ATTACHMENT A

QUALITY ASSURANCE (QA) AND QUALITY CONTROL (QC) GUIDELINES FOR USE BY CLASS "B" LICENSEES IN COLLECTING REPRESENTATIVE WATER SAMPLES IN THE FIELD AND FOR SUBMISSION OF A QA/QC PLAN (INAC, 1996)

QUALITY ASSURANCE (QA) AND QUALITY CONTROL (QC)

GUIDELINES

FOR USE BY CLASS "B" LICENSEES IN COLLECTING REPRESENTATIVE WATER SAMPLES IN THE FIELD

AND FOR SUBMISSION OF A QA/QC PLAN

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**DEPARTMENT OF INDIAN AND NORTHERN AFFAIRS CANADA
WATER RESOURCES DIVISION
AND THE
NORTHWEST TERRITORIES WATER BOARD**

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1.0 Introduction and Definitions

The purpose of this guideline is to provide an outline for Licensees to follow when preparing a site-specific Quality Assurance/Quality Control (QA/QC) plan. The QA/QC plan will help ensure that water samples taken in the field maintain a high degree of quality, so that they accurately reflect the physical and chemical nature of the water being tested.

This guideline is divided into three sections:

1) Sample Collection
2) Sample Handling
3) Lab Analysis

It is recognized that there may be different interpretations as to what is covered by "Quality Assurance/Control" due to the fact that certain Licensees have their own laboratories, while others only use commercial laboratories. For licence purposes, "Quality Assurance" and "Quality Control" refer to the following:

Quality Assurance: is the system of activities designed to better ensure that quality control is done effectively; while

Quality Control: is the use of established procedures to achieve standards of measurement for the three principal components of quality: precision, accuracy and reliability.

2.0 Sample Collection

2.1 Location

A QA/QC plan must identify the locations of all sampling stations and the markers used to identify the stations. If the Surveillance Network Program (SNP) of the Water Licence does not specify sampling locations, locations should be chosen with help from an Inspector.

Buoys and landmarks identify sampling stations in tailings ponds and lakes, while sign post positioning usually marks stream sample stations. Stations should be

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used repeatedly, with the same personnel and techniques to reduce operational error. The use of Global Positioning System (GPS) to identify Latitude and Longitude for sampling stations is recommended.

2.2 Sampling Equipment

The Plan must include a detailed section on the equipment used for sampling and the rationale behind the choices of equipment. Equipment and bottles should be selected so that they do not contaminate or otherwise alter the concentrations of parameters of interest.

Sampling devices, sample bottles and filtration devices should be constructed of non-metallic material. Most samples are now collected in containers constructed of high density polyethylene plastic. However, there are some exceptions, when testing for oil and grease or phenols glass containers are to be used. When conducting a fish bioassay, plastic drums are used while hydrocarbon based containers are not to be used for the collection of organic samples.

This section should also identify whether new or used bottles are used for each sample analysis. New bottles are preferred, but sample containers may be used repeatedly with proper handling measures.

If old bottles are used, a detailed description should be included, noting how they are maintained, stored and cleaned. Usually, this will closely resemble the product manufacturer's instructions. An example of how bottles should be cleaned is outlined below:

* Rinse well with hot tap water for one minute or more.
* Empty bottle and add 30% HNO_3 to approximately 1/3 container capacity. Shake well for three to four minutes.
* Rinse vigorously with hot tap water for two minutes.
* Rinse thoroughly three times with tap water and three times with distilled water.
* Store with 0.2% HNO_3 for a minimum of one week.
* Rinse again with distilled water at least three times.

Bottles that are to be used for bacteria testing should be acid washed or autoclaved if possible.

Note: Additional information on bottle washing is also available from Water