L) | 0.0063 | <0.0050 | <0.0050 | 0.125 | <0.0050 |
| | Nitrite (as N) (mg/L) | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| | Total Kjeldahl Nitrogen (mg/L) | 0.508 | 1.14 | 0.716 | 0.481 | 0.769 |
| | Ortho Phosphate as P (mg/L) | <0.0010 | <0.0010 | <0.0010 | <0.0010 | <0.0010 |
| | Total Phosphate as P (mg/L) | 0.060 | 0.041 | 0.0078 | 0.019 | 0.0148 |
| | Sulfate (SO4) (mg/L) | 25.1 | 6.88 | 8.40 | 7.80 | 7.08 |
| Organic / Inorganic Carbon | Total Organic Carbon (mg/L) | 11.8 | 14.9 | 19.7 | 11.9 | 18.5 |
| Dissolved Metals | Aluminum (AI)-Dissolved (mg/L) | 0.0108 | 0.0084 | 0.0066 | 0.0037 | 0.0245 |
| | Antimony (Sb)-Dissolved (mg/L) | 0.00013 | 0.00011 | 0.00011 | <0.00010 | 0.00012 |
| | Arsenic (As)-Dissolved (mg/L) | 0.00066 | 0.00404 | 0.00084 | 0.00038 | 0.00090 |
| | Barium (Ba)-Dissolved (mg/L) | 0.0496 | 0.107 | 0.0212 | 0.0874 | 0.0217 |
| | Beryllium (Be)-Dissolved (mg/L) | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| | Bismuth (Bi)-Dissolved (mg/L) | <0.00050 | <0.00050 | <0.00050 | <0.00050 | <0.00050 |
| | Boron (B)-Dissolved (mg/L) | 0.067 | 0.021 | 0.690 | 0.050 | 0.725 |
| | Cadmium (Cd)-Dissolved (mg/L) | <0.000080 | <0.00020 | <0.00010 | <0.000080 | <0.00020 |
| | Calcium (Ca)-Dissolved (mg/L) | 17.1 | 29.8 | 20.4 | 26.7 | 20.5 |
| | Chromium (Cr)-Dissolved (mg/L) | <0.0060 | <0.0030 | <0.0020 | <0.0030 | <0.0030 |
| | Cobalt (Co)-Dissolved (mg/L) | 0.00045 | 0.00043 | 0.00017 | 0.00138 | 0.00017 |
| | Copper (Cu)-Dissolved (mg/L) | 0.00102 | 0.00046 | 0.00040 | 0.00408 | 0.00062 |
| | Iron (Fe)-Dissolved (mg/L) | 1.09 | 5.96 | 0.098 | 0.324 | 0.094 |
| | Lead (Pb)-Dissolved (mg/L) | 0.000141 | <0.000050 | <0.000050 | <0.000050 | 0.000052 |
| | Lithium (Li)-Dissolved (mg/L) | 0.0188 | 0.0139 | 0.0580 | 0.0189 | 0.0586 |
| | Magnesium (Mg)-Dissolved (mg/L) | 7.73 | 17.5 | 10.9 | 72.6 | 11.0 |
| | Manganese (Mn)-Dissolved (mg/L) | 0.222 | 0.336 | 0.0294 | 0.0508 | 0.0304 |
| | Molybdenum (Mo)-Dissolved (mg/L) | 0.0230 | 0.0627 | 0.0382 | 0.0281 | 0.0403 |
| | Nickel (Ni)-Dissolved (mg/L) | 0.00663 | 0.0027 | 0.00054 | 0.00208 | 0.00071 |