REPORT ON

ENVIRONMENTAL BASELINE STUDY

WATER QUALITY ASSESSMENT

MINAGO LAKE PROJECT, MANITOBA

Submitted to:

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1. INTRODUCTION

Victory Nickel Inc. is required to undertake Environmental Baseline Studies (EBS) as part of the Comprehensive Monitoring Program (CMP) in compliance with the Environmental Act License (EAL) No. 2981. As part of the CMP various EBS studies were undertaken beginning the fall of 2011. The EBS included Water Quality Studies, which followed the Minago Project Water Quality Sampling Standard Operating Procedure (Mchaina, 2011a) and the Victory Nickel Inc. Comprehensive Monitoring Program for the Minago Project Fall 2011 (Mchaina, 2011b). Victory Nickel Inc retained For&Enviro-Consult, in February 2012, to analyze water quality data from local watersheds within the Minago Project. The water quality monitoring program was undertaken as part of environmental baseline studies. The objectives of the surface water quality monitoring program were to:

- establish pre-mining baseline surface water quality monitoring database for the Minago Project and its surroundings;
- provide baseline surface water quality data for future water quality modeling for impact analysis with a goal to developing water management plans; and
- provide additional data to compliment the baseline data collected for the EAL application.

To assess water quality within and around the Minago Project, representative water samples were collected from ten (10) locations upstream and downstream of the water courses. Water samples were collected by VNI field team in October 2011 from Oakley Creek, Minago River, William River, Limestone Bay, Hill Lake, Drunken Lake, and Cross Lake.

All laboratory analyses were conducted by the ALS Laboratory Group in Vancouver, B.C. Water quality results were provided in the form of Laboratory Certified Reports and spreadsheets. The results of laboratory analysis were then compared against water quality regulatory standard, objectives and guidelines. Though the project does not discharge any affluent in the receiving environment, for this sampling campaign Tier II and Tier III of Manitoba Water Quality Standards, Objectives and Guidelines (MWQSOG) were applied to assess predevelopment baseline surface water quality conditions. But for Tear III, only surface water guidelines were used, and drinking water guidelines were excluded as they are not relevant for this analysis. For completeness, summaries of Minago Project surface water quality results also list guideline limits for the Canadian Water Quality Guidelines for the Protection of Aquatic Life (CWQGPAL) (CCME, 2011) and the Metal Mining Effluent Regulations (MMER) (Environment Canada, 2002a).

1.1 Background

1.2 Location of the Minago Project

The Minago Project is located near the northeast corner of the Western Canada Sedimentary Basin, in Manitoba's Thompson Nickel belt on Highway 6, approximately 225 km south of Thompson and 100 km north of Grand Rapids, Manitoba, Canada (Fig. 1.1).

The site is located within the Nelson River sub-basin, which drains northeast into the southern end of the Hudson Bay. The basin has two more catchments in the Minago River and the Hargrave River, which enclose the project site. Two more tributaries, the William River and the Oakley Creek, are present at the periphery of the project area. The catchments of the latter tributaries are within the Lake Winnipeg basin and drain northward into the Nelson River sub-basin. The mine site is situated within a topographically low area of water-saturated peat and forest terrain. The area is almost entirely swampy muskeg with vegetation consisting of sparse black spruce and tamarack set in a topographic relief of less than 3 m. Although this low area extends for significant distances to the north and east, elevated limestone outcrops exist to the south and west at a distance of 7 to 20 km from the site (VNI, 2010).

1.3 Ownership

Victory Nickel has 100% ownership of the Minago Project and also the Mines and Minerals Act entitles mineral claims owners the rights as given below:

The holder (Victory Nickel) of a mineral claim has the exclusive right to explore for and develop the Crown minerals, other than the quarry minerals, found in place on, in, or under the lands covered by the claim (The Mines and Minerals Act, 73).

The lessee (Victory Nickel) of a mineral lease has the exclusive right to the Crown minerals, other than quarry minerals, that are the property of the Crown and are found in place or under the land covered by the mineral lease. The lessee also has access rights to open and work a shaft or mine, and to erect buildings or structures upon the subject land (The Mines and Minerals Act, 108[a], [b], [i], [ii]). The mineral disposition of the Minago Project is depicted in Fig 1.2.

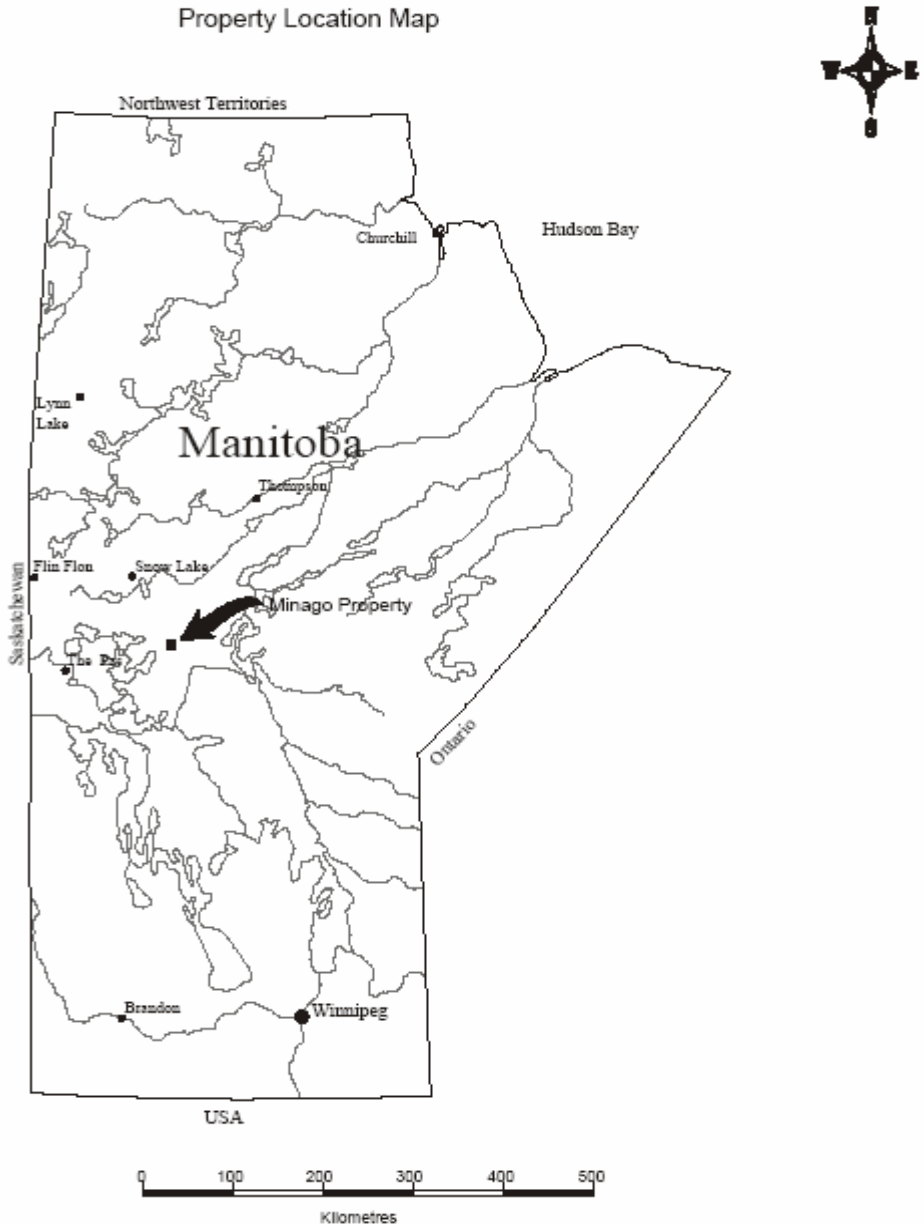

Fig. 1.1. Minago Project Location Map

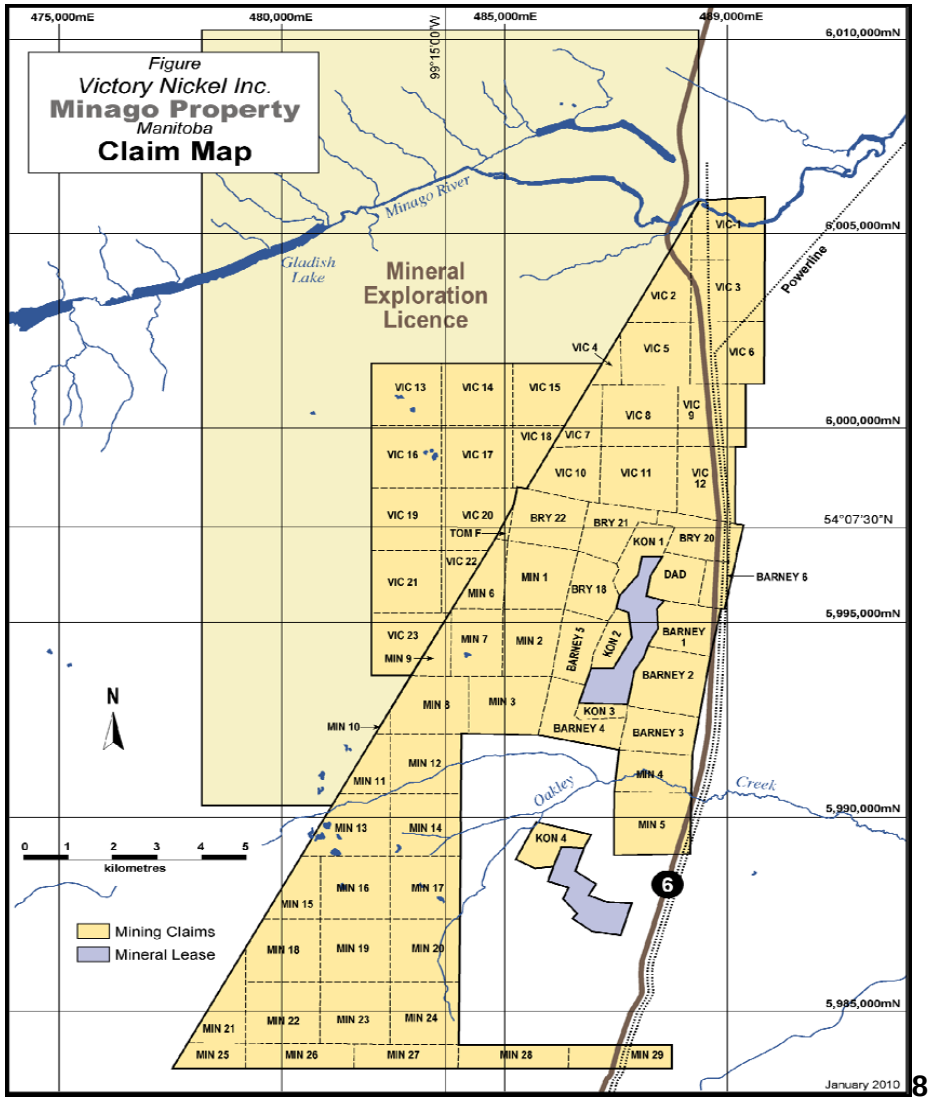

Figure 1-2. Claim Map of the Minago Project Showing Mineral Disposition

1.4 Scope of the Surface Water Quality Assessment

Surface water quality samples in watercourses surrounding the Minago Project were collected for assessment by VNI in October 2011. Water quality was monitored in Oakley Creek (2 stations, upstream and downstream of future discharge point); Minago River (2 stations, upstream and downstream of future discharge point); William River (2 stations, upstream and downstream of the future discharge point [upstream and downstream of the confluence point with Oakley Creek]); Limestone Bay (1 station, at the mouth of William River into Lake Winnipeg); Hill Lake (1 station, where Minago River flows into the Lake);Drunken Lake (1 station, where Minago River flows into the Lake); and Cross Lake (1 station, where Minago River flows into the lake).

The surface water quality sampling program, conducted by VNI, included the measurement of field parameters such as pH, conductivity, temperature, turbidity, and collection of surface water samples for laboratory analysis. Field parameters were assessed with a YSI 600QS multiparameter probe. This probe was calibrated prior to every field sampling event. The probe's pH meter was calibrated with pH 7.0 and pH 10.0 standard solutions. The field sampling protocol is detailed in Appendix A.

Laboratory analyses included:

- **Physical Tests:** pH, conductivity, and turbidity;
- **Anions and Nutrients:** alkalinity, chloride, nitrate, nitrite, fluorides ammonia and sulphate
- **Metals:** total and dissolved.

Water sample collection methods conformed to the guidelines outlined in the Federal Metal Mining Guidance Document for Aquatic Environmental Effects Monitoring (MMER-EEM; Environment Canada, 2002b).

2. SURFACE WATER QUALITY ASSESSMENT

2.1 Sampling Stations

The surface water sampling program was carried out to assess water quality of Oakley Creek, Minago River, William River, Limestone Bay, Hill Lake, Drunken Lake and Cross Lake. For each of these water sources, sampling was carried out at or in the proximity of the permanent sampling stations that had been established during the 2007/2008 Baseline Studies for the EAL Application. Originally the sites were chosen based on local hydrology and accessibility. The same criteria were used during the fall 2011 field sampling expedition. The stations sampled for the Comprehensive Monitoring Program (CMP) are outlined below:

- Oakley Creek (2 stations, upstream and downstream of future discharge point);
- Minago River (2 stations, upstream and downstream of future discharge point);
- William River (2 stations, upstream and downstream of the future discharge point [upstream and downstream of the confluence point with Oakley Creek]);
- Limestone Bay (1 station, at the mouth of William River into Lake Winnipeg);
- Hill Lake (1 station, where Minago River flows into the Lake);
- Drunken Lake (1 station, where Minago River flows into the Lake);
- Cross Lake (1 station, where Minago River flows into the lake)

These sampling stations are depicted on the area map (Fig 2.1.) The station identification variables and other details are described in Table 2.1.

During the 2011 field sampling program, the permanent sampling sites marked on the area map were accessed by a vehicle and/or helicopter depending on their location. After disembarking from the vehicle or helicopter near the site, the stations were located using a handheld Global Positioning System (GPS) unit, by tracking site coordinates recorded during the establishment of the permanent sampling stations.

Where prevailing accessibility factors prevented sampling at the exact pre-established GPS coordinates of the permanent sites, the coordinates of the current sampling point were recorded. But it was ensured that this was in as close proximity as possible to the chosen permanent sampling site coordinates. It was only for one sampling site (William River, downstream) that accessibility challenges dictated complete relocation of the sampling site to a more accessible location far from the original site – closer to Highway 6. However, it was critical that the new location had features that would represent hydrological characteristics similar to those of the original permanent sampling site (i.e. downstream of the future discharge point [downstream of the confluence point with Oakley Creek]).

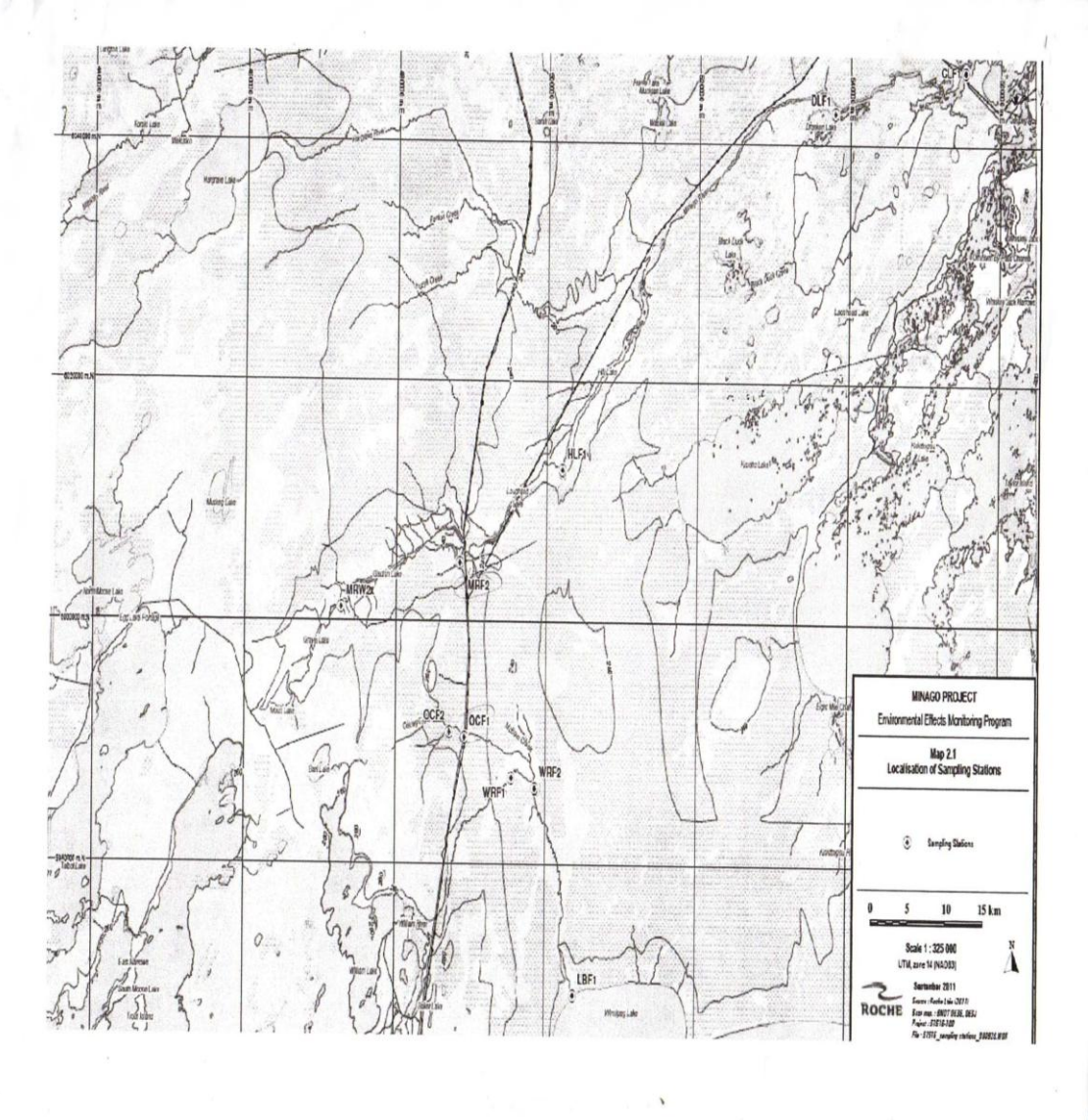

Fig. 2.1. Map Area of the Minago Project Showing the Permanent Water Sampling Stations

Table 2.1. Site Identification and other Features of the Surface Water Quality Sampled Stations Showing Sites Potentially to be Impacted during Operations (PIDO) and Control Sites

Stations	Watershed	Type of stations	GPS coordinates (UTM, NAD83)	
			Permanent Station	Actual Sampled
Minago River				
MRW2X	Cross Lake	Control	472 465, 6 001 209	At permanent station
MRF2	Cross Lake	PIDO	488 562, 6 005 007	488 625, 6 005 297
Hill Lake				
HLF1	Cross Lake	PIDO	502 060, 6 012 816	At permanent station
Drunken Lake				
DLF1	Cross Lake	PIDO	538 349, 6 043 074	At permanent station
Cross Lake				
CLF1	Cross Lake	PIDO	555 324, 6 046 198	At permanent station
Oakley Creek				
OCF2	Lake Winnipeg	Control	487 235, 5 990 908	At permanent station
OCF1	Lake Winnipeg	PIDO	489 238, 5 990 528	489 294, 5 990 515
William River				
WRF1 (changed to (WRF1N)[a]	Lake Winnipeg	Control	495 419, 5 987 166	485 181, 5 973 773
WRF2	Lake Winnipeg	PIDO	498 578, 5 986 330	At permanent station
Limestone Bay				
LBF1	Lake Winnipeg	PIDO	503 911, 5 969 136	503 918, 5 969 164

[a] Sampling for this site was moved to an area more accessible by a vehicle (hence change of ID) – as the helicopter was involved in other field studies at a time

More detailed description of the surface water quality assessment are presented in:

- Appendix A -Field Sampling Protocol;
- Appendix B.1 - Detection Limits and Quality Control Results for Total Metals;
- Appendix B.2 - Detection Limits and Quality Control Results for Dissolved Metals;
- Appendix B.3 - Detection Limits and Quality Control Results for Other Parameters;
- Appendix C - Detailed results from all Sampling Stations vs. Manitoba and CCEM water quality standards, objectives and guidelines;
- Appendix D.1 - Data Quality Objectives ALS Vancouver and;
- Appendix D.2 - October 2010 Lab Analysis Certified Report.

