# MOUNT NANSEN OCTOBER 2014 GROUNDWATER MONITORING AND SAMPLING

Prepared for: Yukon Government

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### 1.0 INTRODUCTION

Hemmera Envirochem Inc. ("Hemmera") and Ecological Logistics & Research Ltd. (Hemmera/ELR) were retained by the Government of Yukon (GY), Assessment and Abandoned Mines (AAM) to conduct a groundwater monitoring and sampling program at the Mount Nansen Site in October of 2014. This report summarizes the activities conducted, the field conditions encountered, and the *in-situ* and laboratory analytical results for the program.

### 1.1 SITE LOCATION

The Mount Nansen Site (the Site) is located approximately 45 kilometres (km) west of the Town of Carmacks (70 km by road). This Type II abandoned mine site consists of three (3) primary areas of existing infrastructure: the Brown McDade Pit, a Mill Complex, and a Tailings Facility (**Figure 1-1**). Previously installed groundwater sampling stations exist throughout much of the Site, a subset of which were sampled during the October 2014 groundwater monitoring and sampling program. The groundwater monitoring locations included in this program are described in **Sections 1.2** and **1.3**.

### 1.2 SCOPE OF WORK

The scope of work included the coordination and execution of the fall groundwater monitoring and sampling program, analysis of groundwater samples, and the presentation of results in a summary report. This report provides a summary of the monitoring and sampling activities, a description of methodologies, a summary of field *in-situ* and laboratory analytical results including a comparison to applicable guidelines, and recommendations relating to sample procedures and monitoring well condition. This report does not provide an interpretation of the results, nor does it provide recommendations relating to groundwater quality at the Site.

Groundwater sampling at the Site was conducted over a four (4) day period, between October 7 and 10, 2014. Sampling was conducted by a team of four (4) field staff from Hemmera/ELR (Glenn Rudman, Rusto Martinka, Andrew Brown, and Jonathan Lowey). A total of 65 groundwater wells were included in the October sampling event (**Table 1-1**).

At each well (sampling station) headspace gas concentrations were measured, well and water level parameters were measured (Depth-to-Water, Depth-to-Bottom, well diameter, and well stick-up height), the well was purged, and then prescribed *in-situ* groundwater quality parameters were measured. Wells were purged and groundwater samples were collected for laboratory analysis. A detailed description of the sampling methods and measured groundwater quality parameters is provided in **Section 2**, below.

# 1.3 SAMPLE SITES

The groundwater wells included in the October monitoring and sampling event were grouped into six (6) main areas of the Mount Nansen Site (**Table 1-1**). The majority groundwater wells were located around existing infrastructure including the tailings facility, the tailings pond and seepage pond/dam (26 wells), the Brown McDade Pit (12 wells) and the Mill Complex (9 wells). Additional wells (primarily drive-point piezometer installations) were sampled in the vicinity of Dome Creek (9) and Pony Creek (9) sample sites. **Table 1-1** provides the location, status, and sample recovery for groundwater wells included in the October sampling program. The well locations are also illustrated in **Figures 1-2** and **1-3**. Photographs of each sample site are included in **Appendix A**.

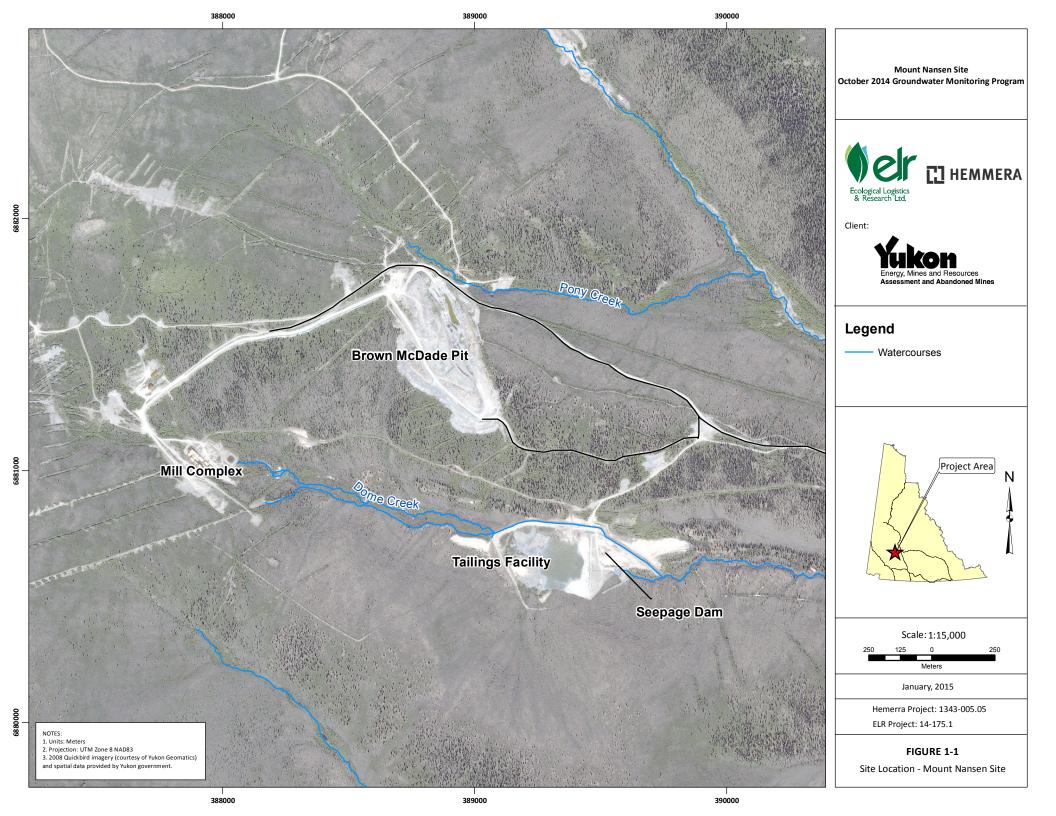


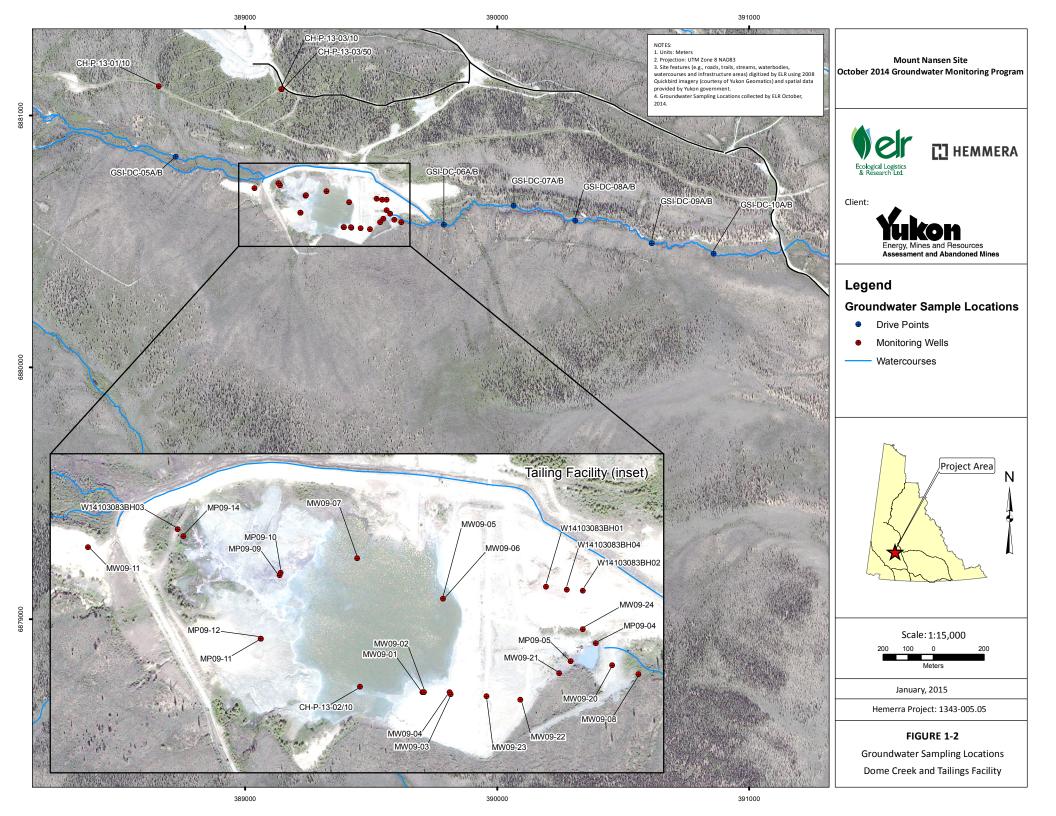
Table 1-1 Summary of Samples Collected at each Well Location

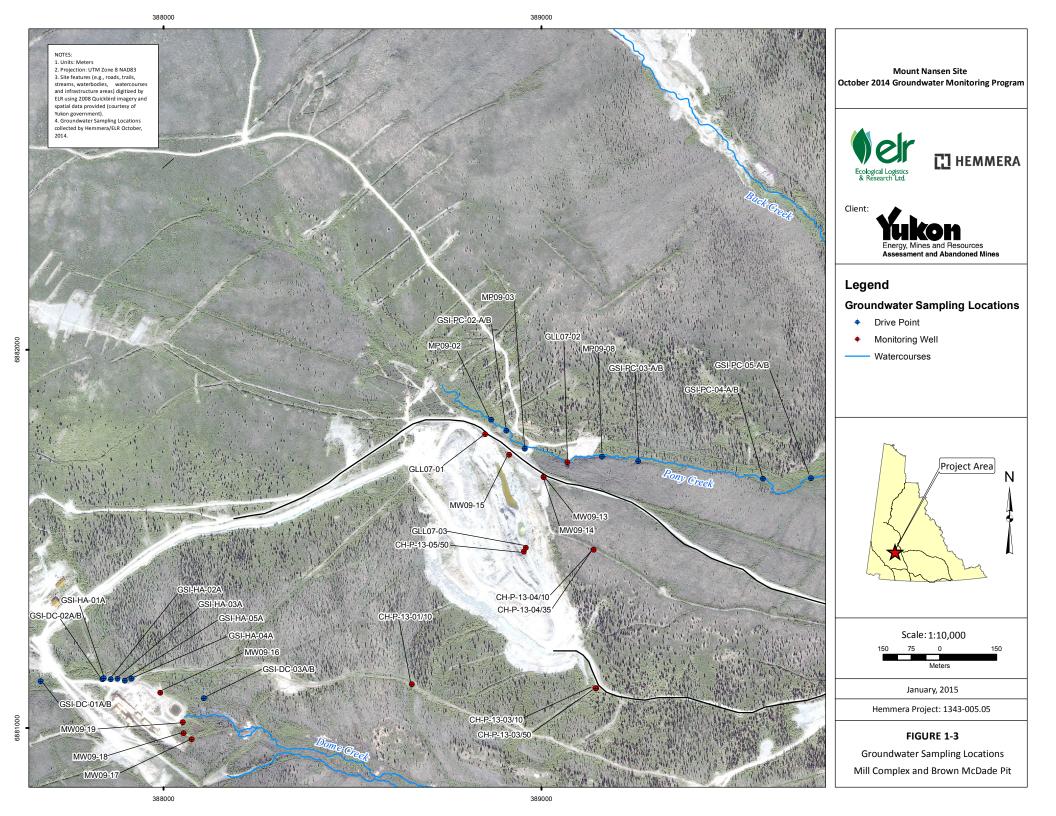
A	Mall Name	UTM (Z	one 08N)	0.1-11.2	Sample	QA/QC Sample
Area	Well Name	Easting	Northing	Status <sup>1,2</sup>	Collected	Collected
	GSI-DC-01B	387675	6881124	Direct Sampled	✓	-
	GSI-DC-02B	387879	6881129	Direct Sampled	✓	-
	GSI-DC-03B	388107	6881079	Direct Sampled	✓	-
	GSI-DC-05B	388725	6880836	Frozen	-	-
Dome Creek	GSI-DC-06B	389788	6880567	Direct Sampled	✓	-
Orook	GSI-DC-07B	390065	6880641	Good	✓	Duplicate
	GSI-DC-08-B	390311	6880583	Direct Sampled	✓	-
	GSI-DC-09-B	390614	6880494	Good	✓	-
	GSI-DC-10-B	390859	6880447	Good	✓	-
	GSI-HA-01A	387842	6881132	Direct Sampled	✓	-
	GSI-HA-02A	387861	6881135	Direct Sampled	✓	-
	GSI-HA-03A	387878	6881131	Direct Sampled	✓	-
	GSI-HA-04A	387916	65881130	Direct Sampled	✓	-
Mill Complex	GSI-HA-05A	387898	6881125	Direct Sampled	✓	-
Complex	MW09-16	387992	6881094	Good	✓	Field Blank
	MW09-17	388075	6880970	Good	✓	-
	MW09-18	388054	6880986	Good	✓	-
	MW09-19	388051	6881016	Good	✓	Duplicate
	CH-P-13-01/10	388657	6881116	Direct Sampled	✓	-
	CH-P-13-03/10	389145	6881105	Damaged <sup>2</sup>	-	-
	CH-P-13-03/50	389143	6881110	Direct Sampled	✓	-
	CH-P-13-04/10	389138	6881472	Good	✓	-
	CH-P-13-04/35	389138	6881472	Blocked <sup>2</sup>	-	-
Brown	CH-P-13-05/50	388954	6881466	Good	✓	Duplicate
McDade Pit	GLL07-01	388851	6881783	Frozen	-	-
	GLL07-02	389069	6881703	Direct Sampled	✓	-
	GLL07-03	388959	6881477	Good	✓	-
	MW09-13	389006	6881664	Frozen	-	-
	MW09-14	389008	6881669	Frozen	-	-
	MW09-15	388920	6881727	Frozen	-	-
	GSI-PC-01-B	N/A	N/A	Destroyed	-	-
	GSI-PC-02-B	388907	6881786	Frozen	-	-
Pony Creek	GSI-PC-03-B	389256	6881706	Direct Sampled	✓	-
5.55K	GSI-PC-04-B	389586	6881656	Direct Sampled	✓	-
	GSI-PC-05-B	389713	6881661	Direct Sampled	✓	-

•	W. II N.	UTM (Z	one 08N)	21.1.1.2	Sample	QA/QC Sample
Area	Well Name	Easting	Northing	- Status <sup>1,2</sup>	Collected	Collected
	MP09-01	N/A	N/A	Destroyed	-	-
	MP09-02	388867	6881816	Good	✓	-
	MP09-03	388956	6881739	Frozen	-	-
	MP09-08	389160	6881718	Frozen	-	-
	W14103083BH01	389522	6880669	Frozen	-	-
Seepage Dam	W14103083BH02	389561	6880665	Direct Sampled	✓	-
Dam	W14103083BH04	389544	6880666	Direct Sampled	✓	-
	MP09-04	389575	6880609	Good	✓	-
	MP09-05	389548	6880590	Good	✓	Duplicate
	MP09-09	389240	6880681	Good	✓	-
	MP09-10	389241	6880684	Good	✓	-
	MP09-11	389220	6880619	Good	✓	-
	MP09-12	389220	6880619	Good	✓	-
	MP09-14	389138	6880722	Frozen	-	-
	MW09-01	389396	6880563	Damaged <sup>2</sup>	-	-
	MW09-02	389393	6880562	Good	✓	-
	MW09-03	389411	6880555	Good	<b>√</b>	Duplicate/Field Blank
Tailings	MW09-04	389420	6880557	Good	✓	-
Facility	MW09-05	389413	6880656	Good	✓	-
	MW09-06	389411	6880653	Good	✓	-
	MW09-07	389322	6880699	Direct Sampled	✓	-
	MW09-08	389620	6880576	Good	✓	-
	MW09-11	389037	6880711	Dry	-	-
	MW09-20	389592	6880586	Dry	-	-
	MW09-21	389536	6880577	Good	✓	-
	MW09-22	389495	6880549	Good	✓	Field Blank
	MW09-23	389459	6880553	Good	✓	-
	MW09-24	389459 6880553 Good ✓ 389561 6880624 Good ✓				-
	W14103083BH03	389132	6880730	Good	✓	Duplicate
	CH-P-13-02/10	388924	6881014	Dry/Damaged <sup>2</sup>	-	-

<sup>1</sup> Direct sampling was completed at sample stations where insufficient volume had been encountered during the June 2014 groundwater sampling. This insufficient volume limited standard purging and sampling methodologies.

<sup>2</sup> Further details concerning damaged, degraded, or obstructed wells are provided in Section 3.2.





### 2.0 METHODOLOGY

### 2.1 Protocols

Groundwater purging, monitoring and sampling conducted by Hemmera/ELR was in accordance with the Groundwater Sampling Standard Operating Procedures included in the document *Scope of Work: Groundwater Sampling Program – Mount Nansen Site 2014.* These procedures were consistent with Environment Yukon's *Protocol for the Contaminated Sites Regulation #7 - Sampling and Decommissioning* (Environment Yukon, March 2011). Methods used were also consistent with the ASTM D4448-01 *Standard Guide for Sampling Groundwater Monitoring Wells* (ASTM, 2013), and the D6452-99 *Guide for Purging Methods for Wells used for Groundwater Quality Investigations* (ASTM, 2012).

### 2.2 WELL MEASUREMENTS AND PURGING

Upon arriving at each sample station (well), headspace gases were measured prior to any other well measurements. Oxygen (%), carbon dioxide (ppm), and methane (%LEL) were measured using a RAE Systems MultiRAE Four-Gas Monitor with photoionization detector (PID).

The well structure and casing of each well were inspected for damage, closure, and general conditions. Depth to water (DTW; m), Depth to bottom (DTB; m), well diameter (cm), and well stick-up height (m) were then recorded from each well.

DTB and DTW were measured using either a Solinst - Model 102 Water Level Meter (for 2.54 cm diameter wells) or a Heron Water Tape (for wells with diameter greater than 2.54 cm). DTB and DTW were measured from (in order of preference): 1) a black mark drawn on the top of the well; 2) the bottom of the most significant notch found on the top of the PVC if a mark was not present; or 3) a line that was drawn on the highest point of the well if no distinguishable point of measure was present. Stick-up height was measured from the lowest point on the bottom of the well casing to the highest point (or distinguishing mark) on the well. Water level meters were cleaned between each sample site using Alconnox low-foaming phosphate-free detergent solution and deionized water.

Following initial inspection and measurements, groundwater wells were purged and sampled using dedicated equipment including high density polyethylene (HDPE) tubing and footvalves. Groundwater wells were purged and sampled using one of three (3) techniques: 1) Hydrolift electric pump using Waterra tubing and footvalve, 2) manual purging using Waterra tubing and footvalve, or 3) GeoPump peristaltic pump. The purging technique chosen for each well was that which would produce the most representative groundwater sample.

Groundwater wells were determined to be sufficiently purged when either three successive field parameter measurements were recorded to be within an allowable tolerance level (as summarized in **Table 2-1**, below) or when a volume of water equivalent to three standing well volumes of water had been purged.

Groundwater turbidity measured in Nephelometric Turbidity Units (NTU) was also measured prior to sampling (described below in **Section 2.3**) and was used as an indication of sample quality. Where possible, samples were not collected until turbidity was less than 50 NTU. Purge volumes and purge rates were measured using a graduated container and stop watch. All well measurements, purging details, and additional field notes were recorded on customized field forms in order to minimize the potential for field errors; this information is presented in **Table 3-1**.

Table 2-1 Groundwater Sampling – Field Parameter Purging Criteria

Field Parameter	Allowable Variance
Temperature (°C)	3%
рН	+0.1
Conductivity (µS/cm)	3%
Specific Conductivity (µS/cm)	3%

### 2.3 DIRECT SAMPLING

During the previous (June) sampling event a moderate number of groundwater wells were found to have an insufficient volume to sample, based on having a limited standing water volume or recharge rate (based on criteria established at that time; Hemmera 2014). While these criteria allowed for clear field decisions by the crew, it limited the number of wells that were sampled. An alternate sampling strategy was established by AAM's consultant (AMEC) prior to the October sampling event in order to obtain samples from low producing wells. At all of the wells identified as having insufficient volume during the June sampling event, Hemmera/ELR direct sampled the well (prior to purging or collecting field parameter measurements), after which time field parameter measurements were collected if possible. Additionally, a priority ranking system for sample collection was established by AAM's consultant (AMEC) and employed in the field (as summarized in **Table 2-2**). This ranking system was to ensure that priority parameters were collected at each well. Further samples were also collected following recharge, where possible.

In addition to the priority ranking order, Hemmera/ELR also considered minimum required sample volumes for laboratory procedures. Where well volume was limited, minimum volumes were collected to maximize the number of program parameters collected.

# 2.4 FIELD PARAMETERS

Hemmera/ELR measured *in-situ* water quality parameters using YSI Professional Plus field meters, Lamotte 2020e or Hach 2100Q turbidity meters, and Hach DR 850 Portable Colorimeters. Flow-through cells were used with the YSI Professional Plus meters to minimize field parameter variability. The *in-situ* groundwater quality parameters recorded at each sample station included; water temperature (°C), specific conductivity (µs/cm), conductivity (µs/cm), oxidation/reduction potential (ORP; mv), pH (pH units), sulphide (mg/l), dissolved oxygen (mg/l), and turbidity (NTU).

During purging, field parameters were monitored at 5 minute intervals, or at volume related intervals (e.g., every 500 mL) in the case of wells with slow recharge. A final set of measurements was recorded at the conclusion of purging.

### 2.5 GROUNDWATER SAMPLING

Groundwater quality samples were collected and preserved in accordance with laboratory directions, and using techniques consistent with *Standard Methods for the Examination of Water and Wastewater* (Rice et al., 2012). ALS Global was the analytical subcontractor chosen for this project, and a summary of the sample bottle set (including parameters analysed and preservation techniques) is provided in **Table 2-2**.

In addition to the analytical parameters provided to Hemmera/ELR in the SOW, AAM's consultant requested that filtered and unpreserved dissolved metals samples be collected from six (6) specific stations at the Site. These additional samples were collected to address arsenic quantification questions from previous sampling events. The stations chosen for this additional paired metals analysis are provided in **Table 2-3**.

Table 2-2 Groundwater Sampling – Preservation and Intended Analysis

Priority	Bottle Type	Parameters Analyzed	Minimum Volume	Sample Treatment	Preservative Added
1a	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered and Preserved	HNO <sub>3</sub>
1b	40 ml (glass)	Dissolved Mercury	15 mL	Field Filtered and Preserved	HCL
1c <sup>1</sup>	120 ml (plastic)	Dissolved Metals	100 ml	Field Filtered, No Head Space	-
2	1 L (plastic)	General Chemistry	250 ml	-	-
3	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	60 ml	Preserved	NaOH
4	250 ml (glass)	NH3	120 ml	Preserved	H <sub>2</sub> SO <sub>4</sub>
5	120 ml (plastic)	Thiocyanate	100 ml	Preserved	HNO <sub>3</sub>
6	120 ml (plastic)	Sulphide	100 ml	Preserved	Zinc Acetate, capped and mixed, then NaOH
7	250 ml (glass amber)	Total Inorganic Carbon	100 ml	-	-
8 <sup>2</sup>	145 ml (plastic)	Cyanide (total, free, weak acid dissociable)	100 ml	Preserved	NaOH

Notes: Denotes filtered, unpreserved dissolved metals for groundwater locations specified by AAM's consultant (AMEC). Completed for a subset of 6 wells. Sampled with zero headspace.

<sup>&</sup>lt;sup>2</sup> Secondary cyanide sample for analysis of free and weak acid dissolved cyanide

Table 2-3 Groundwater Sampling – Sites for Collecting Samples for Paired Metals Analysis

Sample Location	Site Description
MP09-05	tailings dam, downstream toe
MP09-09	tailings facility, interior, west side
MP09-11	tailings facility, interior, west side
MW09-22	tailings dam, downstream toe
GSI-DC-06B	Dome Creek
GSI-DC-10B	Dome Creek

### 2.6 DATA ANALYSIS

Groundwater analytical results were compared to the Canadian Council of Ministers of the Environment (CCME) Water Quality Guidelines for the Protection of Freshwater Aquatic Life (FAL; CCME, 2014). All relevant CCME FAL guidelines are presented in **Table A**.

### 2.7 QUALITY ASSURANCE AND QUALITY CONTROL

### 2.7.1 Field QA/QC

Several controls were used by Hemmera/ELR staff while in the field to ensure that sample integrity was maintained and that data was recorded completely and accurately. All equipment used during the sampling process was dedicated to individual wells, including HDPE tubing and Waterra footvalves, laboratory provided pre-cleaned sample bottles, disposable filters, and disposable syringes. Field staff wore dedicated disposable nitrile gloves for all measurements, purging, and sampling. Water level meters were cleaned between well locations, using Alconox low-foaming phosphate-free detergent and deionized water, and field instruments (YSI field meters and turbidity meters) were checked and/or calibrated before each site visit to ensure the parameters recorded were as accurate as possible.

Project-specific field data sheets were created for the sampling event to help ensure that all required measurements were taken, and that information was recorded correctly. Field data sheets have been included as **Appendix B** of this report.

### 2.7.2 QA/QC

Analytical QA/QC measures were included in the fall sampling program as outlined in the scope of work and as per standard industry practice. This included the collection field duplicates and field blanks, and the use of travel blanks. Duplicate samples were collected at a ratio of 10% of the regular samples (6 duplicates were collected in relation to 49 samples), and a field blank was collected for each day field sampling was conducted (a total of 4 field blanks were collected). Two travel blanks accompanied the analytical supplies and samples from the lab to the field and back to the lab again (1 for each shipment).

The variation between sample and duplicate values was calculated as relative percent difference (RPD). RPD provides a measure of the relative difference between two values in comparison to their mean value, and is calculated as the difference between a sample and its field duplicate over the average of two values. RPD values greater than 20% indicate a potential error that has affected the precision of sampling or analysis. RPD was calculated according to the following formula:

$$\%RPD = \left(\frac{\left(\frac{x_1 - x_2}{x_1 + x_2}\right)}{2}\right) x \ 100$$

RPD is not calculated if either the sample or the field duplicate concentration is less than five times the detection limit.

The analytical results for field and travel blanks were reviewed to determine whether any of the parameters tested were detected (i.e., result exceeding the detection limit). In such cases, the parameter or element in question and its concentration were reviewed to determine potential sources of contamination or error.

# 3.0 RESULTS

Summary tables of the laboratory analytical results are presented in **Table A** of this report, including a comparison of results to CCME FAL guidelines. A summary of the QA/QC sampling results is also attached as **Table B**, including analytical data for duplicates, field blanks, and travel blanks. Laboratory analytical reports are provided as **Appendix C**.

### 3.1 GROUNDWATER SAMPLING SUMMARY

Groundwater sampling was completed between October 7 and 10, 2014. Weather conditions varied throughout the time of sampling with ambient air temperature ranging from -10 to 7°C. Of the 65 wells specified for the October sampling event, 63 were located and assessed during the sampling event and two (2) were found to have been destroyed (MP09-01 / GSI-PC-01-B). 47 wells were sampled; 28 using purging and sample methods as per the program protocols, and 19 sampled directly without purging according to the sample priority ranking. In 13 of the 19 direct sampled wells, volumes were insufficient to collect a full sample set. **Table 3.1** provides a summary of sample success for wells sampled directly without purging.

Of the 16 wells assessed but not sampled during the program, ten (10) wells were frozen, two (2) wells were dry, and four (4) wells were either damaged or had an obstruction in the well. A summary of the condition (status) and sampling result for groundwater wells is provided in **Table 1-1**. A summary of all well measurements, purge details, and *in-situ* parameter results is provided in **Table 3-2**.

Table 3-1 Summary of Samples Collected from Low Producing Wells in October 2014

Well Name	Dissolved Metals	Dissolved Mercury	Dissolved Metals Pair <sup>1</sup>	Physical Parameters	Anions/ Nutrients	Cyanide	Ammonia	Thiocyanate	Sulphide	Total Inorganic Carbon <sup>2</sup>	Cyanide
Priority	1a	1b	1c	2	2	3	4	5	6	7	8
GSI-DC-01B	✓	✓	-	✓	-	-	-	-	-	-	-
GSI-DC-02B	✓	✓	-	✓	✓	✓	-	-	-	-	-
GSI-DC-03B	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
GSI-DC-06B	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
GSI-DC-08-B	✓	✓	-	✓	✓	-	-	-	-	-	-
GSI-HA-01A	✓	✓	-	✓	✓	✓	-	-	-	-	-
GSI-HA-02A	✓	✓	-	✓	✓	ı	-	-	-	-	-
GSI-HA-03A	✓	✓	-	✓	✓		-	-	-	-	-
GSI-HA-04A	✓	✓	-	✓	✓	ı	-	-	-	-	-
GSI-HA-05A	✓	✓	-	✓	✓	<b>✓</b>	-	-	-	-	-
CH-P-13-01/10	✓	✓	-	✓	✓	✓	✓	-	-	-	-
CH-P-13-03/50	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
GLL07-02	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
GSI-PC-03-B	✓	✓	-	-	-	-	-	-	-	-	-
GSI-PC-04-B	✓	✓	-	-	-	-	-	-	-	-	-
GSI-PC-05-B	✓	✓	-	-	-	-	-	-	-	-	-
W14103083BH02	✓	✓	-	✓	✓	-	✓	✓	-	-	-
W14103083BH04	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓
MW09-07	✓	✓	-	✓	✓	✓	✓	✓	✓	✓	✓

Notes: Refer to section 2.2 for details concerning direct sampling methodologies, including minimum volume collection. Samples were collected based on field priority ranking as specified in Table 2-2.

<sup>1</sup> Sampling of paired dissolved metals was requested by AAM to assist with arsenic quantification. Sample locations were chosen by AAM's consultant. Groundwater monitoring wells selected for paired metals analysis are summarized in Table 2-3.

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Mount Nansen October 2014 Groundwater Monitoring
- 15 January 2015

Table 3-2 Groundwater Field Parameters and Well Measurements for 2014 Spring Sampling Program

Area	Location ID	Sample Date	Stick up Height (m)	Depth To Water (m) <sup>1</sup>	Depth to Bottom (m)	Standing Water Volume (L)	Volume Purged (L)	Purge Start Time	Purge End Time	Elapsed Purge Time	Purge Rate (Vmin)	Criteria <sup>2</sup> (3WV/PS/DS)	Draw Down (m)	Hd	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Dissolved Sulphide (mg/L)	Methane (%LEL)	Oxygen (%)	Carbon Dioxide (ppm)	Field Turbidity (NTU)	Method Used	Well Diameter (inches) <sup>3</sup>
	GSI-DC-01A	2014-10-07	0.93	Dry	0.81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	-	-	-	1 DP
	GSI-DC-01B	2014-10-07	0.95	1.42	1.54	-	-	-	-	-	-	DS	-	-	-	-	-	-	-	0	20.9	-	-	Peristaltic	1 DP
	GSI-DC-02A	2014-10-07	0.92	1.65	1.92	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	0	-	-	1 DP
	GSI-DC-02B	2014-10-07	0.88	2.25	4.07	1	-	-	-	-	-	DS	-	-	-	-	1	1	•	0	20.9	-	-	Peristaltic	1 DP
	GSI-DC-03A	2014-10-07	0.91	1.19	1.91	1	-	-	-	-	-	-	-	-	-	-	ı	1	ı	0	20.2	480	-	-	1 DP
	GSI-DC-03B	2014-10-07	0.91	1.19	3.76	-	-	-	-	-	-	DS	-	-	-	-	-	-	•	0	20.9	700	-	Peristaltic	1 DP
	GSI-DC-05A	2014-10-09	1.04	Frozen	1.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.5	510	-	-	1 DP
	GSI-DC-05B	2014-10-09	0.55	Frozen	2.81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.5	500	-	Peristaltic	1 DP
	GSI-DC-06A	2014-10-10	0.87	0.97	1.91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	440	-	-	1 DP
Dome	GSI-DC-06B	2014-10-10	0.51	0.63	2.69	-	-	-	-	-	-	DS	-	-	-	-	-	-	-	2	20.9	700	51.40	Peristaltic	1 DP
Creek	GSI-DC-07A	2014-10-10	0.94	1.26	1.91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	480	-	-	1 DP
	GSI-DC-07B	2014-10-10	0.93	1.27	3.71	1.13	6	11:15	11:45	0:30	0.20	3WV	0.357	6.90	1.07	579	-3.1	1.38	0.04	0	20.9	460	4.48	Peristaltic	1 DP
	GSI-DC-08-A	2014-10-10	0.91	1.20	1.85	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.5	460	-	-	1/2 DP
	GSI-DC-08-B	2014-10-10	0.27	0.66	2.78	0.25	0.35 (used as sample)	10:31	10:40	0:09	-	DS	-	-	-	-	1	1	0.80	0	20.5	480	1078 AU	Peristaltic	1/2 DP
	GSI-DC-09A	2014-10-10	0.91	1.16	2.00	1	-	-	-	-	-	-	-	-	-	-	-	1	ı	0	20.5	430	-	-	1/2 DP
	GSI-DC-09-B	2014-10-10	0.93	1.19	3.86	0.3	2.1	11:26	11:41	0:15	0.14	3WV	0.260	6.01	1.9	94	61.4	0.49	0.05	0	20.5	480	2.56	Peristaltic	1/2 DP
	GSI-DC-10A	2014-10-10	1.04	Frozen	1.81	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.5	430	-	-	1/2 DP
	GSI-DC-10-B	2014-10-10	1.03	1.00	3.76	0.1	2	12:30	12:45	0:15	0.13	3WV	_3	6.15	1.9	234	41.4	0.66	0.06	0	20.5	410	4.76	Peristaltic	1/2 DP
	GSI-HA-01A	2014-10-07	1.22	2.27	3.03	-	-	-	-	-	-	DS	-	-	-	-	-	-	-	0	20.9	0	-	Peristaltic	1 DP
	GSI-HA-02A	2014-10-07	1.49	1.98	3.02	-	-	-	-	-	-	DS	-	-	-	-	-	-	-	0	20.9	0	-	Peristaltic	1 DP
	GSI-HA-03A	2014-10-07	0.93	1.01	2.10	-	-	-	-	-	-	DS	-	-	-	-	-	-	-	0	20.9	0	-		1 DP
	GSI-HA-04A	2014-10-07	0.59	1.12	2.10	-	-	-	-	-	-	DS	-	-	-	-	-	-	-	0	20.6	0	-	Peristaltic	1 DP
Mill Complex	GSI-HA-05A	2014-10-07	0.96	1.17	2.10	-	-	-	-	-	-	DS	-	-	-	-	-	-	-	0	20.9	0	-	Peristaltic	1 DP
	MW09-16	2014-10-07	1.22	1.67	2.61	2	10	11:53	12:26	0:33	0.30	3WV	0.009	6.55	2.51	2154	55.5	5.38	0.01	0	20.6	0	1.22	Peristaltic	2
	MW09-17	2014-10-07	0.97	5.12	5.90	2	8.5	16:28	16:29	0:01	0.27	3WV	0.000	6.70	0.06	2914	98.2	2.14	0.02	0	20.9	0	0.43	Peristaltic	2
	MW09-18 <sup>4</sup>	2014-10-07	0.9	4.57	7.69	6	14	16:48	17:33	0:45	0.31	PS	-	6.73	-0.21	2847	106.8	1.31	0.02	0	20.9	660	0.33	Peristaltic	2
	MW09-19	2014-10-07	0.99	2.53	5.87	7	18	9:57	10:58	1:00	0.30	PS	1.368	6.44	1.15	2290	-31.2	2.78	0.15	0	20.6	0	1.92	Peristaltic	2
Brown	CH-P-13-01/10 <sup>4</sup>	2014-10-10	0.5	2.71	6.63	4.88	3	9:08	9:31	0:23	0.13	DS	-	6.82	0.17	856	189.4	11.49	0.04	0	20.6	480	17.40	Peristaltic	1 1/2
McDade	CH-P-13-03/10	2014-10-07	0.68	Blocked	5.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.6	2440	-	-	2

Area	Location ID	Sample Date	Stick up Height (m)	Depth To Water (m) <sup>1</sup>	Depth to Bottom (m)	Standing Water Volume (L)	Volume Purged (L)	Purge Start Time	Purge End Time	Elapsed Purge Time	Purge Rate (Vmin)	Criteria <sup>2</sup> (3WV/PS/DS)	Draw Down (m)	Hd	Temperature (°C)	Conductivity (uS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Dissolved Sulphide (mg/L)	Methane (%LEL)	Oxygen (%)	Carbon Dioxide (ppm)	Field Turbidity (NTU)	Method Used	Well Diameter (inches) <sup>9</sup>
Pit	CH-P-13-03/50	2014-10-09	0.60	48.50	50.76		-	-	-			DS		-	-	-	-	-	-	0	20.9	606	1656 AU	Waterra	1
	CH-P-13-04/10	2014-10-10	0.63	3.05	6.32	6.54	2.05	16:37	16:52	0:15	0.14	PS	2.680	6.82	0.00	80	42.9	3.91	0.09	0	20.9	580	13.80	Peristaltic	1 3/4
	CH-P-13-04/35	2014-10-07	0.60	Blocked	6.51	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	550	-	-	1
	CH-P-13-05/50	2014-10-07	0.78	22.60	50.47	30.5	90	13:46	14:43	0:57	1.58	3WV	1.480	5.82	0.40	356	98.2	1.42	0.05	0	20.9	440	7.37	Hydrolift	1
	GLL07-01	2014-10-07	0.75	Frozen	13.89	-	•	-	-	-	-	-		-	-		•	1	-	0	15.3	-	-	-	2
	GLL07-02	2014-10-08	1.37	8.31	7.20	5	ı	-	-	-	-	DS	ı	-	-	ı	ı	ı	0.13	0	20.7	460	31.50	Bailer	6
	GLL07-03	2014-10-07	1.15	5.04	11.75	13.5	45	11:28	12:25	0:57	0.79	3WV	4.205	6.01	1.20	159	99.9	2.32	0.19	0	20.9	460	24.00	5/8" Waterra, manual	2
	MW09-13	2014-10-07	0.75	Frozen	9.02	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	960	-	-	2
	MW09-14	2014-10-07	0.73	Frozen	6.94	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
	MW09-15	2014-10-07	0.85	Frozen	14.04	-	-	-	-			-		-	-	-	-	-	-	0	20.9	560	-	-	2
	GSI-PC-01-A	-	-	Destroyed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	GSI-PC-01-B	-	-	Destroyed	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	GSI-PC-02-A	2014-10-07	0.83	Frozen	0.26	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	430	-	-	1
	GSI-PC-02-B	2014-10-07	0.85	Frozen	0.27	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	20.9	530	-	-	1
	GSI-PC-03-A	2014-10-08	0.88	Frozen	2.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	490	-	-	1/2 DP
	GSI-PC-03-B	2014-10-08	0.90	1.60	2.64	-	-	-	-	-	-	DS	-	-	-	-	-	-	0.37	0	20.9	550	69.50	Micro Waterra	1/2 DP
Pony	GSI-PC-04-A	2014-10-08	0.89	0.39	2.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	430	-	-	1/2 DP
Creek	GSI-PC-04-B	2014-10-08	0.92	1.28	2.59	-	-	-	-	-	-	DS	-	-	-	-	-	-	0.43	0	20.9	460	53.30	Micro Waterra	1/2 DP
	GSI-PC-05-A	2014-10-08	0.92	1.51	2.10	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.6	440	-	-	1/2 DP
	GSI-PC-05-B	2014-10-08	0.91	1.85	3.75	-	-	-	-	-	-	DS	-	-	-	-	-	-	0.80	0	20.6	630	2084 AU	Micro Waterra	1/2 DP
	MP09-01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	MP09-02 <sup>5</sup>	2014-10-08	1.36	1.62	1.97	<0.65	6	9:55	10:01	0:06	1.0	3WV	-	-	-	-	-	-	0.03	0	20.9	490	6.04	Peristaltic	1/2 DP
	MP09-03	2014-10-07	0.82	Frozen	1.62	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	430	-	-	1/2 DP
	MP09-08	2014-10-08	1.50	0.88	1.54	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	440	-	-	1/2 DP
	W14103083BH01	2014-10-09	0.64	Frozen	6.65	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2
Seepage Dam	W14103083BH02 <sup>5</sup>	2014-10-09	0.80	6.17	6.81	1.28	-	-	-	-	-	DS	-	-	-	-	-	•	-	-	-	-	-	Peristaltic	2
	W14103083BH04 <sup>5,6</sup>	2014-10-09	0.80	6.23	6.59	0.73	-	-	-	-	-	DS	-	-	-	-	-	-	-	-	-	-	-	Peristaltic	2
Tailings	MP09-04	2014-10-09	1.20	1.96	3.07	2.25	6.5	13:29	13:56	0:17	0.38	PS	0.130	7.15	0.10	159	37.4	3.65	0.04	0	20.9	460	6.41	Peristaltic	1 1/2
Facility	MP09-05	2014-10-09	1.20	1.40	1.82	0.45	3	11:16	11:34	0:18	0.17	3WV	0.070	6.68	1.00	356	-61.5	0.66	0.03	0	20.5	410	3.98	Peristaltic	1 1/2

Area	Location ID	Sample Date	Stick up Height (m)	Depth To Water (m) <sup>1</sup>	Depth to Bottom (m)	Standing Water Volume (L)	Volume Purged (L)	Purge Start Time	Purge End Time	Elapsed Purge Time	Purge Rate (Vmin)	Criteria² (3WV/PS/DS)	Draw Down (m)	Hd	Temperature (°C)	Conductivity (µS/cm)	ORP (mV)	Dissolved Oxygen (mg/L)	Dissolved Sulphide (mg/L)	Methane (%LEL)	Oxygen (%)	Carbon Dioxide (ppm)	Field Turbidity (NTU)	Method Used	Well Diameter (inches) <sup>9</sup>
	MP09-09 <sup>6</sup>	2014-10-10	2.24	2.68	5.54	2.86	2.5	8:20	8:35	0:15	0.17	PS	2.868	8.90	2.81	546	771.0	4.08	0.53	-	-	-	179.00	Peristaltic	1 1/4
	MP09-10 <sup>6</sup>	2014-10-10	1.98	2.50	4.27	1.77	1.5	8:40	8:55	0:15	0.10	PS	1.768	8.86	2.97	290	85.6	7.04	0.80	-	-	-	Over range for instrument	Peristaltic	1 1/4
	MP09-11 <sup>6</sup>	2014-10-09	1.74	1.54	4.86	5.88	6	14:25	15:52	0:27	0.22	PS	3.158	7.17	1.75	9	-20.2	2.69	0.14	-	-	-	54.1	Peristaltic	1 1/4
	MP09-12 <sup>6</sup>	2014-10-09	1.70	1.68	4.18	4.5	5	13:52	14:09	0:17	0.29	PS	2.282	6.99	2.33	642	27.8	5.30	0.40	-	-	-	141.00	Peristaltic	1 1/4
	MP09-14	2014-10-09	1.07	0.46	1.97	-	-	-	-	-	-	-		-	-	-	-	-	-	-	-	-	-	-	1/2 DP
	MW09-01 <sup>7</sup>	2014-10-08	0.82	5.01	8.53	-	-	-	-	-	-	-		-	-	-	-	-	-	0	20.9	430	-	Peristaltic	1 1/2
	MW09-02	2014-10-08	0.75	2.40	4.82	5	9.5	9:10	10:14	1:04	0.15	PS	0.921	6.97	2.44	3194	-47.8	1.34	0.02	0	20.9	560	1.97	Peristaltic	2
	MW09-03	2014-10-0	0.37	4.31	9.83	12	25	12:55	13:55	1:00	0.42	PS	0.463	6.99	1.37	2681	20.3	0.92	0.04	0	20.9	430	0.75	Peristaltic	2
	MW09-04	2014-10-08	0.50	2.87	6.36	8	15	11:31	12:37	1:06	0.23	PS	1.734	8.38	2.80	2870	19.2	0.99	0.01	0	20.9	440	1.23	Peristaltic	2
	MW09-05	2014-10-08	0.81	5.95	7.47	3	7.5	16:03	17:00	0:57	0.13	PS	0.646	6.12	3.07	1907	72.2	0.99	0.02	0	20.9	550	7.68	Peristaltic	2
	MW09-06	2014-10-08	1.65	2.63	5.94	7	15.5	17:18	18:24	1:06	0.23	PS	0.268	7.40	4.96	1819	61.2	0.84	0.02	0	20.9	460	4.05	Peristaltic	2
	MW09-07	2014-10-10	1.35	2.61	3.40	1.6	-	-	-			DS		-	-	-	-	-	0.52	0	20.9	490	35.8	Peristaltic	2
	MW09-08	2014-10-09	1.08	1.12	3.91	5.62	17.5	15:18	15:55	0:37	0.47	3WV	0.160	6.56	3.00	59	-72.3	0.35	0.11	0	20.9	430	6.22	Peristaltic	2
	MW09-11	2014-10-08	0.82	Dry	4.91	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.4	860	-	Bailer	2
	MW09-20	2014-10-09	0.91	Dry	3.71	-	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	600	-	Unknown	2
	MW09-21	2014-10-09	0.72	1.71	3.25	4	11.5	10:07	10:40	0:33	0.35	PS	0.300	6.61	0.90	349	-64.0	0.90	0.06	0	20.5	550	10.40	Peristaltic	2
Tailings	MW09-22	2014-10-08	0.88	3.45	5.16	12	10	14:28	15:21	0:43	0.23	PS	0.573	6.06	2.00	1600	21.7	1.51	0.06	0	20.9	460	8.40	Peristaltic	2
Facility	MW09-23	2014-10-08	0.10	11.09	15.82	11	35	8:09	8:44	0:45	0.78	3WV	0.247	6.54	0.11	2592	13.8	2.37	0.16	0	20.9	480	102.00	Hydrolift	2
	MW09-24	2014-10-09	0.68	9.30	11.17	4	15	8:23	9:07	0:44	0.34	3WV	0.070	7.19	0.40	188	62.8	8.60	0.09	0	20.9	1180	18.20	Purged with 5/8" waterra, sampled with bailer	2
	W14103083BH03	2014-10-08	0.76	1.70	5.38	7.5	24	17:36	18.24	0:48	0.50	3WV	0.070	6.35	1.50	185	-76.2	1.17	3:50	0	20.9	480	13.20	Peristaltic	2
	CH-P-13-02/10 <sup>8</sup>	2014-10-09	NR	8.11	8.17	0.09	-	-	-	-	-	-	-	-	-	-	-	-	-	0	20.9	1030	-	-	1 1/2

Notes: To maximize the sample return for analytical analysis, field parameters were not collected at direct sampled wells.

<sup>1</sup> Depth to Water (DTW) values for frozen or damaged wells indicates depth to ice or blockage

<sup>&</sup>lt;sup>2</sup> 3WV = Three well volumes purged prior to sample collection, PS = field parameters stabilized prior to sample collection, and DS = sample collected directly without purging.

<sup>&</sup>lt;sup>3</sup> Drawdown could not be measured due to well diameter. Water level meter could not be placed in well during purging process.

<sup>&</sup>lt;sup>4</sup> Field parameters were not collected at sample site MP09-02. During the purging process freezing was occurring in the tubing causing the well to go dry. Samples were collected following purging of three well volumes.

<sup>&</sup>lt;sup>5</sup> DTB of W14103083BH02 and W14103083BH04 were found to be above previous measurements. Variation in DTB measurements is thought to be the result of ice accumulation in the bottom of the well. Samples were therefore collected from above an ice blockage.

<sup>&</sup>lt;sup>6</sup> Head space gases were not measured at these sites. Issues with the photoionization detector prevented in-situ data collection.

<sup>&</sup>lt;sup>7</sup> Sample location MW09-01 could not be sampled due to an excessive quantity of tailings present in the groundwater. Presence of tailing may indicate the well screen has been damaged or compromised.

<sup>&</sup>lt;sup>8</sup> Although sample site CH-P-13-02/10 was recorded as a dry well, ~90ml of standing water was measured. This volume was determined to be insufficient for sampling. Bentonite was also present at the bottom of the well.

<sup>&</sup>lt;sup>9</sup> DP refers to Drive Point

### 3.2 ANALYTICAL RESULTS

Analytical results, including a brief summary of CCME FAL guideline exceedances and a description of factors that may have influenced data precision, are provided below. Details regarding well status, including a description of damaged, destroyed, or underperforming wells, are also discussed.

In several instances, the reported laboratory method detection limits (MDL) for parameters exceeded applicable CCME FAL standards (values shaded light grey in **Table A**). In these cases, samples having high levels of certain materials required laboratory dilution in order to perform the required analyses, and thereby resulting in an elevated MDL. For the purpose of this report, samples where the reported MDL is higher than the applicable guideline have not been reported as CCME FAL exceedances.

### 3.2.1 Dome Creek

Groundwater along Dome Creek was sampled between October 7 and October 10, 2014. Samples were obtained from eight (8) of the nine (9) drive-point piezometers located within this area identified for the sampling program. Sample site GSI-DC-05B was frozen during the time of sampling. Sample sites GSI-DC-01B, GSI-DC-02B, GSI-DC-03B, GSI-DC-06B, and GSI-DC-08-B were sampled directly without purging. A summary of the samples collected for direct sampled wells is provided in **Table 3-1**.

Field pH measurements were less than the CCME FAL guideline at two (2) sample locations (GSI-DC-09B and GSI-DC-10B). Field dissolved oxygen concentrations were also less than the CCME FAL guideline at three (3) sample locations (GSI-DC-09B, GSI-DC-10B, and GSI-DC-07B). Concentrations of dissolved aluminum, arsenic, cadmium, chromium, copper, iron, nickel, selenium, and zinc exceeded the CCME FAL guidelines at one or more sample location in the Dome Creek area (**Table A**). Concentrations of fluoride and ammonia also exceeded the CCME FAL guidelines in various sample locations.

The measurement of in-situ headspace vapours was made difficult at the Dome Creek sample sites due to dedicated sampling tubing being present in these small diameter wells. There was no space in the well head to sample vapours until dedicated sampling equipment was removed, after which time well head gases may have dispersed.

Groundwater turbidity in GSI-DC-08-B was extremely high during the time of sample collection (1078 AU) and could have influenced analytical results. Groundwater turbidity in GSI-DC-06B was measured at 51.4 NTU, which is considered slightly greater than optimal. Where measured, the turbidity of all other samples collected within the Dome Creek area was less than 50 NTU (**Table 3-2**).

# 3.2.2 Mill Complex

Groundwater in the Mill Complex Area was sampled on October 7, 2014. Samples were obtained all nine (9) of the wells identified in this area. Drive-points GSI-HA-01A, GSI-HA-02A, GSI-HA-03A, GSI-HA-04A, and GSI-HA-05A were sampled directly without purging. A summary of the samples collected for direct sampled wells is provided in **Table 3-1**.

Field pH measurements were less than the CCME FAL guideline at sample site MW09-19. Field dissolved oxygen concentrations were also less than the CCME FAL guideline at four (4) sample locations (MW09-16, MW09-17, MW09-18, and MW09-19). Concentrations of dissolved aluminum, arsenic, cadmium, chromium, copper, iron and zinc exceeded the CCME FAL guidelines at one or more sample location in Mill Complex area. Concentrations of fluoride also exceeded the CCME FAL guidelines in various sample locations.

Monitoring well MW09-18 had vents installed on the side of the PVC stand pipe, which could have influenced *in-situ* gas concentrations.

Where measured, groundwater turbidity of all samples collected within this area was less than 50 NTU (Table 3-1).

### 3.2.3 Brown McDade Pit

Groundwater wells in the Brown McDade Pit area were sampled between October 7 and October 10, 2014. Samples were obtained from six (6) of the 12 sample sites located within this area. Four (4) wells were frozen during the time of sampling (MW09-13, MW09-14, MW09-15, and GLL07-01), and two (2) wells had an obstruction that prevented sampling (CH-P-13-03/10, and CH-P-13-04/35). Drive-points CH-P-13-01/10, CH-P-13-03/50, and GLL07-02 were sampled directly without purging. A summary of the samples collected for direct sampled wells is provided in **Table 3-1**.

Field pH measurements were less than the CCME FAL guideline at two (2) sample locations (CH-P-13-05/50 and GLL07-03). Field dissolved oxygen concentrations were also less than the CCME FAL guideline at three (3) sample locations (CH-P-13-04/10, CH-P-13-05/50, and GLL07-03). Concentrations of dissolved aluminum, arsenic, cadmium, chromium, copper, iron, selenium, and zinc exceeded the CCME FAL guidelines at one or more sample location in Brown McDade Pit area.

CH-P-13-03/10 was damaged at the top coupler of the PVC pipe, the field crew was able to successfully repair the well. The well casing material (sand) was missing and presumed to have fallen into the well, as indicated by the DTB measurement of 5.2 m which was less than that previously documented DTB (10 m) during the spring sampling event. Re-developing the well and removing the sand was not possible using a hydrolift due to an absence of groundwater, hence this well is still considered to be damaged.

CH-P-13-04/35 was blockage at 6.505 m below the surface. Based on the sound and feel of vibration on the water level meter, it appeared to the crew as though it may have been obstructed by a bailer, but this could not be confirmed. Based on a review of available well logs, Hemmera/ELR also believe that the obstruction could be an existing piezometer installation. There is a partial record of a piezometer having been installed at 35 m, however no cables extend to the well surface. Therefore, it is possible that wires or cables have fallen into the well and have developed the blockage at the current point of refusal for sampling equipment. In order to verify the type of blockage and a potential solution, it may be necessary to employ a well inspection camera during a future monitoring event. During the October 2014 monitoring event, an additional bailer was used to verify no water was present in the well above the blockage.

Sample site GLL07-02 had no markings or identification on the well casing. This sample site consisted of a large (15.5 cm) metal pipe/stick-up protector with no PVC or internal well casing (refer to Photo).

Wells CH-P-13-05/50 and GLL07-03 were not properly sealed (no PVC caps or J-plugs were observed during initial inspection).

Groundwater turbidity in CH-P-13-03/50 was extremely high during the time of sample collection (1656 AU) which could have influenced analytical results. The turbidity of GLL07-03 was within an acceptable range during the start of sample collection but became extremely cloudy during the collection of the general chemistry samples. Where measured, the turbidity of all other samples collected within the Brown McDade Pit area was less than 50 NTU (**Table 3-2**).

Based on observations during the fall sampling event, Hemmera/ELR noted that groundwater well CH-P-13-01/10 may be influenced by discontinuous permafrost (i.e., the well was frozen during the spring event and had very limited recharge during the fall event despite having a moderate standing water volume of 4.88 L). Based on this observation, the groundwater sample collected during the October 2014 sampling event may represent the water quality of the permafrost active layer. These observations are described further in **Appendix D**.

### 3.2.4 Pony Creek

Groundwater wells along Pony Creek were sampled on October 8, 2014. Samples were obtained from four (4) of the nine (9) sample sites in this area during the sampling event. Three (3) wells were frozen during the time of sampling (GSI-PC-02-B, MP09-03, and MP09-08), and two (2) wells had been destroyed by placer mining operations (MP09-01 and GSI-PC-01-B). Drive-points GSI-PC-03-B, GSI-PC-04-B, and GSI-PC-05-B were sampled directly without purging. A summary of the samples collected for direct sampled wells is provided in **Table 3-1**.

Concentrations of dissolved aluminum, arsenic, chromium, copper, iron, and zinc exceeded the CCME FAL guidelines at one or more sample location in this area.

Field parameters were not collected at sample site MP09-02 due to freezing in the sample tubing. Samples were collected following purging of three well volumes.

Groundwater turbidity in GSI-PC-05-B was extremely high during the time of sample collection (2084 AU) which could have influenced analytical results. The turbidity of GSI-PC-03-B and GSI-PC-04-B was also outside an acceptable range during the sample collection (69.5 NTU and 53.3 NTU). Where measured, the turbidity of all other samples collected within this area was less than 50 NTU (**Table 3-1**).

# 3.2.5 Seepage Dam

Groundwater wells in the Seepage Dam area were sampled between October 8 and October 9, 2014. Samples were obtained from two (2) of the three (3) sample sites in this area during the sampling event. Well W14103083BH01 was frozen during the time of sampling. Sample sites W14103083BH02 and W14103083BH04 were sampled directly without purging. A summary of the samples collected for direct sampled wells is provided in **Table 3-1**.

Concentrations of dissolved cadmium and selenium exceeded the CCME FAL guidelines at one or more sample location in this area. Concentrations of fluoride also exceeded the CCME FAL guidelines in various sample locations.

Based on observations during the fall sampling event, Hemmera/ELR noted that groundwater wells W14103083BH02 and W14103083BH04 may be influenced by discontinuous permafrost. These wells were frozen during the spring event and had very limited recharge during the fall event despite the presence of standing water. Further, the depth to bottom of these wells was reduced from previous measurements (spring; 7.920 m and 6.730 m respectively, fall; 6.806 m and 6.590 m respectively). This reduction could be the result of ice accumulation in the bottom of the well. Based on these observations, the groundwater samples collected during the October 2014 sampling event may represent the water quality of the permafrost active layer. These observations are described further in **Appendix D**.

Head space gases were not measured from sample site W14103083BH04. Issues with the photoionization detector prevented in-situ data collection at this site.

# 3.2.6 Tailings Facility

Groundwater wells in the Tailings Facility area were sampled between October 8 and October 10, 2014. Samples were obtained from 18 of the 23 sample sites located in this area.

Two (2) wells were dry during the time of sampling (MW09-11 and MW09-20), one (1) was frozen (MP09-14), and two (2) wells were damaged and could not be sampled (MW09-01 and CHP-13-02/10). Sample site MW09-07 was sampled directly without purging. A summary of the samples collected for direct sampled wells is provided in **Table 3-1**.

Concentrations of dissolved aluminum, arsenic, cadmium, chromium, copper, iron, mercury, selenium, silver and zinc exceeded the CCME FAL guidelines at one or more sample location in this area. Groundwater pH in the tailings facility area was also outside of CCME FAL guidelines at sample sites MW09-05, MW09-22, and W14103083BH03. Field dissolved oxygen concentrations were less than the CCME FAL guideline at all sample sites located within this area. Concentrations of fluoride, ammonia, nitrite, and free cyanide also exceeded the CCME FAL guidelines in at least one sample station.

Wells MP09-09, MP09-10, MP09-12, and MW09-07 had vents installed on the side of the PVC well, which could have influenced in-situ gas measurements. Head space gases were not measured from sample sites MP09-09 and MP09-10. Issues with the field meter prevented in-situ data collection at these sites.

Sample locations MP09-12 and MW09-08 were initially frozen when monitored. Hemmera/ELR used boiled laboratory deionized water to thaw the well before purging.

Sample location MW09-01 could not be sampled due to an excessive quantity of tailings present in the groundwater. There had previously been a blockage at this well (June 2014) which was not encountered during the October sampling event; it is possible that this had been remnant ice. The designation of MW09-01 as a damaged well during the October event was due to the presence of tailings, which may indicate that the well screen has been damaged or compromised.

ELR/Hemmera field staff noted that the well casing of sample site MW09-08 is elevated above the metal stickup protector and therefore is not properly sealed.

Although sample site CH-P-13-02/10 was recorded as a dry well, ~90 ml of standing water was measured. This volume was determined to be insufficient for sampling. This well was considered to be damaged due to the presence of bentonite at the bottom of the well. CH-P-13-02/10 was treated as dry well and therefore not sampled. It may be possible to re-develop this well during a future monitoring event if sufficient water is present.

Groundwater turbidity of samples collected from MP09-09, MP09-11, and MP09-12 were greater than the target limit of 50 NTU for sampling (179, 54.1, and 141 NTU), indicating that suspended solids could potentially affect the sample quality. Field turbidity was also extremely high in MP09-10, measuring 'out of range' on the field turbidity meter (>4000 NTU). Where measured, turbidity of all other samples collected within this area was less than 50 NTU (**Table 3-2**).

# 3.3 QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

Six (6) duplicate groundwater samples were collected during the fall sampling event. Two (2) travel blanks were provided by the laboratory and accompanied the samples throughout the sampling program.

One (1) field blank was prepared on site for each day of sampling (4 field blanks in total). Detailed results of QA/QC sampling are provided in **Table B**, including RPD values for all duplicate and sample pairs collected.

### 3.3.1 Field and Travel Blanks

The majority of field blank and travel blank analytical results were reported as less than the MDL, indicating minimal evidence of contamination during the sampling or transportation process. A detectable concentration of dissolved aluminum (0.0015 mg/l) was recorded in Field Blank 1 which was sampled on October 7, 2014. A detectable concentration of dissolved copper (0.00027 mg/l) was recorded in Field Blank 3 which was sampled on October 9, 2014. No detectable concentrations of any parameter were recorded in Field Blanks 2 or 4.

A detectable concentration of ammonia was recorded in Trip Blank 1 (0.0093 mg/L).

### 3.3.2 Field Duplicates

### 3.3.2.1 CH-P-13-05/50 and DUP-1

Field blank and travel blank analytical results were reported less than detection limits for all analysed parameters, indicating that there was no evidence of contamination during the sampling, transportation, or laboratory analysis process.

### 3.3.2.2 MW09-19 and DUP-2

Field blank and travel blank analytical results were reported less than detection limits for all analysed parameters, indicating that there was no evidence of contamination during the sampling, transportation, or laboratory analysis process.

### 3.3.2.3 W14103083BH03 and DUP-3

Field blank and travel blank analytical results were reported less than detection limits for all analysed parameters, indicating that there was no evidence of contamination during the sampling, transportation, or laboratory analysis process.

### 3.3.2.4 MW09-03 and DUP-4

Field blank and travel blank analytical results were reported less than detection limits for all analysed parameters, indicating that there was no evidence of contamination during the sampling, transportation, or laboratory analysis process.

# 3.3.2.5 MP09-05 and DUP-5

The RDP values for sulphate, total cyanide, and total organic carbon between MP09-05 and DUP-5 (25.8%, 22.9%, and 63.3%, respectively) exceeded the desired limit which could suggest a potential error affecting data precision. All other RDP values were within an acceptable range of variability (less than 20%). As the RDP values of sulphate and total cyanide only marginally exceed the recommended 20% threshold, the results are still considered to be satisfactory. As the RDP value for total organic carbon greatly exceeds the acceptable limit, Hemmera/ELR believe that this result may not be representative.

Based on a review of the available data, no definitive reason for these variances is apparent. Only three RDP exceedences were observed amongst all parameters, and from three separate sample bottles in the field. A review of the field data suggests proper purging (stable parameters, over 6 well volumes purged).

### 3.3.2.6 GS1-DC-07B and DUP-6

Field blank and travel blank analytical results were reported less than detection limits for all analysed parameters, indicating that there was no evidence of contamination during the sampling, transportation, or laboratory analysis process.

# 3.3.3 Quality Assurance and Quality Control Summary

Results for the QAQC analytical program show minimal evidence of contamination during the sampling, transportation, and laboratory testing process. Overall, across six collected field duplicates, elevated variation between test and duplicate samples was only elevated in one sample, and for only three isolated parameters (sulfate, total organic carbon, and total cyanide). Similarly, among four field blanks collected in the program only two individual parameter detections occurred (aluminum and copper). Finally, one single ammonia detection occurred among two travel blanks. Overall, these results are considered to represent a sound QA/QC program with no indications of contamination during field collection, transportation, or laboratory process.

# 4.0 RECOMMENDATIONS

Hemmera/ELR has prepared the following recommendations based on the observations and results of the fall 2014 groundwater sampling program.

 All groundwater wells should be properly sealed with PVC caps or J-plugs. Wells without caps have risk of becoming contaminated which may affect data precision or quality. Wells at risk of contamination include the following; MP09-10, W14103083BH04, GSI-PC-02-A, and GLL07-02. Damaged or degraded wells should be repaired. This includes wells where an
obstruction is restricting ability to sample the well and those that need to be re-developed.
Damaged or degraded wells include the following; CH-P-13-03/10, CH-P-13-04/35, MW09-01 and
CH-P-13-02/10.

The casing of well CH-P-13-03/10 was repaired during the spring sampling event, but missing casing material (sand) has presumably has fallen into the well, as indicated by the DTB measurement of 5.2 m which was less than that previously documented DTB (10 m) during the spring sampling event. Re-developing the well and removing the sand was not possible using a hydrolift due to an absence of groundwater. Removal of nearly 5m column of sand/sediment that extents over the water table may be challenging. A potential way to clear out the sand includes filling the well with water and simultaneously air-lifting the water (with an air compressor). Depending on the well's hydraulic conductivity large volumes of water may be required. For example, if the well accepts large volumes of water without significant pooling inside the well, an air-lift redevelopment method may be effective. An alternative approach would include using a hydrovac with skinny tubing (1.5") to vacuum the sand/sediment out of the well.

CH-P-13-04/35 had blockage at 6.505 m below the surface. As mentioned earlier, this blockage could potentially be equipment associated with a previous piezometer installation. A deployable camera would be recommended to be used during future monitoring events to further investigate the blockage.

MW09-01 could not be sampled due to an excessive quantity of tailings present in the groundwater. This presence of tailing may indicate the well screen has been damaged or compromised. If this is the case, not much can done to repair this well other than having it reinstalled.

CH-P-13-02/10 had only 90 ml of standing water present in the well. This volume was determined to be insufficient for sampling. Bentonite was also present at the bottom of the well. CH-P-13-02/10 was treated as dry well and therefore not sampled. Again, this well should be redeveloped in a future program but requires a larger quantity of standing water to complete the task. A similar redevelopment method as described for CH-P-13-04/35 could be employed.

- 3. Many of the drive-point piezometers included in the fall sampling event did not produce sufficient volumes necessary for complete sample collection. Issues with ice build-up were also observed at the drive-point sample locations. These sites should be re-developed and potentially reinstalled if purge volumes do not improve. Alternatively, drive-point sites could be sampled earlier in the season (potentially late August/early September) in order to ensure drive-points are free of ice.
- 4. Monitoring wells should be fitted for the measurement of in-situ headspace vapour. This would include installing PVC caps or J-plugs on each well, and addressing vents currently installed on the side of some of the PVC wells.
- 5. To avoid inclusion of acid or alkaline-generating solids that are not representative of an equilibrium condition with groundwater, it is recommended that samples for analysis of acidity, alkalinity, and hardness be field-filtered.
- 6. To avoid degassing of carbon dioxide, precipitation of calcium carbonate in sample bottles, and exclusion of the representative precipitate component from analysis, it is recommended that samples for analysis of alkalinity be collected in a separate bottle with zero headspace and that the laboratory be instructed to analyze the contents of the entire bottle.

# 5.0 CLOSURE

We have appreciated the opportunity of working with you on this project and trust that this report is satisfactory to your requirements. Please feel free to contact the undersigned regarding any questions or further information that you may require.

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### 6.0 **REFERENCES**

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# 7.0 STATEMENT OF LIMITATIONS

This report was prepared by Hemmera Envirochem Inc. ("Hemmera"), based on fieldwork conducted by Hemmera, for the sole benefit and exclusive use of the Yukon Government. The material in it reflects Hemmera's best judgment in light of the information available to it at the time of preparing this Report. Any use that a third party makes of this Report, or any reliance on or decision made based on it, is the responsibility of such third parties. Hemmera accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions taken based on this Report.

Hemmera has performed the work as described above and made the findings and conclusions set out in this Report in a manner consistent with the level of care and skill normally exercised by members of the environmental science profession practicing under similar conditions at the time the work was performed.

This Report represents a reasonable review of the information available to Hemmera within the established Scope, work schedule and budgetary constraints. It is possible that the levels of contamination or hazardous materials may vary across the Site, and hence currently unrecognised contamination or potentially hazardous materials may exist at the Site. No warranty, expressed or implied, is given concerning the presence or level of contamination on the Site, except as specifically noted in this Report. The conclusions and recommendations contained in this Report are based upon applicable legislation existing at the time the Report was drafted. Any changes in the legislation may alter the conclusions and/or recommendations contained in the Report. Regulatory implications discussed in this Report were based on the applicable legislation existing at the time this Report was written.

In preparing this Report, Hemmera has relied in good faith on information provided by others as noted in this Report, and has assumed that the information provided by those individuals is both factual and accurate. Hemmera accepts no responsibility for any deficiency, misstatement or inaccuracy in this Report resulting from the information provided by those individuals.

The liability of Hemmera to the Yukon Government shall be limited to injury or loss caused by the negligent acts of Hemmera. The total aggregate liability of Hemmera related to this agreement shall not exceed the lesser of the actual damages incurred, or the total fee of Hemmera for services rendered on this project.

