



SLEMA  
January 2012  
Environmental Update

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# Outline

1. Mine Update
2. Inspection Update
3. Regulators' Update
4. Stakeholders' Update
5. Reviews
6. Agency's Activities



# Acronyms

- AANDC – Aboriginal Affairs and Northern Development Canada (previous INAC – India and Northern Affairs Canada)
- AEMP – Aquatic Effects Monitoring Program
- ARD – Acid Rock Drainage
- DFO – Fisheries and Oceans Canada
- EC – Environment Canada
- ENR – Department of Environment and Natural Resources, GNWT
- GNWT – Government of the Northwest Territories
- MVLWB – Mackenzie Valley Land and Water Board
- PK – Processed Kimberlite
- SLEMA – Snap Lake Environmental Monitoring Agency
- SNP – Surveillance Network Program
- TDS – Total Dissolved Solids
- WEMP – Wildlife Effects Monitoring Program
- WTP – Water Treatment Plant
- WMP – Water Management Pond



# 1.1 Mine Update – December 2011

- Production rate: 82.5 % of its capacity (80,574 tonnes of kimberlite processed)
- 3,160 m<sup>3</sup> of water withdrawn from Snap Lake
- 760,866 m<sup>3</sup> of treated water discharged into Snap Lake
- 55,584 tonnes of coarse reject and 47,653 m<sup>3</sup> of slimes deposited in the North Pile
- 11 spills (5 reportable)
- Water sampled in 6 monitoring stations
  - The monthly average for all parameters met compliance



# 1.2 Emergence Measures for Spill 11-469

- Dated December 30, 2011 and January 3, 2012
- Snow and ice berms were constructed to contain the flow of mine process water for Spill 11-469
- The remediation plan is to allow the water to freeze solid. Once the ponded water has frozen solid, heavy equipment will be used to remove ice from the containment area for placement within the Water Management Pond (WMP)
- Design for a temporary sump is underway. Construction of this temporary sump would be within the footprint of the West Cell down slope of the spill area to collect nutrient rich water during freshet. The water collected in this sump will be pumped to Permanent Sump 5 to be routed to the WMP for treatment



## 1.3 Winter Road Commencement

- Letter dated January 3, 2012
- De Beers intended to begin construction of the Snap Lake Spur Road on January 5, 2012 and usage of the Tibbett to Contwoyto winter road and the Snap Lake spur road commencing on January 26, 2012



# 1.4 Responses to SLEMA Letter Dated January 4, 2012 (I)

- Dated January 6, 2012
- The issue of toxicity testing was discussed in detail during the course of the recent water license renewal hearing for the Snap Lake Mine and De Beers continues to support its response to Information Request #6 submitted in that proceeding
  - The chronic toxicity data are being closely monitored by De Beers
  - De Beers has also agreed to conduct additional toxicity testing in the form of a 30-day rainbow trout egg/alvin test at the edge of the mixing zone, pursuant to Environment Canada Method EPS/1/RM/28



# 1.4 Responses to SLEMA Letter Dated January 4, 2012 (II)

- The results and evaluations of chronic toxicity tests will be made available to stakeholders and regulators for review and comment as per the requirements of the water license
- Stakeholders and regulators are, of course, entitled to undertake their own examinations of the toxicity testing results as they consider appropriate





# 1.5 Responses to Inspector's Concerns about Spill Management

- Dated January 12, 2012
- The diversion ditch was constructed and rapidly and effectively contain the spills #11-460 and 11-461
- Following Spill #10-458 in December 2010, the possibility of re-routing the access road was proposed. However, due to the operational considerations the access road was not re-routed
- De Beers continues to focus on achieving lower water levels in the containment sumps



# 1.6 Request for Approval for Temporary Storage of Lube Totes at the Land Farm

## ➤ Dated January 17, 2012

- Addressed to the Inspector
- To request approval for temporary storage of Lube totes at the lined area of the land farm until September 2012
- These lubes will be removed from the land farm area as they can be pumped into the bulk storage tanks as the materials are used. Totes will be stored on double pallets within the lined cells, so that freshet water can be readily pumped as it accumulates and transferred to the Water Management Pond



# Inspector's Responses

## ➤ Dated January 23, 2012

- The Inspector could not in good conscience grant storage of lubes in the landfarm
  - The landfarm facility is designed to be used to reclaim contaminated material, and not to store lubes
- The Inspector encouraged De Beers to enlarge the lined area at the Waste Management Area and/or Laydown 1 to meet the needs of future lube storage



# 1.7 Study Plan for Toxicity Testing

- Submitted from Nautilus Environmental to Golder Associates Ltd. On January 23, 2012
- Evaluation of the Toxicity of TDS and Strontium to Aquatic Organisms
  - To evaluate the sensitivity of the early life stages of two fish species representative of fish in Snap Lake (NWT) to elevated Total Dissolved Solids (TDS);
  - To evaluate the effect of acclimation on the sensitivity of *Ceriodaphnia dubia* to TDS; and,
  - To evaluate the sensitivity of *Hyalella azteca* and early life stages of rainbow trout to strontium



