HOPE BAY MINING LTD.
Quality Assurance and Quality Control Plan
2AM-DOH0713, 2BB-BOS1217, 2BE-HOP1222
HB-QA-ENV-MP-001

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DOCUMENT CONTROL RECORD

DOCUMENT CONTROL REVISION HISTORY				
Rev No	**Page No**	**Details of Revision**	**Name**	**Date**
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1	All	Review	Hugh Wilson	Mar-04
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1.0 INTRODUCTION

1.1 Overview

This Quality Assurance and Quality Control Plan (QA/QC Plan) was prepared by Hope Bay Mining Limited (HBML), a wholly owned subsidiary of Newmont Mining Company, for use on the Hope Bay Project in the in the west Kitikmeot region of Nunavut. **The Plan is intended to meet the requirements of the Surveillance Network Program as outlined in the Nunavut Water Board issued Water Use License 2AM-DOH0713, 2BE-HOP1222, and 2BB-BOS1217**. These licenses regulate the exploration, mining and milling activities for the Doris North Mine; regional exploration activities in the Hope Bay Belt and the Windy Camp; and the underground bulk sample, surface exploration activities at the Boston deposit and the Boston Camp in the Hope Bay Belt.

Quality assurance and quality control are important components of the Environmental Management System (EMS) for the Hope Bay Belt. This QA/QC Plan has been prepared in accordance with the *QA/QC Guidelines for use by Class “A” and “B” Licensees in Meeting Surveillance Network Program Requirements and for Submission of a QA/QC Plan* published in July 1996 by the Water Resources Division of the Department of Indian and Northern Affairs (now Aboriginal Affairs and Northern Development) and the Northwest Territories Water Board.

1.2 Purpose and Scope

This QA/QC Plan describes the procedures to be used when conducting environmental sampling, analysis, and reporting for the Hope Bay Project, regardless of the project status (e.g., exploration, construction, operations, closure or care and maintenance). It outlines the criteria for sample collection, preservation, documentation and transportation, as well as data management and reporting. These procedures have been developed from literature and guidelines and are intended to promote best practice in environmental management. As per the approved water license, this plan will be reviewed annually and updated as needed to maintain compliance with the license requirements and to support the HBML Data Quality Objectives (DQO).

Although the QA/QC Plan is submitted to the Nunavut Water Board as a condition of the Surveillance Network Programs annexed to the three site Water Licenses, it is primarily intended to be read, understood, and implemented by company personnel involved in environmental monitoring. These procedures are applied to ***all environmental*** **samples**, whether analyzed for the purpose of regulatory compliance monitoring, or for the purpose of internal environmental management.

1.3 Responsibility

This QA/QC Plan is one component of the EMS for the Hope Bay Project. The Environment and Social Responsibility (ESR) Department will use the EMS for guidance when managing site activities. The responsibilities for each position in the ESR Department are divided as follows:

VP Environmental Affairs:

- Ensuring that sufficient resources are available to allow compliance to this Plan; and
- Reviewing the work accomplished by the environmental staff.

Manager of Environmental Compliance:

- Review monthly compliance reports;

- Provide appropriate sampling equipment; and
- Review and update this Quality Assurance and Quality Control Plan annually;

Site Environmental Compliance Team:

- Overseeing and training the environmental staff;
- Provide training and support to field samplers on the procedures contained in this document;
- Oversight and technical support to environmentally sensitive issues in the project area;
- Ensure that required sampling is carried out in accordance with this plan and permit requirements;
- Sampling water as required in the permits, including lakes, tanks, impoundments, discharges, run off, berms, and opportunistic seepage;
- Review and management of analytical data;
- Ensure sampling equipment is available, in good working condition, and calibrated; and
- Prepare monthly compliance report to the Nunavut Water Board.

2.0 QUALITY ASSURANCE AND QUALITY CONTROL

Quality assurance is a set of operating principles that, if strictly followed during sample collection and analysis, will produce data of known and legally defensible quality. A high level of quality assurance can be achieved by applying the following principles:

- Personnel involved in sampling and analysis are trained and competent;
- Sampling and testing equipment are reliable and kept in good working condition;
- Standard procedures are implemented for the collection and transportation of samples, based on acceptable and approved operating practices;
- Use of certified external laboratories to conduct chemical analyses;
- Review of DQOs to ensure that data needed for environmental management is available;
- Laboratory water, reagents and other supplies are of consistent high quality;
- QC programs are developed and implemented, based on recognized best operating practice, to assess the quality of the analytical data and provide warning of unacceptable analytical or samplers errors;
- Prompt remedial action is taken when deficiencies are identified; and
- Analytical results and QC program results are reported internally and externally using standard procedures.

Quality control is a set of specific procedures used to assess the quality of the data produced and correct deficiencies in sampling or analysis, as they occur. Quality control is used by the analyst and sampler to achieve standards of measurement for the three principal components of quality: precision, accuracy and reliability. The components are defined as follows:

Precision: A measure of the closeness with which multiple analyses of a given sample agree with each other.

Accuracy: A measure of the closeness of the analytical result to the true value.

Reliability: A measure of the frequency at which the standards of precision and accuracy are achieved.

Although each component of quality can be achieved without the other, true quality can only be achieved with a combination of all three components.

Different QC methods can be used to measure each of the components of quality and can isolate the probable source of errors detected. For this reason, a good QC program is made up of a number of recognized methods.

3.0 FIELD SAMPLING

Appendix A refers to the sampling stations required to be monitored in the water licences. Additional sampling sites will be added on an as needed basis. These additional sampling locations will be added in response to regulatory requirement or identified DQO needs. These include samples taken on ice to compare water quality before and after a drilling effort, sites of previous petroleum product spills, new spills and spring runoffs, specifically associated with construction activities. All sampling sites coordinates will be recorded using a handheld GPS.

3.1.1 2AM-DOH0713

Appendix A summarizes the permit-required monitoring parameters (Table A1), sample names and locations related to general operations (Table A2) and mining and milling operations (Table A3) and sampling frequency for each location (Tables A2 – A3). It should be noted that many of the permit-required sampling points listed in tables A2 and A3 refer to phases of the project that are not currently active (i.e., mining and milling operations). As the permitted activities begin to be performed on-site, the specified sampling locations will be incorporated into the current sampling program. The locations of the SNP sampling points currently monitored at Doris North are illustrated in Appendix B.

3.1.2 2BE-HOP1222

Appendix A summarizes the permit-required monitoring parameters (Table A1) and sample locations and frequency (Table A4). Windy Camp and Patch Lake Laydown are no longer in use; therefore, the camp water intake and sewage discharge sampling points are not being used or monitored. There are currently no active sampling stations at Windy Camp or Patch Lake; however, water may be drawn from Windy Lake for domestic use at Doris Camp. The location of the SNP sampling point for the Windy Lake intake is illustrated in Appendix B

3.1.3 2BB-BOS1217

Appendix A summarizes the permit-required monitoring parameters (Table A1), and sample locations and frequency (Table A5). The locations of the SNP sampling points currently monitored at Boston Camp are illustrated in Appendix B

3.2 Sample Collection

Environmental sampling of water and soil is conducted to provide information required by the company for effective environmental management of the site, to provide information on follow-up monitoring of previous spill sites, and to monitor regulatory compliance. It is necessary to ensure sample integrity is maintained for all samples collected whether for regulatory compliance or internal management decisions.

