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October 20, 2009
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Mr. Bob Carreau
Vice President, CSR and Sustainability
Breakwater Resources Ltd.
Wellington St. W., Suite 950
Toronto, ON
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Dear Mr. Bob Carreau:

**Reference: Quality Assurance / Quality Control Plan for Surface Water Monitoring Samples, former Nanisivik Mine Site, Nunavut**

This letter outlines the quality assurance / quality control (QA/QC) plan for water samples to be collected during surface water quality monitoring activities at the former Nanisivik Mine site, located near Arctic Bay, Nunavut. Also attached to this letter is a letter provided by Mr. Herbert Yu at Exova Accutest Laboratories, the performing analytical laboratory, confirming their acceptance of the QA/QC plan.

## BACKGROUND

The surface water quality monitoring program is required by the Water Licence (1AR-NAN0914, Parts F and I) issued by the Nunavut Water Board. This QA/QC plan is a requirement of the Water Licence, Part I, Item 11, which states:

*11. The Licensee shall submit a revised "Quality Assurance / Quality Control (QA/QC) Plan". The QA/QC Plan shall be modified to include up to date sampling methods to all applicable standards, acceptable to an accredited laboratory as required by Part I, Item 9 and Part I, Item 10. The Plan shall include a covering letter from the accredited laboratory confirming acceptance of the Plan for analyses to be performed under this Licence.*

The water quality analyses required by the Water Licence are defined in Schedule I, Table 1, and include the following Water Quality Monitoring Groups:

| Group | Included Parameters |
|---|---|
| 1 | Metals Analysis: total cadmium, total lead, total zinc<br>Major Cations: calcium, magnesium, sodium, potassium, ammonia, and the derived parameter hardness<br>Major Anions: chloride, sulphate, bicarbonate, carbonate, nitrate+nitrite, and the derived parameter alkalinity<br>Total Suspended Solids (TSS)<br>Field parameters: specific conductivity, temperature, pH<br>Visual oil and grease |

| Group | Included Parameters |
|---|---|
| 2 | Total Petroleum Hydrocarbon |
| 3 | Oil and Grease |
| 4 | ICP Metal Scan (trace metal scan) to be, at a minimum, consistent with background water quality data previously collected including any other metals of concern or interest |

## QA/QC PLAN

### Field Sampling and Measurement Personnel

No special training of field personnel is required for this activity. The sampling technician employed by Breakwater Resources (Mr. Claude Lavallee of Arctic Bay) has several years experience performing this task, and has completed health and safety training with Breakwater Resources.

### Field Documentation and Records

Field collected data will be documented using a bound field notebook. This book will be kept on permanent file by Mr. Lavallee, and photocopies or electronic scans of the notebook will be made immediately following each sampling event. The photocopies or scanned files will be mailed (or e-mailed) to Breakwater Resources where they will also be kept on permanent file.

Field measured parameters include specific conductivity, water temperature, and pH. These measurements will be performed using field instruments, which will be calibrated in advance of each sampling event (in the case of pH and conductivity) according to the manufacturer's instructions, using standard calibration solutions. For pH, calibration will involve the use of two pH standards, having values of 4.0 and 7.0.

The field notes will record the sampling locations, date and time of sample collection, type of samples collected (e.g., water samples for general chemistry, hydrocarbon analysis, or ICP metal scan), field instruments used to collect field measurements, date of calibration of the field instruments, and results of field measurements (e.g., water temperature, pH, and conductivity). The results of a visual inspection of the sampling site will also be recorded (i.e., presence of any hydrocarbon sheens or other unusual observations).

### Sampling Methods

For this program, all water samples will be collected as grab samples. Water samples should be collected at a depth of 15 cm below the water surface (where the depth of water permits). Bottles and caps will be rinsed three times with site water before filling, unless the bottle is pre-charged with a preservative, in which case rinsing must not be performed. After rinsing, the bottle should be filled by submerging it completely, facing into the current, until all air bubbles have been expelled.

### Labels

All samples will be clearly labeled for proper identification in the field and for tracking in the laboratory. At a minimum the sample labels will include the sampling location or name, the date of collection, the initials of the sampler, the intended analytical parameters, and the method of preservation (if relevant).

### Field Sampling Quality Control

Field QC samples (duplicates and blanks) will be submitted as part of the sampling program. Normally such samples comprise roughly 10% of the samples submitted. Due to the small number of samples to be collected on each sampling dated, one field duplicate and one field blank sample will be submitted for each relevant Water Quality Monitoring Group in conjunction with each sampling event. These samples will be provided with unique (fictitious) sample identification numbers, and will be submitted "blind" to the laboratory. The identity of these samples will be recorded in the field notebook.

