AGNICO EAGLE

MELIADINE GOLD PROJECT

Quality Assurance/Quality Control Plan

MARCH 2017
VERSION 2

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ᑖᒻᓇ ᑎᑎᖅᑲᖅ ᑕᑯᒃᓴᐅᑎᑦᑎᔪᖅ ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᔭᕋᖕᓂᐊᕐᕕᖕᒥᑦ ᖃᓄᐃᓐᓂᕐᒧᑦ ᓇᓗᓇᐃᖅᓯᓂᕐᒥᒃ/ᖃᓄᐃᓐᓂᕐᒧᑦ ᐊᐅᓚᑦᑎᓂᕐᒥᑦ (QA/QC) ᐸᕐᓇᐅᑎᒥᑦ. ᓇᐃᓈᖅᓯᒪᔪᓕᐅᖅᑐᖅ ᓄᓇᒥᒃ ᐆᒃᑐᕋᐃᓂᕐᒧᑦ ᐊᑐᖅᑐᓂᒃ, ᐊᒻᒪ ᖃᐅᔨᓴᐃᕕᖕᒧᑦ ᐊᒻᒪ ᓈᓴᐅᑎᓄᑦ/ᑎᑎᖅᑲᓄᑦ ᐱᔭᓚᐊᕐᑲᕐᓂᐅᔪᓂᒃ.

EXECUTIVE SUMMARY

This document presents the Meliadine Mine Quality Assurance / Quality Control (QA/QC) Plan. It summarizes the field sampling equipment, and methods, as well as laboratory and data requirements.

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DOCUMENT CONTROL

Version	Date	Section	Page	Revision	Author
1	April 2015			This is the first version of this Plan, developed for the Type A Water Licence Application	Golder Associates Ltd.
2	March 2017	2.1	3	Added Eureka Manta 2 as an instrument used	Jeffrey Pratt
		2.2;2.2.1; 2.2.5; Appendix C	4;4;6;Appendix C	Addition of *QA/QC Water Sample Naming and Collection Procedure MEL-ENV-0018*	
		3.1; Appendix B	8; Appendix B	Use of Maxxam Analytical as main laboratory; accreditations	

ACRONYMS

INAC	Indigenous and Northern Affairs Canada
Agnico Eagle	Agnico Eagle Mines Limited
AEMP	Aquatic Effects Monitoring Program
Mine	Proposed Meliadine Gold Mine
MMER	Metal Mining Effluent Regulations
NWB	Nunavut Water Board
Project	Meliadine Gold Project
QA/QC	Quality Assurance and Quality Control
SNP	Surveillance Network Program

SECTION 1 • INTRODUCTION

Agnico Eagle Mines Limited (Agnico Eagle) is developing the Meliadine Gold Project (Project), located approximately 25 kilometres north from Rankin Inlet, and 80 kilometres southwest from Chesterfield Inlet in the Kivalliq Region of Nunavut. Situated on the western shore of Hudson's Bay, the proposed Project site is located on a peninsula (the Peninsula) between the east, south, and west basins of Meliadine Lake (63°01'23.8"N, 92°13'6.42"W), on Inuit Owned Land.

This report presents the Quality Assurance/Quality Control (QA/QC) Plan for the Project. The Plan was prepared in accordance with the requirements of Type A Water Licence Application and the Supplementary Information Guidelines for Mining and Water Works, issued by Nunavut Water Board (NWB 2010a, b, c). It has been developed in accordance with the Indigenous and Northern Affairs Canada (INAC) 1996 '*Guidelines for Use by Class "A" Licensees in Meeting SNP Requirements and for Submission of a QA/QC Plan*', which includes the following definitions:

- Quality Assurance: the system of activities designed to better ensure that quality control is done effectively; and
- Quality Control: the use of established procedures to achieve standards of measurement for the three principal components of quality – precision, accuracy and reliability.

The mine plan proposes open pit and underground mining methods for the development of the Tiriganiaq gold deposit, with two open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and one underground mine. The proposed mine will produce approximately 12.1 million tonnes (Mt) of ore, 31.4 Mt of waste rock, 7.1 Mt of overburden waste, and 12.1 Mt of tailings. There are four phases to the development of Tiriganiaq: just over 4 years construction (Q4 Year -5 to Year -1), 8 years mine operation (Year 1 to Year 8), 3 years closure (Year 9 to Year 11), and post-closure (Year 11 forwards).

A general location plan of the proposed Mine is shown in Figure A-1.

This Plan, which is part of the Environmental Management System for the proposed Mine, is divided into the following components:

- procedures for field sample collection (Section 2);
- external and internal laboratory requirements (Section 3); and
- data verification procedures and regulatory reporting requirements (Section 4).

The objective of the QA/QC program is to assure that the chemical data collected are representative of the material being sampled, are of known quality, are properly documented, and are scientifically defensible. Data quality is assured throughout the collection and analysis of samples using specified standardized procedures, by the employment of accredited laboratories, and by staffing the program with experienced technicians.

This QA/QC Plan sets out standard procedures for sample and data collection with respect to surface water and groundwater sampling in support of monitoring programs outlined in the Water Management Plan and the Aquatic Effects Monitoring Program (AEMP) Design Plan.

SECTION 2 • FIELD SAMPLING

Water quality monitoring will be initiated at the pre-development stage and will continue during construction, operations, and closure. Proposed sampling stations, frequency, and parameters are listed Appendix A, Table A-1. Table A-2 provides supporting definitions. The stations and their requirements may be adjusted based on the requirements of the Type A Water Licence and/or any updates to the Mine management plans over the life of the Mine. Proposed sampling stations are shown in Appendix A, Figure A-2.

Aquatic monitoring consists of three forms as follows:

- Regulated discharge monitoring occurs at monitoring points specified in licences or regulations. It includes discharge limits that must be achieved to maintain compliance with an authorization (i.e., water licence) or regulation (i.e., Metal Mining Effluent Regulations). Enforcement action may be taken if discharge limits are exceeded for a parameter.
- Verification monitoring is carried out for operational and management purposes by Agnico Eagle. This type of monitoring provides data for decision making and builds confidence in the success of processes being used. There is no obligation to report verification monitoring results, although some monitoring locations and these results can be mentioned in environmental management plans (i.e., sampling to verify soil remediation in the landfarm).
- General monitoring is commonly included in a water licence specifying what is to be monitored according to a schedule. It covers all types of monitoring (i.e., geotechnical, lake levels, etc.). This monitoring is subject to compliance assessment to confirm sampling was carried out using established protocols, included QA/QC provisions, and addresses identified issues. General monitoring is subject to change as directed by an Inspector, or by the Licensee, subject to approval by the Water Board.

All sampling stations will have a GPS location and be landmarked. All stations will be used repeatedly with qualified personnel, using the same techniques to reduce operational error. The following sections outline the standard procedures for collection and handling of all surface water and groundwater samples.

