

# Faro Mine Complex, September 2016 Groundwater Sampling

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**Government of Yukon**

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## 1.0 INTRODUCTION

Hemmera Envirochem Inc. (Hemmera) and Ecological Logistics & Research Ltd. (ELR) were retained by the Government of Yukon (GY), Assessment and Abandoned Mines (AAM) to conduct a groundwater sampling program at the Faro Mine Complex (FMC). The program consists of two sampling events: June and September, 2016. This report summarizes the activities completed and analytical results from the September 2016 sampling event.

This Work was performed in accordance with contract C00033457 between Hemmera and the Government of Yukon ("Client"), dated May 13, 2016 ("Contract"). This Report has been prepared by Hemmera/ELR, based on fieldwork conducted by Hemmera/ELR, for sole benefit and use by the Government of Yukon. In performing this work, Hemmera has relied in good faith on information provided by others, and has assumed that the information provided by those individuals is both complete and accurate. This work was performed to current industry standard practice for similar environmental work, within the relevant jurisdiction and same locale. The findings presented herein should be considered within the context of the scope of work and project terms of reference; further, the findings are time sensitive and are considered valid only at the time the Report was produced. The conclusions and recommendations contained in this Report are based upon the applicable guidelines, regulations, and legislation existing at the time the Report was produced; any changes in the regulatory regime may alter the conclusions and/or recommendations.

### 1.1 SITE LOCATION

The FMC is located approximately thirteen (13) kilometres (km) northeast of the Town of Faro, Yukon (20 km by road). The FMC consists of two distinct areas, the Faro Mine Area and the Vangorda/Grum Area (**Figure 1-1**), which are connected by a fourteen (14) km roadway (the Haul Road; **Figure 1-1**). Groundwater sampling stations exist throughout the FMC and surrounding area, a series of which were sampled during the September 2016 program. Specific sampling locations and general sample site distribution are described in **Sections 1.2** and **1.3**.

### 1.2 SCOPE OF WORK

The scope of work (SOW) included the coordination and execution of the September 2016 groundwater sampling program and the preparation of this summary report. This report provides a summary of the sampling program activities, methodologies (including any deviations from standard methodologies), field *in-situ* and laboratory analytical results, concentrations of contaminants exceeding applicable guidelines, and recommendations relating to sample procedures and monitoring well conditions. This report does not provide an interpretation of the analytical results or provide recommendations relating to program design. The groundwater sampling event at the FMC was conducted over a six (6) day period between September 20 and September 25, 2016. 103 groundwater wells were specified by AAM for the event (**Table 1-1**), 50 of which were not included in the June 2016 sampling event (Hemmera, 2016). Sampling was conducted by a team of four (4) field staff from Hemmera/ELR.

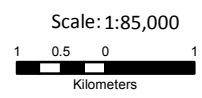
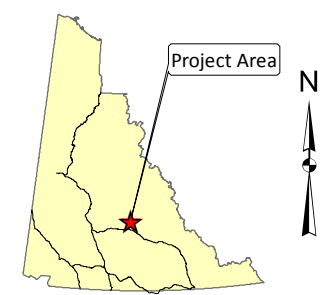


NOTES:  
 1. Units: Meters  
 2. Projection: UTM Zone 8 NAD83  
 3. 2008 Quickbird imagery (courtesy of Yukon Geomatics) and spatial data provided by Yukon government.

**September 2016 FMC  
 Groundwater Sampling Program**



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**FIGURE 1-1**  
 Site Location - Faro Mine Complex

At each well (sampling station) the groundwater level and depth to bottom of the well were measured, the well was purged appropriately, and field parameters were measured (pH, water temperature, conductivity, specific conductivity, oxidation-reduction potential, and dissolved oxygen). Groundwater samples were collected following field measurements and purging, and were analysed for general groundwater quality chemistry (dissolved metals, major anions/cations, and physical parameters). A detailed description of the sampling methodology is provided in **Section 2**.

### 1.3 SAMPLE SITES

September 2016 groundwater sampling was conducted at 103 wells across seven (7) different areas of the FMC (**Table 1-1; Figures 1-1 to 1-4**). 102 of the 103 wells identified for the event were successfully located. One (1) well (sampling station S3) was not located during the spring or fall 2016 events and is presumed to have been destroyed. The majority of the sample sites included in the program were located in the Faro Mine Area (92 wells), with the remaining wells located in the Vangorda/Grum Area (11 wells). A large portion of the wells sampled in the Faro Mine Area were located in the S-Wells Area (27 wells; **Figure 1-3**), with additional wells in the surrounding areas. Wells in the Vangorda/Grum Area were primarily located in the vicinity of the Grum Sulphide Cell (**Figure 1-4**). **Table 1-1** summarizes sample sites included in the sampling program, while **Figures 1-2** through **1-4** show locations and general distribution of the sites. Photographs of each sample site are included as **Appendix A**.

**Table 1-1 Summary of Groundwater Sample Sites Identified for September 2016 Program**

Area	Well Name	UTM (Zone 8N)		Well Status	Sample Collected	QA/QC Sample Collected
		Easting	Northing			
Cross Valley Dam (CVD) Area	P01-02A	579962	6914224	Damaged <sup>1</sup>	✓	-
	P01-02B	579962	6914224	Damaged <sup>1</sup>	✓	-
	P01-11	580092	6914486	Good	✓	-
	P03-09-02	579948	6914410	Good	✓	-
	P03-09-04	579948	6914410	Good	✓	-
	P03-09-6	579948	6914411	Good	✓	-
	P03-09-08	579948	6914410	Good	✓	-
	P03-09-9	579948	6914411	Good	✓	-
	P05-01-01	580061	6914510	Good	✓	-
	P05-01-02	580056	6914505	Good	✓	-
	P05-01-03	580056	6914505	Good	✓	-
	P05-01-04	580056	6914505	Good	✓	-
	P05-01-05	580056	6914505	Good	✓	-
	P05-02	580036	6914439	Good	✓	DUP-6
	P05-03	579982	6914346	Good	✓	FB-4

Area	Well Name	UTM (Zone 8N)		Well Status	Sample Collected	QA/QC Sample Collected
		Easting	Northing			
Down Gradient of CVD Area	CH14-107-MW006A	579346	6915090	Good	✓	-
	CH14-107-MW006B	579348	6915088	Good	✓	-
	P01-01A	579701	6914854	Good	✓	DUP-5
	P01-01B	579701	6914854	Good	✓	-
	X16A	579446	6914842	Good	✓	-
	X16B	579446	6914842	Good	✓	-
	X17A	579756	6914648	Good	✓	-
	X17B	579756	6914648	Good	✓	-
	X18A	579986	6914713	Good	✓	-
	X18B	579986	6914713	Good	✓	-
Emergency Tailings Area (ETA)	P09-ETA-2	582700	6913812	Good	✓	-
	P96-8A	583220	6914072	Good	✓	-
	P96-8B	583220	6914072	Good	✓	-
	SRK04-3A	582870	6913995	Good	✓	-
	SRK05-ETA-BR1	582863	6914019	Good	✓	-
	SRK05-ETA-BR2	582879	6913997	Good	✓	-
Intermediate Dam	P01-03	580516	6914255	Good	✓	DUP-3
	P01-04A	580372	6914074	Good	✓	-
	P01-04B	580372	6914074	Frozen		-
	X24-96D	580544	6914298	Good	✓	FB-2
	X25-96A	580544	6914298	Good	✓	-
	X25-96B	580407	6914119	Good	✓	-
Northeast Waste Rock Dumps	BH14A	585584	6914005	Good	✓	DUP-11
	BH14B	585584	6914005	Good	✓	-
	CH15-107-MW029	585765	6914129	Good	✓	FB-5
	CH15-107-MW030	585832	6914180	Good	✓	-
	CH15-107-MW032	585763	6914249	Slow Recharge <sup>2</sup>	✓	-
	CH15-107-MW033	585764	6914248	Good	✓	-
	CH15-107-MW034	585752	6914496	Good	✓	DUP-9

Area	Well Name	UTM (Zone 8N)		Well Status	Sample Collected	QA/QC Sample Collected
		Easting	Northing			
Second Impoundment	P03-04-02	581968	6913367	Good	✓	-
	P03-04-04	581968	6913367	Good	✓	-
	P03-04-06	581968	6913367	Good	✓	-
	P03-05-02	582488	6913115	Good	✓	-
	P03-05-04	582605	6912934	Good	✓	-
	P03-05-05	582488	6913115	Good	✓	-
	P03-06-1	582452	6913496	Slow Recharge <sup>2</sup>	✓	-
	P03-06-2	582452	6913496	Good	✓	-
	P03-06-03	582454	6913490	Good	✓	-
	P03-06-04	582454	6913490	Good	✓	-
	P03-06-05	582454	6913490	Good	✓	-
S-Wells Area	CH14-107-MW007A	584491	6913091	Good	✓	-
	CH14-107-MW007B	584489	6913092	Good	✓	DUP-1
	CH14-107-MW009	584499	6913099	Good	✓	-
	CH14-107-MW010	584497	6913098	Good	✓	-
	CH15-107-MW019	584288	6912966	Good	✓	-
	CH15-107-MW022	584288	6913049	Good	✓	-
	CH15-107-MW023	584119	6912962	Good	✓	-
	CH15-107-MW025	584136	6912881	Direct Sample <sup>3</sup>	✓	-
	P09-SIS1	584478	6913128	Good	✓	-
	P09-SIS2	584487	6913125	Good	✓	-
	P09-SIS3	584493	6913117	Good	✓	-
	P09-SIS4	584512	6913107	Good	✓	-
	P09-SIS6	584519	6913109	Good	✓	-
	P96-7	584127	6913287	Good	✓	-
	S1A	584433	6913114	Good	✓	-
	S1B	584433	6913114	Slow Recharge <sup>2</sup>	✓	-
	S2A	584471	6913123	Good	✓	-
	S2B	584471	6913123	Slow Recharge <sup>2</sup>	✓	-
	S3	584481	6913091	Destroyed <sup>4</sup>		-
	SRK05-SP-4A	584506	6913110	Good	✓	-
	SRK05-SP-4B	584506	6913110	Good	✓	-
	SRK05-SP-5	584467	6913133	Good	✓	-
	SRK08-SBR2	584484	6913123	Good	✓	DUP-2, FB-1
SRK08-SBR3	584394	6913146	Good	✓	-	
SRK08-SBR4	584447	6913140	Good	✓	-	
SRK08-SP-7A	584437	6913095	Good	✓	-	
SRK08-SP-7B	584437	6913095	Good	✓	-	

Area	Well Name	UTM (Zone 8N)		Well Status	Sample Collected	QA/QC Sample Collected
		Easting	Northing			
Vangorda Grum Area	P09-GS1A	592494	6904832	Good	✓	-
	P09-GS1B	592485	6904833	Good	✓	-
	P09-LCD1	593358	6903316	Good	✓	DUP-7
Vangorda Grum Area	P09-LCD4	593330	6903278	Slow Recharge <sup>2</sup>	✓	-
	P09-LCD6	593313	6903251	Good	✓	-
	P2001-02A	593132	6902866	Slow Recharge <sup>2</sup>	✓	-
	P2001-02B	593132	6902866	Slow Recharge <sup>2</sup>	✓	-
	P96-9A	592648	6903345	Good	✓	-
	SRK05-07	592375	6903189	Good	✓	-
	SRK05-08	592582	6903238	Good	✓	-
	SRK05-9	592949	6903158	Good	✓	-
	V34	593428	6902476	Good	✓	-
	V35	593175	6902554	Good	✓	-
	V36	593133	6902916	Good	✓	DUP-4, FB-3
	V37	593309	6903079	Slow Recharge <sup>2</sup>	✓	-
Zone 2 Pit Outwash Area	BH10A	585122	6913711	Good	✓	DUP-8
	BH10B	585122	6913711	Good	✓	-
	BH8	585144	6913777	Slow Recharge <sup>2</sup>	✓	-
	CH14-107-MW001	585079	6913406	Good	✓	-
	CH14-107-MW002	585078	6913511	Good	✓	DUP-10
	P05-04	585115	6913650	Good	✓	-

**Notes:**

<sup>1</sup> Although groundwater well P01-02B was found damaged in the field, this did not prevent sampling of the well.

<sup>2</sup> Sample sites are flagged as “slow recharge” when sample collection requires purging the well dry and returning to collect a sample following an extended period of recharge (typically 24 hours).

<sup>3</sup> Sample was collected directly without purging due to slow recharge rate.

<sup>4</sup> Groundwater well S3 was not located in the field and is presumed to have been destroyed.

NOTES:  
 1. Units: Meters  
 2. NTS Mapsheet: 11503  
 3. Projection: UTM Zone 8 NAD83  
 4. Site features (e.g., roads, trails, streams, waterbodies, watercourses and infrastructure areas) digitized by ELR using 2008 Quickbird imagery (courtesy of Yukon Geomatics) and spatial data provided by Yukon government.  
 5. Groundwater sampling locations collected by ELR (June, 2016), or provided by Government of Yukon - Assessment & Abandoned Mines (2016).

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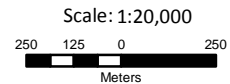
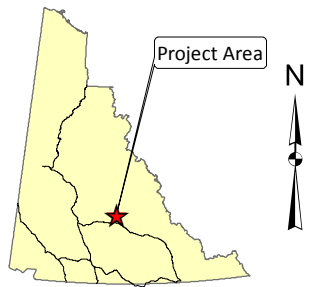


Client:



Legend

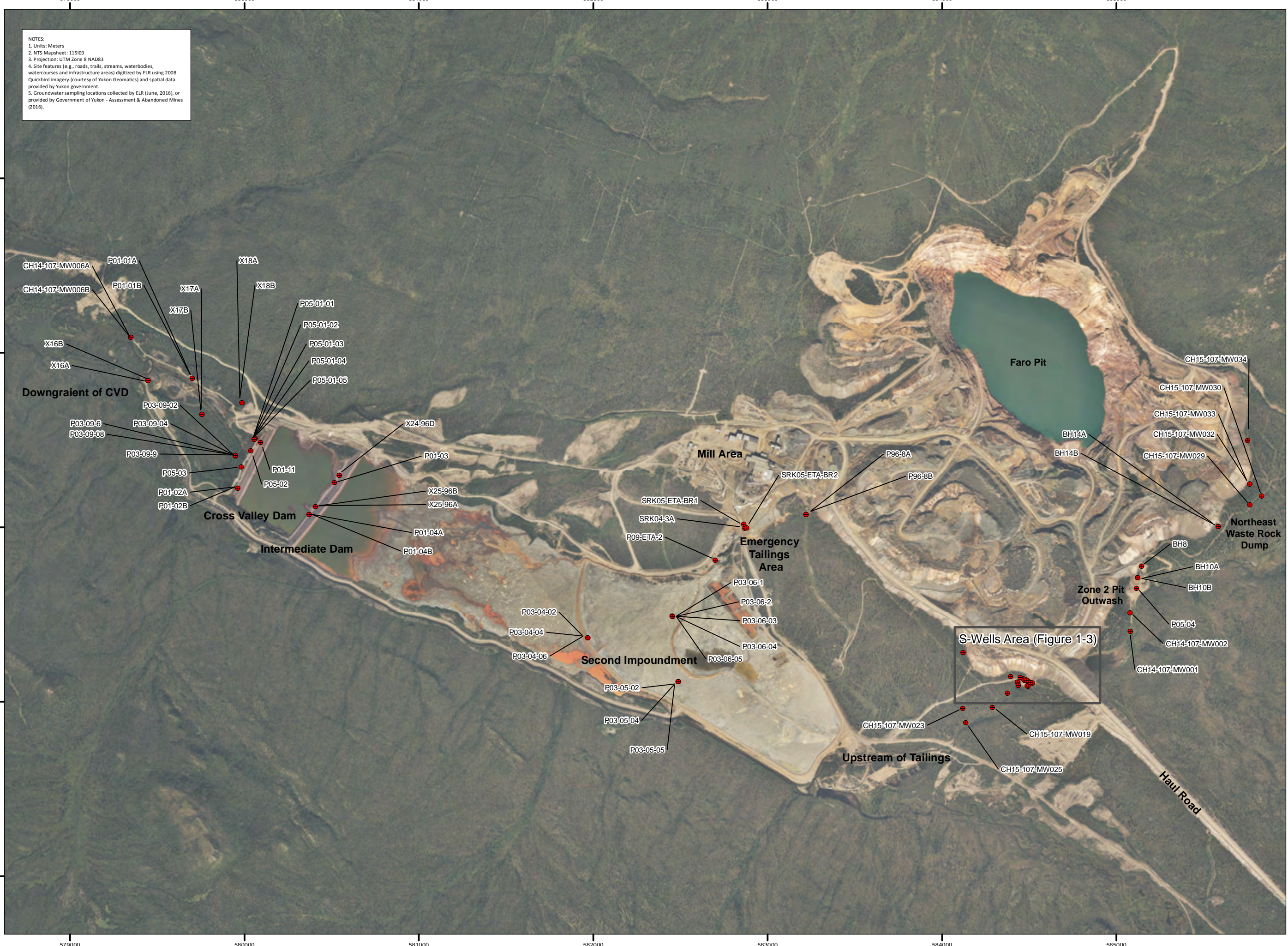
● Groundwater Monitoring Well Locations



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 Hemerra Project: 1343-005.31  
 ELR Project: 16-238.2

**FIGURE 1-2**  
 Groundwater Sampling Locations  
 Faro Mine Area

Drawn by: AN  
 Checked by: CJ



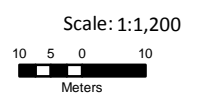
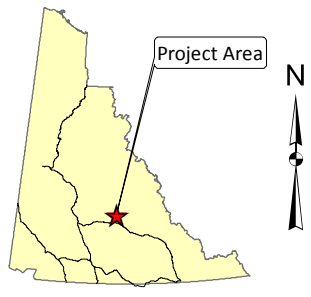


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Client:  
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**FIGURE 1-3**  
Groundwater Sampling Locations  
S-Wells Area

Drawn by: AN  
Checked by: CJ

**NOTES:**  
1. Units: Meters  
2. NTS Mapsheet: 11S103  
3. Projection: UTM Zone 8 NAD83  
4. Site features (e.g., roads, trails, streams, waterbodies, watercourses and infrastructure areas) digitized by ELR using 2008 Quickbird imagery (courtesy of Yukon Geomatics) and spatial data provided by Yukon government.  
5. ELR groundwater sampling locations collected by ELR (June 2016), or provided by Government of Yukon - Assessment & Abandoned Mines (2016).

NOTES:  
 1. Units: Meters  
 2. NTS Mapsheet: 115I03  
 3. Projection: UTM Zone 8 NAD83  
 4. Site features (e.g., roads, trails, streams, waterbodies, watercourses and infrastructure areas) digitized by ELR using 2008 Quickbird Imagery (courtesy of Yukon Geomatics) and spatial data provided by Yukon government.  
 5. ELR Groundwater Sampling Locations collected by ELR (June, 2016), or provided by Government of Yukon - Assessment & Abandoned Mine (2016).

September 2016 FMC Groundwater Sampling Program

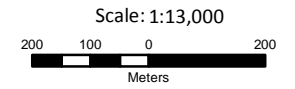
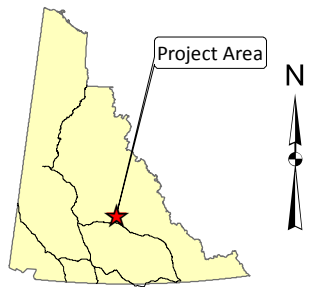


Client:



Legend

● Groundwater Monitoring Well Locations



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**FIGURE 1-4**  
 Groundwater Sampling Locations  
 Vangorda Grum Area

Drawn by: AN

Checked by: CJ



## 2.0 METHODOLOGY

### 2.1 PROTOCOLS

Groundwater purging and sampling conducted by Hemmera/ELR was in accordance with Yukon Environment's *Protocol for the Contaminated Sites Regulation #7 – Groundwater Monitoring Well Installation, Sampling and Decommissioning* (Yukon Environment, March 2011). Methods used were also consistent with the ASTM *D4448-01 Standard Guide for Sampling Groundwater Monitoring Wells* (ASTM, 2013), the *D6452-99 Guide for Purging Methods for Wells used for Groundwater Quality Investigations* (ASTM, 2012) and in accordance with *Standard Methods for the Examination of Water and Wastewater* (Rice et al., 2012).

### 2.2 WELL MEASUREMENTS AND PURGING

Upon arriving at each location, the well structure and casing were inspected for damage, closure, and general conditions. Several measurements were recorded from each well, including depth to water (DTW; m), depth to bottom (DTB; m), well diameter (cm), and well stick-up height (m).

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 was drawn on the highest point of the well and measurement taken from that line if no distinguishable point of measure was present. Based on information reviewed by Hemmera/ELR, it is unknown where the point of measurement was for previous sampling programs. 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 decontaminated between each sample site using a combination of Alconox low-foaming phosphate-free detergent solution and de-ionized water.

Following the initial checks and measurements described above, groundwater wells were purged and sampled using one (1) of three (3) techniques: 1) Hydrolift electric inertial pump using dedicated high density polyethylene (HDPE) Waterra tubing and footvalve, 2) Manual purging using dedicated HDPE Waterra tubing and footvalve, or 3) GeoPump peristaltic pump using dedicated HDPE and silicone tubing. 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 (3) successive field parameter measurements were recorded to be within an allowable tolerance level (as summarized in **Table 2-1**), when a volume of groundwater equivalent to three (3) standing well volumes of groundwater had been purged, or, in the case of wells with extremely poor recharge (i.e., wells that require over 24 hours to recharge), the well has been purged dry and allowed to fully recharge to its initial DTW. Groundwater turbidity measured in Nephelometric Turbidity Units (NTU) or Attenuation Units (AU) was also measured prior to sampling and was used as an indication of sample quality. Where possible samples were not collected until turbidity was less than 50 NTU.

Purge volume measurements were collected using a graduated container and stop watch. All well measurements, purging details, and additional field notes were recorded on field forms.

**Table 2-1 Groundwater Sampling – Field Parameter Purging Criteria**

Field Parameter	Allowable Variance Across 3 Consecutive Readings
Temperature (°C)	±3%
pH (pH Units)	±0.1
Conductivity (µS/cm)	±3%

### 2.3 FIELD PARAMETERS

Hemmera/ELR measured general field parameters using a YSI Professional Plus multi-parameter meters and Lamotte 2020we turbidity meters. Where possible, field parameters were collected using a flow through cell in order to minimize field parameter variability. Field parameters recorded at each sample site included: groundwater temperature (°C), conductivity (µs/cm), specific conductivity (µs/cm), pH (pH Units), oxidation-reduction potential (ORP; mV), dissolved oxygen (mg/l and percent saturation), and turbidity (NTU or AU).

During purging, field parameters were monitored at 3-5 minute intervals, or at volume related intervals (e.g., every 500 mL) in the case of wells with slow recharge. In-situ measurements for reporting purposes were recorded at the conclusion of purging.

### 2.4 GROUNDWATER QUALITY SAMPLE COLLECTION

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 an example summary of the sample set collected at each sample location, including parameters analysed and preservation techniques, is provided in **Table 2-2**.

**Table 2-2 Groundwater Sampling – Preservation and Intended Analysis**

Bottle Type	Parameters Analyzed	Sample Treatment	Preservation Added
120 mL (Plastic)	Dissolved Metals (excluding mercury)	Field Filtered and Preserved	HNO <sub>3</sub>
1 L (Plastic)	Acidity, alkalinity, chloride, conductivity, pH, hardness, sulfate, total suspended solids (TSS)	-	None

### 2.5 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, 2016).

## 2.6 QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC)

### 2.6.1 Field QA/QC

Several controls were used by Hemmera/ELR staff while in the field to help 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 wells using Alconox low-foaming phosphate-free detergent and de-ionized 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.

### 2.6.2 Laboratory and Sampling QA/QC

Laboratory and sampling QA/QC measures taken as part of the September 2016 sampling program include the collection of duplicates and field blanks, and the inclusion of a travel blank, as outlined in the SOW and as per standard industry practice. Eleven (11) duplicate samples were collected in relation to 101 regular samples. Additionally, five (5) field blanks were collected, and one (1) travel blank accompanied the analytical supplies and samples during shipping to and from the laboratory.

The variation between sample and duplicate pair results 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 (2) values. RPD values greater than 20% indicates a greater variance than would normally be anticipated and may be due to a number of factors (e.g., short term change in parameter concentration, sediment in the sample, sampling or instrument error, large relative % difference but very low actual difference in concentration, such as 0.0001 vs 0.0002 mg/L). RPD was calculated according to the following formula:

$$\%RPD = \left( \frac{X_1 - X_2}{\left( \frac{X_1 + X_2}{2} \right)} \right) \times 100$$

Where  $X_1$  is the sample result and  $X_2$  is the corresponding duplicate result. RPD is not considered valid and is therefore 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 exceeded the reported 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 3-1** of this report, including comparison of results to CCME FAL guidelines. A summary of the QA/QC sampling results is also attached, including analytical data for duplicates, field blanks, and travel blanks (**Table 3-2**). Laboratory analytical reports are provided as **Appendix C**.

### 3.1 GROUNDWATER SAMPLING SUMMARY

Groundwater sampling was completed between September 20 and September 25, 2016. Weather conditions varied throughout the sampling program, with ambient air temperature ranging from -4°C to 13°C. Weather conditions were predominantly overcast, with occasional sunny periods and light wind. One hundred and two (102) of the one hundred and three (103) groundwater wells specified for the September 2016 sampling event were located and assessed by Hemmera/ELR. As noted in **Section 1.2**, one (1) well (sampling station S3) could not be located in the field. Groundwater samples were successfully collected from one hundred and one (101) of the one hundred and two (102) wells located, as outlined in **Table 1-1**. The one (1) well that could not be sampled (P01-04B) was found frozen during the time of sampling. A summary of groundwater wells sampled during the September 2016 sampling event, including field parameters and well measurements, is provided in **Table 3-3**. All samples were received by the laboratory within the required holding times and temperature limits.

A summary of the sampling results in the context of CCME-FAL guideline exceedances is provided in the following sections, organized by area.

**Table 3-3 Groundwater Field Parameters and Well Measurements Recorded During the September 2016 Sampling Program**

Area	Well Name	Sample Date	Well Status	Stick up Height (m)	Depth To Water (m)	Depth To Bottom (m)	Standing Water volume (L)	Volume Purged (L)	Purge Start time	Purge End Time	Elapsed Purge Time	Purge Rate (l/min)	Criteria <sup>1</sup> (3WV / PS / DS / PDR)	Draw Down (m)	pH (pH Units)	Temperature (°C)	Conductivity (µs/cm)	Specific Conductivity (µs/cm)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Field Turbidity (NTU)	Method Used	Well diameter (cm)	
Cross Valley Dam (CVD) Area	P01-02A	23/09/2016	Good	0.361	1.988	14.22	24.5	2.5	14:23	14:36	0:13	0.19	PS	0.024	7.56	4.3	457.7	758	-66.7	0.0	0.21	Peri. Pump	5.08	
	P01-02B	23/09/2016	Good	1.583	0 <sup>4</sup>	29.982	56.8	4	14:00	14:16	0:16	0.25	PS	0	7.63	4.1	341.2	567	-90.2	0.01	4.69	Peri. Pump	5.08	
	P01-11	23/09/2016	Good	1.295	1.259	11.034	22	20	9:55	10:08	0:13	0.15	PS	0	6.44	4.4	2378	3919	-35.5	0.03	27.2	Peri. Pump	5.08	
	P03-09-02	23/09/2016	Good	0.46	2.8	32.94	7.5	6.5	16:17	16:40	0:23	0.28	PS	NR*	6.87	4.2	1172	1944	-33.6	0.08	1.85	Peri. Pump	1.58	
	P03-09-04	23/09/2016	Good	0.58	3.154	24.436	5.3	10.5	16:48	17:09	0:21	0.50	PS	NR*	6.71	4.1	1319	2195	0.7	0.0	1.26	Peri. Pump	1.58	
	P03-09-6	23/09/2016	Good	0.63	3.228	19.572	4	2	17:24	17:30	0:06	0.33	PS	NR*	6.75	4.2	1310	2173	6.2	0.04	3.08	Peri. Pump	1.58	
	P03-09-08	23/09/2016	Good	0.65	3.611	10.266	1.66	2.5	17:37	17:44	0:07	0.36	PS	NR*	6.69	4.1	1395	2323	15.7	0.03	8.69	Peri. Pump	1.58	
	P03-09-9	23/09/2016	Good	3.942	3.942	8.392	2.23	2	17:49	17:57	0:08	0.25	PS	NR*	6.69	4.2	1390	2308	22.6	0.0	17.4	Peri. Pump	1.58	
	P05-01-01	23/09/2016	Good	0.455	1.312	26.243	6.23	6	11:38	12:05	0:27	0.22	PS	NR*	6.31	5.4	2216	3540	1.9	0.02	3.62	Peri. Pump	1.58	
	P05-01-02	23/09/2016	Good	0.48	1.529	20.768	4.8	1.5	11:28	11:40	0:12	0.13	PS	NR*	6.28	5.6	2300	3658	2.5	0.78	1.79	Peri. Pump	1.58	
	P05-01-03	23/09/2016	Good	0.519	1.566	17.803	4.1	3	11:17	11:29	0:12	0.25	PS	NR*	6.29	5.2	2375	3815	-4.7	0.1	3.59	Peri. Pump	1.58	
	P05-01-04	23/09/2016	Good	0.532	1.805	12.309	2.63	2	10:53	11:16	0:23	0.09	PS	NR*	6.33	5.3	2301	3685	-17.3	0.64	6.87	Peri. Pump	1.58	
	P05-01-05	23/09/2016	Good	0.552	1.982	6.553	1.14	2.5	10:53	11:05	0:12	0.21	PS	NR*	6.42	5.9	2228	3504	-21.8	0.01	2.4	Peri. Pump	1.58	
	P05-02	23/09/2016	Good	1.89	2.745	5.922	6.354	3	3	12:47	13:06	0:19	0.16	PS	0.012	6.3	5.8	2205	3487	5.8	0.68	3.42	Peri. Pump	5.08
	P05-03	23/09/2016	Good	0.812	4.469	8.01	7.1	3.5	3.5	12:41	13:06	0:25	0.14	PS	0.021	6.82	4.8	1272	2073	-34.6	0.08	1.49	Peri. Pump	5.08
Down Gradient of CVD Area	CH14-107-MW006A	22/09/2016	Good	0.000	1.682	2.582	7.29	6	17:05	17:43	0:38	0.16	PS	0.038	7.22	4.9	376.6	611	14.7	4.09	16	Peri. Pump	10.16	
	CH14-107-MW006B	22/09/2016	Good	0.000	2.607	5.795	24.90	2.5	17:55	18:07	0:12	0.21	PS	0	7.39	3.5	391.9	666	21.7	7.59	2.14	Peri. Pump	10.16	
	P01-01A	22/09/2016	Good	0.61	3.543	20.377	33.8	50	15:30	15:46	0:16	3.13	PS	0.09	6.88	2.1	1292	2293	31.1	2.19	0.15	Hydrolift	5.08	
	P01-01B	22/09/2016	Good	0.57	3.704	35.544	63.7	105	16:00	16:29	0:29	3.62	PS	0	7.22	2.3	908	1602	-9.8	1.77	0.08	Hydrolift	5.08	
	X16A	22/09/2016	Good	0.842	3.65	5.41	3.52	4	4	11:48	12:08	0:20	0.20	PS	0	7.55	6.5	239.8	370.7	-37.9	2.44	0.42	Peri. Pump	3.81
	X16B	22/09/2016	Good	1.03	3.751	29.05	50.6	30	30	12:13	12:27	0:14	2.14	PS	0	7.78	3.5	243.8	414	-39.5	4.67	96.4	Manual	7.62
	X17A	23/09/2016	Good	0.84	2.261	6.085	4.2	3.75	3.75	15:02	15:23	0:21	0.18	PS	0.008	7.34	3.2	315.4	541	3.5	0.19	0.83	Peri. Pump	3.81
	X17B	23/09/2016	Good	0.38	1.829	22.1	92.4	26	26	15:28	15:38	0:10	2.60	PS	NR*	6.84	2.8	1060	1842	-32	2.15	483	Manual	7.62
	X18A	22/09/2016	Good	0.622	4.282	12.349	16.1	6.5	6.5	13:18	14:01	0:43	0.15	PS	0.647	6.91	3.4	1068	1817	-19.9	0.0	1.13	Peri. Pump	5.08
X18B	22/09/2016	Good	0.632	4.012	10.736	12.4	6.5	6.5	14:11	14:49	0:38	0.17	PS	0	6.85	3.5	1003	1705	-0.1	0.0	0.04	Peri. Pump	5.08	

Area	Well Name	Sample Date	Well Status	Stick up Height (m)	Depth To Water (m)	Depth To Bottom (m)	Standing Water volume (L)	Volume Purged (L)	Purge Start time	Purge End Time	Elapsed Purge Time	Purge Rate (l/min)	Criteria <sup>1</sup> (3WV / PS / DS / PDR)	Draw Down (m)	pH (pH Units)	Temperature (°C)	Conductivity (µs/cm)	Specific Conductivity (µs/cm)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Field Turbidity (NTU)	Method Used	Well diameter (cm)
Emergency Tailings Area (ETA)	P09-ETA-2	23/09/2016	Good	0.74	10.38	16.17	11.6	40	17:41	17:53	0:12	3.33	3WV	NR*	6.33	5.7	4026	6371	-35.3	2.89	2.2	Hydrolift	5.08
	P96-8A	23/09/2016	Good	0.71	2.625	4.895	4.5	4.4	16:19	16:40	0:21	0.21	PS	0	3.76	9.2	5549	7939	305.2	0.45	0.32	Peri. Pump	5.08
	P96-8B	23/09/2016	Good	0.61	2.537	9.41	13.7	4.55	16:49	17:09	0:20	0.23	PS	0	5.12	8	5951	8808	148.3	0.9	0.11	Peri. Pump	5.08
	SRK04-3A	23/09/2016	Good	0.625	6.02	12.41	12.8	2.85	8:05	8:27	0:22	0.13	PS	0.005	5.68	6.4	5275	8192	9.1	1.02	7.21	Peri. Pump	5.08
	SRK05-ETA-BR1	23/09/2016	Good	0.701	6.859	13.283	3.2	1.5	8:18	8:35	0:17	0.09	PS	0	5.3	5.5	5392	8583	100.8	0.08	18	Peri. Pump	2.54
	SRK05-ETA-BR2	23/09/2016	Good	0.398	4.829	19.372	7.3	2	8:56	9:15	0:19	0.11	PS	0.404	6.88	5	1659	2684	-72.5	0.0	9.6	Peri. Pump	2.54
Intermediate Dam	P01-03	22/09/2016	Good	0.45	3.134	9.583	12.89	2	9:19	9:36	0:17	0.12	PS	1.22	6.13	4.8	2647	4313	-27	0.05	13.6	Peri. Pump	5.08
	P01-04A	22/09/2016	Good	0.255	1.419	53.65	52.2	40	10:45	11:03	0:18	2.22	PS	0.1	6.71	3.6	715	1210	-19.7	2.06	1.37	Hydrolift	5.08
	P01-04B	22/09/2016	Frozen	-	1.400	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5.08
	X24-96D	22/09/2016	Good	0.799	3.735	28.472	49.5	4	8:28	9:04	0:36	0.11	PS	1.142	6.08	4.7	2566	4198	-19.4	0.05	11.23	Peri. Pump	5.08
	X25-96A	22/09/2016	Good	0.485	3.339	9.505	12.3	2	9:56	10:08	0:12	0.17	PS	0	6.82	4	1166	1949	-60.4	0.02	0	Peri. Pump	5.08
X25-96B	22/09/2016	Good	0.429	3.202	19.75	33.1	2	10:20	10:31	0:11	0.18	PS	0	7.42	4.1	1178	1960	-100.8	0.01	0.35	Peri. Pump	5.08	
Northeast Waste Rock Dumps	BH14A	24/09/2016	Good	0.050	3.495	6.452	5.91	2	18:26	18:51	0:25	0.08	PS	0.112	6.53	5.1	2674	4312	56	0.29	5.75	Peri. Pump	5.08
	BH14B	24/09/2016	Good	0.644	4.1	10.005	11.80	2.6	18:24	18:55	0:31	0.08	PS	0.6	6.74	4.7	2252	3684	219.1	1.78	10.47	Peri. Pump	5.08
	CH15-107-MW029	24/09/2016	Good	0.91	1.883	3.671	14.4	4	16:29	16:51	0:22	0.18	PS	0	6.96	3.2	1297	2225	216.6	7.32	1.71	Peri. Pump	10.16
	CH15-107-MW030	24/09/2016	Good	0.9	4.263	5.14	8	1.9	13:35	13:52	0:17	0.11	PS	0.01	6.95	5.1	1173	1890	178.2	7.39	13.3	Peri. Pump	10.16
Northeast Waste Rock Dumps	CH15-107-MW032 <sup>2</sup>	25/09/2016	Slow recharge	1.03	2.331	9.152	54	49	19:00	19:17	0:17	3.18	PDR	6.069	7.55	3.6	1507	2545	192.9	2.12	19.6	Peri. Pump	10.16
	CH15-107-MW033	24/09/2016	Good	1.1	2.542	3.96	11.3	4.4	15:20	15:36	0:16	0.28	PS	0	7.02	4.2	952	1580	197.3	6.87	1.14	Peri. Pump	10.16
	CH15-107-MW034	24/09/2016	Good	1.1	3.78	6.125	18.8	2.55	14:35	14:51	0:16	0.16	PS	0.04	6.81	4.3	579	959	187	6.14	10.01	Peri. Pump	10.16
Second Impoundment	P03-04-02	24/09/2016	Good	0.595	11.988	48.68	4.7	1.5	8:32	8:46	0:14	0.11	PS	NR*	6.34	3.1	1296	2230	181.3	2.21	29.7	Micro Wat.	1.58
	P03-04-04	24/09/2016	Good	0.625	12.319	36.28	3	7	9:14	9:47	0:33	0.21	PS	NR*	7.12	4.2	966	1601	-56.3	3.23	714	Micro Wat.	1.58
	P03-04-06	21/09/2016	Good	0.675	12.26	18.48	0.8	2.4	15:07	15:12	0:05	0.16	3WV	NR*	6.3	5.4	3112	4968	-55.7	1.33	11.21	Micro Wat.	1.58
	P03-05-02	21/09/2016	Good	0.785	8.374	37.777	7.351	1.5	15:05	15:53	0:48	0.03	PS	NR*	5.73	12.2	1720	2274	25.4	0.48	1.67	Peri. Pump	1.58
	P03-05-4	21/09/2016	Good	0.821	8.563	24.523	4.056	1.2	16:27	17:10	0:43	0.03	PS	NR*	5.83	11.5	1586	2139	27.7	0.33	0.38	Peri. Pump	1.58
	P03-05-05	24/09/2016	Good	0.84	8.622	22.611	3.497	3.5	10:36	10:52	0:16	0.22	PS	NR*	6.13	5.1	4812	7768	-34.8	2.29	1910 AU <sup>3</sup>	Micro Wat.	1.58
	P03-06-1 <sup>2</sup>	24/09/2016	Slow recharge	0.8	16.12	26.56	1.3	1.8	17:31	17:39	0:08	0.16	PDR	NR*	3.97	6.5	2217	3416	285.5	4.66	11	Micro Wat.	1.58
	P03-06-2	21/09/2016	Good	0.775	10.725	23.64	1.6	4.8	17:01	17:12	0:11	0.44	3WV	NR*	4.63	4.8	3436	5599	179.1	1.16	2055 AU <sup>3</sup>	Micro Wat.	1.58
	P03-06-03	24/09/2016	Good	0.83	5.314	20.87	1.97	5	12:32	12:56	0:24	0.21	PS	NR*	5.67	5.4	3459	5530	21.5	1.61	24.4	Micro Wat.	1.58
	P03-06-04	24/09/2016	Good	0.88	12.04	17.56	0.7	2.5	13:07	13:19	0:12	0.21	3WV	NR*	6.36	4.9	2063	3346	-51	1.55	29.7	Micro Wat.	1.58
P03-06-05	24/09/2016	Good	0.91	9.73	15.14	0.7	3.5	11:23	11:43	0:20	0.18	3WV	NR*	6.39	5.3	2960	4742	-68.5	1.93	1866 AU <sup>3</sup>	Micro Wat.	1.58	

Area	Well Name	Sample Date	Well Status	Stick up Height (m)	Depth To Water (m)	Depth To Bottom (m)	Standing Water volume (L)	Volume Purged (L)	Purge Start time	Purge End Time	Elapsed Purge Time	Purge Rate (l/min)	Criteria <sup>1</sup> (3WV / PS / DS / PDR)	Draw Down (m)	pH (pH Units)	Temperature (°C)	Conductivity (µs/cm)	Specific Conductivity (µs/cm)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Field Turbidity (NTU)	Method Used	Well diameter (cm)
S-Wells Area	CH14-107-MW007A	20/09/2016	Good	0.880	3.774	5.753	4.00	2.95	11:53	12:26	0:33	0.09	PS	0.226	5.95	6.3	2960	4600	75.6	2.85	7.21	Peri. Pump	5.08
	CH14-107-MW007B	20/09/2016	Good	0.76	4.177	9.723	45	5.7	12:43	13:09	0:26	1.73	PS	0	5.97	5	992	1603	45.6	3.14	1.37	Peri. Pump	10.16
	CH14-107-MW009	20/09/2016	Good	0.95	4.413	12.065	61.9	4.45	10:22	10:54	0:32	1.93	PS	0	5.95	4.2	765	1270	41.8	3.92	0.85	Peri. Pump	10.16
	CH14-107-MW010	20/09/2016	Good	1.015	2.795	32.65	241.8	119	11:02	11:47	0:45	2.64	PS	0	5.9	2.8	471	817	89	5.3	3.05	Hydrolift	10.16
	CH15-107-MW019	21/09/2016	Good	1.18	2.54	21.58	38.1	3.9	11:32	11:48	0:16	0.24	PS	0	6.01	3	2078	3587	45.9	1.63	14.8	Peri. Pump	5.08
	CH15-107-MW022	21/09/2016	Good	1.1	1.866	21.47	39.2	6.7	10:35	11:06	0:31	0.22	PS	0.329	6.34	3	837	1445	33.9	0.72	10.99	Peri. Pump	5.08
	CH15-107-MW023	21/09/2016	Good	0.92	15.736	28.52	25.6	77	12:56	13:27	0:31	2.48	3WV	0	6.54	1.7	511	919	36.3	1.16	54	Manual	5.08
	CH15-107-MW025	21/09/2016	Good	0.88	14.785	18.951	2.088	0.75	12:32	12:52	0:20	0.04	DS	1.23	7.12	3.6	1760	2976	80.5	16.7	26.4	Bailer	2.54
	P09-SIS1	20/09/2016	Good	0.979	4.613	6.631	4	3.5	17:06	17:41	0:35	0.10	PS	0.705	6.33	6.8	4786	7333	26.7	0.21	8.33	Peri. Pump	5.08
	P09-SIS2	20/09/2016	Good	1.13	3.943	6.335	4.78	2	15:39	15:55	0:16	0.13	PS	0.037	5.55	7.3	6806	10277	83.8	0.12	11.67	Peri. Pump	5.08
	P09-SIS3	20/09/2016	Good	1.11	3.989	4.589	1	2	14:49	15:11	0:22	0.05	PS	0.023	5.68	7.2	7377	11172	57.7	0.01	2.23	Peri. Pump	5.08
	P09-SIS4	20/09/2016	Good	0.954	4.047	4.46	0.826	4.5	11:45	12:51	1:06	0.07	3WV	0.263	6.31	7.1	5740	8729	22.9	0.42	2.85	Peri. Pump	5.08
	P09-SIS6	20/09/2016	Good	1.281	3.793	6.305	5.024	3	10:37	11:14	0:37	0.08	PS	1.136	6.83	6	3826	6007	-70	0.13	27.1	Peri. Pump	5.08
	P96-7	21/09/2016	Good	0.791	4.33	9.894	11.128	3	10:59	11:23	0:24	0.13	PS	0.131	7.21	2.8	1735	3016	44.7	10.58	0.96	Peri. Pump	5.08
	S1A	20/09/2016	Good	1.32	4.729	13.1	16.7	3.55	15:35	15:57	0:22	0.16	PS	0	5.84	4	1181	1971	111.1	3.84	0.55	Peri. Pump	5.08
	S1B <sup>2</sup>	21/09/2016	Slow recharge	1.175	4.521	5.168	1.3	1.3	15:16	15:29	0:13	0.10	PDR	5.168	6.66	2.6	482.2	843	130.9	2.74	23.5	Peri. Pump	5.08
	S2A	21/09/2016	Good	0.35	4.355	11.82	14.9	3.7	8:37	9:04	0:27	0.14	PS	0	6	2.7	1072	1867	43.1	1.49	129	Peri. Pump	5.08
	S2B <sup>2</sup>	21/09/2016	Slow recharge	0.54	4.448	7.074	5.3	10.85	16:17	17:44	1:27	0.12	PDR	7.074	5.8	3.3	6020	10267	51.1	0.34	6.54	Peri. Pump	5.08
	SRK05-SP-4A	20/09/2016	Good	0.659	4.699	22.565	35.7	2.5	14:03	14:28	0:25	0.10	PS	0.231	5.91	5.1	842	1358	40.6	0.09	0.63	Peri. Pump	5.08
	SRK05-SP-4B	20/09/2016	Good	0.794	3.969	4.773	1.5	2.5	13:16	13:47	0:31	0.08	PS	0.262	5.85	7.6	6397	9574	33.8	0.3	9.47	Peri. Pump	5.08
	SRK05-SP-5	21/09/2016	Good	0.981	6.869	14.685	15.6	3	8:32	9:02	0:30	0.10	PS	0	5.73	2.8	6024	10447	82.1	0.09	2.81	Peri. Pump	5.08
	SRK08-SBR2	20/09/2016	Good	0.84	6.749	19.102	24.7	2	16:14	16:33	0:19	0.11	PS	0.14	5.89	5.8	1508	2380	86	0.98	27.7	Peri. Pump	5.08
	SRK08-SBR3	21/09/2016	Good	0.985	11.615	13.245	3.26	25	10:10	10:22	0:12	2.08	3WV	0.005	6.76	1.4	2097	3824	51.5	2.83	25.3	Manual	5.08
	SRK08-SBR4	21/09/2016	Good	0.7	7.315	21.383	28.1	2.5	9:18	9:53	0:35	0.07	PS	0	5.84	3.1	5163	8881	93.6	0.19	1.15	Peri. Pump	5.08
SRK08-SP-7A	20/09/2016	Good	1.2	2.713	17.73	30	80	14:21	14:51	0:30	2.67	3WV	0	6.13	2.5	890	1559	67	1.53	59.4	Manual	5.08	
SRK08-SP-7B	20/09/2016	Good	1.11	2.795	8.78	12	4	13:52	14:17	0:25	0.16	PS	0.017	6.44	4.5	116.2	191.2	47.9	0.37	6.47	Peri. Pump	5.08	

Area	Well Name	Sample Date	Well Status	Stick up Height (m)	Depth To Water (m)	Depth To Bottom (m)	Standing Water volume (L)	Volume Purged (L)	Purge Start time	Purge End Time	Elapsed Purge Time	Purge Rate (l/min)	Criteria <sup>1</sup> (3WV / PS / DS / PDR)	Draw Down (m)	pH (pH Units)	Temperature (°C)	Conductivity (µs/cm)	Specific Conductivity (µs/cm)	Oxidation Reduction Potential (mV)	Dissolved Oxygen (mg/L)	Field Turbidity (NTU)	Method Used	Well diameter (cm)
Vangorda/Grum Area	P09-GS1A	24/09/2016	Good	1.29	2.875	7.38	9	4.5	11:57	12:13	0:16	0.28	PS	0	6.93	9	780	1124	11.8	0.18	1.86	Peri. Pump	5.08
	P09-GS1B	24/09/2016	Good	0.96	2.559	29.645	54	1.9	12:20	12:37	0:17	0.11	PS	0.575	6.83	7.6	1014	1518	-47.9	0.42	8.55	Peri. Pump	5.08
	P09-LCD1	24/09/2016	Good	0.92	3.783	7.346	7.1	7.05	8:34	8:55	0:21	0.34	PS	0.07	7.13	3.3	684	1170	-113.6	0.31	0.57	Peri. Pump	5.08
	P09-LCD4 <sup>2</sup>	25/09/2016	Slow recharge	0.96	2.363	12.4	20.1	20	9:09	10:15	1:06	0.30	PDR	20	7.44	3.8	465.9	783.8	48.2	0.36	10.03	Peri. Pump	5.08
	P09-LCD6	24/09/2016	Good	0.77	5.914	7.91	4	5.4	9:53	10:15	0:22	0.25	PS	0.036	7.23	3.5	653	1107	-112	0.5	8.9	Peri. Pump	5.08
	P2001-02A <sup>2</sup>	24/09/2016	Slow recharge	0.605	4.386	6.366	4	4	10:56	11:32	0:36	0.11	PDR	4.386	6.72	5.8	2490	3932	67.2	0.9	27.7	Peri. Pump	5.08
	P2001-02B <sup>2</sup>	24/09/2016	Slow recharge	0.37	4.16	27.565	46.8	59	11:10	11:53	0:43	1.37	PDR	0.176	6.84	4.9	2331	3783	96.2	4.35	17	Manual	5.08
	P96-9A	22/09/2016	Good	1.01	5.941	9.419	7	1.7	16:06	16:24	0:18	0.09	PS	0.035	6.61	7.2	2130	3231	179.3	1.23	2.8	Peri. Pump	5.08
	SRK05-07	22/09/2016	Good	0.67	5.765	6.43	1.3	3	14:25	14:47	0:22	0.14	PS	0.085	6.91	5.1	2146	3465	140.7	3.28	8.16	Peri. Pump	5.08
	SRK05-08	22/09/2016	Good	0.76	5.94	8.478	5.1	1.7	15:10	15:32	0:22	0.08	PS	0.15	6.83	5.9	1816	2857	171	4.71	1.03	Peri. Pump	5.08
	SRK05-9	22/09/2016	Good	0.52	3.016	3.896	1	3	17:00	17:22	0:22	0.05	3WV	0.028	7.34	4.6	780	1279	174.4	5.52	0.57	Peri. Pump	3.81
	V34	22/09/2016	Good	0.52	5.725	12.036	12.6	2.55	8:25	8:53	0:28	0.09	PS	0.502	6.8	4.3	1353	2236	-37.4	1.34	1.54	Peri. Pump	5.08
	V35	22/09/2016	Good	0.48	6.626	16.003	18.8	2	9:36	10:06	0:30	0.07	PS	0.554	6.96	4.2	1556	2581	147.1	1.72	22	Peri. Pump	5.08
	V36	22/09/2016	Good	0.5	8.847	11.24	4.8	15	12:50	13:02	0:12	1.25	3WV	NR	6.91	4	1896	3168	31.2	2.43	5.44	Manual	5.08
	V37 <sup>2</sup>	24/09/2016	Slow recharge	0.485	8.553	14.41	11.7	12	13:54	13:59	0:05	2.40	PDR	14.4	7.48	3.6	671	1133	96.7	4.15	23.4	Manual	5.08
Zone 2 Pit Outwash Area	BH10A	24/09/2016	Good	1.704	6.186	6.969	1.60	2	14:37	14:50	0:13	0.15	PS	0	6.39	3.5	193.3	327.7	18.1	0.91	7.08	Peri. Pump	5.08
	BH10B	24/09/2016	Good	0.899	5.356	9.228	7.70	1.5	14:59	15:12	0:13	0.09	PS	0	6.73	3.2	234.3	402	36	2.09	14.9	Peri. Pump	5.08
	BH8 <sup>2</sup>	25/09/2016	Slow recharge	0.811	15.658	20.795	10.30	10	17:37	17:50	0:13	0.77	PDR	10	3.59	4.2	2360	3913	199.2	4.77	49.4	Manual	5.08
	CH14-107-MW001	24/09/2016	Good	0.845	2.729	13.689	88.70	2	16:29	16:44	0:15	0.13	PS	0	5.34	4.1	601	1007	115.5	0.12	21.4	Peri. Pump	10.16
	CH14-107-MW002	24/09/2016	Good	0.989	2.162	11.555	76.00	1.5	15:57	16:08	0:11	0.14	PS	0	5.54	3.9	376.8	630.3	102.1	2.59	2.6	Peri. Pump	10.16
	P05-04	24/09/2016	Good	0.679	3.111	7.107	7.9	1.5	15:25	15:40	0:15	0.10	PS	0.002	6.08	3.5	263.5	448.1	59.1	0.05	0.52	Peri. Pump	5.08

**Notes:**

NR = Not recorded in the field due to equipment errors, NR\* = Not recorded due to limiting diameter of well casing, or risk of equipment damage

'-' = Not Applicable.

<sup>1</sup> 3WV = Three Well Volumes, PS=Parameters Stable, DS=Direct Sampled, PDR=Purge Dry & Return

<sup>2</sup> Groundwater well had a slow recharge rate, and was therefore purged dry and sampled the following day.

<sup>3</sup> AU= Attenuation Units. This alternate unit of measure is reported by the turbidity meter in cases of turbidity >500. They are comparable to NTU, but are measured using transmitted rather than scattered light.

<sup>4</sup> Well P01-02B was showing artesian characteristics in that water was flowing from the casing. Accordingly, depth to groundwater was recorded as being zero.

### 3.2 ANALYTICAL RESULTS

Analytical results, including a brief summary of CCME FAL guideline exceedances and factors which may have influenced data precision, are provided below. In some instances the reportable detection limits (RDL) exceeded applicable CCME FAL standards (values shaded in light grey in **Table 3-1**). This occurs when samples with high levels of some elements or compounds require dilution in order for the lab to properly analyse the sample. Accordingly, the laboratory detection limit must then be increased. For the purpose of this report, results that are reported below the RDL, but also have an adjusted RDL that is higher than the applicable guideline, have not been reported as CCME FAL exceedances.

#### 3.2.1 Cross Valley Dam

Groundwater wells located in the Cross Valley Dam (CVD) area were sampled on September 23, 2016. Samples were obtained from all fifteen (15) of the wells within this area identified for the sampling event. Groundwater well P01-02B was found to be partially obstructed by an unidentified object during the June 2016 sampling event (Hemmera, 2016). This blockage was investigated during the September 2016 sampling event using a down-well camera. The only obstruction visible during this investigation was a breakage in the well casing located near ground level. This well was also exhibiting artesian qualities, and accordingly the depth to water was recorded as being zero. Groundwater was observed flowing up from of the well casing and leaking from the breakage found at ground level. This damage did not prevent sampling of the well but may have reduced the quality of other samples collected at this location (namely well P01-02A that is adjacent). In addition to the damage identified at groundwater well P01-02B, site P01-02A was also observed to have a breakage in the well casing just above ground level. Damage to both these wells is likely the result of a truck or heavy object leaning or pushing against the well stick-up.

Concentrations of dissolved aluminum, arsenic, cadmium, iron, lead, and zinc in groundwater exceeded the CCME FAL guidelines in one (1) or more samples collected in the CVD area. Field dissolved oxygen concentrations were below the CCME FAL minimum guideline concentration for all measurements collected in this area. Field and/or laboratory groundwater pH was below the CCME FAL guideline range in seven (7) of the fifteen (15) wells. Observed specific guideline exceedances are provided in **Table 3-4**, as well as noted in **Table 3-1**. Groundwater turbidity of all CVD samples was less than 50 NTU.

**Table 3-4 CCME FAL Exceedances for Wells in Cross Valley Dam Area During September 2016**

Station	CCME FAL Exceedances in September 2016
P01-02A	Field Dissolved Oxygen (DO)
P01-02B	DO, dissolved Iron (Fe-D)
P01-11	Field pH (pH-F), DO, dissolved Arsenic (As-D), Fe-D
P03-09-02	DO, Fe-D
P03-09-04	DO, dissolved Cadmium (Cd-D)
P03-09-6	DO, Cd-D

Station	CCME FAL Exceedences in September 2016
P03-09-08	DO, Cd-D
P03-09-9	DO, Cd-D
P05-01-01	pH-F, DO, dissolved Aluminum (Al-D), Fe-D, dissolved Lead (Pb-D)
P05-01-02	pH-F, DO, Fe-D
P05-01-03	Lab pH (pH-L), pH-F, DO, Fe-D
P05-01-04	pH-L, pH-F, DO, Fe-D
P05-01-05	pH-F, DO, Al-D, As-D, Cd-D, Fe-D, Pb-D
P05-02	pH-F, DO, Al-D, Fe-D, dissolved Zinc (Zn-D)
P05-03	DO, Cd-D, Fe-D

### 3.2.2 Down Gradient of Cross Valley Dam

Groundwater wells located down gradient of the CVD area were sampled between September 22 and September 23, 2016. Samples were obtained from all ten (10) wells within this area identified for the sampling event.

Concentrations of dissolved arsenic, cadmium, iron, and selenium in groundwater exceeded the CCME FAL guidelines in one (1) or more samples collected down gradient of the CVD area. Field dissolved oxygen concentrations were below the CCME FAL minimum guideline concentration for all measurements collected in this area. Observed specific guideline exceedences are provided in **Table 3-5** as noted in **Table 3-1**. Groundwater was extremely turbid at site X16B (96.4 NTU) and site X17B (483 NTU) during the time of sampling. Groundwater turbidity of all other collected samples down gradient of the CVD area was less than 50 NTU.

**Table 3-5 CCME FAL Exceedences for Wells Down Gradient of the Cross Valley Dam During September 2016**

Station	CCME FAL Exceedences in September 2016
CH14107MW006A	DO, dissolved Selenium (Se-D)
CH14107MW006B	DO, Se-D
P01-01A	DO, Cd-D
P01-01B	DO, Fe-D
X16A	DO, Se-D
X16B	DO, Se-D
X17A	DO
X17B	DO, Fe-D
X18A	DO, As-D, Fe-D
X18B	DO

### 3.2.3 Emergency Tailings Area

Groundwater wells located in the Emergency Tailings Area (ETA) were sampled between September 22 and September 23, 2016. Samples were obtained from all six (6) wells in this area identified for the sampling event.

Concentrations of dissolved aluminum, arsenic, cadmium, copper, iron, lead, nickel, thallium, uranium, and zinc in groundwater exceeded the CCME FAL guidelines in one (1) or more samples collected in the ETA. Field dissolved oxygen concentrations were below the CCME FAL minimum guideline concentration for all measurements collected in this area. Field and/or laboratory groundwater pH was below the CCME FAL guideline range in five (5) of the six (6) wells. Observed specific guideline exceedences are provided in **Table 3-6** as noted in **Table 3-1**. Groundwater turbidity in all samples within this area was less than 50 NTU.

**Table 3-6 CCME FAL Exceedences for Wells in the Emergency Tailings Area During September 2016**

Station	CCME FAL Exceedences in September 2016
P09-ETA-2	pH-L, pH-F, DO, Al-D, As-D, Fe-D, dissolved Nickel (Ni-D), Zn-D
P96-8A	pH-L, pH-F, DO, AL-D, Cd-D, dissolved Copper (Cu-D), Fe-D, Pb-D, Ni-D, dissolved Thallium (Tl-D), dissolved Uranium (U-D), Zn-D
P96-8B	pH-L, pH-F, DO, Al-D, Cd-D, Fe-D, Pb-D, Ni-D, Tl-D, Zn-D
SRK04-3A	pH-L, pH-F, DO, Al-D, As-D, Cd-D, Fe-D, Pb-D, Ni-D, Zn-D
SRK05-ETA-BR1	pH-L, pH-F, DO, Al-D, As-D, Cd-D, Fe-D, Pb-D, Ni-D, Zn-D
SRK05-ETA-BR2	DO, Fe-D, Zn-D

### 3.2.4 Intermediate Dam

Groundwater wells located within the intermediate dam area were sampled on September 22, 2016. Samples were collected from five (5) of the six (6) wells within this area identified for the sampling event. Groundwater well P01-04B was found frozen during the time of sampling.

Concentrations of dissolved cadmium, iron, nickel, silver, and zinc in groundwater exceeded the CCME FAL guidelines in one (1) or more samples collected within the intermediate dam area. Field and/or laboratory groundwater pH in the intermediate dam area was outside the CCME FAL guideline range in two (2) of the six (6) samples. Dissolved oxygen concentrations were below the CCME FAL minimum guideline concentration for all measurements collected in this area. Observed specific guideline exceedences are provided in **Table 3-7** as noted in **Table 3-1**.

**Table 3-7 CCME FAL Exceedences for Wells in the Intermediate Dam Area During September 2016**

Station	CCME FAL Exceedences in September 2016
P01-03	pH-L, pH-F, DO, Cd-D, Fe-D, Ni-D, Zn-D
P01-04A	DO, Fe-D, dissolved Silver (Ag-D)
X24-96D	pH-L, pH-F, DO, Cd-D, Fe-D, Ni-D, Zn-D
X25-96A	DO, Fe-D
X25-96B	DO, Fe-D

Groundwater turbidity in all samples within this area was less than 50 NTU.

### 3.2.5 Northeast Waste Rock Dump

Groundwater wells located within the northeast waste rock dump area were sampled between September 24 and September 25, 2016. Samples were collected from all seven (7) wells within this area identified for the sampling event.

Concentrations of dissolved cadmium, lead, nickel, selenium, uranium, and zinc in groundwater exceeded the CCME FAL guidelines in one (1) or more samples collected within the northeast waste rock dump area. Field dissolved oxygen concentrations were less than the CCME FAL guideline level for all measurements collected in this area. Observed specific guideline exceedences are provided in **Table 3-8** as noted in **Table 3-1**. Groundwater turbidity in all samples within this area was less than 50 NTU.

**Table 3-8 CCME FAL Exceedences for Wells in the Northeast Waste Rock Dump Area During September 2016**

Station	CCME FAL Exceedences in September 2016
BH14A	DO, Cd-D, Ni-D, U-D, Zn-D
BH14B	DO, Pb-D, U-D, Zn-D
CH15107MW029	DO, Cd-D, Se-D, Zn-D
CH15107MW030	DO, Se-D, Zn-D
CH15107MW032	DO, U-D
CH15107MW033	DO, Cd-D, Se-D, Zn-D
CH15107MW034	DO, Se-D

### 3.2.6 Second Impoundment

Groundwater wells located within the second impoundment area were sampled between September 21 and September 24, 2016. Samples were collected from all eleven (11) wells within this area identified for the sampling event.

Concentrations of dissolved aluminum, arsenic, cadmium, copper, iron, lead, nickel, uranium, and zinc in groundwater exceeded the CCME FAL guidelines in one (1) or more samples collected within the second impoundment area. Field dissolved oxygen concentrations were less than the CCME FAL guideline level for all measurements collected in this area. Field and/or laboratory groundwater pH was below the CCME FAL guideline range in ten (10) of the eleven (11) wells sampled. Observed specific guideline exceedences are provided in **Table 3-9** as noted in **Table 3-1**. Groundwater was extremely turbid at site P03-04-04 (714 NTU), P03-05-05 (1910 AU), P03-06-2 (2055 AU), and P03-06-05 (1866 AU) during the time of sampling. Groundwater turbidity of all other collected samples second impoundment area was less than 50 NTU.

**Table 3-9 CCME FAL Exceedences for Wells in the Second Impoundment Area During September 2016**

Station	CCME FAL Exceedences in September 2016
P03-04-02	pH-F, DO, Fe-D, Zn-D
P03-04-04	DO, As-D, Fe-D
P03-04-06	pH-L, pH-F, DO, As-D, Fe-D, Zn-D
P03-05-02	pH-L, pH-F, DO, Al-D, As-D, Cd-D, Fe-D, Ni-D, Zn-D
P03-05-4	pH-L, pH-F, DO, Al-D, Cd-D, Fe-D, Ni-D, Zn-D
P03-05-05	pH-L, pH-F, DO, Al-D, As-D, Cd-D, Fe-D, Ni-D, Zn-D
P03-06-1	pH-L, pH-F, DO, Al-D, Cd-D, Cu-D, Fe-D, Pb-D, Ni-D, Zn-D
P03-06-2	pH-L, pH-F, DO, Al-D, Cd-D, Cu-D, Fe-D, Pb-D, Ni-D, Zn-D
P03-06-03	pH-L, pH-F, DO, Al-D, Cd-D, Fe-D, Ni-D, Zn-D
P03-06-04	pH-L, pH-F, DO, Al-D, Cd-D, Fe-D, U-D, Zn-D
P03-06-05	pH-L, pH-F, DO, Al-D, Cd-D, Fe-D, Ni-D, Zn-D

### 3.2.7 S-Wells Area

Groundwater wells located in the S-Wells area were sampled between September 20 and September 21, 2016. Samples were collected from twenty-six (26) of the twenty-seven (27) wells in this area identified for the sampling event. Groundwater well S3 was not located in the field and is presumed to have been destroyed, potentially by road maintenance or general construction activities in the area.

Concentrations of dissolved aluminum, arsenic, cadmium, copper, iron, nickel, selenium, uranium, and zinc in groundwater exceeded the CCME FAL guidelines in one (1) or more samples collected from the S-Wells area. Field and/or laboratory groundwater pH in the S-Wells area was below the CCME FAL guideline range in twenty (20) of the twenty-six (26) samples collected. Field dissolved oxygen concentrations were below the CCME FAL minimum guideline concentration for twenty-four (24) of twenty-six (26) samples collected in this area. Observed specific guideline exceedences are provided in **Table 3-10** as noted in **Table 3-1**. Groundwater was found to be turbid at sites CH15107MW023 (54 NTU), S2A (129 NTU), and SRK08-SP-7A (59.4 NTU) during the time of sampling. Groundwater turbidity of all other collected samples in the S-Wells area was less than 50 NTU.

**Table 3-10 CCME FAL Exceedences for Wells in the S-Wells Area during September 2016**

Station	CCME FAL Exceedences in September 2016
CH14107MW007A	pH-L, pH-F, DO, Al-D, As-D, Cd-D, Fe-D, Ni-D, Zn-D
CH14107MW007B	pH-F, DO, Al-D, As-D, Fe-D, Zn-D
CH14107MW009	pH-L, pH-F, DO, Al-D, Fe-D, Zn-D
CH14107MW010	pH-L, pH-F, DO, Al-D, As-D, Fe-D, Zn-D
CH15107MW019	pH-F, DO, Al-D, As-D, Fe-D, Zn-D
CH15107MW022	pH-F, DO, Fe-D, Zn-D
CH15107MW023	DO, As-D, Fe-D, Zn-D
CH15107MW025	Fe-D, U-D, Zn-D
P09-SIS1	pH-F, DO, Al-D, Cd-D, Cu-D, Fe-D, Ni-D, Zn-D
P09-SIS2	pH-L, pH-F, DO, Al-D, Cd-D, Fe-D, Ni-D, Zn-D
P09-SIS3	pH-F, DO, Al-D, Cd-D, Cu-D, Ni-D, Zn-D
P09-SIS4	pH-F, DO, Cd-D, Cu-D, Ni-D, U-D, Zn-D
P09-SIS6	DO, Cd-D, Fe-D, Zn-D
P96-7	U-D
S1A	pH-F, DO, Al-D, Cd-D, Fe-D, Zn-D
S1B	DO
S2A	pH-L, pH-F, DO, Al-D, Cd-D, Fe-D, Zn-D
S2B	pH-L, pH-F, DO, Cd-D, Fe-D, Ni-D, Zn-D
SRK05-SP-4A	pH-L, pH-F, DO, Al-D, Cd-D, Fe-D, Zn-D
SRK05-SP-4B	pH-F, DO, Al-D, Cd-D, Fe-D, Ni-D, Zn-D
SRK05-SP-5	pH-L, DO, Al-D, Cd-D, Fe-D, Ni-D, Zn-D
SRK08-SBR2	pH-F, DO, Al-D, Cd-D, Cu-D, Fe-D, Ni-D, Zn-D
SRK08-SBR3	DO, Se-D, U-D, Zn-D
SRK08-SBR4	pH-F, DO, Al-D, Cd-D, Cu-D, Fe-D, Ni-D, Zn-D
SRK08-SP-7A	pH-F, DO, As-D, Fe-D, Zn-D
SRK08-SP-7B	pH-F, DO, Al-D, Fe-D, Zn-D

### 3.2.8 Vangorda/Grum Area

Groundwater wells located in the Vangorda/Grum area were sampled between September 22 and September 25, 2016. Samples were collected from all fifteen (15) wells in this area identified for the sampling event.

Concentrations of dissolved arsenic, cadmium, copper, iron, lead, selenium, thallium, uranium, and zinc in groundwater exceeded the CCME FAL guidelines in one (1) or more samples collected from the Vangorda/Grum area. Field dissolved oxygen concentrations were below the CCME FAL minimum guideline concentration for all measurements collected in this area. Observed specific guideline exceedences are provided in **Table 3-11** as noted in **Table 3-1**. Groundwater turbidity in all samples within this area was less than 50 NTU.

**Table 3-11 CCME FAL Exceedences for Wells in the Vangorda/Grum Area During September 2016**

Station	CCME FAL Exceedences in September 2016
P09-GS1A:	DO, As-D, Cd-D, Fe-D, Pb-D, Tl-D, Zn-D
P09-GS1B:	DO, As-D, Fe-D, Zn-D
P09-LCD1:	DO, As-D, Fe-D, Pb-D
P09-LCD4:	DO, Cu-D
P09-LCD6:	DO, As-D, Fe-D, Pb-D
P2001-02A:	DO, Fe-D, U-D
P2001-02B:	DO, Fe-D, U-D
P96-9A:	DO, Cd-D, U-D, Zn-D
SRK05-07:	DO, U-D
SRK05-08:	DO, U-D
SRK05-9:	DO, Zn-D
V34:	DO, Fe-D, U-D
V35:	DO, Se-D, U-D
V36:	DO, Fe-D, U-D, Zn-D
V37:	DO

### 3.2.9 Zone 2 Pit Outwash

Groundwater wells located in the Zone 2 Pit outwash area were sampled between September 24 and September 25, 2016. Samples were collected from all six (6) wells in this area identified for the sampling event.