2.2 Criteria Used for the Analysis

In this report, water quality results are compared to the Manitoba Water Quality Standards, Objectives and Guidelines. The MWQSOG are the assessment criteria for Manitoba policies and guidelines for the management of the province's water resources (Manitoba Water Stewardship, 2011). The policies and guidelines give direction on how to manage the quality and quantity of both surface and ground waters. With respect to surface water quality the goal is to ensure that the water quality is satisfactory for aquatic life and aesthetics and that water uses, which require more stringent water quality be protected on a site specific basis. In that regard, the MWQSOG will protect aquatic life and recreation uses and policy direction is provided about how to deal with situations where water quality is better or worse than the Objectives.

The MWQSOG are numerical and narrative criteria which serve as chemical and physical indicators representing a satisfactory level for surface waters (i.e. lakes, rivers, creeks, etc.) and, where it discharges to the surface, the ground water of the Province. The MWQSOG are set at a level of water quality which is protective of all forms of aquatic life and all aspects of the aquatic life cycles during indefinite exposure to the water. The MWQSOG are intended to provide guidance in making water quality management decisions such as the designation of the surface waters of the Province which should not be further degraded. They are used to assess ambient water quality conditions, infer use impairments, and assist in assessing spills and monitoring the effectiveness of remedial actions (Manitoba Water Stewardship, 2011).

Tier II - Water Quality Objectives are defined for a limited number of common pollutants in Manitoba that are routinely controlled through licencing under The Manitoba Environment Act. These objectives form the basis for the water quality-based approach when additional restrictions need to be developed to protect important uses of ground or surface waters beyond those defined under *Tier I - Water Quality Standards* or other controls to which dischargers are subject. These objectives provide the fundamental link between environmental management regulatory activities, ambient water quality monitoring data, scientific toxicological information, water uses, and public expectations concerning environmental quality.

Tier III - Water Quality Guidelines include three general types of guidance. First, Tier III - Water Quality Guidelines include a large number of variables derived by the CCME for general application across Canada. Environmental quality guidelines are included for water, lake and river bottom sediments, and residues in fish or other aquatic life tissues for protection of wildlife consumers. Second, Tier III - Water Quality Guidelines contain tissue residue guidelines derived by Health Canada to protect human consumers of fish or other aquatic life tissues. Third, Tier III - Water Quality Guidelines contain narrative water quality guidelines since numerical guidelines cannot reasonably be developed for every possible chemical, physical, or biological variable.

Tier III - Water Quality Guidelines should be used as follows:

(a) The Tier III - Numerical Water Quality Guidelines should be used to assist in the interpretation of ambient water quality data. Ambient water quality data can be compared directly to the water quality guidelines to identify exceedances or long-term trends that may lead to exceedances in the future.

If management intervention appears necessary, Tier III - Water Quality Guidelines can be advanced to Tier II - Water Quality Objectives for application in pollution control activities;

(b) The Tier III - Numerical Water Quality Guidelines should be used to assist in identifying if ambient water can sustain specific uses. The water quality guidelines can be used in combination with ambient monitoring data to initially determine whether or not specific bodies of water are suitable for certain proposed uses or activities;

(c) The Tier III - Narrative Water Quality Guidelines should be met as minimum conditions at all times and in all places to ensure that all surface and ground water of Manitoba are free of constituents attributable to sewage, industrial, agricultural, and other land-use practices, or other man-induced point or non-point source discharges that may unacceptably impair water quality

Currently the project does not discharge any affluent in the receiving environment. But for this comprehensive sampling endevour and assessment, Tier II and Tier III of MWQSOG were applied to assess predevelopment baseline surface water quality conditions. However, only surface water guidelines for Tear III were used, and drinking water guidelines were excluded as they are not required/needed for this analysis. To provide a more complete picture of this assessment, summaries of Minago Project surface water quality results also list guideline limits for the Canadian Water Quality Guidelines for the Protection of Aquatic Life (CWQGPAL) (CCME, 2011) and the Metal Mining Effluent Regulations (MMER) (Environment Canada, 2002a).

CWQGPAL define acceptable levels for substances or conditions that affect water quality such as toxic chemicals, temperature and acidity. As long as conditions are within the levels established by the guidelines, one would not expect to see negative effects in the environment (CCME, 2011). These guidelines are based on toxicity data for the most sensitive species of plants and animals found in Canadian waters and act as science-based benchmarks.

The Metal Mining Effluent Regulations (MMER) were registered on June 6, 2002, under subsections 34(2), 36(5), and 38(9) of the Fisheries Act (Environment Canada, 2002a). The MMER prescribe authorized concentration limits for deleterious substances in mine effluents that discharge to waters frequented by fish. The regulated parameters are arsenic, copper, cyanide, lead, nickel, zinc, total suspended solids (TSS), Radium 226, and pH.

2.3 Water Quality Results

An overview of water quality results in terms of average, minimum and maximum concentrations for all ten surface water sampling stations monitored in October 2011 is presented in Table 2-2. Water quality results are tabulated alongside Manitoba Water Quality Standards, Objectives and Guidelines (Manitoba Water Stewardship, 2011), Canadian Water Quality Guidelines for Protection of Aquatic Life (CCME, 2011), and Metal Mining Effluent Regulations (Environment Canada, 2002a). Detailed results for each sampling station, including a listing of minimum and maximum concentrations, against the aforementioned objectives, guidelines and regulations are presented in Appendix C.

Surface water quality was not exceedingly turbid when compared to Manitoba (Tear II) and Canadian surface water standards and guidelines, respectively. The turbidity ranged from 0.20 to 20.8 NTU, and averaged 7.867 NTU. As reported in Appendix C, in samples collected at Drunken Lake, William River (PIDO), and Cross Lake, total iron concentrations as well as dissolved iron concentrations at Limestone Bay station exceeded the Canadian Water Quality Guidelines for Protection of Aquatic Life (CCME, 2011) and Manitoba Tear III objectives of 0.3 mg/L. Total iron contentrations ranged from 0.038 mg/L to 1.11 mg/L with an average of 0.3816 mg/L. Dissolved iron concenrations ranged between 0.014 mg/L and 0.532 mg/L with an average of 0.1225 mg/L. None of the other detectable water quality parameters exceeded Manitoba or CCME limits. Therefore, MMER limits, which are higher than the latter are also met. The aforementioned partial-exceedances for iron are discussed following a general description of the water quality results for the VNI Minago Project.

Table 2-2. Overview of Surface Water Quality for Ten Samples Collected at the Minago Project

PARAMETERS	MEASUREMENTS					REGULATIONS			
	Units	Detection Limit	Minimum	Maximum	Average	Manitoba Water Quality Standards, Objectives and Guidelines (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011)	Metal Mining Effluent Regulations (MMER) (2002) Grab Sample Maximum Concentration)
			(All 10 Stations)	(All 10 Stations)	(All 10 Stations)	TIER II Water Quality Objectives	TIER III - Freshwater		
Physical Tests									
Conductivity	uS/cm	2	179	348	265.4	1000 - 1500[1]			
Hardness (as CaCO3)	mg/L	0.5	85.8	190	139.02				
pH	pH	0.1	7.68	8.36	8.147		6.5-9	6.5-9	6.5-9
Total Suspended Solids	mg/L	3	3	23	9.8	5 – 25 (or 10%) induced change from background[2]	5 – 25 (or 10%) induced change from background	narrative	30
Total Dissolved Solids	mg/L	10	121	192	159.6	500 - 3500[3]			
Turbidity	NTU	0.1	0.28	20.8	7.867	Equivalent Induced Levels of Change, Calculated From Site- or Regional-Specific Correlation Between Total Suspended Sediment and Turbidity.	Equivalent Induced Levels of Change, Calculated From Site- or Regional-Specific Correlation Between Total Suspended Sediment and Turbidity.	narrative	
Anions and Nutrients									
Acidity (as CaCO3)	mg/L		1.4	5.5	2.8111				
Alkalinity, Bicarbonate (as CaCO3)	mg/L	2	87.7	192	143.36				
Alkalinity, Carbonate (as CaCO3)	mg/L	2	5.3	5.3	5.3				
Alkalinity, Hydroxide (as CaCO3)	mg/L	2	<2	<2	<2				
Alkalinity, Total (as CaCO3)	mg/L	2	87.7	192	143.86				
Ammonia (as N)	mg/L	0.02	0.0102	0.0366	0.0153	6.34641[4]	6.34641		

[1] Dependent on the type of ground and surface water use

[2] Dependent on background TSS (5 mg/L for Background Total SuspendedSediment ≤25 mg/L (30-Day, 3 Year) or 25 mg/LBackground Total Suspended Sediment ≤250mg/L (1-Day, 3-Year) or 10% Background Total Suspended Sediment >250 mg/L (1-Day, 3-Year) of induced change from background).

[3] Dependent on the type of surface and ground water use

[4] At average pH of 8.14 and 9.3 deg. C. averaged from the ten sampled stations

Table 2-2 (Cont.'d). Overview of Surface Water Quality for Ten Samples Collected at the Minago Project

PARAMETERS	MEASUREMENTS					REGULATIONS			
	Units	Detection Limit	Minimum	Maximum	Average	Manitoba Water Quality Standards, Objectives (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011)	Metal Mining Effluent Regulations (MMER) (2002) Grab Sample Maximum Concentration)
			(All 10 Stations)	(All 10 Stations)	(All 10 Stations)	TIER II Water Quality Objectives	TIER III - Water Quality Guidelines Freshwater		
Bromide (Br)	mg/L	0.05	<0.05	<0.05	<0.05				
Chloride (Cl)	mg/L	0.5	1.17	4.54	1.856			640 (short-term), 120 (long-term)	
Fluoride (F)	mg/L	0.02	0.062	0.118	0.0784		0.00012 (inorg. fluorides)	0.12	
Nitrate (as N)	mg/L	0.005	0.0053	0.0099	0.007	10	13	13	
Nitrite (as N)	mg/L	0.001	0.0011	0.0028	0.0017		0.06	0.06 (long-term)	
Total Kjeldahl Nitrogen	mg/L		0.418	1.02	0.6452				
Total Nitrogen	mg/L		0.418	1.02	0.6469				
Sulfate (SO4)	mg/L	0.5	0.68	6.02	2.0656				
Cyanides									
Cyanide, Weak Acid Diss	mg/L	0.005	<0.005	<0.005	<0.005	0.0052 [c] 0.022 [d]	0.0052 [c] 0.022 [d]	5 (as free CN)	2
Total Metals									
Aluminum (Al)-Total	mg/L	0.003	0.0063	0.941	0.3641		0.005 (pH<6.5) - 0.1 (pH ≥6.5)	0.005 (pH<6.5) - 0.1 (pH ≥6.5)	
Antimony (Sb)-Total	mg/L	0.00005	<0.00005	<0.00005	<0.00005				
Arsenic (As)-Total	mg/L	0.00003	0.0003	0.0008	0.0006	0.15 [c] 0.34 [d]	Tier II,:0.15 mg/L (4-Day, 3-Year) [A]	0.005	1
Barium (Ba)-Total	mg/L	0.00005	0.0113	0.028	0.0179				
Beryllium (Be)-Total	mg/L	0.0002	<0.0002	<0.0002	<0.0002				

Table 2-2 (Cont.'d). Overview of Surface Water Quality for Ten Samples Collected at the Minago Project

PARAMETERS	MEASUREMENTS					REGULATIONS			
	Units	Detection Limit	Minimum	Maximum	Average	Manitoba Water Quality Standards, Objectives and Regulations (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011)	Metal Mining Effluent Regulations (MMER) (2002) Grab Sample Maximum Concentration)
			(All 10 Stations)	(All 10 Stations)	(All 10 Stations)	TIER II Water Quality Objectives	TIER III - Water Quality Guidelines Freshwater		
Bismuth (Bi)-Total	mg/L	0.0005	<0.0005	<0.0005	<0.0005				
Boron (B)-Total	mg/L	0.005	0.0098	0.0192	0.0136		29 (short-term); 1.5 long-term		
Cadmium (Cd)-Total	mg/L	0.000017	<0.000017	<0.000017	<0.000017	0.000309 [c] 0.002774 [d 5]	0.000309 [c] 0.002774 [d 6]	0.00004395	
Calcium (Ca)-Total	mg/L	0.02	20.4	41	29.7				
Chromium (Cr)-Total	mg/L	0.0001	0.0002	0.0019	0.0007	0.097069 (Cr III) [c] 0.74623 (Cr III) [d] 0.011 (Cr VI)[c] 0.016 (Cr VI)[d]	0.097069 (Cr III) [c] 0.74623 (Cr III) [d] 0.011 (Cr VI)[c] 0.016 (Cr VI)[d]	0.001 (hexavalent), 0.0089 (trivalent)	
Cobalt (Co)-Total	mg/L	0.0001	0.0001	0.0005	0.0003				
Copper (Cu)-Total	mg/L	0.0005	0.0008	0.0013	0.0011	0.011868 [c] 0.018331[d]	0.011868 [c] 0.018331[d]	0.003133627	0.6
Iron (Fe)-Total	mg/L	0.01	0.038	1.11	0.3816			0.3	
Lead (Pb)-Total	mg/L	0.00005	0.0001	0.0004	0.0002	0.003596 [c] 0.092268 [d]	0.003596 [c] 0.092268 [d]	0.004839287	0.4
Lithium (Li)-Total	mg/L	0.005	<0.005	<0.005	<0.005				

[5] This and all subsequent Hardness depended values were calculated using a hardness of 139.02 mg/L average hadness as CaCO averaged from the ten sampleld stations

[6] This and all subsequent Hardness depended values were calculated using a hardness of 139.02 mg/L average hadness as CaCO averaged from the ten sampleld stations

Table 2-2 (Cont.'d). Overview of Surface Water Quality for Ten Samples Collected at the Minago Project

PARAMETERS	MEASUREMENTS					REGULATIONS		
	Units	Detection Limit	Minimum	Maximum	Average	Manitoba Water Quality Standards, Objectives (Manitoba Water Stewardship, 2011)	Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011)	Metal Mining Effluent Regulations (MMER) (2002) Grab Sample Maximum Concentration)
			(All 10 Stations)	(All 10 Stations)	(All 10 Stations)	TIER II Water Quality Objectives	TIER III - Water Quality Guidelines Freshwater	
Magnesium (Mg)-Total	mg/L	0.005	7	30.4	16.27			
Manganese (Mn)-Total	mg/L	0.00005	0.0044	0.0491	0.0206			
Mercury (Hg)-Total	mg/L	0.00001	<0.00001	<0.00001	<0.00001		0.000026 (inorg.)	0.026
Molybdenum (Mo)-Total	mg/L	0.000050	0.0001	0.0002	0.0001		0.073	0.073
Nickel (Ni)-Total	mg/L	0.0001	0.0001	0.0014	0.0007	0.068723 [c] 0.618737 [d]	0.068723 [c] 0.618737 [d]	0.122769216 1
Phosphorus (P)-Total	mg/L	0.3	<0.3	<0.3	<0.3		narrative [e]	
Potassium (K)-Total	mg/L	0.05	1	1.33	1.076			
Selenium (Se)-Total	mg/L	0.0001	<0.0001	<0.0001	<0.0001		0.001	0.001 1
Silicon (Si)-Total	mg/L	0.05	3.64	6.12	4.736			
Silver (Ag)-Total	mg/L	0.00001	<0.00001	<0.00001	<0.00001		0.0001	0.0001 0.1
Sodium (Na)-Total	mg/L	0.01	2.05	5.95	3.632			
Strontium (Sr)-Total	mg/L	0.0001	0.0307	0.0592	0.0459			
Thallium (Tl)-Total	mg/L	0.00005	<0.00005	<0.00005	<0.00005		0.0008	0.0008
Tin (Sn)-Total	mg/L	0.0001	<0.0001	<0.0001	<0.0001			
Titanium (Ti)-Total	mg/L	0.01	0.021	0.044	0.0315			
Uranium (U)-Total	mg/L	0.00001	0.0001	0.0003	0.0001		0.033 (short-term); 0.015 (long-term)	0.033 (short-term); 0.015 (long-term)
Vanadium (V)-Total	mg/L	0.00005	0.0001	0.0019	0.0007			
Zinc (Zn)-Total	mg/L	0.003	0.0035	0.0039	0.0037	0.068723 [c] 0.618737 [d]	0.068723 [c] 0.618737 [d]	0.03 1

Table 2-2 (Cont.'d). Overview of Surface Water Quality for Ten Samples Collected at the Minago Project

