



Aboriginal Affairs and  
Northern Development Canada

Affaires autochtones et  
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November 20, 2012

MVEIRB File Number: EIR0607-001

Mr. Chuck Hubert  
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VIA EMAIL: [chubert@reviewboard.ca](mailto:chubert@reviewboard.ca)

**Re: AANDC's Presentation – De Beers Canada Gahcho Kue Diamond Mine  
Project-EIR0607-001**

Aboriginal Affairs and Northern Development Canada (AANDC) is pleased to submit the attached presentation to the Mackenzie Valley Environmental Impact Review Board (MVEIRB) on the proposed De Beers Canada Gahcho Kue Diamond Project-EIR0607-001.

AANDC would like to thank the Board for the opportunity to present our presentation on the proposed De Beers Canada Gahcho Kue Diamond Mine Project at the upcoming public hearing scheduled for December 5-7, 2012.

If you have any questions about this presentation, please do not hesitate to contact Mr. Nathen Richea at (867) 669-2657 or [nathen.richea@aandc.gc.ca](mailto:nathen.richea@aandc.gc.ca) or Paul Green (867) 669-2402 or [paul.green@aandc.gc.ca](mailto:paul.green@aandc.gc.ca).

Sincerely,

Robert Jenkins  
A/Director  
Renewable Resources and Environment



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# **Aboriginal Affairs and Northern Development Canada (AANDC) Public Hearing Presentation**

**De Beers Canada  
Gahcho Kue Diamond Mine Project  
MVEIRB EA0607-001**

**Yellowknife, NWT  
December 5-7, 2012**





# Presentation Outline

## Three main areas of concern are discussed in the AANDC Technical Report:

1. Water Quality Objectives (WQOs)/Site Specific Water Quality Objectives (SSWQOs)
2. Aquatic Effects Monitoring (AEMP)
3. Closure and Reclamation







## Site Specific Water Quality Objectives (SSWQO)

- Water Quality Objectives/Site Specific Water Quality Objectives are the “standard” which should be maintained in order to preserve the present and future integrity and uses of an aquatic ecosystem.





## Site Specific Water Quality Objectives

### **De Beers have proposed two types of water quality objectives:**

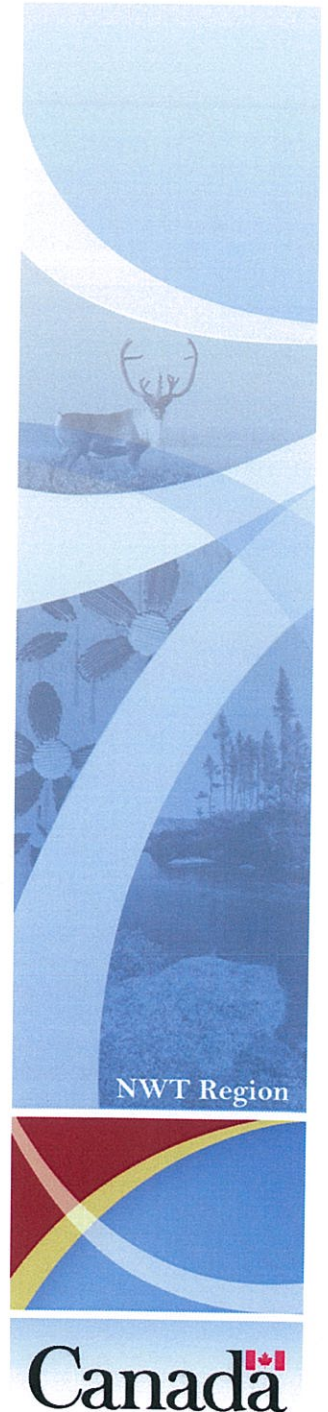
1. Narrative objectives that articulate the water management goals for the project, and
  2. Numerical objectives that, if met, should ensure that the narrative goals are achieved.
- Both objectives presented are intended for Lake N11 during construction and operations and Kennady Lake for post closure.





## Site Specific Water Quality Objectives

- The Water Quality Objective proposed for Lake N11 would apply at the edge of a 200m initial dilution zone (IDZ).







**\*To downstream  
Receiving Environment**

**Mixing Zone  
Assessment Boundary\***

\*SSWQO's are applied at  
this point and beyond.