Concentrations of dissolved aluminum, arsenic, cadmium, copper, iron, lead, nickel, thallium, uranium, and zinc in groundwater exceeded the CCME FAL guidelines in one (1) or more samples collected from the Zone 2 Pit outwash area. Field and/or laboratory groundwater pH in the Zone 2 Pit outwash area was below the CCME FAL guideline range in five (5) of the six (6) samples collected. Field dissolved oxygen concentrations were below the CCME FAL minimum guideline concentration for all measurements collected in this area. Observed specific guideline exceedences are provided in **Table 3-12** as noted in **Table 3-1**. Groundwater turbidity in all samples within this area was less than 50 NTU.

**Table 3-12 CCME FAL Exceedences for Wells in the Zone 2 Pit Outwash Area During September 2016**

Station	CCME FAL Exceedences in September 2016
BH10A:	pH-F, DO, Cd-D, Zn-D
BH10B:	DO, Cd-D, Zn-D
BH8:	pH-L, pH-F, DO, Al-D, As-D, Cd-D, Cu-D, Fe-D, Pb-D, Ni-D, Tl-D, U-D, Zn-D
CH14107MW001:	pH-L, pH-F, DO, Al-D, Fe-D, Zn-D
CH14107MW002:	pH-L, pH-F, DO, Al-D, Cd-D, Fe-D, Zn-D
P05-04:	pH-F, DO, Al-D, Cd-D, Zn-D

### 3.3 QUALITY ASSURANCE AND QUALITY CONTROL RESULTS

Eleven (11) duplicate groundwater samples were collected during the September 2016 sampling event. One (1) travel blank was provided by the laboratory and accompanied the samples throughout the program. Five (5) field blanks were prepared during the sampling program between September 20 and September 24, 2016. The detailed results of the QA/QC sampling program are provided in **Table 3-2**, including RPD values for all duplicate and sample pairs collected.

#### 3.3.1 Field and Travel Blanks

All field blank and travel blank analytical results were reported less than the Reportable Detection Limit (RDL) with exception of acidity as CaCO<sub>2</sub>, which was detected in four (4) field blanks, as well as the laboratory supplied travel blank. In all cases acidity was measured only slightly above the RDL (<1.0 mg/L), with results ranging between 1.0 mg/L and 1.6 mg/L (**Table 3-2**). The program analytical supplier (ALS Global) has indicated that this occurs periodically through the absorption of carbon dioxide into deionized water, and that it should not be considered as a form of contamination at the field or laboratory level.

All other travel blank and field blank analytical results were reported as less than the RDL.

#### 3.3.2 Field Duplicates

##### 3.3.2.1 DUP1 / CH14-107-MW007B

The RPD values for all corresponding pairs of results between DUP1 and CH14-107-MW007B were within the 20% QA/QC threshold, indicating that sampling variation was within acceptable limits (**Table 3-2**).

##### 3.3.2.2 DUP2 / SRK08-SBR2

The RPD value for acidity (58.76%) between DUP2 and SRK08-SBR2 was outside the acceptable range of variability (<20%). Field notes and measurements do not identify any potential source of contamination or suggest variability in groundwater quality during the purging process (**Table 3-3**). All other analytical results for this duplicate pair were within the 20% RPD threshold limit (**Table 3-2**).

### **3.3.2.3 DUP3 / P01-03**

The RPD value for TSS (41.36%) between DUP3 and P01-03 was outside the acceptable range of variability (<20%). Field notes and measurements do not identify any potential source of contamination or suggest variability in groundwater quality during the purging process (**Table 3-3**). All other analytical results for this duplicate pair were within the 20% RPD threshold limit (**Table 3-2**).

### **3.3.2.4 DUP4 / V36**

The RPD values for all corresponding pairs of results between DUP4 and V36 were within the 20% QA/QC threshold, indicating that sampling variation was within acceptable limits (**Table 3-2**).

### **3.3.2.5 DUP5 / P01-01A**

The RPD values for all corresponding pairs of results between DUP5 and P01-01A were within the 20% QA/QC threshold, indicating that sampling variation was within acceptable limits (**Table 3-2**).

### **3.3.2.6 DUP6 / P05-02**

The RPD value for TSS (40.00%) between DUP6 and P05-02 was outside the acceptable range of variability (<20%). Field notes and measurements do not identify any potential source of contamination or suggest variability in groundwater quality during the purging process (**Table 3-3**). All other analytical results for this duplicate pair were within the 20% RPD threshold limit (**Table 3-2**).

### **3.3.2.7 DUP7 / P09-LCD1**

The RPD value for acidity (68.38%) between DUP7 and P09-LCD1 was outside the acceptable range of variability (<20%). Field notes and measurements do not identify any potential source of contamination or suggest variability in groundwater quality during the purging process (**Table 3-3**). All other analytical results for this duplicate pair were within the 20% RPD threshold limit (**Table 3-2**).

### **3.3.2.8 DUP8 / BH10A**

The RPD value for acidity (57.03%) between DUP8 and BH10A was outside the acceptable range of variability (<20%). Field notes and measurements do not identify any potential source of contamination or suggest variability in groundwater quality during the purging process (**Table 3-3**). All other analytical results for this duplicate pair were within the 20% RPD threshold limit (**Table 3-2**).

### **3.3.2.9 DUP9 / CH15-107-MW034**

The RPD value for acidity (45.26%) between DUP9 and CH15-107-MW034 was outside the acceptable range of variability (<20%). Field notes and measurements do not identify any potential source of contamination or suggest variability in groundwater quality during the purging process (**Table 3-3**). All other analytical results for this duplicate pair were within the 20% RPD threshold limit (**Table 3-2**).

### **3.3.2.10 DUP10 / CH14-107-MW002**

The RPD value for acidity (33.30%) between DUP10 and CH14-107-MW002 was outside the acceptable range of variability (<20%). Field notes and measurements do not identify any potential source of contamination or suggest variability in groundwater quality during the purging process (**Table 3-3**). All other analytical results for this duplicate pair were within the 20% RPD threshold limit (**Table 3-2**).

### **3.3.2.11 DUP11 / BH14A**

The RPD value for dissolved lead (115.71%) between DUP11 and BH14A was outside the acceptable range of variability (<20%). Field notes and measurements do not identify any potential source of contamination or suggest variability in groundwater quality during the purging process (**Table 3-3**). All other analytical results for this duplicate pair were within the 20% RPD threshold limit (**Table 3-2**).

## **3.3.3 Quality Assurance and Quality Control Summary**

Results for the QA/QC analytical program did not show evidence of sample contamination, and show only minor variability during the field collection and laboratory analytical processes. Overall, amongst the five (5) field blanks, analytical results show no detections related to contamination. Results from the one (1) travel blank that accompanied the samples throughout the program also show no detections related to contamination. This suggests that no contamination occurred during field collection or sample transportation.

Duplicate and duplicate pair analytical results demonstrated several isolated cases of variability in acidity and total suspended solids (TSS), as well as a single duplicate pair showing significant variability in dissolved lead concentrations. Overall, amongst eleven (11) duplicate sample pairs, cases of RPD exceedances occurred in five (5) for acidity, two (2) for TSS, and one (1) for dissolved lead. The isolated and large variance in the dissolved lead result at BH14A cannot be readily explained, and analytical data have been confirmed, however this was the only observed occurrence of unacceptable variance.

Analytical and spatial data (well locations) were reviewed for 2015 and 2016 June and September sampling programs to determine whether any spatial and/or temporal trends in the elevated RPD values could be observed for acidity and TSS.

### **3.3.3.1 Spatial trends**

The elevated RPD values observed for samples analyzed for acidity appear in a few different areas at the mine site, with nearly all of them being disturbed areas (previously mined and/or having mine infrastructure). Sample variation is considered to be the likely cause of the high RPD values when comparing acidity values in the samples and duplicate samples. The acidity parameter is analyzed from the general parameter bottle set which is unfiltered and not preserved. Sampling methods using unfiltered methods can introduce sediment into the sample, if the sediment is acid-generating the inclusion of the solid phase can bias the result.

The majority of samples where elevated RPD values were observed for TSS were also located in disturbed area (previously mined and/or having mine infrastructure). These activities can change soil makeup, creating areas with larger voids in the soil columns where samples are collected, compared with areas of undisturbed soil. This could lead to variability in TSS values.

### **3.3.3.2 Temporal Trends**

Occurrences of elevated RPD values for samples analyzed for acidity and TSS were observed to be consistent among the sampling events reviewed, although the frequency of TSS RPD exceedences was lower. There were no temporal trends identified.

Overall, the variances are not assumed to constitute systematic differences amongst various parameters.

## **4.0 RECOMMENDATIONS**

Hemmera/ELR prepared the following recommendations based on the observations and results of the September 2016 groundwater sampling program.

1. Wells that produce consistently turbid groundwater could be re-developed in an attempt to collect more representative samples.

Groundwater was found to be extremely turbid at sites X16B (96.4 NTU), X17B (483 NTU), P03-04-04 (714 NTU), P03-05-05 (1910 AU), P03-06-2 (2055 AU), P03-06-05 (1866 AU), S2A (129 NTU) and SRK08-SP-7A (59.4 NTU) during the time of sampling. Although re-development may improve sample quality at each of these locations, groundwater wells located at certain depths in the second impoundment area may always remain turbid due to the presence of tailings material.

2. Attempts could be made to repair groundwater wells P01-02A and P01-02B, however both can currently be sampled properly. For both wells a repair would include exposing the PVC, removing the well casing below the damaged area, adding a new coupler, and replacing the existing stick-up. Due to the elevated water level in P01-02B, this may prove challenging depending on the actual static water level or artesian head found at this location.

## 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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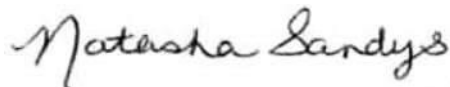
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## **6.0 REFERENCES**

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# **TABLES**

Table 3-1: Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2016 September Sampling Program

Parameter	Units	Cross Valley Dam (CVD) Area															
		Location															
		Station ID	P01-02A	P01-02B	P01-11	P03-09-02	P03-09-04	P03-09-6	P03-09-08	P03-09-9	P05-01-01	P05-01-02	P05-01-03	P05-01-04	P05-01-05	P05-02	P05-03
		Date Sampled	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016
		ALS Sample ID	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022
		Station Status	Damaged	Damaged	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	
		CCME-FAL <sup>1,2,3,4</sup>															
<b>Physical Tests</b>																	
Lab pH	pH units	not <6.5 or >9.0 <sup>5</sup>	8.04	8.17	6.62	7.71	7.70	7.78	7.87	7.63	6.53	6.52	6.49	6.45	6.61	6.57	7.76
Field pH	pH units	not <6.5 or >9.0 <sup>5</sup>	7.56	7.63	6.44	6.87	6.71	6.75	6.69	6.69	6.31	6.28	6.29	6.33	6.42	6.3	6.82
Field Temperature	C	-	4.3	4.1	4.4	4.2	4.1	4.2	4.1	4.2	5.4	5.6	5.2	5.3	5.9	5.8	4.8
Lab Conductivity	uS/cm	-	748	557	3450	1800	2040	2040	2110	2140	3270	3450	3600	3600	3170	3330	1920
Field Conductivity	uS/cm	-	457.7	341.2	2378	1172	1319	1310	1395	1390	2216	2300	2375	2301	2228	2205	1272
Field Specific Conductivity	uS/cm	-	758	567	3919	1944	2195	2173	2323	2308	3540	3658	3815	3685	3504	3487	2073
Field Dissolved Oxygen	mg/L	minimum of 9.5 <sup>6</sup>	0.00	0.01	0.03	0.08	0.00	0.04	0.03	0.00	0.02	0.78	0.1	0.64	0.01	0.68	0.08
Field Oxidation - Redox Potent	mV	-	-66.7	-90.2	-35.5	-33.6	0.7	6.2	15.7	22.6	1.9	2.5	-4.7	-17.3	-21.8	5.8	-34.6
Field Turbidity	NTU	-	0.21	4.69	27.2	1.85	1.26	3.08	8.69	17.4	3.62	1.79	3.59	6.87	2.4	3.42	1.49
Total Suspended Solids	mg/L	-	13.3	6.1	119	30.0	3.5	13.8	129	208	52.9	20.3	32.5	67.3	23.2	24.0	10.6
<b>Anions and Nutrients</b>																	
Acidity (as CaCO3)	mg/L	-	6.5	2.4	230	23.7	23.7	22.2	18.5	27.6	268	296	297	303	220	255	23.1
Total Hardness (as CaCO3)	mg/L	-	405	338	2580	1130	1340	1320	1570	1420	2330	2510	2650	2710	2430	2420	1320
Alkalinity, Total (CaCO3)	mg/L	-	292	229	423	387	350	360	368	361	490	471	472	458	435	490	377
Chloride (Cl)	mg/L	-	<2.5	<0.50	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10
Sulfate (SO4)	mg/L	-	151	83.9	2450	844	1130	1100	1210	1190	2250	2450	2330	2450	2220	2210	964
<b>Dissolved Metals</b>																	
Aluminum (Al)	mg/L	Varies <sup>7</sup>	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.024	<0.010	<0.010	<0.010	0.020	0.011	<0.010
<i>Aluminum CCME Guideline</i>	mg/L	-	0.1000	0.1000	0.005000	0.1000	0.1000	0.1000	0.1000	0.1000	0.005000	0.005000	0.005000	0.005000	0.005000	0.005000	0.1000
Antimony (Sb)	mg/L	-	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050
Arsenic (As)	mg/L	0.005	<0.0010	0.0039	0.0475	0.0017	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0035	0.0059	0.0024	0.0025
Barium (Ba)	mg/L	-	0.062	0.043	0.023	0.028	0.030	0.023	0.023	0.023	0.022	0.022	<0.020	<0.020	0.022	0.022	0.151
Beryllium (Be)	mg/L	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boron (B)	mg/L	1.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)	mg/L	Varies <sup>8</sup>	0.000079	<0.000050	0.000065	<0.000050	0.00130	0.000498	0.00150	0.00104	<0.000050	<0.000050	<0.000050	<0.000050	0.000478	0.000116	0.000766
<i>Cadmium CCME Guideline</i>	mg/L	-	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037
Calcium (Ca)	mg/L	-	112	82.9	741	317	392	387	470	418	662	727	763	774	690	710	386
Chromium (Cr)	mg/L	-	<0.00050	<0.00050	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.00050
Cobalt (Co)	mg/L	-	0.00074	<0.00050	0.0197	<0.00050	0.00997	0.00285	0.00592	0.00593	0.00064	0.0013	0.0026	0.0290	0.0395	0.0231	0.00453
Copper (Cu)	mg/L	Varies <sup>9</sup>	<0.0010	<0.0010	<0.0020	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0010
<i>Copper CCME Guideline</i>	mg/L	-	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Iron (Fe)	mg/L	0.3	<0.030	1.43	106	12.7	<0.030	0.047	0.151	0.086	27.4	39.3	46.6	65.2	48.8	37.0	4.80
Lead (Pb)	mg/L	Varies <sup>10</sup>	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0085	<0.0010	0.0023	0.0015	0.0161	<0.0010	<0.0010
<i>Lead CCME Guideline</i>	mg/L	-	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Lithium (Li)	mg/L	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.088	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Magnesium (Mg)	mg/L	-	30.7	31.8	176	81.9	88.6	87.1	95.3	91.0	165	169	181	189	171	158	85.5
Manganese (Mn)	mg/L	-	1.11	0.126	68.5	23.0	22.9	17.8	23.9	23.0	49.8	63.6	68.9	75.9	61.7	63.8	21.5
Molybdenum (Mo)	mg/L	0.073	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0027
Nickel (Ni)	mg/L	Varies <sup>11</sup>	<0.0050	<0.0050	0.0494	<0.0050	0.0285	0.0266	0.0403	0.0405	<0.0050	<0.0050	<0.0050	0.0121	0.0302	0.0265	0.0068
<i>Nickel CCME Guideline</i>	mg/L	-	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Potassium (K)	mg/L	-	2.4	2.2	8.4	4.2	5.1	5.1	5.4	5.1	7.6	8.4	8.4	8.9	9.4	7.8	5.2
Selenium (Se)	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Silver (Ag)	mg/L	0.0001	<0.000050	<0.000050	<0.00010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.000050
Sodium (Na)	mg/L	-	5.6	4.9	35.3	43.6	25.6	32.0	27.5	28.6	47.3	39.2	37.0	36.9	38.1	32.5	28.5
Thallium (Tl)	mg/L	0.0008	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium (Ti)	mg/L	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Uranium (U)	mg/L	0.015	0.00224	0.00320	0.00908	0.00276	0.0101	0.00941	0.0107	0.0107	0.00042	0.00038	0.00049	0.00204	0.00595	0.00557	0.0117
Vanadium (V)	mg/L	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Zinc (Zn)	mg/L	0.03	<0.0050	<0.0050	0.0092	<0.0050	0.0056	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0092	0.0615	0.0098

(1) Unless otherwise noted, CCME guidelines shown are the maximum allowable concentration. CCME guideline exceedances are shaded dark grey. Reportable detection limits in exceedance of the CCME guideline are shaded light grey. Hardness or pH dependent guideline values have been calculated where relevant and are presented in *grey italicized* text in the row below actual results.  
 (2) - = No standard or not analyzed (3) CCME = Canadian Council of Ministers of the Environment, updated to November 2014 (4) CCME FAL = Chapter 4, Canadian Water Quality Guidelines, 1999, 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) Aluminum varies with pH as follows for CCME FAL: 0.005 if pH<6.5, 0.1 if pH=6.5, 0.1 if pH>=6.5 when field pH is not available, lab pH is used. When field and lab pH are both not available, the most stringent guideline has been used. (8) Cadmium varies with Hardness in mg/L as follows for CCME FAL: 0.0004 if H<17, 0.00004 - 0.00037 if H>17 and H<=280 as follows: CWQG (µg/L)=10{0.83[log(hardness)] - 2.46}, 0.004 if H>280 (9) 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 (µg/L) = 0.2 \* e^{0.8545[ln(hardness)]-1.465}, 0.004 if H>180 (10) Lead varies with Hardness in mg/L as follows for CCME FAL: 0.001 if H<60, 0.001 - 0.007 if H>60 and H<=180 as follows: CWQG (µg/L)= e^{1.273[ln(hardness)]-4.705}, 0.007 if H>180 (11) Nickel varies with Hardness in mg/L as follows for CCME FAL: 0.025 if H<60, 0.025 - 0.15 if H>60 and H<=180 as follows: CWQG (µg/L) = e^{0.76[ln(hardness)]+1.06}, 0.15 if H>180 (12) AU = Attenuation Units - an alternate unit of turbidity measurement used where turbidity is >500. AU is equivalent to NTU, but is measured using transmitted rather than scattered light. (13) RPD = Relative Percent Difference.  
 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.

Table 3-1: Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2016 September Sampling Program

Parameter	Units	Location																
		Down Gradient of CVD										Emergency Tailings Area (ETA)						
Station ID		CH14107MW006A	CH14107MW006B	P01-01A	P01-01B	X16A	X16B	X17A	X17B	X18A	X18B	P09-ETA-2	P96-8A	P96-8B	SRK04-3A	SRK05-ETA-BR1	SRK05-ETA-BR2	
Date Sampled		22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016	23/09/2016	23/09/2016	22/09/2016	22/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	23/09/2016	
ALS Sample ID		L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	
Station Status		Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	
Parameter	Units	CCME-FAL <sup>1,2,3,4</sup>																
<b>Physical Tests</b>																		
Lab pH	pH units	not <6.5 or >9.0 <sup>5</sup>	7.88	8.03	7.39	7.85	8.10	8.15	8.14	7.22	7.61	7.52	6.04	3.39	5.47	5.48	5.20	6.79
Field pH	pH units	not <6.5 or >9.0 <sup>5</sup>	7.22	7.39	6.88	7.22	7.55	7.78	7.34	6.84	6.91	6.85	6.33	3.76	5.12	5.68	5.3	6.88
Field Temperature	C	-	4.9	3.5	2.1	2.3	6.5	3.5	3.2	2.8	3.4	3.5	5.7	9.2	8	6.4	5.5	5
Lab Conductivity	uS/cm	-	605	662	2140	1500	366	414	549	1750	1670	1620	5100	6890	7240	6230	7010	2580
Field Conductivity	uS/cm	-	376.6	391.9	1292	908	239.8	243.8	315.4	1060	1068	1003	4026	5549	5951	5275	5392	1659
Field Specific Conductivity	uS/cm	-	611	666	2293	1602	370.7	414	541	1842	1817	1705	6371	7939	8808	8192	8563	2684
Field Dissolved Oxygen	mg/L	minimum of 9.5 <sup>6</sup>	4.09	7.59	2.19	1.77	2.44	4.67	0.19	2.15	0.00	0.00	2.89	0.45	0.9	1.02	0.08	0
Field Oxidation - Redox Potent	mV	-	14.7	21.7	31.1	-9.8	-37.9	-39.5	3.5	-32	-19.9	-0.1	-35.3	305.2	148.3	9.1	100.8	-72.5
Field Turbidity	NTU	-	16	2.14	0.15	0.08	0.42	96.4	0.83	483	1.13	0.04	2.2	0.32	0.11	7.21	18	9.6
Total Suspended Solids	mg/L	-	16.5	<3.0	<3.0	<3.0	<3.0	1180	<3.0	1150	7.7	<3.0	67.0	11.5	11.2	71.3	56.2	40.7
<b>Anions and Nutrients</b>																		
Acidity (as CaCO3)	mg/L	-	10.1	7.2	37.8	14.7	2.5	2.3	3.6	76.8	23.8	26.6	844	1790	1860	2840	3130	63.2
Total Hardness (as CaCO3)	mg/L	-	336	383	1400	910	201	224	306	980	1070	1030	4930	5980	6980	5310	5050	1660
Alkalinity, Total (CaCO3)	mg/L	-	321	360	359	331	176	205	243	640	318	321	209	<2.0	40.0	79.8	46.5	148
Chloride (Cl)	mg/L	-	<0.50	<2.5	<10	<5.0	<0.50	<0.50	<0.50	11.6	<5.0	<5.0	<25	<25	<25	<25	<25	10
Sulfate (SO4)	mg/L	-	30.6	37.5	1200	667	29.8	26.7	58.9	511	810	751	5270	8680	9680	8240	9130	1730
<b>Dissolved Metals</b>																		
Aluminum (Al)	mg/L	Varies <sup>7</sup>	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.043	20.0	2.43	0.84	1.13	<0.010
Aluminum CCME Guideline	mg/L	-	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.005000	0.005000	0.005000	0.005000	0.005000	0.1000
Antimony (Sb)	mg/L	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.010	<0.010	<0.010	<0.010	<0.00050
Arsenic (As)	mg/L	0.005	<0.0010	<0.0010	<0.0010	0.0019	<0.0010	<0.0010	<0.0010	<0.0010	0.0103	<0.0010	0.0911	<0.010	<0.010	0.046	0.014	<0.0010
Barium (Ba)	mg/L	-	0.162	0.143	0.034	0.098	0.141	0.210	0.142	0.096	0.060	<0.050	<0.050	<0.050	<0.050	<0.050	0.032	
Beryllium (Be)	mg/L	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	<0.010	<0.025	<0.025	<0.025	<0.025	<0.025	
Boron (B)	mg/L	1.5	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.10	
Cadmium (Cd)	mg/L	Varies <sup>8</sup>	<0.000050	<0.000050	0.00166	<0.000050	0.000051	<0.000050	0.000103	<0.000050	<0.000050	0.000136	<0.00010	0.109	0.113	0.0543	0.0662	0.000153
Cadmium CCME Guideline	mg/L	-	0.00037	0.00037	0.00037	0.00037	0.000283	0.000310	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037
Calcium (Ca)	mg/L	-	97.2	86.2	405	268	58.9	62.7	87.3	270	299	287	490	390	437	405	419	500
Chromium (Cr)	mg/L	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0020	<0.010	<0.010	<0.010	<0.010	<0.00050
Cobalt (Co)	mg/L	-	<0.00050	<0.00050	0.00909	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00356	<0.00050	0.581	1.49	1.63	1.63	1.79	0.0296
Copper (Cu)	mg/L	Varies <sup>9</sup>	0.0013	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0040	0.149	<0.020	<0.020	<0.020	<0.0010
Copper CCME Guideline	mg/L	-	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Iron (Fe)	mg/L	0.3	<0.030	<0.030	<0.030	0.634	<0.030	<0.030	<0.030	5.27	3.05	0.170	243	159	287	816	939	23.3
Lead (Pb)	mg/L	Varies <sup>10</sup>	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.199	0.0865	0.0134	0.0650	<0.0010
Lead CCME Guideline	mg/L	-	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Lithium (Li)	mg/L	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.073	<0.050	<0.050	0.128	0.244	0.224	0.205	0.154	<0.050
Magnesium (Mg)	mg/L	-	22.5	40.9	95.3	58.3	13.2	16.5	21.4	74.2	79.6	75.5	901	1220	1430	1040	972	101
Manganese (Mn)	mg/L	-	<0.010	<0.010	13.2	0.244	<0.010	0.240	0.895	5.41	0.506	87.7	113	127	127	120	127	4.24
Molybdenum (Mo)	mg/L	0.073	<0.0010	<0.0010	<0.0010	<0.0010	0.0017	0.0014	0.0015	<0.0010	<0.0010	<0.0010	0.0014	<0.0050	<0.0050	<0.0050	<0.0050	<0.0010
Nickel (Ni)	mg/L	Varies <sup>11</sup>	<0.0050	<0.0050	0.0253	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0081	0.0061	0.544	1.80	1.77	1.40	1.47	0.0252
Nickel CCME Guideline	mg/L	-	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Potassium (K)	mg/L	-	3.3	3.0	6.8	4.6	<2.0	<2.0	<2.0	4.9	6.2	6.0	<10	15	18	15	14	4.0
Selenium (Se)	mg/L	0.001	0.0026	0.0041	<0.0010	<0.0010	0.0012	0.0018	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0010
Silver (Ag)	mg/L	0.0001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000020	<0.0010	<0.0010	<0.0010	<0.0010	<0.000050
Sodium (Na)	mg/L	-	2.1	3.2	21.9	25.0	2.1	2.0	3.2	75.7	20.2	16.2	51	54	61	50	51	29.3
Thallium (Tl)	mg/L	0.0008	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0021	0.0013	<0.0010	<0.0010	<0.00020
Titanium (Ti)	mg/L	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Uranium (U)	mg/L	0.015	0.00445	0.00541	0.00996	0.00993	0.00171	0.00195	0.00197	0.00243	0.00926	0.0122	0.00551	0.0170	0.0027	0.0075	0.0084	0.00059
Vanadium (V)	mg/L	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.15	<0.15	<0.15	<0.15	<0.15	<0.030
Zinc (Zn)	mg/L	0.03	0.0097	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.010	211	841	838	674	727	11.5

(1) Unless otherwise noted, CCME guidelines shown are the maximum allowable concentration. CCME guideline exceedances are shaded dark grey. Reportable detection limits in exceedance of the CCME guideline are shaded light grey. Hardness or pH dependent guideline values have been calculated where relevant and are presented in *italicized* text in the row below actual results.  
 (2) - No standard or not analyzed (3) CCME = Canadian Council of Ministers of the Environment, updated to November 2014 (4) CCME FAL = Chapter 4, Canadian Water Quality Guidelines, 1999, 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) Aluminum varies with pH as follows for CCME FAL: 0.005 if pH<6.5, 0.1 if pH>=6.5 when field pH is not available, lab pH is used. When field and lab pH are both not available, the most stringent guideline has been used. (8) Cadmium varies with Hardness in mg/L as follows for CCME FAL: 0.0004 if H<17, 0.00037 if H=17 and H<=280 as follows: CWQG (µg/L)=10/[0.83(log[hardness]) - 2.46]. 0.004 if H>280 (9) 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 (µg/L) = 0.2 \* e[0.8545(ln[hardness])-1.465], 0.004 if H>180 (10) Lead varies with Hardness in mg/L as follows for CCME FAL: 0.001 if H<60, 0.001 - 0.007 if H=60 and H<=180 as follows: CWQG (µg/L)= e[1.273(ln[hardness])-4.705], 0.007 if H>180 (11) Nickel varies with Hardness in mg/L as follows for CCME FAL: 0.025 if H<60, 0.025 - 0.15 if H=60 and H<=180 as follows: CWQG (µg/L) = e[0.76(ln[hardness])+1.06], 0.15 if H>180 (12) AU= Attenuation Units - an alternate unit of turbidity measurement used where turbidity is >500. AU is equivalent to NTU, but is measured using transmitted rather than scattered light. (13) RPD = Relative Percent Difference.  
 The difference between a sample and its field duplicate over the average of the 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.

Table 3-1: Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2016 September Sampling Program

Parameter	Units	Location													
		Intermediate Dam						Northeast Waste Rock Dumps							
		Station ID	P01-03	P01-04A	P01-04B	X24-96D	X25-96A	X25-96B	BH14A	BH14B	CH15107MW029	CH15107MW030	CH15107MW032	CH15107MW033	CH15107MW034
		Date Sampled	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016	25/09/2016	24/09/2016	24/09/2016
		ALS Sample ID	L1835022	L1835022	-	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022
Station Status	Good	Good	Frozen	Good	Good	Good	Good	Slow recharge	Good	Good	Slow recharge	Good	Good		
Physical Tests		CCME-FAL <sup>1,2,3,4</sup>													
Lab pH	pH units	not <6.5 or >9.0 <sup>5</sup>	5.47	7.16	-	5.54	7.36	7.94	7.59	7.64	7.94	7.63	7.97	7.72	7.70
Field pH	pH units	not <6.5 or >9.0 <sup>5</sup>	6.13	6.71	-	6.08	6.82	7.42	6.53	6.74	6.96	6.95	7.55	7.02	6.81
Field Temperature	C	-	4.8	3.6	-	4.7	4	4.1	5.1	4.7	3.2	5.1	3.6	4.2	4.3
Lab Conductivity	uS/cm	-	3860	1170	-	3710	1770	1820	3750	3340	2100	1840	2440	1540	968
Field Conductivity	uS/cm	-	2647	715	-	2566	1166	1178	2674	2252	1297	1173	1507	952	579
Field Specific Conductivity	uS/cm	-	4313	1210	-	4198	1949	1960	4312	3684	2225	1890	2545	1580	959
Field Dissolved Oxygen	mg/L	minimum of 9.5 <sup>6</sup>	0.05	2.06	-	0.05	0.02	0.01	0.29	1.78	7.32	7.39	2.12	6.87	6.14
Field Oxidation - Redox Potent	mV	-	-27	-19.7	-	-19.4	-60.4	-100.8	56	219.1	216.6	178.2	192.9	197.3	187
Field Turbidity	NTU	-	13.6	1.37	-	11.23	0	0.35	5.75	10.47	1.71	13.3	19.6	1.14	10.01
Total Suspended Solids	mg/L	-	178	<3.0	-	143	30.5	9.3	8.6	18.8	3.5	7.6	40.3	<3.0	17.1
Anions and Nutrients															
Acidity (as CaCO3)	mg/L	-	1190	82.0	-	1070	33.7	12.5	79.3	43.8	9.2	12.9	11.8	10.3	8.4
Total Hardness (as CaCO3)	mg/L	-	2070	598	-	2140	1110	1150	3250	2770	1570	1300	1650	1030	560
Alkalinity, Total (CaCO3)	mg/L	-	96.7	685	-	97.4	306	320	489	465	199	177	280	166	119
Chloride (Cl)	mg/L	-	<10	7.8	-	<10	<5.0	<5.0	<10	<10	<10	<10	17	<5.0	<2.5
Sulfate (SO4)	mg/L	-	2890	42.2	-	2870	913	929	2940	2330	1310	1080	1540	826	451
Dissolved Metals															
Aluminum (Al)	mg/L	Varies <sup>7</sup>	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
<i>Aluminum CCME Guideline</i>	mg/L	-	0.005000	0.1000	-	0.005000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000	0.1000
Antimony (Sb)	mg/L	-	<0.0010	<0.00050	-	<0.0010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Arsenic (As)	mg/L	0.005	<0.0010	<0.0010	-	<0.0010	<0.0010	0.0012	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Barium (Ba)	mg/L	-	<0.020	0.481	-	<0.020	0.025	0.025	<0.020	<0.020	0.070	0.052	0.025	0.022	0.031
Beryllium (Be)	mg/L	-	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boron (B)	mg/L	1.5	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)	mg/L	Varies <sup>8</sup>	0.000465	<0.00050	-	0.000382	0.000116	<0.00050	0.000372	0.000191	0.000394	0.000188	0.000181	0.000116	<0.00050
<i>Cadmium CCME Guideline</i>	mg/L	-	0.00037	0.00037	-	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037
Calcium (Ca)	mg/L	-	443	155	-	477	325	371	540	524	205	182	522	156	126
Chromium (Cr)	mg/L	-	<0.0010	<0.00050	-	<0.0010	<0.00050	<0.00050	0.00062	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt (Co)	mg/L	-	0.303	<0.00050	-	0.342	0.0235	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0112	<0.00050	<0.00050
Copper (Cu)	mg/L	Varies <sup>9</sup>	<0.0020	<0.0010	-	<0.0020	<0.0010	<0.0010	0.0011	0.0012	0.0021	0.0027	<0.0010	0.0021	0.0029
<i>Copper CCME Guideline</i>	mg/L	-	0.004	0.004	-	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Iron (Fe)	mg/L	0.3	603	0.438	-	502	16.5	3.44	<0.030	<0.030	<0.030	<0.030	0.053	<0.030	<0.030
Lead (Pb)	mg/L	Varies <sup>10</sup>	<0.0010	<0.0010	-	<0.0010	<0.0010	<0.0010	0.0059	0.0081	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
<i>Lead CCME Guideline</i>	mg/L	-	0.007	0.007	-	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Lithium (Li)	mg/L	-	<0.050	0.155	-	<0.050	<0.050	<0.050	0.135	0.090	<0.050	<0.050	0.061	<0.050	<0.050
Magnesium (Mg)	mg/L	-	234	51.5	-	230	71.4	54.4	460	356	258	206	85.2	157	59.5
Manganese (Mn)	mg/L	-	88.2	0.273	-	94.5	24.2	0.319	0.695	<0.010	<0.010	<0.010	4.72	<0.010	<0.010
Molybdenum (Mo)	mg/L	0.073	0.0010	<0.0010	-	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0065	<0.0010	0.0025
Nickel (Ni)	mg/L	Varies <sup>11</sup>	0.155	<0.0050	-	0.188	0.0201	<0.0050	0.394	0.0057	0.0261	0.0189	0.0143	0.0354	0.0083
<i>Nickel CCME Guideline</i>	mg/L	-	0.15	0.15	-	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Potassium (K)	mg/L	-	8.0	3.7	-	7.9	5.1	4.4	4.7	4.6	4.8	4.0	9.7	3.6	2.7
Selenium (Se)	mg/L	0.001	<0.0010	<0.0010	-	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0020	0.0019	<0.0010	0.0022	0.0029
Silver (Ag)	mg/L	0.0001	<0.00010	0.000206	-	<0.00010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Sodium (Na)	mg/L	-	25.9	74.0	-	28.5	19.9	43.9	20.6	18.1	10.4	8.3	137	6.9	5.4
Thallium (Tl)	mg/L	0.0008	<0.00020	<0.00020	-	0.00029	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium (Ti)	mg/L	-	<0.050	<0.050	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Uranium (U)	mg/L	0.015	0.00507	0.00029	-	0.00396	0.0115	0.00732	0.131	0.199	0.0107	0.00775	0.0271	0.00804	0.00145
Vanadium (V)	mg/L	-	<0.030	<0.030	-	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
Zinc (Zn)	mg/L	0.03	2.57	<0.0050	-	2.13	<0.0050	<0.0050	32.5	0.358	0.529	0.326	0.0093	2.58	<0.0050

(1) Unless otherwise noted, CCME guidelines shown are the maximum allowable concentration. CCME guideline exceedances are shaded dark grey. Reportable detection limits in exceedence of the CCME guideline are shaded light grey. Hardness or pH dependent guideline values have been calculated where relevant and are presented in grey italicized text in the row below actual results.  
(2) - = No standard or not analyzed (3) CCME = Canadian Council of Ministers of the Environment, updated to November 2014 (4) CCME FAL = Chapter 4, Canadian Water Quality Guidelines, 1999, 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) Aluminum varies with pH as follows for CCME FAL: 0.005 if pH<6.5, 0.1 if pH=6.5 when field pH is not available, lab pH is used. When field and lab pH are both not available, the most stringent guideline has been used. (8) Cadmium varies with Hardness in mg/L as follows for CCME FAL: 0.0004 if H<17, 0.0004 - 0.00037 if H=17 and H=280 as follows: CWQG (µg/L)=10[0.83[log(hardness)] - 2.46], 0.004 if H>280 (9) 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 (µg/L) = 0.2 \* e[0.8545ln(hardness)]-1.465, 0.004 if H=180 (10) Lead varies with Hardness in mg/L as follows for CCME FAL: 0.001 if H<60, 0.001 - 0.007 if H=60 and H=180 as follows: CWQG (µg/L) = e[1.273ln(hardness)]-4.705, 0.007 if H=180 (11) Nickel varies with Hardness in mg/L as follows for CCME FAL: 0.025 if H<60, 0.025 - 0.15 if H=60 and H<180 as follows: CWQG (µg/L) = e[0.76ln(hardness)]+1.06, 0.15 if H=180 (12) AU = Attenuation Units - an alternate unit of turbidity measurement used where turbidity is >500. AU is equivalent to NTU, but is measured using transmitted rather than scattered light. (13) RPD = Relative Percent Difference.  
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.

Table 3-1: Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2016 September Sampling Program

Parameter	Units	Location																			
		Second Impoundment												S-Wells Area							
		Station ID	P03-04-02	P03-04-04	P03-04-06	P03-05-02	P03-05-4	P03-05-05	P03-06-1	P03-06-2	P03-06-3	P03-06-4	P03-06-5	CH14107MW007A	CH14107MW007B	CH14107MW009	CH14107MW010	CH15107MW019	CH15107MW022	CH15107MW023	CH15107MW025
		Date Sampled	24/09/2016	24/09/2016	21/09/2016	21/09/2016	21/09/2016	24/09/2016	24/09/2016	21/09/2016	24/09/2016	24/09/2016	24/09/2016	20/09/2016	20/09/2016	20/09/2016	20/09/2016	21/09/2016	21/09/2016	21/09/2016	21/09/2016
		ALS Sample ID	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022
Station Status	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Slow recharge
Physical Tests		CCME-FAL <sup>1,2,3,4</sup>																			
Lab pH	pH units	not <6.5 or >9.0 <sup>5</sup>	7.53	7.99	4.50	5.37	5.83	3.48	3.99	3.88	4.16	5.15	4.11	6.46	6.68	6.38	6.12	6.58	6.72	6.79	7.75
Field pH	pH units	not <6.5 or >9.0 <sup>5</sup>	6.34	7.12	6.3	5.73	5.83	6.13	3.97	4.63	5.67	6.36	6.39	5.95	5.97	5.95	5.9	6.01	6.34	6.54	7.12
Field Temperature	C	-	3.1	4.2	5.4	12.2	11.5	5.1	6.5	4.8	5.4	4.9	5.3	6.3	5	4.2	2.8	3	1.7	3.6	
Lab Conductivity	uS/cm	-	2150	1530	4830	2160	1940	6880	4700	4850	4560	12760	3740	4160	1600	1280	819	3680	1460	1460	2900
Field Conductivity	uS/cm	-	1296	966	3112	1720	1586	4812	2217	3436	3459	2063	2960	2960	992	765	471	2078	837	511	1760
Field Specific Conductivity	uS/cm	-	2230	1601	4968	2274	2139	7768	3416	5599	5530	3346	4742	4600	1603	1270	817	3587	1445	919	2976
Field Dissolved Oxygen	mg/L	minimum of 9.5 <sup>6</sup>	2.21	3.23	1.33	0.48	0.33	2.29	4.66	1.16	1.61	1.55	1.93	2.85	3.14	3.92	5.3	1.63	0.72	1.16	16.7
Field Oxidation - Redox Potent	mV	-	181.3	-56.3	-55.7	25.4	27.7	-34.8	285.5	179.1	21.5	-51	-68.5	75.6	45.6	41.8	89	45.9	33.9	36.3	80.5
Field Turbidity	NTU	-	29.7	714	11.21	1.67	0.38	1910 <sup>12</sup>	11	2055 <sup>12</sup>	24.4	29.7	1866 <sup>12</sup>	7.21	1.37	0.85	3.05	14.8	10.99	54	26.4
Total Suspended Solids	mg/L	-	94.4	3200	105	40.9	34.8	1170	103	1700	340	130	1430	18.7	19.7	4.1	7.1	48.8	37.2	521	216
Anions and Nutrients																					
Acidity (as CaCO3)	mg/L	-	15.1	7.4	2160	482	288	5450	2670	2800	3330	948	2120	294	117	261	417	212	89.7	80.8	25.1
Total Hardness (as CaCO3)	mg/L	-	1460	743	1730	900	1040	1780	1790	1500	1500	1550	1500	3460	1050	829	449	2660	923	495	749
Alkalinity, Total (CaCO3)	mg/L	-	135	223	<1.0	11.1	19.6	<2.0	<1.0	<1.0	<1.0	16.6	<1.0	163	227	307	243	559	294	456	606
Chloride (Cl)	mg/L	-	<10	<5.0	<10	<10	<10	<25	<25	<25	<10	<10	<10	<10	<5.0	<2.5	<2.5	<10	<5.0	<2.5	73
Sulfate (SO4)	mg/L	-	1480	728	3940	1530	1350	8720	5410	5150	5360	2350	3670	3810	847	517	222	2300	639	96.7	1010
Dissolved Metals																					
Aluminum (Al)	mg/L	Varies <sup>7</sup>	<0.010	<0.010	<0.010	0.033	0.012	0.053	4.12	4.02	0.254	0.049	0.247	0.056	0.040	0.029	0.056	0.026	<0.010	0.043	0.011
<i>Aluminum CCME Guideline</i>	mg/L	-	0.005000	0.1000	0.005000	0.005000	0.005000	0.005000	0.005000	0.005000	0.005000	0.005000	0.005000	0.005000	0.005000	0.005000	0.005000	0.005000	0.005000	0.1000	0.1000
Antimony (Sb)	mg/L	-	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0010	<0.00050	<0.0010	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Arsenic (As)	mg/L	0.005	0.0019	0.0076	0.0167	0.0075	<0.0010	0.0100	<0.0020	0.0040	0.0021	0.0017	0.0011	0.0270	0.0140	0.0036	0.0068	0.0176	0.0022	0.0056	0.0016
Barium (Ba)	mg/L	-	<0.020	0.058	<0.030	0.024	0.023	<0.050	<0.030	<0.030	<0.020	<0.020	<0.020	0.025	0.030	0.026	0.023	<0.020	0.025	0.182	0.093
Beryllium (Be)	mg/L	-	<0.0050	<0.0050	<0.015	<0.0050	<0.0050	<0.025	<0.010	<0.015	<0.010	<0.0050	<0.010	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boron (B)	mg/L	1.5	<0.10	<0.10	<0.30	<0.10	<0.10	<0.50	<0.20	<0.30	<0.20	<0.10	<0.20	<0.20	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cadmium (Cd)	mg/L	Varies <sup>8</sup>	0.000119	<0.000050	<0.000050	0.000846	0.00180	0.00046	0.0493	0.0389	0.0107	0.00500	0.0112	0.00912	<0.000050	<0.000050	<0.000050	0.000083	<0.000050	<0.000050	<0.000050
<i>Cadmium CCME Guideline</i>	mg/L	-	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037
Calcium (Ca)	mg/L	-	451	243	499	280	323	375	401	453	393	463	395	386	244	211	111	607	221	111	205
Chromium (Cr)	mg/L	-	<0.0010	<0.00050	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.0010	<0.00050	<0.0010	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00075
Cobalt (Co)	mg/L	-	0.111	0.00394	0.0313	0.722	0.320	0.400	1.93	1.64	0.341	0.162	0.345	0.0113	0.00454	0.00639	0.00430	0.00581	0.00179	0.00149	0.00112
Copper (Cu)	mg/L	Varies <sup>9</sup>	<0.0020	<0.0010	<0.0020	<0.0020	<0.0020	<0.0040	0.0172	0.0238	<0.0020	0.0019	<0.0020	<0.0040	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
<i>Copper CCME Guideline</i>	mg/L	-	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004
Iron (Fe)	mg/L	0.3	1.45	6.60	1290	263	137	3720	1460	1470	1840	468	1850	34.4	24.9	20.1	21.9	29.8	9.22	2.14	1.61
Lead (Pb)	mg/L	Varies <sup>10</sup>	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0022	0.0147	0.0291	0.0027	0.0011	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
<i>Lead CCME Guideline</i>	mg/L	-	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007
Lithium (Li)	mg/L	-	<0.050	<0.050	<0.050	0.068	0.060	0.118	0.139	0.133	0.059	<0.050	0.063	0.108	<0.050	0.056	0.090	0.252	0.117	0.091	0.143
Magnesium (Mg)	mg/L	-	80.0	33.3	118	48.7	57.4	206	192	191	125	95.8	125	605	108	73.5	41.4	277	90.2	52.9	57.8
Manganese (Mn)	mg/L	-	58.2	8.26	14.4	59.4	58.3	80.9	165	143	71.2	57.9	71.6	23.0	2.75	1.50	0.962	2.87	0.671	0.316	3.56
Molybdenum (Mo)	mg/L	0.073	<0.0010	0.0012	<0.0010	<0.0010	<0.0010	0.0020	0.0013	0.0016	0.0013	0.0019	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0033	0.0013
Nickel (Ni)	mg/L	Varies <sup>11</sup>	0.113	<0.0050	0.0764	0.900	0.162	0.340	2.11	1.80	0.315	0.138	0.318	0.700	0.0184	0.0149	0.0178	0.0165	<0.0050	<0.0050	<0.0050
<i>Nickel CCME Guideline</i>	mg/L	-	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15
Potassium (K)	mg/L	-	4.3	3.3	9.3	4.9	4.2	16	8.3	8.3	6.9	5.0	7.2	10.3	5.1	6.4	5.6	9.2	7.4	4.7	7.3
Selenium (Se)	mg/L	0.001	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Silver (Ag)	mg/L	0.0001	<0.00010	<0.000050	<0.00010	<0.00010	<0.00010	<0.00020	<0.00010	<0.00020	<0.00010	<0.000050	<0.00010	<0.00020	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Sodium (Na)	mg/L	-	24.7	86.9	58.8	13.0	15.5	57	23.8	21.7	17.8	23.9	18.5	30.3	10.9	12.7	13.1	41.1	12.2	24.4	512
Thallium (Tl)	mg/L	0.0008	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium (Ti)	mg/L	-	<0.050	<0.050	<0.050	<0.0															

Table 3-1: Groundwater Sampling Analytical Results and CCME Guideline Exceedances for 2016 September Sampling Program

Parameter	Units	Location	S-Wells Area																		
			Station ID	P09-SIS1	P09-SIS2	P09-SIS3	P09-SIS4	P09-SIS6	P96-7	S1A	S1B	S2A	S2B	SRK05-SP-4A	SRK05-SP-4B	SRK05-SP-5	SRK08-SBR2	SRK08-SBR3	SRK08-SBR4	SRK08-SP-7A	SRK08-SP-7B
Date Sampled			20/09/2016	20/09/2016	20/09/2016	20/09/2016	20/09/2016	20/09/2016	21/09/2016	20/09/2016	21/09/2016	21/09/2016	20/09/2016	20/09/2016	21/09/2016	20/09/2016	21/09/2016	21/09/2016	20/09/2016	20/09/2016	
ALS Sample ID			L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022
Station Status			Good	Good	Good	Slow recharge	Slow recharge	Good	Good	Slow recharge	Good	Slow recharge	Good	Good	Good	Good	Good	Good	Good	Good	Good
Parameter	Units	CCME-FAL <sup>1,2,3,4</sup>																			
<b>Physical Tests</b>																					
Lab pH	pH units	not <6.5 or >9.0 <sup>5</sup>	6.88	6.49	6.86	7.15	7.44	7.72	6.68	7.17	6.31	6.48	6.41	6.84	6.69	7.13	7.02	6.52	6.80	7.01	
Field pH	pH units	not <6.5 or >9.0 <sup>5</sup>	6.33	5.55	5.68	6.31	6.83	7.21	5.84	6.66	6	5.8	5.91	5.85	5.73	5.89	6.76	5.84	6.13	6.44	
Field Temperature	C	-	6.8	7.3	7.2	7.1	6	2.8	4	2.6	2.7	3.3	5.1	7.6	2.8	5.8	1.4	3.1	2.5	4.5	
Lab Conductivity	uS/cm	-	6630	9020	8740	7020	5120	2910	1930	827	1830	820	1340	8130	8070	2160	3430	7310	1480	196	
Field Conductivity	uS/cm	-	4786	6806	7377	5740	3826	1735	1181	482.2	1072	6020	842	6397	6024	1508	2097	5163	890	116.2	
Field Specific Conductivity	uS/cm	-	7333	10277	11172	8729	6007	3016	1971	843	1867	10267	1358	9574	10447	2380	3824	8881	1559	191.2	
Field Dissolved Oxygen	mg/L	minimum of 9.5 <sup>6</sup>	0.21	0.12	0.01	0.42	0.13	10.58	3.84	2.74	1.49	0.34	0.09	0.3	0.09	0.98	2.83	0.19	1.53	0.37	
Field Oxidation - Redox Potent	mV	-	26.7	83.8	57.7	22.9	-70	44.7	111.1	130.9	43.1	51.1	40.6	33.8	82.1	86	51.5	93.6	67	47.9	
Field Turbidity	NTU	-	8.33	11.67	2.23	2.85	27.1	0.96	0.55	23.5	129	6.54	0.63	9.47	2.81	27.7	25.3	1.15	59.4	6.47	
Total Suspended Solids	mg/L	-	31.7	28.0	8.7	9.1	95.6	5.5	3.9	48.0	182	21.9	3.8	24.9	18.6	20.3	75.8	5.0	220	6.6	
<b>Anions and Nutrients</b>																					
Acidity (as CaCO <sub>3</sub> )	mg/L	-	420	1020	1340	290	137	16.1	312	42.9	228	1130	229	1130	1140	240	110	676	107	13.8	
Total Hardness (as CaCO <sub>3</sub> )	mg/L	-	6280	8790	9620	7870	4550	2050	1250	453	1210	9180	785	7820	8710	1570	2740	7600	969	87.0	
Alkalinity, Total (CaCO <sub>3</sub> )	mg/L	-	334	97	139	480	656	216	283	348	290	155	250	47.1	146	228	584	121	161	77	
Chloride (Cl)	mg/L	-	<25	<25	<25	<25	<25	<10	<10	<2.5	<5.0	<25	<2.5	<25	<10	<10	<10	<25	<5.0	<0.50	
Sulfate (SO <sub>4</sub> )	mg/L	-	7160	12000	12300	8140	4840	2070	1080	139	952	10500	547	9880	11000	1410	2360	7850	820	25.0	
<b>Dissolved Metals</b>																					
Aluminum (Al)	mg/L	Varies <sup>7</sup>	0.039	0.56	0.28	<0.020	<0.010	<0.010	0.022	<0.010	0.013	<0.10	0.025	0.12	0.13	1.17	<0.010	0.052	<0.010	0.039	
Aluminum CCME Guideline	mg/L	-	0.005000	0.005000	0.005000	0.005000	0.1000	0.1000	0.005000	0.1000	0.005000	0.005000	0.005000	0.005000	0.005000	0.1000	0.005000	0.005000	0.005000	0.005000	
Antimony (Sb)	mg/L	-	<0.0020	<0.010	<0.010	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.010	<0.00050	<0.010	<0.010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Arsenic (As)	mg/L	0.005	0.0027	<0.010	<0.010	<0.0020	0.0014	<0.0010	<0.0010	<0.0010	<0.010	<0.010	<0.0010	<0.010	<0.010	<0.0010	<0.0010	<0.0010	0.0056	0.0034	
Barium (Ba)	mg/L	-	<0.030	<0.050	<0.050	<0.020	<0.020	<0.020	0.049	<0.020	<0.020	<0.050	<0.020	<0.050	<0.020	<0.050	<0.020	<0.050	<0.020	0.057	
Beryllium (Be)	mg/L	-	<0.015	<0.025	<0.025	<0.025	<0.010	<0.0050	<0.0050	<0.0050	<0.0050	<0.025	<0.0050	<0.025	<0.025	<0.0050	<0.0050	<0.025	<0.0050	<0.0050	
Boron (B)	mg/L	1.5	<0.30	<0.50	<0.50	<0.50	<0.20	<0.10	<0.10	<0.10	<0.50	<0.10	<0.10	<0.50	<0.10	<0.10	<0.10	<0.50	<0.10	<0.10	
Cadmium (Cd)	mg/L	Varies <sup>8</sup>	0.0382	0.356	0.533	0.0294	0.000574	0.000064	0.00170	0.000143	0.00103	0.170	0.00108	0.221	0.389	0.00615	<0.00050	0.143	0.000059	<0.000050	
Cadmium CCME Guideline	mg/L	-	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	0.00037	
Calcium (Ca)	mg/L	-	570	424	430	469	485	472	248	126	281	509	177	430	422	230	486	426	233	10.2	
Chromium (Cr)	mg/L	-	<0.0020	<0.010	<0.010	<0.0020	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.010	<0.00050	<0.010	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	
Cobalt (Co)	mg/L	-	0.250	1.73	2.16	0.0212	0.0105	<0.00050	0.0377	<0.00050	0.0220	1.97	0.0253	0.063	1.85	0.0463	<0.00050	1.09	0.0105	0.00084	
Copper (Cu)	mg/L	Varies <sup>9</sup>	0.0046	<0.020	0.038	0.0108	<0.0010	<0.0010	<0.0010	0.0031	<0.0010	<0.020	<0.0010	<0.020	<0.020	0.0049	<0.0010	0.010	<0.0010	<0.0010	
Copper CCME Guideline	mg/L	-	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.004	0.002099	
Iron (Fe)	mg/L	0.3	25.1	0.57	0.23	<0.15	41.6	<0.030	18.5	<0.030	22.6	24.9	23.0	47.6	2.43	0.525	<0.030	2.34	27.2	1.98	
Lead (Pb)	mg/L	Varies <sup>10</sup>	<0.0010	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0023	<0.0050	<0.0010	<0.0050	<0.0050	<0.0010	<0.0010	<0.0025	<0.0010	<0.0010	
Lead CCME Guideline	mg/L	-	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.007	0.002665	
Lithium (Li)	mg/L	-	0.237	0.246	0.237	0.127	0.066	<0.050	0.053	<0.050	0.058	0.228	0.061	0.217	0.224	0.110	0.068	0.234	0.054	<0.050	
Magnesium (Mg)	mg/L	-	1180	1880	2080	1630	812	213	152	33.3	124	1920	83.6	1640	1860	241	370	1590	94.0	14.9	
Manganese (Mn)	mg/L	-	63.9	114	166	37.7	17.0	<0.010	7.59	0.017	4.38	151	2.80	92.1	127	12.7	<0.010	87.4	2.39	0.841	
Molybdenum (Mo)	mg/L	0.073	0.0010	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0050	<0.0010	<0.0010	<0.0025	<0.0010	<0.0010	
Nickel (Ni)	mg/L	Varies <sup>11</sup>	0.782	2.76	3.67	0.948	0.0793	<0.0050	0.0936	<0.0050	0.0409	2.95	0.0635	3.42	3.03	0.171	0.0256	2.16	0.0256	0.0093	
Nickel CCME Guideline	mg/L	-	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.15	0.08598	
Potassium (K)	mg/L	-	12.7	16	17	12	6.8	5.6	5.9	3.2	6.2	16	5.5	15	16	7.8	8.3	15	6.1	<2.0	
Selenium (Se)	mg/L	0.001	<0.0010	<0.0050	<0.0050	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0050	<0.0010	<0.0050	<0.0050	<0.0010	0.0013	<0.0025	<0.0010	<0.0010	
Silver (Ag)	mg/L	0.0001	<0.00020	<0.0010	<0.0010	<0.00020	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.0010	<0.000050	<0.0010	<0.0010	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	
Sodium (Na)	mg/L	-	44.2	86	72	37	77.5	21.7	14.2	28.9	12.6	69	11.1	46	71	16.5	49.0	70	11.3	2.6	
Thallium (Tl)	mg/L	0.0008	<0.00020	<0.0010	<0.0010	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.00020	<0.0010	<0.00020	<0.00020	<0.00020	<0.00050	<0.00020	<0.00020	
Titanium (Ti)	mg/L	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	
Uranium (U)	mg/L	0.015	0.00224	0.0013	0.0012	0.0233	0.0103	0.0293	0.00311	0.00380	0.00321	<0.0010	0.00167	<0.0010	0.0026	0.00101	0.0343	0.00134	0.00099	<0.00020	
Vanadium (V)	mg/L	-	<0.090	<0.15	<0.15	<0.15	<0.060	<0.030	<0.030	<0.030	<0.030	<0.15	<0.030	<0.15	<0.030	<0.030	<0.030	<0.15	<0.030		



Table 3-2: Quality Assurance and Quality Control Analytical Results for 2016 September Groundwater Sampling Program

Parameter	Units	Station ID		CH14107MW007B		SRK08-SBR2		P01-03		V36		P01-01A		P05-02						
		Sample ID	DUP-1	CH14107MW007B	DUP-2	SRK08-SBR2	DUP-3	P01-03	DUP-4	V36	DUP-5	P01-01A	DUP-6	P05-02						
		Date Sampled	20/09/2016	20/09/2016	20/09/2016	20/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016	23/09/2016	23/09/2016						
		ALS Sample ID	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022						
		Station Status	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good						
				RPD (%) <sup>12</sup>			RPD (%) <sup>12</sup>			RPD (%) <sup>12</sup>			RPD (%) <sup>12</sup>			RPD (%) <sup>12</sup>				
		CCME-FAL <sup>1,2,3,4</sup>																		
<b>Physical Tests</b>																				
Lab pH	pH units	not <6.5 or >9.0 <sup>5</sup>	6.68	6.68	0.00	7.09	7.13	0.56	5.59	5.47	2.17	7.46	7.33	1.76	7.46	7.39	0.94	6.56	6.57	0.15
Field pH	pH units	not <6.5 or >9.0 <sup>5</sup>	5.97	5.97	-	5.89	5.89	-	6.13	6.13	-	6.91	6.91	-	6.88	6.88	-	6.3	6.3	-
Field Temperature	C	-	5	5	-	5.8	5.8	-	4.8	4.8	-	4	4	-	2.1	2.1	-	5.8	5.8	-
Lab Conductivity	uS/cm	-	1610	1600	0.62	2220	2160	2.74	3830	3860	0.78	3020	3000	0.66	2140	2140	0.00	3300	3330	0.90
Field Conductivity	uS/cm	-	992	992	-	1508	1508	-	2647	2647	-	1896	1896	-	1292	1292	-	2205	2205	-
Field Specific Conductivity	uS/cm	-	1603	1603	-	2380	2380	-	4313	4313	-	3168	3168	-	2293	2293	-	3487	3487	-
Field Dissolved Oxygen	mg/L	Minimum of 9.5 <sup>6</sup>	3.14	3.14	-	0.98	0.98	-	0.05	0.05	-	2.43	2.43	-	2.19	2.19	-	0.68	0.68	-
Field Oxidation - Redox Potent	mV	-	45.6	45.6	-	86	86	-	-27	-27	-	31.2	31.2	-	31.1	31.1	-	5.8	5.8	-
Field Turbidity	NTU	-	1.37	1.37	-	27.7	27.7	-	13.6	13.6	-	5.44	5.44	-	0.15	0.15	-	3.42	3.42	-
Total Suspended Solids	mg/L	-	12.5	19.7	nc	23.5	20.3	14.61	117	178	41.36	9.7	10.6	8.87	3.3	<3.0	nc	16.0	24.0	40.00
<b>Anions and Nutrients</b>																				
Acidity (as CaCO <sub>3</sub> )	mg/L	-	119	117	1.69	131	240	58.76	1210	1190	1.67	61.0	71.8	16.27	34.8	37.8	8.26	273	255	6.82
Total Hardness (as CaCO <sub>3</sub> )	mg/L	-	1040	1050	0.96	1550	1570	1.28	2100	2070	1.44	2600	2480	4.72	1440	1400	2.82	2420	2420	0.00
Alkalinity, Total (CaCO <sub>3</sub> )	mg/L	-	228	227	0.44	229	nc	228	648	125	96.7	648	640	1.24	362	359	0.83	500	490	2.02
Chloride (Cl)	mg/L	-	<5.0	<5.0	nc	<10	<10	nc	<10	<10	nc	<10	<10	nc	<10	<10	nc	<10	<10	nc
Sulfate (SO <sub>4</sub> )	mg/L	-	833	847	1.67	1390	1410	1.43	2920	2890	1.03	1780	1790	0.56	1170	1200	2.53	2190	2210	0.91
<b>Dissolved Metals</b>																				
Aluminum (Al)	mg/L	Varies <sup>7</sup>	0.038	0.040	5.13	0.041	1.17	nc	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc	0.021	0.011	nc
Aluminum CCME Guideline	mg/L	-	0.005000	0.005000	-	0.005000	0.005000	-	0.005000	0.005000	-	0.1000	0.1000	-	0.1000	0.1000	-	0.005000	0.005000	-
Antimony (Sb)	mg/L	-	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc	<0.0010	<0.0010	nc	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc	<0.00050	<0.0010	nc
Arsenic (As)	mg/L	0.005	0.0152	0.0140	8.22	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	0.0027	0.0028	3.64	<0.0010	<0.0010	nc	0.0025	0.0024	4.08
Barium (Ba)	mg/L	-	0.030	0.030	0.00	<0.020	<0.020	nc	<0.020	<0.020	nc	<0.020	<0.020	nc	0.035	0.034	2.90	0.022	0.022	0.00
Beryllium (Be)	mg/L	-	<0.0050	<0.0050	nc	<0.0050	<0.0050	nc	<0.0050	<0.0050	nc	<0.0050	<0.0050	nc	<0.0050	<0.0050	nc	<0.0050	<0.0050	nc
Boron (B)	mg/L	1.5	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc
Cadmium (Cd)	mg/L	Varies <sup>8</sup>	<0.000050	<0.000050	nc	0.00609	0.00615	0.98	0.000391	0.000465	17.29	0.000360	0.000356	1.12	0.00148	0.00166	11.46	0.000168	0.000116	nc
Cadmium CCME Guideline	mg/L	-	0.00037	0.00037	-	0.00037	0.00037	-	0.00037	0.00037	-	0.00037	0.00037	-	0.00037	0.00037	-	0.00037	0.00037	-
Calcium (Ca)	mg/L	-	241	244	1.24	225	445	2.20	445	445	0.45	448	445	1.55	410	405	1.23	716	710	0.84
Chromium (Cr)	mg/L	-	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc	<0.0010	<0.0010	nc	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc	<0.00050	<0.0010	nc
Cobalt (Co)	mg/L	-	0.00442	0.00454	2.68	0.0470	0.0463	1.50	0.313	0.303	3.25	0.00244	0.00236	3.33	0.00420	0.00909	nc	0.0235	0.0231	1.72
Copper (Cu)	mg/L	Varies <sup>9</sup>	<0.0010	<0.0010	nc	0.0047	0.0049	4.17	<0.0020	<0.0020	nc	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	<0.0010	<0.0020	nc
Copper CCME Guideline	mg/L	-	0.004	0.004	-	0.004	0.004	-	0.004	0.004	-	0.004	0.004	-	0.004	0.004	-	0.004	0.004	-
Iron (Fe)	mg/L	0.3	24.4	24.9	2.03	0.504	0.525	4.08	609	603	0.99	0.423	0.397	6.34	<0.030	<0.030	nc	37.1	37.0	0.27
Lead (Pb)	mg/L	Varies <sup>10</sup>	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	0.0033	<0.0010	nc	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc
Lead CCME Guideline	mg/L	-	0.007	0.007	-	0.007	0.007	-	0.007	0.007	-	0.007	0.007	-	0.007	0.007	-	0.007	0.007	-
Lithium (Li)	mg/L	-	<0.050	<0.050	nc	0.101	0.110	8.53	<0.050	<0.050	nc	0.056	<0.050	nc	<0.050	<0.050	nc	<0.050	<0.050	nc
Magnesium (Mg)	mg/L	-	105	108	2.82	241	241	0.00	240	234	2.53	359	326	9.64	101	95.3	5.81	152	158	3.87
Manganese (Mn)	mg/L	-	2.71	2.75	1.47	12.2	12.7	4.02	89.2	88.2	1.13	0.241	0.213	12.33	13.6	13.2	2.99	64.0	63.8	0.31
Molybdenum (Mo)	mg/L	0.073	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	<0.0010	0.0010	nc	0.0022	0.0022	0.00	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc
Nickel (Ni)	mg/L	Varies <sup>11</sup>	0.0179	0.0184	2.75	0.173	0.171	1.16	0.160	0.155	3.17	0.0161	0.0157	2.52	0.0230	0.0253	9.52	0.0274	0.0265	3.34
Nickel CCME Guideline	mg/L	-	0.15	0.15	-	0.15	0.15	-	0.15	0.15	-	0.15	0.15	-	0.15	0.15	-	0.15	0.15	-
Potassium (K)	mg/L	-	5.0	5.1	1.98	7.2	7.8	8.00	8.0	8.0	0.00	7.4	6.4	14.49	7.1	6.8	4.32	7.9	7.8	1.27
Selenium (Se)	mg/L	0.001	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc
Silver (Ag)	mg/L	0.0001	<0.000050	<0.000050	nc	<0.000050	<0.000050	nc	<0.00010	<0.00010	nc	<0.000050	<0.000050	nc	<0.000050	<0.000050	nc	<0.000050	<0.00010	nc
Sodium (Na)	mg/L	-	10.7	10.9	1.85	14.9	16.5	10.19	26.0	25.9	0.39	11.8	9.7	19.53	22.6	21.9	3.15	32.8	32.5	0.92
Thallium (Tl)	mg/L	0.0008	<0.00020	<0.00020	nc	<0.00020	<0.00020	nc	<0.00020	<0.00020	nc	<0.00020	<0.00020	nc	<0.00020	<0.00020	nc	<0.00020	<0.00020	nc
Titanium (Ti)	mg/L	-	<0.050	<0.050	nc	<0.050	<0.050	nc	<0.050	<0.050	nc	<0.050	<0.050	nc	<0.050	<0.050	nc	<0.050	<0.050	nc
Uranium (U)	mg/L	0.015	0.00044	0.00045	2.25	0.00098	0.00101	3.02	0.00499	0.00507	1.59	0.0669	0.0658	1.66	0.0101	0.00996	1.40	0.00588	0.00557	5.41
Vanadium (V)	mg/L	-	<0.030	<0.030	nc	<0.030	<0.030	nc	<0.030	<0.030	nc	<0.030	<0.030	nc	<0.030	<0.030	nc	<0.030	<0.030	nc
Zinc (Zn)	mg/L	0.03	3.30	3.38	2.40	33.6	33.1	1.50	2.60	2.57	1.16	0.0888	0.0916	3.10	<0.0050	<0.0050	nc	0.0647	0.0615	5.07

(1) Unless otherwise noted, CCME guidelines shown are the maximum allowable concentration. CCME guideline exceedences are shaded dark grey. Reportable detection limits in exceedence of the CCME guideline are shaded light grey. Hardness or pH dependent guideline values have been calculated where relevant and are presented in *grey italicized* text in the row below actual results.  
 (2) - = No standard or not analyzed (3) CCME = Canadian Council of Ministers of the Environment, updated to November 2014 (4) CCME FAL = Chapter 4, Canadian Water Quality Guidelines/Canadian Environmental Quality Guidelines, 1999, 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) Aluminum varies with pH as follows for CCME FAL: 0.005 if pH<6.5, 0.1 if pH>=6.5 when field pH is not available, lab pH is used. When field and lab pH are both not available, the most stringent guideline has been used. (8) Cadmium varies with Hardness in mg/L as follows for CCME FAL: 0.0004 if H<17, 0.00004 - 0.00037 if H>17 and H<=280 as follows: CWQG (µg/L)=10(0.83(log[hardness])) - 2.46 ). 0.004 if H>280 (9) 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 (µg/L) = 0.2 \* e(0.8545[ln(hardness)]-1.465), 0.004 if H>180 (10) Lead varies with Hardness in mg/L as follows for CCME FAL: 0.001 if H<60, 0.001 - 0.007 if H

Table 3-2: Quality Assurance and Quality Control Analytical Results for 2016 September Groundwater Sampling Program