3.2.1 Sampling Locations and Frequency

The Surveillance Network Program (SNP), as required by the Water Licence, defines a specific water-sampling program for the site, including sampling locations, sampling frequency, and parameters to be analyzed. Maps of the existing properties showing the prescribed sampling locations are on file with the Nunavut Water Board. Site specific photographs with details of sampling locations are provided in Appendix B.

The SNP samples must always be taken at the same location and these sampling stations must be clearly identified in the field by posted signs. The location of signs, and the precise location of sampling, will be approved by the designated Inspector for the site. Sampling locations will be relocated as required by the water use permits or as recommended by the designated site Inspector.

Appendix A outlines the sampling frequency and analytical parameters for each of the sampling stations.

3.2.2 Sample Types

Different sample types can be collected at the various sampling locations, such as composites or grabs. Water samples will generally be grab samples. Water samples are normally taken from natural lakes, streams, treatment ponds, process streams, sumps, or effluent discharges. When possible, samples will be taken from approximately 10 cm below the water surface to avoid floating debris that could impact the quality of the sample.

Soil and ash samples will usually be composite samples, although the purpose of the sampling program will dictate whether grab samples or composites will be used. Monitoring of the land treatment area will usually require a composite sample within a homogenized area. Sampling hydrocarbon contaminated sites may require grab samples from various locations with in the area to delineate the zone of contamination. Ash samples for characterization are composite that are subsampled to be representative of the ash created over a given time.

Waste oil samples are taken from tote containers of waste oil and are a composite of what will be used over a given period of time and at least once a year.

3.2.3 Sample Containers

The laboratory analytical method and the parameter of interest will dictate the size and type of bottle (i.e., glass, plastic, amber glass) to be used for the sample. All sample containers will be prepared and supplied by the contracted laboratory. Only clean unused containers will be used. This helps limit field generated contamination or preservation errors. Sample containers and preservation needed for the different analyses are shown in Appendix A Table A1. If there is a need for bacterial testing, the bottles must be autoclaved (sterilized) by the contracted laboratory prior to use.

3.2.4 Field Sampling Log Book

Details of all sampling activities are recorded in a field logbook. The sampler will record the sampling stations visited, the samples taken at each station, and the date and time for each sample collected. The results of any field measurements (i.e. temperature, pH, etc.) should be recorded, as well as information on sample preservation.

Additional information can be useful when attempting to interpret analytical data. The sampler should, therefore, record any information that may have a bearing on water quality, such as weather conditions, stream flow rates, and unusual conditions at the site. Any necessary deviations from standard procedures or sampling location need to be documented and include the reason for the changes.

A scanned copy of the field log book pages should be made and submitted to the Environmental Coordinator and be filed on the ESR server as soon as possible after sample collection. This copy serves as backup, in the event the log book were lost or destroyed, and as a reference for others who may need to review this data. It is important to remember that field notes and the field log book itself are considered legal documents and should be kept legibly in permanent ink. In the event that an error is made it should be crossed out with a single line and initialled by the one making the correction. Pages should never be removed and space or pages being left blank should be labelled as such with a single diagonal line and the phrase “intentionally left blank”. When filled, the field book should be filed and retained in case of future need.

3.2.5 Environmental Surveillance Monitoring

Some of the monitoring required under the Doris permit does not involve collection of samples or laboratory analysis, including monitoring shoreline erosion or ground temperatures around the camp, as outlined in Appendix A Tables A4 and A5. The timely acquisition and preservation of this data provides documentation for aspects relating to how the camp is affecting the local environment. For example, if runoff from the site is not properly controlled, permafrost degradation or shoreline erosion may be observed and documented. On the same note, a warming trend in a temperature monitoring station could be an early indicator of permafrost degradation. The notes and field measurements for these programs are an important part of the site environmental management.

3.2.6 Field Measurements

Water temperature and pH are typically measured and recorded in the field when the sample is taken. The calibration of the meters must be verified against a known standard solution, and recalibrated as required, prior to each day’s sampling activities and the calibration data recorded. Additionally, the calibration of the meter should be checked against a known standard at the end of the days sampling. Any issues with the meter calibration, or discrepancies with the end of day calibration check should be noted in the field log book along with that day’s sampling data. Calibration check data will not be used to alter any reading taken during the day. Instead, these results may be used to help explain anomalous data. Measurements should be taken directly from the water body being sampled. Where this is impractical, perhaps due to the high velocity of a sample stream, the measurements can be taken from a triple rinsed sample jug or pail. It is important that field meters are never introduced into sample bottles that are destined for laboratory analysis to prevent sample contamination. Temperature and pH measurements will be rounded to one decimal place.

3.2.7 Flow measurements

Seametric TX-115 Flow meters are used to measure piped water movements and discharge within the water management facilities.

3.3 Sampling Methods

Samples will be collected in new sample bottles using new powder-free nitrile gloves at each sampling location. The following procedures should be used to collect water samples, as appropriate to the sampling location.

3.3.1 Streams

The sample should be collected as close as practical to the middle of the stream, where water flows freely and is free of debris. After getting into position, the sampler should face upstream and wait to allow any sediment that may have been stirred up to settle or wash away.

Some sampling bottle types require rinsing prior to collecting the sample. The contracted laboratory can provide instruction for the type of bottle and the rinsing requirements for each analytical parameter. If the sample bottle requires rinsing, the sample bottles should be partially filled with the water to be sampled and rinsed with the cap in place three times. Rinse water will be emptied downstream from the sampling point, so that surface water is not contaminated and stream sediments are not disturbed. As a general rule, plastic bottles require triple rinsing and glass bottles, such as the oil and grease bottle, should not be triple rinsed because hydrocarbons can adsorb to the glass surface and can, therefore, increase the sample concentrations during the rinsing process. Sample bottles that are pre-charged with sample preservative, such as the bacteria sample bottles, must not be rinsed to prevent loss of the sample preservative.

Ideally, the bottle will be submerged into the stream to a depth of approximately half the total stream depth to collect the sample. At minimum, the sample bottle will be submerged to approximately 10 cm below the water surface. If the stream is too shallow to submerge the bottle to 10 cm below the surface, care will be taken to prevent surface debris or sediments from contaminating the sample. If necessary, a smaller bottle can be used to transfer water to the larger sample bottle, provided that both sample bottles are rinsed as required.