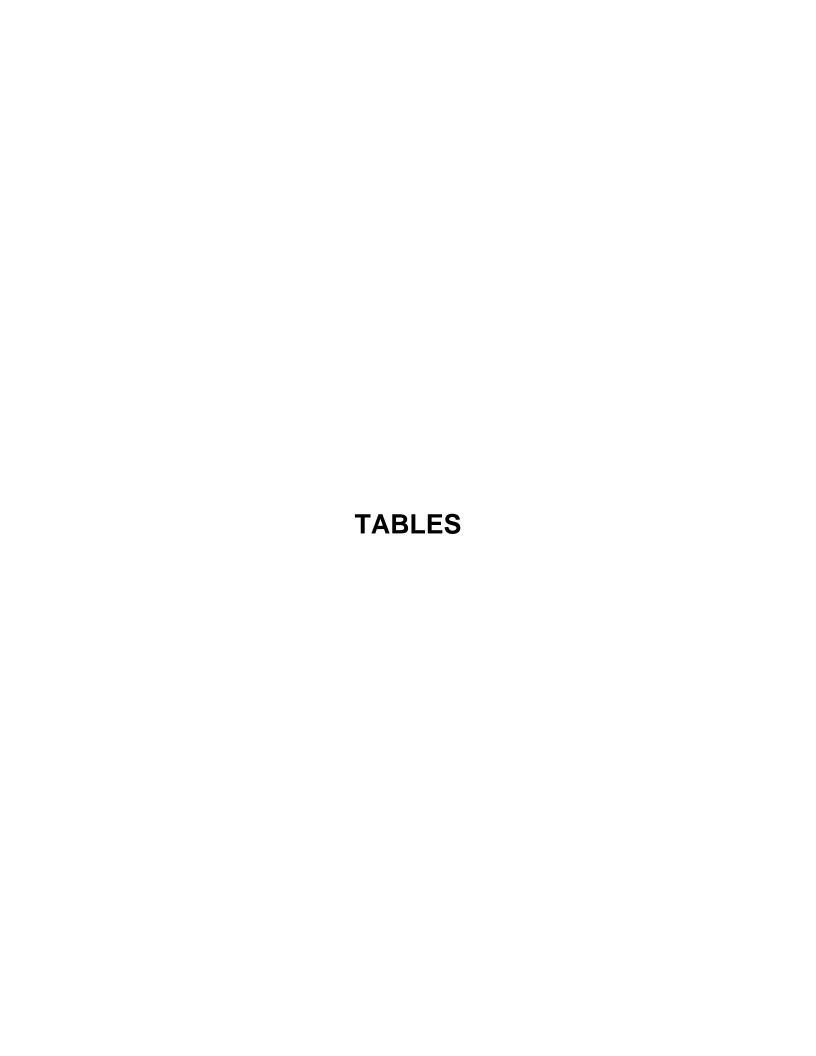


Table A
Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2014 Spring Sampling Program

	Ī	Site Location :	ocation : Dome Creek											
			CCL DC 04D	GSI-DC-02B	CCL DC 02D	COLDC OFF	CSLD	OC-06B	CCL DC 07D	CCL DC 00D	GSI-DC-09B	CSLD	C-10B	
	i	Sample Location:	GSI-DC-01B	GSI-DC-02B	GSI-DC-03B	GSI-DC-05B	G3I-D	1	GSI-DC-07B	GSI-DC-08B	GSI-DC-09B	G3I-D	Ī	
		Sample ID:	GSI-DC-01B	GSI-DC-02B	GSI-DC-03B		GSI-DC-06B	GSI-DC-06B METALS TEST	GSI-DC-07B	GSI-DC-08B	GSI-DC-09B	GSI-DC-10B	GSI-DC-10B METALS TEST	
		Date Sampled:	07/10/2014	07/10/2014	07/10/2014	09/10/2014	10/10	)/2014	10/10/2014	10/10/2014	10/10/2014	10/10	/2014	
		Job Number	L1531123	L1531123	L1531123		L1531711	L1531711	L1531711	L1531711	L1531711	L1531711	L1531711	
		Well Status:	Direct Sampled	Direct Sampled	Direct Sampled	Frozen	Direct Sampled	Sampled	Direct Sampled	Sampled	Sampled	Sampled		
Parameter	Units	CCME FAL 3,4												
Field Parameters														
Dissolved Oxygen	%	-	20.9	20.9	20.9	-	20.9	-	20.9	20.5	20.5	20.5	-	
Dissolved Oxygen	mg/L	9.5 <sup>6</sup>	-	-	-	-	-	-	1.38	-	0.49	0.66	-	
Temperature	۰C	-	-	-	-	-	-	-	1.07	-	1.9	1.9	-	
рН	pH Units	6.5-9 <sup>5</sup>	-	-	-	-	-	-	6.9	-	6.01	6.15	-	
Specific Conductivity	uS/cm	-	-	-	-	-	-	-	-	-	169.8	420.2	-	
Conductivity	uS/cm	-	-	-	-	-	-	-	579	-	94.9	234.7	-	
Oxidation-Reduction Potential	mV	-	-	-	-	-	-	-	-3.1	-	61.4	41.4	-	
Field Sulfide	mg/L	-	-	-	-	-	-	-	0.00004	0.0008	0.00005	0.00006	-	
Field Turbidity	NTU	-	-	-	-	-	51.4	-	4.48	1078 AU	2.56	4.76	-	
Physical Tests														
Conductivity	uS/cm	-	-	928	1090	-	1130	-	525	999	411	1050	-	
Hardness, Total (CaCO3)	mg/L	-	320	544	685	-	734	749	261	560	194	548	555	
рН	pH Units	6.5-9 <sup>5</sup>	-	7.98	8.08	-	7.9	-	7.75	7.36	7.4	6.83	-	
Anions and Nutrients														
Alkalinity, Total (CaCO3)	mg/L	-	-	244	242	-	702	-	149	403	81	138	-	
Ammonia	mg/L	Varies <sup>7</sup>	-	-	0.129	-	2.9*	-	1.39	-	1.74	1.61	-	
Chloride	mg/L	-	-	<2.500	<5.000	-	10.3	-	0.56	3.2	<0.500	<5.000	-	
Fluoride	mg/L	0.12	-	<0.100	<0.200	-	0.33	-	0.081	0.14	0.054	<0.200	-	
Nitrate	mg/L	13	-	0.298	<0.050	-	<0.050	-	<0.005	<0.025	<0.005	<0.050	-	
Nitrite	mg/L	0.06	-	0.0104	<0.010	-	<0.010	-	<0.001	0.02	<0.001	<0.010	-	
Total Kjeldahl Nitrogen	mg/L	-	-	-	0.377	-	8.39	-	1.87	-	2.61	2.8	-	
Sulfate	mg/L	-	-	301	411	-	5	-	135	190	128	496	-	
Sulfide	mg/L	-	-	-	<0.020	-	0.02	-	0.024	-	<0.020	0.024	-	
Anion Sum	mEq/L	-	-	11.2	13.4	-	14.4	-	5.8	12.1	4.28	13.1	-	
Cation Sum	mEq/L	-	-	11.4	14.1	-	17.3	-	6.76	19.4	5.28	16.3	-	
Cation - Anion Balance	%	<u>-</u>	-	0.8	2.5	-	9	-	7.7	23.1	10.4	11	-	
Organic / Inorganic Carbon														
Total Organic Carbon	mg/L	-	-	-	5.56	-	79.6	-	18.1	-	21.2	35.2	-	
Total Inorganic Carbon	mg/L	-	-	-	51.7	-	105	-	30.2	-	16.1	25.4	-	

Table A
Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2014 Spring Sampling Program

		Site Location :	T. T										
					Mill Complex								
		Sample Location:	GSI-HA-01A	GSI-HA-02A	GSI-HA-03A	GSI-HA-04A	GSI-HA-05A	MW09-16	MW09-17	MW09-18	MW09-19		
		Sample ID:	GSI-HA-01A	GSI-HA-02A	GCI-HA-03A	GSI-HA-04A	GSI-HA-05A	MW09-16	MW09-17	MW09-18	MW09-19		
		Date Sampled:	07/10/2014	07/10/2014	07/10/2014	07/10/2014	07/10/2014	07/10/2014	07/10/2014	07/10/2014	07/10/2014		
		Job Number	L1531123	L1531123	L1531123	L1531123	L1531123	L1531123	L1531123	L1531123	L1531123		
		Well Status:	Direct Sampled	Direct Sampled	Direct Sampled	Direct Sampled	Direct Sampled	Sampled	Sampled	Sampled	Sampled		
Parameter	Units	CCME FAL 3,4											
Field Parameters													
Dissolved Oxygen	%	-	20.9	20.9	20.9	20.6	20.9	20.6	20.9	20.9	20.6		
Dissolved Oxygen	mg/L	9.5 <sup>6</sup>	=	-	-	-	-	5.38	2.14	1.31	2.78		
Temperature	°C	-	-	-	-	-	-	2.51	0.06	-0.21	1.15		
рН	pH Units	6.5-9 <sup>5</sup>	-	-	-	-	-	6.55	6.7	6.73	6.44		
Specific Conductivity	uS/cm	-	-	-	-	-	-	-	-	-	-		
Conductivity	uS/cm	-	-	-	-	-	-	2154	2914	2847	2290		
Oxidation-Reduction Potential	mV	-	-	-	-	-	-	55.5	98.2	106.8	-31.2		
Field Sulfide	mg/L	-	-	-	-	-	-	0.00001	0.00002	0.00002	0.00015		
Field Turbidity	NTU	-	-	-	-	-	-	1.22	0.43	0.33	1.92		
Physical Tests													
Conductivity	uS/cm	-	971	695	882	240	897	2010	2710	2650	2130		
Hardness, Total (CaCO3)	mg/L	-	566	372	512	104	502	1330	1880	1860	1380		
рН	pH Units	6.5-9 <sup>5</sup>	8.14	7.33	7.57	7.54	7.75	7.56	7.83	7.82	7.36		
Anions and Nutrients													
Alkalinity, Total (CaCO3)	mg/L	-	218	121	161	29.6	170	337	638	572	473		
Ammonia	mg/L	Varies <sup>7</sup>	-	-	-	-	-	<0.005	<0.005	0.0244	4.86		
Chloride	mg/L	-	<5.000	0.56	<2.500	<0.500	<2.500	<5.000	<10.000	<10.000	<5.000		
Fluoride	mg/L	0.12	<0.200	0.142	<0.100	0.029	<0.100	<0.200	<0.400	<0.400	<0.200		
Nitrate	mg/L	13	<0.050	0.0126	<0.025	<0.005	0.054	0.14	0.17	<0.100	<0.050		
Nitrite	mg/L	0.06	<0.010	0.0027	<0.005	<0.001	<0.005	<0.010	<0.020	<0.020	<0.010		
Total Kjeldahl Nitrogen	mg/L	-	=	-	-	-	-	0.092	0.088	0.085	6.19		
Sulfate	mg/L	-	351	249	343	80.5	340	1020	1440	1400	968		
Sulfide	mg/L	-	-	-	-	-	-	<0.020	<0.020	<0.020	0.242		
Anion Sum	mEq/L	-	11.7	7.62	10.3	2.27	10.5	28	42.8	40.5	29.6		
Cation Sum	mEq/L	-	11.7	8.92	13.6	2.64	11.2	27.3	38.3	37.9	29.9		
Cation - Anion Balance	%	-	0.3	7.8	13.7	7.6	3.3	-1.4	-5.6	-3.3	0.4		
Organic / Inorganic Carbon													
Total Organic Carbon	mg/L	-	-	-	-	-	-	3.14	2.71	2.66	24.4		
Total Inorganic Carbon	mg/L	-	-	-	-	-	-	66.4	111	107	105		

Table A
Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2014 Spring Sampling Program

		Site Location :	Brown McDade Pit											
		Sample Location:	CH-P-13-01/10	CH-P-13-03/10	CH-P-13-03/50	CH-P-13-04/10	CH-P-13-04/35	CH-P-13-05/50	GLL07-01	GLL07-02	GLL07-03	MW09-13	MW09-14	MW09-15
		Sample ID:	CH-P-13-01/10		CH-P-13-03/50	CH-P-13-04/10		CH-P-13-05/50		GLL07-02	GLL07-03			
		Date Sampled:	10/10/2014	07/10/2014	09/10/2014	10/10/2014	07/10/2014	07/10/2014	07/10/2014	08/10/2014	07/10/2014	07/10/2014	07/10/2014	07/10/2014
		Job Number	L1531711		L1531711	L1531711		L1531123		L1531123	L1531123			
		Well Status:	Direct Sampled	Blocked	Direct Sampled	Sampled	Blocked	Sampled	Frozen	Direct Sampled	Sampled	Frozen	Frozen	Frozen
Parameter	Units	CCME FAL 3,4												
Field Parameters														
Dissolved Oxygen	%	-	20.6	-	20.9	20.9	-	20.9	-	20.7	20.9	-	-	-
Dissolved Oxygen	mg/L	9.5 <sup>6</sup>	11.49	-	-	3.91	-	1.42	-	-	2.32	-	-	-
Temperature	°C	-	0.17	-	-	0	-	0.4	-	-	1.2	-	-	-
pH	pH Units	6.5-9 <sup>5</sup>	6.82	-	-	6.82	-	5.82	-	-	6.01	-	-	-
Specific Conductivity	uS/cm	-	-	-	-	139.5	-	667.5	-	-	294.3	-	-	-
Conductivity	uS/cm	-	856	-	-	80.5	-	356.3	-	-	159.8	-	-	-
Oxidation-Reduction Potential	mV	-	189.4	-	-	42.9	-	98.2	-	-	99.9	-	-	-
Field Sulfide	mg/L	-	0.00004	-	-	0.00009	-	0.00005	-	0.00013	0.00019	-	-	-
Field Turbidity	NTU	-	17.4	-	1656 AU	13.8	-	7.37	-	31.5	24	-	-	-
Physical Tests														
Conductivity	uS/cm	-	1030	-	2630	912	-	2770	-	322	823	-	-	-
Hardness, Total (CaCO3)	mg/L	-	624	-	1820	541	-	1860	-	164	449	-	-	-
pН	pH Units	6.5-9 <sup>5</sup>	8.17	-	7.71	8.03	-	6.67	-	7.26	6.96	-	-	-
Anions and Nutrients														
Alkalinity, Total (CaCO3)	mg/L	-	167	-	382	217	-	89.8	-	72.6	45.6	-	-	-
Ammonia	mg/L	Varies <sup>7</sup>	0.0209	-	0.19*	0.0444	-	0.0342	-	0.0051	0.0617	-	-	-
Chloride	mg/L	-	2.5	-	<10.000	1.8	-	<10.000	-	<0.500	<0.500	-	-	-
Fluoride	mg/L	0.12	<0.100	-	<0.400	0.112	-	<0.400	-	0.048	0.096	-	-	-
Nitrate	mg/L	13	0.259	-	0.27	0.0159	-	<0.100	-	0.655	0.571	-	-	-
Nitrite	mg/L	0.06	<0.005	-	0.072	<0.001	-	<0.020	-	<0.001	0.0218	-	-	-
Total Kjeldahl Nitrogen	mg/L	-	0.472	-	2.52	0.577	-	0.071	-	0.426	0.148	-	-	-
Sulfate	mg/L	-	437	-	1390	306	-	1890	-	88.4	390	-	-	-
Sulfide	mg/L	-	-	-	0.025	<0.020	-	<0.020	-	<0.020	0.164	-	-	-
Anion Sum	mEq/L	-	12.5	-	36.5	10.8	-	41.1	-	3.34	9.07	-	-	-
Cation Sum	mEq/L	-	13	-	39.7	11.4	-	40.6	-	3.46	9.63	-	-	-
Cation - Anion Balance	%	-	1.7	-	4.2	2.7	-	-0.6	-	1.8	3	-	-	-
Organic / Inorganic Carbon														
Total Organic Carbon	mg/L	-	12.4	-	57.8	13.1	-	0.88	-	9.45	1.21	-	-	-
Total Inorganic Carbon	mg/L	-	-	-	87	-	-	12.4	-	14.2	9.7	-	-	-

Table A
Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2014 Spring Sampling Program

		Site Location : Pony Creek									
		Sample Location:	GSI-PC-01-B	GSI-PC-02-B	GSI-PC-03-B	GSI-PC-04-B	GSI-PC-05-B	MP09-01	MP09-02	MP09-03	MP09-08
		Sample ID:			GIS-PC-03B	GIS-PC-04B	GIS-PC-O5B		MP09-02		
	-	Date Sampled:	07/10/2014	07/10/2014	08/10/2014	08/10/2014	08/10/2014	07/10/2014	08/10/2014	07/10/2014	08/10/2014
		Job Number			L1531123	L1531123	L1531123		L1531123		
	-	Well Status:	Destroyed	Frozen	Direct Sampled	Direct Sampled	Direct Sampled	Destroyed	Sampled	Frozen	Frozen
Parameter	Units	CCME FAL 3,4									
Field Parameters											
Dissolved Oxygen	%	-	-	-	20.9	20.9	20.6	-	20.9	-	-
Dissolved Oxygen	mg/L	9.5 <sup>6</sup>	-	-	-	-	-	-	-	-	-
Геmperature	°C	-	-	-	-	-	-	-	-	-	-
Н	pH Units	6.5-9 <sup>5</sup>	-	-	-	-	-	-	-	-	-
Specific Conductivity	uS/cm	-	-	-	-	-	-	-	-	-	-
Conductivity	uS/cm	-	-	-	-	-	-	-	-	-	-
Oxidation-Reduction Potential	mV	-	-	-	-	-	-	-	-	-	-
Field Sulfide	mg/L	-	-	-	0.00037	0.00043	0.0008	-	0.03	-	-
ield Turbidity	NTU	-	-	-	69.5	53.3	2084 AU	-	6.04	-	-
Physical Tests											
Conductivity	uS/cm	-	-	-	-	-	-	-	315	-	-
Hardness, Total (CaCO3)	mg/L	-	-	-	637	264	182	-	160	-	-
H	pH Units	6.5-9 <sup>5</sup>	-	-	-	-	-	-	7.9	-	-
Anions and Nutrients											
Alkalinity, Total (CaCO3)	mg/L	-	-	-	-	-	-	-	53.2	-	-
Ammonia	mg/L	Varies <sup>7</sup>	-	-	-	-	-	-	0.0091	-	-
Chloride	mg/L	-	-	-	-	-	-	-	<0.500	-	-
Fluoride	mg/L	0.12	-	-	-	-	-	-	0.048	-	-
litrate	mg/L	13	-	-	-	-	-	-	0.0636	-	-
litrite	mg/L	0.06	-	-	-	-	-	-	<0.001	-	-
otal Kjeldahl Nitrogen	mg/L	-	-	-	-	-	-	-	0.477	-	-
Sulfate	mg/L	-	-	-	-	-	-	-	101	-	-
Sulfide	mg/L	-	-	-	-	-	-	-	<0.020	-	-
nion Sum	mEq/L	-	-	-	-	-	-	-	3.18	-	-
Cation Sum	mEq/L	-	-	-	-	-	-	-	3.4	-	-
Cation - Anion Balance	%	-	-	-	-	-	-	-	3.3	-	-
Organic / Inorganic Carbon											
Total Organic Carbon	mg/L	-	-	-	-	-	-	-	9.21	-	-
Fotal Inorganic Carbon	mg/L	-	-	_	_	<u>-</u>	_	-	10.4	_	_

Table A
Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2014 Spring Sampling Program

		Site Location :		Seepage Dam						Tailings	Facility				
		Sample Location:	W14103083BH01	W14103083BH02	W14103083BH04	MP09-04	MP	09-05	MP	09-09	MP09-10	MP0	9-11	MP09-12	MW09-02
		Sample ID:		W14103083BH02	W14103083BH04	MP09-04	MP09-05	MP09-05 METALS TEST	MP09-09	MP09-09 METALS TEST	MP09-10	MP09-11 METALS TEST	MP09-11	MP09-12	MW09-02
		Date Sampled:	09/10/2014	09/10/2014	09/10/2014	09/10/2014	09/10/2014	09/10/2014	10/10/2014	10/10/2014	10/10/2014	09/10/2014	09/10/2014	09/10/2014	08/10/2014
		Job Number		L1531123	L1531123	L1531123	L1531123	L1531123	L1531711	L1531711	L1531711	L1531123	L1531123	L1531123	L1531123
		Well Status:	Frozen	Direct Sampled	Direct Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Parameter	Units	CCME FAL 3,4													
Field Parameters															
Dissolved Oxygen	%	-	-	-	-	20.9	20.5	-	-	-	-	-	-	-	20.9
Dissolved Oxygen	mg/L	9.5 <sup>6</sup>	-	-	-	3.65	0.66	- 1	4.08	- 1	7.04	-	2.69	5.3	1.34
Temperature	°C	-	-	-	-	0.1	1	-	2.81	-	2.97	-	1.75	2.33	2.44
рН	pH Units	6.5-9 <sup>5</sup>	-	-	-	7.15	6.68	-	8.9	-	8.86	-	7.17	6.99	6.97
Specific Conductivity	uS/cm	-	-	-	-	303.7	658.5	-	NC	-	NC	-	-	-	-
Conductivity	uS/cm	-	-	-	-	159.3	356.3	-	546	-	290	-	9.43	642	3194
Oxidation-Reduction Potential	mV	-	-	-	-	37.4	-61.5	-	771	-	85.6	-	-20.2	27.8	-47.8
Field Sulfide	mg/L	-	-	-	-	0.00004	0.00003	-	0.00053	-	0.0008	-	0.00014	0.0004	0.00002
Field Turbidity	NTU	=	-	-	-	6.41	3.98	-	179	-	Over range	-	54.1	141	1.97
Physical Tests															
Conductivity	uS/cm	-	-	1060	903	835	2510	-	513	-	629	-	1100	749	2940
Hardness, Total (CaCO3)	mg/L	-	-	643	517	494	1460	1480	216	213	261	656	626	434	1570
рН	pH Units	6.5-9 <sup>5</sup>	-	8.01	8.29	7.99	7.12	-	8.9	-	8.59	-	8.09	8.21	6.97
Anions and Nutrients															
Alkalinity, Total (CaCO3)	mg/L	-	-	210	218	179	224	-	82.6	-	90.5	-	695	421	44.3
Ammonia	mg/L	Varies <sup>7</sup>	-	0.0174	-	<0.005	12.1	-	3.71		5.21	-	6.49	4.49	13.6
Chloride	mg/L	-	-	<5.000	<2.500	<0.500	<10.000	-	2.47	-	2.63	-	<5.000	<0.500	<10.000
Fluoride	mg/L	0.12	-	<0.200	0.17	0.038	<0.400	- 1	1.77	- 1	1.54	-	0.36	0.328	0.49
Nitrate	mg/L	13	-	0.5	3.07	0.17	0.35	-	0.0124	-	0.027	-	<0.050	0.0149	<0.100
Nitrite	mg/L	0.06	-	<0.010	<0.005	<0.001	0.027	-	0.0058	-	0.0841		<0.010	0.0207	<0.020
Total Kjeldahl Nitrogen	mg/L	-	-	0.236	-	0.156	14.7	-	5.59	-	12	-	12.3	6.07	17.8
Sulfate	mg/L	-	-	421	291	292	1840	-	148	-	212	-	64.2	27.8	1900
Sulfide	mg/L	-	-	<0.020	-	<0.020	0.021	-	<2.000	-	<0.020	-	0.029	<0.020	<0.020
Anion Sum	mEq/L	-	-	13	10.6	9.67	42.8	-	4.89	-	6.39	-	15.2	9	40.4
Cation Sum	mEq/L	-	-	13.3	10.9	10.2	38.2	-	5.91	-	7.05	-	15.4	9.62	42.2
Cation - Anion Balance	%	-		1.3	1.2	2.7	-5.8	-	9.4	-	4.9	-	0.7	3.3	2.1
Organic / Inorganic Carbon															
Total Organic Carbon	mg/L	-	-	5.36	-	10.7	28.9	-	33.3	-	46.6	-	53.9	19.4	6.84
Total Inorganic Carbon	mg/L	-	-	-	-	35.7	43.3	-	8.8	-	28	-	134	89.4	<1.000

Table A
Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2014 Spring Sampling Program

	ſ	Site Location :							Tailings	s Facility						
		Sample Location:	MW09-03	MW09-04	MW09-05	MW09-06	MW09-07	MW09-08	MW09-21		MW09-22		MW09-23	MW09-24	W14103083BH03	CH-P-13-02/10
		Sample ID:	MW09-03	MW09-04	MW09-05	MW09-06	MW09-07	MW09-08	MW09-21	MW09-22	MW09-22	MW09-22 METALS TEST	MW09-23	MW09-24	W14103083BH03	CH-P-13-02/10
		Date Sampled:	08/10/2014	08/10/2014	08/10/2014	08/10/2014	10/10/2014	09/10/2014	09/10/2014	08/10/2014	09/1	0/2014	08/10/2014	09/10/2014	08/10/2014	09/10/2014
	•	Job Number	L1531123	L1531123	L1531123	L1531123	L1531711	L1531123	L1531123	L1531123	L1531123	L1531123	L1531123	L1531123	L1531123	-
	•	Well Status:	Sampled	Sampled	Sampled	Sampled	Direct Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Dry/Damaged
Parameter	Units	CCME FAL 3,4														
Field Parameters																
Dissolved Oxygen	%	-	20.9	20.9	20.9	20.9	20.9	20.9	20.5	20.9	-	-	20.9	20.9	20.9	20.9
Dissolved Oxygen	mg/L	9.5 <sup>6</sup>	0.92	0.99	0.99	0.84	-	0.35	0.9	1.51	-	- 1	2.37	8.6	1.17	-
Temperature	°C	-	1.37	2.8	3.07	4.96	-	3	0.9	2	-	-	0.11	0.4	1.5	-
рН	pH Units	6.5-9 <sup>5</sup>	6.99	8.38	6.12	7.4	-	6.56	6.61	6.06	-	-	6.54	7.19	6.35	-
Specific Conductivity	uS/cm	-	-	-	-	-	-	102.8	647.9	NC	-	-	NC	356.5	337.7	-
Conductivity	uS/cm	-	2681	2870	1907	1819	-	59.6	349.6	1600	-	-	2592	188.5	185.8	-
Oxidation-Reduction Potential	mV	-	20.3	19.2	72.2	61.2	-	-72.3	-64	21.7	-	-	13.8	62.8	-76.2	-
Field Sulfide	mg/L	-	0.00004	0.00001	0.00002	0.00002	0.00052	0.00011	0.00006	0.00006	-	-	0.00016	0.00009	3.5	-
Field Turbidity	NTU	-	0.75	1.23	7.68	4.05	35.8	6.22	10.4	8.4	-	-	102	18.2	13.2	-
Physical Tests																
Conductivity	uS/cm	-	2450	2690	1600	1760	1780	198	1670	2000	-	-	1440	968	761	
Hardness, Total (CaCO3)	mg/L	-	1580	1670	888	1080	971	101	1010	-	900	915	784	574	390	
рН	pH Units	6.5-9 <sup>5</sup>	7.82	8.02	7.03	7.98	7.4	7.63	7.29	6.69	-	-	7.51	8	6.8	
Anions and Nutrients																
Alkalinity, Total (CaCO3)	mg/L	-	178	96.8	88.7	127	212	112	336	148	-	-	268	201	260	
Ammonia	mg/L	Varies <sup>7</sup>	1.06	7.28	4.77	1.22	2*	2.05	10.7	1.92	-	-	2.71	0.008	6.13	
Chloride	mg/L	-	<10.000	<10.000	<5.000	<5.000	<5.000	<0.500	<5.000	<5.000	-	-	<5.000	<5.000	<2.500	
Fluoride	mg/L	0.12	<0.400	<0.400	<0.200	0.26	<0.200	0.217	<0.200	<0.200	-	- 1	<0.200	<0.200	<0.100	
Nitrate	mg/L	13	<0.100	<0.100	<0.050	<0.050	<0.050	0.0536	0.498	11	-	-	<0.050	2.94	<0.025	
Nitrite	mg/L	0.06	<0.020	<0.020	0.012	<0.010	<0.010	<0.001	0.019	0.198	-	-	<0.010	0.016	<0.005	
Total Kjeldahl Nitrogen	mg/L	-	1.43	8.77	5.76	1.65	3.65	2.75	16	4.76	-	-	4.14	0.228	7.45	
Sulfate	mg/L	-	1530	1730	876	989	893	234	688	1040	-	-	614	355	160	
Sulfide	mg/L	-	<0.020	<0.020	<0.020	<0.020	0.54	0.065	0.044	0.03	-	-	0.038	<0.020	0.136	
Anion Sum	mEq/L	-	35.5	38	20	23.1	22.8	7.13	21.1	-	-	-	18.1	11.6	8.53	
Cation Sum	mEq/L	-	35.1	37.3	20.8	23.5	22.6	4.22	24.8	-	-	-	18.4	11.9	13.7	
Cation - Anion Balance	%	-	-0.6	-0.8	2	0.7	-0.6	-25.6	8.1	-	-	-	0.8	1.1	23.4	
Organic / Inorganic Carbon																
Total Organic Carbon	mg/L	-	6.18	6.8	12.2	6.68	29.8	21.9	30	12.8	-	-	17.4	9.02	30.6	
Total Inorganic Carbon	mg/L	-	35.6	14.4	14.7	20.7	42.2	22.7	62.4	22.7	-	-	57.1	42.3	55.5	

Table A
Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2014 Spring Sampling Program

		Site Location :						Dome Creek					
		Sample Location:	GSI-DC-01B	GSI-DC-02B	GSI-DC-03B	GSI-DC-05B	GSI-D	C-06B	GSI-DC-07B	GSI-DC-08B	GSI-DC-09B	GSI-D	C-10B
		Sample ID:	GSI-DC-01B	GSI-DC-02B	GSI-DC-03B		GSI-DC-06B	GSI-DC-06B	GSI-DC-07B	GSI-DC-08B	GSI-DC-09B	GSI-DC-10B	GSI-DC-10B
		Data Sampladi	07/10/2014	07/10/2014	07/10/2014	09/10/2014	10/10	METALS TEST	10/10/2014	10/10/2014	10/10/2014	10/10	METALS TEST 0/2014
		Date Sampled: Job Number	L1531123	L1531123	L1531123	09/10/2014	L1531711	L1531711	L1531711	10/10/2014 L1531711	L1531711	L1531711	L1531711
<u> </u>		Well Status:	Direct Sampled	Direct Sampled	Direct Sampled	Frozen	Direct Sampled	Direct Sampled	Sampled	Direct Sampled	Sampled	Sampled	Sampled
Parameter	Units	CCME FAL 3,4											
Cyanides	or /I			0.005	0.005		0.005		0.005		0.005	0.005	
Total Cyanide	mg/L	-	-	<0.005	<0.005	-	<0.005	-	<0.005	-	<0.005	<0.005	-
Cyanide, Free	mg/L	0.005	-	<0.005	<0.005	-	<0.005	-	<0.005	-	<0.005	<0.005	-
Cyanide, WAD	mg/L	-	-	<0.005	<0.005	-	<0.005	-	<0.005	-	<0.005	<0.005	-
Thiocyanate (SCN)	mg/L	-	-	-	-	-	<0.5	-	<0.5	-	<0.5	<0.5	-
Dissolved Metals		8						0.045544			0.04	0.110	0.40.444
Aluminum	mg/L	Varies <sup>8</sup>	0.003	0.0026	0.0169	-	0.0012	0.0155**	0.0103	0.394	0.0477	0.142	0.134**
Antimony	mg/L	-	0.00117	0.00032	0.00066	-	0.00029	0.00026	0.00017	0.00185	0.00021	0.00035	0.00033
Arsenic	mg/L	0.005	0.00353	0.00537	0.00235	-	0.326	0.342	0.144	0.0945	0.0453	0.13	0.107
Barium	mg/L	-	0.0246	0.115	0.0243	-	0.24	0.232	0.0715	0.18	0.0341	0.424	0.408
Beryllium	mg/L	-	<0.0001	<0.0001	<0.0001	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002
Bismuth	mg/L	-	<0.0005	<0.0005	<0.0005	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001
Boron	mg/L	1.5	0.058	<0.01	<0.01	-	<0.01	<0.01	0.011	0.11	0.012	<0.02	<0.02
Cadmium	mg/L	Varies <sup>9</sup>	0.000067	0.000115	0.000846	-	<0.00001	<0.00001	<0.00001	0.000038	<0.00001	<0.00002	<0.00002
Calcium	mg/L	-	89.5	141	177	-	177	181	73.7	154	49.7	152	154
Chromium	mg/L	0.001 <sup>10</sup>	0.00708	<0.0001	0.00176	-	0.00181	0.00158	0.00045	0.0737	0.00086	0.00231	0.00221
Cobalt	mg/L	-	0.00016	0.00138	0.00115	-	0.0022	0.00219	0.00155	0.019	0.00096	0.0215	0.0218
Copper	mg/L	Varies 11	0.0512	0.0043	0.00227	-	0.00052	0.0002	<0.0002	0.00179	<0.0002	0.00097	<0.0004
Iron	mg/L	0.3	0.026	1.64	0.013	-	23.2	22.4	14.3	125	14.2	68.7	66.7
Lead	mg/L	Varies 12	0.00209	0.000223	0.000165	-	0.000059	<0.00005	<0.00005	0.0018	<0.00005	0.00014	0.00014
Lithium	mg/L	-	0.00066	0.00167	0.00684	-	<0.0005	<0.0005	0.0011	0.00129	<0.0005	<0.001	<0.001
Magnesium	mg/L	-	23.4	46.6	59.3	-	71	71.7	18.8	42.6	16.9	40.7	41.1
Manganese	mg/L	-	0.0239	2.89	1.95	-	5.07	5.19	1.06	4.58	0.51	13	13.4
Mercury	mg/L	0.000026	<0.00001	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	0.073	0.00818	0.000958	0.00236	-	0.0038	0.00368	0.000378	0.011	0.00021	0.0006	0.00057
Nickel	mg/L	Varies 13	0.026	0.0111	0.00892	-	0.00368	0.00362	0.00054	0.19	0.00059	0.0045	0.0046
Phosphorus	mg/L	-	<0.05	<0.05	<0.05	-	0.251	0.244	0.083	0.218	0.164	<0.05	<0.05
Potassium	mg/L	-	4.4	3.09	2.94	-	3.95	3.94	2.37	6.82	2.22	2.22	2.23
Selenium	mg/L	0.001	<0.0001	<0.0001	<0.0001	-	0.00054	0.00057	0.00016	0.00105	0.00013	0.00036	0.00031
Silicon	mg/L	-	3.76	6.97	7.03	-	8	8	7.1	10.6	8.13	7.77	7.81
Silver	mg/L	0.0001	0.000011	<0.00001	<0.00001	-	<0.00001	<0.00001	<0.00001	0.00002	<0.00001	<0.00002	<0.00002
Sodium	mg/L	-	4.16	4.94	5.2	-	20.3	19.4	13.2	25.1	10.2	23.7	23.1
Strontium	mg/L	-	0.24	0.305	0.439	-	0.897	0.869	0.239	0.585	0.159	0.579	0.56
Sulfur	mg/L	-	65.9	103	140	-	3.23	3.16	46.2	73.1	44.7	155	157
Thallium	mg/L	0.0008	0.000019	<0.00001	0.000024	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00002	<0.00002
Tin	mg/L	-	0.00399	0.00025	0.00058	-	<0.0001	<0.0001	<0.0001	0.0005	<0.0001	<0.0002	<0.0002
Titanium	mg/L	-	<0.01	<0.01	<0.01	-	<0.01	<0.01	<0.01	0.028	<0.01	<0.02	<0.02
Uranium	mg/L	0.015	0.000415	0.000397	0.00233	-	0.000155	0.00016	0.000034	0.00205	0.000109	0.0003	0.000306
Vanadium	mg/L	-	<0.001	<0.001	<0.001	-	0.0085	0.0079	0.002	0.0816	0.0046	0.0113	0.0102
Zinc	mg/L	0.03	0.0305	0.0173	0.136	-	0.0018	0.002	0.0017	0.017	0.0015	0.0101	0.0099

Table A
Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2014 Spring Sampling Program

		Site Location :					Mill Complex				
			GSI-HA-01A	GSI-HA-02A	GSI-HA-03A	GSI-HA-04A	GSI-HA-05A	MW09-16	MW09-17	MW09-18	MW09-19
		Sample Location:	GSI-HA-UTA	GSI-HA-UZA	GSI-HA-03A	GSI-HA-04A	GSI-HA-05A	1010009-16	1010009-17	10100 09-16	1010009-19
		Sample ID:	GSI-HA-01A	GSI-HA-02A	GCI-HA-03A	GSI-HA-04A	GSI-HA-05A	MW09-16	MW09-17	MW09-18	MW09-19
		Date Sampled:	07/10/2014	07/10/2014	07/10/2014	07/10/2014	07/10/2014	07/10/2014	07/10/2014	07/10/2014	07/10/2014
		Job Number	L1531123	L1531123	L1531123	L1531123	L1531123	L1531123	L1531123	L1531123	L1531123
		Well Status:	Direct Sampled	Sampled	Sampled	Sampled	Sampled				
Parameter	Units	CCME FAL 3,4									
Cyanides											
Total Cyanide	mg/L	-	<0.005	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, Free	mg/L	0.005	<0.005	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, WAD	mg/L	-	<0.005	-	-	-	<0.005	<0.005	<0.005	<0.005	<0.005
Thiocyanate (SCN)	mg/L	-	-	-	-	-	-	<0.5	<0.5	<0.5	<0.5
Dissolved Metals											
Aluminum	mg/L	Varies <sup>8</sup>	0.0033	0.0081	0.0234	0.0823	0.01	<0.002	<0.002	<0.002	0.0118
Antimony	mg/L	-	0.00023	0.00067	0.00027	0.00097	0.00014	0.069	0.00036	0.00026	0.0002
Arsenic	mg/L	0.005	0.0112	0.00651	0.042	0.00917	0.0404	0.00808	0.0225	0.0575	0.105
Barium	mg/L	-	0.103	0.101	0.0848	0.042	0.116	0.0155	0.00778	0.00832	0.0529
Beryllium	mg/L	-	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0002
Bismuth	mg/L	-	< 0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.001
Boron	mg/L	1.5	<0.01	0.022	<0.01	<0.01	<0.01	0.112	0.079	<0.02	0.223
Cadmium	mg/L	Varies 9	0.000023	0.000122	0.000081	0.000026	0.000061	0.0286	<0.00002	0.000064	<0.00002
Calcium	mg/L	-	136	94.6	125	26.4	133	307	346	359	304
Chromium	mg/L	0.001 <sup>10</sup>	0.0001	0.0001	0.00294	0.00066	0.00079	<0.0002	<0.0002	<0.0002	0.00043
Cobalt	mg/L	-	0.00029	0.00085	0.00107	0.00051	0.00044	<0.0002	<0.0002	<0.0002	0.00227
Copper	mg/L	Varies 11	0.00103	0.00704	0.00171	0.00198	0.00157	0.00553	0.00046	<0.0004	<0.0004
Iron	mg/L	0.3	2.43	20.3	55	8.36	14.6	<0.01	<0.01	<0.01	18
Lead	mg/L	Varies 12	0.000312	0.000186	0.000479	0.000449	0.000166	0.00451	<0.0001	<0.0001	<0.0001
Lithium	mg/L	-	0.00769	0.00209	0.00063	0.00116	0.00177	0.0115	0.0216	0.0217	0.0098
Magnesium	mg/L	-	55.1	33	48.3	9.12	41.1	137	247	234	150
Manganese	mg/L	-	0.12	4.48	4.71	0.477	3.17	0.0297	<0.0001	0.597	5.9
Mercury	mg/L	0.000026	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	0.073	0.00154	0.00235	0.00329	0.00114	0.00029	0.00011	<0.0001	<0.0001	<0.0001
Nickel	mg/L	Varies 13	0.00488	0.0142	0.0257	0.00466	0.00846	0.0046	<0.001	<0.001	0.0017
Phosphorus	mg/L	-	<0.05	<0.05	<0.05	<0.05	0.088	<0.05	<0.05	<0.05	0.248
Potassium	mg/L	-	3.69	3.25	2.16	0.24	1.85	5.81	6.96	7.09	8.06
Selenium	mg/L	0.001	<0.0001	<0.0001	<0.0001	0.0001	<0.0001	0.00023	0.00024	0.00042	<0.0002
Silicon	mg/L	-	5.96	4.24	7.31	9.04	6.59	4.77	5.05	5.08	9.41
Silver	mg/L	0.0001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00002	<0.00002	<0.00002	<0.00002
Sodium	mg/L	-	4.85	3.33	5	2.12	5.4	8.59	12.4	12.1	14.5
Strontium	mg/L	-	0.37	0.272	0.407	0.0959	0.307	0.688	1.08	1.07	0.982
Sulfur	mg/L	-	114	88.1	116	23.3	112	334	457	448	312
Thallium	mg/L	0.0008	0.000014	0.000014	<0.00001	<0.00001	0.000011	0.000258	0.000107	0.000293	<0.00002
Tin	mg/L	-	0.00012	0.00017	0.00046	0.00016	0.00025	<0.0002	<0.0002	<0.0002	<0.0002
Titanium	mg/L	-	<0.01	<0.01	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.02
Uranium	mg/L	0.015	0.00135	0.00036	0.000117	0.000043	0.000039	0.00411	0.00833	0.00849	0.000436
Vanadium	mg/L	-	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002	<0.002	<0.002	<0.002
Zinc	mg/L	0.03	0.0042	0.0271	0.0282	0.0115	0.0154	4.4	<0.002	0.0029	<0.002

Table A
Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2014 Spring Sampling Program

		Site Location :						Brown Mo	cDade Pit					
		Sample Location:	CH-P-13-01/10	CH-P-13-03/10	CH-P-13-03/50	CH-P-13-04/10	CH-P-13-04/35	CH-P-13-05/50	GLL07-01	GLL07-02	GLL07-03	MW09-13	MW09-14	MW09-15
		Odinpic Education.	0111 10 01/10	0111 10 00/10	0111 10 00/00	0111 10 04/10	0111 10 0 4/00	0111 10 00/00	GEEO7 01	GLEO7 02	GLEO7 00	10100000	101000014	1010000 10
		Sample ID:	CH-P-13-01/10		CH-P-13-03/50	CH-P-13-04/10		CH-P-13-05/50		GLL07-02	GLL07-03			
		Date Sampled:	10/10/2014	07/10/2014	09/10/2014	10/10/2014	07/10/2014	07/10/2014	07/10/2014	08/10/2014	07/10/2014	07/10/2014	07/10/2014	07/10/2014
		Job Number	L1531711		L1531711	L1531711		L1531123		L1531123	L1531123			
		Well Status:	Direct Sampled	Blocked	Direct Sampled	Sampled	Blocked	Sampled	Frozen	Direct Sampled	Sampled	Frozen	Frozen	Frozen
Parameter	Units	CCME FAL 3,4												
Cyanides														
Total Cyanide	mg/L	-	<0.005	=	<0.005	<0.005	-	<0.005	-	<0.005	<0.005	-	-	-
Cyanide, Free	mg/L	0.005	<0.005	-	<0.005	<0.005	-	<0.005	-	<0.005	<0.005	-	-	-
Cyanide, WAD	mg/L	-	<0.005	-	<0.005	<0.005	-	<0.005	-	<0.005	<0.005	-	-	-
Thiocyanate (SCN)	mg/L	-	-	-	<0.5	<0.5	-	<0.5	-	<0.5	<0.5	-	-	-
Dissolved Metals														
Aluminum	mg/L	Varies <sup>8</sup>	0.0087	-	0.0065	0.0033	-	0.0656	-	0.0128	0.0121	-	-	-
Antimony	mg/L	-	0.0022	-	0.00103	0.00107	-	<0.0005	-	0.00061	<0.0001	-	-	-
Arsenic	mg/L	0.005	0.00206	-	0.00195	0.00128	-	0.00389	-	0.00135	<0.0001	-	-	-
Barium	mg/L	-	0.0635	-	0.0623	0.0317	-	0.00674	-	0.0213	0.0108	-	-	-
Beryllium	mg/L	-	<0.0001	-	<0.0002	<0.0001	-	<0.0005	-	<0.0001	<0.0001	-	-	-
Bismuth	mg/L	-	<0.0005	-	<0.001	<0.0005	-	<0.0025	-	<0.0005	<0.0005	-	-	-
Boron	mg/L	1.5	0.017	-	<0.02	0.019	-	<0.05	-	<0.01	<0.01	-	-	-
Cadmium	mg/L	Varies 9	0.000168	-	0.000192	0.000674	-	0.333	-	0.000169	0.276	-	-	-
Calcium	mg/L	-	150	-	455	107	-	453	-	46.2	138	-	-	-
Chromium	mg/L	0.001 10	0.00018	-	<0.0002	0.00027	-	<0.0005	-	0.00014	<0.0001	-	-	-
Cobalt	mg/L	-	0.00048	-	0.0213	0.0122	-	0.0382	-	<0.0001	0.00282	-	-	-
Copper	mg/L	Varies 11	0.0101	-	0.00068	0.0021	-	0.117	-	0.00298	0.0088	-	-	-
Iron	mg/L	0.3	0.057	-	1.05	0.146	-	12	-	0.031	2.24	-	-	-
Lead	mg/L	Varies 12	0.000217	-	<0.0001	0.000098	-	0.00636	-	0.000339	0.000191	-	-	-
Lithium	mg/L	-	0.00325	-	0.0037	0.0113	-	0.0409	-	0.0015	0.0111	-	-	-
Magnesium	mg/L	-	60.9	-	166	66.2	-	177	-	11.9	25.1	-	-	-
Manganese	mg/L	-	0.401	-	12.5	1.35	-	36.7	-	0.00251	2.26	-	-	-
Mercury	mg/L	0.000026	<0.00001	-	<0.00001	<0.00001	-	0.000015	-	<0.00001	<0.00001	-	-	-
Molybdenum	mg/L	0.073	0.00145	-	0.00285	0.00273	-	0.00032	-	0.000085	0.000089	-	-	-
Nickel	mg/L	Varies 13	0.00365	-	0.0392	0.0457	-	0.0141	-	0.00062	0.00831	-	-	-
Phosphorus	mg/L	-	<0.05	-	<0.05	<0.05	-	<0.05	-	<0.05	<0.05	-	-	-
Potassium	mg/L	-	2.85	-	9.18	3.86	-	4.86	-	0.6	1.62	-	-	-
Selenium	mg/L	0.001	0.00016	-	0.00445	0.00012	-	<0.0005	-	<0.0001	<0.0001	-	-	-
Silicon	mg/L	-	7.37	-	6.69	4.92	-	7.18	-	6.51	2.44	-	-	-
Silver	mg/L	0.0001	<0.00001	-	<0.00002	<0.00001	-	<0.00005	-	0.000013	<0.00001	-	-	-
Sodium	mg/L	-	9.3	-	58.6	8.85	-	8.67	-	3.71	5.38	-	-	-
Strontium	mg/L	-	0.452	-	1.05	0.623	-	0.56	-	0.274	0.161	-	-	-
Sulfur	mg/L	-	146	-	501	106	-	614	-	30.7	135	-	-	-
Thallium	mg/L	0.0008	0.000028	-	<0.00002	0.000045	-	0.00053	-	<0.00001	0.000138	-	-	-
Tin	mg/L	-	0.00328	-	0.00092	0.00143	-	<0.0005	-	<0.0001	<0.0001	-	-	-
Titanium	mg/L	-	<0.01	-	<0.02	<0.01	-	<0.05	-	<0.01	<0.01	-	-	-
Uranium	mg/L	0.015	0.00211	-	0.0101	0.00098	-	0.000634	-	0.000222	0.000037	-	-	-
Vanadium	mg/L	-	<0.001	-	<0.002	<0.001	-	<0.005	-	<0.001	<0.001	-	-	-
Zinc	mg/L	0.03	0.0203	-	0.0239	0.156	-	32.7	-	0.0174	5.87	-	-	-

Table A
Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2014 Spring Sampling Program

		Site Location :					Pony Creek				
		Sample Location:	GSI-PC-01-B	GSI-PC-02-B	GSI-PC-03-B	GSI-PC-04-B	GSI-PC-05-B	MP09-01	MP09-02	MP09-03	MP09-08
		Campio 200ationi		3011 3 32 3		30113312	0011 0 00 2	1411 00 01	WII 00 02	WII 00 00	1411 00 00
		Sample ID:			GIS-PC-03B	GIS-PC-04B	GIS-PC-O5B		MP09-02		
		Date Sampled:	07/10/2014	07/10/2014	08/10/2014	08/10/2014	08/10/2014	07/10/2014	08/10/2014	07/10/2014	08/10/2014
		Job Number			L1531123	L1531123	L1531123		L1531123		
		Well Status:	Destroyed	Frozen	Direct Sampled	Direct Sampled	Direct Sampled	Destroyed	Sampled	Frozen	Frozen
Parameter	Units	CCME FAL 3,4									
Cyanides											
Total Cyanide	mg/L	-	-	-	-	-	-	-	<0.005	-	-
Cyanide, Free	mg/L	0.005	-	-	-	-	-	-	<0.005	-	-
Cyanide, WAD	mg/L	-	-	-	-	-	-	-	<0.005	-	-
Thiocyanate (SCN)	mg/L	-	-	-	-	-	-	-	<0.5	-	-
Dissolved Metals											
Aluminum	mg/L	Varies <sup>8</sup>	-	-	0.0155*	0.0115*	0.0164*	-	0.0132	-	-
Antimony	mg/L	-	-	-	0.00367	0.00084	0.00223	-	0.00051	-	-
Arsenic	mg/L	0.005	-	-	0.019	0.0109	0.00267	-	0.00305	-	-
Barium	mg/L	-	-	-	0.113	0.114	0.036	-	0.0308	-	-
Beryllium	mg/L	-	-	-	<0.0001	<0.0001	<0.0001	-	<0.0001	-	-
Bismuth	mg/L	-	-	-	<0.0005	<0.0005	<0.0005	-	<0.0005	-	-
Boron	mg/L	1.5	-	-	0.049	0.022	<0.01	-	<0.01	-	-
Cadmium	mg/L	Varies 9	-	-	0.000051	0.00001	0.000082	-	0.000027	-	-
Calcium	mg/L	-	-	-	94	75.3	50.7	-	47.5	-	-
Chromium	mg/L	0.001 <sup>10</sup>	-	-	0.00648	0.00581	0.0008	-	<0.0001	-	-
Cobalt	mg/L	-	-	-	0.00598	0.00471	<0.0001	-	0.00015	-	-
Copper	mg/L	Varies 11	-	-	0.00491	0.00066	0.00411	-	0.00092	-	-
Iron	mg/L	0.3	-	-	1.11	4.16	0.044	-	0.289	-	-
Lead	mg/L	Varies 12	-	-	0.000779	0.000335	0.000302	-	0.000064	-	-
Lithium	mg/L	-	-	-	0.00632	0.00088	<0.0005	-	0.0008	-	-
Magnesium	mg/L	-	-	-	97.7	18.5	13.3	-	10.1	-	-
Manganese	mg/L	-	-	-	2.16	2.85	0.00416	-	0.0195	-	-
Mercury	mg/L	0.000026	-	-	<0.00001	<0.00001	<0.00001	-	<0.00001	-	-
Molybdenum	mg/L	0.073	-	-	0.0251	0.00964	0.000452	-	0.00006	-	-
Nickel	mg/L	Varies 13	-	-	0.116	0.0646	0.00161	-	<0.0005	-	-
Phosphorus	mg/L	-	-	-	<0.05	<0.05	<0.05	-	<0.05	-	-
Potassium	mg/L	-	-	-	5.11	2.02	0.7	-	0.5	-	-
Selenium	mg/L	0.001	-	-	0.00011	<0.0001	<0.0001	-	<0.0001	-	-
Silicon	mg/L	-	-	-	8.94	7.48	6.07	-	7.21	-	-
Silver	mg/L	0.0001	-	-	<0.00001	<0.00001	<0.00001	-	<0.00001	-	-
Sodium	mg/L	-	-	-	20.7	5.77	3.91	-	3.76	-	-
Strontium	mg/L	-	-	-	0.794	0.423	0.331	-	0.343	-	-
Sulfur	mg/L	-	-	-	120	30.1	31.8	-	35.3	-	-
Thallium	mg/L	0.0008	-	-	<0.00001	<0.00001	0.00001	-	<0.00001	-	-
Tin	mg/L	-	-	-	0.00011	<0.0001	<0.0001	-	<0.0001	-	-
Titanium	mg/L	-	-	-	<0.01	<0.01	<0.01	-	<0.01	-	-
Uranium	mg/L	0.015	-	-	0.00241	0.000143	0.000157	-	0.00008	-	-
Vanadium	mg/L	-	-	-	<0.001	<0.001	0.0014	-	<0.001	-	-
Zinc	mg/L	0.03	-	-	0.0509	0.0069	0.0068	-	0.0029	-	_

Table A
Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2014 Spring Sampling Program

	Ī	Site Location :		Seepage Dam						Tailings	Facility				
	ŀ	Sample Location:	W14103083BH01	W14103083BH02	W14103083BH04	MP09-04	MP	09-05	MPO	19-09	MP09-10	MPO	9-11	MP09-12	MW09-02
		Campio Locationi	***************************************	***************************************	Williams	WII 00 0 1		MP09-05 METALS	0	MP09-09 METALS		MP09-11 METALS		1411 00 12	1111100 02
		Sample ID:		W14103083BH02	W14103083BH04	MP09-04	MP09-05	TEST	MP09-09	TEST	MP09-10	TEST	MP09-11	MP09-12	MW09-02
		Date Sampled:	09/10/2014	09/10/2014	09/10/2014	09/10/2014	09/10/2014	09/10/2014	10/10/2014	10/10/2014	10/10/2014	09/10/2014	09/10/2014	09/10/2014	08/10/2014
	ļ	Job Number		L1531123	L1531123	L1531123	L1531123	L1531123	L1531711	L1531711	L1531711	L1531123	L1531123	L1531123	L1531123
		Well Status:	Frozen	Direct Sampled	Direct Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled
Parameter	Units	CCME FAL 3,4													
Cyanides															
Total Cyanide	mg/L	-	-	-	<0.005	<0.005	0.244	-	1.98	-	11.1	-	0.0117	0.0093	0.227
Cyanide, Free	mg/L	0.005	-	-	<0.005	<0.005	<0.010	-	0.356	-	1.04		<0.005	<0.005	<0.010
Cyanide, WAD	mg/L	-	-	-	<0.005	<0.005	<0.010	-	0.602	-	1.11	-	<0.005	<0.005	0.018
Thiocyanate (SCN)	mg/L	-	-	<0.5	-	<0.5	2.5	-	<0.5	-	<0.5	-	<0.5	<0.5	1.21
Dissolved Metals															
Aluminum	mg/L	Varies <sup>8</sup>	-	0.0018	0.0021	0.0017	0.0354	0.0307**	0.0041	0.0051**	0.0037	0.0071**	0.0068	0.0026	<0.005
Antimony	mg/L	-	-	0.00024	0.00024	0.0017	0.00048	0.00045	0.101	0.0987	0.0951	0.0421	0.0434	0.0417	0.00453
Arsenic	mg/L	0.005	-	0.00312	0.00357	0.00105	0.0963	0.0838	20.6	20.7	9.93	19.3	18.8	5.66	22.8
Barium	mg/L	-	-	0.114	0.264	0.0287	0.122	0.121	0.00174	0.00146	0.000633	0.119	0.119	0.0434	0.00785
Beryllium	mg/L	-	=	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.0002	<0.0005	<0.0001	<0.0005	<0.0005	<0.0001	<0.0005
Bismuth	mg/L	-	-	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.001	<0.0025	<0.0005	<0.0025	<0.0025	<0.0005	<0.0025
Boron	mg/L	1.5	-	0.017	0.016	0.012	0.085	0.087	0.306	0.313	0.307	<0.05	<0.05	0.064	0.059
Cadmium	mg/L	Varies 9	-	0.000296	0.00424	0.00004	0.000295	0.000265	0.000322	0.000318	0.000287	<0.00005	<0.00005	0.000352	0.000497
Calcium	mg/L	-	-	164	140	119	471	477	85.8	84.7	103	151	145	102	477
Chromium	mg/L	0.001 <sup>10</sup>	-	0.00019	0.00011	0.00032	0.00094	0.00078	<0.0002	<0.0005	<0.0001	0.00127	0.0013	0.00037	<0.0005
Cobalt	mg/L	-	-	<0.0001	<0.0001	0.00015	0.016	0.0156	0.0458	0.0469	0.0447	0.00207	0.0021	0.00165	0.0118
Copper	mg/L	Varies 11	-	0.00272	0.00324	0.00261	0.00115	0.00106	0.714	0.657	0.215	<0.001	<0.001	0.00093	<0.001
Iron	mg/L	0.3	-	<0.01	<0.01	<0.01	69.1	68.2	0.214	0.322	0.279	19.6	18.4	4.19	48.7
Lead	mg/L	Varies 12	-	<0.00005	<0.00005	<0.00005	<0.0001	<0.0001	0.00099	0.0008	0.000806	0.00226	0.00322	0.00651	<0.00025
Lithium	mg/L	-	-	0.00123	0.00123	0.00069	<0.001	<0.001	<0.001	<0.0025	<0.0005	0.0034	0.0031	0.00252	0.0294
Magnesium	mg/L	-	-	56.7	40.9	48.1	68.9	70.8	0.41	0.4	0.76	67.5	64.1	43.5	92.2
Manganese	mg/L	-	-	0.0118	0.00274	0.000472	15.3	14.8	0.0409	0.0385	0.03	4.96	4.84	2.66	34.7
Mercury	mg/L	0.000026	-	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	0.000021	0.000021	0.000028	<0.00001	<0.00001	<0.00001	<0.00001
Molybdenum	mg/L	0.073	-	0.00128	0.00109	0.000219	0.00055	0.00057	0.0146	0.0146	0.0148	0.00913	0.00864	0.00294	0.0056
Nickel	mg/L	Varies 13	-	0.00061	0.00056	<0.0005	0.0052	0.0049	0.0184	0.0197	0.0124	0.0097	0.0096	0.00534	0.0033
Phosphorus	mg/L	-	-	<0.05	<0.05	<0.05	<0.05	<0.05	0.168	0.154	0.22	0.128	0.18	0.127	<0.05
Potassium	mg/L	-	-	3.18	2.63	1.63	8.75	8.94	8.78	8.58	9.44	11.2	10.3	5.34	83.7
Selenium	mg/L	0.001	-	0.0006	0.00293	0.00019	<0.0002	<0.0002	0.00233	0.00238	0.00161	<0.0005	<0.0005	0.00011	<0.0005
Silicon	mg/L	-	-	5.37	4.95	5.38	6.63	6.71	9.6	9.47	6.09	13.5	13.6	10.5	6.87
Silver	mg/L	0.0001	-	<0.00001	<0.00001	<0.00001	<0.00002	<0.00002	0.0299	0.028	0.0533	<0.00005	<0.00005	<0.00001	<0.00005
Sodium	mg/L	-	-	8.79	11.7	6.52	83.8	80.2	24.5	24.6	27.6	25.1	24.1	3.84	86.9
Strontium	mg/L	-	-	0.669	0.612	0.366	1.25	1.25	0.158	0.16	0.162	0.844	0.723	0.591	1.07
Sulfur	mg/L	-	-	144	101	103	474	495	90	66.6	86.2	29.1	24.7	10.1	657
Thallium	mg/L	0.0008	-	<0.00001	<0.00001	<0.00001	0.000021	<0.00002	0.00004	0.000066	0.000051	<0.00005	<0.00005	0.000109	0.000256
Tin	mg/L	-	-	0.00042	0.00062	<0.0001	<0.0002	<0.0002	<0.0002	<0.0005	<0.0001	<0.0005	<0.0005	<0.0001	<0.0005
Titanium	mg/L	-	-	<0.01	<0.01	<0.01	<0.02	<0.02	<0.02	<0.05	<0.01	<0.05	<0.05	<0.01	<0.05
Uranium	mg/L	0.015	-	0.00544	0.00755	0.00192	0.00161	0.00161	0.000514	0.00054	0.00138	0.0011	0.00104	0.000644	0.000528
Vanadium	mg/L	-	-	<0.001	<0.001	<0.001	0.003	0.0025	<0.002	<0.005	<0.001	<0.005	<0.005	<0.001	<0.005
Zinc	mg/L	0.03	-	0.0014	0.0083	0.0018	0.0147	0.0142	0.0045	<0.005	0.0021	0.0347	0.0358	0.0367	0.333

Table A
Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2014 Spring Sampling Program

	Г	Site Location :							Tailings	Facility						1
	-	Sample Location:	MW09-03	MW09-04	MW09-05	MW09-06	MW09-07	MW09-08	MW09-21	racility	MW09-22	I	MW09-23	MW09-24	W14103083BH03	CH-P-13-02/10
	-	Sample Location.	1010009-03	1010009-04	1010009-03	1010009-00	1010009-07	101009-00	10100 09-21		10100 03-22	NAVOS OS NATA I O	1010009-23	10100 09-24	W 14103003B1103	CH-F - 13-02/10
		Sample ID:	MW09-03	MW09-04	MW09-05	MW09-06	MW09-07	MW09-08	MW09-21	MW09-22	MW09-22	MW09-22 METALS TEST	MW09-23	MW09-24	W14103083BH03	CH-P-13-02/10
		Date Sampled:	08/10/2014	08/10/2014	08/10/2014	08/10/2014	10/10/2014	09/10/2014	09/10/2014	08/10/2014	09/1	0/2014	08/10/2014	09/10/2014	08/10/2014	09/10/2014
		Job Number	L1531123	L1531123	L1531123	L1531123	L1531711	L1531123	L1531123	L1531123	L1531123	L1531123	L1531123	L1531123	L1531123	-
		Well Status:	Sampled	Sampled	Sampled	Sampled	Direct Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Sampled	Dry/Damaged
Parameter	Units	CCME FAL 3,4														
Cyanides																
Total Cyanide	mg/L	-	0.043	<0.005	<0.005	< 0.005	<0.005	<0.010	0.014	0.0786	-	-	0.016	0.0235	<0.010	
Cyanide, Free	mg/L	0.005	<0.010	<0.005	<0.005	<0.005	<0.005	<0.010	0.0062	0.033	-	-	<0.010	<0.005	<0.010	
Cyanide, WAD	mg/L	-	<0.010	<0.005	<0.005	<0.005	<0.005	<0.010	0.0058	0.0351	-	-	<0.010	<0.005	<0.010	
Thiocyanate (SCN)	mg/L	-	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	-	-	<0.5	<0.5	<0.5	
Dissolved Metals																
Aluminum	mg/L	Varies <sup>8</sup>	<0.01	0.0038	0.0235	<0.002	0.0491	0.0901	0.0965	-	0.025**	0.0229**	0.009	0.0017	0.0529	
Antimony	mg/L	-	0.547	0.341	0.00237	0.254	0.00568	0.00028	0.00024	-	0.00027	0.00026	<0.0005	0.00021	0.00025	
Arsenic	mg/L	0.005	0.838	3.76	0.695	0.106	0.556	0.136	0.117	-	0.00486	0.00433	0.00194	0.00157	0.0605	
Barium	mg/L	-	0.0474	0.00712	0.0312	0.00685	0.022	0.101	0.0892	-	0.0437	0.0433	0.0408	0.0538	0.354	
Beryllium	mg/L	-	<0.001	<0.0002	<0.0001	<0.0002	<0.0002	<0.0001	<0.0002	-	<0.0001	<0.0001	<0.0005	<0.0001	<0.0001	
Bismuth	mg/L	-	<0.005	<0.001	<0.0005	<0.001	<0.001	< 0.0005	<0.001	-	<0.0005	<0.0005	<0.0025	<0.0005	<0.0005	
Boron	mg/L	1.5	0.1	0.297	0.093	0.158	0.058	<0.01	0.037	-	0.074	0.078	0.143	0.013	<0.01	
Cadmium	mg/L	Varies <sup>9</sup>	0.00123	0.000021	0.0032	0.00621	0.000223	<0.00001	0.000095	-	0.00004	0.000037	<0.00005	0.000055	<0.00001	
Calcium	mg/L	-	509	487	281	342	297	30.5	318	-	294	300	206	152	104	
Chromium	mg/L	0.001 <sup>10</sup>	<0.001	<0.0002	0.00058	<0.0002	0.00096	0.00117	0.00158	-	0.00047	0.00042	<0.0005	0.0003	0.00074	
Cobalt	mg/L	-	0.0064	0.00104	0.0178	0.00123	0.0264	0.0008	0.0128	-	0.0171	0.0168	0.0196	0.00042	0.00062	
Copper	mg/L	Varies 11	<0.002	<0.0004	0.00283	0.00644	0.00606	<0.0002	0.00061	-	0.00115	0.00097	<0.001	0.00852	<0.0002	
Iron	mg/L	0.3	0.254	<0.01	8.64	<0.01	9.16	34.4	50.8	-	28.5	28.2	13.7	<0.01	92.4	
Lead	mg/L	Varies <sup>12</sup>	<0.0005	0.00028	0.00309	0.00034	<0.0001	0.000144	<0.0001	-	<0.00005	<0.00005	<0.00025	<0.00005	<0.00005	
Lithium	mg/L	-	<0.005	0.0055	0.00269	0.0096	0.0029	<0.0005	<0.001	-	0.00067	0.00062	<0.0025	0.00091	0.00081	
Magnesium	mg/L	-	74.6	110	45.1	55.4	55.7	6.12	52.8	-	40.3	40.6	65.4	47	31.8	
Manganese	mg/L	-	55.2	4.64	6.24	5.64	20.5	2.58	5.21	-	6.55	6.35	21.7	0.000705	2.07	
Metable	mg/L	0.000026	<0.00001	<0.00001	0.000013	0.000011	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	
Molybdenum Nickel	mg/L	0.073 Varies <sup>13</sup>	0.00336	0.00739	0.000646 0.0103	0.00425 0.0016	0.00156 0.0207	<0.0005	0.00039	-	0.000093	0.000098 0.00207	0.00223	0.000323 <0.0005	0.000095	
Phosphorus	mg/L mg/L	varies	<0.005 0.057	<0.001 0.081	<0.05	<0.05	<0.05	<0.0005 0.116	0.0018 <0.05	-	0.00211 <0.05	<0.05	<0.0025 <0.05	<0.005	<0.0005 0.232	
Potassium		-	16.6	40.8	15.5	20.5	12	1.32	11.3	- -	4.56	4.59	6.4	1.47	1.58	
Selenium	mg/L mg/L	0.001	<0.001	<0.0002	0.00011	<0.0002	0.0002	0.0001	0.0003	- -	0.00032	0.00033	<0.0005	0.00038	0.00018	
Silicon	mg/L	-	16	12	7.1	7.46	9.98	10.1	5.53	- -	4.49	4.47	6.01	5.24	10.9	
Silver	mg/L	0.0001	<0.0001	<0.0002	0.000045	<0.0002	0.000168	<0.0001	<0.0002	- -	0.000021	0.000023	<0.0005	<0.00001	<0.00001	
Sodium	mg/L	-	24.1	52.3	37.2	23.7	33.5	1.3	13.6	-	71.3	70.5	23.7	8.41	9.54	
Strontium	mg/L	-	1.47	1.37	0.592	0.706	0.706	0.131	0.838	-	0.752	0.785	0.519	0.443	0.397	
Sulfur	mg/L	-	520	561	302	342	274	0.68	231	-	284	286	197	118	53	
Thallium	mg/L	0.0008	<0.0001	0.000109	0.000208	0.000358	<0.00002	<0.0001	<0.00002	-	<0.0001	<0.00001	<0.0005	<0.00001	<0.00001	
Tin	mg/L	-	<0.001	0.00064	0.00032	<0.0002	<0.0002	<0.0001	<0.0002	-	0.00016	0.00015	<0.0005	0.00016	<0.0001	
Titanium	mg/L	-	<0.1	<0.02	<0.01	<0.02	<0.02	<0.01	<0.02	-	<0.01	<0.01	<0.05	<0.01	<0.01	
Uranium	mg/L	0.015	0.00285	0.000238	0.000455	0.00128	0.00117	0.000088	0.00067	-	0.000847	0.000848	0.00377	0.00436	0.000124	
Vanadium	mg/L	-	<0.01	<0.002	<0.001	<0.002	0.0026	0.004	0.0061	-	<0.001	<0.001	<0.005	<0.001	0.0021	
Zinc	mg/L	0.03	<0.01	0.132	0.732	0.104	0.36	0.0012	0.0035	-	0.0015	0.0016	0.0182	0.0015	0.0021	

Table B QA/AC Analytical Data

		Sample Location:		GSI-DC-07B			MW09-19		(	CH-P-13-05/50				MP	09-05		
		Sample ID:	GSI-DC-07B	DUP6		MW09-19	DUP2		CH-P-13-05/50	DUP-1		MP09-05	DUP 5		MP09-05 METALS TEST	DUP 5 D-METALS TEST	
		Date Sampled:	10/10	)/2014	RPD (%) <sup>14</sup>	07/10	0/2014	RPD (%) <sup>14</sup>	07/10	/2014	RPD (%) <sup>14</sup>	09/10	)/2014	RPD (%) <sup>14</sup>	09/10	0/2014	RPD (%) <sup>14</sup>
		Job Number	L1531711	L1531711		L1531123	L1531123		L1531123	L1531123		L1531123	L1531123		L1531123	L1531123	1
		Well Status:	Sampled	Sampled		Sampled	Sampled		Sampled	Sampled		Sampled	Sampled		Sampled	Sampled	1
Parameter	Units	CCME FAL 3,4															1
Field Parameters																	
Dissolved Oxygen	%	-	20.9	20.9	-	20.6	20.6	-	20.9	20.9	-	20.5	20.5	-	-	-	-
Dissolved Oxygen	mg/L	9.5 <sup>6</sup>	1.38	1.38		2.78	2.78	-	1.42	1.42	-	0.66	0.66	-	-	-	-
Temperature	°C	-	1.07	1.07	-	1.15	1.15	-	0.4	0.4	-	1	1	-	-	-	-
pH	pH Units	6.5-9 <sup>5</sup>	6.9	6.9	-	6.44	6.44		5.82	5.82	-	6.68	6.68	-	-	-	-
Specific Conductivity	uS/cm	-	-	-	-	-	-	-	667.5	667.5	-	658.5	658.5	-	-	-	-
Conductivity	uS/cm	-	579	579	-	2290	2290	-	356.3	356.3	-	356.3	356.3	-	-	-	-
Oxidation-Reduction Potential	mV	-	-3.1	-3.1	-	-31.2	-31.2	-	98.2	98.2	-	-61.5	-61.5	-	-	-	-
Field Sulfide	mg/L	-	0.00004	0.00004	-	0.00015	0.00015	-	0.00005	0.00005	-	0.00003	0.00003	-	-	-	-
Field Turbidity	NTU	-	4.48	4.48	-	1.92	1.92	-	7.37	7.37	-	3.98	3.98	-	-	-	-
Physical Tests																	
Conductivity	uS/cm	-	525	523	0.4	2130	2130	0.0	2770	2750	0.7	2510	2510	0.0	-	-	-
Hardness, Total (CaCO3)	mg/L	-	261	260	0.4	1380	1380	0.0	1860	1850	0.5	1460	1480	1.4	1480	1470	0.7
pН	pH Units	6.5-9 <sup>5</sup>	7.75	7.32	5.7	7.36	7.29	1.0	6.67	6.6	1.1	7.12	7.04	1.1	-	-	-
Anions and Nutrients																	
Alkalinity, Total (CaCO3)	mg/L	-	149	148	0.7	473	480	1.5	89.8	87.1	3.1	224	223	0.4	-	-	-
Ammonia	mg/L	Varies <sup>7</sup>	1.39	1.39	0.0	4.86	4.93	1.4	0.0342	0.0333	2.7	12.1	11.2	7.7	-	-	-
Chloride	mg/L	-	0.56	0.58	3.5	<5.000	<5.000	nc	<10.000	<10.000	nc	<10.000	<10.000	nc	-	-	-
Fluoride	mg/L	0.12	0.081	0.062	nc	<0.200	<0.200	nc	<0.400	<0.400	nc	<0.400	<0.400	nc	-	-	-
Nitrate	mg/L	13	<0.005	<0.005	nc	<0.050	<0.050	nc	<0.100	<0.100	nc	0.35	0.24	nc	-	-	-
Nitrite	mg/L	0.06	<0.001	<0.001	nc	<0.010	<0.010	nc	<0.020	< 0.020	nc	0.027	0.035	nc	-	-	-
Total Kjeldahl Nitrogen	mg/L	-	1.87	1.91	2.1	6.19	6.14	0.8	0.071	0.058	nc	14.7	15.3	4.0	-	-	-
Sulfate (SO4)	mg/L	-	135	135	0.0	968	948	2.1	1890	1900	0.5	1840	1420	25.8	-	-	-
Sulfide	mg/L	-	0.024	0.024	nc	0.242	0.221	9.1	<0.020	<0.020	nc	0.021	<0.020	nc	-	-	-
Anion Sum	mEq/L	-	5.8	5.8	-	29.6	29.3	-	41.1	41.3	-	42.8	34	-	-	-	-
Cation Sum	mEq/L	-	6.76	6.73	-	29.9	29.9	-	40.6	40.4	-	38.2	38.6	-	-	-	-
Cation - Anion Balance	%	-	7.7	7.4	-	0.4	1	-	-0.6	-1.1	-	-5.8	6.3	-	-	-	-
Organic / Inorganic Carbon																	
Total Organic Carbon	mg/L	-	18.1	17.9	1.1	24.4	23.2	5.0	0.88	1.23	nc	28.9	15	63.3	-	-	-
Total Inorganic Carbon	mg/L	-	30.2	36	17.5	105	103	1.9	12.4	13.6	9.2	43.3	45.2	4.3	-	-	-
Cyanides																	
Total Cyanide	mg/L	-	<0.005	<0.005	nc	<0.005	<0.005	nc	<0.005	<0.005	nc	0.244	0.307	22.9	-	-	-
Cyanide, Free	mg/L	0.005	<0.005	<0.005	nc	<0.005	<0.005	nc	<0.005	<0.005	nc	<0.010	0.023	nc	-	-	-
Cyanide, WAD	mg/L	-	< 0.005	<0.005	nc	<0.005	<0.005	nc	<0.005	<0.005	nc	<0.010	0.029	nc	-	-	-
Thiocyanate (SCN)	mg/L	-	<0.5	<0.5	nc	<0.5	<0.5	nc	<0.5	<0.5	nc	2.5	2.44	2.4	=	_	-