Parameter	Units	Station ID	P09-LCD1		RPD (%) <sup>12</sup>	BH10A		RPD (%) <sup>12</sup>	CH15107MW034		RPD (%) <sup>12</sup>	CH14107MW002		RPD (%) <sup>12</sup>	BH14A		RPD (%) <sup>12</sup>	Field Blanks					Travel Blank
			DUP-7	P09-LCD1		DUP-8	BH10A		DUP-9	CH15107MW034		DUP-10	CH14107MW002		DUP-11	BH14A		FB-1	FB-2	FB-3	FB-4	FB-5	TRAVEL_BLANK
Date Sampled		24/09/2016	24/09/2016		24/09/2016	24/09/2016		24/09/2016	24/09/2016		24/09/2016	24/09/2016		24/09/2016	24/09/2016		20/09/2016	22/09/2016	22/09/2016	23/09/2016	24/09/2016	25/09/2016	
ALS Sample ID		L1835022	L1835022		L1835022	L1835022		L1835022	L1835022		L1835022	L1835022		L1835022	L1835022		L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	
Station Status		Good	Good		Good	Good		Good	Good		Good	Good		Good	Good								
CCME-FAL <sup>1,2,3,4</sup>																							
<b>Physical Tests</b>																							
Lab pH	pH units	not <6.5 or >9.0 <sup>5</sup>	7.76	8.02	3.30	7.57	6.89	9.41	7.83	7.70	1.67	6.93	6.38	8.26	7.71	7.59	1.57	6.56	7.37	6.52	6.23	5.76	6.37
Field pH	pH units	not <6.5 or >9.0 <sup>5</sup>	7.13	7.13	-	6.39	6.39	-	6.81	6.81	-	5.54	5.54	-	6.53	6.53	-	-	-	-	-	-	-
Field Temperature	C	-	3.3	3.3	-	3.5	3.5	-	4.3	4.3	-	3.9	3.9	-	5.1	5.1	-	-	-	-	-	-	-
Lab Conductivity	uS/cm	-	1150	1150	0.00	330	337	2.10	968	968	0.00	635	637	0.31	3700	3750	1.34	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Field Conductivity	uS/cm	-	684	684	-	193.3	193.3	-	579	579	-	376.8	376.8	-	2674	2674	-	-	-	-	-	-	-
Field Specific Conductivity	uS/cm	-	1170	1170	-	327.7	327.7	-	959	959	-	630.3	630.3	-	4312	4312	-	-	-	-	-	-	-
Field Dissolved Oxygen	mg/L	Minimum of 9.5 <sup>6</sup>	0.31	0.31	-	0.91	0.91	-	6.14	6.14	-	2.59	2.59	-	0.29	0.29	-	-	-	-	-	-	-
Field Oxidation - Redox Potent	mV	-	-113.6	-113.6	-	18.1	18.1	-	187	187	-	102.1	102.1	-	56	56	-	-	-	-	-	-	-
Field Turbidity	NTU	-	0.57	0.57	-	7.08	7.08	-	10.01	10.01	-	2.6	2.6	-	5.75	5.75	-	-	-	-	-	-	-
Total Suspended Solids	mg/L	-	13.9	13.4	3.66	20.8	17.7	16.10	20.2	17.1	16.62	3.3	<3.0	-	7.4	8.6	15.00	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0
<b>Anions and Nutrients</b>																							
Acidity (as CaCO3)	mg/L	-	15.7	7.7	<b>68.38</b>	8.9	16.0	<b>57.03</b>	5.3	8.4	<b>45.26</b>	46.8	65.5	<b>33.30</b>	75.3	79.3	5.17	<1.0	<b>1.0</b>	<b>1.0</b>	<b>1.3</b>	<b>1.2</b>	<b>1.6</b>
Total Hardness (as CaCO3)	mg/L	-	674	694	2.92	165	163	1.22	573	560	2.29	305	309	1.30	3160	3250	2.81	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, Total (CaCO3)	mg/L	-	290	290	0.00	125	126	0.80	49.0	119	0.20	494	489	<2.0	410	489	1.02	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Chloride (Cl)	mg/L	-	<2.5	<2.5	nc	<0.50	<0.50	nc	<2.5	<2.5	nc	<2.5	<2.5	nc	<10	<10	nc	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Sulfate (SO4)	mg/L	-	428	436	1.85	45.9	45.9	0.00	452	451	0.22	290	285	1.74	2710	2940	8.14	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
<b>Dissolved Metals</b>																							
Aluminum (Al)	mg/L	Varies <sup>7</sup>	<0.010	<0.010	nc	<0.010	<0.010	nc	<0.010	<0.010	nc	0.015	0.016	6.45	<0.010	<0.010	nc	<0.010	<0.010	<0.010	<0.010	<0.010	-
Aluminum CCME Guideline	mg/L	-	0.1000	0.1000	-	0.005000	0.005000	-	0.1000	0.1000	-	0.005000	0.005000	-	0.1000	0.1000	-	-	-	-	-	-	-
Antimony (Sb)	mg/L	-	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	-
Arsenic (As)	mg/L	0.005	0.121	0.121	0.00	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	-
Barium (Ba)	mg/L	-	0.046	0.045	2.20	<0.020	<0.020	nc	0.033	0.031	6.25	0.021	0.022	4.65	<0.020	<0.020	nc	<0.020	<0.020	<0.020	<0.020	<0.020	-
Beryllium (Be)	mg/L	-	<0.0050	<0.0050	nc	<0.0050	<0.0050	nc	<0.0050	<0.0050	nc	<0.0050	<0.0050	nc	<0.0050	<0.0050	nc	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-
Boron (B)	mg/L	1.5	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	nc	<0.10	<0.10	<0.10	<0.10	<0.10	-
Cadmium (Cd)	mg/L	Varies <sup>8</sup>	<0.000050	<0.000050	nc	0.00279	0.00283	1.42	<0.000050	<0.000050	nc	0.00128	0.00131	2.32	0.00398	0.00372	6.75	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	-
Cadmium CCME Guideline	mg/L	-	0.00037	0.00037	-	0.000240	0.000238	-	0.00037	0.00037	-	0.00037	0.00037	-	0.00037	0.00037	-	-	-	-	-	-	-
Calcium (Ca)	mg/L	-	179	189	5.43	128	129	1.28	235	226	5.25	46.5	46.5	1.64	527	540	2.44	<0.10	<0.10	<0.10	<0.10	<0.10	-
Chromium (Cr)	mg/L	-	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc	<0.00050	<0.00050	nc	0.00072	0.00062	14.93	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	-
Cobalt (Co)	mg/L	-	0.00069	0.00070	1.44	<0.00050	0.00059	nc	<0.00050	<0.00050	nc	0.00940	0.00928	1.28	0.00174	<0.00050	nc	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	-
Copper (Cu)	mg/L	Varies <sup>9</sup>	<0.0010	<0.0010	nc	0.0013	0.0013	0.00	0.0013	0.0013	0.00	0.0013	0.0013	0.00	0.0015	0.0015	nc	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	-
Copper CCME Guideline	mg/L	-	0.004	0.004	-	0.00363	0.00359	-	0.004	0.004	-	0.004	0.004	-	0.004	0.004	-	-	-	-	-	-	-
Iron (Fe)	mg/L	0.3	5.47	5.68	3.77	<0.030	<0.030	nc	<0.030	<0.030	nc	0.417	0.419	0.48	0.036	<0.030	nc	<0.030	<0.030	<0.030	<0.030	<0.030	-
Lead (Pb)	mg/L	Varies <sup>10</sup>	0.0293	0.0284	3.12	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	0.0221	0.0059	<b>115.71</b>	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	-
Lead CCME Guideline	mg/L	-	0.007	0.007	-	0.00602	0.00593	-	0.007	0.007	-	0.007	0.007	-	0.007	0.007	-	-	-	-	-	-	-
Lithium (Li)	mg/L	-	<0.050	<0.050	nc	<0.050	<0.050	nc	<0.050	<0.050	nc	<0.050	<0.050	nc	0.126	0.135	6.90	<0.050	<0.050	<0.050	<0.050	<0.050	-
Magnesium (Mg)	mg/L	-	55.4	54.1	2.37	11.4	11.3	0.88	61.1	59.5	2.65	26.4	26.5	0.38	449	460	2.42	<0.10	<0.10	<0.10	<0.10	<0.10	-
Manganese (Mn)	mg/L	-	0.828	0.805	2.82	<0.010	<0.010	nc	<0.010	<0.010	nc	1.90	1.88	1.06	0.692	0.695	0.43	<0.010	<0.010	<0.010	<0.010	<0.010	-
Molybdenum (Mo)	mg/L	0.073	0.0050	0.0052	3.92	<0.0010	<0.0010	nc	0.0025	0.0025	0.00	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	-
Nickel (Ni)	mg/L	Varies <sup>11</sup>	<0.0050	<0.0050	nc	<0.0050	<0.0050	nc	0.0081	0.0083	2.44	0.0497	0.0500	0.60	0.388	0.394	1.53	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-
Nickel CCME Guideline	mg/L	-	0.15	0.15	-	0.15	0.15	-	0.15	0.15	-	0.15	0.15	-	0.15	0.15	-	-	-	-	-	-	-
Potassium (K)	mg/L	-	3.3	3.1	6.25	<2.0	<2.0	nc	3.0	2.7	10.53	2.6	2.5	3.92	4.4	4.7	6.59	<2.0	<2.0	<2.0	<2.0	<2.0	-
Selenium (Se)	mg/L	0.001	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	0.0030	0.0029	3.39	<0.0010	<0.0010	nc	<0.0010	<0.0010	nc	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	-
Silver (Ag)	mg/L	0.0001	<0.000050	<0.000050	nc	<0.000050	<0.000050	nc	<0.000050	<0.000050	nc	<0.000050	<0.000050	nc	<0.000050	<0.000050	nc	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	-
Sodium (Na)	mg/L	-	18.8	17.6	6.59	3.7	3.8	2.67	5.7	5.4	5.41	5.9	5.7	3.45	19.4	20.6	6.00	<2.0	<2.0	<2.0	<2.0	<2.0	-
Thallium (Tl)	mg/L	0.0008	<0.00020	<0.00020	nc	<0.00020	<0.00020	nc	<0.00020	<0.00020	nc	<0.00020	<0.00020	nc	<0.00020								

Table 3-2: Quality Assurance and Quality Control Analytical Results for 2016 September Groundwater Sampling Program

Parameter	Units	Station ID	CH14107MW007B		SRK08-SBR2		P01-03		V36		P01-01A		P05-02	
		Sample ID	DUP-1	CH14107MW007B	DUP-2	SRK08-SBR2	DUP-3	P01-03	DUP-4	V36	DUP-5	P01-01A	DUP-6	P05-02
		Date Sampled	20/09/2016	20/09/2016	20/09/2016	20/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016	22/09/2016	23/09/2016	23/09/2016
		ALS Sample ID	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022
		Station Status	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
		CCME-FAL <sup>1,2,3,4</sup>												
<b>Total Metals</b>														
Aluminum (Al)	mg/L	Varies <sup>7</sup>	-	-	-	-	-	-	-	-	-	-	-	
Antimony (Sb)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Arsenic (As)	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	
Barium (Ba)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Beryllium (Be)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Boron (B)	mg/L	1.5	-	-	-	-	-	-	-	-	-	-	-	
Cadmium (Cd)	mg/L	Varies <sup>8</sup>	-	-	-	-	-	-	-	-	-	-	-	
Calcium (Ca)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Chromium (Cr)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Cobalt (Co)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Copper (Cu)	mg/L	Varies <sup>9</sup>	-	-	-	-	-	-	-	-	-	-	-	
Iron (Fe)	mg/L	0.3	-	-	-	-	-	-	-	-	-	-	-	
Lead (Pb)	mg/L	Varies <sup>10</sup>	-	-	-	-	-	-	-	-	-	-	-	
Lithium (Li)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Magnesium (Mg)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Manganese (Mn)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Molybdenum (Mo)	mg/L	0.073	-	-	-	-	-	-	-	-	-	-	-	
Nickel (Ni)	mg/L	Varies <sup>11</sup>	-	-	-	-	-	-	-	-	-	-	-	
Potassium (K)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Selenium (Se)	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	
Silver (Ag)	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	
Sodium (Na)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Thallium (Tl)	mg/L	0.0008	-	-	-	-	-	-	-	-	-	-	-	
Titanium (Ti)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Uranium (U)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	
Vanadium (V)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	
Zinc (Zn)	mg/L	0.03	-	-	-	-	-	-	-	-	-	-	-	

(1) Unless otherwise noted, CCME guidelines shown are the maximum allowable concentration. CCME guideline exceedences are shaded dark grey. Reportable detection limits in exceedence of the CCME guideline are shaded light grey. Hardness or pH dependent guideline values have been calculated where relevant and are presented in *grey italicized* text in the row below actual results.  
 (2) - = No standard or not analyzed (3) CCME = Canadian Council of Ministers of the Environment, updated to November 2014 (4) CCME FAL = Chapter 4, Canadian Water Quality Guidelines/Canadian Environmental Quality Guidelines, 1999, 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) Aluminum varies with pH as follows for CCME FAL: 0.005 if pH<6.5, 0.1 if pH=6.5 when field pH is not available, lab pH is used. When field and lab pH are both not available, the most stringent guideline has been used. (8) Cadmium varies with Hardness in mg/L as follows for CCME FAL: 0.0004 if H<17, 0.00004 - 0.00037 if H>17 and H<=280 as follows: CWQG (µg/L)=10[0.83(log[hardness]) - 2.46 ], 0.004 if H>280 (9) 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 (µg/L) = 0.2 \* e[0.8545(ln[hardness])-1.465], 0.004 if H=180 (10) Lead varies with Hardness in mg/L as follows for CCME FAL: 0.001 if H<60, 0.001 - 0.007 if H=60 and H<=180 as follows: CWQG (µg/L)= e[1.273(ln[hardness])-4.705], 0.007 if H>180  
 (11) Nickel varies with Hardness in mg/L as follows for CCME FAL: 0.025 if H<60, 0.025 - 0.15 if H=60 and H<180 as follows: CWQG (µg/L) = e[0.76(ln[hardness])+1.06], 0.15 if H>180 (12) RPD = Relative Percent Difference. 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.  
**Underlined** and **bold** indicates values above RDL in Field Blank or Travel Blank. **Bold and italic** indicates QAQC values exceed expected results (i.e. RDP values exceed 20%).

Table 3-2: Quality Assurance and Quality Control Analytical Results for 2016 September Groundwater Sampling Program

Parameter	Units	Station ID	P09-LCD1		BH10A		CH15107MW034		CH14107MW002		BH14A		Field Blanks					Travel Blank
		Sample ID	DUP-7	P09-LCD1	DUP-8	BH10A	DUP-9	CH15107MW034	DUP-10	CH14107MW002	DUP-11	BH14A	FB-1	FB-2	FB-3	FB-4	FB-5	TRAVEL_BLANK
		Date Sampled	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016	24/09/2016	20/09/2016	22/09/2016	22/09/2016	23/09/2016	24/09/2016	25/09/2016
		ALS Sample ID	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022	L1835022
		Station Status	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good	Good
		CCME-FAL <sup>1,2,3,4</sup>																
<b>Total Metals</b>																		
Aluminum (Al)	mg/L	Varies <sup>7</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	
Antimony (Sb)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Arsenic (As)	mg/L	0.005	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Barium (Ba)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.020	
Beryllium (Be)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0050	
Boron (B)	mg/L	1.5	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	
Cadmium (Cd)	mg/L	Varies <sup>8</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	
Calcium (Ca)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	
Chromium (Cr)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Cobalt (Co)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00050	
Copper (Cu)	mg/L	Varies <sup>9</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Iron (Fe)	mg/L	0.3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.030	
Lead (Pb)	mg/L	Varies <sup>10</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Lithium (Li)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.050	
Magnesium (Mg)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.10	
Manganese (Mn)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.010	
Molybdenum (Mo)	mg/L	0.073	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Nickel (Ni)	mg/L	Varies <sup>11</sup>	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0050	
Potassium (K)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2.0	
Selenium (Se)	mg/L	0.001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0010	
Silver (Ag)	mg/L	0.0001	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.000050	
Sodium (Na)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<2.0	
Thallium (Tl)	mg/L	0.0008	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
Titanium (Ti)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.050	
Uranium (U)	mg/L	0.015	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.00020	
Vanadium (V)	mg/L	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.030	
Zinc (Zn)	mg/L	0.03	-	-	-	-	-	-	-	-	-	-	-	-	-	-	<0.0050	

(1) Unless otherwise noted, CCME guidelines shown are the maximum allowable concentration. CCME guideline exceedences are shaded dark grey. Reportable detection limits in exceedence of the CCME guideline are shaded light grey. Hardness or pH dependent guideline values have been calculated where relevant and are presented in *grey italicized* text in the row below actual results.  
 (2) - = No standard or not analyzed (3) CCME = Canadian Council of Ministers of the Environment, updated to November 2014 (4) CCME FAL = Chapter 4, Canadian Water Quality Guidelines/Canadian Environmental Quality Guidelines, 1999, 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) Aluminum varies with pH as follows for CCME FAL: 0.005 if pH<6.5, 0.1 if pH>=6.5 when field pH is not available, lab pH is used. When field and lab pH are both not available, the most stringent guideline has been used. (8) Cadmium varies with Hardness in mg/L as follows for CCME FAL: 0.0004 if H<17, 0.00004 - 0.00037 if H>17 and H<=280 as follows: CWQG (µg/L)=10{0.83[log(hardness)] - 2.46}, 0.004 if H>280 (9) 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 (µg/L) = 0.2 \* e{0.8545[ln(hardness)]-1.465}, 0.004 if H>180 (10) Lead varies with Hardness in mg/L as follows for CCME FAL: 0.001 if H<60, 0.001 - 0.007 if H>60 and H<=180 as follows: CWQG (µg/L)= e{1.273[ln(hardness)]-4.705}, 0.007 if H>180 (11) Nickel varies with Hardness in mg/L as follows for CCME FAL: 0.025 if H<60, 0.025 - 0.15 if H>60 and H<180 as follows: CWQG (µg/L) = e{0.76[ln(hardness)]+1.06}, 0.15 if H>180 (12) RPD = Relative Percent Difference. 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.  
**Bold** - Bold and underlined indicates values above RDL in Field Blank or Travel Blank. **Underlined** - Bold and underlined indicates values above RDL in Field Blank or Travel Blank. **Bold** - Bold and italic Indicates QAQC values exceed expected results (i.e. RDP values exceed 20%).

**APPENDIX A**  
**Site Photos**



**Photo 1:** View of well BH8. Photo taken on September 24<sup>th</sup>, 2016.



**Photo 2:** View of wells BH10A and BH10B. Photo taken on September 24<sup>th</sup>, 2016.



**Photo 3:** View of wells BH14A and BH14B. Photo taken on September 24<sup>th</sup>, 2016.



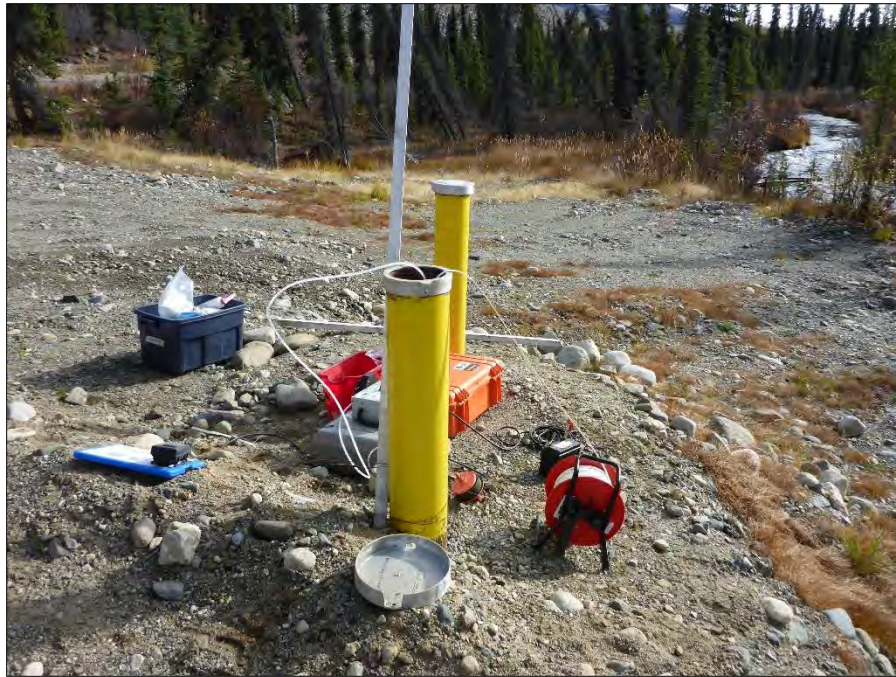
**Photo 4:** View of well CH14-107-MW001. Photo taken on September 24<sup>th</sup>, 2016.



**Photo 5:** View of well CH14-107-MW002. Photo taken on September 24<sup>th</sup>, 2016.



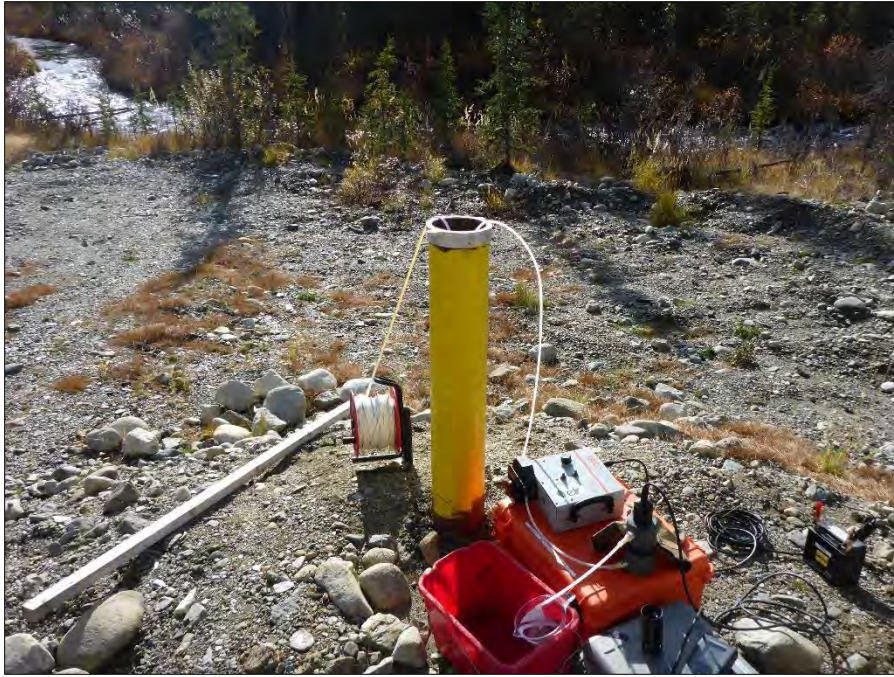
**Photo 6:** View of wells CH14-107-MW006A and CH14-107-MW006B. Photo taken on September 22<sup>nd</sup>, 2016.



**Photo 7:** View of wells CH14-107-MW007A and CH14-107-MW007B. Photo taken on September 20<sup>th</sup>, 2016.



**Photo 8:** View of well CH14-107-MW009. Photo taken on September 20<sup>th</sup>, 2016.



**Photo 9:** View of well CH14-107-MW010. Photo taken on September 20<sup>th</sup>, 2016.



**Photo 10:** View of well CH15-107-MW019. Photo taken on September 21<sup>th</sup>, 2016.



**Photo 11:** View of well CH15-107-MW022. Photo taken on September 21<sup>th</sup>, 2016.



**Photo 12:** View of well CH15-107-MW023. Photo taken on September 21<sup>th</sup>, 2016.



**Photo 13:** View of well CH15-107-MW025. Photo taken on September 21<sup>th</sup>, 2016.



**Photo 14:** View of well CH15-107-MW029. Photo taken on September 24<sup>th</sup>, 2016.



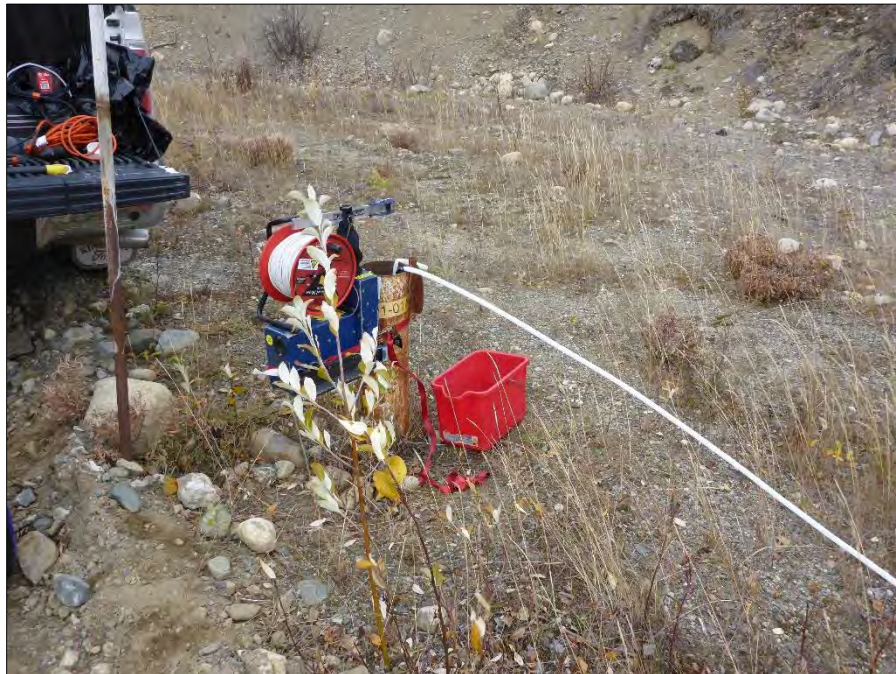
**Photo 15:** View of well CH15-107-MW030. Photo taken on September 24<sup>th</sup>, 2016.



**Photo 16:** View of wells CH15-107-MW032 and CH15-107-MW033. Photo taken on September 24<sup>th</sup>, 2016.



**Photo 17:** View of well CH15-107-MW034. Photo taken on September 24<sup>th</sup>, 2016.



**Photo 18:** View of wells P01-01A and P01-01B. Photo taken on September 22<sup>nd</sup>, 2016.



**Photo 19:** View of wells P01-02A and P01-02B. Photo taken on September 23<sup>rd</sup>, 2016.



**Photo 20:** View of well P01-03. Photo taken on September 22<sup>nd</sup>, 2016.



**Photo 21:** View of wells P01-04A and P01-04B. Photo taken on September 22<sup>nd</sup>, 2016.



**Photo 22:** View of well P01-11. Photo taken on September 23<sup>rd</sup>, 2016.



**Photo 23:** View of well P03-04, includes depths 02, 04, and 06. Photo taken on September 24<sup>th</sup>, 2016.



**Photo 24:** View of well P03-05, includes depths 02, 04, and 05. Photo taken on September 21<sup>st</sup>, 2016.



**Photo 25:** View of well P03-06, includes depths 1, 2, 03, 04, and 05. Photo taken on September 21<sup>st</sup>, 2016.



**Photo 26:** View of well P03-09, includes depths 02, 04, 6, 08, and 9. Photo taken on September 23<sup>rd</sup>, 2016.



**Photo 27:** View of well P05-01, includes depths 01, 02, 03, 04, and 05. Photo taken on September 23<sup>rd</sup>, 2016.



**Photo 28:** View of well P05-02. Photo taken on September 23<sup>rd</sup>, 2016.



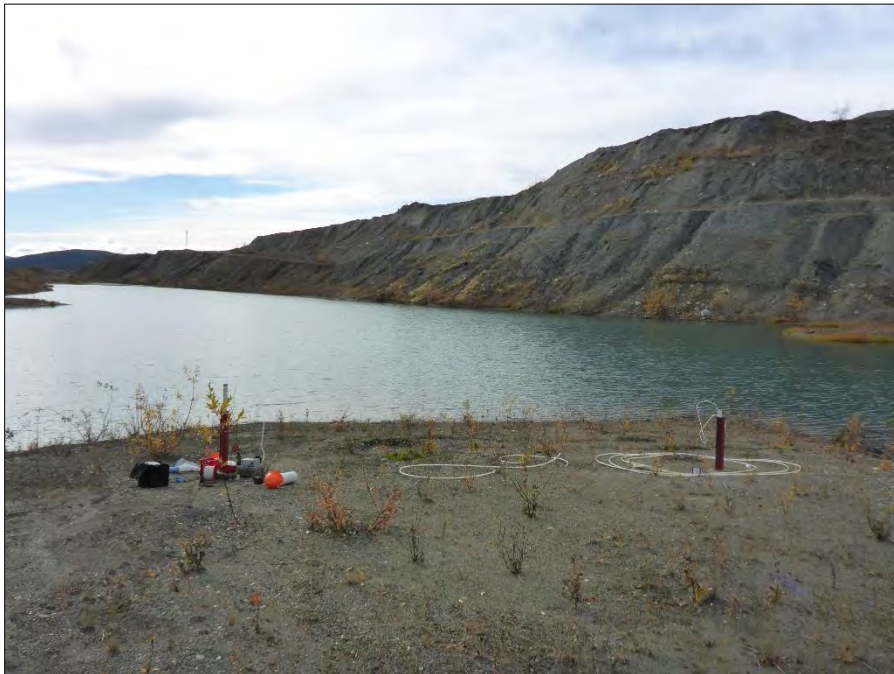
**Photo 29:** View of well P05-03. Photo taken on September 23<sup>rd</sup>, 2016.



**Photo 30:** View of well P05-04. Photo taken on September 24<sup>th</sup>, 2016.



**Photo 31:** View of well P09-ETA-2. Photo taken on September 25<sup>th</sup>, 2016.



**Photo 32:** View of wells P09-GS1A and P09-GS1B. Photo taken on September 24<sup>th</sup>, 2016.



**Photo 33:** View of well P09-LCD1. Photo taken on September 24<sup>th</sup>, 2016.



**Photo 34:** View of well P09-LCD4. Photo taken on September 25<sup>th</sup>, 2016.



**Photo 35:** View of well P09-LCD6. Photo taken on September 24<sup>th</sup>, 2016.



**Photo 36:** View of well P09-SIS1. Photo taken on September 20<sup>th</sup>, 2016.



**Photo 37:** View of well P09-SIS2. Photo taken on September 20<sup>th</sup>, 2016.



**Photo 38:** View of well P09-SIS3. Photo taken on September 20<sup>th</sup>, 2016.



**Photo 39:** View of well P09-SIS4. Photo taken on September 20<sup>th</sup>, 2016.



**Photo 40:** View of well P09-SIS6. Photo taken on September 20<sup>th</sup>, 2016.



**Photo 41:** View of wells P2001-2A and P2001-2B. Photo taken on September 22<sup>nd</sup>, 2016.



**Photo 42:** View of well P96-7. Photo taken on September 21<sup>st</sup>, 2016.



**Photo 43:** View of wells P96-8A and P96-8B. Photo taken on September 23<sup>rd</sup>, 2016.



**Photo 44:** View of well P96-9A. Photo taken on September 22<sup>nd</sup>, 2016.



**Photo 45:** View of wells S1A and S1B. Photo taken on September 20<sup>th</sup>, 2016.



**Photo 46:** View of wells S2A and S2B. Photo taken on September 21<sup>st</sup>, 2016.



**Photo 47:** View of well SRK04-3A. Photo taken on September 23<sup>rd</sup>, 2016.



**Photo 48:** View of well SRK05-07. Photo taken on September 22<sup>nd</sup>, 2016.



**Photo 49:** View of well SRK05-08. Photo taken on September 22<sup>nd</sup>, 2016.



**Photo 50:** View of well SRK05-9. Photo taken on September 22<sup>nd</sup>, 2016.



**Photo 51:** View of well SRK05-ETA-BR1. Photo taken on September 23<sup>rd</sup>, 2016.



**Photo 52:** View of well SRK05-ETA-BR2. Photo taken on September 22<sup>nd</sup>, 2016.



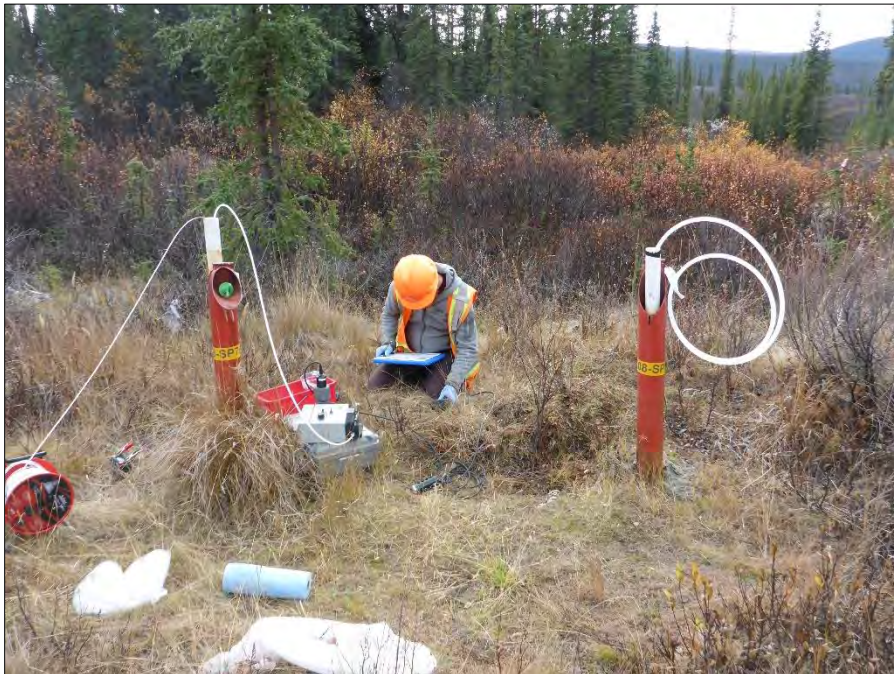
**Photo 53:** View of well SRK05-SP-4A. Photo taken on September 20<sup>th</sup>, 2016.



**Photo 54:** View of well SRK05-SP-4B. Photo taken on September 20<sup>th</sup>, 2016.



**Photo 55:** View of well SRK05-SP-5. Photo taken on September 21<sup>st</sup>, 2016.



**Photo 56:** View of wells SRK08-SP-7A and SRK08-SP-7B. Photo taken on September 20<sup>th</sup>, 2016.



**Photo 57:** View of well SRK08-SBR2. Photo taken on September 20<sup>th</sup>, 2016.



**Photo 58:** View of well SRK08-SBR3. Photo taken on September 21<sup>st</sup>, 2016.



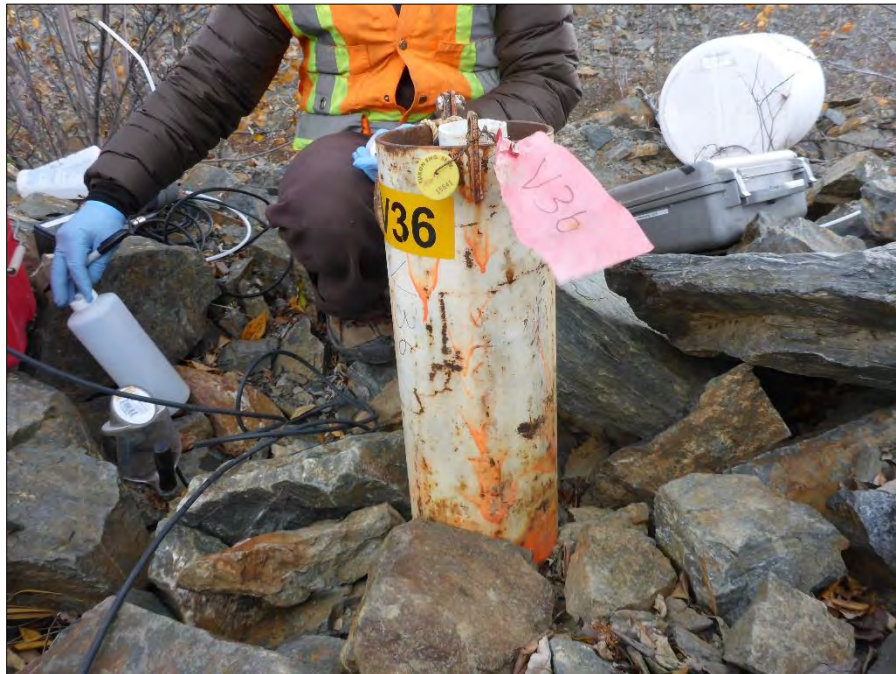
**Photo 59:** View of well SRK08-SBR4. Photo taken on September 21<sup>st</sup>, 2016.



**Photo 60:** View of well V34. Photo taken on September 22<sup>nd</sup>, 2016.



**Photo 61:** View of well V35. Photo taken on September 22<sup>nd</sup>, 2016.



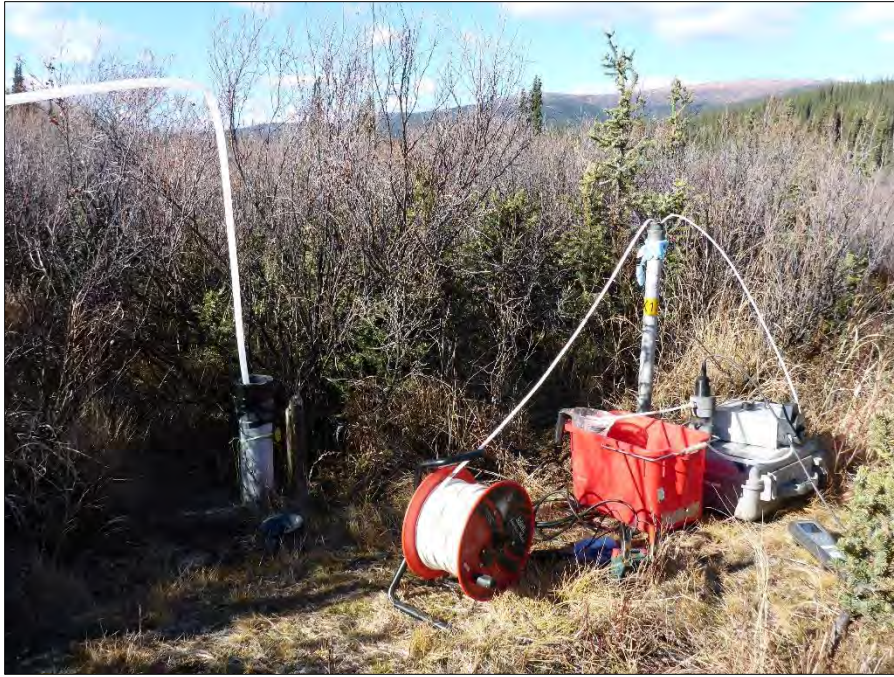
**Photo 62:** View of well V36. Photo taken on September 22<sup>nd</sup>, 2016.



**Photo 63:** View of well V37. Photo taken on September 22<sup>nd</sup>, 2016.



**Photo 64:** View of wells X16A and X16B. Photo taken on September 22<sup>nd</sup>, 2016.



**Photo 65:** View of wells X17A and X17B. Photo taken on September 23<sup>rd</sup>, 2016.



**Photo 66:** View of wells X18A and X18B. Photo taken on September 22<sup>nd</sup>, 2016.



**Photo 67:** View of well X24-96D. Photo taken on September 23<sup>rd</sup>, 2016.



**Photo 68:** View of wells X25-96A and X25-96B. Photo taken on September 22<sup>nd</sup>, 2016.

# **APPENDIX B**

## **Field Forms**

B.4 m @ 7:00pm



# GROUNDWATER SAMPLE COLLECTION SHEET

R

sampled Sept. 25/16

Sample Site:	BHB	Project Number:	1343-005.31	Date:	Sept 24, 2016
Station Status:	slowly	Client:	GY - AAM	Samplers:	JC & CH
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	willy 3°C
UTM Location:	ZONE 0585142 N 6813785	Waypoint:	GPS HEMID N/A	Recovery:	<input type="checkbox"/> Good <input checked="" type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam # 4 Nos 0485 - 0487	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	hydratiff			
Initial Depth to Water (m):	15.658 m	Purge Start Time:	17:37 Sept 24	Purge End Time:	17:48
Depth to Bottom (m):	20.795 m	Purge Interval Time ( ) min, Vol. ( ) L	17:48		
Submerged Tubing Depth (m):	20.295 m	Depth to water (m)	20.09		
Well Stick-up Height (m):	0.811 m	Temperature (°C)	4.2		
Estimated Water Volume (L):	10.3L	pH (pH Units)	3.60		
DTB - DTW) x (πr <sup>2</sup> * 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	2360			
	Specific Cond. (µs/cm)	3914			
	Redox (mV)	198.4			
	DO (mg/L)	5.03			
	DO (%)	39.1			
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Slightly turbid			
	Turbidity (NTU):	49.4			
	Interval Purge Volume (L):	10			
	Cumulative Purge Volume (L):	10			
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	17:50 Sept 24	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	hydratiff			
Sample Time	9:15 Sept 25				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): BH8

 Sample Date (Con't): Sept 24, 2016

 Sample Time (Con't): 9:15 Sept 25

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- Well has very slow recharge, 10L purged and 1 parameter reading collected.
- will return to sample representative sample.

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	Sept 25 direct sample
1 L (plastic)	General Chemistry	500 ml	-	-	1.0 L	Sept 25 direct sample

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	BH10A	Project Number:	1343-005.31	Date:	Sept. 24, 2016
Station Status:	good	Client:	GY - AAM	Samplers:	JC, BCH
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 2°C
UTM Location:	Z08ECSAS125 N6913714	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam 2 Nos. 0470-0472	Purge Method:			
Duplicate Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name Dup-8	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name		✓		
Initial Depth to Water (m):	6.186m	Purge Start Time:	14:37	Purge End Time:	14:50
Depth to Bottom (m):	6.969m	Purge Interval	0.5L		
Submerged Tubing Depth (m):	6.469m	Time ( ) min, Vol. ( ) L	14:40	14:42	14:45
Well Stick-up Height (m):	1.704m	Depth to water (m)	6.180	same	same
Estimated Water Volume (L):	1.6 L	Temperature (°C)	3.7	3.4	3.4
DTB - DTW) x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	pH (pH Units)	6.42	6.43	6.41	6.41
	Cond. (µs/cm)	215.4	197.8	193.4	193.3
	Specific Cond. (µs/cm)	303.4	336.2	328.6	328.0
	Redox (mV)	18.1	16.3	16.7	17.3
	DO (mg/L)	0.93	0.86	0.91	0.89
	DO (%)	6.0	6.6	6.9	6.3
	Appearance & Odour (Clear, Silty, HC odours, etc.)	yellowish no odour	same	same	same
	Turbidity (NTU):	-	-	-	7.08
	Interval Purge Volume (L):	0.5L	0.5	0.5	0.5
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5L	2.0L
YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	14:49	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓		
Sample Time	14:50				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): BH10A

 Sample Date (Con't): Sept. 24, 2016

 Sample Time (Con't): 14:50

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

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

**Consumables:**

- 1/4" HDPE (Peristaltic) 6 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 1/2 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>125 ml</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1.0 L</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	BH10B	Project Number:	1343-005.31	Date:	Sept. 24, 2016	
Station Status:	good	Client:	GY - AAM	Samplers:	JC & CH	
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 3°C	
UTM Location:	ZOB E 1585125 N 6913714	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam. <del>2</del> Nos. 0473 - 0475	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓			
Initial Depth to Water (m):	5.356 m	Purge Start Time:	14:59	Purge End Time:	15:12	
Depth to Bottom (m):	9.228 m	Purge Interval Time ( ) min, Vol. ( ) L	0.5	15:05	15:08	15:11
Submerged Tubing Depth (m):	8.800 m	Depth to water (m)	5.355	same	same	
Well Stick-up Height (m):	0.899 m	Temperature (°C)	3.4	3.3	3.2	
Estimated Water Volume (L):	7.7 L	pH (pH Units)	6.36	6.34	6.34	
DTB - DTW x (m <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	233.2	230.0	234.1		
	Specific Cond. (µs/cm)	397.0	393.5	401.7		
	Redox (mV)	32.0	34.7	35.7		
	DO (mg/L)	2.17	2.35	2.14		
	DO (%)	16.3	17.2	16.0		
	Appearance & Odour (Clear, Silty, HC odours, etc.)	yellowish odour	same	same		
	Turbidity (NTU):	-	-	14.9		
	Interval Purge Volume (L):	0.5	0.5	0.5		
	Cumulative Purge Volume (L):	0.5 L	1.0 L	1.5 L		
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	15:11	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓			
Sample Time	15:13					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): BH10B

 Sample Date (Con't): Sept. 24, 2016

 Sample Time (Con't): 15:13

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

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

Consumables:

- 1/4" HDPE (Peristaltic) 5 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>125 ml</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1.0L</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	BH14A	Project Number:	1343-005.31	Date:	Sep 24, 2016
Station Status:	good	Client:	GY - AAM	Samplers:	JC KCH
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 3°C
UTM Location:	Z.08E 086584 N.0914014	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. <del>EX</del> Nos. 0488 - 0491	Purge Method:			
Duplicate Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name Dup-11	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input type="checkbox"/> No Name		✓		
Initial Depth to Water (m):	3.495 m	Purge Start Time:	18:26	Purge End Time:	18:51
Depth to Bottom (m):	6.452 m	Purge Interval Time ( ) min, Vol. ( ) L	0.5		
Submerged Tubing Depth (m):	6.00 m	Depth to water (m)	18:34	18:37	18:42
Well Stick-up Height (m):	0.050 m	Temperature (°C)	3.721	3.790	3.830
Estimated Water Volume (L):	5.91 L	pH (pH Units)	3.833		
DTB - DTW) x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Conductivity (µs/cm)	5.9	5.5	5.4	5.2
	Specific Cond. (µs/cm)	6.160	6.50	6.52	6.52
	Redox (mV)	2612	2648	2673	2676
	DO (mg/L)	4152	4225	4278	4307
	DO (%)	57.5	59.9	58.1	56.6
	Appearance & Odour (Clear, Silty, HC odours, etc.)	7.16	1.53	0.25	0.21
	Turbidity (NTU):	57.1	12.0	2.0	2.1
	Interval Purge Volume (L):	clear	no odour	same	same
	Cumulative Purge Volume (L):	-	-	-	5.75
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	18:50	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓		
Sample Time	18:52				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.



Sample Site (Con't): BH14A  
 Sample Date (Con't): Sept. 24, 2016  
 Sample Time (Con't): 18:52

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

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 1/2 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	1.0 L	

# GROUNDWATER SAMPLE COLLECTION SHEET

1m = 2L

Sample Site:	BH14B	Project Number:	1343-005.31	Date:	24-Sept-16						
Station Status:	<del>4-100 SLON</del>	Client:	GY - AAM	Samplers:	AN/MM						
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	overcast						
UTM Location:	Z. <del>08E</del> _____ N. _____	Waypoint:	GPS <del>N/A</del> _____	Recovery:	<input type="checkbox"/> Good <input type="checkbox"/> Bad <input checked="" type="checkbox"/> Ok						
Photos:	Cam. 2 Nos. <del>0488-0491</del>	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo						
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X								
Initial Depth to Water (m):	4.100	Purge Start Time:	18:24	Purge End Time:	18:55						
Depth to Bottom (m):	10.005	Purge Interval Time (5) min, Vol. ( ) L	18:25	18:30	18:35	18:40	18:45	18:50	18:55		
Submerged Tubing Depth (m):	~8	Depth to water (m)	/	4.660	4.745	4.825	5.010	5.140	5.26		
Well Stick-up Height (m):	6.644	Temperature (°C)	4.2	4.8	4.9	4.9	4.8	4.7	4.7		
Estimated Water Volume (L):	11.8	pH (pH Units)	6.86	6.73	6.72	6.72	6.71	6.72	6.74		
DTB - DTW) x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\frac{10.1005}{4.100} = 5.9 \times$ $\frac{5.905}{11.810} = 2$	Cond. (µs/cm)	2260	2295	2308	2296	2274	2262	2252			
	Specific Cond. (µs/cm)	3764	3746	3750	3728	3707	3692	3684			
	Redox (mV)	233.5	225.0	222.0	219.6	218.0	218.2	219.1			
	DO (mg/L)	1.05	0.42	0.40	0.55	1.09	1.63	1.78			
	DO (%)	7.8	3.2	3.2	4.4	8.7	12.8	14.0			
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	same	same	same	same	same	same			
	Turbidity (NTU):	/	/	/	/	/	/	10.47			
	Interval Purge Volume (L):	/	0.8	0.3	0.3	0.4	0.4	0.4			
	Cumulative Purge Volume (L):	/	0.8	1.1	1.4	1.8	2.2	2.6			
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	18:55	Waterra	Peristaltic	Disp. Bailer	Redi-flo						
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X								
Sample Time	19:00										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): BH4B

Sample Date (Con't): 24 - Sept - 16

Sample Time (Con't): 19:00

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

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH14-107-MW001	Project Number:	1343-005.31	Date:	Sept. 24, 2016						
Station Status:	good	Client:	GY - AAM	Samplers:	JC BCTH						
Piezometer Diameter:	4"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 3°C						
UTM Location:	Zone E. 0585074 N. 6913103	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	CamERA Nos. 0482-0484	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo						
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓								
Initial Depth to Water (m):	2.729 m	Purge Start Time:	16:29	Purge End Time:	16:44						
Depth to Bottom (m):	13.689 m	Purge Interval Time ( ) min, Vol. ( ) L	0.5	16:32	16:36	16:38	16:41				
Submerged Tubing Depth (m):	13.189 m	Depth to water (m)	2.735	same	same	same					
Well Stick-up Height (m):	0.845 m	Temperature (°C)	4.0	4.1	4.1	4.1					
Estimated Water Volume (L):	88.7 L	pH (pH Units)	5.38	5.36	5.36	5.34					
DTB - DTW) x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	581	601	600	601						
	Specific Cond. (µs/cm)	990	1001	1000	1007						
	Redox (mV)	115.5	115.6	115.4	115.5						
	DO (mg/L)	0.35	0.07	0.11	0.12						
	DO (%)	2.3	0.5	0.8	0.9						
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear, no odour	same	same	same						
	Turbidity (NTU):	-	-	-	21.4						
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5						
	Cumulative Purge Volume (L):	2.5L	1.0L	1.5L	2.0L						
	YSI Field Parameters Logged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	not in YSI	Waterra	Peristaltic	Disp. Bailer	Redi-flo						
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓								
Sample Time	16:45										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH14-107-MW001  
 Sample Date (Con't): Sept. 24, 2016  
 Sample Time (Con't): 16:45

**General Notes (Condition of well, or other features):****Additional Purge Data:**

Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 45 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 1/2 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>125 ml</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1.0L</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH14-107-MW002	Project Number:	1343-005.31	Date:	Sept. 24, 2016	
Station Status:	good	Client:	GY - AAM	Samplers:	JC & GH	
Piezometer Diameter:	4"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	clim 3°C	
UTM Location:	Z08 E 0585076 N. 6913513	Waypoint:	GPS HEM ID NCA	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam. 5 Nos. 0479-0481	Purge Method:				
Duplicate Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name Dup-10	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name					
Initial Depth to Water (m):	2.162 m	Purge Start Time:	15:57	Purge End Time:	16:08	
Depth to Bottom (m):	11.555 m	Purge Interval Time ( ) min, Vol. ( ) L	0.5	15:59	16:02	16:06
Submerged Tubing Depth (m):	11.000 m	Depth to water (m)	2.159	Same	Same	
Well Stick-up Height (m):	0.989 m	Temperature (°C)	3.9	3.8	3.9	
Estimated Water Volume (L):	76.0 L	pH (pH Units)	5.67	5.57	5.54	
DTB - DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	373.5	374.2	376.8		
	Specific Cond. (µs/cm)	627.8	628.0	630.3		
	Redox (mV)	99.8	101.4	102.1		
	DO (mg/L)	2.79	2.63	2.59		
	DO (%)	20.9	20.3	19.5		
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	Same	Same		
	Turbidity (NTU):	-	-	2.60		
	Interval Purge Volume (L):	0.5	0.5	0.5		
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5		
	YSI Field Parameters Logged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	not in YSI database	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit					
Sample Time	16:10					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH14-107-MW002

 Sample Date (Con't): Sept. 24, 2016

 Sample Time (Con't): 16:10

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- well has good recharge
- no drawdown.

**Consumables:**

- 1/4" HDPE (Peristaltic) 40 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 1/2 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>125 ml</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1.0 L</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH14-107-MW006A	Project Number:	1343-005.31	Date:	Sept. 22, 2016						
Station Status:	G008	Client:	GY - AAM	Samplers:	JC 3 CH						
Piezometer Diameter:	4"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	windy & cool 2°C						
UTM Location:	ZOB E. 0579344N. 69150910	Waypoint:	GPS HEM ID M1	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam. <sup>ELP</sup> 2 Nos. 0417-0415	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓								
Initial Depth to Water (m):	1.682 m	Purge Start Time:	17:05	Purge End Time:	17:43						
Depth to Bottom (m):	2.582 m	Purge Interval Time ( ) min, Vol. (0.5) L	17:09	17:13	17:15	17:18	17:21	17:24	17:27	17:30	17:33
Submerged Tubing Depth (m):	2.00 m	Depth to water (m)	1.710	1.720	1.720	1.720	1.720	Same	Same	Same	Same
Well Stick-up Height (m):	0m (Flush)	Temperature (°C)	5.5	5.5	5.3	5.3	5.3	5.2	5.0	5.1	5.0
Estimated Water Volume (L):	7.29 L	pH (pH Units)	7.34	7.30	7.27	7.26	7.25	7.24	7.23	7.23	7.23
DTB - DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	402.0	387.2	389.9	384.1	383.3	381.7	379.0	379.4	377.9	
	Specific Cond. (µs/cm)	640.0	617.4	616.5	615.4	615.1	613.7	613.3	612.4	611.3	
	Redox (mV)	-10.5	-4.2	-1.4	0.9	3.1	4.9	7.0	0.6	10.4	
	DO (mg/L)	3.29	3.49	3.51	3.54	3.66	3.67	3.77	3.87	3.93	
	DO (%)	26.0	27.4	27.8	28.1	28.8	28.9	29.5	30.5	30.8	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	murky orange slight turbid	clearly up.	clearly up	clear slight yellow	same	same	same	same	same	
	Turbidity (NTU):	-	-	-	-	-	-	-	-	-	
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
	Cumulative Purge Volume (L):	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	17:43	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓								
Sample Time	17:45										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH14-107-MW006A

Sample Date (Con't): Sept. 22, 2016

Sample Time (Con't): 17:45

Additional Purge Data:			
Purge Interval Time ( ) min, Vol. (0.5) L	17:37	17:40	17:43
Depth to water (m)	Same	Same	Same
Temperature (°C)	5.0	5.0	5.0
pH (pH Units)	7.22	7.22	7.21
Cond. (µs/cm)	376.7	376.9	376.8
Specific Cond. (µs/cm)	610.3	610.6	610.3
Redox (mV)	13.8	14.0	14.6
DO (mg/L)	4.00	4.05	4.09
DO (%)	31.4	31.5	31.9
Appearance & Odour (Clear, Silty, HC odours, etc.)	Same	Same	Same
Turbidity (NTU)	-	-	16.0
Interval Purge Volume (L)	0.5	0.5	0.5
Cumulative Purge Volume (L):	5.0	5.5	6.0

**General Notes (Condition of well, or other features):**

- mislabelled as CH12-204-MW006A, but coordinates & depths with historical data given to us. <sup>match</sup>

- well casing damaged (likely by vehicle)

- transducer in well

photo of well damage = 0421-0423

**Consumables:**

- 1/4" HDPE (Peristaltic) 10 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	116	-
1 L (plastic)	General Chemistry	500 ml	-	-	1000	-

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH14-107-MW006B	Project Number:	1343-005.31	Date:	Sept 22/16
Station Status:	GOOD	Client:	GY - AAM	Samplers:	JC BCH
Piezometer Diameter:	4"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	windy 3000 2°C
UTM Location:	Z08 E0579344 N 6115090	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	CamFL2 Nos 0418 - 0420	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____				Other
Initial Depth to Water (m):	2.607 m	Purge Start Time:	17:55	Purge End Time:	18:07
Depth to Bottom (m):	5.795 m	Purge Interval Time ( ) min, Vol. ( ) L	0.5		
Submerged Tubing Depth (m):	5.295 m	Depth to water (m)	2.607	2.607	same
Well Stick-up Height (m):	0.0 (flush)	Temperature (°C)	3.7	3.6	3.5
Estimated Water Volume (L):	24.9 L.	pH (pH Units)	7.43	7.41	7.39
DTB - DTW x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Conductivity (µs/cm)	396.9	396.6	394.9	394.2
	Specific Cond. (µs/cm)	670.6	672.2	670.5	669.0
	Redox (mV)	17.0	18.5	19.9	20.9
	DO (mg/L)	6.94	7.66	7.85	7.65
	DO (%)	53.6	58.0	59.2	57.7
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	same	same	same
	Turbidity (NTU):	-	-	-	2.14
	Interval Purge Volume (L):	0.5 L	0.5 L	0.5 L	0.5 L
	Cumulative Purge Volume (L):	0.5	1.0 L	1.5 L	2.0 L
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	18:08	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit				Other
Sample Time	18:10				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH14-107-MW006B

Sample Date (Con't): Sept. 22, 2016

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

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- mislabelled as CH12-204-MW006B,  
but coordinates & depths match with  
historical data provided to us.  
- well casing damaged (likely by vehicle)  
- transducer in well  
- photos of well damage = # 0421-0423

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH14-107-MW002A	Project Number:	1343-005.31	Date:	20-Sept-16.				
Station Status:	SLOW RECHARGE	Client:	GY - AAM	Samplers:	AN/MM				
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny, slight overze				
UTM Location:	Z.037E.0584491 N.6913091	Waypoint:	GPS <u>ELUD N/A</u>	Recovery:	<input type="checkbox"/> Good <input type="checkbox"/> Bad <input checked="" type="checkbox"/> Ok				
Photos:	Cam. <u>1</u> Nos. <u>507-510</u>	Purge Method:							
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                 Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other			
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No                 Name _____		X						
Initial Depth to Water (m):	3.774	Purge Start Time:	11:53			Purge End Time:	12:26		
Depth to Bottom (m):	5.753	Purge Interval Time (5) min, Vol. ( ) L	11:56	12:01	12:06	12:11	12:16	12:21	12:26
Submerged Tubing Depth (m):	<del>0.88</del> 5.0	Depth to water (m)	/	3.936	3.945	3.958	3.975	3.985	4.000
Well Stick-up Height (m):	<del>4.7</del> 5.00.88	Temperature (°C)	6.1	6.3	6.6	6.3	6.3	6.3	6.3
Estimated Water Volume (L):	<del>~5.0</del> → 4.0	pH (pH Units)	5.98	5.93	5.93	5.91	5.93	5.94	5.94
DTB - DTW x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\frac{4.1 \times 1.1 \times 1000}{2} = 22.55$ $\frac{3.774 \times 1.1 \times 1000}{2} = 20.85$ $22.55 - 20.85 = 1.7$	Cond. (µs/cm)	<del>452924</del> 2968	2991	2975	2957	2959	2958		
	Specific Cond. (µs/cm)	4577	4619	4604	4621	4594	4602	4601	
	Redox (mV)	68.4	78.9	81.2	82.4	80.7	78.3	75.7	
	DO (mg/L)	1.71	1.70	2.04	2.37	2.61	2.74	2.83	
	DO (%)	14.0	14.0	17.0	19.5	21.4	22.6	23.4	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	turbid grey rock	same	clearing up	clearing up	clear	clear	clear	
	Turbidity (NTU):	/	/	/	/	/	/	7.21	
	Interval Purge Volume (L):	/	0.7	0.45	0.40	0.45	0.45	0.5	
	Cumulative Purge Volume (L):	/	0.7	1.15	1.55	2.00	2.45	2.95	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:						
Time logged on YSI (24hr):	12:27	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other			
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X						
Sample Time	12:30								

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH14-107-MW007A

 Sample Date (Con't): 20-SEP-16

 Sample Time (Con't): 12:30

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

~~transducer~~  
 - when attempting to pull transducer out of well it fell off the wires, upon pulling the wires completely out it was noted that the wires holding the transducer were cracked. (photo #509-511)

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

# GROUNDWATER SAMPLE COLLECTION SHEET

9.14.

Sample Site:	CH14-107-MW007B	Project Number:	1343-005.31	Date:	20-sept-16						
Station Status:	GOOD	Client:	GY - AAM	Samplers:	AN/MM						
Piezometer Diameter:	4"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny, slight breeze						
UTM Location:	ZONE E. 0384489 N. 6913092	Waypoint:	GPSEID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam. 1 Nos. 513-516	Purge Method:									
Duplicate Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name Dup 1	Waterra	Peristaltic	Disp. Bailer	Redi-flo						
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name		X								
Initial Depth to Water (m):	4.177	Purge Start Time:	12:43	Purge End Time:	13:09						
Depth to Bottom (m):	9.723	Purge Interval Time (5) min, Vol. ( ) L	12:44	12:49	12:54	12:59	13:04	13:09			
Submerged Tubing Depth (m):	~8.7	Depth to water (m)	—	4.155	4.155	4.155	4.155	4.155			
Well Stick-up Height (m):	0.76	Temperature (°C)	6.3	5.1	5.0	4.9	4.9	4.9			
Estimated Water Volume (L):	~45.0	pH (pH Units)	6.15	6.04	6.01	6.00	6.00	5.99			
DTB - DTW x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\frac{9.723 - 4.177}{8.1} = 44.99$	Cond. (µs/cm)	1101	997	976	965	962	988				
	Specific Cond. (µs/cm)	1718	1607	1579	1568	1565	1601				
	Redox (mV)	52.8	52.4	47.2	46.8	46.2	46.2				
	DO (mg/L)	1.57	1.46	1.94	2.40	2.79	3.12				
	DO (%)	12.2	11.5	15.3	18.9	21.9	24.6				
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	same	same	same	same				
	Turbidity (NTU):	—	—	—	—	—	1.37				
	Interval Purge Volume (L):	—	1.2	0.85	0.85	0.85	0.85				
	Cumulative Purge Volume (L):	—	1.2	2.05	2.90	3.75	5.70				
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	13:10	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X								
Sample Time	13:10										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH14-107-MW007B

Sample Date (Con't): 20-Sept-16

Sample Time (Con't): 13:10

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- Transducer was not attached to wires when the j-plug was taken off, most likely sitting at the bottom of the well, photo #0514 shows that wires were frayed + loose

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH44-107-MW009	Project Number:	1343-005.31	Date:	20-Sept-16.						
Station Status:	GOOD.	Client:	GY - AAM	Samplers:	AN/MM.						
Piezometer Diameter:	4"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	~4°C to sun.						
UTM Location:	Z07N E.0584499 N.6913099	Waypoint:	GPS <u>BRID N/A</u>	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam. <u>L</u> Nos. <u>501-503</u>	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X								
Initial Depth to Water (m):	4.413	Purge Start Time:	10:22	Purge End Time:	10:54						
Depth to Bottom (m):	12.056	Purge Interval Time (5) min, Vol. ( ) L	10:24 <del>10:23</del>	10:29	10:34	10:39	10:44	10:49	10:54		
Submerged Tubing Depth (m):	~10	Depth to water (m)	/	4.415	4.415	4.415	4.415	4.415	4.415	4.415	
Well Stick-up Height (m):	0.95	Temperature (°C)	<del>7.49</del> 4.2	4.2	4.2	4.2	4.2	4.1	4.2		
Estimated Water Volume (L):	<del>6</del> 61.9	pH (pH Units)	5.95	5.91	5.92	5.93	5.92	5.93	5.94		
DTB - DTW x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\frac{12.056 - 4.413}{7.643} \times 8.1 = 61.9$	Cond. (µs/cm)	827	793	785	778	774	768	766			
	Specific Cond. (µs/cm)	1350	1314	1303	1294	1286	1279	1274			
	Redox (mV)	85.8	72.0	67.1	64.4	63.4	75.1	45.0			
	DO (mg/L)	2.12	1.65	2.71	3.82	3.85	3.92	3.94			
	DO (%)	15.8	12.7	21.0	29.3	29.7	30.0	30.3			
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear	clear	clear	clear			
	Turbidity (NTU):	/	/	/	/	/	/	0.85			
	Interval Purge Volume (L):	/	0.7	0.75	0.75	0.75	0.75	0.75	0.75		
	Cumulative Purge Volume (L):	/	0.7	1.45	2.20	2.95	3.70	4.45			
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	10:56	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X								
Sample Time	10:55										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH14-107-MW009.

Sample Date (Con't): 20-sept-16.

Sample Time (Con't): 10:55.

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

\* ORP would not stabilize; all other parameters + drawdown stable so decided to sample.

**Consumables:**

- 1/4" HDPE (Peristaltic) 0.5 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>120</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1,000</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH14-107-MW010	Project Number:	1343-005.31	Date:	20-sept-16						
Station Status:	Good	Client:	GY - AAM	Samplers:	AN/MM						
Piezometer Diameter:	4"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	sunny						
UTM Location:	Z.02 E. 0584497 N. 6913098	Waypoint:	GPS ID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam. 1 Nos. 504-506	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Hydroflit									
Initial Depth to Water (m):	2.795	Purge Start Time:	11:02	Purge End Time:	11:47						
Depth to Bottom (m):	32.650	Purge Interval Time (5) min, Vol. ( ) L	11:07	11:12	11:17	11:22	11:27	11:32	11:37	11:42	11:47
Submerged Tubing Depth (m):	~27	Depth to water (m)	2.925	2.942	2.975	2.990	3.005	3.021	3.030	3.040	3.050
Well Stick-up Height (m):	FF 1.015	Temperature (°C)	3.5	3.0	3.0	3.0	2.9	2.9	2.8	2.8	2.8
Estimated Water Volume (L):	241.8	pH (pH Units)	5.85	5.85	5.90	5.88	5.91	5.95	5.86	5.92	5.91
DTB - DTW) x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\frac{11514 \times 32.650 - 2.795 \times 8.1}{29.855} = 241.8$	Cond. (µs/cm)	237.2	467.1	470.6	282.9	467.8	472.1	465.7	470.5	471.1	
	Specific Cond. (µs/cm)	402.6	805.7	812.5	487.9	809.5	817.8	807.4	816.8	817.5	
	Redox (mV)	97.8	90.7	89.0	87.4	88.5	82.7	90.7	83.9	86.1	
	DO (mg/L)	4.94	5.34	5.14	5.84	5.20	5.41	4.79	8.03	5.34	
	DO (%)	37.4	39.9	38.3	43.3	38.6	40.0	35.6	59.9	39.6	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	slightly turbid	clear	clear	same	same	same	same	same	same	
	Turbidity (NTU):	—	—	—	—	—	—	—	—	3.05	
	Interval Purge Volume (L):	12	13	12	12	12	12	12	12	12	
	Cumulative Purge Volume (L):	10	25	37	49	61	73	85	97	109	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	11:48	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	Hydroflit									
Sample Time	11:50										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH14-107-MW010

 Sample Date (Con't): Sept. 20 / 2016

 Sample Time (Con't): 11:50

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

*No consumables used.*

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_.
- Other \_\_\_\_\_.

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH15-107-MW019	Project Number:	1343-005.31	Date:	21-Sept-16
Station Status:	Good	Client:	GY - AAM	Samplers:	AN/MM
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	overcast ~28
UTM Location:	ZONE: 0584277 N. 6912957	Waypoint:	GPS AN ID 110	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. 1 Nos. 532-534	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo Other
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X		
Initial Depth to Water (m):	2540	Purge Start Time:	11:32	Purge End Time:	11:48
Depth to Bottom (m):	21580	Purge Interval Time (5) min, Vol. ( ) L	11:33 11:38 11:43 11:48		
Submerged Tubing Depth (m):	~17	Depth to water (m)	/ 2548 2545 2550		
Well Stick-up Height (m):	1.18	Temperature (°C)	3.9 2.8 2.8 2.9		
Estimated Water Volume (L):	~38.1	pH (pH Units)	6.16 5.99 6.00 6.00		
<p>DTB - DTW) x (πr<sup>2</sup>)1000 (for well diameter) = 1 well volume            (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:</p> <p>21580            2540            19,040            238.08</p>	Cond. (µs/cm)	2098 2074 2071 2068			
	Specific Cond. (µs/cm)	3541 3602 3598 3584			
	Redox (mV)	68.1 48.4 45.8 45.7			
	DO (mg/L)	1.60 1.18 1.27 1.57			
	DO (%)	11.9 8.7 9.6 11.7			
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear same same same			
	Turbidity (NTU):	/ / / 14.8			
	Interval Purge Volume (L):	/ 1.3 1.3 1.3			
	Cumulative Purge Volume (L):	/ 1.3 2.6 3.9			
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	11:48	Waterra	Peristaltic	Disp. Bailer	Redi-flo Other
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X		
Sample Time	11:50				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH15-107-MWG19

Sample Date (Con't): 21-Sept-16

Sample Time (Con't): 11:50

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

2" well and 1" well both located in single stick up/casing. Sampled 2" well, DTB matches sow.  
 \*GPS coordinates provide were not accurate; will need to be updated.