Bottles should be filled to near full capacity, allowing enough room for preservative addition and mixing (the neck of wide-mouthed bottles is sufficient space for this). Some analytical parameter samples must be collected without leaving head-space, which means that the bottle will be filled in such a way to prevent inclusion of air-bubbles. Typically, the easiest way to accomplish this is to place the cap on the bottle while the bottle is submerged. This is very important when sampling volatile parameters, such as volatile organic carbon or chlorine, which may evaporate out of solution if airspace is present. The contracted laboratory can provide instruction for the specific sampling requirements for each analytical parameter.

3.3.2 Lakes and Ponds

Surface samples from lakes and ponds should be collected using the same procedures as above. Subsequent samples should always be taken at the same location. Sample bottles should be submerged to a depth of approximately 10 cm below the water surface.

Although not currently required for SNP sampling, information on water quality at depth in lakes and ponds may be required at times. These samples will usually be collected with a Van Dorn-type sampler, which is lowered to the required depth and triggered to trap a sample of water by releasing a messenger weight from the surface down the rope used to lower the sampler. Both the sampler and sample bottle are rinsed with the water to be sampled a total of three times and the sample is retrieved on the fourth submersion of the sampler to the given depth.

3.3.3 Process Streams (Pipes, Valves and Auto-Samplers)

Some sampling of process streams may be required by the Surveillance Network Program and for environmental management purposes. These may be grab samples, which are taken from a valve or a pipe discharge, or composite samples collected over an extended time period by an automated sampling system.

The same principles used in natural stream sampling should be applied when collecting grab samples. The sample bottle should be rinsed with the water to be sampled three times, with the exception of sampling for Oil and Grease analysis, or pre-charged sample bottles, as noted above. Valves should be open for at least one minute before taking the sample, to help ensure that the water is representative of the process stream.

3.3.4 Soil Sampling

The Environmental Protection Service of the Nunavut Department of Sustainable Development has a published an “Environmental Guideline for Soil Remediation” that provides guidance as to acceptable levels for the remediation of hydrocarbon contaminated soils in Nunavut. These guidelines are derived from the Canadian Council of Ministers of the Environment (CCME) 1991 Interim Criteria and the CCME 1997 Recommended Soil Quality Guidelines.

HBML will use the industrial remediation guidelines for hydrocarbon contaminated soils as the basis for determining when soil has been remediated. Once remediated, the soils can be removed from the Land Treatment Area (LTA) facility and used in site reclamation activities in areas of previous industrial activity.

A record will be kept by HBML’s on-site Environmental Coordinator documenting the amount of contaminated soil and snow placed in the LTA. This record will also include the location of each batch of contaminated material/soil within the LTA by contaminant type and length of remediation. The LTA will be monitored weekly during summer months by the Environmental Technician to help ensure that conditions conducive to the attenuation of hydrocarbon contaminants are present (i.e. soil moisture, pH, and aeration).

The sampling plan will include sampling methods (i.e., grid, composite) and frequency (number of samples per surface area). Since the LTA material is thinly applied and homogenized through tilling, only one depth of sample collection will be required. The samples can then be analyzed for the contaminants of interest and compared with the remediation guidelines. When the contaminant levels are found to be below the industrial screening levels, the soils have been remediated and the LTA can be closed or the soils removed for use elsewhere. Monitoring of contaminant levels in the leachate is only required prior to discharging the leachate to the environment. During recirculation, testing may be done for purposes of tracking remediation progress.

Soil samples will be collected at least twice per year and will be tested for CWS-PHC fractions (Fraction F1 thru F4), Benzene, Toluene, Ethylbenzene, Xylene (BTEX), Total Petroleum Hydrocarbons (TPH), and total metals using a 36 element ICP-MS scan. Soil samples are usually packed into clear glass jars. Prior to beginning the sampling program, appropriate sample containers will be ordered from ALS laboratory.

The CCME guidelines do not specify the density for collection of soil samples in the LTA. Each separate pile within the LTA can be divided into quadrants, and will be sampled with a target density of one composite of ten samples per 25 m^3 to adequately characterize the soil hydrocarbon levels. As for samples collected at spill sites, a sufficient amount of contaminated soil to analyse for all of the parameters listed above will be sampled. Care should be taken not to expose the underlying tundra.

3.3.5 Ash Sampling

The monitoring, characterization and disposal of incinerator ash is a requirement of the water licenses associated with the project. Ash is collected at intervals to be representative of all the ash prior to shipping off site for disposal. The analysis is used to determine suitability for landfill placement. Flash point, paint filter test, leachable metals, leachable mercury and leachable BTEX are conducted on the ash at the ALS Laboratory in Edmonton.

The waste stream of the CY100 Dual Chamber forced air at the Doris site incinerator is food waste, paper and cardboard. During each incinerator ash cleaning a 250 ml ash sample is collected. These are combined together at month end into a composite which is then subsampled for analysis.

Food wastes, paper and cardboard are also incinerated at the Boston Camp site. The incinerator is a single chamber with an afterburner. The ash created at this location is to be sampled in the same manner as the Doris incinerator ash.

The waste stream of the free standing, metal burn pan at the Doris site is untreated wood and cardboard. Each time the ash is cleaned out of the burn pan, three 250 ml samples are collected. These samples are composited and sent for analyses.

3.3.6 Waste Oil Sampling

Feedstock oil to be burned in a waste oil burner must be analyzed to determine the content of metals and other substances known to exist in used oil from the lubrication of machinery components and internal combustion engines, etc. This is a requirement of the Nunavut Water Board issued Water License, territorial guidelines and federal regulations.

An annual supply of waste oil totes is identified and a representative sample is collected from each of the totes to create a composite which is then sent for analysis.

The samples are sent to ALS Edmonton and are analyzed for BTEX, glycol, PCBs, volatile organics, ash, flashpoint and ICP metals. Additionally the samples are sublet to ALS Tribology in Ohio for analysis of sulphur, total chlorine, heating value, pour point, viscosity, gravity, bottom sediment and water.

3.4 Sample Handling

Best Management Practices are employed during collection of all samples, whether they are for regulatory compliance or site environmental management.

3.4.1 Sample Identification

Prior to beginning a sampling event, the required sample bottles and preservatives should be gathered and prepared and organized into sample sets inside a plastic bag.

When sampling and sample preservation is completed, the bottles should be clearly marked with all information that the laboratory analyst will need to report the result. The following information should be included:

- Sample location (or SNP station number),
- Date of sampling,
- Parameters to be analyzed,
- Preservation method used,
- Filtering method used,
- Name or initials of sampler,
- Temperature and pH (where applicable);

- Company name; and
- Property name.

Prior to taking the bottles to the field, each bottle will be labelled with as many of the items above as possible using waterproof pre-printed labels. The sampling time, temperature and pH (where applicable) will be recorded on the label in the field using permanent waterproof ink. If preservatives or filtering are required, the sampler will confirm that these sample treatments have been completed by placing a checkmark, or their initials beside the items on the pre-printed labels.

In some cases permanent markers can be used to identify sample bottles, however these markings can be erased with wear and may not be clearly legible. Whenever possible, and always when sending samples to external laboratories, mark the dry bottles with pre-printed waterproof labels.