PARAMETERS	MEASUREMENTS					REGULATIONS			
	Units	Detection Limit	Minimum	Maximum	Average	Manitoba Water Quality Standards, Objectives (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011)	Metal Mining Effluent Regulations (MMER) (2002) Grab Sample Maximum Concentration)
			(All 10 Stations)	(All 10 Stations)	(All 10 Stations)	TIER II Water Quality Objectives	TIER III - Water Quality Guidelines Freshwater		
Dissolved Metals									
Aluminum (Al)-Dissolved	mg/L	0.003	0.0047	0.461	0.1324		0.005 (pH<6.5) - 0.1 (pH ≥6.5)		
Antimony (Sb)-Dissolved	mg/L	0.00005	<0.00005	<0.00005	<0.00005				
Arsenic (As)-Dissolved	mg/L	0.00003	0.0003	0.0007	0.0006	0.15 [c] 0.34 [d]	Tier II,:0.15 mg/L (4-Day, 3-Year) [A]		
Barium (Ba)-Dissolved	mg/L	0.00005	0.0092	0.0281	0.0159				
Beryllium (Be)-Dissolved	mg/L	0.0002	<0.0002	<0.0002	<0.0002				
Bismuth (Bi)-Dissolved	mg/L	0.0005	<0.0005	<0.0005	<0.0005				
Boron (B)-Dissolved	mg/L	0.005	0.0064	0.0166	0.0101		29 (short-term); 1.5 long-term		
Cadmium (Cd)-Dissolved	mg/L	0.000017	<0.000017	<0.000017	<0.000017	0.000309 [c] 0.002774 [d 7]	.000309 [c] 0.002774 [d 8]	0.00004395	
Calcium (Ca)-Dissolved	mg/L	0.02	19.6	39.3	29.25				
Chromium (Cr)-Dissolved	mg/L	0.0001	0.0002	0.0007	0.0004	0.097069 (Cr III) [c] 0.74623 (Cr III) [d] 0.011 (Cr VI)[c] 0.016 (Cr VI)[d]		0.001 (hexavalent), 0.0089 (trivalent)	
Cobalt (Co)-Dissolved	mg/L	0.0001	0.0003	0.0003	0.0003				
Copper (Cu)-Dissolved	mg/L	0.0005	0.0005	0.001	0.0007	0.011868 [c] 0.018331[d]	0.011868 [c] 0.018331[d]	0.003133627	0.6

[7] This and all subsequent Hardness depended values were calculated using a hardness of 139.02 mg/L average hadness as CaCO averaged from the ten sampleld stations

[8] This and all subsequent Hardness depended values were calculated using a hardness of 139.02 mg/L average hadness as CaCO averaged from the ten sampleld stations

Table 2-2 (Cont.'d). Overview of Surface Water Quality for Ten Samples Collected at the Minago Project

PARAMETERS	MEASUREMENTS					REGULATIONS			
	Units	Detection Limit	Minimum	Maximum	Average	Manitoba Water Quality Standards, Objectives (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011)	Metal Mining Effluent Regulations (MMER) (2002) Grab Sample Maximum Concentration)
			(All 10 Stations)	(All 10 Stations)	(All 10 Stations)	TIER II Water	TIER III - Water Quality Guidelines		
						Quality Objectives	Freshwater		
Iron (Fe)-Dissolved	mg/L	0.01	0.014	**0.532**	0.1225		0.3	0.3	
Lead (Pb)-Dissolved	mg/L	0.00005	0.0001	0.0002	0.0001	0.003596 [c] 0.092268 [d]	0.003596 [c] 0.092268 [d]	0.004839287	0.4
Lithium (Li)-Dissolved	mg/L	0.005	<0.005	<0.005	<0.005				
Magnesium (Mg)-Dissolved	mg/L	0.005	7.21	31	16.047				
Manganese (Mn)-Dissolved	mg/L	0.00005	0.0017	0.0404	0.0103				
Mercury (Hg)-Dissolved	mg/L	0.00001	<0.00001	<0.00001	<0.00001		0.000026 (inorg.)	0.026	
Molybdenum (Mo)-Dissolved	mg/L	0.00005	0.0001	0.0002	0.0001		0.073	0.073	
Nickel (Ni)-Dissolved	mg/L	0.0001	0.0002	0.0008	0.0005	0.068723 [c] 0.618737 [d]	0.068723 [c] 0.618737 [d]	0.122769216	1
Phosphorus (P)-Dissolved	mg/L	0.3	<0.3	<0.3	<0.3			narrative [e]	
Potassium (K)-Dissolved	mg/L	0.05	0.826	1.22	0.9951				
Selenium (Se)-Dissolved	mg/L	0.0001	<0.0001	<0.0001	<0.0001		0.001	0.001	1
Silicon (Si)-Dissolved	mg/L	0.05	3.2	5.47	4.178				
Silver (Ag)-Dissolved	mg/L	0.00001	<0.00001	<0.00001	<0.00001		0.0001	0.0001	0.1
Sodium (Na)-Dissolved	mg/L	0.01	2.09	6.22	3.606				
Strontium (Sr)-Dissolved	mg/L	0.0001	0.031	0.0575	0.0442				
Thallium (Tl)-Dissolved	mg/L	0.00005	<0.00005	<0.00005	<0.00005		0.0008	0.0008	
Tin (Sn)-Dissolved	mg/L	0.0001	0.0001	0.0005	0.0002				

Table 2-2 (Cont.'d). Overview of Surface Water Quality for Ten Samples Collected at the Minago Project

PARAMETERS	MEASUREMENTS					REGULATIONS			
	Units	Detection Limit	Minimum	Maximum	Average	Manitoba Water Quality Standards, Objectives (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011)	Metal Mining Effluent Regulations (MMER) (2002) Grab Sample Maximum Concentration)
			(All 10 Stations)	(All 10 Stations)	(All 10 Stations)	TIER II Water Quality Objectives	TIER III - Water Quality Guidelines Freshwater		
Titanium (Ti)-Dissolved	mg/L	0.01	0.024	0.024	0.024				
Uranium (U)-Dissolved	mg/L	0.00001	0.0001	0.0003	0.0001		0.033 (short-term); 0.015 (long-term)	0.033 (short-term); 0.015 (long-term)	
Vanadium (V)-Dissolved	mg/L	0.00005	0.0001	0.001	0.0004				
Zinc (Zn)-Dissolved	mg/L	0.003	<0.003	<0.003	<0.003	0.068723 [c] 0.618737 [d]	0.068723 [c] 0.618737 [d]	0.03	1

GENERAL FOOTNOTES:

c = Criterion Continuous Concentration (CCC) to prevent chronic effects.

d = Criterion Maximum Concentration (CMC) to prevent acute effects.

Footnotes for the CCME Aquatic Guidelines (Canadian Council of Ministers of the Environment. 2011. Canadian water quality guidelines for the protection of aquatic life).Environment, Winnipeg.

The following Equations were applied:

Cadmium concentration = $10^{0.86[\log10(\text{hardness})]-3.2}$ µg/L

Copper concetration = $e^{0.8545[\ln(\text{hardness})]-1.465} * 0.2$ µg/L

Lead concetration = $e^{1.273[\ln(\text{hardness})]-4.705}$ µg/L

Nickel concentration = $e^{0.76[\ln(\text{hardness})]+1.06}$ µg/L

Canadian Trigger Ranges (for further narrative see factsheet), Total Phosphorus (µg/L):

ultra-oligotrophic <4
oligotrophic 4-10
mesotrophic 10-20
meso-eutrophic 20-35
eutrophic 35-100
hyper-eutrophic >100

Footnotes for the Manitoba Water Quality Standards, Objectives, and Guidelines (Manitoba Water Stewardship, 2011)

Arsenic limits:	0.15 mg/L for averaging duration 4 days (4-Day, 3-Year or 7Q10 Design Flow); 0.34 mg/L for averaging duration 1 hr (1-Day, 3-Year or 1Q10 Design Flow)
Cadmium limits:	[e{0.7409[ln(Hardness)]-4.719]×[1.101672-{ln(Hardness)(0.041838)}] for 4 days averaging duration. [e{1.0166[ln(Hardness)]-3.924}]×[1.136672-{ln(Hardness)(0.041838)}] for 1 hour averaging duration.
Chromium limits:	Chromium III: [e{0.8190[ln(Hardness)]+0.6848}]×[0.860] for 4 days averaging duration. Chromium III: [e{0.8190[ln(Hardness)]+3.7256}]×[0.316] for 1 hour averaging duration. Chromium VI: 0.011 mg/L for averaging duration 4 days (4-Day, 3-Year or 7Q10 Design Flow); 0.016 mg/L for averaging duration 1 hr (1-Day, 3-Year or 1Q10 Design Flow)
Copper limits:	[e{0.8545[ln(Hardness)]-1.702}]×[0.960] for 4 Days hour averaging duration. [e{0.9422[ln(Hardness)]-1.700}]×[0.960] for 1 hour averaging duration.
Lead limits:	[e{1.273[ln(Hardness)]-4.705}]×[1.46203 -{ln(Hardness)(0.145712)}] for 4 Days averaging duration. [e{1.273[ln(Hardness)]-1.460}]×[1.46203 -{ln(Hardness)(0.145712)}] for 1 hour averaging duration.
Nickel limits:	[e{0.8460[ln(Hardness)]+0.0584}]×[0.997] for 4 Days averaging duration. [e{0.8460[ln(Hardness)]+2.255}]×[0.998] for 1 hour averaging duration.
Zinc limits:	[e{0.8473[ln(Hardness)]+0.884}]×[0.986] for 4 Days averaging duration. [e{0.8473[ln(Hardness)]+0.884}]×[0.978] for 1 hour averaging duration.

2.3.1 pH and Alkalinity

All water samples collected in the Minago Project were alkaline with a pH ranging from 7.68 to 8.36. All pH measurements met the Manitoba and Canada Water Quality Objectives and Guidelines.The average pH was 8.14 (Table 2-2). Considering all sampling stations and events, the total alkalinity ranged from 87.7 to 192 mg/L (as $CaCO_3$) with an average concentration of 143.86 mg/L (Table 2-2).

2.3.2 Conductivity & Turbidity

For all sampling stations conductivity (EC) ranged from 197 to 348 µS/cm with an average value of 265.4 µS/cm. Turbidity ranged from 0.28 to 20.8 NTU with an average of 7.867 NTU (Table 2-2). Regarding turbidity, Tear II of the The MWQSOG does not set a specific limit but reqire that turbidity Objective be limited to an Equivalent Induced Levels of Change as Calculated From Site-Specific or Regional-Specific Correlation between Total Suspended Sediment and Turbidity (Manitoba Water Stewardship, 2011).

2.3.3 Detectable Parameters and Exceedances of Water Quality Guidelines and Objectives

Some parameters were in levels below the Detection Limits, but many were recorded above the Detection Limits. Among those regulated by the Province of Manitoba, CCEM and MMER, parameters recorded above Detection Limits for Physical Tests include: Conductivity, pH, Total Suspended Solids, Total Dissolved Solids, and Turbidity. Regulated Anions and Nutrients recorded above Detection Limits include: Ammonia (as N), Chloride (Cl), Fluoride (F), Nitrate (as N), Nitrite (as N). Regulated Total Metals recorded above Detectable Limits include: Aluminum, Arsenic, Barium, Boron, Chromium, Copper, Iron, Lead, Magnesium, Manganese, Molybdenum, Nickel, Sodium, Strontium, Uranium, and Zinc. Among regulated Dissolved Metals those recorded above Detection Limits were: Aluminum, Arsenic, Boron, Chromium, Copper, Lead, Molybdenum, Nickel, Strontium, and Uranium.

However, among the foregoing parameters, iron concentrations were recorded at levels that exceeded some regulations, at Drunken Lake, William River, Limestone Bay, and Cross Lake (See Appendix C).

Exceedances of IronConcentrations and its relation to Turbidity

In watercourses sampled within the VNI Minago Project as depicted in Table 2-2, total iron contentrations ranged from 0.038 mg/L to 1.11 mg/L with an average of 0.3816 mg/L. Dissolved iron concenrations ranged between 0.014 mg/L and 0.532 mg/L with an average of 0.1225 mg/L. On the other hand, Canadian Water Quality Guidelines for Protection of Aquatic Life (CCME, 2011) and Manitoba Tear III objectives are both 0.3 mg/L. The maximum and minimum values above, therefore, imply that in some samples total and dissolved iron concentrations exceeded the CCME and Manitoba (Tear III) objectives. In light of absence of strong industrial development (other than exploratory activity) in the vicinity of the Minago Project, the recorded iron

concentrations are likely due to eroded clay and silt particles, either by natural processes or by the current exploratory activities, as currently there are no industrial discharges taking place. Many types of clay and silt contain large amounts of iron. Clays are also readily suspended in water as colloidal particles.

Turbidity results for the watercourses in the Minago Project may also be indicative of the presence of suspended colloidal matter and soil particles in the water. Turbidity ranged from 0.20 to 20.8 NTU, and averaged 7.867 NTU (Table 2-1). These results imply that surface water was not exceedingly turbid for Manitoba (Tear II) and CCEM Water Standards, Objectives and Guidelines for the Protection of Acquatic Life. Also the recorded turbidity is not exceedingly high relative to ambient water turbidity standards and typical occurances. However, stations that had high iron concentrations also had levels of turbidity that were much higher than the average for the ten samples collected. Turbidity levels for these stations were 12.4, 16.1, 16.8, and 20.8 for Drunken Lake, Cross Lake, William River (PIDO), and Limestone Bay, respectively (Appendix C). Thus, while overall current levels of turbidity around Minago Project are of little concern, as a future guide, as per Manitoba Tear II (2011) and CCEM (2011) objectives, suspended matter should not be added to surface water in concentrations exceeding 5 mg/L induced change from background for a background total suspended sediment ≤25 mg/L and an everaging duration of 30days; and 25 mg/L induced change from background for a background total suspended sediment ≤250mg/L and an averaging duration of 1 day; and 10 % induced change from background background total suspended sediment >250 mg/L for an averaging period of 1 day.

2.3.4 Water Quality Results compared to Metal Mining Effluent Regulations (MMER)

Table 2-1 also presents average, median and maximum water quality results for all sampled Prairie Lake stations against limits of the 2002 Metal Mining Effluent (MMER) Regulations. Given that the MMER are end end of pipe limits, it was expected that the MMER limit are higher than the background concentrations. As expected, none of the analyzed water quality parameter exceeded MMER. The range of values recorded for the regulated parameters are as follows (when compared with MMER grab sample limits in brackets): arsenic = 0.0003 - 0.0008mg/L (MMER = 1 mg/L); copper = 0.0008 - 0.0013 (MMER = 0.6mg/L); lead = 0.0001 - 0.0004 mg/L (MMER = 0.4 mg/L); nickel = 0.0001- 0.0014 (MMER = 1 mg/L); zinc = 0.0035 - 0.0039 mg/L (MMER = 1 mg/L); cyanide <0.005 mg/L (MMER = 2 mg/L), Total Suspended Solids (TSS) = 3 - 23 mg/L (MMER = 30 mg/L); and pH = 7.68 - 8.36 (MMER = 6.5 – 9).

3. CONCLUSIONS AND RECOMMENDATIONS

The baseline water quality sampling at Minago Project was undertaken in October 2011 as part of the CMP required under the EAL 2981. Though the project does not discharge any affluent in the receiving environment, for this sampling campaign Tier II and Tier III of Manitoba Water Quality Standards, Objectives and Guidelines (MWQSOG) were applied to assess predevelopment baseline surface water quality conditions. But for Tear III, only surface water guidelines were used, and drinking water guidelines were excluded due as they are not needed for this analysis. For completeness, summaries of Minago Project surface water quality results also list guideline limits for the Canadian Water Quality Guidelines for the Protection of Aquatic Life (CWQGPAL) (CCME, 2011) and the Metal Mining Effluent Regulations (MMER) (Environment Canada, 2002a).

For the analyzed parameters, only iron concentrations were recorded at levels that exceeded Manitoba (Tier III for surface water) and CCEM regulations. Total iron contentrations ranged from 0.038 mg/L to 1.11 mg/L with an average of 0.3816 mg/L. Dissolved iron concenrations ranged between 0.014 mg/L and 0.532 mg/L with an average of 0.1225 mg/L. Some of the recorded iron values exceeded the Canadian Water Quality Guidelines for Protection of Aquatic Life (CCME, 2011) and Manitoba Tear III objectives both of which are 0.3 mg/L. The recorded iron concentrations are likely due to eroded clay and silt particles, either by natural processes or by the current exploratory activities in the property. Caution must be excersized, therefore, to minimize deposition of eroded clays and silts from the site into the watercourses.

All water samples collected in the Minago Project were alkaline with a pH ranging from 7.68 to 8.36. All pH measurements met the Manitoba and Canada Water Quality Objectives and Guidelines.The average pH was 8.14. Considering all sampling stations and events, the total alkalinity ranged from 87.7 to 192 mg/L (as $CaCO_3$) with an average concentration of 143.86 mg/L. For all sampling stations conductivity (EC) ranged from 197 to 348 μS/cm with an average value of 265.4 μS/cm.

With the exception of the reported iron exceedances, the assessed parameters are well within acceptable limits of the Manitoba Water Quality Standards, Objectives, and Guidelines, which are the measurement and assessment criteria for Manitobas's policies and guidelines for the management of the province's water resources (Manitoba Water Stewardship, 2011). The parameters are also well within acceptable guideline limits for the Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCME, 2011) and, therefore, the Metal Mining Effluent Regulations (MMER) (Environment Canada, 2002a).

IMPORTANT INFORMATION AND LIMITATIONS OF THIS REPORT

Basis and Use of the Report: This report has been prepared for the specific site, design objective, development and purpose described to For&Enviro-Consult by the Client. The factual data, interpretations and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location.

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4. REFERENCES

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APPENDICES

Supplemental Material to the

Surface Water Quality Measurements at Minago

APPENDIX A

Field Sampling Protocol

VICTORY NICKEL INC SAMPLING PROTOCOL FOR THE MINAGOP ROJECT, MANITOBA

SURFACE WATER SAMPLING

- Surface water samples were collected at each site from the lakes, rivers and creeks directly into laboratory (ALS) supplied sampling containers or intermediate dedicated sampling containers for transfer into laboratory supplied sampling containers.

- Bottles and caps were triple rinsed with the water prior to sample collection. Field personnel wore disposal nitrile gloves while handling the bottles and collecting samples. Gloves were changed between stations. Water samples were collected by submerging the sample bottles. All grab samples were taken at an approximatedepth of 0.3 m.
-
- The field Quality Assurance/Quality Control (QA/QC) program involved the use of trip and field blanks. The trip and field blanks consisted of samples of deionized water prepared by the lab, taken to and returned to the lab from the field. The trip blank was returned unopened to the lab, while the field blank was opened in the field during sample collection.
-
- Care was taken during sample collection and subsequent handling to ensure that samples did not become contaminated.
-
- Dissolved metals samples required filtering, which was carried out using a vacuum filtration container and hand pump. A 0.45 micron filter paper was used for the filtering of all dissolved metals samples.
-
- Samples requiring preservation were prepared following laboratory instructions and using laboratory supplied preservatives (see Table below).
-
- Samples were stored on ice in laboratory provided coolers until they were shipped to analytical lab in Vancouver. Whenever possible (especially during hot periods) samples were refrigerated until the samples could be packaged up in coolers for transport to the analytical lab in Thunder Bay.
-
- Field parameters consisting of stream pH, conductivity, dissolved oxygen, ORP, Total Dissolved Solids, temperature, and barometric pressure were recorded at the time of sampling.
-
- Samples were submitted to the analytical laboratory following standard chain of custody procedures.