**Effluent Quality Criteria**  
"End-of-pipe Compliance Limits"

**Mixing Zone  
or 'IDZ'**

**Discharge Pipe**

**Lake N11**

**Kennady Lake**

Slide 6

NWT Region

**Canada**

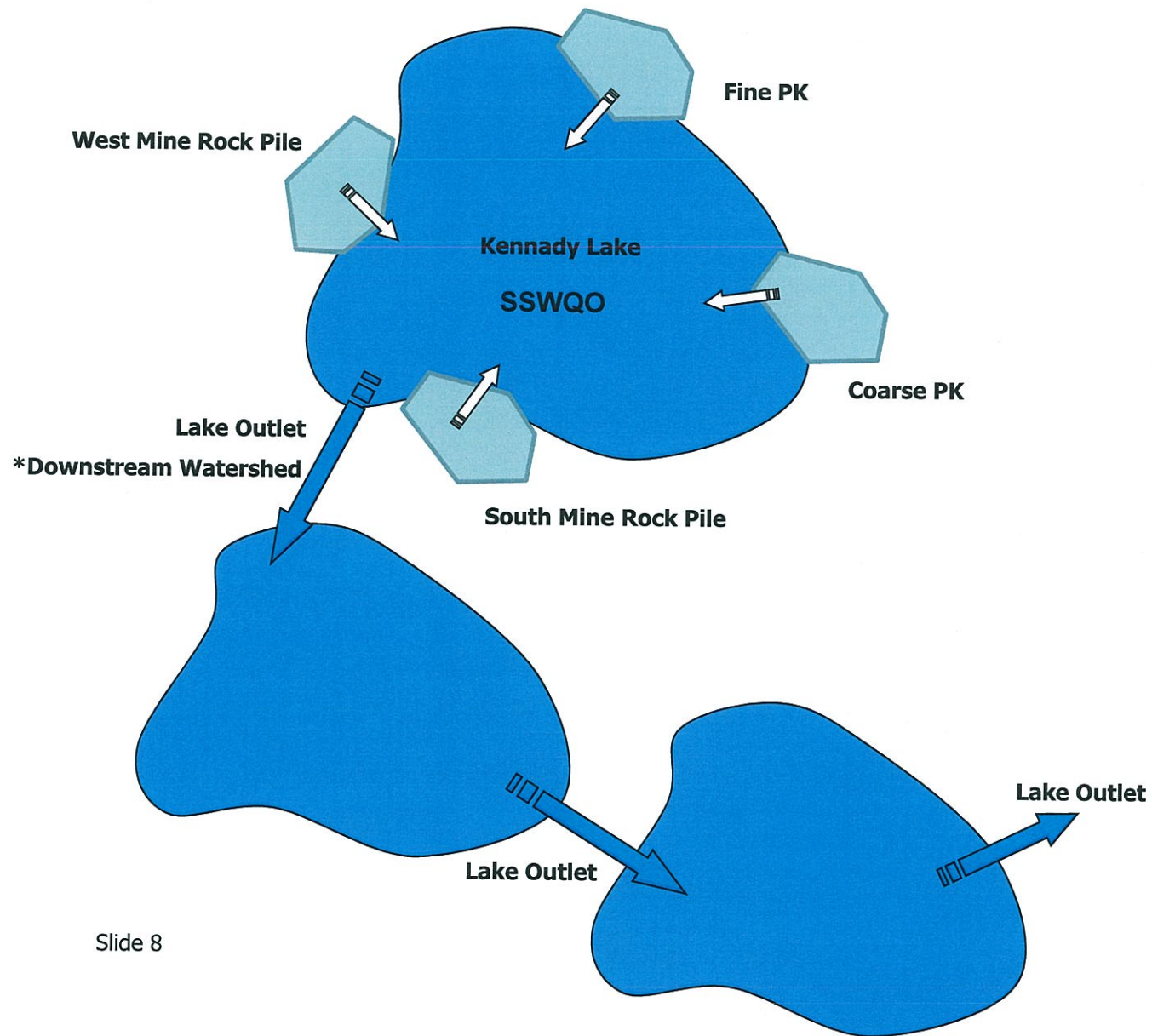


## Site Specific Water Quality Objectives

- The Water Quality Objective proposed for Kennady Lake would apply within the lake.







Slide 8





## Site Specific Water Quality Objectives

- AANDC is in general agreement with the protocol used by De Beers to set water quality objectives, however, has concerns with how De Beers has implemented their water quality objective protocol.
- AANDC maintains that increases in contaminant concentrations in the receiving environment should be minimized in order to provide the greatest confidence that impacts from a project will also be minimized.







## Site Specific Water Quality Objectives

### **AANDC is specifically concerned about:**

- Using regional baseline values as the basis for assessing the potential changes in water quality due to project activities;
- Using the elevated hardness values that result from project activities when accounting for exposure and toxicity modifying factors during water quality objective derivation;
- Defaulting to Canadian Council of Ministers of Environment guideline levels in the event that projected parameter concentrations exceed maximum background concentrations; and
- The water quality objective proposed for mercury.