2.1 Sampling Equipment

New laboratory supplied containers will be used for sample collection. The bottles will be either polyethylene plastic or glass, dependent on the specific parameter being analyzed.

Equipment, such as the Eureka Manta 2 (multimeter), Analite NEP 160 Meter (turbidity), Oakton PCS35 Meter (pH and conductivity), and Hanna Multi-Parameter Meter (pH, dissolved oxygen and conductivity) are handheld instruments that can be used to collect, as required, field parameters. The YSI 6-series MPS (multiprobe system) can also be used to measure parameters in field like pH,

temperature, conductivity, dissolved oxygen, and oxidation reduction potential data as required. The instruments are to be calibrated before each sample event to ensure optimal performance. Calibration and maintenance procedures will be followed as set out by the supplier's operation manual. Equipment and bottles will be selected so that they do not contaminate or alter the concentrations of parameters of interest according to laboratory standards.

For groundwater sampling, and to collect water samples at depth from the surrounding lake receiving environments, a pump with tubing will be used. Low Density Polyethylene tubing, filter apparatus, manual pump, and ashless filter paper will be used to filter water for specific analyses (e.g., dissolved metals, chlorophyll *a*) and/or for depth integrated sampling (e.g., chlorophyll *a*, phytoplankton, or biological oxygen demand).

2.2 Sampling Methods and Handling

The *QA/QC Water Sample Naming and Collection Procedure MEL-ENV-0018* can be found in Appendix C. This procedure explains how sample identification is completed and also the instructions for collecting each type of QA/QC samples.

2.2.1 Sampling Identification

All samples have a unique sample identification name based on a station identifier, date, and time of collection. For duplicates and field blanks, the sample identification will use a numbering system depicted in the *QA/QC Water Sample Naming and Collection Procedure MEL-ENV-0018*.

All sample bottles will be identified with the sample identification number and date of collection. This information will be marked on a label with a water resistant pen and affixed to the sample bottle. Additional information (time of sampling and parameters to analyze) will be included in the analysis request that will be sent to the accredited laboratory.

2.2.2 Surface Water Sampling

The bottles will be pre-labelled with the required sample identification before going to the field. Surface grab samples will be collected by submerging the sample bottle to half depth of the stream. For sumps, diversion ditches and piped discharge points, sample will be collected below the surface of the water.

Samples bottles will be provided by the accredited laboratory. They will be received pre-rinsed and pre-preserved or pre-rinsed with vials of preservative to be added in the field by qualified technicians or biologists. In the case that bottles are not pre-preserved, bottles will be rinsed three times with sample water before filling. When the sampling bottle contains preservative, the bottle will be filled by using another clean bottle to avoid any release of preservative. Sometimes, a preservative is added after filling as directed by the laboratory; see Section 2.2.4 for more details on preservation. The bottles will be filled properly to allow mixing, preservative addition, and thermal expansion.

Samples analyzed for dissolved metals and chlorophyll *a* are filtered through ashless filter paper at the time of collection when the delay before analyses is long. However, when the delay before analyses is short, the accredited laboratory filters the sample before analyses. In some cases, when the analysis delay is long, the sample will be frozen to prevent parameter degradation.

2.2.3 Groundwater Sampling

Well Preparation for Sampling

At the time of purging and sampling, if necessary, any heat trace cables will be activated to warm the well pipe. The well is only purged once the well is thawed.

Well Purging

Purging is performed by inserting a ¾'' Low Density Polyethylene Waterra tube to approximately 20 metres below the water surface and using a compressor to completely dry the well. The wells are purged to remove standing water inside the well and to induce the flow of fresh groundwater from the rock formation. The quality of the purged water is monitored for pH, conductivity, temperature, water clarity, and colour (visual observation) during this activity. Sampling occurs after three well volumes of water (between the in-well packer and bottom of screened interval) have been removed or once the monitored parameters stabilize (values remaining within 10% for three consecutive readings).

Groundwater Sampling

Groundwater is sampled immediately after purging by lowering the intake of the Double Valve Pumping tubing to 3 to 5 metres above the screened interval.

A groundwater sample is collected in clean, laboratory-supplied containers as per the instructions in the previous section. Samples analyzed for dissolved metals are filtered through a 45 micrometre inline filter.

Samples are collected in duplicate (see Section 2.2.5) and submitted to an accredited analytical laboratory. Duplicate samples are collected.

Measurements of groundwater temperature, pH, electrical conductivity, and salinity are obtained in the field during the purging and sampling. Measurements are recorded for future reference and to check against laboratory data.

The following procedures are followed to provide data quality control on the samples:

- measuring field parameters at selected intervals until stable readings (within 10% of each other);
- minimizing the exposure of the sampled water to the atmosphere;

- using compressed, inert gas (nitrogen) to evacuate water for sample collection;
- measuring, in-situ, sensitive chemical parameters (pH, conductivity, where applicable); and
- abiding by sample preservation methods (refrigeration and use of preservatives where needed); and specified holding times.

Bottles are labelled with required information.

2.2.4 Preservation

Preservatives, if required, are added to sample bottles by the laboratory or added by the technician after filling, as directed by the analytical laboratory. Table A-3 summarizes the minimum sample volumes, preservation, and holding times for select parameters. This information was provided by the accredited laboratory Maxxam Analytics.

2.2.5 QA/QC samples

Field duplicates and filter blanks will be collected and handled in the same manner as the other samples in the field. Field blanks are samples of distilled water handled concurrently and in the same manner as the other samples in the field.

The duplicate samples will be given sample identification numbers and included in the sample stream. The indication of the sample as a duplicate is maintained in the data records at site.

Frequency of QA/QC samples are explained in *QA/QC Water Sample Naming and Collection Procedure MEL-ENV-0018* and also in (Table A-4).

2.2.6 Sample Transport

All water samples will be stored upright in coolers with ice packs and preserved as specified by the laboratory. Samples are to be shipped to the external laboratory as soon as possible via Rankin Inlet and dedicated ground transportation to ensure arrival in a safe and timely manner. If the sample cannot be shipped the same day, they are to be stored in a refrigerator at 4°C until shipping.

A Chain of Custody form with the following information is completed for every shipment of samples:

- company name and sampler's name;
- sample identification name;
- time and date of sampling;
- presence and type of preservative and whether the sample was filtered or not;
- requested analytical parameters for each bottle;
- time and date of shipping; and
- analytical laboratory address and contact person.

One electronic or PDF copy will be sent by email to the laboratory; an electronic copy will be kept at the Mine site for reference.

SECTION 3 • LABORATORY ANALYSIS

3.1 External Laboratory

All analytical chemistry analyses are performed by an accredited laboratory.

In most cases, these analyses will be performed by Maxxam Analytical, an accredited facility (see Appendix B) located in Ottawa, Ontario. This ensures that samples collected are analyzed by a notable company with a prestige reputation in service and quality control. All data from Maxxam undergoes a rigorous internal QA/QC process, including the use of field blanks and duplicate samples. Toxicity tests will be performed by either Maxxam Analytique in Quebec City or Exova in Saint-Augustin-de-Desmaures, Quebec. Testing will be conducted as stipulated by Environment Canada's Biological Test Methods.