Table B QA/AC Analytical Data

		Sample Location:		MW09-03		W	14103083BH03		MW09-16	MW09-03	MW09-22	GSI-DC-06B	N/A	N/A
		Sample ID:	MW09-03	DUP4		W14103083BH03	DUP-3		FB1	FB2	FB3	FB4	TRIP BLANK 1	TRIP BLANK 2
	-	Date Sampled:	08/10	0/2014	RPD (%) <sup>14</sup>	08/10	/2014	RPD (%) <sup>14</sup>	07/10/2014	08/10/2014	09/10/2014	10/10/2014	11/10/2014	11/10/2014
	•	Job Number	L1531123	L1531123	1	L1531123	L1531123		L1531123	L1531123	L1531123	L1531711	L1531711	L1531711
		Well Status:	Sampled	Sampled	1	Sampled	Sampled		-	-	-	-	-	-
Parameter	Units	CCME FAL 3,4												
Field Parameters														
Dissolved Oxygen	%	-	20.9	20.9	-	20.9	20.9	-	-	-	-	-	-	-
Dissolved Oxygen	mg/L	9.5 <sup>6</sup>	0.92	0.92		1.17	1.17		-	-	-	-	-	-
Temperature	°C	-	1.37	1.37	-	1.5	1.5	-	-	-	-	-	-	-
pH	pH Units	6.5-9 <sup>5</sup>	6.99	6.99	-	6.35	6.35		-	-	-	-	-	-
Specific Conductivity	uS/cm	-	NC	NC	-	337.7	337.7	-	-	-	-	-	-	-
Conductivity	uS/cm	-	2681	2681	-	185.8	185.8	-	-	-	-	-	-	-
Oxidation-Reduction Potential	mV	-	20.3	20.3	-	-76.2	-76.2	-	-	-	-	-	-	-
Field Sulfide	mg/L	-	0.00004	0.00004	-	h:mm	h:mm	-	-	-	-	-	-	-
Field Turbidity	NTU	-	0.75	0.75	-	13.2	13.2	-	-	-	-	-	-	-
Physical Tests														
Conductivity	uS/cm	-	2450	2490	1.6	761	751	1.3	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Hardness, Total (CaCO3)	mg/L	-	1580	1550	1.9	390	386	1.0	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
pH	pH Units	6.5-9 <sup>5</sup>	7.82	7.63	2.5	6.8	6.9	1.5	5.59	5.68	5.39	5.59	5.55	5.49
Anions and Nutrients														
Alkalinity, Total (CaCO3)	mg/L	-	178	181	1.7	260	262	0.8	<2.000	<2.000	<2.000	<2.000	<2.000	<2.000
Ammonia	mg/L	Varies <sup>7</sup>	1.06	1.06	0.0	6.13	6.07	1.0	<0.005	<0.005	<0.005	<0.005	0.0093	<0.005
Chloride	mg/L	-	<10.000	<10.000	nc	<2.500	2.9	nc	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Fluoride	mg/L	0.12	<0.400	<0.400	nc	<0.100	<0.100	nc	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Nitrate	mg/L	13	<0.100	<0.100	nc	<0.025	<0.025	nc	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Nitrite	mg/L	0.06	<0.020	<0.020	nc	<0.005	<0.005	nc	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Kjeldahl Nitrogen	mg/L	-	1.43	1.5	4.8	7.45	7.41	0.5	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Sulfate (SO4)	mg/L	-	1530	1540	0.7	160	154	3.8	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Sulfide	mg/L	-	<0.020	<0.020	nc	0.136	0.114	17.6	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020
Anion Sum	mEq/L	-	35.5	35.6	_	8.53	8.54	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cation Sum	mEq/L	-	35.1	34.5	-	13.7	13.5	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cation - Anion Balance	%	-	-0.6	-1.6	-	23.4	22.6	-	0	0	0	0	0	0
Organic / Inorganic Carbon														
Total Organic Carbon	mg/L	-	6.18	6.19	0.2	30.6	32.4	5.7	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Total Inorganic Carbon	mg/L	-	35.6	36.9	3.6	55.5	57	2.7	<0.500	<0.500	<0.500	<0.500	<0.500	<0.500
Cyanides														
Total Cyanide	mg/L	-	0.043	0.133	nc	<0.010	<0.010	nc	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, Free	mg/L	0.005	<0.010	<0.050	nc	<0.010	<0.010	nc	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Cyanide, WAD	mg/L		<0.010	<0.050	nc	<0.010	<0.010	nc	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Thiocyanate (SCN)	mg/L	-	<0.5	<0.5	nc	<0.5	<0.5	nc	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5

Table B QA/AC Analytical Data

		Sample Location:		GSI-DC-07B			MW09-19			CH-P-13-05/50				MPO	9-05		
		Sample ID:	GSI-DC-07B	DUP6		MW09-19	DUP2		CH-P-13-05/50	DUP-1		MP09-05	DUP 5		MP09-05 METALS TEST	DUP 5 D-METALS TEST	
		Date Sampled:	10/10	)/2014	RPD (%) <sup>14</sup>	07/10	)/2014	RPD (%) <sup>14</sup>	07/10	0/2014	RPD (%) <sup>14</sup>	09/10	0/2014	RPD (%) <sup>14</sup>	09/10	0/2014	RPD (%) <sup>14</sup>
		Job Number	L1531711	L1531711		L1531123	L1531123		L1531123	L1531123		L1531123	L1531123		L1531123	L1531123	
		Well Status:	Sampled	Sampled	1	Sampled	Sampled	1	Sampled	Sampled		Sampled	Sampled		Sampled	Sampled	1
Parameter	Units	CCME FAL 3,4							·			·					
Dissolved Metals																	
Aluminum	mg/L	Varies <sup>8</sup>	0.0103	0.0102	1.0	0.0118	0.0117	0.9	0.0656	0.0668	1.8	0.0354	0.0336	5.2	0.0307**	0.0318**	3.5
Antimony	mg/L	-	0.00017	0.00015	nc	0.0002	0.00021	nc	<0.0005	<0.0005	nc	0.00048	0.00042	nc	0.00045	0.00047	nc
Arsenic	mg/L	0.005	0.144	0.15	4.1	0.105	0.107	1.9	0.00389	0.00376	3.4	0.0963	0.0956	0.7	0.0838	0.101	18.6
Barium	mg/L	-	0.0715	0.0698	2.4	0.0529	0.0531	0.4	0.00674	0.00697	3.4	0.122	0.123	0.8	0.121	0.123	1.6
Beryllium	mg/L	-	<0.0001	<0.0001	nc	<0.0002	<0.0002	nc	<0.0005	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
Bismuth	mg/L	-	<0.0005	<0.0005	nc	<0.001	<0.001	nc	<0.0025	<0.0025	nc	<0.001	<0.001	nc	<0.001	<0.001	nc
Boron	mg/L	1.5	0.011	0.013	nc	0.223	0.239	6.9	<0.05	<0.05	nc	0.085	0.077	9.9	0.087	0.085	2.3
Cadmium	mg/L	Varies 9	<0.00001	<0.00001	nc	<0.00002	<0.00002	nc	0.333	0.326	2.1	0.000295	0.000263	11.5	0.000265	0.000254	4.2
Calcium	mg/L	-	73.7	73.5	0.3	304	307	1.0	453	453	0.0	471	477	1.3	477	474	0.6
Chromium	mg/L	0.001 10	0.00045	0.00036	nc	0.00043	0.00041	nc	<0.0005	<0.0005	nc	0.00094	0.00084	nc	0.00078	0.00086	nc
Cobalt	mg/L	-	0.00155	0.00153	1.3	0.00227	0.00224	1.3	0.0382	0.0383	0.3	0.016	0.0159	0.6	0.0156	0.0159	1.9
Copper	mg/L	Varies 11	<0.0002	0.0006	nc	<0.0004	<0.0004	nc	0.117	0.109	7.1	0.00115	0.00112	nc	0.00106	0.00111	nc
Iron	mg/L	0.3	14.3	14.1	1.4	18	18.2	1.1	12	11.8	1.7	69.1	71.6	3.6	68.2	69.5	1.9
Lead	mg/L	Varies 12	<0.00005	<0.00005	nc	<0.0001	<0.0001	nc	0.00636	0.00623	2.1	<0.0001	<0.0001	nc	<0.0001	<0.0001	nc
Lithium	mg/L	-	0.0011	0.00092	nc	0.0098	0.0103	5.0	0.0409	0.0421	2.9	<0.001	<0.001	nc	<0.001	<0.001	nc
Magnesium	mg/L	-	18.8	18.6	1.1	150	148	1.3	177	175	1.1	68.9	70.8	2.7	70.8	69.3	2.1
Manganese	mg/L	-	1.06	1.05	0.9	5.9	5.76	2.4	36.7	36	1.9	15.3	15.1	1.3	14.8	15	1.3
Mercury	mg/L	0.000026	<0.00001	<0.00001	nc	<0.00001	<0.00001	nc	0.000015	0.000017	nc	<0.00001	<0.00001	nc	<0.00001	<0.00001	nc
Molybdenum	mg/L	0.073	0.000378	0.000379	0.3	<0.0001	<0.0001	nc	0.00032	0.00032	0.0	0.00055	0.00051	7.5	0.00057	0.00061	6.8
Nickel	mg/L	Varies 13	0.00054	<0.0005	nc	0.0017	0.0017	nc	0.0141	0.0126	11.2	0.0052	0.005	3.9	0.0049	0.0051	4.0
Phosphorus	mg/L	-	0.083	0.081	nc	0.248	0.249	0.4	<0.05	<0.05	nc	<0.05	<0.05	nc	<0.05	<0.05	nc
Potassium	mg/L	-	2.37	2.36	0.4	8.06	8.14	1.0	4.86	4.85	0.2	8.75	8.89	1.6	8.94	8.85	1.0
Selenium	mg/L	0.001	0.00016	0.00019	nc	<0.0002	<0.0002	nc	<0.0005	<0.0005	nc	<0.0002	0.0002	nc	<0.0002	0.00026	nc
Silicon	mg/L	-	7.1	7.08	0.3	9.41	9.49	0.8	7.18	7.1	1.1	6.63	6.82	2.8	6.71	6.71	0.0
Silver	mg/L	0.0001	<0.00001	<0.00001	nc	<0.00002	<0.00002	nc	<0.00005	<0.00005	nc	<0.00002	<0.00002	nc	<0.00002	<0.00002	nc
Sodium	mg/L	-	13.2	13.1	0.8	14.5	14.6	0.7	8.67	8.2	5.6	83.8	81	3.4	80.2	82.3	2.6
Strontium	mg/L	-	0.239	0.23	3.8	0.982	1.08	9.5	0.56	0.525	6.5	1.25	1.15	8.3	1.25	1.26	0.8
Sulfur	mg/L	-	46.2	46	0.4	312	313	0.3	614	607	1.1	474	488	2.9	495	480	3.1
Thallium	mg/L	0.0008	<0.00001	<0.00001	nc	<0.00002	<0.00002	nc	0.00053	0.000543	2.4	0.000021	<0.00002	nc	<0.00002	0.000024	nc
Tin	mg/L	-	<0.0001	<0.0001	nc	<0.0002	<0.0002	nc	<0.0005	<0.0005	nc	<0.0002	<0.0002	nc	<0.0002	<0.0002	nc
Titanium	mg/L	-	<0.01	<0.01	nc	<0.02	<0.02	nc	<0.05	<0.05	nc	<0.02	<0.02	nc	<0.02	<0.02	nc
Uranium	mg/L	0.015	0.000034	0.000032	nc	0.000436	0.000434	0.5	0.000634	0.000649	2.3	0.00161	0.00142	12.5	0.00161	0.00164	1.8
Vanadium	mg/L	-	0.002	0.0019	nc	<0.002	<0.002	nc	<0.005	<0.005	nc	0.003	0.003	nc	0.0025	0.0031	nc
Zinc	mg/L	0.03	0.0017	<0.001	nc	<0.002	<0.002	nc	32.7	31.4	4.1	0.0147	0.0144	2.1	0.0142	0.0156	9.4

Table B QA/AC Analytical Data

		<u> </u>										1	ı	
		Sample Location:		MW09-03		W	14103083BH03		MW09-16	MW09-03	MW09-22	GSI-DC-06B	N/A	N/A
		Sample ID:	MW09-03	DUP4		W14103083BH03	DUP-3		FB1	FB2	FB3	FB4	TRIP BLANK 1	TRIP BLANK 2
		Date Sampled:	08/10	/2014	RPD (%) <sup>14</sup>	08/10	/2014	RPD (%) <sup>14</sup>	07/10/2014	08/10/2014	09/10/2014	10/10/2014	11/10/2014	11/10/2014
		Job Number	L1531123	L1531123		L1531123	L1531123	] [	L1531123	L1531123	L1531123	L1531711	L1531711	L1531711
		Well Status:	Sampled	Sampled		Sampled	Sampled		=	-	-	-	-	-
Parameter	Units	CCME FAL 3,4												
Dissolved Metals														
Aluminum	mg/L	Varies <sup>8</sup>	<0.01	<0.01	nc	0.0529	0.0502	5.2	0.0015	<0.001	<0.001	<0.001	-	-
Antimony	mg/L	-	0.547	0.527	3.7	0.00025	0.00029	nc	<0.0001	<0.0001	<0.0001	<0.0001	-	-
Arsenic	mg/L	0.005	0.838	0.73	13.8	0.0605	0.0688	12.8	<0.0001	<0.0001	<0.0001	<0.0001	-	-
Barium	mg/L	-	0.0474	0.0423	11.4	0.354	0.348	1.7	<0.00005	<0.00005	<0.00005	<0.00005	-	-
Beryllium	mg/L	-	<0.001	<0.001	nc	<0.0001	<0.0001	nc	<0.0001	<0.0001	<0.0001	<0.0001	-	-
Bismuth	mg/L	-	<0.005	<0.005	nc	<0.0005	<0.0005	nc	<0.0005	<0.0005	<0.0005	<0.0005	-	-
Boron	mg/L	1.5	0.1	<0.1	nc	<0.01	<0.01	nc	<0.01	<0.01	<0.01	<0.01	-	-
Cadmium	mg/L	Varies 9	0.00123	0.00114	7.6	<0.00001	<0.00001	nc	<0.00001	<0.00001	<0.00001	<0.00001	-	-
Calcium	mg/L	-	509	504	1.0	104	102	1.9	< 0.05	<0.05	<0.05	<0.05	-	-
Chromium	mg/L	0.001 <sup>10</sup>	<0.001	<0.001	nc	0.00074	0.00072	2.7	< 0.0001	<0.0001	<0.0001	<0.0001	-	-
Cobalt	mg/L	-	0.0064	0.006	6.5	0.00062	0.00058	6.7	<0.0001	<0.0001	<0.0001	<0.0001	-	-
Copper	mg/L	Varies 11	<0.002	<0.002	nc	<0.0002	<0.0002	nc	< 0.0002	<0.0002	0.00027	<0.0002	-	-
Iron	mg/L	0.3	0.254	0.247	2.8	92.4	90.7	1.9	<0.01	<0.01	<0.01	<0.01	-	-
Lead	mg/L	Varies 12	<0.0005	<0.0005	nc	<0.00005	<0.00005	nc	<0.00005	<0.00005	<0.00005	<0.00005	-	-
Lithium	mg/L	-	<0.005	<0.005	nc	0.00081	0.00116	nc	<0.0005	<0.0005	<0.0005	<0.0005	-	-
Magnesium	mg/L	-	74.6	71.8	3.8	31.8	31.9	0.3	<0.1	<0.1	<0.1	<0.1	-	-
Manganese	mg/L	-	55.2	53.2	3.7	2.07	2.02	2.4	<0.00005	<0.00005	<0.00005	<0.00005	-	-
Mercury	mg/L	0.000026	<0.00001	<0.00001	nc	<0.00001	<0.00001	nc	<0.00001	<0.00001	<0.00001	<0.00001	-	-
Molybdenum	mg/L	0.073	0.00336	0.00246	nc	0.000095	0.000126	nc	<0.00005	<0.00005	<0.00005	<0.00005	-	-
Nickel	mg/L	Varies 13	<0.005	<0.005	nc	<0.0005	<0.0005	nc	< 0.0005	<0.0005	<0.0005	<0.0005	-	-
Phosphorus	mg/L	-	0.057	0.07	nc	0.232	0.224	3.5	<0.00005	<0.00005	<0.00005	<0.00005	-	-
Potassium	mg/L	-	16.6	16.3	1.8	1.58	1.46	7.9	<0.1	<0.1	<0.1	<0.1	-	-
Selenium	mg/L	0.001	<0.001	<0.001	nc	0.00018	0.0002	nc	< 0.0001	<0.0001	<0.0001	<0.0001	-	-
Silicon	mg/L	-	16	15.8	1.3	10.9	10.6	2.8	< 0.05	<0.05	<0.05	<0.05	-	-
Silver	mg/L	0.0001	<0.0001	<0.0001	nc	<0.00001	<0.00001	nc	<0.00001	<0.00001	<0.00001	<0.00001	-	-
Sodium	mg/L	-	24.1	24.4	1.2	9.54	9.11	4.6	< 0.05	<0.05	<0.05	<0.05	-	-
Strontium	mg/L	-	1.47	1.52	3.3	0.397	0.377	5.2	< 0.0002	<0.0002	<0.0002	<0.0002	-	-
Sulfur	mg/L	-	520	508	2.3	53	53.9	1.7	< 0.500	<0.500	<0.500	<0.500	-	-
Thallium	mg/L	0.0008	<0.0001	<0.0001	nc	<0.00001	<0.00001	nc	<0.00001	<0.00001	<0.00001	<0.00001	-	-
Tin	mg/L	-	<0.001	<0.001	nc	<0.0001	<0.0001	nc	<0.0001	<0.0001	<0.0001	<0.0001	-	-
Titanium	mg/L	-	<0.1	<0.1	nc	<0.01	<0.01	nc	<0.01	<0.01	<0.01	<0.01	-	-
Uranium	mg/L	0.015	0.00285	0.00266	6.9	0.000124	0.00013	nc	<0.00001	<0.00001	<0.00001	<0.00001	-	-
Vanadium	mg/L	-	<0.01	<0.01	nc	0.0021	0.002	nc	<0.001	<0.001	<0.001	<0.001	-	-
Zinc	mg/L	0.03	<0.01	<0.01	nc	0.0021	0.0019	nc	<0.001	<0.001	<0.001	<0.001	-	-

Table B QA/AC Analytical Data

		Sample Location:	GSI-DC-07B			MW09-19			CH-P-13-05/50			MP09-05						
		Sample ID:	GSI-DC-07B	DUP6	DUP6	MW09-19	DUP2		CH-P-13-05/50	DUP-1		MP09-05	DUP 5		MP09-05 METALS TEST	DUP 5 D-METALS TEST		
		Date Sampled:	10/10/2014		RPD (%) <sup>14</sup>	07/10/2014		RPD (%) <sup>14</sup>	07/10/2014		RPD (%) <sup>14</sup>	09/10/2014		RPD (%) <sup>14</sup>	09/10/2014		RPD (%) <sup>14</sup>	
		Job Number	L1531711	L1531711 Sampled		L1531123	L1531123		L1531123	L1531123		L1531123	L1531123		L1531123	L1531123	`	
		Well Status:	Sampled			Sampled	Sampled		Sampled	Sampled		Sampled	Sampled		Sampled	Sampled	1	
Parameter	Units	CCME FAL 3,4	· · · · · · · · · · · · · · · · · · ·	·		· · · · · · · · · · · · · · · · · · ·	·		· ·						· ·	·		
Total Metals																		
Aluminum	mg/L	0.005-0.18	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Antimony	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Barium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Bismuth	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Boron	mg/L	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cadmium	mg/L	Varies 9	-	-	-	-	-	-	-	-	-	-	-	-	-	-	_	
Calcium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Chromium	mg/L	0.001 <sup>10</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cobalt	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Copper	mg/L	Varies 11	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Iron	mg/L	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Lead	mg/L	Varies 12	-	-	-	-	-	-	-	-	-	-	-	-	-	-	_	
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Magnesium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Manganese	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	_	
Mercury	mg/L	0.000026	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Molybdenum	mg/L	0.073	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Nickel	mg/L	Varies 13	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Phosphorus	mg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	_	
Potassium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Selenium	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sodium	mg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	_	
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sulfur	mg/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Thallium	mg/L	0.0008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	_	
Uranium	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Zinc	mg/L	0.03	-	_	_	_	_	_	_	_	_	-	_	_	_	_	_	

Table B QA/AC Analytical Data

	ı	Г				T			ı			ı		<del></del> 1
		Sample Location:	MW09-03		W14103083BH03			MW09-16	MW09-03	MW09-22	GSI-DC-06B	N/A	N/A	
		Sample ID:	MW09-03	DUP4		W14103083BH03	DUP-3		FB1	FB2	FB3	FB4	TRIP BLANK 1	TRIP BLANK 2
<b>,</b>		Date Sampled:	08/10	0/2014	RPD (%) <sup>14</sup>	08/10/2014		RPD (%) <sup>14</sup>	07/10/2014	08/10/2014	09/10/2014	10/10/2014	11/10/2014	11/10/2014
		Job Number	L1531123	L1531123		L1531123	L1531123		L1531123	L1531123	L1531123	L1531711	L1531711	L1531711
		Well Status:	Sampled	Sampled		Sampled	Sampled		-	-	-	-	-	-
Parameter	Units	CCME FAL 3,4												
Total Metals														
Aluminum	mg/L	0.005-0.1 8	-	-	-	-	-	-	-	-	-	-	<0.003	<0.003
Antimony	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001
Arsenic	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001
Barium	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.00005	<0.00005
Beryllium	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001
Bismuth	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005
Boron	mg/L	1.5	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01
Cadmium	mg/L	Varies 9	-	-	-	-	-	-	-	-	-	-	<0.00001	<0.00001
Calcium	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05
Chromium	mg/L	0.001 <sup>10</sup>	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001
Cobalt	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001
Copper	mg/L	Varies 11	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005
Iron	mg/L	0.3	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01
Lead	mg/L	Varies 12	-	-	-	-	-	-	-	-	-	-	<0.00005	<0.00005
Lithium	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005
Magnesium	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1
Manganese	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.00005	<0.00005
Mercury	mg/L	0.000026	-	-	-	-	-	-	-	-	-	-	<0.00001	<0.00001
Molybdenum	mg/L	0.073	-	-	-	-	-	-	-	-	-	-	<0.00005	<0.00005
Nickel	mg/L	Varies 13	-	-	-	-	-	-	-	-	-	-	<0.0005	<0.0005
Phosphorus	mg/L		-	-	-	-	-	-	-	-	-	-	< 0.050	<0.050
Potassium	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.1	<0.1
Selenium	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001
Silicon	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.05	<0.05
Silver	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	<0.00001	<0.00001
Sodium	mg/L		-	-	-	-	-	-	-	-	-	-	< 0.050	<0.050
Strontium	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.0002	<0.0002
Sulfur	mg/L		-	-	-	-	-	-	-	-	-	-	<0.500	<0.500
Thallium	mg/L	0.0008	-	-	-	-	-	-	-	-	-	-	<0.00001	<0.00001
Tin	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.0001	<0.0001
Titanium	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.01	<0.01
Uranium	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	<0.00001	<0.00001
Vanadium	mg/L	-	-	-	-	-	-	-	-	-	-	-	<0.001	<0.001
Zinc	mg/L	0.03	-	-	-	-	-	-	-	-	-	-	<0.003	<0.003

## **Notes**

- (1) CCME guideline exceedences shaded with dark grey. Light grey shading denotes reportable detection limit in exceedence of CCME Guideline.
- (2) -= No standard or not analyzed
- (3) CCME = Canadian Council of Ministers of the Environment, Canadian

Environmental Quality Guidelines, 1999, updated to November 2014

- (4) CCME FAL = Chapter 4, Canadian Water Quality Guidelines for the Protection of Aquatic Life, Freshwater, updated to November 2014
- (5) CCME FAL stipulates pH not < 6.5 and not > 9
- (6) Guideline note: Lowest acceptable dissolved oxygen concentration for cold-water biota, early life stages
- (7) Ammonia varies with pH and temperature for CCME FAL; see the CCME ammonia

fact sheet for details regarding the applicable criteria, ammonia-NH3

versus total ammonia-N, and other usage guidelines. CCME values listed in the table are expressed as ammonia (N)

when field pH values are not available, lab pH is used. When field and lab pH are both not available, the most stringent guideline has been used.

(8) Aluminum varies with pH as follows for CCME FAL:

0.005 if pH<6.5

0.1 if pH>=6.5

when field pH values are not available, lab pH is used. When field and lab pH are both not available, the most stringent guideline has been used.

(9) Cadmium varies with Hardness in mg/L as follows for CCME FAL:

0.00 if H<17

0.00004 - 0.00037 if H>=17 and H<=280 as follows;

CWQG ( $\mu$ g/L) = 10{0.83(log[hardness]) – 2.46}

0.00 if H>280

(10) Chromium CCME FAL guidelines are expressed in chromium, hexavalent (CrVI). All laboratory data is expressed in total chromium. Total chromium values over 0.001 mg/l are flagged as

(11) Copper varies with Hardness in mg/L as follows for CCME FAL:

0.002 if H<82

0.002 - 0.004 if H>=82 and H<=180 as follows:

CWQG ( $\mu$ g/L) = 0.2 \* e{0.8545[ln(hardness)]-1.465}

0.004 if H>180

(12) Lead varies with Hardness in mg/L as follows for CCME FAL:

0.001 if H<60

.001 - 0.00 if H>=60 and H<=180 as follows;

CWQG (µg/L)= e{1.273[ln(hardness)]-4.705}

0.007 if H>180

(13) Nickel varies with Hardness in mg/L as follows for CCME FAL:

0.025 if H<60

025 - 0.15 if H>=60 and H<=180 as follows;

CWQG ( $\mu$ g/L) = e{0.76[ln(hardness)]+1.06}

0.15 if H>180

(14) RPD = Relative Percent Difference. RPD is calculated as the difference between

a sample and its field duplicate over the average of two values.

nc = not calculated. RPD is not calculated if either the sample or the field

duplicate concentration is less than five times the detection limit.

- \* indicates in the absence of field temperature data, CCME guidelines for ammonia are calculated using the highest recorded value from the fall 2014 sampling event (4.96\*C)
- \*\* indicates in the absence of both field and lab pH data, CCME guidelines are calculated using the most stringent guidelines available.

Bold Indicates QAQC values exceed expected results (RDP values exceed 20% or QAQC analysis is above reportable detection limits)

Hemmera File: 1343-005.05 January 2015

## APPENDIX A Site Photographs



**Photo 1:** View of drive point wells GSI-DC-01A and GSI-DC-01B. Photo taken on October 7<sup>th</sup>, 2014.



Photo 2: View of drive point wells GSI-DC-02A and GSI-DC-02B. Photo taken on October 7<sup>th</sup>, 2014.



**Photo 3:** View of drive point wells GSI-DC-03A and GSI-DC-03B. Photo taken on October 7<sup>th</sup>, 2014.



**Photo 4:** View of drive point wells GSI-DC-05A and GSI-DC-05B. Photo taken on October 9<sup>th</sup>, 2014.



Photo 5: View of drive point wells GSI-DC-06A and GSI-DC-06B. Photo taken on October 10<sup>th</sup>, 2014.



**Photo 6:** View of drive point wells GSI-DC-07A and GSI-DC-07B. Photo taken on October 10<sup>th</sup>, 2014.



**Photo 7:** View of drive point wells GSI-DC-08A and GSI-DC-08B. Photo taken on October 10<sup>th</sup>, 2014.



**Photo 8:** View of drive point wells GSI-DC-09A and GSI-DC-09B. Photo taken on October 10<sup>th</sup>, 2014.



**Photo 9:** View of drive point wells GSI-DC-10A and GSI-DC-10B. Photo taken on October 10<sup>th</sup>, 2014.



**Photo 10:** View of drive point well GSI-HA-01A. Photo taken on October 7<sup>th</sup>, 2014.



**Photo 11:** View of drive point well GSI-HA-02A. Photo taken on October 7<sup>th</sup>, 2014.



**Photo 12:** View of drive point well GSI-HA-03A. Photo taken on October 7<sup>th</sup>, 2014.



**Photo 13:** View of drive point well GSI-HA-04A. Photo taken on October 7<sup>th</sup>, 2014.



**Photo 14:** View of drive point well GSI-HA-05A. Photo taken on October 7<sup>th</sup>, 2014.



Photo 15: View of well MW09-15. Photo taken on October 7<sup>th</sup>, 2014.



Photo 16: View of damaged well MW09-16. Photo taken on October 7<sup>th</sup>, 2014.



Photo 17: View of well MW09-17. Photo taken on October 7<sup>th</sup>, 2014.



Photo 18: View of well MW09-18. Photo taken on October 7<sup>th</sup>, 2014.



Photo 19: View of well MW09-19. Photo taken on October 7<sup>th</sup>, 2014.



Photo 20: View of well CH-P-13-01/10. Photo taken on October 9<sup>th</sup>, 2014.



Photo 21: View of well CH-P-13-03/10. Photo taken on October 7<sup>th</sup>, 2014.



Photo 22: View of well CH-P-13-03/50. Photo taken on October 7<sup>th</sup>, 2014.



Photo 23: View of well CH-P-13-04/10. Photo taken on October 7<sup>th</sup>, 2014.



Photo 24: View of well CH-P-13-04/35. Photo taken on October 7<sup>th</sup>, 2014.



**Photo 25:** View of well CH-P-13-05/50. Photo taken on October 7<sup>th</sup>, 2014.



Photo 26: View of well GLL07-01. Photo taken on October 7<sup>th</sup>, 2014.



Photo 27: View of well GLL07-02. Photo taken on October 8<sup>th</sup>, 2014.



Photo 28: View of well GLL07-03. Photo taken on October 7<sup>th</sup>, 2014.



Photo 29: View of well MW09-13. Photo taken on October 7<sup>th</sup>, 2014.



Photo 30: View of well MW09-14. Photo taken on October 7<sup>th</sup>, 2014.



Photo 31: View of well GSI-PC-02A and GSI-PC-02B. Photo taken on October 7<sup>th</sup>, 2014.



Photo 32: View of well GSI-PC-03A and GSI-PC-03B. Photo taken on October 8<sup>th</sup>, 2014.



Photo 33: View of well GSI-PC-04A and GSI-PC-04B. Photo taken on October 8<sup>th</sup>, 2014.



Photo 34: View of well GSI-PC-05A and GSI-PC-05B. Photo taken on October 8<sup>th</sup>, 2014.



Photo 35: View of well MP09-02. Photo taken on October 7<sup>th</sup>, 2014.



Photo 36: View of well MP09-03. Photo taken on October 7<sup>th</sup>, 2014.



Photo 37: View of well MP09-08. Photo taken on October 8<sup>th</sup>, 2014.



Photo 38: View of well W14103083BH01. Photo taken on October 9<sup>th</sup>, 2014.



Photo 39: View of well W14103083BH02. Photo taken on October 9<sup>th</sup>, 2014.



Photo 40: View of well W14103083BH04. Photo taken on October 9<sup>th</sup>, 2014.



Photo 41: View of well MP09-04. Photo taken on October 9<sup>th</sup>, 2014.



Photo 42: View of well MP09-05. Photo taken on October 9<sup>th</sup>, 2014.



Photo 43: View of well MP09-09 and MP09-10. Photo taken on October 10<sup>th</sup>, 2014.



Photo 44: View of well MP09-11 and MP09-12. Photo taken on October 9<sup>th</sup>, 2014.



Photo 45: View of well MP09-14. Photo taken on October 9<sup>th</sup>, 2014.



Photo 46: View of well MW09-01. Photo taken on October 8<sup>th</sup>, 2014.



Photo 47: View of well MW09-02. Photo taken on October 8<sup>th</sup>, 2014.



Photo 48: View of well MW09-03 and MW09-04. Photo taken on October 8<sup>th</sup>, 2014.



Photo 49: View of well MW09-05 and MW09-06. Photo taken on October 8<sup>th</sup>, 2014.



Photo 50: View of well MW09-07. Photo taken on October 10<sup>th</sup>, 2014.



Photo 51: View of well MW09-08. Photo taken on October 9<sup>th</sup>, 2014.



Photo 52: View of well MW09-11. Photo taken on October 8<sup>th</sup>, 2014.



Photo 53: View of well MW09-20. Photo taken on October 9<sup>th</sup>, 2014.



Photo 54: View of well MW09-21. Photo taken on October 9<sup>th</sup>, 2014.



Photo 55: View of well MW09-22. Photo taken on October 8<sup>th</sup>, 2014.



Photo 56: View of well MW09-23. Photo taken on October 8<sup>th</sup>, 2014.



Photo 57: View of well MW09-24. Photo taken on October 9<sup>th</sup>, 2014.



Photo 58: View of well W14103083BH03. Photo taken on October 8<sup>th</sup>, 2014.



Photo 59: View of well CH-P-13-02/10. Photo taken on October 9<sup>th</sup>, 2014.

# APPENDIX B Field Forms



Well Number: MW109-20 **Project Number:** 1343-005.03 Date: 9 64 2014 orknown in field Approximate Date Drilled: Client: YG-AAM Sampler: AB 2" PVC/unknown Piezometer Diameter / October 2014 Mt.Nansen Overcast, light **Project Name:** Weather/Temp: Screen Length: in field Groundwater CO, 600 CHY **Duplicate** Z 187. NO CHV (ppm / % LEL): Recovery: Good Bad Collected: 20.9 % 0% LEL **Purge Method** Waterra Peristaltic Disp. Bailer Subm. Pump Air Lift Other Initial Depth to Water (m): Calculations: **Purge Start Time: Purge End Time:** NIA -Depth to Bottom (m): ) min. interval (24h) 2.71 nb 4 Time ( Submerged Tubing Depth (m): Depth (m) 0.90 Well Stick-up Height (m): Temperature (°C) Estimated Water Volume (L): рΗ Cond. (µs/cm) (DTB – DTW) x 2 (for 2" well diameter) = 1 well Specific Cond. (µs/cm) volume Redox (mV) (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well DO (mg/L) volume Appearance & Odour (Clear, Silty, HC odours, etc.) 2" casing has 0.16 USgal/ft or 2.032 I/m Interval Purge Volume (L) 1" casing has 0.04 USgal/ft or 0.508 I/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m **Cumulative Purge Volume (L)** 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m **Total Purge Volume:** Method: Disp. Bailer. Stee Eatler Other **Analysis** Sample ID Parameters Analyzed **Container Types** Sample Time Preservative **Turbidity (NTU)** Comments Yes □ No

Pine Minikae PD + EER Solint WL type

well seried.



Sample Site (Con't):	MW09-20	* hypt hame =	/

Field UTM Location: Zn: 6多り Easting: 6399590 Northing: 6980 5多つ

Henry
Wifelore Photo Nos.: 131-135

Final Groundwater Field Parameters (Following Purge)	Additional Purge Data - Continued from Front of Page (if required)
Time (hh:mm; 24h)	Time () minute interval:
Temperature (°C)	Depth (m)
DO (mg/L)	Temperature (°C)
Specific Cond. (µs/cm)	pH
Cond. (µs/cm)	Cond. (μs/cm)
рН	Specific Cond. (µs/cm)
Redox (mV)	Redox (mV)
Turbidity (NTU)	DO (mg/L)
DO (mg/L)	Appearance & Odour (Clear, Silty, HC odours, etc.)
	Interval Purge Volume (L)
	Cumulative Purge Volume (L)
	Total Purge Volume:

General Notes (Gondition of well or	other features):		
7" PUC well inside real s	tick up protector, all in good coodil		
	1 1 )	ood.	



	Well Number:	MP09-03		Project Nu	ımber:	1343-005.03		Date:	7	oct 2014	
	Approximate Date Drilled:	unknown in field		cl Client:		YG-AAM		Sampler:		3 JL	
	Piezometer Diameter / Screen Length:	1/2" PVC inside 1" Steel/continuous in-field		Project Name:		October 2014 Mt.Nansen Groundwater		Weather/Temp:		rost, light	htsnow,
no cap F	CHV (ppm / % LEL):		44 190 LEC	Duplicate Collected:		Øb: No		Recovery:		Good [	Bad
D. 8 2-	Purge Method	EDITOR STATE OF THE STATE OF TH									
	Waterra	Peristalti	C	Disp. E	Bailer	Subm. P	ump	Air Lift		Othe	r
	Initial Depth to Water (m):		Cald	culations:	Purge St	tart Time:		Pu	rge End Ti	ne:	<del>(1111)</del>
	Depth to Bottom (m):		0.73%	to ice/	Time (	_) min. interval (2	4h)				
	Submerged Tubing Depth (r	m):		ction,	Depth (n	n)					
4.	Well Stick-up Height (m):	0.73		WL tape	Tempera	ature (°C)					
bove show	Estimated Water Volume (L)	:		break '	рН						
+ice	(DTB – DTW) x 2 (for 2" well diameter) = 1 well			through	Cond. (µs/cm)						
	volume				Specific	Cond. (µs/cm)					
					Redox (r	nV)					
	(DTB-DTW) x 1.1 (for 1.5" d volume	iameter) = 1 well			DO (mg/	L)					
						nce & Odour (Clea codours, etc.)	ır,				
	2" casing has 0.16 USgal				<u> </u>	Purge Volume (L)				+	
	1" casing has 0.04 USgala 8" sand pack has 0.73 USga										
	6 5/8" sand pack has 0.50 US					ive Purge Volume	(L)				
						rge Volume:					
	Method: Waterra	Peristalt	C	Disp. Bai	(elt	Steel Baller	a Sulomai	Permit s	Air Lift		Other
	Analysis										
	Sample ID Parameters A	nalyzed Sample	Time	Container	Types F	Preservative	Turbidity	(NTU)	С	omments	
					L	Yes					
						No					

Pine Minikae PID, ELR Solinst WL tape



Sample Site (Con't): MP09-03 Light +

Field UTM Location: Zn: 0% V Easting: 038895% Northing: 6881 742

Hemrera
Likeberse
GPS Photo Nos.: 61-65 Vine
camera

Final Groundwater-Field F	Parameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	
рН	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

General Notes (Condition of well or other features):

Additional Purge Data — Continu	iedilikomiek	ont of Page	(if required	j	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
рН					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)				***	
Total Purge Volume:					

1/2 11	ove casin	j Inslde	1" rusty	steel pr	otector, alou	n creek be	ank just	before PC	crossing bel	a main road	
Was	existing	Yu" tobin	i i silicon	in well	at bottom,	had to po	oll and twis	it to break	free from	. Ice at creek	Surface
(	tubing mas	sitting a	bottom of	= well)		سد حادث	. Il halnes is	ce (Wea	tubilo Gre	co from) of	o success

Les tried a 5 min to get WL tape and/or existing tobing into well below ice (where tobing came up from) of no success



	r≥ See revi	lse for a	retails of	" A "								
Well Number:	GS1-PC-02	B	Project Nu	umber:	1343-005.03			Date:		7 00	t Zoly	
Approximate Date Drilled:	unknown in fo	eld	Client:		YG-AAM	YG-AAM		Sampler:		AB TC		
Piezometer Diameter / Screen Length:	-3/4" stainless of	4-100	Project Na	ame:	October 2014 Mt.Nansen Groundwater		en	Weather/Temp:		Overcast, light shows		Show i
CHV (ppm / % LEL): 02	530 CH		Duplicate Collected:		PHD: N	PID: NO		Recove	ry:			Bad
Purge Method												
Waterra	Peristaltio	•	Disp. I	Bailer	Sub	m. Pump		Ai	r Lift		Other	
Initial Depth to Water (m):	N/A-ice-	Calcu	ulations:	Purge S	Start Time:				Purge E	nd Time	e:	
Depth to Bottom (m):	0,89	Lo Wat	- level	Time (_	) min. interv	al (24h)						
Submerged Tubing Depth (r	n): N/A	- Fape		Depth (	m)		Section in the country is not to				2012 (St.) (St.) (St.) (St.) (St.)	<u> </u>
Well Stick-up Height (m):	0.85	<b>−</b>	passice in casing,		Temperature (°C)							
Estimated Water Volume (L)	MILLION CONTRACTOR	in co			pH							
(DTB – DTW) x 2 (for 2" well	diameter) = 1 well	Can he			μs/cm)							
volume	diameter) – r weir	maker	running	Conning Specific Cond. (µs/cm)								
		in cre		Redox	(mV)							
(DTB-DTW) x 1.1 (for 1.5" d. volume	iameter) = 1 well	Uncle/	nenth	DO (mg	;/L)							
2" casing has 0.16 USgal	/ft or 2 022 l/m				ance & Odour ( C odours, etc.)	Clear,						
1" casing has 0.04 USgal				Interva	l Purge Volume	(L)						
8" sand pack has 0.73 USg				ļ	ative Purge Volu							
6 5/8" sand pack has 0.50 US	Sgal/ft or 6.35 l/m				urge Volume:							
Method: Waterra	Peristalti		Disp. Sa		Steel Salie		Sjojani (4)		, i	- Erif		llier
Analysis								7141			9.	ulei
Sample ID Parameters A	nalyzed Sample	Time	Container	Types	Preservative	т	urbidity	/NTII)		٠.	mments	
- I arameters Ar	ia.jeca Campie	inic	- Cinamici	. Jpcs			urbiuity	(1110)		<u> </u>	milents	
				-								
					☐ No							

25 cm ID 0 Sealed F W plastic cap (socol

> above snowlice



		ė vinemaminininininininininininininininininini	H ) (1	isthe same)
Sample Site (Con't):	GS 1-PC-02	B hpt	"[]	is the same)

Field UTM Location: Zn: OB V Easting: 0388907 Northing: 688/786

hoto Nos.:	56-	60	Hembrera Van Concre

Final Groundwater Field Pa	rameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	
рН	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

Additional Purge Data - Continu	ied from Fr	ont of Page	(if required	)	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
рН					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:					

General Notes (Condition of well or other features):		
	MAN - Same will	construction as "B", except no cap, has
	62: 20.9%	DTW = ice blockage plastic ziplock
	(02 - 430	DTB= 0.85m bloc bag cover
	CH4 = 0%	la no water ice blockage, water level tape
	LEL La Same photos +	1/20 N & CASS

Stick up ht = 0.83m above smaller



Well Number:	CHI- P-13-04/35	Project Nu	ımber:	1343-005.03		Date:		70ct	2014
Approximate Date Drilled:	unknown in field	Client:		YG-AAM		Sampler		WB 26	
Piezometer Diameter / Screen Length:	2" prc/unknown in field	Project Na	ıme:	October 2014 Mt.Nansen Groundwater  Weather/1		Temp:	(c ) 1 1		
CHV (ppm / % LEL):	550 CHU 26.9% 0% LI	Duplicate Collected:		DAM: NO		Recovery	<b>/</b> :	Good	
Purge Method		Table 1						1	
Waterra	Peristaltic	Disp. I	3ailer	Subm. Pun	np	Air	Lift		Other
Initial Depth to Water (m):	N/A-dy	Calculations:	Purge S	tart Time:			Purge Ei	nd Time:	
Depth to Bottom (m): (Block.	7 1 6		Time (_	) min. interval (24h	1)				
Submerged Tubing Depth (r	m):  - N/A "	o water detected	Depth (r	n)					
Well Stick-up Height (m):	0.61	n we tape.	Tempera	ature (ºC)					
Estimated Water Volume (L	): N/A A	lso existing	рН						
(DTB – DTW) x 2 (for 2" well	diameter) = 1 well	bniler inside	Cond. (µ	ıs/cm)					
volume	warreter)	ell, dropped	Specific	Cond. (µs/cm)					
	h	paile down	Redox (	mV)					
(DTB-DTW) x 1.1 (for 1.5" d volume	iameter) = 1 well	e hollow(1 1 =>	DO (mg/	<b>/L)</b>					
Folding	50	o hollow/plastic?	Appeara	ance & Odour (Clear,					
2" casing has 0.16 USgal	120	6.50 m and		odours, etc.)					
1" casing has 0.04 USgal	$\pi$ or 0.508 i/m	o water in	Interval	Purge Volume (L)					
8" sand pack has 0.73 USg- 6 5/8" sand pack has 0.50 US	ai/π or 9.2/1 i/m	briler	Cumula	tive Purge Volume (L	)				
0 3/0 Sand pack has 0.50 0.	Syaint of 6.35 init		Total Pu	ırge Volume:					
Method: Wateria.	Peristallic	Disp. Bai	êr -	Steel Bailer	Subject:	201710	Air	Lift	Other
Analysis									
Sample ID Parameters A	nalyzed Sample Ti	me Container	Types I	Preservative	Turbidity	(NTU)		Comn	nents
				Yes					
				No					
				<del></del>					

Pine MiniRae PID, EER S-buist wiere WL tape,

improfer scal,

PVC (-p too

big for pvc

casing



Sample Site (Con't):	05/35 thypt #		7 Hennem
Field UTM Location: Zn: 0% \	Easting: 0389136	Northing: 10081 477	> whileherse

881472 Stemmera
Whiteherse
GPS
Photo Nos.: 46-50 Strangera

Final Groundwater Field P	arameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	
pH	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

Additional Purge Data — Continu	ied from er	ont of Page	(if required	l e	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
pH					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:					

Ceneral Noves	ន្តែសម្រាស់ខ្មាន	Melhowanteere	ures);				
Metal stick	protector	~ 1" PVC	nell (par	fitting corp)	and transducer	contalle/junction box.	
Existing I'	bailer in	h. g. Vsed	boiler to ve	rify no water	in well -s bailed	makes a hollow sour	of high
evicountring	blockage o	r b-How e	6.50m -> 1	posed on well	have, assure D	TB should be 35m?	



Well Number: MW09-13 **Project Number:** 1343-005.03 Date: Oct 7014 Approximate Date Drilled: Unknown in field Client: YG-AAM Sampler: 2" PUC/ unknown Piezometer Diameter / overcast, light wind, October 2014 Mt.Nansen **Project Name:** Weather/Temp: Screen Length: in field Groundwater light snow ~- 39 Co- 960 LEL **Duplicate** CHV (ppm / % LEL): ID: Recovery: Good Bad 0 1/2 Collected: 01 709 **Purge Method** Waterra Peristaltic Disp. Bailer Subm. Pump Air Lift Other Initial Depth to Water (m): NIA Calculations: **Purge Start Time:** Purge End Time: Depth to Bottom (m): blockene 902 Time (\_\_\_) min. interval (24h) Suepert DTB NIA Submerged Tubing Depth (m): Depth (m) Well Stick-up Height (m): 6.75 Temperature (°C) Estimated Water Volume (L): N/A рH Cond. (µs/cm) (DTB – DTW) x 2 (for 2" well diameter) = 1 well See revelse Specific Cond. (µs/cm) volume Redox (mV) (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well DO (mg/L) volume Appearance & Odour (Clear, Silty, HC odours, etc.) 2" casing has 0.16 USgal/ft or 2.032 I/m Interval Purge Volume (L) 1" casing has 0.04 USgal/ft or 0.508 I/m 8" sand pack has 0.73 USgal/ft or 9.271 I/m **Cumulative Purge Volume (L)** 6 5/8" sand pack has 0.50 USgal/ft or 6.35 I/m **Total Purge Volume:** Medhods Waterra Diso Bailer Subma Pump Other **Analysis** Sample ID **Parameters Analyzed** Sample Time Container Types Preservative **Turbidity (NTU)** Comments Yes □ No

Same equipment as GLL 07-01

slits in a consing, no seal



Hemberg Whitehouse GPS

Sample Site (Con't): Mwoq-13

Field UTM Location: Zn: 0% V Easting: 0389006 Northing: 6981664

2 w ρt H MW 09-12Photo Nos.: 11-15

Hembera Van Canerca

Final Groundwater Field F	arameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	
pH	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

Additional Purge Data - Continu	ied from Fre	int of Page	(if respinive	)	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
pH					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:					

#### General Notes (Condition of well or other features)

Red metal stick up protector, on high side of road, reside MWOq-14.

Protector + well in good condition, well sented v/cap (ID on eap) but slits cut into consing below cap, so unpours = ambient.

No existing tobing or transducer in nell, but no mater measured, suspect frozen rell as -ith allo7-01, MW 09-15 : MW 09-14



Well Number: Project Number: MW09-14 1343-005.03 Date: 7 oct 2014 Approximate Date Drilled: unknown in field Client: YG-AAM Sampler: AB JL Piezometer Diameter / 2" PVC/unknown in field October 2014 Mt.Nansen overcust, light Snow, Project Name: Weather/Temp: Screen Length: Groundwater light wind 2-30c Duplicate Not Recorded, CHV (ppm / % LEL): □ ID: Recovery: Good ☐ Bad Collected: Purge Method SEP PERFETSA Waterra Peristaltic Disp. Bailer Subm. Pump Air Lift Other Initial Depth to Water (m): **Purge Start Time:** Calculations: N/A **Purge End Time:** Depth to Bottom (m): blocker (c 694 \_\_\_) min. interval (24h) See revuse, Time ( Submerged Tubing Depth (m): Depth (m) MIA Well Stick-up Height (m): 0.73 Temperature (°C) DIB = Estimated Water Volume (L): Ηα NIA ice/frozen Cond. (µs/cm) (DTB - DTW) x 2 (for 2" well diameter) = 1 well Specific Cond. (us/cm) volume Redox (mV) (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well DO (mg/L) volume Appearance & Odour (Clear, Silty, HC odours, etc.) 2" casing has 0.16 USgal/ft or 2.032 l/m Interval Purge Volume (L) 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 I/m **Cumulative Purge Volume (L)** 6 5/8" sand pack has 0.50 USgal/ft or 6.35 I/m **Total Purge Volume:** Method: Waterra Beristalae Diso Sales Subm. Plants Air Life Other **Analysis** Sample ID **Parameters Analyzed** Sample Time **Container Types** Preservative **Turbidity (NTU)** Comments Yes No

Same equipment as ELLO7-01 (except too cold for PID)

slits in E PVC resim below capi below seal



Sample Site (Con't):MW69-12	be who who di	7	Hemnern Wife	vo/se	Comment of the Commen
Field UTM Location: Zn:  のっ ∨	Easting: 0389008	Northing: 6881664	G PS	Photo Nos.: 16-20	I Hemmera
Final Groundwater Field Paramete	ers (Following Purge)	Additional Purge Data – C			
Time (hh:mm; 24h)		Time () minute interva	l:		
Temperature (°C)		Depth (m)			
DO (mg/L)		Temperature (°C)			
Specific Cond. (µs/cm)		рН			
Cond. (µs/cm)		Cond. (µs/cm)			
рН		Specific Cond. (µs/cm)			
Redox (mV)		Redox (mV)			
Turbidity (NTU)		DO (mg/L)			
DO (mg/L)		Appearance & Odour (Clea Silty, HC odours, etc.)	ar,		
		Interval Purge Volume (L)			
		Cumulative Purge Volume	· (L)		
		Total Purge Volume:			
General Notes (Condition of well o	r other features).				
Metal stick + 2" PVC w	eap = all good cone	lition (right beside mwoq	.13)		
PVC cap an well but	stits cut below	= nc secl = aubient air l	(no CHV recorded	has be see	5
or my to trong in	Well which court	be pilled up or moved.	Abrefore Sus	pect frozen just like	PID)
MWO9- 15, MWO9.	-15 = GLL07-01	·		•	



Approximate Date Drilled:   Driver   Driver   Driver   Duplicate   Container   Driver   Duplicate   Driver   Duplicate   Driver   Duplicate   Driver   Duplicate   Driver   Duplicate   Driver   Driver   Duplicate   Driver   Drive	Well Number:	GLL 07-01		Project Nu	ımber:	1343-005.03		Date:		700	+ 701	4
Project Name:    Crew Length:   Crew	Approximate Date Drilled:	unknown; in	field	Client:		YG-AAM		Sampler:		AB	7 1	
CHV (ppm / % LEL):  O 2 15 2 7 CHq O Collected:  Disp. Bailer  Waterra  Peristaltic  Disp. Bailer  Subm. Pump  Air Lift  Other  Initial Depth to Water (m):  Depth to Section (m): % look  Submerged Tubing Depth (m):  Well Stick-up Height (m):  OTHER DTW) x 2 (for 2" well diameter) = 1 well volume  (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume  (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume  2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 5.58 l/m  8" sand pack has 0.73 USgal/ft or 6.35 l/m  8" sand pack has 0.50 USgal/ft or 6.35 l/m  Sample ID  Parameters Analyzed  Sample Time  Disp. Bailer  Subm. Pump  Air Lift  Other  Purge End Time:  Purge End Time:  Purge End Time:  Purge End Time:  Time () min. interval (24h)  Depth (m)  Depth (m)  Specific Cond. (µs/cm)  Specific Cond. (µs/cm)  Redox (mV)  DO (mg/L)  Appearance & Odour (Clear, Silty, HC odours, etc.)  Interval Purge Volume (L)  Total Purge Volume  Subm. Pump  Air Lift  Other  Other		unknown in	field	Project Na	ıme:		lansen	Weather/Ter	\$25,400 CARC 2000 000 000 000 000 000 000 000 000 0	042,60	1 × 1 × 1	ery lights
Waterra         Peristaltic         Disp. Bailer         Subm. Pump         Air Lift         Other           Initial Depth to Water (m):         N / A         Calculations         Purge Start Time:         Purge End Time:           Depth to Bedtom (m):         No lock         13.8 A O         Time () min. interval (24h)         Purge End Time:           Submerged Tubing Depth (m):         No lock of A         Depth to Bedtom (m):         No lock of A         Depth to Bedtom (m):         Purge End Time:           Well Stick-up Height (m):         No lock of A         Depth (m)         Depth (m)         Depth (m)         Depth (m)           Estimated Water Volume (L):         N / A         Purge End Time:         Depth (m)	CHV (ppm / % LEL):	02 15.3% (H	40			□ ID:		Recovery:				
Initial Depth to Water (m):	Purge Method					_1						
Depth to Section (m): Slock 13 8 0 Depth to Submerged Tubing Depth (m): N / A Submerged Tubing Depth (m): Depth (m) Submerged Tubing Depth (m): Temperature (°C) Submerged Tubing Submerged	Waterra	Peristaltic		Disp. I	Bailer	Subm. Pu	ımp	Air Lift			Other	
Submerged Tubing Depth (m): N / A  Well Stick-up Height (m): C . 7 5	Initial Depth to Water (m):	NIA	Calc	ulations:	Purge S	tart Time:		Pu	urge End	d Time:		
(DTB-DTW) x 2 (for 2" well diameter) = 1 well volume  (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume  (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume  2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m  Method: Waterra Peristaltic Disp. Bailer Steel Bailer Subin Pump Air Lift Other Analysis  Sample ID Parameters Analyzed Sample Time Container Types Preservative Turbidity (NTU) Comments	Depth to Bettom (m): ₺ሎﯨﺪﯨ	- 13.890	0.0		Time (_	) min. interval (24	lh)					
(DTB-DTW) x 2 (for 2" well diameter) = 1 well volume  (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume  (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume  2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m  Method: Waterra Peristaltic Disp. Bailer Steel Bailer Subin Pump Air Lift Other Analysis  Sample ID Parameters Analyzed Sample Time Container Types Preservative Turbidity (NTU) Comments	Submerged Tubing Depth (	m): N/A	1000	n to	Depth (ı	m)						
(DTB-DTW) x 2 (for 2" well diameter) = 1 well volume  (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume  (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume  2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m  Method: Waterra Peristaltic Disp. Bailer Steel Bailer Subin Pump Air Lift Other Analysis  Sample ID Parameters Analyzed Sample Time Container Types Preservative Turbidity (NTU) Comments	Well Stick-up Height (m):	0.75 m	blocks.	1019 4	Temper	ature (ºC)					****	
(DTB-DTW) x 2 (for 2" well diameter) = 1 well volume  (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume  (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume  2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m  Method: Waterra Peristaltic Disp. Bailer Steel Bailer Subin Pump Air Lift Other Analysis  Sample ID Parameters Analyzed Sample Time Container Types Preservative Turbidity (NTU) Comments	Estimated Water Volume (L	): N/A	obstru	104	рН							
Volume  (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume  2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m  Method:  Method:  Waterra  Peristalic  Disp. Bailer  Steel Bailer  Steel Bailer  Subin Pump  Arr Lift  Other  Analysis  Sample ID  Parameters Analyzed  Sample Time  Container Types  Preservative  Turbidity (NTU)  Comments	(DTB – DTW) x 2 (for 2" well		(likel	y tee)	Cond. (	us/cm)						
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume  2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m  Method  Waterra  Peristaltic  Disp. Bailer  Steel Bailer  Subm. Pump  Air Lift  Other  Sample ID  Parameters Analyzed  Sample Time  Container Types  Preservative  Turbidity (NTU)  Comments		alamotory i non	= 13	890m	Specific	Cond. (µs/cm)						
Volume  2" casing has 0.16 USgal/ft or 2.032 l/m 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m  Method: Waterra Peristaltic Disp. Bailer Steel Bailer Subin Pump Air Lift Other  Analysis  Sample ID Parameters Analyzed Sample Time Container Types Preservative Turbidity (NTU) Comments	,				Redox (	mV)						
Appearance & Odour (Clear, Silty, HC odours, etc.)  1" casing has 0.04 USgal/ft or 0.508 l/m  1" casing has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m  Method: Waterra Peristaltic Disp. Bailer Steel Balles Subm. Pump Air Lift Other  Analysis  Sample ID Parameters Analyzed Sample Time Container Types Preservative Turbidity (NTU) Comments  Yes		liameter) = 1 well	162400	>)	DO (mg	/L)						
1" casing has 0.04 USgal/ft or 0.508 I/m 8" sand pack has 0.73 USgal/ft or 9.271 I/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 I/m  Method Waterra Peristaltic Disp. Bailer Steel Bailer Subm. Pump Air Lift Other  Analysis  Sample ID Parameters Analyzed Sample Time Container Types Preservative Turbidity (NTU) Comments	Volume						r,					
8" sand pack has 0.73 USgal/ft or 9.271 l/m 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m  Total Purge Volume:    Method:   Waterra   Peristaltic   Disp. Bailer   Steel Bailer   Subin. Pump   Air Lift   Other	-											
Total Purge Volume:    Method:   Waterra   Peristaltic   Disp. Bailer   Steel Bailer   Subin Pump   Air Lift   Other												
Method: Waterra Peristaltic Disp. Bailer Steel Bailer Subin. Pump Air Lift Other Analysis Sample ID Parameters Analyzed Sample Time Container Types Preservative Turbidity (NTU) Comments  Yes							L)					
Analysis  Sample ID Parameters Analyzed Sample Time Container Types Preservative Turbidity (NTU) Comments  Yes	-	Sgal/it of 0.55 l/iii	Translation of Propagation Control		Total Pu	ırge Volume:						
Sample ID Parameters Analyzed Sample Time Container Types Preservative Turbidity (NTU) Comments  Yes		Peristalfit		Disp. Bal	ler -	// Steel/Bailer	Sübj	n Plamp	AirL	ift	Ç	ther
☐ Yes	Analysis											
	Sample ID Parameters A	nalyzed Sample	Time	Container '	Types	Preservative	Turbid	ity (NTU)		Com	ments	
□ No					[	Yes					· · · · · ·	
					[	No						

Equipment = Hemmern Heron Holl, double checked / ELR small we tape PID Mini Race Pine 17815





Sample Site (Con't): <u>GLL07-01</u> wpt GLL07-01

Hennera 4thse

Field UTM Location: Zn: 08 V Easting: 63 38854 Northing: 688 1783

Eps Photo Nos.: 1-5, Hemnera Van

Final Groundwater Field F	Parameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	
pH	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

					CONTRA
Additional Purge Data - Continu	ied from Fr	ont of Page	Mirequired	), EST	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
pH					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume					

#### General Notes (Condition of well or other features)

on high side of main road, red mell stick of protector of ID on productor. 2" PUC or PUC orp, will ID also on cap. Protector + well in good shape

Existing 3/8" tiling in will, frozen in place, can't be noved/pulled up.

No water encounted in DTV DTB check (ie no beeps) - presume blockage due to ice/frozen



Well Number:	MW09-15		Project Nu	ımber:	1343-005.03		Date:		70c	t 2014	
Approximate Date Drille	d: unknown in f	eld !	Client:		YG-AAM		Sampler:		AB	ΣL	
Piezometer Diameter / Screen Length:	2" PVC (no e unknown in fi	= p)	Project Na	ime:	October 2014 Mt.N Groundwater	Vansen	Weather/Te	emp:		34 light	
CHV (ppm / % LEL):	(02 560 C	H4 1	Duplicate Collected:		☐ ID:		Recovery:		Goo		Bad
Purge Method								100			
Waterra	Peristaltio	<b>;</b>	Disp. E	Bailer	Subm. Pu	ump	Air Lif	ft		Other	
Initial Depth to Water (m	):   13.97	Calcul	lations:	Purge S	tart Time:			'urae Er	nd Time:		
Depth to Bottom (m):		Suspecto	-d	Time (_	) min. interval (24	4h)					
Submerged Tubing Dept		ice/ b1	ockene	Depth (n	n)						
Well Stick-up Height (m)	0.85	e 14.0	•	Tempera	ature (ºC)						
Estimated Water Volume		Pyoc A		рН							
(DTB DTW) x 2 (for 2" w	vell diameter) = 1 well	~7cm		Cond. (µ	ıs/cm)						,
volum				Specific	Cond. (µs/cm)						
(DTD DTM) v 1 1 (for 1 )	=" diamatan = 4	see n	Ε,	Redox (r							
(DTB-DTW) x 1.1 (for 1.5 volum		Sec n	wuse	DO (mg/	L)						
		***************************************	recommendation of the commensus		ince & Odour (Clear codours, etc.)	r,					
2" casing has 0.16 US	~										
1" casing has 0.04 US 8" sand pack has 0.73 L	<u> </u>				Purge Volume (L)						
6 5/8" sand pack has 0.75 0	•		:		tive Purge Volume (	(L)					
·					rge Volume:						NATIONAL PROPERTY OF THE PARTY
Wethod: Watern	a Peristalti	5	Disp. Bai	let	Steel Bailer	Sübn	, Pump	Air	Lift	Ott	er
Analysis					1			mano and and an analysis of the same and an analysis of th			
Sample ID Parameters	S Analyzed Sample	Time C	ontainer <sup>1</sup>	Types F	Preservative	Turbidit	ty (NTU)		Comi	ments	
					Yes						
					☐ No						

Some equipment as GLL07-01



Sample Site (Con't): _	MW09-	1 %	5 Net	//\	NO9- 1	5		
Field LITM Location: 7	7n: 02 1	. #	Easting of 2009)	7	Northing	rn613	27:	,

Hemmera
whiteherse
APS
Photo Nos.: 6-10
Hemmera
Vaga
canera

Final Groundwater Field Pai	ameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	
pH	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

Additional Purge Data - Continu	ie@fitemid=tr	olijikor Pauje	(if required	)	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
рН					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Porge Volume:					

General Notes (Condition of well or other features)
Metal stick op protector (red) on high side of main road, hell 10 marked on protector.
2" PVE will casing w/ no cap, well 10 morked on casing.
Transducer cable in mell, frozen in place could be pulled up or moved. No existing tobing installed
Transducer cable in nell, frozen in place, can't be pulled up or moved. No existing tubing installed La assume Asuspect ice because cable non't move, similar location/depth as GLLO7-01 which also
surped ice became 5/g" fubing want more



Well Number: CH-P-13-03/10 **Project Number:** 1343-005.03 Date: 7 Oct 2014 Approximate Date Drilled: unknown in field Client: YG-AAM Sampler: AD JL Piezometer Diameter / 2" PVC/ unknown October 2014 Mt.Nansen overcost, light wind **Project Name:** Weather/Temp: Screen Length: in field Groundwater 45/16/20 M =5°C CO2 2440 % LEL **Duplicate** CHV (ppm / % LEL): ☐ ID: Recovery: Good Bad = 0 Collected: 01 20.6% **Purge Method** Waterra Peristaltic Disp. Bailer Subm. Pump Air Lift Other Initial Depth to Water (m): N/A Calculations: **Purge Start Time:** Purge End Time: Depth to Bottom (m): 5.02m -) min. interval (24h) Time ( unknown Submerged Tubing Depth (m): NIA Depth (m) if actual 0.58 Well Stick-up Height (m): Temperature (°C) bottom, or Estimated Water Volume (L): pН if obstruction Cond. (µs/cm) (DTB – DTW) x 2 (for 2" well diameter) = 1 well Specific Cond. (µs/cm) volume defected Redox (mV) (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well DO (mg/L) volume SER VEVELGE Appearance & Odour (Clear, Silty, HC odours, etc.) 2" casing has 0.16 USgal/ft or 2.032 l/m Interval Purge Volume (L) 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m Cumulative Purge Volume (L) 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m **Total Purge Volume:** Meined Disp Ballet Submi Flume Other **Analysis** Sample ID Parameters Analyzed Sample Time **Container Types** Preservative **Turbidity (NTU)** Comments Yes l No

Pine PID - battries change ELR Micro WL tape

well properly 2 semled



Sample Site (Con't): CH-P-13-03/10 Wpt CH-P-13-03/10

Field UTM Location: Zn: 08 V Easting: 0389145 Northing: 688 1108

Hemmera whths GPS

Whithse GPS Photo Nos.: 21-25

Hemming Vapa Vapara

Final Groundwater Field Par	ameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	
рН	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

Additional Purge Data—Continu	isa kon Bi	enikok Palgie	(ifurequired	)	
Time () minute interval:					
Depth (m)					
Temperature (ºC)					
рН					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:					•

General Notes (Condition of well or other features).

