CULLATON LAKE WATER QUALITY MONITORING

QA/QC PLAN

Introduction

Surface water quality at Cullaton Lake is monitored on an annual basis during peak flow at Surveillance Network Program (SNP) sites outlined in the Water Licence. Site access is by air only from charter flights in Thompson Manitoba or Arviat Nunavut.

The site location and surrounding relief is shown in Figure 1. The SNP locations are indicated on Figures 2 and 3. A description of each site, location and specific parameters are outlined in Table 1. SNP sites are marked in the field by 2.5cm square iron bars with circular metal tags attached indicating the SNP site number.

Sample Collection and Equipment:

Water samples are collected by the "grab" method since all sites are at locations where the water is typically 15cm deep. With the exception of oil and grease, samples are collected in new HDPE bottles supplied by the lab, with preservatives pre-charged in the bottles where required. Glass bottles are used for oil and grease if present.

Sample bottles are ordered sufficiently in advance to check that the shipment is correct and all preservatives are included.

Sampling Methods:

Grab samples are obtained at all locations. Vinyl gloves are used and the largest sample bottle in the set not containing preservatives is used as a bailer. Where flow is present the bottle opening is held on the upstream side of the current. The bailer bottle is rinsed 3 tines and then used to fill the bottles containing pre-charged preservatives. Rinse water is discarded downstream or on land, such that the water sampling area will not be disturbed. Bottles not containing preservative are not filled with the bailer bottles. In this case the bottles are rinsed 3 times, filled and sealed.

Since Cullaton Lake is a remote site and costly to access, duplicate samples are extracted at each site. Where a bailer is used, corresponding bottles from each set are filled with the same bailer water to ensure sample consistency. Once filled, the bottles are immediately placed in coolers for the return journey to civilization.

Two field blanks are taken at the site; one for the main site samples and one for the Shear Lake sample. The field blanks contain distilled/de-ionized water charged to the sample bottles in the same manner as the surface water samples.

Field pH and temperature are recorded after sampling or downstream of sampling, to ensure no contamination from equipment. A YSI 6350 meter is used and is calibrated no earlier than 3 days prior to the date of sampling.

Sample Identification:

Bottles are pre-labelled by the lab, according to their requested analysis and preservative content if present. Each set is supplied in a plastic bag. Additional information (SNP site number, date and time) are added to the labels prior to filling with a permanent black ink marker. Filled bottle sets are returned to the plastic bag, the bag sealed and the bottles stored upright in the coolers.

A field book is maintained. Each trip is recorded and includes field pH, temperature and time of sampling for each SNP site along with any site conditions (weather, etc) on the date of sampling that could affect the results. Site photos are also taken during the trip as part of the annual site inspection and can provide a useful reference.

Transportation:

On return to Thompson, (or Arviat) the bottle sets are checked to make sure they are packed snugly in each cooler and ice bags are added prior to the coolers being sealed with packing tape. The chain of custody form is filled out and the coolers accompany the sample crew to Winnipeg where they are turned over to a lab representative meeting the crew at the airport. This ensures a transportation time of approximately 24 hours from the field to the lab. The lab representative signs off on the chain of custody and takes the samples to the Winnipeg lab.

Lab Analysis:

Cullaton Lake water samples are currently analyzed by Maxxam Analytics. Accreditation is attached as Appendix 1. Lab QA/QC control involves duplicate analysis of at least one randomly selected sample from each sampling program. Lab QC results are attached to the results certificate.