Agnico Eagle may also require the services of laboratory, such as Maxxam in Edmonton, Alberta, or SGS in Lakefield, Ontario. Agnico Eagle also uses the services of ALS Global for some of the AEMP water quality analysis.

For drinking water and bacteriological samples, the lab MultiLab Direct (H2 Lab) is used this ensures that samples collected meet holding time requirements.

3.2 Internal Laboratory

In the future, the Meliadine site will have an assay lab on site. The assay lab at the Mine site is not an accredited laboratory but will be used periodically for "real-time" results for some parameters like pH, total suspended solids, and Weak Acid Dissociable Cyanide. These results are for observational purposes and do not meet the standards of an accredited laboratory.

SECTION 4 • DATA REQUIREMENTS

4.1 Data Collection

A database of all water sampling data is to be maintained at the Mine site. The database should be designed based on the various discharge limits designated in the Water License. The database functionality will include event scheduling, trend analysis, and flagging out-of-compliance samples, all to enhance the effectiveness of the QA/QC program. The database information will be presented to regulators in the annual report.

The following data is collected for each sample in the field and will be entered into the database by the sampler for the corresponding sampling station:

- sample identification name;
- name of sampler;
- date and time of sampling or measurement; and
- physical characteristics (pH, temperature, etc.), if required.

Upon receipt of sample results from the laboratory, the data will be input to the database and matched to the sample identification name. The analysis certificate for each sample from the accredited laboratory will include but is not limited to:

- analytical methods or techniques used;
- date of analysis;
- name of the person(s) / laboratory that approved the certificate; and
- results of any analysis.

4.2 Data Verification

Upon receipt of analytical results, the field blank and duplicate analyses will be verified for potential contamination and accuracy, respectively. Results will be interpreted and recommended actions will be taken if necessary.

4.3 Exceedance Reporting

Any measured concentration at a sample station exceeding a regulated discharge criterion stipulated in the Water License or the Metal Mining Effluent Regulations will be reported to the Nunavut Water Board, Environment Canada, and INAC water inspector within 30 days of the receipt of the analysis. In addition, results of the action plan, where required, will be reported and, where necessary, mitigation options identified within 90 days after receipt of the analyses.

SECTION 5 • REFERENCES

AANDC (Aboriginal Affairs and Northern Development Canada). 1996. Quality Assurance (QA) and Quality Control (QC) Guidelines for Use by Class "A" Licensees in Meeting SNP Requirements and for Submission of a QA/QC Plan.

NWB (Nunavut Water Board). 2010a. Guide 4: Completing and Submitting a Water Licence Application for a New Licence. April 2010.

NWB. 2010b. Supplemental Information Guideline (SIG) for General Water Works (M1). Issued February 2010.

NWB. 2010c. Supplemental Information Guideline (SIG) for Mine Development (MM3). Issued February 2010.

APPENDIX A • TABLES AND FIGURES

Table A-1: Proposed Water Quality Regulated, General Aquatic, and Verification Monitoring for the Project during Construction, Operations, and Closure

Monitoring Type	Mine Development Phase	Monitoring Station Number	Station Description	Purpose of Station	UTM Zone 11		Sampling Depth	Sample Type	Number of Samples per Station	Monitoring Parameters/Sampling Group (see Table A-2)
					Easting	Northing				
Verification	Construction (prior to release), Operations, and Closure	MEL_12	Water treatment plant (pre-treatment) coming from CP1 station will be off the pipe and not in the pond	Test quality of water before treatment (required to evaluate treatment efficiency)	TBD (in plant area)		From pipe	Grab	1	1
Regulated	Construction (upon effluent release), Operations, and Closure	MEL_11[a]	Water treatment plant (post-treatment), end of pipe (before offsite release) in the plant before release.	Test quality of final effluent before release	TBD (in plant area)		From pipe	Grab	1	Full Suite, 3 (MMER), flow
General Aquatic	Construction (upon effluent release), Operations, and Closure	MEL_13	Mixing zone in Meliadine lake, station 1; and MMER exposure stations for final discharge point within mixing zone	Test mixing of effluent in the receiving environment; sample at varied distances and directions from pipe; MMER exposure for final discharge point	TBD	TBD	Depends on presence of a vertical conductivity gradient	Discrete	1 (depth of maximum conductivity, or mid-depth if no conductivity gradient is present)	Full Suite
General Aquatic	Construction, Operations, and Closure	MEL_14	Water intake from Meliadine Lake	Quality of intake water	TBD	TBD	Depth Integrated or from Intake Pipe	Composite	1	Full Suite, flow
Verification	Operations, Closure	MEL_15	Local Lake, E3	Confirm no leakage/runoff from Emulsion Plant	-	-	-	Composite	1	2
Verification	Construction, Operations, Closure	MEL_16	Local Lake G2	Possible seepage or dust loadings from site infrastructure	-	-	-	Composite	1	2
Verification	Construction, Operations, Closure	MEL_17	Local Pond, H1	Possible seepage or dust loadings	-	-	-	Composite	1	2
Verification	Construction, Operations, Closure	MEL_18	Local Lake, B5		-	-	-	Composite	1	2
Verification	Construction, Operations, Closure	MEL_19	CP2	Collection of natural catchment drainage from the outer berm slopes of the Landfarm and industrial pad	-	-	-	Grab	1	1
Verification	Operations, Closure	MEL_20	CP3	Collection of drainage from dry stacked tailings	-	-	-	Grab	1	1
Verification	Operations, Closure	MEL_21	CP4	Collection of drainage from WRSF1	-	-	-	Grab	1	1
Verification	Construction, Operations, Closure	MEL_22	CP5	Collection of drainage from WRSF1 and WRSF2	-	-	-	Grab	1	1
Verification	Operations, Closure	MEL_23	CP6	Collection of drainage from WRSF3	-	-	-	Grab	1	1
Verification	Construction, Operations, Closure	MEL_24	Landfill	Located between the landfill and Pond H3 to monitor seepage from the landfill	-	-	-	Grab	1	1
Verification	Construction, Operations, Closure	MEL_25	Tankfarm at the Itivia Oil Handling Facility	Located in the secondary containment area of the tankfarm at Itivia to monitor water quality prior to discharge to land	-	-	-	Grab	1	4

Notes: as per Metal Mining Effluent Regulations (MMER), samples for effluent characterization and receiving environment must be collected quarterly, or at least one month apart while effluent is being deposited.

Grey shading indicates that verification monitoring parameters and locations are internal for Agnico Eagle. A systematic approach will be used in communicating inspections results, likely on an annual basis. This will allow Agnico Eagle to inform government, Inuit associations, and the public of inspection outcomes.

