



# CERTIFICATE OF ANALYSIS

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**Date:** October 12, 2005

**ALS File No.** W5305

**Report On:** Mt. Nansen Water Analysis

**Report To:** **Environmental Dynamics Inc.**  
206 - 4133 4th Ave  
Whitehorse, YT  
Y1A 1H8

**Attention:** **Mr. Pat Tobler**

**Received:** September 30, 2005

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**ALS ENVIRONMENTAL**

per:

Amber Springer, B.Sc. - Project Chemist  
Natasha Markovic-Mirovic, B.Sc. - Project Chemist

**RESULTS OF ANALYSIS - Water**

Sample ID	DOME1	DOME2	DOME3
Sample Date	05-09-29	05-09-29	05-09-29
Sample Time	12:05	11:50	12:40
ALS ID	1	2	3

**Physical Tests**

Conductivity (uS/cm)	1320	1100	932
pH	8.42	8.40	8.33

**Dissolved Anions**

Alkalinity-Total	CaCO3	259	190	153
Alkalinity-Bicarbonate	CaCO3	<2.0	<2.0	<2.0
Alkalinity-Carbonate	CaCO3	<2.0	<2.0	<2.0
Alkalinity-Hydroxide	CaCO3	<2.0	<2.0	<2.0
Sulphate SO4		561	460	378

**Nutrients**

Ammonia Nitrogen	N	0.114	0.050	0.095
Nitrate Nitrogen	N	0.150	0.278	0.344
Nitrite Nitrogen	N	<0.0050	<0.0010	0.0018

**Cyanides**

Total Cyanide	CN	<0.0050	0.0078	0.0098
Cyanate	CNO	<0.50	<0.50	<0.50
Thiocyanate	SCN	1.24	1.16	1.07
WAD Cyanide	CN	<0.0050	<0.0050	<0.0050

Results are expressed as milligrams per litre except where noted.  
 < = Less than the detection limit indicated.

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**Total Metals**

Aluminum	T-Al	<0.40	<0.40	0.82
Antimony	T-Sb	<0.40	<0.40	<0.40
Arsenic	T-As	<0.40	<0.40	<0.40
Barium	T-Ba	0.024	<0.020	0.043
Beryllium	T-Be	<0.010	<0.010	<0.010
Bismuth	T-Bi	<0.40	<0.40	<0.40
Boron	T-B	<0.20	<0.20	<0.20
Cadmium	T-Cd	<0.020	<0.020	<0.020
Calcium	T-Ca	206	163	136
Chromium	T-Cr	<0.020	<0.020	<0.020
Cobalt	T-Co	<0.020	<0.020	<0.020
Copper	T-Cu	<0.020	<0.020	<0.020
Iron	T-Fe	2.09	0.805	3.96
Lead	T-Pb	<0.10	<0.10	<0.10
Lithium	T-Li	<0.020	<0.020	<0.020
Magnesium	T-Mg	84.0	70.1	55.3
Manganese	T-Mn	0.902	0.124	0.314
Molybdenum	T-Mo	<0.060	<0.060	<0.060
Nickel	T-Ni	<0.10	<0.10	<0.10
Phosphorus	T-P	<0.60	<0.60	<0.60
Potassium	T-K	4.5	<4.0	<4.0
Selenium	T-Se	<0.40	<0.40	<0.40
Silicon	T-Si	5.98	5.48	6.72
Silver	T-Ag	<0.020	<0.020	<0.020
Sodium	T-Na	7.7	8.4	8.0
Strontium	T-Sr	0.499	0.390	0.375
Thallium	T-Tl	<0.40	<0.40	<0.40
Tin	T-Sn	<0.060	<0.060	<0.060
Titanium	T-Ti	<0.020	<0.020	0.038
Vanadium	T-V	<0.060	<0.060	<0.060
Zinc	T-Zn	0.496	<0.010	0.024

