# Barrick Gold Inc.

BCE Place, Canada Trust Tower Suite 3700, 161 Bay Street P. O. Box 212 Toronto, ON M5J 2S1 Tel: (416) 307-7488 Fax: (416) 861-0058

March 19, 2010

Ms. Dionne Filiatrault Executive Director, Nunavut Water Board P. O. Box 119 Gjoa Haven, Nunavut XOB 1J0

Dear Ms. Filiatrault:

Pursuant to Part B, Article 1 of Water Licence 1BR-CUL0911, please find attached a paper copy of the Annual Water Licence Report 2009 for the Cullaton Lake property. An electronic copy has been e-mailed to you concurrent with this release.

Should you have any questions or comments regarding this report, or any other Cullaton Lake matter, please do not hesitate to contact Paul Brugger at (807) 964-1657 or myself at (801) 990-3746.

Sincerely,

**Bill Ferdinand** 

Director, Environment Health and Safety, North America region

Cc Paul Brugger, P.J. Brugger and Associates

Attachment: As stated

Vaul Brugger for:

# CULLATON LAKE GOLD MINES LTD. WATER LICENCE 1BR-CUL0911

## **ANNUAL WATER LICENCE REPORT 2009**

PREPARED on behalf of:

BARRICK GOLD INC.

By P.J. Brugger and Associates 171 Copper Cliff Rd E Neebing, ON P7L 0B6

March 2010

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#### **EXECUTIVE SUMMARY**

The Cullaton Lake Gold mine is a recognized closed mine site located in the southern part of the Kivalliq Region in the Nunavut Territory. The property is 645 km north of Thompson, Manitoba and 250 km west of Arviat, Nunavut.

The 2009 site activities included an August 5, 2009 visit to conduct the annual site inspection, water quality and thermistor monitoring and the tailings dam geotechnical inspection pursuant to Water Licence No. 1BR-CUL0911. A second site visit was conducted on August 27 to facilitate a Kivalliq Inuit Association inspection.

Summarized, the results of the annual site inspection and monitoring indicate that:

- Water quality continues to remain within the guidelines specified in the Water Licence.
- The tailings storage facility continues to remain stable.
- The tailings thermistors continue to provide erroneous readings. The permafrost in the tailings cover was found at 1.2m on August 5, 2009 by test pit at thermistor T4.

The Screening Level Aquatic Ecological Risk Assessment initiated in 2008 was also completed and copies were forwarded to the NWB and INAC on August 8, 2009. Summarized the risk assessment indicated that the overall surface waters of the site are not significantly impacted by the former mine operation or existing conditions.

#### 1.0 SITE BACKGROUND / LOCATION

Cullaton Lake Gold Mines Ltd. is a wholly owned subsidiary of Barrick Gold Inc. (Barrick) which in turn is a wholly owned subsidiary of Barrick Gold Corporation.

The Cullaton Lake Gold mine is a recognized closed mine site located in the south central part of the Kivalliq Region in the Nunavut Territory. The property is 250 km west of Arviat, Nunavut, 400 km northwest of Churchill, Manitoba, and 645 km north of Thompson, Manitoba (see figure 1). The mine was in operation for four years from 1981 to 1985. Following operation, the mine was in a care and maintenance mode from 1985 to 1991.

#### 1.1 CLOSURE AND POST CLOSURE MAINTENANCE HISTORY

Decommissioning was initiated in 1991 with the rehabilitation of Tailings Pond No. 1, which included construction of a spillway in the dam and the covering of exposed tailings with water or till/mine rock. In addition, the water level in Tailings Pond No. 2 (the polishing pond) was lowered by partial removal of the dam (see figures 2 and 3 for site features).

Between 1991 and 1993, the fresh water intake, pump house and pipelines at the old diamond drill camp on the Kognak River were dismantled and removed. In 1995 and 1996 the mill buildings were dismantled. Some of the inert, non-salvageable material was crushed and placed in the quarry pit. In 1997, additional cover material was placed over the tailings area and the area was seeded and fertilized with a special arctic seed mix, as was the former mill site. During the winter of 1998/99 some salvageable equipment and material was removed from the property.

During the summer of 2001, all remaining inert material was placed in the former quarry pit and covered with 2 meters of till. All waste oils and hydraulic fluids, as well as tires and batteries were removed from equipment prior to burial and subsequently airlifted to Thompson, Manitoba for proper disposal. In addition, waste rock at the Shear Lake Portal area, which had been determined to be acid generating, was collected and encapsulated in till adjacent to the portal.

During the 2005 annual inspection, minor maintenance items identified during the 2004 inspection were corrected. These included a second application of seed and fertilizer on the Encapsulated Waste Rock (EWR) cover at Shear Lake and erosion repairs to the EWR cover, Tailings Pond No. 1 spillway and the quarry pit landfill cover.

During the 2006 annual inspection, a small above-water exposed section of rubber liner on the upstream side of the tailings dam south of the No.1 Spillway was removed.

In response to a request from Barrick in 2006 to return the property to the crown, Indian and Northern Affairs Canada (INAC) initiated a review to assess closure conditions. INAC visited the site in Sept 2006 and commissioned BGC Consulting Ltd. (BGC) to conduct a desk top review of the closure history and monitoring results.

The BGC report indicated for a variety of reasons that INAC should not accept return of the property. In response, INAC, BGC, Barrick and Trow Consulting personnel met on

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the site during the 2007 annual inspection on July 5, to discuss the report findings and confirm a new pH issue at Shear Lake. In addition Barrick volunteered to complete an Ecological Risk Assessment (ERA) to determine a) whether the mitigation efforts at Cullaton Lake have adequately addressed the requirements of the approved 1996 Abandonment and Reclamation Plan, and b) whether the new ARD issue at Shear Lake is having any significant ecological effects.

In 2008 Barrick and Gartner Lee personnel visited the site on 4 occasions to collect field data for completing the ERA. During the August trip, a minor amount of scrap was retrieved from the north bank of the Kognak river and from the former bunkhouse area.

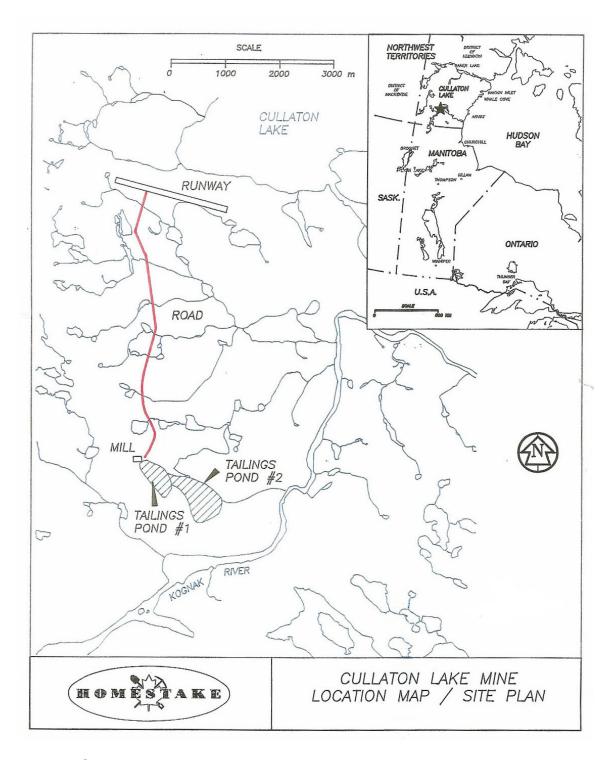


Figure 1: Cullaton Lake Mine location and general site layout

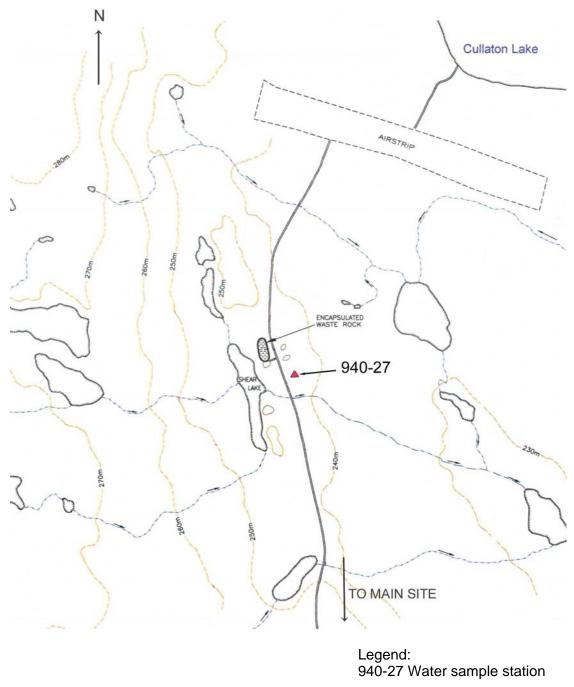
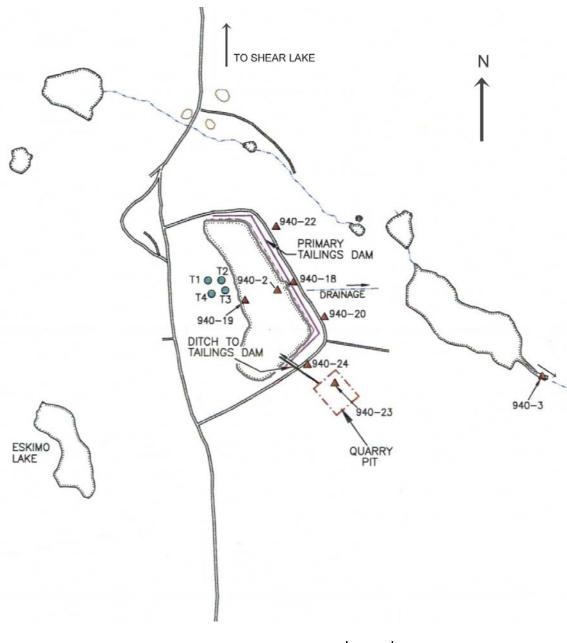


Figure 2: Cullaton Lake Shear Lake site showing features and water sampling station (not to scale).