**Consumables:**

- 1/4" HDPE (Peristaltic) 75.5 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH15-107-MW022	Project Number:	1343-005.31	Date:	21-Sept-16				
Station Status:	GOOD	Client:	GY - AAM	Samplers:	AN/MM				
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	~2°C				
UTM Location:	208 E 504335 N 6913050	Waypoint:	GPS ANID 109	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok				
Photos:	Cam. 1 Nos. 529-531	Purge Method:							
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other			
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X						
Initial Depth to Water (m):	1.866	Purge Start Time:	10:35	Purge End Time:	11:06				
Depth to Bottom (m):	21.470	Purge Interval Time (5) min, Vol. ( ) L	10:36	10:41	10:46	10:51	10:56	11:01	11:06
Submerged Tubing Depth (m):	~17	Depth to water (m)	/	2.150	2.140	2.190	2.190	→ 2.190	
Well Stick-up Height (m):	1.10	Temperature (°C) <sup>wt</sup>	4.3	3.1	3.5	3.3	3.3	3.1	<del>3.03</del>
Estimated Water Volume (L):	39.2	pH (pH Units)	6.68	6.34	6.33	6.34	6.35	6.34	6.34
DTB - DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\frac{21.470}{1.866} \times 2 = 39.208$	Cond. (µs/cm)	823	898	874	863	856	844	837	
	Specific Cond. (µs/cm)	1551	1540	1483	1477	1463	1452	1448	
	Redox (mV)	83.1	42.4	39.0	38.0	36.4	35.4	34.1	
	DO (mg/L)	6.76	0.41	0.75	0.65	0.65	0.68	0.72	
	DO (%)	5.2	3.2	5.8	4.8	4.8	5.0	5.4	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	turbid grey up turbid	clearing up cloudy	same	clear	clear	same	same	
	Turbidity (NTU):	/	/	/	/	/	/	10.99	
	Interval Purge Volume (L):	/	1.5	1.0	1.3	1.3	1.3	1.3	
	Cumulative Purge Volume (L):	/	1.5	2.5	3.8	4.1	5.4	6.7	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:						
Time logged on YSI (24hr):	11:06	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other			
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X						
Sample Time	11:10								

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH15-107-MW000

Sample Date (Con't): 21-Sept-16

Sample Time (Con't): 11:10

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

\*GPS coordinates supplied not accurate; will need to be changed.  
 - nested well; ~~at~~ water level taken @ both wells → 1" diameter = no water in well; will sample 2" diameter.  
 - temperature appears to be varying ~~slightly~~ slightly by the direct sunlight; ~~need~~ all other parameters are good, therefore decided to sample ~~for next day~~

**Consumables:**

- 1/4" HDPE (Peristaltic) 73.5 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

↳ no drawdown

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH15-107-MW023	Project Number:	1343-005.31	Date:	21-Sept-16
Station Status:	Good	Client:	GY - AAM	Samplers:	AN/MM
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	overcast ~ 20°C
UTM Location:	Z. 08 E. 0584119N. 6912959	Waypoint:	GPS AN ID III	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. 1 Nos. 535-537	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	manual			
Initial Depth to Water (m):	15.736	Purge Start Time:	12:56	Purge End Time:	13:27
Depth to Bottom (m):	28.520	Purge Interval Time ( ) min, Vol. (15) L	12:59	13:06	13:12
Submerged Tubing Depth (m):	~ 25	Depth to water (m)	—	—	—
Well Stick-up Height (m):	0.920	Temperature (°C)	1.9	2.1	1.7
Estimated Water Volume (L):	25.6	pH (pH Units)	6.45	6.88	6.92
<p>DTB - DTW) x (πr<sup>2</sup> × 1000 (for well diameter) = 1 well volume            (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:  <math display="block">\frac{28.520 - 15.736}{1.1} \times 2 = 25.584</math></p>	Cond. (µs/cm)	521	502	483.9	505
	Specific Cond. (µs/cm)	930	894	870.9	898
	Redox (mV)	97.0	29.4	12.8	34.4
	DO (mg/L)	1.52	1.41	1.28	1.84
	DO (%)	10.8	9.9	9.0	13.5
	Appearance & Odour (Clear, Silty, HC odours, etc.)	very grey turbid	Same	→	
	Turbidity (NTU):	—	—	—	54
	Interval Purge Volume (L):	15	15	15	17
	Cumulative Purge Volume (L):	15	20	45	60
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	13:28	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	manual			
Sample Time	13:30				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH15-107-MW023

Sample Date (Con't): 21-Sept-16

Sample Time (Con't): 13:30

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

-hill too steep to bring hydroliift down  
 ∴ manual purge w/ watererra.  
 \* Coordinates provided not accurate,  
 should be updated.

**Consumables:**

- 1/4" HDPE (Peristaltic) 100 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves 1 each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>120</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1,000</u>	

☆ note on COC only half of general parameter bottle filled



# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH15-107-MW025	Project Number:	1343-005.31	Date:	Sept. 21, 2016
Station Status:	bad	Client:	GY - AAM	Samplers:	JC BCH
Piezometer Diameter:	1"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	cloudy 5°C
UTM Location:	ZOB E 58436 N 612882	Waypoint:	GPS ID	Recovery:	<input type="checkbox"/> Good <input checked="" type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam: FLR2 Nos 0367-0369	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input type="checkbox"/> No Name			✓	
Initial Depth to Water (m):	14.785	Purge Start Time:	12:32	Purge End Time:	
Depth to Bottom (m):	18.951	Purge Interval Time ( ) min, Vol. ( ) L	12:38 12:51		
Submerged Tubing Depth (m):	N/A	Depth to water (m)	15.182 15.905		
Well Stick-up Height (m):	0.880	Temperature (°C)	3.6		
Estimated Water Volume (L):	2.083L	pH (pH Units)	7.12		
DTB - DTW x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	1760			
	Specific Cond. (µs/cm)	2976			
	Redox (mV)	80.5			
	DO (mg/L)	2.24			
	DO (%)	16.7			
	Appearance & Odour (Clear, Silty, HC odours, etc.)	black particulate			
	Turbidity (NTU):	- 26.4			
	Interval Purge Volume (L):	0.25 0.50			
	Cumulative Purge Volume (L):	0.25 0.75			
	YSI Field Parameters Logged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	N/A	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit			✓	
Sample Time	12:52				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH15-107-MW025  
 Sample Date (Con't): Sept. 21, 2010  
 Sample Time (Con't): 12:52

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	
1 L (plastic)	General Chemistry	~500 ml	-	-	600 ml	

→ not enough water to continuously sample field parameters & water is very slow to recharge  
 → took one reading then direct sample  
 → only able to fill half of general bottle



**General Notes (Condition of well, or other features):**

- 1 inch well → sampled from 1 inch well

2 inch well → stick up height = 0.780m  
 ↳ 2.816 m = depth to ice → could not sample

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters 1 each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer 1 each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other 200ft. twine
- Other \_\_\_\_\_

16-06



# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH15-107-NW009	Project Number:	1343-005.31	Date:	Sept. 24/2016		
Station Status:	GOOD	Client:	GY - AAM	Samplers:	AN, mm		
Piezometer Diameter:	4"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	cloudy ~ 8°C		
UTM Location:	Z. 8 E. 585763 N. 691428	Waypoint:	<del>GPS ID</del>	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok		
Photos:	Cam. 1 Nos. 612-615	Purge Method:					
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other	
Field Blank Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name FB-S		X				
Initial Depth to Water (m):	1.883	Purge Start Time:	16:29		Purge End Time:	16:51	
Depth to Bottom (m):	3.671	Purge Interval Time (S) min, Vol. (L)	16:30	16:36	16:41	16:46	16:51
Submerged Tubing Depth (m):	~3.0	Depth to water (m)	—	1.886	1.886	→	→
Well Stick-up Height (m):	0.91	Temperature (°C)	4.2	3.4	3.3	3.2	3.2
Estimated Water Volume (L):	~14.4	pH (pH Units)	7.63	7.09	7.03	7.00	6.99
DTB - DTW) x (πr <sup>2</sup> ) 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	1288	1298	1299	1298	1298	
	Specific Cond. (µs/cm)	2166	2213	2218	2222	2225	
	Redox (mV)	200.0	208.9	211.3	213.7	215.8	
	DO (mg/L)	7.74	7.30	7.18	7.38	7.35	
	DO (%)	58.6	55.2	54.0	55.6	55.4	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear no odour	Same	Same	Same	Same	
	Turbidity (NTU):	—	—	—	—	1.71	
	Interval Purge Volume (L):	—	1.0	1.0	1.0	1.0	
	Cumulative Purge Volume (L):	—	1.0	2.0	3.0	4.0	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:				
Time logged on YSI (24hr):	16:52	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X				
Sample Time	16:55						

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH15-107-MW029  
 Sample Date (Con't): Sept. 24 / 2016  
 Sample Time (Con't): 16:55

**General Notes (Condition of well, or other features):**

transducer removed @ 16:26

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 6.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH15-107-MW030	Project Number:	1343-005.31	Date:	Sept. 24/2016	
Station Status:	GOOD.	Client:	GY - AAM	Samplers:	AN, MM	
Piezometer Diameter:	4"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny ~10°C.	
UTM Location:	Z. 8 E. 585830 N. 6914181	Waypoint:	GPSN/10	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam. 1 Nos. 599-601	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X			
Initial Depth to Water (m):	4.263	Purge Start Time:	13:35	Purge End Time:	13:52.	
Depth to Bottom (m):	5.140	Purge Interval Time (5) min, Vol. ( ) L	13:37	13:42	13:47	13:52
Submerged Tubing Depth (m):	~4.5	Depth to water (m)	—	4.272	4.275	4.275
Well Stick-up Height (m):	0.9	Temperature (°C)	5.5	5.1	5.2	5.2
Estimated Water Volume (L):	~8 L	pH (pH Units)	7.23	7.03	6.97	6.97
DTB – DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	1197	1174	1171	1172	
	Specific Cond. (µs/cm)	1907	1892	1885	1886	
	Redox (mV)	158.1	149.3	175.3	178.2	
	DO (mg/L)	7.88	7.44	7.35	7.20	
	DO (%)	62.0	58.8	58.6	56.9	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Brown Grey turbid	less turbid	same	slightly turbid	
	Turbidity (NTU):	—	—	—	13.3	
	Interval Purge Volume (L):	—	0.95	0.5	0.5	
	Cumulative Purge Volume (L):	—	0.95	1.45	1.9	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	13:53	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X			
Sample Time	13:55					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH15-107 - MW030

Sample Date (Con't): Sept. 24/2016

Sample Time (Con't): 13:55

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

Sediment on tip of WL meter.  
Transducer removed @ 13:30.  
@ 14:06 transducer put back in well.

**Consumables:**

- 1/4" HDPE (Peristaltic) 1 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>120</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>500, 1,000</u>	

Sampled 23, 2016  
Sept 8.0

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH15-107-MWO 32	Project Number:	1343-005.31	Date:	Sept. 24/2016		
Station Status:	SLOW RECHARGE	Client:	GY - AAM	Samplers:	AN, mm		
Piezometer Diameter:	4"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny ~10°C.		
UTM Location:	Zone E. 0585364 N. 6914219	Waypoint:	GPS N/A/D	Recovery:	<input type="checkbox"/> Good <input checked="" type="checkbox"/> Bad <input type="checkbox"/> Ok		
Photos:	Cam. 1 Nos. 608-611	Purge Method:					
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X				
Initial Depth to Water (m):	2.331	Purge Start Time:	15:44	Purge End Time:	16:04		
Depth to Bottom (m):	9.152	Purge Interval Time (5) min, Vol. ( ) L	15:44	15:49	15:54	15:59	16:04
Submerged Tubing Depth (m):	~7	Depth to water (m)	/	2.510	2.658	2.794	2.820
Well Stick-up Height (m):	1.03	Temperature (°C)	3.6	3.2	3.2	3.4	3.6
Estimated Water Volume (L):	~54	pH (pH Units)	7.23	7.46	7.52	7.53	7.52
DTB - DTW) x (πr <sup>2</sup> *1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	1495	1487	1490	1495	1508	
	Specific Cond. (µs/cm)	2536	2550	2550	2538	2549	
	Redox (mV)	198.1	198.8	197.8	196.6	195.0	
	DO (mg/L)	3.67	2.25	2.21	2.13	2.15	
	DO (%)	26.6	17.0	16.6	16.1	16.4	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	same	same	same	same	
	Turbidity (NTU):	/	/	/	/	0.81	19.6
	Interval Purge Volume (L):	/	1.0	1.0	0.95	0.6	
	Cumulative Purge Volume (L):	/	1.0	2.0	2.95	3.55	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:				
Time logged on YSI (24hr):	16:07	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X				
Sample Time	<del>16:10</del> 9:35						

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH15-107-MW032  
 Sample Date (Con't): Sept. ~~24~~ / 2016  
 Sample Time (Con't): ~~16:10~~ 9:35

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- Well was sampled Sept 24 After stable parameters.
- No recharge in well
- Returned 7:pm sept 24 to 3.2 m water level (Very slow recharge, 0.6 l/m/hr)
- used hydrolit to purge out well, purged to 8.4m DTW
- Returned Sept 25 added tubing to submerged depths of 8.5m and sampled in the screen.

**Consumables:**

- 1/4" HDPE (Peristaltic) 9 ft. - Samples from Sept 24 discarded.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	Resampled Sept 25
1 L (plastic)	General Chemistry	500 ml	-	-	1000	Resampled Sept 25



# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	CH15-107 - MW033	Project Number:	1343-005.31	Date:	Sept. 24 / 2016	
Station Status:	GOOD	Client:	GY - AAM	Samplers:	AN, MM	
Piezometer Diameter:	4"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny ~10°C. light wind.	
UTM Location:	Z. 8 E. 585764 N. 6914249	Waypoint:	<del>GPS ID</del>	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam. 1 Nos. 605-607	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		<del>X</del>			
Initial Depth to Water (m):	2.542	Purge Start Time:	15:20	Purge End Time:	15:36	
Depth to Bottom (m):	3.960	Purge Interval Time (5) min, Vol. ( ) L	15:21	15:26	15:31	15:36
Submerged Tubing Depth (m):	~3	Depth to water (m)	—	2.545	2.545	—
Well Stick-up Height (m):	1.1	Temperature (°C)	5.4	4.2	4.2	4.1
Estimated Water Volume (L):	11.3	pH (pH Units)	7.08	7.04	7.01	7.02
DTB - DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\begin{array}{r} 3.960 \\ 2.542 \\ \hline 1.418 \end{array} \times 8 = 11.344$	Cond. (µs/cm)	1013	951	952	949	
	Specific Cond. (µs/cm)	1625	1576	1577	1577	
	Redox (mV)	193.2	199.4	198.7	198.9	
	DO (mg/L)	8.32	7.12	6.97	6.85	
	DO (%)	64.5	54.5	53.6	52.8	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	Same	Same	Same	
	Turbidity (NTU):	—	—	—	1.14	
	Interval Purge Volume (L):	—	1.3	1.6	1.5	
	Cumulative Purge Volume (L):	—	1.3	2.9	4.4	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	15:37	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		<del>X</del>			
Sample Time	15:40					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH15-107-MW033  
 Sample Date (Con't): Sept. 24 / 2016  
 Sample Time (Con't): 15:40

**General Notes (Condition of well, or other features):**

Transducer removed @ 15:18.  
 @15:43 → transducer put back in well.

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 1.0 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

# GROUNDWATER SAMPLE COLLECTION SHEET

3.2

Sample Site:	CH15-107-MW034	Project Number:	1343-005.31	Date:	24-Sept-16	
Station Status:	GOOD	Client:	GY - AAM	Samplers:	AN/MM	
Piezometer Diameter:	4"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	sunny	
UTM Location:	Z.8 E. 585752 N. 6914497	Waypoint:	GPS N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam. 1 Nos. 602-604	Purge Method:				
Duplicate Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name DWP-9	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name		X			
Initial Depth to Water (m):	3.780	Purge Start Time:	14:35	Purge End Time:	14:51	
Depth to Bottom (m):	6.100	Purge Interval Time (S) min, Vol. (L)	14:36	14:41	14:46	14:51
Submerged Tubing Depth (m):	~5	Depth to water (m)	—	3.820	3.820	—
Well Stick-up Height (m):	1.1	Temperature (°C)	5.2	4.3	4.2	4.3
Estimated Water Volume (L):	418.8	pH (pH Units)	7.33	6.98	6.88	6.81
DTB - DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: 5.101 6.100 3.780 ————— 2.345 8. = 18.76 * 3 4.190	Cond. (µs/cm)	620	579	576	578	
	Specific Cond. (µs/cm)	997	958	956	957	
	Redox (mV)	160.5	173.2	177.5	185.6	
	DO (mg/L)	6.61	6.08	6.11	6.08	
	DO (%)	51.8	47.1	46.6	46.8	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	light brown grey turbid	clear	same	same	
	Turbidity (NTU):	—	—	—	10.01	
	Interval Purge Volume (L):	—	1.0	0.75	0.8	
	Cumulative Purge Volume (L):	—	1.0	1.75	2.55	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	14:52	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X			
Sample Time	14:55					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): CH15-107-MW034  
 Sample Date (Con't): Sept. 24 / 2016  
 Sample Time (Con't): 14:55

**General Notes (Condition of well, or other features):****Additional Purge Data:**

Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 1.0 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	DVP-9 also
1 L (plastic)	General Chemistry	500 ml	-	-	1000	collected full sets.

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P01-01A	Project Number:	1343-005.31	Date:	Sept. 22, 2016		
Station Status:	GOOD	Client:	GY - AAM	Samplers:	JC BCH		
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	windy, cool 10c		
UTM Location:	ZONE: 057969N, 691485E	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok		
Photos:	Cam. Nos. 0409-0411	Purge Method:					
Duplicate Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name Dup-5	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name	<input checked="" type="checkbox"/>					
Initial Depth to Water (m):	3.543m	Purge Start Time:	15:30	Purge End Time:	15:46		
Depth to Bottom (m):	20.377m	Purge Interval Time ( ) min, Vol. ( ) L	15:31	15:34	15:40	15:43	15:46
Submerged Tubing Depth (m):	19.800m	Depth to water (m)	3.633	3.633	3.633	same	same
Well Stick-up Height (m):	0.610m	Temperature (°C)	2.3	2.1	2.5	2.2	2.1
Estimated Water Volume (L):	33.8L	pH (pH Units)	7.20	6.99	6.91	6.89	6.89
DTB - DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	875	1233	1248	1231	1292	
	Specific Cond. (µs/cm)	1544	2177	2186	2183	2294	
	Redox (mV)	10.5	24.7	29.1	30.7	30.5	
	DO (mg/L)	1.69	1.89	2.62	2.16	2.29	
	DO (%)	12.3	13.1	19.1	15.5	16.6	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	same	same	same	same	
	Turbidity (NTU):	-	-	-	-	0.15	
	Interval Purge Volume (L):	70L	10L	10L	10L	10L	
	Cumulative Purge Volume (L):	10L	20L	30L	40L	50L	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:				
Time logged on YSI (24hr):	15:47	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	<input checked="" type="checkbox"/>					
Sample Time	15:50						

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P01-01 A

Sample Date (Con't): Sept. 22, 2010

Sample Time (Con't): 15:50

**General Notes (Condition of well, or other features):**

-hydra lift used  
-dup-5 collected

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	1.0 L	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P01-01B	Project Number:	1343-005.31	Date:	Sept. 22, 2016						
Station Status:	good	Client:	GY - AAM	Samplers:	JC BCH						
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	windy, cool 10°C						
UTM Location:	708 E. 579698 N. 6914857	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam. <del>FS</del> Nos. 0412 - 0414	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	<input checked="" type="checkbox"/>									
Initial Depth to Water (m):	3.704 m	Purge Start Time:	16:00	Purge End Time:	16:29						
Depth to Bottom (m):	35.544 m	Purge Interval Time ( ) min, Vol. ( ) L	10								
Submerged Tubing Depth (m):	35.0 m	Depth to water (m)	3.752	3.750	same	same	same	same	same	same	same
Well Stick-up Height (m):	0.570	Temperature (°C)	2.2	2.2	2.3	2.3	2.3	2.3	2.3	2.3	2.3
Estimated Water Volume (L):	63.7 L	pH (pH Units)	7.19	7.21	7.22	7.23	7.22	7.23	7.22	7.21	7.22
DTB - DTW x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: /	Cond. (µs/cm)	699	818	911	910	909	909	909	909	909	907
	Specific Cond. (µs/cm)	123	145	161	160	160	160	160	160	147	160
	Redox (mV)	20.3	20.6	16.1	10.0	14.2	1.3	-1.5	-4.6	-8.2	
	DO (mg/L)	2.12	1.64	1.82	2.17	2.01	2.04	1.93	1.75	1.86	
	DO (%)	15.4	12.0	13.2	15.0	15.7	15.2	14.2	12.8	13.3	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	same	same	same	same	same	same	same	same	same
	Turbidity (NTU):	-	-	-	-	-	-	-	-	-	-
	Interval Purge Volume (L):	10 L	10 L	10 L	10 L	10 L	10 L	10 L	15 L	15 L	
	Cumulative Purge Volume (L):	10 L	20 L	20 L	30 L	40 L	50 L	60 L	75 L	90 L	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	16:32	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	<input checked="" type="checkbox"/>									
Sample Time	16:35	<input checked="" type="checkbox"/>									

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P01-01B

 Sample Date (Con't): Sept. 22, 2016

 Sample Time (Con't): 16:35

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L	10-15L								
Depth to water (m)	3.750								
Temperature (°C)	2.3								
pH (pH Units)	7.23								
Cond. (µs/cm)	907								
Specific Cond. (µs/cm)	1602								
Redox (mV)	-9.3								
DO (mg/L)	1.89								
DO (%)	13.6								
Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour								
Turbidity (NTU)	0.08								
Interval Purge Volume (L)	15L								
Cumulative Purge Volume (L):	105L								

**General Notes (Condition of well, or other features):**
**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	1.0 L	

# GROUNDWATER SAMPLE COLLECTION SHEET

<b>Sample Site:</b>	P01-02A	<b>Project Number:</b>	1343-005.31	<b>Date:</b>	Sept. 23, 2015		
<b>Station Status:</b>	good (other than broken PVC stick)	<b>Client:</b>	GY - AAM	<b>Samplers:</b>	JC & CH		
<b>Piezometer Diameter:</b>	2"	<b>Project Name:</b>	Faro 2016 GW Fall Sampling Program	<b>Weather/Temperature:</b>	chilly 30°C		
<b>UTM Location:</b>	ZOB E. 0579963 N. 0914226	<b>Waypoint:</b>	GPS ___ ID _____	<b>Recovery:</b>	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok		
<b>Photos:</b>	Cam. # Nos. 0457-0459	<b>Purge Method:</b>					
<b>Duplicate Collected:</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	<b>Waterra</b>	<b>Peristaltic</b>	<b>Disp. Bailer</b>	<b>Redi-flo</b>		
<b>Field Blank Collected:</b>	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓				
<b>Initial Depth to Water (m):</b>	1.988 m	<b>Purge Start Time:</b>	14:23			<b>Purge End Time:</b>	
<b>Depth to Bottom (m):</b>	14.222 m	<b>Purge Interval Time ( ) min, Vol. ( ) L</b>	14:27	14:30	14:32	14:34	14:36
<b>Submerged Tubing Depth (m):</b>	13.800 m	<b>Depth to water (m)</b>	2.012	2.013	same	same	same
<b>Well Stick-up Height (m):</b>	1.27 & 0.3661	<b>Temperature (°C)</b>	4.3	4.3	4.2	4.2	4.2
<b>Estimated Water Volume (L):</b>	24.5 L.	<b>pH (pH Units)</b>	7.59	7.57	7.57	7.57	7.57
DTB - DTW x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	<b>Cond. (µs/cm)</b>	436.5	448.9	456.2	456.7	457.7	
	<b>Specific Cond. (µs/cm)</b>	723.6	743.6	756.4	758.8	757.6	
	<b>Redox (mV)</b>	-77.8	-74.8	-71.1	-68.6	-67.0	
	<b>DO (mg/L)</b>	0.24	0.02	0.0	0.0	0.0	
	<b>DO (%)</b>	1.6	0.1	0.0	0.0	0.0	
	<b>Appearance &amp; Odour (Clear, Silty, HC odours, etc.)</b>	clear no odour	same	same	same	same	
	<b>Turbidity (NTU):</b>	-	-	-	-	0.21	
	<b>Interval Purge Volume (L):</b>	0.5	0.5	0.5	0.5	0.5	
	<b>Cumulative Purge Volume (L):</b>	0.5L	1.0L	1.5L	2.0L	2.5L	
	<b>YSI Field Parameters Logged:</b>	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	<b>Sample Method:</b>				
<b>Time logged on YSI (24hr):</b>	14:36	<b>Waterra</b>	<b>Peristaltic</b>	<b>Disp. Bailer</b>	<b>Redi-flo</b>	<b>Other</b>	
<b>YSI Meter or Pen Unit?:</b>	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓				
<b>Sample Time</b>	14:40						

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P01-02A

Sample Date (Con't): Sept. 23, 2016

Sample Time (Con't): 14:40

**General Notes (Condition of well, or other features):**

*-refer to Jeremy's field notes*

**Additional Purge Data:**

Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 1/2 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other 1 j-plug
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>125 ml</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1.0L</u>	

not  
→ partially  
obstructed  
like noted  
last year



# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P01-02B	Project Number:	1343-005.31	Date:	Sept. 23, 2016						
Station Status:	good minus damage	Client:	GY - AAM	Samplers:	JC 3 CH						
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 3°C						
UTM Location:	ZDB E. 0579963 N. 6914226	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam. ___ Nos. 0460-0462	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name ___	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name ___		✓								
Initial Depth to Water (m):	1.583 m	Purge Start Time:	14:00			Purge End Time:					
Depth to Bottom (m):	29.982 m	Purge Interval Time ( ) min, Vol. ( ) L	0.5	14:01	14:04	14:06	14:08	14:10	14:12	14:14	14:16
Submerged Tubing Depth (m):	29.482 m	Depth to water (m)	Flowing artesian well								
Well Stick-up Height (m):	1.593 m	Temperature (°C)	4.1	4.1	4.1	4.1	4.1	4.2	4.2	4.2	
Estimated Water Volume (L):	56.8 L	pH (pH Units)	7.63	7.63	7.63	7.64	7.64	7.63	7.63	7.63	
DTB - DTW x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	347.2	342.6	341.8	341.5	341.8	342.0	341.6	341.5		
	Specific Cond. (µs/cm)	576.6	569.6	569.0	568.0	568.1	567.6	567.7	567.4		
	Redox (mV)	-38.2	-45.3	-56.5	-68.5	-76.0	-82.0	-88.4	-89.1		
	DO (mg/L)	0.21	0.11	0.06	0.06	0.04	0.05	0.03	0.01		
	DO (%)	1.8	0.9	0.4	0.6	0.2	0.3	0.2	0.1		
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	same	same	same	same	same	same	same		
	Turbidity (NTU):	-	-	-	-	-	-	-	4.69		
	Interval Purge Volume (L):	0.5L	0.5L	0.5L	0.5L	0.5L	0.5L	0.5L	0.5L		
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5L	2.0L	2.5L	3.0L	3.5L	4.0L		
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	14:16	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓								
Sample Time	14:20										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): PO1-02B  
 Sample Date (Con't): Sept. 23, 2016  
 Sample Time (Con't): 14:20

General Notes (Condition of well, or other features):  
 - refer to Jeremy's field notes

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

- Consumables:**
- 1/4" HDPE (Peristaltic) 100 ft.
  - 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
  - 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
  - 1/4" Silicon 1/2 ft.
  - 0.45 micron inline filters \_\_\_\_\_ each
  - D-25 (2" well) foot valves \_\_\_\_\_ each
  - D-16 (1" well) foot valves \_\_\_\_\_ each
  - SS-10 (5/8" well) foot valves \_\_\_\_\_ each
  - 1" HDPE Bailer \_\_\_\_\_ each
  - 2" HDPE Bailer \_\_\_\_\_ each
  - Other \_\_\_\_\_
  - Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>125 ml</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1.0 L</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P01 - 03	Project Number:	1343-005.31	Date:	Sept. 22, 2016	
Station Status:	good	Client:	GY - AAM	Samplers:	JC BOH	
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny 5°C	
UTM Location:	Z08 E 0580521 N 6914252	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam. CR2 Nos. 0302 - 0384	Purge Method:				
Duplicate Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name Dup 3	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name		✓			
Initial Depth to Water (m):	3.134 m	Purge Start Time:	9:19	Purge End Time:	9:36	
Depth to Bottom (m):	9.583 m	Purge Interval Time ( ) min, Vol. ( ) L	9:23 9:28 9:31 9:36			
Submerged Tubing Depth (m):	9.0 m	Depth to water (m)	3.601 3.840 4.130 4.354			
Well Stick-up Height (m):	0.450 m	Temperature (°C)	4.6 4.5 4.5 4.7			
Estimated Water Volume (L):	12.89 L	pH (pH Units)	6.11 6.13 6.12 6.12			
DTB - DTW x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	2637 2627 2626 2644				
	Specific Cond. (µs/cm)	4313 4320 4318 4313				
	Redox (mV)	-25.9 -25.6 -26.2 -26.9				
	DO (mg/L)	0.10 0.04 0.05 0.04				
	DO (%)	0.8 0.3 0.3 0.3				
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Slightly yellow and silty	slightly silty	same	same	
	Turbidity (NTU):	- - - 13.6				
	Interval Purge Volume (L):	0.5 0.5 0.5 0.5				
	Cumulative Purge Volume (L):	0.5 1.0 1.5 2.0				
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	9:36	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓			
Sample Time	9:38					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P01-03  
 Sample Date (Con't): Sept. 22, 2016  
 Sample Time (Con't): 9:38

**General Notes (Condition of well, or other features):**

- well has draw down  
 - stable parameters  
 - dup-3 collected WRL

**Additional Purge Data:**

Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 6 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 1/2 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>125 ml</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1.0L</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P01-04A	Project Number:	1343-005.31	Date:	Sept. 22, 2016	
Station Status:	GOOD	Client:	GY - AAM	Samplers:	JC BCH	
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	cloudy 5°C	
UTM Location:	ZONE 0580377N, 6914075	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Carf. FLB Nos. 0391 - 0393	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	<input checked="" type="checkbox"/>				
Initial Depth to Water (m):	1.419 m	Purge Start Time:	10:45	Purge End Time:		
Depth to Bottom (m):	53.650 m	Purge Interval Time ( ) min, Vol. (10) L	10:48	10:54	10:58	11:02
Submerged Tubing Depth (m):	53.150 m	Depth to water (m)	1.51	Same	Same	Same
Well Stick-up Height (m):	0.255	Temperature (°C)	4.1	3.8	3.6	3.6
Estimated Water Volume (L):	52.2 L	pH (pH Units)	6.74	6.73	6.76	6.71
DTB - DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	773	721	718	714	
	Specific Cond. (µs/cm)	1288	1212	1213	1208	
	Redox (mV)	-36.5	-26.6	-22.2	-20.2	
	DO (mg/L)	2.24	1.95	2.06	2.10	
	DO (%)	17.6	15.0	15.4	16.0	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear	Same	Same	Same	
	Turbidity (NTU):	-	-	-	1.37	
	Interval Purge Volume (L):	10	10	10	10	
	Cumulative Purge Volume (L):	10	20	30	40	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	11:03	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	<input checked="" type="checkbox"/>				
Sample Time	11:10					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P01-4A

Sample Date (Con't): Sept. 22, 2016

Sample Time (Con't): 11:10

**Additional Purge Data:**

Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

→ tubing already in well  
→ used hydralift to sample

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	180	-
1 L (plastic)	General Chemistry	500 ml	-	-	1000	-

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P01-04B	Project Number:	1343-005.31	Date:	Sept. 22, 2016
Station Status:	FROZEN	Client:	GY - AAM	Samplers:	JC & CH
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	cloudy 5°C
UTM Location:	ZOB E0580377N 614075	Waypoint:	GPS ___ ID ___	Recovery:	<input type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. <u>LR2</u> Nos. <u>0394 - 0396</u>	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____				Other
Initial Depth to Water (m):	7.400 m FROZEN	Purge Start Time:		Purge End Time:	
Depth to Bottom (m):	_____	Purge Interval Time (___) min, Vol. (___) L			
Submerged Tubing Depth (m):	_____	Depth to water (m)			
Well Stick-up Height (m):	0,250 m	Temperature (°C)			
Estimated Water Volume (L):	_____	pH (pH Units)			
<p>DTB – DTW) x (πr<sup>2</sup> × 1000 (for well diameter) = 1 well volume            (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:</p>	Cond. (µs/cm)				
	Specific Cond. (µs/cm)				
	Redox (mV)				
	DO (mg/L)				
	DO (%)				
	Appearance & Odour (Clear, Silty, HC odours, etc.)				
	Turbidity (NTU):				
	Interval Purge Volume (L):				
	Cumulative Purge Volume (L):				
	YSI Field Parameters Logged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):		Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input type="checkbox"/> YSI <input type="checkbox"/> Pen Unit				Other
Sample Time					

FROZEN

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P01-4B

Sample Date (Con't): Sept 22, 2016

Sample Time (Con't): N/A / FROZEN

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- FROZEN; no sample collected

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input type="checkbox"/> Field Filtered	<input type="checkbox"/> HNO <sub>3</sub>		
1 L (plastic)	General Chemistry	500 ml	-	-		

10:53



# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P01-11	Project Number:	1343-005.31	Date:	Sept 23 2016	
Station Status:	G00D	Client:	GY - AAM	Samplers:	SC CH	
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	5° overcast	
UTM Location:	Z08 E. 0580094N. 6914487	Waypoint:	GPS HEMID <u>N/A</u>	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam. <u>EOS</u> Nos. <u>0445 - 0447</u>	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓			
Initial Depth to Water (m):	1.259	Purge Start Time:	9:55	Purge End Time:	10:00	
Depth to Bottom (m):	11.034	Purge Interval Time ( ) min, Vol. (L) L	9:59	10:02	10:05	10:08
Submerged Tubing Depth (m):	10.500	Depth to water (m)	1.265	Same	Same	Same
Well Stick-up Height (m):	1.295m	Temperature (°C)	4.8	4.5	4.4	4.4
Estimated Water Volume (L):	22L	pH (pH Units)	6.44	6.45	6.44	6.44
<p>DTB - DTW) x (πr<sup>2</sup>1000 (for well diameter) = 1 well volume                      (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume                      (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:</p>	Cond. (µs/cm)	2376	2378	2380	2378	
	Specific Cond. (µs/cm)	3899	3913	3919	3919	
	Redox (mV)	-29.8	-32.1	-34.1	-35.5	
	DO (mg/L)	0.01	0.03	0.05	0.03	
	DO (%)	0.1	0.3	0.4	0.2	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Slightly hazy no odor	Same	Same	Same	
	Turbidity (NTU):	-	-	-	27.2	
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	
	Cumulative Purge Volume (L):	0.5	1.0	1.5	2.0	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	10:07	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓			
Sample Time	10:10					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): PO1-11  
 Sample Date (Con't): Sept 23 2016  
 Sample Time (Con't): 10:10

**General Notes (Condition of well, or other features):**

- good recovery  
 - no draw down

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P03-04-02	Project Number:	1343-005.31	Date:	27-Sept-16.
Station Status:	good	Client:	GY - AAM	Samplers:	J.C. Scott
Piezometer Diameter:	0.5"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	☁️ clouds, slight breeze.
UTM Location:	Zone 18E, 698194E, 6913367	Waypoint:	GPS <u>AN ID N/A</u>	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. 1 Nos. 538-540	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	micro (manual)			
Initial Depth to Water (m):	11.988	Purge Start Time:	8:32	Purge End Time:	8:46
Depth to Bottom (m):	48.680	Purge Interval Time ( ) min, Vol. ( ) L	0.5	8:36	8:41
Submerged Tubing Depth (m):	~40	Depth to water (m)	-	-	-
Well Stick-up Height (m):	0.595	Temperature (°C)	4.4	4.6	3.8
Estimated Water Volume (L):	~4.7	pH (pH Units)	6.71	6.36	6.40
<p> <math>0.5 = 0.027 \times 1,000 = 27</math>  <math>(\pi \times 0.027^2) \times 48.680 = 0.1267</math>  <math>27 \times 0.1267 = 3.42</math>  <math>3.42 + 1.28 = 4.7</math> </p> <p> <math>DTB - DTW \times (\pi r^2) \times 1000</math> (for well diameter) = 1 well volume  <math>(DTB - DTW) \times 8.1</math> (for 4" well diameter) = 1 well volume  <math>(DTB - DTW) \times 2</math> (for 2" well diameter) = 1 well volume  <math>(DTB - DTW) \times 1.1</math> (for 1.5" diameter) = 1 well volume  <math>(DTB - DTW) \times 0.5</math> (for 1" diameter) = 1 well volume                 </p> <p>                     Calculations:  <math>\frac{48.680}{11.988} = 4.06</math>  <math>4.06 \times 1.1 = 4.47</math>  <math>4.47 + 0.23 = 4.7</math> </p>	Cond. (µs/cm)	1241	1297	1323	
	Specific Cond. (µs/cm)	2043	2125	2230	
	Redox (mV)	176.4	182.6	180.3	
	DO (mg/L)	1.31	1.34	1.91	
	DO (%)	10.3	10.8	15.6	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no colour	same	same	
	Turbidity (NTU):	-	-	29.7	
	Interval Purge Volume (L):	0.5	0.5	0.5	
	Cumulative Purge Volume (L):	0.5	1.0	1.5	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	8:45	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	micro (manual)			
Sample Time	8:50				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P03-04-02  
 Sample Date (Con't): Sept. 24, 2016  
 Sample Time (Con't): 9:50

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

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- 1/4" HDPE (Peristaltic) 17 ft.
- 3/8" HDPE (Microwaterra) 170 ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves 1 each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>125 ml</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>75 ml</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

35

Sample Site:	P03-04-04	Project Number:	1343-005.31	Date:	24-Sept-16						
Station Status:	gond	Client:	GY - AAM	Samplers:	JOBERTH						
Piezometer Diameter:	0.5"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 0°C						
UTM Location:	Z08E.0581967 N. 6913367	Waypoint:	GPS AN ID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam. 1 Nos. 538-540	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo						
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	micro (manual)									
Initial Depth to Water (m):	12:319	Purge Start Time:	9:14	Purge End Time:	9:47						
Depth to Bottom (m):	36.280	Purge Interval Time ( ) min, Vol. ( ) L	9:18	9:21	9:23	9:26	9:28	9:29	9:31	9:38	9:41
Submerged Tubing Depth (m):		Depth to water (m)	-	-	-	-	-	-	-	-	-
Well Stick-up Height (m):	0.625	Temperature (°C)	3.7	4.6	4.4	4.4	4.5	4.2	4.4	3.8	4.6
Estimated Water Volume (L):	~3.0	pH (pH Units)	6.67	6.60	6.59	6.57	6.60	6.65	6.63	7.01	7.04
<p>535 1/25 0.1267</p> <p>DTB - DTW) x (πr<sup>2</sup>1000 (for well diameter) = 1 well volume            (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:  <math>\frac{36.280}{12.319} \times 0.1267 = 3.04</math></p>	Cond. (µs/cm)	943	929	922	921	921	910	916	885	949	
	Specific Cond. (µs/cm)	1597	1520	1525	1519	1514	1513	1516	1488	1555	
	Redox (mV)	131.4	115.5	104.2	93.3	78.1	63.5	53.2	-41.8	-46.7	
	DO (mg/L)	3.77	4.18	3.99	2.56	3.28	3.11	2.96	2.90	3.61	
	DO (%)	28.4	32.9	30.7	19.8	25.5	23.9	23.0	22.0	28.2	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	same	same	same	same	same	same	very silty	same	
	Turbidity (NTU):	-	-	-	-	-	-	-	-	-	
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.5	0.5	
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5L	2.0L	2.5	3.0	3.5	5.0	5.5	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	9:46	Waterra	Peristaltic	Disp. Bailer	Redi-flo						
YSI Meter or Pen Unit?:	<input type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	micro (manual)									
Sample Time	9:50										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.



Sample Site (Con't): P03-04-04  
 Sample Date (Con't): Sept. 24, 2016  
 Sample Time (Con't): 9:50

Additional Purge Data:			
Purge Interval Time ( ) min, Vol. ( ) L	9:44	9:45	9:46
Depth to water (m)	-	-	-
Temperature (°C)	4.8	4.1	4.2
pH (pH Units)	7.06	7.06	7.12
Cond. (µs/cm)	957	965	964
Specific Cond. (µs/cm)	1572	1606	1602
Redox (mV)	-51.2	-53.9	-55.7
DO (mg/L)	3.61	3.05	3.15
DO (%)	27.9	22.3	23.2
Appearance & Odour (Clear, Silty, HC odours, etc.)	same	same	same
Turbidity (NTU)	-	-	7.4
Interval Purge Volume (L)	0.5	0.5	0.5
Cumulative Purge Volume (L):	6.0	6.5	7.0

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

Consumables:

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) 110 ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 1/2 ft.
- 0.45 micron inline filters 1 each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves 1 each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input type="checkbox"/> HNO <sub>3</sub>	<u>125 ml</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>750 ml</u>	

9:46

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P03-04-06	Project Number:	1343-005.31	Date:	21 Sept - 16
Station Status:	600D	Client:	GY - AAM	Samplers:	AN/MM
Piezometer Diameter:	0.5"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	sunny, breezy
UTM Location:	Zone E. 0581967N. 6913367	Waypoint:	GPS AN ID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. 1 Nos. 538-540	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	MICRO.			
Initial Depth to Water (m):	12.260	Purge Start Time:	15:07	Purge End Time:	15:12
Depth to Bottom (m):	18.480	Purge Interval Time ( ) min, Vol. ( ) L	15:08 15:10 15:12		
Submerged Tubing Depth (m):	~16	Depth to water (m)	— / — / —		
Well Stick-up Height (m):	0.675	Temperature (°C)	6.2 5.5 5.4		
Estimated Water Volume (L):	~0.79	pH (pH Units)	6.53 6.33 6.32		
<p>535 14</p> <p>0.1267</p> <p>DTB - DTW x (πr<sup>2</sup>1000 (for well diameter) = 1 well volume            (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:  <math>\frac{18.480 - 12.260}{0.675} \times 0.1267 = 0.788</math></p>	Conductivity (µs/cm)	3125 3114 3105			
	Specific Cond. (µs/cm)	4877 4959 4964			
	Redox (mV)	-39.8 -55.1 -53.5			
	DO (mg/L)	1.32 1.21 1.23			
	DO (%)	10.8 9.9 9.9			
	Appearance & Odour (Clear, Silty, HC odours, etc.)	cloudy turbid smelly / clear / clear			
	Turbidity (NTU):	✓ / ✓ 11.21			
	Interval Purge Volume (L):	0.8 0.8 0.8			
	Cumulative Purge Volume (L):	0.8 1.6 2.4			
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	15:13	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit				
Sample Time	15:15	MICRO.			

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): D03-04-06.

 Sample Date (Con't): 21-sept-16.

 Sample Time (Con't): 15:15

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

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

Consumables:

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) 65. ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves 1 each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>120</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1,000</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P03-05-02	Project Number:	1343-005.31	Date:	Sept. 21, 2016	
Station Status:	good	Client:	GY - AAM	Samplers:	JC BCA	
Piezometer Diameter:	1/2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny 6°C	
UTM Location:	Z08E.0582484N.6913115	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam. #2 Nos. 0370-0372	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	would suggest micro Waterra	✓			
Initial Depth to Water (m):	8.374	Purge Start Time:	15:05	Purge End Time:	15:53	
Depth to Bottom (m):	37.777	Purge Interval Time ( ) min, Vol. (L)	15:12	15:23	15:32	
Submerged Tubing Depth (m):	37.250	Depth to water (m)	-	-	-	
Well Stick-up Height (m):	0.785m	Temperature (°C)	13.4	12.3	12.3	
Estimated Water Volume (L):	7.351 L	pH (pH Units)	6.23	5.93	5.81	
DTB - DTW x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume x 0.25 for 1/2" Calculations:	Cond. (µs/cm)	1525	1576	1652	1668	
	Specific Cond. (µs/cm)	1957	2098	2182	2237	2250
	Redox (mV)	-25.6	5.7	17.5	20.7	23.5
	DO (mg/L)	1.50	0.79	0.62	0.54	0.49
	DO (%)	14.4	7.3	5.7	5.0	4.7
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	same	same	same	same
	Turbidity (NTU):	-	-	-	-	1.67
	Interval Purge Volume (L):	0.250L	0.250	0.250	0.250	0.250
	Cumulative Purge Volume (L):	0.250	0.5	0.750	1.0	1.250
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	15:55	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓			
Sample Time	15:55					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P03-05-02

Sample Date (Con't): Sept. 21, 2016

Sample Time (Con't): 15:55

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- pump rate very slow due to lower water table
- Able to acquire stable parameters before sampling
- Would suggest to switch to micro water

**Consumables:**

- 1/4" HDPE (Peristaltic) 130 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.6 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	500	Min volume collected due to very slow pump rate

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P03-05-04	Project Number:	1343-005.31	Date:	Sept. 21/16							
Station Status:	good	Client:	GY - AAM	Samplers:	JC & CH							
Piezometer Diameter:	1/2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny 62							
UTM Location:	208 E. 0582184 N. 6913115	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok							
Photos:	Cam. <sup>ELP</sup> 2 Nos 0373-0375	Purge Method:										
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other						
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	should use micro waterra	✓									
Initial Depth to Water (m):	8.563	Purge Start Time:	16:27	Purge End Time:	17:10							
Depth to Bottom (m):	24.523	Purge Interval Time ( ) min, Vol. ( ) L	0.2L	16:38	16:44	16:50	16:56	17:01	17:09			
Submerged Tubing Depth (m):	24.000	Depth to water (m)	-	-	-	-	-	-	-			
Well Stick-up Height (m):	0.821	Temperature (°C)	11.9	12.2	11.4	11.6	11.2	11.4				
Estimated Water Volume (L):	4.056 L	pH (pH Units)	6.19	5.94	5.87	5.85	5.84	5.84				
DTB - DTW x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume x 0.25 for 1/2" Calculations:	Cond. (µs/cm)	1630	1694	1686	1630	1631	1593					
	Specific Cond. (µs/cm)	2178	2239	2268	2185	2221	2155					
	Redox (mV)	-1.3	13.4	19.5	22.1	25.8	27.4					
	DO (mg/L)	0.82	0.76	0.74	0.32	0.33	0.33					
	DO (%)	7.7	7.1	6.8	2.9	3.0	3.2					
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	same	same	same	same	same					
	Turbidity (NTU):	-	-	-	-	-	0.38					
	Interval Purge Volume (L):	0.2L	0.2L	0.2L	0.2L	0.2L	0.2L					
	Cumulative Purge Volume (L):	0.2L	0.4L	0.6L	0.8L	1.0L	1.2L					
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:									
Time logged on YSI (24hr):	17:10	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other						
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓									
Sample Time	17:12											

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P03-05-04  
 Sample Date (Con't): Sept. 21, 2016  
 Sample Time (Con't): 17:12

**General Notes (Condition of well, or other features):**

- Low water table. For peristaltic, flow rate very slow  
 - Able to collect stable readings before sampling  
 - would suggest micro watererra next event.

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 80 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 1.0 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	500ml	min volume collected due to low pump rate

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P03-05-05	Project Number:	1343-005.31	Date:	Sept. 21/16				
Station Status:	good	Client:	GY - AAM	Samplers:	JC & CH				
Piezometer Diameter:	1/2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny 6°C				
UTM Location:	ZOB E 0582484 N 6913115	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok				
Photos:	Cam. 2 Nos 0376 0378	Purge Method:							
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other			
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	micro✓							
Initial Depth to Water (m):	8.622	Purge Start Time:	10:36	Purge End Time:	10:52				
Depth to Bottom (m):	22.611	Purge Interval Time ( ) min, Vol. ( ) L	10:38	10:40	10:43	10:45	10:46	10:48	10:50
Submerged Tubing Depth (m):	22.111 m	Depth to water (m)	-	-	-	-	-	-	-
Well Stick-up Height (m):	0.840	Temperature (°C)	4.8	4.9	5.2	5.1	4.9	5.1	5.1
Estimated Water Volume (L):	3.497 L	pH (pH Units)	6.71	6.51	6.35	6.22	6.17	6.15	6.14
DTB - DTW x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	1973	2212	3009	4035	4449	4599	4806	
	Specific Cond. (µs/cm)	3051	3589	4844	6526	7218	7426	7755	
	Redox (mV)	-1.9	-32.7	-32.9	-31.5	-32.5	-33.9	-34.7	
	DO (mg/L)	2.20	1.83	2.21	1.83	1.87	2.02	2.48	
	DO (%)	17.1	14.2	17.3	14.4	14.9	16.4	19.5	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	no odour	no odour	same	same	same	same	same	
	Turbidity (NTU):	-	-	-	-	-	-	1910	
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
	Cumulative Purge Volume (L):	0.5	1.0L	1.5L	2.0	2.5	3.0	3.5	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:						
Time logged on YSI (24hr):	10:51	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other			
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	micro✓							
Sample Time	10:55								

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P03-05-05

Sample Date (Con't): Sept. 24, 2010

Sample Time (Con't): 10:55

**General Notes (Condition of well, or other features):**

- tried low flow sampling, water table too low.  
will return with micro watterra (Sept 21)  
- returned Sept. 24th & sampled  
with micro watterra

**Additional Purge Data:**

Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 80 ft.
- 3/8" HDPE (Microwatterra) 80 ft.
- 5/8" HDPE (Watterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves 1 each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	750 ml	

26.5

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P03-06-01	Project Number:	1343-005.31	Date:	21-sept-16	
Station Status:	good	Client:	GY - AAM	Samplers:	AN/MM	
Piezometer Diameter:	0.5	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny w breeze	
UTM Location:	Z08 E 0582454 N 0913485	Waypoint:	GPS AN ID N/A	Recovery:	<input type="checkbox"/> Good <input type="checkbox"/> Bad <input checked="" type="checkbox"/> Ok	
Photos:	Cam. 1 Nos. 541-543	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	micro			Other	
Initial Depth to Water (m):	16.120	Purge Start Time:	17:31	Purge End Time:	11:51	
Depth to Bottom (m):	26.560	Purge Interval Time ( ) min, Vol. ( ) L	17:36	17:39		
Submerged Tubing Depth (m):		Depth to water (m)	—	—		
Well Stick-up Height (m):	0.80	Temperature (°C)	6.8	6.5	Well purged	
Estimated Water Volume (L):	1.3	pH (pH Units)	3.62	3.97	DRY	
<p>DTB - DTW) x (πr<sup>2</sup>)1000 (for well diameter) = 1 well volume            (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:  <math>\frac{26.560 - 16.120}{1.3} = 10.44 \times 0.1267 = 1.32</math></p>	Cond. (µs/cm)	3203	2217			
	Specific Cond. (µs/cm)	4904	3416			
	Redox (mV)	327.2	285.5			
	DO (mg/L)	4.33	4.66			
	DO (%)	36.0	38.2			
	Appearance & Odour (Clear, Silty, HC odours, etc.)	cloudy + brown + nitric	Same.	17:39 (Sept 21)		
	Turbidity (NTU):	—	—		11.0	
	Interval Purge Volume (L):	1.3	0.5			
	Cumulative Purge Volume (L):	1.3	1.8			
	YSI Field Parameters Logged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	not logged	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
YSI Meter or Pen Unit?:	<input type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	micro			Other	
Sample Time	11:52					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.



Sample Site (Con't): P03-06-01  
 Sample Date (Con't): Sept. 24, 2016  
 Sample Time (Con't): 11:52

**General Notes (Condition of well, or other features):**

→ came back to sample on sept 24th.

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125ml.	
1 L (plastic)	General Chemistry	500 ml	-	-	750 L.	

# GROUNDWATER SAMPLE COLLECTION SHEET

23.6

Sample Site:	R03-06-2	Project Number:	1343-005.31	Date:	21-Sept-16
Station Status:	GOOD	Client:	GY - AAM	Samplers:	AN
Piezometer Diameter:	0.5"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	breezy
UTM Location:	ZON E. 0581962 N. 6913382	Waypoint:	GPS AN ID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. 1 Nos. 541-543	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	micro			Other
Initial Depth to Water (m):	10.725	Purge Start Time:	17:01	Purge End Time:	17:12
Depth to Bottom (m):	23.640	Purge Interval Time ( ) min, Vol. ( ) L	17:03	17:08	17:12
Submerged Tubing Depth (m):	~20	Depth to water (m)	—	—	—
Well Stick-up Height (m):	0.775	Temperature (°C)	8.0	4.8	4.7
Estimated Water Volume (L):	1.6	pH (pH Units)	4.16	4.55	4.61
<p>DTB - DTW) x (πr<sup>2</sup>)1000 (for well diameter) = 1 well volume            (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:  <math>\frac{23.640 - 10.725}{0.5} \times 0.19635 = 2.915</math>  <math>2.915 \times 0.567 = 1.64</math></p>	0.1267	Cond. (µs/cm)	3565	3396	3435
	Specific Cond. (µs/cm)	6282	5539	5602	
	Redox (mV)	228.7	196.4	182.4	
	DO (mg/L)	1.23	0.95	1.07	
	DO (%)	10.3	7.5	8.6	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	grey-brown clear	grey-brown lots of sediment	same	
	Turbidity (NTU):	—	—	2055	AV
	Interval Purge Volume (L):	1.6	1.6	1.6	
	Cumulative Purge Volume (L):	1.6	3.2	4.8	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	17:13	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	micro			Other
Sample Time	17:15				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P03-06-2

Sample Date (Con't): 21-Sept-16

Sample Time (Con't): 17:15

**General Notes (Condition of well, or other features):**

- drawdown not measured b/c no space for the tape.

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	03-06-03	Project Number:	1343-005.31	Date:	24-Sept-16						
Station Status:	good	Client:	GY - AAM	Samplers:	JC, CH						
Piezometer Diameter:	0.5	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 10°C						
UTM Location:	ZONE 0582455 N. 613484	Waypoint:	GPS AN ID _____	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam. 1 Nos. 541-543	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	micro									
Initial Depth to Water (m):	5.310	Purge Start Time:	12:32	Purge End Time:	12:56						
Depth to Bottom (m):	20.870	Purge Interval Time ( ) min, Vol. ( ) L	0.5								
Submerged Tubing Depth (m):	20.370	Depth to water (m)	-	-	-	-	-	-	-	-	
Well Stick-up Height (m):	0.83 m	Temperature (°C)	6.0	5.5	5.2	5.1	5.1	4.9	5.0	5.7	5.5
Estimated Water Volume (L):	1.97L	pH (pH Units)	4.27	5.18	5.47	5.58	5.63	5.66	5.66	5.68	5.68
<p>DTB - DTW) x (πr<sup>2</sup>)1000 (for well diameter) = 1 well volume            (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:  <math>\frac{20.870 - 5.310}{15.56} \times 0.1267 = 1.97</math></p>	Cond. (µs/cm)	3271	3340	3366	3421	3420	3421	3430	3481	3423	
	Specific Cond. (µs/cm)	5130	5327	5413	5518	5517	5540	5551	5515	5457	
	Redox (mV)	105.9	63.9	52.6	48.1	44.0	38.7	29.9	27.0	21.8	
	DO (mg/L)	1.51	2.57	1.81	1.82	2.02	2.13	1.60	1.98	1.60	
	DO (%)	12.1	20.5	14.3	14.5	16.1	17.0	12.5	16.0	13.0	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	same	same	same	same	same	same	same	same	
	Turbidity (NTU):	-	-	-	-	-	-	-	-	-	
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
	Cumulative Purge Volume (L):	0.5	1.0	1.5	2.0	2.5	3.0	3.5	4.0	4.5	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	12:55	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	micro									
Sample Time	13:00										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.



Sample Site (Con't): P03-06-03  
 Sample Date (Con't): Sept. 24, 2016  
 Sample Time (Con't): 13:00

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

Consumables:

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) 65 ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters 1 each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves 1 each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

Additional Purge Data:										
Purge Interval Time ( ) min, Vol. ( ) L	<u>0.5</u>	<u>12:53</u>								
Depth to water (m)	<u>-</u>									
Temperature (°C)	<u>5.4</u>									
pH (pH Units)	<u>5.70</u>									
Cond. (µs/cm)	<u>3466</u>									
Specific Cond. (µs/cm)	<u>571</u>									
Redox (mV)	<u>21.5</u>									
DO (mg/L)	<u>1.80</u>									
DO (%)	<u>14.1</u>									
Appearance & Odour (Clear, Silty, HC odours, etc.)	<u>same</u>									
Turbidity (NTU)	<u>24.4</u>									
Interval Purge Volume (L)	<u>0.5</u>									
Cumulative Purge Volume (L):	<u>5.0</u>									

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>125 ml</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1.0L</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

16.46

Sample Site:	P03-06-04	Project Number:	1343-005.31	Date:	Sep 24, 2016		
Station Status:	good	Client:	GY - AAM	Samplers:	AJC, BCH		
Piezometer Diameter:	0.5"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Chilly 1°C		
UTM Location:	ZOB E 0582456 N. 6913485	Waypoint:	GPS AN ID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok		
Photos:	Cam. 1 Nos. 541-543	Purge Method:					
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	micro					
Initial Depth to Water (m):	12.040 m	Purge Start Time:	13:07		Purge End Time:	13:19	
Depth to Bottom (m):	17.560 m	Purge Interval Time ( ) min, Vol. ( ) L	0.5				
Submerged Tubing Depth (m):	17.060 m	Depth to water (m)	13:10	13:13	13:15	13:17	13:18
Well Stick-up Height (m):	0.88 m	Temperature (°C)	-	-	-	-	-
Estimated Water Volume (L):	0.70	pH (pH Units)	5.1	5.3	5.3	5.2	4.7
<p>DTB - DTW) x (πr<sup>2</sup> 1000 (for well diameter) = 1 well volume            (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:  <math>\frac{17.560 - 12.040}{5.52} \times 0.1267 = 0.69</math></p>	0.1267	Cond. (µs/cm)	6.05	6.27	6.33	6.35	6.37
	Specific Cond. (µs/cm)	2003	2003	2070	2065	2067	
	Redox (mV)	3219	3212	3310	3317	3363	
	DO (mg/L)	-15.1	-39.4	-43.0	-48.1	-49.9	
	DO (%)	1.85	1.96	1.60	1.97	2.01	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	14.3	15.2	12.7	15.3	15.5	
	Turbidity (NTU):	clear no odour	same	same	same	same	
	Interval Purge Volume (L):	-	-	-	-	29.7	
	Cumulative Purge Volume (L):	0.5	0.5	0.5	0.5	0.5	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:				
Time logged on YSI (24hr):	13:19	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	micro					
Sample Time	13:20						

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.



Sample Site (Con't): PO3-06-04

Sample Date (Con't): Sept. 24, 2016

Sample Time (Con't): 13:20

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

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) 55 ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves 1 each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>125 ml</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1.0L</u>	

20870  
17.560



# GROUNDWATER SAMPLE COLLECTION SHEET

15.140  
48.578

Sample Site:	P03-06-05	Project Number:	1343-005.31	Date:	Sept. 24, 2016				
Station Status:	good	Client:	GY - AAM	Samplers:	4 JC BCH				
Piezometer Diameter:	0.5"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	cold breeze -1°C				
UTM Location:	Z. 08 E. 0582455 N. 6913486	Waypoint:	GPS AN ID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok				
Photos:	Cam. 1 Nos. 541-543	Purge Method:							
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other			
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	micro							
Initial Depth to Water (m):	9.730	Purge Start Time:	11:23			Purge End Time:	11:43		
Depth to Bottom (m):	15.140	Purge Interval Time ( ) min, Vol. ( ) L	0.5						
Submerged Tubing Depth (m):	14.600m	Depth to water (m)	11:29	11:31	11:33	11:34	11:37	11:39	11:41
Well Stick-up Height (m):	0.91	Temperature (°C)	-	-	-	-	-	-	-
Estimated Water Volume (L):	0.7	pH (pH Units)	5.4	5.6	5.5	5.5	5.6	5.4	5.3
DTB - DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\frac{15.140 - 9.730}{0.5} \times 0.1267 = 0.71$	Cond. (µs/cm)	6.08	6.23	6.30	6.33	6.35	6.36	6.39	
	Specific Cond. (µs/cm)	3632	3594	3426	3340	3253	2994	2962	
	Redox (mV)	5812	5715	5466	5322	5163	4793	4743	
	DO (mg/L)	-0.9	-26.1	-43.0	-53.7	-62.4	-64.6	-68.4	
	DO (%)	1.40	1.56	1.73	2.13	2.52	2.05	2.02	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	11.4	12.5	14.0	17.3	19.8	16.5	16.1	
	Turbidity (NTU):	high turbid to clear	same	same	same	same	same	same	
	Interval Purge Volume (L):	-	-	-	-	-	-	1866	
	Cumulative Purge Volume (L):	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:						
Time logged on YSI (24hr):	11:42	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other			
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	micro							
Sample Time	11:45								

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.



Sample Site (Con't): P03-06-05

Sample Date (Con't): Sept. 24, 2016

Sample Time (Con't): 11:45

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

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) 55 ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves 1 each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input type="checkbox"/> HNO <sub>3</sub>	<u>125 ml</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>750 ml</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P03-04-02	Project Number:	1343-005.31	Date:	Sept. 23, 2016						
Station Status:	good	Client:	GY - AAM	Samplers:	JC, CH						
Piezometer Diameter:	1/2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 30C						
UTM Location:	Z08 E. 0579740 N. 6914409	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Can. ELG Nos 0463-0469	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓								
Initial Depth to Water (m):	2.800 m	Purge Start Time:	16:17	Purge End Time:							
Depth to Bottom (m):	32.940 m	Purge Interval Time ( ) min, Vol. ( ) L	0.5-1.0	16:20	16:22	16:24	16:28	16:32	16:35	16:38	16:40
Submerged Tubing Depth (m):	32.440 m	Depth to water (m)	-	-	-	-	-	-	-	-	-
Well Stick-up Height (m):	0.460 m	Temperature (°C)	4.8	4.5	4.5	4.3	4.3	4.2	4.2	4.2	4.2
Estimated Water Volume (L):	7.5 L	pH (pH Units)	6.95	6.88	6.87	6.87	6.88	6.88	6.87	6.87	6.87
DTB - DTW x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	1072	1132	1163	1171	1173	1171	1174	1171	1171	
	Specific Cond. (µs/cm)	1752	1861	1914	1938	1943	1944	1945	1944	1944	
	Redox (mV)	46.2	34.8	16.2	-6.9	-19.8	-25.9	-30.9	-32.9	-32.9	
	DO (mg/L)	0.49	0.30	0.21	0.06	0.06	0.06	0.07	0.07		
	DO (%)	3.6	2.3	1.7	0.4	0.6	0.2	0.3	0.5		
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	same	same	same	same	same	same	same		
	Turbidity (NTU):	-	-	-	-	-	-	-	1.85		
	Interval Purge Volume (L):	0.5	0.5	0.5	1.0	1.0	1.0	1.0	1.0		
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5L	2.5L	3.5L	4.5L	5.5L	6.5L		
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	16:41	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓								
Sample Time	16:45										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P03-09-02  
 Sample Date (Con't): Sept. 23, 2016  
 Sample Time (Con't): 16:45

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

Blank area for General Notes.

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	1.0 L	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P03-09-04	Project Number:	1343-005.31	Date:	Sept. 23, 2016						
Station Status:	good	Client:	GY - AAM	Samplers:	JC BCH						
Piezometer Diameter:	1/2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 3°C						
UTM Location:	208 E. 0577940 N 6814409	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam. <u>FL2</u> Nos. <u>0463-0469</u>	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓								
Initial Depth to Water (m):	3.154 m	Purge Start Time:	16:48	Purge End Time:							
Depth to Bottom (m):	24.436 m	Purge Interval 0.5-1.0 Time ( ) min, Vol. ( ) L	16:50	16:51	16:53	16:56	16:59	17:01	17:03	17:06	17:09
Submerged Tubing Depth (m):	24.0 m	Depth to water (m)	-	-	-	-	-	-	-	-	-
Well Stick-up Height (m):	0.580 m	Temperature (°C)	4.3	4.3	4.3	4.2	4.2	4.2	4.1	4.1	4.1
Estimated Water Volume (L):	5.3 L	pH (pH Units)	6.83	6.79	6.76	6.74	6.73	6.73	6.72	6.72	6.73
DTB - DTW x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	1189	1244	1290	1311	1317	1318	1317	1321	1320	
	Specific Cond. (µs/cm)	1968	2069	2141	2176	2186	2189	2191	2194	2192	
	Redox (mV)	-47.4	-40.0	-31.7	-25.8	-20.1	-18.4	-14.5	-10.8	-8.4	
	DO (mg/L)	0.17	0.11	0.05	0.01	0.02	0.0	0.0	0.0	0.0	
	DO (%)	1.4	0.9	0.6	0.1	0.1	0.0	0.1	0.1	0.1	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	same	same	same	same	same	same	same	same	
	Turbidity (NTU):	-	-	-	-	-	-	-	-	-	
	Interval Purge Volume (L):	0.5	0.5	0.5	1.0	1.0	1.0	1.0	1.0	1.0	
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5	2.5	3.5L	4.5L	5.5L	6.5L	7.5	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	17:17	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓								
Sample Time	17:20										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P03-09-04  
 Sample Date (Con't): Sept. 23, 2016  
 Sample Time (Con't): 17:20

**General Notes (Condition of well, or other features):**

- ORP slow to stabilize

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L	17:11	17:15	17:17						
Depth to water (m)	-	-	-						
Temperature (°C)	4.1	4.1	4.1						
pH (pH Units)	6.72	6.72	6.72						
Cond. (µs/cm)	1321	1318	1318						
Specific Cond. (µs/cm)	2169	2195	2195						
Redox (mV)	-49	-1.1	0.5						
DO (mg/L)	0.0	0.0	0.0						
DO (%)	0.00	0.00	0.00						
Appearance & Odour (Clear, Silty, HC odours, etc.)	Same	same	same						
Turbidity (NTU)	-	-	1.26						
Interval Purge Volume (L)	1.0	1.0	1.0						
Cumulative Purge Volume (L):	8.5	9.5	10.5						

**Consumables:**

- 1/4" HDPE (Peristaltic) 0.5 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	1.0 L	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P03-09-06	Project Number:	1343-005.31	Date:	Sept. 23 2016						
Station Status:	good	Client:	GY - AAM	Samplers:	JC BCH						
Piezometer Diameter:	1/2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Willy 3°C						
UTM Location:	Z08 E0579940 N6914409	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam. <del>2</del> Nos. 0463-469	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓								
Initial Depth to Water (m):	3.228 m	Purge Start Time:	17:24	Purge End Time:							
Depth to Bottom (m):	19.572 m	Purge Interval Time ( ) min, Vol. ( ) L	0.5	17:26	17:28	17:29	17:30				
Submerged Tubing Depth (m):	19.072 m	Depth to water (m)	-	-	-	-					
Well Stick-up Height (m):	0.630 m	Temperature (°C)	4.3	4.2	4.2	4.2					
Estimated Water Volume (L):	4.01 L.	pH (pH Units)	6.79	6.77	6.76	6.75					
<p>DTB - DTW) x (πr<sup>2</sup>)1000 (for well diameter) = 1 well volume            (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:</p>	Cond. (µs/cm)	1197	1290	1303	1309						
	Specific Cond. (µs/cm)	1998	2141	2163	2172						
	Redox (mV)	6.7	6.1	6.1	6.2						
	DO (mg/L)	0.32	0.10	0.10	0.09						
	DO (%)	2.5	0.8	0.6	0.5						
	Appearance & Odour (Clear, Silty, HC odours, etc.)	mod turbid no odour	same	same	same						
	Turbidity (NTU):	-	-	-	3.08						
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5						
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5L	2.0L						
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	17:30	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓								
Sample Time	17:35										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P03-09-06

Sample Date (Con't): Sept. 23, 2016

Sample Time (Con't): 17:35

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

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

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	1.0 L	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P03-01-08	Project Number:	1343-005.31	Date:	Sept. 23, 2016	
Station Status:	good	Client:	GY - AAM	Samplers:	JC & CH	
Piezometer Diameter:	1 1/2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 3°C	
UTM Location:	ZOB EP579940 N. (2914409)	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam: FR Nos 0163-0469	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
Field Blank Collected:	<input type="checkbox"/> Yes <input type="checkbox"/> No Name _____		✓			
Initial Depth to Water (m):	3.611 m	Purge Start Time:	17:37	Purge End Time:		
Depth to Bottom (m):	10.266 m	Purge Interval Time ( ) min, Vol. ( ) L	17:39	17:40	17:41	
Submerged Tubing Depth (m):	9.800 m	Depth to water (m)	-	-	-	
Well Stick-up Height (m):	0.650 m	Temperature (°C)	4.2	4.1	4.1	
Estimated Water Volume (L):	1.66 L	pH (pH Units)	6.72	6.69	6.69	
DTB - DTW x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	1364	1386	1392	1396	
	Specific Cond. (µs/cm)	2266	2305	2319	2324	2324
	Redox (mV)	12.6	13.9	14.6	15.1	15.5
	DO (mg/L)	0.32	0.14	0.02	0.01	0.03
	DO (%)	2.5	0.8	0.3	0.1	0.2
	Appearance & Odour (Clear, Silty, HC odours, etc.)	turbid no odour	same	same	same	same
	Turbidity (NTU):	turbid	-	-	-	8.69
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	0.5
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5L	2.0L	2.5L
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	17:44	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓			
Sample Time	17:47					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P03-09-08  
 Sample Date (Con't): Sept. 23, 2016  
 Sample Time (Con't): 17:47

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

Consumables:

- 1/4" HDPE (Peristaltic) 30 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 1/2 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	1.0 L	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P03-09-09	Project Number:	1343-005.31	Date:	Sept. 23, 2016
Station Status:	good	Client:	GY - AAM	Samplers:	JC & CH
Piezometer Diameter:	1/2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	cloudy 3°C
UTM Location:	Z08E0579940N.6914409	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam: <del>ELF</del> Nos. 0463-0469	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input type="checkbox"/> No Name _____		✓		
Initial Depth to Water (m):	3.942 m	Purge Start Time:	17:49	Purge End Time:	
Depth to Bottom (m):	8.392 m	Purge Interval Time ( ) min, Vol. ( ) L	0.5	17:52	17:54
Submerged Tubing Depth (m):	7.900 m	Depth to water (m)	-	17:56	17:57
Well Stick-up Height (m):	0.670 m	Temperature (°C)	4.3	4.3	4.2
Estimated Water Volume (L):	2.23 L	pH (pH Units)	6.74	6.72	6.70
DTB - DTW x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Conductivity (µs/cm)	1389	1390	1391	1394
	Specific Cond. (µs/cm)	2296	2301	2307	231
	Redox (mV)	20.3	21.3	22.0	22.5
	DO (mg/L)	0.01	0.0	0.0	0.0
	DO (%)	0.1	0.0	0.0	0.0
	Appearance & Odour (Clear, Silty, HC odours, etc.)	turbid no odours	same	same	same
	Turbidity (NTU):	-	-	-	17.4
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5L	2.0L
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	17:58	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓		
Sample Time	18:00				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P03-09-09

Sample Date (Con't): Sept. 23, 2016

Sample Time (Con't): 18:00

**Additional Purge Data:**

Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input type="checkbox"/> Field Filtered	<input type="checkbox"/> HNO <sub>3</sub>		
1 L (plastic)	General Chemistry	500 ml	-	-		

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P05-01-01	Project Number:	1343-005.31	Date:	Sept. 23, 2016						
Station Status:	Good	Client:	GY - AAM	Samplers:	JC 3 CH						
Piezometer Diameter:	1/2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 2°C						
UTM Location:	Z08E058005 (N. 6914512)	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam. <u>FLS</u> Nos. 0430 - 0432	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓								
Initial Depth to Water (m):	1.312	Purge Start Time:	11:38			Purge End Time:	12:05				
Depth to Bottom (m):	26.243	Purge Interval Time ( ) min, Vol. ( ) L	11:40	11:42	11:44	11:46	11:48	11:51	11:55	12:00	12:03
Submerged Tubing Depth (m):	21.243	Depth to water (m)	11:40	-	-	-	-	-	-	-	-
Well Stick-up Height (m):	0.455 m	Temperature (°C)	5.7	5.7	5.5	5.4	5.3	5.2	5.2	5.4	5.4
Estimated Water Volume (L):	6.23 L	pH (pH Units)	6.46	6.45	6.47	6.47	6.46	6.44	6.39	6.35	6.33
DTB - DTW x (πr <sup>2</sup> ·1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	1988	1940	1907	1911	1919	1964	2057	2148	2177	
	Specific Cond. (µs/cm)	3149	3080	3041	3055	3080	3162	3292	3432	3475	
	Redox (mV)	-28.6	-24.7	-21.4	-17.7	-14.7	-10.9	-5.5	-1.2	0.0	
	DO (mg/L)	0.80	0.40	0.22	0.17	0.15	0.15	0.00	0.04	0.08	
	DO (%)	6.3	3.2	2.0	1.4	1.2	1.0	0.0	0.6	0.7	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Silty no odour	same	same	same	same	same	same	same	same	
	Turbidity (NTU):	-	-	-	-	-	-	-	-	-	
	Interval Purge Volume (L):	0.5L	0.5L	0.5L	0.5	0.5	0.5	1.0	0.5	0.5	
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5L	2.0L	2.5	3.0	4.0	4.5	5.0	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	12:07	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓								
Sample Time	12:10										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): POS-01-01  
 Sample Date (Con't): Sept. 23, 2010  
 Sample Time (Con't): 12:10

**General Notes (Condition of well, or other features):**

- could not take continuous water levels due to 1/2" diameter

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L	0.5	12:05	12:07						
Depth to water (m)	-	-							
Temperature (°C)	5.4	5.4							
pH (pH Units)	6.32	6.32							
Cond. (µs/cm)	294	220							
Specific Cond. (µs/cm)	3502	3532							
Redox (mV)	1.8	1.6							
DO (mg/L)	0.0	0.05							
DO (%)	0.0	0.3							
Appearance & Odour (Clear, Silty, HC odours, etc.)	same	same							
Turbidity (NTU)	-	3.62							
Interval Purge Volume (L)	0.5	0.5							
Cumulative Purge Volume (L):	5.5	6.0							

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	1.0 L	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P05-01-02	Project Number:	1343-005.31	Date:	Sept. 23, 2016
Station Status:	GOOD	Client:	GY - AAM	Samplers:	JC, JCH
Piezometer Diameter:	1/2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 1°C
UTM Location:	Z09 E.0590056 N.6914512	Waypoint:	GPS <del>HEAD</del> N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam: <del>ELR</del> Nos 0433-0435	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓		
Initial Depth to Water (m):	1.529 m	Purge Start Time:	11:28	Purge End Time:	11:40
Depth to Bottom (m):	20.768 m	Purge Interval Time ( ) min, Vol. (0.5) L	11:31	11:36	11:39
Submerged Tubing Depth (m):	20.268 m	Depth to water (m)	N/A	N/A	N/A
Well Stick-up Height (m):	0.480 m.	Temperature (°C)	6.1	5.8	5.6
Estimated Water Volume (L):		pH (pH Units)	6.33	6.30	6.29
DTB - DTW x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume x 0.25 for 1/2" Calculations:	Cond. (µs/cm)	2290	2311	2302	
	Specific Cond. (µs/cm)	3599	3647	3658	
	Redox (mV)	3.0	3.5	2.6	
	DO (mg/L)	0.75	0.71	0.78	
	DO (%)	6.0	5.7	6.2	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	slightly turbid	clear	clear	
	Turbidity (NTU):	-	-	1.79	
	Interval Purge Volume (L):	0.5	0.5	0.5	
	Cumulative Purge Volume (L):	0.5	1.0	1.5	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	11:40	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓		
Sample Time	11:42				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P 05-01-02  
 Sample Date (Con't): Sept 23 2016  
 Sample Time (Con't): 11:42

**General Notes (Condition of well, or other features):**

- No water levels taken during stabilization due to small well diameter.