3.4.2 Chain of Custody Forms

A Chain-of-Custody form has to be filled out. The form is located on the server.

The completed form is to be printed as a PDF and filed on the server in the EQWin Data folder. A copy of this form also needs to be printed out, signed, and sent accompanying the samples.

3.4.3 Preservation

As samples cannot be delivered to the analytical laboratory within two hours of sampling, preservation may be required for some parameters. In many cases, chemical preservatives must be added to the samples to prevent chemical reactions that may affect the concentration of the parameter of interest. In any case, the samples must be preserved within two hours of sampling. This means that in most cases chemical preservatives can be added at the end of the sampling event prior to shipment. The appropriate preservation and sample container types are listed Appendix A Table A1. Preservative must be analytical grade and must not be used after the expiry date. Expired preservative is returned to the laboratory for proper disposal.

Samples must be kept dark and cool (<10 ºC), but not frozen; therefore, samples will be packed in a cooler with ice packs for shipment to the laboratory. Samples will be stored in a refrigerator if they will not be shipped to the laboratory immediately after sampling. Samples should be delivered to the analytical laboratory as soon as possible after collection.

3.4.4 Transportation

Care should be taken when packing samples for shipment. To help prevent leakage and cross contamination, sample bottles should be packed standing upright in the cooler. Sample bottles laid on their side are much more likely to leak especially if they have other samples on top of them. Additionally, when possible, samples known or suspected to have elevated contaminate levels should not be shipped together with samples expected to be clean (i.e. sewage samples not shipped in same cooler as potable water samples).

Preserving samples allows for extended storage periods prior to analysis; however, samples for some analytical parameters cannot be preserved in the field. The storage time for samples that are not preserved is typically short (i.e., can be as little as 24 hours). The laboratory can identify parameters with short storage times. It is important to transport all samples, regardless of preservation method, to the laboratory as quickly as possible; therefore, sample coolers will be labelled as “Time Sensitive. Keep Cool.”

4.0 QUALITY CONTROL SAMPLES

As outlined in Section 2.0, accepted QA/QC practices are employed throughout the environmental sampling program. There are 6 types of QC samples that can be collected and analyzed to verify the quality of the sample collection and analysis methods. The QC sample types include travel blanks, equipment blanks, field blanks, replicate, method “spiked”, and split samples. These QC samples are analyzed for the same suite of analytical parameters as the sampling station samples being monitored in the Surveillance Network Program.

4.1 Travel Blanks

Travel blanks are used to check for contamination during the movement process of samples and are subjected to the same potential sources of contamination as the samples to be analyzed. The travel blanks are prepared by the analytical laboratory with de-ionized water, shipped to site, transported to the field, carried through the sample collection and shipped back to the laboratory with samples.

4.2 Equipment Blanks

Equipment blanks are collected after cleaning of field equipment and prior to sampling. De-ionized water is used to rinse the equipment and subsequently collected for analysis and submitted with subsequent field samples. The results from this blank sample assure adequate decontaminate of equipment. The Niskin, or other equipment, used to collect samples will be decontaminated prior to use.

4.3 Field Blanks

Field blanks are samples of laboratory-grade de-ionized water that are subjected to the same procedures as routine field samples. Any measurement of the parameter of interest, above method detection limits, will indicate any analytical error, impurities in the laboratory distilled water supply, contaminated sample preservatives, or contamination of the sample during the handling process. Combined with the results of other QC procedures, analysis of field blanks can help identify sources of contamination and error.

A set of field blanks should be made up once each month and taken into the field when the SNP stations are sampled. New sample bottles will be triple rinsed and filled using de-ionized water provided by the contracted laboratory. (note- do not use de-ionized water after the six month shelf life period has expired) The samples will be poured directly from the bottles provided by the laboratory into the sample bottles to replicate grab sample methods. This set should represent all of the parameters routinely analyzed. They should be preserved using the same protocol as the regular samples and submitted to the laboratory identified as field blanks.

4.4 Replicate Samples

Replicate samples (or sometimes referred to as duplicate samples) test precision and assure that sample results are reproducible. They are prepared by collecting 2 separate samples for each given analysis at a given location. The replicate samples are collected, handled, and analyzed using the same procedures applied to routine samples. The samples are also analyzed by the same analytical method in the laboratory. Replicate samples are usually used to identify sampling procedure errors. Once per operating season, for each active SNP, a set of duplicate samples will be taken, representing as many of the routine analyses as possible. Where possible, this should be carried out in conjunction with audit sampling conducted by the designated inspector. Replicate sampling should rotate between the prescribed SNP stations.

4.5 Split Samples

Two or more representative sub-samples are removed from one collected sample and analyzed separately at the laboratory. This data is used as a check of the precision of the analytical procedure employed by the laboratory and is a normal part of the laboratory's QA/QC program. These can also be collected in the field by dividing a composite sample into 2 sets of samples. If field split samples are collected, it is common to label each sample with a different station name, to provide a blind assessment of the laboratory's analytical precision.

4.6 Method "Spiked" Samples and Certified Standards

The recovery of "known additions" from "spiked" samples is used as a check on the recovery of the parameter to be analyzed using a given analytical procedure. It is periodically carried out at the laboratories employed to analyze the samples and forms part of that laboratory's normal QA/QC program.

5.0 CALIBRATION OF FLOW METERS

The calibration procedure for the Seametric TX-115 Flow meters includes testing of the flow measurement reading against a known flow to determine accuracy, adjusting the K-factor to ensure the flowmeters are within 10% and recording the information in a flowmeter calibration log. This calibration is conducted prior to deployment in the field for water management related activities.

6.0 LABORATORY ANALYSIS

As HBML does not maintain an analytical laboratory on site, all analyses are performed at an accredited Environmental Laboratory. Currently HBML uses ALS Environmental Laboratory for all of their environmental analyses.

7.0 REPORTING

All analytical results are forwarded in electronic format to HBML's ESR Site Manager and hbesr.data@newmont.com for filing. Additionally, HBML is in the process of setting up an EQWin electronic database to help manage data and make the data easily accessible. This database will be maintained by the ESR staff on-site. ALS Laboratory will be able to import the data directly into EQWin once the database is fully implemented.

After receipt, the results are screened for anomalies and/or trends, and are placed into the appropriate environmental files. Results that appear to be anomalous are flagged and either the analysis is repeated. Analyses that indicate contamination or changes are subjected to further study and reported to the appropriate agencies. The environmental files are maintained on the server as a management tool for environmental risk assessment and in preparation of summary reports for the regulatory agencies and company officials. In compliance with the Surveillance Network Program, reports of analytical results for SNP samples are submitted in hard copy and electronically to the Nunavut Water Board within 30 days following the month in which the samples were taken. The Nunavut Water Board distributes the reports to other agencies and interested parties.