Grey mutual stick up protector, -/ 2" PVC (w proper sealed cap) inside. All in good condition

Protector lid says " (PT-P-13" cap says "CH-P-13-"

No null repairs heeded, cap unscrews who out pulling casing apart, however as per spring 2044 sampling,

Sand from protector/stick up was falling down well casing when trying to remove cap. No way to try and

develop + remove sand blockage w hydrolift because no water



Wall North Com	G-ST-DC-G	220				ls .			626		
Well Number:	GST-DC-C	93명. Project I	Number:	1343-005.03		Date:		Oct 7, 2014			
Approximate Date Drilled:		Client:		YG-AAM		Sampler: Gryn		WY R	in		
Piezometer Diameter / Screen Length:	I" METAL	NETAL DP Project Name		October 2014 Mt.Nansen Groundwater		en				-4°C OVERCAST	
CHV (ppm / % LEL):		Duplicat Collecte		DID: NONE		Recovery:		☐ Good ☐ Bad		Bad	
Purge Method											
Waterra	Peristaltic	Disp	. Bailer	Sub	m. Pump		Aiı	r Lift		Other	
	01.	RECT. SAMI	VE PE	RISTATIC	•						
Initial Depth to Water (m): F	r 3.89	Calculations:	Purge S	tart Time:			Purge		End Time	e: /	7
Depth to Bottom (196): F-+	12.34		Time (_	) min. interv	/al (24h)						
Submerged Tubing Depth (n	1):		Depth (ı	n)		200000000000000000000000000000000000000					
Well Stick-up Height (m):	0.90		Temper	ature (°C)			N (	1	182 0		THE INC.
Estimated Water Volume (L)			pH				777	DH	/ <del>  `</del>	3 - 5 /	
(DTB – DTW) x 2 (for 2" well diameter) = 1 well			Cond. (μ								
volume	,		Specific	Cond. (µs/cm	)		1)]	RED	7		
			Redox (	mV)					0.7	and the same of th	
(DTB-DTW) x 1.1 (for 1.5" dia volume	ameter) = 1 well		DO (mg	/L)			01	(14)	ML		
•				ance & Odour (Codours, etc.)							
2" casing has 0.16 USgal/1 1" casing has 0.04 USgal/1				Purge Volume							
8" sand pack has 0.73 USga				tive Purge Vol							
6 5/8" sand pack has 0.50 US				ırge Volume:	(L)						
Method: Wateria	Paristatite	Disp. E		Siecl Baile		Silvin :		The second second	r in it is		laer.
Analysis	V W/BA										il (el
Sample ID Parameters An			r Types	Preservative		urbidity (	NTU)		Co	mments	
CST-DC GEN CHEM	18-30		-	Yes		LE TUR		7.			
-03B CYANIDE		t GLAS.		No No	- i rene	LE TUR	101011				
suprice 03A.									****		



Sample Site (Con't): <u>G51-0C-03</u> B		LP.	
Field UTM Location: Zn: OSV Easting:0388105	Northing: 6881076	085	Photo Nos.: 8463

1830 SMMPLE.
SAMPLE.
SAMPLE.
5mple.

Additional Purge Data - Continu	ded from Fr	ont of Page	ให้ใหญ่ข้างครั	
Time () minute interval:				
Depth (m)				
Temperature (°C)				
рН				
Cond. (µs/cm)				
Specific Cond. (µs/cm)				
Redox (mV)				
DO (mg/L)				
Appearance & Odour (Clear, Silty, HC odours, etc.)				
Interval Purge Volume (L)				
Cumulative Purge Volume (L)				
Total Purge Volume:				

General Notes (Condition of well or other features):	
399 4 M PERISTALITE	Gases: A (plastic bag cap) B
8" SILICON	02-20.2% 02-20.9%
	Coz- 480 fpm Coz- 700 ppk
	CH4-18 CH4-18



Well Number:	ML	109-18	3	Project Nu	ımber:	1343-005.03			Date:		00	OCT 7 Z014		
Approximate Date Drilled:				Client:		YG-AAM	YG-AAM		Sampler:		Go	Ganz +RM		
Piezometer Diameter / Screen Length:	Z"	2" NV2		Project Na	Project Name:		October 2014 Mt.Nansen Groundwater		Weather/Temp:		900000	CIGHT GE		
CHV (ppm / % LEL):				Duplicate Collected:			JUNE	•	Recove	ry:	ØG	ood [	Bad	
Purge Method							100							
Waterra		Peristaltic		Disp. I	Bailer	Sub	m. Pump		Ai	r Lift		Other		
	L	TBad	ez											
Initial Depth to Water (নে):	FT 15	5.0	Cal	culations:	Purge S	Start Time:		164	5	Purge	End Tim	e: /7-	35	
Depth to Bottom (m): P	7 2	5.12	(0	E+	Time (_	) min. interv	/al (24h)	1654		1708	1715	1723	1733	
Submerged Tubing Depth	(m):			-	Depth (	m)		15-0	15.0	15.0	-B.	-2	D	
Well Stick-up Height (m):	0	- 86	= 3		Temper	ature (ºC)		-0.21	-2-40°	240.29	-0.27	-0.23	-0.21	
Estimated Water Volume (	L): / 優	5~6L	XZ		рН			6.82	6.75	6.74	6.74	6.73	6.73	
(DTB – DTW) x 2 (for 2" well diameter) = 1 well		r) = 1 well	= 6.		Cond. (µs/cm)		2865	2857	2851	2845	2846	2847		
volume	alamoto	.,	× 3	23	Specific Cond. (µs/cm)									
<b></b>				Purce	Redox (	(mV)		103-7	104.4	105.7	106.7	107.8	106.8	
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume		- 1	8 4	DO (mg	/L)		14.2	2.70	1.52	1.30	1.22	1-31		
2" casing has 0.16 USg	al/ft or 2.0:	32 l/m			Appeara Silty, H	ance & Odour C odours, etc.)	(Clear,	CLEAR	CUERR	CLEAR	CLEAR	->	>	
1" casing has 0.04 USg					Interval	Purge Volume	e (L)	2	1.5	3	1-5	7_	3.5	
8" sand pack has 0.73 US	_				Cumula	tive Purge Vol	ume (L)	2	3.5	6.5	E	10-5	14	
6 5/8" sand pack has 0.50	JSgal/ft or	r 6.35 l/m			Total Pu	urge Volume:			L	I		L		
Method: Waterra		Penistallin		Disp. Sai	ter .	S#ael/Bailer		Sugar	(Unite)	2	ir Bill	(	Majer	
Analysis	1	/												
Sample ID Parameters	Analyzed	Sample	Time	Container	Types	Preservative	Т	urbidity	(NTU)		Co	mments		
Monog FULL SI	57	17-32	<i>إ</i>	PLASTIC		☑ Yes	С	73				to 511		
1-18				+ GUASS		☐ No ☐	_	J J		[ L	HEW	Ledon	~E1K	

MANN - 10°C NIK TEMOR



Sample Site (Con't): Mw9-18

Field UTM Location: Zn: O8V Easting: C388055 Northing: 6880985

Photo Nos.: *§ 453* 

Final Groundwater Field Par	rameters (Föllowing Purge)
Time (hh:mm; 24h)	1736
Temperature (°C)	-0.21
DO (mg/L)	1-31
Specific Cond. (µs/cm)	
Cond. (µs/cm)	2847
рН	6-73
Redox (mV)	106.8
Turbidity (NTU)	0.33
DO-(mg/L)	
SULFIDE mg/1	0.02

Additional Purge Data – Continu	red from Fr	ont of Page	(if required	)	
Time () minute interval:					
Depth (m)	4,				
Temperature ( <sup>0</sup> C)					
рН					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume					

General Notes (Condition of well of other feature	s).	
SLOT IN PIPE.	8" SILICON	Co2 - 660 ppm
		etiy-8



50 - 1.0 m

0084-3 G-S1-05-A/B Well Number: **Project Number:** 1343-005.03 Date: Approximate Date Drilled: Client: YG-AAM Sampler: 1" DETAL Piezometer Diameter / October 2014 Mt.Nansen **Project Name:** Weather/Temp: Screen Length: Groundwater **Duplicate** DID: NONE CHV (ppm / % LEL): Recovery: Good Bad Collected: **Purge Method** Waterra Peristaltic Disp. Bailer Subm. Pump Air Lift Other Initial Depth to Water (39): FROZEN 1-89 Calculations: Purge Start Time: Purge End Time: Depth to Bottom (m): 57 \_\_) min. interval (24h) Time ( Submerged Tubing Depth (m): Depth (m) 0.58 Well Stick-up Height (m): Temperature (°C) Estimated Water Volume (L): Hq Cond. (µs/cm) (DTB – DTW) x 2 (for 2" well diameter) = 1 well Specific Cond. (µs/cm) volume Redox (mV) PCA (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well DO (mg/L) volume Appearance & Odour (Clear, INSUFFICIENT Silty, HC odours, etc.) 2" casing has 0.16 USgal/ft or 2.032 l/m Volume Interval Purge Volume (L) 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m Cumulative Purge Volume (L) 6 5/8" sand pack has 0.50 USgal/ft or 6.35 I/m **Total Purge Volume:** Method Warena Revisibility **Analysis** Sample ID **Parameters Analyzed** Sample Time **Container Types** Preservative **Turbidity (NTU)** Comments GSI-DC FRETEN INITINEY. Y∕es NONE. PUSHED THROUGH WITH NEW -05B TUBING BUT ONLY GOT OF WATER - INSUFFICIENT OTW - FROZEN AT 3.42 FT



Sample Site (Con't): G-51-0 C-05 B

Field UTM Location: Zn: 08V Easting: 038722 Northing: 688 0836

WP91 Photo Nos.: 8476

Final Groundwater Field P	arameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	NO SAMPLE
рН	INSUFFICIENT
Redox (mV)	INSUFFICIENT VOLUME.
Turbidity (NTU)	
DO (mg/L)	

Additional Purge Data - Contin	and hom Er	omi on Page	(if required	
Time () minute interval:				
Depth (m)				
Temperature (°C)				
pH				
Cond. (µs/cm)				
Specific Cond. (µs/cm)				
Redox (mV)				
DO (mg/L)				
Appearance & Odour (Clear, Silty, HC odours, etc.)				
Interval Purge Volume (L)				
Cumulative Purge Volume (L)				
Total Purge Volume				

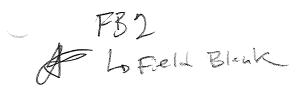
General Notes (Condition of well or other feature	s).	
0.5	m peri tobing.	
Gases: A (plastic ba	,	
02=20.5%	02-20.5% eoz=500ppk	
Cor=510 ppm	CHG = 15	



Well Number:	CH-P-13-02/10 Project Nun		mber: 1343-005.03			Date:	Date:		OCT 9 2014 Pm + GR		
Approximate Date Drilled:		Client:		YG-AAM	YG-AAM		r:	RON + GR			
Piezometer Diameter / Screen Length:	1.54 pvc	Project N	ame:	October 2014 Mt.Nansen Groundwater			Weather/Temp:				
CHV (ppm / % LEL):		Duplicate Collected		□ID: No	ne	Recove	ry:	Good	☐ Bad		
Purge Method	1990	Sign Francisco		2.91							
Waterra	Peristaltic	Disp.	Bailer	Subm.	Pump	Air	· Lift	O	ther		
Initial Depth to Water (m):	+ 26.70360	Calculations:	Purge S	Start Time:			Purge	End Time:	· · · · · · · · · · · · · · · · · · ·		
Depth to Bottom (pr):	26.802		Time (_	) min. interval	(24h)						
Submerged Tubing Depth (r		= 1.2	Depth (	m)							
Well Stick-up Height (m):		cm of	Temper	rature (°C)							
Estimated Water Volume (L): 0.09		Lichant	рН	4		77	7				
(DTB – DTW) x 2 (for 2" well	diameter) = 1 well	celum	Cond. (µs/cm)			10	47				
volume	and an area of the second	Not a such	Specific	Specific Cond. (µs/cm)		7 4	n E	5/2			
(DTD DTM) 4.4 (5.4 5% )		la Cita	Redox (mV)		7						
(DTB-DTW) x 1.1 (for 1.5" d volume	iameter) = 1 well	to flu bubing	DO (mg	(mg/L)			The state of the s	4-			
2" casing has 0.16 USgal	/ft or 2 022 l/m	Con of water column. Not enough to fell besind to bentonite at 60 Hom.	Appear Silty, H	ance & Odour (Cl C odours, etc.)	ear,			CC			
1" casing has 0.04 USgal/			Interval	Purge Volume (L	_)						
8" sand pack has 0.73 USg		Treefed as	Cumula	tive Purge Volum	ne (L)						
6 5/8" sand pack has 0.50 US	Sgal/ft or 6.35 l/m			urge Volume:				1			
Method: Waterra	Penstältio			Steel Pailer	\$1055	TE PUTITE		ur Lift	Other		
Analysis											
Sample ID Parameters Ar	nalyzed Sample	Time Container	Types	Preservative	Turbid	ity (NTU)		Comme	nts		
				Yes			B	STINOTE	AT BOTTO		
				☐ No			OF	WELL.			



Sample Site (Con't):			LP		granda a series
Field UTM Location: Zn:	asting: 0388924 Northing	: 6881014	093	Photo Nos.:	19-8480
Final Groundwater Field Parameters	(Following Purge) A	lditional Pinge Data - Conti	nued from Front o		
Time (hh:mm; 24h)	Tiv	me () minute interval:			
Temperature (°C)	D€	epth (m)			
DO (mg/L)	Те	mperature (°C)			
Specific Cond. (µs/cm)	pH	l			
Cond. (µs/cm)	Co	ond. (µs/cm)			
рН	Sp	ecific Cond. (µs/cm)			
Redox (mV)	Re	edox (mV)			
Turbidity (NTU)	DC	) (mg/L)			
DO (mg/L)		pearance & Odour (Clear, ty, HC odours, etc.)			
	Inf	erval Purge Volume (L)			
	Cı	ımulative Purge Volume (L)			
	16	tal Purge Volume:			
General Notes (Condition of well or of					
Gases:					
Gases:	7				
Coz-1030 pp	les			· San	
CO2-1030 pp					





Well Number:	MW09-03		Project Nu	ımber:	1343-005.03			Date:		00	78	2014
Approximate Date Drilled:			Client: YG-AAM				Sampler:			Gunt Ry		
Piezometer Diameter / Screen Length:	2" PVC		Project Na	me:	October 2014 Mt.Nansen Groundwater		en	Weather/Temp:		-	COC PARTY CLOUDY	
CHV (ppm / % LEL):			Duplicate Collected:		DID: DO	1P4		Recove	ry:	<u>D</u> 6	☐ Good ☐ Bad	
Purge Method					1							
Waterra	Peristaltic		Disp. E	Bailer	Sub	m. Pump		Ai	r Lift		Other	
	V W/BA+	renzy									<u> </u>	
Initial Depth to Water (🕬): \digamma	T 14.13	Calc	ulations:	Purge St	art Time:		12-5	5	Purge	End Time	e: 13	:53
Depth to Bottom (🖛): 🖵	32.26	~18	? Fr	Time (	_) min. interv	/al (24h)	13-00	1308	1323	13.34	17:40	11355
Submerged Tubing Depth (r	n):	,		Depth (m	1)		15.45	15.60	15-65			
Well Stick-up Height (m):	0.37	<sup>-</sup> 6	sh.	Tempera	ture (ºC)		1.64	1.36	1.36	1.35	1.36	137
Estimated Water Volume (L)	): 12.	× 2		рН			7.53	7.29	7.04	7.00	7.01	699
(DTB – DTW) x 2 (for 2" well-	diameter) = 1 well	= 12		Cond. (µ	s/cm)		2784	2755	2688	2483	2671	2681
volume	alamotory ? Won	= 36	L	Specific	Cond. (µs/cm	)	, , , , , , , , , , , , , , , , , , , ,					
				Redox (n	nV)		17.3	16.1	17.2	18.2	19.4	20.3
(DTB-DTW) x 1.1 (for 1.5" di volume	iameter) = 1 well			DO (mg/l	L)		8.47 \$	1.74	0.99	092	0.97	0.92
2" casing has 0.16 USgal/	/ft or 2.022.1/m				nce & Odour ( odours, etc.)		CLEAR	CLEAR	CLEAR		<b>→&gt;</b> —	>
1" casing has 0.04 USgal/				Interval F	Purge Volume	: (L)	3	4	3.5	4.5	5	5
8" sand pack has 0.73 USga				Cumulat	ive Purge Vol	ume (L)	3	7	10.5	15	20	25
6 5/8" sand pack has 0.50 US	Sgal/ft or 6.35 l/m				rge Volume:		25		'		20	
Method: Waterra	Penstalie		(S)(S)(Sa)		Stack Battle					iir si( <b>t</b>	6	itaer
Analysis												
Sample ID Parameters Ar	nalyzed Sample	Time	Container 1	Types P	reservative	Т	urbidity (	'NTU)		Co	mments	
MUCG-03 COMPLETE SET + FB2			peastic t Geas		Yes No	C	75	•	F	B2	+ Du	1P4



Sample Site (Con't): Mwo9 - 03

Field UTM Location: Zn:		Northing: 688 <i>0555</i>	(~88)	Photo Nos.:	8470
Final Groundwater Field Pa	rameters (Föllowing Purge)	Additional Purge Data —	Soldinget from Ero	it of Page (if require	·d)
Time (hh:mm; 24h)	13-54	Time () minute interv	al:		
Temperature (°C)	1.37	Depth (m)			
DO (mg/L)	092	Temperature (°C)			
Specific Cond. (µs/cm)	1	рН			
Cond. (µs/cm)	2681	Cond. (µs/cm)			
pH	6.99	Specific Cond. (µs/cm)			1 1
Redox (mV)	20.3	Redox (mV)			
Turbidity (NTU)	0.75	DO (mg/L)			
DO (mg/L)		Appearance & Odour (Clo Silty, HC odours, etc.)	ear,		
SUPHIE MIL	0-04	Interval Purge Volume (L	.)		
Y		Cumulative Purge Volum	ie (L)		
		Total Purge Volume:	3	1	

Additional Purge Data - Continu	led from Fr	ont of Page	(il required	j e	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
pH					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:					

General Notes (Condition of Well or other features):	
8" SILICON Gases:	
02-20.9% C02-430ppm	
ety - 8.	. /
well cap not tight on due to transducer in	to well-



Well Number:	MW09-04	Projec	t Number:	1343-005.03		Date:		OCT 8	8 Z014
Approximate Date Drilled:		Client:		YG-AAM		Sampler:		Grant +	
Piezometer Diameter / Screen Length:	z" pvc	Projec	t Name:	October 2014 Mt. Groundwater	:.Nansen	Weather/Temp:		1 1 1 1 1 1	
CHV (ppm / % LEL):		Duplic Collect		DHD: Noc	-@	Recovery	l:	☐ Good ¾	Bad
Purge Method									
Waterra	Peristaltic		sp. Bailer	Subm. P	Pump	Air I	Lift	Oth	er
	W/Balbery	7							
Initial Depth to Water (pg):	2022220000	Calculations	: Purge S	Start Time:	11-31		Purge Er	nd Time: /	12-37
Depth to Bottom (##): FT	9 9 7		Time (_	) min. interval (2	24h) /1 41	11:56	1705 1	12:16 12.2	-7 12-37
Submerged Tubing Depth (	A STATE OF THE STA	] = (f m	Depth (g	BAT F-F	1295			48 15.1	1/51
Well Stick-up Height (m):	0-40	] x Z	Temper	ature (ºC)	3.53	3.15 2	<del></del>	2.85 2.81	2.80
Estimated Water Volume (L	1): r8C	= 86	рН		8.22	8.28 8	8.32 8	8.368.3	
(DTB – DTW) x 2 (for 2" well	l diameter) = 1 well		Cond. (μ	us/cm)	2842	2890 -		2863 287	
volume	diameter,	X 3	Specific	Cond. (µs/cm)					
(2-2-2-1)		= 24 L	Redox (ı	mV)	55.8	20.01	18.8 1	8.4 18.	719.2
(DTB-DTW) x 1.1 (for 1.5" o volume	diameter) = 1 well	å.	DO (mg/	/L)	5.6 #	1.27 1	.07 1	6/ 1.03	5 0 00
2" casing has 0.16 USga	al/ft or 2.032 l/m		Appeara Silty, HC	ance & Odour (Clea C odours, etc.)	ear, CLEAR	N Company Code and Code of Cod			
1" casing has 0.04 USga			Interval	Purge Volume (L)	て	4	2.5 2	2.5 2	Z
8" sand pack has 0.73 USg	•		Cumula	tive Purge Volume	e(L) Z	6		11 13	15
6 5/8" sand pack has 0.50 U	/Sgal/ft or 6.35 l/m		Total Pu	urge Volume:	15 L	<u> </u>			
Method: Waterra	Peristaltin	c . Disp	Baller	Studi Bailler	Sabin P	41110	Air	Lift	Öther
Analysis	wlbat								
Sample ID Parameters A			ner Types   F	Preservative	Turbidity (	(NTU)		Comment	ts
MW09 Full sex of	12-3	38 Plastic	4 [	Yes	1.27	•			
-04 Sang	des	-	ass [	No	1.77				



Sample Site (Con't):	
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Field UTM Location: Zn: OFV Easting: O389416 Northing: 688 0555 (WP) Photo Nos.: 8470

	A 20 115
Final Groundwater Field Par	ameters (Following Purge)
Time (hh:mm; 24h)	12-38
Temperature (°C)	2.80
DO (mg/L)	
Specific Cond. (µs/cm)	150
Cond. (µs/cm)	2870
рH	8.38
Redox (mV)	19.2
Turbidity (NTU)	1:23.
DO (mg/L)	0.99
SUPPLIDE MY/L	0.01

Additional Purge Data - Continu	ian idan Er		Mindelenkes		
Time () minute interval:					
Depth (m)					,
Temperature (°C)					
pH					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)				4	
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:		,			

General Notes (Condition of well or other features):	
8h SILICON	Gases
Cent purses Time	02-Zo,9%
	002 - 490pm
	Chief - \$
Well cap not tight or due	to transducer in the well o



Well Number:	V1410	3083 !	3404	Project No	umber:	1343-005.03		Date:		09	OCT	7014
Approximate Date Drilled:				Client:		YG-AAM		Sample	r:		R & 1	
Piezometer Diameter / Screen Length:	2"			Project Na	ıme:	October 2014 Mt.I Groundwater	Vansen	Weathe	r/Temp:	cea	カタ	-8°E
CHV (ppm / % LEL):				Duplicate Collected:		□ ID: ~0~(	E	Recove	ry:	☐ Go		Bad
Purge Method												
Waterra	P	eristaltic		Disp. I	Bailer	Subm. Pi	ump	Aiı	r Lift		Other	
	•	6.Z3 M	-									
Initial Depth to Water (37):	FT 20.	-59	Calc	ulations:	Purge S	tart Time:			Purge	End Time		
Depth to Bottom (1997): FT	21.	74-	-=6	·59 m	Time (	_) min. interval (24	4h)					
Submerged Tubing Depth	(m):		Oc.	36 m	Depth (n	n)						
Well Stick-up Height (m):			<u>-</u>	lunn	Tempera	ature (ºC)						
Estimated Water Volume (I	_): 0 ~	73	× 7_	-32	рН			DIN	CIT			
(DTB – DTW) x 2 (for 2" wel	I diameter)	= 1 well	~~		Cond. (µ	ıs/cm)		111	**************************************			
volume	· ularriotor)		Ø -	30 mml.	Specific	Cond. (µs/cm)		SAM	TPLE			
			3 /	,	Redox (	mV)		200	200	100		
(DTB-DTW) x 1.1 (for 1.5" ovolume	diameter) =	1 well			DO (mg/	L)		700	70			
	l/# 0 000	<b>.</b>				nce & Odour (Clea codours, etc.)	r, Ve	LUM	EAN	15 / C	6	
2" casing has 0.16 USga 1" casing has 0.04 USga						Purge Volume (L)		PLUT	5-41	801	<del>141-1</del>	
8" sand pack has 0.73 US	gal/ft or 9.27	71 l/m				tive Purge Volume	(L)	OBTAIN	IE AB	UT 500	int	
6 5/8" sand pack has 0.50 L	JSgal/ft or 6	6.35 l/m			1	rge Volume:	-					
Method: Waterra.	į.	terjenathic		Disp. Ba	EF	STANTENIE	Silling	40.00		n Lifti		Nine i
Analysis	V	11 Beb	5e /									
Sample ID Parameters A	nalyzed	Sample '	Time	Container	Types F	Preservative	Turbidity	(NTU)		Con	ments	
BHOY GEN CHE	RC	10-5b		PLASTIC + BE	135	Yes No			81 C1	raple KELY L	W17	ER 15 THE
CYANIOE									PE	RAMA FI	2057	1CTIVE

4 BOTTLES. MIN VOLUME



Sample Site (Con't):	L14/0	>3083	13H04

Field UTM Location: Zn:

Easting: 0389541 Northing: 6880668

Photo Nos.: 8483

Einal varoundwater idields	Parameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	
рН	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

Additional Punge Data - Continu	eg Romi Pr	giver Palet	(i) gerejajire a	j	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
рН					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:					•

XXXX		5000	
1808)	28		
35.4c	13		
3200	397	\$20	
300	3.8	16	
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76	99		
8200	35		
88	95	8	
-64	2 3		
160	33	97	
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10.0	38	9	
0.25			
286			
12.5	133		
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100	3.7		
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188	30		
2000	28	åg.	
eroñ.			
500	6. 5	200	
\$25	·	18.	
28	38	鐹	
		j	

Head space gases! METER NOT LIENEING LEEL NOT CUSED. INSTRUMENTS IN THE WAY.

No well cap = grees hat collectel



CSI 65I-HA-04A Well Number: Project Number: 1343-005.03 Date: Approximate Date Drilled: Client: YG-AAM Sampler: I" METAL Piezometer Diameter / October 2014 Mt.Nansen Project Name: Weather/Temp: Screen Length: Groundwater Duplicate CHV (ppm / % LEL): DID: NONE Recovery: Good Bad Collected: **Purge Method** Waterra Peristaltic Disp. Bailer Subm. Pump Air Lift Other DIRECT SAMPLE Initial Depth to Water (1897: ET 3-66 Calculations: **Purge Start Time: Purge End Time:** Depth to Bottom (ser): FT 6-90 ) min. interval (24h) Time ( Submerged Tubing Depth (m): Depth (m) 0-57 Well Stick-up Height (m): Temperature (°C) Estimated Water Volume (L): рН Cond. (µs/cm) (DTB - DTW) x 2 (for 2" well diameter) = 1 well Specific Cond. (µs/cm) volume Redox (mV) (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well DO (mg/L) volume Appearance & Odour (Clear, Silty, HC odours, etc.) 2" casing has 0.16 USgal/ft or 2.032 l/m Interval Purge Volume (L) 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 I/m **Cumulative Purge Volume (L)** 6 5/8" sand pack has 0.50 USgal/ft or 6.35 I/m **Total Purge Volume:** Methods V W/BATTERY **Analysis** Sample ID Parameters Analyzed Sample Time **Container Types** Preservative **Turbidity (NTU)** Comments DISSOLVE MERICO PLASTIC TURBIO (BLACK) ✓ Yes 1510 4A-04A GEN CHEM No

min. VOLUMES.



	S	.e
Sample Site (Con't):	GALT-HA	A40-

Field UTM Location: Zn: ONV Easting: 0387717 Northing: 6881132

1	LP	,
and .	84	,

Photo Nos.: 8462

Final Groundwater Field Pa	rameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	
pH	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

		**************************************	and the same and t		
Additional Purge Data - Contin	reio figin Fi	omical Actor	di regulikea	)	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
pH					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Fotal Purge Volume:					,

General notes (Continued of Well or other	(eaures)
CABES	3.5 m PERISTALTIC
02 - 20-6%	8" SILICON
CH4-0.0 /-	
CH4-0.0%	
,	



Well Number:	GSI-HA-0	5A Project Nu	umber:	1343-005.03			Date:		OCT 7	2014
Approximate Date Drilled:		Client:		YG-AAM			Sampler:		GNR+	RM
Piezometer Diameter / Screen Length:	I METAL OP	Project Na	ime:	October 2014 Groundwater		en	Weather/	Temp:	~ 8 '	JGHT SNOW
CHV (ppm / % LEL):		Duplicate Collected:		☐ ID:			Recovery	<b>:</b>	Good	Bad
Purge Method				100			100			
Waterra	Peristaltic	Disp. I	Bailer	Sub	m. Pump		Air I	Lift	Ot	her
	$\mathcal{O}$	IREKT 5	MAC	-						
Initial Depth to Water (m): F	7 3-84	Calculations:	Purge S	Start Time:				Purge Er	ıd Time:	
Depth to Bottom (pa): FT	6-89		Time (_	) min. interv	/al (24h)					
Submerged Tubing Depth (r	n):	~/~	Depth (	m)						
Well Stick-up Height (m):	0.97		Temper	ature (ºC)						
Estimated Water Volume (L)	!		рН				/ )/	RAI	-	
(DTB – DTW) x 2 (for 2" well	diameter) = 1 well		Cond. (	µs/cm)						
volume	arameter) i wen		Specific	Cond. (µs/cm	)		< >	1796	7.5	
			Redox (	mV)			<u> </u>	* / - \		
(DTB-DTW) x 1.1 (for 1.5" di volume	ameter) = 1 well		DO (mg	/L)			NI	O AC	RGE	
Volume				ance & Odour (			, }			
2" casing has 0.16 USgal/	ft or 2.032 I/m			C odours, etc.)						
1" casing has 0.04 USgal/			Interval	Purge Volume	: (L)					
8" sand pack has 0.73 USga			Cumula	tive Purge Vol	ume (L)					
6 5/8" sand pack has 0.50 US	sgal/π or 6.35 l/m		Total Pu	urge Volume:						
Method: Waterra	Peristaltio	Disp. Ba	ler 🏝	Steeksaller	1	Short P	Windp	Анг	Lift	Other
Analysis	1 V W1	BATTER								
Sample ID Parameters Ar		Time Container	Types	Preservative	To	urbidity (	NTU)		Commer	nts
GSI-HA DISSOLVED GEN CH.	em 14 Ja	t Peneric	[	✓ Yes No	Some YELLS	TIRB	HOITY HOGE	57	DIREUT	
-/// L				,,	i significanting		- And govern			



GATI	-HA-05
	GATI

Field UTM Location: Zn: OSV Easting: 0387896 Northing: 688 / 127

(W1082) Photo Nos.: 8459

Final Groundwater Field P	arameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	
рН	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

	The state of the s	i		V	
Additional Purge Data - Continu	ied from Eg	orit of Pag	e (if require	i)	10
Time () minute interval:					
Depth (m)					
Temperature (°C)					
pH					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:					

General Notes (Condition of well or other)		PERISTALTICE
Coz - 2009 Y Oz - 2009 Y CH4-0.0. Y	Nagariti.	SILICON
O2 -20-9 /-	V	
M4-0.0. Y.		



Well Number:	MU09-01	Project No	umber:	1343-005.03		Date:		OCT 8	2014
Approximate Date Drilled:		Client:		YG-AAM		Sample	r:	( Jank	+ R/7
Piezometer Diameter / Screen Length:	25" PVC.	Project Na	ame:	October 2014 Mt.Nans Groundwater	en	Weathe	r/Temp:	Grace - 902	SNOW
CHV (ppm / % LEL):		Duplicate Collected		□ ID:		Recove	ry:	☐ Good	Bad
Purge Method								1	
Waterra	Peristaltic	Disp.	Bailer	Subm. Pump		Aiı	r Lift	Ot	her
Initial Depth to Water (คาร์: ค่	F BRX 16:44 C	alculations:	Purge Si	tart Time:	195	īį —	Purge E	nd Time:	
Depth to Bottom (m): FT	TES 28.0		Time (	_) min. interval (24h)					
Submerged Tubing Depth (r	n):		Depth (n	n)		The state of the s			
Well Stick-up Height (m):	0.81		Tempera	ature (ºC)				'	
Estimated Water Volume (L)	);		pН			-001			
(DTB – DTW) x 2 (for 2" well	diameter) = 1 well		Cond. (µ	ıs/cm)			7		
volume	and motory i won		Specific	Cond. (µs/cm)		-1	7.1		
(0.77)			Redox (r	mV)	C	The state of the s	MA	0	1
(DTB-DTW) x 1.1 (for 1.5" d volume	iameter) = 1 well		DO (mg/	L)	W.	Ex	1/2	A	
2" casing has 0.16 USgal	/ft or 2 032 l/m			ince & Odour (Clear, codours, etc.)	·		Ba,	Secretary of the Secret	
1" casing has 0.04 USgal			Interval	Purge Volume (L)			91		
8" sand pack has 0.73 USg			Cumulat	tive Purge Volume (L)		1/			
6 5/8" sand pack has 0.50 US	Sgal/ft or 6.35 l/m		Total Pu	rge Volume:		<del>' /                                     </del>	<u> </u>		
Method: Waterra	Peristaltic	Disp. Ba	iler	Steel Bailer	Same	Versite :	ΔŢ	Lift	Other
Analysis									
Sample ID Parameters A	nalyzed Sample Time	Container	Types F	Preservative 1	urbidity	(NTU)		Comme	nts
				Yes	/		IN.	nue of	:/4)//C
				No	H	•	MAS	MAILIN	7.2

FREEZING IN FIRE FUBING + CLOCGES
TRIEU 5/8" LATERRA. ECONIEVE CLOCGES
WITH TAWNGS. COULD NOT SATIPLE.

# **11** HEMMERA

Sample Site (Con't): MW09				8471-8472
Field UTM Location: Zn: 🗷 🦒 🕥	Easting: 0389396	Northing: 6880562	( WPT 087) Photo Nos.:	8466-8469

Final Groundwater Field Parameters (Following Purge)
Time (hh:mm; 24h)
Temperature (°C)
DO (mg/L)
Specific Cond. (µs/cm)
Cond. (µs/cm)
pH
Redox (mV)
Turbidity (NTU)
DO (mg/L)

Additional Purge Data - Continu	ied glom Ek	onto) (Paloje)	(li required	)	FF 44
Time () minute interval:					
Depth (m)					
Temperature (°C)					
рН					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume					

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TRIED WITH PERI TUBING - CLUBGED TRIED WITH 5/8" WATERRA - FOOTVALVE CLOCKED EXCESSIVE QUANTITY OF THUNDS IN WATER. BROKEN SCREEN? BROKEN WELL? HARD FO SKY.

· Big hole in the well cosing.



Well Number:		MW0	9-02	-	Project Nu	ımber:	1343-005.03		****	Date:		007	-82	014
Approximate D	Date Drilled:				Client:	100	YG-AAM			Sample	r:		n tok	
Piezometer Dia Screen Length		2 1°	PUC		Project Na	me:	October 2014 Groundwater		en	Weathe	r/Temp:	9	i °C GNIT SA	
CHV (ppm / % I	LEL):				Duplicate Collected:			ON E		Recove	ry:	□G	PGGR Good	Bad
Purge Method							20 20 20							
Water	rra	P	eristaltic		Disp. E	Bailer	Sub	m. Pump		Ai	r Lift		Other	
		$\sim$	/ W/	Balte	7				***************************************					
Initial Depth to	Water (郷):デナ	7.	88	Calo	culations:	Purge 9	Start Time:		0910	2	Purge	End Tim	e: [0	· 14
Depth to Botto	om ( <del>fr)</del> : FT	15	-8.	8	C+	Time (_	) min. interv	al (24h)	0921	0929	9-39	9-50	10.43	to-13
Submerged Tu	ibing Depth (m)					Depth (	mer Et			10-8	10.8	10-9	10.9	10.9
Well Stick-up F	Height (m):	0.1	57	= 34	I.5m	Temper	rature (ºC)		2.83	3-0	Z-48	253	2.43	2.44
Estimated Water	er Volume (L):	5	4	X Z	_	рН			6.92	6.92	6.94	6.97	6-78	6.97
(DTB – DTW) x	2 (for 2" well dia	ameter)	= 1 well	= 5	F	Cond. (	µs/cm)		2912	2948	3059	3/08	3170	3194
,	volume	,		ائي دد	Manager .	Specific	c Cond. (µs/cm	)						
(DTD DTM)	4.4.6. 4.59 1:			X 3		Redox	(mV)		21.7	10.0	-6.9	-26.4	-37-5	-47.8
(DIR-DIAN) X	1.1 (for 1.5" diar volume	neter) =	1 well	- 13	5 1	DO (mg	/L)		8.75	Z-Z-3	1.33	3.22	86843	134
2" casing ha	as 0.16 USgal/ft	or 2 03:	2 I/m	PAR			ance & Odour ( C odours, etc.)		CLEAR	CLEAR	CHEIR	CLEAR	CLEAR	CLEAR
_	as 0.04 USgal/ft					Interval	Purge Volume	(L)	2.5	1	1.5	P	2	)
	has 0.73 USgal/					Cumula	tive Purge Vol	ume (L)	2.5	3-5	5	6.5	8.5	9.5
6 5/8" sand pac	ck has 0.50 USg	al/ft or 6	6.35 l/m			Total P	urge Volume:				J	-	1	<u> </u>
Methodiss	Waterra		Peristallic		⊚Disp. Bai	leir	. SteamEallea		Submor	Cline		in Ent		Mher
Analysis		\\ \\ \	Baltery											
	arameters Ana		Sample	Time	Container	Гуреѕ	Preservative	T	urbidity	(NTU)		Co	mments	
MW09 F	FULL SET DE SAMPLE.	5	10.15		PLASTIC + GLASS		✓ Yes ☐ No	/	·97		P	MLAN-E	TERS ST.	ABIUZED FE.



*	,
Final Groundwater Field Par	rameters (Following Purge)
Time (hh:mm; 24h)	10-15
Temperature (°C)	2.44
DO (mg/L)	
Specific Cond. (µs/cm)	/
Cond. (µs/cm)	3194
рН	6-97
Redox (mV)	-47.8
Turbidity (NTU)	1.97
DO (mg/L)	1-34
SULPHIDE. Might	0-02

Additional Purge Data - Commu	jedliom Pr	, Sure <u>ige</u>	(Pregnikea	j.	
Time () minute interval:					
Depth (m)	-				
Temperature ( <sup>0</sup> C)					
pH					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:					

General Notes (Condition of well or other features):
8" SILICON
Coz - 560 pp.
Co2-560 ppc



Well Number: Approximate Date Drilled: Piezometer Diameter / Screen Length: CHV (ppm / % LEL):	MW09-1	Project N Client: Project N Duplicate Collected	YG-AAM October 2014 Mt.Nansen Groundwater		sen	Date: Sample Weathe	r/Temp:	OPT 7 2014  GAMR & RAN  OVERCAST  UCHT SNOW- 10°C  Good Bad		
Purge Method Waterra	Peristaltio	: Disp.	Bailer	Subm. Pump		Ai	r Lift		Other	
Initial Depth to Water (**):	1 1/ 2/01	Calculations:	Purge S	tart Time:	8=34	1558	Purge	End Tim	ie: 162	
Depth to Bottom (m):  Submerged Tubing Depth (n  Well Stick-up Height (m):	19.36 FT 1): 0.91	3.16 =/m	Depth (A	_) min. interval (24h)  ff)	16-03	1611	16.8	1623 ->> 0.02	1829 0.08	
Estimated Water Volume (L)	0.000.00.00	= l m = purge	рН	iture ( C)	6.77	6.72		-	6.70	
(DTB – DTW) x 2 (for 2" well o	liameter) = 1 well		Cond. (µ	s/cm) Cond. (µs/cm)	2908	2910	2915	2913	Z9/4	
(DTB-DTW) x 1.1 (for 1.5" dia	ameter) = 1 well		Redox (r	nV)	100	95.8	96.1	97.3	98.2	
volume	ameter) – i weii			nce & Odour (Clear,	CLEAR	3.74 CLEM	3.01	2.31	2.14	
2" casing has 0.16 USgal/l 1" casing has 0.04 USgal/l		. The state of the		odours, etc.) Purge Volume (L)	2	1	7	- シ て	1.5	
8" sand pack has 0.73 USga 6 5/8" sand pack has 0.50 US	l/ft or 9.271 l/m		Cumulat	ive Purge Volume (L)	2	3	5	7	85	
Method: Waterra	Peristalii	c Disjo, S	Andrews Constitution and Constitution an	rge Volume:						
Analysis	T SAZIU	77-5195 (27		A CONTRACTOR OF THE PROPERTY O				Malenii.		ithe
Sample ID Parameters An	alyzed Sample	Time Container	r Types F	reservative	Turbidity	(NTU)		Co	mments	
MUO9 FULL SE	T. 1630	)		Yes No	3.43	·				

NEED TO RIN: RETURNED TO WELL IN PM



Final Groundwater Field Par	ameters (Föllowing Purge)
Time (hh:mm; 24h)	1630
Temperature (°C)	0.06
DO (mg/L)	2.14
Specific Cond. (µs/cm)	293
Cond. (µs/cm)	2914
рН	6.7
Redox (mV)	98.2
Turbidity (NTU)	0.43
DO (MO/L) SUCFIDE	0.02 0.00

Additional Purge Data - Contin	garana.	ententa Pasigia	(december)	1	
Time () minute interval:			,		
Depth (m)					
Temperature (°C)					
рН					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:				,	

Heed Space gases.	8" Suicar -8°C + 7m PERISTACIC
CO-Z 0.0 CHY 0.0 0 <sup>2</sup> 20.9	Note freezing in periotaltie- Mondard well-waiting for warmer  Mont of the day.  Skinning dipper (water level type) is in decimal feet.



Well Number:	G-CI-H	1-03A	Project Nu	ımber:	1343-005.03			Date:		OCT	7 Zo	14
Approximate Date Drilled:			Client:		YG-AAM			Sample	r;	Comp	-+ RM	- J.
Piezometer Diameter / Screen Length:	I" MET OP.	n	Project Na	me:	October 201 Groundwater		en	Weather	'/Temp:	CIGH	+ RA + SNOW	J -8°C
CHV (ppm / % LEL):			Duplicate Collected:		☐ ID:	ICNE		Recover	у:	☐ Goo	od 🛮	Bad
Purge Method												
Waterra	Peri	staltic	Disp. E	Bailer	Sub	m. Pump		Air	Lift		Other	
	L	IRECT	501-0	LE								<u> </u>
Initial Depth to Water (🛩): 🗐	T 3-30	Calc	ulations:	Purge S	tart Time:				Purge E	nd Time:	1-	
Depth to Bottom (pg: FT	6.89		,	Time (_	) min. interv	/al (24h)						
Submerged Tubing Depth (n	1):	~	1 m	Depth (r	m)							
Well Stick-up Height (m):	0.90	<b>)</b>		Temper	ature (ºC)				1 - 1 -			,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
Estimated Water Volume (L)	•			рН			•	111	ZEU	/		
(DTB – DTW) x 2 (for 2" well of	liameter) = 1	well		Cond. (	us/cm)		,	1/11		16		
volume	indiniotory .	110		Specific	Cond. (µs/cm	)			NAV			
				Redox (	mV)			AC		200		
(DTB-DTW) x 1.1 (for 1.5" di volume	ameter) = 1 v	well		DO (mg	/L)				0016	5		
Voidific					ance & Odour			No	7			
2" casing has 0.16 USgal/	ft or 2.032 l/r	m			C odours, etc.)			, ,				
1" casing has 0.04 USgal/		l .		Interval	Purge Volume	(L)						
8" sand pack has 0.73 USga		l .		Cumula	tive Purge Vol	ume (L)						
6 5/8" sand pack has 0.50 US	sgai/π or 6.3t	o I/m		Total Pu	ırge Volume:							
Method: Waterral :	Per	istattic 🔭	. Disp. Bai	ler	Steel/Baille		Silan 5	ឲ្យប្រុស្ត	Air	Lift	Ott	her
Analysis	V	~ BATTERY	•									
Sample ID Parameters Ar		ample Time	Container <sup>3</sup>	Гуреѕ	Preservative	Т	urbidity (	(NTU)		Com	ments	
GCI - DISSOURD	manus La	4-42	PLOSTIC		☑ Yes	Som	E TUR	BIOITY	U	IRECT	79	
HA-03A GEN CHE	M	L			☐ No	YEL	con "	71265		IRECT	PLE	

MIN-VOLUMES



Sample Site (Con't): GCI-HA-03A			
Field UTM Location: Zn:	87876 Northing: 6881132	(WP81) Pho	to Nos.: 8458
Final Groundwater Field Parameters (Following	Purge) Additional Purge Data - Continu		
Time (hh:mm; 24h)	Time () minute interval:		
Temperature (°C)	Depth (m)		
DO (mg/L)	Temperature (°C)		
Specific Cond. (µs/cm)	рН		
Cond. (µs/cm)	Cond. (µs/cm)		
pH	Specific Cond. (µs/cm)		
Redox (mV)	Redox (mV)		
Turbidity (NTU)	DO (mg/L)		
DO (mg/L)	Appearance & Odour (Clear, Silty, HC odours, etc.)		
	Interval Purge Volume (L)		
	Cumulative Purge Volume (L)		
	Total Purge Volume:		
General Notes (Condition of well or other feature			
	S);		
GNSES CONSES	3 M PERESTALTIC		
02 20.9 Y, CH4 0.0 Y. CG2 GOY.	811 OF SLUCON		
CAL O.O.Y	0	,	
102 00 Y.			



appears

Well Number: 14-P-12-05/50 **Project Number:** 1343-005.03 Date: 7 Oct 2014 Approximate Date Drilled: unknown in field Client: YG-AAM Sampler: AG JL Piezometer Diameter / PVE/ unknown October 2014 Mt.Nansen overcast, lightning **Project Name:** Weather/Temp: Screen Length: Groundwater a field + SNOW, ~-50C (G. 440 CHY **Duplicate** CHV (ppm / % LEL): 10: 50P-1 Recovery: ⊠ Good ☐ Bad 20.9% 0% LEL Collected: **Purge Method** 13 Stabilize a hudeliff Waterra Peristaltic Disp. Bailer Subm. Pump Air Lift Other hydrolift Initial Depth to Water (m): 22.26 Calculations: **Purge Start Time:** 13:46 Purge End Time: Depth to Bottom (m): 49.99 50-22 25 Time ( min. interval (24h) 13:59. 14 67 14:16 14:25 14 42 Submerged Tubing Depth (m): ~ 43.5 = 27.75 m Depth (m) 24.00 74.14 24.09 0.70 Well Stick-up Height (m): Temperature (°C) - 1.14/m 0.3 0.4 0.4 Estimated Water Volume (L): ~20.56 5.83 Hq 5.85 579 4 93 5.60 = ~30.5L Cond. (µs/cm) 356.3 356.3 356.3 356.3 356.3 356.3 (DTB – DTW) x 2 (for 2" well diameter) = 1 well Specific Cond. (µs/cm) volume 00 ambient 671.8 673.1 672.5 668.0 67 < Redox (mV) temp ~ -5°c, 124.8 105.1 994 98 2 111.7 1039 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well DO (mg/L) 1.58 1.62 2.0% 1.42 water in flor volume Appearance & Odour (Clear, ight brown mostly Sume clear clear through prince clear - clear - to mostly dear, Silty, HC odours, etc.) ers or 2" casing has 0.16 USgal/ft or 2.032 l/m bucket station Interval Purge Volume (L) 1" casing has 0.04 USgal/ft or 0.508 l/m 15 15 15 15 15 15 to freeze -1 8" sand pack has 0.73 USgal/ft or 9.271 l/m **Cumulative Purge Volume (L)** 15 90 6 5/8" sand pack has 0.50 USgal/ft or 6.35 I/m princing **Total Purge Volume:** Meligoria Vaterra Peristalitie Disp. Bailer Subm Pumo-Owner **Analysis** hydrelift Sample ID **Parameters Analyzed** Sample Time **Container Types** Preservative **Turbidity (NTU)** Comments H-P-13parent + DUP, full suite 7,37 NTU e time of 图 Yes 14.416 -(parent - DUP) 05/50 all as per scope sample 15:03 - No runte incliffer proports as DUP-1 La Field sulphidas = 0.05 mg/L

well has no



Sample Site (Con't): (+1-9-13-05/50 Wp+=

Field UTM Location: Zn: ০ও V Easting: ০૩ ৩৩ ৭ 56 Northing: 658 (낙실구

Themmen Photo Nos.: 36-42 3 Henney

Final Groundwater Field P	arameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	SEE
Specific Cond. (µs/cm)	
Cond. (µs/cm)	PREVIOUS PAGE
рН	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

Additional Purge Data - Continu	(ed from Er	ont of Page	i (ne rejoja ji rejo		4
Time () minute interval:	-		\		
Depth (m)					
Temperature (°C)					, in the second
рН	, A	***	<u> </u>		
Cond. (µs/cm)		1/	<b>λ</b>	1	,
Specific Cond. (µs/cm)		V	4/4	1	and the second
Redox (mV)		1			
DO (mg/L)		1		,	S. J. S.
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)		1		1	
Cumulative Rurge Volume (L)					
Total Purge Volume:				· · · · · · · · · · · · · · · · · · ·	

### General Notes (Condition of well or other features):

Grey much stick up protector -/ 1" PVC well (no cap). Existing 5/5" hunterer already in well Lo also froms ducer controller in casing protector

sin good shape

Located along pit access road, behind concrete lock block protectors



Hoskin La Motte tobidity, Maxim field sulphide Hach DR 890-

Well Number: GLL 07-03 **Project Number:** 1343-005.03 Date: Oct 7014 Approximate Date Drilled: unknown in field Client: YG-AAM Sampler: Piezometer Diameter / 2" PVC/ unknown October 2014 Mt.Nansen overcast, light mind **Project Name:** Weather/Temp: Screen Length: Groundwater in field tsnow. ~ -5% 460 CH4 00% **Duplicate** MADE NO CHV (ppm / % LEL): Recovery: Bad Good Collected: 20.9 Purge Method Edwardam derver purce our really Waterra Peristaltic Disp. Bailer Subm. Pump Other stabilize Air Lift 5/8" , Footvalve manual Initial Depth to Water (m): Calculations: Purge Start Time: 11:28 5.045 **Purge End Time:** 12:25 Depth to Bottom (m): These (7.5) min. interval (24h) 11.76 11.75 - 5.05 11:34 11:43 11:53 17:03 12:14 12:25 Submerged Tubing Depth (m): 6 RZO 8.365 Depth (m) 8.565 9.125 9.115 9.25 ~ 11 m ~ = 6.70 m Well Stick-up Height (m): 1.09 Temperature (°C) 10 2 12Um **Estimated Water Volume (L):** ~ 13.5 5.52 5.79 pН 5,93 5.98 6.01 = 13.46 Cond. (µs/cm) 1517 163.3 153.7 153.3 157.7 159.8 (DTB - DTW) x 2 (for 2" well diameter) = 1 well 282 Specific Cond. (us/cm) 276.1 283.2 volume 297.7 294.3 Redox (mV) 247.1 197.8 131,4 10%.60 101.7 99.9 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well DO (mg/L) 2.49 2.37 2.27 2.51 2.23 2.59 volume faint eight Blown Appearance & Odour (Clear, isa~e farni Silty, HC odours, etc.) mosty clear ight box Prev. 2" casing has 0.16 USgal/ft or 2.032 l/m Interval Purge Volume (L) 7.5 7.5 1" casing has 0.04 USgal/ft or 0.508 l/m 7.5 7.5 7.5 7.5 8" sand pack has 0.73 USgal/ft or 9.271 l/m Cumulative Purge Volume (L) -lear 22.5 30 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m **Total Purge Volume:** no Method 0/5 Weitere. Peristallic ATTEME o)ihi≃is manual 5/2" Childre **Analysis** Sample ID **Parameters Analyzed** Sample Time Preservative **Container Types** Turbidity (NTU) Comments Full suite as 12:43 24.0 NTU e time of (FI LOT Water becoming slightly more Yes of work, inc. & \_ (3:00 per scape of work Sangle (Frint light bran) -03 turbed while filling last No filly + preserve Equip, Humbera 451, ELR Smill We tope, Feld Sulphides

0.19 mg/L

cap but @ Corble in well

# [] HEMMERA

Sample Site (Con't): 4LL07-03	palt	GLL	07-03	
Sample Site (Con't): 4LLD (-05	20 bx	W-C	· ,	

Field UTM Location: Zn: 0% V Easting: 0338956 Northing: 6881474

Henren Whitcherse Photo Nos.: 31-35

Final Groundwater Field Par	ameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	766
Specific Cond. (µs/cm)	
Cond. (µs/cm)	PREVIOUS
рН	
Redox (mV)	PAGE
Turbidity (NTU)	
DO (mg/L)	

Additional Purge Data - Continu	ted from Fir	omno (APaloje	(ii) neigonolo	)	
Time () minute interval:	<i>y</i>		j		
Depth (m)			/		1
Temperature (⁰C)		//			
pH /	N	7 A	\$ }	7	
Cond. (µs/cm)		/	11	J.	
Specific Cond. (µs/cm)			7	1	
Redox (mV)					
DO (mg/L)		1			
Appearance & Odour (Clear, Silty, HC odours, etc.)			p. J. J.		/
Interval Purge Volume (L)		,	/	,	
Cumulative Purge Volume (L)		.,			
Total Purge Volume:					

#### General Notes (Condition of well or other features):

Round metal stick up protector (steel) = just bayond/below lock blocks on pit access round 2" PVC well of cop but poor seal because transducer cable inside well (data logger outside)

Existing 5/3" + footundue in well, used this to sample

The contion have spotter in this area re-possibility for falling rocks from pit walls above



Well Number:	MU09-0	6 Project Number:		1343-005.03		Date:		OCT 8 2014		
Approximate Date Drilled:		Client:		YG-AAM		Sampler:		Gunt + RM		
Piezometer Diameter / Screen Length:	Z" PVC	Project I	Name:	October 2014 Mt.Nansen Groundwater		Weather/Temp:		mostly ~ -8°C		
CHV (ppm / % LEL):		Duplicat Collecte		□ID: NONE		Recovery:		Good B		Bad
Purge Method		100								~
Waterra	Peristaltic	Disp	. Bailer	Subm. Pump		Ai	r Lift		Other	•
	V V/ 60	Hery								
Initial Depth to Water (🏟): 🚝	8.620	Calculations:	Purge S	tart Time:	1718	·	Purge	End Tim	e: /8	-24
Depth to Bottom (pr):	19.50	1, (/	Time (_	) min. interval (24h)	1724	1736	1747	1758	1809	18:27
Submerged Tubing Depth (r	n):	11 Ft	Depth (s	M) FT	9.2	9.5 -	10 Z	-5 -	- J	- →>
Well Stick-up Height (m):	1.65	=3.5 ~	Tempera	ature (°C)	4.15	4.90	4.96	4.97	5.00	496
Estimated Water Volume (L)	· ~ 7	XZ	рН		7-06	7.29	7-35	7.38	7.40	7.40
(DTB – DTW) x 2 (for 2" well	diameter) = 1 well	]=~7L	Cond. (µ	ıs/cm)	1783	1770	1797	1813	1827	1819
volume	diameter) Twen	*	Specific	Cond. (µs/cm)				<u> </u>		
		× 3	Redox (ı	mV)	65	58.8	59.0	59.2	60.5	61.2
(DTB-DTW) x 1.1 (for 1.5" d	iameter) = 1 well	= 21 L	DO (mg/	L)	7-50 4	1-17	0.92	1.40%	0.83	0.84
2" casing has 0.16 USgal	/ft or 2 032 1/m			ince & Odour (Clear, codours, etc.)	CLEAR	→ .	- to -	>	<b>→</b> -	-P
1" casing has 0.04 USgal			interval	Purge Volume (L)	Z	2.5	2.	2.5	3	3.5
8" sand pack has 0.73 USg			Cumulat	tive Purge Volume (L)	Z	4.5	6.5	9	12	15.5
6 5/8" sand pack has 0.50 US	Sgal/ft or 6.35 l/m		Total Pu	rge Volume:			100			1,0,0
Method: Waterra	- Paristalti	c Disp. B		Steel Baller	Sulamat	anine (a	Δ	vi kiji		Diligar
Analysis	V W/31									
Sample ID Parameters A			r Types F	Preservative :	Turbidity	(NTU)		Co	mments	
MUOG FULSET	18-2	4 PLASTIC GUISS		Yes .	4-05					

TALL STICK UP

a = 4s1 turned off + on again



Field UTM Location: Zn: 08V Easting: 0389411 Northing: 6880 653

096 Photo Nos.: 8474 - 8475

	¥*
Final Groundwater Field Par	rameters (Following Purge)
Time (hh:mm; 24h)	1824
Temperature (°C)	4.96
DO (mg/L)	0.84
Specific Cond. (µs/cm)	
Cond. (µs/cm)	1819
pH	7.40
Redox (mV)	61-2
Turbidity (NTU)	4.05
DO (mg/L)	
SULPHICE mg/c	0.02
<i>y</i>	

					V E
Additional Purge Data - Continu	aed from Fr	om of Page	(if required	1.	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
pH					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:					

General Notes (Condition of well or other features):	
8" SI460N	
02 - 20 9 %	
602 - 460 ppm	
Cta - 8	



Well Number:	MW	09-0	5	Project N	umber:	1343-005.03	3	,	Date:		00	T 8 2	7 all
Approximate Date Drilled:				Client:		YG-AAM			Sample	er:	GA	nr + R	
Piezometer Diameter / Screen Length:	2"	PVC		Project Na	ame:	October 201 Groundwate		en		er/Temp:	55000	RT CEP	
CHV (ppm / % LEL):				Duplicate Collected		☐ ID: △	ONE		Recove	ery:	□G	ood [	☑ Bad
Purge Method					100	1000			<u> </u>				
Waterra	F	Peristaltic		Disp.	Bailer	Sub	om. Pump		Ai	r Lift		Other	•
	<b>/</b>	W/BAT	TERY.										
Initial Depth to Water (pa): 🗂	- 19	.53	Cal	culations:	Purge 9	Start Time:		1603	<u> </u>	Purge	End Tim	e: 1	7-01
Depth to Bottom (##): FT	Z	1.5	- 5	H	Time (_	) min. inter	val (24h)	1611	1620	1630	16:40	16:50	17:00
Submerged Tubing Depth (m	1):		= /·		Depth (	(44) f.t.		21.0	21.55	<del></del>	21.6	21.65	21.65
Well Stick-up Height (m):	0-	81			Tempe	rature (ºC)		3.49	2:92	3-27	3.04		5.07
Estimated Water Volume (L)	~ 3	, L.	XZ		pН			6.33	24-26		6.16	6:65	6.12
(DTB – DTW) x 2 (for 2" well o	liameter)	1 = 1 well	36		Cond.	(µs/cm)		2265	2412	2293	2071	1933	
volume	nameter)	- I Well	× 3	•	Specifi	c Cond. (µs/cm	1)		-				
÷			×9.		Redox	(mV)		81-1	814.5	84.0	74.7	72.8	72.2
(DTB-DTW) x 1.1 (for 1.5" dia volume	ameter) :	= 1 well	7 / 6		DO (mg	3/L)		4-16	2:56	1.76	1-14	1.06	0.99
	· 0 00	0.14				ance & Odour C odours, etc.		CLEAR	CLEAR	CLEAR			
2" casing has 0.16 USgal/f 1" casing has 0.04 USgal/f					Interva	l Purge Volume	e (L)	1	100	1	1.5	1	
8" sand pack has 0.73 USga						ative Purge Vol		1	3	4	5.5	6.5	7.5
6 5/8" sand pack has 0.50 US	gal/ft or	6.35 l/m				urge Volume:	(_)	7.50			0.0	Ø . =	100
Method Waterra		Provisio (716		Dien Ba		Steel Baile		Subii 1			ir Lift		Officer
Analysis								3.5					JAMES .
Sample ID Parameters An	alvzed	Sample '	Time	Container	Types	Preservative	7	Furbidity	(NTII)			mments	
MUO9 FUL SET.		17.02		PLASTIC + GLASS	_	Yes No		7.68		57	ZIGINAL AFF GI DEED	-	



Sample Site (Con't): MU09 - 05

Field UTM Location: Zn: 08V Easting: 038941) Northing: 6880653

WHT 090 Photo Nos.: 8474 + 8475

	* ; }
Final Groundwater Field Par	ameters (Following Purge)
Time (hh:mm; 24h)	17-02
Temperature (°C)	3-07
DO (mg/L)	0.99
Specific Cond. (µs/cm)	
Cond. (µs/cm)	1907
рН	6.12
Redox (mV)	72.2
Turbidity (NTU)	7-68
DO (mg/L)	7
SUUTHIDE MY/L	0.02
,	

Additional Purge Data - Continu	(etal) iroim 157	(il/regumes	
Time () minute interval:			
Depth (m)			
Temperature (°C)			
рН			
Cond. (µs/cm)			
Specific Cond. (µs/cm)			
Redox (mV)			
DO (mg/L)			
Appearance & Odour (Clear, Silty, HC odours, etc.)			
Interval Purge Volume (L)			
Cumulative Purge Volume (L)			
Total Purge Volume:		,	

General Notes (Condition of well or other features):	
8" SILICON	
NEW PERITUBING NEXT TRIP.	
02-20.7%	
02-20.9% COZ-550 ppla CHy-8	



Well Number:	MU	09-23		Project Nu	mber:	1343-005.03		Date:		ac	7 8	2014		
Approximate Date Drilled:	HAS L	evel col	d ER	Client:		YG-AAM		Sample	r:	Gn	R+ P	2/77		
Piezometer Diameter / Screen Length:	2" N	IT-REM		Project Na	me:	October 2014 Mt.Nan Groundwater	Weathe	r/Temp:	46	LIGHT SNOW -9°Z				
CHV (ppm / % LEL):				Duplicate Collected:		□ID: ~~~E		Recove	ry:	ДG	ood [	Bad		
Purge Method							100							
Waterra	I	Peristaltic		Disp. E	Bailer	Subm. Pum	p	Aiı	r Lift		Other			
W/ HYDROLIFT														
Initial Depth to Water (🕬): 🗜	T 36	5.39	Calc	ulations:	Purge S	Start Time:	8.00		Purge	End Tim	e:			
Depth to Bottom (🟟):	51	- 9	c16 C	L	Time ( <u></u>	) min. interval (24h)	8,12	8-18	8-3	8-30	8-39	8:44		
Submerged Tubing Depth (n	n):		~16 (-		Depth (	SA FY	37.2	37=2	-> "	<del>D</del> -	<b>→</b> →	6		
Well Stick-up Height (m):	0	.10	G ~	5.50	Temper	ature (ºC)	0-37	-0-12	0-13	0.10	0.10	0.11		
Estimated Water Volume (L)	: ~↓				× 7_ =		рН	:	5-88	6.37	6.49	6.55	6.50	6.54
(DTB – DTW) x 2 (for 2" well of	diameter)	) = 1 well			Cond. (	µs/cm)	2428	2547	2547	2595	Z\$ 90	2592		
` volume	•		Talvana National	<b>1</b>	Specific	Cond. (µs/cm)				•				
(DTD DTM) 4.4 (for 4.5" -!!		4 11	× 3		Redox (	mV)	137·Z	52-1	37-2	25.5	140	13.8		
(DTB-DTW) x 1.1 (for 1.5" di volume	ameter)	= 1 well			DO (mg	/L)	10-5		4012	3-33	2-33	2.37		
2" casing has 0.16 USgal/	ft or 2.03			- 11 _		ance & Odour (Clear, C odours, etc.)	GEAR TURSIO			->				
1" casing has 0.04 USgal/					Interval	Purge Volume (L)	3	б	5	7	9	5		
8" sand pack has 0.73 USga					Cumula	tive Purge Volume (L)	3	9	14	21	30	35		
6 5/8" sand pack has 0.50 US	Sgal/ft or	6.35 l/m			Total Pu	urge Volume:		· · · · · · · · · · · · · · · · · · ·				<u> </u>		
Method: Waterra		Perist <b>e</b> ltic		Disp. Bai	ler	Steel Baller	Sabini	lump -	A	rEifi	Č	)lijer		
Analysis				V										
Sample ID Parameters Ar	nalyzed	Sample	Time	Container 1	Гуреѕ	Preservative	Turbidity	(NTU)		Co	mments			
MW09 Fall se	-	18-	35	Plastic	L.,	Yes 1	Of	102		RGED TURNED	A NO 50	MPLE		
		9 min	$\alpha$				*				211 5 40	Ø4		



Sample Site (Con't): MW09-23

Field UTM Location: Zn: Easting: 4789457 Northing: 6886554

197 Photo Nos.: 8464

Final Groundwater Field Pa	ameters/(Bollowing Parae)
Time (hh:mm; 24h)	1835
Temperature (°C)	G-1)
DO (mg/L)	2.37
Specific Cond. (µs/cm)	
Cond. (µs/cm)	2592
рН	6.54
Redox (mV)	13.8
Turbidity (NTU)	102
DO (mg/L)	
sulphine mg/1	0.16

	00			f f	
Additional Purge Data - Continu	red from Ex	antroji (Palgja)	(linequined	J.	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
рН					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:					

General Notes (Cor	ndition of well or other features):		
	17m waterra 5/8" +	FOOTVAUE (025)	
	1" BAILER		
	02 - 20.9%. CO2 - 480 pph		
	1.002 - 480 ppm		
	Ctly - ps		

CI HEMMERA

& This is not an environmental sampling monitoring well, rusty steel **GROUNDWATER SAMPLE COLLECTION SHEET** 

no fuc vell

Well Number:	GLL07-02	Project Nu	ımber:	1343-005.03		Date:		& Oct	2014
Approximate Date Drilled:	unlendum in fi	cld Client:		YG-AAM	***************************************	Sample	r:		2r
Piezometer Diameter / Screen Length:	15.5 cm iD 8/ unknown in fiel	Project Na	ıme:	October 2014 Mt.Nans Groundwater	en	Weathe	r/Temp:	overcast,	light snow,
CHV (ppm / % LEL):	L	Duplicate Collected:		Ano: NO		Recove	ry:	☐ Good	
Purge Method			many and			LA W	KNOWN		
Waterra	Peristaltic	Disp. E	Bailer	Subm. Pump		américa de la companya de la company	r Lift	WAY STOMP OF A MARKET PROTECTION OF THE STORY	Other
		NIA	-> dir	cet sample					
Initial Depth to Water (m):	6.355	Calculations:	Purge St	art Time:	N/A	_	Purge Ei	nd Time:	NIA
Depth to Bottom (m):	7.20	15.5cm	Time (	_) min. interval (24h)					
Submerged Tubing Depth (r	n): _ 1.0	~ 6564	Depth (m	1)			7	7	
Well Stick-up Height (m):	1.33		Tempera	ture (°C)		1			7//
Estimated Water Volume (L)	: ~ 5L	1.2 - 6.33	pН		1				7/
(DTB – DTW) x 2 (for 2" well		= 0.95m	Cond. (µ	s/cm)	, <u>,                                  </u>	DI	KEC		71
volume	and the state of t	26.35 4m	Specific	Cond. (µs/cm)	7				
/ <del></del>		~54	Redox (n	nV)		44/	1 Pi		
(DTB-DTW) x 1.1 (for 1.5" di volume	iameter) = 1 well	~ 3 0	DO (mg/	L)	/			2	
2" casing has 0.16 USgal/	ff or 2 032 l/m			nce & Odour (Clear, odours, etc.)					
1" casing has 0.04 USgal/			Interval I	ourge Volume (L)	1/	7 .	/ /		
8" sand pack has 0.73 USga			Cumulat	ive Purge Volume (L)	1	7.	2		
6 5/8" sand pack has 0.50 US	Sgal/ft or 6.35 l/m		Total Pu	rge Volume:	<i>J</i>	/	7		1
Method: Waterra	Peristalfic	Disp. Bai	let <sup>*</sup>	Steel Bailer	Silini	(elinie	Air	Lift	Officer
Analysis		2 L plasti							
Sample ID Parameters Ar	nalyzed Sample	participation of the contract			urbidity	(NTU)		Comm	ents
GLLO7- Full soite à	, ,	As pur sour, field filter +	1000/10			it Ency		w post so	ingle

metal cap but 00

La Field sulphides : 0.13 mg/L Lo direct sangle of existing I & plastic bailer in well- unsure if there is even a screen, or how much make will wield

\_ OB Discuss -/ PM before subnitting for analysis?