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 6 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	—
1 L (plastic)	General Chemistry	500 ml	-	-	1000	—

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P05-01-03	Project Number:	1343-005.31	Date:	Sept. 23 2016	
Station Status:	good	Client:	GY - AAM	Samplers:	JC 3 CH	
Piezometer Diameter:	1/2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	cloudy 1°C	
UTM Location:	Z08 E 158056 N 6914512	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam. <del>EL5</del> Nos. 0436-0438	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓			
Initial Depth to Water (m):	1.566 m	Purge Start Time:	11:17	Purge End Time:		
Depth to Bottom (m):	17.803	Purge Interval Time ( ) min, Vol. ( ) L	11:20	11:21	11:23	
Submerged Tubing Depth (m):	17.203	Depth to water (m)	-	-	-	
Well Stick-up Height (m):	0.519 m	Temperature (°C)	5.5	5.1	5.1	
Estimated Water Volume (L):	4.10 L	pH (pH Units)	6.42	6.33	6.31	
DTB - DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	2319	2362	2368	2370	
	Specific Cond. (µs/cm)	3720	3809	3809	3815	3816
	Redox (mV)	-18.1	-12.4	-9.5	-7.5	-5.9
	DO (mg/L)	0.53	0.28	0.22	0.16	0.12
	DO (%)	4.0	2.5	1.7	1.4	1.0
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	same	same	same	same
	Turbidity (NTU):	-	-	-	-	3.59
	Interval Purge Volume (L):	0.5L	0.5L	0.5L	0.5L	0.5L
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5L	2.0L	2.5L
	YSI Field Parameters Logged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	11:29	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓			
Sample Time	11:30					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P05-01-03  
 Sample Date (Con't): Sept. 23, 2016  
 Sample Time (Con't): 11:30

**General Notes (Condition of well, or other features):**

- couldn't take continuous water levels due to 1/2" diameter

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 10 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	1.0 L	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P05-04-04	Project Number:	1343-005.31	Date:	Sept. 23, 2016	
Station Status:	good	Client:	GY - AAM	Samplers:	JC & CH	
Piezometer Diameter:	1/2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 1°C	
UTM Location:	Z08E0580056 N.6914512	Waypoint:	GPS <u>N/A</u> ID <u>N/A</u>	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam: <u>ES</u> Nos <u>0439-0441</u>	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓			
Initial Depth to Water (m):	1.805 m	Purge Start Time:	10:53	Purge End Time:	11:16	
Depth to Bottom (m):	12.309 m	Purge Interval Time ( ) min, Vol. (0.5) L	11:05	11:08	11:11	11:14
Submerged Tubing Depth (m):	11.800 m	Depth to water (m)	N/A	N/A	N/A	N/A
Well Stick-up Height (m):	0.532 m	Temperature (°C)	5.9	5.4	5.4	5.3
Estimated Water Volume (L):	2.63 L	pH (pH Units)	6.38	6.32	6.31	6.30
DTB - DTW x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	2224	2268	2269	2302	
	Specific Cond. (µs/cm)	3497	3622	3674	3680	
	Redox (mV)	-19.0	-17.0	-16.4	-16.9	
	DO (mg/L)	0.73	0.76	0.72	0.65	
	DO (%)	5.7	5.8	5.7	5.1	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	minky turbid grey	Same	Same	Clear	
	Turbidity (NTU):	-	-	-	6.07	
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	
	Cumulative Purge Volume (L):	0.5	1.0	1.5	2.0	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	11:16	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓			
Sample Time	11:18					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P05-01-04  
 Sample Date (Con't): Sept 23 2016  
 Sample Time (Con't): 11:18

**General Notes (Condition of well, or other features):**

- could not take water level reading due to small well diameter.

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 6 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000.	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P05-01-05	Project Number:	1343-005.31	Date:	Sept. 23, 2016		
Station Status:	good	Client:	GY - AAM	Samplers:	JC, B, CH		
Piezometer Diameter:	1/2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 1°C		
UTM Location:	ZOB E. 0580057 N. 6914512	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok		
Photos:	Cam: <del>EUR</del> Nos 0442-0444	Purge Method:					
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓				
Initial Depth to Water (m):	1.982 m	Purge Start Time:	10:53	Purge End Time:			
Depth to Bottom (m):	6.553 m	Purge Interval Time ( ) min, Vol. ( ) L	10:56	10:58	11:00	11:03	11:05
Submerged Tubing Depth (m):	6.00 m	Depth to water (m)	-	-	-	-	-
Well Stick-up Height (m):	0.552 m	Temperature (°C)	6.2	6.0	6.0	5.9	5.9
Estimated Water Volume (L):	1.14 L	pH (pH Units)	6.48	6.43	6.41	6.40	6.40
DTB - DTW) x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	2247	2236	2231	2229	2229	
	Specific Cond. (µs/cm)	3510	3508	3504	3504	3505	
	Redox (mV)	-43.1	-34.0	-29.2	-24.9	-22.7	
	DO (mg/L)	0.04	0.05	0.06	0.01	0.01	
	DO (%)	0.3	0.4	0.3	0.1	0.0	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear odour	same	same	same	same	
	Turbidity (NTU):	-	-	-	-	2.40	
	Interval Purge Volume (L):	0.5L	0.5L	0.5L	0.5L	0.5L	
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5L	2.0L	2.5L	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:				
Time logged on YSI (24hr):	11:06	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓				
Sample Time	11:10						

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P05-01-05

Sample Date (Con't): Sept. 23, 2016

Sample Time (Con't): 11:10

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- couldn't take continuous water levels due to 1/2" diameter

**Consumables:**

- 1/4" HDPE (Peristaltic) 10 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	1.0 L	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P05- <del>001</del> 02	Project Number:	1343-005.31	Date:	Sept 23 2016						
Station Status:	GOOD	Client:	GY - AAM	Samplers:	JC CH						
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	10° Sunny						
UTM Location:	Z.08 E. 0580038 N. 6914444	Waypoint:	GPS <u>HEM</u> ID <u>N/A</u>	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam. <u>ELR</u> Nos. <u>0451-0453</u>	Purge Method:									
Duplicate Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name <u>DUP-6</u>	Waterra	Peristaltic	Disp. Bailer	Redi-flo						
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		<input checked="" type="checkbox"/>								
Initial Depth to Water (m):	2.745	Purge Start Time:	12:47	Purge End Time:							
Depth to Bottom (m):	5.972	Purge Interval Time ( ) min, Vol. (0.5) L	12:50	12:53	12:56	12:59	13:03	13:06			
Submerged Tubing Depth (m):	5.50	Depth to water (m)	2.733	2.733	Same	Same	Same	Same			
Well Stick-up Height (m):	1.890	Temperature (°C)	6.2	6.1	5.9	5.8	5.8	5.8			
Estimated Water Volume (L):	6.354	pH (pH Units)	6.39	6.36	6.33	6.33	6.31	6.30			
DTB - DTW) x (πr <sup>2</sup> *1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	2233	2228	2216	2212	2206	2208				
	Specific Cond. (µs/cm)	3487	3487	3488	3489	3484	3490				
	Redox (mV)	14.0	10.9	8.4	6.9	6.3	5.8				
	DO (mg/L)	0.65	0.76	0.64	0.63	0.64	0.67				
	DO (%)	5.3	6.1	5.2	5.1	5.2	5.4				
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear odorless	same	same	same	same	same				
	Turbidity (NTU):	-	-	-	-	-	3.12				
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	0.5	0.5				
	Cumulative Purge Volume (L):	0.5	1.0	1.5	2.0	2.5	3.0				
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	13:06	Waterra	Peristaltic	Disp. Bailer	Redi-flo						
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		<input checked="" type="checkbox"/>								
Sample Time	13:10										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): PO5-02  
 Sample Date (Con't): Sept 23 2016  
 Sample Time (Con't): 13:10

**General Notes (Condition of well, or other features):**

- good producing well

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	-
1 L (plastic)	General Chemistry	500 ml	-	-	1000	-

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P05-03	Project Number:	1343-005.31	Date:	Sept. 23, 2016					
Station Status:	good	Client:	GY - AAM	Samplers:	JC, 3CH					
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny 5°C					
UTM Location:	Z08 E. 057 98 N. 6914350	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok					
Photos:	Cam. <sup>4</sup> Nos. 0448-0450	Purge Method:								
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
Field Blank Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name FB-4									
Initial Depth to Water (m):	4.469 m	Purge Start Time:	12:41	Purge End Time:	13:06					
Depth to Bottom (m):	8.010 m	Purge Interval Time ( ) min, Vol. ( ) L	0.5							
Submerged Tubing Depth (m):	7.500 m	Depth to water (m)	4.482	4.483	4.490	same	same	same	same	same
Well Stick-up Height (m):	0.812 m	Temperature (°C)	6.1	6.0	5.1	5.0	4.9	4.8	4.8	4.8
Estimated Water Volume (L):	7.1 L	pH (pH Units)	6.87	6.85	6.84	6.83	6.83	6.83	6.82	6.82
DTB - DTW x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	1301	1292	1287	1280	1275	1275	1273	1273	
	Specific Cond. (µs/cm)	2094	2088	2076	2072	2072	2071	2072	2072	
	Redox (mV)	-63.0	-53.1	-46.1	-42.2	-40.0	-38.0	-36.8	-35.7	
	DO (mg/L)	0.70	0.78	0.63	0.35	0.28	0.20	0.14	0.13	
	DO (%)	5.5	6.2	5.1	3.0	2.3	1.5	1.0	0.9	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	same	same	same	same	same	same	same	
	Turbidity (NTU):	-	-	-	-	-	-	-	1.49	
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5L	2.0L	2.5L	3.0L	3.0L	3.5L	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:							
Time logged on YSI (24hr):	13:05	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit									
Sample Time	13:07									

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): POS-03  
 Sample Date (Con't): Sept. 23, 2016  
 Sample Time (Con't): 13:07

**General Notes (Condition of well, or other features):**
**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	1.0L	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	<del>POS-4</del> POS-04	Project Number:	1343-005.31	Date:	Sept. 24, 2016	
Station Status:	good	Client:	GY - AAM	Samplers:	JC, 3 CH	
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	cloudy 30	
UTM Location:	Z08 E. 0585116 N. 691365	Waypoint:	GPS <sup>HEM</sup> ID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam. <del>POS</del> Nos. 0470 - 0478	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		<input checked="" type="checkbox"/>			
Initial Depth to Water (m):	3.111 m	Purge Start Time:	15:25	Purge End Time:	15:40	
Depth to Bottom (m):	7.107 m	Purge Interval Time ( ) min, Vol. ( ) L	0.5	15:27	15:31	15:34
Submerged Tubing Depth (m):	6.600 m	Depth to water (m)	3.113	Same	Same	
Well Stick-up Height (m):	0.679 m	Temperature (°C)	3.5	3.5	3.5	
Estimated Water Volume (L):	7.9 L	pH (pH Units)	6.12	6.10	6.08	
DTB - DTW x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	264.	264.2	263.5		
	Specific Cond. (µs/cm)	449	447.9	448.1		
	Redox (mV)	57.9	58.7	59.1		
	DO (mg/L)	0.06	0.10	0.09		
	DO (%)	0.4	0.8	0.6		
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear odourless	Same	Same		
	Turbidity (NTU):	-	-	0.52		
	Interval Purge Volume (L):	0.5	0.5	0.5		
	Cumulative Purge Volume (L):	0.5	1.0	1.5		
	YSI Field Parameters Logged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	POS-4 not in YSI data base	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		<input checked="" type="checkbox"/>			
Sample Time	15:40					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.



Sample Site (Con't): P05-04  
 Sample Date (Con't): Sept 24 2016  
 Sample Time (Con't): 15:40

**General Notes (Condition of well, or other features):**

- good producing well

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	-
1 L (plastic)	General Chemistry	500 ml	-	-	1000	-

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	PO9-ETA-2	Project Number:	1343-005.31	Date:	25-Sept-16
Station Status:	GOOD	Client:	GY - AAM	Samplers:	AN/MM
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	sunny, light breeze
UTM Location:	ZONE 058274 N. 6913810	Waypoint:	GPS N/A ID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. 1 Nos. 580-582	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	hydroflit			
Initial Depth to Water (m):	10.380	Purge Start Time:	17:41	Purge End Time:	17:55
Depth to Bottom (m):	16.170	Purge Interval Time (5 min, Vol. (12) L)	17:46	17:50	17:55
Submerged Tubing Depth (m):	~12	Depth to water (m)	/	/	/
Well Stick-up Height (m):	6.74	Temperature (°C)	6.6	5.8	5.7
Estimated Water Volume (L):	11.6	pH (pH Units)	5.96	6.27	6.36
DTB - DTW x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\frac{510 \times 16.170 - 10.380 \times 2}{5.79} = 11.58$	Cond. (µs/cm)	4068	4034	4025	
	Specific Cond. (µs/cm)	6286	6364	6370	
	Redox (mV)	-5.4	-45.1	-41.3	
	DO (mg/L)	2.61	2.82	2.85	
	DO (%)	21.7	23.0	23.8	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	same	same	
	Turbidity (NTU):	/	/	2.20	
	Interval Purge Volume (L):	15	15	10	
	Cumulative Purge Volume (L):	15	30	40	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	17:54	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	hydroflit			
Sample Time	18:00				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P09-ETA-2

Sample Date (Con't): 23- sept -16

Sample Time (Con't): 18:00

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

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

Consumables:

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

# GROUNDWATER SAMPLE COLLECTION SHEET

7.3

Sample Site:	P09-GS1A	Project Number:	1343-005.31	Date:	24-sept-16	
Station Status:	GOOD	Client:	GY - AAM	Samplers:	AN/MM	
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Some clouds, light breeze	
UTM Location:	Z. 8 E. 592494 N. 6904832	Waypoint:	GPS N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam. 1 Nos. 593-598	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X			
Initial Depth to Water (m):	2.875	Purge Start Time:	11:57	Purge End Time:	12:13	
Depth to Bottom (m):	7.380	Purge Interval Time (5) min, Vol. ( ) L	11:58	12:03	12:08	12:13
Submerged Tubing Depth (m):	~4.5	Depth to water (m)	—	2.876	2.876	→
Well Stick-up Height (m):	1.29	Temperature (°C)	8.2	9.0	9.0	9.0
Estimated Water Volume (L):	9.0	pH (pH Units)	7.59	7.05	6.97	6.73
<p>DTB – DTW) x (πr<sup>2</sup>)1000 (for well diameter) = 1 well volume            (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:  <math display="block">\begin{array}{r} 6.17 \\ 7.380 \\ 2.875 \\ \hline 4.505 \end{array} \times 2 = 9.010</math></p>	Cond. (µs/cm)	805	786	782	780	
	Specific Cond. (µs/cm)	1185	1133	1127	1124	
	Redox (mV)	49.0	24.5	17.5	12.1	
	DO (mg/L)	1.46	0.19	0.16	0.17	
	DO (%)	12.1	1.7	1.4	1.5	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear no odour	Sand	Same	Same	
	Turbidity (NTU):	—	—	—	1.86	
	Interval Purge Volume (L):	—	1.5	1.5	1.5	
	Cumulative Purge Volume (L):	—	1.5	3.0	4.5	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	12:14	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X			
Sample Time	12:15					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P09-651A  
 Sample Date (Con't): Sept. 24 / 2016  
 Sample Time (Con't): 12:15

**General Notes (Condition of well, or other features):****Additional Purge Data:**

Purge Interval Time ( ) min, Vol. ( ) L										
Depth to water (m)										
Temperature (°C)										
pH (pH Units)										
Cond. (µs/cm)										
Specific Cond. (µs/cm)										
Redox (mV)										
DO (mg/L)										
DO (%)										
Appearance & Odour (Clear, Silty, HC odours, etc.)										
Turbidity (NTU)										
Interval Purge Volume (L)										
Cumulative Purge Volume (L):										

**Consumables:**

- 1/4" HDPE (Peristaltic) 1.0 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

29.7

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	R09-G51B	Project Number:	1343-005.31	Date:	24-sep-16	
Station Status:	600 D.	Client:	GY - AAM	Samplers:	AN, MM	
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Cloudy ~ 8°C. Light wind	
UTM Location:	Z. 8 E. 592487 N. 6904835	Waypoint:	GPS ___ ID _____	Recovery:	<input type="checkbox"/> Good <input type="checkbox"/> Bad <input checked="" type="checkbox"/> Ok	
Photos:	Cam. 1 Nos. 593-518	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X			
Initial Depth to Water (m):	2.559	Purge Start Time:	12:20	Purge End Time:	12:37	
Depth to Bottom (m):	29.645	Purge Interval Time (5) min, Vol. ( ) L	12:21	12:26	12:33	12:37
Submerged Tubing Depth (m):	~ 27.5	Depth to water (m)	—	2.980	3.075	3.134
Well Stick-up Height (m):	0.96	Temperature (°C)	7.8	7.6	7.6	7.5
Estimated Water Volume (L):	~ 54	pH (pH Units)	7.15	6.89	6.89	6.84
DTB – DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	1039	1015	1012	1012	
	Specific Cond. (µs/cm)	1560	1521	1516	1524	
	Redox (mV)	4.9	-41.4	-45.7	-47.6	
	DO (mg/L)	1.18	0.28	0.42	0.42	
	DO (%)	7.7	7.6	3.4	3.6	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	Sand	Same.	Same	
	Turbidity (NTU):	—	—	—	8.55	
	Interval Purge Volume (L):	—	0.9	0.5	0.5	
	Cumulative Purge Volume (L):	—	0.9	0.5	0.5	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	1237	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X			
Sample Time	1240					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

PA

Sample Site (Con't): P09 - 651B  
 Sample Date (Con't): Sept. 24 / 2016  
 Sample Time (Con't): 12:40

**General Notes (Condition of well, or other features):****Additional Purge Data:**

Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 1.0 ft.  
 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.  
 5/8" HDPE (Waterra) \_\_\_\_\_ ft.  
 1/4" Silicon 0.5 ft.  
 0.45 micron inline filters \_\_\_\_\_ each  
 D-25 (2" well) foot valves \_\_\_\_\_ each  
 D-16 (1" well) foot valves \_\_\_\_\_ each  
 SS-10 (5/8" well) foot valves \_\_\_\_\_ each  
 1" HDPE Bailer \_\_\_\_\_ each  
 2" HDPE Bailer \_\_\_\_\_ each  
 Other \_\_\_\_\_  
 Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>120</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1600</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

7.4

Sample Site:	PO9-LCD1	Project Number:	1343-005.31	Date:	24-Sept-16		
Station Status:	GOOD	Client:	GY - AAM	Samplers:	AN/MM		
Piezometer Diameter:	0"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	~20°C		
UTM Location:	Z.08/E.0593352 N. 690336	Waypoint:	GPS N/A/D N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok		
Photos:	Cam. 1 Nos. 583-585	Purge Method:					
Duplicate Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name Dup-7	Waterra	Peristaltic	Disp. Bailer	Redi-flo		
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name		X				
Initial Depth to Water (m):	3.783	Purge Start Time:	08:34	Purge End Time:	08:55		
Depth to Bottom (m):	7.346	Purge Interval Time (5) min, Vol. ( ) L	08:35	08:40	08:45	08:50	08:55
Submerged Tubing Depth (m):	~6	Depth to water (m)	3.830	3.830	3.850	3.853	
Well Stick-up Height (m):	0.92	Temperature (°C)	3.7	3.3	3.3	3.3	
Estimated Water Volume (L):	7.1	pH (pH Units)	6.64	7.00	7.07	7.11	7.13
DTB - DTW x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:  $\frac{6.121 \times 7.346}{3.563} \times 2 = 7.126$	Cond. (µs/cm)	708	692	685	684	684	
	Specific Cond. (µs/cm)	1195	1183	1171	1169	1169	
	Redox (mV)	-89.8	-115.8	-115.1	-113.5	-113.7	
	DO (mg/L)	1.35	0.47	0.40	0.36	0.31	
	DO (%)	9.7	3.5	3.0	2.6	2.3	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear	clear	
	Turbidity (NTU):	/	/	/	/	0.57	
	Interval Purge Volume (L):	/	1.75	1.85	1.90	1.85	
	Cumulative Purge Volume (L):	/	1.75	3.60	5.20	7.05	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:	5.20			
Time logged on YSI (24hr):	08:55	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X				
Sample Time	09:00						

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P09-LCD1

Sample Date (Con't): 24-Sept-16.

Sample Time (Con't): 09:00

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- Fast purge rate.

**Consumables:**

- 1/4" HDPE (Peristaltic) 27 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

# GROUNDWATER SAMPLE COLLECTION SHEET

x 25-sept-16. ~~10~~

Sample Site:	PO9-LCD4	Project Number:	1343-005.31	Date:	24-sept-16
Station Status:	SLOW RECHARGE, RETURN	Client:	GY - AAM	Samplers:	AN/MM
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	slight cloud, 0°C
UTM Location:	ZONE. 0593224N. 6902278	Waypoint:	GPS N/A	Recovery:	<input type="checkbox"/> Good <input checked="" type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. 1 Nos. 586-588	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X		
Initial Depth to Water (m):	2.363	Purge Start Time:	09:09	Purge End Time:	<del>09:50</del> 10:15
Depth to Bottom (m):	12.400	Purge Interval Time (5) min, Vol. ( ) L	09:16	09:15	09:20
Submerged Tubing Depth (m):	~10	Depth to water (m)	2.785	3.035	10:15
Well Stick-up Height (m):	0.96	Temperature (°C)	3.8	3.6	3.8
Estimated Water Volume (L):	20.1	pH (pH Units)	7.38	7.45	7.44
<p>DTB - DTW x (πr<sup>2</sup>)1000 (for well diameter) = 1 well volume            (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:  <math display="block">\frac{12.400 \times 2}{2.363} = 20.074</math></p>	Conductivity (µs/cm)	479.3	468.4	465.9	LITTLE RECHARGE EVIDENT Very little recharge sufficient vol. to sample.
	Specific Cond. (µs/cm)	809.4	791.9	783.8	
	Redox (mV)	69.0	46.2	48.2	
	DO (mg/L)	1.98	0.41	0.36	
	DO (%)	14.6	3.1	2.7	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	slightly cloudy	clear	clear	
	Turbidity (NTU):	✓	✓	✓	
	Interval Purge Volume (L):	—	0.95	0.4	
	Cumulative Purge Volume (L):	—	0.95	1.35	
	YSI Field Parameters Logged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	N/A	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X		
Sample Time	09:35 on Sept 25				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

\* well requires more than 24 hours to recharge, + should be sampled w a bailer.  
 There is lots of sediment in the bottom of the well, attempt to get as much water as possible w the bailer; not enough water present to get parameters. ~~isa~~



Sample Site (Con't): P09-LCD4  
 Sample Date (Con't): ~~24 sept 16~~ 25-sept-16  
 Sample Time (Con't): 09:35

- on 25-sept-16 @ 09:30 DTW 11.581 m

**General Notes (Condition of well, or other features):**

- very slow recharge, will return to attempt to sample.  
 - the well should be purged w water + sampled w peristaltic or bailer  
 - had to finish purge w water

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 41.5 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) 41.5 ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves 1 each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer 2 each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	1000	
1 L (plastic)	General Chemistry	500 ml	-	-	400	

\* can hear the water drain out of the bailer

↳ too much sediment at the bottom unable to bail out the remaining water due to sand preventing the ball from sinking.

# GROUNDWATER SAMPLE COLLECTION SHEET

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Sample Site:	PO9-LCDB	Project Number:	1343-005.31	Date:	24-Sep-16
Station Status:	G000	Client:	GY - AAM	Samplers:	AN/MM
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	some clouds
UTM Location:	ZONE E. 593313 N. 6903242	Waypoint:	GPS/ND	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. 1 Nos. 589-592	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name		X		
Initial Depth to Water (m):	5.914	Purge Start Time:	09:53	Purge End Time:	10:15
Depth to Bottom (m):	7.910	Purge Interval Time (5) min, Vol. ( ) L	09:55	10:00	10:05
Submerged Tubing Depth (m):	~ 6.9	Depth to water (m)	5.950	5.950	5.950
Well Stick-up Height (m):	0.77	Temperature (°C)	3.4	3.3	3.4
Estimated Water Volume (L):	34	pH (pH Units)	7.29	7.23	7.23
DTB - DTW x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\frac{6.18 \times 2}{1.996} \times 2 = 3.992$	Cond. (µs/cm)	635	645	649	651
	Specific Cond. (µs/cm)	1083	1101	1104	1107
	Redox (mV)	-87.2	-102.2	-108.0	-116.4
	DO (mg/L)	0.51	0.30	0.41	0.48
	DO (%)	3.7	2.2	3.1	3.6
	Appearance & Odour (Clear, Silty, HC odours, etc.)	slightly cloudy	clear	clear	clear
	Turbidity (NTU):	/	/	/	8.9
	Interval Purge Volume (L):	/	1.5	1.5	1.0
	Cumulative Purge Volume (L):	/	1.5	3.0	4.4
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	10:15	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X		
Sample Time	10:00				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P09-LCD6

 Sample Date (Con't): 24 - Sept - 16

 Sample Time (Con't): 10:20

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

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

Consumables:

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 65 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	20	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P09-SIS1	Project Number:	1343-005.31	Date:	Sept. 20, 2016				
Station Status:	good	Client:	GY - AAM	Samplers:	JC B CH				
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny 10°C				
UTM Location:	ZONE 0584476N. 6913132	Waypoint:	GPS #END NIA	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok				
Photos:	Cam ELR Nos 0352-0354	Purge Method:							
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other			
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓						
Initial Depth to Water (m):	4.613	Purge Start Time:	17:06	Purge End Time:	17:41				
Depth to Bottom (m):	6.631	Purge Interval Time ( ) min, Vol. 0.5 L	17:12	17:16	17:21	17:25	17:30	17:36	17:40
Submerged Tubing Depth (m):	6.500	Depth to water (m)	4.850	4.989	5.110	5.170	5.232	5.301	5.318
Well Stick-up Height (m):	0.979 m.	Temperature (°C)	7.4	7.2	6.8	7.0	6.9	6.9	6.8
Estimated Water Volume (L):	4.0	pH (pH Units)	6.36	6.36	6.37	6.36	6.35	6.33	6.33
DTB - DTW) x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	4339	4302	4309	4403	4498	4654	4749	
	Specific Cond. (µs/cm)	6537	6525	6608	6715	6870	7109	7288	
	Redox (mV)	60.7	48.8	38.2	31.5	29.0	27.6	26.9	
	DO (mg/L)	0.14	0.14	0.20	0.19	0.19	0.22	0.22	
	DO (%)	1.2	1.3	1.7	1.5	1.5	1.7	1.8	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	Same	Same	Same	Same	Same	Same	
	Turbidity (NTU):	-	-	-	-	-	-	8.33	
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
	Cumulative Purge Volume (L):	0.5	1.0	1.5	2.0	2.5	3.0	3.5	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:						
Time logged on YSI (24hr):	17:41	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other			
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓						
Sample Time	17:45								

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): PO9-SIS1  
 Sample Date (Con't): Sept. 20, 2016  
 Sample Time (Con't): ~~7:44~~ 17:45

**General Notes (Condition of well, or other features):**

- transducer in well  
 - parameters stable - full sample set collected.

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 6 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>120</u>	<u>-</u>
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1000</u>	<u>-</u>

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P09-5152	Project Number:	1343-005.31	Date:	Sept 20 2016
Station Status:	good	Client:	GY - AAM	Samplers:	SC CH
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	10° Sunny
UTM Location:	Z08 E. 0584486 N. 6913126	Waypoint:	GPS HEMID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. FLK Nos. 0346 - 0348	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓		
Initial Depth to Water (m):	3.943	Purge Start Time:	15:39	Purge End Time:	15:55
Depth to Bottom (m):	6.335	Purge Interval Time ( ) min, Vol. (0.5) L	15:44	15:47	15:50
Submerged Tubing Depth (m):	6.100	Depth to water (m)	3.982	3.979	3.978
Well Stick-up Height (m):	1.13	Temperature (°C)	7.5	7.6	7.5
Estimated Water Volume (L):	4.78	pH (pH Units)	5.71	5.59	5.55
DTB - DTW) x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	6785	6800	6834	6811
	Specific Cond. (µs/cm)	10207	10279	10293	10277
	Redox (mV)	75.5	80.1	83.7	81.0
	DO (mg/L)	0.23	0.09	0.15	0.12
	DO (%)	1.7	0.9	1.4	1.0
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Slightly turbid slight organic smell	Same	Same	Same
	Turbidity (NTU):				11.67
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5
	Cumulative Purge Volume (L):	0.5	1.0	1.5	2.0
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	15:55	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	✓	✓		
Sample Time	15:55				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P09-S152  
 Sample Date (Con't): Sept 20 2016  
 Sample Time (Con't): 15:55

**General Notes (Condition of well, or other features):**

- Well has good recharge  
 - Full parameters + sample set  
 - transducer in well

**Additional Purge Data:**

Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	—
1 L (plastic)	General Chemistry	500 ml	-	-	1000	—

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	PO9-SISS3	Project Number:	1343-005.31	Date:	Sept. 20, 2016	
Station Status:	Good	Client:	GY - AAM	Samplers:	JC & CH	
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	10° Sunny	
UTM Location:	Z08E0584493N6913119	Waypoint:	GPS HEMID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Can. #12 Nos 0343 - 0345	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____					
Initial Depth to Water (m):	3.989	Purge Start Time:	14:49	Purge End Time:	15:14	
Depth to Bottom (m):	4.589	Purge Interval Time ( ) min, Vol. (0.5) L	14:55	14:59	15:05	15:09
Submerged Tubing Depth (m):	4.200	Depth to water (m)	4.009	4.013	4.016	4.012
Well Stick-up Height (m):	1.110	Temperature (°C)	7.9	7.5	7.3	7.1
Estimated Water Volume (L):	1.7	pH (pH Units)	5.67	5.68	5.68	5.67
DTB - DTW) x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	7479	7450	7399	7378	
	Specific Cond. (µs/cm)	11129	11202	11192	11192	
	Redox (mV)	46.9	51.1	54.7	57.1	
	DO (mg/L)	0.08	0.02	0.02	0.03	
	DO (%)	0.6	0.2	0.1	0.2	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	same	same	same	
	Turbidity (NTU):	-	-	-	223	
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	
	Cumulative Purge Volume (L):	0.5	1.0	1.5	2.0	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	15:11	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit					
Sample Time	15:15					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P09 - S1S3  
 Sample Date (Con't): Sept. 20, 2016  
 Sample Time (Con't): 15:15

**General Notes (Condition of well, or other features):**

- Well had stable water level while purging.  
 - Full parameters + Full sample.

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 16 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	—
1 L (plastic)	General Chemistry	500 ml	-	-	1000	—

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P09-5154	Project Number:	1343-005.31	Date:	Sept 20 2016						
Station Status:	slow recharge	Client:	GY - AAM	Samplers:	JC CH						
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	10° Sunny						
UTM Location:	Z.08 E. 0584509N. 6913111	Waypoint:	GPS HEM ID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input checked="" type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam. FLR2 Nos. 0334 - 0336	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓								
Initial Depth to Water (m):	4.047	Purge Start Time:	11:45	Purge End Time:	12:51						
Depth to Bottom (m):	4.460	Purge Interval Time ( ) min, Vol. 0.5 L	11:50	11:55	12:03	12:13	12:17	12:26	12:39	12:45	12:51
Submerged Tubing Depth (m):	4.300	Depth to water (m)	4.189	4.273	4.333	4.319	4.311	4.354	4.278	4.336	4.310
Well Stick-up Height (m):	0.954	Temperature (°C)	6.9	7.0	7.0	7.0	7.5	7.0	7.4	7.7	7.2
Estimated Water Volume (L):	0.826	pH (pH Units)	6.38	6.33	6.29	6.31	6.31	6.31	6.32	6.31	6.31
DTB - DTW x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	5790	5763	5688	5769	5785	5773	6014	5795	5727	
	Specific Cond. (µs/cm)	8053	8795	8677	8757	8760	8815	8983	8643	8710	
	Redox (mV)	-21.5	-13.9	-5.4	3.4	5.5	11.8	18.3	21.0	23.1	
	DO (mg/L)	0.26	0.12	0.12	0.14	1.33	0.23	0.20	0.66	0.46	
	DO (%)	2.4	1.0	1.1	1.2	1.5	1.6	1.4	5.4	3.8	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear odour less	clear admits less	clear no odour	clear no odour	clear no odour	clear no odour	clear no odour	Sims	Sims	Sims
	Turbidity (NTU):	-	-	-	-	-	-	-	-	-	2.85
	Interval Purge Volume (L):	0.5L	0.5L	0.5L	0.5L	0.5L	0.5L	0.5L	0.5	0.5	0.5
	Cumulative Purge Volume (L):	0.5L	1L	1.5L	2.0L	2.5L	3.0L	3.5	4.0	4.5	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	12:52	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓								
Sample Time	12:55										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): PO9-SIS411  
 Sample Date (Con't): Sept. 20, 2016  
 Sample Time (Con't): 12:55

**General Notes (Condition of well, or other features):**

- transducer in well  
 - recovery OK  
 - ORP slow to stabilize  
 - had to turn off pump mid way to let the well recharge  
 - over 3 well volumes purged  
 - ORP NOT stabilizing - Sampled after 9 readings

**Additional Purge Data:**

Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 4 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	100	—
1 L (plastic)	General Chemistry	500 ml	-	-	1000	—

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P09-S156	Project Number:	1343-005.31	Date:	Sept 20 2016					
Station Status:	Very slow Recharge	Client:	GY - AAM	Samplers:	JC CH					
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	10° Sunny					
UTM Location:	208 E. 0584516 N. 691300	Waypoint:	GPS HEM ID N/A	Recovery:	<input type="checkbox"/> Good <input checked="" type="checkbox"/> Bad <input type="checkbox"/> Ok					
Photos:	Cam: ELK2 Nos. 0.331 - 0.333	Purge Method:								
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓							
Initial Depth to Water (m):	3.793	Purge Start Time:	10:37	Purge End Time:	11:14					
Depth to Bottom (m):	6.305	Purge Interval Time ( ) min, Vol. (0.5) L	10.44	10.54	11:01	11:05	11:10	11:14		
Submerged Tubing Depth (m):	5.800	Depth to water (m)	4.133	4.367	4.51	4.601	4.814	4.929		
Well Stick-up Height (m):	1.281	Temperature (°C)	6.5	7.5	6.0	5.8	5.9	6.1		
Estimated Water Volume (L):	5.024	pH (pH Units)	6.92	7.02	6.84	6.85	6.85	6.84		
DTB - DTW) x (πr <sup>2</sup> ) 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	3493	3788	3862	3806	3789	3826			
	Specific Cond. (µs/cm)	5399	5887	6070	5996	5965	6000			
	Redox (mV)	-17.1	-38.6	-50.6	-63.7	-68.1	-70			
	DO (mg/L)	1.03	3.54	0.33	0.14	0.14	0.13			
	DO (%)	8.7	27.7	2.1	1.2	1.2	1.1			
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear colourless	same	same	same	same	same			
	Turbidity (NTU):	-	-	-	-	-	27.1			
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	0.5	0.5			
	Cumulative Purge Volume (L):	0.5	1.0	1.5	2.0	2.5	3.0			
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:							
Time logged on YSI (24hr):	11:15	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
YSI Meter or Pen Unit?:	<input type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓							
Sample Time	11:16									

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

*Handwritten notes:*  
 water  
 5/18

Sample Site (Con't): P09-S156  
 Sample Date (Con't): Sept 20 2016.  
 Sample Time (Con't): 11:16

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- Possibly a transducer in the well  
 (Aircraft cable attached to well)  
 - well has very slow recharge  
 - Stable parameters collected + Full  
 Sample set.

**Consumables:**

- 1/4" HDPE (Peristaltic) 19 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	—
1 L (plastic)	General Chemistry	500 ml	-	-	1L	—

# GROUNDWATER SAMPLE COLLECTION SHEET

+ 24-sept  
22-sept-16

Sample Site:	P8001-2A	Project Number:	1343-005.31	Date:	22-sept						
Station Status:	SLOW RECHARGE	Client:	GY - AAM	Samplers:	AN/MM						
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	windy, overcast						
UTM Location:	Z08/E0593132 N.6902866	Waypoint:	GPS <del>ID</del>	Recovery:	<input type="checkbox"/> Good <input checked="" type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam. 1 Nos. 530-550	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X								
Initial Depth to Water (m):	4.386	Purge Start Time:	10:56	Purge End Time:	11:32						
Depth to Bottom (m):	6.366	Purge Interval Time (5) min, Vol. ( ) L	10:57	11:02	11:09	11:14	11:19	11:24	11:28	11:32	Sept 24 11:40
Submerged Tubing Depth (m):	~5.5	Depth to water (m)	—	4.112	4.626	4.80	4.98	5.124	increased purge rate to 20 L/min	Well Dry	—
Well Stick-up Height (m):	0.605	Temperature (°C)	6.2	6.4	6.4	6.4	6.6	6.7			5.8
Estimated Water Volume (L):	~4.0	pH (pH Units)	6.77	6.64	6.63	6.63	6.63	6.65			6.88
DTB - DTW) x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\frac{5.124 \times 2 \times 2}{1.980} = 3.96$	Cond. (µs/cm)	2409	2428	2440	2438	2443	2434			2474	
	Specific Cond. (µs/cm)	3759	3772	3785	3782	3770	3742			3907	
	Redox (mV)	-11.7	-16.5	-22.7	-21.8	-10.6	1.4			75.4	
	DO (mg/L)	0.86	0.56	0.87	1.11	1.49	2.02			1.29	
	DO (%)	6.2	6.4	7.2	9.2	12.1	16.9			10.1	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Grey turbid	Same	Same	Same	Same	Same			no HC	clear
	Turbidity (NTU):	—	4.6	—	—	—	—			27.7	
	Interval Purge Volume (L):	—	0.6	0.5	0.35	0.45	0.35			—	
	Cumulative Purge Volume (L):	—	0.6	1.1	1.45	1.9	2.25			—	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	11:11	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X								
Sample Time	11:00 on Sept										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

24

Sample Site (Con't): P2001-2A

 Sample Date (Con't): Sept 24, 2016

 Sample Time (Con't): 11:00

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

Tip of WL meter covered in bentonite  
after well was dipped.

on Sept 24 returned to sample  
DTW 4.445

**Consumables:**

- 1/4" HDPE (Peristaltic) 1.0 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

# GROUNDWATER SAMPLE COLLECTION SHEET

424 - Sept - 16

Sample Site:	P2001-2B	Project Number:	1343-005.31	Date:	22-Sept-16				
Station Status:	Slow RECHARGE, RETURN	Client:	GY - AAM	Samplers:	ANIMM				
Piezometer Diameter:	2 1/2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	windy				
UTM Location:	ZONE 18Q UTM N. 6902866	Waypoint:	GPS ID	Recovery:	<input type="checkbox"/> Good <input checked="" type="checkbox"/> Bad <input type="checkbox"/> Ok				
Photos:	Cam. 1 Nos. 550-552	Purge Method:							
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name	Waterra	Peristaltic	Disp. Bailer	Redi-flo				
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name	manual							
Initial Depth to Water (m):	4.160	Purge Start Time:	11:10	Purge End Time:	11:53				
Depth to Bottom (m):	27.565	Purge Interval Time (5) min, Vol. ( ) L	11:15	11:37	11:45	11:53	Sept 22	11:22	Sept 24
Submerged Tubing Depth (m):	2 ~ 21	Depth to water (m)	—	—	—	—	—	4.336	—
Well Stick-up Height (m):	24.037	Temperature (°C)	—	3.3	3.5	3.4	—	4.8	—
Estimated Water Volume (L):	46.8	pH (pH Units)	—	6.97	6.93	6.99	—	6.87	—
<p>DTB - DTW) x (πr<sup>2</sup> 1000 (for well diameter) = 1 well volume            (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:  <math display="block">\frac{27.565 \times 8.1}{2} = 112.3</math> <math display="block">\frac{41.60 \times 2}{2} = 41.60</math> <math display="block">\frac{93.405}{2} = 46.810</math></p>	Cond. (µs/cm)	—	2259	2172	2162	—	2329	—	
	Specific Cond. (µs/cm)	—	3853	3626	3681	—	3787	—	
	Redox (mV)	—	11.3	-11.1	-0.8	—	97.2	—	
	DO (mg/L)	—	2.18	1.79	2.33	—	4.45	—	
	DO (%)	—	16.5	13.6	17.6	—	35.0	—	
	Appearance & Odour (Clear, Silty, HC-odours, etc.)	Slightly turbid.	Clear.	Sandy	Sandy	—	turbid rusty brown	—	
	Turbidity (NTU):	—	—	—	—	—	17.0	—	
	Interval Purge Volume (L):	12.0	15.0	15.0	15.0	—	—	—	
	Cumulative Purge Volume (L):	12.0	27.0	42.0	57.0	—	—	—	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:						
Time logged on YSI (24hr):	1123	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other			
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	manual							
Sample Time	11:20 on Sept 24								

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P2001 - 2B

Sample Date (Con't): 24 - Sept - 16

Sample Time (Con't): 11:15

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- returned to sample on 24-Sept-16

DSW: 4.336m

Sample was clear (i.e. not turbid) but became cloudy (light brown/rusty) when completing VSI in situ measurements.

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	11000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P96-7	Project Number:	1343-005.31	Date:	Sept. 21, 2016						
Station Status:	good	Client:	GY - AAM	Samplers:	JC BCHA						
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny 6°C						
UTM Location:	Z.08E.0584128N.6913283	Waypoint:	GPS ID 1114	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	CamFLR Nos. 0364 - 0366	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓								
Initial Depth to Water (m):	4.330	Purge Start Time:	10:59	Purge End Time:	11:23						
Depth to Bottom (m):	9.894	Purge Interval Time ( ) min, Vol. 0.5L	11:03	11:07	11:11	11:14	11:18	11:22			
Submerged Tubing Depth (m):	9.450	Depth to water (m)	4.441	4.445	4.454	4.462	4.474	4.461			
Well Stick-up Height (m):	0.791 m	Temperature (°C)	2.9	2.8	2.8	2.8	2.8	2.8			
Estimated Water Volume (L):	11.128L	pH (pH Units)	7.16	7.14	7.17	7.19	7.20	7.21			
DTB - DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	1812	1776	1742	1737	1734	1736				
	Specific Cond. (µs/cm)	3132	3077	3025	3018	3013	3016				
	Redox (mV)	28.2	37.6	41.2	42.2	43.2	44.6				
	DO (mg/L)	3.67	5.78	9.23	10.14	10.61	10.61				
	DO (%)	87.8	43.6	68.9	75.7	79.4	79.5				
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear to odour	clear to odour	same	same	same	same				
	Turbidity (NTU):	-	-	-	-	-	0.96				
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	0.5	0.5				
	Cumulative Purge Volume (L):	0.5	1.0	1.5	2.0	2.5	3.0				
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	11:23	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓								
Sample Time	11:25										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P96-7

 Sample Date (Con't): Sept. 21, 2016

 Sample Time (Con't): 11:25

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- tubing was in wells  
 - well accessible by road along  
 powerline.

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	—
1 L (plastic)	General Chemistry	500 ml	-	-	1000	—

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P96-8A	Project Number:	1343-005.31	Date:	23 <del>22</del> Sept - 16.					
Station Status:	GOOD	Client:	GY - AAM	Samplers:	AN/MM					
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	blue skies, light breeze					
UTM Location:	Z.08E. 05 03219 N. 6914672	Waypoint:	GPS <del>115A</del>	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok					
Photos:	Cam. <u>1</u> Nos. <u>278-580</u>	Purge Method:								
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X							
Initial Depth to Water (m):	2.625	Purge Start Time:	16:19	Purge End Time:	16:40					
Depth to Bottom (m):	84.895	Purge Interval Time (5) min, Vol. ( ) L	16:20	16:25	16:30	16:35	16:40			
Submerged Tubing Depth (m):	4	Depth to water (m)	—	2.630	2.630	2.630	2.630	2.630		
Well Stick-up Height (m):	0.71	Temperature (°C)	9.1	9.0	9.2	9.2	9.2			
Estimated Water Volume (L):	4.5	pH (pH Units)	4.36	3.97	3.82	3.80	3.78			
DTB – DTW x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:  $\frac{4.895 \times 2}{2.625} = 4.54$	Cond. (µs/cm)	6430	6474	5842	5587	5549				
	Specific Cond. (µs/cm)	9262	9310	8348	7989	7937				
	Redox (mV)	2832	2867	3062	3055	3052				
	DO (mg/L)	0.56	0.21	0.46	0.45	0.45				
	DO (%)	4.9	1.9	4.1	4.1	4.1				
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	same	same	same				
	Turbidity (NTU):	—	—	—	—	0.32				
	Interval Purge Volume (L):	—	1	1.5	1.4	1.5				
	Cumulative Purge Volume (L):	—	1	1.5	2.9	4.4				
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:							
Time logged on YSI (24hr):	16:40	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X							
Sample Time	16:45									

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P96-8A

Sample Date (Con't): 23-Sept-16


Sample Time (Con't): 16:45

**Additional Purge Data:**

Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- lots of oxidation (orange) color around well + in seepage creek



**Consumables:**

- 1/4" HDPE (Peristaltic) 1 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>120</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1,000</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P96-88	Project Number:	1343-005.31	Date:	23 - Sept - 16					
Station Status:	GOOD	Client:	GY - AAM	Samplers:	AN/MM					
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny					
UTM Location:	Z. 08E. 058299N. 691407E	Waypoint:	GPS N/A/N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok					
Photos:	Cam. 1 Nos. 578 - 580	Purge Method:								
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X							
Initial Depth to Water (m):	2.537	Purge Start Time:	16:49	Purge End Time:	17:09					
Depth to Bottom (m):	9.410	Purge Interval Time (5) min, Vol. ( ) L	16:49	16:54	16:59	17:04	17:09			
Submerged Tubing Depth (m):	~8	Depth to water (m)	—	2.535	2.535	2.535	2.535			
Well Stick-up Height (m):	0.61	Temperature (°C)	8.9	8.1	8.0	8.1	8.0			
Estimated Water Volume (L):	13.7	pH (pH Units)	4.15	4.94	5.09	5.13	5.10			
DTB - DTW x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\frac{8.19 \times 6.1}{9.410} \times 2 = \frac{2.537}{6.273} \times 2 = 13.746$	Cond. (µs/cm)	6205	5979	5959	5965	5952				
	Specific Cond. (µs/cm)	8977	8839	8810	8809	8807				
	Redox (mV)	218.4	162.5	155.4	151.1	148.6				
	DO (mg/L)	3.16	0.53	0.64	0.76	0.88				
	DO (%)	27.2	4.6	5.6	6.7	7.8				
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	same	same	same	same				
	Turbidity (NTU):	—	—	—	—	0.11				
	Interval Purge Volume (L):	—	1	1.25	1.15	1.15				
	Cumulative Purge Volume (L):	—	1	2.25	3.40	4.55				
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:							
Time logged on YSI (24hr):	17:09	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X							
Sample Time	17:10									

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P96-8B

Sample Date (Con't): 23 - Sept - 16

Sample Time (Con't): 17:10

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- oxidation around well + creek.

**Consumables:**

- 1/4" HDPE (Peristaltic) 1 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>120</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1,000</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	P96-9A	Project Number:	1343-005.31	Date:	22-sept-16
Station Status:	GOOD	Client:	GY - AAM	Samplers:	AN/MM
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	windy / overcast
UTM Location:	Z. 8 E. 592647 N. 6903349	Waypoint:	GPS NIDA	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. 1 Nos. 565-567	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X		
Initial Depth to Water (m):	5.941	Purge Start Time:	16:06	Purge End Time:	16:24
Depth to Bottom (m):	9.419	Purge Interval Time (5) min, Vol. ( ) L	16:08	16:14	16:19
Submerged Tubing Depth (m):	~ 7.5	Depth to water (m)	—	5.976	5.976
Well Stick-up Height (m):	1.01	Temperature (°C)	7.3	7.2	7.1
Estimated Water Volume (L):	~ 7.0	pH (pH Units)	6.89	6.70	6.70
<p>DTB – DTW) x (πr<sup>2</sup>)1000 (for well diameter) = 1 well volume            (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:  <math>\frac{9.419 - 5.941}{2} = 6.956</math></p>	Cond. (µs/cm)	2101	2125	2130	2130
	Specific Cond. (µs/cm)	3179	3224	3232	3232
	Redox (mV)	184.5	181.8	180.5	179.5
	DO (mg/L)	1.43	0.97	1.11	1.24
	DO (%)	11.7	8.1	9.4	10.3
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear	Same	Same	Same
	Turbidity (NTU):	—	—	—	2.80
	Interval Purge Volume (L):	—	0.8	0.4	0.5
	Cumulative Purge Volume (L):	—	0.8	1.2	1.7
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	16:25	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X		
Sample Time	16:25				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): P96-9A  
 Sample Date (Con't): Sept. 22/2016  
 Sample Time (Con't): 16:25

**General Notes (Condition of well, or other features):**

**Additional Purge Data:**

Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 1.0 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	51A	Project Number:	1343-005.31	Date:	20-sept-16.
Station Status:	GOOD.	Client:	GY - AAM	Samplers:	AN/MM
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny
UTM Location:	Z08E0584433 N.6913114	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. 1 Nos. 525-528.	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X		
Initial Depth to Water (m):	4.729	Purge Start Time:	1535	Purge End Time:	
Depth to Bottom (m):	13.100	Purge Interval Time (5) min, Vol. ( ) L	15:37 1542 1547 1552 1557		
Submerged Tubing Depth (m):	~10	Depth to water (m)	4.730 4.729 4.729 → →		
Well Stick-up Height (m):	1.320	Temperature (°C)	4.3 4.5 4.3 4.1 4.1		
Estimated Water Volume (L):	16.7	pH (pH Units)	6.06 5.82 5.83 5.84 5.83		
DTB - DTW x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\begin{array}{r} 2169 \\ 13.100 \\ 4.729 \\ \hline 8.371 \end{array} \times 2 = 16.74$	Cond. (µs/cm)	1161 1197 1188 1182 1182			
	Specific Cond. (µs/cm)	1937 1967 1961 1969 1971			
	Redox (mV)	120.0 114.8 112.6 111.4 111.4			
	DO (mg/L)	0.97 1.35 2.17 3.4 3.74			
	DO (%)	7.1 10.7 16.9 24.1 28.7			
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear clear Same Same Same			
	Turbidity (NTU):	— — — — 0.55			
	Interval Purge Volume (L):	— 1.0 0.85 0.85 0.85			
	Cumulative Purge Volume (L):	— 1.0 1.85 2.7 3.55			
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	15:58	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X		
Sample Time	16:00				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): S1A  
 Sample Date (Con't): Sept. 20/16  
 Sample Time (Con't): 16:00

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

*(Faint handwritten notes visible in the box)*

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- 1/4" HDPE (Peristaltic) 1.0 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

# GROUNDWATER SAMPLE COLLECTION SHEET

+ 21-sept-16.

Sample Site:	S1B	Project Number:	1343-005.31	Date:	20-sept-16	
Station Status:	SLOW RECHARGE; RETURN	Client:	GY - AAM	Samplers:	AN/MM	
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny w some clouds	
UTM Location:	Zone E 584432 N. 6913114	Waypoint:	GPS <u>ELUID NIA</u>	Recovery:	<input type="checkbox"/> Good <input checked="" type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam. 1 Nos. 521-524	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X			
Initial Depth to Water (m):	4.521	Purge Start Time:	15:16	Purge End Time:	1529	
Depth to Bottom (m):	5.168	Purge Interval Time (5) min, Vol. ( ) L	15:19	1524	1529	09:43
Submerged Tubing Depth (m):	~5	Depth to water (m)	4.778	5.055	5.16	Will purged
Well Stick-up Height (m):	1.175	Temperature (°C)	6.5	4.9	4.5	DRY
Estimated Water Volume (L):	1.3	pH (pH Units)	6.56	6.54	6.54	SEPTEMBER 20 2016
DTB - DTW x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\frac{4.521 \times 2}{0.5} = 18.084$	Cond. (µs/cm)	526	487.6	487.2	484.8	
	Specific Cond. (µs/cm)	817	792.4	788.7	847.8	
	Redox (mV)	71.5	119.1	130.5	129.0	
	DO (mg/L)	3.61	3.30	2.84	2.94	
	DO (%)	28.9	26.0	22.7	21.9	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear slightly cloudy	Same	Same	clear	
	Turbidity (NTU):	—	—	—	23.5	
	Interval Purge Volume (L):	—	0.5	0.5	—	
	Cumulative Purge Volume (L):	—	0.5	1.0	—	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	09:43	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X			
Sample Time	09:30 on 21-sept					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): S1B

Sample Date (Con't): 21-Sept-16

Sample Time (Con't): 09:30

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- well not recharging, after consulting previous years notes well was purged dry & will return to sample later.  
- returned to sample on 21-sept-16  
DTW: 4.539m; sample time 09:30; well dry after taking parameters.

**Consumables:**

- 1/4" HDPE (Peristaltic) 20 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	S2A	Project Number:	1343-005.31	Date:	20-Sept-16					
Station Status:	Good	Client:	GY - AAM	Samplers:	AN/MM					
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Overcast					
UTM Location:	Z. 8 E. 584471 N. 693123	Waypoint:	GPS ID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok					
Photos:	Cam. 1 Nos. 525-528	Purge Method:								
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X							
Initial Depth to Water (m):	4.355	Purge Start Time:	8:37			Purge End Time:	09:04			
Depth to Bottom (m):	11.820	Purge Interval Time (5) min, Vol. ( ) L	8:38	8:43	08:48	08:53	8:59	9:04		
Submerged Tubing Depth (m):	~9	Depth to water (m)	—	4.294	4.290	4.282	4.282	—		
Well Stick-up Height (m):	*0.35 / A	Temperature (°C)	3.2	2.7	2.6	2.6	2.7	2.6		
Estimated Water Volume (L):	14.9	pH (pH Units)	6.20	6.04	6.01	6.00	6.00	5.99		
DTB - DTW x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\frac{11.820 - 4.355}{2} \times 2 = 14.930$	Cond. (µs/cm)	1076	1083	1072	1069	1069	1071			
	Specific Cond. (µs/cm)	1854	1886	1871	1866	1861	1868			
	Redox (mV)	10.5	9.3	26.0	33.8	39.7	42.7			
	DO (mg/L)	3.56	0.69	0.67	0.83	1.17	1.45			
	DO (%)	23.1	5.0	5.0	6.1	8.6	10.8			
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Brown Green turbid	Same	same	same	Slightly less turbid	Same			
	Turbidity (NTU):	—	—	—	—	—	109			
	Interval Purge Volume (L):	—	0.8	0.8	0.8	0.8	0.5			
	Cumulative Purge Volume (L):	—	0.8	1.6	2.4	3.2	3.7			
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:							
Time logged on YSI (24hr):	9:05	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X							
Sample Time	9:10									

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): S2A

 Sample Date (Con't): 21 Sept-16

 Sample Time (Con't): 09:10

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

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

- Consumables:
- 1/4" HDPE (Peristaltic) 30 ft.
  - 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
  - 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
  - 1/4" Silicon 0.5 ft.
  - 0.45 micron inline filters \_\_\_\_\_ each
  - D-25 (2" well) foot valves \_\_\_\_\_ each
  - D-16 (1" well) foot valves \_\_\_\_\_ each
  - SS-10 (5/8" well) foot valves \_\_\_\_\_ each
  - 1" HDPE Bailer \_\_\_\_\_ each
  - 2" HDPE Bailer \_\_\_\_\_ each
  - Other \_\_\_\_\_
  - Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>120</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1,000</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

+ 21 Sept - 16

Sample Site:	S2A S2B	Project Number:	1343-005.31	Date:	20-Sept-16						
Station Status:	SLOW RECHARGE	Client:	GY - AAM	Samplers:	ANIMM						
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	overcast						
UTM Location:	Z.08N.E.0084468N.6913118	Waypoint:	GPS ELEV ID N/A	Recovery:	<input type="checkbox"/> Good <input type="checkbox"/> Bad <input checked="" type="checkbox"/> Ok						
Photos:	Cam. 1 Nos. 525-528	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X								
Initial Depth to Water (m):	4.355 4.418	Purge Start Time:	16:17	Purge End Time:	17:44						
Depth to Bottom (m):	7.074	Purge Interval Time (5) min, Vol. ( ) L	16:19	16:24	16:29	16:34	16:39	16:44	16:49	16:54	16:59
Submerged Tubing Depth (m):	~7.6	Depth to water (m)	—	4.892	4.975	5.005	5.062	5.090	5.131	5.152	5.110
Well Stick-up Height (m):	0.54	Temperature (°C)	5.6	4.6	5.2	5.2	4.9	4.9	4.9	5.4	5.6
Estimated Water Volume (L):	5.3	pH (pH Units)	6.21	6.12	6.11	6.12	6.11	6.12	6.12	6.03	6.04
DTB - DTW) x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\frac{6.16 + 7.074 + 4.448}{2.626} \times 2 = 5.252$	Cond. (µs/cm)	2136	1978	2024	2091	2127	2166	2235	2516	3513	
	Specific Cond. (µs/cm)	3440	3238	3249	3369	3447	3511	3640	4068	5582	
	Redox (mV)	41.5	57.4	58.4	54.2	53.0	52.0	52.0	53.6	63.9	
	DO (mg/L)	2.31	1.49	1.79	2.11	2.43	2.68	2.93	3.17	3.21	
	DO (%)	18.3	11.7	14.4	16.7	19.4	21.4	23.1	25.3	26.0	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	turbid	same	same	same	same	same	same	same	same	
	Turbidity (NTU):	—	—	—	—	—	—	—	—	—	
	Interval Purge Volume (L):	—	0.95	0.65	0.35	0.45	0.40	0.40	0.45	0.35	
	Cumulative Purge Volume (L):	—	—	1.60	1.95	2.50	2.90	3.30	3.75	4.10	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	8:35	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X								
Sample Time	08:20 on Sept 21										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): S2B

Sample Date (Con't): ~~20 Sept-16~~ 21 Sept-16

Sample Time (Con't): 08:20

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L	Sept. 20							Sept 21	
17:04	17:09	17:14	17:19	17:24	17:27	17:44		8:34	
Depth to water (m)	5.140	5.163	5.146	5.131	5.175	7.01			
Temperature (°C)	5.9	5.2	5.3	5.4	4.8			3.5	
pH (pH Units)	5.92	5.92	5.91	5.82	5.80			5.80	
Cond. (µs/cm)	5219	5644	5708	6404	6222			6138	
Specific Cond. (µs/cm)	838	9667	9167	10256	10137			10452	
Redox (mV)	87.9	102.3	112.1	126.5	127.6			60.3	
DO (mg/L)	3.37	3.39	3.51	3.82	3.62			0.51	
DO (%)	27.9	27.6	28.7	31.4	29.3			3.8	
Appearance & Odour (Clear, Silty, HC odours, etc.)	slightly cloudy	same	same	same	same			clear	
Turbidity (NTU)	/	/	/	/	/			6.54	
Interval Purge Volume (L)	0.4	0.25	0.5	0.3	0.35			-	
Cumulative Purge Volume (L):	4.5	4.75	5.25	5.55	5.85			-	

**General Notes (Condition of well, or other features):**

~~Notes~~  
Parameters would not stabilize. Could not purge slowly enough to match recharge. Purged well DRY @ 17:44 on Sept. 20/2016. - returned to sample on 21 Sept-16 DTW: 4.477m; sample time 08:20

**Consumables:**

- 1/4" HDPE (Peristaltic) 1.0 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	21-Sept-16 @ 08:20
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	21-Sept-16 @ 08:20

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	S3	Project Number:	1343-005.31	Date:	20-sept-16
Station Status:		Client:	GY - AAM	Samplers:	AN/MM
Piezometer Diameter:		Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny
UTM Location:	Z. ___ E. ___ N. ___	Waypoint:	GPS ___ ID ___	Recovery:	<input type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. ___ Nos. ___	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name ___	Waterra	Peristaltic	Disp. Bailer	Redi-flo Other
Field Blank Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name ___				
Initial Depth to Water (m):		Purge Start Time:		Purge End Time:	
Depth to Bottom (m):		Purge Interval Time (___) min, Vol. (___) L			
Submerged Tubing Depth (m):		Depth to water (m)			
Well Stick-up Height (m):		Temperature (°C)			
Estimated Water Volume (L):		pH (pH Units)			
<p>DTB – DTW) x (πr<sup>2</sup>)1000 (for well diameter) = 1 well volume            (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:</p>	Cond. (µs/cm)				
	Specific Cond. (µs/cm)				
	Redox (mV)				
	DO (mg/L)				
	DO (%)				
	Appearance & Odour (Clear, Silty, HC odours, etc.)				
	Turbidity (NTU):				
	Interval Purge Volume (L):				
	Cumulative Purge Volume (L):				
	YSI Field Parameters Logged:	<input type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):		Waterra	Peristaltic	Disp. Bailer	Redi-flo Other
YSI Meter or Pen Unit?:	<input type="checkbox"/> YSI <input type="checkbox"/> Pen Unit				
Sample Time					

CANNOT LOCATE

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): 83

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

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

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

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

CANNOT LOCATE

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input type="checkbox"/> Field Filtered	<input type="checkbox"/> HNO <sub>3</sub>		
1 L (plastic)	General Chemistry	500 ml	-	-		

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRR04-3A	Project Number:	1343-005.31	Date:	03-sept-16	
Station Status:	Good	Client:	GY - AAM	Samplers:	AN/MM	
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	clearcast / 0°C	
UTM Location:	Z. 8 E. 582868 N. 6914001	Waypoint:	GPS W/DL	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam. 1 Nos. 571-573	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X			
Initial Depth to Water (m):	6.900	Purge Start Time:	8:05	Purge End Time:	8:27	
Depth to Bottom (m):	12.410	Purge Interval Time (5) min, Vol. ( ) L	8:07	8:11	8:17	
Submerged Tubing Depth (m):	~10	Depth to water (m)	—	6.025	6.025	
Well Stick-up Height (m):	0.625	Temperature (°C)	7.4	6.6	6.5	
Estimated Water Volume (L):	12.8	pH (pH Units)	5.80	5.66	5.67	
<p>DTB – DTW) x (πr<sup>2</sup>)1000 (for well diameter) = 1 well volume            (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:  <math display="block">\frac{12.410 - 6.900}{2} = 2.755</math> <math display="block">2.755 \times 2 = 5.51</math> <math display="block">5.51 + 6.900 = 12.390</math></p>	Cond. (µs/cm)	5519	5352	5306	5293	
	Specific Cond. (µs/cm)	8412	8252	8196	8199	8188
	Redox (mV)	13.1	13.4	10.2	9.2	9.1
	DO (mg/L)	0.59	0.63	0.65	0.74	0.94
	DO (%)	4.7	5.5	5.5	6.2	8.0
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear slight turbid	clear	same	same	same
	Turbidity (NTU):	—	—	—	—	7.21
	Interval Purge Volume (L):	—	0.85	0.6	0.6	0.8
	Cumulative Purge Volume (L):	—	0.85	1.45	2.05	2.85
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	8:29	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X			
Sample Time	8:30					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): SRK04-3A  
 Sample Date (Con't): Sept. 23/2016  
 Sample Time (Con't): 8:30.