Parameter	Container	Quantity	Prep & Preservative
Total metals	**250 mL plastic**	**1**	**Ultrapure HNO3**
Dissolved metals	**250 mL plastic**	**1**	**Filtered and ultrapure HNO3**
Radium 226	**1L plastic**	**5**	**HNO3**
Total K Nitrogen (TKN)	**250 mL amber glass**	**1**	**H2SO4**
Ammonia Nitrogen[1]	**250 mL amber glass**	**1**	**H2SO4**
Cyanide	**1L plastic**	**1**	**NaOH**
Total Organic Carbon	**125 mL amber glass**	**1**	**HCl**
Diss. Organic Carbon	**125 mL amber glass**	**1**	**Filtered and HCl**
General Parameters	**1L plastic**	**1**	**None**

NOTE: 1 Nitrite and nitrate were determined based on a 1:100 dilution of sample from this bottle to ensure that holding times were not exceeded for these parameters.

APPENDIX B.1

Detection Limits and Quality Control Results fo Total Metals

	Units	DETECTION LIMITS				
Sample		GRAB SAMPLES		TRAVEL BLANK 1	TRAVEL BLANK 2	FIELD BLANK 1
Date Sampled		13 - 14-OCT-11		17-OCT-11	17-OCT-11	13-OCT-11
Sample ID		LBF1	L1074659-1	L1074659-11	L1074659-12	L1074659-13
		DLF1	L1074659-2			
		CLF1	L1074659-3			
		MRMW2X	L1074659-4			
		OCF1	L1074659-5			
		HLF1	L1074659-6			
		WRF1N	L1074659-7			
		OCF2	L1074659-8			
		WRF2	L1074659-9			
		MRF2	L1074659-10			
Total Metals						
Aluminum (Al)-Total	mg/L	0.0030		0.0030	0.0030	0.0030
Antimony (Sb)-Total	mg/L	0.000050		0.000050	0.000050	0.000050
Arsenic (As)-Total	mg/L	0.000030		0.000030	0.000030	0.000030
Barium (Ba)-Total	mg/L	0.000050		0.000050	0.000050	0.000050
Beryllium (Be)-Total	mg/L	0.00020		0.00020	0.00020	0.00020
Bismuth (Bi)-Total	mg/L	0.00050		0.00050	0.00050	0.00050
Boron (B)-Total	mg/L	0.0050		0.0050	0.0050	0.0050
Cadmium (Cd)-Total	mg/L	0.000017		0.000017	0.000017	0.000017
Calcium (Ca)-Total	mg/L	0.020		0.020	0.020	0.020
Chromium (Cr)-Total	mg/L	0.00010		0.00010	0.00010	0.00010
Cobalt (Co)-Total	mg/L	0.00010		0.00010	0.00010	0.00010
Copper (Cu)-Total	mg/L	0.00050		0.00050	0.00050	0.00050
Iron (Fe)-Total	mg/L	0.010		0.010	0.010	0.010
Lead (Pb)-Total	mg/L	0.000050		0.000050	0.000050	0.000050
Lithium (Li)-Total	mg/L	0.0050		0.0050	0.0050	0.0050
Magnesium (Mg)-Total	mg/L	0.0050		0.0050	0.0050	0.0050
Manganese (Mn)-Total	mg/L	0.000050		0.000050	0.000050	0.000050
Mercury (Hg)-Total	mg/L	0.000010		0.000010	0.000010	0.000010
Molybdenum (Mo)-Total	mg/L	0.000050		0.000050	0.000050	0.000050
Nickel (Ni)-Total	mg/L	0.00010		0.00010	0.00010	0.00010
Phosphorus (P)-Total	mg/L	0.30		0.30	0.30	0.30
Potassium (K)-Total	mg/L	0.050		0.050	0.050	0.050
Selenium (Se)-Total	mg/L	0.00010		0.00010	0.00010	0.00010
Silicon (Si)-Total	mg/L	0.050		0.050	0.050	0.050
Silver (Ag)-Total	mg/L	0.000010		0.000010	0.000010	0.000010
Sodium (Na)-Total	mg/L	0.010		0.010	0.010	0.010
Strontium (Sr)-Total	mg/L	0.00010		0.00010	0.00010	0.00010
Thallium (Tl)-Total	mg/L	0.000050		0.000050	0.000050	0.000050
Tin (Sn)-Total	mg/L	0.00010		0.00010	0.00010	0.00010
Titanium (Ti)-Total	mg/L	0.010		0.010	0.010	0.010
Uranium (U)-Total	mg/L	0.000010		0.000010	0.000010	0.000010
Vanadium (V)-Total	mg/L	0.000050		0.000050	0.000050	0.000050
Zinc (Zn)-Total	mg/L	0.0030		0.0030	0.0030	0.0030

APPENDIX B.2

Detection Limits and Quality Control Results for Diss. Metals

	Units	DETECTION LIMITS				
Sample		GRAB SAMPLES		TRAVEL BLANK 1	TRAVEL BLANK 2	FIELD BLANK 1
Date Sampled		14-OCT-11		17-OCT-11	17-OCT-11	13-OCT-11
Sample ID		LBF1	L1074659-1	L1074659-11	L1074659-12	L1074659-13
		DLF1	L1074659-2			
		CLF1	L1074659-3			
		MRMW2X	L1074659-4			
		OCF1	L1074659-5			
		HLF1	L1074659-6			
		WRF1N	L1074659-7			
		OCF2	L1074659-8			
		WRF2	L1074659-9			
		MRF2	L1074659-10			
Total Metals						
Aluminum (Al)-Dissolved	mg/L	0.0030		0.0030	0.0030	0.0030
Antimony (Sb)-Dissolved	mg/L	0.000050		0.000050	0.000050	0.000050
Arsenic (As)-Dissolved	mg/L	0.000030		0.000030	0.000030	0.000030
Barium (Ba)-Dissolved	mg/L	0.000050		0.000050	0.000050	0.000050
Beryllium (Be)-Dissolved	mg/L	0.00020		0.00020	0.00020	0.00020
Bismuth (Bi)-Dissolved	mg/L	0.00050		0.00050	0.00050	0.00050
Boron (B)-Dissolved	mg/L	0.0050		0.0050	0.0050	0.0050
Cadmium (Cd)-Dissolved	mg/L	0.000017		0.000017	0.000017	0.000017
Calcium (Ca)-Dissolved	mg/L	0.020		0.020	0.020	0.020
Chromium (Cr)-Dissolved	mg/L	0.00010		0.00010	0.00010	0.00010
Cobalt (Co)-Dissolved	mg/L	0.00010		0.00010	0.00010	0.00010
Copper (Cu)-Dissolved	mg/L	0.00050		0.00050	0.00050	0.00050
Iron (Fe)-Dissolved	mg/L	0.010		0.010	0.010	0.010
Lead (Pb)-Dissolved	mg/L	0.000050		0.000050	0.000050	0.000050
Lithium (Li)-Dissolved	mg/L	0.0050		0.0050	0.0050	0.0050
Magnesium (Mg)-Dissolved	mg/L	0.0050		0.0050	0.0050	0.0050
Manganese (Mn)-Dissolved	mg/L	0.000050		0.000050	0.000050	0.000050
Mercury (Hg)-Dissolved	mg/L	0.000010		0.000010	0.000010	0.000010
Molybdenum (Mo)-Dissolved	mg/L	0.000050		0.000050	0.000050	0.000050
Nickel (Ni)-Dissolved	mg/L	0.00010		0.00010	0.00010	0.00010
Phosphorus (P)-Dissolved	mg/L	0.30		0.30	0.30	0.30
Potassium (K)-Dissolved	mg/L	0.050		0.050	0.050	0.050
Selenium (Se)-Dissolved	mg/L	0.00010		0.00010	0.00010	0.00010
Silicon (Si)-Dissolved	mg/L	0.050		0.050	0.050	0.050
Silver (Ag)-Dissolved	mg/L	0.000010		0.000010	0.000010	0.000010
Sodium (Na)-Dissolved	mg/L	0.010		0.010	0.010	0.010
Strontium (Sr)-Dissolved	mg/L	0.00010		0.00010	0.00010	0.00010
Thallium (Tl)-Dissolved	mg/L	0.000050		0.000050	0.000050	0.000050
Tin (Sn)-Dissolved	mg/L	0.00010		0.00010	0.00010	0.00010
Titanium (Ti)-Dissolved	mg/L	0.010		0.010	0.010	0.010
Uranium (U)-Dissolved	mg/L	0.000010		0.000010	0.000010	0.000010
Vanadium (V)-Dissolved	mg/L	0.000050		0.000050	0.000050	0.000050
Zinc (Zn)-Dissolved	mg/L	0.0030		0.0030	0.0030	0.0030

APPENDIX B.3

Detection Limits and Quality Control Results for Other Parameters

	Units	DETECTION LIMITS				
Sample		GRAB SAMPLES		TRAVEL BLANK 1	TRAVEL BLANK 2	FIELD BLANK 1
Date Sampled		14-OCT-11		17-OCT-11	17-OCT-11	13-OCT-11
Sample ID		LBF1	L1074659-1	L1074659-11	L1074659-12	L1074659-13
		DLF1	L1074659-2			
		CLF1	L1074659-3			
		MRMW2X	L1074659-4			
		OCF1	L1074659-5			
		HLF1	L1074659-6			
		WRF1N	L1074659-7			
		OCF2	L1074659-8			
		WRF2	L1074659-9			
		MRF2	L1074659-10			
Physical Tests						
Conductivity	uS/cm		2.0			
Hardness (as CaCO3)	mg/L		0.50			
pH	pH		0.10			
Total Suspended Solids	mg/L		1.0			
Total Dissolved Solids	mg/L		3.0			
Turbidity	NTU		0.10			
Anions and Nutrients						
Acidity (as CaCO3)	mg/L		1.0			
Alkalinity, Bicarbonate (as CaCO3)	mg/L		2.0			
Alkalinity, Carbonate (as CaCO3)	mg/L		2.0			
Alkalinity, Hydroxide (as CaCO3)	mg/L		2.0			
Alkalinity, Total (as CaCO3)	mg/L		2.0			
Ammonia (as N)	mg/L		0.0050			
Bromide (Br)	mg/L		0.050			
Chloride (Cl)	mg/L		0.50			
Fluoride (F)	mg/L		0.020			
Nitrate (as N)	mg/L		0.0050			
Nitrite (as N)	mg/L		0.0010			
Total Kjeldahl Nitrogen	mg/L		0.050			
Total Nitrogen	mg/L		0.0025			
Sulfate (SO4)	mg/L		0.50			
Cyanides						
Cyanide, Weak Acid Diss	mg/L		0.0050			

APPENDIX C

October 2011 Results

Table C-1. Overview of Surface Water Quality for Hill Lake, Limestone Bay, Drunken Lake and Cross Lake Water Courses Collected at the Minago Project

	WATER COURSE		Hill Lake	Limestone Bay	Drunken Lake	Cross Lake	Manitoba Water Quality Standards, Objectives (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM, 2002a)
Sample ID	Units	STATIONS	HLF1	LBF1	DLF1	CLF1				
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11				
Time Sampled			11:00	13:30	16:00	12:30				
ALS Sample ID			L1074659-6	L1074659-1	L1074659-2	L1074659-3	TIER II Water	TIER III - Water Quality Guidelines	(CCEM, 2011)	
Matrix			Water	Water	Water	Water	Quality Objectives	Freshwater	(see Footnotes for details)	
		DL								
Physical Tests										
Conductivity	uS/cm	2.0	272	231	184	190	1000 - 1500[9]			
Hardness (as CaCO3)	mg/L	0.50	140	124	89.7	85.8				
pH	pH	0.10	8.14	8.17	8.12	8.12		6.5-9	6.5-9	6.5-9
Total Suspended Solids	mg/L	3.0	3.0	19.8	4.4	8.6	5 – 25 (or 10%) induced change from background[10]	5 – 25 (or 10%) induced change from background	narrative	30
Total Dissolved Solids	mg/L	10	160	149	130	127	500 - 3500[11]			
Turbidity	NTU	0.10	3.31	20.8	12.4	16.1	Equivalent Induced Levels of Change, Calculated From Site- or Regional-Specific Correlation Between Total Suspended Sediment and Turbidity.	Equivalent Induced Levels of Change, Calculated From Site- or Regional-Specific Correlation Between Total Suspended Sediment and Turbidity.	narrative	
Anions and Nutrients										
Acidity (as CaCO3)	mg/L		3.1	2.6	3.1	3.1				
Alkalinity, Bicarbonate (as CaCO3)	mg/L	2.0	147	123	98.8	87.7				
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	2.0	147	123	98.8	87.7				
Ammonia (as N)	mg/L	0.02	0.0187	0.0366	0.0123	0.0106	6.34641[12]	6.34641		
Bromide (Br)	mg/L	0.05	<0.050	<0.050	<0.050	<0.050				

[9] Dependent on the type of ground and surface water use

[10] Dependent on background TSS (5 mg/L for Background Total SuspendedSediment ≤25 mg/L (30-Day, 3 Year) or 25 mg/LBackground Total Suspended Sediment ≤250mg/L (1-Day, 3-Year) or 10% Background Total Suspended Sediment >250 mg/L (1-Day, 3-Year) of induced change from background).

[11] Dependent on the type of surface and ground water use

[12] At average pH of 8.14 and 9.3 deg. C. averaged from the ten sampled stations

Table C-1. (cont'd) Overview of Surface Water Quality for Hill Lake, Limestone Bay, Drunken Lake and Cross Lake Water Courses at the Minago Project

	WATER COURSE		Hill Lake	Limestone Bay	Drunken Lake	Cross Lake	Manitoba Water Quality Standards, Objectives (Manitoba Water Stewardship, 2011)			Canadian Water Quality Guidelines for the Protection of Aquatic Life	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM, 2002a)
Sample ID	Units	STATIONS	HLF1	LBF1	DLF1	CLF1					
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11					
Time Sampled			11:00	13:30	16:00	12:30					
ALS Sample ID			L1074659-6	L1074659-1	L1074659-2	L1074659-3	TIER II Water	TIER III - Water Quality Guidelines		(CCEM, 2011)	
Matrix			Water	Water	Water	Water	Quality Objectives		Freshwater	(see Footnotes for details)	
		DL									
Chloride (Cl)	mg/L	0.50	1.48	1.59	2.37	4.54				640 (short-term), 120 (long-term)	
Fluoride (F)	mg/L	0.020	0.072	0.075	0.063	0.071			0.00012 (inorg. fluorides)	0.12	
Nitrate-N plus Nitrite-N	mg/L	0.0051		0.009							
Nitrate (as N)	mg/L	0.0050	<0.0050	0.0058	0.0053	<0.0050	10		13	13	
Nitrite (as N)	mg/L	0.0010	0.0012	0.0028	<0.0010	<0.0010			0.06	0.06 (long-term)	
Total Kjeldahl Nitrogen	mg/L		0.663	1.02	0.814	0.708	10		13	13	
Total Nitrogen	mg/L		0.664	1.02	0.819	0.708					
Sulfate (SO4)	mg/L	0.50	0.83	1.09	2.60	6.02					
Cyanides											
Cyanide, Weak Acid Diss	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	0.0052 [c] 0.022 [d]		0.0052 [c] 0.022 [d]	5 (as free CN)	2
Total Metals											
Aluminum (Al)-Total	mg/L	0.0030	0.133	0.941	0.642	0.792			0.005 (pH<6.5) - 0.1 (pH ≥6.5)	0.005 (pH<6.5) - 0.1 (pH ≥6.5)	
Antimony (Sb)-Total	mg/L	0.000050	<0.000050	<0.000050	<0.000050	<0.000050					
Arsenic (As)-Total	mg/L	0.000030	0.000668	0.000741	0.000759	0.000706	0.15 [c] 0.34 [d]		Tier II,:0.15 mg/L (4-Day, 3-Year) [A]	0.005	1
Barium (Ba)-Total	mg/L	0.000050	0.0113	0.0207	0.0147	0.0179					
Beryllium (Be)-Total	mg/L	0.00020	<0.00020	<0.00020	<0.00020	<0.00020					
Bismuth (Bi)-Total	mg/L	0.00050	<0.00050	<0.00050	<0.00050	<0.00050					

Table C-1. (cont'd) Overview of Surface Water Quality for Hill Lake, Limestone Bay, Drunken Lake and Cross Lake Water Courses at the Minago Project

	WATER COURSE		Hill Lake	Limestone Bay	Drunken Lake	Cross Lake	Manitoba Water Quality Standards, Objectives (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM, 2002a)
Sample ID	Units	STATIONS	HLF1	LBF1	DLF1	CLF1				
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11				
Time Sampled			11:00	13:30	16:00	12:30				
ALS Sample ID			L1074659-6	L1074659-1	L1074659-2	L1074659-3	TIER II Water	TIER III - Water Quality Guidelines	(CCEM, 2011)	
Matrix			Water	Water	Water	Water	Quality Objectives	Freshwater	(see Footnotes for details)	
		DL								
Boron (B)-Total	mg/L	0.0050	0.0172	0.0120	0.0128	0.0137		29 (short-term); 1.5 long-term		
Cadmium (Cd)-Total	mg/L	0.000017	<0.000017	<0.000017	<0.000017	<0.000017	0.000309 [c] 0.002774 [d] [13]	0.000309 [c] 0.002774 [d] [14]	0.00004395	
Calcium (Ca)-Total	mg/L	0.020	33.3	23.0	22.9	21.8				
Chromium (Cr)-Total	mg/L	0.00010	0.00036	0.00194	0.00102	0.00110	0.097069 (Cr III) [c] 0.74623 (Cr III) [d] 0.011 (Cr VI)[c] 0.016 (Cr VI)[d]	0.097069 (Cr III) [c] 0.74623 (Cr III) [d] 0.011 (Cr VI)[c] 0.016 (Cr VI)[d]	0.001 (hexavalent), 0.0089 (trivalent)	
Cobalt (Co)-Total	mg/L	0.00010	0.00011	0.00047	0.00021	0.00022				
Copper (Cu)-Total	mg/L	0.00050	<0.00050	0.00102	0.00110	0.00132	0.011868 [c] 0.018331[d]	0.011868 [c] 0.018331[d]	0.003133627	0.6
Iron (Fe)-Total	mg/L	0.010	0.203	1.11	**0.585**	**0.595**			0.3	
Lead (Pb)-Total	mg/L	0.000050	0.000067	0.000387	0.000244	0.000337	0.003596 [c] 0.092268 [d]	0.003596 [c] 0.092268 [d]	0.004839287	0.4
Lithium (Li)-Total	mg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050				
Magnesium (Mg)-Total	mg/L	0.0050	14.3	16.4	7.80	7.00				
Manganese (Mn)-Total	mg/L	0.000050	0.0491	0.0394	0.0189	0.0133				
Mercury (Hg)-Total	mg/L	0.000010	<0.000010	<0.000010	<0.000010	<0.000010		0.000026 (inorg.)	0.026	

[13] This and all subsequent Hardness depended values were calculated using a hardness of 139.02 mg/L average hadness as CaCO averaged from the ten sampleld stations

[14] This and all subsequent Hardness depended values were calculated using a hardness of 139.02 mg/L average hadness as CaCO averaged from the ten sampleld stations