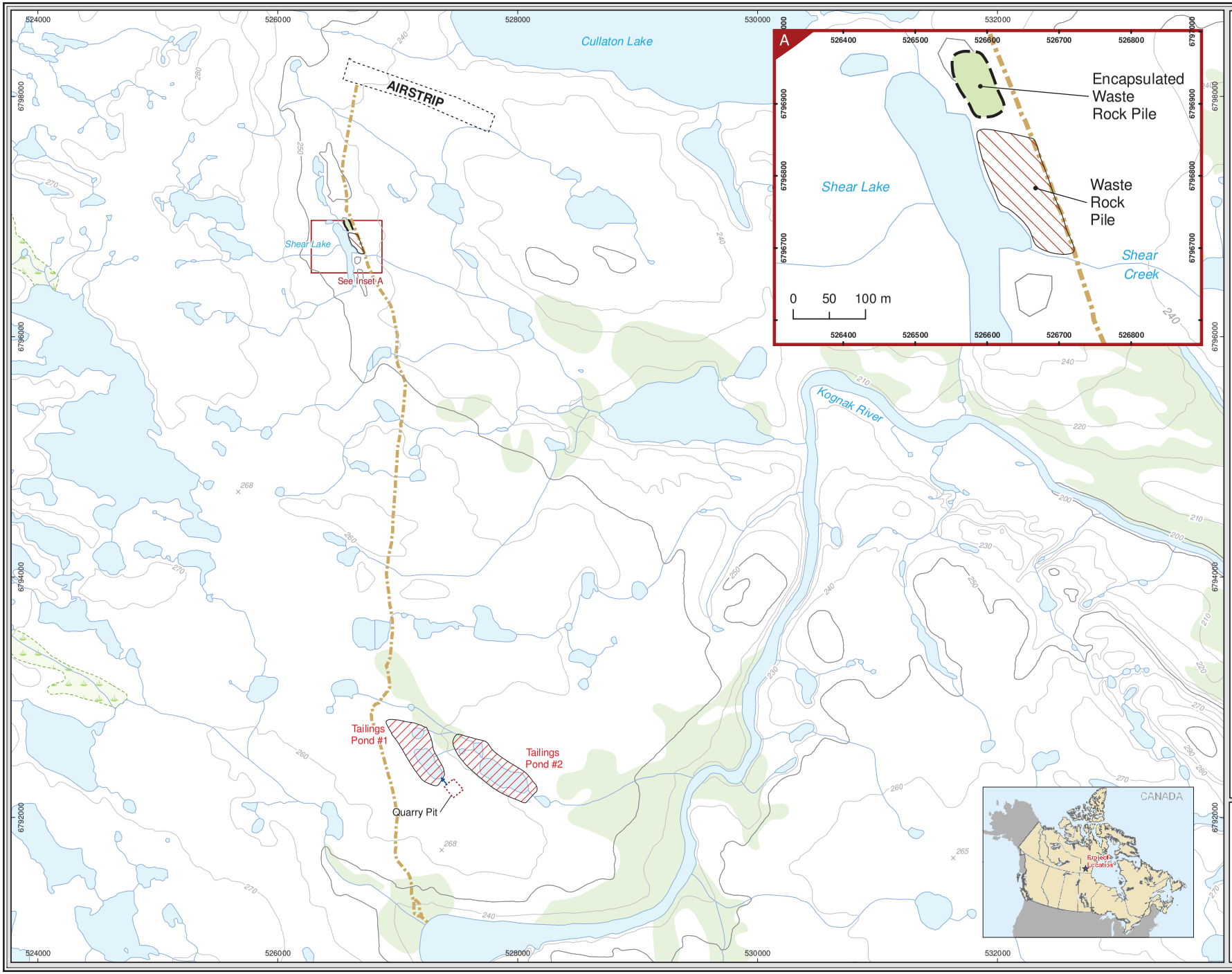
Detection Limits:

Required detection limits for the Cullaton Lake water samples are:

Licence Parameter	Method Detection Limit
Total Suspended Solids	1 mg/l
Total Cyanide	0.005 mg/l
Total Arsenic	0.4 µ/l
Total Copper	1 µg/l
Total Lead	0.5 µg/l
Total Mercury	0.00005 mg/l
Total Nickel	1 µg/l
Total Zinc	5 µg/l

Review

The QA/QC plan is reviewed and updated annually as necessary and as a condition of the water Licence.