**General Notes (Condition of well, or other features):**

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 1.0 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>120</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1000</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK05-07	Project Number:	1343-005.31	Date:	22-Sept-16		
Station Status:	GOOD	Client:	GY - AAM	Samplers:	ANIMM		
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	breezy, overcast		
UTM Location:	ZONE: 059237N. 6903189.	Waypoint:	GPS N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok		
Photos:	Cam. 1 Nos. 559-561	Purge Method:					
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo		
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X				
Initial Depth to Water (m):	5.765	Purge Start Time:	14:25	Purge End Time:	14:47		
Depth to Bottom (m):	6.430	Purge Interval Time (3) min, Vol. ( ) L	14:27	14:32	14:37	14:42	14:47
Submerged Tubing Depth (m):	~6.0	Depth to water (m)	/	5.835	5.845	5.850	5.850
Well Stick-up Height (m):	0.67	Temperature (°C)	5.6	5.2	5.2	5.1	5.1
Estimated Water Volume (L):	1.3	pH (pH Units)	7.05	6.91	6.86	6.90	6.89
DTB - DTW x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\begin{matrix} 5.81 \\ 6.430 \\ 5.765 \end{matrix} \times 2 = 1.330$ $\begin{matrix} 5.81 \\ 6.430 \\ 5.765 \end{matrix} \times 0.5 = 1.330$	Cond. (µs/cm)	2171	2152	2142	2145	2146	
	Specific Cond. (µs/cm)	3453	3458	3447	3462	3465	
	Redox (mV)	130.5	128.5	136.0	139.7	140.9	
	DO (mg/L)	2.53	2.46	2.98	3.22	3.33	
	DO (%)	20.0	19.9	23.9	25.5	26.7	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	light brown turbid	clearing up	clear	clear	same	
	Turbidity (NTU):	/	/	/	/	8.16	
	Interval Purge Volume (L):	/	0.85	0.8	0.7	0.85	
	Cumulative Purge Volume (L):	/	0.85	1.65	2.15	3.00	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:				
Time logged on YSI (24hr):	14:48	Waterra	Peristaltic	Disp. Bailer	Redi-flo		
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X				
Sample Time	14:50						

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): SRK05-07

Sample Date (Con't): 20. sept - 16

Sample Time (Con't): 14:50

**Additional Purge Data:**

Purge Interval Time ( ) min, Vol. ( ) L										
Depth to water (m)										
Temperature (°C)										
pH (pH Units)										
Cond. (µs/cm)										
Specific Cond. (µs/cm)										
Redox (mV)										
DO (mg/L)										
DO (%)										
Appearance & Odour (Clear, Silty, HC odours, etc.)										
Turbidity (NTU)										
Interval Purge Volume (L)										
Cumulative Purge Volume (L):										

**General Notes (Condition of well, or other features):**

**Consumables:**

- 1/4" HDPE (Peristaltic) 0.1 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK05-08.	Project Number:	1343-005.31	Date:	22-sept-16.					
Station Status:	GOOD, SLOW PURGE	Client:	GY - AAM	Samplers:	AN/MM					
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	windy / overcast					
UTM Location:	ZONE: 0592580 N. 6903239	Waypoint:	GPS <input checked="" type="checkbox"/> ID	Recovery:	<input type="checkbox"/> Good <input type="checkbox"/> Bad <input checked="" type="checkbox"/> Ok					
Photos:	Cam. 1 Nos. 562-564	Purge Method:								
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name	Waterra	Peristaltic	Disp. Bailer	Redi-flo					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name		X							
Initial Depth to Water (m):	5.940	Purge Start Time:	15:10	Purge End Time:	15:32					
Depth to Bottom (m):	8.478	Purge Interval Time (5) min, Vol. ( ) L	15:12	15:17	15:22	15:28	15:32			
Submerged Tubing Depth (m):	~7	Depth to water (m)	—	6.045	6.060	6.075	6.090			
Well Stick-up Height (m):	0.76	Temperature (°C)	6.3	5.4	5.9	5.8	5.9			
Estimated Water Volume (L):	5.1	pH (pH Units)	7.30	6.83	6.91	6.87	6.84			
<p>DTB – DTW) x (πr<sup>2</sup>)1000 (for well diameter) = 1 well volume            (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:  <math display="block">\frac{8.478 - 5.940}{2} \times 2 = 5.076</math></p>	Cond. (µs/cm)	1859	1793	1813	1818	1818				
	Specific Cond. (µs/cm)	2914	2863	2850	2858	2856				
	Redox (mV)	159.4	164.3	166.3	169.2	170.8				
	DO (mg/L)	5.34	4.88	4.91	5.00	4.82				
	DO (%)	43.0	39.0	40.1	40.5	39.0				
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	same	same	same	same				
	Turbidity (NTU):	—	—	—	—	1.03				
	Interval Purge Volume (L):	—	0.5	0.4	0.4	0.4				
	Cumulative Purge Volume (L):	—	0.5	0.9	1.3	1.7				
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:							
Time logged on YSI (24hr):	15:34	Waterra	Peristaltic	Disp. Bailer	Redi-flo					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X							
Sample Time	15:35									

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): SRK05-08

Sample Date (Con't): 22-sept-16

Sample Time (Con't): 15:35

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

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

**Consumables:**

- 1/4" HDPE (Peristaltic) 1 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>120</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1,000</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK05-9	Project Number:	1343-005.31	Date:	20-2pt-16
Station Status:	GOOD	Client:	GY - AAM	Samplers:	AN/MM
Piezometer Diameter:	1.5"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	windy / overcast
UTM Location:	ZONE 05 2981 N. 6903160	Waypoint:	GPS N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. 1 Nos. 568-570	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X		
Initial Depth to Water (m):	3.016	Purge Start Time:	17:00	Purge End Time:	17:22
Depth to Bottom (m):	3.896	Purge Interval Time (5) min, Vol. ( ) L	17:00	17:07	17:12
Submerged Tubing Depth (m):	~ 3.6	Depth to water (m)	/	3.044	3.044
Well Stick-up Height (m):	0.52	Temperature (°C)	5.3	4.7	4.6
Estimated Water Volume (L):	0.97 ~ 1.0	pH (pH Units)	7.53	7.41	7.34
DTB - DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\frac{3.896 - 3.016}{0.880} \times 1.1 = 0.968$	Cond. (µs/cm)	751	725	754	772
	Specific Cond. (µs/cm)	1214	1187	1235	1266
	Redox (mV)	176.9	164.0	166.0	170.9
	DO (mg/L)	5.44	5.03	5.31	5.35
	DO (%)	42.4	39.7	41.5	41.7
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	clear	clear
	Turbidity (NTU):	/	/	/	0.57
	Interval Purge Volume (L):	/	0.85	0.7	0.7
	Cumulative Purge Volume (L):	/	0.85	1.55	2.25
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	17:22	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X		
Sample Time	17:25				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): SRK05-9  
 Sample Date (Con't): 22-Sept-16  
 Sample Time (Con't): 17:25

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

@16:26 → ~~SS~~ transducer removed  
 \*bring garbage bag → lots of old  
 tubing that has been left @ the  
 well.  
 @17:31 → transducer put back in well

**Consumables:**

- 1/4" HDPE (Peristaltic) 14.7 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK05-ETA-BR1	Project Number:	1343-005.31	Date:	Sep. 23, 2016		
Station Status:	good	Client:	GY - AAM	Samplers:	JC, B, CH		
Piezometer Diameter:	1"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 0°C		
UTM Location:	ZONE 0582865 N. 6914024	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok		
Photos:	Can. Nos. 0424 - 0426	Purge Method:					
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓				
Initial Depth to Water (m):	6.859	Purge Start Time:	8:18	Purge End Time:			
Depth to Bottom (m):	13.283	Purge Interval 0.25-0.5L Time ( ) min, Vol. ( ) L	8:23	8:25	8:30	8:32	8:35
Submerged Tubing Depth (m):	12.800 m.	Depth to water (m)	6.833	6.833	same	same	same
Well Stick-up Height (m):	0.701 m	Temperature (°C)	6.2	5.9	5.7	5.6	5.6
Estimated Water Volume (L):	3.2 L	pH (pH Units)	5.27	5.28	5.29	5.27	5.29
DTB - DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	5405	5425	5409	5404	5400	
	Specific Cond. (µs/cm)	8432	8474	8566	8583	8585	
	Redox (mV)	139.5	125.4	109.4	105.0	102.3	
	DO (mg/L)	2.04	0.75	0.19	0.10	0.10	
	DO (%)	16.5	6.3	1.4	0.7	0.8	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	yellowish to odour	same	same	same	same	
	Turbidity (NTU):	-	-	-	-	18.0	
	Interval Purge Volume (L):	0.25L	0.25	0.5	0.25	0.25	
	Cumulative Purge Volume (L):	0.25L	0.5	1.0	1.25	1.5	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:				
Time logged on YSI (24hr):	8:34	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓				
Sample Time	8:40						

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): SRK05-ETA-BR1

Sample Date (Con't): Sept. 23, 2016

Sample Time (Con't): 8:40

**Additional Purge Data:**

Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

**Consumables:**

- 1/4" HDPE (Peristaltic) 45 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>125 ml</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1.0L</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK05-ETA-BR2	Project Number:	1343-005.31	Date:	Sept. 22, 2016	
Station Status:	good	Client:	GY - AAM	Samplers:	JE BOH	
Piezometer Diameter:	1"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 0°C	
UTM Location:	ZOB E. 0582880N. (611400)	Waypoint:	GPS ___ ID _____	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam: <sup>SLR</sup> Nos 0427 - 0429	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓			
Initial Depth to Water (m):	4.829 m	Purge Start Time:	8:50	Purge End Time:		
Depth to Bottom (m):	19.372 m	Purge Interval Time ( ) min, Vol. ( ) L	0.5			
Submerged Tubing Depth (m):	18.800 m	8:59	9:04	9:08	9:12	
Well Stick-up Height (m):	0.398 m	5:180	5:195	5:211	5:233	
Estimated Water Volume (L):	7.3 L	5:2	5:2	5:1	5:1	
DTB - DTW x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Temperature (°C)	5.2	5.2	5.1	5.1	
	pH (pH Units)	6.63	6.83	6.80	6.86	6.88
	Cond. (µs/cm)	1709	1629	1617	1622	1653
	Specific Cond. (µs/cm)	2744	2619	2604	2615	2673
	Redox (mV)	-43	-55.1	-66.0	-70.0	-72.3
	DO (mg/L)	0.13	0.03	0.00	0.00	0.00
	DO (%)	1.0	0.3	0.0	0.00	0.00
	Appearance & Odour (Clear, Silty, HC odours, etc.)	yellowish no odour	same	same	same	same
	Turbidity (NTU):	-	-	-	-	9.60
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	0.5
Cumulative Purge Volume (L):	0.5	1.0L	1.0L	1.5L	2.0L	
YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:				
Time logged on YSI (24hr):	9:16	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓			
Sample Time	9:20					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): SRK05-ETA-BR2

Sample Date (Con't): Sept. 23, 2010

Sample Time (Con't): 9:20

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

*- good recharge*

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<i>1.25 ml</i>	
1 L (plastic)	General Chemistry	500 ml	-	-	<i>1.0 L</i>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SJK05-SP-4A	Project Number:	1343-005.31	Date:	Sept 20 2016					
Station Status:	Good	Client:	GY - AAM	Samplers:	JC CH					
Piezometer Diameter:	3"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	8° Sunny					
UTM Location:	Z.08 E. 0584502 N. 6913113	Waypoint:	GPS HEM ID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok					
Photos:	Cam. <del>SLR</del> Nos. 0337 - 0339	Purge Method:								
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____									
Initial Depth to Water (m):	4.699	Purge Start Time:	14:03	Purge End Time:	14:28					
Depth to Bottom (m):	22.565	Purge Interval Time ( ) min, Vol. (0.5) L	14:09	14:14	14:18	14:23	14:28			
Submerged Tubing Depth (m):	22.000	Depth to water (m)	5.552	5.228	5.082	4.993	4.930			
Well Stick-up Height (m):	0.659	Temperature (°C)	5.6	5.6	5.2	5.3	5.1			
Estimated Water Volume (L):	35.7	pH (pH Units)	6.01	5.95	5.94	5.93	5.91			
DTB - DTW) x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	958	866	852	848	848				
	Specific Cond. (µs/cm)	1517	1390	1373	1355	1358				
	Redox (mV)	39.0	39.9	40.3	40.7	40.6				
	DO (mg/L)	1.01	0.24	0.07	0.07	0.09				
	DO (%)	8.1	1.9	0.5	0.5	0.8				
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear Colourless	Clear colourless	Same	Same	Same				
	Turbidity (NTU):	-	-	-	-	0.63				
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	0.5				
	Cumulative Purge Volume (L):	0.5	1.0	1.5	2.0	2.5				
	YSI Field Parameters Logged:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Sample Method:							
Time logged on YSI (24hr):	-	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit									
Sample Time	14:25									

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): SRK05-SP-4A  
 Sample Date (Con't): Sept 20 2016  
 Sample Time (Con't): 14:25

**General Notes (Condition of well, or other features):**

- well has good recharge

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) 100 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 1 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	-
1 L (plastic)	General Chemistry	500 ml	-	-	1000	-

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK05-SP-4B	Project Number:	1343-005.31	Date:	Sept 20 2016					
Station Status:	OK recharge	Client:	GY - AAM	Samplers:	JC CH					
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	10° Sunny					
UTM Location:	Z. 08 E. 0584502 N. 6913113	Waypoint:	GPS <del>HEM</del> ID N/A	Recovery:	<input type="checkbox"/> Good <input type="checkbox"/> Bad <input checked="" type="checkbox"/> Ok					
Photos:	Cam. <del>FLR</del> Nos. 0340 - 0342	Purge Method:								
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓							
Initial Depth to Water (m):	3.969	Purge Start Time:	13:16	Purge End Time:	13:47					
Depth to Bottom (m):	4.773	Purge Interval Time ( ) min, Vol. (0.5) L	13:22	13:26	13:32	13:38	13:46			
Submerged Tubing Depth (m):	4.600	Depth to water (m)	4.094	4.130	4.178	4.218	4.231			
Well Stick-up Height (m):	0.794	Temperature (°C)	7.4	7.3	7.9	7.5	7.6			
Estimated Water Volume (L):	1.5	pH (pH Units)	6.01	5.97	5.97	5.92	5.88			
DTB - DTW) x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	6302	6291	6382	6351	6375				
	Specific Cond. (µs/cm)	9464	9451	9480	9536	9551				
	Redox (mV)	33.3	27.7	24.4	29.1	32.9				
	DO (mg/L)	0.62	0.55	0.43	0.43	0.30				
	DO (%)	5.4	4.9	3.4	3.4	2.5				
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear colourless	clear no odour	same	same	same				
	Turbidity (NTU):	-	-	-	-	9.47				
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	0.5				
	Cumulative Purge Volume (L):	0.5	1.0	1.5	2.0	2.5				
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:							
Time logged on YSI (24hr):	13:47	Waterra	Peristaltic	Disp. Bailer	Redi-flo					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓							
Sample Time	13:50									

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): SRK05-SP-48  
 Sample Date (Con't): Sept 20 2016.  
 Sample Time (Con't): 13:50

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- well has ok recharge
- stopped pump after 3rd reading to let water recharge.
- parameters stabilized
- full sample collected.

**Consumables:**

- 1/4" HDPE (Peristaltic) 3 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	-
1 L (plastic)	General Chemistry	500 ml	-	-	1000	-

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK05-SP-5	Project Number:	1343-005.31	Date:	Sept 21 2016						
Station Status:	Good	Client:	GY - AAM	Samplers:	JL CH						
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	0° Sunny						
UTM Location:	ZOB E. 584401 N 613132	Waypoint:	GPS HEMD N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam 122 Nos. 0255-0357	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓								
Initial Depth to Water (m):	6.869	Purge Start Time:	8:32	Purge End Time:	9:02						
Depth to Bottom (m):	14.685	Purge Interval Time ( ) min, Vol. 0.5 L	8:40	8:46	8:49	8:53	8:57	9:01			
Submerged Tubing Depth (m):	14.5	Depth to water (m)	6.87	Same	Same	Same	Same	Same			
Well Stick-up Height (m):	0.981 m.	Temperature (°C)	3.0	3.0	2.8	2.8	3.0	2.8			
Estimated Water Volume (L):	15.6	pH (pH Units)	5.71	5.70	5.69	5.71	5.71	5.74			
DTB - DTW x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	6061	6077	6052	6035	6051	6028				
	Specific Cond. (µs/cm)	10454	10491	10515	10476	10441	1045				
	Redox (mV)	64.4	74.4	78.0	79.6	81.2	82.0				
	DO (mg/L)	0.38	0.27	0.24	0.16	0.14	0.13				
	DO (%)	3.0	1.9	1.9	1.4	1.1	0.9				
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear colorless odorless	Same	Same	Same	Same	Same				
	Turbidity (NTU):	—	—	—	—	—	2.81				
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	0.5	6.5				
	Cumulative Purge Volume (L):	0.5	1.0	1.5	2.0	2.5	3.0				
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	9:01	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓								
Sample Time	9:05										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): SRK05-SP-5  
 Sample Date (Con't): Sept 21 2016  
 Sample Time (Con't): 9:05

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- Transducer in well
- good producing well
- No drawdown

**Consumables:**

- 1/4" HDPE (Peristaltic) 53 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	—
1 L (plastic)	General Chemistry	500 ml	-	-	1000	—

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK08-SP7A	Project Number:	1343-005.31	Date:	Sept. 20/2016					
Station Status:	GOOD	Client:	GY - AAM	Samplers:	ANMM					
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Cloudy ~13°C					
UTM Location:	ZAB/E.6584437 N.6913005	Waypoint:	GPSEID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok					
Photos:	Cam. 1 Nos. 517-520	Purge Method:								
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	manual								
Initial Depth to Water (m):	2.713	Purge Start Time:	14:21	Purge End Time:	14:51					
Depth to Bottom (m):	17.730	Purge Interval Time ( ) min, Vol. (10) L	14:28	14:31	14:34	14:36	14:39	14:43	14:47	14:51
Submerged Tubing Depth (m):		Depth to water (m)	/	/	/	/	/	/	/	/
Well Stick-up Height (m):	1.2	Temperature (°C)	2.9	2.5	2.4	2.4	2.4	2.7	2.6	2.5
Estimated Water Volume (L):	~30	pH (pH Units)	6.14	6.12	6.13	6.13	6.14	6.13	6.14	6.13
DTB - DTW x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	876	978	948	920	915	899	899	890	
	Specific Cond. (µs/cm)	1519	1714	1666	1618	1607	1568	1570	1558	
	Redox (mV)	672	655	626	58.1	57.3	663	62.9	65.9	
	DO (mg/L)	1.20	1.54	1.37	1.34	1.31	1.87	1.84	1.54	
	DO (%)	8.9	11.4	10.1	9.8	9.7	14.2	13.5	11.3	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	very turbid	same	same	same	same	same	same	same	
	Turbidity (NTU):	/	/	/	/	/	/	/	4x 59.4	
	Interval Purge Volume (L):	10	10	10	10	10	10	10	10	
	Cumulative Purge Volume (L):	10	20	30	40	50	60	70	80	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:							
Time logged on YSI (24hr):	14:51	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	manual								
Sample Time	14:50									

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): SRK08 - ~~SA~~ SPIA

Sample Date (Con't): 20-Sept-16

Sample Time (Con't): 14:50

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

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

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) 623 ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves 1 each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>120</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1000</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK08-SP7B	Project Number:	1343-005.31	Date:	Sept. 20/2016					
Station Status:	GOOD	Client:	GY - AAM	Samplers:	AN, MM.					
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Cloudy ~13°C					
UTM Location:	ZONE: 0584437N. 691300E	Waypoint:	GPS ID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok					
Photos:	Cam. 1 Nos. 517-520	Purge Method:								
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X							
Initial Depth to Water (m):	2.795	Purge Start Time:	1352	Purge End Time:	14:17					
Depth to Bottom (m):	8.780	Purge Interval Time ( ) min, Vol. 0.8 L	1356	14:01	1406	1412	1417			
Submerged Tubing Depth (m):	~8.6	Depth to water (m)	2.810	2.820	2.817	2.810	2.812			
Well Stick-up Height (m):	1.110	Temperature (°C)	4.3	4.6	4.4	4.4	4.4			
Estimated Water Volume (L):	~12.0	pH (pH Units)	6.69	6.53	6.52	6.47	6.45			
DTB – DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	119.0	113.8	111.5	112.6	115.5				
	Specific Cond. (µs/cm)	198.6	186.2	183.7	185.8	190.3				
	Redox (mV)	56.3	59.6	60.3	55.6	48.8				
	DO (mg/L)	0.39	0.27	0.22	0.25	0.35				
	DO (%)	3.0	2.0	1.7	1.9	2.8				
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Suspect Solids rusty	Same.	Same	Same	Same.				
	Turbidity (NTU):	—	—	—	—	6.47				
	Interval Purge Volume (L):	0.8	0.8	0.8	0.8	0.8				
	Cumulative Purge Volume (L):	0.8	1.6	2.4	3.2	4.0				
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:							
Time logged on YSI (24hr):	14:18	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X							
Sample Time	14:20									

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): SRK08-SP7B  
 Sample Date (Con't): Sept. 20 / 2016  
 Sample Time (Con't): 14:20

**General Notes (Condition of well, or other features):****Additional Purge Data:**

Additional Purge Data:										
Purge Interval Time ( ) min, Vol. ( ) L										
Depth to water (m)										
Temperature (°C)										
pH (pH Units)										
Cond. (µs/cm)										
Specific Cond. (µs/cm)										
Redox (mV)										
DO (mg/L)										
DO (%)										
Appearance & Odour (Clear, Silty, HC odours, etc.)										
Turbidity (NTU)										
Interval Purge Volume (L)										
Cumulative Purge Volume (L):										

**Consumables:**

- 1/4" HDPE (Peristaltic) 30 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK08-SBR2	Project Number:	1343-005.31	Date:	Sept. 20, 2016	
Station Status:	G002	Client:	GY - AAM	Samplers:	JC & GH	
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	10°C Sunny	
UTM Location:	ZD0E.0584482N.6913127E	Waypoint:	GPS WPT ID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam 02 Nos. 0349-0351	Purge Method:				
Duplicate Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name DUB-2	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
Field Blank Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name FB-1				Other	
Initial Depth to Water (m):	6.749	Purge Start Time:	16:14	Purge End Time:	16:33	
Depth to Bottom (m):	19.102	Purge Interval Time ( ) min, Vol. (05) L	16:20	16:24	16:29	16:33
Submerged Tubing Depth (m):	18.700	Depth to water (m)	6.878	6.887	6.888	6.889
Well Stick-up Height (m):	*see sketch on	Temperature (°C)	6.8	6.2	6.0	6.0
Estimated Water Volume (L):	24.7	pH (pH Units)	5.92	5.90	5.90	5.89
DTB - DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	11009	1531	1515	1514	
	Specific Cond. (µs/cm)	2469	2388	2378	2379	
	Redox (mV)	82.7	84.3	85.5	86.6	
	DO (mg/L)	1.00	0.97	0.99	0.99	
	DO (%)	8.1	7.8	7.9	7.9	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	yellowish no odour	Same	Same	Same	
	Turbidity (NTU):	-	-	-	27.7	
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	
	Cumulative Purge Volume (L):	0.5	1.0	1.5	2.0	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	16:35	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit				Other	
Sample Time	16:40					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

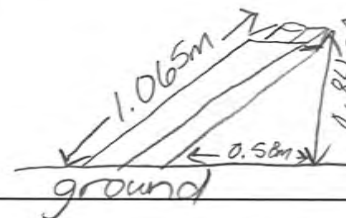


Sample Site (Con't): SRK08-SBR2  
 Sample Date (Con't): Sept 20 2016  
 Sample Time (Con't): 16:35

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- well at an angle like:
- Dup-2 collected
- FB-1 Collected
- slight wind no dust
- DI date 8 Sept 2016



**Consumables:**

- 1/4" HDPE (Peristaltic) 6 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters 1 each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	Dup-2 collected
1 L (plastic)	General Chemistry	500 ml	-	-	1000	Dup-2 collected

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRK08-SRB3	Project Number:	1343-005.31	Date:	Sept. 21, 2016		
Station Status:	good	Client:	GY - AAM	Samplers:	JC & CH		
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 3°C		
UTM Location:	Z08E.0584313 N. 64113150	Waypoint:	GPS ID	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok		
Photos:	Cam. 2 Nos 0361-0363	Purge Method:					
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>				
Initial Depth to Water (m):	11.615	Purge Start Time:	10:10	Purge End Time:	10:22		
Depth to Bottom (m):	13.245	Purge Interval Time ( ) min, Vol. (5) L	10:12	10:14	10:16	10:19	10:22
Submerged Tubing Depth (m):	bottom	Depth to water (m)	11.617	11.610	11.611	11.610	11.610
Well Stick-up Height (m):	0.985 m	Temperature (°C)	1.8	1.4	1.3	1.2	1.4
Estimated Water Volume (L):	3.26 L	pH (pH Units)	6.67	6.74	6.77	6.77	6.79
DTB - DTW x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	2165	2114	1785	2090	2097	
	Specific Cond. (µs/cm)	3888	3845	3249	3826	3825	
	Redox (mV)	52.6	51.5	51.2	51.8	50.8	
	DO (mg/L)	2.81	3.28	3.52	3.28	2.95	
	DO (%)	20.4	23.9	25.1	23.3	21.1	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear, no odour	same	same	same	same	
	Turbidity (NTU):	-	-	-	-	25.3	
	Interval Purge Volume (L):	5.0	5.0	5.0	5.0	5.0	
	Cumulative Purge Volume (L):	5.0	10.0	15.0	20.0	25.0	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:				
Time logged on YSI (24hr):	10:23	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other	
YSI Meter or Pen Unit?:	<input type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	<input checked="" type="checkbox"/>					
Sample Time	10:25						

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): SRK08 - SBR3

Sample Date (Con't): Sept 21, 2016

Sample Time (Con't): 10:25

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- good producing well  
- New water in well.

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) 50 ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	—
1 L (plastic)	General Chemistry	500 ml	-	-	1000	—

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	SRX08-SBR4	Project Number:	1343-005.31	Date:	Sept. 21, 2016					
Station Status:	67002	Client:	GY - AAM	Samplers:	JC & CAH					
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	chilly 3°C					
UTM Location:	208E.058444 N. 6913144	Waypoint:	GPS HEM ID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok					
Photos:	Cam: 42 Nos. 0358-0360	Purge Method:								
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓							
Initial Depth to Water (m):	7.315 m.	Purge Start Time:	9:18	Purge End Time:	9:53					
Depth to Bottom (m):	21.383 m	Purge Interval Time ( ) min, Vol. 0.5 L	9:27	9:35	9:42	9:46	9:52			
Submerged Tubing Depth (m):	20.0	Depth to water (m)	7.315	7.320	Same	Same	Same			
Well Stick-up Height (m):	0.70 m	Temperature (°C)	2.9	3.2	3.3	3.2	3.1			
Estimated Water Volume (L):	28.1 L	pH (pH Units)	5.85	5.83	5.84	5.84	5.84			
DTB - DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	5098	5177	5183	5164	5169				
	Specific Cond. (µs/cm)	8952	8899	8857	8873	8885				
	Redox (mV)	90.9	93.6	93.9	93.9	93.6				
	DO (mg/L)	0.36	0.19	0.15	0.14	0.17				
	DO (%)	2.8	1.4	1.2	1.2	1.4				
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear Colourless Odourless	Same	Same	Same	Same				
	Turbidity (NTU):	-	-	-	-	1.15				
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	0.5				
	Cumulative Purge Volume (L):	0.5	1.0	1.5	2.0	2.5				
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:							
Time logged on YSI (24hr):	9:52	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓							
Sample Time	9:55									

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): SRK08 - SBR4  
 Sample Date (Con't): Sept. 21, 2016  
 Sample Time (Con't): 9:55

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- Well has good recharge  
 - new tubing in well.

**Consumables:**

- 1/4" HDPE (Peristaltic) 70 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	-
1 L (plastic)	General Chemistry	500 ml	-	-	1000	-

# GROUNDWATER SAMPLE COLLECTION SHEET

12.3

Sample Site:	V34	Project Number:	1343-005.31	Date:	Sept. 22 / 2016						
Station Status:	SLOW RECHARGE	Client:	GY - AAM	Samplers:	AN, MM.						
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Overcast/windy ~ 5°C						
UTM Location:	Z. 8 E. 593427 N. 690247b	Waypoint:	<del>GPS ID</del>	Recovery:	<input type="checkbox"/> Good <input type="checkbox"/> Bad <input checked="" type="checkbox"/> Ok						
Photos:	Cam. 1 Nos. 544-546	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	<del>X</del>									
Initial Depth to Water (m):	5.725	Purge Start Time:	8:25	Purge End Time:	8:53						
Depth to Bottom (m):	12.036	Purge Interval Time (5) min, Vol. ( ) L	8:27	8:32	8:37	8:43	8:47	8:53			
Submerged Tubing Depth (m):	~ 5.0	Depth to water (m)	—	6.087	6.170	6.205	6.220	6.227			
Well Stick-up Height (m):	0.52	Temperature (°C)	4.4	3.8	4.2	4.4	4.3	4.3			
Estimated Water Volume (L):	~ 12.0	pH (pH Units)	6.41	6.79	6.72	6.79	6.76	6.79			
DTB – DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	1422	1344	1344	1364	1351	1350				
	Specific Cond. (µs/cm)	2354	2269	2229	2235	2233	2237				
	Redox (mV)	-49.0	-48.1	-45.0	-42.4	-41.0	-38.1				
	DO (mg/L)	2.28	0.32	0.36	0.97	1.07	1.28				
	DO (%)	16.1	2.4	2.9	7.5	8.3	4.3				
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	Same.	Same	same	same	Same				
	Turbidity (NTU):	—	—	—	—	—	1.54				
	Interval Purge Volume (L):	—	0.7	0.45	0.45	0.3	0.35				
	Cumulative Purge Volume (L):	—	0.7	1.15	1.90	2.2	2.55				
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	8:55	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	<del>X</del>									
Sample Time	8:55										

2.05  
1.70  
3

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): V34  
 Sample Date (Con't): 22-Sept-16  
 Sample Time (Con't): 8:55

**General Notes (Condition of well, or other features):****Additional Purge Data:**

Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

# GROUNDWATER SAMPLE COLLECTION SHEET

16

Sample Site:	V35.	Project Number:	1343-005.31	Date:	02-20-16.						
Station Status:	SLOW RECHARGE	Client:	GY - AAM	Samplers:	AN/MM.						
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	windy + overcast.						
UTM Location:	ZONE 05 175 N. 6902554	Waypoint:	GPS AN ID N/A.	Recovery:	<input type="checkbox"/> Good <input checked="" type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam. 1 Nos. 547-549.	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo						
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X								
Initial Depth to Water (m):	6.626	Purge Start Time:	09:36.	Purge End Time:	10:06						
Depth to Bottom (m):	16.003	Purge Interval Time (5.) min, Vol. ( ) L	9:39	9:45	9:50	9:55	10:01	10:06			
Submerged Tubing Depth (m):	~13	Depth to water (m)	—	6.854	6.957	7.030	7.105	7.180			
Well Stick-up Height (m):	0.48	Temperature (°C)	4.7	4.5	4.3	4.2	4.1	4.2			
Estimated Water Volume (L):	18.8	pH (pH Units)	7.19	7.07	6.99	6.99	7.00	6.99			
DTB – DTW x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB – DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations: $\frac{5.99 \times 16.16 \times 3}{6.626} \times 2 = 7.54$	Cond. (µs/cm)	1730	1594	1575	1562	1556	1557				
	Specific Cond. (µs/cm)	2806	2615	2598	2592	2588	2581				
	Redox (mV)	151.7	136.2	141.8	142.6	145.4	146.5				
	DO (mg/L)	2.83	1.55	1.56	1.65	1.82	1.70				
	DO (%)	21.0	12.1	12.1	12.6	14.0	13.2				
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear	Same	Same	Same.	Same	Same.				
	Turbidity (NTU):	—	0	—	—	—	22.0				
	Interval Purge Volume (L):	—	0.45	0.4	0.3	0.45	0.4				
	Cumulative Purge Volume (L):	—	0.45	0.85	1.15	1.6	2.0				
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	10:08	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X								
Sample Time	10:10										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): V35

Sample Date (Con't): 22-sep-16

Sample Time (Con't): 10:10

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

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

Consumables:

- 1/4" HDPE (Peristaltic) 1.0 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

Sample Collection

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	V36	Project Number:	1343-005.31	Date:	20-sept-16
Station Status:	GOOD	Client:	GY - AAM	Samplers:	AN/MM
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	windy overcast
UTM Location:	ZONE. 0593131 N. 6902916	Waypoint:	GPS N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. 1 Nos. 553-555	Purge Method:			
Duplicate Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name Dup-4	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name FB-3	manual	<del>*</del>		
Initial Depth to Water (m):	8.847	Purge Start Time:	12:50	Purge End Time:	13:02
Depth to Bottom (m):	11.240	Purge Interval Time (3) min, Vol. (5) L	12:54	12:58	13:02
Submerged Tubing Depth (m):	~10	Depth to water (m)	/	/	/
Well Stick-up Height (m):	0.50	Temperature (°C)	4.2	3.9	4.0
Estimated Water Volume (L):	4.8	pH (pH Units)	7.04	6.94	6.91
<p>DTB - DTW) x (πr<sup>2</sup>)1000 (for well diameter) = 1 well volume            (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:  <math display="block">\frac{11.240 - 8.847}{2} \times 2 = 4.786</math></p>	Cond. (µs/cm)	1473	1734	1895	
	Specific Cond. (µs/cm)	2440	2909	3164	
	Redox (mV)	-27.9	5.0	29.4	
	DO (mg/L)	3.15	1.97	2.52	
	DO (%)	24.6	15.2	19.3	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear	clear	same	
	Turbidity (NTU):	/	/	5.44	
	Interval Purge Volume (L):	5	5	5	
	Cumulative Purge Volume (L):	5	10	15	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	13:03	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit				
Sample Time	13:05	manual			

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): V36.

 Sample Date (Con't): 22-sept-16.

 Sample Time (Con't): 13:05.

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- attempted peristaltic, just out of reach so had to sample w/ water
- FB batch date 8-sept-16.  
↳ windy conditions during sampling + FB

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft. (12m).
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other PVC cap + ELR
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	(+ Dup-4)
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	(+ Dup-4)

# GROUNDWATER SAMPLE COLLECTION SHEET

24 - Sept

Sample Site:	V37.	Project Number:	1343-005.31	Date:	22-Sept-16
Station Status:	SLOW RECHARGE (RETURN)	Client:	GY - AAM	Samplers:	AN/MM.
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	windy overcast
UTM Location:	ZONE E. 05933091 N.	Waypoint:	GPS ID	Recovery:	<input type="checkbox"/> Good <input checked="" type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. 1 Nos. 556-558	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name 6903079	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name	manual			
Initial Depth to Water (m):	8.553	Purge Start Time:	13:54	Purge End Time:	13:59
Depth to Bottom (m):	14.410	Purge Interval Time ( ) min, Vol. ( ) L	13:59	10:41	
Submerged Tubing Depth (m):	~11	Depth to water (m)			
Well Stick-up Height (m):	0.485	Temperature (°C)	2.9	3.6	
Estimated Water Volume (L):	1.7	pH (pH Units)	7.23	7.46	
<p>DTB - DTW) x (πr<sup>2</sup> 1000 (for well diameter) = 1 well volume            (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:  <math display="block">\frac{3.50 \times 14.410}{8.553} = 5.857</math> <math display="block">5.857 \times 2 = 11.714</math></p>	Cond. (µs/cm)	647	670		
	Specific Cond. (µs/cm)	1119	1133		
	Redox (mV)	127.5	103.9		
	DO (mg/L)	4.46	4.31		
	DO (%)	53.1	32.6		
	Appearance & Odour (Clear, Silty, HC odours, etc.)	slightly cloudy	cloudy		
	Turbidity (NTU):		23.4		
	Interval Purge Volume (L):	10			
	Cumulative Purge Volume (L):	10			
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	10:43	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit				
Sample Time	10:40 on Sept 24	Manual			

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): V37 -

Sample Date (Con't): 24-sept-16.

Sample Time (Con't): 10:40

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- Purged any slow recharge,  
will return later to sample.  
- returned to sample on 24-sept  
DTW 9.713m

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	11000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	x16A	Project Number:	1343-005.31	Date:	Sept. 22, 2016					
Station Status:	900d	Client:	GY - AAM	Samplers:	JC, CH					
Piezometer Diameter:	1.5"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	cloudy 5°C					
UTM Location:	Z08E.0579446N.691842	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok					
Photos:	Cam. FLK Nos 0397-6399	Purge Method:								
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓							
Initial Depth to Water (m):	3.650 m	Purge Start Time:	11:48			Purge End Time:				
Depth to Bottom (m):	5.410 m	Purge Interval Time ( ) min, Vol. ( ) L	11:52	11:55	11:57	11:59	12:01	12:04	12:06	12:08
Submerged Tubing Depth (m):	5.0 m	Depth to water (m)	3.65	3.641	3.645	3.640	3.650	3.650	3.650	3
Well Stick-up Height (m):	0.842 m	Temperature (°C)	6.3	6.3	6.3	6.4	6.4	6.5	6.5	6.4
Estimated Water Volume (L):	352 L	pH (pH Units)	7.86	7.74	7.69	7.64	7.61	7.60	7.57	7.55
DTB - DTW x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	266.6	250.4	244.0	241.5	240.6	240.2	239.8	239.6	
	Specific Cond. (µs/cm)	414.0	387.6	379.6	374.7	372.8	371.7	370.9	371.7	
	Redox (mV)	-75.9	-58.6	-53.1	-47.9	-44.8	-42.0	-40.1	-38.4	
	DO (mg/L)	2.53	2.57	2.65	2.52	2.56	2.50	2.48	2.44	
	DO (%)	20.6	20.9	21.5	20.4	20.9	20.4	20.0	19.8	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	same	same	same	same	same	same	same	
	Turbidity (NTU):	-	-	-	-	-	-	-	0.42	
	Interval Purge Volume (L):	0.5L	0.5L	0.5L	0.5L	0.5L	0.5	0.5L	0.5L	
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5L	2.0L	2.5L	3.0L	3.5L	4.0L	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:							
Time logged on YSI (24hr):	12:09	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓							
Sample Time	12:10									

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): X16A  
 Sample Date (Con't): Sept. 22, 2016  
 Sample Time (Con't): 12:10

**General Notes (Condition of well, or other features):**  
 - good producer; no draw-down  
 - well cap held on with glove

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

- Consumables:**
- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
  - 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
  - 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
  - 1/4" Silicon \_\_\_\_\_ ft.
  - 0.45 micron inline filters \_\_\_\_\_ each
  - D-25 (2" well) foot valves \_\_\_\_\_ each
  - D-16 (1" well) foot valves \_\_\_\_\_ each
  - SS-10 (5/8" well) foot valves \_\_\_\_\_ each
  - 1" HDPE Bailer \_\_\_\_\_ each
  - 2" HDPE Bailer \_\_\_\_\_ each
  - Other \_\_\_\_\_
  - Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	1L	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X16B	Project Number:	1343-005.31	Date:	Sept. 22, 2016	
Station Status:	good	Client:	GY - AAM	Samplers:	JC 3CA	
Piezometer Diameter:	3"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	cloudy 5°C	
UTM Location:	Z08E0579446 N.6714842	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam. 2 Nos. 0400-0402	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	<input checked="" type="checkbox"/>				
Initial Depth to Water (m):	3.751	Purge Start Time:	12:13	Purge End Time:	12:27	
Depth to Bottom (m):	29.050	Purge Interval Time ( ) min, Vol. ( ) L	12:19	12:22	12:24	12:27
Submerged Tubing Depth (m):	28.450 m	Depth to water (m)	3.752	3.752	3.751	3.752
Well Stick-up Height (m):	1.030 m	Temperature (°C)	4.0	3.8	3.7	3.5
Estimated Water Volume (L):	50.6 L	pH (pH Units)	7.67	7.71	7.76	7.79
DTB - DTW) x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	251.6	242.7	245.0	244.0	
	Specific Cond. (µs/cm)	419.8	408.2	413.4	414.0	
	Redox (mV)	-38.8	-40.6	-40.3	-40.5	
	DO (mg/L)	4.27	4.99	4.34	4.79	
	DO (%)	32.7	37.8	32.8	35.6	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	med turbid no odour	same	same	
	Turbidity (NTU):	-	-	-	96.4	
	Interval Purge Volume (L):	7.5 L	7.5 L	7.5	7.5 L	
	Cumulative Purge Volume (L):	7.5 L	15 L	22.5 L	30 L	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	12:28	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	<input checked="" type="checkbox"/>				
Sample Time	12:30	<input checked="" type="checkbox"/>				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): X 16B

 Sample Date (Con't): Sept. 22, 2010

 Sample Time (Con't): 12:30

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**
**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters 1 each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	1.0 L	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X17A	Project Number:	1343-005.31	Date:	23-2017-16
Station Status:	Good	Client:	GY - AAM	Samplers:	MM/AN
Piezometer Diameter:	1.5"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	er sunny / breezy
UTM Location:	Z.08E.0579724 N.6914648	Waypoint:	GPS N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok
Photos:	Cam. 1 Nos. _____	Purge Method:			
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		X		
Initial Depth to Water (m):	2.261	Purge Start Time:	15:02	Purge End Time:	15:23
Depth to Bottom (m):	6.085	Purge Interval Time (5) min, Vol. ( ) L	15:03	15:08	15:13
Submerged Tubing Depth (m):	~5	Depth to water (m)	2.269	2.269	2.269
Well Stick-up Height (m):	6.84	Temperature (°C)	4.8	3.6	3.7
Estimated Water Volume (L):	4.2	pH (pH Units)	7.60	7.45	7.37
<p>DTB - DTW) x (πr<sup>2</sup>1000 (for well diameter) = 1 well volume            (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume            (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations:            5            6.1085            2.261            3.824            *21.1 = 4.21            7.648</p>	Cond. (µs/cm)	397.2	340.4	328.4	323.3
	Specific Cond. (µs/cm)	645.5	574.3	563.6	545.7
	Redox (mV)	-37.7	-26.5	-14.1	-15.1
	DO (mg/L)	1.20	0.29	0.21	0.20
	DO (%)	8.6	2.1	1.6	1.5
	Appearance & Odour (Clear, Silty, HC odours, etc.)	Clear, Sulphur odour	Clear same	Clear, Sulphur odour	same
	Turbidity (NTU):	—	—	—	—
	Interval Purge Volume (L):	—	1	0.95	0.80
	Cumulative Purge Volume (L):	—	1	1.95	2.75
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:		
Time logged on YSI (24hr):	15:24	Waterra	Peristaltic	Disp. Bailer	Redi-flo
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		X		
Sample Time	15:25				

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): X17A

 Sample Date (Con't): 23-sept-16

 Sample Time (Con't): 15:25

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

\* temperature fluctuating directly  
w/ the sunlight, therefore sampled  
without being in range, other  
parameters look good

**Consumables:**

- 1/4" HDPE (Peristaltic) 1 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 0.5 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X17B	Project Number:	1343-005.31	Date:	23-sept-16	
Station Status:	GOOD	Client:	GY - AAM	Samplers:	AN/MM	
Piezometer Diameter:	# 3"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny/breezy	
UTM Location:	ZONE: 6529754 N.6914648	Waypoint:	GPS N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam. <input type="checkbox"/> Nos. _____	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	manual				
Initial Depth to Water (m):	1.829	Purge Start Time:	15:08	Purge End Time:	15:38	
Depth to Bottom (m):	22.100	Purge Interval Time ( ) min, Vol. ( ) L	5	15:36	15:32	
Submerged Tubing Depth (m):	18	Depth to water (m)	/	15:34	15:36	
Well Stick-up Height (m):	0.38	Temperature (°C)	2.9	2.8	2.8	
Estimated Water Volume (L):	92.4	pH (pH Units)	7.11	7.16	7.08	
<p>3" = 0.0762m = 4.56 * r = 0.0381 = 4.56 * DTB - DTW) x (πr<sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume</p> <p>Calculations: 0.0 22.100 * 4.56 = 92.44 20.271</p>	Cond. (µs/cm)	1027	1080	1077	1071	
	Specific Cond. (µs/cm)	1738	1874	1809	1861	1843
	Redox (mV)	-15.2	-39.6	-44.2	-47.1	-38.8
	DO (mg/L)	2.11	1.92	1.97	2.19	1.92
	DO (%)	14.9	13.4	14.1	12.7	13.7
	Appearance & Odour (Clear, Silty, HC odours, etc.)	very turbid (brown)	same	same	same	same
	Turbidity (NTU):	/	/	/	/	483
	Interval Purge Volume (L):	6	6.5	5	5	5
	Cumulative Purge Volume (L):	6	12.5	16	21	26
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	15:40 15:39	Waterra	Peristaltic	Disp. Bailer	Redi-flo	
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit	manual				
Sample Time	15:45					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): X17B

 Sample Date (Con't): 23<sup>rd</sup> Sept-16

 Sample Time (Con't): 15:45
**Additional Purge Data:**

Purge Interval Time ( <u>5</u> ) min, Vol. ( ) L										
Depth to water (m)										
Temperature (°C)										
pH (pH Units)										
Cond. (µs/cm)										
Specific Cond. (µs/cm)										
Redox (mV)										
DO (mg/L)										
DO (%)										
Appearance & Odour (Clear, Silty, HC odours, etc.)										
Turbidity (NTU)										
Interval Purge Volume (L)										
Cumulative Purge Volume (L):										

**General Notes (Condition of well, or other features):**
**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.  
 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.  
 5/8" HDPE (Waterra) \_\_\_\_\_ ft.  
 1/4" Silicon \_\_\_\_\_ ft.  
 0.45 micron inline filters \_\_\_\_\_ each  
 D-25 (2" well) foot valves \_\_\_\_\_ each  
 D-16 (1" well) foot valves \_\_\_\_\_ each  
 SS-10 (5/8" well) foot valves \_\_\_\_\_ each  
 1" HDPE Bailer \_\_\_\_\_ each  
 2" HDPE Bailer \_\_\_\_\_ each  
 Other \_\_\_\_\_  
 Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1,000	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X18A	Project Number:	1343-005.31	Date:	Sept. 22, 2016						
Station Status:	good	Client:	GY - AAM	Samplers:	JC 3 CH						
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	cloudy 5°C						
UTM Location:	ZDBE0570190N 6914717E	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok						
Photos:	Cam. <del>5</del> Nos 0403-0405	Purge Method:									
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo						
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓								
Initial Depth to Water (m):	4.282 m	Purge Start Time:	13:18	Purge End Time:	14:01						
Depth to Bottom (m):	12.349 m	Purge Interval Time ( ) min, Vol. 0.5 L	13:22	13:25	13:27	13:30	13:33	13:37	13:41	13:47	13:55
Submerged Tubing Depth (m):	11.8 m	Depth to water (m)	4.709	4.822	4.902	4.959	4.933	4.935	4.956	4.929	4.929
Well Stick-up Height (m):	0.622 m	Temperature (°C)	3.4	3.2	3.2	3.2	3.3	3.3	3.2	3.4	3.3
Estimated Water Volume (L):	16.1 L	pH (pH Units)	7.02	6.94	6.92	6.91	6.90	6.91	6.90	6.90	6.90
DTB - DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	1035	1029	1032	1038	1065	1069	1068	1072	1070	
	Specific Cond. (µs/cm)	1769	1763	1770	1780	1818	1825	1827	1824	1822	
	Redox (mV)	17.0	12.7	7.4	3.4	-2.3	-6.9	-9.8	-14.6	-18.0	
	DO (mg/L)	0.16	0.12	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	DO (%)	1.3	0.6	0.0	-0.2	-0.2	-0.4	-0.2	-0.2	0.0	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	low turbid no odour	same	same	same	same	same	same	same	same	
	Turbidity (NTU):	-	-	-	-	-	-	-	-	-	
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	0.5	0.5	0.5	1.0	1.0	
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5L	2.0L	2.5L	3.0L	3.5L	4.5L	5.5L	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:								
Time logged on YSI (24hr):	14:02	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other					
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit										
Sample Time	14:05										

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): X18A  
 Sample Date (Con't): Sept. 22, 2016  
 Sample Time (Con't): 14:05

**General Notes (Condition of well, or other features):**  
 - black stick-ups, no red casing,  
 follow line locate flags.

Additional Purge Data:										
Purge Interval	0.5 - 1.0L									
Time ( ) min, Vol. ( ) L		13:59	14:01							
Depth to water (m)		4.929	4.929							
Temperature (°C)		3.4	3.4							
pH (pH Units)		6.90	6.90							
Cond. (µs/cm)		1070	1068							
Specific Cond. (µs/cm)		1824	1816							
Redox (mV)		-19.3	-20.3							
DO (mg/L)		0.0	0.0							
DO (%)		-0.2	-0.3							
Appearance & Odour (Clear, Silty, HC odours, etc.)		same	same							
Turbidity (NTU)		-	1.13							
Interval Purge Volume (L)		0.5L	0.5L							
Cumulative Purge Volume (L):		6.0L	6.5L							

**Consumables:**

- 1/4" HDPE (Peristaltic) 1 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 1/2 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	125 ml	
1 L (plastic)	General Chemistry	500 ml	-	-	1.0L	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X188	Project Number:	1343-005.31	Date:	Sept. 22, 2016							
Station Status:	good	Client:	GY - AAM	Samplers:	TC 3 CH							
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	cloudy 5°C							
UTM Location:	Z08E057984N. 6914717	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok							
Photos:	Cam. <sup>SLR</sup> 2 Nos. 0406 - 0408	Purge Method:										
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Watterra	Peristaltic	Disp. Bailer	Redi-flo	Other						
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓									
Initial Depth to Water (m):	4.012 m	Purge Start Time:	14:11			Purge End Time:	14:49					
Depth to Bottom (m):	10.736 m	Purge Interval Time ( ) min, Vol. ( ) L	0.5	14:15	14:18	14:22	14:25	14:30	14:38	14:44	14:47	14:49
Submerged Tubing Depth (m):	10.236 m	Depth to water (m)	4.050	4.052	4.055	4.053	4.050	4.050	4.050	4.050	4.050	4.050
Well Stick-up Height (m):	0.682 m	Temperature (°C)	3.3	3.3	3.3	3.3	3.4	3.3	3.3	3.3	3.3	3.4
Estimated Water Volume (L):	12.4 L	pH (pH Units)	6.93	6.88	6.88	6.87	6.86	6.85	6.85	6.85	6.85	6.85
DTB - DTW) x (πr <sup>2</sup> )1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	984	1005	1011	1011	1010	1003	999	994	1003		
	Specific Cond. (µs/cm)	1686	1722	1735	1729	1721	1711	1706	1700	1706		
	Redox (mV)	-28.5	-22.3	-17.9	-14.5	-10.1	-5.1	-2.1	-1.0	-0.3		
	DO (mg/L)	0.10	0.03	0.00	0.00	0.0	0.02	0.00	0.0	0.0		
	DO (%)	0.6	0.2	0.0	-0.3	-0.2	0.2	0.0	0.0	0.0		
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear no odour	same	same	same	same	same	same	same	same		
	Turbidity (NTU):	-	-	-	-	-	-	-	-	0.04		
	Interval Purge Volume (L):	0.5L	0.5L	0.5L	0.5L	1.0L	1.5L	1.0	0.5	0.5		
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5L	2.0L	3.0L	4.5L	5.5L	6.0L	6.5L		
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:									
Time logged on YSI (24hr):	14:49	Watterra	Peristaltic	Disp. Bailer	Redi-flo	Other						
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓									
Sample Time	14:52											

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): X18B

Sample Date (Con't): Sept. 22, 2016

Sample Time (Con't): 14:52

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

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

Consumables:

- 1/4" HDPE (Peristaltic) 1 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 1/2 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	<u>125 ml</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1.0 L</u>	

Dup 3



# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X24-960	Project Number:	1343-005.31	Date:	Sept. 22 / 16					
Station Status:	good	Client:	GY - AAM	Samplers:	JC & CH					
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	Sunny 5°C					
UTM Location:	ZOB E. 0581548N. 6914296	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok					
Photos:	CamE... Nos 6379-0381	Purge Method:								
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
Field Blank Collected:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No Name FB-2		✓							
Initial Depth to Water (m):	3.735 m.	Purge Start Time:	8:28			Purge End Time:	9:04			
Depth to Bottom (m):	28.472 m	Purge Interval Time ( ) min, Vol. ( ) L	0.5							
Submerged Tubing Depth (m):	28.0 m	Depth to water (m)	8:32	8:37	8:42	8:46	8:50	8:55	8:59	9:03
Well Stick-up Height (m):	0.799 m	Temperature (°C)	4.209	4.395	4.500	4.595	4.683	4.735	4.795	4.872
Estimated Water Volume (L):	49.5 L	pH (pH Units)	4.6	4.8	4.7	4.7	4.7	4.7	4.7	4.7
DTB - DTW) x (πr <sup>2</sup> 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	6.04	6.05	6.00	6.07	6.08	6.08	6.07	6.08	
	Specific Cond. (µs/cm)	2571	2589	2573	2570	2573	2572	2567	2566	
	Redox (mV)	4205	4217	4198	4199	4201	4200	4190	4192	
	DO (mg/L)	61.1	24.9	4.4	-4.8	-10.3	-14.1	-15.9	-18.8	
	DO (%)	0.96	0.61	0.22	0.14	0.11	0.11	0.07	0.06	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	7.2	4.9	1.8	1.0	0.9	0.9	0.6	0.6	
	Turbidity (NTU):	clear metallic odour	same	same	same	same	same	same	same	
	Interval Purge Volume (L):	-	-	-	-	-	-	-	11.23	
	Cumulative Purge Volume (L):	0.5L	1.0L	1.5L	2.0L	2.5	3.0	3.5	4.0	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:							
Time logged on YSI (24hr):	9:03	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other				
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓							
Sample Time	9:05									

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): X24-96D

 Sample Date (Con't): Sept. 22, 2016

 Sample Time (Con't): 9:05

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

-FB-2 collected slight wind, no dust.  
Collected in the back of the truck.

**Consumables:**

- 1/4" HDPE (Peristaltic) 100 ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon 1/2 ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input type="checkbox"/> HNO <sub>3</sub>	<u>125 ml</u>	
1 L (plastic)	General Chemistry	500 ml	-	-	<u>1.0L</u>	

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X25 - 96A	Project Number:	1343-005.31	Date:	Sept. 22, 2016	
Station Status:	Good	Client:	GY - AAM	Samplers:	JC BCH	
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	cloudy 5°C	
UTM Location:	Z08 E 0580414 N 6914122	Waypoint:	GPS ___ ID ___	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam. ERM Nos. 0385 - 0387	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓			
Initial Depth to Water (m):	3.339 m	Purge Start Time:	9:56	Purge End Time:	10:68	
Depth to Bottom (m):	9.505 m	Purge Interval Time ( ) min, Vol. ( ) L	9:59	10:02	10:05	10:68
Submerged Tubing Depth (m):	9.0 m	Depth to water (m)	3.336	Same	Same	Same
Well Stick-up Height (m):	0.485	Temperature (°C)	4.1	4.0	4.0	4.0
Estimated Water Volume (L):	12.3 L	pH (pH Units)	6.89	6.81	6.83	6.83
DTB - DTW x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	1160	1165	1167	1167	
	Specific Cond. (µs/cm)	1930	1944	1946	1947	
	Redox (mV)	-66.5	-63.9	-62.1	-60.5	
	DO (mg/L)	0.35	0.10	0.08	0.04	
	DO (%)	2.8	1.0	0.6	0.3	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear slightly yellow	metallic smell	same	same	
	Turbidity (NTU):	-	-	-	0.0	
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	
	Cumulative Purge Volume (L):	0.5	1.0	1.5	2.0	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	10:09	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓			
Sample Time	10:10					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): X25-96A

 Sample Date (Con't): Sept 22 2016

 Sample Time (Con't): 10:10

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**General Notes (Condition of well, or other features):**

- well has good recharge no drawdown

**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	20	-
1 L (plastic)	General Chemistry	500 ml	-	-	1000	-

# GROUNDWATER SAMPLE COLLECTION SHEET

Sample Site:	X25-96B	Project Number:	1343-005.31	Date:	Sept. 22, 2016	
Station Status:		Client:	GY - AAM	Samplers:	JC BCH	
Piezometer Diameter:	2"	Project Name:	Faro 2016 GW Fall Sampling Program	Weather/Temperature:	cloudy 5°C	
UTM Location:	ZOB E 158044 N. 0914122	Waypoint:	GPS ID N/A	Recovery:	<input checked="" type="checkbox"/> Good <input type="checkbox"/> Bad <input type="checkbox"/> Ok	
Photos:	Cam 02 Nos 0388 - 0394	Purge Method:				
Duplicate Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
Field Blank Collected:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No Name _____		✓			
Initial Depth to Water (m):	3.202	Purge Start Time:	10:20		Purge End Time:	10:31
Depth to Bottom (m):	19.750	Purge Interval Time ( ) min, Vol. (0.5) L	10:23	10:26	10:28	10:31
Submerged Tubing Depth (m):	19.2 m	Depth to water (m)	3.202	Same	Same	Same
Well Stick-up Height (m):	0.429	Temperature (°C)	4.1	4.2	4.3	4.1
Estimated Water Volume (L):	33.1 L	pH (pH Units)	7.34	7.34	7.39	7.40
DTB - DTW x (πr <sup>2</sup> × 1000 (for well diameter) = 1 well volume (DTB - DTW) x 8.1 (for 4" well diameter) = 1 well volume (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 0.5 (for 1" diameter) = 1 well volume  Calculations:	Cond. (µs/cm)	1179	1171	1182	1177	
	Specific Cond. (µs/cm)	1961	1961	1961	1962	
	Redox (mV)	-96.5	-97.6	-99.0	-100.3	
	DO (mg/L)	0.18	0.02	0.01	0.01	
	DO (%)	1.5	0.2	0.0	0.0	
	Appearance & Odour (Clear, Silty, HC odours, etc.)	clear metallic	Same	Same	Same	
	Turbidity (NTU):	-	-	0.1	0.35	
	Interval Purge Volume (L):	0.5	0.5	0.5	0.5	
	Cumulative Purge Volume (L):	0.5	1.0	1.5L	2.0L	
	YSI Field Parameters Logged:	<input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Sample Method:			
Time logged on YSI (24hr):	10:32	Waterra	Peristaltic	Disp. Bailer	Redi-flo	Other
YSI Meter or Pen Unit?:	<input checked="" type="checkbox"/> YSI <input type="checkbox"/> Pen Unit		✓			
Sample Time	10:35					

\*Field parameters are considered stable when the following criteria have been met; temperature ±3%, pH ±0.1, conductivity ±3%, redox ±10%, DO ±10%, turbidity 50 NTU.

Sample Site (Con't): X25-96B  
 Sample Date (Con't): 22-sept-16  
 Sample Time (Con't): 10:35

**General Notes (Condition of well, or other features):**
**Consumables:**

- 1/4" HDPE (Peristaltic) \_\_\_\_\_ ft.
- 3/8" HDPE (Microwaterra) \_\_\_\_\_ ft.
- 5/8" HDPE (Waterra) \_\_\_\_\_ ft.
- 1/4" Silicon \_\_\_\_\_ ft.
- 0.45 micron inline filters \_\_\_\_\_ each
- D-25 (2" well) foot valves \_\_\_\_\_ each
- D-16 (1" well) foot valves \_\_\_\_\_ each
- SS-10 (5/8" well) foot valves \_\_\_\_\_ each
- 1" HDPE Bailer \_\_\_\_\_ each
- 2" HDPE Bailer \_\_\_\_\_ each
- Other \_\_\_\_\_
- Other \_\_\_\_\_

Additional Purge Data:									
Purge Interval Time ( ) min, Vol. ( ) L									
Depth to water (m)									
Temperature (°C)									
pH (pH Units)									
Cond. (µs/cm)									
Specific Cond. (µs/cm)									
Redox (mV)									
DO (mg/L)									
DO (%)									
Appearance & Odour (Clear, Silty, HC odours, etc.)									
Turbidity (NTU)									
Interval Purge Volume (L)									
Cumulative Purge Volume (L):									

**Sample Collection**

Bottle Type	Parameters Analyzed	Min. Volume	Treatment <input checked="" type="checkbox"/>	Preservative Added <input checked="" type="checkbox"/>	Vol. Collected (ml)	Comments
120 ml (plastic)	Dissolved Metals	100 ml	<input checked="" type="checkbox"/> Field Filtered	<input checked="" type="checkbox"/> HNO <sub>3</sub>	120	
1 L (plastic)	General Chemistry	500 ml	-	-	1000	

**APPENDIX C**  
**Laboratory Analytical Reports**



HEMMERA ENVIROCHEM INC.  
ATTN: Natasha Sandys  
230 - 2237 2nd Avenue  
Whitehorse YK Y1A 0K7

Date Received: 27-SEP-16  
Report Date: 11-OCT-16 13:52 (MT)  
Version: FINAL

Client Phone: 867-456-4865

## Certificate of Analysis

Lab Work Order #: L1835022  
Project P.O. #: NOT SUBMITTED  
Job Reference: 1343-005.31  
C of C Numbers: 1-1343-005.31  
Legal Site Desc:

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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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-1	L1835022-2	L1835022-3	L1835022-4	L1835022-5
	Water 20-SEP-16 14:25 SRK05-SP-4A	Water 20-SEP-16 15:55 P09-SIS2	Water 20-SEP-16 13:50 SRK05-SP-4B	Water 20-SEP-16 17:45 P09-SIS1	Water 20-SEP-16 15:15 P09-SIS3	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	1340	9020	8130	6630	8740
	Hardness (as CaCO3) (mg/L)	785	8790	7820	6280	9620
	pH (pH)	6.41	6.49	6.84	6.88	6.86
	Total Suspended Solids (mg/L)	3.8	28.0	24.9	31.7	8.7
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	229	1020	1130	420	1340
	Alkalinity, Total (as CaCO3) (mg/L)	250	97	47.1	334	139
	Chloride (Cl) (mg/L)	<2.5 <sup>DLDS</sup>	<25 <sup>DLDS</sup>	<25 <sup>DLDS</sup>	<25 <sup>DLDS</sup>	<25 <sup>DLDS</sup>
	Sulfate (SO4) (mg/L)	547	12000	9880	7160	12300
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
Thallium (Tl)-Total (mg/L)						
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-6	L1835022-7	L1835022-8	L1835022-9	L1835022-10
	Water 20-SEP-16 12:55 P09-SIS4	Water 20-SEP-16 11:16 P09-SIS6	Water 20-SEP-16 16:40 SRK08-SBR2	Water 20-SEP-16 16:40 FB-1	Water 20-SEP-16 16:40 FB-1	Water 20-SEP-16 16:40 DUP-2
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	7020	5120	2160	<2.0	2220
	Hardness (as CaCO3) (mg/L)	7870	4550	1570	<0.50	1550
	pH (pH)	7.15	7.44	7.13	6.56	7.09
	Total Suspended Solids (mg/L)	9.1	95.6	20.3	<3.0	23.5
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	290	137	240	<1.0	131
	Alkalinity, Total (as CaCO3) (mg/L)	480	656	228	<2.0	229
	Chloride (Cl) (mg/L)	<25	<25	<10	<0.50	<10
	Sulfate (SO4) (mg/L)	8140	4840	1410	<0.30	1390
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
	Thallium (Tl)-Total (mg/L)					
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-11 Water 20-SEP-16 16:00 S1A	L1835022-12 Water 20-SEP-16 14:20 SRK08-SP7B	L1835022-13 Water 20-SEP-16 12:30 CH14-107- MW007A	L1835022-14 Water 20-SEP-16 14:50 SRK08-SP7A	L1835022-15 Water 20-SEP-16 13:10 CH14-107- MW007B
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	1930	196	4160	1480	1600
	Hardness (as CaCO3) (mg/L)	1250	87.0	3460	969	1050
	pH (pH)	6.68	7.01	6.46	6.80	6.68
	Total Suspended Solids (mg/L)	3.9	6.6	18.7	220	19.7
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	312	13.8	294	107	117
	Alkalinity, Total (as CaCO3) (mg/L)	283	77	163	161	227
	Chloride (Cl) (mg/L)	<10 <sup>DLDS</sup>	<0.50	<10 <sup>DLDS</sup>	<5.0 <sup>DLDS</sup>	<5.0 <sup>DLDS</sup>
	Sulfate (SO4) (mg/L)	1080	25.0	3810	820	847
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
Thallium (Tl)-Total (mg/L)						
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-16 Water 20-SEP-16 13:10 DUP-1	L1835022-17 Water 20-SEP-16 10:55 CH14-107-MW009	L1835022-18 Water 20-SEP-16 11:50 CH14-107-MW010	L1835022-19 Water 21-SEP-16 10:25 SRK08-SBR3	L1835022-20 Water 21-SEP-16 09:55 SRK08-SBR4
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	1610	1280	819	3430	7310
	Hardness (as CaCO3) (mg/L)	1040	829	449	2740	7600
	pH (pH)	6.68	6.38	6.12	7.02	6.52
	Total Suspended Solids (mg/L)	12.5	4.1	7.1	75.8	5.0
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	119	261	417	110	676
	Alkalinity, Total (as CaCO3) (mg/L)	228	307	243	584	121
	Chloride (Cl) (mg/L)	<5.0 <sup>DLDS</sup>	<2.5 <sup>DLDS</sup>	<2.5 <sup>DLDS</sup>	<10 <sup>DLDS</sup>	<25 <sup>DLDS</sup>
	Sulfate (SO4) (mg/L)	833	517	222	2360	7850
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
Thallium (Tl)-Total (mg/L)						
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-21 Water 21-SEP-16 09:05 SRK05-SP-5	L1835022-22 Water 21-SEP-16 12:52 CH15-107-MW025	L1835022-23 Water 21-SEP-16 11:25 P96-7	L1835022-24 Water 21-SEP-16 15:55 P03-05-02	L1835022-25 Water 21-SEP-16 17:12 P03-05-04
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	8070	2900	2910	2160	1940
	Hardness (as CaCO3) (mg/L)	8710	749	2050	900	1040
	pH (pH)	6.69	7.75	7.72	5.37	5.83
	Total Suspended Solids (mg/L)	18.6	216	5.5	40.9	34.8
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1140	25.1	16.1	482	288
	Alkalinity, Total (as CaCO3) (mg/L)	146	606	216	11.1	19.6
	Chloride (Cl) (mg/L)	<25 <sup>DLDS</sup>	73	<10 <sup>DLDS</sup>	<10 <sup>DLDS</sup>	<10 <sup>DLDS</sup>
	Sulfate (SO4) (mg/L)	11000	1010	2070	1530	1350
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
	Thallium (Tl)-Total (mg/L)					
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-26 Water 21-SEP-16 15:15 P03-04-06	L1835022-27 Water 21-SEP-16 11:10 CH15-107-MW022	L1835022-28 Water 21-SEP-16 17:15 P03-06-2	L1835022-29 Water 21-SEP-16 13:30 CH15-107-MW023	L1835022-30 Water 21-SEP-16 11:50 CH15-107-MW019
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	4830	1460	4850	1460	3680
	Hardness (as CaCO3) (mg/L)	1730	923	1920	495	2660
	pH (pH)	4.50	6.72	3.88	6.79	6.58
	Total Suspended Solids (mg/L)	105	37.2	1700	521	48.8
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	2160	89.7	2800	80.8	212
	Alkalinity, Total (as CaCO3) (mg/L)	<1.0	294	<1.0	456	559
	Chloride (Cl) (mg/L)	<10 <sup>DLDS</sup>	<5.0 <sup>DLDS</sup>	<25 <sup>DLDS</sup>	<2.5 <sup>DLDS</sup>	<10 <sup>DLDS</sup>
	Sulfate (SO4) (mg/L)	3940	639	5150	96.7	2300
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
Thallium (Tl)-Total (mg/L)						
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-31	L1835022-32	L1835022-33	L1835022-34	L1835022-35
	Water 21-SEP-16 09:30 S1B	Water 21-SEP-16 09:10 S2A	Water 21-SEP-16 08:20 S2B	Water 22-SEP-16 14:50 SRK05-07	Water 22-SEP-16 15:35 SRK05-08	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	827	1830	8200	3350	2820
	Hardness (as CaCO3) (mg/L)	453	1210	9180	2610	2120
	pH (pH)	7.17	6.31	6.48	7.48	7.47
	Total Suspended Solids (mg/L)	48.0	182	21.9	8.2	5.5
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	42.9	228	1130	72.1	54.0
	Alkalinity, Total (as CaCO3) (mg/L)	348	290	155	712	617
	Chloride (Cl) (mg/L)	<2.5 <sup>DLDS</sup>	<5.0 <sup>DLDS</sup>	<25 <sup>DLDS</sup>	<10 <sup>DLDS</sup>	<10 <sup>DLDS</sup>
	Sulfate (SO4) (mg/L)	139	952	10500	2110	1470
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
	Thallium (Tl)-Total (mg/L)					
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-36	L1835022-37	L1835022-38	L1835022-39	L1835022-40
	Water 22-SEP-16 08:55 V34	Water 22-SEP-16 10:10 V35	Water 22-SEP-16 13:05 V36	Water 22-SEP-16 13:05 FB-3	Water 22-SEP-16 13:05 FB-3	Water 22-SEP-16 13:05 DUP-4
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	2170	2450	3000	<2.0	3020
	Hardness (as CaCO3) (mg/L)	1630	1910	2480	<0.50	2600
	pH (pH)	7.20	7.48	7.33	6.52	7.46
	Total Suspended Solids (mg/L)	5.3	4.6	10.6	<3.0	9.7
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	113	50.3	71.8	1.0	61.0
	Alkalinity, Total (as CaCO3) (mg/L)	926	586	640	<2.0	648
	Chloride (Cl) (mg/L)	<10	<10	<10	<0.50	<10
	Sulfate (SO4) (mg/L)	646	1310	1790	<0.30	1780
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
	Thallium (Tl)-Total (mg/L)					
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-41 Water 22-SEP-16 17:25 SRK05-9	L1835022-42 Water 22-SEP-16 17:45 CH14-107- MW006A	L1835022-43 Water 22-SEP-16 18:10 CH14-107- MW006B	L1835022-44 Water 22-SEP-16 14:05 X18A	L1835022-45 Water 22-SEP-16 16:35 P01-01B
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	1290	605	662	1670	1500
	Hardness (as CaCO3) (mg/L)	817	336	383	1070	910
	pH (pH)	7.95	7.88	8.03	7.61	7.85
	Total Suspended Solids (mg/L)	<3.0	16.5	<3.0	7.7	<3.0
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	9.6	10.1	7.2	23.8	14.7
	Alkalinity, Total (as CaCO3) (mg/L)	298	321	360	318	331
	Chloride (Cl) (mg/L)	<2.5 <sup>DLDS</sup>	<0.50	<2.5 <sup>DLDS</sup>	<5.0 <sup>DLDS</sup>	<5.0 <sup>DLDS</sup>
	Sulfate (SO4) (mg/L)	532	30.6	37.5	810	667
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
Thallium (Tl)-Total (mg/L)						
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-46	L1835022-47	L1835022-48	L1835022-49	L1835022-50
	Water 22-SEP-16 15:50 P01-01A	Water 22-SEP-16 15:50 DUP-5	Water 22-SEP-16 12:10 X16A	Water 22-SEP-16 14:52 X18B	Water 22-SEP-16 12:30 X16B	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	2140	2140	366	1620	414
	Hardness (as CaCO3) (mg/L)	1400	1440	201	1030	224
	pH (pH)	7.39	7.46	8.10	7.52	8.15
	Total Suspended Solids (mg/L)	<3.0	3.3	<3.0	<3.0	1180
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	37.8	34.8	2.5	26.6	2.3
	Alkalinity, Total (as CaCO3) (mg/L)	359	362	176	321	205
	Chloride (Cl) (mg/L)	<10 <sup>DLDS</sup>	<10 <sup>DLDS</sup>	<0.50	<5.0 <sup>DLDS</sup>	<0.50
	Sulfate (SO4) (mg/L)	1200	1170	29.8	751	26.7
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
	Thallium (Tl)-Total (mg/L)					
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	<b>Sample ID Description Sampled Date Sampled Time Client ID</b>	L1835022-51 Water 22-SEP-16 09:38 P01-03	L1835022-52 Water 22-SEP-16 09:38 DUP-3	L1835022-53 Water 22-SEP-16 10:10 X25-96A	L1835022-54 Water 22-SEP-16 10:35 X25-96B	L1835022-55 Water 22-SEP-16 09:05 X24-96D
<b>Grouping</b>	<b>Analyte</b>					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	3860	3830	1770	1820	3710
	Hardness (as CaCO3) (mg/L)	2070	2100	1110	1150	2140
	pH (pH)	5.47	5.59	7.36	7.94	5.54
	Total Suspended Solids (mg/L)	178	117	30.5	9.3	143
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1190	1210	33.7	12.5	1070
	Alkalinity, Total (as CaCO3) (mg/L)	96.7	125	306	320	97.4
	Chloride (Cl) (mg/L)	<10 <sup>DLDS</sup>	<10 <sup>DLDS</sup>	<5.0 <sup>DLDS</sup>	<5.0 <sup>DLDS</sup>	<10 <sup>DLDS</sup>
	Sulfate (SO4) (mg/L)	2890	2920	913	929	2870
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
Thallium (Tl)-Total (mg/L)						
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-56 Water 22-SEP-16 09:05 FB-2	L1835022-57 Water 22-SEP-16 11:10 P01-04A	L1835022-58 Water 22-SEP-16 16:25 P96-9A	L1835022-59 Water 23-SEP-16 10:10 P01-11	L1835022-60 Water  TRAVEL BLANK
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	<2.0	1170	3130	3450	<2.0
	Hardness (as CaCO3) (mg/L)	<0.50	598	2430	2580	<0.50 <sup>HTC</sup>
	pH (pH)	7.37	7.16	7.54	6.62	6.41
	Total Suspended Solids (mg/L)	<3.0	<3.0	<3.0	119	<3.0
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.0	82.0	51.8	230	1.7
	Alkalinity, Total (as CaCO3) (mg/L)	<2.0	685	628	423	<2.0
	Chloride (Cl) (mg/L)	<0.50	7.8	<10	<10	<0.50
	Sulfate (SO4) (mg/L)	<0.30	42.2	1880	2450	<0.30
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					<0.010
	Antimony (Sb)-Total (mg/L)					<0.00050
	Arsenic (As)-Total (mg/L)					<0.0010
	Barium (Ba)-Total (mg/L)					<0.020
	Beryllium (Be)-Total (mg/L)					<0.0050
	Boron (B)-Total (mg/L)					<0.10
	Cadmium (Cd)-Total (mg/L)					<0.000050
	Calcium (Ca)-Total (mg/L)					<0.10
	Chromium (Cr)-Total (mg/L)					<0.00050
	Cobalt (Co)-Total (mg/L)					<0.00050
	Copper (Cu)-Total (mg/L)					<0.0010
	Iron (Fe)-Total (mg/L)					<0.030
	Lead (Pb)-Total (mg/L)					<0.0010
	Lithium (Li)-Total (mg/L)					<0.050
	Magnesium (Mg)-Total (mg/L)					<0.10
	Manganese (Mn)-Total (mg/L)					<0.010
	Mercury (Hg)-Total (mg/L)					<0.00020
	Molybdenum (Mo)-Total (mg/L)					<0.0010
	Nickel (Ni)-Total (mg/L)					<0.0050
	Potassium (K)-Total (mg/L)					<2.0
	Selenium (Se)-Total (mg/L)					<0.0010
	Silver (Ag)-Total (mg/L)					<0.000050
	Sodium (Na)-Total (mg/L)					<2.0
	Thallium (Tl)-Total (mg/L)					<0.00020
Titanium (Ti)-Total (mg/L)					<0.050	
Uranium (U)-Total (mg/L)					<0.00020	
Vanadium (V)-Total (mg/L)					<0.030	
Zinc (Zn)-Total (mg/L)					<0.0050	
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-61 Water 22-SEP-16 09:20 SRK05-ETA-BR2	L1835022-62 Water 23-SEP-16 08:40 SRK05-ETA-BR1	L1835022-63 Water 23-SEP-16 11:30 P05-01-03	L1835022-64 Water 23-SEP-16 11:18 P05-01-04	L1835022-65 Water 23-SEP-16 11:42 P05-01-02
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	2580	7010	3600	3600	3450
	Hardness (as CaCO3) (mg/L)	1660	5050	2650	2710	2510
	pH (pH)	6.79	5.20	6.49	6.45	6.52
	Total Suspended Solids (mg/L)	40.7	56.2	32.5	67.3	20.3
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	63.2	3130	297	303	296
	Alkalinity, Total (as CaCO3) (mg/L)	148	46.5	472	458	471
	Chloride (Cl) (mg/L)	10	<25	<10	<10	<10
	Sulfate (SO4) (mg/L)	1730	9130	2330	2450	2450
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
	Thallium (Tl)-Total (mg/L)					
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-66 Water 23-SEP-16 17:10 P96-8B	L1835022-67 Water 23-SEP-16 16:45 P96-8A	L1835022-68 Water 23-SEP-16 15:25 X17A	L1835022-69 Water 23-SEP-16 16:45 X17B	L1835022-70 Water 23-SEP-16 18:00 P09-ETA-2
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	7240	6890	549	1750	5100
	Hardness (as CaCO3) (mg/L)	6980	5980	306	980	4930
	pH (pH)	5.47	3.39	8.14	7.22	6.04
	Total Suspended Solids (mg/L)	11.2	11.5	<3.0	1150	67.0
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1860	1790	3.6	76.8	844
	Alkalinity, Total (as CaCO3) (mg/L)	40.0	<2.0	243	640	209
	Chloride (Cl) (mg/L)	<25 <sup>DLDS</sup>	<25 <sup>DLDS</sup>	<0.50	11.6	<25 <sup>DLDS</sup>
	Sulfate (SO4) (mg/L)	9680	8680	58.9	511	5270
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
Thallium (Tl)-Total (mg/L)						
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1835022-71	L1835022-72	L1835022-73	L1835022-74	L1835022-75
		Description	Water	Water	Water	Water	Water
		Sampled Date	23-SEP-16		23-SEP-16	23-SEP-16	23-SEP-16
		Sampled Time	17:35		18:00	08:30	16:45
		Client ID	P03-09-06	TRAVEL BLANK	P03-09-09	SRK04-3A	P03-09-02
Grouping	Analyte						
<b>WATER</b>							
<b>Physical Tests</b>	Conductivity (uS/cm)		2040	<2.0	2140	6230	1800
	Hardness (as CaCO3) (mg/L)		1320	<0.50 <sup>HTC</sup>	1420	5310	1130
	pH (pH)		7.78	6.37	7.63	5.48	7.71
	Total Suspended Solids (mg/L)		13.8	<3.0	208	71.3	30.0
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)		22.2	1.6	27.6	2840	23.7
	Alkalinity, Total (as CaCO3) (mg/L)		360	<2.0	361	79.8	387
	Chloride (Cl) (mg/L)		<10 <sup>DLDS</sup>	<0.50	<10 <sup>DLDS</sup>	<25 <sup>DLDS</sup>	<10 <sup>DLDS</sup>
	Sulfate (SO4) (mg/L)		1100	<0.30	1190	8240	844
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)			<0.010			
	Antimony (Sb)-Total (mg/L)			<0.00050			
	Arsenic (As)-Total (mg/L)			<0.0010			
	Barium (Ba)-Total (mg/L)			<0.020			
	Beryllium (Be)-Total (mg/L)			<0.0050			
	Boron (B)-Total (mg/L)			<0.10			
	Cadmium (Cd)-Total (mg/L)			<0.000050			
	Calcium (Ca)-Total (mg/L)			<0.10			
	Chromium (Cr)-Total (mg/L)			<0.00050			
	Cobalt (Co)-Total (mg/L)			<0.00050			
	Copper (Cu)-Total (mg/L)			<0.0010			
	Iron (Fe)-Total (mg/L)			<0.030			
	Lead (Pb)-Total (mg/L)			<0.0010			
	Lithium (Li)-Total (mg/L)			<0.050			
	Magnesium (Mg)-Total (mg/L)			<0.10			
	Manganese (Mn)-Total (mg/L)			<0.010			
	Mercury (Hg)-Total (mg/L)			<0.00020			
	Molybdenum (Mo)-Total (mg/L)			<0.0010			
	Nickel (Ni)-Total (mg/L)			<0.0050			
	Potassium (K)-Total (mg/L)			<2.0			
	Selenium (Se)-Total (mg/L)			<0.0010			
	Silver (Ag)-Total (mg/L)			<0.000050			
	Sodium (Na)-Total (mg/L)			<2.0			
	Thallium (Tl)-Total (mg/L)			<0.00020			
	Titanium (Ti)-Total (mg/L)			<0.050			
	Uranium (U)-Total (mg/L)			<0.00020			
Vanadium (V)-Total (mg/L)			<0.030				
Zinc (Zn)-Total (mg/L)			<0.0050				
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location		FIELD		FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-76 Water 23-SEP-16 17:20 P03-09-04	L1835022-77 Water 23-SEP-16 17:47 P03-09-08	L1835022-78 Water 23-SEP-16 14:40 P01-02A	L1835022-79 Water 23-SEP-16 14:20 P01-02B	L1835022-80 Water 23-SEP-16 13:07 P05-03
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	2040	2110	748	557	1920
	Hardness (as CaCO3) (mg/L)	1340	1570	405	338	1320
	pH (pH)	7.70	7.87	8.04	8.17	7.76
	Total Suspended Solids (mg/L)	3.5	129	13.3	6.1	10.6
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	23.7	18.5	6.5	2.4	23.1
	Alkalinity, Total (as CaCO3) (mg/L)	350	368	292	229	377
	Chloride (Cl) (mg/L)	<10 <sup>DLDS</sup>	<10 <sup>DLDS</sup>	<2.5 <sup>DLDS</sup>	<0.50	<10 <sup>DLDS</sup>
	Sulfate (SO4) (mg/L)	1130	1210	151	83.9	964
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
Thallium (Tl)-Total (mg/L)						
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-81	L1835022-82	L1835022-83	L1835022-84	L1835022-85
		Water 23-SEP-16 13:07 FB-4	Water 23-SEP-16 13:10 P05-02	Water 23-SEP-16 13:10 DUP-6	Water 23-SEP-16 12:10 P05-01-01	Water 23-SEP-16 11:10 P05-01-05
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	<2.0	3330	3300	3270	3170
	Hardness (as CaCO3) (mg/L)	<0.50	2420	2420	2330	2430
	pH (pH)	6.23	6.57	6.56	6.53	6.61
	Total Suspended Solids (mg/L)	<3.0	24.0	16.0	52.9	23.2
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	1.3	255	273	268	220
	Alkalinity, Total (as CaCO3) (mg/L)	<2.0	490	500 <sup>DLDS</sup>	490 <sup>DLDS</sup>	435 <sup>DLDS</sup>
	Chloride (Cl) (mg/L)	<0.50	<10	<10 <sup>DLDS</sup>	<10 <sup>DLDS</sup>	<10 <sup>DLDS</sup>
	Sulfate (SO4) (mg/L)	<0.30	2210	2190	2250	2220
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
Thallium (Tl)-Total (mg/L)						
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-86 Water 24-SEP-16 12:40 P09-GS1B	L1835022-87 Water 24-SEP-16 13:55 CH15-107-MW030	L1835022-88 Water 24-SEP-16 11:20 P2001-2B	L1835022-89 Water 24-SEP-16 10:40 V37	L1835022-90 Water 24-SEP-16 09:00 P09-LCD1
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	1510	1840	3430	1080	1150
	Hardness (as CaCO3) (mg/L)	963	1300	2880	654	694
	pH (pH)	7.60	7.63	7.21	8.14	8.02
	Total Suspended Solids (mg/L)	8.3	7.6	45.3	124	13.4
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	19.0	12.9	125	6.2	7.7
	Alkalinity, Total (as CaCO3) (mg/L)	240	177	862	462	290
	Chloride (Cl) (mg/L)	<5.0 <sup>DLDS</sup>	<10 <sup>DLDS</sup>	<10 <sup>DLDS</sup>	<2.5 <sup>DLDS</sup>	<2.5 <sup>DLDS</sup>
	Sulfate (SO4) (mg/L)	711	1080	2140	225	436
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
	Thallium (Tl)-Total (mg/L)					
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-91	L1835022-92	L1835022-93	L1835022-94	L1835022-95
	Water 24-SEP-16 09:00 DUP-7	Water 24-SEP-16 10:20 P09-LCD6	Water 24-SEP-16 11:00 P2001-2A	Water 24-SEP-16 15:40 CH15-107-MW033	Water 24-SEP-16 12:15 P09-GS1A	
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	1150	1080	3510	1540	1120
	Hardness (as CaCO3) (mg/L)	674	674	2990	1030	662
	pH (pH)	7.76	7.91	6.99	7.72	7.85
	Total Suspended Solids (mg/L)	13.9	18.5	57.8	<3.0	<3.0
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	15.7	9.6	59	10.3	11.9
	Alkalinity, Total (as CaCO3) (mg/L)	290	268	882	166	217
	Chloride (Cl) (mg/L)	<2.5 <sup>DLDS</sup>	<2.5 <sup>DLDS</sup>	<10 <sup>DLDS</sup>	<5.0 <sup>DLDS</sup>	<2.5 <sup>DLDS</sup>
	Sulfate (SO4) (mg/L)	428	392	2350	826	483
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
	Thallium (Tl)-Total (mg/L)					
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-96 Water 24-SEP-16 16:55 CH16-107-MW029	L1835022-97 Water 24-SEP-16 16:55 FB-5	L1835022-98 Water 24-SEP-16 14:55 CH15-107-MW034	L1835022-99 Water 24-SEP-16 14:55 DUP-9	L1835022-100 Water 24-SEP-16 19:00 BH14B
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	2100	<2.0	968	968	3340
	Hardness (as CaCO3) (mg/L)	1570	<0.50	560	573	2770
	pH (pH)	7.94	5.76	7.70	7.83	7.64
	Total Suspended Solids (mg/L)	3.5	<3.0	17.1	20.2	18.8
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	9.2	1.2	8.4	5.3	43.8
	Alkalinity, Total (as CaCO3) (mg/L)	199	<2.0	119	118	465
	Chloride (Cl) (mg/L)	<10	<0.50	<2.5	<2.5	<10
	Sulfate (SO4) (mg/L)	1310	<0.30	451	452	2330
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
Thallium (Tl)-Total (mg/L)						
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-101	L1835022-102	L1835022-103	L1835022-104	L1835022-105
	Water	Water	Water	Water	Water	Water
	24-SEP-16	24-SEP-16	24-SEP-16	24-SEP-16	24-SEP-16	24-SEP-16
	08:50	09:50	09:50	13:00	11:52	13:20
	P03-04-02	P03-04-04	P03-04-04	P03-06-03	P03-06-01	P03-06-04
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	2150	1530	4560	4700	2760
	Hardness (as CaCO3) (mg/L)	1460	743	1500	1790	1550
	pH (pH)	7.53	7.99	4.16	3.99	5.15
	Total Suspended Solids (mg/L)	94.4	3200	340	103	130
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	15.1	7.4	3330	2670	948
	Alkalinity, Total (as CaCO3) (mg/L)	135	223	<1.0	<1.0	16.6
	Chloride (Cl) (mg/L)	<10	<5.0	<25	<25	<10
	Sulfate (SO4) (mg/L)	1480	728	5360	5410	2350
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
Thallium (Tl)-Total (mg/L)						
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-106 Water 24-SEP-16 10:55 P03-05-05	L1835022-107 Water 24-SEP-16 11:45 P03-06-05	L1835022-108 Water 24-SEP-16 14:50 BH10A	L1835022-109 Water 24-SEP-16 14:50 DUP-8	L1835022-110 Water 24-SEP-16 16:45 CH14-107-MW001
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	6880	3740	337	330	961
	Hardness (as CaCO3) (mg/L)	1780	1500	163	165	451
	pH (pH)	3.48	4.11	6.89	7.57	5.83
	Total Suspended Solids (mg/L)	1170	1430	17.7	20.8	12.3
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	5450	2120	16.0	8.9	555
	Alkalinity, Total (as CaCO3) (mg/L)	<2.0	<1.0	126	125	218
	Chloride (Cl) (mg/L)	<25 <small>DLDS</small>	<10 <small>DLDS</small>	<0.50	<0.50	<2.5 <small>DLDS</small>
	Sulfate (SO4) (mg/L)	8720	3670	45.9	45.9	352
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
Thallium (Tl)-Total (mg/L)						
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-111 Water 24-SEP-16 15:13 BH10B	L1835022-112 Water 24-SEP-16 15:40 P05-04	L1835022-113 Water 24-SEP-16 16:10 CH14-107-MW002	L1835022-114 Water 24-SEP-16 16:10 DUP-10	L1835022-115 Water 24-SEP-16 18:52 BH14A
Grouping	Analyte					
<b>WATER</b>						
<b>Physical Tests</b>	Conductivity (uS/cm)	409	463	637	635	3750
	Hardness (as CaCO3) (mg/L)	207	236	309	305	3250
	pH (pH)	7.45	6.90	6.38	6.93	7.59
	Total Suspended Solids (mg/L)	45.4	<3.0	<3.0	3.3	8.6
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	12.4	44.9	65.5	46.8	79.3
	Alkalinity, Total (as CaCO3) (mg/L)	143	149	49.0	49.1	489
	Chloride (Cl) (mg/L)	<0.50	<0.50	<2.5 <sup>DLDS</sup>	<2.5 <sup>DLDS</sup>	<10 <sup>DLDS</sup>
	Sulfate (SO4) (mg/L)	69.7	90.4	285	290	2940
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)					
	Antimony (Sb)-Total (mg/L)					
	Arsenic (As)-Total (mg/L)					
	Barium (Ba)-Total (mg/L)					
	Beryllium (Be)-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)					
	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)					
	Potassium (K)-Total (mg/L)					
	Selenium (Se)-Total (mg/L)					
	Silver (Ag)-Total (mg/L)					
	Sodium (Na)-Total (mg/L)					
Thallium (Tl)-Total (mg/L)						
Titanium (Ti)-Total (mg/L)						
Uranium (U)-Total (mg/L)						
Vanadium (V)-Total (mg/L)						
Zinc (Zn)-Total (mg/L)						
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD	FIELD

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-116 Water 24-SEP-16 18:52 DUP-11	L1835022-117 Water 25-SEP-16 09:35 P09-LCD4	L1835022-118 Water 25-SEP-16 09:15 BH8	L1835022-119 Water 25-SEP-16 09:35 CH15-107-MW032
Grouping	Analyte				
<b>WATER</b>					
<b>Physical Tests</b>	Conductivity (uS/cm)	3700	795	3510	2440
	Hardness (as CaCO3) (mg/L)	3160	354	1600	1650
	pH (pH)	7.71	8.27	4.37	7.97
	Total Suspended Solids (mg/L)	7.4	58.8	66.8	40.3
<b>Anions and Nutrients</b>	Acidity (as CaCO3) (mg/L)	75.3	1.0	1670	11.8
	Alkalinity, Total (as CaCO3) (mg/L)	494	364	<2.0	280
	Chloride (Cl) (mg/L)	<10	<2.5	<10	17
	Sulfate (SO4) (mg/L)	2710	112	3210	1540
<b>Total Metals</b>	Aluminum (Al)-Total (mg/L)				
	Antimony (Sb)-Total (mg/L)				
	Arsenic (As)-Total (mg/L)				
	Barium (Ba)-Total (mg/L)				
	Beryllium (Be)-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)				
	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)				
	Potassium (K)-Total (mg/L)				
	Selenium (Se)-Total (mg/L)				
	Silver (Ag)-Total (mg/L)				
	Sodium (Na)-Total (mg/L)				
	Thallium (Tl)-Total (mg/L)				
Titanium (Ti)-Total (mg/L)					
Uranium (U)-Total (mg/L)					
Vanadium (V)-Total (mg/L)					
Zinc (Zn)-Total (mg/L)					
<b>Dissolved Metals</b>	Dissolved Metals Filtration Location	FIELD	FIELD	FIELD	FIELD

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

11-OCT-16 13:52 (MT)

Version: FINAL

Sample ID Description Sampled Date Sampled Time Client ID		L1835022-1 Water 20-SEP-16 14:25 SRK05-SP-4A	L1835022-2 Water 20-SEP-16 15:55 P09-SIS2	L1835022-3 Water 20-SEP-16 13:50 SRK05-SP-4B	L1835022-4 Water 20-SEP-16 17:45 P09-SIS1	L1835022-5 Water 20-SEP-16 15:15 P09-SIS3
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	0.025	0.56	0.12	0.039	0.28
	Antimony (Sb)-Dissolved (mg/L)	<0.00050	<0.010 <sup>DLA</sup>	<0.010 <sup>DLA</sup>	<0.0020 <sup>DLA</sup>	<0.010 <sup>DLA</sup>
	Arsenic (As)-Dissolved (mg/L)	<0.0010	<0.010 <sup>DLA</sup>	<0.010 <sup>DLA</sup>	0.0027 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>
	Barium (Ba)-Dissolved (mg/L)	<0.020	<0.050 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>	<0.030 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>
	Beryllium (Be)-Dissolved (mg/L)	<0.0050	<0.025 <sup>DLHC</sup>	<0.025 <sup>DLHC</sup>	<0.015 <sup>DLHC</sup>	<0.025 <sup>DLHC</sup>
	Boron (B)-Dissolved (mg/L)	<0.10	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.30 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>
	Cadmium (Cd)-Dissolved (mg/L)	0.00108	0.356	0.221	0.0382	0.533
	Calcium (Ca)-Dissolved (mg/L)	177	424	430	570	430
	Chromium (Cr)-Dissolved (mg/L)	<0.00050	<0.010 <sup>DLA</sup>	<0.010 <sup>DLA</sup>	<0.0020 <sup>DLA</sup>	<0.010 <sup>DLA</sup>
	Cobalt (Co)-Dissolved (mg/L)	0.0253	1.73 <sup>DLA</sup>	0.063 <sup>DLA</sup>	0.250	2.16
	Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.020 <sup>DLA</sup>	<0.020 <sup>DLA</sup>	0.0046	0.038
	Iron (Fe)-Dissolved (mg/L)	23.0	0.57 <sup>DLA</sup>	47.6 <sup>DLA</sup>	25.1	0.23 <sup>DLA</sup>
	Lead (Pb)-Dissolved (mg/L)	<0.0010	<0.0050 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>	<0.0010	<0.0050 <sup>DLA</sup>
	Lithium (Li)-Dissolved (mg/L)	0.061	0.246	0.217	0.237	0.237
	Magnesium (Mg)-Dissolved (mg/L)	83.6	1880	1640	1180	2080
	Manganese (Mn)-Dissolved (mg/L)	2.80	114 <sup>DLA</sup>	92.1 <sup>DLA</sup>	63.9	166 <sup>DLA</sup>
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0010	<0.0050 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>	0.0010	<0.0050 <sup>DLA</sup>
	Nickel (Ni)-Dissolved (mg/L)	0.0635	2.76	3.42	0.782	3.67
	Potassium (K)-Dissolved (mg/L)	5.5	16 <sup>DLA</sup>	15 <sup>DLA</sup>	12.7	17 <sup>DLA</sup>
	Selenium (Se)-Dissolved (mg/L)	<0.0010	<0.0050 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>
	Silver (Ag)-Dissolved (mg/L)	<0.000050	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>
	Sodium (Na)-Dissolved (mg/L)	11.1	86 <sup>DLA</sup>	46 <sup>DLA</sup>	44.2	72 <sup>DLA</sup>
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.00020	<0.0010 <sup>DLA</sup>
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050 <sup>DLA</sup>	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)	0.00167	0.0013 <sup>DLHC</sup>	<0.0010 <sup>DLHC</sup>	0.00224 <sup>DLHC</sup>	0.0012 <sup>DLHC</sup>
	Vanadium (V)-Dissolved (mg/L)	<0.030	<0.15 <sup>DLHC</sup>	<0.15 <sup>DLHC</sup>	<0.090 <sup>DLHC</sup>	<0.15 <sup>DLHC</sup>
	Zinc (Zn)-Dissolved (mg/L)	8.31	569	634	175	752

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

11-OCT-16 13:52 (MT)

Version: FINAL

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L1835022-6	L1835022-7	L1835022-8	L1835022-9	L1835022-10
					Water	Water	Water	Water	Water
		20-SEP-16	12:55	P09-SIS4	20-SEP-16	20-SEP-16	20-SEP-16	20-SEP-16	20-SEP-16
					12:55	11:16	16:40	16:40	16:40
					P09-SIS4	P09-SIS6	SRK08-SBR2	FB-1	DUP-2
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)				<0.020 <sup>DLA</sup>	<0.010	1.17	<0.010	0.041
	Antimony (Sb)-Dissolved (mg/L)				<0.0020 <sup>DLA</sup>	<0.00050	<0.00050	<0.00050	<0.00050
	Arsenic (As)-Dissolved (mg/L)				<0.0020 <sup>DLA</sup>	0.0014	<0.0010	<0.0010	<0.0010
	Barium (Ba)-Dissolved (mg/L)				<0.050 <sup>DLHC</sup>	<0.020	<0.020	<0.020	<0.020
	Beryllium (Be)-Dissolved (mg/L)				<0.025 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>	<0.0050	<0.0050	<0.0050
	Boron (B)-Dissolved (mg/L)				<0.50 <sup>DLHC</sup>	<0.20 <sup>DLHC</sup>	<0.10	<0.10	<0.10
	Cadmium (Cd)-Dissolved (mg/L)				0.0294	0.000574	0.00615	<0.000050	0.00609
	Calcium (Ca)-Dissolved (mg/L)				469	485	230	<0.10	225
	Chromium (Cr)-Dissolved (mg/L)				<0.0020 <sup>DLA</sup>	<0.00050	<0.00050	<0.00050	<0.00050
	Cobalt (Co)-Dissolved (mg/L)				0.0212	0.0105	0.0463	<0.00050	0.0470
	Copper (Cu)-Dissolved (mg/L)				0.0108	<0.0010	0.0049	<0.0010	0.0047
	Iron (Fe)-Dissolved (mg/L)				<0.15 <sup>DLHC</sup>	41.6	0.525	<0.030	0.504
	Lead (Pb)-Dissolved (mg/L)				<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Lithium (Li)-Dissolved (mg/L)				0.127	0.066	0.110	<0.050	0.101
	Magnesium (Mg)-Dissolved (mg/L)				1630	812	241	<0.10	241
	Manganese (Mn)-Dissolved (mg/L)				37.7	17.0	12.7	<0.010	12.2
	Molybdenum (Mo)-Dissolved (mg/L)				<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Dissolved (mg/L)				0.948	0.0793	0.171	<0.0050	0.173
	Potassium (K)-Dissolved (mg/L)				12	6.8	7.8	<2.0	7.2
	Selenium (Se)-Dissolved (mg/L)				<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Silver (Ag)-Dissolved (mg/L)				<0.00020 <sup>DLA</sup>	<0.000050	<0.000050	<0.000050	<0.000050
	Sodium (Na)-Dissolved (mg/L)				37	77.5	16.5	<2.0	14.9
	Thallium (Tl)-Dissolved (mg/L)				<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Titanium (Ti)-Dissolved (mg/L)				<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)				0.0233	0.0103	0.00101	<0.00020	0.00098
	Vanadium (V)-Dissolved (mg/L)				<0.15 <sup>DLHC</sup>	<0.060 <sup>DLHC</sup>	<0.030	<0.030	<0.030
	Zinc (Zn)-Dissolved (mg/L)				123	33.1	33.1	<0.0050	33.6

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-11 Water 20-SEP-16 16:00 S1A	L1835022-12 Water 20-SEP-16 14:20 SRK08-SP7B	L1835022-13 Water 20-SEP-16 12:30 CH14-107- MW007A	L1835022-14 Water 20-SEP-16 14:50 SRK08-SP7A	L1835022-15 Water 20-SEP-16 13:10 CH14-107- MW007B
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	0.022	0.039	0.056 <sup>DLA</sup>	<0.010	0.040
	Antimony (Sb)-Dissolved (mg/L)	<0.00050	<0.00050	<0.0020 <sup>DLA</sup>	<0.00050	<0.00050
	Arsenic (As)-Dissolved (mg/L)	<0.0010	0.0034	0.0270	0.0056	0.0140
	Barium (Ba)-Dissolved (mg/L)	<0.020	0.057	0.025	<0.020	0.030
	Beryllium (Be)-Dissolved (mg/L)	<0.0050	<0.0050	<0.010 <sup>DLHC</sup>	<0.0050	<0.0050
	Boron (B)-Dissolved (mg/L)	<0.10	<0.10	<0.20 <sup>DLHC</sup>	<0.10	<0.10
	Cadmium (Cd)-Dissolved (mg/L)	0.00170	<0.000050	0.00912	0.000059	<0.000050
	Calcium (Ca)-Dissolved (mg/L)	248	10.2	386 <sup>DLA</sup>	233	244
	Chromium (Cr)-Dissolved (mg/L)	<0.00050	0.00050	<0.0020 <sup>DLA</sup>	<0.00050	<0.00050
	Cobalt (Co)-Dissolved (mg/L)	0.0377	0.00084	0.0113 <sup>DLA</sup>	0.0105	0.00454
	Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0040 <sup>DLA</sup>	<0.0010	<0.0010
	Iron (Fe)-Dissolved (mg/L)	18.5	1.98	34.4	27.2	24.9
	Lead (Pb)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Lithium (Li)-Dissolved (mg/L)	0.053	<0.050	0.108	0.054	<0.050
	Magnesium (Mg)-Dissolved (mg/L)	152	14.9	605	94.0	108
	Manganese (Mn)-Dissolved (mg/L)	7.59	0.841	23.0	2.39	2.75
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Dissolved (mg/L)	0.0936	0.0093	0.700	0.0256	0.0184
	Potassium (K)-Dissolved (mg/L)	5.9	<2.0	10.3	6.1	5.1
	Selenium (Se)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Silver (Ag)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00020 <sup>DLA</sup>	<0.000050	<0.000050
	Sodium (Na)-Dissolved (mg/L)	14.2	2.6	30.3	11.3	10.9
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)	0.00311	<0.00020	0.00089	0.00099	0.00045
	Vanadium (V)-Dissolved (mg/L)	<0.030	<0.030	<0.060 <sup>DLHC</sup>	<0.030	<0.030
	Zinc (Zn)-Dissolved (mg/L)	19.5	2.41	106	0.882	3.38

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L1835022-16 Water 20-SEP-16 13:10 DUP-1	L1835022-17 Water 20-SEP-16 10:55 CH14-107-MW009	L1835022-18 Water 20-SEP-16 11:50 CH14-107-MW010	L1835022-19 Water 21-SEP-16 10:25 SRK08-SBR3	L1835022-20 Water 21-SEP-16 09:55 SRK08-SBR4	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	0.038	0.029	0.056	<0.010	0.052 <sup>DLA</sup>
	Antimony (Sb)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.0050 <sup>DLA</sup>
	Arsenic (As)-Dissolved (mg/L)	0.0152	0.0036	0.0068	<0.0010	<0.0050 <sup>DLHC</sup>
	Barium (Ba)-Dissolved (mg/L)	0.030	0.026	0.023	<0.020	<0.050 <sup>DLHC</sup>
	Beryllium (Be)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.025 <sup>DLHC</sup>
	Boron (B)-Dissolved (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.50 <sup>DLHC</sup>
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	0.143
	Calcium (Ca)-Dissolved (mg/L)	241	211	111	486	426 <sup>DLA</sup>
	Chromium (Cr)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.0050 <sup>DLA</sup>
	Cobalt (Co)-Dissolved (mg/L)	0.00442	0.00639	0.00430	<0.00050	1.09 <sup>DLA</sup>
	Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.010
	Iron (Fe)-Dissolved (mg/L)	24.4	20.1	21.9	<0.030	2.34 <sup>DLA</sup>
	Lead (Pb)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0025 <sup>DLA</sup>
	Lithium (Li)-Dissolved (mg/L)	<0.050	0.056	0.090	0.068	0.234
	Magnesium (Mg)-Dissolved (mg/L)	105	73.5	41.4	370	1590
	Manganese (Mn)-Dissolved (mg/L)	2.71	1.50	0.962	<0.010	87.4 <sup>DLA</sup>
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0025 <sup>DLA</sup>
	Nickel (Ni)-Dissolved (mg/L)	0.0179	0.0149	0.0178	0.0256	2.16
	Potassium (K)-Dissolved (mg/L)	5.0	6.4	5.6	8.3	15 <sup>DLA</sup>
	Selenium (Se)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0013	<0.0025 <sup>DLA</sup>
	Silver (Ag)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.00050 <sup>DLA</sup>
	Sodium (Na)-Dissolved (mg/L)	10.7	12.7	13.1	49.0	70 <sup>DLA</sup>
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00050 <sup>DLA</sup>
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)	0.00044	0.00249	<0.00020	0.0343	0.00134 <sup>DLHC</sup>
	Vanadium (V)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.15
	Zinc (Zn)-Dissolved (mg/L)	3.30	0.762	1.17	0.0542	409

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

11-OCT-16 13:52 (MT)

Version: FINAL

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L1835022-21	L1835022-22	L1835022-23	L1835022-24	L1835022-25
					Water	Water	Water	Water	Water
		21-SEP-16	09:05	SRK05-SP-5	21-SEP-16	21-SEP-16	21-SEP-16	21-SEP-16	21-SEP-16
					09:05	12:52	11:25	15:55	17:12
					SRK05-SP-5	CH15-107-MW025	P96-7	P03-05-02	P03-05-04
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	0.13	0.011	<0.010	0.033	0.012			
	Antimony (Sb)-Dissolved (mg/L)	<0.010 <sup>DLA</sup>	<0.00050	<0.00050	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>			
	Arsenic (As)-Dissolved (mg/L)	<0.010 <sup>DLA</sup>	0.0016	<0.0010	0.0075	<0.0010			
	Barium (Ba)-Dissolved (mg/L)	<0.050 <sup>DLHC</sup>	0.093	<0.020	0.024	0.023			
	Beryllium (Be)-Dissolved (mg/L)	<0.025 <sup>DLHC</sup>	<0.0050	<0.0050	<0.0050	<0.0050			
	Boron (B)-Dissolved (mg/L)	<0.50 <sup>DLHC</sup>	<0.10	<0.10	<0.10	<0.10			
	Cadmium (Cd)-Dissolved (mg/L)	0.389	<0.000050	0.000064	0.000846	0.00180			
	Calcium (Ca)-Dissolved (mg/L)	422	205	472	280	323			
	Chromium (Cr)-Dissolved (mg/L)	<0.010 <sup>DLA</sup>	0.00075	<0.00050	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>			
	Cobalt (Co)-Dissolved (mg/L)	1.85	0.00112	<0.00050	0.722	0.320			
	Copper (Cu)-Dissolved (mg/L)	<0.020 <sup>DLA</sup>	<0.0010	<0.0010	<0.0020 <sup>DLA</sup>	<0.0020 <sup>DLA</sup>			
	Iron (Fe)-Dissolved (mg/L)	2.43	1.61	<0.030	263	137			
	Lead (Pb)-Dissolved (mg/L)	<0.0050 <sup>DLA</sup>	<0.0010	<0.0010	<0.0010	<0.0010			
	Lithium (Li)-Dissolved (mg/L)	0.224	0.143	<0.050	0.068	0.060			
	Magnesium (Mg)-Dissolved (mg/L)	1860	57.8	213	48.7	57.4			
	Manganese (Mn)-Dissolved (mg/L)	127	3.56	<0.010	59.4	58.3			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0050 <sup>DLA</sup>	0.0013	<0.0010	<0.0010	<0.0010			
	Nickel (Ni)-Dissolved (mg/L)	3.03	<0.0050	<0.0050	0.900	0.162			
	Potassium (K)-Dissolved (mg/L)	16	7.3	5.6	4.9	4.2			
	Selenium (Se)-Dissolved (mg/L)	<0.0050 <sup>DLA</sup>	<0.0010	<0.0010	<0.0010	<0.0010			
	Silver (Ag)-Dissolved (mg/L)	<0.0010 <sup>DLA</sup>	<0.000050	<0.000050	<0.00010 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>			
	Sodium (Na)-Dissolved (mg/L)	71	512	21.7	13.0	15.5			
	Thallium (Tl)-Dissolved (mg/L)	<0.0010 <sup>DLA</sup>	<0.00020	<0.00020	<0.00020	<0.00020			
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050			
	Uranium (U)-Dissolved (mg/L)	0.0026	0.0858	0.0293	0.00122	0.00048			
	Vanadium (V)-Dissolved (mg/L)	<0.15 <sup>DLHC</sup>	<0.030	<0.030	<0.030	<0.030			
	Zinc (Zn)-Dissolved (mg/L)	596	0.0386	<0.0050	45.6	2.26			

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L1835022-26 Water 21-SEP-16 15:15 P03-04-06	L1835022-27 Water 21-SEP-16 11:10 CH15-107-MW022	L1835022-28 Water 21-SEP-16 17:15 P03-06-2	L1835022-29 Water 21-SEP-16 13:30 CH15-107-MW023	L1835022-30 Water 21-SEP-16 11:50 CH15-107-MW019	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	<0.010 <sup>DLA</sup>	<0.010	4.02 <sup>DLA</sup>	0.043	0.026
	Antimony (Sb)-Dissolved (mg/L)	<0.0010 <sup>DLA</sup>	<0.00050	<0.0020 <sup>DLA</sup>	<0.00050	<0.00050
	Arsenic (As)-Dissolved (mg/L)	0.0167 <sup>DLHC</sup>	0.0022	0.0040 <sup>DLHC</sup>	0.0056	0.0176
	Barium (Ba)-Dissolved (mg/L)	<0.030 <sup>DLHC</sup>	0.025	<0.030 <sup>DLHC</sup>	0.182	<0.020
	Beryllium (Be)-Dissolved (mg/L)	<0.015 <sup>DLHC</sup>	<0.0050	<0.015 <sup>DLHC</sup>	<0.0050	<0.0050
	Boron (B)-Dissolved (mg/L)	<0.30 <sup>DLHC</sup>	<0.10	<0.30 <sup>DLHC</sup>	<0.10	<0.10
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	<0.000050	0.0389	<0.000050	0.000083
	Calcium (Ca)-Dissolved (mg/L)	499	221	453 <sup>DLA</sup>	111	607
	Chromium (Cr)-Dissolved (mg/L)	<0.0010 <sup>DLA</sup>	<0.00050	<0.0020 <sup>DLA</sup>	<0.00050	<0.00050
	Cobalt (Co)-Dissolved (mg/L)	0.0313	0.00179	1.64	0.00149	0.00581
	Copper (Cu)-Dissolved (mg/L)	<0.0020 <sup>DLA</sup>	<0.0010	0.0238	<0.0010	<0.0010
	Iron (Fe)-Dissolved (mg/L)	1290	9.22	1470	2.14	29.8
	Lead (Pb)-Dissolved (mg/L)	<0.0010	<0.0010	0.0291	<0.0010	<0.0010
	Lithium (Li)-Dissolved (mg/L)	<0.050	0.117	0.133	0.091	0.252
	Magnesium (Mg)-Dissolved (mg/L)	118	90.2	191	52.9	277
	Manganese (Mn)-Dissolved (mg/L)	14.4	0.671	143	0.316	2.87
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0010	<0.0010	0.0016	0.0033	<0.0010
	Nickel (Ni)-Dissolved (mg/L)	0.0764	<0.0050	1.80	<0.0050	0.0165
	Potassium (K)-Dissolved (mg/L)	9.3	7.4	8.3	4.7	9.2
	Selenium (Se)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Silver (Ag)-Dissolved (mg/L)	<0.00010 <sup>DLA</sup>	<0.000050	<0.00020 <sup>DLA</sup>	<0.000050	<0.000050
	Sodium (Na)-Dissolved (mg/L)	58.8	12.2	21.7	24.4	41.1
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)	0.00209	0.00065	0.00359	0.00469	0.00215
	Vanadium (V)-Dissolved (mg/L)	<0.090 <sup>DLHC</sup>	<0.030	<0.090 <sup>DLHC</sup>	<0.030	<0.030
	Zinc (Zn)-Dissolved (mg/L)	1.23	0.0640	50.6	0.0589	0.0342

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L1835022-31	L1835022-32	L1835022-33	L1835022-34	L1835022-35
					Water	Water	Water	Water	Water
		21-SEP-16	09:30	S1B	21-SEP-16	09:10	21-SEP-16	08:20	22-SEP-16
						S2A	S2B	14:50	15:35
								SRK05-07	SRK05-08
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	<0.010	0.013	<0.10 <sup>DLA</sup>	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Dissolved (mg/L)	<0.00050	<0.00050	<0.010 <sup>DLA</sup>	0.00059	<0.00050	0.00059	<0.00050	<0.00050
	Arsenic (As)-Dissolved (mg/L)	<0.0010	<0.0010	<0.010 <sup>DLA</sup>	0.0031	<0.0010	0.0031	<0.0010	<0.0010
	Barium (Ba)-Dissolved (mg/L)	0.049	<0.020	<0.050 <sup>DLHC</sup>	0.044	<0.020	0.044	<0.020	<0.020
	Beryllium (Be)-Dissolved (mg/L)	<0.0050	<0.0050	<0.025 <sup>DLHC</sup>	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Boron (B)-Dissolved (mg/L)	<0.10	<0.10	<0.50 <sup>DLHC</sup>	<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Dissolved (mg/L)	0.000143	0.00103	0.170	0.000094	0.000187	0.170	0.000094	0.000187
	Calcium (Ca)-Dissolved (mg/L)	126	281	509	488	430	509	488	430
	Chromium (Cr)-Dissolved (mg/L)	<0.00050	<0.00050	<0.010 <sup>DLA</sup>	<0.00050	0.00054	<0.010	<0.00050	0.00054
	Cobalt (Co)-Dissolved (mg/L)	<0.00050	0.0220	1.97	0.00257	0.00064	1.97	0.00257	0.00064
	Copper (Cu)-Dissolved (mg/L)	0.0031	<0.0010	<0.020 <sup>DLA</sup>	0.0013	0.0030	<0.020	0.0013	0.0030
	Iron (Fe)-Dissolved (mg/L)	<0.030	22.6	24.9	<0.030	<0.030	24.9	<0.030	<0.030
	Lead (Pb)-Dissolved (mg/L)	<0.0010	0.0023	<0.0050 <sup>DLA</sup>	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010
	Lithium (Li)-Dissolved (mg/L)	<0.050	0.058	0.228	<0.050	<0.050	0.228	<0.050	<0.050
	Magnesium (Mg)-Dissolved (mg/L)	33.3	124	1920	337	254	1920	337	254
	Manganese (Mn)-Dissolved (mg/L)	0.017	4.38	151	0.025	<0.010	151	0.025	<0.010
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0050 <sup>DLA</sup>	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010
	Nickel (Ni)-Dissolved (mg/L)	<0.0050	0.0409	2.95	0.0462	<0.0050	2.95	0.0462	<0.0050
	Potassium (K)-Dissolved (mg/L)	3.2	6.2	16	2.7	2.2	16	2.7	2.2
	Selenium (Se)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0050 <sup>DLA</sup>	<0.0010	<0.0010	<0.0050	<0.0010	<0.0010
	Silver (Ag)-Dissolved (mg/L)	<0.000050	<0.000050	<0.0010 <sup>DLA</sup>	<0.000050	<0.000050	<0.0010	<0.000050	<0.000050
	Sodium (Na)-Dissolved (mg/L)	28.9	12.6	69	14.4	12.0	69	14.4	12.0
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.0010 <sup>DLA</sup>	<0.00020	<0.00020	<0.0010	<0.00020	<0.00020
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050 <sup>DLA</sup>	<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)	0.00380	0.00321	<0.0010 <sup>DLA</sup>	0.0348	0.0294	<0.0010	0.0348	0.0294
	Vanadium (V)-Dissolved (mg/L)	<0.030	<0.030	<0.15 <sup>DLHC</sup>	<0.030	<0.030	<0.15	<0.030	<0.030
	Zinc (Zn)-Dissolved (mg/L)	0.0203	3.79	643	<0.0050	<0.0050	643	<0.0050	<0.0050

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1835022-36 Water 22-SEP-16 08:55 V34	L1835022-37 Water 22-SEP-16 10:10 V35	L1835022-38 Water 22-SEP-16 13:05 V36	L1835022-39 Water 22-SEP-16 13:05 FB-3	L1835022-40 Water 22-SEP-16 13:05 DUP-4
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Arsenic (As)-Dissolved (mg/L)	0.0016	<0.0010	0.0028	<0.0010	0.0027
	Barium (Ba)-Dissolved (mg/L)	0.036	<0.020	<0.020	<0.020	<0.020
	Beryllium (Be)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Boron (B)-Dissolved (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	0.000087	0.000356	<0.000050	0.000360
	Calcium (Ca)-Dissolved (mg/L)	242	407	455	<0.10	448
	Chromium (Cr)-Dissolved (mg/L)	<0.00050	0.00053	<0.00050	<0.00050	<0.00050
	Cobalt (Co)-Dissolved (mg/L)	0.00201	<0.00050	0.00236	<0.00050	0.00244
	Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Iron (Fe)-Dissolved (mg/L)	1.81	<0.030	0.397	<0.030	0.423
	Lead (Pb)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0033
	Lithium (Li)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	0.056
	Magnesium (Mg)-Dissolved (mg/L)	248	217	326	<0.10	359
	Manganese (Mn)-Dissolved (mg/L)	0.054	<0.010	0.213	<0.010	0.241
	Molybdenum (Mo)-Dissolved (mg/L)	0.0012	<0.0010	0.0022	<0.0010	0.0022
	Nickel (Ni)-Dissolved (mg/L)	0.0057	<0.0050	0.0157	<0.0050	0.0161
	Potassium (K)-Dissolved (mg/L)	5.3	4.1	6.4	<2.0	7.4
	Selenium (Se)-Dissolved (mg/L)	<0.0010	0.0016	<0.0010	<0.0010	<0.0010
	Silver (Ag)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Sodium (Na)-Dissolved (mg/L)	8.8	7.6	9.7	<2.0	11.8
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)	0.0216	0.0632	0.0658	<0.00020	0.0669
	Vanadium (V)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Zinc (Zn)-Dissolved (mg/L)	<0.0050	<0.0050	0.0916	<0.0050	0.0888

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-41 Water 22-SEP-16 17:25 SRK05-9	L1835022-42 Water 22-SEP-16 17:45 CH14-107- MW006A	L1835022-43 Water 22-SEP-16 18:10 CH14-107- MW006B	L1835022-44 Water 22-SEP-16 14:05 X18A	L1835022-45 Water 22-SEP-16 16:35 P01-01B
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Arsenic (As)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0103	0.0019
	Barium (Ba)-Dissolved (mg/L)	0.025	0.162	0.143	0.096	0.046
	Beryllium (Be)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Boron (B)-Dissolved (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Dissolved (mg/L)	0.000166	<0.000050	<0.000050	<0.000050	<0.000050
	Calcium (Ca)-Dissolved (mg/L)	159	97.2	86.2	299	268
	Chromium (Cr)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Cobalt (Co)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.00356	<0.00050
	Copper (Cu)-Dissolved (mg/L)	0.0010	0.0013	<0.0010	<0.0010	<0.0010
	Iron (Fe)-Dissolved (mg/L)	<0.030	<0.030	<0.030	3.05	0.634
	Lead (Pb)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Lithium (Li)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Magnesium (Mg)-Dissolved (mg/L)	102	22.5	40.9	79.6	58.3
	Manganese (Mn)-Dissolved (mg/L)	<0.010	<0.010	<0.010	5.41	0.244
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	0.0081	<0.0050
	Potassium (K)-Dissolved (mg/L)	2.7	3.3	3.0	6.2	4.6
	Selenium (Se)-Dissolved (mg/L)	<0.0010	0.0026	0.0041	<0.0010	<0.0010
	Silver (Ag)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Sodium (Na)-Dissolved (mg/L)	7.2	2.1	3.2	20.2	25.0
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)	0.0129	0.00445	0.00541	0.00926	0.00993
	Vanadium (V)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Zinc (Zn)-Dissolved (mg/L)	0.377	0.0097	<0.0050	<0.0050	<0.0050

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

11-OCT-16 13:52 (MT)

Version: FINAL

		Sample ID	L1835022-46	L1835022-47	L1835022-48	L1835022-49	L1835022-50
		Description	Water	Water	Water	Water	Water
		Sampled Date	22-SEP-16	22-SEP-16	22-SEP-16	22-SEP-16	22-SEP-16
		Sampled Time	15:50	15:50	12:10	14:52	12:30
		Client ID	P01-01A	DUP-5	X16A	X18B	X16B
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Arsenic (As)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Barium (Ba)-Dissolved (mg/L)		0.034	0.035	0.098	0.060	0.141
	Beryllium (Be)-Dissolved (mg/L)		<0.0050	<0.0050	<0.0050	<0.010 <sup>DLHC</sup>	<0.0050
	Boron (B)-Dissolved (mg/L)		<0.10	<0.10	<0.10	<0.20 <sup>DLHC</sup>	<0.10
	Cadmium (Cd)-Dissolved (mg/L)		0.00166	0.00148	0.000051	0.000136	<0.000050
	Calcium (Ca)-Dissolved (mg/L)		405	410	58.9	287	62.7
	Chromium (Cr)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Cobalt (Co)-Dissolved (mg/L)		0.00909	0.00420	<0.00050	<0.00050	<0.00050
	Copper (Cu)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Iron (Fe)-Dissolved (mg/L)		<0.030	<0.030	<0.030	0.170	<0.030
	Lead (Pb)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Lithium (Li)-Dissolved (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Magnesium (Mg)-Dissolved (mg/L)		95.3	101	13.2	75.5	16.5
	Manganese (Mn)-Dissolved (mg/L)		13.2	13.6	<0.010	0.506	<0.010
	Molybdenum (Mo)-Dissolved (mg/L)		<0.0010	<0.0010	0.0017	<0.0010	0.0014
	Nickel (Ni)-Dissolved (mg/L)		0.0253	0.0230	<0.0050	0.0061	<0.0050
	Potassium (K)-Dissolved (mg/L)		6.8	7.1	<2.0	6.0	<2.0
	Selenium (Se)-Dissolved (mg/L)		<0.0010	<0.0010	0.0012	<0.0010	0.0018
	Silver (Ag)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Sodium (Na)-Dissolved (mg/L)		21.9	22.6	2.1	16.2	2.0
	Thallium (Tl)-Dissolved (mg/L)		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Titanium (Ti)-Dissolved (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)		0.00996	0.0101	0.00171	0.0122	0.00195
	Vanadium (V)-Dissolved (mg/L)		<0.030	<0.030	<0.030	<0.060 <sup>DLHC</sup>	<0.030
	Zinc (Zn)-Dissolved (mg/L)		<0.0050	<0.0050	<0.0050	<0.010 <sup>DLHC</sup>	<0.0050

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L1835022-51	L1835022-52	L1835022-53	L1835022-54	L1835022-55
					Water	Water	Water	Water	Water
		22-SEP-16	09:38	P01-03	22-SEP-16	22-SEP-16	22-SEP-16	22-SEP-16	22-SEP-16
					09:38	09:38	10:10	10:35	09:05
					P01-03	DUP-3	X25-96A	X25-96B	X24-96D
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Dissolved (mg/L)	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010 <sup>DLA</sup>
	Arsenic (As)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0012	<0.0010	0.0012	<0.0010	<0.0010
	Barium (Ba)-Dissolved (mg/L)	<0.020	<0.020	0.061	0.025	<0.020	0.025	<0.020	<0.020
	Beryllium (Be)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Boron (B)-Dissolved (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Dissolved (mg/L)	0.000465	0.000391	0.000116	<0.000050	0.000382	<0.000050	0.000382	0.000382
	Calcium (Ca)-Dissolved (mg/L)	443	445	325	371	477	371	477	477
	Chromium (Cr)-Dissolved (mg/L)	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.00050	<0.00050	<0.0010 <sup>DLA</sup>	<0.00050	<0.00050	<0.0010 <sup>DLA</sup>
	Cobalt (Co)-Dissolved (mg/L)	0.303	0.313	0.0235	<0.00050	0.342	<0.00050	<0.00050	0.342
	Copper (Cu)-Dissolved (mg/L)	<0.0020 <sup>DLA</sup>	<0.0020 <sup>DLA</sup>	<0.0010	<0.0010	<0.0020 <sup>DLA</sup>	<0.0010	<0.0010	<0.0020 <sup>DLA</sup>
	Iron (Fe)-Dissolved (mg/L)	603	609	16.5	3.44	502	3.44	502	502
	Lead (Pb)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Lithium (Li)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Magnesium (Mg)-Dissolved (mg/L)	234	240	71.4	54.4	230	54.4	230	230
	Manganese (Mn)-Dissolved (mg/L)	88.2	89.2	24.2	0.319	94.5	0.319	94.5	94.5
	Molybdenum (Mo)-Dissolved (mg/L)	0.0010	<0.0010	0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Dissolved (mg/L)	0.155	0.160	0.0201	<0.0050	0.188	<0.0050	<0.0050	0.188
	Potassium (K)-Dissolved (mg/L)	8.0	8.0	5.1	4.4	7.9	4.4	7.9	7.9
	Selenium (Se)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Silver (Ag)-Dissolved (mg/L)	<0.00010 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>	<0.000050	<0.000050	<0.00010 <sup>DLA</sup>	<0.000050	<0.000050	<0.00010 <sup>DLA</sup>
	Sodium (Na)-Dissolved (mg/L)	25.9	26.0	19.9	43.9	28.5	43.9	28.5	28.5
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	0.00029	<0.00020	<0.00020	0.00029
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)	0.00507	0.00499	0.0115	0.00732	0.00396	0.00732	0.00396	0.00396
	Vanadium (V)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030
	Zinc (Zn)-Dissolved (mg/L)	2.57	2.60	<0.0050	<0.0050	2.13	<0.0050	<0.0050	2.13

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-56 Water 22-SEP-16 09:05 FB-2	L1835022-57 Water 22-SEP-16 11:10 P01-04A	L1835022-58 Water 22-SEP-16 16:25 P96-9A	L1835022-59 Water 23-SEP-16 10:10 P01-11	L1835022-60 Water  TRAVEL BLANK
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010 <sup>DLA</sup>
	Antimony (Sb)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.0010 <sup>DLA</sup>
	Arsenic (As)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0475	
	Barium (Ba)-Dissolved (mg/L)	<0.020	0.481	0.052	0.023	
	Beryllium (Be)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	
	Boron (B)-Dissolved (mg/L)	<0.10	<0.10	<0.10	<0.10	
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	<0.000050	0.000733	0.000065	
	Calcium (Ca)-Dissolved (mg/L)	<0.10	155	391	741	
	Chromium (Cr)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.0010	<0.0010 <sup>DLA</sup>
	Cobalt (Co)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	0.0197	
	Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.0010	0.0029	<0.0020	<0.0020 <sup>DLA</sup>
	Iron (Fe)-Dissolved (mg/L)	<0.030	0.438	<0.030	106	
	Lead (Pb)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Lithium (Li)-Dissolved (mg/L)	<0.050	0.155	<0.050	<0.050	
	Magnesium (Mg)-Dissolved (mg/L)	<0.10	51.5	352	176	
	Manganese (Mn)-Dissolved (mg/L)	<0.010	0.273	<0.010	68.5	
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Nickel (Ni)-Dissolved (mg/L)	<0.0050	<0.0050	0.0188	0.0494	
	Potassium (K)-Dissolved (mg/L)	<2.0	3.7	6.0	8.4	
	Selenium (Se)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	
	Silver (Ag)-Dissolved (mg/L)	<0.000050	0.000206	<0.000050	<0.00010	<0.00010 <sup>DLA</sup>
	Sodium (Na)-Dissolved (mg/L)	<2.0	74.0	12.3	35.3	
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	
	Uranium (U)-Dissolved (mg/L)	<0.00020	0.00029	0.0525	0.00908	
	Vanadium (V)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	
	Zinc (Zn)-Dissolved (mg/L)	<0.0050	<0.0050	0.186	0.0092	

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L1835022-61 Water 22-SEP-16 09:20 SRK05-ETA-BR2	L1835022-62 Water 23-SEP-16 08:40 SRK05-ETA-BR1	L1835022-63 Water 23-SEP-16 11:30 P05-01-03	L1835022-64 Water 23-SEP-16 11:18 P05-01-04	L1835022-65 Water 23-SEP-16 11:42 P05-01-02
Grouping	Analyte				
<b>WATER</b>					
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	<0.010	1.13 <sup>DLA</sup>	<0.010 <sup>DLA</sup>	<0.010 <sup>DLA</sup>
	Antimony (Sb)-Dissolved (mg/L)	<0.00050	<0.010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>
	Arsenic (As)-Dissolved (mg/L)	<0.0010	0.014 <sup>DLHC</sup>	<0.0010	0.0035
	Barium (Ba)-Dissolved (mg/L)	0.032	<0.050 <sup>DLHC</sup>	0.022	<0.020
	Beryllium (Be)-Dissolved (mg/L)	<0.0050	<0.025 <sup>DLHC</sup>	<0.0050	<0.0050
	Boron (B)-Dissolved (mg/L)	<0.10	<0.50 <sup>DLHC</sup>	<0.10	<0.10
	Cadmium (Cd)-Dissolved (mg/L)	0.000153	0.0662	<0.000050	<0.000050
	Calcium (Ca)-Dissolved (mg/L)	500	419 <sup>DLA</sup>	763 <sup>DLA</sup>	774 <sup>DLA</sup>
	Chromium (Cr)-Dissolved (mg/L)	<0.00050	<0.010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>
	Cobalt (Co)-Dissolved (mg/L)	0.0296	1.79 <sup>DLA</sup>	0.0026 <sup>DLA</sup>	0.0290 <sup>DLA</sup>
	Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.020 <sup>DLA</sup>	<0.0020 <sup>DLA</sup>	<0.0020 <sup>DLA</sup>
	Iron (Fe)-Dissolved (mg/L)	23.3	939	46.6	65.2
	Lead (Pb)-Dissolved (mg/L)	<0.0010	0.0650	0.0023	0.0015
	Lithium (Li)-Dissolved (mg/L)	<0.050	0.154	<0.050	<0.050
	Magnesium (Mg)-Dissolved (mg/L)	101	972	181	189
	Manganese (Mn)-Dissolved (mg/L)	4.24	127 <sup>DLA</sup>	68.9	75.9
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0010	<0.0050 <sup>DLA</sup>	<0.0010	<0.0010
	Nickel (Ni)-Dissolved (mg/L)	0.0252	1.47	<0.0050	0.0121
	Potassium (K)-Dissolved (mg/L)	4.0	14 <sup>DLA</sup>	8.4	8.9
	Selenium (Se)-Dissolved (mg/L)	<0.0010	<0.0050 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>
	Silver (Ag)-Dissolved (mg/L)	<0.000050	<0.0010 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>
	Sodium (Na)-Dissolved (mg/L)	29.3	51 <sup>DLA</sup>	37.0	36.9
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.0010 <sup>DLA</sup>	<0.00020	<0.00020
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)	0.00059	0.0084 <sup>DLHC</sup>	0.00049	0.00204
	Vanadium (V)-Dissolved (mg/L)	<0.030	<0.15 <sup>DLHC</sup>	<0.030	<0.030
	Zinc (Zn)-Dissolved (mg/L)	11.5	727	<0.0050	<0.0050

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L1835022-66	L1835022-67	L1835022-68	L1835022-69	L1835022-70
					Water	Water	Water	Water	Water
		23-SEP-16	17:10	P96-8B	23-SEP-16	23-SEP-16	23-SEP-16	23-SEP-16	23-SEP-16
					17:10	16:45	15:25	16:45	18:00
					P96-8B	P96-8A	X17A	X17B	P09-ETA-2
Grouping	Analyte								
<b>WATER</b>									
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	2.43	20.0	<0.010	<0.010	0.043			
	Antimony (Sb)-Dissolved (mg/L)	<0.010 <sup>DLA</sup>	<0.010 <sup>DLA</sup>	<0.00050	<0.00050	<0.0020 <sup>DLA</sup>			
	Arsenic (As)-Dissolved (mg/L)	<0.010 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>	<0.0010	<0.0010	0.0911 <sup>DLHC</sup>			
	Barium (Ba)-Dissolved (mg/L)	<0.050 <sup>DLHC</sup>	<0.050 <sup>DLHC</sup>	0.210	0.142	<0.050 <sup>DLHC</sup>			
	Beryllium (Be)-Dissolved (mg/L)	<0.025 <sup>DLHC</sup>	<0.025 <sup>DLHC</sup>	<0.0050	<0.0050	<0.025 <sup>DLHC</sup>			
	Boron (B)-Dissolved (mg/L)	<0.50 <sup>DLHC</sup>	<0.50 <sup>DLHC</sup>	<0.10	<0.10	<0.50 <sup>DLHC</sup>			
	Cadmium (Cd)-Dissolved (mg/L)	0.113	0.109	0.000103	<0.000050	<0.00010 <sup>DLA</sup>			
	Calcium (Ca)-Dissolved (mg/L)	437	390	87.3	270	490 <sup>DLA</sup>			
	Chromium (Cr)-Dissolved (mg/L)	<0.010 <sup>DLA</sup>	<0.010 <sup>DLA</sup>	<0.00050	<0.00050	<0.0020 <sup>DLA</sup>			
	Cobalt (Co)-Dissolved (mg/L)	1.63	1.49	<0.00050	<0.00050	0.581 <sup>DLA</sup>			
	Copper (Cu)-Dissolved (mg/L)	<0.020 <sup>DLA</sup>	0.149	<0.0010	<0.0010	<0.0040 <sup>DLA</sup>			
	Iron (Fe)-Dissolved (mg/L)	287	159	<0.030	5.27	243			
	Lead (Pb)-Dissolved (mg/L)	0.0865	0.199	<0.0010	<0.0010	<0.0010			
	Lithium (Li)-Dissolved (mg/L)	0.224	0.244	<0.050	0.073	0.128			
	Magnesium (Mg)-Dissolved (mg/L)	1430	1220	21.4	74.2	901			
	Manganese (Mn)-Dissolved (mg/L)	127	113	0.240	0.895	87.7			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0050 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>	0.0015	<0.0010	0.0014			
	Nickel (Ni)-Dissolved (mg/L)	1.77	1.80	<0.0050	<0.0050	0.544 <sup>DLHC</sup>			
	Potassium (K)-Dissolved (mg/L)	18	15	<2.0	4.9	<10 <sup>DLHC</sup>			
	Selenium (Se)-Dissolved (mg/L)	<0.0050 <sup>DLA</sup>	<0.0050 <sup>DLA</sup>	<0.0010	<0.0010	<0.0010 <sup>DLA</sup>			
	Silver (Ag)-Dissolved (mg/L)	<0.0010 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.000050	<0.000050	<0.00020 <sup>DLA</sup>			
	Sodium (Na)-Dissolved (mg/L)	61	54	3.2	75.7	51			
	Thallium (Tl)-Dissolved (mg/L)	0.0013	0.0021	<0.00020	<0.00020	<0.00020			
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050			
	Uranium (U)-Dissolved (mg/L)	0.0027	0.0170	0.00197	0.00243	0.00551 <sup>DLHC</sup>			
	Vanadium (V)-Dissolved (mg/L)	<0.15 <sup>DLHC</sup>	<0.15 <sup>DLHC</sup>	<0.030	<0.030	<0.15 <sup>DLHC</sup>			
	Zinc (Zn)-Dissolved (mg/L)	838	841	<0.0050	<0.0050	211			

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1835022-71	L1835022-72	L1835022-73	L1835022-74	L1835022-75
		Description	Water	Water	Water	Water	Water
		Sampled Date	23-SEP-16		23-SEP-16	23-SEP-16	23-SEP-16
		Sampled Time	17:35		18:00	08:30	16:45
		Client ID	P03-09-06	TRAVEL BLANK	P03-09-09	SRK04-3A	P03-09-02
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)		<0.010		<0.010	0.84 <sup>DLA</sup>	<0.010
	Antimony (Sb)-Dissolved (mg/L)		<0.00050		<0.00050	<0.010 <sup>DLA</sup>	<0.00050
	Arsenic (As)-Dissolved (mg/L)		<0.0010		<0.0010	0.046 <sup>DLHC</sup>	0.0017
	Barium (Ba)-Dissolved (mg/L)		0.029		0.023	<0.050 <sup>DLHC</sup>	0.028
	Beryllium (Be)-Dissolved (mg/L)		<0.0050		<0.0050	<0.025 <sup>DLHC</sup>	<0.0050
	Boron (B)-Dissolved (mg/L)		<0.10		<0.10	<0.50 <sup>DLHC</sup>	<0.10
	Cadmium (Cd)-Dissolved (mg/L)		0.000498		0.00104	0.0543	<0.000050
	Calcium (Ca)-Dissolved (mg/L)		387		418	405 <sup>DLA</sup>	317
	Chromium (Cr)-Dissolved (mg/L)		<0.00050		<0.00050	<0.010 <sup>DLA</sup>	<0.00050
	Cobalt (Co)-Dissolved (mg/L)		0.00285		0.00593	1.63 <sup>DLA</sup>	<0.00050
	Copper (Cu)-Dissolved (mg/L)		<0.0010		<0.0010	<0.020 <sup>DLA</sup>	<0.0010
	Iron (Fe)-Dissolved (mg/L)		0.047		0.086	816	12.7
	Lead (Pb)-Dissolved (mg/L)		<0.0010		<0.0010	0.0134	<0.0010
	Lithium (Li)-Dissolved (mg/L)		<0.050		<0.050	0.205	<0.050
	Magnesium (Mg)-Dissolved (mg/L)		87.1		91.0	1040	81.9
	Manganese (Mn)-Dissolved (mg/L)		17.8		23.0	120 <sup>DLA</sup>	0.961
	Molybdenum (Mo)-Dissolved (mg/L)		<0.0010		<0.0010	<0.0050 <sup>DLA</sup>	<0.0010
	Nickel (Ni)-Dissolved (mg/L)		0.0266		0.0405	1.40	<0.0050
	Potassium (K)-Dissolved (mg/L)		5.1		5.1	15 <sup>DLA</sup>	4.2
	Selenium (Se)-Dissolved (mg/L)		<0.0010		<0.0010	<0.0050 <sup>DLA</sup>	<0.0010
	Silver (Ag)-Dissolved (mg/L)		<0.000050		<0.000050	<0.0010 <sup>DLA</sup>	<0.000050
	Sodium (Na)-Dissolved (mg/L)		32.0		28.6	50 <sup>DLA</sup>	43.6
	Thallium (Tl)-Dissolved (mg/L)		<0.00020		<0.00020	<0.0010 <sup>DLA</sup>	<0.00020
	Titanium (Ti)-Dissolved (mg/L)		<0.050		<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)		0.00941		0.0107	0.0075 <sup>DLHC</sup>	0.00276
	Vanadium (V)-Dissolved (mg/L)		<0.030		<0.030	<0.15 <sup>DLHC</sup>	<0.030
	Zinc (Zn)-Dissolved (mg/L)		<0.0050		<0.0050	674	<0.0050