Table C-1. (cont'd) Overview of Surface Water Quality for Hill Lake, Limestone Bay, Drunken Lake and Cross Lake Water Courses at the Minago Project

	WATER COURSE		Hill Lake	Limestone Bay	Drunken Lake	Cross Lake	Manitoba Water Quality Standards, Objectives (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM, 2002a)
Sample ID	Units	STATIONS	HLF1	LBF1	DLF1	CLF1				
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11				
Time Sampled			11:00	13:30	16:00	12:30				
ALS Sample ID			L1074659-6	L1074659-1	L1074659-2	L1074659-3	TIER II Water	TIER III - Water Quality Guidelines	(CCEM, 2011)	
Matrix			Water	Water	Water	Water	Quality Objectives	Freshwater	(see Footnotes for details)	
		DL								
Molybdenum (Mo)-Total	mg/L	0.000050	0.000066	0.000074	0.000108	0.000186		0.073	0.073	
Nickel (Ni)-Total	mg/L	0.00010	0.00055	0.00144	0.00094	0.00092	0.068723 [c] 0.618737 [d]		0.122769216	1
Phosphorus (P)-Total	mg/L	0.30	<0.30	<0.30	<0.30	<0.30			narrative [e]	
Potassium (K)-Total	mg/L	0.050	1.01	1.01	1.10	1.33				
Selenium (Se)-Total	mg/L	0.00010	<0.00010	<0.00010	<0.00010	<0.00010		0.001	0.001	1
Silicon (Si)-Total	mg/L	0.050	4.73	6.12	4.44	4.18				
Silver (Ag)-Total	mg/L	0.000010	<0.000010	<0.000010	<0.000010	<0.000010		0.0001	0.0001	0.1
Sodium (Na)-Total	mg/L	0.010	4.61	2.91	4.34	5.95				
Strontium (Sr)-Total	mg/L	0.00010	0.0592	0.0358	0.0473	0.0535				
Thallium (Tl)-Total	mg/L	0.000050	<0.000050	<0.000050	<0.000050	<0.000050		0.0008	0.0008	
Tin (Sn)-Total	mg/L	0.00010	<0.00010	<0.00010	<0.00010	<0.00010				
Titanium (Ti)-Total	mg/L	0.010	<0.010	0.044	0.021	0.023				
Uranium (U)-Total	mg/L	0.000010	0.000089	0.000168	0.000153	0.000200		0.033 (short-term); 0.015 (long-term)	0.033 (short-term); 0.015 (long-term)	
Vanadium (V)-Total	mg/L	0.000050	0.000399	0.00193	0.00114	0.00120				
Zinc (Zn)-Total	mg/L	0.0030	<0.0030	0.0039	<0.0030	<0.0030	0.068723 [c] 0.618737 [d]	0.068723 [c] 0.618737 [d]	0.03	1

Table C-1. (cont'd) Overview of Surface Water Quality for Hill Lake, Limestone Bay, Drunken Lake and Cross Lake Water Courses at the Minago Project

	WATER COURSE		Hill Lake	Limestone Bay	Drunken Lake	Cross Lake	Manitoba Water Quality Standards, Objectives (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM, 2002a)
Sample ID	Units	STATIONS	HLF1	LBF1	DLF1	CLF1				
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11				
Time Sampled			11:00	13:30	16:00	12:30				
ALS Sample ID			L1074659-6	L1074659-1	L1074659-2	L1074659-3	TIER II Water	TIER III - Water Quality Guidelines	(CCEM, 2011)	
Matrix			Water	Water	Water	Water	Quality Objectives	Freshwater	(see Footnotes for details)	
		DL								
Dissolved Metals										
Aluminum (Al)-Dissolved	mg/L	0.0030	0.0099	0.461	0.175	0.222		0.005 (pH<6.5) - 0.1 (pH ≥6.5)		
Antimony (Sb)-Dissolved	mg/L	0.000050	<0.000050	<0.000050	<0.000050	<0.000050				
Arsenic (As)-Dissolved	mg/L	0.000030	0.000659	0.000702	0.000718	0.000687	0.15 [c] 0.34 [d]	Tier II,:0.15 mg/L (4-Day, 3-Year) [A]		
Barium (Ba)-Dissolved	mg/L	0.000050	0.0107	0.0167	0.0109	0.0132				
Beryllium (Be)-Dissolved	mg/L	0.00020	<0.00020	<0.00020	<0.00020	<0.00020				
Bismuth (Bi)-Dissolved	mg/L	0.00050	<0.00050	<0.00050	<0.00050	<0.00050				
Boron (B)-Dissolved	mg/L	0.0050	0.0140	0.0077	0.0087	0.0101		29 (short-term); 1.5 long-term		
Cadmium (Cd)-Dissolved	mg/L	0.000017	<0.000017	<0.000017	<0.000017	<0.000017	0.000309 [c] 0.002774 [d] [15]	.000309 [c] 0.002774 [d] [16]	0.00004395	
Calcium (Ca)-Dissolved	mg/L	0.020	32.9	22.8	23.1	22.5				
Chromium (Cr)-Dissolved	mg/L	0.00010	<0.00010	0.00069	0.00021	0.00025	0.097069 (Cr III) [c] 0.74623 (Cr III) [d] 0.011 (Cr VI)[c] 0.016 (Cr VI)[d]		0.001 (hexavalent), 0.0089 (trivalent)	

[15] This and all subsequent Hardness depended values were calculated using a hardness of 139.02 mg/L average hadness as CaCO averaged from the ten sampleld stations

[16] This and all subsequent Hardness depended values were calculated using a hardness of 139.02 mg/L average hadness as CaCO averaged from the ten sampleld stations

Table C-1. (cont'd) Overview of Surface Water Quality for Hill Lake, Limestone Bay, Drunken Lake and Cross Lake Water Courses at the Minago Project

	WATER COURSE		Hill Lake	Limestone Bay	Drunken Lake	Cross Lake	Manitoba Water Quality Standards, Objectives (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM, 2002a)
Sample ID	Units	STATIONS	HLF1	LBF1	DLF1	CLF1				
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11				
Time Sampled			11:00	13:30	16:00	12:30				
ALS Sample ID			L1074659-6	L1074659-1	L1074659-2	L1074659-3	TIER II Water	TIER III - Water Quality Guidelines	(CCEM, 2011)	
Matrix			Water	Water	Water	Water	Quality Objectives	Freshwater	(see Footnotes for details)	
		DL								
Cobalt (Co)-Dissolved	mg/L	0.00010	<0.00010	0.00025	<0.00010	<0.00010				
Copper (Cu)-Dissolved	mg/L	0.00050	0.00052	0.00061	0.00084	0.00095	0.011868 [c] 0.018331[d]	0.011868 [c] 0.018331[d]	0.003133627	0.6
Iron (Fe)-Dissolved	mg/L	0.010	0.068	0.532	0.198	0.185		0.3	0.3	
Lead (Pb)-Dissolved	mg/L	0.000050	0.000057	0.000200	0.000092	0.000099	0.003596 [c] 0.092268 [d]	0.003596 [c] 0.092268 [d]	0.004839287	0.4
Lithium (Li)-Dissolved	mg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050				
Magnesium (Mg)-Dissolved	mg/L	0.0050	14.1	16.4	7.76	7.21				
Manganese (Mn)-Dissolved	mg/L	0.000050	0.0404	0.0275	0.00274	0.00174				
Mercury (Hg)-Dissolved	mg/L	0.000010	<0.000010	<0.000010	<0.000010	<0.000010		0.000026 (inorg.)	0.026	
Molybdenum (Mo)-Dissolved	mg/L	0.000050	0.000057	<0.000050	0.000093	0.000166		0.073	0.073	
Nickel (Ni)-Dissolved	mg/L	0.00010	0.00050	0.00081	0.00077	0.00058	0.068723 [c] 0.618737 [d]	0.068723 [c] 0.618737 [d]	0.122769216	1
Phosphorus (P)-Dissolved	mg/L	0.30	<0.30	<0.30	<0.30	<0.30			narrative [e]	
Potassium (K)-Dissolved	mg/L	0.050	0.975	0.851	0.966	1.22				
Selenium (Se)-Dissolved	mg/L	0.00010	<0.00010	<0.00010	<0.00010	<0.00010		0.001	0.001	1
Silicon (Si)-Dissolved	mg/L	0.050	4.41	5.47	3.49	3.20				
Silver (Ag)-Dissolved	mg/L	0.000010	<0.000010	<0.000010	<0.000010	<0.000010		0.0001	0.0001	0.1
Sodium (Na)-Dissolved	mg/L	0.010	4.53	2.91	4.37	6.22				

Table C-1. (cont'd) Overview of Surface Water Quality for Hill Lake, Limestone Bay, Drunken Lake and Cross Lake Water Courses at the Minago Project

	WATER COURSE		Hill Lake	Limestone Bay	Drunken Lake	Cross Lake	Manitoba Water Quality Standards, Objectives (Manitoba Water Stewardship, 2011)			Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011)	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM, 2002a)
Sample ID	Units	STATIONS	HLF1	LBF1	DLF1	CLF1					
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11					
Time Sampled			11:00	13:30	16:00	12:30					
ALS Sample ID			L1074659-6	L1074659-1	L1074659-2	L1074659-3	TIER II Water	TIER III - Water Quality Guidelines			
Matrix			Water	Water	Water	Water	Quality Objectives		Freshwater	(see Footnotes for details)	
		DL									
Strontium (Sr)-Dissolved	mg/L	0.00010	0.0575	0.0338	0.0461	0.0532					
Thallium (Tl)-Dissolved	mg/L	0.000050	<0.000050	<0.000050	<0.000050	<0.000050			0.0008	0.0008	
Tin (Sn)-Dissolved	mg/L	0.00010	<0.00010	<0.00010	0.00014	0.00037					
Titanium (Ti)-Dissolved	mg/L	0.010	<0.010	0.024	<0.010	<0.010					
Uranium (U)-Dissolved	mg/L	0.000010	0.000082	0.000147	0.000140	0.000187			0.033 (short-term); 0.015 (long-term)	0.033 (short-term); 0.015 (long-term)	
Vanadium (V)-Dissolved	mg/L	0.000050	0.000208	0.000954	0.000509	0.000562					
Zinc (Zn)-Dissolved	mg/L	0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.068723 [c] 0.618737 [d]		0.068723 [c] 0.618737 [d]	0.03	1

Table C-2. Overview of Surface Water Quality for Minago River, Oakley Creek, and William River at the Minago Project

		WATER COURSES	Minago River		Oackley Creek		William River		Manitoba Water Quality Standards, Objectives and Guidelines (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011) (see FootNotes for details)	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM 2002a)
Sample ID	Units	STATIONS	MRMW2X	MRF2	OCF1	OCF2	WRF1N	WRF2				
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11				
Time Sampled			17:30	11:30	12:40	16:00	17:00	16:20				
ALS Sample ID			L1074659-4	L1074659-10	L1074659-5	L1074659-8	L1074659-7	L1074659-9	TIER II Water	TIER III - Water Quality Guidelines		
Matrix			Water	Water	Water	Water	Water	Water	Quality Objectives	Freshwater		
		DL										
Physical Tests												
Conductivity	uS/cm	2.0	336	274	300	340	348	179	1000 - 1500[17]			
Hardness (as CaCO3)	mg/L	0.50	181	141	165	181	190	92.7				
pH	pH	0.10	8.26	8.14	8.26	8.22	8.36	7.68		6.5-9	6.5-9	6.5-9
Total Suspended Solids	mg/L	3.0	5.6	<1.0	<1.0	<1.0	4.2	23.0	5 – 25 (or 10%) induced change from background[18]	5 – 25 (or 10%) induced change from background	narrative	30
Total Dissolved Solids	mg/L	10	183	192	172	191	171	121	500 - 3500[19]			
Turbidity	NTU	0.10	3.95	1.03	0.55	0.28	3.45	16.8	Equivalent Induced Levels of Change, Calculated From Site- or Regional-Specific Correlation Between Total Suspended Sediment and Turbidity.	Equivalent Induced Levels of Change, Calculated From Site- or Regional-Specific Correlation Between Total Suspended Sediment and Turbidity.	narrative	

[17] Dependent on the type of ground and surface water use

[18] Dependent on background TSS (5 mg/L for Background Total SuspendedSediment ≤25 mg/L (30-Day, 3 Year) or 25 mg/LBackground Total Suspended Sediment ≤250mg/L (1-Day, 3-Year) or 10% Background Total Suspended Sediment >250 mg/L (1-Day, 3-Year) of induced change from background).

[19] Dependent on the type of surface and ground water use

Table C-2. (cont'd) Overview of Surface Water Quality for Minago River, Oakley Creek, and William River at the Minago Project

		WATER COURSES	Minago River		Oackley Creek		William River		Manitoba Water Quality Standards, Objectives and Guidelines (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011) (see FootNotes for details)	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM 2002a)
Sample ID	Units	STATIONS	MRMW2X	MRF2	OCF1	OCF2	WRF1N	WRF2				
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11				
Time Sampled			17:30	11:30	12:40	16:00	17:00	16:20				
ALS Sample ID			L1074659-4	L1074659-10	L1074659-5	L1074659-8	L1074659-7	L1074659-9	TIER II Water	TIER III - Water Quality Guidelines		
Matrix			Water	Water	Water	Water	Water	Water	Quality Objectives	Freshwater		
		DL										
Anions and Nutrients												
Acidity (as CaCO3)	mg/L		1.4	3.1	1.4	2.0	<1.0	5.5				
Alkalinity, Bicarbonate (as CaCO3)	mg/L	2.0	192	148	163	191	185	98.1				
Alkalinity, Carbonate (as CaCO3)	mg/L	2.0	<2.0	<2.0	<2.0	<2.0	5.3	<2.0				
Alkalinity, Hydroxide (as CaCO3)	mg/L	2.0	<2.0	<2.0	<2.0	<2.0	<1.0	<2.0				
Alkalinity, Total (as CaCO3)	mg/L	2.0	192	148	163	191	190	98.1				
Ammonia (as N)	mg/L	0.02	0.0105	0.0125	0.0103	0.0102	0.0169	0.0144	6.34641[20]		6.34641	
Bromide (Br)	mg/L	0.05	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050				
Chloride (Cl)	mg/L	0.50	1.37	1.27	1.38	1.17	1.39	2.00			640 (short-term), 120 (long-term)	
Fluoride (F)	mg/L	0.020	0.082	0.076	0.077	0.088	0.118	0.062		0.00012 (inorg. fluorides)	0.12	
Nitrate-N plus Nitrite-N	mg/L	0.0051							10			
Nitrate (as N)	mg/L	0.0050	0.0099	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	10	13	13	
Nitrite (as N)	mg/L	0.0010	<0.0010	<0.0010	0.0011	<0.0010	<0.0010	<0.0010		0.06	0.06 (long-term)	

[20] At average pH of 8.14 and 9.3 deg. C. averaged from the ten sampled stations

Table C-2. (cont'd) Overview of Surface Water Quality for Minago River, Oakley Creek, and William River at the Minago Project

		WATER COURSES	Minago River		Oackley Creek		William River		Manitoba Water Quality Standards, Objectives and Guidelines (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011) (see FootNotes for details)	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM 2002a)
Sample ID	Units	STATIONS	MRMW2X	MRF2	OCF1	OCF2	WRF1N	WRF2				
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11				
Time Sampled			17:30	11:30	12:40	16:00	17:00	16:20				
ALS Sample ID			L1074659-4	L1074659-10	L1074659-5	L1074659-8	L1074659-7	L1074659-9	TIER II Water	TIER III - Water Quality Guidelines		
Matrix			Water	Water	Water	Water	Water	Water	Quality Objectives	Freshwater		
		DL										
Total Kjeldahl Nitrogen	mg/L		0.563	0.615	0.466	0.418	0.551	0.634				
Total Nitrogen	mg/L		0.573	0.615	0.467	0.418	0.551	0.634				
Sulfate (SO4)	mg/L	0.50	0.68	0.71	1.32	1.96	3.38	<0.50				
Cyanides												
Cyanide, Weak Acid Diss	mg/L	0.005	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0052 [c] 0.022 [d]	0.0052 c 0.022 d	5 (as free CN)	2
Total Metals												
Aluminum (Al)-Total	mg/L	0.0030	0.158	0.0513	0.0192	0.0063	0.115	0.783		0.005 (pH<6.5) - 0.1 (pH ≥6.5)	0.005 (pH<6.5) - 0.1 (pH ≥6.5)	
Antimony (Sb)-Total	mg/L	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050				
Arsenic (As)-Total	mg/L	0.000030	0.000542	0.000676	0.000331	0.000276	0.000525	0.000655	0.15 [c] 0.34 [d]	Tier II,:0.15 mg/L (4-Day, 3-Year) [A]	0.005	1
Barium (Ba)-Total	mg/L	0.000050	0.0210	0.0129	0.0181	0.0204	0.0280	0.0144				
Beryllium (Be)-Total	mg/L	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020				
Bismuth (Bi)-Total	mg/L	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050				

Table C-2. (cont'd) Overview of Surface Water Quality for Minago River, Oakley Creek, and William River at the Minago Project

		WATER COURSES	Minago River		Oackley Creek		William River		Manitoba Water Quality Standards, Objectives and Guidelines (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011) (see FootNotes for details)	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM 2002a)
Sample ID	Units	STATIONS	MRMW2X	MRF2	OCF1	OCF2	WRF1N	WRF2				
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11				
Time Sampled			17:30	11:30	12:40	16:00	17:00	16:20				
ALS Sample ID			L1074659-4	L1074659-10	L1074659-5	L1074659-8	L1074659-7	L1074659-9	TIER II Water	TIER III - Water Quality Guidelines		
Matrix			Water	Water	Water	Water	Water	Water	Quality Objectives	Freshwater		
		DL										
Boron (B)-Total	mg/L	0.0050	0.0144	0.0155	0.0110	0.0106	0.0192	0.0098		29 (short-term); 1.5 long-term		
Cadmium (Cd)-Total	mg/L	0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017	0.000309 [c] 0.002774 [d] [21]	0.000309 [c] 0.002774 [d] [22]	0.000043 5	
Calcium (Ca)-Total	mg/L	0.020	41.0	33.7	36.4	40.0	24.5	20.4				
Chromium (Cr)-Total	mg/L	0.00010	0.00047	0.00022	0.00024	0.00018	0.00029	0.00153	0.097069 (Cr III) [c] 0.74623 (Cr III) [d] 0.011 (Cr VI)[c] 0.016 (Cr VI)[d]	0.097069 (Cr III) [c] 0.74623 (Cr III) [d] 0.011 (Cr VI)[c] 0.016 (Cr VI)[d]	0.001 (hexavalent), 0.0089 (trivalent)	
Cobalt (Co)-Total	mg/L	0.00010	0.00013	<0.00010	<0.00010	<0.00010	<0.00010	0.00037				
Copper (Cu)-Total	mg/L	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00081	0.011868 [c] 0.018331[d]	0.011868 [c] 0.018331[d]	0.003133627	0.6
Iron (Fe)-Total	mg/L	0.010	0.222	0.081	0.046	0.038	0.116	**0.820**			0.3	
Lead (Pb)-Total	mg/L	0.000050	0.000083	<0.000050	<0.000050	<0.000050	0.000084	0.000343	0.003596 [c] 0.092268 [d]	0.003596 [c] 0.092268 [d]	0.004392	0.4
Lithium (Li)-Total	mg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050				