Legend:

T1: Thermistor station 940-2: Water sample station

Figure 3: Cullaton Lake main site showing features, water sampling and thermistor stations (not to scale).

#### 2.0 WATER LICENCE SUPPLEMENTAL CONDITIONS AND NOTES

Management of Cullaton Lake is conducted pursuant to Water Licence 1BR-CUL0911, which was issued on February 9, 2009 to amend the expiry date of NWB1CUL0708, in order to facilitate additional divestiture discussions and studies. 1BR-CUL0911 will expire on January 31, 2011. The following provides a historic summary of supplemental conditions and notes pursuant to previous licence NWB1CUL0207:

#### Name Change:

On November 13, 2003, application was made to the Nunavut Water Board to change the name on Licence NWB1CUL0207 from Homestake Canada Inc. to Barrick Gold Inc. to reflect changes resulting from the 2001 merger of Barrick Gold Corporation and Homestake Mining Company.

Amendment for Encapsulated Waste Rock at Shear Lake:

Part F, Item 5 of Licence NWB1CUL0207 required submission of an application for amendment to the approved Abandonment and Restoration Plan by January 1, 2003 (subsequently extended to March 31, 2003) for the new waste rock disposal area on the shores of Shear Lake. The application for amendment with supporting documentation was submitted to the Nunavut Water Board on March 31, 2003. The amendment was granted on June 6, 2005. In addition, station 940-25 was removed from the monitoring program and replaced with station 940-27, intended to monitor any seepage from the encapsulated waste rock down-gradient to Shear Lake Creek.

The amendment required that suitable as-built drawings for the encapsulated waste rock be submitted within 6 months of the date of the amendment. Drawings were submitted on Dec 5, 2005.

The amendment also required that Section 4.4 of the Approved Abandonment and Restoration Plan be revised to incorporate the latest information with respect to the closure of the Shear Lake Waste Rock disposal area. The revision was submitted concurrent with the 2005 Annual Report.

Contingency Plan to Address Seepage Issues at the Encapsulated Waste Rock

Part F, Item 6, Amendment No. 1 of Licence NWB1CUL0207 required the submission of a Contingency Plan to address the potential of the permafrost not to re-aggrade into the waste rock pile / cover as anticipated, the clogging of the passive treatment system due to the relatively flat terrain and the remediation or mitigation of sediments contaminated with levels of metals in excess of CCME guidelines due to seepage from the encapsulated waste rock pile. The contingency plan for clogging of the passive treatment system and contamination remediation was submitted concurrent with the 2005 Annual Report and under separate cover. In the same document Barrick requested that the requirement for a Contingency Plan to address the possibility of permafrost not

re-aggrading into the waste rock be deleted from the Licence since this condition was identified as an "added benefit" and not a design parameter as specified by URS <sup>1</sup>.

#### Amendment for Encapsulated Waste Rock Thermistors:

Water Licence NWB1CUL0207 required the installation of thermistors in the encapsulated waste rock at Shear Lake. An unsuccessful attempt to install the thermistors was made in July 2003. A report detailing this attempt was submitted to the Nunavut Water Board on November 25, 2003 and requested that this requirement be removed from the Licence. The request was granted on June 6, 2005 and station 940-26 was removed from the monitoring program.

#### Site Map:

Part G, Item 4a of Licence NWB1CUL0207 required submission to the Board of a Site Map of the Project Environmental Impact Area with active Surveillance Network Program (SNP) Stations within 60 days of issuance of the Licence. The required site map was submitted to the Nunavut Water Board on December 16, 2002.

#### GPS Coordinates:

Part G, Item 4b of Licence NWB1CUL0207 required submission of GPS coordinates of all surface and subsurface sampling points. The required GPS coordinates were submitted to the Nunavut Water Board on August 29, 2003.

#### Miscellaneous:

The NWB noted the following in their October 10, 2006 review of the 2005 Annual Water Licence report:

1. While the 2004 reported detection limit for nickel had been lowered as previously requested, the detection limit for arsenic was now higher than previously reported (1 $\mu$ g/l compared to 0.1  $\mu$ g/l). To clarify the issue the NWB requested that detection limits proposed for the 2007 monitoring be included in the 2006 annual report.

The variability in detection limits is largely the result of the many recent laboratory acquisitions / mergers and procedure changes. After discussing the issue with the present laboratory and reviewing the associated methods and equipment limitations, the 2007 proposed detection limits were as follows:

<sup>&</sup>lt;sup>1</sup> Assessment of Closure Options and Impacts, Shear Lake Zone Waste Rock Dump, Cullaton Lake Mine Nunavut, March 2003, URS Norecol, Dames & Moore Inc.

Licence Parameter	Method Detection Limit
Total Suspended Solids	1 mg/l
Total Cyanide	0.005 mg/l
Total Arsenic	0.4 μ/Ι
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

Following the 2007 sampling, the lab erroneously used a TSS detection limit of 10mg/l for the 2007 results. According to the lab, a correction to 1mg/l was not possible due the volume of analysis being less than 500ml. In 2008 the license required water samples were collected by Gartner Lee personnel along with the additional samples required for supporting their ERA. The 2008 detection limits were equal to or lower than those shown above.

2. The NWB commented on the 2005 anomalous zinc value at station 940-23 (.065 mg/l) for follow – up in future monitoring.

The 2006 sampling at 940-23 reported a zinc concentration of 0.012 mg/l.

The 2007 sampling at 940-23 reported a zinc concentration of 0.006 mg/l.

The 2008 sampling at 940-23 reported a zinc concentration of 0.0086 mg/l.

The 2009 sampling at 940-23 reported a zinc concentration of 0.023 mg/l.

3. The NWB requested that the Spill Response Plan contact number for the INAC Water Resources Inspector be changed.

The required change was made to the 2006 and subsequent versions.

On review of the 2008 annual report, the NWB requested that the NT-NU spill report form be included with the spill contingency plan. The form has been included with the 2010 plan and will be included with subsequent plans.

4. The NWB requested that water quality and thermistor data be also provided in Excel format, in order to allow for easier data analysis

The 2006 data was provided in Excel format via e-mail on October 12, 2006. Subsequent results in Excel format are provided concurrent with the annual reports.

#### **3.0 2009 ACTIVITIES**

The annual site inspection was conducted at the closed Cullaton Lake Gold Mine (Cullaton Lake) on August 5, 2009. Personnel attending the site during this trip included:

Barrick Personnel:

Paul Brugger, Closed Properties Manager, Eastern Canada Ron Aubry, assistant

Trow Associates Personnel:

Demetri Georgiou, Principle, qualified geotechnical engineer

Access to the site was via a chartered aircraft from Thompson, Manitoba. During this trip Mr. Brugger conducted visual inspections of the quarry pit, tailings cover, all former underground access areas, EWR and the site in general and collected water samples pursuant to Water Licence 1BR-CUL0911. Mr. Aubry excavated the test pit at Thermistor T4 to determine the depth of permafrost. Mr. Georgiou performed the annual geotechnical inspection.

On August 27, Mr. Brugger returned to the site to accompany Kivalliq Inuit Association inspector Stephen Hartman on an informal site inspection.

There were no weather related or other issues affecting the inspections.

#### 3.1 ANNUAL SITE INSPECTION GENERAL FINDINGS

The annual site inspection performed on August 5, 2009 indicated that overall the site remains in good condition. The following findings were noted:

A minor amount of subsidence was noted at the Shear Lake portal over the area of previously observed (2006) subsidence. The area was refilled during the August 27<sup>th</sup> trip.

Minor subsidence on the quarry pit landfill continues. Most of the affected areas are occupied by arctic ground squirrels.

Select photos are included in Appendix 1.

#### 3.2 WATER QUALITY MONITORING

Duplicate water sampling was completed on August 5, 2009 at 6 of the 9 stations identified in the Water Licence (see Figures 2 and 3 for locations). Results are provided in Appendix 2. Recent historic results are also included for comparison. The following is a brief description of the sampling activities and results:

Station 940-2 (Tailings Pond No. 1 at discharge to Tailings Pond No. 2) – Duplicate water samples were collected on August 5, 2009. Results indicated that all parameters were below the limits prescribed in the Water Licence.