Legend

- Quarry Pit
- Encapsulated Waste Rock Pile
- Waste Rock Pile
- Tailings Pond
- Flow Direction

Base Mapping

Contours
- Index (50m)
- Intermediate (10m)

Hydrology
- Waterbody
- Watercourse

- Vegetation
- Wetland
- Road (decommissioned)

Base data: National Topographic Database (NTDB) compiled by Natural Resources Canada at 1:50,000 scale. Sampling performed by Gartner Lee Ltd., June 2008. Road GPS-tracked by Gartner Lee Ltd., June 2008. Airport footprint approximate; for reference purposes only. EWR pile, tailings ponds and quarry outlines, BGC Engineering, Inc. (2006). All other data, AECOM 2009.

N W E S

0 0.5 1
Kilometres

1:30,000
UTM Zone 14N, NAD 83

File Name: 107651_By1_Fig1_CullatonLake_Mar17_2011.mxd

Prepared By: MM Date Issued: Mar, 2011
Reviewed By: KW Project Number: 107651

Barrick Gold

Project: Cullaton Lake Project
Location: Nunavut

Cullaton Lake Site

AECOM

Figure 1

File Location: P:\60146995\000-CADD\050 GIS WIP\By7_Grizzly_Habitat\107651_By1_Fig1_CullatonLake_Mar17_2011.mxd