[21] This and all subsequent Hardness depended values were calculated using a hardness of 139.02 mg/L average hadness as CaCO averaged from the ten sampleld stations

[22] This and all subsequent Hardness depended values were calculated using a hardness of 139.02 mg/L average hadness as CaCO averaged from the ten sampleld stations

Table C-2. (cont'd) Overview of Surface Water Quality for Minago River, Oakley Creek, and William River at the Minago Project

		WATER COURSES	Minago River		Oackley Creek		William River		Manitoba Water Quality Standards, Objectives and Guidelines (Manitoba Water Stewardship, 2011)			Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011) (see FootNotes for details)	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM 2002a)
Sample ID	Units	**STATIONS**	**MRMW2X**	**MRF2**	**OCF1**	**OCF2**	**WRF1N**	**WRF2**					
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11					
Time Sampled			17:30	11:30	12:40	16:00	17:00	16:20					
ALS Sample ID			L1074659-4	L1074659-10	L1074659-5	L1074659-8	L1074659-7	L1074659-9	**TIER II Water**		**TIER III - Water Quality Guidelines**		
Matrix			Water	Water	Water	Water	Water	Water	**Quality Objectives**		**Freshwater**		
		DL											
Magnesium (Mg)-Total	mg/L	0.0050	20.8	14.8	19.2	20.9	30.4	11.1					
Manganese (Mn)-Total	mg/L	0.000050	0.0228	0.00690	0.00563	0.00439	0.00658	0.0394					
Mercury (Hg)-Total	mg/L	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			0.000026 (inorg.)	0.026	
											0.073	0.073	
									0.068723 [c] 0.618737 [d]		0.068723 c 0.618737 d	0.122769216	1
Molybdenum (Mo)-Total	mg/L	0.000050	0.000092	0.000062	0.000070	0.000073	0.000126	<0.000050				narrative [e]	
Nickel (Ni)-Total	mg/L	0.00010	0.00055	0.00050	0.00019	0.00014	0.00025	0.00116					
Phosphorus (P)-Total	mg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30			0.001	0.001	1
Potassium (K)-Total	mg/L	0.050	1.06	1.00	1.01	1.20	1.00	1.04					
Selenium (Se)-Total	mg/L	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			0.0001	0.0001	0.1
Silicon (Si)-Total	mg/L	0.050	4.86	5.07	4.19	4.08	3.64	6.05			0.000026 (inorg.)	0.026	
Silver (Ag)-Total	mg/L	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			0.073	0.073	
Sodium (Na)-Total	mg/L	0.010	3.48	4.78	2.37	2.30	2.05	3.53					

Table C-2. (cont'd) Overview of Surface Water Quality for Minago River, Oakley Creek, and William River at the Minago Project

		WATER COURSES	Minago River		Oackley Creek		William River		Manitoba Water Quality Standards, Objectives and Guidelines (Manitoba Water Stewardship, 2011)			Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011) (see FootNotes for details)	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM 2002a)
Sample ID	Units	**STATIONS**	**MRMW2X**	**MRF2**	**OCF1**	**OCF2**	**WRF1N**	**WRF2**					
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11					
Time Sampled			17:30	11:30	12:40	16:00	17:00	16:20					
ALS Sample ID			L1074659-4	L1074659-10	L1074659-5	L1074659-8	L1074659-7	L1074659-9	**TIER II Water**		**TIER III - Water Quality Guidelines**		
Matrix			Water	Water	Water	Water	Water	Water	**Quality Objectives**		**Freshwater**		
		DL											
Strontium (Sr)-Total	mg/L	0.00010	0.0563	0.0559	0.0414	0.0449	0.0307	0.0340					
Thallium (Tl)-Total	mg/L	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			0.0008	0.0008	
Tin (Sn)-Total	mg/L	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010					
Titanium (Ti)-Total	mg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.038					
Uranium (U)-Total	mg/L	0.000010	0.000193	0.000083	0.000095	0.000120	0.000300	0.000084			0.033 (short-term); 0.015 (long-term)	0.033 (short-term); 0.015 (long-term)	
Vanadium (V)-Total	mg/L	0.000050	0.000477	0.000275	0.000097	0.000061	0.000405	0.00149					
Zinc (Zn)-Total	mg/L	0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0035	0.068723 [c] 0.618737 [d]		0.068723 c 0.618737 [d]	0.03	1
Dissolved Metals													
Aluminum (Al)-Dissolved	mg/L	0.0030	0.0057	0.0047	<0.0030	<0.0030	<0.0030	0.0486			0.005 (pH<6.5) - 0.1 (pH ≥6.5)		
Antimony (Sb)-Dissolved	mg/L	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050					
Arsenic (As)-Dissolved	mg/L	0.000030	0.000551	0.000671	0.000353	0.000289	0.000564	0.000624	0.15 [c] 0.34 [d]		Tier II,:0.15 mg/L (4-Day, 3-Year) [A]		

Table C-2. (cont'd) Overview of Surface Water Quality for Minago River, Oakley Creek, and William River at the Minago Project

		WATER COURSES	Minago River		Oackley Creek		William River		Manitoba Water Quality Standards, Objectives and Guidelines (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011) (see FootNotes for details)	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM 2002a)
Sample ID	Units	STATIONS	MRMW2X	MRF2	OCF1	OCF2	WRF1N	WRF2				
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11				
Time Sampled			17:30	11:30	12:40	16:00	17:00	16:20				
ALS Sample ID			L1074659-4	L1074659-10	L1074659-5	L1074659-8	L1074659-7	L1074659-9	TIER II Water	TIER III - Water Quality Guidelines		
Matrix			Water	Water	Water	Water	Water	Water	Quality Objectives	Freshwater		
		DL										
Barium (Ba)-Dissolved	mg/L	0.000050	0.0193	0.0125	0.0181	0.0205	0.0281	0.00920				
Beryllium (Be)-Dissolved	mg/L	0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020				
Bismuth (Bi)-Dissolved	mg/L	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050				
Boron (B)-Dissolved	mg/L	0.0050	0.0102	0.0122	0.0077	0.0077	0.0166	0.0064		29 (short-term); 1.5 long-term		
Cadmium (Cd)-Dissolved	mg/L	0.000017	<0.000017	<0.000017	<0.000017	0.000026	<0.000017	0.000017	0.000309 [c] 0.002774 [d 23]	.000309 [c] 0.002774 [d 24]	0.00004395	
Calcium (Ca)-Dissolved	mg/L	0.020	39.3	32.8	35.4	39.0	25.1	19.6				
Chromium (Cr)-Dissolved	mg/L	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.097069 (Cr III) [c] 0.74623 (Cr III) [d] 0.011 (Cr VI)[c] 0.016 (Cr VI)[d]		0.001 (hexavalent), 0.0089 (trivalent)	
Cobalt (Co)-Dissolved	mg/L	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010				

[23] This and all subsequent Hardness depended values were calculated using a hardness of 139.02 mg/L average hadness as CaCO averaged from the ten sampleld stations

[24] This and all subsequent Hardness depended values were calculated using a hardness of 139.02 mg/L average hadness as CaCO averaged from the ten sampleld stations

Table C-2. (cont'd) Overview of Surface Water Quality for Minago River, Oakley Creek, and William River at the Minago Project

		WATER COURSES	Minago River		Oackley Creek		William River		Manitoba Water Quality Standards, Objectives and Guidelines (Manitoba Water Stewardship, 2011)			Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011) (see FootNotes for details)	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM 2002a)
Sample ID	Units	STATIONS	MRMW2X	MRF2	OCF1	OCF2	WRF1N	WRF2					
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11					
Time Sampled			17:30	11:30	12:40	16:00	17:00	16:20					
ALS Sample ID			L1074659-4	L1074659-10	L1074659-5	L1074659-8	L1074659-7	L1074659-9	TIER II Water		TIER III - Water Quality Guidelines		
Matrix			Water	Water	Water	Water	Water	Water	Quality Objectives		Freshwater		
		DL											
Copper (Cu)-Dissolved	mg/L	0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.011868 [c] 0.018331[d]		0.011868 c 0.018331d	0.003133627	0.6
Iron (Fe)-Dissolved	mg/L	0.010	0.052	0.038	0.029	0.027	0.014	0.082			0.3	0.3	
Lead (Pb)-Dissolved	mg/L	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.003596 c 0.092268 [d]		0.003596 c 0.092268 d	0.004839287	0.4
Lithium (Li)-Dissolved	mg/L	0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050					
Magnesium (Mg)-Dissolved	mg/L	0.0050	20.1	14.3	18.6	20.4	31.0	10.6					
Manganese (Mn)-Dissolved	mg/L	0.000050	0.00695	0.00464	0.00410	0.00215	0.00250	0.0100					
Mercury (Hg)-Dissolved	mg/L	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			0.000026 (inorg.)	0.026	
Molybdenum (Mo)-Dissolved	mg/L	0.000050	0.000079	0.000055	0.000056	0.000061	0.000125	<0.000050			0.073	0.073	
Nickel (Ni)-Dissolved	mg/L	0.00010	0.00042	0.00052	0.00021	0.00021	0.00020	0.00031	0.068723 [c] 0.618737 [d]		0.068723 [c] 0.618737 [d]	0.122769216	1

Table C-2. (cont'd) Overview of Surface Water Quality for Minago River, Oakley Creek, and William River at the Minago Project

		WATER COURSES	Minago River		Oackley Creek		William River		Manitoba Water Quality Standards, Objectives and Guidelines (Manitoba Water Stewardship, 2011)			Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011) (see FootNotes for details)	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM 2002a)
Sample ID	Units	STATIONS	MRMW2X	MRF2	OCF1	OCF2	WRF1N	WRF2					
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11					
Time Sampled			17:30	11:30	12:40	16:00	17:00	16:20					
ALS Sample ID			L1074659-4	L1074659-10	L1074659-5	L1074659-8	L1074659-7	L1074659-9	TIER II Water		TIER III - Water Quality Guidelines		
Matrix			Water	Water	Water	Water	Water	Water	Quality Objectives		Freshwater		
		DL											
Phosphorus (P)-Dissolved	mg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30				narrative [e]	
Potassium (K)-Dissolved	mg/L	0.050	0.977	0.976	1.00	1.17	0.990	0.826					
Selenium (Se)-Dissolved	mg/L	0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			0.001	0.001	1
Silicon (Si)-Dissolved	mg/L	0.050	4.37	4.87	4.04	3.97	3.47	4.49					
Silver (Ag)-Dissolved	mg/L	0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			0.0001	0.0001	0.1
Sodium (Na)-Dissolved	mg/L	0.010	3.33	4.64	2.25	2.24	2.09	3.48					
Strontium (Sr)-Dissolved	mg/L	0.00010	0.0532	0.0537	0.0385	0.0427	0.0310	0.0321					
Thallium (Tl)-Dissolved	mg/L	0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050			0.0008	0.0008	

Table C-2. (cont'd) Overview of Surface Water Quality for Minago River, Oakley Creek, and William River at the Minago Project

		WATER COURSES	Minago River		Oackley Creek		William River		Manitoba Water Quality Standards, Objectives and Guidelines (Manitoba Water Stewardship, 2011)		Canadian Water Quality Guidelines for the Protection of Aquatic Life (CCEM, 2011) (see FootNotes for details)	Metal Mining Effluent Regulations (MMER) (Grab Sample Maximum Concentration) (CCEM 2002a)
Sample ID	Units	STATIONS	MRMW2X	MRF2	OCF1	OCF2	WRF1N	WRF2				
Date Sampled			14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11				
Time Sampled			17:30	11:30	12:40	16:00	17:00	16:20				
ALS Sample ID			L1074659-4	L1074659-10	L1074659-5	L1074659-8	L1074659-7	L1074659-9	TIER II Water	TIER III - Water Quality Guidelines		
Matrix			Water	Water	Water	Water	Water	Water	Quality Objectives	Freshwater		
		DL										
Tin (Sn)-Dissolved	mg/L	0.00010	<0.00010	0.00045	0.00011	<0.00010	0.00014	<0.00010				
Titanium (Ti)-Dissolved	mg/L	0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010				
Uranium (U)-Dissolved	mg/L	0.000010	0.000177	0.000075	0.000087	0.000112	0.000296	0.000061		0.033 (short-term); 0.015 (long-term)	0.033 (short-term); 0.015 (long-term)	
Vanadium (V)-Dissolved	mg/L	0.000050	0.000232	0.000227	0.000073	<0.000050	0.000241	0.000252				
Zinc (Zn)-Dissolved	mg/L	0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.068723 [c] 0.618737 [d]	0.068723 [c] 0.618737 [d]	0.03	1

APPENDIX D

Laboratory Certified Reports

Appendix E.1: Data Quality Objectives – ALS Vancourver

Appendix E.2: October 2011 Certified Lab Results

APPENDIX D.1

Data Quality Objectives – ALS Vancouver

Data Quality Objectives – ALS Vancouver

DATA QUALITY OBJECTIVES – WATER
Last updated October 19, 2006

Mobile Laboratories	ACCURACY [1] DQO	PRECISION [2] DQO
Extractable Hydrocarbons by GC	60% to 130% Recovery	40% Relative Percent Difference
Non-halogenated Volatile Organics	70% to 130% Recovery	30% Relative Percent Difference
Trace Metals	**ACCURACY [1] DQO**	**PRECISION [2] DQO**
All metals	75% to 125% Recovery	20% Relative Percent Difference
Trace Organics	**ACCURACY [1] DQO**	**PRECISION [2] DQO**
Acid Extractable Herbicides	50% to 150% Recovery	N/A (whole sample analysis)
Chlorinated Hydrocarbons	50% to 150% Recovery	N/A (whole sample analysis)
Chlorinated Phenolics	50% to 150% Recovery	N/A (whole sample analysis)
Extractable Hydrocarbons by GC	60% to 140% Recovery	N/A (whole sample analysis)
Oil and Grease (gravimetric)	75% to 125% Recovery	N/A (whole sample analysis)
Halogenated Volatile Organics - Ambient gases, Dichloromethane - Others	 50% to 150% Recovery 65% to 135% Recovery	30% Relative Percent Difference
Non-Chlorinated Phenolics - Cresols - Dimethyl Phenol - Others	40% to 140% Recovery 30% to 150% Recovery 50% to 150% Recovery	N/A (whole sample analysis)
Non-halogenated Volatile Organics - BTEX compounds - Volatile Hydrocarbons (VH) - Other non-routine compounds	70% to 130% Recovery 70% to 130% Recovery 70% to 130% Recovery	30% Relative Percent Difference
Organochlorine Pesticides	50% to 150% Recovery	N/A (whole sample analysis)
Organophosphate Pesticides	50% to 150% Recovery	N/A (whole sample analysis)
Polychlorinated Biphenyls	60% to 140% Recovery	N/A (whole sample analysis)
Polycyclic Aromatic Hydrocarbons - Naphthalene, - Acridine, Quinoline - Others	60% to 140% Recovery 50% to 150% Recovery 65% to 135% Recovery	N/A (whole sample analysis)
Resin Acids and Fatty Acids - Levopimaric acid - Neoabietic acid - Others	20% to 150% Recovery 35% to 150% Recovery 50% to 150% Recovery	50% Relative Percent Difference
Glycols	65% to 135% Recovery	30% Relative Percent Difference
Water Quality	**ACCURACY [1] DQO**	**PRECISION [2] DQO**
Bacteriological Tests		
Coliform Bacteria - Fecal	Not Available[3]	25% (36% by MPN analysis)
Coliform Bacteria - Total	Not Available[3]	25% (36% by MPN analysis)
Cyanides (Total and WAD)	85% to 115% Recovery	20% Relative Percent Difference
Thiocyanate SCN	85% to 115% Recovery	20% Relative Percent Difference
Cyanate CNO	80% to 120% Recovery	20% Relative Percent Difference
Dissolved Anions	85% to 115% Recovery	20% Relative Percent Difference
Sulphide S	75% to 125% Recovery	20% Relative Percent Difference
Nutrients	85% to 115% Recovery	20% Relative Percent Difference
Total Nitrogen	80% to 120% Recovery	20% Relative Percent Difference
Total Kjeldahl Nitrogen TKN	80% to 120% Recovery	20% Relative Percent Difference
Organic Parameters	85% to 115% Recovery	25% Relative Percent Difference
Total Organic Carbon TOC	85% to 115% Recovery	20% Relative Percent Difference
Chemical Oxygen Demand COD	85% to 115% Recovery	20% Relative Percent Difference
Biological Oxygen Demand BOD	75% to 125% Recovery	25% Relative Percent Difference
Physical Tests	85% to 115% Recovery	20% Relative Percent Difference
Hardness CaCO3	75% to 125% Recovery	20% Relative Percent Difference
Total Suspended Solid TSS	80% to 120% Recovery	25% Relative Percent Difference

DQO for Contamination Control (Method Blanks): For all tests, method blank concentrations must be less than Commonly Reported Detection Limit (CRDL). Parameters like pH, acidity and alkalinity where no true method blank exists by definition, "zero" spike samples are analyzed; however, they can not be guaranteed to be less than their applicable method detection limit.

The Data Quality Objectives in these tables describe the minimum criteria for acceptance of Quality Control sample data without qualification. Wherever possible, these values have been derived from statistical analysis of actual QC data, and represent a 99% confidence interval. Typically 99% of all QC data analyzed by ALSE will lie within these limits.

Where DQO criteria are not met, and where reported results may be significantly affected, the analysis will be repeated or the reported result will be qualified.

Footnotes and Explanations:

1) Accuracy is measured as Percent Difference from True Value or Certified Target for Reference Materials and/or Method Analyte Spikes and Surrogates where applicable. An additional value of +/- 1 detection limit is added to the Accuracy DQO range to deal with variability near the detection limit.

   Example DQO for Accuracy: Result is within [(DQO% Recovery x True Value) + DL]

2) Precision is measured as the absolute value of Relative Percent Difference for Laboratory Duplicate Samples. RPD = |(Result2 - Result1) / Mean|*100%. An additional value of +/- $\sqrt{2}$ multiplied by the detection limit is added to the Precision DQO range to deal with variability of the two results near the detection limit.

   Example DQO for Precision: Difference between results is $\leq$| [(RPD%*Mean) + (($\sqrt{2}$) x DL)]|

3) Reference materials are not available for bacteriological parameters.