**Station 940-3 (Tailings Pond No. 2)** – Duplicate water samples were collected on August 5, 2009. Results indicated that all parameters were below the limits prescribed in the Water Licence.

**Station 940-18 (Tailings Pond No. 1 spillway)** – Duplicate water samples were collected on August 5, 2009. Results indicated that all parameters were below the limits prescribed in the Water Licence.

**Station 940-19 (Tailings Pond No. 1 at piezometer)** – Duplicate water samples were collected on August 5, 2009. Results indicated that all parameters were below the limits prescribed in the Water Licence.

**Station 940-20 (Tailings Pond No. 1 seepage at east side)** – Duplicate water samples were collected on August 5, 2009. Results indicated that all parameters were below the limits prescribed in the Water Licence.

**Station 940-22 (Tailings Pond No. 1 seepage at northeast corner)** – There was no flow observed on August 5, 2009 and consequently no samples were collected.

**Station 940-23 (Quarry Pit)** – Duplicate water samples were collected on August 5, 2009. Results indicated that all parameters were below the limits prescribed in the Water Licence. In addition, there was no visible sheen indicating the presence of oil / grease.

**Station 940-24 (Quarry Pit flow to Tailings Pond No. 1)** - There was no flow from the Quarry Pit to Tailings Pond No. 1 on August 5, 2009 and consequently no samples were collected.

Station 940-27 (Seepage from Encapsulated Waste Rock to Shear Lake Creek) - There was no flow observed on August 5, 2009 and consequently no samples were collected.

#### 3.3 THERMISTOR MONITORING

A test pit excavated at Thermistor T4 in 2007 indicated that the thermistors are no longer providing correct readings. As in 2008, the T4 test pit was re-opened during the August 5, 2009 visit in order to visually ascertain the depth of permafrost.

Based on the test pit finding, the permafrost was found at a depth of 1.2m on August 5, 2009. The till cover is 90cm thick at this location. The thawed 30cm of tailings above the permafrost was saturated (see field notes and photos in Appendix 3).

#### 3.4 GEOTECHNICAL INSPECTION

Demetri Georgiou (Trow Associates) performed the geotechnical inspection on August 5, 2009, pursuant to Part D, Article 8d of Water Licence 1BR-CUL0911. A copy of the inspection report was submitted to the NWB on November 25, 2009.

In summary the report indicates that the tailings dam remains stable. Continued monitoring for erosion in the No. 1 Spillway channel is also recommended.

Pursuant to Part D, Article 8e of the Water Licence, the condition of the encapsulated waste rock cover at Shear Lake is to be monitored by the geotechnical engineer for erosion until vegetation is sufficiently established so as to stabilize the cover. At the time of the 2009 site inspection, the engineer noted the vegetation continues to take hold and is helping to reduce erosion. A recommendation for additional monitoring was also made.

#### 4.0 ANNUAL REVIEW OF SPILL RESPONSE PLAN

Pursuant to Part H, Article 1 of the Water Licence, a review and update of the Spill Response Plan was conducted this month. An updated version is provided in Appendix 4.

#### 5.0 ANNUAL REVIEW OF ABANDONMENT AND RESTORATION PLAN

Pursuant to Part I, Article 2 of the Water Licence, an annual review of the Abandonment and Restoration Plan was completed. There were no changes to the plan.

#### 6.0 ANNUAL REVIEW OF QUALITY ASSURANCE / QUALTY CONTROL

Pursuant to Part J, Article 4, an annual review of the approved quality assurance / quality control plan (QA/QC) was conducted and found adequate. Field QA/QC is provided by duplicate sampling at each location. Lab QA/QC control is provided by Maxxam Analytics Inc., according to it's standard quality assurance/quality control plan. The laboratory QC involves duplicate analysis of at least one randomly selected sample from each sampling program. Lab QC results for the 2009 samples are provided in Appendix 2.

#### 7.0 2010 PROPOSED PROGRAM

The 2010 program will consist of a site inspection, water quality monitoring, tailings dam geotechnical inspection and EWR cover stability inspection pursuant to Water Licence 1BR-CUL0911. The program is tentatively scheduled to occur during the first week of August. Permafrost readings will be obtained by reopening the test pit at Thermistor No. 4

In addition to the above, minor maintenance activities will be preformed, including additional top dressing at previously filled areas of settlement and erosion channel repair as required.

## Appendix 1 Cullaton Lake Site Photos August 5 and 27, 2009



Photo 1: Cullaton Lake main site, looking west, August 5, 2009



Photo 2: Shear Lake site, looking southeast, August 5, 2009



Photo 3: Flooded portion of Tailings No.1 Pond, looking northwest from spillway, August 5, 2009



Photo 4: Spillway flowing at outlet of former polishing pond, August 5, 2009



Photo 5: Former Shear Lake Portal, August 5, 2009.



Photo 6: Former B Zone Portal and Fresh Air Raise, looking north on August 5, 2009.



Photo 7: Encapsulated Waste Rock at Shear Lake 4 years after the application of additional seed and fertilizer. Erosion scars are visible due to being filled in with lighter coloured granular road material.



Photo 8: South side of Shear Lake area on August 27, 2009, with low pH pool in centre of photo.



Photo 9: Low ph pool, looking northwest on August 5, 2009



Photo 10: Minor settlement in quarry pit cover on August 5, 2009, 4 years after being filled in August, 2005.



Photo 11: Tailings cover, looking southeast on August 5, 2009.

## Appendix 2 August 5, 2009 Water Quality Monitoring Results

# Cullaton Lake Water Quality Monitoring Results August 5, 2009

Location	Sample	Field	Temp	Lab	Suspended	Total	Total	Total	Total	Total	Total	Total
	Number	PH	°C ¯	PH	Solids	Cyanide	Arsenic	Copper	Lead	Mercury	Nickel	Zinc
					mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Tailings Pond No. 1	940-2A	8.2	15.8	8.0	<1	< 0.005	0.0019	0.0012	0.00032	< 0.00002	0.0010	< 0.0025
(at discharge)	940-2B			7.9	<1	< 0.005	0.0019	0.0013	0.00030	< 0.00002	0.0011	< 0.0025
Tailings Pond No. 2	940-3A	8.1	15.4	8.0	2	< 0.005	0.0027	0.0039	< 0.00005	< 0.00002	0.0036	< 0.0005
	940-3B			7.5	2	< 0.005	0.0027	0.0037	< 0.00005	< 0.00002	0.0036	0.0011
Tailings Pond No. 1	940-18A	8.3	15.8	7.8	1	< 0.005	0.0033	0.0012	0.00011	< 0.00002	0.0010	< 0.0025
(spillway)	940-18B			8.0	<1	< 0.005	0.0033	0.0012	0.00011	< 0.00002	0.0008	< 0.0025
Tailings Pond No. 1	940-19A	8.0	15.3	7.9	<1	< 0.005	0.0019	0.0015	0.00032	< 0.00002	0.0010	< 0.0025
(at piezometer)	940-19B			7.9	<1	< 0.005	0.0019	0.0012	0.00032	< 0.00002	0.0012	< 0.0025
Tailings Pond No. 1	940-20A	8.0	18.9	8.3	1	< 0.005	0.0028	0.0031	< 0.00005	< 0.00002	0.0036	0.0038
(seepage at east side)	940-20B			8.3	1	< 0.005	0.0029	0.0036	< 0.00005	< 0.00002	0.0037	< 0.0025
Tailings Pond No. 1	940-22A	Dry										
(seepage at northeast corner)	940-22B											
Quarry Pit	940-23A	8.3	14.3	8.1	<1	< 0.005	0.0013	0.0024	0.00014	< 0.00002	0.0023	0.0229
	940-23B			8.0	1	< 0.005	0.0013	0.0019	0.00014	< 0.00002	0.0022	0.0238
Quarry Pit	940-24	Dry										
(flow to Tailings Pond No. 1)												
Seepage from Shear Lake	940-27	Dry										
<b>Encapsulated Waste Rock to</b>												
Shear Lake Creek												

# Cullaton Lake Water Quality Monitoring August 5, 2009 Water Analysis Certificate and Quality Control Report



Your Project #: CULLATON LAKE Your C.O.C. #: n/a

Attention: Paul Brugger
BARRICK GOLD CORPORATION
Thunder Bay
171 Copper Cliff Road East
Neebing, ON
P7L 0B6

Report Date: 2009/08/14

This report supersedes all previous reports with the same Maxxam job number

#### **CERTIFICATE OF ANALYSIS**

MAXXAM JOB #: A9A0728 Received: 2009/08/06, 10:30

Sample Matrix: Water # Samples Received: 14

		Date	Date	Method
Analyses	Quantity	Extracted	Analyzed Laboratory Method	Reference
Total Cyanide	14	2009/08/11	2009/08/11 CAM SOP-00457	EPA 335.3
Hardness (calculated as CaCO3)	14	N/A	2009/08/11 CAM SOP 0102	SM 2340 B
Mercury (low level)	14	2009/08/11	2009/08/11 CAM SOP-00453	EPA 7470
Metals in Water by ICPMS (low level)	14	2009/08/10	2009/08/10 CAM SOP-00447	EPA 6020
рН	4	N/A	2009/08/10 CAM SOP-00448	SM 4500H
рН	3	N/A	2009/08/11 CAM SOP-00448	SM 4500H
pH	7	N/A	2009/08/12 CAM SOP-00448	SM 4500H
Low Level Total Suspended Solids	14	N/A	2009/08/10 CAM SOP-00428	SM 2540D

<sup>\*</sup> RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

**Encryption Key** 

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

MARIJANE CRUZ, Project Manager Email: Marijane.Cruz@maxxamanalytics.com Phone# (905) 817-5756

\_\_\_\_\_\_

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

For Service Group specific validation please refer to the Validation Signature Page

Total cover pages: 1

<sup>\*</sup> Results relate only to the items tested.