[(a)] Sampling may not occur during break-up (June)

CP = collection pond; WRSF = waste rock storage facility; TBD = to be determined

Table A-2: List of Constituents in Each Parameter Group

Parameter Group	Parameters
1	pH, turbidity, hardness, alkalinity, chloride, fluoride, sulphate, total dissolved solids (TDS), total suspended solids (TSS), total cyanide, ammonia nitrogen, nitrate, nitrite, phosphorus, ortho-phosphate, total metals (aluminum, arsenic; barium, cadmium, chromium, copper, iron, lead, manganese, mercury, molybdenum, nickel, selenium, silver, thallium, and zinc).
2	**Total and dissolved metals**: aluminum, antimony, arsenic, barium, beryllium, boron cadmium, chromium, copper, iron, lead, lithium, manganese, mercury, molybdenum, nickel, selenium, silver, strontium, thallium, tin, titanium, uranium, vanadium, and zinc. **Nutrients**: ammonia-nitrogen, total Kjeldahl nitrogen, nitrate-nitrogen, nitrite-nitrogen, ortho-phosphate, total phosphorus, total organic carbon, dissolved organic carbon, and reactive silica. **Conventional Parameters**: bicarbonate alkalinity, chloride, carbonate alkalinity, turbidity, conductivity, hardness, calcium, potassium, magnesium, sodium, sulphate, pH, total alkalinity, TDS, TSS, total cyanide, free cyanide, and weak acid dissociable (WAD) cyanide.
3	**MMER parameters**: total cyanide, arsenic, copper, lead, nickel, zinc, radium-226, TSS, pH, sulphate, turbidity, and aluminum. Effluent volumes and flow rate of discharge, acute toxicity (Rainbow Trout and *Daphnia magna*) and environmental effects monitoring (EEM).
4	Total arsenic, total copper, total lead, total nickel, TSS, ammonia, benzene, toluene, ethylbenzene, xylene, total petroleum hydrocarbons (TPH), and pH.
Full Suite	Group 2, TPH, and turbidity.
Flow	Flow datalogger
Field measurements	Field pH, specific conductivity, dissolved oxygen, and temperature.

MMER = Metal Mining Effluent Regulations.

Table A-3: Sampling Requirements for Potential Parameters

Parameters	Matrix				Type of Bottle	Preservative	Volume
	Drinking Water	Waste Water	Surface Water	Ground Water (1)			
Microbiology							
Escherichia coli, total coliforms, A.A.H.B	48[h]	48[h]	48[h]	48[h]	PPS	TS, E	250[ml]
Enterococcus	48[h]	48[h]	48[h]	48[h]	PPS	TS, E	250[ml]
Thermo tolerant coliforms (fecal)	48[h]	48[h]	48[h]	48[h]	PPS	TS, E	250[ml]
Inorganic Chemistry							
Absorbance UV, Transmittance UV	24[h]			24[h]	P. T. V	N	125[ml]
Alkalinity, Acidity, Bicarbonates, Carbonates	14[d]	14[d]	14[d]	14[d]	P, T, V	N	250[ml]
Ammonia nitrogen (NH3-NH4)	28[d]	28[d]	28[d]	28[d]	P, T, V	AS	125[ml]
Kjeldahl ammonia (NTK)		28[d]	28[d]	28[d]	P, T, V	AS	125[ml]
Anions (Cl, F,SO4)	28[d]	28[d]	28[d]	28[d]	P, T, V	N	250[ml]
Color, Free & total Chlorine	48[h]	48[h]	48[h]	48[h]	P, T, V	N	125[ml]
Conductivity	28[d]	28[d]	28[d]	28[d]	P, T, V	N	250[ml]
Cyanides total/available, Cyanides	14[d]	14[d]	14[d]	14[d]	P, T, V	NaOH	250[ml]
BOD5/Carbonated BOD5 (2)		48[h]/4°	48[h]/4°		P, T, V	N	250[ml]
COD (chemical oxygen demand)		28[d]	28[d]		P, T, V	AS	125[ml]
Mercury (Hg)	28[d]	28[d]	28[d]	28[d]	P, T, V	AN	250[ml]
Total/dissolved metals (filtered on field)	180[d]	180[d]	180[d]	180[d]	P, T, V	AN	250[ml]
Dissolved metals (filtered in the laboratory)	24[h]	24[h]	24[h]	24[h]	P, T, V	N	250[ml]
Total suspended solids & volatile TSS		7[d]	7[d]	7[d]	P. T. V	N	500[ml]
NH3 or NH4		24[h]	24[h]	24[h]	P.T.V	N+AS	2/125[ml]
Nitrites (NO2), Nitrates (NO3), Turbidity	48[h]	48[h]	48[h]	48[h]	P, T, V	N	250[ml]
Nitrites-Nitrates (NO2-NO3)	28[d]	28[d]	28[d]	28[d]	P, T, V	AS	250[ml]
O-Phosphates (O-PO4)	48[h]	48[h]	48[h]	48[h]	P, T, V	N	500[ml]
pH	24[h]	24[h]	24[h]	24[h]	P, T, V	N	125[ml]
Total Phosphorus (P-tot)	28[d]	28[d]	28[d]	28[d]	P, T, V	AS	125[ml]
Dissolved solids (TDS)		7[d]	7[d]	7[d]	P. T. V	N	250[ml]

Parameters	Matrix				Type of Bottle	Preservative	Volume
	Drinking Water	Waste Water	Surface Water	Ground Water (1)			
Total solids		7[d]	7[d]	7[d]	P. T. V	N	250[ml]
Sulphides (H2S) (3)	28[d]	28[d]	28[d]	28[d]	P. T. V	E.D.T.A	125[ml]
Thiosulfates	48[h]	48[h]	48[h]	48[h]	P. T. V	N	125[ml]
Radioactive & Organic Chemistry							
Fatty resin acids (S-T)	-	28[d]	28[d]	-	VA, VT	AS	1[L]
Congeners PCB (S-T)	28[d]	28[d]	28[d]	28[d]	VA, VT	N	1[L]
Chlorobenzene	28[d]	28[d]	28[d]	28[d]	2 Vial+1 blank	TSS	2/40[ml]
Total organic carbon (TOC)	28[d]	28[d]	28[d]	28[d]	P, T, V (B)	AC	100[ml]
Dissolved organic carbon (DOC)	48[h]	48[h]	48[h]	48[h]	P, T, V (B)	N	100[ml]
Total inorganic carbon (TIC)	48[h]	48[h]	48[h]	48[h]	P, T, V (B)	N	100[ml]
Phenolic compound (GC-MS)	28[d]	28[d]	28[d]	28[d]	VA, VT	AS	1[L]
Glyphosate (S-T)	14[d]	14[d]	14[d]	14[d]	P.T	N	500[ml]
PAH	28[d]	28[d]	28[d]	28[d]	VB	AS	1[L]
Oil & greases (total and non-polar)	28[d]	28[d]	28[d]	28[d]	VA, VT	AS	1[L]
C10-C50 HP and/or Petroleum product identification	28[d]	28[d]	28[d]	28[d]	VA, VT	AS	1[L]
Phenol index	28[d]	28[d]	28[d]	28[d]	VA, VT	AS	500[ml]
Radium-226	180[d]	180[d]	180[d]	180[d]	P, T. V	AN	1[L]
VOC (MAH, CAH, THM, BTEX) (3)	28[d]	28[d]	28[d]	28[d]	2 Vial+1 blank	TSS	2/40[ml]