APPENDIX A

Sampling Locations, Frequency, and Analytical Parameters

Table A1 Analytical Parameter Groups, Units, Sampling Containers, and Preservation for 2AM-DOH0713, 2BE-HOP1222, and 2BB-BOS1217

Group	Analytical Parameters	Measurement Units	Sample Container	Preservative
General (**G**)	pH	pH units	None, field measured	N/A
	TSS	mg/L		
Nutrients (**N1**)	Total Ammonia - N	mg-N/L	500 mL Plastic	2 mL H_2SO_4
	Nitrate - N			
	Nitrite - N			
Nutrients (**N2**)	OrthoPhosphate - P	mg/L		
	Total Phosphate - P			
Total Metals (Unfiltered) (**MT**)	T-Aluminum	mg/L	250 mL Plastic	3 mL 1:3 HNO_3
	T-Arsenic			
	T-Copper			
	T-Iron			
	T-Nickel			
	T-Lead			
	T-Zinc			
Dissolved Metals Filtered (**MD**)	D-Iron	mg/L	250 mL Plastic	3 mL 1:3 HNO3
	D-Copper			
	D-Arsenic			
	D-Zinc			
	D-Cadmium			
	D-Nickel			
Biological (**B**)	Biological Oxygen Demand	mg/L	1 L Plastic	None
	Fecal Coliforms	CFU/100mL (colony forming units)	Sterile	Sodium Thiosulfate (precharged)
Hydrocarbons (**HC**)	Total Oil and Grease	mg/L	1 L Amber Glass	2 mL HCl
	T-Lead		250 mL Plastic	5 mL 20% HNO3
	Benzene		3 x 40 mL clear glass	Sodium Bisulphate (precharged), No headspace
	Toluene			
	Ethyl-Benzene			
Discharge (**D**)	Flow	m^3/day	None, field measured	N/A
	Volume	m^3		
	Duration	day		

Table A2 General Monitoring Requirements, 2AM-DOH0713

Station	Description	Phase	Monitoring Parameters	Frequency
ST-1	Discharge from Sedimentation Pond, taken at a depth of ≈0.25 m	Construction, Operation, and Closure	**G, N1, MT**, and Total Sulphate, Total CN, Total Oil and Grease,	Once before any discharge, daily when discharging onto the tundra
			D	Daily during periods of discharge
ST-2	Discharge from Pollution Control Pond, taken at a depth of ≈ 0.25 m	Construction, Operation, and Closure	**G, N1, MT**, and Total Sulphate, Total CN, Total Oil and Grease, Alkalinity, Chloride, and Total metals by ICP-MS	Monthly during open water season
			D	Daily during periods of discharge
ST-3*	Discharge from Non-hazardous Landfill pollution control sump	Construction, Operation, and Closure	**G, MT**, and Total Ammonia-N, Total Sulphate, Total CN, Total Oil and Grease,	Once before any discharge, daily when discharging onto the tundra
			D	Daily during periods of discharge
ST-4	Discharges from Landfarm sump	Construction, Operation, and Closure	**G, HC**	Once before any discharge, daily when discharging onto the tundra
			D	Daily during periods of discharge
ST-5	Discharge from the Plant Site Fuel Storage and Containment Area	Construction, Operation, and Closure	**G, HC**	Once before any discharge, daily when discharging onto the tundra
			D	Daily during periods of discharge
ST-6a and b	Discharges from the Roberts Bay Fuel Storage and Containment Area	Construction, Operation, and Closure	**G, HC**	Once before any discharge, daily when discharging onto the tundra
			D	Daily during periods of discharge
ST-7	Freshwater pumped from Doris Lake, taken from a valve on the discharge end of the freshwater pump	Construction, Operation, and Closure	**B, G,N1,N2,MT** and Free CN, Total Cn, T-AG, T-Cd, T-Cr, T-Hg, T-Mo, T-Se, T-Tl, and Total Oil and Grease	Monthly
			D	Monthly during periods of pumping
ST-8	Discharge from	Construction,	**G,B,** and Total Oil and	Monthly

Station	Description	Phase	Monitoring Parameters	Frequency
	Sewage Treatment Plant bio-membrane	Operation, and Closure	Grease	
			Location of discharge	Monthly during periods of discharge
			D	Monthly during periods of discharge
ST-9	Runoff from Sewage Treatment Plant discharge - downstream of sewage treatment plant discharge point and just prior to flow entering Doris Lake	Construction	**G, B,** and Total Oil and Grease	Monthly
ST-10	Site Runoff form Sediment Controls	Construction, Operation, and Closure	**TSS**	Daily during periods of discharge
ST-11*	Discharge from Cyanide and Reagent Storage Area	Construction, Operation, and Closure	**G, N1, MT**, and Total Sulphate, Total CN, Total Oil and Grease,	Once before any discharge, daily when discharging onto the tundra
			D	Daily during periods of discharge

*these are not in use at this time

Table A3 Mining and Milling Related Monitoring Requirements, 2AM-DOH0713

Station	Description	Phase	Monitoring Parameters	Frequency
TL-1	TIA at the reclaim Pump Barge - depth 1.5m below surface	Operations, Closure, Post Closure (for up to nine (9) years after cessation of mining	**G, N1,N2, MT** and TDS, CL, Free CN, Total CN, T-Ag, T-CA, T-Cd, T-Cr, T-Hg, T-K, T-Mo, T-Mg, T-Na, T-Se, T-Tl	Every second day for two (2) weeks prior to discharge and for two (2) weeks after discharge commences, then reducing to once per week during remainder of annual discharge period
			Dissolved Oxygen and Redox Potential	Every second month
			Acute Lethality	Once prior to discharge
			D	Daily during periods of discharge
TL-2	Doris Outflow Creek - upstream (at the flow monitoring station adjacent to the bridge	Operations, Closure, Post Closure (for up to nine (9) years after cessation of mining	**G, N1,N2, MT** and TDS, CL, Free CN, Total CN, T-Ag, T-Ca, T-Cd, T-Cr, T-Hg, T-K, T-Mo, T-Mg, T-Na, T-Se, T-Tl	Every second day for two (2) weeks prior to discharge and for two (2) weeks after discharge commences, then reducing to once per week during remainder of annual discharge period
			D	Daily during periods of discharge from Tail Lake
TL-3	Doris Outflow Creek (≈80m downstream of the base of the waterfall)	Operations, Closure, Post Closure (for up to nine (9) years after cessation of mining	**G, N1,N2, MT** and TDS, CL, Free CN, Total CN, T-Ag, T-CA, T-Cd, T-Cr, T-Hg, T-K, T-Mo, T-Mg, T-Na, T-Se, T-Tl, Total Oil and Grease	Every second day for two (2) weeks prior to discharge and for two (2) weeks after discharge commences, then reducing to once per week during remainder of annual discharge period
			D	Daily during periods of discharge from Tail Lake
TL-4	TIA Discharge End-of Pipe (taken at a valve at the discharge end of the transfer pump pipeline)	Operations, Closure, Post Closure (for up to nine (9) years after cessation of mining	**D**	Daily during periods of discharge from Tail Lake
			G, N1,N2, MT and TDS, CL, Free CN, Total CN, T-Ag, T-CA, T-Cd, T-Cr, T-Hg, T-K, T-Mo, T-Mg, T-Na, T-Se, T-Tl, T-Radium 226	Every second day for two (2) weeks prior to discharge and for two (2) weeks after discharge commences, then reducing to once per week during remainder of annual discharge period
			Acute Lethality	Monthly during discharge
			B	Monthly