## 2. Inspection Update

- INAC Inspector – Tracy Covey
- No Inspection Reports received in January 2012



## 2.1 Inspector's Letter of Warning: Containment of Surface Water Runoff (I)

### ➤ Dated January 24, 2012

- Given the spills of process water during the last 13 months, the Inspector no longer has confidence that the surface runoff containment structures currently associated with the North Pile Facility are effectively containing water seeping (or flowing) from the North Pile
- De Beers is hereby warned that it must take all reasonable action to ensure that no further “mine water/process water” breaches the permanent runoff control structures associated with North Pile (i.e. PS 1-5 or TS4)



## 2.1 Inspector's Letter of Warning: Containment of Surface Water Runoff (II)

- Should any further breaches of water occur, the Inspector will have no alternative but to eliminate the input of water into the North Pile, which will be achieved through termination of the PK deposition
- De Beers has to provide detailed response by February 23, 2012



# De Beers Responses

- Dated January 27, 2012
  - De Beers has indicated they are actively taking all reasonable steps to prevent mine water or process water from breaching the permanent runoff control structures associated with the North Pile
    - In discussion with Golder to identify the possible causes for the water release from the Starter Cell in December 2011 and January 2012
    - The solution is to construct a ditch to route flows towards Inland Lake #6





# 3. Regulators' Update

## ➤ MVLWB

- Notice dated January 18, 2012
  - MVLWB is meeting on January 25, 2012 to consider making a motion to extend the term of the current WL MV2001L2-0002. The current WL expires on April 14, 2012, the new proposed date is June 13, 2012
  - The extension would allow for appropriate consideration to address the following:
    - comments made by reviewers and the proponent;
    - provide reviewers, the proponent and Board staff an appropriate amount of time to review and provide constructive comments on the draft license; and
    - allow 60 days for Ministerial approval
- The motion was passed on January 25, 2012, and a letter was sent to the Minister of AANDC for his approval and signature



# 4. Stakeholders' Update

## ➤ Security and Regulatory Instruments

- On December 22, 2011, AANDC provided the MVLWB with information regarding the amounts of security they hold against the Mine (\$56,796,701), including the various regulatory instruments, the Environmental Agreement, and land leases
  - Type A Land Use Permit, \$19,878,845
  - Type A Water Licence, \$36,917,856
  - Environmental Agreement – Additional Security Deposit (ASD), \$20,000,000
  - Land Leases, \$0



# De Beers Response

- Responded by Osler, Hoskin & Harcourt LLP on behalf of De Beers on January 5, 2012
  - Given the fact that AANDC already holds security against the Mine which exceeds the amount of its estimate, and the fact that the Interim Closure and Reclamation Plan is expected to be reviewed in the near future, De Beers submits that it is not necessary for the MVLWB to increase the total amount of security required at this time



# 5. Reviews

- Spills within the North Pile
  - 13 spills from 2006 to 2012
    - 5 resulted from pipe problems
    - 5 resulted from failed water level control
    - 3 possibly resulted from design defect of water collection system
  - 8 out of 13 spills occurred from December 2010 to January 2012
    - Resulted in the Inspector's Letter of Warning dated January 24, 2012
  - Recommendation – De Beers to revisit North Pile water management, including strategy, design and practices