Notes:

Type of Bottle:

- = non-applicable; P.S.V.T. = plastic bottle, bag or glass bottle with Teflon cap; P, T = Plastic bottle or plastic bottle with Teflon cap; P.T.V. = Plastic bottle or glass bottle with plastic or Teflon cap; PPS = Sterile propyl ethylene bottle; VA = Clear or amber glass with aluminium or Teflon seal; VB = Amber glass (or clear glass covered with aluminium paper) aluminium seal of Teflon; *VT = Clear or amber glass bottle with Teflon seal*

Preservative:

AC = 0.1ml (100 µl) of HCl per 100 ml of sample; AcZn = 0.2 ml zinc acetate 2 N per 100 ml of sample and NaOH 10 N to pH >9; AN = HNO3 to pH <2; AS = H2SO4 to pH <2; E = 2.5 ml EDTA 1.5% (p/v) per 100 ml of sample if heavy metals are suspected; ED = 0.1 ml diamine ethylene 45 mg/l per 100 ml of sample; EDTA = 1 ml EDTA 0.25 M per 100 ml of sample; N = No preservative; NaOH = NaOH 10 N to >12; TS = Sodium thiosulfate final concentration in the sample of 0.1% (p/v); TSS = about 40 mg of thiosulfate sodium

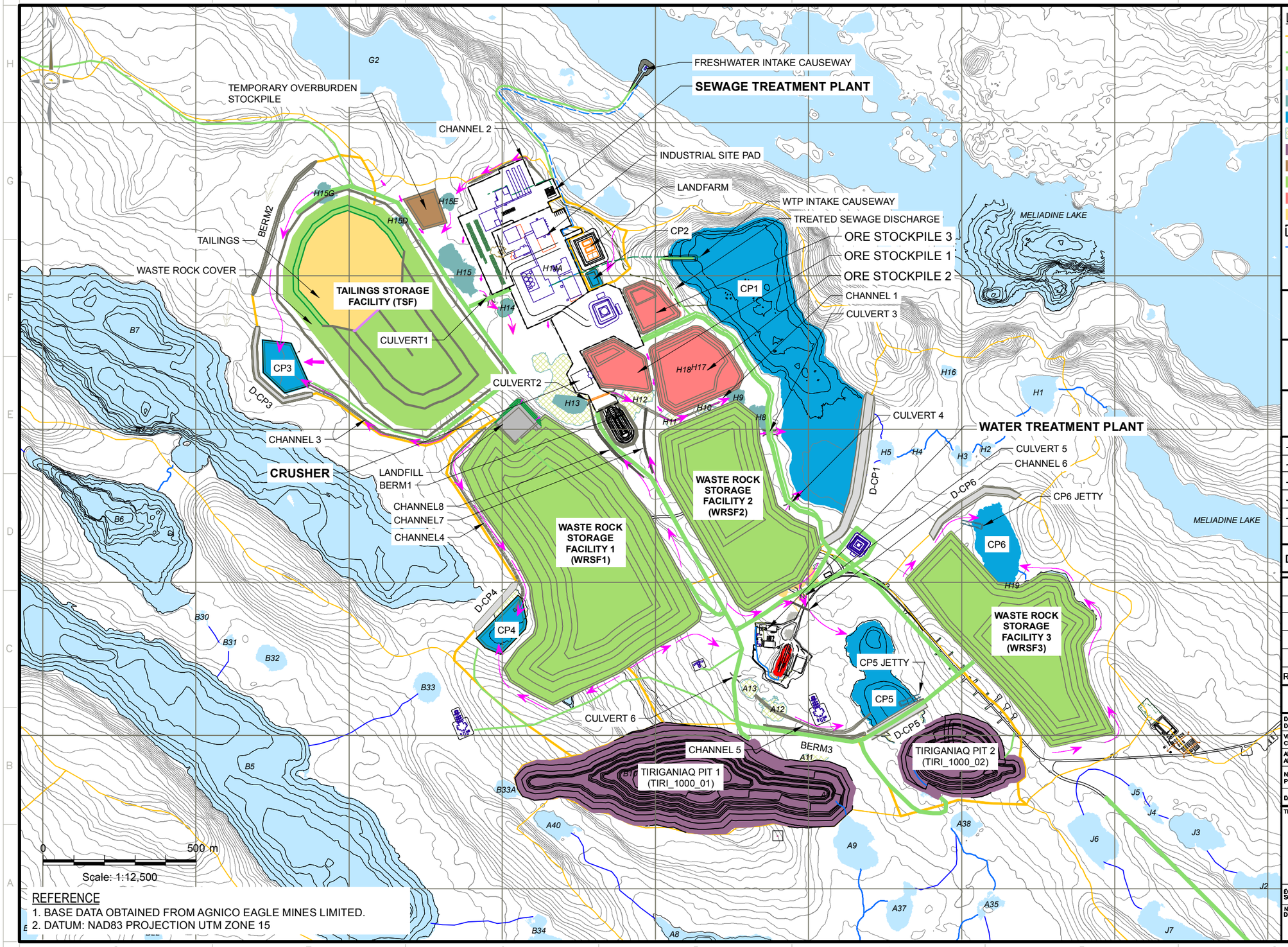
Table A-4: Quality Control Sample Frequency

Sampling Site	QA/QC Sampling Frequency
Regulated and General Aquatic Monitoring	
Collection Pond 1 [a]	1 field duplicate and 1 field blank per year
Mine facilities - operations	1 field duplicate per year
Mine facilities - closure	1 field duplicate per year
Mine facilities - post-closure	1 field duplicate per year
Receiving water chemistry	Blind field duplicates, laboratory and field blanks, sediment cleaning swipes, laboratory matrix spike duplicates per 10 samples
Event Monitoring Program	
Each event	One field duplicate per 10 samples

[a] Collection Pond 1 is the Water Management Pond for the Project

NO. DESSIN
DRAWING NO.