Station	Description	Phase	Monitoring Parameters	Frequency
TL-5*	Combined Tailings Discharged into TIA (water component) taken from a valve in the mill at the discharge end of the mill tailings pump	Operations	**G, N1, MT,** and Free CN, Total CN, WAD CN, Sulphate, T-Cd, T-CR, T-HG, T-Mo, T-Se, and Total metals by ICP-MS	Daily initially, reduced to weekly after three (3) months of operation
			Cyanate and Thiocyanate	Quarterly
			D	Daily initially, reduced to weekly after three (3) months of operation
TL-6*	Combined Tailings Discharged into TIA (water component) taken from a valve in the mill at the discharge end of the mill tailings pump	Operations	Tonnage of dry tailings solids	Monthly during periods of discharge
			MT and T-Cd, T-Cr, T-Hg, T-Mo, T-Se	Sampled on a weekly basis with analyses carried out monthly on a composite sample of the TL-6 weekly samples
			Total Inorganic Carbon and Total Metals by ICP-MS (must include Sulphur)	
TL-7*	Filtered Cyanide Leach Residue sent underground as backfill	Operations	Dry tonnage of CN leach residue sent underground, Wad CN, Total Inorganic Carbon, Total Metals by ICP-MS (including Sulphur), Moisture content of backfill trucked underground	Monthly
			Cyanate and Thiocyanate	Quarterly
TL-8*	Reclaim water pumped from TIA to Mill Process water tank, taken from a valve at the discharge end of the reclaim water pump	Operation	**G, N1, N2, MT** and Free CN, Total CN, T-Ag, T-Cd, T-Cr, T-Hg, T-Mo, T-Se, T-Tl	Monthly
			D	Daily during periods of pumping
TL-9*	Barren Bleed Solution sent to tailings, taken from a sampling valve within the mill	Operations	MD and pH, Total and WAD CN, Chemical Oxygen Demand	Monthly

Station	Description	Phase	Monitoring Parameters	Frequency
TL-10	Water Column in deepest portion of Tail Lake and at a location away from the TIA Reclaim water floating pump house, sampled at the surface, mid-depth and near bottom	Operations, Closure, Post Closure (for up to nine (9) years after cessation of mining	**G, N1,N2, MT** and TDS, CL, Free CN, Total CN, T-Ag, T-Ca, T-Cd, T-Cr, T-Hg, T-K, T-Mo, T-Mg, T-Na, T-Se, T-Tl, Dissolved Oxygen, and Redox Potential	Monthly during discharge, starting two (2) weeks prior to start of discharge season
TL-11*	Seepage from underground backfilled stopes	Operations	Visual inspection for seepage. If seepage present parameter to be monitored include **N1** and pH, EC, Trace metals by ICP-MS, Alkalinity, Acidity, Sulphate, Total and WAD CN	Survey twice annually
TL-12*	Underground Minewater - Water pumped from the underground mine into the Mill tailings pump box	Operations	G, N1 and Total Sulphate, and Total Metals by ICP-MS	Monthly
			D	Monthly during pumping

*these are not in use at this time

Table A4 Monitoring Requirements, 2BE-HOP1222

Station	Description	Monitoring Parameters	Frequency
HOP-1	Raw water supply intake at Windy Lake	**B, G,** Oil and Grease	Monthly (when in use for Doris)
		D	Daily during periods of pumping
HOP-2*	WWTF effluent discharge at the surge tank prior to being pumped over the ridge east of the Windy Camp Facilities	**G, MT,** Oil and Grease	Monthly
		D	Daily during periods of discharge
HOP-3*	WWTF effluent at a point of entry into windy lake	**B, G,** Oil and Grease	Monthly
		Acute Lethality	Annually
		D	Daily during periods of discharge
HOP-4*	Effluent from the Landfarm Treatment Facility pumped to the WWTF surge tank	**B, G,** Oil and Grease	Once before any discharge, daily when discharging onto the tundra
		D	Daily during periods of discharge
HOP-5*	Effluent from the Bulk Fuel Storage Facility located at the Windy Camp, prior to release	**G, MT, HC,** Total Hardness, Total Alkalinity, Calcium, Potassium, Sulphate, Sodium, Magnesium	Once before any discharge, monthly when discharging onto the tundra
		D	Daily during periods of discharge
HOP-6*	Effluent from the Bulk Fuel Storage Facility located at the Patch Lake location, prior to release to a location approved by an Inspector	**G, MT, HC,** Oil and Grease Total Hardness, Total Alkalinity, Calcium, Potassium, Sulphate, Sodium, Magnesium	Once before any discharge, monthly when discharging onto the tundra
		D	Daily during periods of discharge
HOP-7 A, B and D	Discharge from Quarries A, B and D respectively	**G, N1, MT**, Total Sulphate, Alkalinity, and Reduction potential (Eh).	Once before any discharge, monthly when discharging onto the tundra
		D	Daily during periods of discharge
HOP-8*	Effluent from the Bulk Fuel Storage Facility located at the new Windy Camp location, prior to release to a location approved by an Inspector	**G, MT, HC,** Total Hardness, Total Alkalinity, Calcium, Potassium, Sulphate, Sodium, Magnesium	Once before any discharge, monthly when discharging onto the tundra
		D	Daily during periods of discharge
Drill Sites	Under-ice sampling before and after drilling	**G, MT, HC**	Before and after on-ice drilling
	Water intake from all sources	**D**	Daily during periods of discharge