## Recommendation One

- Water quality changes due to mining activities will not significantly affect benthic macro-invertebrate and plankton abundance, taxonomic richness or diversity.
- Water quality changes due to mining activities will not significantly alter fish abundance or diversity or fish consumption at current levels.
- Water quality changes due to mining activities will not negatively affect areas utilized as traditional drinking water sources.





## Recommendation One, cont'd

- Water quality changes due to mining activities will not significantly affect mammals or wildfowl using the area as a drinking water, food source or habitat, or the current ability for people to harvest these animals.
- Prior to re-connection with the surrounding watershed, water and sediment quality in Kennady Lake will be adequate to support a viable and self sustaining ecosystem that is compatible with the regional watershed and maintains traditional use of the area.





## Recommendation Two

- AANDC recommends that specific baseline values, as opposed to regional baseline values, should be used when deriving site specific water quality objectives for Kennady Lake and Lake N11.







## Recommendation Three

- AANDC recommends that the hardness concentration used for calculating hardness dependant site specific water quality objectives should reflect the existing baseline hardness concentration and not the altered conditions predicted as a result of mining activities.





## Recommendation Four

- AANDC recommends that, when deriving site specific water quality objectives, the lowest level reasonably achievable (considering requirements for operational flexibility) should be selected instead of defaulting to existing generic guideline values.





## Recommendation Five

- AANDC recommends that the site specific water quality objectives for mercury should either align with the maximum predicted mercury concentrations as a result of the project and/or within the range of naturally occurring background concentrations in Kennady Lake and Lake N11.







## Aquatic Effects Monitoring Plan (AEMP)

- AANDC agrees with De Beers that an aquatic effects monitoring program is required and is in support of De Beers proposal to work with regulators and interested parties in developing the AEMP.
- AANDC would like to see a stronger commitment to follow AANDC's 'Guidelines for Designing and Implementing Aquatic Effects Monitoring Programs for Development Projects in the Northwest Territories (2009)'





## Recommendation Six

- AANDC recommends that De Beers Canada be required to follow the “Guidelines for Designing and Implementing Aquatic Effects Monitoring Programs for Development Projects in the Northwest Territories, June 2009” in the development of its Aquatic Effects Monitoring Program, action levels, and related Management Response Framework for the Gahcho Kue Diamond Mine Project.







## Closure and Reclamation

- At the end of mining the water management pond will refill and will be reconnected to the surrounding watersheds. The time required for the water management pond to recover to form a sustainable ecosystem is on the order of 70 years from the end of Project operations.
- Portions of the west and south mine rock piles, coarse and fine processed kimberlite facilities will be in contact with the water management pond.







## Closure and Reclamation

- AANDC's position on closure and reclamation related issues are based upon the "Mine Site Reclamation Policy for the Northwest Territories, Indian and Northern Affairs Canada, 2002".





## Closure and Reclamation

- AANDC notes that having waste rock and processed kimberlite piles in direct contact with a water body is not typical practice at northern mine sites. Depending upon the accuracy of the model assumptions, final water quality in the water management pond may differ from predicted values.





## Closure and Reclamation

- AANDC remains concerned about post-closure water quality, as it is important to ensure a viable and self sustaining ecosystem that is compatible with the regional watershed and maintains traditional use of the area.







## Recommendation Seven

- AANDC recommends that water quality be closely monitored during the re-filling process, and adaptive management be implemented as required to ensure that the final water quality is sufficient to support a viable and self-sustaining ecosystem that is compatible with the regional watershed and maintains traditional use of the area prior to reconnecting the WMP to the downstream watersheds.





## Recommendation Eight

- AANDC recommends that a key element of the closure planning process, during operations, should be to identify potential mechanisms through which full lake mixing could occur (e.g. weather, pit wall slumping, etc.) and use the results of ongoing investigations and study to implement measures such that chemocline stability will be enhanced.





## Recommendation Nine

- AANDC recommends that a key element of the closure planning process, during operations, should be to identify and develop methods to reduce the period of time required for recovery of the WMP.







## Recommendation Ten

- AANDC recommends that closure goals and objectives be developed for the WMP that must be met prior to and following reconnection with the downstream environment. These closure goals and objectives would be developed in consultation with Aboriginal groups, interested parties and regulators.





## Concluding Remarks

- AANDC has provided recommendations within this report that relate to water quality with the intent of minimizing potential impacts from the proposed development both in magnitude and temporal extent.
- Setting site specific water quality objectives with the goal of maintaining existing water quality, to the extent feasible, will minimize the potential effects and provide a higher level of confidence that Kennady Lake and the downstream aquatic receiving environment will see minimal impacts.





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# Thank You.