FORMAT ANSI B – 11x17



LEGEND

- CATCHMENT BOUNDARY
- SERVICE ROAD
- HAUL ROAD
- NON CONTACT WATERBODY
- CONTACT WATERBODY
- WATER COLLECTION POND
- DRAINED POND AREA
- OPEN PIT
- OVERBURDEN
- WASTE ROCK
- ORE
- TAILINGS
- INDUSTRIAL SITE PAD
- STREAM

AGNICO EAGLE

Golder Associates

–	–
–	–
–	–
–	–
–	–
TITRE / TITLE	# DWG

DESSINS EN RÉFÉRENCE/REFERENCE DRAWINGS

–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
–	–	–	–
REV	DESCRIPTION	DATE	PAR BY

REVISIONS

DESSINÉ PAR DRAWN BY	CDB	DATE 05-12-2014
VÉRIFIÉ PAR CHECKED BY	LY	24-03-2015
APPROUVÉ PAR APPROVED BY	DRW	24-03-2015
No. PROJET PROJECT NO.	1405283	
DATE	–	

TITRE / TITLE

AGNICO EAGLE – MELIADINE DIVISION
FIGURE A-1 GENERAL SITE PLAN

ÉCHELLE/SCALE	1:12500	FICHIER FILE	.DWG
No. DESSIN/DRAWING NO.	–	REVISION	0
		FEUILLE/SHT	1 / 1

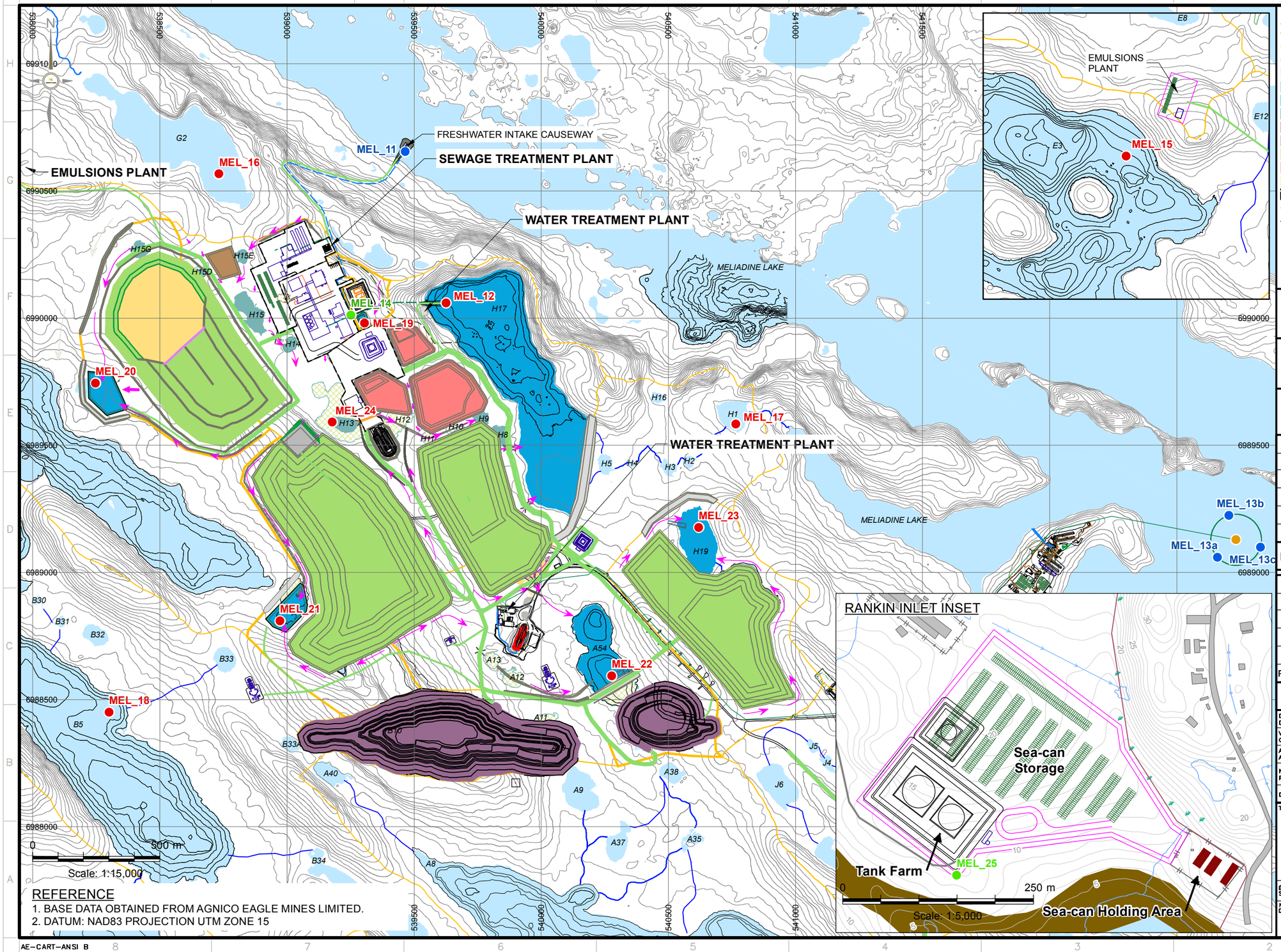
REFERENCE
1. BASE DATA OBTAINED FROM AGNICO EAGLE MINES LIMITED.
2. DATUM: NAD83 PROJECTION UTM ZONE 15

AE-CART-ANSI B

N:\Client\Agnico_Eagle_Mines_Ltd\Meliadine_Gold_Project\99_PROJECTS\1405283_Meliadine_Water_License\02_PRODUCTION\3000_Application_Preparation\MXD\3200\Report\QAQC_Plan\1405283_Figure_A-1_General_Site_Plan.mxd

NO. DESSIN
DRAWING NO.

FORMAT ANSI B – 11x17



LEGEND

- CATCHMENT BOUNDARY
- SERVICE ROAD
- HAUL ROAD
- NON CONTACT WATERBODY
- CONTACT WATERBODY
- WATER COLLECTION POND
- DRAINED POND AREA
- OPEN PIT
- OVERBURDEN
- WASTE ROCK
- ORE
- TAILINGS
- INDUSTRIAL SITE PAD
- CONTACT WATER FLOW DIRECTION
- STREAM
- DIFFUSER LOCATION
- GENERAL AQUATIC MONITORING LOCATION
- REGULATED MONITORING LOCATION
- VERIFICATION MONITORING LOCATION

AGNICO EAGLE

Golder Associates

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TITRE / TITLE	# DWG

DESSINS EN RÉFÉRENCE/REFERENCE DRAWINGS

–	–	–	–
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–	–	–	–
–	–	–	–
REV	DESCRIPTION	DATE	PAR BY

REVISIONS

DESSINÉ PAR DRAWN BY	MH	DATE 22–03–2017
VÉRIFIÉ PAR CHECKED BY	LY	24–05–2016
APPROUVÉ PAR APPROVED BY	DRW	24–05–2016
No. PROJET PROJECT NO.	1656645	
DATE	–	