Sample Site (Con't):	Ello7-02	Wyp+#
campio dito (con t).		1 L

Field UTM Location: Zn: 🔗 🦠

Easting: 039,907\

Northing: 6881705

Photo Nos.: 66-70 } Hennera

Final Groundwater Field P	arameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	N/A/
Specific Cond. (µs/cm)	
Cond. (µs/cm)	うたら
рН	
Redox (mV)	P REVVOUS
Turbidity (NTU)	-
DO (mg/L)	PAGE
	1 /
	1

Additional Purge Data - Continu	led from Fi	ant of Page	(Marelquine)	)	
Time () minute interval:	Market Section (Section)			/	,
Depth (m)	and the second second				
Temperature (°C)	1				
pH					pur
Cond. (µs/cm)		<u> </u>			
Specific Cond. (µs/cm)	gar.				White the state of
Redox (mV)	1	and the state of t	All de la constitución de la con	. ga jakka ka ka ka ka	
DO (mg/L)	Į.	1 1	g g g g g	-jidan	
Appearance & Odour (Clear, Silty, HC odours, etc.)	green and the second	e e e e e e e e e e e e e e e e e e e		<i>J</i>	<i>y</i> *
Interval Purge Volume (L)	1	J.	4		de la companya de la
Cumulative Purge Volume (L)	1	A.	Service Control of the Control of th		
Total Purge Volume:					

#### General Notes (Condition of well or other features)

Large rusty metal casing (-15.5 cm 10 0) located below main road, near barriconded entrance to tunnel - No puc casing inside, large hole into ground w/mater present and existing IL larile + twine Laurence whether this is suggessed to be a PVC casing MW or met? There are no markings anywhore on metal casing indicating this is GLLO7-02? Cleak of PM before Submitting Sample Decide to collect direct sa-ple or existing baseler. Unsure in Ehr penetrales (if there is a screen?), and have no ability to use peri pump as tobing coils up inside costy todoesn't reach lastern

Equipment MiniRue PID (Piro), Solinst hale tage (mice) ELR, IL plustic disposeble boiler (already in place) Hoskin La Mothe, Maxim HACH



Well Number: W1410 20 93BH03 **Project Number:** 1343-005.03 Date: % oct 7014 Approximate Date Drilled: unlevern in field Client: YG-AAM Sampler: AB TL 2" PUC/ unlevern Piezometer Diameter / October 2014 Mt.Nansen Overcest, light wind, Project Name: Weather/Temp: Screen Length: in field Groundwater cold ~ -80C ctly 480 Duplicate CHV (ppm / % LEL): ☑ ID: DUP-3 Recovery: Good ☐ Bad 20.9% OOLO LEL Collected: Purge Method Waterra **Peristaltic** Disp. Bailer Subm. Pump Air Lift Other peri pum p Initial Depth to Water (m): 17:36 Calculations: **Purge Start Time:** 1.70 Purge End Time: 10:24 Depth to Bottom (m): Time (5) min. interval (24h) 5.38 5.38- 1-70 17:39 17:44 17:49 17:54 17:59 13.04 Submerged Tubing Depth (m): ~ 5.0 1.74 Depth (m) 1.75 1.77 1.75 1.77 = 3.68 M Well Stick-up Height (m): Temperature (°C) 6.71 1.3 1.40 1.5% 1.4 37. 1/m Estimated Water Volume (L): ~ 7.5 pН 6.28 6.21 6,21 6.26 Cond. (µs/cm) 183.4 1830 183.3 -7.36 x1076h 183.9 (DTB - DTW) x 2 (for 2" well diameter) = 1 well 334,2 volume Specific Cond. (µs/cm) 334.0 334.0 333,6 Redox (mV) -45.01 -53.1 -60.9 -65.7 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well DO (mg/L) 0.99 0.74 0.76 0.82 volume Mostly Ver, faint light orcy borry Appearance & Odour (Clear, 11 17 15 17 Silty, HC odours, etc.) 2" casing has 0.16 USgal/ft or 2.032 l/m ut brown 3.0 Interval Purge Volume (L) 1" casing has 0.04 USgal/ft or 0.508 l/m 1.5 1.5 2.75 0.75 2.5 8" sand pack has 0.73 USgal/ft or 9.271 l/m **Cumulative Purge Volume (L)** 7.25 3.75 0.75 6.25 9.0 GUER-> 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m 271 **Total Purge Volume:** Medice Nilla (Gunta) Disp. Bailer (O) I TEN **Analysis** Flore Sample ID Parameters Analyzed Sample Time **Container Types** Preservative **Turbidity (NTU)** Comments W14102063BH03 13.2 NTU @ fine of Full suite, full battle 18:26-As per Sow Yes Field solphide 1008-3 10001 =0.16ma/L 190:37 sample No

. Hemmen YSI, ELR peri pump,

Hestein Lamotte, Monein HACH

PID (Pine) Solinst WL TER (ELR)

# [] HEMMERA

	A.		
Sample Site (Con't): Wld	BHOS	tspd_	Nome

Field UTM Location: Zn: DS V Easting: 0389134 Northing: 6880 732

Hemen

Whitehore Photo Nos.: 106-110 } Hembern

Consor

Final Groundwater Field P	arameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	SEE OVER
Cond. (µs/cm)	OVER
pH	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

Additional Purge Data - Contin	ued from Er	ចាក់ ២៩៩៦១	(if require	iy.
Time () minute interval:	18:09	18:14	18:19	18:24
Depth (m)	1.77	1.78	artining,	
Temperature (°C)	1.4°0	1.5	1,5	1.5
pH	6.31	6,32	6.34	6-35
Cond. (µs/cm)	184.3	185.5	186.4	185.8
Specific Cond. (µs/cm)	335.0	337.2	337.9	337.7
Redox (mV)	-69.2	-72.3	-74.6	-76,2
DO (mg/L)	0.91	1.03	1.12	1,17.
Appearance & Odour (Clear, Silty, HC odours, etc.)	mostly clear	N V	11.17	
Interval Purge Volume (L)	3. 0	3. 0	3.0	3.0
Cumulative Purge Volume (L)	15	18	21	24
Total Purge Volume:				

#### General Notes (Condition of well or other features):

Red metal stick up or lid, of 2" PVC well (no cap) inside Existing IL plastic bailer in well dook red booms statued bottom of bailer Installed Com of 1-1" t-bin + 6" silicon for low flow sa-pling



Well Number: MW 99-11 **Project Number:** 1343-005.03 Date: 8 Oct 2014 Approximate Date Drilled: unknown in tield Client: YG-AAM Sampler: AB 2" PVC - Emp/ Piezometer Diameter / October 2014 Mt.Nansen overcast, light nind, Project Name: Weather/Temp: Screen Length: unknown in field Groundwater 602 860 **Duplicate** CHV (ppm / % LEL): MO: NO Recovery: Good Bad Collected: 0% LEL **Purge Method**  $0 \bowtie \varnothing$ Waterra Peristaltic Disp. Bailer Subm. Pump Air Lift Other Initial Depth to Water (m): Calculations: N//A Dry **Purge Start Time:** Purge End Time: Depth to Bottom (m): Time (\_ ) min. interval (24h) Submerged Tubing Depth (m): NIA Depth (m) Well Stick-up Height (m): 0.80 Temperature (°C) Estimated Water Volume (L): N/A Ha Cond. (µs/cm)  $(DTB - DTW) \times 2$  (for 2" well diameter) = 1 well Specific Cond. (us/cm) volume Redox (mV) (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well DO (mg/L) volume Appearance & Odour (Clear, Silty, HC odours, etc.) 2" casing has 0.16 USgal/ft or 2.032 I/m Interval Purge Volume (L) 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m **Cumulative Purge Volume (L)** 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m **Total Purge Volume:** Methods Waterra Perisialitie Disp Baller ATRICIO **Analysis** Sample ID **Parameters Analyzed** Sample Time **Container Types** Preservative **Turbidity (NTU)** Comments Yes ☐ No

good sent of corp on well (slits above



		Section of the sectio	
Sample Site (Con't):	Mhon-11	wet name =	

Easting: 0389039 Northing: 6880712

7	Hemnera
5	Whitcherse
	€ 9 5

Photo Nos.: 100 - 105

Hennem	
Van	
Corner	

Final Groundwater/Field]	Parameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	
рН	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

Additional Purge Data - Continu	iedskom za	ogicograficie	(firequire)	
Time () minute interval:				
Depth (m)				
Temperature (°C)				
рН				
Cond. (µs/cm)				
Specific Cond. (µs/cm)				
Redox (mV)				
DO (mg/L)				
Appearance & Odour (Clear, Silty, HC odours, etc.)				
Interval Purge Volume (L)				
Cumulative Purge Volume (L)				
Total Purge Volume:				

### General Notes (Condition of well or other features).

Red metal stick up + 2" PVC well wcop all in good condition. located in Sand Green above failings round La Existing 16 plastic bailer in well or no nator in it

Mini Rac PID (Pine) Solinst We tape (ELR)



> see reverse for "A"

## **GROUNDWATER SAMPLE COLLECTION SHEET**

	Well Numbe	r: //	751-pc - 63 A	1/B	Project N	umber:	1343-005.03	1343-005.03				8 oct	2014	
	Approximate		intercul in fi	parties.	Client:		YG-AAM			Sampler:		A6 JC		
	Screen Length:		0.25 cm & strinks steel/ unknown in field		Project Name:		888	October 2014 Mt.Nansen Groundwater		Weather/Temp:		overeast, light should		
cap in place d	CHV (ppm /		550 CHy 20.9% ON LEL		Duplicate Collected:		DYD: N	MD: NO		Recovery:		☐ Good ☑ Bad		
~ / •]••	Purge Metho													
	Wa	aterra	Perista	ltic	Disp.	Bailer	Sub	m. Pump		Air L	.ift	C	Other	
	- N 1	A = no no	urge, direct	t san	note only									
	Initial Depth	to Water (m):	1.60	Cal	lculations:	Purge S	Start Time:		NIA		Purge E	End Time: V/A		
	Depth to Bo	ttom (m):	2.64			Time (_	Time () min. interval (24h)		Ì					
	Submerged	Tubing Depth (m	): ~ 2.5			Depth (m)							2000000	
	Well Stick-u	p Height (m):	0.012			Temper	ature (ºC)							
	Estimated W	Vater Volume (L):	1e (L):			рН				D		DECT		
	(DTB – DTW) x 2 (for 2" well diar		ameter) - 1 well			Cond. (µs/cm)						***		
	(0.0 0.11	volume	-	<b>"</b>	Specific Cond. (µs/cm)					SAM	PLF			
					Redox (mV) DO (mg/L)									
	(DTB-DTW	) x 1.1 (for 1.5" dia volume	ameter) = 1 wel	ı										
		volume				Appearance & Odour (Clear,			.,,,,,					
	2" casing	has 0.16 USgal/f	t or 2.032 l/m		Silty, HC odours, etc.)									
	1" casing	has 0.04 USgal/f	t or 0.508 I/m			Interval	Purge Volume	e (L)						
		ck has 0.73 USga				Cumulative Purge Volume (L)								
	6 5/8" sand	pack has 0.50 US	gal/ft or 6.35 l/r	n		Total Purge Volume:								
	Method:	Waterra	Pensia	iltic :	Disp. Ba	iler (i i	Skeel Sailer	7/10/10	Suba P.	iri)iğ	Air	Lift	Other	
	Analysis	manual =/footu	Nue micro											
1	Sample ID	Parameters An	ISSECTION OF THE PROPERTY OF T	ole Time	Container	Types	Preservative	Τι	urbidity (N	NTU)		Comm	ents	
& Limited	GS(-PC-	Pis Mehls/bo	th 15:00	-15:07	1x120 ml pln	stic	☑ Yes + િ	69.5	NTO Pri	or te	Field	Sulphides	= 0.27	
paranetus	03B	Dis Hg	full)		1 x you v	. ,	□ No	metals fi	,			£	mg/L	
ion ledel									<b>プ</b> !				ノ	

& Limited paranetus

Ly 15:00 - start direct sample of macro notion + footralise manual, yield ~ 200ml brown, silty trobid mater before going dry 1 mill retrin ofter finishing proposed sampling to cleak rectarge

15:45 - retrined to well, yield £ 10 ml noter, vary slow recharge - finished of limited volume / privily Sampling along creek

## [] HEMMERA

			A.	Secretary States	, 7
Sample Site (Con't):	G51-	PC-03	A/B	With	N. J.

Field UTM Location: Zn: 6% V

Easting:

Northing:

both A/B		e potr	14/B
) Hommera		7	Henner-
Whitehorse EPS	Photo Nos.: 71-75	>	Van Orren

Final Groundwater Field Parameters (Following P	urge) Additional Ruige Data - Commi
Time (hh:mm; 24h)	Time () minute interval:
Temperature ( <sup>0</sup> C)	Depth (m)
DO (mg/L)	Temperature (°C)
Specific Cond. (µs/cm)	рН
Cond. (µs/cm)	Cond. (µs/cm)
рН	Specific Cond. (µs/cm)
Redox (mV)	Redox (mV)
Turbidity (NTU)	DO (mg/L)
DO (mg/L)	Appearance & Odour (Clear, Silty, HC odours, etc.)
	Interval Purge Volume (L)
	Cumulative Purge Volume (L)
	Total Purge Volume

Time () minute interval:			
Depth (m)			
Temperature (°C)			
рН			
Cond. (µs/cm)			
Specific Cond. (µs/cm)			
Redox (mV)			
DO (mg/L)			
Appearance & Odour (Clear, Silty, HC odours, etc.)			
Interval Purge Volume (L)			
Cumulative Purge Volume (L)			
Total Puroe Valuares			

General Nove	S (Condition of Well or other features):	
* pulled he Existing	icro waterra 14" tubing in mell, frozen in place, had to be thisted and to break free from icel frozen tubing was kinked at top of casing, had to replace of new micro waterra plus micro foot value	"A" Details a same construction as "B" except no cop,  Ziploc bag cover early a not great sen!  COL 490 OZ 20.9% [they of lett  DTLY DTB = N/A a frozen e 0.94m and  No existing tubing in well. Attempt to use "B"  tobin to break ice, but won't peretrate
	·	

Stick up = 0.88 cm



Well Number: (-SI-PC-04 A/B **Project Number:** 1343-005.03 Date: 8 Oct 2014 Approximate Date Drilled: unknown in field Client: YG-AAM Sampler: AB JL Piezometer Diameter / 25cm 10 0/ unknown October 2014 Mt.Nansen overcest, light snow, Project Name: Weather/Temp: Screen Length: in field Groundwater ~ -5° ( 460 Duplicate CHV (ppm / % LEL): ZID: NO Bad Recovery: Good 20.9% Collected: 1% LEL Purge Method Waterra **Peristaltic** Disp. Bailer Subm. Pump Air Lift Other - direct W/ mo ted valvines Initial Depth to Water (m): 29 Calculations: **Purge Start Time:** Purge End Time: Depth to Bottom (m): 2.59 \_) min. interval (24h) Time ( Submerged Tubing Depth (m): ~ 2.30 Depth (m) Well Stick-up Height (m): 0.92 Temperature (°C) Estimated Water Volume (L): Ha Cond. (µs/cm) (DTB - DTW) x 2 (for 2" well diameter) = 1 well Specific Cond. (µs/cm) volume Redox (mV)  $(DTB-DTW) \times 1.1$  (for 1.5" diameter) = 1 well DO (mg/L) volume Appearance & Odour (Clear, SAMPLE Silty, HC odours, etc.) 2" casing has 0.16 USgal/ft or 2.032 l/m = 0.43 Interval Purge Volume (L) 1" casing has 0.04 USgal/ft or 0.508 l/m m9/L 8" sand pack has 0.73 USgal/ft or 9.271 l/m Cumulative Purge Volume (L) 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m **Total Purge Volume:** Method Disp Bailer **Analysis** Micro Hochedus manual Parameters Analyzed | Sample Time Sample ID **Container Types** Preservative **Turbidity (NTU)** Comments Dies Metals 7 full GSI-PC-Yes the 53.3 NTU from bottle before 2 bottles only, both full, 13:30 x 120 Nl plastic volume 048 Filling / filtering metals + Hg (remaining sangle by lurba 1x 40ml vial Diss Ha 13:46

(1) limited pavameters gampled

Pine MiniRae, ELR Solinst W/L type, manual micro meterra. Hoskin Lamotte, Moxim HACH

14:30 - return to well, yield & you to surface ofter 50 min rechange will be limited sample, enough for Diss Metals 1 Hg only



Sample Site (Con't): GS1-PE-O-1 A/B Lept name - 7 both wells

Field UTM Location: Zn: 08 V Easting: 0389 586 Northing: 688 1656

Whilehorse Photo Nos.: 81-85

Final Groundwater Field I	<sup>e</sup> arameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	NIA
Specific Cond. (µs/cm)	
Cond. (µs/cm)	DIRKT
рН	SAMPLE
Redox (mV)	
Turbidity (NTU)	KEE PREVIOUS
DO (mg/L)	REE PREVIOUS PACE

	6- Y	• /			
Additional Purge Data—Continu	isalirom Sk	onit e i Fizigie	(i) Kelgilired		
Time () minute interval:		1		`.	_
Depth (m)		1			1
Temperature (°C)	<b>\</b>	No.			
pH		N.		1	
Cond. (µs/cm)	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	N/	A	N.	No.
Specific Cond. (µs/cm)			1	1	
Redox (mV)		The state of the s	A. A	1	100
DO (mg/L)	The state of the s		**************************************	J. Salar	ā,
Appearance & Odour (Clear, Silty, HC odours, etc.)					A A A A A A A A A A A A A A A A A A A
Interval Purge Volume (L)					1,
Cumulative Purge Volume (L)			N.		_
Total Purge Volume:		-			

General Notes (Condition of well or other features)	
, but pulled out robatively easy	"All details some construction as "B" except has no cap, ziglock bag poor seal  (Oz 430 Oz Zo.9% CHy 0% LEL  DTW 0.93n DTB 2.01m  Stick up = 0.91



- see details for "A" on next page

#### **GROUNDWATER SAMPLE COLLECTION SHEET**

	Well Number:	GS1-PC-05A/	B Project Nu	mber:	1343-005.03		Date:	9	Get 7014	
		unknown in field	Client:		YG-AAM	******	Sampler:	A		
		25cm 100/ unknewa	Project Na	me:	October 2014 Mt.Nans Groundwater	en	Weather/Tem	6.	ercast, lights	snay
nell sealed	CHV (ppm / % LEL): (0 7 0 7	630 CH-1 Zo.690 0900	Duplicate Collected:	197	120: NO		Recovery:		Good 🔏 B	
1 6	Purge Method		No.							
	Waterra	Peristaltic	Disp. E	Bailer	Subm. Pump		Air Lift		Other	
	N/A- proceed -/	direct sandle					A DIE	CTSAN	VPLC	21000 2000
	Initial Depth to Water (m):	1,85	alculations:	Purge St	art Time:	N/A		ge End T		·
	Depth to Bottom (m):	3.70		Time (	_) min. interval (24h)					and the second
	Submerged Tubing Depth (m	1): ~ 3.5		Depth (m	1)	V				CANADA CAREA
	Well Stick-up Height (m):	0.89		Tempera	iture (°C) Water	ven b	our silly	. 10-610	-/ trace	
	Estimated Water Volume (L):			рН	bile	§ -9-	pation Ovaa			
	(DTB – DTW) x 2 (for 2" well d	iameter) = 1 well		Cond. (μ	· · · · · · · · · · · · · · · · · · ·	20 10	Patrice Prese	WKD		
	volume			Specific	Cond. (µs/cm)					
	(DTD DTM) 4.4 (f. 4.5")			Redox (r	nV)					
	(DTB-DTW) x 1.1 (for 1.5" dia volume	ameter) = 1 well		DO (mg/l	L)					
		4 0 000 V			nce & Odour (Clear, odours, etc.)					
	2" casing has 0.16 USgal/fi 1" casing has 0.04 USgal/fi				Purge Volume (L)					
	8" sand pack has 0.73 USga	1			ive Purge Volume (L)					
	6 5/8" sand pack has 0.50 US	gal/ft or 6.35 l/m			rge Volume:			<u> </u>		
	Method: Watema	Peristallit	Disp. Bail		Sign Bailer	Subin E	SIN S	Air Lift	Othe	
	Analysis micro if potrolly									
insted a	Sample ID Parameters And	CONTROL OF THE PROPERTY OF THE	Container T	vpes F	reservative T	urbidity (	NTU)		Comments	
Limited &	GS1-PC-05/ Diss Metals +D	-	1×120ml plastic			1 AU 0,			messer field	
Por /	B	·	1 x Hone glass	′ ン	No metals f		F *		Word turbid	

o Limited a

mill sealed

14:00 - start direct simple or manual uniero haterra, yield - 300 ml very silty + tooled make before going dry a 14:07, west 0.80 5 mins, no significant recharge, nothing to surface

-> Able to direct sample Diss Metals (full) & Diss Hg (full) Not enough water remaining for other parameters/jams, and also very turbid > OK to measure field sulphides W



## **11** HEMMERA

Sample Site (Con't):	GS1-PC-05A/B	L Typt Name

Field UTM Location: Zn: 05 V Easting: 0389 710 Northing: 68 1663

Hemnera
Whitebose Photo Nos.: 76-80

Hemnera
Van
(Anek)

arameters (Following Purge)
N/A
No PURCE,
DIRECT SAMPI

Additional Purge Data—Continu	led from Fr	ontoi Page	(if required	1	
Time () minute interval:	1	1	200	1	
Depth (m)	1		1		
Temperature (ºC)					
pH	, La		The state of the s	No. of the state o	\_
Cond (µs/cm)	S. C.	1		*	و م يختر بموجه
Specific Cond. (µs/cm)	No. of the last of	N/	[/t		
Redox (mV)		1		And San	100
DO (mg/L)		A A A A A A A A A A A A A A A A A A A		i de	\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.\.
Appearance & Odour (Clear, Silty, HC odours, etc.)				a contraction of the contraction	The state of the s
Interval Purge Volume (L)					
Cumulative Purge Volume (L)			r. Andrews		:
Total Purge Volume:		\		***	

General Notes (Condition of well or other features):	
25 cm 10 of strinless steel drive point well. Existing micro vatering tubing a footvalve in well, not frezen in place, able to pull out easily last frezen	"A" will details has no cop, poor seel of ziplock be (or 440 Oz 20.6% CH4 6% LEL
- Used existing tour direct sample	DTW = 1.51 DTB = 2.10 Lacold be bottom,
	Stick - phight = 0.86m (hollow sound m

Equipment = Pine MiniRce PDD, ELR Sclinst WL tope, manual micro interior, Benotte (Hostin) + MACH (Maxim)

probe



Well Number:	G51-HA-01	A Project N	umber:	1343-005.03		Date:	OCT 7 2014
Approximate Date Drilled:		Client:		YG-AAM		Sampler:	GMR + RM
Piezometer Diameter / Screen Length:	I" METAL	Project N	ame:	October 2014 Mt.Nanse Groundwater	en	Weather/Temp:	LIGHT SNOW ~ -8°C
CHV (ppm / % LEL):		Duplicate Collected		□ID: NONE		Recovery:	☐ Good ☐ Bad
Purge Method							
Waterra	Peristaltic	Disp.	Bailer	Subm. Pump		Air Lift	Other
Initial Depth to Water (ﷺ): 🕞	7 7.46	Calculations:	Purge S	tart Time:		Purasi	End Time:
Depth to Bottom (pp): FT	- 10		Time (	) min. interval (24h)		I uige i	
Submerged Tubing Depth (n	n): 🎋		Depth (n				
Well Stick-up Height (m):	1.15	2	Tempera	ature (ºC)			ORGE
Estimated Water Volume (L)		DIRECT SMILE.	рН			1 1 1 1	
(DTB – DTW) x 2 (for 2" well of	diameter) = 1 well	SMALE.	Cond. (µ	ıs/cm)		n	
volume			Specific	Cond. (µs/cm)			
(DTB-DTW) x 1.1 (for 1.5" di	iamatar) = 1all		Redox (ı	mV)			
volume	ameter) – i weii		DO (mg/			2 47	
				ince & Odour (Clear, Codours, etc.)			
2" casing has 0.16 USgal/ 1" casing has 0.04 USgal/				Purge Volume (L)			
8" sand pack has 0.73 USga				tive Purge Volume (L)			
6 5/8" sand pack has 0.50 US				irge Volume:			
Method Waterra	Periendin	-i ∈ Disp. Ba		Seet Fallet			
Analysis	- Section of the sect	SISTEM		SASERVICE	\$1.10)71.	A	r Eff. Collec
Sample ID Parameters Ar	nalyzed Sample	Time Container	Types F	Preservative T	urbidity	(NTU)	Comments
GSI-HA- DISS MEMS	80mc 1420						RECT SAMPLE
OLA GEN GEM	Seo my			No .	70	scan tinge	





Sample Site (Con't):	G-51	- HA-	OIA

Field UTM Location: Zn: O&V Easting: 0387841 Northing: 688/135 WP79, Photo Nos.: 846/

Final Groundwater Field P	arameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	NIONE
pH	
Redox (mV)	TIKEN
Turbidity (NTU)	
DO (mg/L)	DREC
	SATTE
۷.	

4					
Alcinopat Purge Data—Comm	red it om i Fr	on of Page	(If required	$\mathcal{N}_{\mathbf{q}}$	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
рН					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:					

General Notes (Condition of well or other features)	
Head Space gases O2 2097. CHY 007. CO2 0.0%	2 M OF PERI TUBING 8" SILICON



Well Number:	GSI-HA-G	ZA Project No	umber:	1343-005.03		Date:	OCT 7 2014
Approximate Date Drilled:		Client:		YG-AAM		Sampler:	Grange + Rom
Piezometer Diameter / Screen Length:	I" METAL	Project Na	ıme:	October 2014 Mt.Nans Groundwater	sen	Weather/Temp:	1,51=50 +01
CHV (ppm / % LEL):		Duplicate Collected		□ID: NONÈ		Recovery:	☐ Good ☐ Bad
Purge Method							
Waterra	Peristaltic	Disp. I	Bailer	Subm. Pump	)	Air Lift	Other
	UIREC	T SAMPL	E				
Initial Depth to Water 🖛): 🧲	T 6.50	Calculations:	Purge S	tart Time:		Purge	End Time:
Depth to Bottom (m): ドナ	9.92	$\sim$	Time (_	_) min. interval (24h)	00/0	100 333 333 333	
Submerged Tubing Depth (m	າ):	I'm of	Depth (n	m)			
Well Stick-up Height (m):	1.45	water.	Tempera	ature (ºC)		DID F	
Estimated Water Volume (L)	:		рН			111	
(DTB – DTW) x 2 (for 2" well o	liameter) = 1 well		Cond. (µ	ıs/cm)		CAM	ME
volume	nameter) Twen		Specific	Cond. (µs/cm)		341, 1	
			Redox (ı	mV)			TARGE
(DTB-DTW) x 1.1 (for 1.5" dia volume	ameter) = 1 well		DO (mg/	(L)		NO	
Volunic				ance & Odour (Clear,		*	
2" casing has 0.16 USgal/l	ft or 2.032 l/m			odours, etc.)			
1" casing has 0.04 USgal/t			Interval	Purge Volume (L)			
8" sand pack has 0.73 USga			Cumulat	tive Purge Volume (L)			
6 5/8" sand pack has 0.50 US	gai/it or 6.35 i/m		Total Pu	ırge Volume:			
Method: Waterra	Peristallic	Disp. Ba	ler	Steel Bailer	Submer	Yump 1	Air Lift
Analysis	V						
Sample ID Parameters An		Time Container	Types F	Preservative	Turbidity (	(NTU)	Comments
GSI-HA DISSENTE M	Enus 14-5	3 PLASTI	/< [	Yes son	-e Tu	EBIDITY TIME	
Tour Cli	<u> </u>			」No	ELLAN	71166	

mul valumes.



Field UTM Location: Zn:	Easting: 0387 861	Northing: 6881135	WPGO Photo	Nos.: 8457	
Final Groundwater Field Pa	rameters (Following Purge)	Additional Purge Data - Contin	nued Rom Brom( o) Page (i	(required)	
Time (hh:mm; 24h)	· · · · · · · · · · · · · · · · · · ·	Time () minute interval:			
Temperature (°C)		Depth (m)			
DO (mg/L)		Temperature ( <sup>0</sup> C)			
Specific Cond. (µs/cm)		рН			
Cond. (µs/cm)		Cond. (µs/cm)			
pH		Specific Cond. (µs/cm)			
Redox (mV)		Redox (mV)			
Turbidity (NTU)	DIRECT	DO (mg/L)			
DO (mg/L)	SMYLE.	Appearance & Odour (Clear, Silty, HC odours, etc.)			
		Interval Purge Volume (L)			
		Cumulative Purge Volume (L)			
		Total Purge Volume:			
General Notes (Condition of			50 T 10 T		
HEMD 88 GA COZ C.O %. CHY O.O O2 Zeg V	ts 4 v	PERISTALTIC 1 SILICON	TOBING-		
Coz c.0 %					
CH4 0.0 1,	8	SILICON			
02 209 V					

Sample Site (Con't): \_\_\_\_



	>							
Well Number:	Ga1-DC-02	_B Proj	ect Number:	1343-005.03		Date:	OC	772014
Approximate Date Drilled:		Clie	nt:	YG-AAM		Sampler:		R+RM
Piezometer Diameter / Screen Length:	1" Meta	Proj	ect Name:	October 2014 Groundwater	Mt.Nansen	Weather/Ten	np: Lig	~-8°C
CHV (ppm / % LEL):			licate ected:	DID: No	NE	Recovery:		
Purge Method								
Waterra	Peristaltic		Disp. Bailer	Subi	n. Pump	Air Lift		Other
	N N							
Initial Depth to Water (ﷺ): 🖵	7.39	Calculation	ons: Purge	Start Time:		Pu	rge End Tim	e:
Depth to Bottom 📂: 🦵	12-36		Time (	) min. interv	al (24h)			
Submerged Tubing Depth (n	າ):		Depth	(m)	20.750000			
Well Stick-up Height (₥): №	0.88		Temp	erature (ºC)		DIDE		
Estimated Water Volume (L)	•	DIRECT	рН	pH			110	
(DTB – DTW) x 2 (for 2" well of	liameter) = 1 well	5AMPL	Cond.	(µs/cm)		15/14 Tr		
volume	nameter) i wen		Specif	ic Cond. (µs/cm)		N lay	FREF	<b>5</b>
			Redox	(mV)		1/40 1		
(DTB-DTW) x 1.1 (for 1.5" di volume	ameter) = 1 well		DO (m	g/L)				
rotanio				rance & Odour (	Clear,			
2" casing has 0.16 USgal/				HC odours, etc.)				
1" casing has 0.04 USgal/				al Purge Volume	` '			
8" sand pack has 0.73 USga 6 5/8" sand pack has 0.50 US			Cumu	lative Purge Volu	ıme (L)			
			Total	Purge Volume:				
Method: Waterra	- Peristatio			SteelsEnter	30.0	nePonos	AMLIN	Other
Analysis	VL/BA	1764						
Sample ID Parameters An		Time Cont	ainer Types	Preservative	Turbid	lity (NTU)	Co	mments
GCI-DC DISSOVES M	ETRUS 14-08	PLA	StIC LY.	✓ Yes		AND PROPERTY.	DP.	
- 30 MANUE -	"	. ON	LY.	☐ No				
MEN QUANT	_A							

3 A GASES. A
BOTTLES CH4 G.O Y. OTB 6:30 FT
COZ O.O Y. SU C.88 P

Field UTM Location: Zn: ○ ₹ ✓ Easting: 0387879 No	rthing: $6881128$	(WP083) Photo Nos.: 8460
Final Groundwater Field Parameters (Following Purge)	Additional Pirige Data – Continu	ued from Front of Page (il required)
Time (hh:mm; 24h)	Time () minute interval:	
Temperature (°C)	Depth (m)	
DO (mg/L)	Temperature (°C)	
Specific Cond. (µs/cm)	рН	
Cond. (µs/cm)	Cond. (µs/cm)	
рН	Specific Cond. (µs/cm)	
Redox (mV)	Redox (mV)	
Turbidity (NTU)	DO (mg/L)	
DO (mg/L)	Appearance & Odour (Clear, Silty, HC odours, etc.)	
	Interval Purge Volume (L)	
	Cumulative Purge Volume (L)	
	Total Purge Volume:	
General Notes (Gondition of well or other features):		
	15 DOWNSTILETON O	iFA BY C.4M,
02 20-91. Coz 0-781. CA4 0.04.		

Sample Site (Con't):



FB1

Well Number:	MW09-11	Project Nu	ımber:	1343-005.03			Date:		Na	770	214
Approximate Date Drilled:		Client:		YG-AAM			Sample	r		1 Pr	'
Piezometer Diameter / Screen Length:	211	Project Na	ıme:	October 2014 N	Mt.Nans	en	•	r/Temp:		5/ Jun	
CHV (ppm / % LEL):		Duplicate Collected:		□ID: Nor	JE		Recove	ry:	☐ Go	ood [	] Bad
Purge Method											
Waterra	Peristaltic	Disp. E	3ailer	Subm	. Pump		Ai	r Lift		Other	
	V										
Initial Depth to Water (m):Ը-	L 5.47	Calculations:	Purge St	tart Time:		11-5	3	Purge	End Time	e: 17-	26
Depth to Bottom (♥): [-	8.56		Time (	_) min. interval	(24h)	11.59	1211		12-24		
Submerged Tubing Depth (r	r):	3 ft.	Depth (n	n PL		5.5	5.5	5.5	5-5		
Well Stick-up Height (m):	1.21		Tempera	ture (°C)		2:29	2:39	2.36	2-51		
Estimated Water Volume (L)	: 2L	3   1	рН			6.57	6.55	6.55	6.55		
(DTB – DTW) x 2 (for 2" well of	diameter) = 1 well	* 2	Cond. (µ	s/cm)		2154	2155	2157	2154		
volume	anamotor) Twen		Specific	Cond. (µs/cm)						-	
/ <u>-</u>		= 2 L	Redox (r	nV)		35.4	47.5	52:7	55.5		
(DTB-DTW) x 1.1 (for 1.5" di volume	ameter) = 1 well	83	DO (mg/	L)		8.96	5-84	5-56	5-38		
		5 6 L		nce & Odour (C odours, etc.)	lear,	CLEAT	CLEAR	CLEAR	CLEM		
2" casing has 0.16 USgal/ 1" casing has 0.04 USgal/			<u> </u>	Purge Volume (I	1	0.5	4,5	3	2		
8" sand pack has 0.73 USga	al/ft an 0.074 l/	SKINNY DIPPER		ive Purge Volun		0.5	5	8			
6 5/8" sand pack has 0.50 US		15 FT!		rge Volume:	ile (L)	0 3		8	10		
Method: Waterra's	. Registaltic					*					
Analysis	Constant	≝ s ⊘Disp Bai		Charles Earlier					10 <u>14</u> 6		ther
Sample ID Parameters Ar		Time Container 1	Types E	Preservative	т	urbidity (	NTII				
MW01-16 FULL SET			ypes r	6	I	ur braity (	NIU)		Cor	nments	
+ FB1	12-7	+ GLASS		Yes No	/`	22	_				





Sample Site (Con't): Mw 09-16

Field UTM Location: Zn: OFV Easting: 038 790 Northing: 685 1097

(76) Photo Nos.: 8455

Final Groundwater Field Par	ameters (Following Purge)
Time (hh:mm; 24h)	12-24
Temperature (°C)	2.51
DO (mg/L)	5.38
Specific Cond. (µs/cm)	
Cond. (µs/cm)	2134
рН	6.55
Redox (mV)	55.5
Turbidity (NTU)	1.22
DO (mg/L)	
SULFIDE MA/1	0-01

Additional Purge Data - Continu	ies /iong Fi	ensel Page	ali reigienpeli	
Time () minute interval:				
Depth (m)				
Temperature (°C)				
рН				
Cond. (µs/cm)				
Specific Cond. (µs/cm)				
Redox (mV)				
DO (mg/L)				
Appearance & Odour (Clear, Silty, HC odours, etc.)				
Interval Purge Volume (L)				
Cumulative Purge Volume (L)				
Tötal Pürge Volume:				

General Notes (Condition of well or other features):		
Head Space goods 02 - 20.6 %.	SULPHIDE = 0.01 mg/1 BLANK = 0.00 mg/1	FB1
caφ = 0.0%.	8" SILICON	
SUT IN CASING.		



Well Number:	MW09-19	Project I	Number:	1343-005.03	Date:		00	]			
Approximate Date Drilled:		Client:		YG-AAM	YG-AAM		er:	Gr		2014 RM	1
Piezometer Diameter / Screen Length:	21	Project I	Name:	me: October 2014 Mt.Nansen Groundwater		Weather/Temp:		0: -10° c		VERCAST	]
CHV (ppm / % LEL):		Duplicat Collecte		DUP .	2)	Recove	ry:			Bad	
Purge Method											-
Waterra	Peristaltic	Disp	. Bailer	Subm. Pun	ip	Ai	r Lift		Other		
											4
Initial Depth to Water (m):	2-532	Calculations:	Purge S	tart Time:	9-5	7	Purge	End Tim	ie: 10	'-58'	1
Depth to Bottom (m):	5.895		Time (_	) min. interval (24h	10.02	- 10-13	10-29	10-34	10.43	10-50	10.5
Submerged Tubing Depth (n	205-ASSAN		Depth (r	n)	297	~3.06	3.9				
Well Stick-up Height (m):	0.95	3.4×2	Tempera	ature (ºC)	1.47	1.46	1-32	1.17	1-08	1-14	1.15
Estimated Water Volume (L)	: ~7 ~	_ /	рН		6731	6:45	6.38	639	6-23	6-55	6.44
(DTB – DTW) x 2 (for 2" well o	diameter) = 1 well	=6.7 L	Cond. (µ	ıs/cm)	2268	5549	2254	2269	2052	2284	2290
volume	,		Specific	Cond. (µs/cm)							1
(DTD DTA) 4.4 (5.4 5") (1		1~16	Redox (	mV)	83.1	12.8	-1.3	-16.5	-24-5	-28-0	-31-2
(DTB-DTW) x 1.1 (for 1.5" di volume	ameter) = 1 well	× 3	DO (mg/	<b>'L)</b> 14	5 21-6	4.75	2-76	6.03	7.34	1.82	2.78
2" casing has 0.16 USgal/	ff or 2 032 l/m	= 214	Appeara Silty, HC	ance & Odour (Clear, Codours, etc.)	CLEAR		D _	SUL PA	UR - CI	ILE R CLEAR	CLEAR
1" casing has 0.04 USgal/			Interval	Purge Volume (L)	1	2	4	3	3	2	13
8" sand pack has 0.73 USga			Cumula	tive Purge Volume (L)		3	7	10	13	15	18.
6 5/8" sand pack has 0.50 US	Sgal/ft or 6.35 l/m		Total Pu	ırge Volume:				<b>-L</b>	1	<u>.l</u>	1
Nethod: Watera 4	Peristatiid	) Disp. 8	alle	SeelfBaileji	Significan	2000			(	oungs -	
Analysis											1
Sample ID Parameters An	alyzed Sample	Time Containe	r Types I	Preservative	Turbidity	(NTU)		Co	mments		
MWO9-19 FULL SET	File Co	7.		Yes	1.97-						See .
AND OUPLIC	ATES   "		[	No	. , _						



Field UTM Location: Zn: 680 Easting: 0388054 Northing: 688 3078

~	
Final Groundwater Field P	arameters (Following Purge)
Time (hh:mm; 24h)	11.00
Temperature (°C)	1.15
DO (mg/L)	2. 第78
Specific Cond. (µs/cm)	
Cond. (µs/cm)	2270
рН	6.44
Redox (mV)	-31.2
Turbidity (NTU)	1-92
DO (mg/L)	
SUPPLIE MOLL	0.15 .

(LP) (075) Photo Nos.: 8454

Additional Gurge Data - Contin	ued ironi Fr	ont of Page	(ifarequired	
Time () minute interval:				
Depth (m)				
Temperature (°C)				
рН				
Cond. (µs/cm)				
Specific Cond. (µs/cm)				
Redox (mV)				
DO (mg/L)				
Appearance & Odour (Clear, Silty, HC odours, etc.)				
Interval Purge Volume (L)				
Cumulative Purge Volume (L)				
Total Parge Volume:				,

General Notes (Condition of Well) of other reatur	65)
Head Space gases:	8" OF SILICON
0Z = Zo.6	BLANK = 0.0 mg/t
Cu4 = 0.0	SUFICE = 0.15 Mg/1
CO- 000	$\bigvee L^{-\epsilon}$



13 (ocer) 02 Zo.9%.

Well Number:	(C)	JUI-DC-C	01 B	Project Nu	ımber:	1343-005.03			Date:		CKT	7 Z	014
Approximate Date Drill	led:			Client:		YG-AAM			Sample			RFV	2
Piezometer Diameter / Screen Length:		ETAL [" DP.		Project Name:		28	October 2014 Mt.Nansen Groundwater		Weather/Temp:		FIGHT SNOT		
CHV (ppm / % LEL):				Duplicate Collected:			ONE		Recover	ry:	☐ Go	ood 🖊	Bad
Purge Method									90				
Waterra		Peristaltic		Disp. E	Bailer	Sub	m. Pump		Air	Lift		Other	
Initial Depth to Water 4	mir FT	4.67	Calc	ulations:	Purge S	tart Time:			_	Purge E	nd Time	<u>,:</u>	
Depth to Bottom (pp):		5.05			Time (	) min. interv	al (24h)						
Submerged Tubing De	pth (m):				Depth (r	n)				0: 0			
Well Stick-up Height (n	n):	0.9			Tempera	ature (ºC)			0	PUZ	-UT		
Estimated Water Volun	ne (L):				рН				2			3	
(DTB – DTW) x 2 (for 2" well diameter) = 1 well				Cond. (µs/cm)		$\square$	LEC	7 51	M				
volu					Specific	Cond. (µs/cm	)						
					Redox (ı	mV)		C	NUC	7.			
(DTB-DTW) x 1.1 (for 1 volu		ter) = 1 well			DO (mg/L)			1					
Void						ınce & Odour (		50	つんし	0 15	SOLL		
2" casing has 0.16 L	JSgal/ft or	2.032 l/m				odours, etc.)				M		_5_	
1" casing has 0.04 L	•				Interval	Purge Volume	(L)			1~LY		,	
8" sand pack has 0.73	-	3			Cumulat	tive Purge Vol	ume (L)			1			
6 5/8" sand pack has 0.	.50 USgai/	π or 6.35 I/m			Total Pu	ırge Volume:							
Method:	Tra	Pensialus	7	Disp. Sai		Steel Francy		Sitting	unije .	Ajir	Eq.	Ö	ther
Analysis													
Sample ID Paramete	ers Analyz	ed Sample	Time	Container	Types l	Preservative	Т	urbidity (	NTU)		Cor	nments	
-01 B 201850U	IED ME SUM PRESERV	1 13-10	)	PLASTIC		✓ Yes No	^	iene C	PELLELT	·6)			

GSI-OC-OIA READINGS

CHY 0.0 % DEPTH TO W = DRY CHY 0.0 % DATS = 2.66 FT (02 3.17%, SU = 0.87



Sample Site (Con't): GCI-DC-01 B

Field UTM Location: Zn: ON Easting: 387672 Northing: 6881123 Photo Nos.: 8456

Freel Committees and a second	
	arameters (Following Purge)
Time (hh:mm; 24h)	1310.
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	
рН	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

	10			[	
Additional Purge Data - Continu	(១៤) ស្រែក្រុង	ante of Faige	(forêgin)es		
Time () minute interval:		1			
Depth (m)					
Temperature (°C)					
рН					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Tötal Purge Volume:					

General Notes (Condition of well or other fea	ures):
Head Space gases  02:20.97.  CH4:0.07.  CO2:3.13%.	PERITORNO : 2.5 M SILICON = 8" DNLY COLECTED SOM! DISSOLVED METALS DIRECT SAMPLE, NO PURGE.
	R 15 0.500 UPSTREAM OF A.



Well Number:	GS1-DC-07	M. B. Project No	umber:	1343-005.03		Date:		1 Oct	T/0 3	014
Approximate Date Drilled:		Client:		YG-AAM		Sample	r:	RHICE		
Piezometer Diameter / Screen Length:	I" METAL	Project Na	October 2014 Mt Nancon			Weather/Temp:		Shu	49 3	- ° C
CHV (ppm / % LEL):		Duplicate Collected		1910: Dup6		Recove	гу:	ØG	ood	Bad
Purge Method		Name to the second						1		
Waterra	Peristaltic	Disp.	Bailer	Subm. Pump		Air	Lift		Other	
	W/ batter	<b>n</b>								
Initial Depth to Water (🚧):🚝	4.18	/ Calculations:	Purge S	tart Time: /じょう	1120		Purge	End Tim	e:	
Depth to Bottom (₥): ├⊤	12.17	= 8 FT	Time (	_) min. interval (24h)	11:20	11575	1130	11-35	1140	11.45
Submerged Tubing Depth (n	n):	= 2.5 ~	Depth (	A FT	5-3	5-35	5.35	5-35	5-35 -	->-
Well Stick-up Height (∰): Fr	243.08		Tempera	ature (ºC)	1.17	1-06	1.06	1.13	1011	1.07
Estimated Water Volume (L)	: 1-13	,	рН		6.92	6.90	6.90	6.90	6089	6.90
(DTB – DTW) x 2 (for 2" well diameter) = 1 well		(= 0.013	C=0.012 Cond. (µs/cm)		576	576	575	579	579	579
volume	alamotory 1 Woll	0.000144	Specific	Cond. (µs/cm)						
		0.000452	Redox (	mV)	70.4	39.84	21.5	9.5	5-8	-3-1
(DTB-DTW) x 1.1 (for 1.5" di volume	iameter) = 1 well	10	DO (mg/	L)	6.854	3.23 +	興26	1.96	1-61	1-38
2" casing has 0.16 USgal/	ff or 2 032 l/m		Appearance & Odour (Clear, Silty, HC odours, etc.)		Lle	a /_				
1" casing has 0.04 USgal/			Interval	Purge Volume (L)	N.		l	Carponia.	(	1
8" sand pack has 0.73 USga			Cumulat	ive Purge Volume (L)	1	2	3	4	5	6
6 5/8" sand pack has 0.50 US	Sgal/ft or 6.35 l/m		Total Pu	rge Volume:		J			.1	1 **
Method: Waterra	Peristallin	Disp. Ba	(ie)	Steel Eatler	Selong	(Elinje)	A	i Lije		Jilier Tenik
Analysis	w but	ers								
Sample ID Parameters Ar	Notice of the Control		Types F	Preservative T	urbidity	(NTU)		Co	omments	
651-DC- Full set	11-5	o Plastic	, , -	Yes 4	48.					
							11		1	

Duplo - 9 Bottles

F51-0C-07 A= OTU = 4.12 FT OTB = 6.27 FT HEADSPACE ENERS!



Sample Site (Con't):				
Field UTM Location: Zn: 🔿 🖔	Easting: 039 0064	Northing:	880641	

6880641 LoZ . Photo Nos.: 8504

Final Groundwater Field Par	ameters (Following Purge)
Time (hh:mm; 24h)	11-50
Temperature (°C)	1-07
DO (mg/L)	1.38
Specific Cond. (µs/cm)	
Cond. (µs/cm)	579
рН	6-9
Redox (mV)	-3.1
Turbidity (NTU)	4.48
DO (mg/L)	
SULPHIDE mg/L	0.04
	(

Additional Purge Data - Continu	led from En	omboli Palge	(If required	j)	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
рН					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:					

General Notes (Condition of well or	other features):	
Gases :		
A (plastic bag cop)	R	
02-70.5%	02-20-7/3 602-480 pph,	
102-460 pp	602 - 400 Ppm,	
C+19-9	14 0 h	



Well Number: MW09-07 **Project Number:** 1343-005.03 Date: 10 oct 2014 Approximate Date Drilled: field Client: YG-AAM Sampler: AB 5L Piezometer Diameter / 2" PVL/ valerous October 2014 Mt.Nansen overenst, light wind Project Name: Weather/Temp: Screen Lenath: in field Groundwater ~ BOC 490 CHLY **Duplicate** CHV (ppm / % LEL): Mp: No Recovery: Good R Bad Collected: 0% LEL 200 **Purge Method** Waterra Peristaltic Disp. Bailer Subm. Pump Air Lift Other NIA > based on spring Till ted volume - ad direct sons 2014 shrale steet, This is 5/2 lecharal Initial Depth to Water (m): 2.61 Calculations: Purge Start Time: **Purge End Time:** Depth to Bottom (m): \_) min. interval (24h) 3.42 Time ( 3.47-2.61 Submerged Tubing Depth (m): ~ 3.25 Depth (m) - 0.61 m Well Stick-up Height (m): 1.35 Temperature (°C) Estimated Water Volume (L): ~1.66 x 24/2 Нα Cond. (µs/cm) (DTB - DTW) x 2 (for 2" well diameter) = 1 well = 1.10 L Specific Cond. (µs/cm) volume Redox (mV)  $(DTB-DTW) \times 1.1 \text{ (for 1.5" diameter)} = 1 \text{ well}$ DO (mg/L) volume Appearance & Odour (Clear, Silty, HC odours, etc.) 2" casing has 0.16 USgal/ft or 2.032 l/m Interval Purge Volume (L) 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m **Cumulative Purge Volume (L)** 6 5/8" sand pack has 0.50 USgal/ft or 6.35 I/m **Total Purge Volume:** Method Waterra Disposition **Analysis** 10 Very aw + EU- SER RVERE for ans rate + relavere into Sample ID Parameters Analyzed Sample Time **Container Types** Preservative **Turbidity (NTU)** Comments Full Suite + full 8:17-8:23 As per SOW, inc 35.9 NTU from Gen Field Sulphidas ₹ Yes MW09-07 Hill Aller + bottles as for SOW 8:53.9:02 den bottle somple ₩ No ns appropriate

flow possible)

nell seded we cap but shifs ext below cap



Sample Site (Con't): MW09-07 hypt have =		Helperan 1 1 July 2000	3 Homel
Field UTM Location: Zn: Ø\$ ✓ Easting: ७३% ३२२ No	orthing: 688070	Shikewise Photo Nos.: 191-145	S Van Care
Final Groundwater Field Parameters (Following Purge)	Additional Purge Data - Contin	ued from Front of Page (if required)	
Time (hh:mm; 24h)	Time () minute interval:		
Temperature (°C)	Depth (m)		
DO (mg/L)	Temperature (ºC)		
Specific Cond. (µs/cm)	рН		1
Cond. (µs/cm)	Cond. (µs/cm)	8/10	1
pH PIRECT	Specific Cond. (µs/cm)	N/A	*
Redox (mV)	Redox (mV)		
Turbidity (NTU) SAMPLE	DO (mg/L)		
DO (mg/L)	Appearance & Odour (Clear, Silty, HC odours, etc.)		
(LOW VOLLME,	Interval Purge Volume (L)		
SLOW PECHARGE	Cumulative Purge Volume (L)		
Story FECTARCEE	Total Purge Volume:		
General Notes (Condition of well or other features):			
2" PVC rell inside 6" DVC cosing/protect. hell is higher to	ran protector. Both in good ship	و	
Used existing " tobing in will for low flow direct saw	ple		
8:17-8:23 - direct sa-pled IL, DTW d-appeal to 3.0	07 m		
Wait 15 mins, rechange to 2,99m (8:33) -> we rescure sample collect a 8:57 - 9:02, vield	ail another 15 mins, DTWS	2.88m (8:53)	
= resume sample rollect a 8:57 - 9:02, vield	~ 850nL, -> DTar d-sp	ped to 3.27m	
Pine Minika PID ELR Solinst WL tage Her	neura Peri Dioni I - Millo	(Hestin) HACH (Maria)	



Well Number: GS1-DC-09 A/B **Project Number:** 1343-005.03 Date: 10 Oct ZOM Approximate Date Drilled: unknown infield Client: YG-AAM TL Sampler: 25cm iD & Stainless/ Piezometer Diameter / October 2014 Mt.Nansen mit Sun + davd, Project Name: Weather/Temp: Screen Length: light wind a +32 vukuoun in field Groundwater 10, 480 Duplicate CHV (ppm / % LEL): PID: NO Recovery: ☑ Good Bad Collected: Oι 20.5% 0% LEL that vulue flow **Purge Method** Waterra Peristaltic Disp. Bailer Subm. Pump Air Lift Other e low flow Initial Depth to Water (m): Calculations: **Purge Start Time:** 1.19 1126 Purge End Time: 1141 Depth to Bottom (m): 3.85 Time (3) min. interval (24h) 1129 3.85-1.20 1137 1135 1138 1141 Submerged Tubing Depth (m): ~3.6 Depth (m) 1.37 1.39 1.45 1.41 1.45 = 2.65 m 0-93 Well Stick-up Height (m): Temperature (°C) ( . O 10 9 2.0 Estimated Water Volume (L): ~.3L Нq 5.82 5.97 . 6.125 L/m 5.54 5.92 6.01 Cond. (µs/cm) 101.1 295 L 110.9 98.4 97.4 94.9 (DTB – DTW) x 2 (for 2" well diameter) = 1 well Specific Cond. (us/cm) volume 197.9 100 a 175.1 174.5 1698 Redox (mV) 73.7 20.7 99.5 69.6 61.4 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well DO (mg/L) 0.49 0.64 0.5% 6.55 0.99 volume light brown, mistri Appearance & Odour (Clear, particle dear. Silty, HC odours, etc.) 2" casing has 0.16 USgal/ft or 2.032 l/m and haldbran Interval Purge Volume (L) 1" casing has 0.04 USgal/ft or 0.508 l/m 45 45 45 100 8" sand pack has 0.73 USgal/ft or 9.271 l/m **Cumulative Purge Volume (L)** .45 2.1 6 5/8" sand pack has 0.50 USgal/ft or 6.35 I/m **Total Purge Volume:** Sponieni. **Analysis** clow flow Sample ID Parameters Analyzed Sample Time **Container Types Preservative Turbidity (NTU)** Comments Full Suite W/full GSI- DC 11:42-As per souring. 256 NTU from Field sulphides = 0.05 Yes a peropriale field Tiller racid Same Sample equipment as DC-08B, except able to do complete purge or YSI, yield all bottles fell for sample bottles as per Solv

propor seal



Sample Site (Con't):	GS (-	DC	09	A/B	Que de la companya della companya della companya de la companya della companya de	hypt have =	_
				2000		' 1	

Sample Site (Con't): Field UTM Location: Zn: 68 V Easting: 0390613 Northing: 6880498

| Sample Site (Con't): For both wells | Hemmen | With wells |
| Sample Site (Con't): Field UTM Location: Zn: 68 V Easting: 0390613 Northing: 6880498

Final Groundwater Field Parameters (Following Purge)
Time (hh:mm; 24h)
Temperature (°C)
DO (mg/L)
Specific Cond. (µs/cm)
Cond. (µs/cm)
рН
Redox (mV)
Turbidity (NTU)
DO (mg/L)

Additional Purge Data - Continu	led from Er	<b>ंग ा स</b> ब्द्रह	(if required	j.	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
рН					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume					

General Notes (Condition of well or other features):	
25cm 10 or stainless steel drive points, in good condition Existing 1-1" Labing & silicon in well for low flow simpling	"A" need details. Same construction as "B" will, except
Existing 14" Labing & silicon in will for la flow supling	has cap, just ziplock bong four sent
	(02 430 02 20.5% (Hy 09. LEL
	DTW = 1.16 DTB = 2.00
	Stick up = 0.93 m

Pine Mirikae PID, ECR Solved WL tage (mini)



Well Number: GSI- PC- 10 A/B **Project Number:** 1343-005.03 Date: 10 Oct 7014 Approximate Date Drilled: Client: YG-AAM Unkrown in field Sampler: 46 JL Piezometer Diameter / 2.5 cm @ inchainles/ October 2014 Mt.Nansen mix sun + cloud, Project Name: Weather/Temp: Screen Lenath: Groundwater unknown in Field light aird ~ +4°C  $f(G_n)$ 410 CHU **Duplicate** NO CHV (ppm / % LEL): TAB: Recovery: ☑ Good Bad Collected: 20.5% 0% LEL **Purge Method** Garring by Hay Waterra Peristaltic Disp. Bailer Subm. Pump Air Lift Other @ low flow Initial Depth to Water (m): 1.00 Calculations: **Purge Start Time:** Purge End Time: 1230 17.45 Depth to Bottom (m): Time ( 5 ) min. interval (24h) 1.66 - ice at ground 1733 1236 1245 Submerged Tubing Depth (m): Depth (m) - N/A - unable to ~ 1.75 sulface had pass ice C alaquire Well Stick-up Height (m): 1.02 Temperature (°C) 1.8 to break 1.90 Estimated Water Volume (L): ~.1 L Нα 6.09 6.12 6.15 6.02 6.04 through by Cond. (µs/cm) 234.7 224.0 233.0 233.7 231.9 (DTB - DTW) x 2 (for 2" well diameter) = 1 well pullin / Listing Specific Cond. (µs/cm) volume 419.3 419.2 420.7 402.0 existing tubing Redox (mV) 44.2 61.0 54.7 49.4 41.4 (DTB-DTW)  $\times 1.1$  (for 1.5" diameter) = 1 well 0.86m 125 Vm DO (mg/L) 0-68 1.24 6.77 6.63 0.66 volume Appearance & Odour (Clear, Mostly Clear, Same ~.16 as previous Silty, HC odours, etc.) light 2" casing has 0.16 USgal/ft or 2.032 I/m Interval Purge Volume (L) 0.4 1" casing has 0.04 USgal/ft or 0.508 l/m 0.61 0.4 0.4 0 4 8" sand pack has 0.73 USgal/ft or 9.271 l/m 6.0 **Cumulative Purge Volume (L)** 0.4 1.7 2.0 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m **Total Purge Volume:** 20 Method: Disp. Bailer **Analysis** e law flow Sample ID Parameters Analyzed Sample Time **Container Types** Preservative **Turbidity (NTU)** Comments ESI-DC As person and priced netals emily Full suite (w/full NTU from 17,46- 
 Yès
 Fields Johides = 0.06mm/L -10B 12:59 F. No + preserve as | ⊀ No Een dem bottle from gen dem bottl

SOW = Scope F work

Some sample equipment as ESI-BC-09B

Sample Site (Con't): GS1-DC-1CA/B hypt name:

Field UTM Location: Zn: 09V Easting: 6390861 Northing: 6820447

THOMAS Whitherse CPS Photo Nos.: 156-166

CPS Photo Nos.: 156-166

Sample Site (Con't):	GS1-DC-16	A/B
1		

Final Groundwater Field F	arameters (Following Purge)	Additional F
Time (hh:mm; 24h)		Time ()
Temperature (°C)		Depth (m)
DO (mg/L)		Temperatur
Specific Cond. (µs/cm)		рН
Cond. (µs/cm)	SEE	Cond. (µs/c
рН		Specific Co
Redox (mV)	PREVIOUS	Redox (mV)
Turbidity (NTU)		DO (mg/L)
DO (mg/L)	PASE	Appearance Silty, HC od
		Interval Pur
		Cumulative
		Total Punge

Additional Purge Data - Continu	ied from Er	ontoli Page	al regures	)	
Time () minute interval:		1	\	/	
Depth (m)		N. N.			
Temperature (ºC)	N. T.			· .	1.
рН			N,	14.	
Cond. (µs/cm)		<b>k</b> ( /	$\Lambda$		
Specific Cond. (µs/cm)	_	1//	11		N. T.
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)				N. A.	
Interval Purge Volume (L)					
Cumulative Purge Volume (L)			$\sim$		
Total Purge Volume:					

General Notes (Condition of well or other features):	
Stanks steel dive point 25 cm, in good condition	"All will defails a same as "B" except no cap, poor seed of ziplack bag
	poor seal of ziplack bag
to get loose - Used existing tobing to sample	102 430 02 20.5% (Hy 0% LEL
	DTV = N/A DTB = 1.07 m = depth Fiezen to ice/blockage
	State up height = 0.95m



9 Oct 2014 SAMPLE

Well Number:	CH-P-13-631	So Project Nu	mber: 1343-005.03		Date:	7 out 7014 > monte
Approximate Date Drilled:	unknown in fix	्रि Client:	YG-AAM	YG-AAM		AR JL S
Piezometer Diameter / Screen Length:	1" PVC/ unkn		me: October 2014 Groundwater	Mt.Nansen	Weather/Temp	المعانما والممال المعامر والم
CHV (ppm / % LEL):	(02 606 02 20.9%	o/o L∈L Duplicate = o Collected:	Aro: ^	10	Recovery:	☐ Good ☐ Bad
Purge Method					IN IN	nknown(suspect bed)
Waterra	Peristaltic	Disp. E	Bailer Subn	n. Pump	Air Lift	Other
	N/A -	- direct sample	via manual 5/8"	tubing+Small	FELVALVE	
Initial Depth to Water (m):	N/A &	Calculations:	Purge Start Time:		1932/07/00/09/09/00/00/00	ge End Time:
Depth to Bottom (m):	50.64	No haler	Time () min. interva	ıl (24h)		
Submerged Tubing Depth (i	m):	detected at	Depth (m)		1 /	
Well Stick-up Height (m):	0.54	low sensitivity,	Temperature (°C)			
Estimated Water Volume (L	); N/A	faint sound	рH	///	1	
1 ', '		e high rensitivity Cond. (µs/cm)		7	N/4	
volume	a.a.metery i we	1 1	Specific Cond. (µs/cm)			
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well		c 485 m - 50 m	Redox (mV)	7	DRE	47
			DO (mg/L)	/		< AMPLE
2" casing has 0.16 USgal	/ft or 2 032 I/m	sample to vorty	Appearance & Odour (0 Silty, HC odours, etc.)	Clear,		
1" casing has 0.04 USgal		and direct surph	Interval Purge Volume	(L) /	J-502 /2/21	5.6 / / /
8" sand pack has 0.73 USg	al/ft or 9.271 l/m	A 50	Cumulative Purge Volu	me (L)		
6 5/8" sand pack has 0.50 U	Sgal/ft or 6.35 l/m	(8 Oct 2041)	Total Purge Volume:			
Method: Waterra	Regissifi		-	Subject	Missio	Air Lift Other
Analysis Say manua						3,4150
Sample ID Parameters A	nalyzed Sample	Time Container T	Types Preservative	Turbidity	(NTU)	Comments
CH-P-13 Full Samples full bobbles -03/50 turbid	set of 17:30 -	17:45 As per Soly	inc Yes	1656 Au From ger much clearer for dis	n clem bottle	Not recorded field inhited inhited

Sample Sample Samples Samples Analysid

well preparly

Same equipment as CH-P-13-03/10 LPID, whiteper plus used 1 1" balu + 50m twine

8 Oct 2014, 0800 & fauch water in well VI" bailer near bottom (suspent 49 m?) ~ praced ~

direct sample (possible limited volumes/priority filling) ~ no success getting water to surface ~ SEE REVERS ? ~



Sample Site (Con't): CH-P-13-03/50 Wpt CH-P-13-03/50

Field UTM Location: Zn: 08 V Easting: 0389 149 Northing: 688 1110

Hemmera

White horse

White PS

Photo Nos.: 26-30

Hemmera

Valan

Connerg

Final Groundwater/Field Pa	rameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	N/A.
pH	
Redox (mV)	SEE PEVESE
Turbidity (NTU)	
DO (mg/L)	

Additional Purge Data - Continu	iedšīroms Fr	out of Page	(if requires	1	
Time () minute interval:		/			
Depth (m)			7	1	
Temperature (°C)		1		p <sup>d</sup>	
pH		1	1 1		
Cond. (µs/cm)	L	11/	n /	J. J.	/
Specific Cond. (µs/cm)		N( F	*//		/
Redox (mV)			1 1	7	7
DO (mg/L)	1	1 /			ر
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)		7 ,	/		
Cumulative Purge Volume (L)		/ /	1		1
Total Purge Volume: ************************************		/			

	General Notes (Condition of well or other features):
	Gray metal stick up protector w 1" pvc veil + cap inside, as nell as electronic controller for transducer
	Lo All in good shape. No tubing or transducer
	Metal protector hid says " (H-P-15-03 79.50 Mpgs VWP+ hell.
	Les despite 1D songs CH-P-13-03, suspect/assure this is CH-P-13-05/50"
	3 od > feel regard of nature in built- but doesn't yield may hanter to top (teales part boill?)  In tried 2 x 3" boilers, tried water tope as weight to push clover, won't yield noter to
	Lastried 2 x 3" boilers, tried water tope as weight to push down, won't weld note to
	Surface (read neighbor boiler?)
	La Also found bailer sometimes hough up in casing (bend?) at 18m (appear) and doesn't reach bottom
AD1	9 Oct-orthanpt to sample again or bailers, no success purge ~ 3 L into 3/8" tubing and collect from tubing level goes dry, maker intubing doesn't reach s-rando
0	Losee AB field notes (well goes dry, maker intuling doesn't reach s-rtace)



10 Oct 2014 Sauple 8 Oct 2014

@ well not quite 2" (2" bailer	doesn't fit insid	(e) ~	13/411?	_ <b></b> -			& Oct	7014	
Well Number: (H-P-13-0	1/10 Project Nur	mber:	1343-005.03		Date:		7 00	+ 7014	1
Approximate Date Drilled: Unknown in	field Client:		YG-AAM		Sample	er:	A-B	5"6	
Screen Length: 2" PVC ~ Cap	\d	me:	October 2014 Mt.Nanso Groundwater	en	Weathe	er/Temp:	Overce 13ma	st. light wind	
CHV (ppm / % LEL): (02 580 CY 20.9	الا Duplicate الا القال Duplicate الا القال Duplicate		DIO NO		Recove	ery:	☐ G	ood 🖟 Bad	
Purge Method				100	-> CAN	't over	slow ex	rough to multiple	
Waterra Peristalt	ic Disp. B	ailer	Subm. Pump			r Lift '		Other druvdan	<b>4</b> \
@ lovest pros.)		water	freezing in tubiv	4				because of co	
Initial Depth to Water (m): 3.05	Calculations:		art Time:	16:37		Purge	End Time	e: 16:52	recharge
Depth to Bottom (m): or blocking 1 6.32	6.32 - 3.05	Time (	min. interval (24h)	1640	1643	1646	1649	1652	Å Z
Submerged Tubing Depth (m): ~ (, ~	_ = 3,27 m	Depth (m	<u> </u>	4.30	4.75	5.22	5.55		
Well Stick-up Height (m): 0.53		Tempera	ture (ºC)	0.1	0.0	-0.1	0.0	4	_
Estimated Water Volume (L): 6.5 4L	>21/m	рН		6.55	6.65	6.80	6.82	Water trozen	_
(DTB – DTW) x 2 (for 2" well diameter) = 1 wel	1 = 6.54 L	Cond. (µ	· · · · · · · · · · · · · · · · · · ·	160.4	109.5	89.1	90.5	in tubing,	_
volume	Lo water francing		Cond. (µs/cm)	304.6	207.5	172.1	139.5	mater level	
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well	in toling during -	Redox (n		58.5	43.5	42.4	42.9	dropped to	_
volume	purce dinudoun	DO (mg/l		3.06	3.82	3.98	3.91	5.73~,	1
2" casing has 0.16 USgal/ft or 2.032 l/m	exceeds proge		nce & Odour (Clear, odours, etc.)	clear,	4 .	f.,		getting close	
1" casing has 0.04 USgal/ft or 0.508 l/m	rate, suggest	Interval I	Purge Volume (L)	0.75	0.4	0.45	0.45	TO PETER CONT	1
8" sand pack has 0.73 USgal/ft or 9.271 l/m	return tomorrow	Cumulat	ive Purge Volume (L)	0.75	1.15	1.6	2.05		1
6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m	W/ bally for le	Total Pu	rge Volume:		1 -	.1		I I	1
Method: Waterra Penstal		er	Sted Sate	Subju 6	aginig		sindelfic	Öther	
Analysis elow flow	~								2
	e Time Container T	ypes P	reservative T	urbidity	(NTU) -	5	Co	mments	
CH-P-13 DSEE REVERSE 14.24	400,0,	YE } [*	Yes 13.8 M	V	(	/ Yi	eld 1L i	n 6 mins then	1&
- OU/10 FOR DETAILS 14:	30 FOR DETAIL	s TE	No No		(			clear when	
	1					171-	<del>-</del> - ,		7

@limited parametersi

good sealed

cap but slit in pre

below Cap

Pine MiniRas PID, ELE niero we tage

ELR per pump, Hemmera YSI, Hoskin La Motte, Marxim HACH

1 8 Oct 2014 69:26 DTV= 5.455 m, not fully technique Since yesterly, whit for full technique before direct trouble 100 oct 2014 17:16 DTW = 5.45 m, either very slow recharge, or static naturally be 0.5 45 m => proceed / direct limited sample



	and the same of th	AND A SECURE AND ADDRESS OF THE PARTY OF THE	1
Sample Site (Con't):	(H-P-13-04/10 =	Wypt	#

Field UTM Location: Zn: 08 V Easting: 038913つ Northing: 6891477

arameters (Following Purge
SEE
PREV lous
PAGE

thing: 6881477	imnera Whilebouse EPS	Photo Nos.: 41-45 } Hemnera Van Canera
Additional Purge Data - Continu	sied (from FR	ont of Page (If required)
Time () minute interval:		
Depth (m)		
Temperature (°C)	The same of the sa	
pH	The same of the sa	
Cond. (µs/cm)	The state of the s	
Specific Cond. (µs/cm)		WITH
Redox (mV)		
DO (mg/L)		
Appearance & Odour (Clear, Silty, HC odours, etc.)		
Interval Purge Volume (L)		
Cumulative Purge Volume (L)		
Total Purge Volume:		

General Notes (Condition of well or other features):	
Metal Stick up protector or 2" PVC well inside or 1-p -all in good shape	
Add Im of Ky" tobing + 6" silicon for low flow sampling	
Based on well name, assume DTB should be 10m2 me encounter blockage (bottom & 6.37 m	
6) SCN (76 Full, pr	'eseved)
Collected 1) Dis Metals (Full, filter preserve) 4) Cyanide (1/2 Full, preserved)	,
2) DIS HIG (Foll, Filler + preserve) 5) NH3 (1/2 foll, preserved) NOT COLLECTED law	y volume)
3) Een (lum (lyfull, ~250 ml) 7) Sulphide (% Full, preserved) Cyanate	





Well Number:	G5	1-DC-08/	1/13	Project Nu	mbor:	1343-005.03		Date:		T		
Approximate Date I				-	iiiibei.					10 Oct 7014		
Piezometer Diamete		known intel		Client:	0.000	YG-AAM		Sampler:		AB JL		
Screen Length:	Un	em 100 strong Encorn in field		Project Na	October 2014 Mt.Nansen Groundwater						mix son + cloud, uny hightwised ~ + 2°C	
CHV (ppm / % LEL):	· 1: 20.5		ly o LEC	Duplicate Collected:		Baro: No		Recover	ry:	Good	⊠ Bad	
Purge Method	100				The second			1> dande	γλ, e. VI.	1		
Waterra		Peristaltic		Disp. E	Bailer	Subm. Pump		STP ( a Start Co. Served a reservo con Court o	Lift	Other		
	ρ	lowflow (	→ v	to full pu	rge							
Initial Depth to Wate	er (m):	0.66	Calc	ulations:	Purge St	art Time:	(031		Purge E	nd Time:		
Depth to Bottom (m	ı):	2.78	2.78-	۵.66	Time (_3	_) min. interval (24h)	1034	1039	1090		200	
Submerged Tubing	Depth (m):	~ 2.5	- Z	17 ~	Depth (m	1)	2.288	sto	and our	me and	proceed	
Well Stick-up Heigh	ıt (m):	0.33	. (	3.125 Wn	Tempera	ture (ºC)	1.8		14	1	nlu	
Estimated Water Vo	olume (L):	~0.25 L			рН		5.68	(		_ \  \  .	through	
(DTB – DTW) x 2 (fo	r 2" well diam	eter) = 1 well	~ 0	.25	Cond. (µ	s/cm)	226.8	t-control	flow t		, , , , , , , , , , , , , , , , , , , ,	
	olume				Specific	Cond. (µs/cm)	4040	Li	. fillres	1.7	Mecked	
					Redox (n	nV)	117.1		dan 1	flow Ansove		
(DTB-DTW) x 1.1 (f	for 1.5" diame ∕olume	ter) = 1 well		DO (mg			2.23		1.	em for n	# 4 A	
						nce & Odour (Clear, 🧐 odours, etc.)	it brown		ilan a	oceed (cont	inve 4	
2" casing has 0.1 1" casing has 0.0	-					Purge Volume (L)	0.35		,	5 Sanslive		
8" sand pack has 0	_					ive Purge Volume (L)				5		
6 5/8" sand pack ha						rge Volume:	0.35		· . [1			
Method: W	/attennar	Peristaltio		Disp Bar	And the second s	Steel Batter	centra social regimento considera con assistante acces	*****	resolution experimental and		dis metals	
Analysis		e very low flo					Same ?	(UIUS	AU.	Lift	Other.	
		Landa de la constante de la co		Me direct in	OBSTRUCTION OF THE PROPERTY OF	ineval clem						
-	neters Analyz	•		Container	•		urbidity			Comme		
AB R DIS HO	July (FUII) 5 (FUII) 6m (250 ml)	10:34 - Cintomitte	\  1	latzoni plact account plastic account plastic (	< '   <u> </u>		en bottl	V from		d sulphides m Ern Clan	= 0.80mg/	
Pine Minikae PID,						2 peri pump			<del></del>	pre fillwee		

@ limited parameters filmited volume in Um cpm 1 hother B

good Sed

@ Purged direct into sample battle in case law recharge/low volume. Stopped purge a 16:34 to monitor recharge 10:50 DTW = 1.86 > appears to be enough under to slowly fill all bottles (stopped Ling to purge) La resumed sampling and yield a loom before DTV below 2.60m

MACH

\_> @ prefilled nater is light boun to brown colour, but with no patieles visible, feltred metals also light brown

HEMMERA both wells

Sample Site (Con't): 651-DC-68 A/B Wypt Name: 3 co-ords for both

Field UTM Location: Zn: のをし Easting: ら3903!! Northing: しももうちゃー

Hencen writebose EPS Photo Nos.: 146-150

Final Groundwater Field P	arameters (Following Purge)	Additional Purge Data - Continued from Front of Page (If required)
Time (hh:mm; 24h)		Time () minute interval:
Temperature (°C)		Depth (m)
DO (mg/L)	SFE	Temperature (°C)
Specific Cond. (µs/cm)	PREVIOUS	рН
Cond. (µs/cm)	PACE,	Cond. (µs/cm)
рН		Specific Cond. (µs/cm)
Redox (mV)	LIMITED	Redox (mV)
Turbidity (NTU)	PURCE TAME/	DO (mg/L)
DO (mg/L)	VOLUME/	Appearance & Odour (Clear, Silty, HC odours, etc.)
	READINES	Interval Purge Volume (L)
		Cumulative Purge Volume (L)
		Total Purge Volume:

General Notes (Condition of well or other features):	
25cm 10 0 strinless skel well wplastic cap in good condition Found existing Micro watern Libing a Controller on ground	"A" hell details- same construction as "B" well except no cap, just ziplock bog for poor seal
Added 3n & 1/2" toping + 6" silicon for low flow	(02 460 02 20.5% CHY 0% LEL
	DTW = 1.20 DTB 1.85 Stick up Leight = 0.92
	Stick up Leight = 0.92



Well Number:	-SI-DC-06B	Project Nu	mber:	1343-005.03	····	Date:		OCT	10 2	014
Approximate Date Drilled:		Client:		YG-AAM		Sampler:		GMR	-t RI	m
Piezometer Diameter / Screen Length:	U ment op.	Project Nar	me:	October 2014 Mt.Nans Groundwater	en	Weather/	Гетр:	PMLT	107. t	2°C
CHV (ppm / % LEL):		Duplicate Collected:		DID: NONE		Recovery	•	☐ Go	od 🗵	Bad
Purge Method					E.					
Waterra	Peristaltic	Disp.,B	ailer	Subm. Pump		Air L	ift	1	Other	
	w/BATTERY									
Initial Depth to Water (畑):ドケ	2:06 Ca	lculations:	Purge St	art Time:	/		Purge Er	nd Time	: /	•
Depth to Bottom (xxx): Et	8.82		Time (	_) min. interval (24h)	1000					
Submerged Tubing Depth (m):			Depth (m	)						
Well Stick-up Height (m):	0.53		Tempera	ture (ºC)		Λ				
Estimated Water Volume (L):			рН			1///	n -	_		
(DTB – DTW) x 2 (for 2" well dia	meter) = 1 well		Cond. (μ	s/cm)			C C	1		
volume			Specific	Cond. (µs/cm)		SAN				
			Redox (n	nV)		2707	IP OF			
(DTB-DTW) x 1.1 (for 1.5" diam volume	ieter) = 1 well		DO (mg/l	_)		NO 1	7.			
2" casing has 0.16 USgal/ft c	or 2 032 l/m			nce & Odour (Clear, odours, etc.)			URG	$\leq$		
1" casing has 0.04 USgal/ft o			Interval l	Purge Volume (L)						
8" sand pack has 0.73 USgal/fi			Cumulat	ive Purge Volume (L)						
6 5/8" sand pack has 0.50 USga	al/ft or 6.35 l/m		Total Pu	rge Volume:						
Method: Waterra	Peristallic.	Disp. Bail	<b>E</b> F	Steel Bailer :	Salom f	ennje - L	Air	Biji Sa	Ē	liner.
Analysis	VW/BATT	SLY								***************************************
Sample ID Parameters Anal	yzed Sample Time	Container T	ypes F	reservative	Furbidity	(NTU)		Con	nments	
GSI-DC 0135 METHS -06B CEN CHEM	10-20	PLASTIC TCEASS		Yes 5/	.4		t Fi	34		
CYANIDE NH3 SEN SULPHIDE TIC CYANATE	10 3 BOTTLES FULL SET. MIN VOLUMES	DISSAVED  DISSAVED  METALS(F)  NO PRESERV  NO PRESERV	NHVG NHVG	A= DTIW: DTB:	3.19 6.26 0.88	ft et m				



Field UTM Location: Zn:	Easting: 6389787
Final Groundwater Field Par	ameters (Following Purge)
Time (hh:mm; 24h)	10-20
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	
pH	
Redox (mV)	
Turbidity (NTU)	51.4
DO (mg/L)	,
SUPPLIDE mg/E	0.15

Sample Site (Con't): \_\_

Northing: 6880565	WPION	Photo Nos.: 8503
Additional Purge Data - Cori	timued from Front	of Page (If required)
Time () minute interval:		
Depth (m)		
Temperature (°C)		
рН		
Cond. (µs/cm)		
Specific Cond. (µs/cm)		
Redox (mV)		
DO (mg/L)		
Appearance & Odour (Clear, Silty, HC odours, etc.)		