APPENDIX D.2

Certified Laboratory Report for Surface Water Quality

October 2011 Certified Lab Results

VICTORY NICKEL INC.
ATTN: DR. DAVID MCHAINA
#1802 - 80 RICHMOND STREET WEST
TORONTO ON M5H 2A4

Date Received: 20-OCT-11
Report Date: 19-DEC-11 18:55 (MT)
Version: FINAL

Client Phone: 519-241-9655

Certificate of Analysis

Lab Work Order #: L1074659

Project P.O. #: NOT SUBMITTED
Job Reference:
C of C Numbers: 10-035934, 10-035937
Legal Site Desc:

Can Dang
Senior Account Manager

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

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1074659-1	L1074659-2	L1074659-3	L1074659-4	L1074659-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11
	Sampled Time	13:30	16:00	12:30	17:30	12:40
	Client ID	LBF1	DLF1	CLF1	MRMW2X	OCF1
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	231	184	190	336	300
	Hardness (as CaCO3) (mg/L)	124	89.7	85.8	181	165
	pH (pH)	8.17	8.12	8.12	8.26	8.26
	Total Suspended Solids (mg/L)	19.8	4.4	8.6	5.6	<1.0
	Total Dissolved Solids (mg/L)	149	130	127	183	172
	Turbidity (NTU)	20.8	12.4	16.1	3.95	0.55
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	2.6	3.1	3.1	1.4	1.4
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	123	98.8	87.7	192	163
	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)	123	98.8	87.7	192	163
	Ammonia (as N) (mg/L)	0.0366	0.0123	0.0106	0.0105	0.0103
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	1.59	2.37	4.54	1.37	1.38
	Fluoride (F) (mg/L)	0.075	0.063	0.071	0.082	0.077
	Nitrate (as N) (mg/L)	0.0058	0.0053	<0.0050	0.0099	<0.0050
	Nitrite (as N) (mg/L)	0.0028	<0.0010	<0.0010	<0.0010	0.0011
	Total Kjeldahl Nitrogen (mg/L)	1.02	0.814	0.708	0.563	0.466
	Total Nitrogen (mg/L)	1.02	0.819	0.708	0.573	0.467
	Sulfate (SO4) (mg/L)	1.09	2.60	6.02	0.68	1.32
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Total Metals	Aluminum (Al)-Total (mg/L)	0.941	0.642	0.792	0.158	0.0192
	Antimony (Sb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Arsenic (As)-Total (mg/L)	0.000741	0.000759	0.000706	0.000542	0.000331
	Barium (Ba)-Total (mg/L)	0.0207	0.0147	0.0179	0.0210	0.0181
	Beryllium (Be)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	0.0120	0.0128	0.0137	0.0144	0.0110
	Cadmium (Cd)-Total (mg/L)	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017
	Calcium (Ca)-Total (mg/L)	23.0	22.9	21.8	41.0	36.4
	Chromium (Cr)-Total (mg/L)	0.00194	0.00102	0.00110	0.00047	0.00024
	Cobalt (Co)-Total (mg/L)	0.00047	0.00021	0.00022	0.00013	<0.00010
	Copper (Cu)-Total (mg/L)	0.00102	0.00110	0.00132	<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)	1.11	0.585	0.595	0.222	0.046
	Lead (Pb)-Total (mg/L)	0.000387	0.000244	0.000337	0.000083	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Magnesium (Mg)-Total (mg/L)	16.4	7.80	7.00	20.8	19.2

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

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1074659-6	L1074659-7	L1074659-8	L1074659-9	L1074659-10
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11
	Sampled Time	11:00	17:00	16:00	16:20	11:30
	Client ID	HLF1	WRF1N	OCF2	WRF2	MRF2
Grouping	**Analyte**					
WATER						
Physical Tests	Conductivity (uS/cm)	272	348	340	179	274
	Hardness (as CaCO3) (mg/L)	140	190	181	92.7	141
	pH (pH)	8.14	8.36	8.22	7.68	8.14
	Total Suspended Solids (mg/L)	3.0	4.2	<1.0	23.0	<1.0
	Total Dissolved Solids (mg/L)	160	171	191	121	192
	Turbidity (NTU)	3.31	3.45	0.28	16.8	1.03
Anions and Nutrients	Acidity (as CaCO3) (mg/L)	3.1	<1.0	2.0	5.5	3.1
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)	147	185	191	98.1	148
	Alkalinity, Carbonate (as CaCO3) (mg/L)	<2.0	5.3	<2.0	<2.0	<2.0
	Alkalinity, Hydroxide (as CaCO3) (mg/L)	<2.0	<1.0	<2.0	<2.0	<2.0
	Alkalinity, Total (as CaCO3) (mg/L)	147	190	191	98.1	148
	Ammonia (as N) (mg/L)	0.0187	0.0169	0.0102	0.0144	0.0125
	Bromide (Br) (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Chloride (Cl) (mg/L)	1.48	1.39	1.17	2.00	1.27
	Fluoride (F) (mg/L)	0.072	0.118	0.088	0.062	0.076
	Nitrate (as N) (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	0.0012	<0.0010	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	0.663	0.551	0.418	0.634	0.615
	Total Nitrogen (mg/L)	0.664	0.551	0.418	0.634	0.615
	Sulfate (SO4) (mg/L)	0.83	3.38	1.96	<0.50	0.71
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Total Metals	Aluminum (Al)-Total (mg/L)	0.133	0.115	0.0063	0.783	0.0513
	Antimony (Sb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Arsenic (As)-Total (mg/L)	0.000668	0.000525	0.000276	0.000655	0.000676
	Barium (Ba)-Total (mg/L)	0.0113	0.0280	0.0204	0.0144	0.0129
	Beryllium (Be)-Total (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Total (mg/L)	0.0172	0.0192	0.0106	0.0098	0.0155
	Cadmium (Cd)-Total (mg/L)	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017
	Calcium (Ca)-Total (mg/L)	33.3	24.5	40.0	20.4	33.7
	Chromium (Cr)-Total (mg/L)	0.00036	0.00029	0.00018	0.00153	0.00022
	Cobalt (Co)-Total (mg/L)	0.00011	<0.00010	<0.00010	0.00037	<0.00010
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	0.00081	<0.00050
	Iron (Fe)-Total (mg/L)	0.203	0.116	0.038	0.820	0.081
	Lead (Pb)-Total (mg/L)	0.000067	0.000084	<0.000050	0.000343	<0.000050
	Lithium (Li)-Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Magnesium (Mg)-Total (mg/L)	14.3	30.4	20.9	11.1	14.8

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

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ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	L1074659-11	L1074659-12	L1074659-13		
Description	TRAVEL BLANK	TRAVEL BLANK	FIELD BLANK		
Sampled Date	17-OCT-11	17-OCT-11	13-OCT-11		
Sampled Time	07:00	07:00	07:00		
Client ID	TRAVEL BLANK 1	TRAVEL BLANK 2	FIELD BLANK 1		
Grouping	**Analyte**				
WATER					
Physical Tests	Conductivity (uS/cm)				
	Hardness (as CaCO3) (mg/L)				
	pH (pH)				
	Total Suspended Solids (mg/L)				
	Total Dissolved Solids (mg/L)				
	Turbidity (NTU)				
Anions and Nutrients	Acidity (as CaCO3) (mg/L)				
	Alkalinity, Bicarbonate (as CaCO3) (mg/L)				
	Alkalinity, Carbonate (as CaCO3) (mg/L)				
	Alkalinity, Hydroxide (as CaCO3) (mg/L)				
	Alkalinity, Total (as CaCO3) (mg/L)				
	Ammonia (as N) (mg/L)				
	Bromide (Br) (mg/L)				
	Chloride (Cl) (mg/L)				
	Fluoride (F) (mg/L)				
	Nitrate (as N) (mg/L)				
	Nitrite (as N) (mg/L)				
	Total Kjeldahl Nitrogen (mg/L)				
	Total Nitrogen (mg/L)				
	Sulfate (SO4) (mg/L)				
Cyanides	Cyanide, Weak Acid Diss (mg/L)				
Total Metals	Aluminum (Al)-Total (mg/L)	<0.0030	<0.0030	<0.0030	
	Antimony (Sb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	
	Arsenic (As)-Total (mg/L)	<0.000030	<0.000030	<0.000030	
	Barium (Ba)-Total (mg/L)	<0.000050	<0.000050	<0.000050	
	Beryllium (Be)-Total (mg/L)	<0.00020	<0.00020	<0.00020	
	Bismuth (Bi)-Total (mg/L)	<0.00050	<0.00050	<0.00050	
	Boron (B)-Total (mg/L)	<0.0050	<0.0050	<0.0050	
	Cadmium (Cd)-Total (mg/L)	<0.000017	<0.000017	<0.000017	
	Calcium (Ca)-Total (mg/L)	<0.020	<0.020	<0.020	
	Chromium (Cr)-Total (mg/L)	<0.00010	<0.00010	<0.00010	
	Cobalt (Co)-Total (mg/L)	<0.00010	<0.00010	<0.00010	
	Copper (Cu)-Total (mg/L)	<0.00050	<0.00050	<0.00050	
	Iron (Fe)-Total (mg/L)	<0.010	<0.010	<0.010	
	Lead (Pb)-Total (mg/L)	<0.000050	<0.000050	<0.000050	
	Lithium (Li)-Total (mg/L)	<0.0050	<0.0050	<0.0050	
	Magnesium (Mg)-Total (mg/L)	<0.0050	<0.0050	<0.0050	

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

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ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID	L1074659-1	L1074659-2	L1074659-3	L1074659-4	L1074659-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11
	Sampled Time	13:30	16:00	12:30	17:30	12:40
	Client ID	LBF1	DLF1	CLF1	MRMW2X	OCF1
Grouping	**Analyte**					
WATER						
Total Metals	Manganese (Mn)-Total (mg/L)	0.0394	0.0189	0.0133	0.0228	0.00563
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Total (mg/L)	0.000074	0.000108	0.000186	0.000092	0.000070
	Nickel (Ni)-Total (mg/L)	0.00144	0.00094	0.00092	0.00055	0.00019
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Total (mg/L)	1.01	1.10	1.33	1.06	1.01
	Selenium (Se)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Silicon (Si)-Total (mg/L)	6.12	4.44	4.18	4.86	4.19
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Total (mg/L)	2.91	4.34	5.95	3.48	2.37
	Strontium (Sr)-Total (mg/L)	0.0358	0.0473	0.0535	0.0563	0.0414
	Thallium (Tl)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Titanium (Ti)-Total (mg/L)	0.044	0.021	0.023	<0.010	<0.010
	Uranium (U)-Total (mg/L)	0.000168	0.000153	0.000200	0.000193	0.000095
	Vanadium (V)-Total (mg/L)	0.00193	0.00114	0.00120	0.000477	0.000097
	Zinc (Zn)-Total (mg/L)	0.0039	<0.0030	<0.0030	<0.0030	<0.0030
Dissolved Metals	Aluminum (Al)-Dissolved (mg/L)	0.461	0.175	0.222	0.0057	<0.0030
	Antimony (Sb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Arsenic (As)-Dissolved (mg/L)	0.000702	0.000718	0.000687	0.000551	0.000353
	Barium (Ba)-Dissolved (mg/L)	0.0167	0.0109	0.0132	0.0193	0.0181
	Beryllium (Be)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	0.0077	0.0087	0.0101	0.0102	0.0077
	Cadmium (Cd)-Dissolved (mg/L)	<0.000017	<0.000017	<0.000017	<0.000017	<0.000017
	Calcium (Ca)-Dissolved (mg/L)	22.8	23.1	22.5	39.3	35.4
	Chromium (Cr)-Dissolved (mg/L)	0.00069	0.00021	0.00025	<0.00010	<0.00010
	Cobalt (Co)-Dissolved (mg/L)	0.00025	<0.00010	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	0.00061	0.00084	0.00095	<0.00050	<0.00050
	Iron (Fe)-Dissolved (mg/L)	0.532	0.198	0.185	0.052	0.029
	Lead (Pb)-Dissolved (mg/L)	0.000200	0.000092	0.000099	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Magnesium (Mg)-Dissolved (mg/L)	16.4	7.76	7.21	20.1	18.6
	Manganese (Mn)-Dissolved (mg/L)	0.0275	0.00274	0.00174	0.00695	0.00410
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.000093	0.000166	0.000079	0.000056
	Nickel (Ni)-Dissolved (mg/L)	0.00081	0.00077	0.00058	0.00042	0.00021

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

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Sample ID	L1074659-6	L1074659-7	L1074659-8	L1074659-9	L1074659-10
Description	WATER	WATER	WATER	WATER	WATER
Sampled Date	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11
Sampled Time	11:00	17:00	16:00	16:20	11:30
Client ID	HLF1	WRF1N	OCF2	WRF2	MRF2
Grouping / **Analyte**					
WATER					
Total Metals Manganese (Mn)-Total (mg/L)	0.0491	0.00658	0.00439	0.0394	0.00690
Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Total (mg/L)	0.000066	0.000126	0.000073	<0.000050	0.000062
Nickel (Ni)-Total (mg/L)	0.00055	0.00025	0.00014	0.00116	0.00050
Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
Potassium (K)-Total (mg/L)	1.01	1.00	1.20	1.04	1.00
Selenium (Se)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Silicon (Si)-Total (mg/L)	4.73	3.64	4.08	6.05	5.07
Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium (Na)-Total (mg/L)	4.61	2.05	2.30	3.53	4.78
Strontium (Sr)-Total (mg/L)	0.0592	0.0307	0.0449	0.0340	0.0559
Thallium (Tl)-Total (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium (Ti)-Total (mg/L)	<0.010	<0.010	<0.010	0.038	<0.010
Uranium (U)-Total (mg/L)	0.000089	0.000300	0.000120	0.000084	0.000083
Vanadium (V)-Total (mg/L)	0.000399	0.000405	0.000061	0.00149	0.000275
Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030	0.0035	<0.0030
Dissolved Metals Aluminum (Al)-Dissolved (mg/L)	0.0099	<0.0030	<0.0030	0.0486	0.0047
Antimony (Sb)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Arsenic (As)-Dissolved (mg/L)	0.000659	0.000564	0.000289	0.000624	0.000671
Barium (Ba)-Dissolved (mg/L)	0.0107	0.0281	0.0205	0.00920	0.0125
Beryllium (Be)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Boron (B)-Dissolved (mg/L)	0.0140	0.0166	0.0077	0.0064	0.0122
Cadmium (Cd)-Dissolved (mg/L)	<0.000017	<0.000017	0.000026	0.000017	<0.000017
Calcium (Ca)-Dissolved (mg/L)	32.9	25.1	39.0	19.6	32.8
Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt (Co)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper (Cu)-Dissolved (mg/L)	0.00052	<0.00050	<0.00050	<0.00050	<0.00050
Iron (Fe)-Dissolved (mg/L)	0.068	0.014	0.027	0.082	0.038
Lead (Pb)-Dissolved (mg/L)	0.000057	<0.000050	<0.000050	<0.000050	<0.000050
Lithium (Li)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Magnesium (Mg)-Dissolved (mg/L)	14.1	31.0	20.4	10.6	14.3
Manganese (Mn)-Dissolved (mg/L)	0.0404	0.00250	0.00215	0.0100	0.00464
Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Molybdenum (Mo)-Dissolved (mg/L)	0.000057	0.000125	0.000061	<0.000050	0.000055
Nickel (Ni)-Dissolved (mg/L)	0.00050	0.00020	0.00021	0.00031	0.00052

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

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	Sample ID	L1074659-11	L1074659-12	L1074659-13		
	Description	TRAVEL BLANK	TRAVEL BLANK	FIELD BLANK		
	Sampled Date	17-OCT-11	17-OCT-11	13-OCT-11		
	Sampled Time	07:00	07:00	07:00		
	Client ID	TRAVEL BLANK 1	TRAVEL BLANK 2	FIELD BLANK 1		
Grouping	**Analyte**					
WATER						
Total Metals	Manganese (Mn)-Total (mg/L)	<0.000050	<0.000050	<0.000050		
	Mercury (Hg)-Total (mg/L)	<0.000010	<0.000010	<0.000010		
	Molybdenum (Mo)-Total (mg/L)	<0.000050	<0.000050	<0.000050		
	Nickel (Ni)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Phosphorus (P)-Total (mg/L)	<0.30	<0.30	<0.30		
	Potassium (K)-Total (mg/L)	<0.050	<0.050	<0.050		
	Selenium (Se)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Silicon (Si)-Total (mg/L)	<0.050	<0.050	<0.050		
	Silver (Ag)-Total (mg/L)	<0.000010	<0.000010	<0.000010		
	Sodium (Na)-Total (mg/L)	<0.010	<0.010	<0.010		
	Strontium (Sr)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Thallium (Tl)-Total (mg/L)	<0.000050	<0.000050	<0.000050		
	Tin (Sn)-Total (mg/L)	<0.00010	<0.00010	<0.00010		
	Titanium (Ti)-Total (mg/L)	<0.010	<0.010	<0.010		
	Uranium (U)-Total (mg/L)	<0.000010	<0.000010	<0.000010		
	Vanadium (V)-Total (mg/L)	<0.000050	<0.000050	<0.000050		
	Zinc (Zn)-Total (mg/L)	<0.0030	<0.0030	<0.0030		
Dissolved Metals	Aluminum (Al)-Dissolved (mg/L)					
	Antimony (Sb)-Dissolved (mg/L)					
	Arsenic (As)-Dissolved (mg/L)					
	Barium (Ba)-Dissolved (mg/L)					
	Beryllium (Be)-Dissolved (mg/L)					
	Bismuth (Bi)-Dissolved (mg/L)					
	Boron (B)-Dissolved (mg/L)					
	Cadmium (Cd)-Dissolved (mg/L)					
	Calcium (Ca)-Dissolved (mg/L)					
	Chromium (Cr)-Dissolved (mg/L)					
	Cobalt (Co)-Dissolved (mg/L)					
	Copper (Cu)-Dissolved (mg/L)					
	Iron (Fe)-Dissolved (mg/L)					
	Lead (Pb)-Dissolved (mg/L)					
	Lithium (Li)-Dissolved (mg/L)					
	Magnesium (Mg)-Dissolved (mg/L)					
	Manganese (Mn)-Dissolved (mg/L)					
	Mercury (Hg)-Dissolved (mg/L)					
	Molybdenum (Mo)-Dissolved (mg/L)					
	Nickel (Ni)-Dissolved (mg/L)					

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

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	Sample ID	L1074659-1	L1074659-2	L1074659-3	L1074659-4	L1074659-5
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11
	Sampled Time	13:30	16:00	12:30	17:30	12:40
	Client ID	LBF1	DLF1	CLF1	MRMW2X	OCF1
Grouping	**Analyte**					
WATER						
Dissolved Metals	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	0.851	0.966	1.22	0.977	1.00
	Selenium (Se)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Silicon (Si)-Dissolved (mg/L)	5.47	3.49	3.20	4.37	4.04
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	2.91	4.37	6.22	3.33	2.25
	Strontium (Sr)-Dissolved (mg/L)	0.0338	0.0461	0.0532	0.0532	0.0385
	Thallium (Tl)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00014	0.00037	<0.00010	0.00011
	Titanium (Ti)-Dissolved (mg/L)	0.024	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000147	0.000140	0.000187	0.000177	0.000087
	Vanadium (V)-Dissolved (mg/L)	0.000954	0.000509	0.000562	0.000232	0.000073
	Zinc (Zn)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