TITRE / TITLE

AGNICO EAGLE – MELIADINE DIVISION

ÉCHELLE/ SCALE	1:12500	FICHIER FILE	.DWG
No. DESSIN/ DRAWING NO.	–	REVISION 0	FEUILLE/SHT 1 / 1

AE–CART–ANSI B

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APPENDIX B • MAXXAM ANALYTICAL ACCREDITED CERTIFICATES

CERTIFICATE OF ACCREDITATION

Standards Council of Canada
Conseil canadien des normes

CERTIFICAT D'ACCRÉDITATION

Maxxam Analytics International Corporation

32 Colonnade Road North Unit 1000, Nepean, Ottawa, Ontario, K2E 7J6

having been assessed by the Standards Council of Canada (SCC) and found to conform with the requirements of ISO/IEC 17025:2005 and the conditions for accreditation established by SCC is hereby recognized as an

ACCREDITED TESTING LABORATORY

for the specific tests or types or tests listed in the scope of accreditation approved by SCC and found on the SCC website at www.scc.ca.

ayant fait l'objet d'une évaluation réalisée par le Conseil canadien des normes (CCN), et été jugé conforme aux exigences énoncées dans ISO/CEI 17025:2005 et aux conditions liées à l'accréditation établies par le CCN, est de ce fait reconnu comme étant un

LABORATOIRE D'ESSAIS ACCRÉDITÉ

pour les essais ou types d'essais énumérés dans la portée d'accréditation approuvée par le CCN et figurant dans le site web du CCN au www.ccn.ca.

Accredited laboratory number: / Numéro de laboratoire accrédité : 814

Accreditation date: / Date d'accréditation : 2015-10-14

Issued on: / Délivré le : 2015-10-14

Expiry date: / Date d'expiration : 2019-10-14

This certificate is valid until the date of expiration unless suspended, withdrawn or superseded by SCC. / Le présent certificat est valide jusqu'à la date d'expiration, à moins qu'il ne soit suspendu, retiré ou remplacé par le CCN.

Vice-President – Accreditation Services / Vice-présidente – Services d'accréditation

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. The accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF communiqué dated January 2009).

Ce laboratoire est accrédité conformément a la Norme internationale reconnue ISO/IEC 17025:2005. Cette accréditation démontre la compétence technique d'un organisme pour une portée définie et l'exploitation d'un système de management de la qualité de laboratoire (cf. communiqué conjoint ISO-ILAC-IAF date de janvier 2009)

Canada

Canadian Association for Laboratory Accreditation Inc.

CALA

Certificate of Accreditation

Maxxam Analytics (Burnaby, Canada Way)
Maxxam Analytics International Corporation
4606 Canada Way
Burnaby, British Columbia

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-ILAC-IAF Communiqué dated 8 January 2009).

CALA

Accreditation No.: A2168
Issued On: April 7, 2015
Accreditation Date: January 3, 2005
Expiry Date: October 5, 2017

President & CEO

ilac-MRA

CALA

CERTIFICATE OF ACCREDITATION

Standards Council of Canada
Conseil canadien des normes

CERTIFICAT D'ACCRÉDITATION

MAXXAM ANALYTICS

6740 Campobello Road, Mississauga, Ontario, L5N 2L8, Canada

having been assessed by the Standards Council of Canada (SCC) and found to conform with the requirements of ISO/IEC 17025:2005 (CAN-P-4E) and the conditions for accreditation established by SCC is hereby recognized as an

ACCREDITED TESTING LABORATORY

for the specific tests or types of tests listed in the scope of accreditation approved by SCC and found on the SCC website at www.scc.ca.

ayant fait l'objet d'une évaluation réalisée par le Conseil canadien des normes (CCN) et été jugé conforme aux exigences énoncées dans ISO/CEI 17025:2005 (CAN-P-4E) et aux conditions liées à l'accréditation établies par le CCN, est de fait reconnu comme étant un

LABORATOIRE D'ESSAIS ACCRÉDITÉ

pour les essais ou types d'essais énumérés dans la portée d'accréditation approuvée par le CCN et figurant dans le site web du CCN au www.ccn.ca.

Accredited laboratory number: / Numéro de laboratoire accredité : 097

Accreditation date: / Date d'accréditation : 1992-10-06

Issued on: / Délivré le : 2014-06-11

Expiry date: / Date d'expiration : 2018-10-06

This certificate is valid until the date of expiration unless suspended, withdrawn or superseded by the SCC. / Le présent certificat est valide jusqu'à la date d'expiration, à moins qu'il ne soit suspendu, retiré ou remplacé par le CCN.

Vice-President - Accreditation Services / Vice-présidente - Services d'accréditation

This laboratory is accredited in accordance with the recognised International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer joint ISO-ILAC-IAF Communiqué dated January 2009)".

Ce laboratoire est accrédité conformément à la Norme internationale reconnue ISO/CEI 17025:2005. Cette accréditation démontre la compétence technique d'un organisme pour une portée définie et l'exploitation d'un système de management de la qualité de laboratoire (cf. communiqué conjoint ISO-ILAC-IAF daté de janvier 2009).

Canada

APPENDIX C • QA/QC WATER SAMPLE NAMING AND COLLECTION PROCEDURE MEL-ENV-0018

QA/QC Water Sample Naming and Collection Procedure

	PROCEDURE NUMBER:	**MEL-ENV-0018**	
People concerned	**Meliadine Environment Department**	**Prepared by**	**Meliadine Environment Department**
		Authorized by	**Jeffrey Pratt** **Sr. Environmental Coordinator**
Issuing date :	**December 18, 2016**	***"Safety First, Safety Last … Safety Always!"*** ***"No Repeats" – Our Stepping Stone to ZERO HARM***	
This procedure corresponds to the required minimum standard. Each and every one also has to comply with the rules and regulations of the Nunavut Government in terms of health and safety at work.			

Objective:

The use of quality assurance/quality control (QA/QC) samples is the primary means of identifying the stage in the sampling process during which contamination could be introduced. There are different forms of QA/QC when collecting samples. Field parameters that are measured and recorded can be used to cross reference samples collected and sent to the laboratory (lab) to be analyzed. Samples collected for QA/QC lab analysis may include field blanks, trip blanks, equipment blanks and duplicate samples. Sampling QA/QC are specifically intended to provide confidence in the results by allowing for analysis of possible detection of inconsistencies or contamination introduced throughout a sample collection, equipment used during sampling or laboratory analysis components of the program and to provide information to the regulators verifying sampling methods are conducted accurately. The QA/QC methods are individually described in greater detail below.

Concerned departments:

Environment

Required equipment:

- Handheld field parameter multi-meter
- De-ionized water (trip blank and field blank)
- Additional laboratory provided sample bottles

Required PPE:

Nitrile gloves
Site specific PPE

Abbreviations:

DUP - Duplicate
FB - Field Blank
TB - Trip blank
EB - Equipment Blank

QA/QC Water Sample Naming and Collection Procedure

Risks /Impacts legend		
Health & Safety	Operation Quality/Costs	Environment

Procedure	Risk / Impacts
1. Determine the additional sample containers that will be required to collect a DUP, FB, TB or EB. QA/QC sample containers should correspond/match to the field sample being collected. Use the same number and type of containers for the QA/QC as you would for the sample you are applying the QA/QC on.	
2. All samples have a unique sample identification name based on a station identifier, date, and time of collection. For QA/QC samples, the sample identification will be a number that is generated in the office from the QA/QC Log Sheet. This sheet can be found at \\Camefs02\groups\Environment\DATA_MANAGEMENT\QAQC\QA-QC_Identification_FORM.xlsx	
3. Complete the cells on the QA/QC Log Sheet and Electronic File for the QA/QC sample for the columns: - Sample Type, - Date, - Corresponding site, - Lab samples will be analyzed at.	