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1835022-76	L1835022-77	L1835022-78	L1835022-79	L1835022-80
		Description	Water	Water	Water	Water	Water
		Sampled Date	23-SEP-16	23-SEP-16	23-SEP-16	23-SEP-16	23-SEP-16
		Sampled Time	17:20	17:47	14:40	14:20	13:07
		Client ID	P03-09-04	P03-09-08	P01-02A	P01-02B	P05-03
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Arsenic (As)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	0.0039	0.0025
	Barium (Ba)-Dissolved (mg/L)		0.030	0.024	0.062	0.043	0.151
	Beryllium (Be)-Dissolved (mg/L)		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Boron (B)-Dissolved (mg/L)		<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Dissolved (mg/L)		0.00130	0.00150	0.000079	<0.000050	0.000766
	Calcium (Ca)-Dissolved (mg/L)		392	470	112	82.9	386
	Chromium (Cr)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Cobalt (Co)-Dissolved (mg/L)		0.00997	0.00592	0.00074	<0.00050	0.00453
	Copper (Cu)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Iron (Fe)-Dissolved (mg/L)		<0.030	0.151	<0.030	1.43	4.80
	Lead (Pb)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Lithium (Li)-Dissolved (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Magnesium (Mg)-Dissolved (mg/L)		88.6	95.3	30.7	31.8	85.5
	Manganese (Mn)-Dissolved (mg/L)		22.9	23.9	1.11	0.126	21.5
	Molybdenum (Mo)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	0.0027
	Nickel (Ni)-Dissolved (mg/L)		0.0285	0.0403	<0.0050	<0.0050	0.0068
	Potassium (K)-Dissolved (mg/L)		5.1	5.4	2.4	2.2	5.2
	Selenium (Se)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Silver (Ag)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Sodium (Na)-Dissolved (mg/L)		25.6	27.5	5.6	4.9	28.5
	Thallium (Tl)-Dissolved (mg/L)		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Titanium (Ti)-Dissolved (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)		0.0101	0.0107	0.00224	0.00320	0.0117
	Vanadium (V)-Dissolved (mg/L)		<0.030	<0.030	<0.030	<0.030	<0.030
	Zinc (Zn)-Dissolved (mg/L)		0.0056	<0.0050	<0.0050	<0.0050	0.0098

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-81 Water 23-SEP-16 13:07 FB-4	L1835022-82 Water 23-SEP-16 13:10 P05-02	L1835022-83 Water 23-SEP-16 13:10 DUP-6	L1835022-84 Water 23-SEP-16 12:10 P05-01-01	L1835022-85 Water 23-SEP-16 11:10 P05-01-05
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	<0.010	0.011	0.021	0.024	0.020
	Antimony (Sb)-Dissolved (mg/L)	<0.00050	<0.0010 <sup>DLA</sup>	<0.00050	<0.00050	<0.0010 <sup>DLA</sup>
	Arsenic (As)-Dissolved (mg/L)	<0.0010	0.0024	0.0025	<0.0010	0.0059
	Barium (Ba)-Dissolved (mg/L)	<0.020	0.022	0.022	0.022	<0.020
	Beryllium (Be)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Boron (B)-Dissolved (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	0.000116	0.000168	<0.000050	0.000478
	Calcium (Ca)-Dissolved (mg/L)	<0.10	710	716	662	690
	Chromium (Cr)-Dissolved (mg/L)	<0.00050	<0.0010 <sup>DLA</sup>	<0.00050	<0.00050	<0.0010 <sup>DLA</sup>
	Cobalt (Co)-Dissolved (mg/L)	<0.00050	0.0231	0.0235	0.00064	0.0395
	Copper (Cu)-Dissolved (mg/L)	<0.0010	<0.0020 <sup>DLA</sup>	<0.0010	<0.0010	<0.0020 <sup>DLA</sup>
	Iron (Fe)-Dissolved (mg/L)	<0.030	37.0	37.1	27.4	48.8
	Lead (Pb)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	0.0085	0.0161
	Lithium (Li)-Dissolved (mg/L)	<0.050	<0.050	<0.050	0.088	<0.050
	Magnesium (Mg)-Dissolved (mg/L)	<0.10	158	152	165	171
	Manganese (Mn)-Dissolved (mg/L)	<0.010	63.8	64.0	49.8	61.7
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Dissolved (mg/L)	<0.0050	0.0265	0.0274	<0.0050	0.0302
	Potassium (K)-Dissolved (mg/L)	<2.0	7.8	7.9	7.6	9.4
	Selenium (Se)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Silver (Ag)-Dissolved (mg/L)	<0.000050	<0.00010 <sup>DLA</sup>	<0.000050	<0.000050	<0.00010 <sup>DLA</sup>
	Sodium (Na)-Dissolved (mg/L)	<2.0	32.5	32.8	47.3	38.1
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)	<0.00020	0.00557	0.00588	0.00042	0.00595
	Vanadium (V)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Zinc (Zn)-Dissolved (mg/L)	<0.0050	0.0615	0.0647	<0.0050	0.0092

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-86 Water 24-SEP-16 12:40 P09-GS1B	L1835022-87 Water 24-SEP-16 13:55 CH15-107-MW030	L1835022-88 Water 24-SEP-16 11:20 P2001-2B	L1835022-89 Water 24-SEP-16 10:40 V37	L1835022-90 Water 24-SEP-16 09:00 P09-LCD1
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Arsenic (As)-Dissolved (mg/L)	1.90	<0.0010	<0.0010	<0.0010	0.121
	Barium (Ba)-Dissolved (mg/L)	0.022	0.052	<0.020	0.042	0.045
	Beryllium (Be)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Boron (B)-Dissolved (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Dissolved (mg/L)	<0.000050	0.000188	<0.000050	<0.000050	<0.000050
	Calcium (Ca)-Dissolved (mg/L)	236	182	580	89.8	189
	Chromium (Cr)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Cobalt (Co)-Dissolved (mg/L)	0.00082	<0.00050	0.00097	<0.00050	0.00070
	Copper (Cu)-Dissolved (mg/L)	<0.0010	0.0027	<0.0010	<0.0010	<0.0010
	Iron (Fe)-Dissolved (mg/L)	4.77	<0.030	0.364	<0.030	5.68
	Lead (Pb)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0284
	Lithium (Li)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Magnesium (Mg)-Dissolved (mg/L)	90.7	206	346	104	54.1
	Manganese (Mn)-Dissolved (mg/L)	0.574	<0.010	0.172	0.102	0.805
	Molybdenum (Mo)-Dissolved (mg/L)	0.0035	<0.0010	<0.0010	0.0224	0.0052
	Nickel (Ni)-Dissolved (mg/L)	0.0079	0.0189	0.0085	<0.0050	<0.0050
	Potassium (K)-Dissolved (mg/L)	2.1	4.0	6.5	5.2	3.1
	Selenium (Se)-Dissolved (mg/L)	<0.0010	0.0019	<0.0010	<0.0010	<0.0010
	Silver (Ag)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Sodium (Na)-Dissolved (mg/L)	15.2	8.3	12.6	23.9	17.6
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)	0.00121	0.00775	0.101	0.00145	0.00901
	Vanadium (V)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Zinc (Zn)-Dissolved (mg/L)	0.0622	0.326	0.0141	0.0054	0.0083

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1835022-91	L1835022-92	L1835022-93	L1835022-94	L1835022-95
		Description	Water	Water	Water	Water	Water
		Sampled Date	24-SEP-16	24-SEP-16	24-SEP-16	24-SEP-16	24-SEP-16
		Sampled Time	09:00	10:20	11:00	15:40	12:15
		Client ID	DUP-7	P09-LCD6	P2001-2A	CH15-107-MW033	P09-GS1A
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)		<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	0.0160
	Arsenic (As)-Dissolved (mg/L)		0.121	0.137	0.0013	<0.0010	0.0737
	Barium (Ba)-Dissolved (mg/L)		0.046	0.047	<0.020	0.022	<0.020
	Beryllium (Be)-Dissolved (mg/L)		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Boron (B)-Dissolved (mg/L)		<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Dissolved (mg/L)		<0.000050	0.000057	<0.000050	0.00116	0.00145
	Calcium (Ca)-Dissolved (mg/L)		179	179	633	156	158
	Chromium (Cr)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Cobalt (Co)-Dissolved (mg/L)		0.00069	0.00127	0.00066	<0.00050	0.0918
	Copper (Cu)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	0.0021	<0.0010
	Iron (Fe)-Dissolved (mg/L)		5.47	7.81	2.37	<0.030	0.582
	Lead (Pb)-Dissolved (mg/L)		0.0293	0.0099	<0.0010	<0.0010	0.0386
	Lithium (Li)-Dissolved (mg/L)		<0.050	<0.050	0.050	<0.050	<0.050
	Magnesium (Mg)-Dissolved (mg/L)		55.4	55.4	341	157	65.1
	Manganese (Mn)-Dissolved (mg/L)		0.828	0.602	0.141	<0.010	1.89
	Molybdenum (Mo)-Dissolved (mg/L)		0.0050	0.0026	<0.0010	<0.0010	0.0018
	Nickel (Ni)-Dissolved (mg/L)		<0.0050	<0.0050	0.0074	0.0354	0.122
	Potassium (K)-Dissolved (mg/L)		3.3	2.5	6.1	3.6	4.0
	Selenium (Se)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	0.0022	<0.0010
	Silver (Ag)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Sodium (Na)-Dissolved (mg/L)		18.8	7.1	10.0	6.9	10.8
	Thallium (Tl)-Dissolved (mg/L)		<0.00020	<0.00020	<0.00020	<0.00020	0.00622
	Titanium (Ti)-Dissolved (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)		0.00908	0.00415	0.105	0.00804	0.0142
	Vanadium (V)-Dissolved (mg/L)		<0.030	<0.030	<0.030	<0.030	<0.030
	Zinc (Zn)-Dissolved (mg/L)		0.0080	<0.0050	0.0091	2.58	5.07

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

	Sample ID Description Sampled Date Sampled Time Client ID	L1835022-96 Water 24-SEP-16 16:55 CH16-107-MW029	L1835022-97 Water 24-SEP-16 16:55 FB-5	L1835022-98 Water 24-SEP-16 14:55 CH15-107-MW034	L1835022-99 Water 24-SEP-16 14:55 DUP-9	L1835022-100 Water 24-SEP-16 19:00 BH14B
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Antimony (Sb)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Arsenic (As)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Barium (Ba)-Dissolved (mg/L)	0.070	<0.020	0.031	0.033	<0.020
	Beryllium (Be)-Dissolved (mg/L)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Boron (B)-Dissolved (mg/L)	<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Dissolved (mg/L)	0.000394	<0.000050	<0.000050	<0.000050	0.000191
	Calcium (Ca)-Dissolved (mg/L)	205	<0.10	126	129	524
	Chromium (Cr)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Cobalt (Co)-Dissolved (mg/L)	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Copper (Cu)-Dissolved (mg/L)	0.0021	<0.0010	0.0029	0.0029	0.0012
	Iron (Fe)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Lead (Pb)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	0.0081
	Lithium (Li)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	0.090
	Magnesium (Mg)-Dissolved (mg/L)	258	<0.10	59.5	61.1	356
	Manganese (Mn)-Dissolved (mg/L)	<0.010	<0.010	<0.010	<0.010	<0.010
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0010	<0.0010	0.0025	0.0025	<0.0010
	Nickel (Ni)-Dissolved (mg/L)	0.0261	<0.0050	0.0083	0.0081	0.0057
	Potassium (K)-Dissolved (mg/L)	4.8	<2.0	2.7	3.0	4.6
	Selenium (Se)-Dissolved (mg/L)	0.0020	<0.0010	0.0029	0.0030	<0.0010
	Silver (Ag)-Dissolved (mg/L)	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Sodium (Na)-Dissolved (mg/L)	10.4	<2.0	5.4	5.7	18.1
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)	0.0107	<0.00020	0.00145	0.00145	0.199
	Vanadium (V)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030	<0.030
	Zinc (Zn)-Dissolved (mg/L)	0.529	<0.0050	<0.0050	<0.0050	0.358

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

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID	L1835022-101 Water 24-SEP-16 08:50 P03-04-02	L1835022-102 Water 24-SEP-16 09:50 P03-04-04	L1835022-103 Water 24-SEP-16 13:00 P03-06-03	L1835022-104 Water 24-SEP-16 11:52 P03-06-01	L1835022-105 Water 24-SEP-16 13:20 P03-06-04	
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	<0.010 <sup>DLA</sup>	<0.010	0.254 <sup>DLA</sup>	4.12 <sup>DLA</sup>	0.049
	Antimony (Sb)-Dissolved (mg/L)	<0.0010 <sup>DLA</sup>	<0.00050	<0.0010 <sup>DLA</sup>	<0.0020 <sup>DLA</sup>	<0.00050
	Arsenic (As)-Dissolved (mg/L)	0.0019	0.0076	0.0021	<0.0020 <sup>DLA</sup>	0.0017
	Barium (Ba)-Dissolved (mg/L)	<0.020	0.058	<0.020	<0.020	<0.020
	Beryllium (Be)-Dissolved (mg/L)	<0.0050	<0.0050	<0.010 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>	<0.0050
	Boron (B)-Dissolved (mg/L)	<0.10	<0.10	<0.20 <sup>DLHC</sup>	<0.20 <sup>DLHC</sup>	<0.10
	Cadmium (Cd)-Dissolved (mg/L)	0.000119	<0.000050	0.0107	0.0493	0.00500
	Calcium (Ca)-Dissolved (mg/L)	451	243	393	401	463
	Chromium (Cr)-Dissolved (mg/L)	<0.0010 <sup>DLA</sup>	<0.00050	<0.0010 <sup>DLA</sup>	<0.0020 <sup>DLA</sup>	<0.00050
	Cobalt (Co)-Dissolved (mg/L)	0.111	0.00394	0.341	1.93	0.162
	Copper (Cu)-Dissolved (mg/L)	<0.0020 <sup>DLA</sup>	<0.0010	<0.0020 <sup>DLA</sup>	0.0172	0.0019
	Iron (Fe)-Dissolved (mg/L)	1.45	6.60	1840	1460	468
	Lead (Pb)-Dissolved (mg/L)	<0.0010	<0.0010	0.0027	0.0147	0.0011
	Lithium (Li)-Dissolved (mg/L)	<0.050	<0.050	0.059	0.139	<0.050
	Magnesium (Mg)-Dissolved (mg/L)	80.0	33.3	125	192	95.8
	Manganese (Mn)-Dissolved (mg/L)	58.2	8.26	71.2	165	57.9
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0010	0.0012	0.0013	0.0013	0.0019
	Nickel (Ni)-Dissolved (mg/L)	0.113	<0.0050	0.315	2.11	0.138
	Potassium (K)-Dissolved (mg/L)	4.3	3.3	6.9	8.3	5.0
	Selenium (Se)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Silver (Ag)-Dissolved (mg/L)	<0.00010 <sup>DLA</sup>	<0.000050	<0.00010 <sup>DLA</sup>	<0.00020 <sup>DLA</sup>	<0.000050
	Sodium (Na)-Dissolved (mg/L)	24.7	86.9	17.8	23.8	23.9
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)	0.00100	0.00368	0.00389	0.00402	0.0205
	Vanadium (V)-Dissolved (mg/L)	<0.030	<0.030	<0.060 <sup>DLHC</sup>	<0.060 <sup>DLHC</sup>	<0.030
	Zinc (Zn)-Dissolved (mg/L)	0.0755	0.0091	75.1	46.7	16.6

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID Description Sampled Date Sampled Time Client ID		L1835022-106 Water 24-SEP-16 10:55 P03-05-05	L1835022-107 Water 24-SEP-16 11:45 P03-06-05	L1835022-108 Water 24-SEP-16 14:50 BH10A	L1835022-109 Water 24-SEP-16 14:50 DUP-8	L1835022-110 Water 24-SEP-16 16:45 CH14-107-MW001
Grouping	Analyte					
<b>WATER</b>						
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	0.053 <sup>DLA</sup>	0.247 <sup>DLA</sup>	<0.010	<0.010	0.155
	Antimony (Sb)-Dissolved (mg/L)	<0.0020	<0.0010	<0.00050	<0.00050	<0.00050
	Arsenic (As)-Dissolved (mg/L)	0.0100	0.0011	<0.0010	<0.0010	<0.0010
	Barium (Ba)-Dissolved (mg/L)	<0.050 <sup>DLHC</sup>	<0.020 <sup>DLHC</sup>	<0.020	<0.020	0.035 <sup>DLM</sup>
	Beryllium (Be)-Dissolved (mg/L)	<0.025 <sup>DLHC</sup>	<0.010 <sup>DLHC</sup>	<0.0050	<0.0050	<0.010 <sup>DLM</sup>
	Boron (B)-Dissolved (mg/L)	<0.50 <sup>DLHC</sup>	<0.20 <sup>DLHC</sup>	<0.10	<0.10	<0.20 <sup>DLM</sup>
	Cadmium (Cd)-Dissolved (mg/L)	0.00046	0.0112	0.00283	0.00279	<0.000050
	Calcium (Ca)-Dissolved (mg/L)	375	395	46.5	47.1	113
	Chromium (Cr)-Dissolved (mg/L)	<0.0020 <sup>DLA</sup>	<0.0010 <sup>DLA</sup>	<0.00050	<0.00050	0.00188
	Cobalt (Co)-Dissolved (mg/L)	0.400	0.345	0.00059	<0.00050	0.0303
	Copper (Cu)-Dissolved (mg/L)	<0.0040 <sup>DLA</sup>	<0.0020 <sup>DLA</sup>	0.0013	0.0013	<0.0010
	Iron (Fe)-Dissolved (mg/L)	3720	1850	<0.030	<0.030	51.7
	Lead (Pb)-Dissolved (mg/L)	0.0022	<0.0010	<0.0010	<0.0010	<0.0010
	Lithium (Li)-Dissolved (mg/L)	0.118	0.063	<0.050	<0.050	0.052
	Magnesium (Mg)-Dissolved (mg/L)	206	125	11.3	11.4	41.3
	Manganese (Mn)-Dissolved (mg/L)	80.9	71.6	<0.010	<0.010	3.27
	Molybdenum (Mo)-Dissolved (mg/L)	0.0020	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Dissolved (mg/L)	0.340	0.318	<0.0050	<0.0050	0.0645
	Potassium (K)-Dissolved (mg/L)	16	7.2	<2.0	<2.0	4.3
	Selenium (Se)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Silver (Ag)-Dissolved (mg/L)	<0.00020 <sup>DLA</sup>	<0.00010 <sup>DLA</sup>	<0.000050	<0.000050	<0.000050
	Sodium (Na)-Dissolved (mg/L)	57	18.5	3.8	3.7	14.5
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)	0.00096	0.00368	<0.00020	<0.00020	<0.00020
	Vanadium (V)-Dissolved (mg/L)	<0.15 <sup>DLHC</sup>	<0.060 <sup>DLHC</sup>	<0.030	<0.030	<0.060 <sup>DLM</sup>
	Zinc (Zn)-Dissolved (mg/L)	1.17	74.6	0.435	0.432	4.01

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

		Sample ID	L1835022-111	L1835022-112	L1835022-113	L1835022-114	L1835022-115
		Description	Water	Water	Water	Water	Water
		Sampled Date	24-SEP-16	24-SEP-16	24-SEP-16	24-SEP-16	24-SEP-16
		Sampled Time	15:13	15:40	16:10	16:10	18:52
		Client ID	BH10B	P05-04	CH14-107-MW002	DUP-10	BH14A
Grouping	Analyte						
<b>WATER</b>							
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)		0.028	0.039	0.016	0.015	<0.010
	Antimony (Sb)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
	Arsenic (As)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Barium (Ba)-Dissolved (mg/L)		<0.020	0.029	0.022	0.021	<0.020
	Beryllium (Be)-Dissolved (mg/L)		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
	Boron (B)-Dissolved (mg/L)		<0.10	<0.10	<0.10	<0.10	<0.10
	Cadmium (Cd)-Dissolved (mg/L)		0.00118	0.00224	0.00131	0.00128	0.00372
	Calcium (Ca)-Dissolved (mg/L)		58.2	66.7	80.0	78.7	540
	Chromium (Cr)-Dissolved (mg/L)		<0.00050	<0.00050	<0.00050	<0.00050	0.00062
	Cobalt (Co)-Dissolved (mg/L)		<0.00050	<0.00050	0.00928	0.00940	<0.00050
	Copper (Cu)-Dissolved (mg/L)		<0.0010	<0.0010	0.0013	0.0013	0.0011
	Iron (Fe)-Dissolved (mg/L)		<0.030	<0.030	0.419	0.417	<0.030
	Lead (Pb)-Dissolved (mg/L)		0.0014	<0.0010	<0.0010	<0.0010	0.0059
	Lithium (Li)-Dissolved (mg/L)		<0.050	<0.050	<0.050	<0.050	0.135
	Magnesium (Mg)-Dissolved (mg/L)		14.9	16.8	26.5	26.4	460
	Manganese (Mn)-Dissolved (mg/L)		<0.010	<0.010	1.88	1.90	0.695
	Molybdenum (Mo)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Nickel (Ni)-Dissolved (mg/L)		<0.0050	0.0076	0.0500	0.0497	0.394
	Potassium (K)-Dissolved (mg/L)		<2.0	<2.0	2.5	2.6	4.7
	Selenium (Se)-Dissolved (mg/L)		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
	Silver (Ag)-Dissolved (mg/L)		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
	Sodium (Na)-Dissolved (mg/L)		4.4	4.7	5.7	5.9	20.6
	Thallium (Tl)-Dissolved (mg/L)		0.00024	<0.00020	<0.00020	<0.00020	<0.00020
	Titanium (Ti)-Dissolved (mg/L)		<0.050	<0.050	<0.050	<0.050	<0.050
	Uranium (U)-Dissolved (mg/L)		<0.00020	0.00114	<0.00020	<0.00020	0.131
	Vanadium (V)-Dissolved (mg/L)		<0.030	<0.030	<0.030	<0.030	<0.030
	Zinc (Zn)-Dissolved (mg/L)		0.784	1.19	8.49	8.91	32.5

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

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample ID	Description	Sampled Date	Sampled Time	Client ID	L1835022-116	L1835022-117	L1835022-118	L1835022-119
					Water	Water	Water	Water
		24-SEP-16	18:52	DUP-11	24-SEP-16	25-SEP-16	25-SEP-16	25-SEP-16
						09:35	09:15	09:35
						P09-LCD4	BH8	CH15-107-MW032
Grouping	Analyte							
<b>WATER</b>								
<b>Dissolved Metals</b>	Aluminum (Al)-Dissolved (mg/L)	<0.010	0.015	26.7 <sup>DLA</sup>	<0.010			
	Antimony (Sb)-Dissolved (mg/L)	<0.00050	0.00052	<0.0020	<0.00050			
	Arsenic (As)-Dissolved (mg/L)	<0.0010	0.0031	0.0108	<0.0010			
	Barium (Ba)-Dissolved (mg/L)	<0.020	0.090	<0.020	0.025			
	Beryllium (Be)-Dissolved (mg/L)	<0.0050	<0.0050	0.0175	<0.0050			
	Boron (B)-Dissolved (mg/L)	<0.10	<0.10	<0.10	<0.10			
	Cadmium (Cd)-Dissolved (mg/L)	0.00398	0.000098	0.606	0.000181			
	Calcium (Ca)-Dissolved (mg/L)	527	99.1	278	522			
	Chromium (Cr)-Dissolved (mg/L)	0.00072	<0.00050	0.0029	<0.00050			
	Cobalt (Co)-Dissolved (mg/L)	0.00174	0.00090	0.605	0.0112			
	Copper (Cu)-Dissolved (mg/L)	0.0015	0.0041	3.48	<0.0010			
	Iron (Fe)-Dissolved (mg/L)	0.036	<0.030	574	0.053			
	Lead (Pb)-Dissolved (mg/L)	0.0221	0.0028	0.988	<0.0010			
	Lithium (Li)-Dissolved (mg/L)	0.126	<0.050	0.113	0.061			
	Magnesium (Mg)-Dissolved (mg/L)	449	25.8	219	85.2			
	Manganese (Mn)-Dissolved (mg/L)	0.692	0.860	13.2	4.72			
	Molybdenum (Mo)-Dissolved (mg/L)	<0.0010	0.0054	<0.0010	0.0065			
	Nickel (Ni)-Dissolved (mg/L)	0.388	0.0058	0.521	0.0143			
	Potassium (K)-Dissolved (mg/L)	4.4	<2.0	6.5	9.7			
	Selenium (Se)-Dissolved (mg/L)	<0.0010	<0.0010	<0.0010	<0.0010			
	Silver (Ag)-Dissolved (mg/L)	<0.000050	<0.000050	<0.00020 <sup>DLA</sup>	<0.000050			
	Sodium (Na)-Dissolved (mg/L)	19.4	61.5	20.6	137			
	Thallium (Tl)-Dissolved (mg/L)	<0.00020	<0.00020	0.00675	<0.00020			
	Titanium (Ti)-Dissolved (mg/L)	<0.050	<0.050	<0.050	<0.050			
	Uranium (U)-Dissolved (mg/L)	0.129	0.00327	0.0540	0.0271			
	Vanadium (V)-Dissolved (mg/L)	<0.030	<0.030	<0.030	<0.030			
	Zinc (Zn)-Dissolved (mg/L)	31.4	0.0071	211	0.0093			

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

## Reference Information

## Qualifiers for Individual Samples Listed:

Sample Number	Client Sample ID	Qualifier	Description
L1835022-60	TRAVEL BLANK	WSMT	Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
L1835022-72	TRAVEL BLANK	WSMT	Water sample(s) for total mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

## QC Samples with Qualifiers &amp; Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Arsenic (As)-Dissolved	MS-B	L1835022-1, -10, -100, -101, -102, -103, -104, -105, -106, -107, -108, -109, -11, -110, -111, -112, -113, -114, -115, -116, -117, -118, -119, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -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, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -61, -62, -63, -64, -65, -66, -67, -68, -69, -7, -70, -71, -73, -74, -75, -76, -77, -78, -79, -8, -80, -81, -82, -83, -84, -85, -86, -87, -88, -89, -9, -90, -91, -92, -93, -94, -95, -96, -97, -98, -99
Matrix Spike	Cobalt (Co)-Dissolved	MS-B	L1835022-1, -10, -100, -101, -102, -103, -104, -105, -106, -107, -108, -109, -11, -110, -111, -112, -113, -114, -115, -116, -117, -118, -119, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -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, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -61, -62, -63, -64, -65, -66, -67, -68, -69, -7, -70, -71, -73, -74, -75, -76, -77, -78, -79, -8, -80, -81, -82, -83, -84, -85, -86, -87, -88, -89, -9, -90, -91, -92, -93, -94, -95, -96, -97, -98, -99
Matrix Spike	Lead (Pb)-Dissolved	MS-B	L1835022-1, -10, -100, -101, -102, -103, -104, -105, -106, -107, -108, -109, -11, -110, -111, -112, -113, -114, -115, -116, -117, -118, -119, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -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, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -61, -62, -63, -64, -65, -66, -67, -68, -69, -7, -70, -71, -73, -74, -75, -76, -77, -78, -79, -8, -80, -81, -82, -83, -84, -85, -86, -87, -88, -89, -9, -90, -91, -92, -93, -94, -95, -96, -97, -98, -99
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L1835022-1, -10, -100, -101, -102, -103, -104, -105, -106, -107, -108, -109, -11, -110, -111, -112, -113, -114, -115, -116, -117, -118, -119, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -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, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -61, -62, -63, -64, -65, -66, -67, -68, -69, -7, -70, -71, -73, -74, -75, -76, -77, -78, -79, -8, -80, -81, -82, -83, -84, -85, -86, -87, -88, -89, -9, -90, -91, -92, -93, -94, -95, -96, -97, -98, -99
Matrix Spike	Nickel (Ni)-Dissolved	MS-B	L1835022-1, -10, -100, -101, -102, -103, -104, -105, -106, -107, -108, -109, -11, -110, -111, -112, -113, -114, -115, -116, -117, -118, -119, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -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, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -61, -62, -63, -64, -65, -66, -67, -68, -69, -7, -70, -71, -73, -74, -75, -76, -77, -78, -79, -8, -80, -81, -82, -83, -84, -85, -86, -87, -88, -89, -9, -90, -91, -92, -93, -94, -95, -96, -97, -98, -99
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1835022-1, -10, -100, -101, -102, -103, -104, -105, -106, -107, -108, -109, -11, -110, -111, -112, -113, -114, -115, -116, -117, -118, -119, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -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, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -61, -62, -63, -64, -65, -66, -67, -68, -69, -7, -70, -71, -73, -74, -75, -76, -77, -78, -79, -8, -80, -81, -82, -83, -84, -85, -86, -87, -88, -89, -9, -90, -91, -92, -93, -94, -95, -96, -97, -98, -99
Matrix Spike	Uranium (U)-Dissolved	MS-B	L1835022-1, -10, -100, -101, -102, -103, -104, -105, -106, -107, -108, -109, -11, -110, -111, -112, -113, -114, -115, -116, -117, -118, -119, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -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, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -61, -62, -63, -64, -65, -66, -67, -68, -69, -7, -70, -71, -73, -74, -75, -76, -77, -78, -79, -8, -80, -81, -82, -83, -84, -85, -86, -87, -88, -89, -9, -90, -91, -92, -93, -94, -95, -96, -97, -98, -99









## Reference Information

Parameter	Qualifier	Applies to Sample Number(s)
		116, -117, -118, -119, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -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, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -61, -62, -63, -64, -65, -66, -67, -68, -69, -7, -70, -71, -73, -74, -75, -76, -77, -78, -79, -8, -80, -81, -82, -83, -84, -85, -86, -87, -88, -89, -9, -90, -91, -92, -93, -94, -95, -96, -97, -98, -99
Matrix Spike	Zinc (Zn)-Dissolved	MS-B L1835022-1, -10, -100, -101, -102, -103, -104, -105, -106, -107, -108, -109, -11, -110, -111, -112, -113, -114, -115, -116, -117, -118, -119, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -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, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -61, -62, -63, -64, -65, -66, -67, -68, -69, -7, -70, -71, -73, -74, -75, -76, -77, -78, -79, -8, -80, -81, -82, -83, -84, -85, -86, -87, -88, -89, -9, -90, -91, -92, -93, -94, -95, -96, -97, -98, -99
Matrix Spike	Zinc (Zn)-Dissolved	MS-B L1835022-1, -10, -100, -101, -102, -103, -104, -105, -106, -107, -108, -109, -11, -110, -111, -112, -113, -114, -115, -116, -117, -118, -119, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -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, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -61, -62, -63, -64, -65, -66, -67, -68, -69, -7, -70, -71, -73, -74, -75, -76, -77, -78, -79, -8, -80, -81, -82, -83, -84, -85, -86, -87, -88, -89, -9, -90, -91, -92, -93, -94, -95, -96, -97, -98, -99
Matrix Spike	Zinc (Zn)-Dissolved	MS-B L1835022-1, -10, -100, -101, -102, -103, -104, -105, -106, -107, -108, -109, -11, -110, -111, -112, -113, -114, -115, -116, -117, -118, -119, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -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, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -61, -62, -63, -64, -65, -66, -67, -68, -69, -7, -70, -71, -73, -74, -75, -76, -77, -78, -79, -8, -80, -81, -82, -83, -84, -85, -86, -87, -88, -89, -9, -90, -91, -92, -93, -94, -95, -96, -97, -98, -99
Matrix Spike	Zinc (Zn)-Dissolved	MS-B L1835022-1, -10, -100, -101, -102, -103, -104, -105, -106, -107, -108, -109, -11, -110, -111, -112, -113, -114, -115, -116, -117, -118, -119, -12, -13, -14, -15, -16, -17, -18, -19, -2, -20, -21, -22, -23, -24, -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, -50, -51, -52, -53, -54, -55, -56, -57, -58, -59, -6, -61, -62, -63, -64, -65, -66, -67, -68, -69, -7, -70, -71, -73, -74, -75, -76, -77, -78, -79, -8, -80, -81, -82, -83, -84, -85, -86, -87, -88, -89, -9, -90, -91, -92, -93, -94, -95, -96, -97, -98, -99

## Qualifiers for Individual Parameters Listed:

Qualifier	Description
DLA	Detection Limit adjusted for required dilution
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
HTC	Hardness was calculated from Total Ca and/or Mg concentrations and may be biased high (dissolved Ca/Mg results unavailable).
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

## Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
ACY-PCT-VA	Water	Acidity by Automatic Titration	APHA 2310 "Acidity"

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

Samples of industrial wastes, acid mine drainage, or other solutions that contain appreciable amounts of hydrolyzable metal ions such as aluminum,

## Reference Information

iron, and manganese may require hot peroxide treatment to ensure oxidation and hydrolysis of reduced forms of polyvalent cations. Acidity results may be highly variable if this procedure is not followed. Results in this report for 'Acidity (as CaCO<sub>3</sub>)' have not been peroxide treated.

**ACY-PCT-VA** Water Acidity by Automatic Titration APHA 2310 Acidity

This analysis is carried out using procedures adapted from APHA Method 2310 "Acidity". Acidity is determined by potentiometric titration to a specified endpoint.

Samples of industrial wastes, acid mine drainage, or other solutions that contain appreciable amounts of hydrolyzable metal ions such as aluminum, iron, and manganese may require hot peroxide treatment to ensure oxidation and hydrolysis of reduced forms of polyvalent cations. Acidity results may be highly variable if this procedure is not followed. Results in this report for 'Acidity (as CaCO<sub>3</sub>)' have not been peroxide treated.

**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.

**ALK-TITR-VA** Water Alkalinity Species by Titration APHA 2320 Alkalinity

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

**CL-IC-N-VA** Water Chloride in Water by IC EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**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 CaCO<sub>3</sub> equivalents. Dissolved Calcium and Magnesium concentrations are preferentially used for the hardness calculation.

**HG-TOT-CVAFS-VA** Water Total Hg in Water by CVAFS LOR=50ppt EPA 1631E (mod)

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).

**MET-D-CCMS-VA** Water Dissolved Metals in Water by CRC ICPMS APHA 3030B/6020A (mod)

Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

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

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

**MET-T-CCMS-VA** Water Total Metals in Water by CRC ICPMS EPA 200.2/6020A (mod)

Water samples are digested with nitric and hydrochloric acids, and analyzed by CRC ICPMS.

Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.

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

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

**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

## Reference Information

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

**SO4-IC-N-VA**                      Water              Sulfate in Water by IC    EPA 300.1 (mod)

Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

**TSS-VA**                              Water              Total Suspended Solids by Gravimetric    APHA 2540 D - GRAVIMETRIC

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

Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.

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

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

---

Laboratory Definition Code	Laboratory Location
VA	ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA

---

**Chain of Custody Numbers:**

1-1343-005.31

**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.*



<b>Report To</b>		<b>Report Format / Distribution</b>			<b>Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)</b>												
Company: Hemmera Environchem Inc.		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)												
Contact: Natasha Sandys		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT												
Address: 230 - 2237 2nd Avenue Whitehorse, YT		<input type="checkbox"/> Criteria on Report - provide details below if box checked			E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT												
Phone: 867-456-4865		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge												
		Email 1 or Fax nsandys@hemmera.com, jchua@hemmera.com			Specify Date Required for E2, E or P:												
		Email 2 chris@elr.ca			<b>Analysis Request</b>												
<b>Invoice To</b>		<b>Invoice Distribution</b>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												
Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX															
Copy of Invoice with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Email 1 or Fax nsandys@hemmera.com															
Company: Hemmera Environchem Inc.		Email 2 chris@elr.ca															
Contact: Natasha Sandys		Project Information															
		Oil and Gas Required Fields (client use)															
ALS Quote #: 1343-005.31		Approver ID: [REDACTED] Cost Center: [REDACTED]															
Job #: 1343-005.31		GL*Account: [REDACTED] Routing Code: [REDACTED]															
PO / AFE:		Activity Code: [REDACTED]															
LSD:		Location: [REDACTED]															
ALS Lab Work Order # (lab use only)		ALS Contact: Sean Sluggett			Sampler: JC,CH,AN,MM												
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	acidity (to pH 8.3)	alkalinity	chloride	conductivity	pH	sulphate	suspended solids, total (TSS)	dissolved metals (excluding mercury)	Number of Containers				
	SRK05-SP-4A	20-Sep-16	14:25	Water	R	R	R	R	R	R	R	R		2			
	P09-SIS2	20-Sep-16	15:55	Water	R	R	R	R	R	R	R	R		2			
	SRK05-SP-4B	20-Sep-16	13:50	Water	R	R	R	R	R	R	R	R		2			
	P09-SIS1	20-Sep-16	17:45	Water	R	R	R	R	R	R	R	R		2			
	P09-SIS3	20-Sep-16	15:15	Water	R	R	R	R	R	R	R	R		2			
	P09-SIS4	20-Sep-16	12:55	Water	R	R	R	R	R	R	R	R		2			
	P09-SIS6	20-Sep-16	11:16	Water	R	R	R	R	R	R	R	R		2			
	SRK08-SBR2	20-Sep-16	16:40	Water	R	R	R	R	R	R	R	R		2			
	FB-1	20-Sep-16	16:40	Water	R	R	R	R	R	R	R	R		2			
	DUP-2	20-Sep-16	16:40	Water	R	R	R	R	R	R	R	R		2			
	S1A	20-Sep-16	16:00	Water	R	R	R	R	R	R	R	R		2			
	SRK08-SP7B	20-Sep-16	14:20	Water	R	R	R	R	R	R	R	R		2			
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report (client Use)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>												
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		- EDD must be in EQUIS format common to Faro Mine Remediation Project. Contact client if clarification is required. - See attached parameter sheet for required detection limits.			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>												
Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Ice packs Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>												
					Cooling Initiated <input checked="" type="checkbox"/>												
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C							
<b>SHIPMENT RELEASE (client use)</b>				<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>									
Released by: [Signature]		Date: 20-sept-16		Time: 10:50		Received by: [Signature]		Date: 26 SEP-16		Time: 11:00		Received by: FIMC		Date: Sept-27		Time: 11:00	

**Short Holding Time  
Rush Processing  
TSS EXTRA**

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

Initial Temps: 4.0, 2.0, 2.0, 3.0, 3.0  
3.0, 1.0, 2.0, 1.0



L1835022-COFC

Report To		Report Format / Distribution			Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)												
Company: Hemmera Environchem Inc.		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)												
Contact: Natasha Sandys		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT												
Address: 230 - 2237 2nd Avenue Whitehorse, YT		<input type="checkbox"/> Criteria on Report - provide details below if box checked			E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT												
Phone: 867-456-4865		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge												
		Email 1 or Fax nsandys@hemmera.com, jchua@hemmera.com			Specify Date Required for E2, E or P:												
		Email 2 chris@elr.ca			<b>Analysis Request</b>												
Invoice To Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>Invoice Distribution</b>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												
Copy of Invoice with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX															
Company: Hemmera Environchem Inc.		Email 1 or Fax nsandys@hemmera.com															
Contact: Natasha Sandys		Email 2 chris@elr.ca															
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>															
ALS Quote #: 1343-005.31		Approver ID: [REDACTED] Cost Center: [REDACTED]															
Job #: 1343-005.31		GL Account: [REDACTED] Routing Code: [REDACTED]															
PO / AFE:		Activity Code: [REDACTED]															
LSD:		Location: [REDACTED]															
ALS Lab Work Order # (lab use only)		ALS Contact: Sean Sluggett			Sampler: JC, CH, AN, MM												
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	acidity (to pH 6.3)	alkalinity	chloride	conductivity	pH	sulphate	suspended solids, total (TSS)	dissolved metals (excluding mercury)	Number of Containers				
CH14-107-MW007A		20-Sep-16	12:30	Water	R	R	R	R	R	R	R	R		2			
SRK08-SP7A		20-Sep-16	14:50	Water	R	R	R	R	R	R	R	R		2			
CH14-107-MW007B		20-Sep-16	13:10	Water	R	R	R	R	R	R	R	R		2			
DUP-1		20-Sep-16	13:10	Water	R	R	R	R	R	R	R	R		2			
CH14-107-MW009		20-Sep-16	10:55	Water	R	R	R	R	R	R	R	R		2			
CH14-107-MW010		20-Sep-16	11:50	Water	R	R	R	R	R	R	R	R		2			
SRK08-SBR3		21-Sep-16	10:25	Water	R	R	R	R	R	R	R	R		2			
SRK08-SBR4		21-Sep-16	9:55	Water	R	R	R	R	R	R	R	R		2			
SRK05-SP-5		21-Sep-16	9:05	Water	R	R	R	R	R	R	R	R		2			
CH15-107-MW025		21-Sep-16	12:52	Water	R	R	R	R	R	R	R	R		2			
P96-7		21-Sep-16	11:25	Water	R	R	R	R	R	R	R	R		2			
P03-05-02		21-Sep-16	15:55	Water	R	R	R	R	R	R	R	R		2			
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report (client Use)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>												
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		- EDD must be in EQUIS format common to Faro Mine Remediation Project. Contact client if clarification is required. - See attached parameter sheet for required detection limits.			Frozen <input type="checkbox"/>					SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>							
Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Ice packs Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>							
					Cooling Initiated <input checked="" type="checkbox"/>												
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C							
<b>SHIPMENT RELEASE (client use)</b>				<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>									
Released by: [Signature]		Date: 26-sep-16		Time: 10:50		Received by: [Signature]		Date: 26-Sep-16		Time: 11:00		Received by: HMC		Date: Sept. 27		Time: 11:00	

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NA-FAC-0326-V01-Print-04 January 2014

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

 Initial Temps: 4.0, 2.0, 2.0, 3.0, 3.0  
 30.1, 0, 2.0, 1.0



Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L1835022-COFC

COC Number: 1 - 1343-005.31

Page 3 of 10

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Report To		Report Format / Distribution			Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)												
Company: Hemmera Environchem Inc.		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)												
Contact: Natasha Sandys		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT												
Address: 230 - 2237 2nd Avenue Whitehorse, YT		<input type="checkbox"/> Criteria on Report - provide details below if box checked			E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT												
Phone: 867-456-4865		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge												
		Email 1 or Fax nsandys@hemmera.com, jchua@hemmera.com			Specify Date Required for E2, E or P:												
		Email 2 chris@elr.ca			Analysis Request												
Invoice To Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Invoice Distribution			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												
Copy of Invoice with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX															
Company: Hemmera Environchem Inc.		Email 1 or Fax nsandys@hemmera.com															
Contact: Natasha Sandys		Email 2 chris@elr.ca															
Project Information		Oil and Gas Required Fields (client use)															
ALS Quote #: 1343-005.31		Approver, ID: [REDACTED] Cost Center: [REDACTED]															
Job #: 1343-005.31		GL Account: [REDACTED] Routing Code: [REDACTED]															
PO / AFE:		Activity Code: [REDACTED]															
LSD:		Location: [REDACTED]															
ALS Lab Work Order # (lab use only)		ALS Contact: Sean Sluggett			Sampler: JC, CH, AN, MM												
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	acidity (to pH 8.3)	alkalinity	chloride	conductivity	pH	sulphate	suspended solids, total (TSS)	dissolved metals (excluding mercury)	Number of Containers				
P03-05-04		21-Sep-16	17:12	Water	R	R	R	R	R	R	R	R		2			
P03-04-06		21-Sep-16	15:15	Water	R	R	R	R	R	R	R	R		2			
CH15-107-MW022		21-Sep-16	11:10	Water	R	R	R	R	R	R	R	R		2			
P03-06-2		21-Sep-16	17:15	Water	R	R	R	R	R	R	R	R		2			
CH15-107-MW023		21-Sep-16	13:30	Water	R	R	R	R	R	R	R	R		2			
CH15-107-MW019		21-Sep-16	11:50	Water	R	R	R	R	R	R	R	R		2			
S1B		21-Sep-16	9:30	Water	R	R	R	R	R	R	R	R		2			
S2A		21-Sep-16	9:10	Water	R	R	R	R	R	R	R	R		2			
S2B		21-Sep-16	8:20	Water	R	R	R	R	R	R	R	R		2			
SRK05-07		22-Sep-16	14:50	Water	R	R	R	R	R	R	R	R		2			
SRK05-08		22-Sep-16	15:35	Water	R	R	R	R	R	R	R	R		2			
V34		22-Sep-16	8:55	Water	R	R	R	R	R	R	R	R		2			
Drinking Water (DW) Samples <sup>1</sup> (client use)		Special Instructions / Specify Criteria to add on report (client use)			SAMPLE CONDITION AS RECEIVED (lab use only)												
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		- EDD must be in EQUIS format common to Faro Mine Remediation Project. Contact client if clarification is required. - See attached parameter sheet for required detection limits.			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>												
Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Ice packs Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>												
					Cooling Initiated <input checked="" type="checkbox"/>												
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C							
SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (lab use only)				FINAL SHIPMENT RECEPTION (lab use only)									
Released by: [Signature]		Date: 26-Sept-16		Time: 10:50		Received by: [Signature]		Date: 26-SEP-16		Time: 11:00		Received by: Hmc		Date: Sept 27		Time: 11:00	

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FRM-0326a v08 Form04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

Initial Temps: 40, 2.0, 2.0, 3.0, 3.0  
30, 1.0, 2.0, 1.0



L1835022-COFC

Report To		Report Format / Distribution				Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)											
Company: Hemmera Environchem Inc.		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL)				R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)											
Contact: Natasha Sandys		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No				P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT											
Address: 230 - 2237 2nd Avenue Whitehorse, YT		<input type="checkbox"/> Criteria on Report - provide details below if box checked				E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT											
Phone: 867-456-4865		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX				E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge											
		Email 1 or Fax nsandys@hemmera.com, jchua@hemmera.com				Specify Date Required for E2, E or P:											
		Email 2 chris@elr.ca				<b>Analysis Request</b>											
Invoice To Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>Invoice Distribution</b>				Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below											
Copy of Invoice with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX															
Company: Hemmera Environchem Inc.		Email 1 or Fax nsandys@hemmera.com															
Contact: Natasha Sandys		Email 2 chris@elr.ca															
<b>Project Information</b>		Oil and Gas Required Fields (client use)															
ALS Quote #: 1343-005.31		Approver ID:		Cost Center:													
Job #: 1343-005.31		GL Account:		Routing Code:													
PO / AFE:		Activity Code:															
LSD:		Location:															
ALS Lab Work Order # (lab use only)		ALS Contact: Sean Sluggett		Sampler: JC, CH, AN, MM													
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	acidity (to pH 8.3)	alkalinity	chloride	conductivity	pH	sulphate	suspended solids, total (TSS)	dissolved metals (excluding mercury)					Number of Containers
V35		22-Sep-16	10:10	Water	R	R	R	R	R	R	R	R					2
V36		22-Sep-16	13:05	Water	R	R	R	R	R	R	R	R					2
FB-3		22-Sep-16	13:05	Water	R	R	R	R	R	R	R	R					2
DUP-4		22-Sep-16	13:05	Water	R	R	R	R	R	R	R	R					2
SRK05-9		22-Sep-16	17:25	Water	R	R	R	R	R	R	R	R					2
CH14-107-MW006A		22-Sep-16	17:45	Water	R	R	R	R	R	R	R	R					2
CH14-107-MW006B		22-Sep-16	18:10	Water	R	R	R	R	R	R	R	R					2
X18A		22-Sep-16	14:05	Water	R	R	R	R	R	R	R	R					2
P01-01B		22-Sep-16	16:35	Water	R	R	R	R	R	R	R	R					2
P01-01A		22-Sep-16	15:50	Water	R	R	R	R	R	R	R	R					2
DUP-5		22-Sep-16	15:50	Water	R	R	R	R	R	R	R	R					2
X16A		22-Sep-16	12:10	Water	R	R	R	R	R	R	R	R					2
Drinking Water (DW) Samples <sup>1</sup> (client use)		Special Instructions / Specify Criteria to add on report (client Use)				<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>											
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		- EDD must be in EQUiS format common to Faro Mine Remediation Project. Contact client if clarification is required. - See attached parameter sheet for required detection limits.				Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>											
Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No						Ice packs Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>											
						Cooling Initiated <input checked="" type="checkbox"/>											
						INITIAL COOLER TEMPERATURES °C						FINAL COOLER TEMPERATURES °C					
<b>SHIPMENT RELEASE (client use)</b>				<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>									
Released by: <i>[Signature]</i>	Date: 26-Sep-16	Time: 10:50	Received by: <i>[Signature]</i>	Date: 26-Sep-16	Time: 11:00	Received by: <i>[Signature]</i>	Date: 27-Sep-16	Time: 12:00									

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0220a V06 From 04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

 Initial Temps: 4.0, 2.0, 2.0, 3.0, 3.0  
 3.0, 1.0, 2.0, 1.0



L1835022-COFC

<b>Report To</b>		<b>Report Format / Distribution</b>			<b>Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)</b>																		
Company: Hemmera Environchem Inc.		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)																		
Contact: Natasha Sandys		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT																		
Address: 230 - 2237 2nd Avenue Whitehorse, YT		<input type="checkbox"/> Criteria on Report - provide details below if box checked			E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT																		
Phone: 867-456-4865		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge																		
		Email 1 or Fax nsandys@hemmera.com, jchua@hemmera.com			Specify Date Required for E2, E or P:																		
		Email 2 chris@elr.ca			<b>Analysis Request</b>																		
<b>Invoice To</b>		<b>Invoice Distribution</b>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below																		
Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX																					
Copy of Invoice with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Email 1 or Fax nsandys@hemmera.com																					
Company: Hemmera Environchem Inc.		Email 2 chris@elr.ca																					
Contact: Natasha Sandys																							
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>																					
ALS Quote #: 1343-005.31		Approver ID: [REDACTED] Cost Center: [REDACTED]																					
Job #: 1343-005.31		GL Account: [REDACTED] Routing Code: [REDACTED]																					
PO / AFE:		Activity Code: [REDACTED]																					
LSD:		Location: [REDACTED]																					
ALS Lab Work Order # (lab use only)		ALS Contact: Sean Sluggett			Sampler: JC, CH, AN, MM																		
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mm-yy)	Time (hh:mm)	Sample Type	acidity (to pH 8.3)	alkalinity	chloride	conductivity	pH	sulphate	suspended solids, total (TSS)	dissolved metals (excluding mercury)	Total Metals									Number of Containers	
X18B		22-Sep-16	14:52	Water	R	R	R	R	R	R	R	R	R										2
X16B		22-Sep-16	12:30	Water	R	R	R	R	R	R	R	R	R										2
P01-03		22-Sep-16	9:38	Water	R	R	R	R	R	R	R	R	R										2
DUP-3		22-Sep-16	9:38	Water	R	R	R	R	R	R	R	R	R										2
X25-96A		22-Sep-16	10:10	Water	R	R	R	R	R	R	R	R	R										2
X25-96B		22-Sep-16	10:35	Water	R	R	R	R	R	R	R	R	R										2
X24-96D		22-Sep-16	9:05	Water	R	R	R	R	R	R	R	R	R										2
FB-2		22-Sep-16	9:05	Water	R	R	R	R	R	R	R	R	R										2
P01-04A		22-Sep-16	11:10	Water	R	R	R	R	R	R	R	R	R										2
P96-9A		22-Sep-16	16:25	Water	R	R	R	R	R	R	R	R	R										2
P01-11		23-Sep-16	10:10	Water	R	R	R	R	R	R	R	R	R										2
TRAVEL BLANK				Water	R	R	R	R	R	R	R	R	R										4
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report (client Use)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>																		
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		- EDD must be in EQUIS format common to Faro Mine Remediation Project. Contact client if clarification is required. - See attached parameter sheet for required detection limits.			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>																		
Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Ice packs Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>																		
					Cooling Initiated <input type="checkbox"/>																		
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C													
<b>SHIPMENT RELEASE (client use)</b>				<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>															
Released by: [Signature]	Date: 26-Sept-16	Time: 10:50	Received by: [Signature]	Date: 26-SEP-16	Time: 11:00	Received by: [Signature]	Date: 26-SEP-16	Time: 11:00	Received by: [Signature]	Date: 26-SEP-16	Time: 11:00	Received by: [Signature]	Date: 26-SEP-16	Time: 11:00	Received by: [Signature]	Date: 26-SEP-16	Time: 11:00	Received by: [Signature]	Date: 26-SEP-16	Time: 11:00	Received by: [Signature]	Date: 26-SEP-16	Time: 11:00

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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NA-FM-022Rev 001 From 04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

 Initial Temps: 4.0, 2.0, 2.0, 3.0, 3.0  
 3.0, 1.0, 2.0, 1.0





Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878



L1835022-COFC

COC Number: 1 - 1343-005.31

Page 7 of 10

www.alsglobal.com

<b>Report To</b>		<b>Report Format / Distribution</b>			<b>Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)</b>												
Company: Hemmera Environchem Inc.		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)												
Contact: Natasha Sandys		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT												
Address: 230 - 2237 2nd Avenue Whitehorse, YT		<input type="checkbox"/> Criteria on Report - provide details below if box checked			E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT												
Phone: 867-456-4865		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge												
		Email 1 or Fax nsandys@hemmera.com, jchua@hemmera.com			Specify Date Required for E2, E or P:												
		Email 2 chris@elr.ca			<b>Analysis Request</b>												
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>Invoice Distribution</b>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												
Copy of Invoice with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX															
Company: Hemmera Environchem Inc.		Email 1 or Fax nsandys@hemmera.com															
Contact: Natasha Sandys		Email 2 chris@elr.ca															
<b>Project Information</b>		Oil and Gas Required Fields (client use)															
ALS Quote #: 1343-005.31		Approver ID: [REDACTED] Cost Center: [REDACTED]															
Job #: 1343-005.31		GL Account: [REDACTED] Routing Code: [REDACTED]															
PO / AFE:		Activity Code: [REDACTED]															
LSD:		Location: [REDACTED]															
ALS Lab Work Order # (lab use only)		ALS Contact: Sean Sluggett			Sampler: JC, CH, AN, MM												
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	acidity (to pH 8.3)	alkalinity	chloride	conductivity	pH	sulphate	suspended solids, total (TSS)	dissolved metals (excluding mercury)	Number of Containers				
	P03-08-09	23-Sep-16	18:00	Water	R	R	R	R	R	R	R	R		2			
	SRK04-3A	23-Sep-16	8:30	Water	R	R	R	R	R	R	R	R		2			
	P03-09-02	23-Sep-16	16:45	Water	R	R	R	R	R	R	R	R		2			
	P03-09-04	23-Sep-16	17:20	Water	R	R	R	R	R	R	R	R		2			
	P03-09-08	23-Sep-16	17:47	Water	R	R	R	R	R	R	R	R		2			
	P01-02A	23-Sep-16	14:40	Water	R	R	R	R	R	R	R	R		2			
	P01-02B	23-Sep-16	14:20	Water	R	R	R	R	R	R	R	R		2			
	P05-03	23-Sep-16	13:07	Water	R	R	R	R	R	R	R	R		2			
	FB-4	23-Sep-16	13:07	Water	R	R	R	R	R	R	R	R		2			
	P05-02	23-Sep-16	13:10	Water	R	R	R	R	R	R	R	R		2			
	DUP-6	23-Sep-16	13:10	Water	R	R	R	R	R	R	R	R		2			
	P05-01-01	23-Sep-16	12:10	Water	R	R	R	R	R	R	R	R		2			
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report (client Use)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>												
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		- EDD must be in EQUIS format common to Faro Mine Remediation Project. Contact client if clarification is required.			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>												
Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		- See attached parameter sheet for required detection limits.			Ice packs Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>												
					Cooling Initiated <input checked="" type="checkbox"/>												
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C							
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>												
Released by: [Signature]		Date: 26-2016	Time: 10:50	Received by: [Signature]	Date: 26-SEP-16	Time: 11:00	Received by: [Signature]	Date: 26-27	Time: 11:00								

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

14-FM-9326 v09 From/CA January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

Initial Temps: 4.0, 2.0, 2.0, 3.0, 3.0  
3.0, 1.0, 2.0, 1.0



L1835022-COFC

<b>Report To</b>		<b>Report Format / Distribution</b>			<b>Select Service Level Below</b> (Rush Turnaround Time (TAT) is not available for all tests)												
Company: Hemmera Environchem Inc.		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)												
Contact: Natasha Sandys		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT												
Address: 230 - 2237 2nd Avenue Whitehorse, YT		<input type="checkbox"/> Criteria on Report - provide details below if box checked			E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT												
Phone: 867-456-4865		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge												
		Email 1 or Fax nsandys@hemmera.com, jchua@hemmera.com			Specify Date Required for E2, E or P:												
		Email 2 chris@elr.ca			<b>Analysis Request</b>												
<b>Invoice To</b>		<b>Invoice Distribution</b>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												
Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX															
Copy of Invoice with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Email 1 or Fax nsandys@hemmera.com															
Company: Hemmera Environchem Inc.		Email 2 chris@elr.ca															
Contact: Natasha Sandys																	
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>															
ALS Quote #: 1343-005.31		Approver ID: [REDACTED] Cost Center: [REDACTED]															
Job #: 1343-005.31		GL Account: [REDACTED] Routing Code: [REDACTED]															
PO / AFE:		Activity Code: [REDACTED]															
LSD:		Location: [REDACTED]															
ALS Lab Work Order # (lab use only)		ALS Contact: Sean Sluggett			Sampler: JC, CH, AN, MM												
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	acidity (to pH 8.3)	alkalinity	chloride	conductivity	pH	sulphate	suspended solids, total (TSS)	dissolved metals (excluding mercury)	Number of Containers				
P05-01-05		23-Sep-16	11:10	Water	R	R	R	R	R	R	R	R		2			
P09-GS1B		24-Sep-16	12:40	Water	R	R	R	R	R	R	R	R		2			
CH15-107-MW030		24-Sep-16	13:55	Water	R	R	R	R	R	R	R	R		2			
P2001-2B		24-Sep-16	11:20	Water	R	R	R	R	R	R	R	R		2			
V37		24-Sep-16	10:40	Water	R	R	R	R	R	R	R	R		2			
P09-LCD1		24-Sep-16	9:00	Water	R	R	R	R	R	R	R	R		2			
DUP-7		24-Sep-16	9:00	Water	R	R	R	R	R	R	R	R		2			
P09-LCD6		24-Sep-16	10:20	Water	R	R	R	R	R	R	R	R		2			
P2001-2A		24-Sep-16	11:00	Water	R	R	R	R	R	R	R	R		2			
CH15-107-MW033		24-Sep-16	15:40	Water	R	R	R	R	R	R	R	R		2			
P09-GS1A		24-Sep-16	12:15	Water	R	R	R	R	R	R	R	R		2			
CH15-107-MW029		24-Sep-16	16:55	Water	R	R	R	R	R	R	R	R		2			
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report (client Use)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>												
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		- EDD must be in EQUIS format common to Faro Mine Remediation Project. Contact client if clarification is required. - See attached parameter sheet for required detection limits.			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>												
Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Ice packs Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>												
					Cooling Initiated <input checked="" type="checkbox"/>												
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C							
<b>SHIPMENT RELEASE (client use)</b>				<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>									
Released by: [Signature]	Date: 26 Sep 16	Time: 10:50	Received by: [Signature]	Date: 26 Sep 16	Time: 11:00	Received by: [Signature]	Date: 26 Sep 16	Time: 1100									

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

NA-FM-0226e-09 From 04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

Initial Temp: 4.0, 2.0, 2.9, 3.0, 3.0  
3.0, 1.0, 2.0, 1.0



L1835022-COFC

<b>Report To</b>		<b>Report Format / Distribution</b>			<b>Select Service Level Below</b> (Rush Turnaround Time (TAT) is not available for all tests)												
Company: Hemmera Environchem Inc.		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)												
Contact: Natasha Sandys		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT												
Address: 230 - 2237 2nd Avenue Whitehorse, YT		<input type="checkbox"/> Criteria on Report - provide details below if box checked			E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT												
Phone: 867-456-4865		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge												
		Email 1 or Fax nsandys@hemmera.com, jchua@hemmera.com			Specify Date Required for E2,E or P:												
		Email 2 chris@elr.ca			<b>Analysis Request</b>												
<b>Invoice To</b>		<b>Invoice Distribution</b>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												
Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX															
Copy of Invoice with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Email 1 or Fax nsandys@hemmera.com															
Company: Hemmera Environchem Inc.		Email 2 chris@elr.ca															
Contact: Natasha Sandys																	
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>															
ALS Quote #: 1343-005.31		Approver ID: [REDACTED] Cost Center: [REDACTED]															
Job #: 1343-005.31		GL Account: [REDACTED] Routing Code: [REDACTED]															
PO / AFE:		Activity Code: [REDACTED]															
LSD:		Location: [REDACTED]															
ALS Lab Work Order # (lab use only)		ALS Contact: Sean Sluggett			Sampler: JC,CH,AN,MM												
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	acidity (to pH 8.3)	alkalinity	chloride	conductivity	pH	sulphate	suspended solids, total (TSS)	dissolved metals (excluding mercury)	Number of Containers				
FB-5		24-Sep-16	16:55	Water	R	R	R	R	R	R	R	R		2			
CH15-107-MW034		24-Sep-16	14:55	Water	R	R	R	R	R	R	R	R		2			
DUP-9		24-Sep-16	14:55	Water	R	R	R	R	R	R	R	R		2			
BH14B		24-Sep-16	19:00	Water	R	R	R	R	R	R	R	R		2			
P03-04-02		24-Sep-16	8:50	Water	R	R	R	R	R	R	R	R		2			
P03-04-04		24-Sep-16	9:50	Water	R	R	R	R	R	R	R	R		2			
P03-06-03		24-Sep-16	13:00	Water	R	R	R	R	R	R	R	R		2			
P03-06-01		24-Sep-16	11:52	Water	R	R	R	R	R	R	R	R		2			
P03-06-04		24-Sep-16	13:20	Water	R	R	R	R	R	R	R	R		2			
P03-05-05		24-Sep-16	10:55	Water	R	R	R	R	R	R	R	R		2			
P03-06-05		24-Sep-16	11:45	Water	R	R	R	R	R	R	R	R		2			
BH10A		24-Sep-16	14:50	Water	R	R	R	R	R	R	R	R		2			
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report (client use)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>												
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		- EDD must be in EQUiS format common to Faro Mine Remediation Project. Contact client if clarification is required. - See attached parameter sheet for required detection limits.			Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>												
Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Ice packs Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>												
					Cooling Initiated <input checked="" type="checkbox"/>												
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C							
<b>SHIPMENT RELEASE (client use)</b>				<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>				<b>FINAL SHIPMENT RECEPTION (lab use only)</b>									
Released by: <i>[Signature]</i>	Date: 20 Sep-16	Time: 10:50	Received by: <i>[Signature]</i>	Date: 26 Sep-16	Time: 11:00	Received by: <i>[Signature]</i>	Date: 27 Sep-16	Time: 11:00									

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY

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NA-FM-0226 v00 Form/04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

 Initial Temps: 4.0, 2.0, 2.0, 3.0, 3.0  
 3.0, 1.0, 2.0, 1.0



L1835022-COFC

<b>Report To</b>		<b>Report Format / Distribution</b>			<b>Select Service Level Below (Rush Turnaround Time (TAT) is not available for all tests)</b>												
Company: Hemmera Environchem Inc.		Select Report Format: <input checked="" type="checkbox"/> PDF <input checked="" type="checkbox"/> EXCEL <input checked="" type="checkbox"/> EDD (DIGITAL)			R <input checked="" type="checkbox"/> Regular (Standard TAT if received by 3 pm - business days)												
Contact: Natasha Sandys		Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No			P <input type="checkbox"/> Priority (2-4 bus. days if received by 3pm) 50% surcharge - contact ALS to confirm TAT												
Address: 230 - 2237 2nd Avenue Whitehorse, YT		<input type="checkbox"/> Criteria on Report - provide details below if box checked			E <input type="checkbox"/> Emergency (1-2 bus. days if received by 3pm) 100% surcharge - contact ALS to confirm TAT												
Phone: 867-456-4865		Select Distribution: <input checked="" type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX			E2 <input type="checkbox"/> Same day or weekend emergency - contact ALS to confirm TAT and surcharge												
		Email 1 or Fax nsandys@hemmera.com, jchua@hemmera.com			Specify Date Required for E2, E or P:												
		Email 2 chris@elr.ca			<b>Analysis Request</b>												
<b>Invoice To</b> Same as Report To <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No		<b>Invoice Distribution</b>			Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below												
Copy of Invoice with Report <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Select Invoice Distribution: <input checked="" type="checkbox"/> EMAIL <input checked="" type="checkbox"/> MAIL <input type="checkbox"/> FAX															
Company: Hemmera Environchem Inc.		Email 1 or Fax nsandys@hemmera.com															
Contact: Natasha Sandys		Email 2 chris@elr.ca															
<b>Project Information</b>		<b>Oil and Gas Required Fields (client use)</b>															
ALS Quote #: 1343-005.31		Approver ID: [REDACTED] Cost Center: [REDACTED]															
Job #: 1343-005.31		GL Account: [REDACTED] Routing Code: [REDACTED]															
PO / AFE:		Activity Code: [REDACTED]															
LSD:		Location: [REDACTED]															
ALS Lab Work Order # (lab use only)		ALS Contact: Sean Sluggett			Sampler: JC, CH, AN, MM												
ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	acidity (to pH 8.3)	alkalinity	chloride	conductivity	pH	sulphate	suspended solids, total (TSS)	dissolved metals (excluding mercury)			Number of Containers		
DUP-8		24-Sep-16	14:50	Water	R	R	R	R	R	R	R	R			2		
CH14-107-MW001		24-Sep-16	16:45	Water	R	R	R	R	R	R	R	R			2		
BH10B		24-Sep-16	15:13	Water	R	R	R	R	R	R	R	R			2		
P05-04		24-Sep-16	15:40	Water	R	R	R	R	R	R	R	R			2		
CH14-107-MW002		24-Sep-16	16:10	Water	R	R	R	R	R	R	R	R			2		
DUP-10		24-Sep-16	16:10	Water	R	R	R	R	R	R	R	R			2		
BH14A		24-Sep-16	18:52	Water	R	R	R	R	R	R	R	R			2		
DUP-11		24-Sep-16	18:52	Water	R	R	R	R	R	R	R	R			2		
P09-LCD4		25-Sep-16	9:35	Water	R	R	R	R	R	R	R	R			2		
BH8		25-Sep-16	9:15	Water	R	R	R	R	R	R	R	R			2		
CH15-107-MW032		25-Sep-16	9:35	Water	R	R	R	R	R	R	R	R			2		
<b>Drinking Water (DW) Samples<sup>1</sup> (client use)</b>		<b>Special Instructions / Specify Criteria to add on report (client Use)</b>			<b>SAMPLE CONDITION AS RECEIVED (lab use only)</b>												
Are samples taken from a Regulated DW System? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		- EDD must be in EquiS format common to Faro Mine Remediation Project. Contact client if clarification is required. - See attached parameter sheet for required detection limits.			Frozen <input type="checkbox"/>					SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/>							
Are samples for human drinking water use? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No					Ice packs Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>					Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/>							
					Cooling Initiated <input checked="" type="checkbox"/>												
					INITIAL COOLER TEMPERATURES °C					FINAL COOLER TEMPERATURES °C							
<b>SHIPMENT RELEASE (client use)</b>		<b>INITIAL SHIPMENT RECEPTION (lab use only)</b>			<b>FINAL SHIPMENT RECEPTION (lab use only)</b>												
Released by: [Signature]	Date: 20 Sept-16	Time: 10:50	Received by: [Signature]	Date: 26 Sep-16	Time: 11:00	Received by: [Signature]	Date: Sept. 27	Time: 11:00									

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

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NALM-0226 v08 Form 04 January 2014

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

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

 Initial Temps: 4.0, 2.0, 2.0, 3.0, 3.0  
 3.0, 1.0, 2.0, 1.0

## **APPENDIX D**

### **Response to Comments Received on Draft Report**

**Response to Comments from Draft Report Version (as Received December 9, 2016)**

Comment No.	Page	Comment	Response
1	7	Space needed	Report has been edited.
2	10	Will it be clear for those taking future measurements which reference point was used? If possible, consider adding this reference point for each location to one of the tables.	Information on which reference point was used was not collected as part of the field program, but it is something that could be collected as part of future programs.
3	14	Please fix table items that are cut-off	Table has been reformatted to show all text headings clearly
4	18	Within the results text, please include a bullet list (or table) of all of the locations with CCME FAL exceedances and what parameters were exceeded at that location. Ex. <ul style="list-style-type: none"> <li>• <u>P01-11</u>: field pH, field DO, etc.</li> <li>• <u>P01-02A</u>: field DO, etc.</li> </ul>	Summary tables have been added to the text to provide this information.
5	22	Please provide more guidance on results outside of acceptable range (concerns? is there a rationale or explanation?)	The text has been updated to provide more guidance as the acceptability of results.
6	24	Any comments for the priority of these recommendations? Importance of groundwater data at these locations?	Since our team has been able to successfully sample all of the wells identified, the recommendations are general not high or critical priority. As we do not have information on the importance of groundwater quality results for any particular area, it is also difficult to determine at this time which wells would be candidates for redevelopment first.
7	Table 3-1	Please include at bottom of table the meaning of these superscripts. Also, for limits please indicate whether within guidelines is above or below value if a range is not given.	The table notes have been added to each table, and clarification regarding guidelines has been provided.
8	Table 3-1	Please include a legend below all tables indicating what greyed out boxes versus greyed out font means so tables can be stand-alone. Also dark grey versus light grey boxes?	The table notes have been added to each table which includes the reference to shading.