Maxxam Job #: A9A0728 Report Date: 2009/08/14 BARRICK GOLD CORPORATION Client Project #: CULLATON LAKE

#### **RESULTS OF ANALYSES OF WATER**

Maxxam ID		DH6326		DH6327		DH6328		DH6329		DH6330		
Sampling Date		2009/08/05		2009/08/05		2009/08/05		2009/08/05		2009/08/05		
	Units	940-2A	QC Batch	940-2B	QC Batch	940-3A	QC Batch	940-3B	QC Batch	940-18A	RDL	QC Batch
Calculated Parameters												
Hardness (CaCO3)	mg/L	210	1901235	220	1901235	94	1901235	93	1901235	220	1	1901235
Inorganics												
pН	pН	8.0	1903585	7.9	1902756	8.0	1903585	7.5	1902870	7.8		1902870
Total Suspended Solids	mg/L	ND	1901674	ND	1901674	2	1901674	2	1901674	1	1	1901674
Total Cyanide (CN)	mg/L	ND	1902980	ND	1903236	ND	1902980	ND	1903236	ND	0.005	1902980

Maxxam ID		DH6331		DH6332		DH6333		DH6334		DH6335		
Sampling Date		2009/08/05		2009/08/05		2009/08/05		2009/08/05		2009/08/05		
	Units	940-18B	QC Batch	940-19A	QC Batch	940-19B	QC Batch	940-20A	QC Batch	940-20B	RDL	QC Batch
Calculated Parameters												
Hardness (CaCO3)	mg/L	220	1901235	220	1901235	210	1901235	240	1901235	250	1	1901235
Inorganics												
pН	рН	8.0	1902756	7.9	1903585	7.9	1902756	8.3	1903585	8.3		1903585
Total Suspended Solids	mg/L	ND	1901671	ND	1901671	ND	1901671	1	1901674	1	1	1901674
Total Cyanide (CN)	mg/L	ND	1903236	ND	1902980	ND	1903236	ND	1902980	ND	0.005	1903236

Maxxam ID		DH6336		DH6337		DH6338		DH6339		
Sampling Date		2009/08/05		2009/08/05		2009/08/05		2009/08/05		
	Units	940-23A	QC Batch	940-23B	QC Batch	SWEAR-CREEK A	QC Batch	SWEAR-CREEK B	RDL	QC Batch
Calculated Parameters										
Hardness (CaCO3)	mg/L	100	1901235	100	1901235	14	1901235	14	1	1901235
Inorganics										
рН	pН	8.1	1903585	8.0	1902870	7.0	1902756	7.4		1903585
Total Suspended Solids	mg/L	ND	1901674	1	1901671	1	1901671	1	1	1901671
Total Cyanide (CN)	mg/L	ND	1902980	ND	1903236	ND	1902980	ND	0.005	1903236

ND = Not detected

RDL = Reportable Detection Limit QC Batch = Quality Control Batch



Maxxam Job #: A9A0728 Report Date: 2009/08/14 BARRICK GOLD CORPORATION Client Project #: CULLATON LAKE

#### **ELEMENTS BY ATOMIC SPECTROSCOPY (WATER)**

Maxxam ID		DH6326	DH6327		DH6328	DH6329		DH6330	DH6331	DH6332	DH6333	DH6334		
Sampling Date		2009/08/05	2009/08/05		2009/08/05	2009/08/05		2009/08/05	2009/08/05	2009/08/05	2009/08/05	2009/08/05		
	Units	940-2A	940-2B	RDL	940-3A	940-3B	RDL	940-18A	940-18B	940-19A	940-19B	940-20A	RDL	QC Batch
Metals														
. Arsenic (As)	ug/L	1.9	1.9	0.1	2.7	2.7	0.1	3.3	3.3	1.9	1.9	2.8	0.1	1902753
. Copper (Cu)	ug/L	1.2	1.3	0.1	3.9	3.7	0.1	1.2	1.2	1.5	1.2	3.1	0.1	1902753
. Lead (Pb)	ug/L	0.32	0.30	0.05	ND	ND	0.05	0.11	0.11	0.32	0.32	ND	0.05	1902753
Mercury (Hg)	ug/L	ND	ND	0.02	ND	ND	0.02	ND	ND	ND	ND	ND	0.02	1902929
. Nickel (Ni)	ug/L	1.0(1)	1.1(1)	0.5	3.6	3.6	0.1	1.0(1)	0.8(1)	1.0(1)	1.2(1)	3.6(1)	0.5	1902753
. Zinc (Zn)	ug/L	ND(1)	ND(1)	2.5	ND	1.1	0.5	ND(1)	ND(1)	ND(1)	ND(1)	3.8(1)	2.5	1902753

Maxxam ID		DH6335		DH6336	DH6337	DH6338	DH6339		
Sampling Date		2009/08/05		2009/08/05	2009/08/05	2009/08/05	2009/08/05		
	Units	940-20B	RDL	940-23A	940-23B	SWEAR-CREEK A	WEAR-CREEK B	RDL	QC Batch
Metals									
. Arsenic (As)	ug/L	2.9	0.1	1.3	1.3	0.4	0.4	0.1	1902753
. Copper (Cu)	ug/L	3.6	0.1	2.4	1.9	4.1	4.4	0.1	1902753
. Lead (Pb)	ug/L	ND	0.05	0.14	0.14	0.08	0.09	0.05	1902753
Mercury (Hg)	ug/L	ND	0.02	ND	ND	ND	ND	0.02	1902929
. Nickel (Ni)	ug/L	3.7(1)	0.5	2.3	2.2	4.3	4.4	0.1	1902753
. Zinc (Zn)	ug/L	ND(1)	2.5	22.9	23.8	3.1	3.2	0.5	1902753

ND = Not detected

RDL = Reportable Detection Limit

QC Batch = Quality Control Batch

(1) - Metal analysis: Detection Limit was raised due to matrix interferences.



Maxxam Job #: A9A0728 Report Date: 2009/08/14 BARRICK GOLD CORPORATION Client Project #: CULLATON LAKE

#### **QUALITY ASSURANCE REPORT**

			Matrix S	Spike	Spiked	Blank	Method Blan	k	RF	D	QC Star	ndard
QC Batch	Parameter	Date	% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits	% Recovery	QC Limits
1901671	Total Suspended Solids	2009/08/10					ND, RDL=1	mg/L	NC	25	100	85 - 115
1901674	Total Suspended Solids	2009/08/10					ND, RDL=1	mg/L	NC	25	102	85 - 115
1902753	. Arsenic (As)	2009/08/10	115	75 - 125	100	90 - 110	ND, RDL=0.1	ug/L	0.6	25		
1902753	. Copper (Cu)	2009/08/10	98	75 - 125	97	90 - 110	ND, RDL=0.1	ug/L	2.0	25		
1902753	. Lead (Pb)	2009/08/10	100	75 - 125	97	90 - 110	ND, RDL=0.05	ug/L	0.1	25		
1902753	. Nickel (Ni)	2009/08/10	98	75 - 125	100	90 - 110	ND, RDL=0.1	ug/L	NC <sub>(1)</sub>	25		
1902753	. Zinc (Zn)	2009/08/10	102	75 - 125	98	90 - 110	ND, RDL=0.5	ug/L	NC <sub>(1)</sub>	25		
1902929	Mercury (Hg)	2009/08/11	95	75 - 125	102	82 - 122	ND, RDL=0.02	ug/L	NC	25		
1902980	Total Cyanide (CN)	2009/08/11	112	75 - 125	98	75 - 125	ND, RDL=0.005	mg/L	NC	25		
1903236	Total Cyanide (CN)	2009/08/11	93	75 - 125	99	75 - 125	ND, RDL=0.005	mg/L	NC	25		

N/A = Not Applicable

RDL = Reportable Detection Limit

RPD = Relative Percent Difference

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

QC Standard: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

Spiked Blank: A blank matrix to which a known amount of the analyte has been added. Used to evaluate analyte recovery.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (RPD): The RPD was not calculated. The level of analyte detected in the parent sample and its duplicate was not sufficiently significant to permit a reliable calculation.