	Sample #	Sample type	Date	Time	Sampler Initials	Corresponding Site	Lab	Job Number	Lab ID number	Comments
1										
2	2015-9999	FB	9/18/2015			MEL-01	MAXXAM			
3	2015-9998	DUP	9/18/2015			MEL-01	MAXXAM			
4	2016-0000									
5	2016-0001									

4. Label QA/QC sampling containers the same as the sample you are applying the QA/QC on, except use the Sample number from the QA/QC Log Sheet. Example: if you are doing a Field Blank and Duplicate for Mel-01, you would have 3 of each type of bottle generally used to sample Mel-01. Each bottle would be labelled with the date/time/sampler. One set would be identified as Mel-01, another set would be identified as 2015-9998 for the DUPLICATE, and another set would be identified as 2015-9999 for the FIELD BLANK. 	
5. Be sure to keep QA/QC sample bottles separated with the sample bottle sets for the intended sample location if performing more than one set of QA/QC samples in a single outing. *Example*: if sampling A8 and B6 in one outing and QA/QC samples will be collected for both locations be sure to keep the QA/QC number bottles for A8 with the A8 bottle set and the QA/QC number bottles for B6 with the B6 bottle set. NOTE: Mixing QA/QC containers with the incorrect station will defeat the purpose of the QA/QC sampling, will provide an incorrect analytical result, and could create problems between the site and the lab.	
6. Prep for collection of field parameters with QA/QC sampling. Review MEL-ENV-0022 Field Parameter Collection Procedure.	
7. Once labelled and packaged accordingly you may proceed with sampling.	
8. While collecting samples always be sure to wear Nitrile gloves to ensure no contamination is crossed.	
9. Always collect Drinking Water samples prior to collecting Sewage Treatment samples if collecting both types of samples on the same day.	

AT NO TIME SHOULD A QA/QC SAMPLE HAVE THE SITE ID ON THE QA/QC SAMPLE BOTTLE

Post – Sample Collection Activities

1. Back on site; put the samples in the fridge.

2. Complete the cells on the QA/QC Log Sheet and Electronic File for the QA/QC sample for the columns:
- TIME
- SAMPLER INITIALS

Sample #	Sample type	Date	Time	Sampler Initials	Corresponding Site	Lab	Job Number	Lab ID number	Comments
2015-9999	FB	9/18/2015	13:24	JP	MEL-01	MAXXAM			
2015-9998	DUP	9/18/2015	13:24	JP	MEL-01	MAXXAM			

3. Send samples to appropriate Lab (SEE SAMPLE SHIPPING PROCEDURE MEL-ENV-0023).

4. Once the lab provides the Accuse or Job Confirmation Report please add the information to the QA/QC Log Sheet and Electronic File:
- JOB NUMBER
- LAB ID NUMBER

Sample #	Sample type	Date	Time	Sampler Initials	Corresponding Site	Lab	Job Number	Lab ID number	Comments
2015-9999	FB	9/18/2015	13:24	JP	MEL-01	MAXXAM	B6J8696	DBU124	
2015-9998	DUP	9/18/2015	13:24	JP	MEL-01	MAXXAM	B6J8697	DBU125	

Instructions for collecting each type of QA/QC sample

Collecting an Equipment Blank

Equipment blanks are exposed to the environment and the equipment used during water sampling (pumps, filters or others). They provide information on contamination resulting from equipment used during water sampling.

1. When using equipment for sampling, equipment blank samples should be taken every 20 sample sets.
2. Setup the water sampling equipment as if a routine sample was to be collected except that the intake hose is to be placed into a 4 L container of distilled water.
3. Pump for 30 seconds to flush site water from the equipment.
4. Fill all the necessary containers, filter and preserve as other samples (where necessary).
5. Prepare samples to be shipped to the lab and follow post-sample collection activities.

Collecting a Field Blank

Field Blanks are exposed to the environment at the sample site and handled in the same manner as the original field sample; they provide information on contamination resulting from handling and from exposure to the atmosphere.

1. At least one Field Blank sample should be collected for every 10 samples collected in the field.
2. Field Blank samples should be labelled as indicated in Step 3 of this procedure and recorded with the corresponding sample that it is the duplicate for.
3. Receive the field blank water directly from the lab. Containers can be received in two formats:
    a) Containers already filled with de-ionized water or air, preserved and closed in individually sized bottles to mimic a sample set.
    b) Large containers already filled with de-ionized water or air, preserved and closed. When going into the field bring an extra set of empty bottles matching the sample set, to pour this water into.
4. Carry the field blank bottle(s) into the field with the other sampling vessels.

5. Open the sample container during sampling (to expose it to the environment/atmosphere): a) For small bottles: close the container(s) when sampling at that location is complete. b) For large bottles: pour the de-ionized water from the large container into each individual bottle brought for the Field Blank set. 6. Prepare samples to be shipped to the lab and follow post-sample collection activities.	
Collecting a Trip Blank Trip blanks are not exposed to the environment or the equipment. They provide information on contamination resulting from transportation of the sample. 1. Trip blanks will be requested from the analytical supplier 1 for every 30 sample sets. 2. Receive the trip blank directly from the lab (container already filled and closed). 3. Carry the trip blank into the field and treat like the other sampling vessels except that the containers are not to be opened or anything added to them. 4. Prepare the samples to be shipped to the lab and follow the post-sample collection activities.	
Collecting a "Blind" Duplicate Sample Duplicate samples are two or more samples taken from the same location sequentially and are collected to assess the precision and accuracy of the field and laboratory components of the sampling program. The analysis of duplicate samples checks method, stability and performance. 1. At least one QA/QC sample should be collected for every 10 samples collected in the field. 2. Duplicate samples should be labelled as indicated in Step 3 of this procedure and recorded with the corresponding sample that it is the duplicate for. 3. Take the pre-labeled containers to the sampling location and collect, preserve and treat the duplicate sample in the same manner (including filtering of groundwater samples) as the field sample. If the field sample is being collected in a vat to meet other sampling protocol (i.e. interlab comparisons, spike samples), the duplicate must also be split from the same vat. 4. Fill half of one container and do the same with the duplicate container. Then, fill the other half of both containers. If more than one container is needed, fill one regular and the duplicate	

related to the same parameter and continue on alternating one regular container and one duplicate container still by filling them half and half. **5.** Prepare samples to be shipped to the lab and follow post-sample collection activities.	