<b>L</b>	Peri tubing Silicon	Gases: A (plastic Legeop) 2-20.9%. Coz-440ppl	B 02-20.9% C02-700pth, CM4-2pph,

Interval Purge Volume (L)

Cumulative Purge Volume (L)

Total Purge Volume:



Well Number:	Λ	1P001-10		Project Nu	ımber:	1343-005.03	3		Date:		Oc al	-10,	20 4
Approximate Date	Drilled:			Client:		YG-AAM			Sample	r:	Gran	1-10 2 + R	1
Piezometer Diame Screen Length:	ter I	25" NV	<u> </u>	Project Na	ıme:	October 201 Groundwate		en	Weathe	r/Temp:	cier		+1°C
CHV (ppm / % LEL	- <b>):</b>			Duplicate Collected:			ONE		Recove	ry:	☐ Ge	ood Z	∫ Bad
Purge Method						The second secon							
Waterra		Peristaltic		Disp. I	Bailer	Sub	m. Pump		Aiı	r Lift		Other	
Initial Depth to Wa	iter (m): F7	8.20	Cal	culations:	Purge	Start Time:		8-0	f0	Purge E	ind Time	e:	
Depth to Bottom (	m+ F+	14,00	<.	8 FF	Time (	) min. inter	val (24h)	8-46	850	855			
Submerged Tubing	g Depth (m):			o Ft	Depth	WI FT		11.8	298	DRY	_		
Well Stick-up Heig	jht (m):	1.95			Tempe	erature (ºC)		3.16	2.97		1/ET	WN	07
Estimated Water V	/olume (L):				pН			8.47	8.86		1 1-	-CA	
(DTB – DTW) x 2 (f	for 2" well diam	eter) = 1 well			Cond.	(µs/cm)		720	290		<del> /1</del>	011	01 -
(= -=	volume	7			Specif	ic Cond. (µs/cm	1)				to	2/10	put
(272.274)					Redox	(mV)		85-5	85.6				
(DTB-DTW) x 1.1	(for 1.5" diame volume	ter) = 1 well			DO (m	g/L)		124	7.04				
2"i h 0		0.000.1/				rance & Odour IC odours, etc.)		VERY					
2" casing has 0. 1" casing has 0.	•					al Purge Volume		1	\$ 0.5				
8" sand pack has	•					ative Purge Vol		ě	78 L-5				
6 5/8" sand pack h	as 0.50 USgal/	ft or 6.35 l/m				Purge Volume:	· · · · · · · · · · · · · · · · · · ·	, , , , , , , , , , , , , , , , , , ,	47.				
Method:	Varasa	Persona		Digity Bai		Stee Beije							
Analysis				(a. )									list(s)
Sample ID Para	meters Analyz	red Sample	Time	Container :	Types	Preservative	T	urbidity	(NTU)	200	Col	nments	
	L SET BUTTLES	1400		PLASTIC + GLAS	5	Yes No	OVEI	2 PM	INGE MENT	V£ ~:	TH TA	TURBI	iD Š•



Sample Site (Con't):		***************************************
Field UTM Location: Zn:	08.7	Easting: 0389239 Northing: 6880680

Photo Nos.: 8499 SSOE LATER

	rameters (Folkowing Purge)
Time (hh:mm; 24h)	1400
Temperature (°C)	2-97
DO (mg/L)	7-04
Specific Cond. (µs/cm)	}
Cond. (µs/cm)	290
рН	8.86
Redox (mV)	85.6
Turbidity (NTU)	OVER RANGE FOR INS
DO (mg/L)	
SUPHIDE mg/1	0.80 "uma

Epot manufacture (Art Parish American and American and Cart Manufacture Constitution and Cart Manufacture Co					TURES
Additional Purgs Cata = Contin	de di Romi F	Oniver Pag	er en inte	1)	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
рН					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume: ""					

General Notes (Condition of well or other features):	
Head space gases; METER NOT LORKING	AND HOLES (SLITS) IN PUC. PHOTO 8505
Cut in the PUC casing = gases	hat allecked

09-10 8.20 WIL



#### **GROUNDWATER SAMPLE COLLECTION SHEET**

Well Number:	MP89-00	↑ Project Nu	ımber:	1343-005.03		Date:		1006	-Zo(4
Approximate Date Drilled:		Client:		YG-AAM		Sampler:		Gun + RM	
Piezometer Diameter / Screen Length:	1-25" P	/-Z5" PVC Project Name		October 2014 Mt.Nansen Groundwater			r/Temp:	clarky 2°2	
CHV (ppm / % LEL):		Duplicate Collected:		DID: None		Recovery:		☐ Good ဩ Bad	
Purge Method				90S, 50S		100			
Waterra	Peristaltic	Disp. I	Bailer	Subm. Pump	)	Aiı	r Lift	Oth	er
	V W/Ball	tery							
Initial Depth to Water ( $\mathfrak{M}$ ): $\digamma$	4 8.78	Calculations:	Purge S	tart Time:	082	S	Purge E	nd Time:	
Depth to Bottom (m): 🗐	18.19	= 3141	Time (	_) min. interval (24h)	8.27	8:30	8-33 8	3:35	13-03
Submerged Tubing Depth (n	(775-27-27-27-27-27-27-27-27-27-27-27-27-27-		Depth (R	of File	13.1	147	16.2	18,0 -oDr	9.0
Well Stick-up Height (m):	2,20	1-25"=	Tempera	ature (ºC)	2-55	2.73	2.77 2	2.81	24 Grinoua
Estimated Water Volume (L)	:	1, -, -,	рН		8.77	8.88	8,90	3.90	
(DTB – DTW) x 2 (for 2" well o	diameter) = 1 well		Cond. (µ	ıs/cm)	555	220	540 5	46	
volume			Specific	Cond. (µs/cm)			,		
(DTD DT1)			Redox (ı	mV)	81.5	78.8	77.4 -	77.1	
(DTB-DTW) x 1.1 (for 1.5" di volume	ameter) = 1 well		DO (mg/L)		6.94	5-056	4.12 4	80.1	
			Appeara	nce & Odour (Clear,	var			-1-	
2" casing has 0.16 USgal/			<u> </u>	odours, etc.)	TURBL	T	**	¥	
1" casing has 0.04 USgal/			Interval	Purge Volume (L)	1	0.5		0.5	
8" sand pack has 0.73 USga 6 5/8" sand pack has 0.50 US			Cumulat	tive Purge Volume (L)	1	1.5	2 3	2.5	
0 3/0 Sand pack has 0.50 03	sgai/it or 6.33 i/iii		Total Pu	rge Volume:					
Method: Waterra	Peristallic	Ojep Ba	ler	Steel Bailer	Subin 1	djinje	Aur	Liff	Other
Analysis									
Sample ID Parameters Ar		Time Container	Types F	Preservative	Turbidity	(NTU)		Commen	ts
MPag-og Full set,	Plus 1315	5 PLASTIC		Yes	79.		V. 1	TURBIO	
extra Met	al (not	+ GLAS	3	☐ No	<i>A</i> ( •				
	`	· · · · · · · · · · · · · · · · · · ·							·····

reserved).



Sample Site (Con't):				taller than 10
Field UTM Location: Zn: FV Easting: 6389239 North	ning: 6880680	(097)	Photo Nos.: 84	99 8X0
Final Groundwater Field Parameters (Following Purge)	Additional Purge Data - Continue	⊇ē Troje (Froje (é)	(Page (if required)	
Time (hh:mm; 24h)	Time () minute interval:			
Temperature (°C)	Depth (m)			
DO (mg/L)	Temperature (°C)			
Specific Cond. (µs/cm)	pH			
Cond. (µs/cm)	Cond. (µs/cm)			
рН	Specific Cond. (µs/cm)			
Redox (mV)	Redox (mV)			
Turbidity (NTU)	DO (mg/L)			
DO (mg/L)	Appearance & Odour (Clear, Silty, HC odours, etc.)			
SULPHIDE mg/ 083 0.53	Interval Purge Volume (L)			
	Cumulative Purge Volume (L)			
	Total Purge Volume:			
General Notes (Condition of well or other features):				
Cut PUC casing = gases	ele de			



### **GROUNDWATER SA**

Well Number:	@\$ CH-P-13	- 01/10 Project	t Number:	1343-005.03		Date:		09	92	010
Approximate Date Drilled:		Client	100	YG-AAM		Sample	er:	GM	i FRI	
Piezometer Diameter / Screen Length:	1.5" PVC	Projec	t Name:	October 2014 Mt.Nans Groundwater	sen	Weathe	er/Temp:	000000	CCAST ~7	,d
CHV (ppm / % LEL):		Duplic Collec		□ ID: NON6		Recove	ery:	☐ Go	ood D	Bad
Purge Method	Commence of the Commence of th								· · · · · · · · · · · · · · · · · · ·	
Waterra	Peristaltic	Di	sp. Bailer	Subm. Pump	)	Ai	r Lift		Other	
	\ \ \ \ \ \ \ \ \	Buttery.								
Initial Depth to Water (arr): 🛭	T 8.89	Calculations	s: Purge S	Start Time:	090	8	Purge I	End Time	: pot	+ 102
Depth to Bottom (ﷺ: 仟	D Bottom (pr): F 21.75 4cm 12,		Time (_	) min. interval (24h)	0913	9-31		1611	1510	1515
Submerged Tubing Depth (r	n):	13 St 12.8	( CF Depth #	研)	12.7	20.00	STOPPED	19.8	19-8	D
Well Stick-up Height (m):		= 3.89 m	· I —	ature (ºC)	0.07	017	break			0,7
Estimated Water Volume (L	): 4.88	water colu			6.21	6.82	GK CERUVE			6
(DTB – DTW) x 2 (for 2" well	diameter) = 1 well		Cond. (	µs/cm)	963	856	DICAM			07
` volume	,	4.88 L	Specific	Cond. (µs/cm)						75
(DTD DTM) 44 (f 4 ft 1		of water	Redox	(mV)	192.3	,				_ }
(DTB-DTW) x 1.1 (for 1.5" d volume	iameter) = 1 well	purge	DO (mg	/L)	13.02\$	11.49 4	RETURN.			0 5
2" casing has 0.16 USgal	/ft or 2.032 l/m	15 c apple		ance & Odour (Clear, C odours, etc.)	CLEM	CLEM	CEFT WELL AT			16 16
1" casing has 0.04 USgal			Interval	Purge Volume (L)	L. 5	1.5	9-36			Ē
8" sand pack has 0.73 USg			Cumula	tive Purge Volume (L)	1.5	3				· .
6 5/8" sand pack has 0.50 U	Sgal/ft or 6.35 l/m		Total P	urge Volume:		1	.L			I

Method:	Waterra	Peristaltic	Disp. Bailer (	Steel Bailei	Subm, Pump	Air Lift Other
Analysis						
Sample ID	Parameters Analyzed	Sample Time	Container Types	Preservative	Turbidity (NTU)	Comments
CH-P-13 -01/10	DISS METALS DISS MERCURY CYANIDE	15:13 OCT 10 Zoly	PLASTIC + GLASS	Yes No	17.4	

GENCHEN: \$ Bothes - MINIMUM volumes NO REHAMOSE SINCE YESTERDAY. CIKELY COLLECTED GLU FROM THE ACTIVE LATER OF THE PERMATROST.



Sample Site (Con't):	CH-	P-	13	-01	/10	)
Sample Site (Con't):	CH-	P	15	-01	[ ] [	_

Field UTM Location: Zn: 08V Easting: 0388654 Northing: 688 (119

WP 092 Photo Nos.: 8477 - 8478.

		,
Final Groundwater Field Pai	ramielers (Fo	ollowing Furge)
Time (hh:mm; 24h)	1515	0410,2014
Temperature (°C)		
DO (mg/L)		-5-0
Specific Cond. (µs/cm)		
Cond. (µs/cm)		
pH		
Redox (mV)		
Turbidity (NTU)	17.4	
DO (mg/L)		
SURPHIOE Mg/L	0.04	

Additional Purge Data—Gomini	iciel (zem Si	enifericheige	afii reguliyes	)	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
pH					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:		,			

General Notes (Condition of)	ell or other features):	
	8.5 m Peritubing	
	Cases is 6	
	Cases rough eozena - 9	

14-175



## **GROUNDWATER SAMPLE COLLECTION SHEET**

Well Number:	MP09-00		Project Nu	mber:	1343-005.03		Date:	8 Oct 2014
Approximate Date Drilled:	unkrown in	field	Client:		YG-AAM		Sampler:	AB JL
Piezometer Diameter / Screen Length:	12" pvc iuside 14 unknown in fis		Project Na	me:	October 2014 Mt.N Groundwater	ansen	Weather/Temp:	( ) ( ) ( ) ( ) ( )
CHV (ppm / % LEL):	440 (H4 20.9% 0%	LEL	Duplicate Collected:		DID: NO		Recovery:	☐ Good ☐ Bad
Purge Method			1000				12 Untran	. frozen
Waterra	Peristaltio	<b>:</b>	Disp. E	Bailer	Subm. Pu	mp	Air Lift	Other
Initial Depth to Water (m):	0.36m	Cald	culations:	Purge St	tart Time:		Purge	End Time:
Depth to Bottom (m):	1.54 m	W/L	tupe	Time (	_) min. interval (24	h)		
Submerged Tubing Depth (n			hters	Depth (n	n)			
Well Stick-up Height (m):	0,73		@ 0.80m,	Tempera	ature (°C)			
Estimated Water Volume (L)	:			рН				
(DTB – DTW) x 2 (for 2" well of	diameter) = 1 well		tect unter, measure	Cond. (µ	ıs/cm)			
volume	diameter) = 1 well		memore Used	Specific	Cond. (µs/cm)			
		1	unteria	Redox (r	mV)			
(DTB-DTW) x 1.1 (for 1.5" di volume	ameter) = 1 well	1	unive to	DO (mg/	L)			
Volunie		1			nce & Odour (Clear	,		
2" casing has 0.16 USgal/	ft or 2.032 I/m		apart ice		odours, etc.)			
1" casing has 0.04 USgal/			et other	Interval	Purge Volume (L)			
8" sand pack has 0.73 USga		UTE	measure-h	Cumulat	ive Purge Volume (	L)		
6 5/8" sand pack has 0.50 US	Sgal/ft or 6.35 l/m			Total Pu	rge Volume:			
Method: Waterra	. Peristalfi	C .	. Disp. Bai	ler 💮	» Steël Baller.	Subm.	Pump et 🖂	Air Lift Other
Analysis						enter entre en		
Sample ID Parameters Ar	nalyzed Sample	Time	Container	Types F	Preservative	Turbidity	(NTU)	Comments
					Yes			
					☐ No			

Returned to well a 15:33 oct 8, after simpling GSI-PC-03 to -05, existing t-bing one again frozen in place in nell, had to pull and tonish to get out, ice blockage formed a 0.65 cm preventing t-bing or under level tape passing, runned (book/kinked) the existing XI" nature a micro materia in place a nell trying to break post ice, all tabing removed from well.

FROZENI Mobile to sample

no well &



Sample Site (Con't): _	MP09-08	Wet	nouse)
Campio One (Com t).	4 1 7	1	

Field UTM Location: Zn: 09 V Easting: 0389159 Northing: 6891720

Henners

Wan

Cosen

Final Groundwater Field	arameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	
рН	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

Additional Purge Data - Continu	ied from En	ompor Page	(Hasequine)	j.	
Time () minute interval:					
Depth (m)					
Temperature (°C)					
рН					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)		:			
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)				•	
Total Purge Volume:					

#### General Notes (Condition of well-or other features):

Drive point well in creek 12 " Fue inside I" shoul Is hos existing by" & silicon for low flow and by" & micro-footbelie for manual, polled by "thing out of frozen cell and used micro-water & footbelle to break apart ice and give necess to use tape in early afternoon, retrined in late afternoon but well frozen, unable to advance we tape or tubing to see reverse



- SAMPLE & Oct 7014 MP09-02 Well Number: **Project Number:** 1343-005.03 Date: 7 Oct 2014 Approximate Date Drilled: unknown in field Client: YG-AAM Sampler: AB JL Piezometer Diameter / 1/24 PVC inside 71 currenst, clearing, light snow, n-50 October 2014 Mt.Nansen Project Name: Weather/Temp: Screen Length: metal / unknown in field Groundwater 490 CHY **Duplicate** CHV (ppm / % LEL): ZJD: NIO Recovery: Bad Collected: 20.9% 0% LEL **Purge Method** Bo has flee Waterra Peristaltic Disp. Bailer Subm. Pump Air Lift Other How A low Initiai Depth to Water (m): Calculations: **Purge Start Time:** 1.62 09:55 Purge End Time: 10:01 Depth to Bottom (m): Time (3) min. interval (24h) 40/59 (8:0) 1.99 DTW = depth to 10:02 ~1.8 Submerged Tubing Depth (m): sulface ice Depth (m) - N/A - conit NOUMOUN WIL Well Stick-up Height (m): that probe 1.0 m Temperature (°C) Estimated Water Volume (L): 40.65L broke through Hq tack brown. Waler start Cond. (µs/cm) <i | clear (DTB - DTW) x 2 (for 2" well diameter) = 1 well 198-1.62 Specific Cond. (µs/cm) volume San ale treezing Redox (mV) in tubina = 0.36m mensus (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well DO (mg/L) -/ flw (or t volume = 0.125 L/m Appearance & Odour (Clear, through 500 Silty, HC odours, etc.) purp = miniscule 2" casing has 0.16 USgal/ft or 2.032 I/m Interval Purge Volume (L) 1" casing has 0.04 USgal/ft or 0.508 l/m 0.3 0 . 2 8" sand pack has 0.73 USgal/ft or 9.271 l/m Cumulative Purge Volume (L) 0.3 0.5 6 5/8" sand pack has 0.50 USgal/ft or 6.35 I/m **Total Purge Volume:** 0.0 Method: Disp. Bailer **Analysis** alow flow Sample ID Parameters Analyzed Sample Time **Container Types** Preservative **Turbidity (NTU)** \*\*Comments MPOA-OZ FUI Svile V/ EVI 10:02-Acpersowing. 6.04 NTU & Fidel Sulphides field filler bottles as for sow 10:18 time of sample 0.03 mg/L

080c70

No call

above

rycleut

, ca

well not

Pine PID, ELR Solinst microML tope

No field parameters, broker Freezing In thing during proge, > 3 UV proged, meter clearduring sample -> Lamothe Hoskin, HACH maxim



			 - Charles and the Control of the Con		}
Sample Site (Con't):	MPO9	-02	 Wpt	none =	تممر

Field UTM Location: Zn: ° ⋄ ✓

Easting: 03 888 6 6

Northing 621816

Hemnera
Whitehorse
Photo Nos.: 51-55 } Hemnera
Van
Creeva

Final Groundwater Field Pa	arameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	SEE
Specific Cond. (µs/cm)	PREVIOUS PAGE
Cond. (µs/cm)	PACE
рН	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

					5-33-34 m
Additional Purge Data - Continu	edifform Ex	ont of Page	(it required	) i	
Time () minute interval: (	į.		1	V. A	
Depth (m)		,		1	
Temperature (°C)					
рН					1
Cond. (µs/cm)	\	1/1	<b>de</b>	1	<i>Y</i>
Specific Cond. (µs/cm)		114	And I		and the second s
Redox (mV)					Service Control of the Control of th
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)			And the state of t	A STATE OF THE STA	
Interval Purge Volume (L)			The state of the s		
Cumulative Purge Volume (L)			No.	A. A.	
Total Pürge Volume					

#### General Notes (Condition of well or other features)

I" rusty metal coming protections to " PUC tobing, located in midule of (now frozen) creek channel La existing by" tobing Corsilican already in well, difficulty getting tobing past ice a 1.68m, but eventually get to bottom & Sampled & Oct 2014; 10:02 - 10:18 = see details on previous page. Able to collect full suite of full bottles, just didn't get field parameters (but did get > 3 WV) for fear water freezing in t-bing and/or well noing day



Well Number:	MW09-22	Project N	umber:	1343-005.03		Date:		OCT	8 20	214	1
Approximate Date Drilled:		Client:		YG-AAM		Sample	r:	RAY	+ Gr		
Piezometer Diameter / Screen Length:	2' pvc	Project N	ame:	October 2014 Mt.Nans Groundwater	en	Weathe	r/Temp:	PMC	-8°	coy	
CHV (ppm / % LEL):		Duplicate Collected		□ ID: Non	Æ	Recove	ry:	☐ Go	ood [	Bad	
Purge Method											
Waterra	Peristaltic	Disp.	Bailer	Subm. Pump		Aiı	r Lift		Other	,	
	VW/BATT	ERY *									
Initial Depth to Water (🕪): 🗁	+ 11-32	Calculations:	Purge St	tart Time:	14-2	8	Purge E	End Time	: 15	:-21	
Depth to Bottom (10):	16,94	= 6 Ft	Time (	_) min. interval (24h)	1433	1440	1447 1	4-55	1501	15:08	15:20
Submerged Tubing Depth (r	n):	= 2 m	Depth (a	m) ft.	12.65	13-0	13.1	3.2	13·Z	13.2	13. 2
Well Stick-up Height (m):	078		Tempera	nture (°C)	1-95	1.94	1.81	2.0	1.91	1.91	2.00
Estimated Water Volume (L)	: 4 L	× 2	рН		6.19	6-14	612	(TO. 6)	6.07	6.06	6.06
(DTB – DTW) x 2 (for 2" well of	diameter) = 1 well	= 40	Cond. (µ	s/cm)	1217	1222	1303 1	1414	1575	1730	16 40
volume		× 3	Specific	Cond. (µs/cm)							
			Redox (r	nV)	15.9	11.7	12.1	,	19.3	23.9	2-(.7)
(DTB-DTW) x 1.1 (for 1.5" di volume	ameter) = 1 well	[ ( ] L	DO (mg/	L)	3.57	2.01	1.44	1.30	2.146	1.48	(.5
2" casing has 0.16 USgal/	ft or 2 032 l/m			nce & Odour (Clear, codours, etc.)	CLEMR	CLEMA	to the second	- V>		A	
1" casing has 0.04 USgal/			Interval	Purge Volume (L)	1	2.5	0.5	/	1.5	1.5	2_
8" sand pack has 0.73 USga	al/ft or 9.271 l/m		Cumulat	ive Purge Volume (L)	to 1	3.5	4	5	6.5	8	19
6 5/8" sand pack has 0.50 US	Sgal/ft or 6.35 l/m				5 100	r 10L					
Method: Wateria	Peristanio	Disp. 8:		Steel/Ballet	Subar			r Lijie		Other	
Analysis	w bathe										
Sample ID Parameters Ar	nalyzed Sample	Time Container	Types F	Preservative T	urbidity (	(NTU)		Cor	nments		
mucy Full set	5-7	77 Plastic		Yes	7 11 0		Suc	PHUR - C	wike c	DOUR	,
-TL + EXTRA M	EMETAGE D)	-C G6	-87 [	☐ No	r 40	•					
02000	.7014										•

FORGOT DUP RETURNED ON OCT 9 ZOLY TO RECOLLECT PRESERVED METALS AND UN PRESERVED METALS

Purged 10h, they allected samples.



Sample Site (Con't): Mw09 - 22

Field UTM Location: Zn: C8V Easting: C38944 Northing: 6880551 (C89) Photo Nos.: 8473

	**************************************
Final Groundwater Field Pa	irameters (Following Purge)
Time (hh:mm; 24h)	15-22
Temperature (°C)	2.0
DO (mg/L)	1-51
Specific Cond. (µs/cm)	
Cond. (µs/cm)	1600
рН	6.06
Redox (mV)	21-7
Turbidity (NTU)	8.40
D <del>O (mg/L)</del>	
SULPHIDE my/L	0.06

Additional Purge Data - Continu	aed from Fr	ont of Page	(if required	
Time () minute interval:				
Depth (m)				
Temperature (°C)				
pH				
Cond. (µs/cm)				
Specific Cond. (µs/cm)				
Redox (mV)				
DO (mg/L)				
Appearance & Odour (Clear, Silty, HC odours, etc.)			,	
Interval Purge Volume (L)				
Cumulative Purge Volume (L)				
Total Purge Volume:				

General Notes (Condition of well or other features).	
8" siucon	
NO GAS READINGS - METER	2 NOT LONKING
02 - 20. 9%	
Coz - 460 pp h	
Ctly - 9	



Purge Method  Waterra Peristaltic Disp. Bailer Subm. Pump Air Lift Other  Initial Depth to Water (m): Calculations: Purge Start Time: Purge End Time:  Depth to Bottom (m): Time () min. interval (24h)  Submerged Tubing Depth (m): Depth (m)  Well Stick-up Height (m): Temperature (°C)  Estimated Water Volume (L): pH	ساب
Project Name: October 2014 Mt. Nansen Groundwater  CHV (ppm / % LEL):	1_
Purge Method  Waterra Peristaltic Disp. Bailer Subm. Pump Air Lift Other  Initial Depth to Water (m): Calculations: Purge Start Time: Purge End Time:  Depth to Bottom (m): Time () min. interval (24h)  Submerged Tubing Depth (m): Depth (m)  Well Stick-up Height (m): Temperature (°C)  Estimated Water Volume (L):	
Waterra Peristaltic Disp. Bailer Subm. Pump Air Lift Other   Initial Depth to Water (m): Calculations: Purge Start Time: Purge End Time:   Depth to Bottom (m): Time () min. interval (24h) Depth (m)   Submerged Tubing Depth (m): Depth (m) Temperature (°C)   Well Stick-up Height (m): Temperature (°C) Purge End Time:	ad
Initial Depth to Water (m):  Depth to Bottom (m):  Submerged Tubing Depth (m):  Well Stick-up Height (m):  Estimated Water Volume (L):  Depth to Water (m):  Calculations:  Purge Start Time:  Time () min. interval (24h)  Depth (m)  Temperature (°C)  pH	
Depth to Bottom (m):  Submerged Tubing Depth (m):  Well Stick-up Height (m):  Estimated Water Volume (L):  Time () min. interval (24h)  Depth (m)  Temperature (°C)  pH	
Depth to Bottom (m):  Submerged Tubing Depth (m):  Well Stick-up Height (m):  Estimated Water Volume (L):  Time () min. interval (24h)  Depth (m)  Temperature (°C)  pH	
Submerged Tubing Depth (m):  Well Stick-up Height (m):  Estimated Water Volume (L):  Depth (m)  Temperature (°C)  pH	
Well Stick-up Height (m):  Estimated Water Volume (L):  Temperature (°C)  pH	
Estimated Water Volume (L):	
-	
(DTB – DTW) x 2 (for 2" well diameter) = 1 well	
volume Specific Cond. (µs/cm)	
Redox (mV)	
(DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well volume	
Appearance & Odour (Clear,	
2 casing has 0. to Osgal/it or 2.032 i/m	
6.5/8" sand pack has 0.50 LIScalift or 6.35 I/m	
Total Purge volume:	77.170.073.740.07
Method. Waterra Peristaltic Disp Bailer Steel Bailer Sulzm Pump Air Lift Oth	T
Analysis	
Sample ID Parameters Analyzed Sample Time Container Types Preservative Turbidity (NTU) Comments	
FIB3 FULL SET. 12:00 Pes No	



Sample Site (Con't):			
Field UTM Location: Zn:	Easting:	Northing:	Photo Nos.:
Final Groundwater Field Para	meters (Following Purge)	Additional Purge Data - Comm	nued from From of Page (If required)
Time (hh:mm; 24h)		Time () minute interval:	
Temperature (°C)		Depth (m)	
DO (mg/L)		Temperature (°C)	
Specific Cond. (µs/cm)		рН	
Cond. (µs/cm)		Cond. (µs/cm)	
рН		Specific Cond. (µs/cm)	
Redox (mV)		Redox (mV)	
Turbidity (NTU)		DO (mg/L)	:
DO (mg/L)		Appearance & Odour (Clear, Silty, HC odours, etc.)	
		Interval Purge Volume (L)	
		Cumulative Purge Volume (L)	
		Total Purge Volume	
General Notes (Condition of w	ell or other features)	All December 1997 (1997)	
*			



Well Number:	Par 1410308	38HOL Project N	umber:	1343-005.03	<del></del>	Date:	OCT 9 2014	_
Approximate Date Drilled:		Client:		YG-AAM		Sampler:	BMR+RM.	
Piezometer Diameter / Screen Length:	2" pvc	Project N	ame:	October 2014 Mt.Nans Groundwater	en	Weather/Temp	C1/11/04.	
CHV (ppm / % LEL):		Duplicate Collected		□ID: NONE		Recovery:	☐ Good ☐ Bad	
Purge Method								
Waterra	Peristaltic	Disp.	Bailer	Subm. Pump		Air Lift	Other	
		13 m						
Initial Depth to Water	90% (X-186.0)	Calculations:	Purge St	tart Time:		Purg	je End Time:	
Depth to Bottom (m):	? 22·33, n): 6:76m	= 2.09 ft	Time (	_) min. interval (24h)		Para constitution	The second secon	
Submerged Tubing Depth (r	n): 676m		Depth (n	n)				COLUMN TO SERVICE
Well Stick-up Height (m):		=0.63 M	Tempera	ature (°C)			Market	
Estimated Water Volume (L)	):	column	рН			100 /	West	
(DTB – DTW) x 2 (for 2" well	diameter) = 1 well	=1-28L	Cond. (µ	ıs/cm)				
volume	didiffictory 1 Well		Specific	Cond. (µs/cm)		D11 60	+ SAMA F	
del Ma			Redox (r	mV)		7/166		
(DTB-DTW) x 1.1 (for 1.5" di	iameter) = 1 well		DO (mg/	L)				
volume				ince & Odour (Clear, codours, etc.)		ABOUT	8504	
2" casing has 0.16 USgal/				Purge Volume (L)		ICE PLUG	AT BOTTOM CH	=
1" casing has 0.04 USgal/ 8" sand pack has 0.73 USga						WELL		
6 5/8" sand pack has 0.50 US				tive Purge Volume (L)				
			30	rge Volume:				
Method: Waterra	Peristatio		T(EF	Stell Paller	Simp	em)a	Air Lifts 1995 an Other	
Analysis	L/BATTE							
Sample ID Parameters Ar				Preservative T	urbidity		Comments	
UISSOLUED UISSOLUED GEN CHEI	r-620 1045	PLASTIC + GCAS	1 12	∑ Yes     ☐ No		,	INSUFFICIENT VULUE IN SPRIMG SO DIRE SAMPLE THIS TIP	EC#
CYANDE	7	3.	1				Eptias INDICATE	
NH3	Shuma	VOLUME				レと	IN AT THE TOX	Train.
SCN						P	WF 1 1 - 10°	UKEY
SULPHIDE.	She min	CC 118ED				WITELW TI	MG AT PIAE BO LACE LATER IS HE PERMATROST	ACTIVE ?
• •	1 1507/ 6						· · <del></del>	



Sample Site (Con't): 141 03083 BF	10 12	UP.		
Field UTM Location: Zn:	389567 Northing: 6880666	094	Photo Nos.: 848/	-8482
Final Groundwater Field Parameters (Followin	ng Purge) Additional Purge Data – Go	ontinued from Fior	d of Page (it required)	
Time (hh:mm; 24h)	Time () minute interval	:		
Temperature (°C)	Depth (m)			
DO (mg/L)	Temperature (°C)			
Specific Cond. (µs/cm)	рН			
Cond. (µs/cm)	Cond. (µs/cm)			
pH	Specific Cond. (μs/cm)			
Redox (mV)	Redox (mV)			
Turbidity (NTU)	DO (mg/L)			
DO (mg/L)	Appearance & Odour (Clea Silty, HC odours, etc.)	ır,		
	Interval Purge Volume (L)			
	Cumulative Purge Volume	(L)		
	Total Purge Volume:			
General Notes (Condition of well or other feature	ues):			
Head Space goses: No ven enp = ge	rses had ealerched			



Well Number: MW09-21 **Project Number:** 1343-005.03 Date: Gd 7014 Approximate Date Drilled: unknown in field Client: YG-AAM Sampler: 74 PVC / unlessen Piezometer Diameter / October 2014 Mt.Nansen Overcast, cold Project Name: Weather/Temp: Screen Length: Groundwater In tield 550 CFly **Duplicate** CHV (ppm / % LEL): NIA Recovery: ₩ Good ☐ Bad Collected: A/ @ 20.5% Olo LEL Purge Method Waterra Peristaltic Disp. Bailer Subm. Pump Air Lift Other low flow Initial Depth to Water (m): Calculations: Purge Start Time: 10:08 Purge End Time: 10:40 Depth to Bottom (m): 3.62 Time ( 4 ) min. interval (24h) 10:12 10:16 10:74 10:32 3.62 - 177 Submerged Tubing Depth (m): Depth (m) 1.96 ~ 3.75 2,00 2.01 1.96 2,00 2.02 Well Stick-up Height (m): 6.79 Temperature (°C) 1.0 1.0 0.9 0.9 09 0.9 Estimated Water Volume (L): 6.57 6.58 Нα 6.56 6.100 6.61 6.60 12 L/m Cond. (µs/cm) 347.9 350.1 354.8 356.3 (DTB - DTW) x 2 (for 2" well diameter) = 1 well Specific Cond. (us/cm) 656.2 642.7 648.4 volume 659.B - ~ 4L Redox (mV) -50. Lt -55,0 -45.2 -59.1 -61.0 62.7 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well 0.96 DO (mg/L) 0.94 0.95 0.93 1.19 volume Appearance & Odour (Clear, light red, 13 to Silty, HC odours, etc.) 2" casing has 0.16 USgal/ft or 2.032 l/m Interval Purge Volume (L) 1.5 1.5 1" casing has 0.04 USgal/ft or 0.508 l/m 8" sand pack has 0.73 USgal/ft or 9.271 l/m 23 Cumulative Purge Volume (L) 1.0 4.0 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m 11.5 **Total Purge Volume:** Method Walishira PariSellie Alekin **Analysis** froeze in tubina e lowest flow possible not have mater Sample ID Preservative Parameters Analyzed Sample Time **Container Types Turbidity (NTU)** Comments Full suite of full As per SOW, inc) Yes 10.40 MU & time of 10:47 -Field Sulphides = MWOA-ZI field fill++ buttles as per son 10:55 No No 0.06 mg/L Sample

well has cap of slits cut, no proper

OUER->



Sample Site (Con't): MWO9-21 hope there

Field UTM Location: Zn: 6% V Easting: 638953 Northing: 6880578

Hemmera
Whitehorse
EPS
Photo Nos.: 121-125
Van Consera

Emal-Groundwater Fields	Parameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	SEE _
рН	SEE OVER
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

	المست	~ ' )			هميد
Additional Purge Data - Continu	red From Fr	ont of Fage	(if required	)	
Time ( ) minute interval:	1036	1040			
Depth (m)	2.01	2.01			
Temperature (°C)	0.8	0.9			
pH	6.60	6.61			
Cond. (µs/cm)	354.4	349.6			
Specific Cond. (µs/cm)	650.7	647.9			
Redox (mV)	- 43.1	-64.0			
DO (mg/L)	0.92	0.90			
Appearance & Odour (Clear, for Silty, HC odours, etc.)	ent light red/ truce silt i	<sup>1</sup> 67.			
Interval Purge Volume (L)	1.5	1-5			
Cumulative Purge Volume (L)	10	11.5			
Total Purge Volume:					

#### General Notes (Condition of well or other features).

2" PVC mell inside red metal stick up protector. Loll 10 marked on hell cap. Good condition Existing tubing in hel removed, very dark + oxidized, also old bank on ground removed, added new My" 16" silicon

Transducerfolder logger in sell pulled up a resingular a 9:55 9 oct 7014



Well Number: MP09-05 **Project Number:** 1343-005.03 Date: 9 Oct 2014 Approximate Date Drilled: unknown in field Client: YG-AAM Sampler: AB JL 1.5" PVC/unkneur Piezometer Diameter / October 2014 Mt.Nansen Overcast, cold, light wind **Project Name:** Weather/Temp: in field Screen Length: Groundwater ~ - 8°C (65 (Hy 410 **Duplicate** CHV (ppm / % LEL): DUP-5 ☑ Good Recovery: Bad 20.5% Collected: 0% LFL **Purge Method** lan button Waterra **Peristaltic** Disp. Bailer Subm. Pump Air Lift Other flow Initial Depth to Water (m): .40 Calculations: **Purge Start Time:** Purge End Time: 1116 Depth to Bottom (m): 1,82 11:31 1.82 -1.40 Time ( $\frac{3}{2}$ ) min. interval (24h) 11:28 11139 1119 1122 Submerged Tubing Depth (m): ~ 1,70 Depth (m) 1,48 1.49 1.47 = 0.42 m Well Stick-up Height (m): Temperature (°C) 0.8 0.9 > 2 L/n® 0.9 1.0 Estimated Water Volume (L): pН 6.68 = ~ 0.85 Cond. (µs/cm) 356.3 3513 356.3 356.3 (DTB - DTW) x 2 (for 2" well diameter) = 1 well 659.7 662.2 Specific Cond. (µs/cm) 659.9 658.5 volume & nell advaller Redox (mV) -55.7 59.7 -61.5 41.7 1.5" Ø, (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well DO (mg/L) 0.71 0.63 0.59 1.77 9.66 volume 0.47 - 211 Appearance & Odour (Clear, hall red/blown mostly dear, Silty, HC odours, etc.) time fine SAVALL ing fright what bon when = 0.45 L 2" casing has 0.16 USgal/ft or 2.032 I/m Interval Purge Volume (L) 1" casing has 0.04 USgal/ft or 0.508 l/m 0.6 0.6 0-6 06 0.6 8" sand pack has 0.73 USgal/ft or 9.271 I/m Cumulative Purge Volume (L) 1.8 3.0 0.6 1,2 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m **Total Purge Volume:** 3.0 Method Peristaltic Wateria Diso Bailer ATTACK! Other Sabin Ramp **Analysis** ion flow Sample ID Parameters Analyzed Sample Time **Container Types** Preservative **Turbidity (NTU)** Comments Parent + DUP, full sufe MPD9-05 Field sulphides = 0.03 mg/L 1133 -As per Saward Yes 7as 3-98 NTU @ (full bottles) as + DUP-5 1208 onired metals A No. Francisco DO SOW

& both

Sangles

also paired (

metals

10 dismatals

PRUS

Prival metal

PRUS

instructions

time of sample

SOW Scope of Look



Sample Site	(Con't):	MP09-05	

Field UTM Location: Zn: 0% V Easting: 0389548 Northing: 6880592

Himmen unitebose Eps Photo Nos.: 116.120 } Himmen can

Final Groundwater Field Pa	irameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	SFE
Cond. (µs/cm)	
рН	PREVIOUS
Redox (mV)	0.00
Turbidity (NTU)	MACE
DO (mg/L)	

Additional Purge Data - Continu	ied from Fro	eni of Page	lif required	j i i i i i	
Time () minute interval:					
Depth (m)	,	1	\		
Temperature (°C)					
рН		No.			
Cond. (µs/cm)					**.
Specific Cond. (µs/cm)					
Redox (mV)		1			Na.
DO (mg/L)					70
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					* '
Total Purge Volume:			in a second	/	)

General Notes (Condition of well or other features):

1.5" PVC stick up (no protector) beside pour share. Well cap but poor sent. Existing /4" tobing in will but red oxidized, wher slightly frozen, veplaced or new tobing to 6" silican for low Flow

Same equiphent as MWO9-21



OVER->

## **GROUNDWATER SAMPLE COLLECTION SHEET**

Well Number: MP09-04 **Project Number:** 1343-005.03 Date: 9 Oct 2014 Approximate Date Drilled: unknown in field Client: YG-AAM Sampler: AB JL Piezometer Diameter / 1/2" PVC/ Unknown October 2014 Mt.Nansen overcast, lighthird Project Name: Weather/Temp: Screen Length: Groundwater cold , - - 80c IN 460 CHY Duplicate C01 / IB: CHV (ppm / % LEL): NO Recovery: K Good Bad Collected: 20.9% 0% LEL **Purge Method** -- a 1041 flow Waterra **Peristaltic** Disp. Bailer Subm. Pump Air Lift Other a law flow 1.96 Initial Depth to Water (m): Calculations: **Purge Start Time:** 13 29 Purge End Time: 1356 Depth to Bottom (m): Time (3) min. interval (24h) 3.09 309-1.96 1332 13 41 1335 1344 1347 ~ 2.75 Submerged Tubing Depth (m): = 2.13 m Depth (m) 2.06 2.06 2.07 2.09 Well Stick-up Height (m): 1.21 Temperature (°C) 0.1 0.0 -0.1 0.2 0.0 0.0 Estimated Water Volume (L): ~2251 рΗ 7.32 7.21 7.20 7.190 1.27 7.24 = 2.25 m Cond. (µs/cm) 164.8 159.1 160.7 159.5 160.2 159.6  $(DTB - DTW) \times 2$  (for 2" well diameter) = 1 well Specific Cond. (µs/cm) 301.3 306.2 313.5 304.5 volume 305.1 305.1 Redox (mV) 34.2 37.1 37.3 for 3 Well 37.Z 37.5 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well DO (mg/L) 3.71 3.87 4.23 3.81 3.77 4.01 1/6/Un-es volume Appearance & Odour (Clear, westly Clear Lξ Silty, HC odours, etc.) clear 2" casing has 0.16 USgal/ft or 2.032 I/m Interval Purge Volume (L) 1" casing has 0.04 USgal/ft or 0.508 I/m 0.65 0.75 0.65 6 65 0.8 0.75 8" sand pack has 0.73 USgal/ft or 9.271 l/m Cumulative Purge Volume (L) 1.95 4.75 1.3 6.65 6 5/8" sand pack has 0.50 USgal/ft or 6.35 I/m **Total Purge Volume:** 6.5 Wether. Weiterie Disa Bailer ATT LIFE Other **Analysis** flour Sample ID Parameters Analyzed Sample Time Preservative Turbidity (NTU) **Container Types** Comments 6.41 MU & time of Field Sulphides Full suite efull 135% As per Sow, Yes MP09-04 ine field filter voltles as per - 14:07 = 0.04 m/L ⅓ No 5mm Ne Ins appopriate

sed of sed of rell cap

La All same equipment as MW09-21



Sample Site (Con't): Mpon-ou

Field UTM Location: Zn: 0% ✓ Easting: 0389574 Northing: ७%%06 |

Hemniq
Whitcherse Photo Nos.: 136-140

Hennem
Van
(anexa

Final Groundwater Field F	arameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	SEE
Cond. (µs/cm)	
рН	OVER
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

Additional Punge Data — Comin	led from Fr	ont or Rage	(threquire)	4
Time ( <u>}</u> ) minute interval:	13 50	1353	1356	
Depth (m)	2.69	2.69	_	
Temperature (°C)	0.2	0. Z	0./	
рН	7.16	7.15	7.15	
Cond. (µs/cm)	159.5	159.3	159.3	
Specific Cond. (µs/cm)	303.4	307.8	363.7	
Redox (mV)	37.4	37.4	37.4	
DO (mg/L)	3.69	3.63	3.65	
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	₹ <u>₹</u>	£ (	
Interval Purge Volume (L)	6.75	6.75	G.75	
Cumulative Purge Volume (L)	5	5.75	6.5	
Total Purge Volume.			-	

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1.5" PVC Lell or no stick up protector, just above "share" of tailings point
Replaced cracked (no suction) &" tubin or new 4" and WM 6" silicon



Well Number: MW09-09 **Project Number:** 1343-005.03 Date: Oct 7014 Approximate Date Drilled: unknown in field Client: YG-AAM Sampler: JL Piezometer Diameter / overcast, light Lind. October 2014 Mt.Nansen **Project Name:** Weather/Temp: Screen Length: inknown in field Groundwater - 8°C lor430 **Duplicate** CHV (ppm / % LEL): AID: NO Recovery: ⊠ Good Bad 20.9% Collected: 0% LEL **Purge Method** a low-thow Waterra **Peristaltic** Disp. Bailer Subm. Pump Air Lift Other Flow Initial Depth to Water (m): Calculations: **Purge Start Time: Purge End Time:** Depth to Bottom (m): Time ( 3 ) min. interval (24h) 1521 Frozen obstruction 1524 1530 1535 1540 Submerged Tubing Depth (m): ~ 3.60 Depth (m) 1.27 .25 1.76 1,27 1.27 1.28 1.14 m. Well Stick-up Height (m): 1.07 Temperature (°C) 4,2 3.4 3.8 3-2 3.5 ~ 5.62 Estimated Water Volume (L): Hq 6.55 6.53 4.51 6.53 6.54 Cond. (µs/cm) 63.1 59.9 61.1 60.2 (DTB – DTW) x 2 (for 2" well diameter) = 1 well 60.3 Specific Cond. (µs/cm) volume 104.6 10Z-3 102.8 103,3 1025 Redox (mV) 52.1 - 54.8 -59.3 60.4 -66-9 OI water cleared (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well DO (mg/L) 0.43 0.88 0.52 0.44 0.47 0.42 volume ice, mostly dean frontlight "brown/a del Appearance & Odour (Clear, mothy down Mostly DTW=1.12 M Silty, HC odours, etc.) frint light brown face Clear 7 2" casing has 0.16 USgal/ft or 2.032 l/m DTB=3.93m Interval Purge Volume (L) 1" casing has 0.04 USgal/ft or 0.508 l/m 1.25 1.25 1.5 2.5 2.5 8" sand pack has 0.73 USgal/ft or 9.271 l/m 3.93-1.12 **Cumulative Purge Volume (L)** 3.5 2.25 10 6 5/8" sand pack has 0.50 USgal/ft or 6.35 l/m = 2.81 m **Total Purge Volume:** 17.5 เก็เล็กเกิดเลีย Waterra Subm. Pilma **Analysis** Flow OV Sample ID **Parameters Analyzed** Sample Time **Container Types** Preservative Turbidity (NTU) Comments 6.22 NTU @ time of As ger Sou 15:50 -Field Solphides √x Yes MWO9 inc. field filtr = 0.11 mg/ SOW (inc. full bittles) 16:07 sample. No Pine Mini Fae PID - all same equipment as MPO9-05/MWO9-21 once thanked

not hall sented, cap in place but shit extends beyond (a)

ELR Solinst we trok

OUERS

# **LI** HEMMERA

Sample Site (Con't): MW09 -08 Wypt name = -

Field UTM Location: Zn: ひるく

Easting: 0389617 Northing: 6880579

Hemman Whitehers EP 5

noto Nos.: 🕺 🍳

Hemines Venn Comm

Time (hh:mm; 24h)	
Time (mi.min, 24n)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	SEE
pH	OVER
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

General Notes (Condition of Well or other features)

Additional Eurge Data - Contin	ed thom: Fix	ont et Page	W. required	The same of	
Time ( minute interval:	15:45	15:50	15:55		
Depth (m)	1.27	1.28	1.2%		
Temperature (°C)	3.0	3.1	3.0		
рН	6.55	6.56	6.56		
Cond. (µs/cm)	59.4	59.8	59.6		
Specific Cond. (µs/cm)	102.7	102.9	102.8		
Redox (mV)	-69.5	-71.7	-72.3		
DO (mg/L)	0.37	6.36	6.35		
Appearance & Odour (Clear, Mo Silty, HC odours, etc.)	sly clears	" / "	× (		
Interval Purge Volume (L)	2.5	2.5	2.5		
Cumulative Purge Volume (L)	12-5	15	17.5		
Total Purge Volume:					

2" PVC well of red affick up protector beside creek bank, below locast tenlings down.

In good correlation, but well casing brigher than stick up

Lexisting 1/4" tabing in hell, frozen in place, head to thist + pull repeatedly to free framice, once free blockage remains and one't advance WL probe or tabing below 1.14m (ice blockage)

Letting 5/6" tabing + footvalve to break through ice, unsuccessful (tubing kinked while bashing) > probably good the out

uption mill

La Returned later in day, boiled a 750 ml of lab supplied DI mater and ported dark well, loosening & clearing Ice



Pine Minitae PID, ELR Solinst small WL tage, added 12m

Well Number: Project Number: 1343-005.03 Date: MWO9-ZU 9 oct 7014 Approximate Date Drilled: Client: tield YG-AAM Sampler: 2" PVC/ Unlevour Piezometer Diameter / October 2014 Mt.Nansen overenst, cold Project Name: Weather/Temp: Screen Length: in Field Groundwater 1-806 1480 CH4 (00 Duplicate AND: CHV (ppm / % LEL): No Recovery: Good Bad Collected: 20,9% Of LEL **Purge Method Peristaltic** Waterra Disp. Bailer Subm. Pump Air Lift Other 5/4" footvalue Marino 0823 Initial Depth to Water (m): Calculations: Purge Start Time: Purge End Time: 9.30 0907 9:35 09:47 Depth to Bottom (m): Interval (24h) 8.28 9:00 11.24 11.24-9.30 0907 **Submerged Tubing Depth (m):** 9,35 9.39 ~ 10,7 9622 9.37 Depth (m) - 1.9Um Well Stick-up Height (m): 9.3 Temperature (°C) 0,0 0.64 0.4 0.5 0.3 0.4 2 ZL/m Estimated Water Volume (L): рН 6,93 7.09 7.29 7.19 6.91 Z 3.8B 193.5 186.5 Cond. (µs/cm) 196.4 197.6 188.8 (DTB - DTW) x 2 (for 2" well diameter) = 1 well Specific Cond. (µs/cm) 3629 355.2 356.5 volume Redox (mV) 77.6 62.9 (DTB-DTW) x 1.1 (for 1.5" diameter) = 1 well 9,23 8.50 8.60 DO (mg/L) 10.33 11.01 10.39 volume clear. Appearance & Odour (Clear, mosty 11 2 fine sand Silty, HC odours, etc.) 11551 2" casing has 0.16 USgal/ft or 2.032 I/m 2.5 Interval Purge Volume (L) 2.5 2.5 1" casing has 0.04 USgal/ft or 0.508 I/m 2.5 2.5 8" sand pack has 0.73 USgal/ft or 9.271 l/m 2,5 **Cumulative Purge Volume (L)** 12.5 6 5/8" sand pack has 0.50 USgal/ft or 6.35 I/m **Total Purge Volume:** W/Cifetojele **Analysis** 1 L plastic from Waterra sounded w to awaid any time Preservative **Turbidity (NTU)** Sample ID **Parameters Analyzed** Sample Time **Container Types** Comments 18.2 NtV wbailer. Field supplides: Foll suite os por As per SOW inc MW09-24 Yes as 09:15 preserve + field SOW ( bottles full) 0.09 mg/L 09:30 No Solv Filter as applicable

8" + Footvalve, Himson YST, Auskin La Motte, Maxim HACH

well sealed r/cop



			 	)
Sample Site (Con't): _	MWO9-	24	 F tgg w	

Field UTM Location: Zn: CEV Easting: 6389 559 Northing: 6880 625

Henney Lange Photo Nos.: 111-115 } Kemmen

Final Groundwater Field Pan	ameters (Föllowing Purge)
Time (hh:mm; 24h)	4
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	STE
Cond. (µs/cm)	PREVIOUS
рН	PAGE
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	Y

Additional Purge Data - Continu	iedalikom Ek	ont of Page	(il required	)	
Time () minute interval:	1		1		
Depth (m)	1	\			
Temperature (°C)	1	1			
pH				1	
Cond. (µs/cm)		/ ^ /	$\lambda = \lambda$		
Specific Cond. (µs/cm)		* IV /	(+)		
Redox (mV)	1				
DO (mg/L)	3				
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:					

34	66	35		×		w						36	ø		a		8						В	ь	άb			8	М	9			ŝ,		ж								3																				4	×		ĸ.	18												2				a	
	Αŀ	n	×	и	V	9	w.	и	κ	옃	E		8	а	Н	t	k	н	è	М	¥	3)	И	6	ı,	S	я	e,	P	H	×	8	12	3.	ş	c	ĕ,	М	۳	V.	ķ	Н	я	ź		H	V	5	e	K		н	ÿ.		39	×		ķ	П	В		N	9	S	ä	ĸ		'n	×	ø	3	М	И	ķ	ç	ž	×	9	6	3	8	а	я	
×	м	9	×	S	Ł		Ý.	и		ş	×	b		ē.	6	£	ĕ.		ż		z		8	я		٤	9	3	ĸ	ı	3	ß	В	g	ż	8	з	×	2	В	ě	в	١,		9	ı	3	Æ		ų,	Э	н	В	۶,	£:	ø	X,	8	B		ă	ш		Ç.	4				8	2	ĕ		8	ã,	Ų,		8		2	×	э	я	а	i
98	×				38				22	ш			ø			31	2						×				X	s		×					2			m		ä		ц						a		34	×			а		ĸ	m	15	r	w			89	eri						×	3		S.	a.	ю				12		4	a	ж	i

2" PVC well of compression and metal stick up which > ID marked on both > all in good condition to this ing out condition to the plastic bailer in well, looks new clean



Well Number:	MP09-12		Project Nu	mber:	1343-005.03		Date:		091	OCT ZO14
Approximate Date Drilled:			Client:		YG-AAM		Sample	r:	GMR	+ RM
Piezometer Diameter / Screen Length:	1.25 ° PV	C	Project Na	me:	October 2014 Mt.Nans Groundwater	sen	Weathe	r/Temp:	ceno:	+ RM 79°C
CHV (ppm / % LEL):			Duplicate Collected:		DID: NONE		Recove	ry:	Good	d 🗌 Bad
Purge Method						1000			-	
Waterra	Peristaltio		Disp. E	Bailer	Subm. Pump		Ai	r Lift		Other
	~1.68 m	7,EN								
Initial Depth to Water (m): 🗁		Calcu	lations:	Purge St	tart Time:	1352	-	Purge E	nd Time:	
Depth to Bottom (#): 🦠	M 4.175	13-53	Α.	Time (	_) min. interval (24h)	1400	1409			
Submerged Tubing Depth (r	n):	I .	column.	Depth-(n	AT FT.	11.3	13			
Well Stick-up Height (m):	1:70		Easing	Tempera	ature (°C)	1-98	7=8-52.	33		
Estimated Water Volume (L)	: 4.5	1,00		рН		6.64	6.99			
(DTB – DTW) x 2 (for 2" well	diameter) = 1 well		v e. e311	Cond. (µ	s/cm)	761	642			
volume	diameter) – 1 weii	4 3. let	X 0·024	Specific	Cond. (µs/cm)					
:		× locro		Redox (r	mV)	66.24	27.8			
(DTB-DTW) x 1.1 (for 1.5" di volume	iameter) = 1 well	- 4-5	<u></u>	DO (mg/	L)	6.394	5-3			
Volume					nce & Odour (Clear,	STURITED .	1			
2" casing has 0.16 USgal/	ft or 2.032 l/m				odours, etc.)					
1" casing has 0.04 USgal/				Interval	Purge Volume (L)	3	2			
8" sand pack has 0.73 USg				Cumulat	tive Purge Volume (L)	3	5			
6 5/8" sand pack has 0.50 US	Sgal/ft or 6.35 l/m			Total Pu	rge Volume:		THE	JORY WI	LL RETURN	TO SAMPLE.
Method: Waterna	Peristalti	6	Disp. Bai	ler :	Steel-Baller (* 1866)	Silleme	era e	4.1	rEnt -	Officer
Analysis							40000000000000000000000000000000000000		Annual Schland Post (Index)	
Sample ID Parameters A	nalyzed Sample	Time 0	Container	Types F	Preservative -	Turbidity	(NTU)		Comm	nents
MROG-17 FIRE SET	16 1	7 /	COSTIC		] Yes /	<i>(L. )</i> .		SC	tts i~	WELL
MP09-12 FUL SET	vous 15-10	t	GLASS			41		CAS	1NG- NO	o GASES RE

USES BULES OF WATER TO BREAK THROUGH ICE PLUG. THEN PURCES. USED ~ 600 MI OF DI WATER.

CORDED.



Sample Site (Con't):	Name		( wp ]	8494-8
Field UTM Location: Zn:	Easting: 0389218 Northing:	6880619	(098)	Photo Nos.: 8491 - 8

Final Groundwater Field Par	ramelers (Following Purge)
Time (hh:mm; 24h)	1510
Temperature (°C)	Z: 33
DO (mg/L)	z:33
Specific Cond. (µs/cm)	
Cond. (µs/cm)	642
рН	6.99
Redox (mV)	27.8
Turbidity (NTU)	141
DO (mg/L)	
SUPHIDE mall	0.40
<u> </u>	

Additional Purge Data - Continu	hed thom Fig.	oloji olij Pajoje	ni veribilizaci	
Time () minute interval:				
Depth (m)				
Temperature (°C)				
рН				
Cond. (µs/cm)				
Specific Cond. (µs/cm)				
Redox (mV)				
DO (mg/L)				
Appearance & Odour (Clear, Silty, HC odours, etc.)				
Interval Purge Volume (L)				
Cumulative Purge Volume (L)				
Total Purge Volume:				

General Notes (Condition of well or other features):	
5.5 m peristellic tubing	
Courts in the PUC casing a gases not callected	



Well Number:	I	MP09-11	Project N	umber:	1343-005.03		Date:		OC	T 9 Z	_014
Approximate Date D	Orilled:		Client:		YG-AAM		Sample	er:	Gun	R + R	$\overline{A}$
Piezometer Diamete Screen Length:	er/	Zs" PV	Project N	ame:	October 2014 Mt.N Groundwater	ansen	Weathe	er/Temp:		7007.	
CHV (ppm / % LEL):			Duplicate Collected		DID: NONE		Recove	ry:	□G	ood [	Bad
Purge Method			- P						I sa		
Waterra		Peristaltic	Disp.	Bailer	Subm. Pu	mp	Ai	r Lift		Other	
Initial Depth to Wate	er (pai):[1	5.84 FAUZE	* Calculations:	Purge S	Start Time:	142	.5	Purge	End Tim	e: 100	57
Depth to Bottom (ng		15.95	=1.7m	Time (	) min. interval (24		14 36	1439	1444	WSO	
Submerged Tubing	Depth (m):		= 3.25 m	Depth (		8.6	9.9	11.8	13.3	15.4	
Well Stick-up Heigh	t (m):	1-74	alumn	Temper	rature (ºC)	2-0	1.32	1.9	2.24	1.75	
Estimated Water Vo	lume (L):	5.88 L	<i>O</i> ************************************	рН		6.82	7.00	7.08	7.15	7-17	
(DTB – DTW) x 2 (for	r 2" well dia	meter) = 1 well	= 5-886	Cond. (	µs/cm)	1019	1026	1014	966	943	
	olume	illetei) – i weli	- 2000	Specific	c Cond. (µs/cm)						
				Redox	(mV)	66.6 \$	33.3 4	10-34	-6.91	-20.2	
(DTB-DTW) x 1.1 (f	or 1.5" diam olume	eter) = 1 well		DO (mg	/L)	9-55+	6-20 4	3-926	3-14	2-69	
2" casing has 0.1		r 2 032 l/m			ance & Odour (Clear C odours, etc.)	, Tin	310 -	-Ð			
1" casing has 0.1	•			Interval	Purge Volume (L)	1.5	B.	ķ	1.5	1	
8" sand pack has 0	.73 USgal/ft	or 9.271 l/m		Cumula	itive Purge Volume (	L) 1.5	7.5	3-5	S	6,	
6 5/8" sand pack has	s 0.50 05ga	II/π or 6.35 I/m		Total P	urge Volume:					TH	EN DRY
Methods: 2	allerra	Persiditio	Disp. Ba	iller	Skeel Bailer	5.000	2010)		i Liji	Ć	/ijner
Analysis											
Sample ID Param	eters Analy	yzed Sample	Time Container	Types	Preservative	Turbidity	(NTU)			mments	
MP09-11 FUL	L SET	1550	PLASTIC		☐ Yes	3344	2	po	VRGE»	ORY. L	EFT IT FO SAMPLE
MIN	1. VOW	E. 102	AND GO	183	□ No	-1-1	54.	1 Ex	5 mins	THEN	SAMPLE



Sample Site (Con't):		
	_	(-

Field UTM Location: Zn: 08√ Easting: 0389 218 Northing: 6880619

Photo Nos.:	8491	مسيد	8493
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Final Groundwater Field P	arameters (Following Purge)-
Time (hh:mm; 24h)	1550
Temperature (°C)	1-75
DO (mg/L)	2.69
Specific Cond. (µs/cm)	
Cond. (µs/cm)	943
рН	7-17
Redox (mV)	-20-2
Turbidity (NTU)	54.1
DO (mg/Ľ)	
SOUPALDE ingl	L 0.14
***	

Additional Purge Data - Continu	iedjion R	entrol/Page	(if required	
Time () minute interval:				
Depth (m)				
Temperature (°C)				
pH				
Cond. (µs/cm)				
Specific Cond. (µs/cm)				
Redox (mV)				
DO (mg/L)				
Appearance & Odour (Clear, Silty, HC odours, etc.)				
Interval Purge Volume (L)				
Cumulative Purge Volume (L)				
Total Purge Volume:				

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228
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1011
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88 g t
196
1881
3 6 6
8 8
30
3.0
77
200
100
68
08
80
2.
560
1 33
1.6
38
æ
=
27

4.5 m peristaltic tubing

Cuts in the PUC casing - gases not collected



Well Number:	MP09-14	Project No	umber:	1343-005.03		Date:		00	r 9 2	010
Approximate Date Drilled:	•	Client:		YG-AAM		Sampler	•:	Gny	2 + R	1
Piezometer Diameter / Screen Length:	DP	Project Na	ame:	October 2014 Mt.Nanso Groundwater	en	Weather	r/Temp:	cea	2+R	9°C
CHV (ppm / % LEL):		Duplicate Collected		□ ID:		Recover	ry:	☐ Go	ood [	Bad
Purge Method								1		
Waterra	Peristaltic	Disp. I	Bailer	Subm. Pump		Air	Lift		Other	
	Ŧ	Frozen								
Initial Depth to Water (47):	4 1.50	Calculations:	Purge S	tart Time:			Purge I	End Time	j:	
Depth to Bottom (46):			Time (	) min. interval (24h)						
Submerged Tubing Depth (n	n):		Depth (r	n)						
Well Stick-up Height (m):			Tempera	ature (ºC)			10.15	00		,
Estimated Water Volume (L)	•		рН			TI	7)74	riu		
(DTB – DTW) x 2 (for 2" well of	diameter) = 1 well		Cond. (	ıs/cm)			1	ME		
volume	aramatary . Won		Specific	Cond. (µs/cm)		V	100			
			Redox (	mV)			WO V	76-		
(DTB-DTW) x 1.1 (for 1.5" di volume	ameter) = 1 well		DO (mg/	/L)			- WV			
				ance & Odour (Clear, C odours, etc.)						
2" casing has 0.16 USgal/ 1" casing has 0.04 USgal/	i			Purge Volume (L)						
8" sand pack has 0.73 USga	1			tive Purge Volume (L)						
6 5/8" sand pack has 0.50 US	1			irge Volume:						
Method: Waterga			Charles and the second second second	_						
	Peristanic	Disjo: Ba	(i(=) /	Steel Baller	Submer;		<u> </u>	PLIT.	Ot	her
Analysis		.		<u> </u>						
Sample ID Parameters Ar	nalyzed Sample T	ime Container	Types 1		urbidity	(NTU)		Cor	nments	
				Yes						
				No						



Time (hh:mm; 24h)	arameters (Following Purge)	Additional Purge Data - Confur Time ( ) minute interval:	MES (140)m Es	ostikoju skiele	Misselmier	1	
Temperature (°C)		Depth (m)	Name of the last o				
DO (mg/L)		Temperature (°C)	-				
Specific Cond. (µs/cm)		рН					
Cond. (µs/cm)		Cond. (µs/cm)					
рН		Specific Cond. (µs/cm)					
Redox (mV)		Redox (mV)					
Turbidity (NTU)		DO (mg/L)		\			
DO (mg/L)		Appearance & Odour (Clear, Silty, HC odours, etc.)					
		Interval Purge Volume (L)					
		Cumulative Purge Volume (L)					
		Total Purge Volume:					
General Notes (Condition of	i well or other features):						
			· ·				
	VERICIENT VOLUM.	- 1. 6. 2. 2					

Sample Site (Con't):



Well Number:	W14103083 BH	dol Project N	Project Number: 1343-005.03		Date:		OCT 9 2014						
Approximate Date Drilled:		Client:		YG-AAM	•	Sampler: C4		Com	C+ KM				
Piezometer Diameter <i>I</i> Screen Length:	Z" PVC	Project N	ame:	October 2014 Mt.Na Groundwater	nsen	sen Weather/Te		CCOUDY 78°					
CHV (ppm / % LEL):		Duplicate Collected		DID: NONE,		Recovery:		Recovery:		Recovery:		☐ God	
Purge Method		- In the second						1					
Waterra	Peristaltic	Disp.	Bailer	Subm. Pum	ıp	Air L	.ift		Other				
	ر <del>ا</del>	5.46 m											
Initial Depth to Water (🕬): 🛭	7 21.32 FROZ	Calculations:	Purge S	tart Time:			Purge E	nd Time:					
Depth to Bottom (##): 🖅			Time (_	) min. interval (24h)	)								
Submerged Tubing Depth (n	n):		Depth (ı	n)									
Well Stick-up Height (m):			Temper	ature (ºC)		77 -	, \						
Estimated Water Volume (L)	:		рН			KOZ							
(DTB – DTW) x 2 (for 2" well of	diameter) = 1 well		Cond. (	ıs/cm)		0.1	11 - N C	700	50 7				
volume	ulameter) – i well		Specific Cond. (µs/cm)		IN	PEN	MI	-12-Y	9 1				
			Redox (	mV)		100							
(DTB-DTW) x 1.1 (for 1.5" di volume	ameter) = 1 well		DO (mg	/L)		1/1/							
volume				ance & Odour (Clear, C odours, etc.)									
2" casing has 0.16 USgal/													
1" casing has 0.04 USgal/ 8" sand pack has 0.73 USga				Purge Volume (L)									
6 5/8" sand pack has 0.50 US				tive Purge Volume (L)									
·			Variable Control of the Control of t	ırge Volume:									
Method: Waterra	Peristaltio	Disp. Ba	uler	Steel Eatler	Sabhat	Politico III	Air	Lift	Other				
Analysis			\										
Sample ID Parameters Ar	nalyzed Sample	Time Container	Types	Preservative	Turbidity	(NTU)		Com	ments				
NOT SAMPLED.	NOT	KED		□ Ves									
	- · · · · · · · · · · · · · · · · · · ·		1	NO									



Field UTM Location: Zn: OSV Easting: 0389522 Northing: 6880667

Final Groundwater Field	Parameters (Following Purge)
Time (hh:mm; 24h)	
Temperature (°C)	
DO (mg/L)	
Specific Cond. (µs/cm)	
Cond. (µs/cm)	
рН	
Redox (mV)	
Turbidity (NTU)	
DO (mg/L)	

hing: 6880667	Wr. 096	-	Photo Nos.:	8484:	+8485
Additional Purge Data — Commi	ied from Er				
Time () minute interval:					
Depth (m)					
Temperature (°C)					
рН					
Cond. (µs/cm)					
Specific Cond. (µs/cm)					
Redox (mV)					
DO (mg/L)					
Appearance & Odour (Clear, Silty, HC odours, etc.)					
Interval Purge Volume (L)					
Cumulative Purge Volume (L)					
Total Purge Volume:		J			

Ger	ierai.	Notes/Con	altion of ave	li or other leatures).					
1	J-	Nell	cap	= gases	Not	collected	ones.		

# **APPENDIX C Laboratory Reports**



HEMMERA ENVIROCHEM INC.

ATTN: Natasha Sandys 230 - 2237 2nd Avenue Whitehorse YK Y1A 0K7 Date Received: 10-OCT-14

Report Date: 24-OCT-14 15:30 (MT)

Version: FINAL REV. 2

Client Phone: 867-456-4865

# **Certificate of Analysis**

Lab Work Order #: L1531123

Project P.O. #: NOT SUBMITTED

Job Reference: 1343-005.05

C of C Numbers: 1, 2, 3, 4

Legal Site Desc:

#### Comments:

24-OCT-2014 This report replaces the previous version and contains a correction to a Sample Date for one sample.