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**Dissolved Metals**

Aluminum	D-Al	<0.40	<0.40	<0.40
Antimony	D-Sb	<0.40	<0.40	<0.40
Arsenic	D-As	0.00420	0.00530	0.00212
Barium	D-Ba	0.020	<0.020	0.029
Beryllium	D-Be	<0.010	<0.010	<0.010
Bismuth	D-Bi	<0.40	<0.40	<0.40
Boron	D-B	<0.20	<0.20	<0.20
Cadmium	D-Cd	<0.020	<0.020	<0.020
Calcium	D-Ca	201	161	131
Chromium	D-Cr	<0.020	<0.020	<0.020
Cobalt	D-Co	<0.020	<0.020	<0.020
Copper	D-Cu	0.031	<0.020	<0.020
Iron	D-Fe	<0.060	0.113	0.164
Lead	D-Pb	<0.10	<0.10	<0.10
Lithium	D-Li	<0.020	<0.020	<0.020
Magnesium	D-Mg	81.9	68.2	53.2
Manganese	D-Mn	0.787	0.122	0.267
Molybdenum	D-Mo	<0.060	<0.060	<0.060
Nickel	D-Ni	<0.10	<0.10	<0.10
Phosphorus	D-P	<0.60	<0.60	<0.60
Potassium	D-K	4.2	<4.0	<4.0
Selenium	D-Se	<0.40	<0.40	<0.40
Silicon	D-Si	5.51	5.23	5.36
Silver	D-Ag	<0.020	<0.020	<0.020
Sodium	D-Na	7.4	8.1	7.6
Strontium	D-Sr	0.484	0.378	0.359
Thallium	D-Tl	<0.40	<0.40	<0.40
Tin	D-Sn	<0.060	<0.060	<0.060
Titanium	D-Ti	<0.020	<0.020	<0.020
Vanadium	D-V	<0.060	<0.060	<0.060
Zinc	D-Zn	0.343	<0.010	<0.010

Results are expressed as milligrams per litre except where noted.  
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## Appendix 1 - METHODOLOGY



Outlines of the methodologies utilized for the analysis of the samples submitted are as follows

### Conductivity in Water

This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity electrode.

Recommended Holding Time:

Sample: 28 days

Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

### pH in Water

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.

Recommended Holding Time:

Sample: 2 hours

Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

### Alkalinity in Water by Titration

This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.

Recommended Holding Time:

Sample: 14 days

Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

### Dissolved Anions in Water by Ion Chromatography

This analysis is carried out using procedures adapted from APHA Method 4110 "Determination of Anions by Ion Chromatography" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Anions are determined by filtering the sample through a 0.45 micron membrane filter and injecting the filtrate onto a Dionex IonPac AG17 anion exchange column with a hydroxide eluent stream. Anions routinely determined by this method include: bromide, chloride, fluoride, nitrate, nitrite and sulphate.

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## Appendix 1 - METHODOLOGY - Continued

Recommended Holding Time:

Sample: 28 days (bromide, chloride, fluoride, sulphate)

Sample: 2 days (nitrate, nitrite)

Reference: APHA and EPA

Laboratory Location: ALS Environmental, Vancouver

### Ammonia in Water by Selective Ion Electrode

This analysis is carried out, on sulphuric acid preserved samples, using procedures adapted from APHA Method 4500-NH<sub>3</sub> "Nitrogen (Ammonia)". Ammonia is determined using an ammonia selective electrode.

Recommended Holding Time:

Sample: 28 days

Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

### Cyanide Species in Water

This analysis is carried out using procedures adapted from APHA Method 4500-CN "Cyanide". Total or strong acid dissociable (SAD) cyanide and weak acid dissociable (WAD) cyanide are determined by sample distillation and analysis using the chloramine-T colourimetric method. Cyanate is determined by the cyanate hydrolysis method using an ammonia selective electrode. Thiocyanate is determined by the ferric nitrate colourimetric method.

Recommended Holding Time:

Sample: 14 days

Reference: APHA

Laboratory Location: ALS Environmental, Vancouver

### Metals in Water

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" 20th Edition 1998 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 hotplate or microwave oven, or filtration (EPA Method 3005A). Instrumental analysis is by atomic absorption/emission spectrophotometry (EPA Method 7000 series), inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B), and/or inductively coupled plasma - mass spectrometry (EPA Method 6020).

Recommended Holding Time:

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**Appendix 1 - METHODOLOGY - Continued**



Sample: 6 months  
Reference: EPA

Laboratory Location: ALS Environmental, Vancouver

**Results contained within this certificate relate only to the samples as submitted.**

**This Certificate Of Analysis shall only be reproduced in full, except with the written approval of ALS Environmental.**

**End of Report**