### Sample Containers and Preservatives

Sample containers will be provided pre-cleaned by the laboratory. In some cases, the laboratory will provide the sample bottles pre-treated with a preservative.

### Sample Packaging and Shipping

All sample containers will be placed in a cooler, with bags of ice to ensure that they remain cool during shipping. Glass bottles will be wrapped with bubble-wrap before being placed in the cooler, and all bottles will be placed in plastic bags and protected with suitable materials (*e.g.,* bubble wrap) to ensure that movement of and potential damage to bottles during shipping is minimized.

The cooler will be sealed by the sample packer, using tape. The analytical laboratory will be notified of the shipment and provided with waybill information and the estimated date and time of arrival by e-mail.

### Chain of Custody

Chain of custody forms will be provided by the analytical laboratory, and will be completed by the sampler prior to packing the samples in a cooler. The chain of custody document will include details of the samples shipped, date of collection, sampler, date of shipment, and analyses requested. The chain of custody document will be placed in the cooler in a plastic Ziploc bag, on top of the samples, prior to sealing the cooler.

### Laboratory Analysis Methods

The analytical laboratory must be accredited with the Canadian Association for Laboratory Accreditation (CALA). Accreditation by this organization provides assurance of the quality and competence of the performing laboratory.

Analytical methods must follow either U.S. EPA approved methods or methods from the most recent edition of *Standard Methods for the Examination of Water and Wastewater*.

### Laboratory QA/QC

The analytical laboratory will perform regular QA/QC during the analysis of field samples, including a program of method blanks, laboratory control samples, instrument calibration samples, matrix spikes, and duplicates.

### Annual Reporting

An annual report on water quality monitoring results will be submitted to the Nunavut Water Board no later than March 31 in the year following the calendar year being reported (as required by Part B, Item 3 of the Water Licence). The format and content of the report will be similar to those of the 2008 Annual Water Quality Monitoring Report (prepared by Jacques Whitford, February 19, 2009). The annual report will include as appendices the original laboratory analysis certificates, as well as tables and figures as appropriate to identify

trends in the data, or exceedances of action levels as established in the *Contingency Plan for Water Quality Exceedances, Former Nanisivik Mine Site* (Stantec, 2009).

Within the annual report, the acceptability of samples will be evaluated qualitatively by examination of the field blanks, and field duplicate sample data. Reproducibility of samples will be expressed as relative percent difference (RPD):

$$RPD = 100 \times ((|X_1 - X_2|) / ((X_1 + X_2) / 2)) \ ,$$

where $X_1$ is the original sample concentration, $X_2$ is the duplicate sample concentration, and $|X_1 - X_2|$ denotes the absolute value of the difference between these two concentrations.

## CLOSING

This letter has been prepared by Malcolm Stephenson PhD, and was reviewed by Tania Noble Sharpe, M.Eng., P.Eng., for the sole benefit of Breakwater Resources Ltd./CanZinco Limited, and may not be relied upon by any other person or entity without the express written consent of Jacques Whitford Stantec Limited and Breakwater Resources Ltd./CanZinco Limited. Jacques Whitford Stantec Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report.

We trust that the above information fulfills your needs at this time. Should you require additional information, please do not hesitate to contact the undersigned.

Sincerely,

**JACQUES WHITFORD STANTEC LIMITED**

*(Original signed by Malcolm Stephenson)*

Malcolm Stephenson, PhD
Principal, Project Manager

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MS/TNS/ttb

cc. Robert Walker, Exova Accutest Laboratories
Herbert Yu, Exova Accutest Laboratories

Attachment

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Testing. Advising. Assuring.

13 October 2009

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Dr. Malcolm Stephenson
Principal, Project Manager

Re: Quality Assurance / Quality Control Plan for Surface Water Monitoring Samples, former Nanisivik Mine Site, Nunavut

Dear Dr. Stephenson,

This letter is to confirm that we accept the QA/QC plan submitted for the project.

We are an ISO17025 accredited laboratory through Canadian Association for Laboratory Accreditation (CALA). We are committed to fulfill the QA/QC requirements outlined in your letter.

Thank you for your interest in our analytical services.

Sincerely,

Herbert Yu
Quality Assurance Coordinator
Exova Accutest Laboratories