Brent Mack, B.Sc. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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



L1531123 CONTD.... PAGE 2 of 27 24-OCT-14 15:30 (MT)

#### ALS ENVIRONMENTAL ANALYTICAL REPORT

Version: FINAL REV. 2

	Sample ID Description Sampled Date Sampled Time Client ID	L1531123-1 Water 07-OCT-14 15:03 CH-P-13-05/50	L1531123-2 Water 07-OCT-14 13:00 GLL07-03	L1531123-3 Water 07-OCT-14 14:42 GCI-HA-03A	L1531123-4 Water 07-OCT-14 18:30 GSI-DC-03B	L1531123-5 Water 07-OCT-14 17:36 MW09-18
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	2770	823	882	1090	2650
	Hardness (as CaCO3) (mg/L)	1860	449	512	685	1860
	pH (pH)	6.67	6.96	7.57	8.08	7.82
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	89.8	45.6	161	242	572
	Ammonia, Total (as N) (mg/L)	0.0342	0.0617		0.129	0.0244
	Chloride (CI) (mg/L)	<10 DLA	<0.50	<2.5	<5.0	<10 DLA
	Fluoride (F) (mg/L)	<0.40	0.096	<0.10	<0.20	<0.40
	Nitrate (as N) (mg/L)	<0.10	0.571	<0.025	<0.050	<0.10
	Nitrite (as N) (mg/L)	<0.020	0.0218	<0.0050	<0.010	<0.020
	Total Kjeldahl Nitrogen (mg/L)	0.071	0.148		0.377	0.085
	Sulfate (SO4) (mg/L)	1890	390	343	411	1400
	Sulphide as S (mg/L)	<0.020	0.164		<0.020	<0.020
	Anion Sum (meq/L)	41.1	9.07	10.3	13.4	40.5
	Cation Sum (meq/L)	40.6	9.63	13.6	14.1	37.9
	Cation - Anion Balance (%)	-0.6	3.0	13.7	2.5	-3.3
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050		<0.0050	<0.0050
	Cyanide, Total (mg/L)	<0.0050	<0.0050		<0.0050	<0.0050
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50			<0.50
	Cyanide, Free (mg/L)	<0.0050	<0.0050		<0.0050	<0.0050
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)	12.4	9.7		51.7	107
	Total Organic Carbon (mg/L)	0.88	1.21		5.56	2.66
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (AI)-Dissolved (mg/L)	0.0656 DLA	0.0121	0.0234	0.0012	<0.0020
	Antimony (Sb)-Dissolved (mg/L)	<0.00050	<0.00010	0.00027	0.00066	0.00026
	Arsenic (As)-Dissolved (mg/L)	0.00389	<0.00010	0.0420	0.00235	0.0575
	Barium (Ba)-Dissolved (mg/L)	0.00674 DLA	0.0108	0.0848	0.0243	0.00832 DLA
	Beryllium (Be)-Dissolved (mg/L)	<0.00050 DLA	<0.00010	<0.00010	<0.00010	<0.00020 DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.0025	<0.00050	<0.00050	<0.00050	<0.0010 DLA
	Boron (B)-Dissolved (mg/L)	<0.050	<0.010	<0.010	<0.010	<0.020
	Cadmium (Cd)-Dissolved (mg/L)	0.333	0.276	0.000081	0.000846	0.000064
	Calcium (Ca)-Dissolved (mg/L)	453 DLA	138	125	177	359
	Chromium (Cr)-Dissolved (mg/L)	<0.00050	<0.00010	0.00294	0.00176	<0.00020 DLA
	Cobalt (Co)-Dissolved (mg/L)	0.0382	0.00282	0.00107	0.00115	<0.00020 DLA
	Copper (Cu)-Dissolved (mg/L)	0.117	0.00880	0.00171	0.00227	<0.00040
	Iron (Fe)-Dissolved (mg/L)	12.0	2.24	55.0	0.013	<0.010

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

L1531123 CONTD.... PAGE 3 of 27 24-OCT-14 15:30 (MT)

Version: FINAL REV. 2

#### ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID L1531123-6 L1531123-7 L1531123-8 L1531123-9 L1531123-10 Description Water Water Water Water Water 07-OCT-14 07-OCT-14 07-OCT-14 07-OCT-14 07-OCT-14 Sampled Date Sampled Time 16:30 15:10 14:54 14:20 14:33 MW09-17 GSI-HA-04A GSI-HA-01A GSI-HA-02A GSI-HA-05A Client ID Grouping **Analyte WATER Physical Tests** Conductivity (uS/cm) 2710 240 897 971 695 Hardness (as CaCO3) (mg/L) 1880 104 502 566 372 pH (pH) 7.83 7.54 7.75 8.14 7.33 Anions and Alkalinity, Total (as CaCO3) (mg/L) 170 638 29.6 218 121 **Nutrients** Ammonia, Total (as N) (mg/L) < 0.0050 DLA DLA Chloride (CI) (mg/L) <10 < 0.50 <2.5 <5.0 0.56 DLA DLA DLA Fluoride (F) (mg/L) < 0.40 0.029 < 0.10 < 0.20 0.142 DLA Nitrate (as N) (mg/L) < 0.050 < 0.0050 0.0126 0.17 0.054 DLA DLA HTD DLA Nitrite (as N) (mg/L) < 0.020 < 0.0010 < 0.0050 < 0.010 0.0027 Total Kjeldahl Nitrogen (mg/L) 0.088 Sulfate (SO4) (mg/L) 1440 80.5 340 351 249 Sulphide as S (mg/L) < 0.020 Anion Sum (meg/L) 7.62 42.8 2.27 10.5 11.7 Cation Sum (meg/L) 38.3 2.64 11.2 11.7 8.92 Cation - Anion Balance (%) -5.6 7.6 3.3 0.3 7.8 **Cyanides** Cyanide, Weak Acid Diss (mg/L) < 0.0050 < 0.0050 <0.0050 Cyanide, Total (mg/L) < 0.0050 <0.0050 < 0.0050 Thiocyanate (SCN) (mg/L) < 0.50 Cyanide, Free (mg/L) < 0.0050 < 0.0050 < 0.0050 Total Inorganic Carbon (mg/L) Organic / 111 **Inorganic Carbon** Total Organic Carbon (mg/L) 2.71 Dissolved Mercury Filtration Location **Dissolved Metals FIELD FIELD FIELD FIELD FIELD** Dissolved Metals Filtration Location **FIELD FIELD FIELD FIELD** FIELD Aluminum (Al)-Dissolved (mg/L) <0.0020 0.0823 0.0100 0.0033 0.0081 Antimony (Sb)-Dissolved (mg/L) 0.00036 0.00097 0.00014 0.00023 0.00067 Arsenic (As)-Dissolved (mg/L) 0.0225 0.00917 0.0404 0.0112 0.00651 Barium (Ba)-Dissolved (mg/L) 0.103 0.101 0.00778 0.0420 0.116 Beryllium (Be)-Dissolved (mg/L) < 0.00020 < 0.00010 < 0.00010 < 0.00010 < 0.00010 Bismuth (Bi)-Dissolved (mg/L) < 0.0010 < 0.00050 < 0.00050 < 0.00050 < 0.00050 Boron (B)-Dissolved (mg/L) 0.079 <0.010 < 0.010 < 0.010 0.022 Cadmium (Cd)-Dissolved (mg/L) < 0.000020 0.000026 0.000061 0.000023 0.000122 Calcium (Ca)-Dissolved (mg/L) 346 26.4 133 136 94.6 Chromium (Cr)-Dissolved (mg/L) <0.00020 0.00010 0.00066 0.00079 0.00010 Cobalt (Co)-Dissolved (mg/L) < 0.00020 0.00051 0.00044 0.00029 0.00085 Copper (Cu)-Dissolved (mg/L) 0.00157 0.00103 0.00704 0.00046 0.00198 Iron (Fe)-Dissolved (mg/L) < 0.010 8.36 14.6 2.43 20.3

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

L1531123 CONTD.... PAGE 4 of 27 24-OCT-14 15:30 (MT)

#### ALS ENVIRONMENTAL ANALYTICAL REPORT

Version: FINAL REV. 2

	Sample ID Description Sampled Date Sampled Time Client ID	L1531123-11 Water 07-OCT-14 14:08 GSI-DC-02B	L1531123-12 Water 07-OCT-14 12:27 MW09-16	L1531123-13 Water 07-OCT-14 11:00 MW09-19	L1531123-14 Water 07-OCT-14 11:00 DUP2	L1531123-15 Water 07-OCT-14 15:03 DUP-1
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	928	2010	2130	2130	2750
	Hardness (as CaCO3) (mg/L)	544	1330	1380	1380	1850
	pH (pH)	7.98	7.56	7.36	7.29	6.60
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	244	337	473	480	87.1
	Ammonia, Total (as N) (mg/L)		<0.0050	4.86	4.93	0.0333
	Chloride (CI) (mg/L)	<2.5	<5.0	<5.0	<5.0	<10 DLA
	Fluoride (F) (mg/L)	<0.10	<0.20 DLA	<0.20	<0.20	<0.40
	Nitrate (as N) (mg/L)	0.298	0.140	<0.050	<0.050	<0.10
	Nitrite (as N) (mg/L)	0.0104	<0.010	<0.010	<0.010	<0.020
	Total Kjeldahl Nitrogen (mg/L)		0.092	6.19	6.14	0.058
	Sulfate (SO4) (mg/L)	301	1020	968	948	1900
	Sulphide as S (mg/L)		<0.020	0.242	0.221	<0.020
	Anion Sum (meq/L)	11.2	28.0	29.6	29.3	41.3
	Cation Sum (meq/L)	11.4	27.3	29.9	29.9	40.4
	Cation - Anion Balance (%)	0.8	-1.4	0.4	1.0	-1.1
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cyanide, Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Thiocyanate (SCN) (mg/L)		<0.50	<0.50	<0.50	<0.50
	Cyanide, Free (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)		66.4	105	103	13.6
	Total Organic Carbon (mg/L)		3.14	24.4	23.2	1.23
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0026	<0.0020	0.0118	0.0117	0.0668 DLA
	Antimony (Sb)-Dissolved (mg/L)	0.00032	0.0690	0.00020	0.00021	<0.00050
	Arsenic (As)-Dissolved (mg/L)	0.00537	0.00808	0.105	0.107	0.00376
	Barium (Ba)-Dissolved (mg/L)	0.115	0.0155 DLA	0.0529 DLA	0.0531 DLA	0.00697 DLA
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00020 DLA	<0.00020 DLA	<0.00020 DLA	<0.00050 DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.0010	<0.0010	<0.0010	<0.0025
	Boron (B)-Dissolved (mg/L)	<0.010	0.112	0.223	0.239 DLA	<0.050
	Cadmium (Cd)-Dissolved (mg/L)	0.000115	0.0286	<0.000020	<0.000020	0.326
	Calcium (Ca)-Dissolved (mg/L)	141	307 DLA	304	307	453
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	<0.00020 DLA	0.00043	0.00041	<0.00050
	Cobalt (Co)-Dissolved (mg/L)	0.00138	<0.00020	0.00227 DLA	0.00224 DLA	0.0383
	Copper (Cu)-Dissolved (mg/L)	0.00430	0.00553	<0.00040	<0.00040	0.109
	Iron (Fe)-Dissolved (mg/L)	1.64	<0.010	18.0	18.2	11.8

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

		1		,		ion: FINAL REV
	Sample ID Description Sampled Date Sampled Time Client ID	L1531123-16 Water 07-OCT-14 12:27 FB1	L1531123-17 Water 07-OCT-14 13:10 GSI-DC-01B	L1531123-18 Water 08-OCT-14 18:37 W14103083BH03	L1531123-19 Water 08-OCT-14 15:07 GIS-PC-03B	L1531123-20 Water 08-OCT-14 13:40 GIS-PC-04B
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	<2.0		761		
,	Hardness (as CaCO3) (mg/L)	<0.50	320	390	637	264
	pH (pH)	5.59	320	6.80	037	204
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	<2.0		260		
	Ammonia, Total (as N) (mg/L)	<0.0050		6.13		
	Chloride (CI) (mg/L)	<0.50		<2.5		
	Fluoride (F) (mg/L)	<0.020		<0.10		
	Nitrate (as N) (mg/L)	<0.0050		<0.025		
	Nitrite (as N) (mg/L)	<0.0010		<0.0050		
	Total Kjeldahl Nitrogen (mg/L)	<0.050		7.45		
	Sulfate (SO4) (mg/L)	<0.50		160		
	Sulphide as S (mg/L)	<0.020		0.136		
	Anion Sum (meq/L)	<0.10		8.53		
	Cation Sum (meq/L)	<0.10		13.7		
	Cation - Anion Balance (%)	0.0		23.4		
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050		<0.010		
	Cyanide, Total (mg/L)	<0.0050		<0.010		
	Thiocyanate (SCN) (mg/L)	<0.50		<0.50		
	Cyanide, Free (mg/L)	<0.0050		<0.010		
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)	<0.50		55.5		
	Total Organic Carbon (mg/L)	<0.50		30.6		
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD RRV	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0015	0.0030	0.0529	0.0155	0.0115
	Antimony (Sb)-Dissolved (mg/L)	<0.00010	0.00117	0.00025	0.00367	0.00084
	Arsenic (As)-Dissolved (mg/L)	<0.00010	0.00353	0.0605	0.0190	0.0109
	Barium (Ba)-Dissolved (mg/L)	<0.000050	0.0246	0.354	0.113	0.114
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	<0.010	0.058	<0.010	0.049	0.022
	Cadmium (Cd)-Dissolved (mg/L)	<0.000010	0.000067	<0.000010	0.000051	0.000010
	Calcium (Ca)-Dissolved (mg/L)	<0.050	89.5	104	94.0	75.3
	Chromium (Cr)-Dissolved (mg/L)	<0.00010	0.00708	0.00074	0.00648	0.00581
	Cobalt (Co)-Dissolved (mg/L)	<0.00010	0.00016	0.00062	0.00598	0.00471
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.0512	<0.00020	0.00491	0.00066
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.026	92.4	1.11	4.16

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

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Version: FINAL REV. 2

#### ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID L1531123-21 L1531123-22 L1531123-23 L1531123-24 L1531123-25 Description Water Water Water Water Water 08-OCT-14 08-OCT-14 08-OCT-14 08-OCT-14 08-OCT-14 Sampled Date Sampled Time 14:07 11:05 17:02 15:22 18:35 MW09-05 GIS-PC-O5B GLL07-02 MW09-22 MW09-23 Client ID Grouping **Analyte WATER Physical Tests** Conductivity (uS/cm) 322 1600 2000 1440 Hardness (as CaCO3) (mg/L) 182 164 888 784 pH (pH) 7.26 7.03 6.69 7.51 Anions and Alkalinity, Total (as CaCO3) (mg/L) 88.7 148 72.6 268 **Nutrients** RRV Ammonia, Total (as N) (mg/L) 0.0051 4.77 1.92 2.71 DLA DLA DLA Chloride (CI) (mg/L) < 0.50 <5.0 <5.0 < 5.0 DLA DLA DLA Fluoride (F) (mg/L) 0.048 < 0.20 < 0.20 < 0.20 DLA DLA Nitrate (as N) (mg/L) < 0.050 < 0.050 0.655 11.0 DLA Nitrite (as N) (mg/L) <0.0010 0.012 0.198 < 0.010 Total Kjeldahl Nitrogen (mg/L) 0.426 5.76 4.76 4.14 Sulfate (SO4) (mg/L) 1040 88.4 876 614 Sulphide as S (mg/L) < 0.020 < 0.020 0.030 0.038 Anion Sum (meg/L) 20.0 18.1 3.34 Cation Sum (meg/L) 3.46 20.8 18.4 Cation - Anion Balance (%) 2.0 1.8 8.0 **Cyanides** Cyanide, Weak Acid Diss (mg/L) < 0.0050 < 0.0050 0.0351 <0.010 Cyanide, Total (mg/L) 0.0786 0.016 < 0.0050 <0.0050 Thiocyanate (SCN) (mg/L) < 0.50 < 0.50 < 0.50 < 0.50 Cyanide, Free (mg/L) < 0.0050 < 0.0050 0.0330 < 0.010 Total Inorganic Carbon (mg/L) Organic / 14.2 14.7 22.7 57.1 **Inorganic Carbon** Total Organic Carbon (mg/L) 12.2 12.8 17.4 9.45 Dissolved Mercury Filtration Location **Dissolved Metals FIELD FIELD FIELD FIELD FIELD** Dissolved Metals Filtration Location **FIELD FIELD FIELD FIELD** Aluminum (Al)-Dissolved (mg/L) 0.0164 0.0128 0.0235 0.0090 Antimony (Sb)-Dissolved (mg/L) 0.00223 0.00061 0.00237 < 0.00050 Arsenic (As)-Dissolved (mg/L) 0.00267 0.00135 0.695 0.00194 Barium (Ba)-Dissolved (mg/L) 0.0360 0.0213 0.0312 0.0408 Beryllium (Be)-Dissolved (mg/L) <0.00050 < 0.00010 < 0.00010 < 0.00010 DLA Bismuth (Bi)-Dissolved (mg/L) < 0.0025 < 0.00050 < 0.00050 < 0.00050 Boron (B)-Dissolved (mg/L) < 0.010 < 0.010 0.093 0.143 Cadmium (Cd)-Dissolved (mg/L) < 0.000050 0.000082 0.000169 0.00320 Calcium (Ca)-Dissolved (mg/L) 50.7 46.2 281 206 Chromium (Cr)-Dissolved (mg/L) 0.00080 0.00014 < 0.00050 0.00058 Cobalt (Co)-Dissolved (mg/L) < 0.00010 < 0.00010 0.0178 0.0196 Copper (Cu)-Dissolved (mg/L) 0.00411 0.00283 <0.0010 0.00298 Iron (Fe)-Dissolved (mg/L) 0.044 0.031 8.64 13.7

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531123-26 Water 08-OCT-14 12:38 MW09-04	L1531123-27 Water 08-OCT-14 13:54 MW09-03	L1531123-28 Water 08-OCT-14 10:15 MW09-02	L1531123-29 Water 08-OCT-14 13:54 FB2	L1531123-30 Water 08-OCT-14 18:37 DUP-3
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	2690	2450	2940	<2.0	751
	Hardness (as CaCO3) (mg/L)	1670	1580	1570	<0.50	386
	pH (pH)	8.02	7.82	6.97	5.68	6.90
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	96.8	178	44.3	<2.0	262
	Ammonia, Total (as N) (mg/L)	7.28	1.06	13.6	<0.0050	6.07 RRV
	Chloride (CI) (mg/L)	<10 DLA	<10 DLA	<10 DLA	<0.50	2.9
	Fluoride (F) (mg/L)	<0.40	<0.40 DLA	0.49	<0.020	<0.10
	Nitrate (as N) (mg/L)	<0.10	<0.10 DLA	<0.10	<0.0050	<0.025
	Nitrite (as N) (mg/L)	<0.020	<0.020	<0.020	<0.0010	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	8.77	1.43	17.8	<0.050	7.41
	Sulfate (SO4) (mg/L)	1730	1530	1900	<0.50	154
	Sulphide as S (mg/L)	<0.020	<0.020	<0.020	<0.020	0.114
	Anion Sum (meq/L)	38.0	35.5	40.4	<0.10	8.54
	Cation Sum (meq/L)	37.3	35.1	42.2	<0.10	13.5
	Cation - Anion Balance (%)	-0.8	-0.6	2.1	0.0	22.6
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.010	0.018	<0.0050	<0.010
	Cyanide, Total (mg/L)	<0.0050	0.043 DLM	0.227	<0.0050	<0.010
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50	1.21	<0.50	<0.50
	Cyanide, Free (mg/L)	<0.0050	<0.010	<0.010	<0.0050	<0.010
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)	14.4	35.6	<1.0	<0.50	57.0
	Total Organic Carbon (mg/L)	6.80	6.18	6.84	<0.50	32.4
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	NA	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.0038	<0.010	<0.0050	<0.0010	0.0502
	Antimony (Sb)-Dissolved (mg/L)	0.341	0.547	0.00453	<0.00010	0.00029
	Arsenic (As)-Dissolved (mg/L)	3.76	0.838	22.8	<0.00010	0.0688
	Barium (Ba)-Dissolved (mg/L)	0.00712 DLA	0.0474 DLA	0.00785 DLA	<0.000050	0.348
	Beryllium (Be)-Dissolved (mg/L)	<0.00020 DLA	<0.0010 DLA	<0.00050 DLA	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.0010	<0.0050	<0.0025	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	0.297	0.10	0.059	<0.010	<0.010
	Cadmium (Cd)-Dissolved (mg/L)	0.000021	0.00123	0.000497	<0.000010	<0.000010
	Calcium (Ca)-Dissolved (mg/L)	487 DLA	509 DLA	477	<0.050	102
	Chromium (Cr)-Dissolved (mg/L)	<0.00020	<0.0010	<0.00050	<0.00010	0.00072
	Cobalt (Co)-Dissolved (mg/L)	0.00104	0.0064	0.0118	<0.00010	0.00058
	Copper (Cu)-Dissolved (mg/L)	<0.00040	<0.0020	<0.0010	<0.00020	<0.00020
	Iron (Fe)-Dissolved (mg/L)	<0.010	0.254	48.7	<0.010	90.7

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531123-31 Water 08-OCT-14 13:54 DUP4	L1531123-32 Water 09-OCT-14 12:00 MW09-22	L1531123-33 Water 09-OCT-14 12:00 FB3	L1531123-34 Water 09-OCT-14 10:45 W14103083BH02	L1531123-35 Water 09-OCT-14 10:56 W14103083BH04
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	2490		<2.0	1060	903
	Hardness (as CaCO3) (mg/L)	1550	900	<0.50	643	517
	pH (pH)	7.63		5.39	8.01	8.29
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	181		<2.0	210	218
	Ammonia, Total (as N) (mg/L)	1.06		<0.0050	0.0174	
	Chloride (CI) (mg/L)	<10 DLA		<0.50	<5.0 DLA	<2.5
	Fluoride (F) (mg/L)	<0.40		<0.020	<0.20	0.17
	Nitrate (as N) (mg/L)	<0.10		<0.0050	0.500	3.07
	Nitrite (as N) (mg/L)	<0.020		<0.0010	<0.010	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	1.50		<0.050	0.236	
	Sulfate (SO4) (mg/L)	1540		<0.50	421	291
	Sulphide as S (mg/L)	<0.020		<0.020	<0.020	
	Anion Sum (meq/L)	35.6		<0.10	13.0	10.6
	Cation Sum (meq/L)	34.5		<0.10	13.3	10.9
	Cation - Anion Balance (%)	-1.6		0.0	1.3	1.2
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.050		<0.0050		<0.0050
	Cyanide, Total (mg/L)	0.133		<0.0050		<0.0050
	Thiocyanate (SCN) (mg/L)	<0.50		<0.50	<0.50	
	Cyanide, Free (mg/L)	<0.050		<0.0050		<0.0050
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)	36.9		<0.50		
	Total Organic Carbon (mg/L)	6.19		<0.50	5.36	
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD DLA	FIELD	FIELD	FIELD	FIELD
	Aluminum (AI)-Dissolved (mg/L)	<0.010	0.0250	<0.0010	0.0018	0.0021
	Antimony (Sb)-Dissolved (mg/L)	0.527	0.00027	<0.00010	0.00024	0.00024
	Arsenic (As)-Dissolved (mg/L)	0.730	0.00486	<0.00010	0.00312	0.00357
	Barium (Ba)-Dissolved (mg/L)	0.0423	0.0437	<0.000050	0.114	0.264
	Beryllium (Be)-Dissolved (mg/L)	<0.0010	<0.00010	<0.00010	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	<0.0050	<0.00050	<0.00050	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	<0.10 DLA	0.074	<0.010	0.017	0.016
	Cadmium (Cd)-Dissolved (mg/L)	0.00114	0.000040	<0.000010	0.000296	0.00424
	Calcium (Ca)-Dissolved (mg/L)	504	294	<0.050	164	140
	Chromium (Cr)-Dissolved (mg/L)	<0.0010	0.00047	<0.00010	0.00019	0.00011
	Cobalt (Co)-Dissolved (mg/L)	0.0060	0.0171	<0.00010	<0.00010	<0.00010
	Copper (Cu)-Dissolved (mg/L)	<0.0020	0.00115	0.00027	0.00272	0.00324
	Iron (Fe)-Dissolved (mg/L)	0.247	28.5	<0.010	<0.010	<0.010

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531123-36 Water 09-OCT-14 15:56 MW09-08	L1531123-37 Water 09-OCT-14 13:58 MP09-04	L1531123-38 Water 09-OCT-14 11:33 MP09-05	L1531123-39 Water 09-OCT-14 12:00 DUP 5	L1531123-40 Water 09-OCT-14 10:42 MW09-21
Grouping	Analyte					
WATER	, alalyto					
Physical Tests	Conductivity (uS/cm)	400	005	0540	0540	4070
Tilyologi Toolo	Hardness (as CaCO3) (mg/L)	198	835	2510	2510	1670
	pH (pH)	101 7.63	494	1460	1480	1010
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	112	7.99 179	7.12 224	7.04	7.29 336
	Ammonia, Total (as N) (mg/L)	2.05	<0.0050	12.1	11.2	10.7
	Chloride (CI) (mg/L)	<0.50	<0.50	<10 DLA	<10 DLA	<5.0
	Fluoride (F) (mg/L)	0.217	0.038	<0.40	<0.40	<0.20
	Nitrate (as N) (mg/L)	0.0536	0.170	0.35	0.24	0.498
	Nitrite (as N) (mg/L)	<0.0010	<0.0010	0.027	0.035	0.019
	Total Kjeldahl Nitrogen (mg/L)	2.75	0.156	14.7	15.3	16.0
	Sulfate (SO4) (mg/L)	234	292	1840	1420	688
	Sulphide as S (mg/L)	0.065	<0.020	0.021	<0.020	0.044
	Anion Sum (meq/L)	7.13	9.67	42.8	34.0	21.1
	Cation Sum (meq/L)	4.22	10.2	38.2	38.6	24.8
	Cation - Anion Balance (%)	-25.6	2.7	-5.8	6.3	8.1
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.010	<0.0050	<0.010	0.029	0.0058
	Cyanide, Total (mg/L)	<0.010	<0.0050	0.244	0.307 DLM	0.0140
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50	2.50	2.44	<0.50
	Cyanide, Free (mg/L)	<0.010	<0.0050	<0.010	0.023	0.0062
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)	22.7	35.7	43.3	45.2	62.4
	Total Organic Carbon (mg/L)	21.9	10.7	28.9	15.0	30.0
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (AI)-Dissolved (mg/L)	0.0901	0.0017	0.0354	0.0336	0.0965
	Antimony (Sb)-Dissolved (mg/L)	0.00028	0.00170	0.00048	0.00042	0.00024
	Arsenic (As)-Dissolved (mg/L)	0.136	0.00105	0.0963	0.0956	0.117
	Barium (Ba)-Dissolved (mg/L)	0.101	0.0287	0.122	0.123	0.0892 DLA
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020 DLA	<0.00020 DLA	<0.00020 DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0010	<0.0010	<0.0010
	Boron (B)-Dissolved (mg/L)	<0.010	0.012	0.085	0.077	0.037
	Cadmium (Cd)-Dissolved (mg/L)	<0.000010	0.000040	0.000295	0.000263	0.000095
	Calcium (Ca)-Dissolved (mg/L)	30.5	119	471	477	318
	Chromium (Cr)-Dissolved (mg/L)	0.00117	0.00032	0.00094	0.00084	0.00158
	Cobalt (Co)-Dissolved (mg/L)	0.00080	0.00015	0.0160	0.0159	0.0128
	Copper (Cu)-Dissolved (mg/L)	<0.00020	0.00261	0.00115	0.00112	0.00061
	Iron (Fe)-Dissolved (mg/L)	34.4	<0.010	69.1	71.6	50.8

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531123-41 Water 09-OCT-14 09:15 MW09-24	L1531123-42 Water 09-OCT-14 15:10 MP09-12	L1531123-43 Water 09-OCT-14 15:50 MP09-11	L1531123-44 Water 08-OCT-14 10:02 MP09-02	L1531123-45 Water 08-OCT-14 MW09-06
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	968	749	1100	315	1760
	Hardness (as CaCO3) (mg/L)	574	434	626	160	1080
	pH (pH)	8.00	8.21	8.09	7.90	7.98
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	201	421	695	53.2	127
	Ammonia, Total (as N) (mg/L)	0.0080	4.49	6.49	0.0091	1.22
	Chloride (CI) (mg/L)	<5.0	<0.50	<5.0 DLA	<0.50	<5.0 DLA
	Fluoride (F) (mg/L)	<0.20 DLA	0.328	0.36	0.048	0.26
	Nitrate (as N) (mg/L)	2.94	0.0149	<0.050	0.0636	<0.050
	Nitrite (as N) (mg/L)	0.016	0.0207	<0.010	<0.0010	<0.010
	Total Kjeldahl Nitrogen (mg/L)	0.228	6.07	12.3	0.477	1.65
	Sulfate (SO4) (mg/L)	355	27.8	64.2	101	989
	Sulphide as S (mg/L)	<0.020	<0.020	0.029	<0.020	<0.020
	Anion Sum (meq/L)	11.6	9.00	15.2	3.18	23.1
	Cation Sum (meq/L)	11.9	9.62	15.4	3.40	23.5
	Cation - Anion Balance (%)	1.1	3.3	0.7	3.3	0.7
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cyanide, Total (mg/L)	0.0235	0.0093	0.0117	<0.0050	<0.0050
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Cyanide, Free (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)	42.3	89.4	134	10.4	20.7
	Total Organic Carbon (mg/L)	9.02	19.4	53.9	9.21	6.68
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (AI)-Dissolved (mg/L)	0.0017	0.0026	0.0068	0.0132	<0.0020
	Antimony (Sb)-Dissolved (mg/L)	0.00021	0.0417	0.0434	0.00051	0.254
	Arsenic (As)-Dissolved (mg/L)	0.00157	5.66	18.8	0.00305	0.106
	Barium (Ba)-Dissolved (mg/L)	0.0538	0.0434	0.119	0.0308	0.00685 DLA
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00050 DLA	<0.00010	<0.00020 DLA
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0025	<0.00050	<0.0010
	Boron (B)-Dissolved (mg/L)	0.013	0.064	<0.050 DLA	<0.010	0.158
	Cadmium (Cd)-Dissolved (mg/L)	0.000055	0.000352	<0.000050	0.000027	0.00621
	Calcium (Ca)-Dissolved (mg/L)	152	102	145	47.5	342 DLA
	Chromium (Cr)-Dissolved (mg/L)	0.00030	0.00037	0.00130	<0.00010	<0.00020
	Cobalt (Co)-Dissolved (mg/L)	0.00042	0.00165	0.00210 DLA	0.00015	0.00123
	Copper (Cu)-Dissolved (mg/L)	0.00852	0.00093	<0.0010	0.00092	0.00644
	Iron (Fe)-Dissolved (mg/L)	<0.010	4.19	18.4	0.289	<0.010

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531123-46 Water 09-OCT-14 12:00 MW09-22 D- METALS TEST	L1531123-47 Water 09-OCT-14 12:00 DUP 5 D-METALS TEST	L1531123-48 Water 09-OCT-14 11:33 MP09-05 D- METALS TEST	L1531123-49  Water 09-OCT-14 15:50  MP09-11 D- METALS TEST	
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)					
	Hardness (as CaCO3) (mg/L)	915	1470	1480	656	
	pH (pH)					
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)					
	Ammonia, Total (as N) (mg/L)					
	Chloride (CI) (mg/L)					
	Fluoride (F) (mg/L)					
	Nitrate (as N) (mg/L)					
	Nitrite (as N) (mg/L)					
	Total Kjeldahl Nitrogen (mg/L)					
	Sulfate (SO4) (mg/L)					
	Sulphide as S (mg/L)					
	Anion Sum (meq/L)					
	Cation Sum (meq/L)					
	Cation - Anion Balance (%)					
Cyanides	Cyanide, Weak Acid Diss (mg/L)					
	Cyanide, Total (mg/L)					
	Thiocyanate (SCN) (mg/L)					
	Cyanide, Free (mg/L)					
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)					
	Total Organic Carbon (mg/L)					
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	
	Aluminum (Al)-Dissolved (mg/L)	0.0229	0.0318	0.0307	0.0071	
	Antimony (Sb)-Dissolved (mg/L)	0.00026	0.00047	0.00045	0.0421	
	Arsenic (As)-Dissolved (mg/L)	0.00433	0.101	0.0838	19.3	
	Barium (Ba)-Dissolved (mg/L)	0.0433	0.123 DLA	0.121 DLA	0.119 DLA	
	Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00020 DLA	<0.00020 DLA	<0.00050 DLA	
	Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.0010	<0.0010	<0.0025	
	Boron (B)-Dissolved (mg/L)	0.078	0.085	0.087	<0.050 DLA	
	Cadmium (Cd)-Dissolved (mg/L)	0.000037	0.000254	0.000265	<0.000050	
	Calcium (Ca)-Dissolved (mg/L)	300	474	477	151	
	Chromium (Cr)-Dissolved (mg/L)	0.00042	0.00086	0.00078	0.00127	
	Cobalt (Co)-Dissolved (mg/L)	0.0168	0.0159	0.0156	0.00207 DLA	
	Copper (Cu)-Dissolved (mg/L)	0.00097	0.00111	0.00106	<0.0010	
	Iron (Fe)-Dissolved (mg/L)	28.2	69.5	68.2	19.6	

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531123-1 Water 07-OCT-14 15:03 CH-P-13-05/50	L1531123-2 Water 07-OCT-14 13:00 GLL07-03	L1531123-3 Water 07-OCT-14 14:42 GCI-HA-03A	L1531123-4 Water 07-OCT-14 18:30 GSI-DC-03B	L1531123-5 Water 07-OCT-14 17:36 MW09-18
Grouping	Analyte					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	0.00636	0.000191	0.000479	0.000165	<0.00010
	Lithium (Li)-Dissolved (mg/L)	0.0409	0.0111	0.00063	0.00684	0.0217
	Magnesium (Mg)-Dissolved (mg/L)	177	25.1	48.3	59.3	234
	Manganese (Mn)-Dissolved (mg/L)	36.7	2.26	4.71	1.95	0.597
	Mercury (Hg)-Dissolved (mg/L)	0.000015	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00032	0.000089	0.00329	0.00236	<0.00010
	Nickel (Ni)-Dissolved (mg/L)	0.0141	0.00831	0.0257	0.00892	<0.0010
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	4.86	1.62	2.16	2.94	7.09
	Selenium (Se)-Dissolved (mg/L)	<0.00050	<0.00010	<0.00010	<0.00010	0.00042
	Silicon (Si)-Dissolved (mg/L)	7.18	2.44	7.31	7.03	5.08
	Silver (Ag)-Dissolved (mg/L)	<0.000050	<0.000010	<0.000010	<0.000010	<0.000020
	Sodium (Na)-Dissolved (mg/L)	8.67	5.38	5.00	5.20	12.1
	Strontium (Sr)-Dissolved (mg/L)	0.560	0.161	0.407	0.439	1.07
	Sulfur (S)-Dissolved (mg/L)	614	135	116	140	448
	Thallium (TI)-Dissolved (mg/L)	0.000530	0.000138	<0.000010	0.000024	0.000293
	Tin (Sn)-Dissolved (mg/L)	<0.00050	<0.00010	0.00046	0.00058	<0.00020
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.010	<0.010	<0.010	<0.020
	Uranium (U)-Dissolved (mg/L)	0.000634	0.000037	0.000117	0.00233	0.00849
	Vanadium (V)-Dissolved (mg/L)	<0.0050	<0.0010	<0.0010	<0.0010	<0.0020
	Zinc (Zn)-Dissolved (mg/L)	32.7	5.87	0.0282	0.136	0.0029

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531123-6 Water 07-OCT-14 16:30 MW09-17	L1531123-7 Water 07-OCT-14 15:10 GSI-HA-04A	L1531123-8 Water 07-OCT-14 14:54 GSI-HA-05A	L1531123-9 Water 07-OCT-14 14:20 GSI-HA-01A	L1531123-10 Water 07-OCT-14 14:33 GSI-HA-02A
Grouping	Analyte					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	<0.00010	0.000449	0.000166	0.000312	0.000186
	Lithium (Li)-Dissolved (mg/L)	0.0216	0.00116	0.00177	0.00769	0.00209
	Magnesium (Mg)-Dissolved (mg/L)	247	9.12	41.1	55.1	33.0
	Manganese (Mn)-Dissolved (mg/L)	O.00010	0.477	3.17	0.120	4.48
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	O.00010	0.00114	0.000290	0.00154	0.00235
	Nickel (Ni)-Dissolved (mg/L)	<0.0010	0.00466	0.00846	0.00488	0.0142
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	0.088	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	6.96	0.24	1.85	3.69	3.25
	Selenium (Se)-Dissolved (mg/L)	0.00024	0.00010	<0.00010	<0.00010	<0.00010
	Silicon (Si)-Dissolved (mg/L)	5.05	9.04	6.59	5.96	4.24
	Silver (Ag)-Dissolved (mg/L)	OLA <0.000020	<0.000010	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	12.4	2.12	5.40	4.85	3.33
	Strontium (Sr)-Dissolved (mg/L)	1.08	0.0959	0.307	0.370	0.272
	Sulfur (S)-Dissolved (mg/L)	457	23.3	112	114	88.1
	Thallium (TI)-Dissolved (mg/L)	0.000107	<0.000010	0.000011	0.000014	0.000014
	Tin (Sn)-Dissolved (mg/L)	<0.00020	0.00016	0.00025	0.00012	0.00017
	Titanium (Ti)-Dissolved (mg/L)	OLA <0.020	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.00833	0.000043	0.000039	0.00135	0.000360
	Vanadium (V)-Dissolved (mg/L)	<0.0020	<0.0010	<0.0010	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	<0.0020 <0.0020	0.0115	0.0154	0.0042	0.0271

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531123-11 Water 07-OCT-14 14:08 GSI-DC-02B	L1531123-12 Water 07-OCT-14 12:27 MW09-16	L1531123-13 Water 07-OCT-14 11:00 MW09-19	L1531123-14 Water 07-OCT-14 11:00 DUP2	L1531123-15 Water 07-OCT-14 15:03 DUP-1
Grouping	Analyte					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	0.000223	0.00451	<0.00010	<0.00010	0.00623
	Lithium (Li)-Dissolved (mg/L)	0.00167	0.0115	0.0098	0.0103	0.0421
	Magnesium (Mg)-Dissolved (mg/L)	46.6	137	150	148	175
	Manganese (Mn)-Dissolved (mg/L)	2.89	0.0297	5.90	5.76	36.0
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	0.000017
	Molybdenum (Mo)-Dissolved (mg/L)	0.000958	0.00011	<0.00010	<0.00010	0.00032
	Nickel (Ni)-Dissolved (mg/L)	0.0111	0.0046	0.0017	0.0017	0.0126
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	0.248	0.249	<0.050
	Potassium (K)-Dissolved (mg/L)	3.09	5.81	8.06	8.14	4.85
	Selenium (Se)-Dissolved (mg/L)	<0.00010	0.00023	<0.00020	<0.00020	<0.00050
	Silicon (Si)-Dissolved (mg/L)	6.97	4.77	9.41	9.49	7.10
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000020	<0.000020	<0.000020	<0.000050
	Sodium (Na)-Dissolved (mg/L)	4.94	8.59	14.5	14.6	8.20
	Strontium (Sr)-Dissolved (mg/L)	0.305	0.688	0.982	1.08	0.525
	Sulfur (S)-Dissolved (mg/L)	103	334	312	313	607
	Thallium (TI)-Dissolved (mg/L)	<0.000010	0.000258	<0.000020	<0.000020	0.000543
	Tin (Sn)-Dissolved (mg/L)	0.00025	<0.00020	<0.00020	<0.00020	<0.00050
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.020	<0.020	<0.020	<0.050
	Uranium (U)-Dissolved (mg/L)	0.000397	0.00411	0.000436	0.000434	0.000649
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0020	<0.0020	<0.0020	<0.0050
	Zinc (Zn)-Dissolved (mg/L)	0.0173	4.40	<0.0020	<0.0020	31.4

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531123-16 Water 07-OCT-14 12:27 FB1	L1531123-17 Water 07-OCT-14 13:10 GSI-DC-01B	L1531123-18 Water 08-OCT-14 18:37 W14103083BH03	L1531123-19 Water 08-OCT-14 15:07 GIS-PC-03B	L1531123-20 Water 08-OCT-14 13:40 GIS-PC-04B
Grouping	Analyte					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.00209	<0.000050	0.000779	0.000335
	Lithium (Li)-Dissolved (mg/L)	<0.00050	0.00066	0.00081	0.00632	0.00088
	Magnesium (Mg)-Dissolved (mg/L)	<0.10	23.4	31.8	97.7	18.5
	Manganese (Mn)-Dissolved (mg/L)	<0.000050	0.0239	2.07	2.16	2.85
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.00818	0.000095	0.0251	0.00964
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.0260	<0.00050	0.116	0.0646
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	0.232	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	<0.10	4.40	1.58	5.11	2.02
	Selenium (Se)-Dissolved (mg/L)	<0.00010	<0.00010	0.00018	0.00011	<0.00010
	Silicon (Si)-Dissolved (mg/L)	<0.050	3.76	10.9	8.94	7.48
	Silver (Ag)-Dissolved (mg/L)	<0.000010	0.000011	<0.000010	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	<0.050	4.16	9.54	20.7	5.77
	Strontium (Sr)-Dissolved (mg/L)	<0.00020	0.240	0.397	0.794	0.423
	Sulfur (S)-Dissolved (mg/L)	<0.50	65.9	53.0	120	30.1
	Thallium (TI)-Dissolved (mg/L)	<0.000010	0.000019	<0.000010	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	<0.00010	0.00399	<0.00010	0.00011	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	<0.000010	0.000415	0.000124	0.00241	0.000143
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	0.0021	<0.0010	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	<0.0010	0.0305	0.0021	0.0509	0.0069

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531123-21 Water 08-OCT-14 14:07 GIS-PC-05B	L1531123-22 Water 08-OCT-14 11:05 GLL07-02	L1531123-23 Water 08-OCT-14 17:02 MW09-05	L1531123-24 Water 08-OCT-14 15:22 MW09-22	L1531123-25 Water 08-OCT-14 18:35 MW09-23
Grouping	Analyte					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	0.000302	0.000339	0.00309		<0.00025
	Lithium (Li)-Dissolved (mg/L)	<0.00050	0.00150	0.00269		<0.0025
	Magnesium (Mg)-Dissolved (mg/L)	13.3	11.9	45.1		65.4
	Manganese (Mn)-Dissolved (mg/L)	0.00416	0.00251	6.24		21.7
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	0.000013	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.000452	0.000085	0.000646		0.00223
	Nickel (Ni)-Dissolved (mg/L)	0.00161	0.00062	0.0103		<0.0025
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050		<0.050
	Potassium (K)-Dissolved (mg/L)	0.70	0.60	15.5		6.40
	Selenium (Se)-Dissolved (mg/L)	<0.00010	<0.00010	0.00011		<0.00050
	Silicon (Si)-Dissolved (mg/L)	6.07	6.51	7.10		6.01
	Silver (Ag)-Dissolved (mg/L)	<0.000010	0.000013	0.000045		<0.000050
	Sodium (Na)-Dissolved (mg/L)	3.91	3.71	37.2		23.7
	Strontium (Sr)-Dissolved (mg/L)	0.331	0.274	0.592		0.519
	Sulfur (S)-Dissolved (mg/L)	31.8	30.7	302		197
	Thallium (TI)-Dissolved (mg/L)	0.000010	<0.000010	0.000208		<0.00050
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	0.00032		<0.00050
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.010		<0.050
	Uranium (U)-Dissolved (mg/L)	0.000157	0.000222	0.000455		0.00377
	Vanadium (V)-Dissolved (mg/L)	0.0014	<0.0010	<0.0010		<0.0050
	Zinc (Zn)-Dissolved (mg/L)	0.0068	0.0174	0.732		0.0182

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531123-26 Water 08-OCT-14 12:38 MW09-04	L1531123-27 Water 08-OCT-14 13:54 MW09-03	L1531123-28 Water 08-OCT-14 10:15 MW09-02	L1531123-29 Water 08-OCT-14 13:54 FB2	L1531123-30 Water 08-OCT-14 18:37 DUP-3
Grouping	Analyte					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	0.00028	<0.00050	<0.00025	<0.000050	<0.000050
	Lithium (Li)-Dissolved (mg/L)	0.0055	<0.0050	0.0294	<0.00050	0.00116
	Magnesium (Mg)-Dissolved (mg/L)	110	74.6	92.2	<0.10	31.9
	Manganese (Mn)-Dissolved (mg/L)	4.64	55.2	34.7	<0.000050	2.02
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00739	0.00336	0.00560	<0.000050	0.000126
	Nickel (Ni)-Dissolved (mg/L)	<0.0010	<0.0050	0.0033	<0.00050	<0.00050
	Phosphorus (P)-Dissolved (mg/L)	0.081	0.057	<0.050	<0.050	0.224
	Potassium (K)-Dissolved (mg/L)	40.8	16.6	83.7	<0.10	1.46
	Selenium (Se)-Dissolved (mg/L)	<0.00020	<0.0010	<0.00050	<0.00010	0.00020
	Silicon (Si)-Dissolved (mg/L)	12.0	16.0	6.87	<0.050	10.6
	Silver (Ag)-Dissolved (mg/L)	<0.000020	<0.00010	<0.000050	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	52.3	24.1	86.9	<0.050	9.11
	Strontium (Sr)-Dissolved (mg/L)	1.37	1.47	1.07	<0.00020	0.377
	Sulfur (S)-Dissolved (mg/L)	561	520	657	<0.50	53.9
	Thallium (TI)-Dissolved (mg/L)	0.000109	<0.00010	0.000256	<0.000010	<0.000010
	Tin (Sn)-Dissolved (mg/L)	0.00064	<0.0010	<0.00050	<0.00010	<0.00010
	Titanium (Ti)-Dissolved (mg/L)	<0.020	<0.10 DLA	<0.050	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000238	0.00285	0.000528	<0.000010	0.000130
	Vanadium (V)-Dissolved (mg/L)	<0.0020	<0.010	<0.0050	<0.0010	0.0020
	Zinc (Zn)-Dissolved (mg/L)	0.132	<0.010	0.333	<0.0010	0.0019

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

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#### ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID L1531123-31 L1531123-32 L1531123-33 L1531123-34 L1531123-35 Description Water Water Water Water Water 08-OCT-14 09-OCT-14 09-OCT-14 09-OCT-14 09-OCT-14 **Sampled Date** Sampled Time 13:54 12:00 12:00 10:45 10:56 DUP4 MW09-22 W14103083BH02 W14103083BH04 FB3 Client ID Grouping **Analyte WATER Dissolved Metals** Lead (Pb)-Dissolved (mg/L) <0.00050 < 0.000050 < 0.000050 < 0.000050 < 0.000050 Lithium (Li)-Dissolved (mg/L) < 0.0050 0.00067 < 0.00050 0.00123 0.00123 Magnesium (Mg)-Dissolved (mg/L) 71.8 40.3 < 0.10 56.7 40.9 Manganese (Mn)-Dissolved (mg/L) < 0.000050 53.2 6.55 0.0118 0.00274 Mercury (Hg)-Dissolved (mg/L) < 0.000010 < 0.000010 < 0.000010 < 0.000010 < 0.000010 Molybdenum (Mo)-Dissolved (mg/L) 0.000093 < 0.000050 0.00128 0.00109 0.00246 Nickel (Ni)-Dissolved (mg/L) <0.0050 0.00211 < 0.00050 0.00061 0.00056 Phosphorus (P)-Dissolved (mg/L) 0.070 < 0.050 < 0.050 < 0.050 < 0.050 Potassium (K)-Dissolved (mg/L) 4.56 < 0.10 3.18 2.63 16.3 DLA Selenium (Se)-Dissolved (mg/L) <0.0010 0.00032 < 0.00010 0.00060 0.00293 Silicon (Si)-Dissolved (mg/L) 4.49 < 0.050 5.37 4.95 15.8 Silver (Ag)-Dissolved (mg/L) < 0.00010 0.000021 < 0.000010 < 0.000010 < 0.000010 Sodium (Na)-Dissolved (mg/L) 24.4 71.3 < 0.050 8.79 11.7 Strontium (Sr)-Dissolved (mg/L) 1.52 0.752 < 0.00020 0.669 0.612 Sulfur (S)-Dissolved (mg/L) 508 284 < 0.50 144 101 Thallium (TI)-Dissolved (mg/L) <0.00010 < 0.000010 < 0.000010 < 0.000010 < 0.000010 DLA Tin (Sn)-Dissolved (mg/L) <0.0010 0.00016 < 0.00010 0.00042 0.00062 DLA Titanium (Ti)-Dissolved (mg/L) <0.10 <0.010 < 0.010 < 0.010 < 0.010 Uranium (U)-Dissolved (mg/L) 0.00266 0.000847 < 0.000010 0.00544 0.00755 DLA Vanadium (V)-Dissolved (mg/L) <0.010 <0.0010 <0.0010 <0.0010 <0.0010 DLA Zinc (Zn)-Dissolved (mg/L) <0.010 0.0015 < 0.0010 0.0014 0.0083

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531123-36 Water 09-OCT-14 15:56 MW09-08	L1531123-37 Water 09-OCT-14 13:58 MP09-04	L1531123-38 Water 09-OCT-14 11:33 MP09-05	L1531123-39 Water 09-OCT-14 12:00 DUP 5	L1531123-40 Water 09-OCT-14 10:42 MW09-21
Grouping	Analyte					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	0.000144	<0.000050	<0.00010	<0.00010	<0.00010
	Lithium (Li)-Dissolved (mg/L)	<0.00050	0.00069	<0.0010	<0.0010	<0.0010
	Magnesium (Mg)-Dissolved (mg/L)	6.12	48.1	68.9	70.8	52.8
	Manganese (Mn)-Dissolved (mg/L)	2.58	0.000472	15.3	15.1	5.21
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	<0.000050	0.000219	0.00055	0.00051	0.00039
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	<0.00050	0.0052	0.0050	0.0018
	Phosphorus (P)-Dissolved (mg/L)	0.116	<0.050	<0.050	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	1.32	1.63	8.75	8.89	11.3
	Selenium (Se)-Dissolved (mg/L)	0.00010	0.00019	<0.00020	0.00020	0.00030
	Silicon (Si)-Dissolved (mg/L)	10.1	5.38	6.63	6.82	5.53
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000020	<0.000020	<0.000020
	Sodium (Na)-Dissolved (mg/L)	1.30	6.52	83.8	81.0	13.6
	Strontium (Sr)-Dissolved (mg/L)	0.131	0.366	1.25	1.15	0.838
	Sulfur (S)-Dissolved (mg/L)	0.68	103	474	488	231
	Thallium (TI)-Dissolved (mg/L)	<0.000010	<0.000010	0.000021	<0.000020	<0.000020
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00020	<0.00020	<0.00020
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	<0.020	<0.020	<0.020
	Uranium (U)-Dissolved (mg/L)	0.000088	0.00192	0.00161	0.00142	0.000670
	Vanadium (V)-Dissolved (mg/L)	0.0040	<0.0010	0.0030	0.0030	0.0061
	Zinc (Zn)-Dissolved (mg/L)	0.0012	0.0018	0.0147	0.0144	0.0035

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	·		L1531123-42 Water 09-OCT-14 15:10 MP09-12	L1531123-43 Water 09-OCT-14 15:50 MP09-11	L1531123-44 Water 08-OCT-14 10:02 MP09-02	L1531123-45 Water 08-OCT-14 MW09-06
Grouping	Analyte					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	<0.000050	0.00651	0.00322	0.000064	0.00034
	Lithium (Li)-Dissolved (mg/L)	0.00091	0.00252	0.0031	0.00080	0.0096
	Magnesium (Mg)-Dissolved (mg/L)	47.0	43.5	64.1	10.1	55.4
	Manganese (Mn)-Dissolved (mg/L)	0.000705	2.66	4.84	0.0195	5.64
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	0.000011
	Molybdenum (Mo)-Dissolved (mg/L)	0.000323	0.00294	0.00864	0.000060	0.00425
	Nickel (Ni)-Dissolved (mg/L)	<0.00050	0.00534	0.0096	<0.00050	0.0016
	Phosphorus (P)-Dissolved (mg/L)	<0.050	0.127	0.180	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	1.47	5.34	10.3	0.50	20.5
	Selenium (Se)-Dissolved (mg/L)	0.00038	0.00011	<0.00050	<0.00010	<0.00020
	Silicon (Si)-Dissolved (mg/L)	5.24	10.5	13.6	7.21	7.46
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	<0.00050	<0.000010	<0.000020
	Sodium (Na)-Dissolved (mg/L)	8.41	3.84	24.1	3.76	23.7
	Strontium (Sr)-Dissolved (mg/L)	0.443	0.591	0.723	0.343	0.706
	Sulfur (S)-Dissolved (mg/L)	118	10.1	24.7	35.3	342
	Thallium (TI)-Dissolved (mg/L)	<0.000010	0.000109	<0.00050	<0.000010	0.000358
	Tin (Sn)-Dissolved (mg/L)	0.00016	<0.00010	<0.00050	<0.00010	<0.00020
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	O.050	<0.010	<0.020
	Uranium (U)-Dissolved (mg/L)	0.00436	0.000644	0.00104	0.000080	0.00128
	Vanadium (V)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0050	<0.0010	<0.0020
	Zinc (Zn)-Dissolved (mg/L)	0.0015	0.0367	0.0358	0.0029	0.104

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531123-46 Water 09-OCT-14 12:00 MW09-22 D- METALS TEST	L1531123-47 Water 09-OCT-14 12:00 DUP 5 D-METALS TEST	L1531123-48 Water 09-OCT-14 11:33 MP09-05 D- METALS TEST	L1531123-49 Water 09-OCT-14 15:50 MP09-11 D- METALS TEST	
Grouping	Analyte					
WATER						
Dissolved Metals	Lead (Pb)-Dissolved (mg/L)	<0.000050	<0.00010	<0.00010	0.00226	
	Lithium (Li)-Dissolved (mg/L)	0.00062	<0.0010	<0.0010	0.0034	
	Magnesium (Mg)-Dissolved (mg/L)	40.6	69.3	70.8	67.5	
	Manganese (Mn)-Dissolved (mg/L)	6.35	15.0	14.8	4.96	
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	
	Molybdenum (Mo)-Dissolved (mg/L)	0.000098	0.00061	0.00057	0.00913	
	Nickel (Ni)-Dissolved (mg/L)	0.00207	0.0051	0.0049	0.0097	
	Phosphorus (P)-Dissolved (mg/L)	<0.050	<0.050	<0.050	0.128	
	Potassium (K)-Dissolved (mg/L)	4.59	8.85	8.94	11.2	
	Selenium (Se)-Dissolved (mg/L)	0.00033	0.00026	<0.00020	<0.00050	
	Silicon (Si)-Dissolved (mg/L)	4.47	6.71	6.71	13.5	
	Silver (Ag)-Dissolved (mg/L)	0.000023	<0.000020	<0.000020	<0.000050	
	Sodium (Na)-Dissolved (mg/L)	70.5	82.3	80.2	25.1	
	Strontium (Sr)-Dissolved (mg/L)	0.785	1.26	1.25	0.844	
	Sulfur (S)-Dissolved (mg/L)	286	480	495	29.1	
	Thallium (TI)-Dissolved (mg/L)	<0.000010	0.000024	<0.000020	<0.000050	
	Tin (Sn)-Dissolved (mg/L)	0.00015	<0.00020	<0.00020	<0.00050	
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.020	<0.020	<0.050	
	Uranium (U)-Dissolved (mg/L)	0.000848	0.00164	0.00161	0.00110	
	Vanadium (V)-Dissolved (mg/L)	<0.0010	0.0031	0.0025	<0.0050	
	Zinc (Zn)-Dissolved (mg/L)	0.0016	0.0156	0.0142	0.0347	

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

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# **Reference Information**

#### **Qualifiers for Individual Samples Listed:**

Sample Number	Client Sample ID	Qualifier	Description
L1531123-10	GSI-HA-02A	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-11	GSI-DC-02B	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-17	GSI-DC-01B	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-19	GIS-PC-03B	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-20	GIS-PC-04B	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-21	GIS-PC-O5B	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-3	GCI-HA-03A	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-31	DUP4	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-32	MW09-22	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-35	W14103083BH04	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-4	GSI-DC-03B	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-46	MW09-22 D-METALS TEST	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-47	DUP 5 D-METALS TEST	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-48	MP09-05 D-METALS TEST	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-49	MP09-11 D-METALS TEST	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-7	GSI-HA-04A	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-8	GSI-HA-05A	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531123-9	GSI-HA-01A	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

#### QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Aluminum (AI)-Dissolved	DLA	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Duplicate	Antimony (Sb)-Dissolved	DLA	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Duplicate	Arsenic (As)-Dissolved	DLA	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Duplicate	Beryllium (Be)-Dissolved	DLA	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Duplicate	Boron (B)-Dissolved	DLA	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Duplicate	Chromium (Cr)-Dissolved	DLA	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Duplicate	Lead (Pb)-Dissolved	DLA	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19,

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# **Reference Information**

	Parameter	Qualifier	Applies to Sample Number(s)
			-2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Duplicate	Nickel (Ni)-Dissolved	DLA	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, - 32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Duplicate	Selenium (Se)-Dissolved	DLA	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Duplicate	Silver (Ag)-Dissolved	DLA	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Duplicate	Thallium (TI)-Dissolved	DLA	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Duplicate	Tin (Sn)-Dissolved	DLA	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Duplicate	Titanium (Ti)-Dissolved	DLA	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Duplicate	Vanadium (V)-Dissolved	DLA	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Duplicate	Zinc (Zn)-Dissolved	DLA	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Duplicate	Cadmium (Cd)-Dissolved	DLM	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1531123-1, -11, -12, -13, -14, -15, -16, -18, -2, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -33, -34, -35, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -5, -6, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1531123-1, -11, -12, -13, -14, -15, -16, -18, -2, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -33, -34, -35, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -5, -6, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1531123-1, -11, -12, -13, -14, -15, -16, -18, -2, -22, -23, -24, -25, -26, -27, -28, -29, -3, -30, -31, -33, -34, -35, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -5, -6, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1531123-10
Matrix Spike	Total Organic Carbon	MS-B	L1531123-1, -12, -13, -14, -15, -16, -18, -2, -22, -24, -26, -27, -28, -29, -30, -31, -33, -34, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -5, -6
Matrix Spike	Total Organic Carbon	MS-B	L1531123-1, -12, -13, -14, -15, -16, -18, -2, -22, -24, -26, -27, -28, -29, -30, -31, -33, -34, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -5, -6
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9

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# **Reference Information**

	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Matrix Spike	Total Organic Carbon	MS-B	L1531123-23, -25
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Matrix Spike	Silicon (Si)-Dissolved	MS-B	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Matrix Spike	Total Inorganic Carbon	MS-B	L1531123-28
Matrix Spike	Total Kjeldahl Nitrogen	MS-B	L1531123-24, -26, -27, -28, -29, -31, -33, -34, -36, -37, -38, -39, -40, -41, -42, -43, -44, -45
Matrix Spike	Total Kjeldahl Nitrogen	MS-B	L1531123-24, -26, -27, -28, -29, -31, -33, -34, -36, -37, -38, -39, -40, -41, -42, -43, -44, -45
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1531123-1, -10, -11, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -25, -26, -27, -28, -29, -3, -30, -31, -32, -33, -34, -35, -36, -37, -38, -39, -4, -40, -41, -42, -43, -44, -45, -46, -47, -48, -49, -5, -6, -7, -8, -9

#### **Qualifiers for Individual Parameters Listed:**

Qualifier	Description
CNP	Cyanide test sample appears to have been preserved, but pH was <10 at time of testing. Results may be biased low, particularly for Free CN species.
DLA	Detection Limit adjusted for required dilution
DLM	Detection Limit Adjusted due to sample matrix effects.
HTD	Hold time exceeded for re-analysis or dilution, but initial testing was conducted within hold time.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

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TKNI TKN result is likely biased low due to Nitrate interference. Nitrate-N is > 10x TKN.

**Test Method References:** 

ALS Test Code Matrix Test Description Method Reference\*\*

ALK-COL-VA Water Alkalinity by Colourimetric (Automated) EPA 310.2

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

colourimetric method.

ANIONS-CL-IC-WR Water Chloride by Ion Chromatography EPA 300.1

This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19,

Dionex 2003.

ANIONS-F-IC-WR Water Fluoride by Ion Chromatography EPA 300.1

This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19,

Dionex 2003.

ANIONS-NO2-IC-WR Water Nitrite Nitrogen by Ion Chromatography EPA 300.1

This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19,

Dionex 2003. Nitrate is detected by UV absorbance.

ANIONS-NO3-IC-WR Water Nitrate Nitrogen by Ion Chromatography EPA 300.1

This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19,

Dionex 2003. Nitrate is detected by UV absorbance.

ANIONS-SO4-IC-WR Water Sulphate by Ion Chromatography EPA 300.1

This analysis is carried out using procedures adapted from EPA Method 300.1, "Determination of Inorganic Anions by Ion Chromatography", Revision 1.0, April 1999 and from "Determination of Inorganic Anions in Environmental Waters Using a Hydroxide-Selective Column", Application Note 154 v.19,

Dionex 2003.

CARBONS-TIC-VA Water Total inorganic carbon by CO2 purge APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CARBONS-TOC-VA Water Total organic carbon by combustion APHA 5310 TOTAL ORGANIC CARBON (TOC)

This analysis is carried out using procedures adapted from APHA Method 5310 "Total Organic Carbon (TOC)".

CN-FREE-CFA-VA Water Free Cyanide in water by CFA ASTM 7237

This analysis is carried out using procedures adapted from ASTM Method 7237 "Free Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion Separation and Amperometric Detection". Free cyanide is determined by in-line gas diffusion at pH 6 with final determination by colourimetric analysis.

CN-SCN-VA Water Thiocyanate by Colour APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN- M "Thiocyanate" Thiocyanate is determined by the ferric nitrate

colourimetric method.

CN-T-CFA-VA Water Total Cyanide in water by CFA ISO 14403:2002

This analysis is carried out using procedures adapted from ISO Method 14403:2002 "Determination of Total Cyanide using Flow Analysis (FIA and CFA)". Total or strong acid dissociable (SAD) cyanide is determined by in-line UV digestion along with sample distillation and final determination by colourimetric analysis. Method Limitation: This method is susceptible to interference from thiocyanate (SCN). If SCN is present in the sample, there

could be a positive interference with this method, but it would be less than 1% and could be as low as zero.

CN-WAD-CFA-VA Water Weak Acid Diss. Cyanide in water by CFA APHA 4500-CN CYANIDE

This analysis is carried out using procedures adapted from APHA Method 4500-CN I. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable (WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

FC-PCT-VA Water Conductivity (Automated)

APHA 2510 Automated

**EC-PCT-VA**Water Conductivity (Automated)
APHA 2510 Auto. Conduc.
This analysis is carried out using procedures adapted from APHA Method 2510 "Conductivity". Conductivity is determined using a conductivity.

electrode.

HARDNESS-CALC-VA Water Hardness APHA 2340B

Hardness (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

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analysis is by cold vapour atomic fluorescence spectrophotometry or atomic absorption spectrophotometry (EPA Method 245.7).

**IONBALANCE-VA** 

Water

Ion Balance Calculation

**APHA 1030E** 

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

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

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

MET-D-CCMS-VA

Water

Dissolved Metals in Water by CRC ICPMS

APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-DIS-LOW-ICP-VA

Water

Dissolved Metals in Water by ICPOES

EPA 3005A/6010B

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

NH3-F-VA

Water

Ammonia in Water by Fluorescence

J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

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

S-DIS-ICP-VA

Water

Dissolved Sulfur in Water by ICPOES

EPA SW-846 3005A/6010B

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

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

S2-T-COL-VA

Water

Total Sulphide by Colorimetric

APHA 4500-S2 Sulphide

This analysis is carried out using procedures adapted from APHA Method 4500-S2 "Sulphide". Sulphide is determined using the methlyene blue colourimetric method.

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.

\*\* 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
WR	ALS ENVIRONMENTAL - WHITEHORSE, YUKON, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA
Chain of Custody Numbers:	

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#### **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.



# Chain of Custody (COC) / Analytical Request Form

L1531123 COTE

COC Number: 1 -

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Canada Toll Free: 1 800 668 9878 www.alsglobal.com

Report To	1					Report Format / Distribution								(Rus	h Tum	around	Time (	TAT) is	not availa	able for	all tests	s)		
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Contact:	Natasha Sandys				Quality Contro	Quality Control (QC) Report with Report								eived by	ed by 3pm) 50% surcharge - contact ALS to confirm TAT									
\ddress:	230 - 2237 2nd Avenue				Criteria on Report - provide details below if box checked								f received by 3pm) 100% surcharge - contact ALS to confirm TAT											
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# ALS Environmental

# Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

1531123 025

COC Number: 1 -

Page 2 of 4

	www.alsglobal.com						_	1001153-CC	DFC				<u>:</u>										
Report To			-			Report Format	/ Diagram												not ava	ilable fo	or all tes	its)	
Company:	Hemmera Environchem	Inc.		Si	elect Report F	ormat: 🕩 DF	☑EXCEL ☑	EDD (DIGITAL)		<b>∐</b> regi				eived b									
Contact:	Natasha Sandys			Q	uality Control	(QC) Report with R	eport 😿 Ye	s FNo					ys if rece	-				-					
Address:	230 - 2237 2nd Avenue			][	Criteria on Repo	rt - provide details below		_	-				. days if									m TAT	
	Whitehorse, YT				elect Distributi			□FAX		_	-		id emer		contac	t ALS 1	o confi	rm TAT	and su	rcharge			
Phone:	867-456-4865					nsandys@hemme	ra.com, rmartink	a@hemmera.com	Spec	fy Dat	e Requ	uired fo	or E2,E	_		_							
			- ··	E	mail 2	chris@elr.ca							Analysis Request Preserved (P) or Filtered and Preserved (F/P) below										
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	Dup2			İ		07-Oct-14	11:00	Water	R	R	R	R	R	R	R	R	R					9	
	Dup-1					07-Oct-14	15:03	Water	R	R	R	R	R	R	R	R	R					9	
	FB1					07-Oct-14	12:27	Water	R	R	R	R	R	R	R	R	R					9	
	GSI-DC-01B					07-Oct-14	13:10	Water	R													1	
	W14103083BH03					08-Oct-14	18:37	Water	R	R	R	R	R	R	R	R	R					9	
	GIS-PC-03B					08-Oct-14	15:07	Water	R													2	
	GIS-PC-04B					08-Oct-14	13:40	Water	R													2	
	GIS-PC-05B					08-Oct-14	14:07	Water	R													2	
	GLL07-02					08-Oct-14	11:05	Water	R	R	R	R	R	R	R	R	R					9	
	MW09-05					08-Oct-14	17:02	Water	R	R	R	R	R	R	R	R	R					9	
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	en from a Regulated DW	System?			format commo	n to Faro Mine Ren	nediation Project	. Contact client if		acks	Yes		No		Cust	ody s	eal in	tact	Yes		No		
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Are samples for human drinking water use? collected in some sets.									INI	INIITIAL COOLER TEMPERA				ATURES °C			FINAL COOLER TEMPERATURES						
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# ALS Environmental

# Chain of Custody (COC) / Analytical Request Form

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Page	3 of	4

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Address:	230 - 2237 2nd Avenue			Crite	eria on Report	- provide details belov			_				-					_	- contac			m TAT
	Whitehorse, YT				t Distributio		·	FAX							contac	t ALS I	to conf	rm TAT	and sure	charge		
Phone:	867-456-48 <b>65</b>			Email		isandys@hemmei	ra.com, rmartink	a@hemmera.con	Speci	fy Dat	e Requ	ired fo	or E2,E									
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ALS Sample # Sample Identification and/or Coordinates Date Time Sample				Sample Type	Dissolved	General	Cyanide	e	z	Sulphide		Cyanate	Dissolved	sotv								
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	MW09-04					08-Oct-14	12:38	Water	R	R	R	R	R	R	R	R	R					9
	MW09-03					08-Oct-14	13:54	Water	R	R	R	R	R	R	R	R	R					9
	MW09-02					08-Oct-14	10:15	Water	R	R	R	R	R	R	R	R	R					9
	FB2					08-Oct-14	13:54	Water	R	R	R	R	R	R	R	R	R					1
	Dup-3		· <del>- · ·</del>			08-Oct-14	18:37	Water	R	R	R	R	R	R	R	R	R					9
	Dup4			·		08-Oct-14	13:54	Water	R	R	R	R	R	R	R	R	R					2
	MVV09-22					09-0ct-14	12:00	Water	R									R				2
	FB3					09-0ct-14	12:00	Water	R	R	R	R	R	R	R	R	R					9
	W14103083BH02					09-0ct-14	10:45	Water	R	R	R	R	R	R			R					7
	W14103083BH04					09-0ct-14	10:56	Water	R	R	R							R				4
	MW09-08					09-0ct-14	15:56	Water	R	R	R	R	R	R	R	R	R					
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	ten from a Regulated DW S	ystem?	- EDD must be in clarification is req		nat common	to Faro Mine Ren	nediation Project.	. Contact client if		acks	Yes		No	Ш	Cust	ody s	eal in	tact	Yes	Ц	No	
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# ALS Environmental

#### Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L1531123-COFC

COC Number: 1 -

Page 4 of 4

Report To				Report Fo	Ormat / Distribution							Jsh T	umaro	und Tin	ne (TAT	r) is not	available	for all tests)
	Hemmera Environchem Inc.			Select Report Format: բթը	[7]EXCEL [	ZEDO (DIGITAL)	R	[₹Reg	ular (Si	tandard	TAT if	receive	ed by 3	pm - b	usiness	days)		
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	Whitehorse, YT			Select Distribution:   Memory		FAX	E2	Dam	e day	or wee	end en	nergen	cy - con	tact AL	S to co	ofirm T <i>i</i>	AT and suc	charge
Phone:	867-456-4865			nsandys@hemmera.com, rma	artinka@hemmera.cor	n	Speci	fy Date	Req	uired	for E2							
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Contact:	Natasha Sandys			chris@elr.ca								1				न्न	<u> </u>	½
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ALS	Sample Identification and/or Cod	rdinates		Date	Time		<u>š</u>	<u></u>	흥			윤		욢	ě	ě	!	1 - 1
Sample # (lab use	(This description will appear on th			(dd-mmm-yy)	(hh:mm)	Sample Type	Dissolv	General	Cyanide	뫒	S S	Sulphide	2	Cyanate	Dissolved	Dissolved		
VIDO GOC	MP09-04			09-Oct-14	13:58	Water	R	Ř	R	R	Ř	R	R	R	R	-	$\overline{}$	9
	MP09-05			09-Oct-14	11:33	Water	R	R	R	R	R	R	Ř	R	R	R		10
	DUP 5			09-Oct-14	12:00	Water	R	R	R	R	R	R	Ŕ	R	R			9
	MW09-21			09-Oct-14	10:42	Water	R	R	R	R	R	Ř	Ř	R	R		$\Box$	9
	MW09-24			09-Oct-14	9:15	Water	R	R	R	R	R	R	R	R	R		$\Box$	9
	MP09-12			09-Qct-14	15:10	Water	R	R	R	R	R	Ŕ	R	R	R			9
	MP09-11			09-Oct-14	15:50	Water	R	R	R	R	R	R	R	R	TR	R		10
	MP09-02			08-Oct-14	10:02	Water	R	R	R	R	R	R	Ř	R	Ŕ			9
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ŀ	Drinking Water (DW) Samples <sup>1</sup> (client use)	1	Specia	I Instructions / Specify Criteria to	o add on report (client l	Use)	Froze	n					SIEO	hean	ations		Ye	to □
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Are sample:	s taken from a Regulated DW System?			ulS format common to Faro Mir	ne Remediation Projec	t. Contact client if	ice pa	cks	Yes		No		Custo	dy se	al inta	ct	Ye: 🗌 N	4o □
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Are sample:	s for human drinking water use?	conected	iii suille sets	a.			INITIA	r coo:	LER T	EMPER	ATUR	ES °C		FINAL	COOL	ER TE	MPERATI	JRES °C
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Failure to complete all portions of this form may delay analysis. Please filt 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,

1. If any water samples are taken from a Regulated Drinking Water (DW). System, please submit using an Authorized DW COC form.



HEMMERA ENVIROCHEM INC.