(1) - Metal analysis: Detection Limit was raised due to matrix interferences.



### **Validation Signature Page**

Maxxam Jo	b #: A9A0728			

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

BRAD NEWMAN, Scientific Specialist

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. SCC and CALA have approved this reporting process and electronic report format.

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SAN	Note: For regulate	ed drinking water samples - please use the Drinking KEPT COOL (<10°C) FROM TIME OF SAMPLIN	G UNTIL DELIVE	RY TO MAXXAN		Regulated Drinking Water ? (Y / N Metals Field Filtered ? (Y (N))	Total Cyanide	Mercury (low level)	Hd	Hardness (calculated as CaCO3)	Low Level Total Suspended Solids	Metals in Water by ICPMS (low level)				(W St Pi da Jo Da	gular (Sta ill be applie andard TA) ease note bys - contac b Specific e Required	ation Number: (call to	BOD and Dioxins/Furans are > 5 ssion) equired:
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# Cullaton Lake Water Quality Monitoring Results 2001- 2009

#### **CULLATON LAKE GOLD MINES LTD.**

**CULLATON LAKE MINE** 

#### WATER ANALYSIS REPORT STATION 940-02A - TAILNGS POND NO. 1 DISCHARGE, AUGUST 2009

Physical and General	Units	Water	CCME	July 26	July 3	July 29	July 7	Aug 5	Aug 2	July 5	June 28	Aug 5	MINIMUM	MAXIMUM	AVERAGE
		License	Guidelines	2001	2002	2003	2004	2005	2006	2007	2008	2009			
pH (lab)	units	6.0 - 9.5	6.5-9.0	8.00	7.81	8.07	7.77	7.8	8.0	7.7	7.5	8.0	7.50	8.07	7.85
Temperature	°C			21.6	14.1	21.0	15.3	NR	14.5	15.2	12.5	15.8	12.5	21.6	14.4
Suspended Solids (105°C)	mg/L	25.0		4	< 3	< 3	< 3	14	< 1	< 10	1	< 1	< 1	14	< 4
Total Cyanide	mg/L	0.80		0.015	0.009	< 0.005	< 0.0050	0.006	< 0.005	< 0.005	0.0088	< 0.005	< 0.005	0.015	< 0.007
Total Hardness	mg CaCO3/L						197	199	210	220	162	210	162	220	200
Minor Cations															
Arsenic	mg/L	0.30	0.005	0.0025	0.0022	0.0025	0.00159	0.003	0.0018	0.0021	0.00563	0.0019	0.00159	0.00563	0.00258
Copper	mg/L	0.20	0.004	0.002	0.002	0.002	0.0014	0.002	0.001	0.001	0.00136	0.0012	0.001	0.002	0.002
Lead	mg/L	0.20	0.007	0.001	< 0.001	< 0.001	< 0.0010	< 0.001	< 0.0005	< 0.0005	0.00146	0.00032	0.00032	0.00146	0.00086
Mercury	mg/L		0.0002	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00001	< 0.00002	< 0.00001	< 0.0001	< 0.00005
Nickel	mg/L	0.30	0.150	< 0.02	0.003	0.001	< 0.020	< 0.002	< 0.001	0.002	0.00258	0.001	< 0.001	< 0.02	< 0.006
Zinc	mg/L	0.30	0.030	< 0.005	< 0.005	< 0.005	< 0.005	< 0.003	< 0.005	< 0.005	0.0011	< 0.0025	0.0011	< 0.005	< 0.0043

( ) Laboratory replicate.

[ ] Results re-checked.

(E) Not analyzed

NR: Not recorded due to equipment malfunction

#### **CULLATON LAKE GOLD MINES LTD.**

**CULLATON LAKE MINE** 

#### WATER ANALYSIS REPORT STATION 940-03A - TAILNGS POND NO. 2 DISCHARGE, AUGUST 2009

Physical and General	Units	Water	CCME	July 26	July 3	July 29	July 7	Aug 5	Aug 2	July 5	June 28	Aug 5	MINIMUM	MAXIMUM	AVERAGE
		License	Guidelines	2001	2002	2003	2004	2005	2006	2007	2008	2009			
pH (lab)	units	6.0 - 9.5	6.5-9.0	8.03	8.05	8.07	7.96	7.7	7.9	7.8	7.7	8.0	7.7	8.07	7.91
Temperature	°C			21.6	15.7	20.8	19.3	NR	17.4	13.7	17.0	15.4	13.7	21.6	15.7
Suspended Solids (105°C)	mg/L	25.0		< 3	< 3	5	< 3	2	2	< 10	2	2	2	10	4
Total Cyanide	mg/L	0.80		0.035	0.010	0.010	0.0072	< 0.0020	< 0.005	< 0.005	0.0016	< 0.005	0.0016	0.035	0.009
Total Hardness	mg CaCO3/L						92.4	100	90	88	82.3	94	82.3	100	91.1
Minor Cations															
Arsenic	mg/L	0.30	0.005	0.0042	0.0032	0.0059	0.00305	0.004	0.0037	0.0055	0.0032	0.0027	0.0027	0.0059	0.0039
Copper	mg/L	0.20	0.002	0.003	0.003	0.003	0.0043	0.020	0.004	0.006	0.0037	0.0039	0.003	0.020	0.006
Lead	mg/L	0.20	0.002	< 0.001	< 0.001	< 0.001	< 0.0010	< 0.001	< 0.0005	< 0.0005	0.00006	< 0.00005	< 0.00005	< 0.001	< 0.00068
Mercury	mg/L		0.0002	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	0.00001	< 0.00002	0.00001	< 0.0001	< 0.00005
Nickel	mg/L	0.30	0.065	< 0.02	0.003	0.004	< 0.020	0.003	0.005	0.005	0.00357	0.0036	0.003	< 0.02	< 0.007
Zinc	mg/L	0.30	0.030	< 0.005	< 0.005	< 0.005	< 0.005	0.015	< 0.005	< 0.005	0.0009	< 0.0005	< 0.0005	0.015	0.0052

( ) Laboratory replicate.

[ ] Results re-checked.

(E) Not analyzed

NR: Not recorded due to equipment malfunction

**CULLATON LAKE MINE** 

#### WATER ANALYSIS REPORT

#### STATION 940-18A - TAILNGS POND NO. 1 SPILLWAY, AUGUST 2009

Physical and General	Units	Water	CCME	July 26	July 3	July 29	July 7	Aug 5	Aug 2	July 5	June 28	Aug 5	MINIMUM	MAXIMUM	AVERAGE
		License	Guidelines	2001	2002	2003	2004	2005	2006	2007	2008	2009			
pH (lab)	units	6.0 - 9.5	6.5-9.0	8.10	7.86	8.87	7.89	8.1	8.4	7.8	7.5	7.8	7.50	8.87	8.04
Temperature	°C			21.5	14.2	20.5	18.5	NR	21.4	15.2	15.8	15.8	0.00	21.50	15.88
Suspended Solids (105°C)	mg/L	25.0		< 3	< 3	4	< 3	< 2	3	< 10	< 1	1	< 1.00	< 10.00	< 3.33
Total Cyanide	mg/L	0.80		0.009	0.008	0.009	0.0096	0.004	0.037	0.005	0.0077	< 0.005	0.00	0.04	0.01
Total Hardness	mg CaCO3/L						217	200	210	230	159	220	159.00	230.00	206.00
Minor Cations															
Arsenic	mg/L	0.30	0.005	0.0023	0.0021	0.0029	0.00165	0.002	0.0055	0.0023	0.00133	0.0033	0.00133	0.0055	0.0026
Copper	mg/L	0.20	0.004	0.002	0.001	0.002	0.0018	0.001	0.005	0.002	0.00086	0.0012	0.00086	0.005	0.00187
Lead	mg/L	0.20	0.007	< 0.001	< 0.001	< 0.001	< 0.0010	< 0.001	< 0.0005	< 0.0005	0.00032	0.00011	0.00011	< 0.001	< 0.00071
Mercury	mg/L		0.0002	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00001	< 0.00002	< 0.00001	< 0.0001	< 0.00005
Nickel	mg/L	0.30	0.150	< 0.02	0.002	0.001	< 0.020	< 0.002	0.002	0.001	0.00124	0.001	0.001	< 0.020	< 0.006
Zinc	mg/L	0.30	0.030	< 0.005	< 0.005	< 0.005	< 0.005	< 0.003	< 0.005	< 0.005	0.0003	< 0.0025	0.0003	< 0.005	< 0.0040