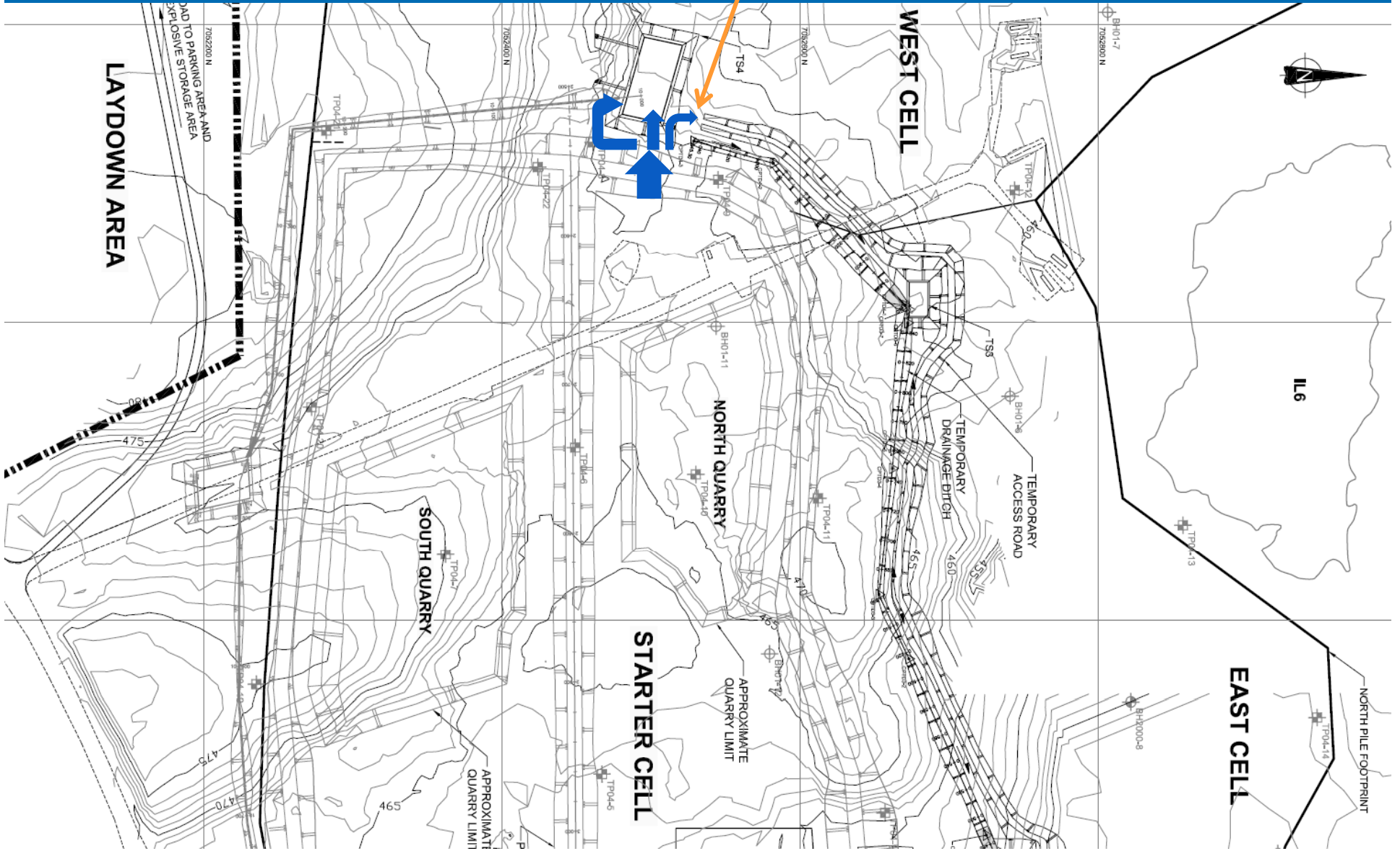


Spill #	Date	Spill Amount	Location	Cause
2006-291	Jul. 22	200 m <sup>3</sup> , surface water	Near Temporary Sump #1 (TS1)	Ruptured discharge pipe due to increased pressure
2006-300	Aug. 1	200 m <sup>3</sup> , water	Near TS1	Ruptured discharge pipe
2007-217	May 21	10 m <sup>3</sup> , runoff	Near TS2	Punch lock fitting detached from the hose
2009-005	Jan. 6	20 m <sup>3</sup> , process water	TS3	Water level within the sump rose to beyond the designed capacity , water draining <u>through the roadway</u> to the tundra
2009-479	Oct. 19	438 m <sup>3</sup> , process water	Near Permanent Sump #2	Frozen pipeline, water seeping under the road to East Cell footprint
2010-458	Dec. 10	110 m <sup>3</sup> , process water	TS4	Water pushed out through the Starter Cell berm entering TS4 and into the diversion ditch across the access road along with the north side of TS4
2011-391	Oct. 2	126 m <sup>3</sup> , North Pile runoff	Perimeter Sump #3 (PS3), East Cell	Water flowed from the base of the tote road directly adjacent to PS3 in the direction of Snap Lake. visible flow towards Snap Lake was measured at 0.13 m/s.
2011-398	Oct. 11		East Cell Drainage	Visible pooling was observed outside of the containment structures
2011-460	Dec. 19	1 m <sup>3</sup>	TS4, Starter Cell	Process water drained from the Starter Cell to the access road
2011-461	Dec. 20	2 m <sup>3</sup>	TS4, Starter Cell	Process water flowed over the access road
2011-466	Dec. 25	0.1 m <sup>3</sup>	Between TS3 & TS4	Back pressure from frozen line caused bullhose to break apart at the fitting
2011-469	Dec. 29	5500 m <sup>3</sup>	TS4, Starter Cell	TS4 was found to be overflowing to the tundra
2012-014	Jan. 23	10 m <sup>3</sup>	TS4, Starter Cell	Pool of water was observed within the ditch west of the sump road and North Pile

# Location of Spills within the North Pile



# Spills 2010-458, 2011-460 and 461



## 6. Agency's Activities

- SLEMA website was upgraded and updated
  - [www.slema.ca](http://www.slema.ca)
- Executive Meeting was held on January 23, 2012