Date Revised: March 17, 2011
Date Plotted: March 17, 2011

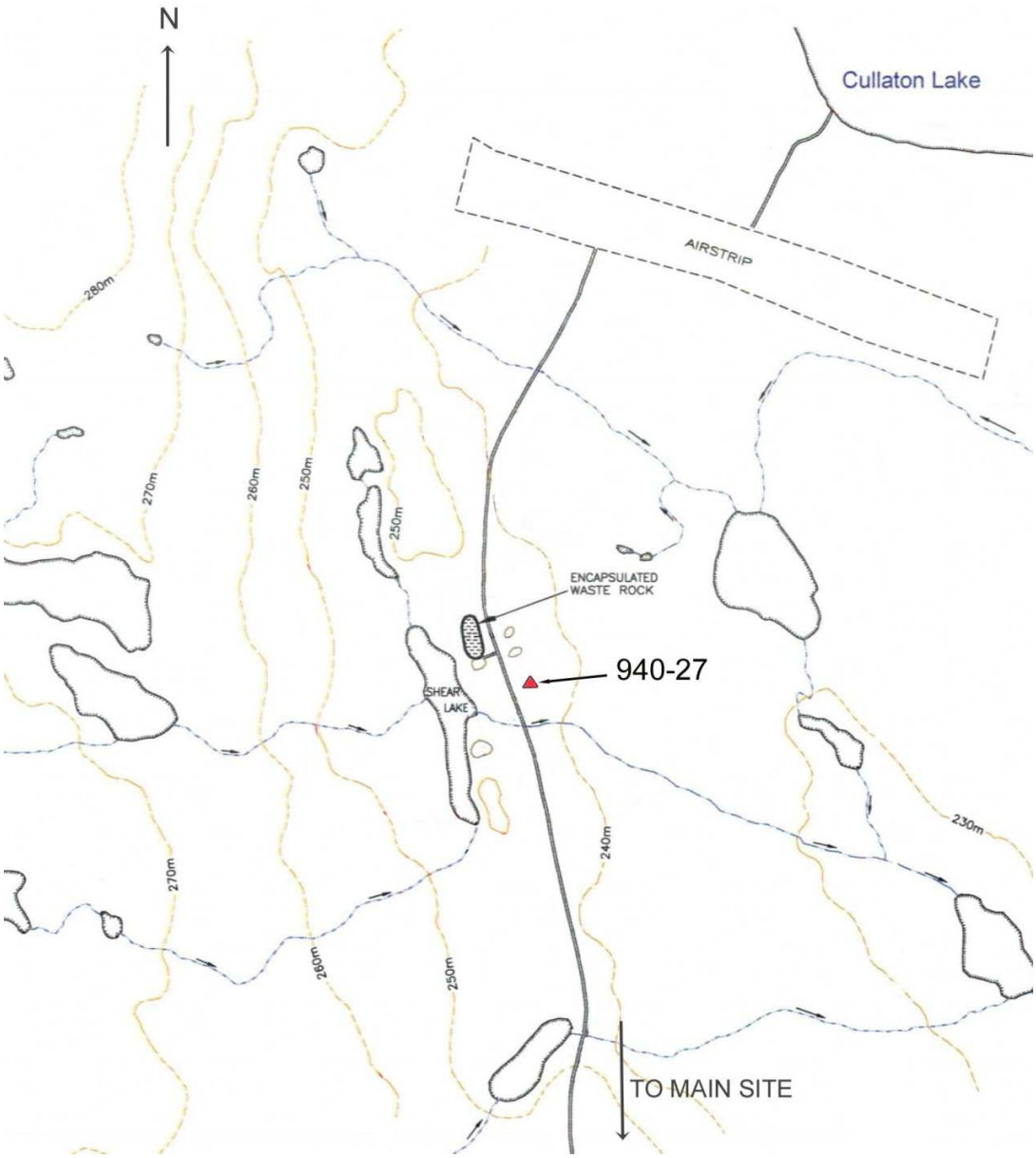


Figure 2: General location of SNP 940-27 at Shear Lake.