( ) Laboratory replicate.
[ ] Results re-checked.
(E) Not analyzed

**CULLATON LAKE MINE** 

## WATER ANALYSIS REPORT

#### STATION 940-19A - TAILNGS POND NO. 1 AT PIEZOMETER LOCATION AUGUST 2009

Physical and General	Units	NWB Water	CCME	July 26	July 3	July 29	July 7	Aug 5	Aug 2	July 5	June 28	Aug 5	MINIMUM	MAXIMUM	AVERAGE
•		License	Guidelines	2001	2002	2003	2004	2005	2006	2007	2008	2009			
pH (lab)	units	6.0 - 9.5	6.5-9.0	8.11	7.89	8.08	7.69	7.9	7.9	7.8	7.9	7.9	7.69	8.11	7.91
Temperature	°C			22.0	12.7	20.8	16.3	NR	15.4	15.3	21.3	15.3	12.7	22.0	15.5
Suspended Solids (105°C)	mg/L	25.0		< 3	< 3	8	< 3	2	< 1	< 10	< 1	< 1	< 1	< 10	< 4
Total Cyanide	mg/L	0.80		0.010	0.012	< 0.005	0.0074	0.006	< 0.005	< 0.005	0.0009	< 0.005	0.0009	0.012	0.006
Total Hardness	mg CaCO3/L						206	201	210	220	749	220	201	749	301
Minor Cations															
Arsenic	mg/L	0.30	0.005	0.0024	0.0030	0.0036	0.00209	0.002	0.0019	0.0016	0.0025	0.0019	0.0016	0.0036	0.0023
Copper	mg/L	0.20	0.004	0.002	0.002	0.002	0.0015	0.002	0.001	0.001	0.00143	0.0015	0.001	0.002	0.002
Lead	mg/L	0.20	0.007	< 0.001	0.001	< 0.001	< 0.0010	< 0.001	< 0.0005	< 0.0005	0.00182	0.00032	0.00032	0.00182	0.00090
Mercury	mg/L		0.0002	< 0.00005	< 0.00005	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00001	< 0.00002	< 0.00001	< 0.0001	< 0.00005
Nickel	mg/L	0.30	0.150	< 0.02	0.003	0.002	< 0.020	< 0.002	< 0.001	0.002	0.00858	0.001	< 0.001	< 0.02	< 0.007
Zinc	mg/L	0.30	0.030	< 0.005	< 0.005	< 0.005	< 0.005	< 0.003	< 0.005	< 0.005	0.0161	< 0.0025	< 0.0025	0.0161	< 0.0057

( ) Laboratory replicate.

[ ] Results re-checked.

(E) Not analyzed

**CULLATON LAKE MINE** 

## WATER ANALYSIS REPORT

## STATION 940-20A - TAILNGS POND NO. 1 EAST SIDE SEEPAGE, AUGUST 2009

Physical and General	Units	Water	CCME	July 26	July 3	July 29	July 7	Aug 5	Aug 2	July 5	June 28	Aug 5	MINIMUM	MAXIMUM	AVERAGE
,		License	Guidelines	2001	2002	2003	2004	2005	2006	2007	2008	2009			
pH (lab)	units	6.0 - 9.5	6.5-9.0	8.43	D	D	8.13	7.8	8.1	8.2	8.1	8.3	7.8	8.43	8.15
Temperature	°C			24.3	D	D	21.3	NR	22.0	17.9	19.6	18.9	17.9	24.3	17.7
Suspended Solids (105°C)	mg/L	25.0		5	D	D	< 3	< 2	1	< 10	4	1	1	10	4
Total Cyanide	mg/L	0.80		0.019	D	D	0.0104	0.118	< 0.005	< 0.005	0.0038	< 0.005	0.0038	0.118	0.024
Total Hardness	mg CaCO3/L						310	338	220	620	370	240	220	620	350
Minor Cations															
Arsenic	mg/L	0.30	0.005	0.0028	D	D	0.00297	0.001	0.0044	0.0052	0.00337	0.0028	0.001	0.0052	0.0032
Copper	mg/L	0.20	0.004	0.005	D	D	0.0041	0.004	0.004	0.005	0.00423	0.0031	0.0031	0.005	0.0042
Lead	mg/L	0.20	0.007	< 0.001	D	D	< 0.0010	< 0.001	< 0.0005	< 0.0005	0.00023	< 0.00005	< 0.00005	< 0.0010	< 0.0006
Mercury	mg/L		0.0002	< 0.00005	D	D	< 0.00005	< 0.0001	< 0.00005	< 0.00005	< 0.00001	< 0.00002	< 0.00001	< 0.0001	< 0.0000
Nickel	mg/L	0.30	0.150	< 0.02	D	D	< 0.020	0.015	0.006	0.008	0.00644	0.0036	0.0036	< 0.020	< 0.0113
Zinc	mg/L	0.30	0.030	< 0.005	D	D	< 0.005	< 0.003	< 0.005	< 0.005	0.0016	0.0038	0.0016	< 0.005	< 0.0041

( ) Laboratory replicate.

[ ] Results re-checked. D Dry

**CULLATON LAKE MINE** 

#### WATER ANALYSIS REPORT STATION 940-22A - TAILNGS POND NO. 1 NORTH SIDE SEEPAGE, AUGUST 2009

Physical and General	Units	Water	CCME	July 26	July 3	July 29	July 7	Aug 5	Aug 2	July 5	Jun 28	Aug 5	MINIMUM	MAXIMUM	AVERAGE
		License	Guidelines	2001	2002	2003	2004	2005	2006	2007	2008	2009			
pH (lab)	units	6.0 - 9.5	6.5-9.0	D	D	D	D	7.7	D	D	8.0	D	7.7	8.0	7.9
Temperature	°C			D	D	D	D	NR	D	D	18.7	D	18.7	18.70	18.70
Suspended Solids (105°C)	mg/L	25.0		D	D	D	D	6	D	D	1	D	1	6	4
Total Cyanide	mg/L	0.80		D	D	D	D	0.073	D	D	0.0015	D	0.0015	0.073	0.037
Total Hardness	mg CaCO3/L			D	D	D	D	515	D	D	546	D	515	546	531
Minor Cations															
Arsenic	mg/L	0.30	0.005	D	D	D	D	0.001	D	D	0.00339	D	0.001	0.00339	0.0022
Copper	mg/L	0.20	0.004	D	D	D	D	0.004	D	D	0.00239	D	0.00239	0.004	0.0032
Lead	mg/L	0.20	0.007	D	D	D	D	< 0.001	D	D	0.00057	D	0.00057	< 0.001	< 0.0008
Mercury	mg/L		0.0002	D	D	D	D	< 0.0001	D	D	< 0.00001	D	< 0.00001	< 0.0001	< 0.00006
Nickel	mg/L	0.30	0.150	D	D	D	D	0.045	D	D	0.00415	D	0.00415	0.045	0.0246
Zinc	mg/L	0.30	0.030	D	D	D	D	< 0.010	D	D	0.0022	D	0.0022	< 0.010	< 0.0061

( ) Laboratory replicate.

[ ] Results re-checked. D Dry

**CULLATON LAKE MINE** 

#### WATER ANALYSIS REPORT STATION 940-23A - QUARRY PIT, AUGUST 2009

Physical and General	Units	Water	CCME	July 26	July 3	July 29	July 7	Aug 5	Aug 2	July 5	June 28	Aug 5	MINIMUM	MAXIMUM	AVERAGE
		License	Guidelines	2001	2002	2003	2004	2005	2006	2007	2008	2009			
pH (lab)	units	6.0 - 9.5	6.5-9.0	D	7.82	8.07	7.56	7.8	8.1	7.7	7.4	8.1	7.4	8.1	7.8
Temperature	°C			D	12.7	20.7	15.7	NR	15.5	14.4	14.5	14.3	12.7	20.7	13.5
Suspended Solids (105°C)	mg/L	25.0		D	< 3	10	< 3	4	1	< 10	< 1	< 1	< 1	10	4
Total Cyanide	mg/L	0.80		D	< 0.005	< 0.006	< 0.0050	< 0.002	< 0.005	< 0.005	< 0.0005	< 0.005	< 0.0005	< 0.006	< 0.004
Total Hardness	mg CaCO3/L						37.9	104	120	78	46.7	100	37.9	120	81.1
Minor Cations															
Arsenic	mg/L	0.30	0.005	D	0.0020	0.0019	0.00096	0.002	0.0014	0.0011	0.00084	0.0013	0.00084	0.002	0.0014
Copper	mg/L	0.20	0.002	D	0.003	0.002	< 0.0010	0.002	0.002	< 0.001	0.00102	0.0024	< 0.0010	0.003	< 0.0018
Lead	mg/L	0.20	0.002	D	< 0.001	< 0.001	< 0.0010	< 0.001	< 0.0005	< 0.0005	0.00009	0.00014	0.00009	< 0.0010	< 0.0007
Mercury	mg/L		0.0002	D	< 0.00005	< 0.00005	< 0.00005	< 0.0001	< 0.00005	< 0.00005	0.00001	< 0.00002	0.00001	< 0.0001	< 0.00005
Nickel	mg/L	0.30	0.065	D	0.003	0.002	< 0.020	0.002	0.002	0.001	0.00141	0.0023	0.001	< 0.020	< 0.004
Zinc	mg/L	0.30	0.030	D	0.008	0.007	0.0087	0.065	0.012	0.006	0.0086	0.0229	0.006	0.065	0.017

( ) Laboratory replicate.