*these are not in use at this time

Table A5 Monitoring Requirements, 2BB-BOS1217

Station	Description	Monitoring Parameters	Frequency
BOS-1*	Raw water supply intake at Aimaokatalok (Spyder) Lake	**B, G,** Oil and Grease	Monthly
		D	Daily during periods of pumping
BOS-2	Containment Pond discharge	**G,** T-Arsenic, T-Copper, T-Lead, T-Nickel, T-Zinc, Oil and Grease	Prior to discharge, weekly during periods of discharge, and once near the end of discharge
		D	Daily during periods of discharge
BOS-3*	Sewage Disposal Facility final discharge	**B, G,** Oil and Grease	Monthly
		D	Daily during periods of discharge
BOS-4*	Treated sewage effluent point prior to entry into Aimaokatalok (Spyder) Lake	**B, G,** Oil and Grease	Once before any discharge, daily when discharging onto the tundra
		Acute Lethality	Annually
BOS-5	Effluent from the Bulk Fuel Storage Facility prior to release to a location approved by an Inspector	**G, MT, HC,** T-Mercury, Total Petroleum Hydrocarbons, PAH, Total Hardness, Total Alkalinity, Calcium, Potassium, Sulphate, Sodium, Magnesium, Nitrate-Nitrite, Electrical Conductivity	Once before any discharge, monthly when discharging onto the tundra
		D	Daily during periods of discharge
BOS-6	Effluent from the Landfarm Treatment Facility prior to release	**G, MT, HC,** T-Mercury, Total Petroleum Hydrocarbons, PAH, Total Hardness, Total Alkalinity, Calcium, Potassium, Sulphate, Sodium, Magnesium, Nitrate-Nitrite, Electrical Conductivity	Once before any discharge, monthly when discharging onto the tundra
		D	Daily during periods of discharge
BOS-7	Landfill leachate (seepage from former waste pit)	**G, MT, HC,** T-Mercury, Total Petroleum Hydrocarbons, PAH, Total Hardness, Total Alkalinity, Calcium, Potassium, Sulphate, Sodium, Magnesium, Nitrate-Nitrite, Electrical Conductivity	During periods of observed flow
BOS-8	Waste Rock and Ore Storage Pad	**G, ICP-MS, HC,** Electrical Conductivity, Total Ammonia, Sulphate	Initially during spring thaw and monthly during periods of observed flow
Drill Sites	Under-ice sampling before and after drilling	**G, ICP-MS,** T-Arsenic, T-Mercury, Electrical Conductivity, Total Ammonia, Sulphate	Before and after on-ice drilling
	Water intake from all sources	**D**	Daily during periods of discharge

*these are not in use at this time

APPENDIX B

Current Sampling Locations

Figure B1 Doris Camp SNP Sampling Stations

Figure B2 Active TL Sampling Stations

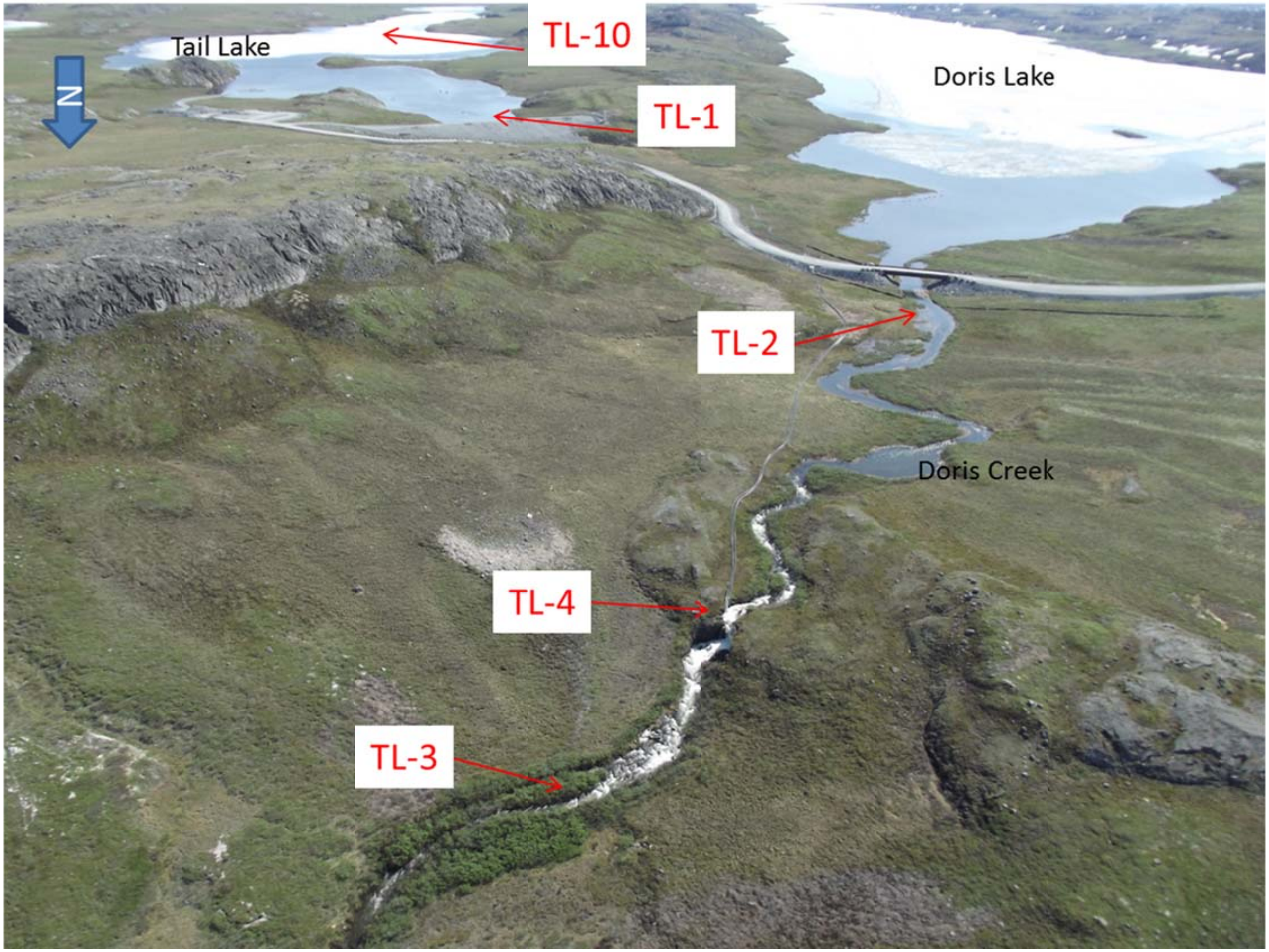

Figure B4 Windy Camp Sampling Stations (When water is drawn for Doris Camp)

Figure B4 Boston Camp Sampling Stations

BOS-4 not shown. Located east of this photo at lake edge.

APPENDIX C

ALS Quality Control Protocols v3

ALS Quality Control Protocols

08 May, 2012

Quality control samples are introduced into batches of samples at critical points of sample handling, preparation and analysis to demonstrate the processes are performing as expected. In general, quality control samples are considered either Instrument QC or Method QC.

Instrument QC:

Instrument QC samples demonstrate control for the instrumental portion of a method. Instrument QC requirements must be successfully met before the analysis of Method QC or samples may proceed.

- Verification of initial calibration - criteria varies with each test.
- 2nd source Calibration Verification Standard (CVS) – at minimum, with each initial calibration.
- Continuing Calibration Verification (CCV) – frequency varies by test.
- Instrument Blanks – usage and frequency varies by test.

Method QC:

Method QC samples encompass the entire method and are initiated at the earliest point of the method where appropriate. Refer to the QC Definitions below. One set of Method QC is included for each batch of up to 20 client samples. Each set includes:

- 1 Method Blank.
- 1 Sample Duplicate. *
- 1 Lab Control Sample.
- 1 Reference Material or Matrix Spike. **
- Surrogate Compounds.

* Duplicate analyses are not performed where sub-sampling is not possible – e.g. most tests for organics in water.
** Spikes and Reference Materials are unavailable for Microbiology tests.