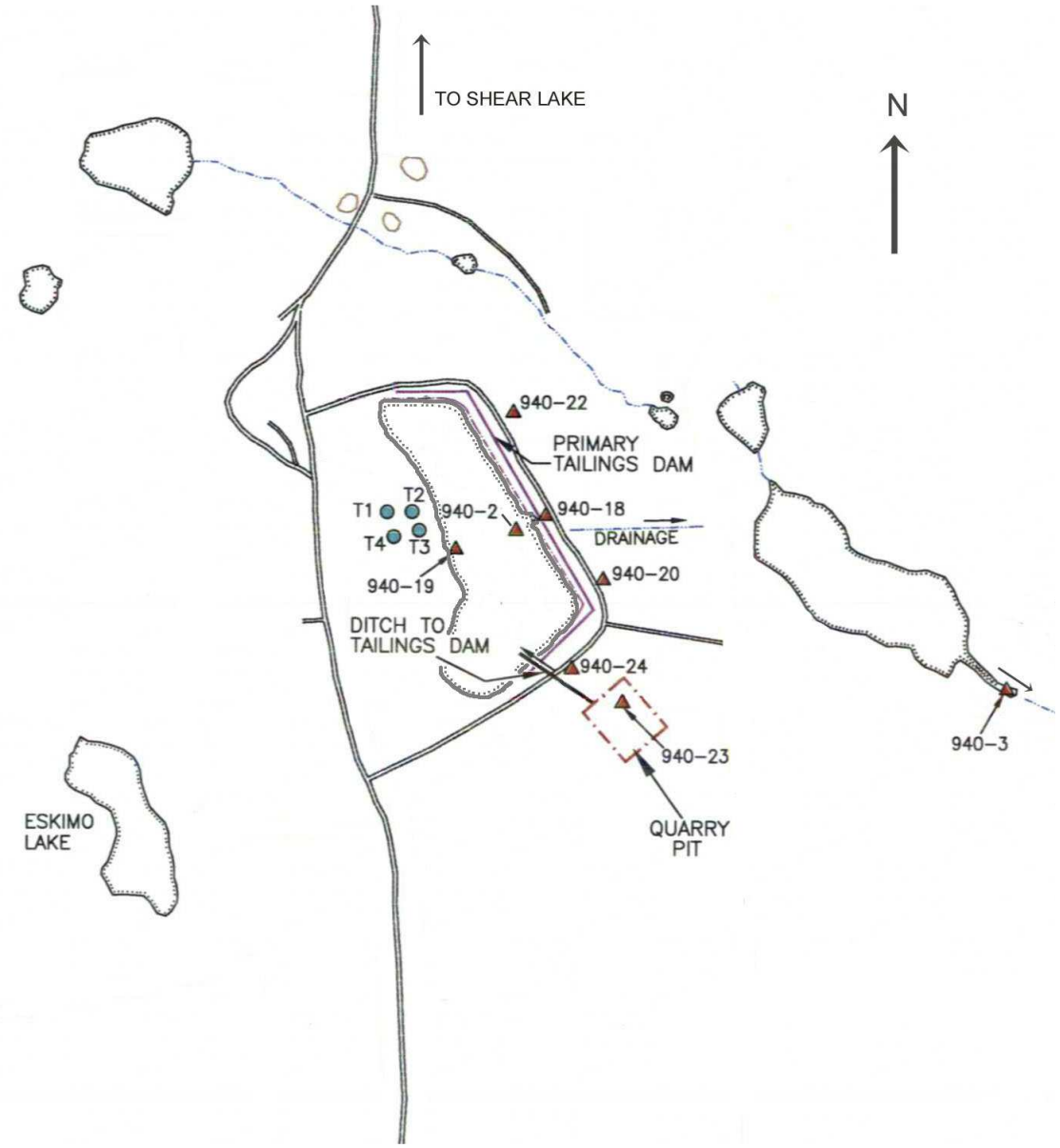


Figure 3: SNP locations at Main Site

Station	Location	Latitude (DMS)	Longitude (DMS)	Parameters
940-2	Tailings Pond No. 1 at spillway invert	61 15 59.2 N	98 29 23.6 W	pH, Total Suspended Solids, Total Cyanide, As, Cu, Hg, Ni, Pb, Zn
940-3	Tailings Pond No. 2 at outflow invert	61 15 42.6 N	98 28 24.4 W	pH, Total Suspended Solids, Total Cyanide, As, Cu, Hg, Ni, Pb, Zn
940-18	Spillway discharge at Tailings pond No. 1	61 15 59.3 N	98 29 19.8 W	pH, Total Suspended Solids, Total Cyanide, As, Cu, Hg, Ni, Pb, Zn
940-19	Tailings Pond No. 1 at piezometer stations	61 16 03.2 N	98 29 40.2 W	pH, Total Suspended Solids, Total Cyanide, As, Cu, Hg, Ni, Pb, Zn
940-20	Area of seepage at east side of Tailings Pond No. 1 dam	61 15 53.8 N	98 29 19.6 W	pH, Total Suspended Solids, Total Cyanide, As, Cu, Hg, Ni, Pb, Zn
940-22	Area of seepage at east side of Tailings Pond No. 1 dam	61 16 08.0 N	98 29 37.6 W	pH, Total Suspended Solids, Total Cyanide, As, Cu, Hg, Ni, Pb, Zn
940-23	Quarry Pit	61 15 49.2 N	98 29 18.9 W	pH, Total Suspended Solids, Total Cyanide, As, Cu, Hg, Ni, Pb, Zn
940-24	Seepage from Quarry Pit to Tailings Pond No. 1	61 15 49.3 N	98 29 22.5 W	pH, Total Suspended Solids, Total Cyanide, As, Cu, Hg, Ni, Pb, Zn Total petroleum hydrocarbons and total extractable hydrocarbons if visible sheen present
940-27	Area of seepage from Encapsulated Waste Rock to Shear Creek	61 18 16.5 N	98 30 07.2 W	pH, Total Suspended Solids, Total Cyanide, As, Cu, Hg, Ni, Pb, Zn

Table 1: Cullaton Lake surface water SNP site numbers, descriptions, location and parameters

APPENDIX 1

LAB CORRESPONDENCE and ACCREDITATION

To Whom It May Concern:

The Burnaby Maxxam Analytics lab is accredited to test for following parameters by CALA.

Total Cyanide
Mercury (low level)
Metals by ICPMS (low level)
Hardness
pH
Sulphate
Total Suspended Solids (low level)

Please note that Hardness is a calculation based on the CALA accredited parameters. Should you have any further questions or require additional documentation, please do not hesitate to contact me.

Regards,

NEEL SIVA, B.Sc.
QA Specialist, BC

Office 604 638 5925
Toll free 800 665 8566 / Fax 604 731 2386

4606 Canada Way / Burnaby, BC Canada V5G 1K5

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 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 8 January 2009).

Accreditation No.:	A2168
Issued on:	December 21, 2010
Accreditation Date:	January 3, 2005
Expiry Date:	December 21, 2013

Chief Executive Officer

ilac-MRA CALA