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

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	Sample ID	L1074659-6	L1074659-7	L1074659-8	L1074659-9	L1074659-10
	Description	WATER	WATER	WATER	WATER	WATER
	Sampled Date	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11	14-OCT-11
	Sampled Time	11:00	17:00	16:00	16:20	11:30
	Client ID	HLF1	WRF1N	OCF2	WRF2	MRF2
Grouping	**Analyte**					
WATER						
Dissolved Metals	Phosphorus (P)-Dissolved (mg/L)	<0.30	<0.30	<0.30	<0.30	<0.30
	Potassium (K)-Dissolved (mg/L)	0.975	0.990	1.17	0.826	0.976
	Selenium (Se)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Silicon (Si)-Dissolved (mg/L)	4.41	3.47	3.97	4.49	4.87
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	4.53	2.09	2.24	3.48	4.64
	Strontium (Sr)-Dissolved (mg/L)	0.0575	0.0310	0.0427	0.0321	0.0537
	Thallium (Tl)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00014	<0.00010	<0.00010	0.00045
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000082	0.000296	0.000112	0.000061	0.000075
	Vanadium (V)-Dissolved (mg/L)	0.000208	0.000241	<0.000050	0.000252	0.000227
	Zinc (Zn)-Dissolved (mg/L)	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

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

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	Sample ID	L1074659-11	L1074659-12	L1074659-13		
	Description	TRAVEL BLANK	TRAVEL BLANK	FIELD BLANK		
	Sampled Date	17-OCT-11	17-OCT-11	13-OCT-11		
	Sampled Time	07:00	07:00	07:00		
	Client ID	TRAVEL BLANK 1	TRAVEL BLANK 2	FIELD BLANK 1		
Grouping	**Analyte**					
WATER						
Dissolved Metals	Phosphorus (P)-Dissolved (mg/L)					
	Potassium (K)-Dissolved (mg/L)					
	Selenium (Se)-Dissolved (mg/L)					
	Silicon (Si)-Dissolved (mg/L)					
	Silver (Ag)-Dissolved (mg/L)					
	Sodium (Na)-Dissolved (mg/L)					
	Strontium (Sr)-Dissolved (mg/L)					
	Thallium (Tl)-Dissolved (mg/L)					
	Tin (Sn)-Dissolved (mg/L)					
	Titanium (Ti)-Dissolved (mg/L)					
	Uranium (U)-Dissolved (mg/L)					
	Vanadium (V)-Dissolved (mg/L)					
	Zinc (Zn)-Dissolved (mg/L)					

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

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Aluminum (Al)-Total	DLA	L1074659-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Bismuth (Bi)-Total	DLA	L1074659-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Cobalt (Co)-Total	DLA	L1074659-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Silver (Ag)-Total	DLA	L1074659-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Tin (Sn)-Total	DLA	L1074659-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Duplicate	Zinc (Zn)-Total	DLA	L1074659-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Fluoride (F)	MS-B	L1074659-1, -10, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1074659-1, -10, -2, -3, -4, -5, -6, -7, -8, -9

Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit Adjusted For required dilution
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 Acidity
This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.			
ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 "Alkalinity"
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 Alkalinity
This analysis is carried out using procedures adapted from APHA Method 2320 "Alkalinity". Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.			
ALK-SCR-VA	Water	Alkalinity by colour or titration	EPA 310.2 OR APHA 2320
This analysis is carried out using procedures adapted from EPA Method 310.2 "Alkalinity". Total Alkalinity is determined using the methyl orange colourimetric method. OR 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.			
ANIONS-BR-IC-VA	Water	Bromide by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
ANIONS-CL-IC-VA	Water	Chloride by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
ANIONS-F-IC-VA	Water	Fluoride by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
ANIONS-NO2-IC-VA	Water	Nitrite in Water by Ion Chromatography	EPA 300.0
This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrite is detected by UV absorbance.			
ANIONS-NO3-IC-VA	Water	Nitrate in Water by Ion Chromatography	EPA 300.0
This analysis is carried out using procedures adapted from EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography". Nitrate is detected by UV absorbance.			
ANIONS-SO4-IC-VA	Water	Sulfate by Ion Chromatography	APHA 4110 B.
This analysis is carried out using procedures adapted from APHA Method 4110 B. "Ion Chromatography with Chemical Suppression of Eluent Conductivity" and EPA Method 300.0 "Determination of Inorganic Anions by Ion Chromatography".			
CN-WAD-MID-COL-VA	Water	Weak Acid Dissociable Cyanide by Dist.	APHA 4500-CN Cyanide
This analysis is carried out using procedures adapted from APHA Method 4500-CN "Cyanide". Weak acid dissociable (WAD) cyanide are determined by sample distillation and analysis using the chloramine-T colourimetric method.			

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Reference Information

EC-PCT-VA	Water	Conductivity (Automated)	APHA 2510 Auto. Conduc.

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

FE-DIS-LOW-ICP-VA	Water	Dissolved Fe in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

FE-TOT-LOW-ICP-VA	Water	Total Fe in Water by ICPOES	EPA SW-846 3005A/6010B

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

HARDNESS-CALC-VA	Water	Hardness	APHA 2340B

Hardness (also known as Total Hardness) is calculated from the sum of Calcium and Magnesium concentrations, expressed in CaCO3 equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

HG-DIS-LOW-CVAFS-VA	Water	Dissolved Mercury in Water by CVAFS(Low)	EPA SW-846 3005A & EPA 245.7

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

HG-TOT-LOW-CVAFS-VA	Water	Total Mercury in Water by CVAFS(Low)	EPA 245.7

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

MET-DIS-ICP-VA	Water	Dissolved Metals in Water by ICPOES	EPA SW-846 3005A/6010B

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedure involves filtration (EPA Method 3005A) and analysis by inductively coupled plasma - optical emission spectrophotometry (EPA Method 6010B).

MET-DIS-LOW-MS-VA	Water	Dissolved Metals in Water by ICPMS(Low)	EPA SW-846 3005A/6020A

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

MET-DIS-ULTRA-MS-VA	Water	Diss. Metals in Water by ICPMS (Ultra)	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 involves preliminary sample treatment by filtration (EPA Method 3005A). Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

MET-TOT-ICP-VA	Water	Total Metals in Water by ICPOES	EPA SW-846 3005A/6010B

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

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

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

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

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

NH3-F-VA	Water	Ammonia in Water by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

Reference Information

This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H "pH Value"

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

It is recommended that this analysis be conducted in the field.

PH-PCT-VA Water pH by Meter (Automated) APHA 4500-H pH Value

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

It is recommended that this analysis be conducted in the field.

TDS-LOW-VA Water Low Level TDS (3.0mg/L) by Gravimetric APHA 2540 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-F-VA Water TKN in Water by Fluorescence APHA 4500-NORG D.

This analysis is carried out using procedures adapted from APHA Method 4500-Norg D. "Block Digestion and Flow Injection Analysis". Total Kjeldahl Nitrogen is determined using block digestion followed by Flow-injection analysis with fluorescence detection.

TN-CALC-VA Water Total Nitrogen (Calculation) BC MOE LABORATORY MANUAL (2005)

Total Nitrogen is a calculated parameter. Total Nitrogen = Total Kjeldahl Nitrogen + [Nitrate and Nitrite (as N)]

TSS-LOW-VA Water Total Suspended Solids by Grav. (1 mg/L) APHA 2540 Gravimetric

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

TURBIDITY-VA Water Turbidity by Meter APHA 2130 "Turbidity"

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

TURBIDITY-VA Water Turbidity by Meter APHA 2130 Turbidity

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

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

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

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BC, CANADA

Chain of Custody Numbers:

10-035934 10-035937

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.
mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.
D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

SRC Group # 2011-10576

SRC ANALYTICAL

Nov 14, 2011

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

ALS Laboratory Group
8081 Lougheed Hwy
Burnaby, BC V5A 1W9
Attn: Can Dang

Date Samples Received: Oct-24-2011 Client P.O.: L1074659

This is a final report.

Organics results have been authorized by Pat Moser, Supervisor

ICP results have been authorized by Keith Gipman, Supervisor

Inorganics and Radiochemistry results have been authorized by Jeff Zimmer, Supervisor

SLOWPOKE-2 results have been authorized by Dave Chorney

* Test methods and data are validated by the laboratory's Quality Assurance Program.

* Routine methods follow recognized procedures from sources such as

  * Standard Methods for the Examination of Water and Wastewater APHA AWWA WEF
  * Environment Canada
  * US EPA
  * CANMET

* The results reported relate only to the test samples as provided by the client.

* Samples will be kept for 30 days after the final report is sent. Please contact the lab if you have any special requirements.

* Additional information is available upon request.

SRC Group # 2011-10576

SRC ANALYTICAL

Nov 14, 2011

422 Downey Road
Saskatoon, Saskatchewan, Canada
S7N 4N1
(306) 933-6932 or 1-800-240-8808

ALS Laboratory Group
8081 Lougheed Hwy
Burnaby, BC V5A 1W9
Attn: Can Dang

Date Samples Received: Oct-24-2011 Client P.O.: L1074659

38374	**10/14/2011 L1074659-1 LBF1 *WATER***
38375	**10/14/2011 L1074659-2 DLF1 *WATER***
38376	**10/14/2011 L1074659-3 CLF1 *WATER***

Analyte	Units	38374	38375	38376
Radio Chemistry				
Radium-226	Bq/L	<0.005	<0.005	<0.005

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

Page 1 of 4

SRC Group # 2011-10576

SRC ANALYTICAL

Nov 14, 2011

ALS Laboratory Group

38377	**10/14/2011 L1074659-4 MRMW2X *WATER***
38378	**10/14/2011 L1074659-5 OCF1 *WATER***
38379	**10/14/2011 L1074659-6 HLF1 *WATER***

Analyte	Units	38377	38378	38379
Radio Chemistry				
Radium-226	Bq/L	<0.005	<0.005	0.01

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

SRC Group # 2011-10576

SRC ANALYTICAL

Nov 14, 2011

ALS Laboratory Group

38380 10/14/2011 L1074659-7 WRF1N *WATER*
38381 10/14/2011 L1074659-8 OCF2 *WATER*
38382 10/14/2011 L1074659-9 WRF2 *WATER*

Analyte	Units	38380	38381	38382
Radio Chemistry				
Radium-226	Bq/L	<0.005	0.06	0.04

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

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SRC Group # 2011-10576

SRC ANALYTICAL

Nov 14, 2011

ALS Laboratory Group

38383 10/14/2011 L1074659-10 MRF2 *WATER*

Analyte	Units	38383
Radio Chemistry		
Radium-226	Bq/L	<0.005

Symbol of "<" means "less than". This indicates that it was not detected at level stated above.

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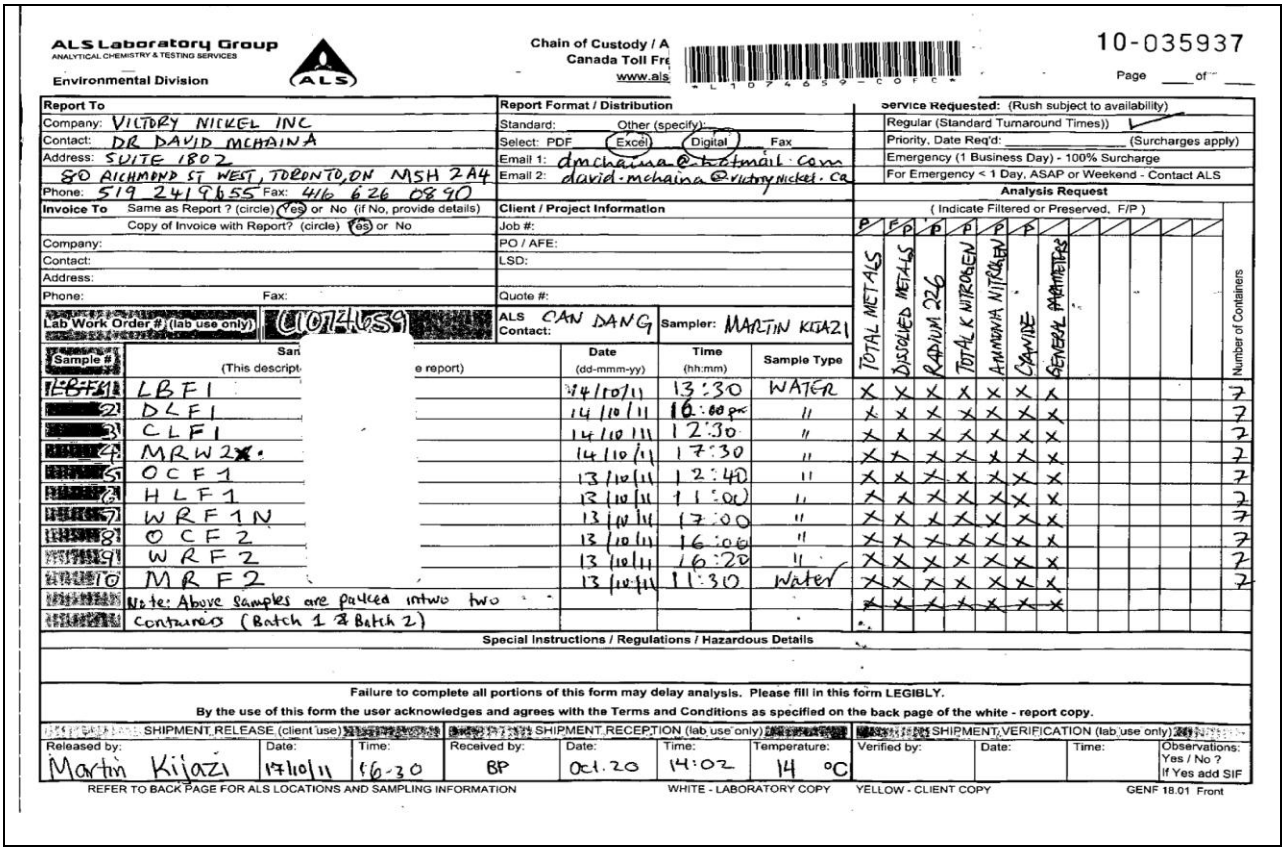

ALS Laboratory Group — ANALYTICAL CHEMISTRY & TESTING SERVICES — Environmental Division

Chain of Custody / A
Canada Toll Fr
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10-035937

Page ____ of ____

Report To	Report Format / Distribution	Service Requested: (Rush subject to availability)
Company: VICTORY NICKEL INC	Standard: Other (specify):	Regular (Standard Turnaround Times)) ✓
Contact: DR DAVID MCHAINA	Select: PDF (Excel) (Digital) Fax	Priority, Date Req'd: _____ (Surcharges apply)
Address: SUITE 1802	Email 1: dmchaina@hotmail.com	Emergency (1 Business Day) - 100% Surcharge
80 RICHMOND ST WEST, TORONTO, ON M5H 2A4	Email 2: david.mchaina@victorynickel.ca	For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone: 519 2419655 Fax: 416 626 0890		Analysis Request
Invoice To Same as Report ? (circle) (Yes) or No (if No, provide details)	Client / Project Information	(Indicate Filtered or Preserved, F/P)
Copy of Invoice with Report? (circle) (Yes) or No	Job #:	
Company:	PO / AFE:	
Contact:	LSD:	
Address:		
Phone: Fax:	Quote #:	
Lab Work Order # (lab use only) C074653	ALS Contact: CAN DANG	Sampler: MARTIN KIJAZI

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	TOTAL METALS	DISSOLVED METALS	RADIUM 226	TOTAL K NITROGEN	AMMONIA NITROGEN	CYANIDE	GENERAL PARAMETERS	Number of Containers
					F/P	F/P	F/P	F/P	F/P	F/P		
[redacted]	LBF1	14/10/11	13:30	WATER	X	X	X	X	X	X	X	7
[redacted]	DLF1	14/10/11	16:00	"	X	X	X	X	X	X	X	7
[redacted]	CLF1	14/10/11	12:30	"	X	X	X	X	X	X	X	7
[redacted]	MRW2	14/10/11	17:30	"	X	X	X	X	X	X	X	7
[redacted]	OCF1	13/10/11	12:40	"	X	X	X	X	X	X	X	7
[redacted]	HLF1	13/10/11	11:00	"	X	X	X	X	X	X	X	7
[redacted]	WRF1N	13/10/11	17:00	"	X	X	X	X	X	X	X	7
[redacted]	OCF2	13/10/11	16:00	"	X	X	X	X	X	X	X	7
[redacted]	WRF2	13/10/11	16:20	"	X	X	X	X	X	X	X	7
[redacted]	MRF2	13/10/11	11:30	Water	X	X	X	X	X	X	X	7
[redacted]	Note: Above Samples are packed intwo two				X	X	X	X	X	X	X	
[redacted]	Containers (Batch 1 & Batch 2)											

Special Instructions / Regulations / Hazardous Details

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

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Martin Kijazi	17/10/11	16:30	BP	Oct.20	14:02	14 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY — GENF 18.01 Front

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES
Environmental Division

Chain of Cu
Canad

10-035934

Page ___ of ___

Report To		Report Format / D		Service Requested: (Rush subject to availability)
Company: VICTORY NICKEL INC		Standard:		ilar (Standard Turnaround Times))
Contact: DR. DAVID MCHAINA		Select: PDF (Excel) (Digital) Fax		Priority, Date Req'd: _____ (Surcharges apply)
Address: SUITE 1802		Email 1: dmchaina@hotmail.com		Emergency (1 Business Day) - 100% Surcharge
80 RICHMOND STREET WEST, TORONTO, ON, M5H 2A4		Email 2: david.mchaina@victorynickel.ca		For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone: 519 241 9655	Fax: 416 626 0890			Analysis Request
Invoice To Same as Report ? (circle) (Yes) or No (If No, provide details)		Client / Project Information		(Indicate Filtered or Preserved, F/P)
Copy of Invoice with Report? (circle) (Yes) or No		Job #:		
Company:		PO / AFE:		
Contact:		LSD:		
Address:				
Phone:	Fax:	Quote #:		
Lab Work Order #, (lab use only): L1074659		ALS Contact: CAN DANG	Sampler: MARTIN KIJAZI	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Number of Containers
1	Travel Blank # 1	17/10/11	Between 9:00 am - 24:00	Travel Blank	
2	Travel Blank # 2	17/10/11	7:00 am - 24:00	Travel Blank	
3	Field Blank # 1	13-14/10/11	7:00 - 24:00	Field Blank	
4					
	Note: Travel Blank #1 & Travel				
	Blank are in Two different containers				
	containing (Batch 1 & Batch 2) of the same				
	field water samples				
	Field Blank # 1 Applies to both				

Special Instructions / Regulations / Hazardous Details

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

By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date:	Time:	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Martin Kijazi	17/10/11	16:30	BP	Oct. 20	14:02	14 °C				

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION — WHITE - LABORATORY COPY — YELLOW - CLIENT COPY — GENF 18.01 Front