Method QC must be successfully analyzed before sample results are approved. Method QC results are normally reported to ALS clients with data reports.

Data Quality Objectives (DQOs):

DQOs are established for each QC sample, based on a combination of reference method objectives, customer requirements and historical test method performance. Where applicable, prescriptive elements of reference methods take precedence over internal DQOs. Current DQOs are available upon request.

Detailed descriptions of how DQOs are evaluated for different types of Quality Control samples are described on the following pages.

Types of Quality Control – Definitions and Evaluation Protocols

Method Blank (MB) - A blank sample prepared to represent the sample matrix as closely as possible and analyzed exactly like the calibration standards, samples, and quality control (QC) samples. Results of Method Blanks provide an estimate of the within batch variability of the blank response and an indication of bias introduced by the analytical procedure.

Except in special cases (as outlined in ALS DQO summary documents) the ALS DQO for Method Blanks is for all results to lie below the Limit of Reporting (LOR).

Laboratory Sample Duplicate (DUP) - A second portion of sample taken from the same container as the sub-sample used for the primary analysis, that is analyzed independently through all steps of the laboratory's sampling and analytical procedures. Duplicate samples are used to assess variance of the total method including sampling and analysis.

Duplicate precision is normally measured as Relative Percent Difference (RPD), where RPD = |(Result2 - Result1) / Mean| * 100. Duplicate samples should normally agree to within the ALS Precision DQO for the test and parameter (expressed as RPD), or within ± 2 x the LOR (for low level results). Refer to the ALS DQOs for Precision for specific limits for any given test.

ALS does not establish DQOs for Field Sample Duplicates. However, it is generally understood and accepted that the variability of Field Sample Duplicates is significantly more than what is observed with Laboratory Sample Duplicates.[1]

Laboratory Control Sample (LCS) - A known matrix spiked with compound(s) representative of the target analytes. An LCS is used to verify the accuracy of the laboratory's performance of the test.

LCS accuracy is calculated as the measured amount divided by the target concentration, and is normally expressed as percent recovery. LCS recoveries should normally lie within the ALS Accuracy DQOs for the test and parameter. For a low level LCS, the result should lie within ± 1 x the LOR of the target concentration. Refer to the ALS Accuracy DQOs for specific limits for any given test.

Reference Material (RM) – A material or substance, one or more of whose property values are sufficiently homogeneous and well established to be used for the calibration of an apparatus, the assessment of a measurement method, or for assigning values to materials. An RM is similar to an LCS, but encompasses a representative sample matrix. Similar to an LCS, an RM is used to verify the accuracy of the laboratory's performance of the test, but including the challenges of a complex sample matrix.

RM accuracy is calculated, expressed, and evaluated similarly to LCS accuracy. Refer to ALS Accuracy DQOs for specific limits for any given test.

Matrix Spike (MS) - A sample prepared by adding a known amount of a target analyte to a specified amount of a sample for which an independent estimate of the target analyte concentration is available. Spiked samples are used, for example, to determine the effect of the sample matrix on a method's recovery efficiency.

Matrix Spike results are calculated and expressed as percent recovery, by dividing the measured result (minus any analyte contribution from the unspiked sample) by the target analyte concentration. Matrix Spike results should normally lie within the ALS Accuracy DQOs for Matrix

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[1] Depending on the type of Field Sample Duplicates being evaluated (e.g. Co-located versus Split Sample Duplicates), ALS recommends DQOs for Field Sample Duplicates that are between 1.5 – 2.0 times higher than our Laboratory Sample Duplicate DQOs. Co-located Sample Duplicates generally require higher DQOs than Split Sample Duplicates.

Spikes. Matrix Spike results cannot be calculated or reported in cases where the background concentration of the test parameter in the sample is too high relative to the spike level.

Surrogate Compounds (SURR) – Surrogate Compounds are added to every sample where applicable (organics tests only). They are substances with properties that mimic the analyte of interest, and which are unlikely to be found in environmental samples. They are added at known concentration to samples to establish that the analytical method has been properly performed.

Surrogate results are calculated and expressed as percent recovery, by dividing the measured result against the expected target concentration. Refer to ALS Accuracy DQOs for specific limits for any given test.

Automated Relational Checks

In addition to all our standard Quality Control checks, ALS also employs dozens of "Relational Checks", which are programmed into our Laboratory Information Systems (LIMS) to automatically highlight any situations where the expected relationships between different test parameters are violated, which can often point to errors. Such errors may originate with field sampling, or from laboratory processes, but should always be identified and pro-actively investigated.

Total versus Dissolved Metals ("D > T" Check) – One of the most important and common relational checks we do is a check for situations where Dissolved Metal concentrations significantly exceed Total Metal concentrations. By definition, this situation should not occur. However, there are a few reasons why this can occur:

i) Circumstances where Dissolved Metals slightly exceed Total Metals are expected in a small percentage of samples, simply due to normal random variability. In fact, when all metals in a test sample exist in the dissolved form, we expect that Dissolved Metals measurements will numerically exceed Total Metals measurements exactly half the time (by a small margin), simply due to random chance.

ii) Samples to be analyzed for Dissolved Metals must be filtered, which is normally done in the field. Filtration processes are a common source of low level metals contaminants. Contamination of a sample during filtration is the most common source of significant D > T issues.

iii) Field samples for Dissolved and Total Metals are normally collected independently, so variability of the sampling process is another common cause of D > T issues.

If none of the above causes can explain a situation where Dissolved Metals exceed Total Metals, then another type of error may be indicated, either with the collection of the sample in the field, or with sample containers or preservatives, or with the laboratory testing process.

ALS automatically highlights and investigates all circumstances where a Dissolved Metal result exceeds the Total Metal result by 20% RPD or more, but only if the absolute difference between the two results is greater than the sum of the Limits of Reporting (Detection Limits) of the two results.

The mechanism of this relational check is derived from the ALS Duplicate DQOs for Metals in Water.

All D > T relational checks that violate the rule above are flagged internally, and are investigated by ALS before sample results will be released to our clients. In most cases, results will be re-analyzed to confirm or correct the anomalous relationship. If results are confirmed by re-analysis, the following data qualifier is applied:

DTC: Dissolved concentration exceeds total. Results were confirmed by re-analysis.

Other Important Relational Checks Conducted by ALS

ALS employs dozens of other relational checks to highlight anomalous relationships between test parameters. Some of more common checks include the following:

- *Total Ammonia should not exceed Total Kjeldahl Nitrogen*
- *Weak Acid Dissociable Cyanide should not exceed Total Cyanide*
- *E. coli should not exceed Fecal Coliforms*
- *Nitrate + Nitrite should not exceed Total Nitrogen*
- *Hexavalent Chromium should not exceed Total Chromium*
- *True Colour should not exceed Apparent Colour*
- *Mineral Oil and Grease should not exceed Total Oil and Grease*
- *Reactive Phosphorus should not exceed Total Phosphorus*