[ ] Results re-checked. (E) Not analyzed

**CULLATON LAKE MINE** 

#### WATER ANALYSIS REPORT

## STATION 940-24A - AREA OF SEEPAGE FROM QUARY PIT TO TAILINGS POND, AUGUST 2009

Physical and General	Units	Water	CCME	July 26	July 3	July 29	July 7	Aug 5	Aug 2	July 5	June 28	Aug 5	MINIMUM	MAXIMUM	AVERAGE
		License	Guidelines	2001	2002	2003	2004	2005	2006	2007	2008	2009			
pH (lab)	units	6.0 - 9.5	6.5-9.0	D	D	D	D	D	D	D	D	D			
Temperature	°C			D	D	D	D	D	D	D	D	D			
Suspended Solids (105°C)	mg/L	25.0		D	D	D	D	D	D	D	D	D			
Total Cyanide	mg/L	0.80		D	D	D	D	D	D	D	D	D			
Total Hardness	mg CaCO3/L			D	D	D	D	D	D	D	D	D			
Oil and Grease	mg/L	Visible		D	D	D	D	D	D	D	D	D			
Minor Cations															
Arsenic	mg/L	0.30	0.005	D	D	D	D	D	D	D	D	D			
Copper	mg/L	0.20	0.004	D	D	D	D	D	D	D	D	D			
Lead	mg/L	0.20	0.007	D	D	D	D	D	D	D	D	D			
Mercury	mg/L		0.0002	D	D	D	D	D	D	D	D	D			
Nickel	mg/L	0.30	0.150	D	D	D	D	D	D	D	D	D			
Zinc	mg/L	0.30	0.030	D	D	D	D	D	D	D	D	D			

( ) Laboratory replicate.

[ ] Results re-checked.

D: Dry

**CULLATON LAKE MINE** 

#### WATER ANALYSIS REPORT

## STATION 940-27A - AREA OF SEEPAGE FROM EWR TO SHEAR LAKE CREEK (1), AUGUST 2009

Physical and General	Units	Water	CCME	July 26	July 3	July 29	July 7	Aug 5	Aug 2	July 5	June 28	Aug 5	MINIMUM	MAXIMUM	AVERAGE
		License	Guidelines	2001	2002	2003	2004	2005	2006	2007	2008	2009			
pH (lab)	units	6.0 - 9.5	6.5-9.0					D	D	D	D	D			
Temperature	°C							D	D	D	D	D			
Suspended Solids (105°C)	mg/L	25.0						D	D	D	D	D			
Total Cyanide	mg/L	0.80						D	D	D	D	D			
Total Hardness	mg CaCO3/L							D	D	D	D	D			
Sulphate	mg/L							D	D	D	D	D			
Minor Cations															
Arsenic	mg/L	0.30	0.005					D	D	D	D	D			
Copper	mg/L	0.20	0.004					D	D	D	D	D			
Lead	mg/L	0.20	0.007					D	D	D	D	D			
Mercury	mg/L		0.0002					D	D	D	D	D			
Nickel	mg/L	0.30	0.150					D	D	D	D	D			
Zinc	mg/L	0.30	0.030					D	D	D	D	D			

- (1) Station added in 2005
- ( ) Laboratory replicate.
- [ ] Results re-checked.
- D: Dry

## Appendix 3 August 5, 2009 Thermistor Monitoring Results

# THERMISTOR MONITORING RESULTS Station 940-21

Field notes for pit excavated on August 5, 2009 at same location as last year (immediately north of T4)

0 - 0.9m: till cover

0.9m - 1.2m: saturated tailings

1.2m: Permafrost



Test pit excavated at T4 on August 5, 2009, showing till cover / saturated tailings interface.



Test pit excavated to permafrost at 1.2m

## September 2, 2008 T4 Test Pit Field Notes:

0 -0.9m: till cover

0.9m -1.1m: unsaturated tailings 1.1m - 2.0m: saturated tailings

2.0m: permafrost

## July 5, 2007 (See Note 1 below)

Depth (m)	T1 (°C)	T2 (°C)	T3 (°C)	T4 (°C)
0.3	18.78	18.78	16.29	16.88
0.8	8.89	7.93	17.19	10.32
1.3	4.53	5.18	12.83	6.67
1.8	0.16	3.05	7.38	0.65
2.3	-1.23	1.68	0.90	-1.56
2.8	-1.45	Error (87.72)	-20.89	-0.55

## August 2, 2006

Depth (m)	T1 (°C)	T2 (°C)	T3 (°C)	T4 (°C)
0.3	26.91	26.41	27.93	25.46
0.8	9.49	8.31	25.46	11.65
1.3	6.15	6.32	16.00	7.38
1.8	4.22	5.65	7.74	4.22
2.3	0.65	3.19	4.69	-0.89
2.8	-0.66	3.48	4.07	-0.43

## August 3, 2005

Depth (m)	T1 (°C)	T2 (°C)	T3 (°C)	T4 (°C)
0.3	18.45	20.16	22.03	20.52
0.8	12.34	10.75	20.89	10.11
1.3	7.38	7.56	13.32	7.56
1.8	3.48	5.82	8.12	2.62
2.3	-0.43	2.21	3.63	-1.56
2.8	-1.45	-0.43	No reading	-2.10

## Notes:

(1) Test pit completed at T4 on July 5, 2007 found permafrost at 1.2m depth. Therefore all historic readings prior to this date are suspect.

## Appendix 4 2010 Spill Response Plan

# CULLATON LAKE ENVIRONMENTAL SPILL RESPONSE PLAN

#### **COMPANY INFORMATION**

Cullaton Lake Gold Mines Ltd. is wholly owned by Barrick Gold Inc. The Barrick head office responsible for the site is located at:

Barrick Gold Inc. BCE Place, Canada Trust Tower, Suite 3700 161 Bay Street, P.O. Box 212 Toronto, Ontario M5J 2S1

The site manager is:

Paul Brugger,
Barrick Gold Inc.
171 Copper Cliff Road East
Neebing, Ontario
P7L 0B6

Phone: 807-964-1657 (Thunder Bay, Ontario)

Cell: 807-473-7947

e-mail: <a href="mailto:pbrugger@xplornet.com">pbrugger@xplornet.com</a>

#### **SITE LOCATION:**

The Cullaton Lake property is located in the southern part of the District of Keewatin in the Nunavut Territory. The property is 250 km west of Arviat, NU, 400 km northwest of Churchill, Manitoba and 645 km north of Thompson, Manitoba.

#### PROJECT HISTORY AND CURRENT ACTIVITY:

Cullaton Lake operated as an underground gold mine for four years from 1981 to 1985. Decommissioning and reclamation began in 1991 and was completed in 2001. By the end of 2001, all mine buildings had been removed, roads were decommissioned and the tailings impoundment area was reclaimed. No chemicals, fuels or reagents remain on site.

Remaining activities on the site consist of a one-day annual visit for inspection and monitoring purposes. The site is dormant and uninhabited for the remainder of the year.

## **REVISIONS AND EFFECTIVE DATE OF PLAN:**

This plan was reviewed and revised on March 4, 2010 and is effective until March 31, 2011.

## SPILL CONTROL AND REPORTING PROCEDURES:

Should it be necessary to mobilize contractors to the site for any reason in the future, the contractor will be required to supply spill control and clean up materials, have a spill control plan and train personnel in spill response procedures.

Upon discovery of a spill, the person discovering the spill will take the following actions:

## **INITIAL ACTIONS:**

- a. Stop the flow if possible.
- b. Eliminate open flame ignition sources (i.e. extinguish cigarettes, shut off motors (from a remote location if surrounded by vapours).
- c. Contain flow of fuel by dyking, barricading or blocking flow by any means available. Use earth-moving equipment if available. A dam made of earth or other available fill can be quickly constructed to contain and prevent a spill from spreading. If the ground is permeable, it may be necessary to excavate a shallow depression and line it with plastic to prevent the oil from seeping away.

## **ACTION IN CASE OF FIRE:**

- a. Use C0<sub>2</sub>, dry chemical, foam or water spray (fog), although water may spread the fire.
- b. Use jet streams to wash away burning gasoline.
- c. Use fog streams to protect any rescue team and trapped people.
- d. Use water to cool surface of tanks.
- e. Divert the oil or gasoline to an open area and let it burn off under control. If the fire is put out before all the fuel is consumed, beware of re-ignition. Rubber tires are almost impossible to extinguish after involvement with a fire. Have vehicles with burning tires removed from the danger area.

#### **RECOVERY PROCEDURE:**

- a. Unburned oil or gasoline can be soaked up by sand and peat moss, or by commercial absorbents such as Graboil.
- If necessary, contaminated soil should be excavated and disposed of as per the following section.
- c. Fuel entering the ground can be recovered by digging sumps or trenches.

## DISPOSAL:

- a. Evaporation may be used if appropriate.
- b. Disposal as per the approved Abandonment and Restoration (1996) Plan.