ATTN: Natasha Sandys 230 - 2237 2nd Avenue Whitehorse YK Y1A 0K7 Date Received: 11-OCT-14

Report Date: 24-OCT-14 10:41 (MT)

Version: FINAL

Client Phone: 867-456-4865

# **Certificate of Analysis**

Lab Work Order #: L1531711

Project P.O. #: NOT SUBMITTED

Job Reference: 1343-005.05

C of C Numbers: 1, 2

Legal Site Desc:

13 Hack

Brent Mack, B.Sc. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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



L1531711 CONTD.... PAGE 2 of 17 24-OCT-14 10:41 (MT)

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531711-1 Water 10-OCT-14 10:20 GSI-DC-06B	L1531711-2 Water 10-OCT-14 10:20 FB4	L1531711-3 Water 10-OCT-14 11:10 GSI-DC-08B	L1531711-4 Water 09-OCT-14 17:45 CH-P-13-03/50	L1531711-5 Water 10-OCT-14 14:30 CH-P-13-04/10
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	1130	<2.0	999	2630	912
	Hardness (as CaCO3) (mg/L)	734	<0.50	560	1820	541
	pH (pH)	7.90	5.59	7.36	7.71	8.03
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	702	<2.0	403	382	217
	Ammonia, Total (as N) (mg/L)	2.90	<0.0050		0.190	0.0444
	Chloride (CI) (mg/L)	10.3	<0.50	3.2	<10 DLA	1.80
	Fluoride (F) (mg/L)	0.33	<0.020	0.14	<0.40 DLA	0.112
	Nitrate (as N) (mg/L)	<0.050	<0.0050	<0.025	0.27	0.0159
	Nitrite (as N) (mg/L)	<0.010	<0.0010	0.0200	0.072	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	8.39	<0.050		2.52	0.577
	Sulfate (SO4) (mg/L)	5.0	<0.50	190	1390	306
	Sulphide as S (mg/L)	0.020	<0.020		0.025	<0.020
	Anion Sum (meq/L)	14.4	<0.10	12.1	36.5	10.8
	Cation Sum (meq/L)	17.3	<0.10	19.4	39.7	11.4
	Cation - Anion Balance (%)	9.0	0.0	23.1	4.2	2.7
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050		<0.0050	<0.0050
	Cyanide, Total (mg/L)	<0.0050	<0.0050		<0.0050	<0.0050
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50		<0.50	<0.50
	Cyanide, Free (mg/L)	<0.0050	<0.0050		<0.0050	<0.0050
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)	105	<0.50		87.0	
	Total Organic Carbon (mg/L)	79.6	<0.50		57.8	13.1
Total Metals	Aluminum (AI)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-Total (mg/L)					
	Bismuth (Bi)-Total (mg/L)					
	Boron (B)-Total (mg/L)					
	Cadmium (Cd)-Total (mg/L)					
	Calcium (Ca)-Total (mg/L)					
	Chromium (Cr)-Total (mg/L)					
	Cobalt (Co)-Total (mg/L)					
	Copper (Cu)-Total (mg/L)					
	Iron (Fe)-Total (mg/L)					
	Lead (Pb)-Total (mg/L)					
	Lithium (Li)-Total (mg/L)					

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

L1531711 CONTD.... PAGE 3 of 17 24-OCT-14 10:41 (MT)

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531711-6 Water 10-OCT-14 12:59 GSI-DC-10B	L1531711-7 Water 10-OCT-14 11:59 GSI-DC-09B	L1531711-8 Water 10-OCT-14 09:02 MW09-07	L1531711-9 Water 10-OCT-14 11:50 GSI-DC-07B	L1531711-10 Water 10-OCT-14 15:13 CH-P-13-01/10
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	1050	411	1780	525	1030
	Hardness (as CaCO3) (mg/L)	548	194	971	261	624
	pH (pH)	6.83	7.40	7.40	7.75	8.17
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	138	81.0	212	149	167
	Ammonia, Total (as N) (mg/L)	1.61	1.74 RRV	2.00	1.39	0.0209
	Chloride (CI) (mg/L)	<5.0 DLA	<0.50	<5.0	0.56	2.5
	Fluoride (F) (mg/L)	<0.20 DLA	0.054	<0.20	0.081	<0.10
	Nitrate (as N) (mg/L)	<0.050	<0.0050	<0.050	<0.0050	0.259
	Nitrite (as N) (mg/L)	<0.010	<0.0010	<0.010	<0.0010	<0.0050
	Total Kjeldahl Nitrogen (mg/L)	2.80	2.61	3.65	1.87	0.472
	Sulfate (SO4) (mg/L)	496	128	893	135	437
	Sulphide as S (mg/L)	0.024	<0.020	0.54	0.024	
	Anion Sum (meq/L)	13.1	4.28	22.8	5.80	12.5
	Cation Sum (meq/L)	16.3	5.28	22.6	6.76	13.0
	Cation - Anion Balance (%)	11.0	10.4	-0.6	7.7	1.7
Cyanides	Cyanide, Weak Acid Diss (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Cyanide, Total (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50	<0.50	<0.50	
	Cyanide, Free (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)	25.4	16.1	42.2	30.2	
	Total Organic Carbon (mg/L)	35.2	21.2	29.8	18.1	12.4
Total Metals	Aluminum (AI)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-Total (mg/L)					
	Bismuth (Bi)-Total (mg/L)					
	Boron (B)-Total (mg/L)					
	Cadmium (Cd)-Total (mg/L)					
	Calcium (Ca)-Total (mg/L)					
	Chromium (Cr)-Total (mg/L)					
	Cobalt (Co)-Total (mg/L)					
	Copper (Cu)-Total (mg/L)					
	Iron (Fe)-Total (mg/L)					
	Lead (Pb)-Total (mg/L)					
	Lithium (Li)-Total (mg/L)					

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531711-11 Water 10-OCT-14 13:15 MP09-09	L1531711-12 Water 10-OCT-14 14:00 MP09-10	L1531711-13 Water 10-OCT-14 11:50 DUP6	L1531711-15 Water 11-OCT-14 TRIP BLANK 1	L1531711-16 Water 11-OCT-14 TRIP BLANK 2
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)	513	629	523	<2.0	<2.0
	Hardness (as CaCO3) (mg/L)	216	261	260	<0.50	<0.50
	pH (pH)	8.90	8.59	7.32	5.55	5.49
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)	82.6	90.5	148	<2.0	<2.0
	Ammonia, Total (as N) (mg/L)	3.71	5.21	1.39	0.0093	<0.0050
	Chloride (CI) (mg/L)	2.47	2.63	0.58	<0.50	<0.50
	Fluoride (F) (mg/L)	1.77	1.54	0.062	<0.020	<0.020
	Nitrate (as N) (mg/L)	0.0124	0.0270	<0.0050	<0.0050	<0.0050
	Nitrite (as N) (mg/L)	0.0058	0.0841	<0.0010	<0.0010	<0.0010
	Total Kjeldahl Nitrogen (mg/L)	5.59	12.0	1.91	<0.050	<0.050
	Sulfate (SO4) (mg/L)	148	212	135	<0.50	<0.50
	Sulphide as S (mg/L)	<2.0 DLM	<0.020	0.024	<0.020	<0.020
	Anion Sum (meq/L)	4.89	6.39	5.80	<0.10	<0.10
	Cation Sum (meq/L)	5.91	7.05	6.73	<0.10	<0.10
	Cation - Anion Balance (%)	9.4	4.9	7.4	0.0	0.0
Cyanides	Cyanide, Weak Acid Diss (mg/L)	0.602	1.11	<0.0050	<0.0050	<0.0050
	Cyanide, Total (mg/L)	1.98	11.1	<0.0050	<0.0050	<0.0050
	Thiocyanate (SCN) (mg/L)	<0.50	<0.50	<0.50	<0.50	<0.50
	Cyanide, Free (mg/L)	0.356	1.04	<0.0050	<0.0050	<0.0050
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)	8.8	28.0	36.0	<0.50	<0.50
	Total Organic Carbon (mg/L)	33.3	46.6	17.9	<0.50	<0.50
Total Metals	Aluminum (AI)-Total (mg/L)				<0.0030	<0.0030
	Antimony (Sb)-Total (mg/L)				<0.00010	<0.00010
	Arsenic (As)-Total (mg/L)				<0.00010	<0.00010
	Barium (Ba)-Total (mg/L)				<0.000050	<0.000050
	Beryllium (Be)-Total (mg/L)				<0.00010	<0.00010
	Bismuth (Bi)-Total (mg/L)				<0.00050	<0.00050
	Boron (B)-Total (mg/L)				<0.010	<0.010
	Cadmium (Cd)-Total (mg/L)				<0.000010	<0.000010
	Calcium (Ca)-Total (mg/L)				<0.050	<0.050
	Chromium (Cr)-Total (mg/L)				<0.00010	<0.00010
	Cobalt (Co)-Total (mg/L)				<0.00010	<0.00010
	Copper (Cu)-Total (mg/L)				<0.00050	<0.00050
	Iron (Fe)-Total (mg/L)				<0.010	<0.010
	Lead (Pb)-Total (mg/L)				<0.000050	<0.000050
	Lithium (Li)-Total (mg/L)				<0.00050	<0.00050

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

		14504744 47	1,1501711,10	1450474440		TINAL
	Sample ID Description	L1531711-17 Water	L1531711-18 Water	L1531711-19 Water		
	Sampled Date	10-OCT-14	10-OCT-14	10-OCT-14		
	Sampled Time Client ID	12:59 GSI-DC-10B	13:15 MP09-09	10:20 GSI-DC-06B		
	Client ID	DISSOLVED METALS TEST	DISSOLVED METALS TEST	DISSOLVED METALS TEST		
Grouping	Analyte					
WATER						
Physical Tests	Conductivity (uS/cm)					
	Hardness (as CaCO3) (mg/L)	555	213	749		
	pH (pH)					
Anions and Nutrients	Alkalinity, Total (as CaCO3) (mg/L)					
	Ammonia, Total (as N) (mg/L)					
	Chloride (CI) (mg/L)					
	Fluoride (F) (mg/L)					
	Nitrate (as N) (mg/L)					
	Nitrite (as N) (mg/L)					
	Total Kjeldahl Nitrogen (mg/L)					
	Sulfate (SO4) (mg/L)					
	Sulphide as S (mg/L)					
	Anion Sum (meq/L)					
	Cation Sum (meq/L)					
	Cation - Anion Balance (%)					
Cyanides	Cyanide, Weak Acid Diss (mg/L)					
	Cyanide, Total (mg/L)					
	Thiocyanate (SCN) (mg/L)					
	Cyanide, Free (mg/L)					
Organic / Inorganic Carbon	Total Inorganic Carbon (mg/L)					
	Total Organic Carbon (mg/L)					
Total Metals	Aluminum (AI)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-Total (mg/L)					
	Bismuth (Bi)-Total (mg/L)					
	Boron (B)-Total (mg/L)					
	Cadmium (Cd)-Total (mg/L)					
	Calcium (Ca)-Total (mg/L)					
	Chromium (Cr)-Total (mg/L)					
	Cobalt (Co)-Total (mg/L)					
	Copper (Cu)-Total (mg/L)					
	Iron (Fe)-Total (mg/L)					
	Lead (Pb)-Total (mg/L)					
	Lithium (Li)-Total (mg/L)					

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

Magnesium (Mg)-Total (mg/L)   Manganese (Mn)-Total (mg/L)   Molybdenum (Mo)-Total (mg/L)   Molybdenum (Molybdenum (Mo)-Total (mg/L)   Molybdenum (Molybdenum		Sample ID Description Sampled Date Sampled Time Client ID	L1531711-1 Water 10-OCT-14 10:20 GSI-DC-06B	L1531711-2 Water 10-OCT-14 10:20 FB4	L1531711-3 Water 10-OCT-14 11:10 GSI-DC-08B	L1531711-4 Water 09-OCT-14 17:45 CH-P-13-03/50	L1531711-5 Water 10-OCT-14 14:30 CH-P-13-04/10
Total Metals	Grouping	Analyte					
Manganese (Mn)-Total (mg/L)   Mercury (Hg)-Total (mg/L)   Molydedrum (Mo)-Total (mg/L)   Molydedrum (Mo)-Total (mg/L)   Phosphorus (P)-Total (mg/L)   Phosphorus (P)-Total (mg/L)   Phosphorus (P)-Total (mg/L)   Silicon (Si)-Total (mg/L)   Silicon (Si)-Total (mg/L)   Silicon (Si)-Total (mg/L)   Silicon (Si)-Total (mg/L)   Sodium (Na)-Total (mg/L)   Sodium (Na)-Total (mg/L)   Strontium (Si)-Total (mg/L)   Strontium (Si)-Total (mg/L)   Tanalium (Ti)-Total (mg/L)   Tanalium (N)-Total (mg/L)   Tanal	WATER						
Mercury (Hg)-Total (mg/L)   Molyddenum (Mo)-Total (mg/L)   Nickel (Ni)-Total (mg/L)   Phosphorus (P)-Total (mg/L)   Potassium (K)-Total (mg/L)   Silicon (Si)-Total (mg/L)   Sitonium (Si)-Total (mg/L)   Stronium (Si)-Total (mg/L)   Trailium (Ti)-Total	Total Metals	Magnesium (Mg)-Total (mg/L)					
Molybdenum (Mol)-Total (mg/L)   Nicke (Ni)-Total (mg/L)   Phosphorus (P)-Total (mg/L)   Phosphorus (P)-Total (mg/L)   Selenium (Se)-Total (mg/L)   Silicon (Si)-Total (mg/L)   Silicon (Si)-Total (mg/L)   Sodium (Ni)-Total (mg/L)   Sodium (Ni)-Total (mg/L)   Sodium (Ni)-Total (mg/L)   Sulfur (Si)-Total (mg/L)   Trailium (Ti)-Total (m		Manganese (Mn)-Total (mg/L)					
Nickel (Ni)-Total (mg/L)		Mercury (Hg)-Total (mg/L)					
Phosphorus (P)-Total (mg/L) Potassium (K)-Total (mg/L) Selenium (Se)-Total (mg/L) Silicon (Si)-Total (mg/L) Silicon (Si)-Total (mg/L) Sodium (Na)-Total (mg/L) Sodium (Na)-Total (mg/L) Sodium (Na)-Total (mg/L) Stornium (S)-Total (mg/L) Tinalium (Ti)-Total (mg/L) Titanium (Ti)-Total (mg/L) Uranium (U)-Total (mg/L) Uranium (U)-Total (mg/L) Uranium (U)-Total (mg/L)  Dissolved Metals Filtration Location Dissolved Metals Filtration Location Aluminum (Al)-Dissolved (mg/L) Antimony (Sb)-Dissolved (mg/L) Barium (Ba)-Dissolved (mg/L) Barium (Ba)-Dissolved (mg/L) Beryllium (Be)-Dissolved (mg/L) Bismuth (Bi)-Dissolved (mg/L) Cadeium (Ca)-Dissolved (mg/L) Cobalt (Co)-Dissolved	Molybdenum (Mo)-Total (mg/L)						
Potassium (K)-Total (mg/L)   Selenium (Se)-Total (mg/L)   Silicon (Si)-Total (mg/L)   Thallium (Ti)-Total (mg/L)   Thallium (Ti)-Total (mg/L)   Tin (Sn)-Total (mg/L)   Tin (Sn)-Total (mg/L)   Vanadium (V)-Total (mg/L)   Vanadium (A)-Dissolved (mg/L		Nickel (Ni)-Total (mg/L)					
Selenium (Se)-Total (mg/L)   Silicon (Si)-Total (mg/L)   Silver (Ag)-Total (mg/L)   Silver (Ag)-Total (mg/L)   Sodium (Na)-Total (mg/L)   Strontium (Si)-Total (mg/L)   Strontium (Si)-Total (mg/L)   Thallium (Ti)-Total (mg/L)   Titanium (Aliminum (Al)-Dissolved (mg/L)   0.0168   -0.0010   0.394   0.0065   0.0033   0.00107   Arsenic (As)-Dissolved (mg/L)   0.0029   -0.00010   0.0945   0.00185   0.00128		Phosphorus (P)-Total (mg/L)					
Silicon (Si)-Total (mg/L)   Silver (Ag)-Total (mg/L)   Sodium (Na)-Total (mg/L)   Sodium (Na)-Total (mg/L)   Strontium (Sr)-Total (mg/L)   Suffur (S)-Total (mg/L)   Thallium (TI)-Total (mg/L)   Titanium (TI)-Total (mg/L)   Titanium (TI)-Total (mg/L)   Titanium (TI)-Total (mg/L)   Vanadium (V)-Total (mg/L)   Vanadium (Al)-Dissolved (mg/L)   0.0169   <0.0010   0.394   0.0065   0.0033   0.00107   Aluminum (Al)-Dissolved (mg/L)   0.0029   <0.00010   0.394   0.0065   0.0033   0.00107   Arsenic (As)-Dissolved (mg/L)   0.326   <0.00010   0.0945   0.00195   0.00128   0.00158   0.0013   0.00107   0.0029   0.00010   0.00050   0.00		Potassium (K)-Total (mg/L)					
Silver (Ag)-Total (mg/L)   Sodium (Na)-Total (mg/L)   Suffur (S)-Total (mg/L)   Strontium (Sr)-Total (mg/L)   Suffur (S)-Total (mg/L)   Thallium (TI)-Total (mg/L)   Tin (Sn)-Total (mg/L)   Tin (Sn)-Total (mg/L)   Tin (Sn)-Total (mg/L)   Uranium (U)-Total (mg/L)   Uranium (U)-Total (mg/L)   Uranium (U)-Total (mg/L)   Vanadium (V)-Total		Selenium (Se)-Total (mg/L)					
Sodium (Na)-Total (mg/L)   Strontium (Sr)-Total (mg/L)   Sulfur (S)-Total (mg/L)   Thallium (Ti)-Total (mg/L)   Thallium (Ti)-Total (mg/L)   Tin (Sn)-Total (mg/L)   Titanium (Ti)-Total (mg/L)   Uranium (U)-Total (mg/L)   Vanadium (V)-Total (mg/L)   Vanadium (V)-Dissolved (mg/L)   Van		Silicon (Si)-Total (mg/L)					
Strontium (Sr)-Total (mg/L)   Sulfur (S)-Total (mg/L)   Thallium (TI)-Total (mg/L)   Titanium (TI)-Total (mg/L)   Titanium (TI)-Total (mg/L)   Uranium (U)-Total (mg/L)   Vanadium (U)-Total (mg/L)   Vanadium (U)-Total (mg/L)   Vanadium (U)-Total (mg/L)   Vanadium (V)-Total (mg/L)   Vanadium (V)-Dissolved (mg/L)   Vanadium (V)-Dissolved (mg/L)   Vanadium (Vanadium		Silver (Ag)-Total (mg/L)					
Sulfur (S)-Total (mg/L) Thallium (TI)-Total (mg/L) Tin (Sn)-Total (mg/L) Titanium (Ti)-Total (mg/L) Uranium (U)-Total (mg/L) Vanadium (V)-Total (mg/L) Zinc (Zn)-Total (mg/L)  Dissolved Metals Pitration Location Dissolved Metals Pitration Location Aluminum (Al)-Dissolved (mg/L) Aluminum (Al)-Dissolved (mg/L) Assenic (As)-Dissolved (mg/L) Barium (Ba)-Dissolved (mg/L) Beryllium (Ba)-Dissolved (mg/L) Cadmium (Cd)-Dissolved (mg/L) Calcium (Ca)-Dissolved (mg/L) Cabout		Sodium (Na)-Total (mg/L)					
Thallium (TI)-Total (mg/L) Titanium (Ti)-Total (mg/L) Titanium (Ti)-Total (mg/L) Uranium (U)-Total (mg/L) Vanadium (V)-Total (mg/L) Zinc (Zn)-Total (mg/L) Zinc (Zn)-Total (mg/L) Zinc (Zn)-Total (mg/L) Dissolved Metals Dissolved Metals Filtration Location PIELD 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) Cadmium (Cd)-Dissolved (mg/L) Capper (Cu)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Lead (Pb)-Dissolved (mg/L) Lead (Pb)-Dissolved (mg/L) Copposited (mg/L) Copper (Cu)-Dissolved (mg/L) Copposited (mg/L) Copper (Cu)-Dissolved (mg/L) Copposited (mg/L) Copper (Cu)-Dissolved (mg/L) Copper (C		Strontium (Sr)-Total (mg/L)					
Tin (Sn)-Total (mg/L) Titanium (Ti)-Total (mg/L) Uranium (U)-Total (mg/L) Vanadium (V)-Total (mg/L) Zinc (Zn)-Total (mg/L) Zinc (Zn)-Total (mg/L) Dissolved Mercury Filtration Location Dissolved Metals Filtration Location Aluminum (Al)-Dissolved (mg/L) 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) Cadmium (Cd)-Dissolved (mg/L) Cadmium (Cd)-Dissolved (mg/L) Cadmium (Cd)-Dissolved (mg/L) Capper (Cu)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Lead (Pb)-Dissolved (mg/L) Lead (Pb)-Dissolved (mg/L) Cacomous Copper (Cu)-Dissolved (mg/L) Cacomous		Sulfur (S)-Total (mg/L)					
Titanium (Ti)-Total (mg/L) Uranium (U)-Total (mg/L) Vanadium (V)-Total (mg/L) Zinc (Zn)-Total (mg/L) Zinc (Zn)-Total (mg/L)  Dissolved Metals Dissolved Metals Filtration Location Aluminum (Al)-Dissolved (mg/L) Antimony (Sb)-Dissolved (mg/L) Arsenic (As)-Dissolved (mg/L) Bismuth (Bi)-Dissolved (mg/L) Cadmium (Bi)-Dissolved (mg/L) Cadmium (Cd)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Cadmium (Cf)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Cadmium (Ci)-Dissolved (mg/L) Cadmium (Ci)-Dissolved (mg/L) Cadmium (Ci)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Cadmium (Ci)-Dissolved (mg/L) Cadmium (Ci)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Cadmium (Ci)-Dissolved (mg/L) Cadmium (Ci)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Cadmium (Ci)-Dissolved (mg/L) Cadmium (Ci)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Cadmium (Ci)-Dissolved (mg/L) Cadmium (Ci)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Cadmium (Di)-Dissolved (mg/L) Cadmium (Di)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Cadmium (Di)-Dissolved (mg/L) Cadmium (Di)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Cadmium (Di)-Dissolved (mg/L) Cadmium (Di)-Dissolved (mg/L) Cadmium (Di)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Copper (Cu)-D		Thallium (TI)-Total (mg/L)					
Uranium (U)-Total (mg/L)   Vanadium (V)-Total (mg/L)   Zinc (Zn)-Total (mg/L)		Tin (Sn)-Total (mg/L)					
Vanadium (V)-Total (mg/L)   Zinc (Zn)-Total (mg/L)   Zinc (Zn)-Total (mg/L)   Dissolved Merals   Dissolved Mercury Filtration Location   Dissolved Metals Filtration Location   Dissolved Metals Filtration Location   FIELD   FIELD   FIELD   FIELD   FIELD   FIELD   FIELD   FIELD   Aluminum (Al)-Dissolved (mg/L)   O.0169   <0.0010   0.394   0.0065   0.0033   0.00107   Arsenic (As)-Dissolved (mg/L)   O.0029   <0.00010   0.00185   0.00103   0.00107   0.00128   Dissolved (mg/L)   O.240   <0.000050   O.180   O.0623   O.0017   0.0017   O.0017   O.0017   O.0017   O.00010   O.00050   O.00		Titanium (Ti)-Total (mg/L)					
Dissolved Metals   Dissolved Mercury Filtration Location   Dissolved Metals   Dissolved Metals Filtration Location   Dissolved Metals Filtration Location   FIELD   FIELD   FIELD   FIELD   FIELD   FIELD   FIELD   FIELD   FIELD   Dissolved Metals Filtration Location   FIELD   FIELD   FIELD   FIELD   FIELD   FIELD   Dissolved Metals Filtration Location   Dissolved (mg/L)		Uranium (U)-Total (mg/L)					
Dissolved Metals   Dissolved Mercury Filtration Location   Dissolved Metals Filtration Location   FIELD   FI		Vanadium (V)-Total (mg/L)					
Dissolved Metals Filtration Location   FIELD   FIELD   FIELD   FIELD   Aluminum (Al)-Dissolved (mg/L)   0.0169   <0.0010   0.394   0.0065   0.0033   0.00107   0.00185   0.00103   0.00107   0.00185   0.00103   0.00107   0.00185   0.00103   0.00107   0.00185   0.00103   0.00107   0.00185   0.00103   0.00107   0.00185   0.00195   0.00128   0.00195   0.00128   0.00195   0.00128   0.00195   0.00128   0.00195   0.00128   0.00195   0.00128   0.00195   0.00128   0.00195   0.00128   0.00195   0.00128   0.00195   0.00107   0.00010   0.00010   0.00010   0.00010   0.00020   0.00010   0.00020   0.00010   0.00020   0.00010   0.00020   0.00010   0.00020   0.00010   0.00020   0.00010   0.00020   0.00010   0.00050   0.0010   0.0010   0.0010   0.0010   0.00195   0.00195   0.00195   0.00195   0.00195   0.00195   0.00195   0.00195   0.00195   0.00195   0.00195   0.00195   0.00195   0.00195   0.00195   0.00195   0.00195   0.00195   0.00195   0.000195		Zinc (Zn)-Total (mg/L)					
Aluminum (Al)-Dissolved (mg/L)  Aluminum (Al)-Dissolved (mg/L)  O.0169  O.0010  O.0029  O.00010  O.00185  O.00103  O.00107  Arsenic (As)-Dissolved (mg/L)  O.0029  O.00010  O.00185  O.00103  O.00107  Arsenic (As)-Dissolved (mg/L)  O.240  O.000050  O.180  O.0020  O.00010  O.00050  O.00010  O.00050  O.00010  O.00050  O.00010  O.00050  O.	Dissolved Metals	Dissolved Mercury Filtration Location	NA	NA	NA	NA	NA
Antimony (Sb)-Dissolved (mg/L) Arsenic (As)-Dissolved (mg/L) Barium (Ba)-Dissolved (mg/L) Bismuth (Bi)-Dissolved (mg/L) Cadmium (Cd)-Dissolved (mg/L) Calcium (Ca)-Dissolved (mg/L) Cable (Co)-Dissolved (mg/L) Copper (Cu)-Dissolved (mg/L) Lithium (Li)-Dissolved (mg/L)  Arsenic (As)-Dissolved (mg/L)  0.00029  0.00010 0.00010 0.00050 0.180 0.0623 0.0317 0.0010 0.00010 0.000010 0.00010 0.000010 0.000010 0.000010 0.000000 0.000000 0.000000 0.000000 0.000000		Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
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)  Cadmium (Cd)-Dissolved (mg/L)  Calcium (Ca)-Dissolved (mg/L)  Calcium (Cr)-Dissolved (mg/L)  Copper (Cu)-Dissolved (mg/L)  Lead (Pb)-Dissolved (mg/L)  Arsenic (As)-Dissolved (mg/L)  O.00029  O.00050		Aluminum (AI)-Dissolved (mg/L)	0.0169	<0.0010	0.394	0.0065	0.0033
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)  Chromium (Cr)-Dissolved (mg/L)  Cobalt (Co)-Dissolved (mg/L)  Copper (Cu)-Dissolved (mg/L)  Lead (Pb)-Dissolved (mg/L)  Lithium (Li)-Dissolved (mg/L)  Condonso  Co		Antimony (Sb)-Dissolved (mg/L)	0.00029	<0.00010	0.00185	0.00103	0.00107
Beryllium (Be)-Dissolved (mg/L)		Arsenic (As)-Dissolved (mg/L)	0.326	<0.00010	0.0945	0.00195	0.00128
Seryllium (Be)-Dissolved (mg/L)		Barium (Ba)-Dissolved (mg/L)	0.240	<0.000050	0.180	0.0623	0.0317
Sismuth (Bi)-Dissolved (mg/L)   Co.00050		Beryllium (Be)-Dissolved (mg/L)	<0.00010	<0.00010	<0.00010		<0.00010
Cadmium (Cd)-Dissolved (mg/L)   Cadmium (Cd)-Dissolved (mg/L)   Calcium (Ca)-Dissolved (mg/L)   177   Chromium (Cr)-Dissolved (mg/L)   0.00181   Calcium (Ca)-Dissolved (mg/L)   0.00181   Calcium (Ca)-Dissolved (mg/L)   Cobalt (Co)-Dissolved (mg/L)   0.00181   Calcium (Ca)-Dissolved (mg/L)   Cobalt (Co)-Dissolved (mg/L)   Calcium (Ca)-Dissolved (m		Bismuth (Bi)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050		<0.00050
Calcium (Ca)-Dissolved (mg/L)  177  Chromium (Cr)-Dissolved (mg/L)  Cobalt (Co)-Dissolved (mg/L)  Copper (Cu)-Dissolved (mg/L)  177  177  177  177  177  177  177  1		Boron (B)-Dissolved (mg/L)	<0.010	<0.010	0.110		0.019
Calcium (Ca)-Dissolved (mg/L)         177         <0.050         154         455         107           Chromium (Cr)-Dissolved (mg/L)         0.00181         <0.00010		Cadmium (Cd)-Dissolved (mg/L)					
Chromium (Cr)-Dissolved (mg/L)         0.00181         <0.00010         0.0737         <0.00020         0.00027           Cobalt (Co)-Dissolved (mg/L)         0.00220         <0.00010		Calcium (Ca)-Dissolved (mg/L)	177	<0.050	154	455	107
Cobalt (Co)-Dissolved (mg/L)         0.00220         <0.00010         0.0190         0.0213         0.0122           Copper (Cu)-Dissolved (mg/L)         0.00052         <0.00020		Chromium (Cr)-Dissolved (mg/L)	0.00181	<0.00010	0.0737		0.00027
Iron (Fe)-Dissolved (mg/L)         23.2         <0.010         125         1.05         0.146           Lead (Pb)-Dissolved (mg/L)         0.000059         <0.00050		Cobalt (Co)-Dissolved (mg/L)	0.00220	<0.00010	0.0190		0.0122
Iron (Fe)-Dissolved (mg/L)     23.2     <0.010		Copper (Cu)-Dissolved (mg/L)					
Lead (Pb)-Dissolved (mg/L)       0.000059       <0.000050       0.00180       <0.00010       0.000098         Lithium (Li)-Dissolved (mg/L)       <0.00050		Iron (Fe)-Dissolved (mg/L)				1.05	
Lithium (Li)-Dissolved (mg/L) <0.00050 <0.00050 0.00129 0.0037 0.0113		Lead (Pb)-Dissolved (mg/L)					
Magnesium (Mg)-Dissolved (mg/L) 71.0 <0.10 42.6 166 66.2		Lithium (Li)-Dissolved (mg/L)					
1.1.5		Magnesium (Mg)-Dissolved (mg/L)	71.0	<0.10	42.6	166	66.2

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531711-6 Water 10-OCT-14 12:59 GSI-DC-10B	L1531711-7 Water 10-OCT-14 11:59 GSI-DC-09B	L1531711-8 Water 10-OCT-14 09:02 MW09-07	L1531711-9 Water 10-OCT-14 11:50 GSI-DC-07B	L1531711-10 Water 10-OCT-14 15:13 CH-P-13-01/10
Grouping	Analyte					
WATER						
Total Metals	Magnesium (Mg)-Total (mg/L)					
	Manganese (Mn)-Total (mg/L)					
	Mercury (Hg)-Total (mg/L)					
	Molybdenum (Mo)-Total (mg/L)					
	Nickel (Ni)-Total (mg/L)					
	Phosphorus (P)-Total (mg/L)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silicon (Si)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
	Strontium (Sr)-Total (mg/L)					
	Sulfur (S)-Total (mg/L)					
	Thallium (TI)-Total (mg/L)					
	Tin (Sn)-Total (mg/L)					
	Titanium (Ti)-Total (mg/L)					
	Uranium (U)-Total (mg/L)					
	Vanadium (V)-Total (mg/L)					
	Zinc (Zn)-Total (mg/L)					
Dissolved Metals	Dissolved Mercury Filtration Location	NA	NA	NA	NA	NA
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD
	Aluminum (Al)-Dissolved (mg/L)	0.142	0.0477	0.0491	0.0103	0.0087
	Antimony (Sb)-Dissolved (mg/L)	0.00035	0.00021	0.00568	0.00017	0.00220
	Arsenic (As)-Dissolved (mg/L)	0.130	0.0453	0.556	0.144	0.00206
	Barium (Ba)-Dissolved (mg/L)	0.424	0.0341	0.0220	0.0715	0.0635
	Beryllium (Be)-Dissolved (mg/L)	DLA <0.00020	<0.00010	<0.00020	<0.00010	<0.00010
	Bismuth (Bi)-Dissolved (mg/L)	OLA <0.0010	<0.00050	<0.0010	<0.00050	<0.00050
	Boron (B)-Dissolved (mg/L)	DLA <0.020	0.012	0.058	0.011	0.017
	Cadmium (Cd)-Dissolved (mg/L)	<0.00020	<0.000010	0.000223	<0.000010	0.000168
	Calcium (Ca)-Dissolved (mg/L)	152	49.7	297	73.7	150
	Chromium (Cr)-Dissolved (mg/L)	0.00231	0.00086	0.00096	0.00045	0.00018
	Cobalt (Co)-Dissolved (mg/L)	0.0215	0.00096	0.0264	0.00155	0.00048
	Copper (Cu)-Dissolved (mg/L)	0.00097	<0.00020	0.00606	<0.00020	0.0101
	Iron (Fe)-Dissolved (mg/L)	68.7	14.2	9.16	14.3	0.057
	Lead (Pb)-Dissolved (mg/L)	0.00014	<0.000050	<0.00010	<0.000050	0.000217
	Lithium (Li)-Dissolved (mg/L)	O.0010	<0.00050	0.0029	0.00110	0.00325
	Magnesium (Mg)-Dissolved (mg/L)	40.7	16.9	55.7	18.8	60.9

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

Grouping WATER	Analyte			DUP6	TRIP BLANK 1	TRIP BLANK 2
WATER						
Total Metals	Magnesium (Mg)-Total (mg/L)				<0.10	<0.10
M	Manganese (Mn)-Total (mg/L)				<0.000050	<0.000050
M	Mercury (Hg)-Total (mg/L)				<0.000010	<0.000010
N	Molybdenum (Mo)-Total (mg/L)				<0.000050	<0.000050
1	Nickel (Ni)-Total (mg/L)				<0.00050	<0.00050
F	Phosphorus (P)-Total (mg/L)				<0.050	<0.050
F	Potassium (K)-Total (mg/L)				<0.10	<0.10
5	Selenium (Se)-Total (mg/L)				<0.00010	<0.00010
5	Silicon (Si)-Total (mg/L)				<0.050	<0.050
5	Silver (Ag)-Total (mg/L)				<0.000010	<0.000010
5	Sodium (Na)-Total (mg/L)				<0.050	<0.050
5	Strontium (Sr)-Total (mg/L)				<0.00020	<0.00020
5	Sulfur (S)-Total (mg/L)				<0.50	<0.50
1	Thallium (TI)-Total (mg/L)				<0.000010	<0.000010
1	Tin (Sn)-Total (mg/L)				<0.00010	<0.00010
1	Titanium (Ti)-Total (mg/L)				<0.010	<0.010
ι	Jranium (U)-Total (mg/L)				<0.000010	<0.000010
\	Vanadium (V)-Total (mg/L)				<0.0010	<0.0010
Ž	Zinc (Zn)-Total (mg/L)				<0.0030	<0.0030
Dissolved Metals	Dissolved Mercury Filtration Location	NA	NA	NA		
1	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD		
A	Aluminum (AI)-Dissolved (mg/L)	0.0041	0.0037	0.0102		
A	Antimony (Sb)-Dissolved (mg/L)	0.101	0.0951	0.00015		
A	Arsenic (As)-Dissolved (mg/L)	20.6	9.93	0.150		
E	Barium (Ba)-Dissolved (mg/L)	0.00174	0.000633	0.0698		
E	Beryllium (Be)-Dissolved (mg/L)	O.00020	<0.00010	<0.00010		
E	Bismuth (Bi)-Dissolved (mg/L)	OLA <0.0010	<0.00050	<0.00050		
E	Boron (B)-Dissolved (mg/L)	0.306	0.307	0.013		
(	Cadmium (Cd)-Dissolved (mg/L)	0.000322	0.000287	<0.000010		
(	Calcium (Ca)-Dissolved (mg/L)	85.8	103	73.5		
(	Chromium (Cr)-Dissolved (mg/L)	O.00020	<0.00010	0.00036		
(	Cobalt (Co)-Dissolved (mg/L)	0.0458	0.0447	0.00153		
(	Copper (Cu)-Dissolved (mg/L)	0.714	0.215	0.00060		
I	ron (Fe)-Dissolved (mg/L)	0.214	0.279	14.1		
L	_ead (Pb)-Dissolved (mg/L)	0.00099	0.000806	<0.000050		
L	Lithium (Li)-Dissolved (mg/L)	DLA <0.0010	<0.00050	0.00092		
N	Magnesium (Mg)-Dissolved (mg/L)	0.41	0.76	18.6		

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

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

		I	I	I	1	l
	Sample ID Description Sampled Date Sampled Time Client ID	L1531711-17 Water 10-OCT-14 12:59 GSI-DC-10B DISSOLVED METALS TEST	L1531711-18  Water  10-OCT-14  13:15  MP09-09 DISSOLVED METALS TEST	L1531711-19 Water 10-OCT-14 10:20 GSI-DC-06B DISSOLVED METALS TEST		
Grouping	Analyte	, WETALOTEOT	METALO TEOT	WILTALO TEOT		
WATER						
Total Metals	Magnesium (Mg)-Total (mg/L)					
	Manganese (Mn)-Total (mg/L)					
	Mercury (Hg)-Total (mg/L)					
	Molybdenum (Mo)-Total (mg/L)					
	Nickel (Ni)-Total (mg/L)					
	Phosphorus (P)-Total (mg/L)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silicon (Si)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
	Strontium (Sr)-Total (mg/L)					
	Sulfur (S)-Total (mg/L)					
	Thallium (TI)-Total (mg/L)					
	Tin (Sn)-Total (mg/L)					
	Titanium (Ti)-Total (mg/L)					
	Uranium (U)-Total (mg/L)					
	Vanadium (V)-Total (mg/L)					
	Zinc (Zn)-Total (mg/L)					
Dissolved Metals	Dissolved Mercury Filtration Location	FIELD	FIELD	FIELD		
	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD		
	Aluminum (AI)-Dissolved (mg/L)	0.134	0.0051	0.0155		
	Antimony (Sb)-Dissolved (mg/L)	0.00033	0.0987	0.00026		
	Arsenic (As)-Dissolved (mg/L)	0.107	20.7	0.342		
	Barium (Ba)-Dissolved (mg/L)	0.408	0.00146	0.232		
	Beryllium (Be)-Dissolved (mg/L)	<0.00020	<0.00050	<0.00010		
	Bismuth (Bi)-Dissolved (mg/L)	<0.0010	<0.0025	<0.00050		
	Boron (B)-Dissolved (mg/L)	<0.020	0.313	<0.010		
	Cadmium (Cd)-Dissolved (mg/L)	<0.000020	0.000318	<0.000010		
	Calcium (Ca)-Dissolved (mg/L)	154	84.7	181		
	Chromium (Cr)-Dissolved (mg/L)	0.00221	<0.00050	0.00158		
	Cobalt (Co)-Dissolved (mg/L)	0.0218	0.0469	0.00219		
	Copper (Cu)-Dissolved (mg/L)	<0.00040	0.657	0.00020		
	Iron (Fe)-Dissolved (mg/L)	66.7	0.322	22.4		
	Lead (Pb)-Dissolved (mg/L)	0.00014	0.00080	<0.000050		
	Lithium (Li)-Dissolved (mg/L)	O.0010	<0.0025	<0.00050		
	Magnesium (Mg)-Dissolved (mg/L)	41.1	0.40	71.7		

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

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#### ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531711-1 Water 10-OCT-14 10:20 GSI-DC-06B	L1531711-2 Water 10-OCT-14 10:20 FB4	L1531711-3 Water 10-OCT-14 11:10 GSI-DC-08B	L1531711-4 Water 09-OCT-14 17:45 CH-P-13-03/50	L1531711-5 Water 10-OCT-14 14:30 CH-P-13-04/10
Grouping	Analyte					
WATER						
Dissolved Metals	Manganese (Mn)-Dissolved (mg/L)	5.07	<0.000050	4.58	12.5	1.35
	Mercury (Hg)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000010	<0.00010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00380	<0.000050	0.0110	0.00285	0.00273
	Nickel (Ni)-Dissolved (mg/L)	0.00368	<0.00050	0.190	0.0392	0.0457
	Phosphorus (P)-Dissolved (mg/L)	0.251	<0.050	0.218	<0.050	<0.050
	Potassium (K)-Dissolved (mg/L)	3.95	<0.10	6.82	9.18	3.86
	Selenium (Se)-Dissolved (mg/L)	0.00054	<0.00010	0.00105	0.00445	0.00012
	Silicon (Si)-Dissolved (mg/L)	8.00	<0.050	10.6	6.69	4.92
	Silver (Ag)-Dissolved (mg/L)	<0.000010	<0.000010	0.000020	<0.000020	<0.000010
	Sodium (Na)-Dissolved (mg/L)	20.3	<0.050	25.1	58.6	8.85
	Strontium (Sr)-Dissolved (mg/L)	0.897	<0.00020	0.585	1.05	0.623
	Sulfur (S)-Dissolved (mg/L)	3.23	<0.50	73.1	501	106
	Thallium (TI)-Dissolved (mg/L)	<0.000010	<0.000010	<0.000010	<0.000020	0.000045
	Tin (Sn)-Dissolved (mg/L)	<0.00010	<0.00010	0.00050	0.00092	0.00143
	Titanium (Ti)-Dissolved (mg/L)	<0.010	<0.010	0.028	<0.020	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000155	<0.000010	0.00205	0.0101	0.000980
	Vanadium (V)-Dissolved (mg/L)	0.0085	<0.0010	0.0816	<0.0020	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0018	<0.0010	0.0170	0.0239	0.156

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

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#### ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531711-6 Water 10-OCT-14 12:59 GSI-DC-10B	L1531711-7 Water 10-OCT-14 11:59 GSI-DC-09B	L1531711-8 Water 10-OCT-14 09:02 MW09-07	L1531711-9 Water 10-OCT-14 11:50 GSI-DC-07B	L1531711-10 Water 10-OCT-14 15:13 CH-P-13-01/10
Grouping	Analyte					
WATER						
Dissolved Metals	Manganese (Mn)-Dissolved (mg/L)	13.0	0.510	20.5	1.06	0.401
	Mercury (Hg)-Dissolved (mg/L)	<0.00010	<0.000010	<0.000010	<0.000010	<0.000010
	Molybdenum (Mo)-Dissolved (mg/L)	0.00060	0.000210	0.00156	0.000378	0.00145
	Nickel (Ni)-Dissolved (mg/L)	0.0045	0.00059	0.0207	0.00054	0.00365
	Phosphorus (P)-Dissolved (mg/L)	<0.050	0.164	<0.050	0.083	<0.050
	Potassium (K)-Dissolved (mg/L)	2.22	2.22	12.0	2.37	2.85
	Selenium (Se)-Dissolved (mg/L)	0.00036	0.00013	0.00020	0.00016	0.00016
	Silicon (Si)-Dissolved (mg/L)	7.77	8.13	9.98	7.10	7.37
	Silver (Ag)-Dissolved (mg/L)	<0.000020	<0.000010	0.000168	<0.000010	<0.000010
	Sodium (Na)-Dissolved (mg/L)	23.7	10.2	33.5	13.2	9.30
	Strontium (Sr)-Dissolved (mg/L)	0.579	0.159	0.706	0.239	0.452
	Sulfur (S)-Dissolved (mg/L)	155	44.7	274	46.2	146
	Thallium (TI)-Dissolved (mg/L)	<0.000020	<0.000010	<0.000020	<0.000010	0.000028
	Tin (Sn)-Dissolved (mg/L)	<0.00020	<0.00010	<0.00020	<0.00010	0.00328
	Titanium (Ti)-Dissolved (mg/L)	<0.020	<0.010	<0.020	<0.010	<0.010
	Uranium (U)-Dissolved (mg/L)	0.000300	0.000109	0.00117	0.000034	0.00211
	Vanadium (V)-Dissolved (mg/L)	0.0113	0.0046	0.0026	0.0020	<0.0010
	Zinc (Zn)-Dissolved (mg/L)	0.0101	0.0015	0.360	0.0017	0.0203
						0.0250

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

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#### ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1531711-11 Water 10-OCT-14 13:15 MP09-09	L1531711-12 Water 10-OCT-14 14:00 MP09-10	L1531711-13 Water 10-OCT-14 11:50 DUP6	L1531711-15 Water 11-OCT-14 TRIP BLANK 1	L1531711-16 Water 11-OCT-14 TRIP BLANK 2
Grouping	Analyte					
WATER						
Dissolved Metals	Manganese (Mn)-Dissolved (mg/L)	0.0409	0.0300	1.05		
	Mercury (Hg)-Dissolved (mg/L)	0.000021	0.000028	<0.000010		
	Molybdenum (Mo)-Dissolved (mg/L)	0.0146	0.0148	0.000379		
	Nickel (Ni)-Dissolved (mg/L)	0.0184	0.0124	<0.00050		
	Phosphorus (P)-Dissolved (mg/L)	0.168	0.220	0.081		
	Potassium (K)-Dissolved (mg/L)	8.78	9.44	2.36		
	Selenium (Se)-Dissolved (mg/L)	0.00233	0.00161	0.00019		
	Silicon (Si)-Dissolved (mg/L)	9.60	6.09	7.08		
	Silver (Ag)-Dissolved (mg/L)	0.0299	0.0533	<0.000010		
	Sodium (Na)-Dissolved (mg/L)	24.5	27.6	13.1		
	Strontium (Sr)-Dissolved (mg/L)	0.158	0.162	0.230		
	Sulfur (S)-Dissolved (mg/L)	90.0	86.2	46.0		
	Thallium (TI)-Dissolved (mg/L)	0.000040	0.000051	<0.000010		
	Tin (Sn)-Dissolved (mg/L)	<0.00020	<0.00010	<0.00010		
	Titanium (Ti)-Dissolved (mg/L)	<0.020	<0.010	<0.010		
	Uranium (U)-Dissolved (mg/L)	0.000514	0.00138	0.000032		
	Vanadium (V)-Dissolved (mg/L)	<0.0020	<0.0010	0.0019		
	Zinc (Zn)-Dissolved (mg/L)	0.0045	0.0021	<0.0010		

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

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#### ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID   Description   Sampled Date   Sampled Date   Sampled Time   Client ID   Description   Sampled Time   Client ID   Client ID   Description   Sampled Time   Client ID   Description   Descripti	
WATER           Dissolved Metals         Manganese (Mn)-Dissolved (mg/L)         13.4         0.0385         5.19           Mercury (Hg)-Dissolved (mg/L)         <0.000010         0.000021         <0.000010           Molybdenum (Mo)-Dissolved (mg/L)         0.00057         0.0146         0.00368           Nickel (Ni)-Dissolved (mg/L)         0.0046         0.0197         0.00362           Phosphorus (P)-Dissolved (mg/L)         <0.050         0.154         0.244           Potassium (K)-Dissolved (mg/L)         2.23         8.58         3.94           Selenium (Se)-Dissolved (mg/L)         0.00031         0.00238         0.00057           Silicon (Si)-Dissolved (mg/L)         7.81         9.47         8.00           Silver (Ag)-Dissolved (mg/L)         23.1         24.6         19.4           Strontium (Sr)-Dissolved (mg/L)         0.560         0.160         0.869           Sulfur (S)-Dissolved (mg/L)         157         66.6         3.16           Thallium (TI)-Dissolved (mg/L)         <0.000020         0.000066         <0.000010           Tin (Sn)-Dissolved (mg/L)         <0.000020         <0.00050         <0.00010	
Dissolved Metals         Manganese (Mn)-Dissolved (mg/L)         13.4         0.0385         5.19           Mercury (Hg)-Dissolved (mg/L)         <0.000010         0.000021         <0.000010           Molybdenum (Mo)-Dissolved (mg/L)         0.00057         0.0146         0.00368           Nickel (Ni)-Dissolved (mg/L)         0.0046         0.0197         0.00362           Phosphorus (P)-Dissolved (mg/L)         <0.050         0.154         0.244           Potassium (K)-Dissolved (mg/L)         2.23         8.58         3.94           Selenium (Se)-Dissolved (mg/L)         0.00031         0.00238         0.00057           Silicon (Si)-Dissolved (mg/L)         7.81         9.47         8.00           Silver (Ag)-Dissolved (mg/L)         <0.000020         0.0280         <0.000010           Sodium (Na)-Dissolved (mg/L)         23.1         24.6         19.4           Strontium (Sr)-Dissolved (mg/L)         0.560         0.160         0.869           Sulfur (S)-Dissolved (mg/L)         157         66.6         3.16           Thallium (TI)-Dissolved (mg/L)         <0.000020         0.000066         <0.000010           Tin (Sn)-Dissolved (mg/L)         <0.000020         <0.000050         <0.000010	
Mercury (Hg)-Dissolved (mg/L)         <0.000010	
Molybdenum (Mo)-Dissolved (mg/L)         0.00057         0.0146         0.00368           Nickel (Ni)-Dissolved (mg/L)         0.0046         0.0197         0.00362           Phosphorus (P)-Dissolved (mg/L)         <0.050         0.154         0.244           Potassium (K)-Dissolved (mg/L)         2.23         8.58         3.94           Selenium (Se)-Dissolved (mg/L)         0.00031         0.00238         0.00057           Silicon (Si)-Dissolved (mg/L)         7.81         9.47         8.00           Silver (Ag)-Dissolved (mg/L)         <0.000020         0.0280         <0.000010           Sodium (Na)-Dissolved (mg/L)         23.1         24.6         19.4           Strontium (Sr)-Dissolved (mg/L)         0.560         0.160         0.869           Sulfur (S)-Dissolved (mg/L)         157         66.6         3.16           Thallium (TI)-Dissolved (mg/L)         <0.000020         0.000066         <0.000010           Tin (Sn)-Dissolved (mg/L)         <0.00020         <0.00050         <0.00010	
Nickel (Ni)-Dissolved (mg/L)       0.0046       0.0197       0.00362         Phosphorus (P)-Dissolved (mg/L)       <0.050       0.154       0.244         Potassium (K)-Dissolved (mg/L)       2.23       8.58       3.94         Selenium (Se)-Dissolved (mg/L)       0.00031       0.00238       0.00057         Silicon (Si)-Dissolved (mg/L)       7.81       9.47       8.00         Silver (Ag)-Dissolved (mg/L)       <0.000020       0.0280       <0.000010         Sodium (Na)-Dissolved (mg/L)       23.1       24.6       19.4         Strontium (Sr)-Dissolved (mg/L)       0.560       0.160       0.869         Sulfur (S)-Dissolved (mg/L)       157       66.6       3.16         Thallium (TI)-Dissolved (mg/L)       <0.000020       0.000066       <0.000010         Tin (Sn)-Dissolved (mg/L)       <0.00020       <0.00050       <0.00010	
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)  Strontium (Sr)-Dissolved (mg/L)  Strontium (Sr)-Dissolved (mg/L)  Thallium (Tl)-Dissolved (mg/L)  Tin (Sn)-Dissolved (mg/L)  Solo50  0.154  0.244  0.00031  0.00238  0.00023  0.000238  0.000238  0.000238  0.00020  0.0280  0.000010  23.1  24.6  19.4  0.560  0.160  0.869  3.16  7hallium (Tl)-Dissolved (mg/L)	
Potassium (K)-Dissolved (mg/L)  Selenium (Se)-Dissolved (mg/L)  Silicon (Si)-Dissolved (mg/L)  Silver (Ag)-Dissolved (mg/L)  Sodium (Na)-Dissolved (mg/L)  Strontium (Sr)-Dissolved (mg/L)  Sulfur (S)-Dissolved (mg/L)  Thallium (Tl)-Dissolved (mg/L)  Tin (Sn)-Dissolved (mg/L)  Selenium (Se)-Dissolved (mg/L)  2.23  8.58  3.94  0.00023  0.00238  0.00023  0.0280  0.0280  0.0280  0.000010  0.869  0.160  0.869  3.16  Thallium (Tl)-Dissolved (mg/L)  Vo.000020  0.000066  0.000066  0.000010  0.000066  0.000010  0.000066  0.000010	
Selenium (Se)-Dissolved (mg/L)       0.00031       0.00238       0.00057         Silicon (Si)-Dissolved (mg/L)       7.81       9.47       8.00         Silver (Ag)-Dissolved (mg/L)       <0.000020       0.0280       <0.000010         Sodium (Na)-Dissolved (mg/L)       23.1       24.6       19.4         Strontium (Sr)-Dissolved (mg/L)       0.560       0.160       0.869         Sulfur (S)-Dissolved (mg/L)       157       66.6       3.16         Thallium (TI)-Dissolved (mg/L)       <0.000020       <0.000066       <0.000010         Tin (Sn)-Dissolved (mg/L)       <0.000020       <0.00050       <0.00010	
Silicon (Si)-Dissolved (mg/L)       7.81       9.47       8.00         Silver (Ag)-Dissolved (mg/L)       <0.000020       0.0280       <0.000010         Sodium (Na)-Dissolved (mg/L)       23.1       24.6       19.4         Strontium (Sr)-Dissolved (mg/L)       0.560       0.160       0.869         Sulfur (S)-Dissolved (mg/L)       157       66.6       3.16         Thallium (Tl)-Dissolved (mg/L)       <0.000020       0.000066       <0.000010         Tin (Sn)-Dissolved (mg/L)       <0.00020       <0.00050       <0.00010	
Silver (Ag)-Dissolved (mg/L)       <0.000020       0.0280       <0.000010         Sodium (Na)-Dissolved (mg/L)       23.1       24.6       19.4         Strontium (Sr)-Dissolved (mg/L)       0.560       0.160       0.869         Sulfur (S)-Dissolved (mg/L)       157       66.6       3.16         Thallium (TI)-Dissolved (mg/L)       <0.000020       0.000066       <0.000010         Tin (Sn)-Dissolved (mg/L)       <0.00020       <0.00050       <0.00010	
Silver (Ag)-Dissolved (mg/L)	
Strontium (Sr)-Dissolved (mg/L)       0.560       0.160       0.869         Sulfur (S)-Dissolved (mg/L)       157       66.6       3.16         Thallium (TI)-Dissolved (mg/L)       <0.000020       0.000066       <0.000010         Tin (Sn)-Dissolved (mg/L)       <0.00020       <0.00050       <0.00010	
Sulfur (S)-Dissolved (mg/L)  157 66.6  Thallium (TI)-Dissolved (mg/L)  7in (Sn)-Dissolved (mg/L)  5.300 6.100 6.300 6.100 6.000 6.000 6.000 6.0000 6.0000 6.00000 6.000000 6.000000 6.0000000 6.0000000 6.0000000 6.0000000 6.00000000	
Thallium (TI)-Dissolved (mg/L)	
Thallium (TI)-Dissolved (mg/L)	
Tin (Sn)-Dissolved (mg/L) <0.00020 <0.00050 <0.00010	
Titanium (Ti)-Dissolved (mg/L) <0.020 C0.050 C0.010	
Uranium (U)-Dissolved (mg/L) 0.000306 0.000540 0.000160	
Vanadium (V)-Dissolved (mg/L) 0.0102 <0.0050 0.0079	
Zinc (Zn)-Dissolved (mg/L) 0.0099 <0.0050 0.0020	

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

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### **Reference Information**

#### **Qualifiers for Individual Samples Listed:**

Sample Number	Client Sample ID	Qualifier	Description
L1531711-17	GSI-DC-10B DISSOLVED ME	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531711-18	MP09-09 DISSOLVED META	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1531711-19	GSI-DC-06B DISSOLVED ME	WSMD	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

QC Samples	with	Qualifiers	&	Comments:
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QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Duplicate	Beryllium (Be)-Dissolved	DLA	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5 -6, -7, -8, -9
Duplicate	Bismuth (Bi)-Dissolved	DLA	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5 -6, -7, -8, -9
Duplicate	Chromium (Cr)-Dissolved	DLA	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5 -6, -7, -8, -9
Duplicate	Lead (Pb)-Dissolved	DLA	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5 -6, -7, -8, -9
Duplicate	Silver (Ag)-Dissolved	DLA	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5 -6, -7, -8, -9
Duplicate	Thallium (TI)-Dissolved	DLA	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5 -6, -7, -8, -9
Duplicate	Titanium (Ti)-Dissolved	DLA	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5 -6, -7, -8, -9
Duplicate	Vanadium (V)-Dissolved	DLA	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Fluoride (F)	MS-B	L1531711-1, -10, -11, -12, -13, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Sulfate (SO4)	MS-B	L1531711-1, -10, -11, -12, -13, -15, -16, -2, -3, -4, -5, -6, -7, -8, -9
Matrix Spike	Calcium (Ca)-Dissolved	MS-B	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5 -6, -7, -8, -9
Matrix Spike	Sulfur (S)-Dissolved	MS-B	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5 -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5 -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5 -6, -7, -8, -9
Matrix Spike	Total Inorganic Carbon	MS-B	L1531711-13
Matrix Spike	Total Kjeldahl Nitrogen	MS-B	L1531711-1, -10, -11, -12, -13, -2, -4, -5, -6, -9
Matrix Spike	Total Kjeldahl Nitrogen	MS-B	L1531711-1, -10, -11, -12, -13, -2, -4, -5, -6, -9
Matrix Spike	Barium (Ba)-Dissolved	MS-B	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5 -6, -7, -8, -9
Matrix Spike	Manganese (Mn)-Dissolved	MS-B	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5 -6, -7, -8, -9
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5 -6, -7, -8, -9
Matrix Spike	Sodium (Na)-Dissolved	MS-B	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5 -6, -7, -8, -9
Matrix Spike	Strontium (Sr)-Dissolved	MS-B	L1531711-1, -10, -11, -12, -13, -17, -18, -19, -2, -3, -4, -5 -6, -7, -8, -9
Matrix Spike	Barium (Ba)-Total	MS-B	L1531711-15, -16
Matrix Spike	Strontium (Sr)-Total	MS-B	L1531711-15, -16
Matrix Spike	Total Kjeldahl Nitrogen	MSTN	L1531711-16, -7

#### Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLM	Detection Limit Adjusted due to sample matrix effects.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
MSTN	TKN Matrix Spike recovery was low due to interference from high nitrate, which causes negative bias on TKN.
	Reported Result Verified By Repeat Analysis

#### **Reference Information**

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RRV			
Test Method Referen	ces:		
ALS Test Code	Matrix	Test Description	Method Reference**
ALK-COL-VA	Water	Alkalinity by Colourimetric (Automated)	EPA 310.2
This analysis is carried colourimetric method.	out using proce	edures adapted from EPA Method 310.2 "Alk	alinity". Total Alkalinity is determined using the methyl orange
ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 "Alkalinity"
			kalinity". Total alkalinity is determined by potentiometric titration to a method physical ph
ALK-PCT-VA	Water	Alkalinity by Auto. Titration	APHA 2320 Alkalinity
			kalinity". Total alkalinity is determined by potentiometric titration to a method physical ph
ANIONS-CL-IC-WR	Water	Chloride by Ion Chromatography	EPA 300.1
			etermination of Inorganic Anions by Ion Chromatography", Revision ers Using a Hydroxide-Selective Column", Application Note 154 v.19
ANIONS-F-IC-WR	Water	Fluoride by Ion Chromatography	EPA 300.1
			etermination of Inorganic Anions by Ion Chromatography", Revision ers Using a Hydroxide-Selective Column", Application Note 154 v.19
ANIONS-NO2-IC-WR	Water	Nitrite Nitrogen by Ion Chromatography	EPA 300.1
	m "Determinatio	n of Inorganic Anions in Environmental Wate	etermination of Inorganic Anions by Ion Chromatography", Revision ers Using a Hydroxide-Selective Column", Application Note 154 v.19
ANIONS-NO3-IC-WR	Water	Nitrate Nitrogen by Ion Chromatography	EPA 300.1
	m "Determinatio	n of Inorganic Anions in Environmental Wate	etermination of Inorganic Anions by Ion Chromatography", Revision ers Using a Hydroxide-Selective Column", Application Note 154 v.19
ANIONS-SO4-IC-WR	Water	Sulphate by Ion Chromatography	EPA 300.1
			etermination of Inorganic Anions by Ion Chromatography", Revision ers Using a Hydroxide-Selective Column", Application Note 154 v.19
CARBONS-TIC-VA	Water	Total inorganic carbon by CO2 purge	APHA 5310 TOTAL ORGANIC CARBON (TOC)
This analysis is carried	out using proce	edures adapted from APHA Method 5310 "To	otal Organic Carbon (TOC)".
CARBONS-TOC-VA	Water	Total organic carbon by combustion	APHA 5310 TOTAL ORGANIC CARBON (TOC)
		edures adapted from APHA Method 5310 "To	` '
Triis analysis is samea	out doing proof	realized daupted from All Till Method 6010	oral organic databan (100).
CN-FREE-CFA-VA	Water	Free Cyanide in water by CFA	ASTM 7237
			ree Cyanide with Flow Injection Analysis (FIA) Utilizing Gas Diffusion as diffusion at pH 6 with final determination by colourimetric analysis
CN-SCN-VA	Water	Thiocyanate by Colour	APHA 4500-CN CYANIDE
This analysis is carried colourimetric method.	out using proce	edures adapted from APHA Method 4500-CN	I- M "Thiocyanate" Thiocyanate is determined by the ferric nitrate
CN-T-CFA-VA	Water	Total Cyanide in water by CFA	ISO 14403:2002
CFA)". Total or strong a colourimetric analysis.	acid dissociable Method Limitati	(SAD) cyanide is determined by in-line UV of	2 "Determination of Total Cyanide using Flow Analysis (FIA and digestion along with sample distillation and final determination by the from thiocyanate (SCN). If SCN is present in the sample, there could be as low as zero.
CN-WAD-CFA-VA	Water	Weak Acid Diss. Cyanide in water by CFA	A APHA 4500-CN CYANIDE
This analysis is carried	out using proce	edures adapted from APHA Method 4500-CN	II. "Weak Acid Dissociable Cyanide". Weak Acid Dissociable

APHA 2510 Auto. Conduc.

HARDNESS-CALC-VA Water Hardness APHA 2340B

(WAD) cyanide is determined by in-line sample distillation with final determination by colourimetric analysis.

Conductivity (Automated)

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

Water

**EC-PCT-VA** 

electrode.

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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

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 or atomic absorption 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 or atomic absorption spectrophotometry (EPA Method 245.7).

**IONBALANCE-VA** 

Water

Water

Ion Balance Calculation

**APHA 1030E** 

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

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

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

MET-D-CCMS-VA

Water

Dissolved Metals in Water by CRC ICPMS

APHA 3030 B&E / EPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

MET-DIS-LOW-ICP-VA

Water

Dissolved Metals in Water by ICPOES

EPA 3005A/6010B

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

**MET-T-CCMS-VA** 

Water

Total Metals in Water by CRC ICPMS

APHA 3030 B&F / FPA SW-846 6020A

This analysis is carried out using procedures adapted from "Standard Methods for the Examination of Water and Wastewater" published by the American Public Health Association, and with procedures adapted from "Test Methods for Evaluating Solid Waste" SW-846 published by the United States Environmental Protection Agency (EPA). The procedures may involve preliminary sample treatment by acid digestion, using hotblock, or filtration (APHA 3030B&E). Instrumental analysis is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

**MET-TOT-LOW-ICP-VA** 

Water

Total Metals in Water by ICPOES

EPA 3005A/6010B

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

NH3-F-VA

Water

Ammonia in Water by Fluorescence

J. ENVIRON. MONIT., 2005, 7, 37-42, RSC

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

S-DIS-ICP-VA

Water

Dissolved Sulfur in Water by ICPOES

EPA SW-846 3005A/6010B

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

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

S-TOT-ICP-VA

Water

Total Sulfur in Water by ICPOES

EPA SW-846 3005A/6010B

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

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

S2-T-COL-VA

Water

Total Sulphide by Colorimetric

APHA 4500-S2 Sulphide

This analysis is carried out using procedures adapted from APHA Method 4500-S2 "Sulphide". Sulphide is determined using the methlyene blue colourimetric method.

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.

\*\* 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
WR	ALS ENVIRONMENTAL - WHITEHORSE, YUKON, CANADA
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

#### **Chain of Custody Numbers:**

2

#### **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.

1

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.

## ALS Environmental

### Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

L1531711-COFC

COC Number: 1 - 10102014

Page <u>1</u> of <u>2</u>

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## ALS Environmental

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Canada Toll Free: 1 800 668 9878

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Page 2 of 2

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### **APPENDIX D**

Description of Frozen Monitoring Wells Encountered During 2014 Sampling Events

### DESCRIPTION OF FROZEN MONITORING WELLS ENCOUNTERED DURING 2014 SAMPLING EVENTS

Based on a comparison of well monitoring data (June and October 2014) and available well logs, as assessment of frozen monitoring wells was completed to determine which wells are likely situated in zones of discontinuous permafrost (Table 1), and which were likely frozen due to seasonal conditions (Table 2). As noted in the report, for those wells believed to be situated in discontinuous permafrost where samples were collected in the fall of 2014, there is believed to be a potential influence of permafrost melt on the samples collected.

 Table D
 1 Frozen Monitoring Wells Influenced by Discontinuous Permafrost

Well ID	2014 Event (Spring/Fall)	Depth to Water (m TOC)	Sampled (Yes/No)
W44402002DLI04	Spring	6.646	No
W14103083BH01	Fall	6.460	No
W14103083BH02	Spring	6.897	No
W 14103063BH02	Fall	6.130	Yes
W4.44.02002DLI0.4	Spring	6.730	No
W14103083BH04	Fall	6.230	Yes
MMM00 42	Spring	8.995	No
MW09-13	Fall	9.020	No
NAVA 00 4 4	Spring	5.098	No
MW09-14	Fall	6.940	No
NAVA 00 45	Spring	13.947	No
MW09-15	Fall	13.970	No
OU D 40 04/40	Spring	2.630	No
CH-P-13-01/10	Fall	2.710	Yes
CL L 0.7. 0.4	Spring	12.876	No
GLL07-01	Fall	13.890	No

Notes:

m TOC meters top of casing permafrost melt water

**Table D - 2** Frozen Monitoring Wells Influenced by Seasonal Conditions (i.e., ice plugs at top of water column broken mechanically or thawed using hot deionized water)

Well ID	2014 Event (Spring/Fall)	Depth to Water (m TOC)	Sampled (Yes/No)
MW09-08	Fall	1.140	Yes
MP09-03	Fall	0.730	Yes
MP09-11	Fall	1.700	Yes
MP09-12	Fall	1.680	Yes
GSI-PC-02B	Fall	0.890	No
GSI-DC-05B	Fall	0.570	No

Notes: m meters TOC top of casing

# APPENDIX E Response to Comments Received on Draft Report

#### Response to Comments from Draft Report Version (as Received November 25, 2014).

Comment No.	Page	Comment	Response
1	4	In previous report, it stated that the well was damaged	CH-P-13-03/10 was damaged at the top coupler of the PVC pipe, the field crew was able to successfully repair the well during the fall. The well casing material (sand) was missing and presumed to have fallen into the well (this was also observed in the spring), as indicated by the DTB measurement of 5.2 m which was less than that previously documented DTB (10 m). Re-developing the well and removing the sand was not possible using a hydrolift due to an absence of groundwater. Due to the variation in DTB the well was recorded as 'blocked', but we have changed the status to Damaged to better represent the condition observed.
2	4	In the previous report, stated that obstruction may be a plastic bailer. Can this be removed?	During both the spring and fall sampling events the field crew described a hollow plastic sound when measuring depth-to-blockage at this location. The blockage was assumed to be a plastic bailer, although this was not confirmed. Efforts were made to remove the blockage during the fall event with no success. A small diameter camera could be used during future monitoring events to investigate the blockage in more detail.
3	5	Previous report stated that there was an obstruction.	Sample location MW09-01 could not be sampled due to an excessive quantity of tailings present in the groundwater. Presence of tailings may indicate the well screen has been damaged or compromised.
4	5	Is it repairable?	CH-P-13-02/10 needs to be re-developed. Although sample site CH-P-13-02/10 was recorded as a dry well, ~90 ml of standing water was measured. This volume was determined to be insufficient for sampling. Bentonite was also present at the bottom of the well. Standing water volume was insufficient for re-development of this well.
5	9	AAM's	Report has been revised accordingly.
6	9	consultant (AMEC) prior to the	Report has been revised accordingly.
7	9	AAM's consultant (AMEC) and employed	Report has been revised accordingly.
8	10	What about dissolved oxygen?	Report has been revised accordingly.
9	10	Notation appears to be in the wrong spot.	Report has been revised accordingly.
10	10	Where's number 2?	Report has been revised accordingly.
11	11	Please ensure notation are correct.	Notation has been revised accordingly.
12	14	Why are we comparing to October 13 data? Shouldn't we not be comparing to June 14 (the most recent)? Or is it a seasonal reason for why we choose October 13.	Table 3-1 is a summary of parameters collected for October 2014. The table title has been revised accordingly.

Comment No.	Page	Comment	Response
13	17	Why is it measured as a percentage?	The meters used to measure headspace gases were sourced from two rental companies and each unit had been setup differently, therefore units for CO2 varied. One meter malfunctioned in the field and also reported CO2 in % rather than ppm. Only four measurements were taken using this meter, and the readings did not appear to be accurate. These have been removed from the final version.
14	17	What is the size and are all the drive points the same size?	All drive points were ½" in diameter.
15	18	Ensure to make changes once analytical data (table A and B) has been reviewed with respects to comments provided.	Analytical tables have been reviewed and no changes to CCME guideline exceedances were required.
16	18	Is this common practice?	It is common practice for the laboratory to use dilution to analyse samples that contain elevated quantities of certain materials. No evidence exists to suggest that these samples exceed CCME guidelines and the results are therefore not flagged as exceedances.
17	20	Can it be removed?	As stated in comment 2, the blockage was assumed to be a plastic bailer. Efforts were made to remove the blockage during the fall event with no success. Further efforts could be made to remove the blockage, including using a camera to investigate the obstruction in more detail. Once we get a better look at the obstruction we can decide on the most effective approach for removal.
18	20	Were you able to go deeper? And was this an issue during the last event?	The blockage was observed at the same depth during the spring and fall sampling event. We were not able to get below the obstruction, a bailer was lowered to the depth of the blockage to confirm there was no water in the accessible portion of the well.
19	22	Says in table that it's damaged?	This well was listed as damaged due to the bentonite observed in the bottom of the well. This well should be redeveloped. Due to the low volume of standing water present in the well, redevelopment was not possible during the October 2014 sampling event.
20	23	This seems high. Does it mean MP09-05 results should be disregarded?	We do not recommend disregarding the MP09-05 sample altogether. RPD values for sulphate and total cyanide (25.8% and 22.9%) are only slightly above the 20% threshold and should therefore be considered satisfactory. RDP values for TOC however were 63.3%, in this case, the TOC value recorded may not be representative and additional sampling may need to be completed to confirm TOC concentration.  No variations from laboratory or field methods were identified that may have caused sample variation. Although turbidity was at an acceptable level in this sample (7.68 NTU), it is possible that sediment and/or particles in the water sample and duplicate varied, which could give a different TOC value. It is also possible that when the lab implements their sampling protocol we could see variations (i.e. they may shake the bottle right before analysis).
21	23	spelling	Report has been revised accordingly.

Comment No.	Page	Comment	Response
22	23	Provide overall QA/QC conclusion.  Are they acceptable or not?	Conclusion section has been added.
23	24	Identify how many wells require this and which ones?	Location ID for wells at risk of contamination have been added to the report recommendations.
24	24	I thought that this was going to be addressed during this program?	CH-P-13-03/10 was damaged at the top coupler of the PVC pipe, the loose PVC stickup was repaired (glued) at the end of the spring 2014 program. The well casing material (sand) was missing and presumed to have fallen into the well, as indicated by the DTB measurement of 5.2 m which was less than that previously documented DTB (10 m) during the spring sampling event. Re-developing the well and removing the sand was not possible using a hydrolift due to an absence of groundwater. Removal of nearly 5m column of sand/sediment that extents over the water table may be challenging. A potential way to clear out the sand includes filling the well with water and simultaneously air-lifting the water (with an air compressor). Depending on the well's hydraulic conductivity large volumes of water may be required. For example, if the well accepts large volumes of water without significant pooling inside the well, an air-lift redevelopment method may be effective. An alternative approach (better but much more expensive) would include using a hydrovac with narrow tubing (1.5") to vacuum the sand/sediment out of the well.  CH-P-13-04/35 had blockage at 6.505 m below the surface. As mentioned earlier, this blockage could potentially be equipment associated with a previous piezometer installation. A deployable camera would be recommended to be used during future monitoring events to further investigate the blockage.  MW09-01 could not be sampled due to an excessive quantity of tailings present in the groundwater. Presence of tailing may indicate the well screen has been damaged or compromised. Not much can be done to remedy this well other than reinstalling it if the condition persists.  CH-P-13-02/10 had only 90 ml of standing water present in the well. This volume was determined to be insufficient for sampling. Bentonite was also present at the bottom of the well. CH-P-13-02/10 was treated as dry well and therefore not sampled. Again, this well should be redeveloped but requires a larger quantity of standing water to complete the
25	24	How many locations?	The majority of monitoring wells have slits installed in the PVC casing that release headspace gases. Each well varies slightly in where and how these slits were installed. A complete record of these features were not captured during the 2014 events. If fitting these wells for proper headspace gas monitoring is of interest to AAM, this detail could be added to field forms for a future monitoring event. This would help to generate an inventory of how this could be completed for individual wells. The DP sites are properly sealed with threaded caps.

Comment No.	Page	Comment	Response
26	24	For 5 and 6 Shouldn't this not be a requirement? Is this common practice does it follow typical procedure?	It is not common procedure, and Hemmera/ELR have made this as a suggestion only as AAM's Consultant (AMEC) have designed the monitoring program through 2014. In our opinion, these suggestions would help to collect more representative samples, particularly at a site where there is significant metal contamination (i.e. an abandoned hard rock mine). The reason we would recommend field-filtered samples for acidity, alkalinity and hardness is because it reduces the particles that metals could attach to. If there are metals attached to the particles this could impact the acidity, alkalinity and/or hardness that would result in the groundwater. We recommend collecting alkalinity samples separately in a bottle with zero headspace because when the water sample interacts with oxygen there is the possibility of ion transfer that could result in an artificial alkalinity results.
27	28	You will see that we went through all the data and highlighted ones that we thought needed clarity (either should of been highlighted or were highlighted when they didn't need to be) Could you guys do a check and based on any errors found, please change any analytical results provided in the previous section.	We have reviewed each of the values highlighted in the table and found that no changes to CCME exceedances were necessary.
28	29	Please insert detection limit column	We have not included a detection limit column due to inconsistencies in detection limit among samples. Due to the need to dilute some samples, detection limits vary from sample to sample and cannot be provided in a single column.
29	29	Insert field test parameters here too!	Table has been revised accordingly.
30	29	Is there parameters missing here? (i.e. TSS)	No parameters were found to missing. TSS was not included in the original scope of work.
31	30	On notes sheet, rage for cadmium is given at 0.04 - 0.37. why is it at 0.016 - 0.37 here?	The ranges for parameter exceedences were listed according to the actual range of guideline levels based on individual site conditions. As per discussions with AAM, these ranges have now been replaced with the text "Varies" and a reference to guideline details.
32	33	Where is CH-P-13-02?	Table has been revised accordingly.