#### **REPORTING:**

An individual discovering a spill must report it as soon as possible to the 24 hour Spill Report Line by calling:

#### (867) 920-8130

- (1) A person reporting a spill shall give as much of the following information as possible:
  - date and time of spill
  - location of spill
  - direction spill is moving
  - name and phone number of a contact person close to the location of the spill
  - type and description of contaminant spilled including an estimate of the quantity
  - cause of spill
  - status of spill (i.e. continuing or stopped)
  - action taken to contain, recover, clean-up, and dispose of contaminant
  - name, address and phone number of person reporting the spill
  - name of owner, or person in charge or control of contaminant at time of spill
- (2) No person shall delay reporting a spill because of lack of knowledge of the factors listed in subsection (1).
- (3) The person reporting the spill shall also contact:
- INAC Water Resources Inspector at: (867) 975-4295
- Environment Canada at (867) 975-4644 and emergency pager (867) 920-5131
- Government of Nunavut Environmental Protection at (867) 857-2828
- Kivalliq Inuit Association at (867) 645-2810 or 1-800-220-6541 Contact Stephen Hartman
- Barrick Gold Corporation :

Paul Brugger, Site Manager

Phone: **807-964-1657** Cell: 807-473-7947

Alternate: Bill Ferdinand

Director, Environment, Health and Safety,

North American Region Phone: **801-990-3746** Cell: 801-244-3540

- If required:
  - RCMP Arviat at (867) 857-0123
  - Arviat Hospital at (867) 857-3100
  - Arviat Fire Response at (867) 857-2538
- (4) The attached NT-NU Spill Report will also be completed and submitted to the Nunavut spills reporting office at fax: (867) 873-6924 or email <a href="mailto:spills@gov.nt.ca">spills@gov.nt.ca</a>





# Canad'ä

# **NT-NU SPILL REPORT**

OIL, GASOLINE, CHEMICALS AND OTHER HAZARDOUS MATERIALS

NT-NU 24-HOUR SPILL REPORT LINE

TEL: (867) 920-8130 FAX: (867) 873-6924 EMAIL: spills@gov.nt.ca

## REPORT LINE USE ONLY

Α	REPORT DATE: MONTH – DAY	′–YEAR		REPOF	RT TIMI	E	□ OF	RIGINAL SPILL REPORT,		REPORT NUMBER
В	OCCURRENCE DATE: MONTH	I – DAY – YEAR		OCCUF	RRENC	CE TIME		PDATE # HE ORIGINAL SPILL RE	PORT	<del>-</del>
С	LAND USE PERMIT NUMBER	(IF APPLICABLE)			WA	TER LICENCE NUMBER	R (IF A	PPLICABLE)		
D	GEOGRAPHIC PLACE NAME (	OR DISTANCE AND DIRE	CTION FROM NAMED L	OCATIO	N	REGION  NWT NUNAVU	UT	☐ ADJACENT JURISDI	CTION	OR OCEAN
Е	LATITUDE				LO	NGITUDE				
_	DEGREES	MINUTES	SECONDS	DA DTV /	_	GREES	1011	MINUTES	SI	ECONDS
F	RESPONSIBLE PARTY OR VE					SS OR OFFICE LOCAT	ION			
G	ANY CONTRACTOR INVOLVED	)	CONTRACTOR	ADDRES	SS OR	OFFICE LOCATION				
	PRODUCT SPILLED		QUANTITY IN LI	TRES, K	KILOGF	RAMS OR CUBIC METRI	ES	U.N. NUMBER		
Н	SECOND PRODUCT SPILLED	(IF APPLICABLE)	QUANTITY IN LI	TRES, K	KILOGF	RAMS OR CUBIC METRI	ES	U.N. NUMBER		
Ι	SPILL SOURCE		SPILL CAUSE					AREA OF CONTAMINAT	ON IN	SQUARE METRES
J	FACTORS AFFECTING SPILL (	OR RECOVERY	DESCRIBE ANY	ASSIST	TANCE	REQUIRED		HAZARDS TO PERSONS	, PROF	PERTY OR ENVIRONMENT
K										
L	REPORTED TO SPILL LINE BY	POSITION		EMPLC	OYER		LOCA	ATION CALLING FROM	Т	ELEPHONE
M	ANY ALTERNATE CONTACT	ANY ALTERNATE CONTACT POSITION			OYER			ERNATE CONTACT	A	LTERNATE TELEPHONE
		REPORT LIN	E USE	ONLY						
N I	RECEIVED AT SPILL LINE BY		EMPLC	DYER		LOC	ATION CALLED	F	REPORT LINE NUMBER	
N		STATION OPERATO	OR	ļ.,			YELL	OWKNIFE, NT	(	867) 920-8130
LEAD	AGENCY DEC DCCG DC	GNWT □ GN □ ILA □	INAC □ NEB □ TC	SIG	3NIFIC	ANCE □ MINOR □ MA	MAJOR □ UNKNOWN FILE STATUS □ OPEN □ CLOSED			JS □ OPEN □ CLOSED
AGEI	NCY	CONTACT NAME		СО	NTAC1	TTIME	F	REMARKS		
	D AGENCY ST SUPPORT AGENCY									
	COND SUPPORT AGENCY			+						
	COND SUPPORT AGENCY			+			+			
THIR	D SUPPORT AGENCY									

## Instructions for Completing the NT-NU Spill Report Form

This form can be filled out electronically and e-mailed as an attachment to spills@gov.nt.ca. Until further notice, please verify receipt of e-mail transmissions with a follow-up telephone call to the spill line. Forms can also be printed and faxed to the spill line at 867-873-6924. Spills can still be phoned in by calling collect at 867-920-8130.

A. Report Date/Time	The actual date and time that the spill was reported to the spill line. If the spill is phoned in, the Spill Line will fill this out. <b>Please do not fill in the Report Number</b> : the spill line will assign a number after the spill is reported.
B. Occurrence Date/Time	Indicate, to the best of your knowledge, the exact date and time that the spill occurred. Not to be confused with the report date and time (see above).
C. Land Use Permit Number /Water Licence Number	This only needs to be filled in if the activity has been licenced by the Nunavut Water Board and/or if a Land Use Permit has been issued. Applies primarily to mines and mineral exploration sites.
D. Geographic Place Name	In most cases, this will be the name of the city or town in which the spill occurred. For remote locations – outside of human habitations – identify the most prominent geographic feature, such as a lake or mountain and/or the distance and direction from the nearest population center. You must include the geographic coordinates (Refer to Section E).
E. Geographic Coordinates	This only needs to be filled out if the spill occurred outside of an established community such as a mine site. Please note that the location should be stated in degrees, minutes and seconds of Latitude and Longitude.
F. Responsible Party Or Vessel Name	This is the person who was in management/control/ownership of the substance at the time that it was spilled. In the case of a spill from a ship/vessel, include the name of the ship/vessel. Please include full address, telephone number and email. Use box K if there is insufficient space. Please note that, the owner of the spilled substance is ultimately responsible for any spills of that substance, regardless of who may have actually caused the spill.
G. Contractor involved?	Were there any other parties/contractors involved? An example would be a construction company who is undertaking work on behalf of the owner of the spilled substance and who may have contributed to, or directly caused the spill and/or is responding to the spill.
H. Product Spilled	Identify the product spilled; most commonly, it is gasoline, diesel fuel or sewage. For other substances, avoid trade names. Wherever possible, use the chemical name of the substance and further, identify the product using the four digit UN number (eg: UN1203 for gasoline; UN1202 for diesel fuel; UN1863 for Jet A & B)
I. Spill Source	Identify the source of the spill: truck, ship, home heating fuel tank and, if known, the cause (eg: fuel tank overfill, leaking tank; ship ran aground; traffic accident, vandalism, storm, etc.). Provide an estimate of the extent of the contaminated/impacted area (eg: 10 m²)
J. Factors Affecting Spill	Any factors which might make it difficult to clean up the spill: rough terrain, bad weather, remote location, lack of equipment. Do you require advice and/or assistance with the cleanup operation? Identify any hazards to persons, property or environment: for example, a gasoline spill beside a daycare centre would pose a safety hazard to children. Use box K if there is insufficient space.
K. Additional Information	Provide any additional, pertinent details about the spill, such as any peculiar/unique hazards associated with the spilled material. State what action is being taken towards cleaning up the spill; disposal of spilled material; notification of affected parties. If necessary, append additional sheets to the spill report. Number the pages in the same format found in the lower right hand corner of the spill form: eg. "Page 1 of 2", "Page 2 of 2" etc. Please number the pages to ensure that recipients can be certain that they received all pertinent documents. If only the spill report form was filled out, number the form as "Page 1 of 1".
L. Reported to Spill Line by	Include your full name, employer, contact number and the location from which you are reporting the spill. Use box K if there is insufficient space.
M. Alternate Contact	Identify any alternate contacts. This information assists regulatory agencies to obtain additional information if they cannot reach the individual who reported the spill.
N. Report Line Use Only	Leave Blank. This box is for the Spill Line's use only.